
google-cloud Documentation

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Attention: The `google-cloud` package is deprecated

The `google-cloud` package is no longer maintained or updated. Instead, install the `google-cloud-*` subpackages directly.

The `google-cloud` package (formerly `gcloud`) contains **all** `google-cloud-*` subpackages.

- `gcloud==0.01` (PyPI)
- `gcloud==0.02` (PyPI)
- `gcloud==0.02.1` (PyPI)
- `gcloud==0.02.2` (PyPI)
- `gcloud==0.3.0` (PyPI, Release Notes)
- `gcloud==0.4.0` (PyPI, Release Notes)
- `gcloud==0.4.1` (PyPI, Release Notes)
- `gcloud==0.4.2` (PyPI, Release Notes)
- `gcloud==0.4.3` (PyPI, Release Notes)
- `gcloud==0.5.0` (PyPI, Release Notes)
- `gcloud==0.6.0` (PyPI, Release Notes)
- `gcloud==0.7.0` (PyPI, Release Notes)
- `gcloud==0.7.1` (PyPI, Release Notes)
- `gcloud==0.8.0` (PyPI, Release Notes)
- `gcloud==0.9.0` (PyPI, Release Notes)
- `gcloud==0.10.0` (PyPI, Release Notes)
- `gcloud==0.10.1` (PyPI, Release Notes)
- `gcloud==0.11.0` (PyPI, Release Notes)
- `gcloud==0.12.0` (PyPI, Release Notes)
- `gcloud==0.12.1` (PyPI, Release Notes)
- `gcloud==0.13.0` (PyPI, Release Notes)
- `gcloud==0.14.0` (PyPI, Release Notes)
- `gcloud==0.15.0` (PyPI, Release Notes)
- `gcloud==0.16.0` (PyPI, Release Notes)
- `gcloud==0.16.1` (PyPI, Release Notes)
- `gcloud==0.17.0` (PyPI, Release Notes)
- `gcloud==0.18.0` (PyPI, Release Notes)
- `gcloud==0.18.1` (PyPI, Release Notes)
- `gcloud==0.18.2` (PyPI, Release Notes)
- `gcloud==0.18.3` (PyPI, Release Notes)
- `0.19.0` (PyPI, Release Notes)

- [0.20.0 \(PyPI, Release Notes\)](#)
- [0.21.0 \(PyPI, Release Notes\)](#)
- [0.21.1 \(PyPI, Release Notes\)](#)
- [0.22.0 \(PyPI, Release Notes\)](#)
- [0.23.0 \(PyPI, Release Notes\)](#)
- [0.24.0 \(PyPI, Release Notes\)](#)
- [0.25.0 \(PyPI, Release Notes\)](#)
- [0.25.1 \(PyPI, Release Notes\)](#)
- [0.26.0 \(PyPI, Release Notes\)](#)
- [0.26.1 \(PyPI, Release Notes\)](#)
- [0.27.0 \(PyPI, Release Notes\)](#)
- [0.28.0 \(PyPI, Release Notes\)](#)
- [0.29.0 \(PyPI, Release Notes\)](#)
- [0.30.0 \(PyPI, Release Notes\)](#)
- [0.31.0 \(PyPI, Release Notes\)](#)
- [0.32.0 \(PyPI, Release Notes\)](#)

1.1 Configuration

1.1.1 Overview

Use service client objects to configure your applications.

For example:

```
>>> from google.cloud import bigquery
>>> client = bigquery.Client()
```

When creating a client in this way, the project ID will be determined by searching these locations in the following order.

- GOOGLE_CLOUD_PROJECT environment variable
- GOOGLE_APPLICATION_CREDENTIALS JSON file
- Default service configuration path from `$ gcloud beta auth application-default login`.
- Google App Engine application ID
- Google Compute Engine project ID (from metadata server)

You can override the detection of your default project by setting the `project` parameter when creating client objects.

```
>>> from google.cloud import bigquery
>>> client = bigquery.Client(project='my-project')
```

You can see what project ID a client is referencing by accessing the `project` property on the client object.

```
>>> client.project
u'my-project'
```

1.1.2 Authentication

The authentication credentials can be implicitly determined from the environment or directly. See [Authentication](#).

Logging in via `gcloud beta auth application-default login` will automatically configure a JSON key file with your default project ID and credentials.

Setting the `GOOGLE_APPLICATION_CREDENTIALS` and `GOOGLE_CLOUD_PROJECT` environment variables will override the automatically configured credentials.

You can change your default project ID to `my-new-default-project` by using the `gcloud` CLI tool to change the configuration.

```
$ gcloud config set project my-new-default-project
```

1.1.3 Environment Variables

Comprehensive list of environment variables used in google-cloud.

These enable many types of implicit behavior in both production and tests.

```
google.cloud.environment_vars.BIGTABLE_EMULATOR = 'BIGTABLE_EMULATOR_HOST'
```

Environment variable defining host for Bigtable emulator.

```
google.cloud.environment_vars.DISABLE_GRPC = 'GOOGLE_CLOUD_DISABLE_GRPC'
```

Environment variable acting as flag to disable gRPC.

To be used for APIs where both an HTTP and gRPC implementation exist.

```
google.cloud.environment_vars.GCD_DATASET = 'DATASTORE_DATASET'
```

Environment variable defining default dataset ID under GCD.

```
google.cloud.environment_vars.GCD_HOST = 'DATASTORE_EMULATOR_HOST'
```

Environment variable defining host for GCD dataset server.

```
google.cloud.environment_vars.PUBSUB_EMULATOR = 'PUBSUB_EMULATOR_HOST'
```

Environment variable defining host for Pub/Sub emulator.

1.2 Authentication

1.2.1 Overview

- **If you're running in Compute Engine or App Engine**, authentication should “just work”.
- **If you're developing locally**, the easiest way to authenticate is using the [Google Cloud SDK](#):

```
$ gcloud auth application-default login
```

Note that this command generates credentials for client libraries. To authenticate the CLI itself, use:

```
$ gcloud auth login
```

Previously, `gcloud auth login` was used for both use cases. If your `gcloud` installation does not support the new command, please update it:

```
$ gcloud components update
```

- If you're running your application elsewhere, you should download a [service account](#) JSON keyfile and point to it using an environment variable:

```
$ export GOOGLE_APPLICATION_CREDENTIALS="/path/to/keyfile.json"
```

1.2.2 Client-Provided Authentication

Every package uses a *Client* as a base for interacting with an API. For example:

```
from google.cloud import datastore
client = datastore.Client()
```

Passing no arguments at all will “just work” if you’ve followed the instructions in the [Overview](#). The credentials are inferred from your local environment by using Google [Application Default Credentials](#).

Credential Discovery Precedence

When loading the [Application Default Credentials](#), the library will check for credentials in your environment by following the precedence outlined by `google.auth.default()`.

1.2.3 Explicit Credentials

The Application Default Credentials discussed above can be useful if your code needs to run in many different environments or if you just don’t want authentication to be a focus in your code.

However, you may want to be explicit because

- your code will only run in one place
- you may have code which needs to be run as a specific service account every time (rather than with the locally inferred credentials)
- you may want to use two separate accounts to simultaneously access data from different projects

In these situations, you can create an explicit [Credentials](#) object suited to your environment. After creation, you can pass it directly to a *Client*:

```
client = Client(credentials=credentials)
```

Tip: To create a credentials object, follow the [google-auth-guide](#).

Google App Engine Environment

To create `credentials` just for Google App Engine:

```
from google.auth import app_engine
credentials = app_engine.Credentials()
```

Google Compute Engine Environment

To create `credentials` just for Google Compute Engine:

```
from google.auth import compute_engine
credentials = compute_engine.Credentials()
```

Service Accounts

A `service account` is stored in a JSON keyfile.

The `from_service_account_json()` factory can be used to create a `Client` with service account credentials.

For example, with a JSON keyfile:

```
client = Client.from_service_account_json('/path/to/keyfile.json')
```

Tip: Previously the Google Cloud Console would issue a PKCS12/P12 key for your service account. This library does not support that key format. You can generate a new JSON key for the same service account from the console.

User Accounts (3-legged OAuth 2.0) with a refresh token

The majority of cases are intended to authenticate machines or workers rather than actual user accounts. However, it's also possible to call Google Cloud APIs with a user account via [OAuth 2.0](#).

Tip: A production application should **use a service account**, but you may wish to use your own personal user account when first getting started with the `google-cloud-python` library.

The simplest way to use credentials from a user account is via Application Default Credentials using `gcloud auth login` (as mentioned above) and `google.auth.default()`:

```
import google.auth

credentials, project = google.auth.default()
```

This will still follow the *precedence* described above, so be sure none of the other possible environments conflict with your user provided credentials.

Advanced users of `oauth2client` can also use custom flows to create credentials using `client secrets` or using a `webserver flow`. After creation, `Credentials` can be serialized with `to_json()` and stored in a file and then and deserialized with `from_json()`. In order to use `oauth2client`'s credentials with this library, you'll need to [convert them](#).

1.2.4 Troubleshooting

Setting up a Service Account

If your application is not running on Google Compute Engine, you need a [Google Developers Service Account](#).

1. Visit the [Google Developers Console](#).
2. Create a new project or click on an existing project.

3. Navigate to **APIs & auth > APIs** and enable the APIs that your application requires.

Note: You may need to enable billing in order to use these services.

- **BigQuery**
 - BigQuery API
 - **Datastore**
 - Google Cloud Datastore API
 - **Pub/Sub**
 - Google Cloud Pub/Sub
 - **Storage**
 - Google Cloud Storage
 - Google Cloud Storage JSON API
-

1. Navigate to **APIs & auth > Credentials**.

You should see a screen like one of the following:

Find the “Add credentials” drop down and select “Service account” to be guided through downloading a new JSON keyfile.

If you want to re-use an existing service account, you can easily generate a new keyfile. Just select the account you wish to re-use, and click **Generate new JSON key**:

Using Google Compute Engine

If your code is running on Google Compute Engine, using the inferred Google [Application Default Credentials](#) will be sufficient for retrieving credentials.

However, by default your credentials may not grant you access to the services you intend to use. Be sure when you [set up the GCE instance](#), you add the correct scopes for the APIs you want to access:

- **All APIs**
 - `https://www.googleapis.com/auth/cloud-platform`
 - `https://www.googleapis.com/auth/cloud-platform.read-only`
- **BigQuery**
 - `https://www.googleapis.com/auth/bigquery`
 - `https://www.googleapis.com/auth/bigquery.insertdata`
- **Datastore**
 - `https://www.googleapis.com/auth/datastore`
 - `https://www.googleapis.com/auth/userinfo.email`
- **Pub/Sub**
 - `https://www.googleapis.com/auth/pubsub`
- **Storage**

- `https://www.googleapis.com/auth/devstorage.full_control`
- `https://www.googleapis.com/auth/devstorage.read_only`
- `https://www.googleapis.com/auth/devstorage.read_write`

1.3 Base Client

Base classes for client used to interact with Google Cloud APIs.

class `google.cloud.client.Client` (*credentials=None, _http=None*)

Bases: `google.cloud.client._ClientFactoryMixin`

Client to bundle configuration needed for API requests.

Stores *credentials* and an HTTP object so that subclasses can pass them along to a connection class.

If no value is passed in for *_http*, a `requests.Session` object will be created and authorized with the *credentials*. If not, the *credentials* and *_http* need not be related.

Callers and subclasses may seek to use the private key from *credentials* to sign data.

Parameters

- **credentials** (*google.auth.credentials.Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no *_http* object is passed), falls back to the default inferred from the environment.
- **_http** (*requests.Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an *_http* object is created that is bound to the *credentials* for the current object. This parameter should be considered private, and could change in the future.

Raises `google.auth.exceptions.DefaultCredentialsError` – Raised if *credentials* is not specified and the library fails to acquire default credentials.

SCOPE = None

The scopes required for authenticating with a service.

Needs to be set by subclasses.

class `google.cloud.client.ClientWithProject` (*project=None, credentials=None, _http=None*)

Bases: `google.cloud.client.Client`, `google.cloud.client._ClientProjectMixin`

Client that also stores a project.

Parameters

- **project** (*str*) – the project which the client acts on behalf of. If not passed falls back to the default inferred from the environment.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no *_http* object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `request()`. If not passed, an *_http* object is created that is bound to the *credentials* for the current object. This parameter should be considered private, and could change in the future.

Raises `ValueError` if the project is neither passed in nor set in the environment.

1.4 Exceptions

Exceptions raised by Google API core & clients.

This module provides base classes for all errors raised by libraries based on `google.api_core`, including both HTTP and gRPC clients.

exception `google.api_core.exceptions.Aborted` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.Conflict`

Exception mapping a `grpc.StatusCode.ABORTED` error.

exception `google.api_core.exceptions.AlreadyExists` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.Conflict`

Exception mapping a `grpc.StatusCode.ALREADY_EXISTS` error.

exception `google.api_core.exceptions.BadGateway` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ServerError`

Exception mapping a 502 Bad Gateway response.

exception `google.api_core.exceptions.BadRequest` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 400 Bad Request response.

exception `google.api_core.exceptions.Cancelled` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a `grpc.StatusCode.CANCELLED` error.

exception `google.api_core.exceptions.ClientError` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.GoogleAPICallError`

Base class for all client error (HTTP 4xx) responses.

exception `google.api_core.exceptions.Conflict` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 409 Conflict response.

exception `google.api_core.exceptions.DataLoss` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ServerError`

Exception mapping a `grpc.StatusCode.DATA_LOSS` error.

exception `google.api_core.exceptions.DeadlineExceeded` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.GatewayTimeout`

Exception mapping a `grpc.StatusCode.DEADLINE_EXCEEDED` error.

exception `google.api_core.exceptions.FailedPrecondition` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.BadRequest`

Exception mapping a `grpc.StatusCode.FAILED_PRECONDITION` error.

exception `google.api_core.exceptions.Forbidden` (*message*, *errors=()*, *response=None*)
Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 403 Forbidden response.

exception `google.api_core.exceptions.GatewayTimeout` (*message*, *errors=()*, *response=None*)
Bases: `google.api_core.exceptions.ServerError`

Exception mapping a 504 Gateway Timeout response.

exception `google.api_core.exceptions.GoogleAPICallError` (*message*, *errors=()*, *response=None*)
Bases: `google.api_core.exceptions.GoogleAPIError`

Base class for exceptions raised by calling API methods.

Parameters

- **message** (*str*) – The exception message.
- **errors** (*Sequence[Any]*) – An optional list of error details.
- **response** (*Union[requests.Request, grpc.Call]*) – The response or gRPC call metadata.

code = None

Optional[int] – The HTTP status code associated with this error.

This may be `None` if the exception does not have a direct mapping to an HTTP error.

See <http://www.w3.org/Protocols/rfc2616/rfc2616-sec10.html>

errors

Detailed error information.

Returns A list of additional error details.

Return type `Sequence[Any]`

grpc_status_code = None

Optional[grpc.StatusCode] – The gRPC status code associated with this error.

This may be `None` if the exception does not match up to a gRPC error.

message = None

str – The exception message.

response

Optional[Union[requests.Request, grpc.Call]] – The response or gRPC call metadata.

exception `google.api_core.exceptions.GoogleAPIError`

Bases: `Exception`

Base class for all exceptions raised by Google API Clients.

exception `google.api_core.exceptions.InternalServerError` (*message*, *errors=()*, *response=None*)
Bases: `google.api_core.exceptions.ServerError`

Exception mapping a 500 Internal Server Error response. or a `grpc.StatusCode.INTERNAL` error.

exception `google.api_core.exceptions.InvalidArgument` (*message*, *errors=()*, *response=None*)
Bases: `google.api_core.exceptions.BadRequest`

Exception mapping a `grpc.StatusCode.INVALID_ARGUMENT` error.

```
exception google.api_core.exceptions.LengthRequired(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 411 Length Required response.

```
exception google.api_core.exceptions.MethodNotAllowed(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 405 Method Not Allowed response.

```
exception google.api_core.exceptions.MethodNotImplemented(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.ServerError`

Exception mapping a 501 Not Implemented response or a `grpc.StatusCode.UNIMPLEMENTED` error.

```
exception google.api_core.exceptions.MovedPermanently(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.Redirection`

Exception mapping a 301 Moved Permanently response.

```
exception google.api_core.exceptions.NotFound(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 404 Not Found response or a `grpc.StatusCode.NOT_FOUND` error.

```
exception google.api_core.exceptions.NotModified(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.Redirection`

Exception mapping a 304 Not Modified response.

```
exception google.api_core.exceptions.OutOfRange(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.BadRequest`

Exception mapping a `grpc.StatusCode.OUT_OF_RANGE` error.

```
exception google.api_core.exceptions.PermissionDenied(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.Forbidden`

Exception mapping a `grpc.StatusCode.PERMISSION_DENIED` error.

```
exception google.api_core.exceptions.PreconditionFailed(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 412 Precondition Failed response.

```
exception google.api_core.exceptions.Redirection(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.GoogleAPICallError`

Base class for for all redirection (HTTP 3xx) responses.

```
exception google.api_core.exceptions.RequestRangeNotSatisfiable(message, errors=(), response=None)
```

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 416 Request Range Not Satisfiable response.

exception `google.api_core.exceptions.ResourceExhausted` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.TooManyRequests`

Exception mapping a `grpc.StatusCode.RESOURCE_EXHAUSTED` error.

exception `google.api_core.exceptions.ResumeIncomplete` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.Redirection`

Exception mapping a 308 Resume Incomplete response.

Note: `http_client.PERMANENT_REDIRECT` is 308, but Google APIs differ in their use of this status code.

exception `google.api_core.exceptions.RetryError` (*message*, *cause*)

Bases: `google.api_core.exceptions.GoogleAPIError`

Raised when a function has exhausted all of its available retries.

Parameters

- **message** (*str*) – The exception message.
- **cause** (*Exception*) – The last exception raised when retrying the function.

cause

The last exception raised when retrying the function.

exception `google.api_core.exceptions.ServerError` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.GoogleAPICallError`

Base for 5xx responses.

exception `google.api_core.exceptions.ServiceUnavailable` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ServerError`

Exception mapping a 503 Service Unavailable response or a `grpc.StatusCode.UNAVAILABLE` error.

exception `google.api_core.exceptions.TemporaryRedirect` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.Redirection`

Exception mapping a 307 Temporary Redirect response.

exception `google.api_core.exceptions.TooManyRequests` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 429 Too Many Requests response.

exception `google.api_core.exceptions.Unauthenticated` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.Unauthorized`

Exception mapping a `grpc.StatusCode.UNAUTHENTICATED` error.

exception `google.api_core.exceptions.Unauthorized` (*message*, *errors=()*, *response=None*)

Bases: `google.api_core.exceptions.ClientError`

Exception mapping a 401 Unauthorized response.

exception `google.api_core.exceptions.Unknown` (*message*, *errors=()*, *response=None*)
 Bases: `google.api_core.exceptions.ServerError`

Exception mapping a `grpc.StatusCode.UNKNOWN` error.

`google.api_core.exceptions.exception_class_for_grpc_status` (*status_code*)
 Return the exception class for a specific `grpc.StatusCode`.

Parameters `status_code` (`grpc.StatusCode`) – The gRPC status code.

Returns the appropriate subclass of `GoogleAPICallError`.

Return type `type()`

`google.api_core.exceptions.exception_class_for_http_status` (*status_code*)
 Return the exception class for a specific HTTP status code.

Parameters `status_code` (`int`) – The HTTP status code.

Returns the appropriate subclass of `GoogleAPICallError`.

Return type `type()`

`google.api_core.exceptions.from_grpc_error` (*rpc_exc*)
 Create a `GoogleAPICallError` from a `grpc.RpcError`.

Parameters `rpc_exc` (`grpc.RpcError`) – The gRPC error.

Returns

An instance of the appropriate subclass of `GoogleAPICallError`.

Return type `GoogleAPICallError`

`google.api_core.exceptions.from_grpc_status` (*status_code*, *message*, ***kwargs*)
 Create a `GoogleAPICallError` from a `grpc.StatusCode`.

Parameters

- **status_code** (`grpc.StatusCode`) – The gRPC status code.
- **message** (`str`) – The exception message.
- **kwargs** – Additional arguments passed to the `GoogleAPICallError` constructor.

Returns

An instance of the appropriate subclass of `GoogleAPICallError`.

Return type `GoogleAPICallError`

`google.api_core.exceptions.from_http_response` (*response*)
 Create a `GoogleAPICallError` from a `requests.Response`.

Parameters `response` (`requests.Response`) – The HTTP response.

Returns

An instance of the appropriate subclass of `GoogleAPICallError`, with the message and errors populated from the response.

Return type `GoogleAPICallError`

`google.api_core.exceptions.from_http_status` (*status_code*, *message*, ***kwargs*)
 Create a `GoogleAPICallError` from an HTTP status code.

Parameters

- **status_code** (`int`) – The HTTP status code.

- **message** (*str*) – The exception message.
- **kwargs** – Additional arguments passed to the `GoogleAPICallError` constructor.

Returns

An instance of the appropriate subclass of `GoogleAPICallError`.

Return type `GoogleAPICallError`

1.5 Helpers

1.5.1 General Helpers

Helpers for general Python functionality.

`google.api_core.general_helpers.wraps(wrapped)`
A `functools.wraps` helper that handles partial objects on Python 2.

1.5.2 Datetime Helpers

Helpers for `datetime`.

class `google.api_core.datetime_helpers.DatetimeWithNanoseconds`
Bases: `datetime.datetime`

Track nanosecond in addition to normal datetime attrs.

Nanosecond can be passed only as a keyword argument.

classmethod `from_rfc3339(stamp)`
Parse RFC 3339-compliant timestamp, preserving nanoseconds.

Parameters **stamp** (*str*) – RFC 3339 stamp, with up to nanosecond precision

Returns an instance matching the timestamp string

Return type `DatetimeWithNanoseconds`

Raises `ValueError` – if *stamp* does not match the expected format

nanosecond
Read-only – nanosecond precision.

rfc3339()
Return an RFC 3339-compliant timestamp.

Returns Timestamp string according to RFC 3339 spec.

Return type (*str*)

`google.api_core.datetime_helpers.from_iso8601_date(value)`
Convert a ISO8601 date string to a date.

Parameters **value** (*str*) – The ISO8601 date string.

Returns A date equivalent to the date string.

Return type `datetime.date`

`google.api_core.datetime_helpers.from_iso8601_time(value)`
Convert a zoneless ISO8601 time string to a time.

Parameters **value** (*str*) – The ISO8601 time string.

Returns A time equivalent to the time string.

Return type `datetime.time`

`google.api_core.datetime_helpers.from_microseconds(value)`

Convert timestamp in microseconds since the unix epoch to datetime.

Parameters **value** (*float*) – The timestamp to convert, in microseconds.

Returns

The datetime object equivalent to the timestamp in UTC.

Return type `datetime.datetime`

`google.api_core.datetime_helpers.from_rfc3339(value)`

Convert a microsecond-precision timestamp to datetime.

Parameters **value** (*str*) – The RFC3339 string to convert.

Returns

The datetime object equivalent to the timestamp in UTC.

Return type `datetime.datetime`

`google.api_core.datetime_helpers.from_rfc3339_nanos(value)`

Convert a nanosecond-precision timestamp to a native datetime.

Note: Python datetimes do not support nanosecond precision; this function therefore truncates such values to microseconds.

Parameters **value** (*str*) – The RFC3339 string to convert.

Returns

The datetime object equivalent to the timestamp in UTC.

Return type `datetime.datetime`

Raises `ValueError` – If the timestamp does not match the RFC 3339 regular expression.

`google.api_core.datetime_helpers.to_microseconds(value)`

Convert a datetime to microseconds since the unix epoch.

Parameters **value** (*datetime.datetime*) – The datetime to covert.

Returns Microseconds since the unix epoch.

Return type `int`

`google.api_core.datetime_helpers.to_milliseconds(value)`

Convert a zone-aware datetime to milliseconds since the unix epoch.

Parameters **value** (*datetime.datetime*) – The datetime to covert.

Returns Milliseconds since the unix epoch.

Return type `int`

`google.api_core.datetime_helpers.to_rfc3339(value, ignore_zone=True)`

Convert a datetime to an RFC3339 timestamp string.

Parameters

- **value** (*datetime.datetime*) – The datetime object to be converted to a string.
- **ignore_zone** (*bool*) – If True, then the timezone (if any) of the datetime object is ignored and the datetime is treated as UTC.

Returns The RFC3339 formatted string representing the datetime.

Return type `str`

`google.api_core.datetime_helpers.utcnow()`
 A `datetime.datetime.utcnow()` alias to allow mocking in tests.

1.5.3 gRPC Helpers

Helpers for `grpc`.

class `google.api_core.grpc_helpers.ChannelStub` (*responses=[]*)
 Bases: `grpc.Channel`

A testing stub for the `grpc.Channel` interface.

This can be used to test any client that eventually uses a gRPC channel to communicate. By passing in a channel stub, you can configure which responses are returned and track which requests are made.

For example:

```
channel_stub = grpc_helpers.ChannelStub()
client = FooClient(channel=channel_stub)

channel_stub.GetFoo.response = foo_pb2.Foo(name='bar')

foo = client.get_foo(labels=['baz'])

assert foo.name == 'bar'
assert channel_stub.GetFoo.requests[0].labels == ['baz']
```

Each method on the stub can be accessed and configured on the channel. Here's some examples of various configurations:

```
# Return a basic response:

channel_stub.GetFoo.response = foo_pb2.Foo(name='bar')
assert client.get_foo().name == 'bar'

# Raise an exception:
channel_stub.GetFoo.response = NotFound('...')

with pytest.raises(NotFound):
    client.get_foo()

# Use a sequence of responses:
channel_stub.GetFoo.responses = iter([
    foo_pb2.Foo(name='bar'),
    foo_pb2.Foo(name='baz'),
])

assert client.get_foo().name == 'bar'
```

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```

assert client.get_foo().name == 'baz'

# Use a callable

def on_get_foo(request):
    return foo_pb2.Foo(name='bar' + request.id)

channel_stub.GetFoo.response = on_get_foo

assert client.get_foo(id='123').name == 'bar123'

```

close()
 grpc.Channel.close implementation.

requests = None
Sequence[Tuple[str, protobuf.Message]] – A list of all requests made on this channel in order. The tuple is of method name, request message.

stream_stream(*method, request_serializer=None, response_deserializer=None*)
 grpc.Channel.stream_stream implementation.

stream_unary(*method, request_serializer=None, response_deserializer=None*)
 grpc.Channel.stream_unary implementation.

subscribe(*callback, try_to_connect=False*)
 grpc.Channel.subscribe implementation.

unary_stream(*method, request_serializer=None, response_deserializer=None*)
 grpc.Channel.unary_stream implementation.

unary_unary(*method, request_serializer=None, response_deserializer=None*)
 grpc.Channel.unary_unary implementation.

unsubscribe(*callback*)
 grpc.Channel.unsubscribe implementation.

google.api_core.grpc_helpers.**create_channel**(*target, credentials=None, scopes=None, **kwargs*)

Create a secure channel with credentials.

Parameters

- **target** (*str*) – The target service address in the format ‘hostname:port’.
- **credentials** (*google.auth.credentials.Credentials*) – The credentials. If not specified, then this function will attempt to ascertain the credentials from the environment using `google.auth.default()`.
- **scopes** (*Sequence[str]*) – A optional list of scopes needed for this service. These are only used when credentials are not specified and are passed to `google.auth.default()`.
- **kwargs** – Additional key-word args passed to `google.auth.transport.grpc.secure_authorized_channel()`.

Returns The created channel.

Return type `grpc.Channel`

google.api_core.grpc_helpers.**wrap_errors**(*callable_*)
 Wrap a gRPC callable and map `grpc.RpcErrors` to friendly error classes.

Errors raised by the gRPC callable are mapped to the appropriate `google.api_core.exceptions.GoogleAPICallError` subclasses. The original `grpc.RpcError` (which is usually also a `grpc.Call`) is available from the `response` property on the mapped exception. This is useful for extracting metadata from the original error.

Parameters `callable` (*Callable*) – A gRPC callable.

Returns The wrapped gRPC callable.

Return type `Callable`

1.6 Retry

Helpers for retrying functions with exponential back-off.

The `Retry` decorator can be used to retry functions that raise exceptions using exponential backoff. Because a exponential sleep algorithm is used, the retry is limited by a *deadline*. The deadline is the maximum amount of time a method can block. This is used instead of total number of retries because it is difficult to ascertain the amount of time a function can block when using total number of retries and exponential backoff.

By default, this decorator will retry transient API errors (see `if_transient_error()`). For example:

```
@retry.Retry()
def call_flaky_rpc():
    return client.flaky_rpc()

# Will retry flaky_rpc() if it raises transient API errors.
result = call_flaky_rpc()
```

You can pass a custom predicate to retry on different exceptions, such as waiting for an eventually consistent item to be available:

```
@retry.Retry(predicate=if_exception_type(exceptions.NotFound))
def check_if_exists():
    return client.does_thing_exist()

is_available = check_if_exists()
```

Some client library methods apply retry automatically. These methods can accept a `retry` parameter that allows you to configure the behavior:

```
my_retry = retry.Retry(deadline=60)
result = client.some_method(retry=my_retry)
```

```
class google.api_core.retry.Retry (predicate=<function if_exception_type.<locals>.if_exception_type_predicate>,
                                     initial=1.0, maximum=60.0, multiplier=2.0, dead-
                                     line=120.0)
```

Bases: `object`

Exponential retry decorator.

This class is a decorator used to add exponential back-off retry behavior to an RPC call.

Although the default behavior is to retry transient API errors, a different predicate can be provided to retry other exceptions.

Parameters

- **predicate** (*Callable[Exception]*) – A callable that should return `True` if the given exception is retryable.
- **initial** (*float*) – The minimum amount of time to delay in seconds. This must be greater than 0.
- **maximum** (*float*) – The maximum amount of time to delay in seconds.
- **multiplier** (*float*) – The multiplier applied to the delay.
- **deadline** (*float*) – How long to keep retrying in seconds.

with_deadline (*deadline*)

Return a copy of this retry with the given deadline.

Parameters **deadline** (*float*) – How long to keep retrying.

Returns A new retry instance with the given deadline.

Return type *Retry*

with_delay (*initial=None, maximum=None, multiplier=None*)

Return a copy of this retry with the given delay options.

Parameters

- **initial** (*float*) – The minimum amount of time to delay. This must be greater than 0.
- **maximum** (*float*) – The maximum amount of time to delay.
- **multiplier** (*float*) – The multiplier applied to the delay.

Returns A new retry instance with the given predicate.

Return type *Retry*

with_predicate (*predicate*)

Return a copy of this retry with the given predicate.

Parameters **predicate** (*Callable[Exception]*) – A callable that should return `True` if the given exception is retryable.

Returns A new retry instance with the given predicate.

Return type *Retry*

`google.api_core.retry.exponential_sleep_generator` (*initial, maximum, multiplier=2.0*)

Generates sleep intervals based on the exponential back-off algorithm.

This implements the [Truncated Exponential Back-off](#) algorithm.

Parameters

- **initial** (*float*) – The minimum amount of time to delay. This must be greater than 0.
- **maximum** (*float*) – The maximum amount of time to delay.
- **multiplier** (*float*) – The multiplier applied to the delay.

Yields *float* – successive sleep intervals.

`google.api_core.retry.if_exception_type` (**exception_types*)

Creates a predicate to check if the exception is of a given type.

Parameters **exception_types** (*Sequence[type ()]*) – The exception types to check for.

Returns

A predicate that returns `True` if the provided exception is of the given type(s).

Return type `Callable[Exception]`

`google.api_core.retry.if_transient_error(exception)`

A predicate that checks if an exception is a transient API error.

The following server errors are considered transient:

- `google.api_core.exceptions.InternalServerError` - HTTP 500, gRPC INTERNAL (13) and its subclasses.
- `google.api_core.exceptions.TooManyRequests` - HTTP 429
- `google.api_core.exceptions.ResourceExhausted` - gRPC RESOURCE_EXHAUSTED (8)

`google.api_core.retry.retry_target(target, predicate, sleep_generator, deadline, on_error=None)`

Call a function and retry if it fails.

This is the lowest-level retry helper. Generally, you'll use the higher-level retry helper `Retry`.

Parameters

- **target** (`Callable`) – The function to call and retry. This must be a nullary function - apply arguments with `functools.partial`.
- **predicate** (`Callable[Exception]`) – A callable used to determine if an exception raised by the target should be considered retryable. It should return `True` to retry or `False` otherwise.
- **sleep_generator** (`Iterable[float]`) – An infinite iterator that determines how long to sleep between retries.
- **deadline** (`float`) – How long to keep retrying the target.
- **on_error** (`Callable`) – A function to call while processing a retryable exception. Any error raised by this function will *not* be caught.

Returns the return value of the target function.

Return type `Any`

Raises

- `google.api_core.RetryError` – If the deadline is exceeded while retrying.
- `ValueError` – If the sleep generator stops yielding values.
- `Exception` – If the target raises a method that isn't retryable.

1.7 Timeout

Decorators for applying timeout arguments to functions.

These decorators are used to wrap API methods to apply either a constant or exponential timeout argument.

For example, imagine an API method that can take a while to return results, such as one that might block until a resource is ready:

```
def is_thing_ready(timeout=None):
    response = requests.get('https://example.com/is_thing_ready')
    response.raise_for_status()
    return response.json()
```

This module allows a function like this to be wrapped so that timeouts are automatically determined, for example:

```
timeout_ = timeout.ExponentialTimeout()
is_thing_ready_with_timeout = timeout_(is_thing_ready)

for n in range(10):
    try:
        is_thing_ready_with_timeout({'example': 'data'})
    except:
        pass
```

In this example the first call to `is_thing_ready` will have a relatively small timeout (like 1 second). If the resource is available and the request completes quickly, the loop exits. But, if the resource isn't yet available and the request times out, it'll be retried - this time with a larger timeout.

In the broader context these decorators are typically combined with `google.api_core.retry` to implement API methods with a signature that matches `api_method(request, timeout=None, retry=None)`.

class `google.api_core.timeout.ConstantTimeout` (*timeout=None*)
Bases: `object`

A decorator that adds a constant timeout argument.

This is effectively equivalent to `functools.partial(func, timeout=timeout)`.

Parameters `timeout` (*Optional[float]*) – the timeout (in seconds) to applied to the wrapped function. If *None*, the target function is expected to never timeout.

class `google.api_core.timeout.ExponentialTimeout` (*initial=5.0, maximum=30.0, multiplier=2.0, deadline=None*)

Bases: `object`

A decorator that adds an exponentially increasing timeout argument.

This is useful if a function is called multiple times. Each time the function is called this decorator will calculate a new timeout parameter based on the the number of times the function has been called.

For example

Parameters

- **initial** (*float*) – The initial timeout to pass.
- **maximum** (*float*) – The maximum timeout for any one call.
- **multiplier** (*float*) – The multiplier applied to the timeout for each invocation.
- **deadline** (*Optional[float]*) – The overall deadline across all invocations. This is used to prevent a very large calculated timeout from pushing the overall execution time over the deadline. This is especially useful in conjunction with `google.api_core.retry`. If *None*, the timeouts will not be adjusted to accomodate an overall deadline.

with_deadline (*deadline*)

Return a copy of this teimout with the given deadline.

Parameters `deadline` (*float*) – The overall deadline across all invocations.

Returns A new instance with the given deadline.

Return type *ExponentialTimeout*

1.8 Page Iterators

Iterators for paging through paged API methods.

These iterators simplify the process of paging through API responses where the request takes a page token and the response is a list of results with a token for the next page. See [list pagination](#) in the Google API Style Guide for more details.

API clients that have methods that follow the list pagination pattern can return an *Iterator*. You can use this iterator to get **all** of the results across all pages:

```
>>> results_iterator = client.list_resources()
>>> list(results_iterator) # Convert to a list (consumes all values).
```

Or you can walk your way through items and call off the search early if you find what you're looking for (resulting in possibly fewer requests):

```
>>> for resource in results_iterator:
...     print(resource.name)
...     if not resource.is_valid:
...         break
```

At any point, you may check the number of items consumed by referencing the `num_results` property of the iterator:

```
>>> for my_item in results_iterator:
...     if results_iterator.num_results >= 10:
...         break
```

When iterating, not every new item will send a request to the server. To iterate based on each page of items (where a page corresponds to a request):

```
>>> for page in results_iterator.pages:
...     print('=' * 20)
...     print('    Page number: {:d}'.format(iterator.page_number))
...     print('    Items in page: {:d}'.format(page.num_items))
...     print('    First item: {!r}'.format(next(page)))
...     print('Items remaining: {:d}'.format(page.remaining))
...     print('Next page token: {}'.format(iterator.next_page_token))
=====
    Page number: 1
    Items in page: 1
    First item: <MyItemClass at 0x7f1d3cccf690>
Items remaining: 0
Next page token: eav1OzQB0OM8rLdGXOEsyQWSG
=====
    Page number: 2
    Items in page: 19
    First item: <MyItemClass at 0x7f1d3cccf6d0>
Items remaining: 18
Next page token: None
```

Then, for each page you can get all the resources on that page by iterating through it or using `list()`:

```
>>> list(page)
[
    <MyItemClass at 0x7fd64a098ad0>,
```

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```

    <MyItemClass at 0x7fd64a098ed0>,
    <MyItemClass at 0x7fd64a098e90>,
]

```

```

class google.api_core.page_iterator.GRPCIterator(client, method, request, items_field,
                                                  item_to_value=<function
                                                    _item_to_value_identity>,
                                                  request_token_field='page_token',
                                                  response_token_field='next_page_token',
                                                  max_results=None)

```

Bases: `google.api_core.page_iterator.Iterator`

A generic class for iterating through gRPC list responses.

Note: The class does not take a `page_token` argument because it can just be specified in the request.

Parameters

- **client** (`google.cloud.client.Client`) – The API client. This unused by this class, but kept to satisfy the `Iterator` interface.
- **method** (`Callable[protobuf.Message]`) – A bound gRPC method that should take a single message for the request.
- **request** (`protobuf.Message`) – The request message.
- **items_field** (`str`) – The field in the response message that has the items for the page.
- **item_to_value** (`Callable[GRPCIterator, Any]`) – Callable to convert an item from the type in the JSON response into a native object. Will be called with the iterator and a single item.
- **request_token_field** (`str`) – The field in the request message used to specify the page token.
- **response_token_field** (`str`) – The field in the response message that has the token for the next page.
- **max_results** (`int`) – The maximum number of results to fetch.

pages

Iterator of pages in the response.

Returns

A generator of page instances.

Return type `types.GeneratorType[google.api_core.page_iterator.Page]`

Raises `ValueError` – If the iterator has already been started.

```

class google.api_core.page_iterator.HTTPIterator(client, api_request, path,
                                                  item_to_value, items_key='items',
                                                  page_token=None,
                                                  max_results=None,
                                                  extra_params=None,
                                                  page_start=<function
                                                    _do_nothing_page_start>,
                                                  next_token='nextPageToken')

```

Bases: `google.api_core.page_iterator.Iterator`

A generic class for iterating through HTTP/JSON API list responses.

To make an iterator work, you'll need to provide a way to convert a JSON item returned from the API into the object of your choice (via `item_to_value`). You also may need to specify a custom `items_key` so that a given response (containing a page of results) can be parsed into an iterable page of the actual objects you want.

Parameters

- **client** (`google.cloud.client.Client`) – The API client.
- **api_request** (`Callable`) – The function to use to make API requests. Generally, this will be `google.cloud._http.JSONConnection.api_request()`.
- **path** (`str`) – The method path to query for the list of items.
- **item_to_value** (`Callable[[google.api_core.page_iterator.Iterator, Any]]`) – Callable to convert an item from the type in the JSON response into a native object. Will be called with the iterator and a single item.
- **items_key** (`str`) – The key in the API response where the list of items can be found.
- **page_token** (`str`) – A token identifying a page in a result set to start fetching results from.
- **max_results** (`int`) – The maximum number of results to fetch.
- **extra_params** (`dict`) – Extra query string parameters for the API call.
- **(Callable[[`page_start`] – `google.api_core.page_iterator.Iterator`, `google.api_core.page_iterator.Page`, `dict`])**: Callable to provide any special behavior after a new page has been created. Assumed signature takes the `Iterator` that started the page, the `Page` that was started and the dictionary containing the page response.
- **next_token** (`str`) – The name of the field used in the response for page tokens.

pages

Iterator of pages in the response.

Returns

A generator of page instances.

Return type `types.GeneratorType[google.api_core.page_iterator.Page]`

Raises `ValueError` – If the iterator has already been started.

```
class google.api_core.page_iterator.Iterator(client, item_to_value=<function
    _item_to_value_identity>,
    page_token=None, max_results=None)
```

Bases: `object`

A generic class for iterating through API list responses.

Parameters

- **client** (`google.cloud.client.Client`) – The API client.
- **item_to_value** (`Callable[[google.api_core.page_iterator.Iterator, Any]]`) – Callable to convert an item from the type in the raw API response into the native object. Will be called with the iterator and a single item.
- **page_token** (`str`) – A token identifying a page in a result set to start fetching results from.
- **max_results** (`int`) – The maximum number of results to fetch.

client = None

Optional[Any] – The client that created this iterator.

item_to_value = None

Callable[Iterator, Any] – Callable to convert an item from the type in the raw API response into the native object. Will be called with the iterator and a single item.

max_results = None

int – The maximum number of results to fetch.

next_page_token = None

str – The token for the next page of results. If this is set before the iterator starts, it effectively offsets the iterator to a specific starting point.

num_results = None

int – The total number of results fetched so far.

page_number = None

int – The current page of results.

pages

Iterator of pages in the response.

Returns

A generator of page instances.

Return type `types.GeneratorType[google.api_core.page_iterator.Page]`

Raises `ValueError` – If the iterator has already been started.

class `google.api_core.page_iterator.Page` (*parent, items, item_to_value*)

Bases: `object`

Single page of results in an iterator.

Parameters

- **parent** (`google.api_core.page_iterator.Iterator`) – The iterator that owns the current page.
- **items** (`Sequence[Any]`) – An iterable (that also defines `__len__`) of items from a raw API response.
- **item_to_value** (`Callable[google.api_core.page_iterator.Iterator, Any]`) – Callable to convert an item from the type in the raw API response into the native object. Will be called with the iterator and a single item.

next ()

Get the next value in the page.

num_items

int – Total items in the page.

remaining

int – Remaining items in the page.

1.9 Identity and Access Management

Non-API-specific IAM policy definitions

For allowed roles / permissions, see: <https://cloud.google.com/iam/docs/understanding-roles>

`google.cloud.iam.EDITOR_ROLE = 'roles/editor'`

Generic role implying rights to modify an object.

`google.cloud.iam.OWNER_ROLE = 'roles/owner'`

Generic role implying all rights to an object.

class `google.cloud.iam.Policy` (*etag=None, version=None*)

Bases: `collections.abc.MutableMapping`

IAM Policy

See <https://cloud.google.com/iam/reference/rest/v1/Policy>

Parameters

- **etag** (*str*) – ETag used to identify a unique of the policy
- **version** (*int*) – unique version of the policy

static `all_users()`

Factory method for a member representing all users.

Return type `str`

Returns A member string representing all users.

static `authenticated_users()`

Factory method for a member representing all authenticated users.

Return type `str`

Returns A member string representing all authenticated users.

static `domain(domain)`

Factory method for a domain member.

Parameters **domain** (*str*) – The domain for this member.

Return type `str`

Returns A member string corresponding to the given domain.

editors

Legacy access to editor role.

classmethod `from_api_repr(resource)`

Create a policy from the resource returned from the API.

Parameters **resource** (*dict*) – resource returned from the `getIamPolicy` API.

Return type `Policy`

Returns the parsed policy

static `group(email)`

Factory method for a group member.

Parameters **email** (*str*) – An id or e-mail for this particular group.

Return type `str`

Returns A member string corresponding to the given group.

owners

Legacy access to owner role.

static `service_account(email)`

Factory method for a service account member.

Parameters **email** (*str*) – E-mail for this particular service account.

Return type *str*

Returns A member string corresponding to the given service account.

to_api_repr()

Construct a Policy resource.

Return type *dict*

Returns a resource to be passed to the `setIamPolicy` API.

static user (*email*)

Factory method for a user member.

Parameters **email** (*str*) – E-mail for this particular user.

Return type *str*

Returns A member string corresponding to the given user.

viewers

Legacy access to viewer role.

`google.cloud.iam.VIEWER_ROLE = 'roles/viewer'`

Generic role implying rights to access an object.

1.10 Long-Running Operations

Futures for long-running operations returned from Google Cloud APIs.

These futures can be used to synchronously wait for the result of a long-running operation using `Operation.result()`:

```
operation = my_api_client.long_running_method()
result = operation.result()
```

Or asynchronously using callbacks and `Operation.add_done_callback()`:

```
operation = my_api_client.long_running_method()

def my_callback(future):
    result = future.result()

operation.add_done_callback(my_callback)
```

```
class google.api_core.operation.Operation(operation, refresh, cancel, re-
                                         sult_type, metadata_type=None,
                                         retry=<google.api_core.retry.Retry object>)
```

Bases: `google.api_core.future.polling.PollingFuture`

A Future for interacting with a Google API Long-Running Operation.

Parameters

- **operation** (*google.longrunning.operations_pb2.Operation*) – The initial operation.
- **refresh** (*Callable[[], Operation]*) – A callable that returns the latest state of the operation.

- **cancel** (*Callable[[], None]*) – A callable that tries to cancel the operation.
- (**func** (*metadata_type*) – *type*): The protobuf type for the operation’s result.
- (**func** – *type*): The protobuf type for the operation’s metadata.
- **retry** (*google.api_core.retry.Retry*) – The retry configuration used when polling. This can be used to control how often *done()* is polled. Regardless of the retry’s deadline, it will be overridden by the *timeout* argument to *result()*.

cancel()

Attempt to cancel the operation.

Returns

True if the cancel RPC was made, False if the operation is already complete.

Return type *bool*

cancelled()

True if the operation was cancelled.

done()

Checks to see if the operation is complete.

Returns True if the operation is complete, False otherwise.

Return type *bool*

metadata

google.protobuf.Message – the current operation metadata.

operation

google.longrunning.Operation – The current long-running operation.

google.api_core.operation.from_gapic (*operation, operations_client, result_type, **kwargs*)
Create an operation future from a gapic client.

This interacts with the long-running operations *service* (specific to a given API) via a gapic client.

Parameters

- **operation** (*google.longrunning.operations_pb2.Operation*) – The operation.
- **operations_client** (*google.api_core.operations_v1.OperationsClient*) – The operations client.
- **result_type** (*type()*) – The protobuf result type.
- **kwargs** – Keyword args passed into the *Operation* constructor.

Returns

The operation future to track the given operation.

Return type *Operation*

google.api_core.operation.from_grpc (*operation, operations_stub, result_type, **kwargs*)
Create an operation future using a gRPC client.

This interacts with the long-running operations *service* (specific to a given API) via gRPC.

Parameters

- **operation** (*google.longrunning.operations_pb2.Operation*) – The operation.

- **operations_stub** (*google.longrunning.operations_pb2.OperationsStub*) – The operations stub.
- **result_type** (*type()*) – The protobuf result type.
- **kwargs** – Keyword args passed into the *Operation* constructor.

Returns

The operation future to track the given operation.

Return type *Operation*

`google.api_core.operation.from_http_json(operation, api_request, result_type, **kwargs)`
Create an operation future using a HTTP/JSON client.

This interacts with the long-running operations *service* (specific to a given API) via [HTTP/JSON](#).

Parameters

- **operation** (*dict*) – Operation as a dictionary.
- **api_request** (*Callable*) – A callable used to make an API request. This should generally be `google.cloud._http.Connection.api_request()`.
- **result_type** (*type()*) – The protobuf result type.
- **kwargs** – Keyword args passed into the *Operation* constructor.

Returns

The operation future to track the given operation.

Return type *Operation*

1.11 Long-Running Operations Client

Package for interacting with the `google.longrunning.operations` meta-API.

```

class google.api_core.operations_v1.OperationsClient(channel,
                                                       client_config={'interfaces':
{'google.longrunning.Operations':
{'retry_codes': {'idempotent':
['DEADLINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent': []},
'retry_params': {'default':
{'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
20000,
'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
600000, 'total_timeout_millis':
600000}},
'methods':
{'GetOperation': {'time-
out_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'ListOperations':
{'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'CancelOperation':
{'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'DeleteOperation':
{'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}}}}))

```

Bases: `object`

Client for interacting with long-running operations within a service.

Parameters

- **channel** (*grpc.Channel*) – The gRPC channel associated with the service that implements the `google.longrunning.operations` interface.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified the default configuration is used.

cancel_operation (*name*, *retry=<object object>*, *timeout=<object object>*)

Starts asynchronous cancellation on a long-running operation.

The server makes a best effort to cancel the operation, but success is not guaranteed. Clients can use `get_operation()` or service-specific methods to check whether the cancellation succeeded or whether the operation completed despite cancellation. On successful cancellation, the operation is not deleted; instead, it becomes an operation with an `Operation.error` value with a `google.rpc.Status` code of 1, corresponding to `Code.CANCELLED`.

Example

```
>>> from google.api_core import operations_v1
>>> api = operations_v1.OperationsClient()
>>> name = ''
>>> api.cancel_operation(name)
```

Parameters

- **name** (*str*) – The name of the operation resource to be cancelled.
- **retry** (`google.api_core.retry.Retry`) – The retry strategy to use when invoking the RPC. If unspecified, the default retry from the client configuration will be used. If `None`, then this method will not retry the RPC at all.
- **timeout** (*float*) – The amount of time in seconds to wait for the RPC to complete. Note that if `retry` is used, this timeout applies to each individual attempt and the overall time it takes for this method to complete may be longer. If unspecified, the the default timeout in the client configuration is used. If `None`, then the RPC method will not time out.

Raises

- `google.api_core.exceptions.MethodNotImplemented` – If the server does not support this method. Services are not required to implement this method.
- `google.api_core.exceptions.GoogleAPICallError` – If an error occurred while invoking the RPC, the appropriate `GoogleAPICallError` subclass will be raised.

delete_operation (*name*, *retry*=<object object>, *timeout*=<object object>)

Deletes a long-running operation.

This method indicates that the client is no longer interested in the operation result. It does not cancel the operation.

Example

```
>>> from google.api_core import operations_v1
>>> api = operations_v1.OperationsClient()
>>> name = ''
>>> api.delete_operation(name)
```

Parameters

- **name** (*str*) – The name of the operation resource to be deleted.
- **retry** (`google.api_core.retry.Retry`) – The retry strategy to use when invoking the RPC. If unspecified, the default retry from the client configuration will be used. If `None`, then this method will not retry the RPC at all.
- **timeout** (*float*) – The amount of time in seconds to wait for the RPC to complete. Note that if `retry` is used, this timeout applies to each individual attempt and the overall time it takes for this method to complete may be longer. If unspecified, the the default timeout in the client configuration is used. If `None`, then the RPC method will not time out.

Raises

- `google.api_core.exceptions.MethodNotImplemented` – If the server does not support this method. Services are not required to implement this method.
- `google.api_core.exceptions.GoogleAPICallError` – If an error occurred while invoking the RPC, the appropriate `GoogleAPICallError` subclass will be raised.

get_operation (*name*, *retry*=<object object>, *timeout*=<object object>)

Gets the latest state of a long-running operation.

Clients can use this method to poll the operation result at intervals as recommended by the API service.

Example

```
>>> from google.api_core import operations_v1
>>> api = operations_v1.OperationsClient()
>>> name = ''
>>> response = api.get_operation(name)
```

Parameters

- **name** (*str*) – The name of the operation resource.
- **retry** (`google.api_core.retry.Retry`) – The retry strategy to use when invoking the RPC. If unspecified, the default retry from the client configuration will be used. If `None`, then this method will not retry the RPC at all.
- **timeout** (*float*) – The amount of time in seconds to wait for the RPC to complete. Note that if `retry` is used, this timeout applies to each individual attempt and the overall time it takes for this method to complete may be longer. If unspecified, the the default timeout in the client configuration is used. If `None`, then the RPC method will not time out.

Returns

The state of the operation.

Return type `google.longrunning.operations_pb2.Operation`

Raises `google.api_core.exceptions.GoogleAPICallError` – If an error occurred while invoking the RPC, the appropriate `GoogleAPICallError` subclass will be raised.

list_operations (*name*, *filter_*, *retry*=<object object>, *timeout*=<object object>)

Lists operations that match the specified filter in the request.

Example

```
>>> from google.api_core import operations_v1
>>> api = operations_v1.OperationsClient()
>>> name = ''
>>>
>>> # Iterate over all results
>>> for operation in api.list_operations(name):
```

(continues on next page)

(continued from previous page)

```

>>> # process operation
>>> pass
>>>
>>> # Or iterate over results one page at a time
>>> iter = api.list_operations(name)
>>> for page in iter.pages:
>>>     for operation in page:
>>>         # process operation
>>>         pass

```

Parameters

- **name** (*str*) – The name of the operation collection.
- **filter** (*str*) – The standard list filter.
- **retry** (`google.api_core.retry.Retry`) – The retry strategy to use when invoking the RPC. If unspecified, the default retry from the client configuration will be used. If `None`, then this method will not retry the RPC at all.
- **timeout** (*float*) – The amount of time in seconds to wait for the RPC to complete. Note that if `retry` is used, this timeout applies to each individual attempt and the overall time it takes for this method to complete may be longer. If unspecified, the the default timeout in the client configuration is used. If `None`, then the RPC method will not time out.

Returns

An iterator that yields `google.longrunning.operations_pb2.Operation` instances.

Return type `google.api_core.page_iterator.Iterator`

Raises

- `google.api_core.exceptions.MethodNotImplemented` – If the server does not support this method. Services are not required to implement this method.
- `google.api_core.exceptions.GoogleAPICallError` – If an error occurred while invoking the RPC, the appropriate `GoogleAPICallError` subclass will be raised.

1.12 Path Templates

Expand and validate URL path templates.

This module provides the `expand()` and `validate()` functions for interacting with Google-style URL [path templates](#) which are commonly used in Google APIs for [resource names](#).

`google.api_core.path_template.expand(tmpl, *args, **kwargs)`

Expand a path template with the given variables.

..code-block:: python

```

>>> expand('users/*/messages/*', 'me', '123')
users/me/messages/123
>>> expand('/v1/{name=shelves/*/books/*}', name='shelves/1/books/3')
/v1/shelves/1/books/3

```

Parameters

- **tmpl** (*str*) – The path template.
- **args** – The positional variables for the path.
- **kwargs** – The named variables for the path.

Returns The expanded path

Return type `str`

Raises `ValueError` – If a positional or named variable is required by the template but not specified or if an unexpected template expression is encountered.

`google.api_core.path_template.validate` (*tmpl*, *path*)

Validate a path against the path template.

```
>>> validate('users/*/messages/*', 'users/me/messages/123')
True
>>> validate('users/*/messages/*', 'users/me/drafts/123')
False
>>> validate('/v1/{name=shelves/*/books/*}', /v1/shelves/1/books/3)
True
>>> validate('/v1/{name=shelves/*/books/*}', /v1/shelves/1/tapes/3)
False
```

Parameters

- **tmpl** (*str*) – The path template.
- **path** (*str*) – The expanded path.

Returns True if the path matches.

Return type `bool`

1.13 Changelog

The `google-cloud-core` package contains helpers common to all `google-cloud-*` packages. In an attempt to reach a stable API, much of the functionality has been split out into a new package `google-api-core`.

1.13.1 Changelog

PyPI History

1.2.1

Implementation Changes

- Make `client_info` work without gRPC installed. (#5075)
- Rename `x-goog-header-params` to `x-goog-request-params` (#5495)

1.2.0

Implementation Changes

- Add close method to grpc Channel (#5333)

Internal / Testing Changes

- Fix tests after grpcio update (#5333)
- Add Test runs for Python 3.7 and remove 3.4 (#5295)

1.1.2

Packaging

- Update setuptools before packaging (#5265)

1.1.1

Internal / Testing Changes

- Use `install_requires` for platform dependencies instead of `extras_require` (#4991)
- Update trove classifier to '5 - Production/Stable'

1.1.0

Interface additions

- Add `datetime_helpers.DatetimeWithNanoSeconds` (#4979)

Implementation changes

- Use a class to wrap grpc streaming errors instead of monkey-patching (#4995)

1.0.0

This is the stable v1.0.0 release of google-api-core for Python. Releases after this will not contain breaking changes.

Interface changes and additions

- Made `api_core.page_iterator.PageIterator.item_to_value` public
- Added ability to specify retry for `Operation` and `polling.Future`. (#4922)

0.1.4

New Features

- Add `ChannelStub` to `grpc_helpers` for testing gRPC-based clients. (#4705)

Notable Implementation Changes

- Fix handling of `gpic` metadata when specified as `None`. (#4701)

0.1.3

Notable Implementation Changes

- Apply scopes to explicitly provided credentials if needed (#4594).
- Removing `google.api_core.gapic_v1.method.METRICS_METADATA_KEY`. It can be accessed via `google.api_core.gapic_v1.client_info.METRICS_METADATA_KEY` (#4588).

Dependencies

- Upgrading to latest `grpcio==1.8.2` (#4642). For details, see related gRPC [bug](#) and [fix](#).

PyPI: <https://pypi.org/project/google-api-core/0.1.3/>

0.1.2

- Upgrading `concurrent.futures` backport from `>= 3.0.0` to `>= 3.2.0` (#4521).
- Moved `datetime`-related helpers from `google.cloud.core` to `google.api_core.datetime_helpers` (#4399).
- Added missing `client_info` to `gapic_v1/__init__.py`'s `__all__` (#4567).
- Added helpers for routing headers to `gapic_v1` (#4336).

PyPI: <https://pypi.org/project/google-api-core/0.1.2/>

0.1.1

Dependencies

- Upgrading `grpcio` dependency from `1.2.0, < 1.6dev` to `>= 1.7.0` (#4280)

PyPI: <https://pypi.org/project/google-api-core/0.1.1/>

0.1.0

Initial release

Prior to being separated, this package was developed in `google-cloud-core`, so relevant changes from that package are included here.

- Add google.api.core.gapic_v1.config (#4022)
- Add google.api.core.helpers.grpc_helpers (#4041)
- Add google.api.core.gapic_v1.method (#4057)
- Add wrap_with_paging (#4067)
- Add grpc_helpers.create_channel (#4069)
- Add DEFAULT sentinel for gapic_v1.method (#4079)
- Remove googleapis-common-protos from deps in non-core packages. (#4098)
- Add google.api.core.operations_v1 (#4081)
- Fix test assertion in test_wrap_method_with_overriding_retry_deadline (#4131)
- Add google.api.core.helpers.general_helpers.wraps (#4166)
- Update Docs with Python Setup Guide (#4187)
- Move modules in google.api.core.helpers up one level, delete google.api.core.helpers. (#4196)
- Clarify that PollingFuture timeout is in seconds. (#4201)
- Add api_core package (#4210)
- Replace usage of google.api.core with google.api_core (#4221)
- Add google.api_core.gapic_v2.client_info (#4225)
- Fix how api_core.operation populates exception errors (#4231)
- Fix bare except (#4250)
- Fix parsing of API errors with Unicode err message (#4251)
- Port gax proto helper methods (#4249)
- Remove gapic_v1.method.wrap_with_paging (#4257)
- Add final set of protobuf helpers to api_core (#4259)

PyPI: <https://pypi.org/project/google-api-core/0.1.0/>

1.13.2 Changelog

PyPI History

0.28.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)
- Requiring 'grpcio >= 1.8.2'. (#4642)

Documentation

- `DefaultCredentialsError` could be raised if credentials not supplied (#4688)
- Unreachable links in the readme files have been fixed. (#4406)
- Fixing “Fore” -> “For” typo in README docs. (#4317)

Testing and internal changes

- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Making a `nox -s default` session for all packages. (#4324)
- Shorten test names (#4321)

0.28.0

Notable Implementation Changes

- A large portion of the implementation has moved into `google-api-core` (#4022, #4041, #4057, #4067, #4069, #4079, #4081, #4166, #4221)

Dependencies

- Explicit depending on `google-api-core` and upgrading to `grpcio >= 1.7.0` (see #4096, #4280 and <https://github.com/grpc/grpc/issues/12455>)

Interface changes / additions

- Rename `google.cloud.obselete` module to `obsolete` (#3913, h/t to @dimaqq)

PyPI: <https://pypi.org/project/google-cloud-core/0.28.0/>

Python Client for Cloud AutoML API (Alpha)

Cloud AutoML API: The AutoML project API.

- [Client Library Documentation](#)
- [Product Documentation](#)

2.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. Select or create a Cloud Platform project.
2. Enable billing for your project.
3. Enable the Cloud AutoML API.
4. Setup Authentication.

2.1.1 Installation

Install this library in a `virtualenv` using `pip`. `virtualenv` is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With `virtualenv`, it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-automl
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-automl
```

2.1.2 Next Steps

- Read the [Client Library Documentation](#) for Cloud AutoML API API to see other available methods on the client.
- Read the [Cloud AutoML API Product documentation](#) to learn more about the product and see How-to Guides.
- View this [repository's main README](#) to see the full list of Cloud APIs that we cover.

2.2 Api Reference

2.2.1 Client for Cloud AutoML API

```
class google.cloud.automl_v1beta1.PredictionServiceClient (transport=None,
                                                         channel=None,
                                                         credentials=None,
                                                         client_config={'interfaces':
{'google.cloud.automl_v1beta1.PredictionService':
{'retry_codes': {'idempotent': ['DEAD-
LINE_EXCEEDED',
'UNAVAILABLE']},
'non_idempotent':
[]}, 'retry_params':
{'default': {'initial_retry_delay_millis':
100,
'retry_delay_multiplier':
1.3,
'max_retry_delay_millis':
60000,
'initial_rpc_timeout_millis':
60000,
'rpc_timeout_multiplier':
1.0,
'max_rpc_timeout_millis':
60000,
'total_timeout_millis':
600000}}}, 'methods':
{'Predict': {'timeout_millis':
60000,
'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'}}}},
                                                         client_info=None)
```

AutoML Prediction API.

Constructor.

Parameters

- **(Union[PredictionServiceGrpcTransport, (transport)** – Callable[[~.Credentials, type], ~.PredictionServiceGrpcTransport]): A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If

none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.

- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you’re developing your own client library.

enums = <module 'google.cloud.automl_v1beta1.gapic.enums' from '/home/docs/checkouts/r

classmethod from_service_account_file (*filename*, **args*, ***kwargs*)

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *PredictionServiceClient*

classmethod from_service_account_json (*filename*, **args*, ***kwargs*)

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *PredictionServiceClient*

classmethod model_path (*project*, *location*, *model*)

Return a fully-qualified model string.

predict (*name*, *payload*, *params=None*, *retry=<object object>*, *timeout=<object object>*, *meta-data=None*)

Perform a prediction.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.PredictionServiceClient()
>>>
>>> name = client.model_path('[PROJECT]', '[LOCATION]', '[MODEL]')
>>>
>>> # TODO: Initialize ``payload``:
>>> payload = {}
>>>
>>> response = client.predict(name, payload)
```

Parameters

- **name** (*str*) – Name of the model requested to serve the prediction.
- **payload** (*Union[dict, ExamplePayload]*) – Required. Payload to perform a prediction on. The payload must match the problem type that the model was trained to solve. If a dict is provided, it must be of the same form as the protobuf message *ExamplePayload*
- **params** (*dict[str -> str]*) – Additional domain-specific parameters, any string must be up to 25000 characters long.
 - For Image Classification:

`score_threshold` - (float) A value from 0.0 to 1.0. When the model makes predictions for an image, it will only produce results that have at least this confidence score threshold. The default is 0.5.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *PredictResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

```

class google.cloud.automl_v1beta1.AutoMlClient (transport=None, channel=
None, credentials=None, client_config={'interfaces':
{'google.cloud.automl.v1beta1.AutoMl':
{'retry_codes': {'idempotent': ['DEAD-
LINE_EXCEEDED', 'UNAVAILABLE'],
'non_idempotent': []}, 'retry_params':
{'default': {'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
20000, 'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
20000, 'total_timeout_millis':
600000}}, 'methods': {'Create-
Dataset': {'timeout_millis': 5000,
'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'}, 'Get-
Dataset': {'timeout_millis': 5000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'}, 'List-
Datasets': {'timeout_millis': 5000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'DeleteDataset': {'timeout_millis':
5000, 'retry_codes_name': 'idempo-
tent', 'retry_params_name': 'default'},
'ImportData': {'timeout_millis': 5000,
'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'}, 'Ex-
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'retry_params_name': 'default'}, 'List-
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'retry_params_name': 'default'},
'DeleteModel': {'timeout_millis': 5000,
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'retry_params_name': 'default'}, 'De-
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'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'}, 'Un-
deployModel': {'timeout_millis': 5000,
'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'}, 'Get-
ModelEvaluation': {'timeout_millis':
5000, 'retry_codes_name': 'idem-
potent', 'retry_params_name':
'default'}, 'ListModelEvalua-
tions': {'timeout_millis': 5000,
'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'}}}},
client_info=None)

```

AutoML Server API.

The resource names are assigned by the server. The server never reuses names that it has created after the resources with those names are deleted.

An ID of a resource is the last element of the item's resource name. For `projects/{project_id}/locations/{location_id}/datasets/{dataset_id}`, then the id for the item is `{dataset_id}`.

Constructor.

Parameters

- **(Union[AutoMlGrpcTransport, (transport) - Callable[[~.Credentials, type], ~.AutoMlGrpcTransport])**: A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you're developing your own client library.

create_dataset (*parent, dataset, retry=<object object>, timeout=<object object>, metadata=None*)
Creates a dataset.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # TODO: Initialize ``dataset``:
>>> dataset = {}
>>>
>>> response = client.create_dataset(parent, dataset)
```

Parameters

- **parent** (*str*) – The resource name of the project to create the dataset for.

- **dataset** (*Union[dict, Dataset]*) – The dataset to create. If a dict is provided, it must be of the same form as the protobuf message *Dataset*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *Dataset* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_model (*parent, model, retry=<object object>, timeout=<object object>, metadata=None*)

Creates a model. Returns a Model in the *response* field when it completes. When you create a model, several model evaluations are created for it: a global evaluation, and one evaluation for each annotation spec.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # TODO: Initialize ``model``:
>>> model = {}
>>>
>>> response = client.create_model(parent, model)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **parent** (*str*) – Resource name of the parent project where the model is being created.
- **model** (*Union[dict, Model]*) – The model to create. If a dict is provided, it must be of the same form as the protobuf message *Model*

- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[*Sequence*[*Tuple*[*str*, *str*]]]) – Additional metadata that is provided to the method.

Returns A *_OperationFuture* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod dataset_path (*project*, *location*, *dataset*)

Return a fully-qualified dataset string.

delete_dataset (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=*None*)

Deletes a dataset and all of its contents. Returns empty response in the *response* field when it completes, and *delete_details* in the *metadata* field.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> name = client.dataset_path('[PROJECT]', '[LOCATION]', '[DATASET]')
>>>
>>> response = client.delete_dataset(name)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **name** (*str*) – The resource name of the dataset to delete.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

- **metadata** (*Optional[Sequence[Tuple[str, str]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_model (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Deletes a model. If a model is already deployed, this only deletes the model in AutoML BE, and does not change the status of the deployed model in the production environment. Returns `google.protobuf.Empty` in the response field when it completes, and `delete_details` in the metadata field.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> name = client.model_path('[PROJECT]', '[LOCATION]', '[MODEL]')
>>>
>>> response = client.delete_model(name)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **name** (*str*) – Resource name of the model being deleted.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

deploy_model (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)
 Deploys model. Returns a `DeployModelResponse` in the `response` field when it completes.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> name = client.model_path('[PROJECT]', '[LOCATION]', '[MODEL]')
>>>
>>> response = client.deploy_model(name)
```

Parameters

- **name** (*str*) – Resource name of the model to deploy.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

enums = <module 'google.cloud.automl_v1beta1.gapic.enums' from '/home/docs/checkouts/r

export_data (*name*, *output_config*, *retry*=<object object>, *timeout*=<object object>, *meta-*
data=None)

Exports dataset's data to a Google Cloud Storage bucket. Returns an empty response in the `response` field when it completes.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
```

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```

>>> name = client.dataset_path('[PROJECT]', '[LOCATION]', '[DATASET]')
>>>
>>> # TODO: Initialize `output_config`:
>>> output_config = {}
>>>
>>> response = client.export_data(name, output_config)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()

```

Parameters

- **name** (*str*) – Required. The resource name of the dataset.
- **output_config** (*Union[dict, OutputConfig]*) – Required. The desired output location. If a dict is provided, it must be of the same form as the protobuf message *OutputConfig*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *_OperationFuture* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod from_service_account_file (*filename, *args, **kwargs*)

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *AutoMLClient*

classmethod `from_service_account_json` (*filename*, **args*, ***kwargs*)

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *AutoMLClient*

get_dataset (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets a dataset.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMLClient()
>>>
>>> name = client.dataset_path('[PROJECT]', '[LOCATION]', '[DATASET]')
>>>
>>> response = client.get_dataset(name)
```

Parameters

- **name** (*str*) – The resource name of the dataset to retrieve.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[*Sequence*[*Tuple*[*str*, *str*]]]) – Additional metadata that is provided to the method.

Returns A *Dataset* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_model (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets a model.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> name = client.model_path('[PROJECT]', '[LOCATION]', '[MODEL]')
>>>
>>> response = client.get_model(name)
```

Parameters

- **name** (*str*) – Resource name of the model.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *Model* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_model_evaluation (*name*, *retry=<object object>*, *timeout=<object object>*, *meta-data=None*)
Gets a model evaluation.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> name = client.model_evaluation_path('[PROJECT]', '[LOCATION]', '[MODEL]',
→ '[MODEL_EVALUATION]')
>>>
>>> response = client.get_model_evaluation(name)
```

Parameters

- **name** (*str*) – Resource name for the model evaluation.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *ModelEvaluation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

import_data(*name*, *input_config*, *retry*=<object object>, *timeout*=<object object>, *meta-data*=None)

Imports data into a dataset. Returns an empty response in the `response` field when it completes.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> name = client.dataset_path('[PROJECT]', '[LOCATION]', '[DATASET]')
>>>
>>> # TODO: Initialize `input_config`:
>>> input_config = {}
>>>
>>> response = client.import_data(name, input_config)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **name** (*str*) – Required. Dataset name. Dataset must already exist. All imported annotations and examples will be added.
- **input_config** (*Union[dict, InputConfig]*) – Required. The desired input location. If a dict is provided, it must be of the same form as the protobuf message *InputConfig*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_datasets (*parent, filter_=None, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists datasets in a project.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_datasets(parent):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_datasets(parent, options=CallOptions(page_
↪token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – The resource name of the project from which to list datasets.
- **filter** (*str*) – An expression for filtering the results of the request.
 - `dataset_metadata` - for existence of the case.

An example of using the filter is:

- `translation_dataset_metadata:* -> The dataset has :: translation_dataset_metadata.`

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `Dataset` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_model_evaluations (*parent, filter_=None, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists model evaluations.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> parent = client.model_path('[PROJECT]', '[LOCATION]', '[MODEL]')
>>>
>>> # Iterate over all results
>>> for element in client.list_model_evaluations(parent):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_model_evaluations(parent,
↳ options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – Resource name of the model to list the model evaluations for. If modelId is set as “-“, this will list model evaluations from across all models of the parent location.
- **filter** (*str*) – An expression for filtering the results of the request.
 - `annotation_spec_id` - for `=`, `!=` or existence. See example below for `::` the last.

Some examples of using the filter are:

- `annotation_spec_id!=4 ->` The model evaluation was done for `::` annotation spec with ID different than 4.
- `NOT annotation_spec_id:* ->` The model evaluation was done for `::` aggregate of all annotation specs.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `ModelEvaluation` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_models (*parent, filter_=None, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)
Lists models.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_models(parent):
```

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```

...     # process element
...     pass
>>>
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_models(parent, options=CallOptions(page_
    ↪token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **parent** (*str*) – Resource name of the project, from which to list the models.
- **filter** (*str*) – An expression for filtering the results of the request.
 - `model_metadata` - for existence of the case.
 - `dataset_id` - for `=` or `!=`.
 Some examples of using the filter are:
 - `image_classification_model_metadata:*` -> The model has `:: image_classification_model_metadata`.
 - `dataset_id=5` -> The model was created from a sibling dataset with `:: ID 5`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `Model` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod location_path (*project, location*)

Return a fully-qualified location string.

classmethod `model_evaluation_path` (*project, location, model, model_evaluation*)

Return a fully-qualified `model_evaluation` string.

classmethod `model_path` (*project, location, model*)

Return a fully-qualified model string.

undeploy_model (*name, retry=<object object>, timeout=<object object>, metadata=None*)

Undeploys model. Returns an `UndeployModelResponse` in the `response` field when it completes.

Example

```
>>> from google.cloud import automl_v1beta1
>>>
>>> client = automl_v1beta1.AutoMlClient()
>>>
>>> name = client.model_path('[PROJECT]', '[LOCATION]', '[MODEL]')
>>>
>>> response = client.undeploy_model(name)
```

Parameters

- **name** (*str*) – Resource name of the model to undeploy.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

2.2.2 Types for Cloud AutoML API Client

class `google.cloud.automl_v1beta1.types.AnnotationPayload`

Contains annotation information that is relevant to AutoML.

detail

Output only. Additional information about the annotation specific to the AutoML solution.

translation

Annotation details for translation.

classification

Annotation details for content or image classification.

annotation_spec_id

Output only. The resource ID of the annotation spec that this annotation pertains to. The annotation spec comes from either an ancestor dataset, or the dataset that was used to train the model in use.

display_name

Output only. The value of [AnnotationSpec.display_name][google.cloud.automl.v1beta1.AnnotationSpec.display_name] when the model was trained. Because this field returns a value at model training time, for different models trained using the same dataset, the returned value could be different as model owner could update the display_name between any two model training.

class google.cloud.automl_v1beta1.types.Any

class google.cloud.automl_v1beta1.types.CancelOperationRequest

class google.cloud.automl_v1beta1.types.ClassificationAnnotation

Contains annotation details specific to classification.

score

Output only. A confidence estimate between 0.0 and 1.0. A higher value means greater confidence that the annotation is positive. If a user approves an annotation as negative or positive, the score value remains unchanged. If a user creates an annotation, the score is 0 for negative or 1 for positive.

class google.cloud.automl_v1beta1.types.ClassificationEvaluationMetrics

Model evaluation metrics for classification problems. Visible only to v1beta1

au_prc

Output only. The Area under precision recall curve metric.

base_au_prc

Output only. The Area under precision recall curve metric based on priors.

confidence_metrics_entry

Output only. Metrics that have confidence thresholds. Precision-recall curve can be derived from it.

confusion_matrix

Output only. Confusion matrix of the evaluation. Only set for MULTICLASS classification problems where number of labels is no more than 10. Only set for model level evaluation, not for evaluation per label.

annotation_spec_id

Output only. The annotation spec ids used for this evaluation.

class ConfidenceMetricsEntry

Metrics for a single confidence threshold.

confidence_threshold

Output only. The confidence threshold value used to compute the metrics.

recall

Output only. Recall under the given confidence threshold.

precision

Output only. Precision under the given confidence threshold.

f1_score

Output only. The harmonic mean of recall and precision.

recall_at1

Output only. The recall when only considering the label that has the highest prediction score and not below the confidence threshold for each example.

precision_at1

Output only. The precision when only considering the label that has the highest predictionscore and not below the confidence threshold for each example.

f1_score_at1

Output only. The harmonic mean of [recall_at1][google.cloud.automl.v1beta1.ClassificationEvaluationMetrics.ConfidenceMetricsEntry.recall_at1] and [precision_at1][google.cloud.automl.v1beta1.ClassificationEvaluationMetrics.ConfidenceMetricsEntry.precision_at1].

class ConfusionMatrix

Confusion matrix of the model running the classification.

annotation_spec_id

Output only. IDs of the annotation specs used in the confusion matrix.

row

Output only. Rows in the confusion matrix. The number of rows is equal to the size of annotation_spec_id. row[i].value[j] is the number of examples that have ground truth of the annotation_spec_id[i] and are predicted as annotation_spec_id[j] by the model being evaluated.

class Row

Output only. A row in the confusion matrix.

example_count

Output only. Value of the specific cell in the confusion matrix. The number of values each row is equal to the size of annotation_spec_id.

class google.cloud.automl.v1beta1.types.CreateDatasetRequest

Request message for [AutoML.CreateDataset][google.cloud.automl.v1beta1.AutoML.CreateDataset].

parent

The resource name of the project to create the dataset for.

dataset

The dataset to create.

class google.cloud.automl.v1beta1.types.CreateModelOperationMetadata

Details of CreateModel operation.

class google.cloud.automl.v1beta1.types.CreateModelRequest

Request message for [AutoML.CreateModel][google.cloud.automl.v1beta1.AutoML.CreateModel].

parent

Resource name of the parent project where the model is being created.

model

The model to create.

class google.cloud.automl.v1beta1.types.CustomHttpPattern**class google.cloud.automl.v1beta1.types.Dataset**

A workspace for solving a single, particular machine learning (ML) problem. A workspace contains examples that may be annotated.

dataset_metadata

Required. The dataset metadata that is specific to the problem type.

translation_dataset_metadata

Metadata for a dataset used for translation.

image_classification_dataset_metadata
Metadata for a dataset used for image classification.

text_classification_dataset_metadata
Metadata for a dataset used for text classification.

name
Output only. The resource name of the dataset. Form: `project s/{project_id}/locations/{location_id}/datasets/{dataset_id}`

display_name
Required. The name of the dataset to show in the interface. The name can be up to 32 characters long and can consist only of ASCII Latin letters A-Z and a-z, underscores (`_`), and ASCII digits 0-9.

example_count
Output only. The number of examples in the dataset.

create_time
Output only. Timestamp when this dataset was created.

class `google.cloud.automl_v1beta1.types.DeleteDatasetRequest`
Request message for `[AutoML.DeleteDataset][google.cloud.automl.v1beta1.AutoML.DeleteDataset]`.

name
The resource name of the dataset to delete.

class `google.cloud.automl_v1beta1.types.DeleteModelRequest`
Request message for `[AutoML.DeleteModel][google.cloud.automl.v1beta1.AutoML.DeleteModel]`.

name
Resource name of the model being deleted.

class `google.cloud.automl_v1beta1.types.DeleteOperationRequest`

class `google.cloud.automl_v1beta1.types.DeployModelRequest`
Request message for `[AutoML.DeployModel][google.cloud.automl.v1beta1.AutoML.DeployModel]`.

name
Resource name of the model to deploy.

class `google.cloud.automl_v1beta1.types.DescriptorProto`

class `ExtensionRange`

class `ReservedRange`

class `google.cloud.automl_v1beta1.types.Empty`

class `google.cloud.automl_v1beta1.types.EnumDescriptorProto`

class `EnumReservedRange`

class `google.cloud.automl_v1beta1.types.EnumOptions`

class `google.cloud.automl_v1beta1.types.EnumValueDescriptorProto`

class `google.cloud.automl_v1beta1.types.EnumValueOptions`

class `google.cloud.automl_v1beta1.types.ExamplePayload`
Example data used for training or prediction.

payload
Required. Input only. The example data.

image

An example image.

text_snippet

Example text.

class google.cloud.automl_v1beta1.types.**ExportDataRequest**

Request message for [AutoML.ExportData][google.cloud.automl.v1beta1.AutoML.ExportData].

name

Required. The resource name of the dataset.

output_config

Required. The desired output location.

class google.cloud.automl_v1beta1.types.**ExtensionRangeOptions**

class google.cloud.automl_v1beta1.types.**FieldDescriptorProto**

class google.cloud.automl_v1beta1.types.**FieldMask**

class google.cloud.automl_v1beta1.types.**FieldOptions**

class google.cloud.automl_v1beta1.types.**FileDescriptorProto**

class google.cloud.automl_v1beta1.types.**FileDescriptorSet**

class google.cloud.automl_v1beta1.types.**FileOptions**

class google.cloud.automl_v1beta1.types.**GcsDestination**

The GCS location where the output must be written to

output_uri_prefix

Required. Google Cloud Storage URI to output directory, up to 2000 characters long. Accepted forms:
* Prefix path: gs://bucket/directory The requesting user must have write permission to the bucket. The directory is created if it doesn't exist.

class google.cloud.automl_v1beta1.types.**GcsSource**

The GCS location for the input content.

input_uris

Required. Google Cloud Storage URIs to input files, up to 2000 characters long. Accepted forms: * Full object path: gs://bucket/directory/object.csv

class google.cloud.automl_v1beta1.types.**GeneratedCodeInfo**

class Annotation

class google.cloud.automl_v1beta1.types.**GetDatasetRequest**

Request message for [AutoML.GetDataset][google.cloud.automl.v1beta1.AutoML.GetDataset].

name

The resource name of the dataset to retrieve.

class google.cloud.automl_v1beta1.types.**GetModelEvaluationRequest**

Request message for [AutoML.GetModelEvaluation][google.cloud.automl.v1beta1.AutoML.GetModelEvaluation].

name

Resource name for the model evaluation.

class google.cloud.automl_v1beta1.types.**GetModelRequest**

Request message for [AutoML.GetModel][google.cloud.automl.v1beta1.AutoML.GetModel].

name
Resource name of the model.

class google.cloud.automl_v1beta1.types.**GetOperationRequest**

class google.cloud.automl_v1beta1.types.**Http**

class google.cloud.automl_v1beta1.types.**HttpRule**

class google.cloud.automl_v1beta1.types.**Image**
A representation of an image.

data
Input only. The data representing the image. For Predict calls [image_bytes][] must be set, as other options are not currently supported by prediction API. You can read the contents of an uploaded image by using the [content_uri][] field.

image_bytes
Image content represented as a stream of bytes. Note: As with all bytes fields, protobufs use a pure binary representation, whereas JSON representations use base64.

input_config
An input config specifying the content of the image.

thumbnail_uri
Output only. HTTP URI to the thumbnail image.

class google.cloud.automl_v1beta1.types.**ImageClassificationDatasetMetadata**
Dataset metadata that is specific to image classification.

classification_type
Required. Type of the classification problem.

class google.cloud.automl_v1beta1.types.**ImageClassificationModelMetadata**
Model metadata for image classification.

base_model_id
Optional. The ID of the base model. If it is specified, the new model will be created based on the base model. Otherwise, the new model will be created from scratch. The base model is expected to be in the same project and location as the new model to create.

train_budget
Required. The train budget of creating this model. The actual train_cost will be equal or less than this value.

train_cost
Output only. The actual train cost of creating this model. If this model is created from a base model, the train cost used to create the base model are not included.

stop_reason
Output only. The reason that this create model operation stopped, e.g. BUDGET_REACHED, CONVERGED.

class google.cloud.automl_v1beta1.types.**ImportDataRequest**
Request message for [AutoML.ImportData][google.cloud.automl.v1beta1.AutoML.ImportData].

name
Required. Dataset name. Dataset must already exist. All imported annotations and examples will be added.

input_config
Required. The desired input location.

class google.cloud.automl_v1beta1.types.**InputConfig**

Input configuration.

source

Required. The source of the input.

gcs_source

The GCS location for the input content.

class google.cloud.automl_v1beta1.types.**ListDatasetsRequest**

Request message for [AutoML.ListDatasets][google.cloud.automl.v1beta1.AutoML.ListDatasets].

parent

The resource name of the project from which to list datasets.

filter

An expression for filtering the results of the request. - dataset_metadata - for existence of the case. An example of using the filter is: - translation_dataset_metadata: * -> The dataset has translation_dataset_metadata.

page_size

Requested page size. Server may return fewer results than requested. If unspecified, server will pick a default size.

page_token

A token identifying a page of results for the server to return Typically obtained via [ListDatasetsResponse.next_page_token][google.cloud.automl.v1beta1.ListDatasetsResponse.next_page _token] of the previous [AutoML.ListDatasets][google.cloud.aut oml.v1beta1.AutoML.ListDatasets] call.

class google.cloud.automl_v1beta1.types.**ListDatasetsResponse**

Response message for [AutoML.ListDatasets][google.cloud.automl.v1beta1.AutoML.ListDatasets].

datasets

The datasets read.

next_page_token

A token to retrieve next page of results. Pass to [ListDataset sRe-quest.page_token][google.cloud.automl.v1beta1.ListDatasets Request.page_token] to obtain that page.

class google.cloud.automl_v1beta1.types.**ListModelEvaluationsRequest**

Request message for [AutoML.ListModelEvaluations][google.cloud.automl.v1beta1.AutoML.ListModelEvaluations].

parent

Resource name of the model to list the model evaluations for. If modelId is set as “-“, this will list model evaluations from across all models of the parent location.

filter

An expression for filtering the results of the request. - annotation_spec_id - for =, != or existence. See example below for the last. Some examples of using the filter are: - annotation_spec_id! =4 -> The model evaluation was done for annotation spec with ID different than 4. - NOT annotation_spec_id: * -> The model evaluation was done for aggregate of all annotation specs.

page_size

Requested page size.

page_token

A token identifying a page of results for the server to return. Typically obtained via ListModelEvaluationsResponse.next_page_token of the previous [Au- toML.ListModelEvaluations][google.cloud.automl.v1b eta1.AutoML.ListModelEvaluations] call.


```

class google.cloud.automl_v1beta1.types.ListModelEvaluationsResponse
    Response message for [AutoMl.ListModelEvaluations][google.cloud.automl.v1beta1.AutoMl.ListModelEvaluations].

    model_evaluation
        List of model evaluations in the requested page.

    next_page_token
        A token to retrieve next page of results. Pass to [ListModelEvaluations.page_token][] to obtain that page.

class google.cloud.automl_v1beta1.types.ListModelsRequest
    Request message for [AutoMl.ListModels][google.cloud.automl.v1beta1.AutoMl.ListModels].

    parent
        Resource name of the project, from which to list the models.

    filter
        An expression for filtering the results of the request.
        - model_metadata - for existence of the case.
        - dataset_id - for = or !=.
        Some examples of using the filter are:
        - image_classification_model_metadata:* -> The model has image_classification_model_metadata.
        - dataset_id=5 -> The model was created from a sibling dataset with ID 5.

    page_size
        Requested page size.

    page_token
        A token identifying a page of results for the server to return Typically obtained via [ListModelsResponse.next_page_token][ google.cloud.automl.v1beta1.ListModelsResponse.next_page_token] of the previous [AutoMl.ListModels][google.cloud.automl.v1beta1.AutoMl.ListModels] call.

class google.cloud.automl_v1beta1.types.ListModelsResponse
    Response message for [AutoMl.ListModels][google.cloud.automl.v1beta1.AutoMl.ListModels].

    model
        List of models in the requested page.

    next_page_token
        A token to retrieve next page of results. Pass to [ListModels.page_token][] to obtain that page.

class google.cloud.automl_v1beta1.types.ListOperationsRequest
class google.cloud.automl_v1beta1.types.ListOperationsResponse
class google.cloud.automl_v1beta1.types.MessageOptions
class google.cloud.automl_v1beta1.types.MethodDescriptorProto
class google.cloud.automl_v1beta1.types.MethodOptions
class google.cloud.automl_v1beta1.types.Model
    API proto representing a trained machine learning model.

    model_metadata
        Required. The model metadata that is specific to the problem type. Must match the metadata type of the dataset used to train the model.

    image_classification_model_metadata
        Metadata for image classification models.

    text_classification_model_metadata
        Metadata for text classification models.

```

translation_model_metadata

Metadata for translation models.

name

Output only. Resource name of the model. Format: `projects/{project_id}/locations/{location_id}/models/{model_id}`

display_name

Required. The name of the model to show in the interface. The name can be up to 32 characters long and can consist only of ASCII Latin letters A-Z and a-z, underscores (`_`), and ASCII digits 0-9.

dataset_id

Required. The resource ID of the dataset used to create the model. The dataset must come from the same ancestor project and location.

create_time

Output only. Timestamp when this model was created.

update_time

Output only. Timestamp when this model was last updated.

deployment_state

Output only. Deployment state of the model.

class `google.cloud.automl_v1beta1.types.ModelEvaluation`

Evaluation results of a model.

metrics

Output only. Problem type specific evaluation metrics.

classification_evaluation_metrics

Evaluation metrics for models on classification problems models.

translation_evaluation_metrics

Evaluation metrics for models on translation models.

name

Output only. Resource name of the model evaluation. Format: `projects/{project_id}/locations/{location_id}/models/{model_id}/modelEvaluations/{model_evaluation_id}`

annotation_spec_id

Output only. The ID of the annotation spec that the model evaluation applies to. The ID is empty for overall model evaluation. NOTE: Currently there is no way to obtain the `display_name` of the annotation spec from its ID. To see the `display_names`, review the model evaluations in the UI.

create_time

Output only. Timestamp when this model evaluation was created.

evaluated_example_count

Output only. The number of examples used for model evaluation.

class `google.cloud.automl_v1beta1.types.OneofDescriptorProto`**class** `google.cloud.automl_v1beta1.types.OneofOptions`**class** `google.cloud.automl_v1beta1.types.Operation`**class** `google.cloud.automl_v1beta1.types.OperationMetadata`

Metadata used across all long running operations returned by AutoML API.

details

Output only. Details of specific operation. Even if this field is empty, the presence allows to distinguish different types of operations.

create_model_details

Details of CreateModel operation.

progress_percent

Output only. Progress of operation. Range: [0, 100].

partial_failures

Output only. Partial failures encountered. E.g. single files that couldn't be read. This field should never exceed 20 entries. Status details field will contain standard GCP error details.

create_time

Output only. Time when the operation was created.

update_time

Output only. Time when the operation was updated for the last time.

class google.cloud.automl_v1beta1.types.**OutputConfig**

Output configuration.

destination

Required. The destination of the output.

gcs_destination

The GCS location where the output must be written to.

class google.cloud.automl_v1beta1.types.**PredictRequest**

Request message for [PredictionService.Predict][google.cloud.automl_v1beta1.PredictionService.Predict].

name

Name of the model requested to serve the prediction.

payload

Required. Payload to perform a prediction on. The payload must match the problem type that the model was trained to solve.

params

Additional domain-specific parameters, any string must be up to 25000 characters long. - For Image Classification: `score_threshold` - (float) A value from 0.0 to 1.0. When the model makes predictions for an image, it will only produce results that have at least this confidence score threshold. The default is 0.5.

class ParamsEntry

class google.cloud.automl_v1beta1.types.**PredictResponse**

Response message for [PredictionService.Predict][google.cloud.automl_v1beta1.PredictionService.Predict].

Currently, this is only used to return an image recognition prediction result. More prediction output metadata might be introduced in the future.

payload

Prediction result.

metadata

Additional domain-specific prediction response metadata.

class MetadataEntry

class google.cloud.automl_v1beta1.types.**ServiceDescriptorProto**

class google.cloud.automl_v1beta1.types.**ServiceOptions**

```
class google.cloud.automl_v1beta1.types.SourceCodeInfo

    class Location
class google.cloud.automl_v1beta1.types.Status
class google.cloud.automl_v1beta1.types.TextClassificationDatasetMetadata
    Dataset metadata for classification.

    classification_type
        Required. Type of the classification problem.
class google.cloud.automl_v1beta1.types.TextClassificationModelMetadata
    Model metadata that is specific to text classification.
class google.cloud.automl_v1beta1.types.TextSnippet
    A representation of a text snippet.

    content
        Required. The content of the text snippet as a string. Up to 250000 characters long.

    mime_type
        The format of the source text. For example, "text/html" or "text/plain". If left blank the format is automatically determined from the type of the uploaded content. The default is "text/html". Up to 25000 characters long.

    content_uri
        Output only. HTTP URI where you can download the content.
class google.cloud.automl_v1beta1.types.Timestamp
class google.cloud.automl_v1beta1.types.TranslationAnnotation
    Annotation details specific to translation.

    translated_content
        Output only . The translated content.
class google.cloud.automl_v1beta1.types.TranslationDatasetMetadata
    Dataset metadata that is specific to translation.

    source_language_code
        Required. The BCP-47 language code of the source language.

    target_language_code
        Required. The BCP-47 language code of the target language.
class google.cloud.automl_v1beta1.types.TranslationEvaluationMetrics
    Evaluation metrics for the dataset.

    bleu_score
        Output only. BLEU score.

    base_bleu_score
        Output only. BLEU score for base model.
class google.cloud.automl_v1beta1.types.TranslationModelMetadata
    Model metadata that is specific to translation.

    base_model
        The resource name of the model to use as a baseline to train the custom model. If unset, we use the default base model provided by Google Translate. Format: projects/{project_id}/ locations/{location_id}/models/{model_id}
```

source_language_code

Output only. Inferred from the dataset. The source language (The BCP-47 language code) that is used for training.

target_language_code

Output only. The target language (The BCP-47 language code) that is used for training.

class google.cloud.automl_v1beta1.types.UndeployModelRequest

Request message for [AutoML.UndeployModel][google.cloud.automl.v1beta1.AutoML.UndeployModel].

name

Resource name of the model to undeploy.

class google.cloud.automl_v1beta1.types.UninterpretedOption

class NamePart

3.1 API Reference

The main concepts with this API are:

- *Client* manages connections to the BigQuery API. Use the client methods to run jobs (such as a *QueryJob* via *query()*) and manage resources.
- *Dataset* represents a collection of tables.
- *Table* represents a single “relation”.

3.1.1 Client

<code>client.Client([project, credentials, _http])</code>	Client to bundle configuration needed for API requests.
---	---

google.cloud.bigquery.client.Client

class google.cloud.bigquery.client.**Client** (*project=None, credentials=None, _http=None*)
 Client to bundle configuration needed for API requests.

Parameters

- **project** (*str*) – Project ID for the project which the client acts on behalf of. Will be passed when creating a dataset / job. If not passed, falls back to the default inferred from the environment.
- **credentials** (*google.auth.credentials.Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*requests.Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to

the `credentials` for the current object. This parameter should be considered private, and could change in the future.

Raises `google.auth.exceptions.DefaultCredentialsError` – Raised if `credentials` is not specified and the library fails to acquire default credentials.

__init__ (*project=None, credentials=None, _http=None*)
Initialize self. See help(type(self)) for accurate signature.

Methods

<code>cancel_job(job_id[, project, location, retry])</code>	Attempt to cancel a job from a job ID.
<code>copy_table(sources, destination[, job_id, ...])</code>	Copy one or more tables to another table.
<code>create_dataset(dataset)</code>	API call: create the dataset via a POST request.
<code>create_table(table)</code>	API call: create a table via a PUT request
<code>dataset(dataset_id[, project])</code>	Construct a reference to a dataset.
<code>delete_dataset(dataset[, delete_contents, retry])</code>	Delete a dataset.
<code>delete_table(table[, retry])</code>	Delete a table
<code>extract_table(source, destination_uris[, ...])</code>	Start a job to extract a table into Cloud Storage files.
<code>from_service_account_json(...)</code>	Factory to retrieve JSON credentials while creating client.
<code>get_dataset(dataset_ref[, retry])</code>	Fetch the dataset referenced by <code>dataset_ref</code>
<code>get_job(job_id[, project, location, retry])</code>	Fetch a job for the project associated with this client.
<code>get_service_account_email([project])</code>	Get the email address of the project's BigQuery service account
<code>get_table(table_ref[, retry])</code>	Fetch the table referenced by <code>table_ref</code>
<code>insert_rows(table, rows[, selected_fields])</code>	Insert rows into a table via the streaming API.
<code>insert_rows_json(table, json_rows[, ...])</code>	Insert rows into a table without applying local type conversions.
<code>job_from_resource(resource)</code>	Detect correct job type from resource and instantiate.
<code>list_datasets([project, include_all, ...])</code>	List datasets for the project associated with this client.
<code>list_jobs([project, max_results, ...])</code>	List jobs for the project associated with this client.
<code>list_partitions(table[, retry])</code>	List the partitions in a table.
<code>list_projects([max_results, page_token, retry])</code>	List projects for the project associated with this client.
<code>list_rows(table[, selected_fields, ...])</code>	List the rows of the table.
<code>list_tables(dataset[, max_results, ...])</code>	List tables in the dataset.
<code>load_table_from_dataframe(dataframe, destination)</code>	Upload the contents of a table from a pandas DataFrame.
<code>load_table_from_file(file_obj, destination)</code>	Upload the contents of this table from a file-like object.
<code>load_table_from_uri(source_uris, destination)</code>	Starts a job for loading data into a table from Cloud Storage.
<code>query(query[, job_config, job_id, ...])</code>	Run a SQL query.
<code>update_dataset(dataset, fields[, retry])</code>	Change some fields of a dataset.
<code>update_table(table, fields[, retry])</code>	Change some fields of a table.

google.cloud.bigquery.client.Client.cancel_job

`Client.cancel_job(job_id, project=None, location=None, retry=<google.api_core.retry.Retry object>)`

Attempt to cancel a job from a job ID.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/cancel>

Parameters `job_id` (*str*) – Unique job identifier.

Keyword Arguments

- **project** (*str*) – (Optional) ID of the project which owns the job (defaults to the client's project).
- **location** (*str*) – Location where the job was run.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Returns Job instance, based on the resource returned by the API.

Return type `Union[google.cloud.bigquery.job.LoadJob, google.cloud.bigquery.job.CopyJob, google.cloud.bigquery.job.ExtractJob, google.cloud.bigquery.job.QueryJob]`

google.cloud.bigquery.client.Client.copy_table

`Client.copy_table(sources, destination, job_id=None, job_id_prefix=None, location=None, project=None, job_config=None, retry=<google.api_core.retry.Retry object>)`

Copy one or more tables to another table.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.copy>

Parameters

- **sources** (`Union[google.cloud.bigquery.table.TableReference, Sequence[google.cloud.bigquery.table.TableReference]]`) – Table or tables to be copied.
- **destination** (`google.cloud.bigquery.table.TableReference`) – Table into which data is to be copied.

Keyword Arguments

- **job_id** (*str*) – (Optional) The ID of the job.
- **job_id_prefix** (*str*) – (Optional) the user-provided prefix for a randomly generated job ID. This parameter will be ignored if a `job_id` is also given.
- **location** (*str*) – Location where to run the job. Must match the location of any source table as well as the destination table.
- **project** (*str*) – Project ID of the project of where to run the job. Defaults to the client's project.
- **job_config** (`google.cloud.bigquery.job.CopyJobConfig`) – (Optional) Extra configuration options for the job.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Returns A new copy job instance.

Return type `google.cloud.bigquery.job.CopyJob`

google.cloud.bigquery.client.Client.create_dataset

`Client.create_dataset(dataset)`

API call: create the dataset via a POST request.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables/insert>

Parameters `dataset` (`google.cloud.bigquery.dataset.Dataset`) – A Dataset populated with the desired initial state.

Returns A new Dataset returned from the API.

Return type `google.cloud.bigquery.dataset.Dataset`

Example

```
>>> from google.cloud import bigquery
>>> client = bigquery.Client()
>>> dataset = bigquery.Dataset(client.dataset('my_dataset'))
>>> dataset = client.create_dataset(dataset)
```

google.cloud.bigquery.client.Client.create_table

`Client.create_table(table)`

API call: create a table via a PUT request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables/insert>

Parameters `table` (`Table`) – A Table populated with the desired initial state.

Return type “`Table`”

Returns a new Table returned from the service.

google.cloud.bigquery.client.Client.dataset

`Client.dataset(dataset_id, project=None)`

Construct a reference to a dataset.

Parameters

- **dataset_id** (`str`) – ID of the dataset.
- **project** (`str`) – (Optional) project ID for the dataset (defaults to the project of the client).

Return type `google.cloud.bigquery.dataset.DatasetReference`

Returns a new DatasetReference instance

google.cloud.bigquery.client.Client.delete_dataset

`Client.delete_dataset(dataset, delete_contents=False, retry=<google.api_core.retry.Retry object>)`

Delete a dataset.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/datasets/delete>

Parameters

- **dataset** (One of: *Dataset DatasetReference*) – the dataset to delete, or a reference to it.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.
- **delete_contents** (*boolean*) – (Optional) If True, delete all the tables in the dataset. If False and the dataset contains tables, the request will fail. Default is False

google.cloud.bigquery.client.Client.delete_table

`Client.delete_table(table, retry=<google.api_core.retry.Retry object>)`

Delete a table

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables/delete>

Parameters

- **table** (One of: *Table TableReference*) – the table to delete, or a reference to it.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

google.cloud.bigquery.client.Client.extract_table

`Client.extract_table(source, destination_uris, job_id=None, job_id_prefix=None, location=None, project=None, job_config=None, retry=<google.api_core.retry.Retry object>)`

Start a job to extract a table into Cloud Storage files.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.extract>

Parameters

- **source** (*google.cloud.bigquery.table.TableReference*) – Table to be extracted.
- **destination_uris** (*Union[str, Sequence[str]]*) – URIs of Cloud Storage file(s) into which table data is to be extracted; in format `gs://<bucket_name>/<object_name_or_glob>`.
- **source** – table to be extracted.

Keyword Arguments

- **job_id** (*str*) – (Optional) The ID of the job.
- **job_id_prefix** (*str*) – (Optional) the user-provided prefix for a randomly generated job ID. This parameter will be ignored if a `job_id` is also given.
- **location** (*str*) – Location where to run the job. Must match the location of the source table.
- **project** (*str*) – Project ID of the project of where to run the job. Defaults to the client's project.
- **job_config** (*google.cloud.bigquery.job.ExtractJobConfig*) – (Optional) Extra configuration options for the job.

- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Returns A new extract job instance.

Return type `google.cloud.bigquery.job.ExtractJob`

`google.cloud.bigquery.client.Client.from_service_account_json`

classmethod `Client.from_service_account_json` (`json_credentials_path`, **args*, ***kwargs*)

Factory to retrieve JSON credentials while creating client.

Parameters

- **json_credentials_path** (*str*) – The path to a private key file (this file was given to you when you created the service account). This file must contain a JSON object with a private key and other credentials information (downloaded from the Google APIs console).
- **args** (*tuple*) – Remaining positional arguments to pass to constructor.
- **kwargs** (*dict*) – Remaining keyword arguments to pass to constructor.

Return type `_ClientFactoryMixin`

Returns The client created with the retrieved JSON credentials.

Raises `TypeError` – if there is a conflict with the kwargs and the credentials created by the factory.

`google.cloud.bigquery.client.Client.get_dataset`

`Client.get_dataset` (`dataset_ref`, `retry=<google.api_core.retry.Retry object>`)

Fetch the dataset referenced by `dataset_ref`

Parameters

- **dataset_ref** (`google.cloud.bigquery.dataset.DatasetReference`) – the dataset to use.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Return type `google.cloud.bigquery.dataset.Dataset`

Returns a `Dataset` instance

`google.cloud.bigquery.client.Client.get_job`

`Client.get_job` (`job_id`, `project=None`, `location=None`, `retry=<google.api_core.retry.Retry object>`)

Fetch a job for the project associated with this client.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters **job_id** (*str*) – Unique job identifier.

Keyword Arguments

- **project** (*str*) – (Optional) ID of the project which owns the job (defaults to the client's project).
- **location** (*str*) – Location where the job was run.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Returns Job instance, based on the resource returned by the API.

Return type Union[`google.cloud.bigquery.job.LoadJob`, `google.cloud.bigquery.job.CopyJob`, `google.cloud.bigquery.job.ExtractJob`, `google.cloud.bigquery.job.QueryJob`]

google.cloud.bigquery.client.Client.get_service_account_email

`Client.get_service_account_email (project=None)`

Get the email address of the project's BigQuery service account

Note: This is the service account that BigQuery uses to manage tables encrypted by a key in KMS.

Parameters **project** (*str*, *optional*) – Project ID to use for retrieving service account email. Defaults to the client's project.

Returns service account email address

Return type *str*

Example

```
>>> from google.cloud import bigquery
>>> client = bigquery.Client()
>>> client.get_service_account_email()
my_service_account@my-project.iam.gserviceaccount.com
```

google.cloud.bigquery.client.Client.get_table

`Client.get_table (table_ref, retry=<google.api_core.retry.Retry object>)`

Fetch the table referenced by `table_ref`

Parameters

- **table_ref** (`google.cloud.bigquery.table.TableReference`) – the table to use.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Return type `google.cloud.bigquery.table.Table`

Returns a `Table` instance

google.cloud.bigquery.client.Client.insert_rows

`Client.insert_rows(table, rows, selected_fields=None, **kwargs)`

Insert rows into a table via the streaming API.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tabledata/insertAll>

Parameters

- **table** (One of: *Table* *TableReference*) – the destination table for the row data, or a reference to it.
- **rows** (One of: *list of tuples* *list of dictionaries*) – Row data to be inserted. If a list of tuples is given, each tuple should contain data for each schema field on the current table and in the same order as the schema fields. If a list of dictionaries is given, the keys must include all required fields in the schema. Keys which do not correspond to a field in the schema are ignored.
- **selected_fields** (list of *SchemaField*) – The fields to return. Required if table is a *TableReference*.
- **kwargs** (*dict*) – Keyword arguments to `insert_rows_json()`

Return type list of mappings

Returns One mapping per row with insert errors: the “index” key identifies the row, and the “errors” key contains a list of the mappings describing one or more problems with the row.

Raises `ValueError` if table’s schema is not set

google.cloud.bigquery.client.Client.insert_rows_json

`Client.insert_rows_json(table, json_rows, row_ids=None, skip_invalid_rows=None, ignore_unknown_values=None, template_suffix=None, retry=<google.api_core.retry.Retry object>)`

Insert rows into a table without applying local type conversions.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tabledata/insertAll>

Parameters

- **table** (One of: *Table* *TableReference*) – the destination table for the row data, or a reference to it.
- **json_rows** (*list of dictionaries*) – Row data to be inserted. Keys must match the table schema fields and values must be JSON-compatible representations.
- **row_ids** (*list of string*) – (Optional) Unique ids, one per row being inserted. If omitted, unique IDs are created.
- **skip_invalid_rows** (*bool*) – (Optional) Insert all valid rows of a request, even if invalid rows exist. The default value is `False`, which causes the entire request to fail if any invalid rows exist.
- **ignore_unknown_values** (*bool*) – (Optional) Accept rows that contain values that do not match the schema. The unknown values are ignored. Default is `False`, which treats unknown values as errors.
- **template_suffix** (*str*) – (Optional) treat name as a template table and provide a suffix. BigQuery will create the table `<name> + <template_suffix>`

based on the schema of the template table. See <https://cloud.google.com/bigquery/streaming-data-into-bigquery#template-tables>

- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

Return type list of mappings

Returns One mapping per row with insert errors: the “index” key identifies the row, and the “errors” key contains a list of the mappings describing one or more problems with the row.

google.cloud.bigquery.client.Client.job_from_resource

`Client.job_from_resource(resource)`

Detect correct job type from resource and instantiate.

Parameters **resource** (*dict*) – one job resource from API response

Return type One of: *google.cloud.bigquery.job.LoadJob*, *google.cloud.bigquery.job.CopyJob*, *google.cloud.bigquery.job.ExtractJob*, or *google.cloud.bigquery.job.QueryJob*

Returns the job instance, constructed via the resource

google.cloud.bigquery.client.Client.list_datasets

`Client.list_datasets(project=None, include_all=False, filter=None, max_results=None, page_token=None, retry=<google.api_core.retry.Retry object>)`

List datasets for the project associated with this client.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/datasets/list>

Parameters

- **project** (*str*) – Optional. Project ID to use for retrieving datasets. Defaults to the client’s project.
- **include_all** (*bool*) – Optional. True if results include hidden datasets. Defaults to False.
- **filter** (*str*) – Optional. An expression for filtering the results by label. For syntax, see <https://cloud.google.com/bigquery/docs/reference/rest/v2/datasets/list#filter>.
- **max_results** (*int*) – Optional. Maximum number of datasets to return.
- **page_token** (*str*) – Optional. Token representing a cursor into the datasets. If not passed, the API will return the first page of datasets. The token marks the beginning of the iterator to be returned and the value of the `page_token` can be accessed at `next_page_token` of the *HTTPIterator*.
- **retry** (*google.api_core.retry.Retry*) – Optional. How to retry the RPC.

Returns Iterator of *DatasetListItem*. associated with the project.

Return type *google.api_core.page_iterator.Iterator*

google.cloud.bigquery.client.Client.list_jobs

`Client.list_jobs` (*project=None, max_results=None, page_token=None, all_users=None, state_filter=None, retry=<google.api_core.retry.Retry object>, min_creation_time=None, max_creation_time=None*)

List jobs for the project associated with this client.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/list>

Parameters

- **project** (*str, optional*) – Project ID to use for retrieving datasets. Defaults to the client's project.
- **max_results** (*int, optional*) – Maximum number of jobs to return.
- **page_token** (*str, optional*) – Opaque marker for the next “page” of jobs. If not passed, the API will return the first page of jobs. The token marks the beginning of the iterator to be returned and the value of the `page_token` can be accessed at `next_page_token` of *HTTPIterator*.
- **all_users** (*bool, optional*) – If true, include jobs owned by all users in the project. Defaults to `False`.
- **state_filter** (*str, optional*) –

If set, include only jobs matching the given state. One of:

- "done"
- "pending"
- "running"

- **retry** (*google.api_core.retry.Retry, optional*) – How to retry the RPC.
- **min_creation_time** (*datetime.datetime, optional*) – Min value for job creation time. If set, only jobs created after or at this timestamp are returned. If the datetime has no time zone assumes UTC time.
- **max_creation_time** (*datetime.datetime, optional*) – Max value for job creation time. If set, only jobs created before or at this timestamp are returned. If the datetime has no time zone assumes UTC time.

Returns Iterable of job instances.

Return type *google.api_core.page_iterator.Iterator*

google.cloud.bigquery.client.Client.list_partitions

`Client.list_partitions` (*table, retry=<google.api_core.retry.Retry object>*)

List the partitions in a table.

Parameters

- (*Union[google.cloud.bigquery.table.Table, google.cloud.bigquery.table.TableReference]*, *(table)*) – The table or reference from which to get partition info
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

Returns A list of the partition ids present in the partitioned table

Return type List[str]

google.cloud.bigquery.client.Client.list_projects

`Client.list_projects` (*max_results=None*, *page_token=None*,
retry=<google.api_core.retry.Retry object>)
 List projects for the project associated with this client.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/projects/list>

Parameters

- **max_results** (*int*) – (Optional) maximum number of projects to return, If not passed, defaults to a value set by the API.
- **page_token** (*str*) – (Optional) Token representing a cursor into the projects. If not passed, the API will return the first page of projects. The token marks the beginning of the iterator to be returned and the value of the `page_token` can be accessed at `next_page_token` of the *HTTPIterator*.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

Return type *Iterator*

Returns Iterator of `Project` accessible to the current client.

google.cloud.bigquery.client.Client.list_rows

`Client.list_rows` (*table*, *selected_fields=None*, *max_results=None*, *page_token=None*,
start_index=None, *page_size=None*, *retry=<google.api_core.retry.Retry object>*)
 List the rows of the table.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tabledata/list>

Note: This method assumes that the provided schema is up-to-date with the schema as defined on the back-end: if the two schemas are not identical, the values returned may be incomplete. To ensure that the local copy of the schema is up-to-date, call `client.get_table`.

Parameters

- **table** (One of: *Table* *TableReference*) – the table to list, or a reference to it.
- **selected_fields** (list of *SchemaField*) – The fields to return. Required if `table` is a *TableReference*.
- **max_results** (*int*) – (Optional) maximum number of rows to return.
- **page_token** (*str*) – (Optional) Token representing a cursor into the table's rows. If not passed, the API will return the first page of the rows. The token marks the beginning of the iterator to be returned and the value of the `page_token` can be accessed at `next_page_token` of the *RowIterator*.
- **start_index** (*int*) – (Optional) The zero-based index of the starting row to read.
- **page_size** (*int*) – (Optional) The maximum number of items to return per page in the iterator.

- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

Return type *RowIterator*

Returns Iterator of row data *Row*-s. During each page, the iterator will have the `total_rows` attribute set, which counts the total number of rows **in the table** (this is distinct from the total number of rows in the current page: `iterator.page.num_items`).

google.cloud.bigquery.client.Client.list_tables

`Client.list_tables(dataset, max_results=None, page_token=None, retry=<google.api_core.retry.Retry object>)`

List tables in the dataset.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables/list>

Parameters

- **dataset** (One of: *Dataset DatasetReference*) – the dataset whose tables to list, or a reference to it.
- **max_results** (*int*) – (Optional) Maximum number of tables to return. If not passed, defaults to a value set by the API.
- **page_token** (*str*) – (Optional) Token representing a cursor into the tables. If not passed, the API will return the first page of tables. The token marks the beginning of the iterator to be returned and the value of the `page_token` can be accessed at `next_page_token` of the *HTTPIterator*.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

Return type *Iterator*

Returns Iterator of *TableListItem* contained within the current dataset.

google.cloud.bigquery.client.Client.load_table_from_dataframe

`Client.load_table_from_dataframe(dataframe, destination, num_retries=6, job_id=None, job_id_prefix=None, location=None, project=None, job_config=None)`

Upload the contents of a table from a pandas *DataFrame*.

Similar to `load_table_from_uri()`, this method creates, starts and returns a *LoadJob*.

Parameters

- **dataframe** (*pandas.DataFrame*) – A *DataFrame* containing the data to load.
- **destination** (*google.cloud.bigquery.table.TableReference*) – The destination table to use for loading the data. If it is an existing table, the schema of the *DataFrame* must match the schema of the destination table. If the table does not yet exist, the schema is inferred from the *DataFrame*.

Keyword Arguments

- **num_retries** (*int, optional*) – Number of upload retries.
- **job_id** (*str, optional*) – Name of the job.

- **job_id_prefix** (*str*, *optional*) – The user-provided prefix for a randomly generated job ID. This parameter will be ignored if a `job_id` is also given.
- **location** (*str*) – Location where to run the job. Must match the location of the destination table.
- **project** (*str*, *optional*) – Project ID of the project of where to run the job. Defaults to the client's project.
- **job_config** (`google.cloud.bigquery.job.LoadJobConfig`, *optional*) – Extra configuration options for the job.

Returns A new load job.

Return type `google.cloud.bigquery.job.LoadJob`

Raises `ImportError` – If a usable parquet engine cannot be found. This method requires `pyarrow` to be installed.

`google.cloud.bigquery.client.Client.load_table_from_file`

```
Client.load_table_from_file(file_obj, destination, rewind=False, size=None,
                             num_retries=6, job_id=None, job_id_prefix=None, location=None, project=None, job_config=None)
```

Upload the contents of this table from a file-like object.

Similar to `load_table_from_uri()`, this method creates, starts and returns a `LoadJob`.

Parameters

- **file_obj** (*file*) – A file handle opened in binary mode for reading.
- **destination** (`google.cloud.bigquery.table.TableReference`) – Table into which data is to be loaded.

Keyword Arguments

- **rewind** (*bool*) – If True, seek to the beginning of the file handle before reading the file.
- **size** (*int*) – The number of bytes to read from the file handle. If size is None or large, resumable upload will be used. Otherwise, multipart upload will be used.
- **num_retries** (*int*) – Number of upload retries. Defaults to 6.
- **job_id** (*str*) – (Optional) Name of the job.
- **job_id_prefix** (*str*) – (Optional) the user-provided prefix for a randomly generated job ID. This parameter will be ignored if a `job_id` is also given.
- **location** (*str*) – Location where to run the job. Must match the location of the destination table.
- **project** (*str*) – Project ID of the project of where to run the job. Defaults to the client's project.
- **job_config** (`google.cloud.bigquery.job.LoadJobConfig`) – (Optional) Extra configuration options for the job.

Returns A new load job.

Return type `google.cloud.bigquery.job.LoadJob`

Raises `ValueError` – If `size` is not passed in and can not be determined, or if the `file_obj` can be detected to be a file opened in text mode.

`google.cloud.bigquery.client.Client.load_table_from_uri`

`Client.load_table_from_uri`(*source_uris*, *destination*, *job_id=None*, *job_id_prefix=None*,
location=None, *project=None*, *job_config=None*,
retry=<google.api_core.retry.Retry object>)

Starts a job for loading data into a table from CloudStorage.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load>

Parameters

- **source_uris** (*Union[str, Sequence[str]]*) – URIs of data files to be loaded; in format `gs://<bucket_name>/<object_name_or_glob>`.
- **destination** (`google.cloud.bigquery.table.TableReference`) – Table into which data is to be loaded.

Keyword Arguments

- **job_id** (*str*) – (Optional) Name of the job.
- **job_id_prefix** (*str*) – (Optional) the user-provided prefix for a randomly generated job ID. This parameter will be ignored if a `job_id` is also given.
- **location** (*str*) – Location where to run the job. Must match the location of the destination table.
- **project** (*str*) – Project ID of the project of where to run the job. Defaults to the client's project.
- **job_config** (`google.cloud.bigquery.job.LoadJobConfig`) – (Optional) Extra configuration options for the job.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Returns A new load job.

Return type `google.cloud.bigquery.job.LoadJob`

`google.cloud.bigquery.client.Client.query`

`Client.query`(*query*, *job_config=None*, *job_id=None*, *job_id_prefix=None*, *location=None*,
project=None, *retry=<google.api_core.retry.Retry object>*)

Run a SQL query.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query>

Parameters **query** (*str*) – SQL query to be executed. Defaults to the standard SQL dialect. Use the `job_config` parameter to change dialects.

Keyword Arguments

- **job_config** (`google.cloud.bigquery.job.QueryJobConfig`) – (Optional) Extra configuration options for the job.
- **job_id** (*str*) – (Optional) ID to use for the query job.
- **job_id_prefix** (*str*) – (Optional) The prefix to use for a randomly generated job ID. This parameter will be ignored if a `job_id` is also given.

- **location** (*str*) – Location where to run the job. Must match the location of the any table used in the query as well as the destination table.
- **project** (*str*) – Project ID of the project of where to run the job. Defaults to the client's project.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Returns A new query job instance.

Return type `google.cloud.bigquery.job.QueryJob`

`google.cloud.bigquery.client.Client.update_dataset`

`Client.update_dataset(dataset, fields, retry=<google.api_core.retry.Retry object>)`

Change some fields of a dataset.

Use `fields` to specify which fields to update. At least one field must be provided. If a field is listed in `fields` and is `None` in `dataset`, it will be deleted.

If `dataset.etag` is not `None`, the update will only succeed if the dataset on the server has the same ETag. Thus reading a dataset with `get_dataset`, changing its fields, and then passing it to `update_dataset` will ensure that the changes will only be saved if no modifications to the dataset occurred since the read.

Parameters

- **dataset** (`google.cloud.bigquery.dataset.Dataset`) – The dataset to update.
- **fields** (`Sequence[str]`) – The properties of dataset to change (e.g. “friendly_name”).
- **retry** (`google.api_core.retry.Retry`, *optional*) – How to retry the RPC.

Returns The modified Dataset instance.

Return type `google.cloud.bigquery.dataset.Dataset`

`google.cloud.bigquery.client.Client.update_table`

`Client.update_table(table, fields, retry=<google.api_core.retry.Retry object>)`

Change some fields of a table.

Use `fields` to specify which fields to update. At least one field must be provided. If a field is listed in `fields` and is `None` in `table`, it will be deleted.

If `table.etag` is not `None`, the update will only succeed if the table on the server has the same ETag. Thus reading a table with `get_table`, changing its fields, and then passing it to `update_table` will ensure that the changes will only be saved if no modifications to the table occurred since the read.

Parameters

- **table** (`google.cloud.bigquery.table.Table`) – The table to update.
- **fields** (`Sequence[str]`) – The fields of table to change, spelled as the Table properties (e.g. “friendly_name”).
- **retry** (`google.api_core.retry.Retry`) – (Optional) A description of how to retry the API call.

Returns The table resource returned from the API call.

Return type `google.cloud.bigquery.table.Table`

Attributes

<code>SCOPE</code>	The scopes required for authenticating as a BigQuery consumer.
--------------------	--

`google.cloud.bigquery.client.Client.SCOPE`

`Client.SCOPE = ('https://www.googleapis.com/auth/bigquery', 'https://www.googleapis.com/auth/bigquery.readonly')`
The scopes required for authenticating as a BigQuery consumer.

3.1.2 Job

Job Configuration

<code>job.QueryJobConfig()</code>	Configuration options for query jobs.
<code>job.CopyJobConfig()</code>	Configuration options for copy jobs.
<code>job.LoadJobConfig()</code>	Configuration options for load jobs.
<code>job.ExtractJobConfig()</code>	Configuration options for extract jobs.

`google.cloud.bigquery.job.QueryJobConfig`

class `google.cloud.bigquery.job.QueryJobConfig`

Configuration options for query jobs.

All properties in this class are optional. Values which are None -> server defaults.

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a job configuration given its API representation
<code>to_api_repr()</code>	Build an API representation of the query job config.

`google.cloud.bigquery.job.QueryJobConfig.from_api_repr`

classmethod `QueryJobConfig.from_api_repr(resource)`

Factory: construct a job configuration given its API representation

Parameters `resource` (`dict`) – An extract job configuration in the same representation as is returned from the API.

Return type `google.cloud.bigquery.job._JobConfig`

Returns Configuration parsed from `resource`.

`google.cloud.bigquery.job.QueryJobConfig.to_api_repr`

`QueryJobConfig.to_api_repr()`

Build an API representation of the query job config.

Returns A dictionary in the format used by the BigQuery API.

Return type `dict`

Attributes

<code>allow_large_results</code>	<code>bool</code> – Allow large query results tables (legacy SQL, only)
<code>create_disposition</code>	<code>google.cloud.bigquery.job.CreateDisposition</code> – Specifies behavior for creating tables.
<code>default_dataset</code>	<code>google.cloud.bigquery.dataset.DatasetReference</code> – the default dataset to use for unqualified table names in the query or <code>None</code> if not set.
<code>destination</code>	<code>google.cloud.bigquery.table.TableReference</code> – table where results are written or <code>None</code> if not set.
<code>destination_encryption_configuration</code>	<code>google.cloud.bigquery.table.EncryptionConfiguration</code> – Custom encryption configuration for the destination table.
<code>dry_run</code>	<code>bool</code> – True if this query should be a dry run to estimate costs.
<code>flatten_results</code>	<code>bool</code> – Flatten nested/repeated fields in results.
<code>maximum_billing_tier</code>	<code>int</code> – Deprecated.
<code>maximum_bytes_billed</code>	<code>int</code> – Maximum bytes to be billed for this job or <code>None</code> if not set.
<code>priority</code>	<code>google.cloud.bigquery.job.QueryPriority</code> – Priority of the query.
<code>query_parameters</code>	<code>List[Union[google.cloud.bigquery.query.ArrayQueryParameter, google.cloud.bigquery.query.ScalarQueryParameter, google.cloud.bigquery.query.StructQueryParameter]]</code> – list of parameters for parameterized query (empty by default)
<code>schema_update_options</code>	<code>List[google.cloud.bigquery.job.SchemaUpdateOption]</code> – Specifies updates to the destination table schema to allow as a side effect of the query job.
<code>table_definitions</code>	<code>Dict[str, google.cloud.bigquery.external_config.ExternalConfig]</code> – Definitions for external tables or <code>None</code> if not set.
<code>time_partitioning</code>	<code>google.cloud.bigquery.table.TimePartitioning</code> – Specifies time-based partitioning for the destination table.
<code>udf_resources</code>	<code>List[google.cloud.bigquery.query.UDFResource]</code> – user defined function resources (empty by default)
<code>use_legacy_sql</code>	<code>bool</code> – Use legacy SQL syntax.
<code>use_query_cache</code>	<code>bool</code> – Look for the query result in the cache.

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<code>write_disposition</code>	<code>google.cloud.bigquery.job.WriteDisposition</code> – Action that occurs if the destination table already exists.
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google.cloud.bigquery.job.QueryJobConfig.allow_large_results`QueryJobConfig.allow_large_results`*bool* – Allow large query results tables (legacy SQL, only)See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.allowLargeResults>**google.cloud.bigquery.job.QueryJobConfig.create_disposition**`QueryJobConfig.create_disposition`*google.cloud.bigquery.job.CreateDisposition* – Specifies behavior for creating tables.See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.createDisposition>**google.cloud.bigquery.job.QueryJobConfig.default_dataset**`QueryJobConfig.default_dataset`*google.cloud.bigquery.dataset.DatasetReference* – the default dataset to use for unqualified table names in the query or *None* if not set.See <https://g.co/cloud/bigquery/docs/reference/v2/jobs#configuration.query.defaultDataset>**google.cloud.bigquery.job.QueryJobConfig.destination**`QueryJobConfig.destination`*google.cloud.bigquery.table.TableReference* – table where results are written or *None* if not set.See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.destinationTable>**google.cloud.bigquery.job.QueryJobConfig.destination_encryption_configuration**`QueryJobConfig.destination_encryption_configuration`*google.cloud.bigquery.table.EncryptionConfiguration* – Custom encryption configuration for the destination table.Custom encryption configuration (e.g., Cloud KMS keys) or *None* if using default encryption.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.destinationEncryptionConfiguration>**google.cloud.bigquery.job.QueryJobConfig.dry_run**`QueryJobConfig.dry_run`*bool* – True if this query should be a dry run to estimate costs.See <https://g.co/cloud/bigquery/docs/reference/v2/jobs#configuration.dryRun>

google.cloud.bigquery.job.QueryJobConfig.flatten_results**QueryJobConfig.flatten_results***bool* – Flatten nested/repeated fields in results. (Legacy SQL only)See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.flattenResults>**google.cloud.bigquery.job.QueryJobConfig.maximum_billing_tier****QueryJobConfig.maximum_billing_tier***int* – Deprecated. Changes the billing tier to allow high-compute queries.See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.maximumBillingTier>**google.cloud.bigquery.job.QueryJobConfig.maximum_bytes_billed****QueryJobConfig.maximum_bytes_billed***int* – Maximum bytes to be billed for this job or None if not set.See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.maximumBytesBilled>**google.cloud.bigquery.job.QueryJobConfig.priority****QueryJobConfig.priority***google.cloud.bigquery.job.QueryPriority* – Priority of the query.See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.priority>**google.cloud.bigquery.job.QueryJobConfig.query_parameters****QueryJobConfig.query_parameters***List[Union[google.cloud.bigquery.query.ArrayQueryParameter, google.cloud.bigquery.query.ScalarQueryParameter, google.cloud.bigquery.query.StructQueryParameter]]* – list of parameters for parameterized query (empty by default)See: <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.queryParameters>**google.cloud.bigquery.job.QueryJobConfig.schema_update_options****QueryJobConfig.schema_update_options***List[google.cloud.bigquery.job.SchemaUpdateOption]* – Specifies updates to the destination table schema to allow as a side effect of the query job.**google.cloud.bigquery.job.QueryJobConfig.table_definitions****QueryJobConfig.table_definitions***Dict[str, google.cloud.bigquery.external_config.ExternalConfig]* – Definitions for external tables or None if not set.See <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions>

google.cloud.bigquery.job.QueryJobConfig.time_partitioning**QueryJobConfig.time_partitioning***google.cloud.bigquery.table.TimePartitioning* – Specifies time-based partitioning for the destination table.**google.cloud.bigquery.job.QueryJobConfig.udf_resources****QueryJobConfig.udf_resources***List[google.cloud.bigquery.query.UDFResource]* – user defined function resources (empty by default)

See: <https://g.co/cloud/bigquery/docs/reference/rest/v2/jobs#configuration.query.userDefinedFunctionResources>

google.cloud.bigquery.job.QueryJobConfig.use_legacy_sql**QueryJobConfig.use_legacy_sql***bool* – Use legacy SQL syntax.

See <https://g.co/cloud/bigquery/docs/reference/v2/jobs#configuration.query.useLegacySql>

google.cloud.bigquery.job.QueryJobConfig.use_query_cache**QueryJobConfig.use_query_cache***bool* – Look for the query result in the cache.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.useQueryCache>

google.cloud.bigquery.job.QueryJobConfig.write_disposition**QueryJobConfig.write_disposition***google.cloud.bigquery.job.WriteDisposition* – Action that occurs if the destination table already exists.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.writeDisposition>

google.cloud.bigquery.job.CopyJobConfig**class google.cloud.bigquery.job.CopyJobConfig**

Configuration options for copy jobs.

All properties in this class are optional. Values which are None -> server defaults.

__init__()

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

Methods

<i>from_api_repr(resource)</i>	Factory: construct a job configuration given its API representation
<i>to_api_repr()</i>	Build an API representation of the job config.

google.cloud.bigquery.job.CopyJobConfig.from_api_repr**classmethod** `CopyJobConfig.from_api_repr(resource)`

Factory: construct a job configuration given its API representation

Parameters `resource` (*dict*) – An extract job configuration in the same representation as is returned from the API.**Return type** `google.cloud.bigquery.job._JobConfig`**Returns** Configuration parsed from `resource`.**google.cloud.bigquery.job.CopyJobConfig.to_api_repr**`CopyJobConfig.to_api_repr()`

Build an API representation of the job config.

Return type `dict`**Returns** A dictionary in the format used by the BigQuery API.**Attributes**

<code>create_disposition</code>	<code>google.cloud.bigquery.job.CreateDisposition</code> – Specifies behavior for creating tables.
<code>destination_encryption_configuration</code>	<code>google.cloud.bigquery.table.EncryptionConfiguration</code> – Custom encryption configuration for the destination table.
<code>write_disposition</code>	<code>google.cloud.bigquery.job.WriteDisposition</code> – Action that occurs if the destination table already exists.

google.cloud.bigquery.job.CopyJobConfig.create_disposition`CopyJobConfig.create_disposition``google.cloud.bigquery.job.CreateDisposition` – Specifies behavior for creating tables.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.copy.createDisposition>**google.cloud.bigquery.job.CopyJobConfig.destination_encryption_configuration**`CopyJobConfig.destination_encryption_configuration``google.cloud.bigquery.table.EncryptionConfiguration` – Custom encryption configuration for the destination table.Custom encryption configuration (e.g., Cloud KMS keys) or `None` if using default encryption.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.copy.destinationEncryptionConfiguration>

google.cloud.bigquery.job.CopyJobConfig.write_disposition**CopyJobConfig.write_disposition***google.cloud.bigquery.job.WriteDisposition* – Action that occurs if the destination table already exists.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.copy.writeDisposition>**google.cloud.bigquery.job.LoadJobConfig****class** google.cloud.bigquery.job.**LoadJobConfig**

Configuration options for load jobs.

All properties in this class are optional. Values which are None -> server defaults.

__init__()

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

Methods

<i>from_api_repr</i> (resource)	Factory: construct a job configuration given its API representation
<i>to_api_repr</i> ()	Build an API representation of the job config.

google.cloud.bigquery.job.LoadJobConfig.from_api_repr**classmethod** LoadJobConfig.**from_api_repr**(resource)

Factory: construct a job configuration given its API representation

Parameters **resource** (*dict*) – An extract job configuration in the same representation as is returned from the API.**Return type** google.cloud.bigquery.job._JobConfig**Returns** Configuration parsed from resource.**google.cloud.bigquery.job.LoadJobConfig.to_api_repr**LoadJobConfig.**to_api_repr**()

Build an API representation of the job config.

Return type dict**Returns** A dictionary in the format used by the BigQuery API.**Attributes**

<i>allow_jagged_rows</i>	<i>bool</i> – Allow missing trailing optional columns (CSV only).
<i>allow_quoted_newlines</i>	<i>bool</i> – Allow quoted data containing newline characters (CSV only).

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<i>autodetect</i>	<i>bool</i> – Automatically infer the schema from a sample of the data.
<i>create_disposition</i>	<i>google.cloud.bigquery.job.CreateDisposition</i> – Specifies behavior for creating tables.
<i>destination_encryption_configuration</i>	<i>google.cloud.bigquery.table.EncryptionConfiguration</i> – Custom encryption configuration for the destination table.
<i>encoding</i>	<i>google.cloud.bigquery.job.Encoding</i> – The character encoding of the data.
<i>field_delimiter</i>	<i>str</i> – The separator for fields in a CSV file.
<i>ignore_unknown_values</i>	<i>bool</i> – Ignore extra values not represented in the table schema.
<i>max_bad_records</i>	<i>int</i> – Number of invalid rows to ignore.
<i>null_marker</i>	<i>str</i> – Represents a null value (CSV only).
<i>quote_character</i>	<i>str</i> – Character used to quote data sections (CSV only).
<i>schema</i>	<i>List[google.cloud.bigquery.schema.SchemaField]</i> – Schema of the destination table.
<i>schema_update_options</i>	<i>List[google.cloud.bigquery.job.SchemaUpdateOption]</i> – Specifies updates to the destination table schema to allow as a side effect of the load job.
<i>skip_leading_rows</i>	<i>int</i> – Number of rows to skip when reading data (CSV only).
<i>source_format</i>	<i>google.cloud.bigquery.job.SourceFormat</i> – File format of the data.
<i>time_partitioning</i>	<i>google.cloud.bigquery.table.TimePartitioning</i> – Specifies time-based partitioning for the destination table.
<i>write_disposition</i>	<i>google.cloud.bigquery.job.WriteDisposition</i> – Action that occurs if the destination table already exists.

google.cloud.bigquery.job.LoadJobConfig.allow_jagged_rows**LoadJobConfig.allow_jagged_rows***bool* – Allow missing trailing optional columns (CSV only).See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.allowJaggedRows>**google.cloud.bigquery.job.LoadJobConfig.allow_quoted_newlines****LoadJobConfig.allow_quoted_newlines***bool* – Allow quoted data containing newline characters (CSV only).See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.allowQuotedNewlines>**google.cloud.bigquery.job.LoadJobConfig.autodetect****LoadJobConfig.autodetect***bool* – Automatically infer the schema from a sample of the data.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.autodetect>

google.cloud.bigquery.job.LoadJobConfig.create_disposition

`LoadJobConfig.create_disposition`

google.cloud.bigquery.job.CreateDisposition – Specifies behavior for creating tables.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.createDisposition>

google.cloud.bigquery.job.LoadJobConfig.destination_encryption_configuration

`LoadJobConfig.destination_encryption_configuration`

google.cloud.bigquery.table.EncryptionConfiguration – Custom encryption configuration for the destination table.

Custom encryption configuration (e.g., Cloud KMS keys) or `None` if using default encryption.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.destinationEncryptionConfiguration>

google.cloud.bigquery.job.LoadJobConfig.encoding

`LoadJobConfig.encoding`

google.cloud.bigquery.job.Encoding – The character encoding of the data.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.encoding>

google.cloud.bigquery.job.LoadJobConfig.field_delimiter

`LoadJobConfig.field_delimiter`

str – The separator for fields in a CSV file.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.fieldDelimiter>

google.cloud.bigquery.job.LoadJobConfig.ignore_unknown_values

`LoadJobConfig.ignore_unknown_values`

bool – Ignore extra values not represented in the table schema.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.ignoreUnknownValues>

google.cloud.bigquery.job.LoadJobConfig.max_bad_records

`LoadJobConfig.max_bad_records`

int – Number of invalid rows to ignore.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.maxBadRecords>

google.cloud.bigquery.job.LoadJobConfig.null_marker

`LoadJobConfig.null_marker`

str – Represents a null value (CSV only).

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.nullMarker>

google.cloud.bigquery.job.LoadJobConfig.quote_character

`LoadJobConfig.quote_character`

str – Character used to quote data sections (CSV only).

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.quote>

google.cloud.bigquery.job.LoadJobConfig.schema

`LoadJobConfig.schema`

List[google.cloud.bigquery.schema.SchemaField] – Schema of the destination table.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.schema>

google.cloud.bigquery.job.LoadJobConfig.schema_update_options

`LoadJobConfig.schema_update_options`

List[google.cloud.bigquery.job.SchemaUpdateOption] – Specifies updates to the destination table schema to allow as a side effect of the load job.

google.cloud.bigquery.job.LoadJobConfig.skip_leading_rows

`LoadJobConfig.skip_leading_rows`

int – Number of rows to skip when reading data (CSV only).

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.skipLeadingRows>

google.cloud.bigquery.job.LoadJobConfig.source_format

`LoadJobConfig.source_format`

google.cloud.bigquery.job.SourceFormat – File format of the data.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.sourceFormat>

google.cloud.bigquery.job.LoadJobConfig.time_partitioning

`LoadJobConfig.time_partitioning`

google.cloud.bigquery.table.TimePartitioning – Specifies time-based partitioning for the destination table.

google.cloud.bigquery.job.LoadJobConfig.write_disposition`LoadJobConfig.write_disposition`*google.cloud.bigquery.job.WriteDisposition* – Action that occurs if the destination table already exists.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.writeDisposition>**google.cloud.bigquery.job.ExtractJobConfig****class** `google.cloud.bigquery.job.ExtractJobConfig`

Configuration options for extract jobs.

All properties in this class are optional. Values which are None -> server defaults.

`__init__()`

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a job configuration given its API representation
<code>to_api_repr()</code>	Build an API representation of the job config.

google.cloud.bigquery.job.ExtractJobConfig.from_api_repr**classmethod** `ExtractJobConfig.from_api_repr(resource)`

Factory: construct a job configuration given its API representation

Parameters `resource` (*dict*) – An extract job configuration in the same representation as is returned from the API.**Return type** `google.cloud.bigquery.job._JobConfig`**Returns** Configuration parsed from `resource`.**google.cloud.bigquery.job.ExtractJobConfig.to_api_repr**`ExtractJobConfig.to_api_repr()`

Build an API representation of the job config.

Return type `dict`**Returns** A dictionary in the format used by the BigQuery API.**Attributes**

<code>compression</code>	<i>google.cloud.bigquery.job.Compression</i> – Compression type to use for exported files.
<code>destination_format</code>	<i>google.cloud.bigquery.job.DestinationFormat</i> – Exported file format.

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<i>field_delimiter</i>	<i>str</i> – Delimiter to use between fields in the exported data.
<i>print_header</i>	<i>bool</i> – Print a header row in the exported data.

google.cloud.bigquery.job.ExtractJobConfig.compression**ExtractJobConfig.compression***google.cloud.bigquery.job.Compression* – Compression type to use for exported files.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.extract.compression>**google.cloud.bigquery.job.ExtractJobConfig.destination_format****ExtractJobConfig.destination_format***google.cloud.bigquery.job.DestinationFormat* – Exported file format.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.extract.destinationFormat>**google.cloud.bigquery.job.ExtractJobConfig.field_delimiter****ExtractJobConfig.field_delimiter***str* – Delimiter to use between fields in the exported data.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.extract.fieldDelimiter>**google.cloud.bigquery.job.ExtractJobConfig.print_header****ExtractJobConfig.print_header***bool* – Print a header row in the exported data.See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.extract.printHeader>**Job Classes**

<i>job.QueryJob</i> (job_id, query, client[, job_config])	Asynchronous job: query tables.
<i>job.CopyJob</i> (job_id, sources, destination, client)	Asynchronous job: copy data into a table from other tables.
<i>job.LoadJob</i> (job_id, source_uris, ...[, ...])	Asynchronous job for loading data into a table.
<i>job.ExtractJob</i> (job_id, source, ...[, job_config])	Asynchronous job: extract data from a table into Cloud Storage.
<i>job.UnknownJob</i> (job_id, client)	A job whose type cannot be determined.

google.cloud.bigquery.job.QueryJob**class** `google.cloud.bigquery.job.QueryJob` (*job_id*, *query*, *client*, *job_config=None*)

Asynchronous job: query tables.

Parameters

- **job_id** (*str*) – the job’s ID, within the project belonging to *client*.
- **query** (*str*) – SQL query string
- **client** (*google.cloud.bigquery.client.Client*) – A client which holds credentials and project configuration for the dataset (which requires a project).
- **job_config** (*QueryJobConfig*) – (Optional) Extra configuration options for the query job.

__init__ (*job_id, query, client, job_config=None*)
Initialize self. See help(type(self)) for accurate signature.

Methods

<i>add_done_callback</i> (<i>fn</i>)	Add a callback to be executed when the operation is complete.
<i>cancel</i> ([<i>client</i>])	API call: cancel job via a POST request
<i>cancelled</i> ()	Check if the job has been cancelled.
<i>done</i> ([<i>retry</i>])	Refresh the job and checks if it is complete.
<i>exception</i> ([<i>timeout</i>])	Get the exception from the operation, blocking if necessary.
<i>exists</i> ([<i>client, retry</i>])	API call: test for the existence of the job via a GET request
<i>from_api_repr</i> (<i>resource, client</i>)	Factory: construct a job given its API representation
<i>reload</i> ([<i>client, retry</i>])	API call: refresh job properties via a GET request.
<i>result</i> ([<i>timeout, retry</i>])	Start the job and wait for it to complete and get the result.
<i>running</i> ()	True if the operation is currently running.
<i>set_exception</i> (<i>exception</i>)	Set the Future’s exception.
<i>set_result</i> (<i>result</i>)	Set the Future’s result.
<i>to_dataframe</i> ()	Return a pandas DataFrame from a QueryJob

google.cloud.bigquery.job.QueryJob.add_done_callback

QueryJob.add_done_callback (*fn*)

Add a callback to be executed when the operation is complete.

If the operation is not already complete, this will start a helper thread to poll for the status of the operation in the background.

Parameters *fn* (*Callable[Future]*) – The callback to execute when the operation is complete.

google.cloud.bigquery.job.QueryJob.cancel

QueryJob.cancel (*client=None*)

API call: cancel job via a POST request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/cancel>

Parameters *client* (*Client* or *NoneType*) – the client to use. If not passed, falls back to the *client* stored on the current dataset.

Return type *bool*

Returns Boolean indicating that the cancel request was sent.

google.cloud.bigquery.job.QueryJob.cancelled

`QueryJob.cancelled()`

Check if the job has been cancelled.

This always returns False. It's not possible to check if a job was cancelled in the API. This method is here to satisfy the interface for `google.api_core.future.Future`.

Return type `bool`

Returns False

google.cloud.bigquery.job.QueryJob.done

`QueryJob.done(retry=<google.api_core.retry.Retry object>)`

Refresh the job and checks if it is complete.

Return type `bool`

Returns True if the job is complete, False otherwise.

google.cloud.bigquery.job.QueryJob.exception

`QueryJob.exception(timeout=None)`

Get the exception from the operation, blocking if necessary.

Parameters `timeout (int)` – How long to wait for the operation to complete. If None, wait indefinitely.

Returns

The operation's error.

Return type `Optional[google.api_core.GoogleAPICallError]`

google.cloud.bigquery.job.QueryJob.exists

`QueryJob.exists(client=None, retry=<google.api_core.retry.Retry object>)`

API call: test for the existence of the job via a GET request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Return type `bool`

Returns Boolean indicating existence of the job.

google.cloud.bigquery.job.QueryJob.from_api_repr

classmethod `QueryJob.from_api_repr(resource, client)`

Factory: construct a job given its API representation

Parameters

- **resource** (*dict*) – dataset job representation returned from the API
- **client** (*google.cloud.bigquery.client.Client*) – Client which holds credentials and project configuration for the dataset.

Return type *google.cloud.bigquery.job.QueryJob*

Returns Job parsed from resource.

google.cloud.bigquery.job.QueryJob.reload

`QueryJob.reload(client=None, retry=<google.api_core.retry.Retry object>)`

API call: refresh job properties via a GET request.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the client stored on the current dataset.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

google.cloud.bigquery.job.QueryJob.result

`QueryJob.result(timeout=None, retry=<google.api_core.retry.Retry object>)`

Start the job and wait for it to complete and get the result.

Parameters

- **timeout** (*float*) – How long (in seconds) to wait for job to complete before raising a *concurrent.futures.TimeoutError*.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the call that retrieves rows.

Return type *RowIterator*

Returns Iterator of row data *Row*-s. During each page, the iterator will have the `total_rows` attribute set, which counts the total number of rows **in the result set** (this is distinct from the total number of rows in the current page: `iterator.page.num_items`).

Raises *GoogleCloudError* if the job failed or *concurrent.futures.TimeoutError* if the job did not complete in the given timeout.

google.cloud.bigquery.job.QueryJob.running

`QueryJob.running()`

True if the operation is currently running.

google.cloud.bigquery.job.QueryJob.set_exception

`QueryJob.set_exception(exception)`
Set the Future's exception.

google.cloud.bigquery.job.QueryJob.set_result

`QueryJob.set_result(result)`
Set the Future's result.

google.cloud.bigquery.job.QueryJob.to_dataframe

`QueryJob.to_dataframe()`
Return a pandas DataFrame from a QueryJob

Returns A `DataFrame` populated with row data and column headers from the query results.
The column headers are derived from the destination table's schema.

Raises `ValueError` – If the `pandas` library cannot be imported.

Attributes

<code>allow_large_results</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.allow_large_results</code> .
<code>billing_tier</code>	Return billing tier from job statistics, if present.
<code>cache_hit</code>	Return whether or not query results were served from cache.
<code>create_disposition</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.create_disposition</code> .
<code>created</code>	Datetime at which the job was created.
<code>ddl_operation_performed</code>	<code>Optional[str]</code> – Return the DDL operation performed.
<code>ddl_target_table</code>	<code>Optional[TableReference]</code> –
<code>default_dataset</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.default_dataset</code> .
<code>destination</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.destination</code> .
<code>destination_encryption_configuration</code>	<code>google.cloud.bigquery.table.EncryptionConfiguration</code> – Custom encryption configuration for the destination table.
<code>dry_run</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.dry_run</code> .
<code>ended</code>	Datetime at which the job finished.
<code>error_result</code>	Error information about the job as a whole.
<code>errors</code>	Information about individual errors generated by the job.
<code>etag</code>	ETag for the job resource.
<code>flatten_results</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.flatten_results</code> .

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<code>job_id</code>	<i>str</i> – ID of the job.
<code>job_type</code>	Type of job
<code>location</code>	<i>str</i> – Location where the job runs.
<code>maximum_billing_tier</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.maximum_billing_tier</code> .
<code>maximum_bytes_billed</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.maximum_bytes_billed</code> .
<code>num_dml_affected_rows</code>	Return the number of DML rows affected by the job.
<code>path</code>	URL path for the job's APIs.
<code>priority</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.priority</code> .
<code>project</code>	Project bound to the job.
<code>query_parameters</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.query_parameters</code> .
<code>query_plan</code>	Return query plan from job statistics, if present.
<code>referenced_tables</code>	Return referenced tables from job statistics, if present.
<code>schema_update_options</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.schema_update_options</code> .
<code>self_link</code>	URL for the job resource.
<code>slot_millis</code>	<code>Union[int, None]</code> – Slot-milliseconds used by this query job.
<code>started</code>	Datetime at which the job was started.
<code>state</code>	Status of the job.
<code>statement_type</code>	Return statement type from job statistics, if present.
<code>table_definitions</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.table_definitions</code> .
<code>time_partitioning</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.time_partitioning</code> .
<code>timeline</code>	<code>List(TimelineEntry)</code> – Return the query execution timeline from job statistics.
<code>total_bytes_billed</code>	Return total bytes billed from job statistics, if present.
<code>total_bytes_processed</code>	Return total bytes processed from job statistics, if present.
<code>udf_resources</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.udf_resources</code> .
<code>undeclared_query_parameters</code>	Return undeclared query parameters from job statistics, if present.
<code>use_legacy_sql</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.use_legacy_sql</code> .
<code>use_query_cache</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.use_query_cache</code> .
<code>user_email</code>	E-mail address of user who submitted the job.
<code>write_disposition</code>	See <code>google.cloud.bigquery.job.QueryJobConfig.write_disposition</code> .

google.cloud.bigquery.job.QueryJob.allow_large_results**QueryJob.allow_large_results**See *google.cloud.bigquery.job.QueryJobConfig.allow_large_results*.**google.cloud.bigquery.job.QueryJob.billing_tier****QueryJob.billing_tier**

Return billing tier from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.billingTier>**Return type** `int` or `None`**Returns** billing tier used by the job, or `None` if job is not yet complete.**google.cloud.bigquery.job.QueryJob.cache_hit****QueryJob.cache_hit**

Return whether or not query results were served from cache.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.cacheHit>**Return type** `bool` or `None`**Returns** whether the query results were returned from cache, or `None` if job is not yet complete.**google.cloud.bigquery.job.QueryJob.create_disposition****QueryJob.create_disposition**See *google.cloud.bigquery.job.QueryJobConfig.create_disposition*.**google.cloud.bigquery.job.QueryJob.created****QueryJob.created**

Datetime at which the job was created.

Return type `datetime.datetime`, or `NoneType`**Returns** the creation time (`None` until set from the server).**google.cloud.bigquery.job.QueryJob.ddl_operation_performed****QueryJob.ddl_operation_performed***Optional[str]* – Return the DDL operation performed.See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.ddlOperationPerformed>

google.cloud.bigquery.job.QueryJob.ddl_target_table

`QueryJob.ddl_target_table`

Optional[TableReference] –

Return the DDL target table, present for CREATE/DROP TABLE/VIEW queries.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.ddlTargetTable>

google.cloud.bigquery.job.QueryJob.default_dataset

`QueryJob.default_dataset`

See `google.cloud.bigquery.job.QueryJobConfig.default_dataset`.

google.cloud.bigquery.job.QueryJob.destination

`QueryJob.destination`

See `google.cloud.bigquery.job.QueryJobConfig.destination`.

google.cloud.bigquery.job.QueryJob.destination_encryption_configuration

`QueryJob.destination_encryption_configuration`

google.cloud.bigquery.table.EncryptionConfiguration – Custom encryption configuration for the destination table.

Custom encryption configuration (e.g., Cloud KMS keys) or None if using default encryption.

See `google.cloud.bigquery.job.QueryJobConfig.destination_encryption_configuration`.

google.cloud.bigquery.job.QueryJob.dry_run

`QueryJob.dry_run`

See `google.cloud.bigquery.job.QueryJobConfig.dry_run`.

google.cloud.bigquery.job.QueryJob.ended

`QueryJob.ended`

Datetime at which the job finished.

Return type `datetime.datetime`, or `NoneType`

Returns the end time (None until set from the server).

google.cloud.bigquery.job.QueryJob.error_result

`QueryJob.error_result`

Error information about the job as a whole.

Return type `mapping`, or `NoneType`

Returns the error information (None until set from the server).

google.cloud.bigquery.job.QueryJob.errors**QueryJob.errors**

Information about individual errors generated by the job.

Return type list of mappings, or `NoneType`

Returns the error information (None until set from the server).

google.cloud.bigquery.job.QueryJob.etag**QueryJob.etag**

ETag for the job resource.

Return type str, or `NoneType`

Returns the ETag (None until set from the server).

google.cloud.bigquery.job.QueryJob.flatten_results**QueryJob.flatten_results**

See `google.cloud.bigquery.job.QueryJobConfig.flatten_results`.

google.cloud.bigquery.job.QueryJob.job_id**QueryJob.job_id**

str – ID of the job.

google.cloud.bigquery.job.QueryJob.job_type**QueryJob.job_type**

Type of job

Return type str

Returns one of 'load', 'copy', 'extract', 'query'

google.cloud.bigquery.job.QueryJob.location**QueryJob.location**

str – Location where the job runs.

google.cloud.bigquery.job.QueryJob.maximum_billing_tier**QueryJob.maximum_billing_tier**

See `google.cloud.bigquery.job.QueryJobConfig.maximum_billing_tier`.

google.cloud.bigquery.job.QueryJob.maximum_bytes_billed

`QueryJob.maximum_bytes_billed`

See *google.cloud.bigquery.job.QueryJobConfig.maximum_bytes_billed*.

google.cloud.bigquery.job.QueryJob.num_dml_affected_rows

`QueryJob.num_dml_affected_rows`

Return the number of DML rows affected by the job.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.numDmlAffectedRows>

Return type `int` or `None`

Returns number of DML rows affected by the job, or `None` if job is not yet complete.

google.cloud.bigquery.job.QueryJob.path

`QueryJob.path`

URL path for the job's APIs.

Return type `str`

Returns the path based on project and job ID.

google.cloud.bigquery.job.QueryJob.priority

`QueryJob.priority`

See *google.cloud.bigquery.job.QueryJobConfig.priority*.

google.cloud.bigquery.job.QueryJob.project

`QueryJob.project`

Project bound to the job.

Return type `str`

Returns the project (derived from the client).

google.cloud.bigquery.job.QueryJob.query_parameters

`QueryJob.query_parameters`

See *google.cloud.bigquery.job.QueryJobConfig.query_parameters*.

google.cloud.bigquery.job.QueryJob.query_plan

`QueryJob.query_plan`

Return query plan from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.queryPlan>

Return type list of `QueryPlanEntry`

Returns mappings describing the query plan, or an empty list if the query has not yet completed.

`google.cloud.bigquery.job.QueryJob.referenced_tables`

`QueryJob.referenced_tables`

Return referenced tables from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.referencedTables>

Return type list of dict

Returns mappings describing the query plan, or an empty list if the query has not yet completed.

`google.cloud.bigquery.job.QueryJob.schema_update_options`

`QueryJob.schema_update_options`

See `google.cloud.bigquery.job.QueryJobConfig.schema_update_options`.

`google.cloud.bigquery.job.QueryJob.self_link`

`QueryJob.self_link`

URL for the job resource.

Return type str, or `NoneType`

Returns the URL (None until set from the server).

`google.cloud.bigquery.job.QueryJob.slot_millis`

`QueryJob.slot_millis`

Union[int, None] – Slot-milliseconds used by this query job.

`google.cloud.bigquery.job.QueryJob.started`

`QueryJob.started`

Datetime at which the job was started.

Return type `datetime.datetime`, or `NoneType`

Returns the start time (None until set from the server).

`google.cloud.bigquery.job.QueryJob.state`

`QueryJob.state`

Status of the job.

Return type str, or `NoneType`

Returns the state (None until set from the server).

google.cloud.bigquery.job.QueryJob.statement_type

`QueryJob.statement_type`

Return statement type from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.statementType>

Return type `str` or `None`

Returns type of statement used by the job, or `None` if job is not yet complete.

google.cloud.bigquery.job.QueryJob.table_definitions

`QueryJob.table_definitions`

See `google.cloud.bigquery.job.QueryJobConfig.table_definitions`.

google.cloud.bigquery.job.QueryJob.time_partitioning

`QueryJob.time_partitioning`

See `google.cloud.bigquery.job.QueryJobConfig.time_partitioning`.

google.cloud.bigquery.job.QueryJob.timeline

`QueryJob.timeline`

List(TimelineEntry) – Return the query execution timeline from job statistics.

google.cloud.bigquery.job.QueryJob.total_bytes_billed

`QueryJob.total_bytes_billed`

Return total bytes billed from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.totalBytesBilled>

Return type `int` or `None`

Returns total bytes processed by the job, or `None` if job is not yet complete.

google.cloud.bigquery.job.QueryJob.total_bytes_processed

`QueryJob.total_bytes_processed`

Return total bytes processed from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.totalBytesProcessed>

Return type `int` or `None`

Returns total bytes processed by the job, or `None` if job is not yet complete.

google.cloud.bigquery.job.QueryJob.udf_resources

`QueryJob.udf_resources`

See `google.cloud.bigquery.job.QueryJobConfig.udf_resources`.

google.cloud.bigquery.job.QueryJob.undeclared_query_parameters**QueryJob.undeclared_query_parameters**

Return undeclared query parameters from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.query.undeclaredQueryParameters>

Return type list of `ArrayQueryParameter`, `ScalarQueryParameter`, or `StructQueryParameter`

Returns undeclared parameters, or an empty list if the query has not yet completed.

google.cloud.bigquery.job.QueryJob.use_legacy_sql**QueryJob.use_legacy_sql**

See `google.cloud.bigquery.job.QueryJobConfig.use_legacy_sql`.

google.cloud.bigquery.job.QueryJob.use_query_cache**QueryJob.use_query_cache**

See `google.cloud.bigquery.job.QueryJobConfig.use_query_cache`.

google.cloud.bigquery.job.QueryJob.user_email**QueryJob.user_email**

E-mail address of user who submitted the job.

Return type str, or `NoneType`

Returns the URL (None until set from the server).

google.cloud.bigquery.job.QueryJob.write_disposition**QueryJob.write_disposition**

See `google.cloud.bigquery.job.QueryJobConfig.write_disposition`.

google.cloud.bigquery.job.CopyJob

class `google.cloud.bigquery.job.CopyJob` (*job_id*, *sources*, *destination*, *client*,
job_config=None)

Asynchronous job: copy data into a table from other tables.

Parameters

- **job_id** (*str*) – the job’s ID, within the project belonging to *client*.
- **sources** (list of `google.cloud.bigquery.table.TableReference`) – Table into which data is to be loaded.
- **destination** (`google.cloud.bigquery.table.TableReference`) – Table into which data is to be loaded.

- **client** (*google.cloud.bigquery.client.Client*) – A client which holds credentials and project configuration for the dataset (which requires a project).
- **job_config** (*CopyJobConfig*) – (Optional) Extra configuration options for the copy job.

__init__ (*job_id, sources, destination, client, job_config=None*)

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

Methods

<i>add_done_callback</i> (fn)	Add a callback to be executed when the operation is complete.
<i>cancel</i> ([client])	API call: cancel job via a POST request
<i>cancelled</i> ()	Check if the job has been cancelled.
<i>done</i> ([retry])	Refresh the job and checks if it is complete.
<i>exception</i> ([timeout])	Get the exception from the operation, blocking if necessary.
<i>exists</i> ([client, retry])	API call: test for the existence of the job via a GET request
<i>from_api_repr</i> (resource, client)	Factory: construct a job given its API representation
<i>reload</i> ([client, retry])	API call: refresh job properties via a GET request.
<i>result</i> ([timeout])	Start the job and wait for it to complete and get the result.
<i>running</i> ()	True if the operation is currently running.
<i>set_exception</i> (exception)	Set the Future's exception.
<i>set_result</i> (result)	Set the Future's result.

google.cloud.bigquery.job.CopyJob.add_done_callback

`CopyJob.add_done_callback` (*fn*)

Add a callback to be executed when the operation is complete.

If the operation is not already complete, this will start a helper thread to poll for the status of the operation in the background.

Parameters **fn** (*Callable[Future]*) – The callback to execute when the operation is complete.

google.cloud.bigquery.job.CopyJob.cancel

`CopyJob.cancel` (*client=None*)

API call: cancel job via a POST request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/cancel>

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current dataset.

Return type `bool`

Returns Boolean indicating that the cancel request was sent.

google.cloud.bigquery.job.CopyJob.cancelled

`CopyJob.cancelled()`

Check if the job has been cancelled.

This always returns False. It's not possible to check if a job was cancelled in the API. This method is here to satisfy the interface for `google.api_core.future.Future`.

Return type `bool`

Returns False

google.cloud.bigquery.job.CopyJob.done

`CopyJob.done(retry=<google.api_core.retry.Retry object>)`

Refresh the job and checks if it is complete.

Parameters `retry` (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Return type `bool`

Returns True if the job is complete, False otherwise.

google.cloud.bigquery.job.CopyJob.exception

`CopyJob.exception(timeout=None)`

Get the exception from the operation, blocking if necessary.

Parameters `timeout` (`int`) – How long to wait for the operation to complete. If None, wait indefinitely.

Returns

The operation's error.

Return type `Optional[google.api_core.GoogleAPICallError]`

google.cloud.bigquery.job.CopyJob.exists

`CopyJob.exists(client=None, retry=<google.api_core.retry.Retry object>)`

API call: test for the existence of the job via a GET request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Return type `bool`

Returns Boolean indicating existence of the job.

google.cloud.bigquery.job.CopyJob.from_api_repr

classmethod `CopyJob.from_api_repr(resource, client)`

Factory: construct a job given its API representation

Parameters

- **resource** (*dict*) – dataset job representation returned from the API
- **client** (*google.cloud.bigquery.client.Client*) – Client which holds credentials and project configuration for the dataset.

Return type *google.cloud.bigquery.job.CopyJob*

Returns Job parsed from *resource*.

google.cloud.bigquery.job.CopyJob.reload

`CopyJob.reload(client=None, retry=<google.api_core.retry.Retry object>)`

API call: refresh job properties via a GET request.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the *client* stored on the current dataset.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

google.cloud.bigquery.job.CopyJob.result

`CopyJob.result(timeout=None)`

Start the job and wait for it to complete and get the result.

Parameters **timeout** (*float*) – How long (in seconds) to wait for job to complete before raising a *concurrent.futures.TimeoutError*.

Return type *_AsyncJob*

Returns This instance.

Raises *GoogleCloudError* if the job failed or *concurrent.futures.TimeoutError* if the job did not complete in the given timeout.

google.cloud.bigquery.job.CopyJob.running

`CopyJob.running()`

True if the operation is currently running.

google.cloud.bigquery.job.CopyJob.set_exception

`CopyJob.set_exception(exception)`

Set the Future's exception.

google.cloud.bigquery.job.CopyJob.set_result

`CopyJob.set_result(result)`
Set the Future's result.

Attributes

<code>create_disposition</code>	See <code>google.cloud.bigquery.job.CopyJobConfig.create_disposition</code> .
<code>created</code>	Datetime at which the job was created.
<code>destination_encryption_configuration</code>	<code>google.cloud.bigquery.table.EncryptionConfiguration</code> – Custom encryption configuration for the destination table.
<code>ended</code>	Datetime at which the job finished.
<code>error_result</code>	Error information about the job as a whole.
<code>errors</code>	Information about individual errors generated by the job.
<code>etag</code>	ETag for the job resource.
<code>job_id</code>	<i>str</i> – ID of the job.
<code>job_type</code>	Type of job
<code>location</code>	<i>str</i> – Location where the job runs.
<code>path</code>	URL path for the job's APIs.
<code>project</code>	Project bound to the job.
<code>self_link</code>	URL for the job resource.
<code>started</code>	Datetime at which the job was started.
<code>state</code>	Status of the job.
<code>user_email</code>	E-mail address of user who submitted the job.
<code>write_disposition</code>	See <code>google.cloud.bigquery.job.CopyJobConfig.write_disposition</code> .

google.cloud.bigquery.job.CopyJob.create_disposition

`CopyJob.create_disposition`
See `google.cloud.bigquery.job.CopyJobConfig.create_disposition`.

google.cloud.bigquery.job.CopyJob.created

`CopyJob.created`
Datetime at which the job was created.

Return type `datetime.datetime`, or `NoneType`

Returns the creation time (None until set from the server).

google.cloud.bigquery.job.CopyJob.destination_encryption_configuration

`CopyJob.destination_encryption_configuration`
`google.cloud.bigquery.table.EncryptionConfiguration` – Custom encryption configuration for the destination table.

Custom encryption configuration (e.g., Cloud KMS keys) or `None` if using default encryption.

See `google.cloud.bigquery.job.CopyJobConfig.destination_encryption_configuration`.

`google.cloud.bigquery.job.CopyJob.ended`

`CopyJob.ended`

Datetime at which the job finished.

Return type `datetime.datetime`, or `NoneType`

Returns the end time (`None` until set from the server).

`google.cloud.bigquery.job.CopyJob.error_result`

`CopyJob.error_result`

Error information about the job as a whole.

Return type `mapping`, or `NoneType`

Returns the error information (`None` until set from the server).

`google.cloud.bigquery.job.CopyJob.errors`

`CopyJob.errors`

Information about individual errors generated by the job.

Return type `list of mappings`, or `NoneType`

Returns the error information (`None` until set from the server).

`google.cloud.bigquery.job.CopyJob.etag`

`CopyJob.etag`

ETag for the job resource.

Return type `str`, or `NoneType`

Returns the ETag (`None` until set from the server).

`google.cloud.bigquery.job.CopyJob.job_id`

`CopyJob.job_id`

str – ID of the job.

`google.cloud.bigquery.job.CopyJob.job_type`

`CopyJob.job_type`

Type of job

Return type `str`

Returns one of 'load', 'copy', 'extract', 'query'

google.cloud.bigquery.job.CopyJob.location

`CopyJob.location`

str – Location where the job runs.

google.cloud.bigquery.job.CopyJob.path

`CopyJob.path`

URL path for the job's APIs.

Return type `str`

Returns the path based on project and job ID.

google.cloud.bigquery.job.CopyJob.project

`CopyJob.project`

Project bound to the job.

Return type `str`

Returns the project (derived from the client).

google.cloud.bigquery.job.CopyJob.self_link

`CopyJob.self_link`

URL for the job resource.

Return type `str`, or `NoneType`

Returns the URL (None until set from the server).

google.cloud.bigquery.job.CopyJob.started

`CopyJob.started`

Datetime at which the job was started.

Return type `datetime.datetime`, or `NoneType`

Returns the start time (None until set from the server).

google.cloud.bigquery.job.CopyJob.state

`CopyJob.state`

Status of the job.

Return type `str`, or `NoneType`

Returns the state (None until set from the server).

google.cloud.bigquery.job.CopyJob.user_email`CopyJob.user_email`

E-mail address of user who submitted the job.

Return type str, or `NoneType`**Returns** the URL (None until set from the server).**google.cloud.bigquery.job.CopyJob.write_disposition**`CopyJob.write_disposition`See `google.cloud.bigquery.job.CopyJobConfig.write_disposition`.**google.cloud.bigquery.job.LoadJob**

```
class google.cloud.bigquery.job.LoadJob(job_id, source_uris, destination, client,
                                         job_config=None)
```

Asynchronous job for loading data into a table.

Can load from Google Cloud Storage URIs or from a file.

Parameters

- **job_id** (*str*) – the job’s ID
- **source_uris** (sequence of string or `NoneType`) – URIs of one or more data files to be loaded. See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.load.sourceUri> for supported URI formats. Pass `None` for jobs that load from a file.
- **destination** (*google.cloud.bigquery.table.TableReference*) – reference to table into which data is to be loaded.
- **client** (*google.cloud.bigquery.client.Client*) – A client which holds credentials and project configuration for the dataset (which requires a project).

`__init__` (*job_id, source_uris, destination, client, job_config=None*)Initialize self. See `help(type(self))` for accurate signature.**Methods**

<code>add_done_callback(fn)</code>	Add a callback to be executed when the operation is complete.
<code>cancel([client])</code>	API call: cancel job via a POST request
<code>cancelled()</code>	Check if the job has been cancelled.
<code>done([retry])</code>	Refresh the job and checks if it is complete.
<code>exception([timeout])</code>	Get the exception from the operation, blocking if necessary.
<code>exists([client, retry])</code>	API call: test for the existence of the job via a GET request
<code>from_api_repr(resource, client)</code>	Factory: construct a job given its API representation
<code>reload([client, retry])</code>	API call: refresh job properties via a GET request.

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<code>result([timeout])</code>	Start the job and wait for it to complete and get the result.
<code>running()</code>	True if the operation is currently running.
<code>set_exception(exception)</code>	Set the Future's exception.
<code>set_result(result)</code>	Set the Future's result.

google.cloud.bigquery.job.LoadJob.add_done_callback`LoadJob.add_done_callback(fn)`

Add a callback to be executed when the operation is complete.

If the operation is not already complete, this will start a helper thread to poll for the status of the operation in the background.

Parameters `fn` (*Callable[Future]*) – The callback to execute when the operation is complete.**google.cloud.bigquery.job.LoadJob.cancel**`LoadJob.cancel(client=None)`

API call: cancel job via a POST request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/cancel>**Parameters** `client` (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current dataset.**Return type** `bool`**Returns** Boolean indicating that the cancel request was sent.**google.cloud.bigquery.job.LoadJob.cancelled**`LoadJob.cancelled()`

Check if the job has been cancelled.

This always returns False. It's not possible to check if a job was cancelled in the API. This method is here to satisfy the interface for `google.api_core.future.Future`.**Return type** `bool`**Returns** False**google.cloud.bigquery.job.LoadJob.done**`LoadJob.done(retry=<google.api_core.retry.Retry object>)`

Refresh the job and checks if it is complete.

Parameters `retry` (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.**Return type** `bool`**Returns** True if the job is complete, False otherwise.

google.cloud.bigquery.job.LoadJob.exception

`LoadJob.exception` (*timeout=None*)

Get the exception from the operation, blocking if necessary.

Parameters `timeout` (*int*) – How long to wait for the operation to complete. If `None`, wait indefinitely.

Returns

The operation's error.

Return type `Optional[google.api_core.GoogleAPICallError]`

google.cloud.bigquery.job.LoadJob.exists

`LoadJob.exists` (*client=None, retry=<google.api_core.retry.Retry object>*)

API call: test for the existence of the job via a GET request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

Return type `bool`

Returns Boolean indicating existence of the job.

google.cloud.bigquery.job.LoadJob.from_api_repr

classmethod `LoadJob.from_api_repr` (*resource, client*)

Factory: construct a job given its API representation

Parameters

- **resource** (*dict*) – dataset job representation returned from the API
- **client** (*google.cloud.bigquery.client.Client*) – Client which holds credentials and project configuration for the dataset.

Return type `google.cloud.bigquery.job.LoadJob`

Returns Job parsed from `resource`.

google.cloud.bigquery.job.LoadJob.reload

`LoadJob.reload` (*client=None, retry=<google.api_core.retry.Retry object>*)

API call: refresh job properties via a GET request.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.

- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

google.cloud.bigquery.job.LoadJob.result

`LoadJob.result` (*timeout=None*)

Start the job and wait for it to complete and get the result.

Parameters **timeout** (*float*) – How long (in seconds) to wait for job to complete before raising a `concurrent.futures.TimeoutError`.

Return type `_AsyncJob`

Returns This instance.

Raises `GoogleCloudError` if the job failed or `concurrent.futures.TimeoutError` if the job did not complete in the given timeout.

google.cloud.bigquery.job.LoadJob.running

`LoadJob.running` ()

True if the operation is currently running.

google.cloud.bigquery.job.LoadJob.set_exception

`LoadJob.set_exception` (*exception*)

Set the Future's exception.

google.cloud.bigquery.job.LoadJob.set_result

`LoadJob.set_result` (*result*)

Set the Future's result.

Attributes

<code>allow_jagged_rows</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.allow_jagged_rows</code> .
<code>allow_quoted_newlines</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.allow_quoted_newlines</code> .
<code>autodetect</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.autodetect</code> .
<code>create_disposition</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.create_disposition</code> .
<code>created</code>	Datetime at which the job was created.
<code>destination_encryption_configuration</code>	<code>google.cloud.bigquery.table.EncryptionConfiguration</code> – Custom encryption configuration for the destination table.

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<code>encoding</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.encoding</code> .
<code>ended</code>	Datetime at which the job finished.
<code>error_result</code>	Error information about the job as a whole.
<code>errors</code>	Information about individual errors generated by the job.
<code>etag</code>	ETag for the job resource.
<code>field_delimiter</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.field_delimiter</code> .
<code>ignore_unknown_values</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.ignore_unknown_values</code> .
<code>input_file_bytes</code>	Count of bytes loaded from source files.
<code>input_files</code>	Count of source files.
<code>job_id</code>	<i>str</i> – ID of the job.
<code>job_type</code>	Type of job
<code>location</code>	<i>str</i> – Location where the job runs.
<code>max_bad_records</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.max_bad_records</code> .
<code>null_marker</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.null_marker</code> .
<code>output_bytes</code>	Count of bytes saved to destination table.
<code>output_rows</code>	Count of rows saved to destination table.
<code>path</code>	URL path for the job's APIs.
<code>project</code>	Project bound to the job.
<code>quote_character</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.quote_character</code> .
<code>schema</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.schema</code> .
<code>schema_update_options</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.schema_update_options</code> .
<code>self_link</code>	URL for the job resource.
<code>skip_leading_rows</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.skip_leading_rows</code> .
<code>source_format</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.source_format</code> .
<code>started</code>	Datetime at which the job was started.
<code>state</code>	Status of the job.
<code>time_partitioning</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.time_partitioning</code> .
<code>user_email</code>	E-mail address of user who submitted the job.
<code>write_disposition</code>	See <code>google.cloud.bigquery.job.LoadJobConfig.write_disposition</code> .

google.cloud.bigquery.job.LoadJob.allow_jagged_rows**LoadJob.allow_jagged_rows**

See `google.cloud.bigquery.job.LoadJobConfig.allow_jagged_rows`.

google.cloud.bigquery.job.LoadJob.allow_quoted_newlines

`LoadJob.allow_quoted_newlines`

See `google.cloud.bigquery.job.LoadJobConfig.allow_quoted_newlines`.

google.cloud.bigquery.job.LoadJob.autodetect

`LoadJob.autodetect`

See `google.cloud.bigquery.job.LoadJobConfig.autodetect`.

google.cloud.bigquery.job.LoadJob.create_disposition

`LoadJob.create_disposition`

See `google.cloud.bigquery.job.LoadJobConfig.create_disposition`.

google.cloud.bigquery.job.LoadJob.created

`LoadJob.created`

Datetime at which the job was created.

Return type `datetime.datetime`, or `NoneType`

Returns the creation time (None until set from the server).

google.cloud.bigquery.job.LoadJob.destination_encryption_configuration

`LoadJob.destination_encryption_configuration`

`google.cloud.bigquery.table.EncryptionConfiguration` – Custom encryption configuration for the destination table.

Custom encryption configuration (e.g., Cloud KMS keys) or None if using default encryption.

See `google.cloud.bigquery.job.LoadJobConfig.destination_encryption_configuration`.

google.cloud.bigquery.job.LoadJob.encoding

`LoadJob.encoding`

See `google.cloud.bigquery.job.LoadJobConfig.encoding`.

google.cloud.bigquery.job.LoadJob.ended

`LoadJob.ended`

Datetime at which the job finished.

Return type `datetime.datetime`, or `NoneType`

Returns the end time (None until set from the server).

google.cloud.bigquery.job.LoadJob.error_result

LoadJob.error_result

Error information about the job as a whole.

Return type mapping, or `NoneType`

Returns the error information (None until set from the server).

google.cloud.bigquery.job.LoadJob.errors

LoadJob.errors

Information about individual errors generated by the job.

Return type list of mappings, or `NoneType`

Returns the error information (None until set from the server).

google.cloud.bigquery.job.LoadJob.etag

LoadJob.etag

ETag for the job resource.

Return type str, or `NoneType`

Returns the ETag (None until set from the server).

google.cloud.bigquery.job.LoadJob.field_delimiter

LoadJob.field_delimiter

See *google.cloud.bigquery.job.LoadJobConfig.field_delimiter*.

google.cloud.bigquery.job.LoadJob.ignore_unknown_values

LoadJob.ignore_unknown_values

See *google.cloud.bigquery.job.LoadJobConfig.ignore_unknown_values*.

google.cloud.bigquery.job.LoadJob.input_file_bytes

LoadJob.input_file_bytes

Count of bytes loaded from source files.

Return type int, or `NoneType`

Returns the count (None until set from the server).

Raises `ValueError` for invalid value types.

google.cloud.bigquery.job.LoadJob.input_files

`LoadJob.input_files`

Count of source files.

Return type int, or `NoneType`

Returns the count (None until set from the server).

google.cloud.bigquery.job.LoadJob.job_id

`LoadJob.job_id`

str – ID of the job.

google.cloud.bigquery.job.LoadJob.job_type

`LoadJob.job_type`

Type of job

Return type *str*

Returns one of 'load', 'copy', 'extract', 'query'

google.cloud.bigquery.job.LoadJob.location

`LoadJob.location`

str – Location where the job runs.

google.cloud.bigquery.job.LoadJob.max_bad_records

`LoadJob.max_bad_records`

See *google.cloud.bigquery.job.LoadJobConfig.max_bad_records*.

google.cloud.bigquery.job.LoadJob.null_marker

`LoadJob.null_marker`

See *google.cloud.bigquery.job.LoadJobConfig.null_marker*.

google.cloud.bigquery.job.LoadJob.output_bytes

`LoadJob.output_bytes`

Count of bytes saved to destination table.

Return type int, or `NoneType`

Returns the count (None until set from the server).

google.cloud.bigquery.job.LoadJob.output_rows

`LoadJob.output_rows`

Count of rows saved to destination table.

Return type `int`, or `NoneType`

Returns the count (None until set from the server).

google.cloud.bigquery.job.LoadJob.path

`LoadJob.path`

URL path for the job's APIs.

Return type `str`

Returns the path based on project and job ID.

google.cloud.bigquery.job.LoadJob.project

`LoadJob.project`

Project bound to the job.

Return type `str`

Returns the project (derived from the client).

google.cloud.bigquery.job.LoadJob.quote_character

`LoadJob.quote_character`

See *google.cloud.bigquery.job.LoadJobConfig.quote_character*.

google.cloud.bigquery.job.LoadJob.schema

`LoadJob.schema`

See *google.cloud.bigquery.job.LoadJobConfig.schema*.

google.cloud.bigquery.job.LoadJob.schema_update_options

`LoadJob.schema_update_options`

See *google.cloud.bigquery.job.LoadJobConfig.schema_update_options*.

google.cloud.bigquery.job.LoadJob.self_link

`LoadJob.self_link`

URL for the job resource.

Return type `str`, or `NoneType`

Returns the URL (None until set from the server).

google.cloud.bigquery.job.LoadJob.skip_leading_rows

`LoadJob.skip_leading_rows`

See `google.cloud.bigquery.job.LoadJobConfig.skip_leading_rows`.

google.cloud.bigquery.job.LoadJob.source_format

`LoadJob.source_format`

See `google.cloud.bigquery.job.LoadJobConfig.source_format`.

google.cloud.bigquery.job.LoadJob.started

`LoadJob.started`

Datetime at which the job was started.

Return type `datetime.datetime`, or `NoneType`

Returns the start time (None until set from the server).

google.cloud.bigquery.job.LoadJob.state

`LoadJob.state`

Status of the job.

Return type `str`, or `NoneType`

Returns the state (None until set from the server).

google.cloud.bigquery.job.LoadJob.time_partitioning

`LoadJob.time_partitioning`

See `google.cloud.bigquery.job.LoadJobConfig.time_partitioning`.

google.cloud.bigquery.job.LoadJob.user_email

`LoadJob.user_email`

E-mail address of user who submitted the job.

Return type `str`, or `NoneType`

Returns the URL (None until set from the server).

google.cloud.bigquery.job.LoadJob.write_disposition

`LoadJob.write_disposition`

See `google.cloud.bigquery.job.LoadJobConfig.write_disposition`.

google.cloud.bigquery.job.ExtractJob

class google.cloud.bigquery.job.**ExtractJob**(*job_id*, *source*, *destination_uris*, *client*, *job_config=None*)

Asynchronous job: extract data from a table into Cloud Storage.

Parameters

- **job_id** (*str*) – the job’s ID
- **source** (*google.cloud.bigquery.table.TableReference*) – Table into which data is to be loaded.
- **destination_uris** (*list of string*) – URIs describing where the extracted data will be written in Cloud Storage, using the format `gs://<bucket_name>/<object_name_or_glob>`.
- **client** (*google.cloud.bigquery.client.Client*) – A client which holds credentials and project configuration.
- **job_config** (*ExtractJobConfig*) – (Optional) Extra configuration options for the extract job.

__init__ (*job_id*, *source*, *destination_uris*, *client*, *job_config=None*)

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

Methods

<i>add_done_callback</i> (<i>fn</i>)	Add a callback to be executed when the operation is complete.
<i>cancel</i> ([<i>client</i>])	API call: cancel job via a POST request
<i>cancelled</i> ()	Check if the job has been cancelled.
<i>done</i> ([<i>retry</i>])	Refresh the job and checks if it is complete.
<i>exception</i> ([<i>timeout</i>])	Get the exception from the operation, blocking if necessary.
<i>exists</i> ([<i>client</i> , <i>retry</i>])	API call: test for the existence of the job via a GET request
<i>from_api_repr</i> (<i>resource</i> , <i>client</i>)	Factory: construct a job given its API representation
<i>reload</i> ([<i>client</i> , <i>retry</i>])	API call: refresh job properties via a GET request.
<i>result</i> ([<i>timeout</i>])	Start the job and wait for it to complete and get the result.
<i>running</i> ()	True if the operation is currently running.
<i>set_exception</i> (<i>exception</i>)	Set the Future’s exception.
<i>set_result</i> (<i>result</i>)	Set the Future’s result.

google.cloud.bigquery.job.ExtractJob.add_done_callback

ExtractJob.add_done_callback (*fn*)

Add a callback to be executed when the operation is complete.

If the operation is not already complete, this will start a helper thread to poll for the status of the operation in the background.

Parameters **fn** (*Callable[Future]*) – The callback to execute when the operation is complete.

google.cloud.bigquery.job.ExtractJob.cancel`ExtractJob.cancel (client=None)`

API call: cancel job via a POST request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/cancel>**Parameters** `client` (*Client* or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.**Return type** `bool`**Returns** Boolean indicating that the cancel request was sent.**google.cloud.bigquery.job.ExtractJob.cancelled**`ExtractJob.cancelled()`

Check if the job has been cancelled.

This always returns False. It's not possible to check if a job was cancelled in the API. This method is here to satisfy the interface for `google.api_core.future.Future`.**Return type** `bool`**Returns** False**google.cloud.bigquery.job.ExtractJob.done**`ExtractJob.done (retry=<google.api_core.retry.Retry object>)`

Refresh the job and checks if it is complete.

Parameters `retry` (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.**Return type** `bool`**Returns** True if the job is complete, False otherwise.**google.cloud.bigquery.job.ExtractJob.exception**`ExtractJob.exception (timeout=None)`

Get the exception from the operation, blocking if necessary.

Parameters `timeout` (*int*) – How long to wait for the operation to complete. If None, wait indefinitely.**Returns****The operation's** error.**Return type** `Optional[google.api_core.GoogleAPICallError]`**google.cloud.bigquery.job.ExtractJob.exists**`ExtractJob.exists (client=None, retry=<google.api_core.retry.Retry object>)`

API call: test for the existence of the job via a GET request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

Return type `bool`

Returns Boolean indicating existence of the job.

google.cloud.bigquery.job.ExtractJob.from_api_repr

classmethod `ExtractJob.from_api_repr(resource, client)`

Factory: construct a job given its API representation

Parameters

- **resource** (*dict*) – dataset job representation returned from the API
- **client** (*google.cloud.bigquery.client.Client*) – Client which holds credentials and project configuration for the dataset.

Return type *google.cloud.bigquery.job.ExtractJob*

Returns Job parsed from `resource`.

google.cloud.bigquery.job.ExtractJob.reload

`ExtractJob.reload(client=None, retry=<google.api_core.retry.Retry object>)`

API call: refresh job properties via a GET request.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

google.cloud.bigquery.job.ExtractJob.result

`ExtractJob.result(timeout=None)`

Start the job and wait for it to complete and get the result.

Parameters **timeout** (*float*) – How long (in seconds) to wait for job to complete before raising a `concurrent.futures.TimeoutError`.

Return type `_AsyncJob`

Returns This instance.

Raises `GoogleCloudError` if the job failed or `concurrent.futures.TimeoutError` if the job did not complete in the given timeout.

google.cloud.bigquery.job.ExtractJob.running`ExtractJob.running()`

True if the operation is currently running.

google.cloud.bigquery.job.ExtractJob.set_exception`ExtractJob.set_exception(exception)`

Set the Future's exception.

google.cloud.bigquery.job.ExtractJob.set_result`ExtractJob.set_result(result)`

Set the Future's result.

Attributes

<code>compression</code>	See <code>google.cloud.bigquery.job.ExtractJobConfig.compression</code> .
<code>created</code>	Datetime at which the job was created.
<code>destination_format</code>	See <code>google.cloud.bigquery.job.ExtractJobConfig.destination_format</code> .
<code>destination_uri_file_counts</code>	Return file counts from job statistics, if present.
<code>ended</code>	Datetime at which the job finished.
<code>error_result</code>	Error information about the job as a whole.
<code>errors</code>	Information about individual errors generated by the job.
<code>etag</code>	ETag for the job resource.
<code>field_delimiter</code>	See <code>google.cloud.bigquery.job.ExtractJobConfig.field_delimiter</code> .
<code>job_id</code>	<i>str</i> – ID of the job.
<code>job_type</code>	Type of job
<code>location</code>	<i>str</i> – Location where the job runs.
<code>path</code>	URL path for the job's APIs.
<code>print_header</code>	See <code>google.cloud.bigquery.job.ExtractJobConfig.print_header</code> .
<code>project</code>	Project bound to the job.
<code>self_link</code>	URL for the job resource.
<code>started</code>	Datetime at which the job was started.
<code>state</code>	Status of the job.
<code>user_email</code>	E-mail address of user who submitted the job.

google.cloud.bigquery.job.ExtractJob.compression`ExtractJob.compression`See `google.cloud.bigquery.job.ExtractJobConfig.compression`.

google.cloud.bigquery.job.ExtractJob.created**ExtractJob.created**

Datetime at which the job was created.

Return type `datetime.datetime`, or `NoneType`**Returns** the creation time (None until set from the server).**google.cloud.bigquery.job.ExtractJob.destination_format****ExtractJob.destination_format**See *google.cloud.bigquery.job.ExtractJobConfig.destination_format*.**google.cloud.bigquery.job.ExtractJob.destination_uri_file_counts****ExtractJob.destination_uri_file_counts**

Return file counts from job statistics, if present.

See: <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#statistics.extract.destinationUriFileCounts>**Returns** a list of integer counts, each representing the number of files per destination URI or URI pattern specified in the extract configuration. These values will be in the same order as the URIs specified in the 'destinationUris' field. Returns None if job is not yet complete.**google.cloud.bigquery.job.ExtractJob.ended****ExtractJob.ended**

Datetime at which the job finished.

Return type `datetime.datetime`, or `NoneType`**Returns** the end time (None until set from the server).**google.cloud.bigquery.job.ExtractJob.error_result****ExtractJob.error_result**

Error information about the job as a whole.

Return type mapping, or `NoneType`**Returns** the error information (None until set from the server).**google.cloud.bigquery.job.ExtractJob.errors****ExtractJob.errors**

Information about individual errors generated by the job.

Return type list of mappings, or `NoneType`**Returns** the error information (None until set from the server).

google.cloud.bigquery.job.ExtractJob.etag

`ExtractJob.etag`

ETag for the job resource.

Return type str, or `NoneType`

Returns the ETag (None until set from the server).

google.cloud.bigquery.job.ExtractJob.field_delimiter

`ExtractJob.field_delimiter`

See `google.cloud.bigquery.job.ExtractJobConfig.field_delimiter`.

google.cloud.bigquery.job.ExtractJob.job_id

`ExtractJob.job_id`

str – ID of the job.

google.cloud.bigquery.job.ExtractJob.job_type

`ExtractJob.job_type`

Type of job

Return type str

Returns one of 'load', 'copy', 'extract', 'query'

google.cloud.bigquery.job.ExtractJob.location

`ExtractJob.location`

str – Location where the job runs.

google.cloud.bigquery.job.ExtractJob.path

`ExtractJob.path`

URL path for the job's APIs.

Return type str

Returns the path based on project and job ID.

google.cloud.bigquery.job.ExtractJob.print_header

`ExtractJob.print_header`

See `google.cloud.bigquery.job.ExtractJobConfig.print_header`.

google.cloud.bigquery.job.ExtractJob.project

`ExtractJob.project`

Project bound to the job.

Return type `str`

Returns the project (derived from the client).

google.cloud.bigquery.job.ExtractJob.self_link

`ExtractJob.self_link`

URL for the job resource.

Return type `str`, or `NoneType`

Returns the URL (None until set from the server).

google.cloud.bigquery.job.ExtractJob.started

`ExtractJob.started`

Datetime at which the job was started.

Return type `datetime.datetime`, or `NoneType`

Returns the start time (None until set from the server).

google.cloud.bigquery.job.ExtractJob.state

`ExtractJob.state`

Status of the job.

Return type `str`, or `NoneType`

Returns the state (None until set from the server).

google.cloud.bigquery.job.ExtractJob.user_email

`ExtractJob.user_email`

E-mail address of user who submitted the job.

Return type `str`, or `NoneType`

Returns the URL (None until set from the server).

google.cloud.bigquery.job.UnknownJob

class `google.cloud.bigquery.job.UnknownJob(job_id, client)`

A job whose type cannot be determined.

__init__(*job_id, client*)

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

Methods

<code>add_done_callback(fn)</code>	Add a callback to be executed when the operation is complete.
<code>cancel([client])</code>	API call: cancel job via a POST request
<code>cancelled()</code>	Check if the job has been cancelled.
<code>done([retry])</code>	Refresh the job and checks if it is complete.
<code>exception([timeout])</code>	Get the exception from the operation, blocking if necessary.
<code>exists([client, retry])</code>	API call: test for the existence of the job via a GET request
<code>from_api_repr(resource, client)</code>	Construct an UnknownJob from the JSON representation.
<code>reload([client, retry])</code>	API call: refresh job properties via a GET request.
<code>result([timeout])</code>	Start the job and wait for it to complete and get the result.
<code>running()</code>	True if the operation is currently running.
<code>set_exception(exception)</code>	Set the Future's exception.
<code>set_result(result)</code>	Set the Future's result.

google.cloud.bigquery.job.UnknownJob.add_done_callback

`UnknownJob.add_done_callback(fn)`

Add a callback to be executed when the operation is complete.

If the operation is not already complete, this will start a helper thread to poll for the status of the operation in the background.

Parameters `fn` (`Callable[Future]`) – The callback to execute when the operation is complete.

google.cloud.bigquery.job.UnknownJob.cancel

`UnknownJob.cancel(client=None)`

API call: cancel job via a POST request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/cancel>

Parameters `client` (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.

Return type `bool`

Returns Boolean indicating that the cancel request was sent.

google.cloud.bigquery.job.UnknownJob.cancelled

`UnknownJob.cancelled()`

Check if the job has been cancelled.

This always returns False. It's not possible to check if a job was cancelled in the API. This method is here to satisfy the interface for `google.api_core.future.Future`.

Return type `bool`

Returns False

`google.cloud.bigquery.job.UnknownJob.done`

`UnknownJob.done` (*retry*=<`google.api_core.retry.Retry` object>)

Refresh the job and checks if it is complete.

Parameters **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Return type bool

Returns True if the job is complete, False otherwise.

`google.cloud.bigquery.job.UnknownJob.exception`

`UnknownJob.exception` (*timeout*=None)

Get the exception from the operation, blocking if necessary.

Parameters **timeout** (*int*) – How long to wait for the operation to complete. If None, wait indefinitely.

Returns

The operation's error.

Return type Optional[`google.api_core.GoogleAPICallError`]

`google.cloud.bigquery.job.UnknownJob.exists`

`UnknownJob.exists` (*client*=None, *retry*=<`google.api_core.retry.Retry` object>)

API call: test for the existence of the job via a GET request

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or NoneType) – the client to use. If not passed, falls back to the `client` stored on the current dataset.
- **retry** (`google.api_core.retry.Retry`) – (Optional) How to retry the RPC.

Return type bool

Returns Boolean indicating existence of the job.

`google.cloud.bigquery.job.UnknownJob.from_api_repr`

classmethod `UnknownJob.from_api_repr` (*resource*, *client*)

Construct an `UnknownJob` from the JSON representation.

Parameters

- **resource** (*dict*) – JSON representation of a job.
- **client** (`google.cloud.bigquery.client.Client`) – Client connected to BigQuery API.

Returns Job corresponding to the resource.

Return type *UnknownJob*

google.cloud.bigquery.job.UnknownJob.reload

`UnknownJob.reload(client=None, retry=<google.api_core.retry.Retry object>)`

API call: refresh job properties via a GET request.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs/get>

Parameters

- **client** (*Client* or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current dataset.
- **retry** (*google.api_core.retry.Retry*) – (Optional) How to retry the RPC.

google.cloud.bigquery.job.UnknownJob.result

`UnknownJob.result(timeout=None)`

Start the job and wait for it to complete and get the result.

Parameters **timeout** (*float*) – How long (in seconds) to wait for job to complete before raising a `concurrent.futures.TimeoutError`.

Return type `_AsyncJob`

Returns This instance.

Raises `GoogleCloudError` if the job failed or `concurrent.futures.TimeoutError` if the job did not complete in the given timeout.

google.cloud.bigquery.job.UnknownJob.running

`UnknownJob.running()`

True if the operation is currently running.

google.cloud.bigquery.job.UnknownJob.set_exception

`UnknownJob.set_exception(exception)`

Set the Future's exception.

google.cloud.bigquery.job.UnknownJob.set_result

`UnknownJob.set_result(result)`

Set the Future's result.

Attributes

<code>created</code>	Datetime at which the job was created.
<code>ended</code>	Datetime at which the job finished.
<code>error_result</code>	Error information about the job as a whole.
<code>errors</code>	Information about individual errors generated by the job.
<code>etag</code>	ETag for the job resource.
<code>job_id</code>	<i>str</i> – ID of the job.
<code>job_type</code>	Type of job
<code>location</code>	<i>str</i> – Location where the job runs.
<code>path</code>	URL path for the job's APIs.
<code>project</code>	Project bound to the job.
<code>self_link</code>	URL for the job resource.
<code>started</code>	Datetime at which the job was started.
<code>state</code>	Status of the job.
<code>user_email</code>	E-mail address of user who submitted the job.

`google.cloud.bigquery.job.UnknownJob.created`

`UnknownJob.created`

Datetime at which the job was created.

Return type `datetime.datetime`, or `NoneType`

Returns the creation time (None until set from the server).

`google.cloud.bigquery.job.UnknownJob.ended`

`UnknownJob.ended`

Datetime at which the job finished.

Return type `datetime.datetime`, or `NoneType`

Returns the end time (None until set from the server).

`google.cloud.bigquery.job.UnknownJob.error_result`

`UnknownJob.error_result`

Error information about the job as a whole.

Return type `mapping`, or `NoneType`

Returns the error information (None until set from the server).

`google.cloud.bigquery.job.UnknownJob.errors`

`UnknownJob.errors`

Information about individual errors generated by the job.

Return type `list of mappings`, or `NoneType`

Returns the error information (None until set from the server).

google.cloud.bigquery.job.UnknownJob.etag

`UnknownJob.etag`

ETag for the job resource.

Return type `str`, or `NoneType`

Returns the ETag (None until set from the server).

google.cloud.bigquery.job.UnknownJob.job_id

`UnknownJob.job_id`

str – ID of the job.

google.cloud.bigquery.job.UnknownJob.job_type

`UnknownJob.job_type`

Type of job

Return type `str`

Returns one of ‘load’, ‘copy’, ‘extract’, ‘query’

google.cloud.bigquery.job.UnknownJob.location

`UnknownJob.location`

str – Location where the job runs.

google.cloud.bigquery.job.UnknownJob.path

`UnknownJob.path`

URL path for the job’s APIs.

Return type `str`

Returns the path based on project and job ID.

google.cloud.bigquery.job.UnknownJob.project

`UnknownJob.project`

Project bound to the job.

Return type `str`

Returns the project (derived from the client).

google.cloud.bigquery.job.UnknownJob.self_link

`UnknownJob.self_link`

URL for the job resource.

Return type `str`, or `NoneType`

Returns the URL (None until set from the server).

`google.cloud.bigquery.job.UnknownJob.started`

`UnknownJob.started`

Datetime at which the job was started.

Return type `datetime.datetime`, or `NoneType`

Returns the start time (None until set from the server).

`google.cloud.bigquery.job.UnknownJob.state`

`UnknownJob.state`

Status of the job.

Return type `str`, or `NoneType`

Returns the state (None until set from the server).

`google.cloud.bigquery.job.UnknownJob.user_email`

`UnknownJob.user_email`

E-mail address of user who submitted the job.

Return type `str`, or `NoneType`

Returns the URL (None until set from the server).

Job-Related Types

<code>job.Compression</code>	The compression type to use for exported files.
<code>job.CreateDisposition</code>	Specifies whether the job is allowed to create new tables.
<code>job.DestinationFormat</code>	The exported file format.
<code>job.Encoding</code>	The character encoding of the data.
<code>job.QueryPriority</code>	Specifies a priority for the query.
<code>job.SourceFormat</code>	The format of the data files.
<code>job.WriteDisposition</code>	Specifies the action that occurs if destination table already exists.
<code>job.SchemaUpdateOption</code>	Specifies an update to the destination table schema as a side effect of a load job.

`google.cloud.bigquery.job.Compression`

class `google.cloud.bigquery.job.Compression`

The compression type to use for exported files. The default value is `NONE`.

`DEFLATE` and `SNAPPY` are only supported for Avro.

`__init__()`

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

Attributes

<i>DEFLATE</i>	Specifies DEFLATE format.
<i>GZIP</i>	Specifies GZIP format.
<i>NONE</i>	Specifies no compression.
<i>SNAPPY</i>	Specifies SNAPPY format.

google.cloud.bigquery.job.Compression.DEFLATE

`Compression.DEFLATE = 'DEFLATE'`
Specifies DEFLATE format.

google.cloud.bigquery.job.Compression.GZIP

`Compression.GZIP = 'GZIP'`
Specifies GZIP format.

google.cloud.bigquery.job.Compression.NONE

`Compression.NONE = 'NONE'`
Specifies no compression.

google.cloud.bigquery.job.Compression.SNAPPY

`Compression.SNAPPY = 'SNAPPY'`
Specifies SNAPPY format.

google.cloud.bigquery.job.CreateDisposition

class `google.cloud.bigquery.job.CreateDisposition`
Specifies whether the job is allowed to create new tables. The default value is `CREATE_IF_NEEDED`.

Creation, truncation and append actions occur as one atomic update upon job completion.

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

Attributes

<i>CREATE_IF_NEEDED</i>	If the table does not exist, BigQuery creates the table.
<i>CREATE_NEVER</i>	The table must already exist.

google.cloud.bigquery.job.CreateDisposition.CREATE_IF_NEEDED

`CreateDisposition.CREATE_IF_NEEDED = 'CREATE_IF_NEEDED'`
If the table does not exist, BigQuery creates the table.

google.cloud.bigquery.job.CreateDisposition.CREATE_NEVER

`CreateDisposition.CREATE_NEVER = 'CREATE_NEVER'`

The table must already exist. If it does not, a 'notFound' error is returned in the job result.

google.cloud.bigquery.job.DestinationFormat

class google.cloud.bigquery.job.DestinationFormat

The exported file format. The default value is *CSV*.

Tables with nested or repeated fields cannot be exported as CSV.

`__init__()`

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

Attributes

<i>AVRO</i>	Specifies Avro format.
<i>CSV</i>	Specifies CSV format.
<i>NEWLINE_DELIMITED_JSON</i>	Specifies newline delimited JSON format.

google.cloud.bigquery.job.DestinationFormat.AVRO

`DestinationFormat.AVRO = 'AVRO'`

Specifies Avro format.

google.cloud.bigquery.job.DestinationFormat.CSV

`DestinationFormat.CSV = 'CSV'`

Specifies CSV format.

google.cloud.bigquery.job.DestinationFormat.NEWLINE_DELIMITED_JSON

`DestinationFormat.NEWLINE_DELIMITED_JSON = 'NEWLINE_DELIMITED_JSON'`

Specifies newline delimited JSON format.

google.cloud.bigquery.job.Encoding

class google.cloud.bigquery.job.Encoding

The character encoding of the data. The default is *UTF_8*.

BigQuery decodes the data after the raw, binary data has been split using the values of the quote and fieldDelimiter properties.

`__init__()`

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

Attributes

<code>ISO_8859_1</code>	Specifies ISO-8859-1 encoding.
<code>UTF_8</code>	Specifies UTF-8 encoding.

`google.cloud.bigquery.job.Encoding.ISO_8859_1`

`Encoding.ISO_8859_1 = 'ISO-8859-1'`
 Specifies ISO-8859-1 encoding.

`google.cloud.bigquery.job.Encoding.UTF_8`

`Encoding.UTF_8 = 'UTF-8'`
 Specifies UTF-8 encoding.

`google.cloud.bigquery.job.QueryPriority`

class `google.cloud.bigquery.job.QueryPriority`
 Specifies a priority for the query. The default value is *INTERACTIVE*.

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

Attributes

<code>BATCH</code>	Specifies batch priority.
<code>INTERACTIVE</code>	Specifies interactive priority.

`google.cloud.bigquery.job.QueryPriority.BATCH`

`QueryPriority.BATCH = 'BATCH'`
 Specifies batch priority.

`google.cloud.bigquery.job.QueryPriority.INTERACTIVE`

`QueryPriority.INTERACTIVE = 'INTERACTIVE'`
 Specifies interactive priority.

`google.cloud.bigquery.job.SourceFormat`

class `google.cloud.bigquery.job.SourceFormat`
 The format of the data files. The default value is *CSV*.

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

Attributes

<i>AVRO</i>	Specifies Avro format.
<i>CSV</i>	Specifies CSV format.
<i>DATASTORE_BACKUP</i>	Specifies datastore backup format
<i>NEWLINE_DELIMITED_JSON</i>	Specifies newline delimited JSON format.
<i>ORC</i>	Specifies Orc format.
<i>PARQUET</i>	Specifies Parquet format.

google.cloud.bigquery.job.SourceFormat.AVRO

`SourceFormat.AVRO = 'AVRO'`
Specifies Avro format.

google.cloud.bigquery.job.SourceFormat.CSV

`SourceFormat.CSV = 'CSV'`
Specifies CSV format.

google.cloud.bigquery.job.SourceFormat.DATASTORE_BACKUP

`SourceFormat.DATASTORE_BACKUP = 'DATASTORE_BACKUP'`
Specifies datastore backup format

google.cloud.bigquery.job.SourceFormat.NEWLINE_DELIMITED_JSON

`SourceFormat.NEWLINE_DELIMITED_JSON = 'NEWLINE_DELIMITED_JSON'`
Specifies newline delimited JSON format.

google.cloud.bigquery.job.SourceFormat.ORC

`SourceFormat.ORC = 'ORC'`
Specifies Orc format.

google.cloud.bigquery.job.SourceFormat.PARQUET

`SourceFormat.PARQUET = 'PARQUET'`
Specifies Parquet format.

google.cloud.bigquery.job.WriteDisposition

class `google.cloud.bigquery.job.WriteDisposition`
Specifies the action that occurs if destination table already exists.

The default value is `WRITE_APPEND`.

Each action is atomic and only occurs if BigQuery is able to complete the job successfully. Creation, truncation and append actions occur as one atomic update upon job completion.

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

Attributes

<code>WRITE_APPEND</code>	If the table already exists, BigQuery appends the data to the table.
<code>WRITE_EMPTY</code>	If the table already exists and contains data, a ‘duplicate’ error is returned in the job result.
<code>WRITE_TRUNCATE</code>	If the table already exists, BigQuery overwrites the table data.

`google.cloud.bigquery.job.WriteDisposition.WRITE_APPEND`

`WriteDisposition.WRITE_APPEND = 'WRITE_APPEND'`
If the table already exists, BigQuery appends the data to the table.

`google.cloud.bigquery.job.WriteDisposition.WRITE_EMPTY`

`WriteDisposition.WRITE_EMPTY = 'WRITE_EMPTY'`
If the table already exists and contains data, a ‘duplicate’ error is returned in the job result.

`google.cloud.bigquery.job.WriteDisposition.WRITE_TRUNCATE`

`WriteDisposition.WRITE_TRUNCATE = 'WRITE_TRUNCATE'`
If the table already exists, BigQuery overwrites the table data.

`google.cloud.bigquery.job.SchemaUpdateOption`

class `google.cloud.bigquery.job.SchemaUpdateOption`
Specifies an update to the destination table schema as a side effect of a load job.

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

Attributes

<code>ALLOW_FIELD_ADDITION</code>	Allow adding a nullable field to the schema.
<code>ALLOW_FIELD_RELAXATION</code>	Allow relaxing a required field in the original schema to nullable.

google.cloud.bigquery.job.SchemaUpdateOption.ALLOW_FIELD_ADDITION

`SchemaUpdateOption.ALLOW_FIELD_ADDITION = 'ALLOW_FIELD_ADDITION'`

Allow adding a nullable field to the schema.

google.cloud.bigquery.job.SchemaUpdateOption.ALLOW_FIELD_RELAXATION

`SchemaUpdateOption.ALLOW_FIELD_RELAXATION = 'ALLOW_FIELD_RELAXATION'`

Allow relaxing a required field in the original schema to nullable.

3.1.3 Dataset

<code>dataset.Dataset(dataset_ref)</code>	Datasets are containers for tables.
<code>dataset.DatasetListItem(resource)</code>	A read-only dataset resource from a list operation.
<code>dataset.DatasetReference(project, dataset_id)</code>	DatasetReferences are pointers to datasets.
<code>dataset.AccessEntry(role, entity_type, entity_id)</code>	Represents grant of an access role to an entity.

google.cloud.bigquery.dataset.Dataset

class `google.cloud.bigquery.dataset.Dataset` (*dataset_ref*)

Datasets are containers for tables.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/datasets>

Parameters `dataset_ref` (`google.cloud.bigquery.dataset.DatasetReference`) – a pointer to a dataset

__init__ (*dataset_ref*)
Initialize self. See `help(type(self))` for accurate signature.

Methods

<code>from_api_repr(resource)</code>	Factory: construct a dataset given its API representation
<code>from_string(full_dataset_id)</code>	Construct a dataset from fully-qualified dataset ID.
<code>table(table_id)</code>	Constructs a <code>TableReference</code> .
<code>to_api_repr()</code>	Construct the API resource representation of this dataset

google.cloud.bigquery.dataset.Dataset.from_api_repr

classmethod `Dataset.from_api_repr` (*resource*)

Factory: construct a dataset given its API representation

Parameters (`Dict[str, resource]` – object): Dataset resource representation returned from the API

Returns Dataset parsed from `resource`.

Return type *google.cloud.bigquery.dataset.Dataset*

google.cloud.bigquery.dataset.Dataset.from_string

classmethod `Dataset.from_string(full_dataset_id)`

Construct a dataset from fully-qualified dataset ID.

Parameters `full_dataset_id` (*str*) – A fully-qualified dataset ID in standard SQL format. Must include both the project ID and the dataset ID, separated by ..

Returns Dataset parsed from `full_dataset_id`.

Return type *Dataset*

Examples

```
>>> Dataset.from_string('my-project-id.some_dataset')
Dataset(DatasetReference('my-project-id', 'some_dataset'))
```

Raises *ValueError* – If `full_dataset_id` is not a fully-qualified dataset ID in standard SQL format.

google.cloud.bigquery.dataset.Dataset.table

`Dataset.table(table_id)`

Constructs a *TableReference*.

Parameters `table_id` (*str*) – the ID of the table.

Returns A *TableReference* for a table in this dataset.

Return type *google.cloud.bigquery.table.TableReference*

google.cloud.bigquery.dataset.Dataset.to_api_repr

`Dataset.to_api_repr()`

Construct the API resource representation of this dataset

Returns The dataset represented as an API resource

Return type `Dict[str, object]`

Attributes

<code>access_entries</code>	<i>List[google.cloud.bigquery.dataset.AccessEntry]</i> – Dataset's access entries.
<code>created</code>	<i>Union[datetime.datetime, None]</i> – Datetime at which the dataset was created (<i>None</i> until set from the server).
<code>dataset_id</code>	<i>str</i> – Dataset ID.

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<code>default_table_expiration_ms</code>	<code>Union[int, None]</code> – Default expiration time for tables in the dataset (defaults to <code>None</code>).
<code>description</code>	<code>Union[str, None]</code> – Description of the dataset as set by the user (defaults to <code>None</code>).
<code>etag</code>	<code>Union[str, None]</code> – ETag for the dataset resource (<code>None</code> until set from the server).
<code>friendly_name</code>	<code>Union[str, None]</code> – Title of the dataset as set by the user (defaults to <code>None</code>).
<code>full_dataset_id</code>	<code>Union[str, None]</code> – ID for the dataset resource (<code>None</code> until set from the server)
<code>labels</code>	<code>Dict[str, str]</code> – Labels for the dataset.
<code>location</code>	<code>Union[str, None]</code> – Location in which the dataset is hosted as set by the user (defaults to <code>None</code>).
<code>modified</code>	<code>Union[datetime.datetime, None]</code> – Datetime at which the dataset was last modified (<code>None</code> until set from the server).
<code>path</code>	<code>str</code> – URL path for the dataset based on project and dataset ID.
<code>project</code>	<code>str</code> – Project ID of the project bound to the dataset.
<code>reference</code>	<code>google.cloud.bigquery.dataset.DatasetReference</code> – A reference to this dataset.
<code>self_link</code>	<code>Union[str, None]</code> – URL for the dataset resource (<code>None</code> until set from the server).

google.cloud.bigquery.dataset.Dataset.access_entries**Dataset.access_entries**`List[google.cloud.bigquery.dataset.AccessEntry]` – Dataset’s access entries.role augments the entity type and must be present **unless** the entity type is view.**Raises**

- `TypeError` – If ‘value’ is not a sequence
- `ValueError` – If any item in the sequence is not an `AccessEntry`.

google.cloud.bigquery.dataset.Dataset.created**Dataset.created**`Union[datetime.datetime, None]` – Datetime at which the dataset was created (`None` until set from the server).**google.cloud.bigquery.dataset.Dataset.dataset_id****Dataset.dataset_id**`str` – Dataset ID.

google.cloud.bigquery.dataset.Dataset.default_table_expiration_ms**Dataset.default_table_expiration_ms***Union[int, None]* – Default expiration time for tables in the dataset (defaults to `None`).**Raises** `ValueError` – For invalid value types.**google.cloud.bigquery.dataset.Dataset.description****Dataset.description***Union[str, None]* – Description of the dataset as set by the user (defaults to `None`).**Raises** `ValueError` – for invalid value types.**google.cloud.bigquery.dataset.Dataset.etag****Dataset.etag***Union[str, None]* – ETag for the dataset resource (`None` until set from the server).**google.cloud.bigquery.dataset.Dataset.friendly_name****Dataset.friendly_name***Union[str, None]* – Title of the dataset as set by the user (defaults to `None`).**Raises** `ValueError` – for invalid value types.**google.cloud.bigquery.dataset.Dataset.full_dataset_id****Dataset.full_dataset_id***Union[str, None]* – ID for the dataset resource (`None` until set from the server)In the format `project_id:dataset_id`.**google.cloud.bigquery.dataset.Dataset.labels****Dataset.labels***Dict[str, str]* – Labels for the dataset.

This method always returns a dict. To change a dataset's labels, modify the dict, then call `google.cloud.bigquery.client.Client.update_dataset()`. To delete a label, set its value to `None` before updating.

Raises `ValueError` – for invalid value types.**google.cloud.bigquery.dataset.Dataset.location****Dataset.location***Union[str, None]* – Location in which the dataset is hosted as set by the user (defaults to `None`).**Raises** `ValueError` – for invalid value types.

google.cloud.bigquery.dataset.Dataset.modified**Dataset.modified**

Union[datetime.datetime, None] – Datetime at which the dataset was last modified (*None* until set from the server).

google.cloud.bigquery.dataset.Dataset.path**Dataset.path**

str – URL path for the dataset based on project and dataset ID.

google.cloud.bigquery.dataset.Dataset.project**Dataset.project**

str – Project ID of the project bound to the dataset.

google.cloud.bigquery.dataset.Dataset.reference**Dataset.reference**

google.cloud.bigquery.dataset.DatasetReference – A reference to this dataset.

google.cloud.bigquery.dataset.Dataset.self_link**Dataset.self_link**

Union[str, None] – URL for the dataset resource (*None* until set from the server).

google.cloud.bigquery.dataset.DatasetListItem**class google.cloud.bigquery.dataset.DatasetListItem(resource)**

A read-only dataset resource from a list operation.

For performance reasons, the BigQuery API only includes some of the dataset properties when listing datasets. Notably, *access_entries* is missing.

For a full list of the properties that the BigQuery API returns, see the [REST documentation for datasets.list](#).

Parameters **resource** (*Dict[str, str]*) – A dataset-like resource object from a dataset list response. A *datasetReference* property is required.

Raises *ValueError* – If *datasetReference* or one of its required members is missing from *resource*.

__init__(*resource*)

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

Methods

table(*table_id*)

Constructs a *TableReference*.

google.cloud.bigquery.dataset.DatasetListItem.table

`DatasetListItem.table(table_id)`

Constructs a `TableReference`.

Parameters `table_id` (*str*) – the ID of the table.

Returns A `TableReference` for a table in this dataset.

Return type *google.cloud.bigquery.table.TableReference*

Attributes

<i>dataset_id</i>	<i>str</i> – Dataset ID.
<i>friendly_name</i>	<i>Union[str, None]</i> – Title of the dataset as set by the user (defaults to <code>None</code>).
<i>full_dataset_id</i>	<i>Union[str, None]</i> – ID for the dataset resource (<code>None</code> until set from the server)
<i>labels</i>	<i>Dict[str, str]</i> – Labels for the dataset.
<i>project</i>	<i>str</i> – Project bound to the dataset.
<i>reference</i>	<i>google.cloud.bigquery.dataset.DatasetReference</i> – A reference to this dataset.

google.cloud.bigquery.dataset.DatasetListItem.dataset_id

`DatasetListItem.dataset_id`

str – Dataset ID.

google.cloud.bigquery.dataset.DatasetListItem.friendly_name

`DatasetListItem.friendly_name`

Union[str, None] – Title of the dataset as set by the user (defaults to `None`).

google.cloud.bigquery.dataset.DatasetListItem.full_dataset_id

`DatasetListItem.full_dataset_id`

Union[str, None] – ID for the dataset resource (`None` until set from the server)

In the format `project_id:dataset_id`.

google.cloud.bigquery.dataset.DatasetListItem.labels

`DatasetListItem.labels`

Dict[str, str] – Labels for the dataset.

google.cloud.bigquery.dataset.DatasetListItem.project

`DatasetListItem.project`

str – Project bound to the dataset.

google.cloud.bigquery.dataset.DatasetListItem.reference

`DatasetListItem.reference`

google.cloud.bigquery.dataset.DatasetReference – A reference to this dataset.

google.cloud.bigquery.dataset.DatasetReference

class `google.cloud.bigquery.dataset.DatasetReference` (*project*, *dataset_id*)
DatasetReferences are pointers to datasets.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/datasets>

Parameters

- **project** (*str*) – The ID of the project
- **dataset_id** (*str*) – The ID of the dataset

Raises `ValueError` – If either argument is not of type `str`.

__init__ (*project*, *dataset_id*)
Initialize self. See `help(type(self))` for accurate signature.

Methods

<code>from_api_repr(resource)</code>	Factory: construct a dataset reference given its API representation
<code>from_string(full_dataset_id)</code>	Construct a dataset reference from fully-qualified dataset ID.
<code>table(table_id)</code>	Constructs a <code>TableReference</code> .
<code>to_api_repr()</code>	Construct the API resource representation of this dataset reference

google.cloud.bigquery.dataset.DatasetReference.from_api_repr

classmethod `DatasetReference.from_api_repr` (*resource*)

Factory: construct a dataset reference given its API representation

Parameters **resource** (`Dict[str, str]`) – Dataset reference resource representation returned from the API

Returns Dataset reference parsed from *resource*.

Return type *google.cloud.bigquery.dataset.DatasetReference*

google.cloud.bigquery.dataset.DatasetReference.from_string

classmethod `DatasetReference.from_string` (*full_dataset_id*)

Construct a dataset reference from fully-qualified dataset ID.

Parameters **full_dataset_id** (*str*) – A fully-qualified dataset ID in standard SQL format. Must include both the project ID and the dataset ID, separated by `..`

Returns Dataset reference parsed from *full_dataset_id*.

Return type *DatasetReference*

Examples

```
>>> DatasetReference.from_string('my-project-id.some_dataset')
DatasetReference('my-project-id', 'some_dataset')
```

Raises *ValueError* – If `full_dataset_id` is not a fully-qualified dataset ID in standard SQL format.

google.cloud.bigquery.dataset.DatasetReference.table

`DatasetReference.table(table_id)`

Constructs a *TableReference*.

Parameters `table_id` (*str*) – The ID of the table.

Returns A table reference for a table in this dataset.

Return type *google.cloud.bigquery.table.TableReference*

google.cloud.bigquery.dataset.DatasetReference.to_api_repr

`DatasetReference.to_api_repr()`

Construct the API resource representation of this dataset reference

Returns dataset reference represented as an API resource

Return type `Dict[str, str]`

Attributes

<i>dataset_id</i>	<i>str</i> – Dataset ID.
<i>path</i>	<i>str</i> – URL path for the dataset based on project and dataset ID.
<i>project</i>	<i>str</i> – Project ID of the dataset.

google.cloud.bigquery.dataset.DatasetReference.dataset_id

`DatasetReference.dataset_id`

str – Dataset ID.

google.cloud.bigquery.dataset.DatasetReference.path

`DatasetReference.path`

str – URL path for the dataset based on project and dataset ID.

google.cloud.bigquery.dataset.DatasetReference.project

`DatasetReference.project`
str – Project ID of the dataset.

google.cloud.bigquery.dataset.AccessEntry

class `google.cloud.bigquery.dataset.AccessEntry` (*role, entity_type, entity_id*)
Represents grant of an access role to an entity.

An entry must have exactly one of the allowed `ENTITY_TYPES`. If anything but `view` is set, a role is also required. `role` is omitted for a view, because views are always read-only.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/datasets>.

role
str – Role granted to the entity. The following string values are supported: `'READER'`, `'WRITER'`, `'OWNER'`. It may also be `None` if the `entity_type` is `view`.

entity_type
str – Type of entity being granted the role. One of `ENTITY_TYPES`.

entity_id
`Union[str, Dict[str, str]]` – If the `entity_type` is not `'view'`, the `entity_id` is the `str` ID of the entity being granted the role. If the `entity_type` is `'view'`, the `entity_id` is a dict representing the view from a different dataset to grant access to in the following format:

```
{
    'projectId': string,
    'datasetId': string,
    'tableId': string
}
```

Raises `ValueError` – If the `entity_type` is not among `ENTITY_TYPES`, or if a view has role set, or a non view **does not** have a role set.

Examples

```
>>> entry = AccessEntry('OWNER', 'userByEmail', 'user@example.com')
```

```
>>> view = {
...     'projectId': 'my-project',
...     'datasetId': 'my_dataset',
...     'tableId': 'my_table'
... }
>>> entry = AccessEntry(None, 'view', view)
```

__init__ (*role, entity_type, entity_id*)
Initialize self. See `help(type(self))` for accurate signature.

Methods

<code>from_api_repr(resource)</code>	Factory: construct an access entry given its API representation
<code>to_api_repr()</code>	Construct the API resource representation of this access entry

`google.cloud.bigquery.dataset.AccessEntry.from_api_repr`

classmethod `AccessEntry.from_api_repr(resource)`

Factory: construct an access entry given its API representation

Parameters `resource` (`Dict[str, object]`) – Access entry resource representation returned from the API

Returns Access entry parsed from `resource`.

Return type `google.cloud.bigquery.dataset.AccessEntry`

Raises `ValueError` – If the resource has more keys than `role` and one additional key.

`google.cloud.bigquery.dataset.AccessEntry.to_api_repr`

`AccessEntry.to_api_repr()`

Construct the API resource representation of this access entry

Returns Access entry represented as an API resource

Return type `Dict[str, object]`

Attributes

<code>ENTITY_TYPES</code>	Allowed entity types.
---------------------------	-----------------------

`google.cloud.bigquery.dataset.AccessEntry.ENTITY_TYPES`

`AccessEntry.ENTITY_TYPES = frozenset({'userByEmail', 'specialGroup', 'view', 'domain', 'domainReference'})`
Allowed entity types.

3.1.4 Table

<code>table.Table(table_ref[, schema])</code>	Tables represent a set of rows whose values correspond to a schema.
<code>table.TableListItem(resource)</code>	A read-only table resource from a list operation.
<code>table.TableReference(dataset_ref, table_id)</code>	TableReferences are pointers to tables.
<code>table.Row(values, field_to_index)</code>	A BigQuery row.
<code>table.RowIterator(client, api_request, path, ...)</code>	A class for iterating through HTTP/JSON API row list responses.
<code>table.EncryptionConfiguration([kms_key_name])</code>	Custom encryption configuration (e.g., Cloud KMS keys).
<code>table.TimePartitioning([type_, field, ...])</code>	Configures time-based partitioning for a table.

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<code>table.TimePartitioningType</code>	Specifies the type of time partitioning to perform.
---	---

google.cloud.bigquery.table.Table

class `google.cloud.bigquery.table.Table` (*table_ref*, *schema=None*)

Tables represent a set of rows whose values correspond to a schema.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables>

Parameters

- **table_ref** (`google.cloud.bigquery.table.TableReference`) – A pointer to a table
- **schema** (`List[google.cloud.bigquery.schema.SchemaField]`) – The table's schema

__init__ (*table_ref*, *schema=None*)

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a table given its API representation
<code>from_string(full_table_id)</code>	Construct a table from fully-qualified table ID.
<code>to_api_repr()</code>	Constructs the API resource of this table

google.cloud.bigquery.table.Table.from_api_repr

classmethod `Table.from_api_repr` (*resource*)

Factory: construct a table given its API representation

Parameters

- **resource** (`Dict[str, object]`) – Table resource representation from the API
- **dataset** (`google.cloud.bigquery.dataset.Dataset`) – The dataset containing the table.

Returns Table parsed from resource.

Return type `google.cloud.bigquery.table.Table`

Raises `KeyError` – If the `resource` lacks the key 'tableReference', or if the dict stored within the key 'tableReference' lacks the keys 'tableId', 'projectId', or 'datasetId'.

google.cloud.bigquery.table.Table.from_string

classmethod `Table.from_string` (*full_table_id*)

Construct a table from fully-qualified table ID.

Parameters **full_table_id** (*str*) – A fully-qualified table ID in standard SQL format. Must include a project ID, dataset ID, and table ID, each separated by `..`

Returns Table parsed from `full_table_id`.

Return type *Table*

Examples

```
>>> Table.from_string('my-project.mydataset.mytable')
Table(TableRef...(D...('my-project', 'mydataset'), 'mytable'))
```

Raises *ValueError* – If `full_table_id` is not a fully-qualified table ID in standard SQL format.

google.cloud.bigquery.table.Table.to_api_repr

`Table.to_api_repr()`

Constructs the API resource of this table

Returns Table represented as an API resource

Return type `Dict[str, object]`

Attributes

<i>created</i>	<i>Union[datetime.datetime, None]</i> – Datetime at which the table was created (<i>None</i> until set from the server).
<i>dataset_id</i>	<i>str</i> – ID of dataset containing the table.
<i>description</i>	<i>Union[str, None]</i> – Description of the table (defaults to <i>None</i>).
<i>encryption_configuration</i>	<i>google.cloud.bigquery.table.EncryptionConfiguration</i> – Custom encryption configuration for the table.
<i>etag</i>	<i>Union[str, None]</i> – ETag for the table resource (<i>None</i> until set from the server).
<i>expires</i>	<i>Union[datetime.datetime, None]</i> – Datetime at which the table will be deleted.
<i>external_data_configuration</i>	<i>Union[google.cloud.bigquery.ExternalConfig, None]</i> – Configuration for an external data source (defaults to <i>None</i>).
<i>friendly_name</i>	<i>Union[str, None]</i> – Title of the table (defaults to <i>None</i>).
<i>full_table_id</i>	<i>Union[str, None]</i> – ID for the table (<i>None</i> until set from the server).
<i>labels</i>	<i>Dict[str, str]</i> – Labels for the table.
<i>location</i>	<i>Union[str, None]</i> – Location in which the table is hosted (defaults to <i>None</i>).
<i>modified</i>	<i>Union[datetime.datetime, None]</i> – Datetime at which the table was last modified (<i>None</i> until set from the server).
<i>num_bytes</i>	<i>Union[int, None]</i> – The size of the table in bytes (<i>None</i> until set from the server).

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<code>num_rows</code>	<i>Union[int, None]</i> – The number of rows in the table (<i>None</i> until set from the server).
<code>partition_expiration</code>	<i>Union[int, None]</i> – Expiration time in milliseconds for a partition.
<code>partitioning_type</code>	<i>Union[str, None]</i> – Time partitioning of the table if it is partitioned (Defaults to <i>None</i>).
<code>path</code>	<i>str</i> – URL path for the table’s APIs.
<code>project</code>	<i>str</i> – Project bound to the table.
<code>reference</code>	A <i>TableReference</i> pointing to this table.
<code>schema</code>	<i>List[google.cloud.bigquery.schema.SchemaField]</i> – Table’s schema.
<code>self_link</code>	<i>Union[str, None]</i> – URL for the table resource (<i>None</i> until set from the server).
<code>streaming_buffer</code>	<i>google.cloud.bigquery.StreamingBuffer</i> – Information about a table’s streaming buffer.
<code>table_id</code>	<i>str</i> – ID of the table.
<code>table_type</code>	<i>Union[str, None]</i> – The type of the table (<i>None</i> until set from the server).
<code>time_partitioning</code>	<i>google.cloud.bigquery.table.TimePartitioning</i> – Configures time-based partitioning for a table.
<code>view_query</code>	<i>Union[str, None]</i> – SQL query defining the table as a view (defaults to <i>None</i>).
<code>view_use_legacy_sql</code>	<i>bool</i> – Specifies whether to execute the view with Legacy or Standard SQL.

google.cloud.bigquery.table.Table.created**Table.created**

Union[datetime.datetime, None] – Datetime at which the table was created (*None* until set from the server).

google.cloud.bigquery.table.Table.dataset_id**Table.dataset_id**

str – ID of dataset containing the table.

google.cloud.bigquery.table.Table.description**Table.description**

Union[str, None] – Description of the table (defaults to *None*).

Raises *ValueError* – For invalid value types.

google.cloud.bigquery.table.Table.encryption_configuration**Table.encryption_configuration**

google.cloud.bigquery.table.EncryptionConfiguration – Custom encryption configuration for the table.

Custom encryption configuration (e.g., Cloud KMS keys) or *None* if using default encryption.

See [protecting data with Cloud KMS keys](#) in the BigQuery documentation.

google.cloud.bigquery.table.Table.etag**Table.etag**

Union[str, None] – ETag for the table resource (*None* until set from the server).

google.cloud.bigquery.table.Table.expires**Table.expires**

Union[datetime.datetime, None] – Datetime at which the table will be deleted.

Raises *ValueError* – For invalid value types.

google.cloud.bigquery.table.Table.external_data_configuration**Table.external_data_configuration**

Union[google.cloud.bigquery.ExternalConfig, None] – Configuration for an external data source (defaults to *None*).

Raises *ValueError* – For invalid value types.

google.cloud.bigquery.table.Table.friendly_name**Table.friendly_name**

Union[str, None] – Title of the table (defaults to *None*).

Raises *ValueError* – For invalid value types.

google.cloud.bigquery.table.Table.full_table_id**Table.full_table_id**

Union[str, None] – ID for the table (*None* until set from the server).

In the format `project_id:dataset_id.table_id`.

google.cloud.bigquery.table.Table.labels**Table.labels**

Dict[str, str] – Labels for the table.

This method always returns a dict. To change a table's labels, modify the dict, then call `Client.update_table`. To delete a label, set its value to *None* before updating.

Raises *ValueError* – If value type is invalid.

google.cloud.bigquery.table.Table.location**Table.location**

Union[str, None] – Location in which the table is hosted (defaults to *None*).

Raises *ValueError* – For invalid value types.

google.cloud.bigquery.table.Table.modified**Table.modified**

Union[datetime.datetime, None] – Datetime at which the table was last modified (*None* until set from the server).

google.cloud.bigquery.table.Table.num_bytes**Table.num_bytes**

Union[int, None] – The size of the table in bytes (*None* until set from the server).

google.cloud.bigquery.table.Table.num_rows**Table.num_rows**

Union[int, None] – The number of rows in the table (*None* until set from the server).

google.cloud.bigquery.table.Table.partition_expiration**Table.partition_expiration**

Union[int, None] – Expiration time in milliseconds for a partition.

If *partition_expiration* is set and *type_* is not set, *type_* will default to *DAY*.

google.cloud.bigquery.table.Table.partitioning_type**Table.partitioning_type**

Union[str, None] – Time partitioning of the table if it is partitioned (Defaults to *None*).

The only partitioning type that is currently supported is *DAY*.

google.cloud.bigquery.table.Table.path**Table.path**

str – URL path for the table's APIs.

google.cloud.bigquery.table.Table.project**Table.project**

str – Project bound to the table.

google.cloud.bigquery.table.Table.reference**Table.reference**

A *TableReference* pointing to this table.

Returns pointer to this table.

Return type *google.cloud.bigquery.table.TableReference*

google.cloud.bigquery.table.Table.schema**Table.schema**

List[google.cloud.bigquery.schema.SchemaField] – Table’s schema.

Raises

- `TypeError` – If ‘value’ is not a sequence
- `ValueError` – If any item in the sequence is not a *SchemaField*

google.cloud.bigquery.table.Table.self_link**Table.self_link**

Union[str, None] – URL for the table resource (`None` until set from the server).

google.cloud.bigquery.table.Table.streaming_buffer**Table.streaming_buffer**

google.cloud.bigquery.StreamingBuffer – Information about a table’s streaming buffer.

google.cloud.bigquery.table.Table.table_id**Table.table_id**

str – ID of the table.

google.cloud.bigquery.table.Table.table_type**Table.table_type**

Union[str, None] – The type of the table (`None` until set from the server).

Possible values are 'TABLE', 'VIEW', or 'EXTERNAL'.

google.cloud.bigquery.table.Table.time_partitioning**Table.time_partitioning**

google.cloud.bigquery.table.TimePartitioning – Configures time-based partitioning for a table.

Raises `ValueError` – If the value is not *TimePartitioning* or `None`.

google.cloud.bigquery.table.Table.view_query**Table.view_query**

Union[str, None] – SQL query defining the table as a view (defaults to `None`).

By default, the query is treated as Standard SQL. To use Legacy SQL, set *view_use_legacy_sql* to `True`.

Raises `ValueError` – For invalid value types.

google.cloud.bigquery.table.Table.view_use_legacy_sql**Table.view_use_legacy_sql**

bool – Specifies whether to execute the view with Legacy or Standard SQL.

This boolean specifies whether to execute the view with Legacy SQL (`True`) or Standard SQL (`False`). The client side default is `False`. The server-side default is `True`. If this table is not a view, `None` is returned.

Raises `ValueError` – For invalid value types.

google.cloud.bigquery.table.TableListItem

class google.cloud.bigquery.table.**TableListItem**(*resource*)

A read-only table resource from a list operation.

For performance reasons, the BigQuery API only includes some of the table properties when listing tables. Notably, `schema` and `num_rows` are missing.

For a full list of the properties that the BigQuery API returns, see the [REST documentation for tables.list](#).

Parameters **resource** (`Dict[str, object]`) – A table-like resource object from a table list response. A `tableReference` property is required.

Raises `ValueError` – If `tableReference` or one of its required members is missing from `resource`.

__init__(*resource*)

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

Methods**Attributes**

<code>dataset_id</code>	<code>str</code> – ID of dataset containing the table.
<code>friendly_name</code>	<code>Union[str, None]</code> – Title of the table (defaults to <code>None</code>).
<code>full_table_id</code>	<code>Union[str, None]</code> – ID for the table (<code>None</code> until set from the server).
<code>labels</code>	<code>Dict[str, str]</code> – Labels for the table.
<code>partition_expiration</code>	<code>Union[int, None]</code> – Expiration time in milliseconds for a partition.
<code>partitioning_type</code>	<code>Union[str, None]</code> – Time partitioning of the table if it is partitioned (Defaults to <code>None</code>).
<code>project</code>	<code>str</code> – Project bound to the table.
<code>reference</code>	A <code>TableReference</code> pointing to this table.
<code>table_id</code>	<code>str</code> – ID of the table.
<code>table_type</code>	<code>Union[str, None]</code> – The type of the table (<code>None</code> until set from the server).
<code>time_partitioning</code>	<code>google.cloud.bigquery.table.TimePartitioning</code> – Configures time-based partitioning for a table.

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<code>view_use_legacy_sql</code>	<code>bool</code> – Specifies whether to execute the view with Legacy or Standard SQL.
----------------------------------	--

google.cloud.bigquery.table.TableListItem.dataset_id`TableListItem.dataset_id`*str* – ID of dataset containing the table.**google.cloud.bigquery.table.TableListItem.friendly_name**`TableListItem.friendly_name`*Union[str, None]* – Title of the table (defaults to `None`).**google.cloud.bigquery.table.TableListItem.full_table_id**`TableListItem.full_table_id`*Union[str, None]* – ID for the table (`None` until set from the server).In the format `project_id:dataset_id.table_id`.**google.cloud.bigquery.table.TableListItem.labels**`TableListItem.labels`*Dict[str, str]* – Labels for the table.

This method always returns a dict. To change a table's labels, modify the dict, then call `Client.update_table`. To delete a label, set its value to `None` before updating.

google.cloud.bigquery.table.TableListItem.partition_expiration`TableListItem.partition_expiration`*Union[int, None]* – Expiration time in milliseconds for a partition.If this property is set and `type_` is not set, `type_` will default to `TimePartitioningType.DAY`.**google.cloud.bigquery.table.TableListItem.partitioning_type**`TableListItem.partitioning_type`*Union[str, None]* – Time partitioning of the table if it is partitioned (Defaults to `None`).**google.cloud.bigquery.table.TableListItem.project**`TableListItem.project`*str* – Project bound to the table.

google.cloud.bigquery.table.TableListItem.reference

TableListItem.**reference**

A *TableReference* pointing to this table.

Returns pointer to this table.

Return type *google.cloud.bigquery.table.TableReference*

google.cloud.bigquery.table.TableListItem.table_id

TableListItem.**table_id**

str – ID of the table.

google.cloud.bigquery.table.TableListItem.table_type

TableListItem.**table_type**

Union[str, None] – The type of the table (*None* until set from the server).

Possible values are 'TABLE', 'VIEW', or 'EXTERNAL'.

google.cloud.bigquery.table.TableListItem.time_partitioning

TableListItem.**time_partitioning**

google.cloud.bigquery.table.TimePartitioning – Configures time-based partitioning for a table.

google.cloud.bigquery.table.TableListItem.view_use_legacy_sql

TableListItem.**view_use_legacy_sql**

bool – Specifies whether to execute the view with Legacy or Standard SQL.

This boolean specifies whether to execute the view with Legacy SQL (*True*) or Standard SQL (*False*). The client side default is *False*. The server-side default is *True*. If this table is not a view, *None* is returned.

Raises *ValueError* – For invalid value types.

google.cloud.bigquery.table.TableReference

class google.cloud.bigquery.table.**TableReference** (*dataset_ref, table_id*)

TableReferences are pointers to tables.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables>

Parameters

- **dataset_ref** (*google.cloud.bigquery.dataset.DatasetReference*)
– A pointer to the dataset
- **table_id** (*str*) – The ID of the table

__init__ (*dataset_ref, table_id*)

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a table reference given its API representation
<code>from_string(full_table_id)</code>	Construct a table reference from fully-qualified table ID.
<code>to_api_repr()</code>	Construct the API resource representation of this table reference.

`google.cloud.bigquery.table.TableReference.from_api_repr`

classmethod `TableReference.from_api_repr(resource)`

Factory: construct a table reference given its API representation

Parameters `resource` (`Dict[str, object]`) – Table reference representation returned from the API

Returns Table reference parsed from `resource`.

Return type `google.cloud.bigquery.table.TableReference`

`google.cloud.bigquery.table.TableReference.from_string`

classmethod `TableReference.from_string(full_table_id)`

Construct a table reference from fully-qualified table ID.

Parameters `full_table_id` (`str`) – A fully-qualified table ID in standard SQL format. Must include a project ID, dataset ID, and table ID, each separated by `.`

Returns Table reference parsed from `full_table_id`.

Return type `TableReference`

Examples

```
>>> TableReference.from_string('my-project.mydataset.mytable')
TableRef...(DatasetRef...(my-project', 'mydataset'), 'mytable')
```

Raises `ValueError` – If `full_table_id` is not a fully-qualified table ID in standard SQL format.

`google.cloud.bigquery.table.TableReference.to_api_repr`

`TableReference.to_api_repr()`

Construct the API resource representation of this table reference.

Returns Table reference represented as an API resource

Return type `Dict[str, object]`

Attributes

<code>dataset_id</code>	<i>str</i> – ID of dataset containing the table.
<code>path</code>	<i>str</i> – URL path for the table’s APIs.
<code>project</code>	<i>str</i> – Project bound to the table
<code>table_id</code>	<i>str</i> – The table ID.

`google.cloud.bigquery.table.TableReference.dataset_id`

`TableReference.dataset_id`
str – ID of dataset containing the table.

`google.cloud.bigquery.table.TableReference.path`

`TableReference.path`
str – URL path for the table’s APIs.

`google.cloud.bigquery.table.TableReference.project`

`TableReference.project`
str – Project bound to the table

`google.cloud.bigquery.table.TableReference.table_id`

`TableReference.table_id`
str – The table ID.

`google.cloud.bigquery.table.Row`

class `google.cloud.bigquery.table.Row`(*values*, *field_to_index*)
A BigQuery row.

Values can be accessed by position (index), by key like a dict, or as properties.

Parameters

- **values** (*Sequence[object]*) – The row values
- **field_to_index** (*Dict[str, int]*) – A mapping from schema field names to indexes

`__init__`(*values*, *field_to_index*)
Initialize self. See `help(type(self))` for accurate signature.

Methods

<code>get(key[, default])</code>	Return a value for key, with a default value if it does not exist.
----------------------------------	--

Continued on next page

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<code>items()</code>	Return items as (key, value) pairs.
<code>keys()</code>	Return the keys for using a row as a dict.
<code>values()</code>	Return the values included in this row.

google.cloud.bigquery.table.Row.get`Row.get (key, default=None)`

Return a value for key, with a default value if it does not exist.

Parameters

- **key** (*str*) – The key of the column to access
- **default** (*object*) – The default value to use if the key does not exist. (Defaults to `None`.)

Returns The value associated with the provided key, or a default value.**Return type** `object`**Examples**

When the key exists, the value associated with it is returned.

```
>>> Row(('a', 'b'), {'x': 0, 'y': 1}).get('x')
'a'
```

The default value is `None` when the key does not exist.

```
>>> Row(('a', 'b'), {'x': 0, 'y': 1}).get('z')
None
```

The default value can be overridden with the `default` parameter.

```
>>> Row(('a', 'b'), {'x': 0, 'y': 1}).get('z', '')
''
```

```
>>> Row(('a', 'b'), {'x': 0, 'y': 1}).get('z', default = '')
''
```

google.cloud.bigquery.table.Row.items`Row.items()`

Return items as (key, value) pairs.

Returns The (key, value) pairs representing this row.**Return type** `Iterable[Tuple[str, object]]`**Examples**

```
>>> list(Row(('a', 'b'), {'x': 0, 'y': 1}).items())
[('x', 'a'), ('y', 'b')]
```

google.cloud.bigquery.table.Row.keys

`Row.keys()`

Return the keys for using a row as a dict.

Returns The keys corresponding to the columns of a row

Return type `Iterable[str]`

Examples

```
>>> list(Row(('a', 'b'), {'x': 0, 'y': 1}).keys())
['x', 'y']
```

google.cloud.bigquery.table.Row.values

`Row.values()`

Return the values included in this row.

Returns A sequence of length `len(row)`.

Return type `Sequence[object]`

google.cloud.bigquery.table.RowIterator

```
class google.cloud.bigquery.table.RowIterator(client, api_request, path, schema,
                                              page_token=None, max_results=None,
                                              page_size=None, extra_params=None)
```

A class for iterating through HTTP/JSON API row list responses.

Parameters

- **client** (*google.cloud.bigquery.Client*) – The API client.
- **api_request** (*Callable[google.cloud._http.JSONConnection.api_request]*) – The function to use to make API requests.
- **path** (*str*) – The method path to query for the list of items.
- **page_token** (*str*) – A token identifying a page in a result set to start fetching results from.
- **max_results** (*int, optional*) – The maximum number of results to fetch.
- **page_size** (*int, optional*) – The number of items to return per page.
- **extra_params** (*Dict[str, object]*) – Extra query string parameters for the API call.

```
__init__(client, api_request, path, schema, page_token=None, max_results=None, page_size=None,
         extra_params=None)
```

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

Methods

<code>to_dataframe()</code>	Create a pandas DataFrame from the query results.
-----------------------------	---

google.cloud.bigquery.table.RowIterator.to_dataframe

`RowIterator.to_dataframe()`

Create a pandas DataFrame from the query results.

Returns A `DataFrame` populated with row data and column headers from the query results.
The column headers are derived from the destination table's schema.

Return type `pandas.DataFrame`

Raises `ValueError` – If the `pandas` library cannot be imported.

Attributes

<code>pages</code>	Iterator of pages in the response.
<code>schema</code>	<code>List[google.cloud.bigquery.schema.SchemaField]</code> – Table's schema.
<code>total_rows</code>	<code>int</code> – The total number of rows in the table.

google.cloud.bigquery.table.RowIterator.pages

`RowIterator.pages`

Iterator of pages in the response.

Returns

A generator of page instances.

Return type `types.GeneratorType[google.api_core.page_iterator.Page]`

Raises `ValueError` – If the iterator has already been started.

google.cloud.bigquery.table.RowIterator.schema

`RowIterator.schema`

`List[google.cloud.bigquery.schema.SchemaField]` – Table's schema.

google.cloud.bigquery.table.RowIterator.total_rows

`RowIterator.total_rows`

`int` – The total number of rows in the table.

google.cloud.bigquery.table.EncryptionConfiguration

class `google.cloud.bigquery.table.EncryptionConfiguration` (`kms_key_name=None`)

Custom encryption configuration (e.g., Cloud KMS keys).

Parameters `kms_key_name` (`str`) – resource ID of Cloud KMS key used for encryption

`__init__` (*kms_key_name=None*)
Initialize self. See help(type(self)) for accurate signature.

Methods

<code>from_api_repr</code> (resource)	Construct an encryption configuration from its API representation
<code>to_api_repr</code> ()	Construct the API resource representation of this encryption configuration.

google.cloud.bigquery.table.EncryptionConfiguration.from_api_repr

classmethod `EncryptionConfiguration.from_api_repr` (resource)

Construct an encryption configuration from its API representation

Parameters **resource** (*Dict[str, object]*) – An encryption configuration representation as returned from the API.

Returns An encryption configuration parsed from resource.

Return type *google.cloud.bigquery.table.EncryptionConfiguration*

google.cloud.bigquery.table.EncryptionConfiguration.to_api_repr

`EncryptionConfiguration.to_api_repr` ()

Construct the API resource representation of this encryption configuration.

Returns Encryption configuration as represented as an API resource

Return type *Dict[str, object]*

Attributes

<code>kms_key_name</code>	<i>str</i> – Resource ID of Cloud KMS key
---------------------------	---

google.cloud.bigquery.table.EncryptionConfiguration.kms_key_name

`EncryptionConfiguration.kms_key_name`

str – Resource ID of Cloud KMS key

Resource ID of Cloud KMS key or *None* if using default encryption.

google.cloud.bigquery.table.TimePartitioning

class `google.cloud.bigquery.table.TimePartitioning` (*type_=None*, *field=None*,
expiration_ms=None, *require_partition_filter=None*)

Configures time-based partitioning for a table.

Parameters

- **type** (`google.cloud.bigquery.table.TimePartitioningType`, *optional*) – Specifies the type of time partitioning to perform. Defaults to `DAY`, which is the only currently supported type.
- **field** (*str*, *optional*) – If set, the table is partitioned by this field. If not set, the table is partitioned by pseudo column `__PARTITIONTIME`. The field must be a top-level `TIMESTAMP` or `DATE` field. Its mode must be `NULLABLE` or `REQUIRED`.
- **expiration_ms** (*int*, *optional*) – Number of milliseconds for which to keep the storage for a partition.
- **require_partition_filter** (*bool*, *optional*) – If set to true, queries over the partitioned table require a partition filter that can be used for partition elimination to be specified.

`__init__` (*type=None, field=None, expiration_ms=None, require_partition_filter=None*)
Initialize self. See `help(type(self))` for accurate signature.

Methods

<code>from_api_repr(api_repr)</code>	Return a <i>TimePartitioning</i> object deserialized from a dict.
<code>to_api_repr()</code>	Return a dictionary representing this object.

`google.cloud.bigquery.table.TimePartitioning.from_api_repr`

classmethod `TimePartitioning.from_api_repr(api_repr)`

Return a *TimePartitioning* object deserialized from a dict.

This method creates a new *TimePartitioning* instance that points to the `api_repr` parameter as its internal properties dict. This means that when a *TimePartitioning* instance is stored as a property of another object, any changes made at the higher level will also appear here:

```
>>> time_partitioning = TimePartitioning()
>>> table.time_partitioning = time_partitioning
>>> table.time_partitioning.field = 'timecolumn'
>>> time_partitioning.field
'timecolumn'
```

Parameters `api_repr` (*Mapping[str, str]*) – The serialized representation of the *TimePartitioning*, such as what is output by `to_api_repr()`.

Returns The *TimePartitioning* object.

Return type `google.cloud.bigquery.table.TimePartitioning`

`google.cloud.bigquery.table.TimePartitioning.to_api_repr`

`TimePartitioning.to_api_repr()`

Return a dictionary representing this object.

This method returns the properties dict of the *TimePartitioning* instance rather than making a copy. This means that when a *TimePartitioning* instance is stored as a property of another object, any changes made at the higher level will also appear here.

Returns A dictionary representing the TimePartitioning object in serialized form.

Return type `dict`

Attributes

<code>expiration_ms</code>	<i>int</i> – Number of milliseconds to keep the storage for a partition.
<code>field</code>	<i>str</i> – Field in the table to use for partitioning
<code>require_partition_filter</code>	<i>bool</i> – Specifies whether partition filters are required for queries
<code>type_</code>	<i>google.cloud.bigquery.table.TimePartitioningType</i> – The type of time partitioning to use.

`google.cloud.bigquery.table.TimePartitioning.expiration_ms`

`TimePartitioning.expiration_ms`

int – Number of milliseconds to keep the storage for a partition.

`google.cloud.bigquery.table.TimePartitioning.field`

`TimePartitioning.field`

str – Field in the table to use for partitioning

`google.cloud.bigquery.table.TimePartitioning.require_partition_filter`

`TimePartitioning.require_partition_filter`

bool – Specifies whether partition filters are required for queries

`google.cloud.bigquery.table.TimePartitioning.type_`

`TimePartitioning.type_`

google.cloud.bigquery.table.TimePartitioningType – The type of time partitioning to use.

`google.cloud.bigquery.table.TimePartitioningType`

class `google.cloud.bigquery.table.TimePartitioningType`

Specifies the type of time partitioning to perform.

`__init__()`

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

Attributes

<code>DAY</code>	<i>str</i> – Generates one partition per day.
------------------	---

google.cloud.bigquery.table.TimePartitioningType.DAY

`TimePartitioningType.DAY = 'DAY'`

str – Generates one partition per day.

3.1.5 Schema

`schema.SchemaField(name, field_type[, mode, Describe a single field within a table schema.
...])`

google.cloud.bigquery.schema.SchemaField

class google.cloud.bigquery.schema.**SchemaField**(*name, field_type, mode='NULLABLE',
description=None, fields=()*)

Describe a single field within a table schema.

Parameters

- **name** (*str*) – the name of the field.
- **field_type** (*str*) – the type of the field (one of 'STRING', 'INTEGER', 'FLOAT', 'NUMERIC', 'BOOLEAN', 'TIMESTAMP' or 'RECORD').
- **mode** (*str*) – the mode of the field (one of 'NULLABLE', 'REQUIRED', or 'REPEATED').
- **description** (*str*) – optional description for the field.
- **fields** (tuple of *SchemaField*) – subfields (requires *field_type* of 'RECORD').

__init__ (*name, field_type, mode='NULLABLE', description=None, fields=()*)

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

Methods

<code>from_api_repr(api_repr)</code>	Return a SchemaField object deserialized from a dictionary.
<code>to_api_repr()</code>	Return a dictionary representing this schema field.

google.cloud.bigquery.schema.SchemaField.from_api_repr

classmethod SchemaField.**from_api_repr** (*api_repr*)

Return a SchemaField object deserialized from a dictionary.

Parameters *api_repr* (*Mapping[str, str]*) – The serialized representation of the SchemaField, such as what is output by `to_api_repr()`.

Returns The SchemaField object.

Return type google.cloud.biquery.schema.SchemaField

google.cloud.bigquery.schema.SchemaField.to_api_repr

`SchemaField.to_api_repr()`

Return a dictionary representing this schema field.

Returns

A dictionary representing the `SchemaField` in a serialized form.

Return type `dict`

Attributes

<i>description</i>	<i>Optional[str]</i> – Description for the field.
<i>field_type</i>	<i>str</i> – The type of the field.
<i>fields</i>	<i>tuple</i> – Subfields contained in this field.
<i>is_nullable</i>	Check whether ‘mode’ is ‘nullable’.
<i>mode</i>	<i>str</i> – The mode of the field.
<i>name</i>	<i>str</i> – The name of the field.

google.cloud.bigquery.schema.SchemaField.description

`SchemaField.description`

Optional[str] – Description for the field.

google.cloud.bigquery.schema.SchemaField.field_type

`SchemaField.field_type`

str – The type of the field.

Will be one of ‘STRING’, ‘INTEGER’, ‘FLOAT’, ‘NUMERIC’, ‘BOOLEAN’, ‘TIMESTAMP’ or ‘RECORD’.

google.cloud.bigquery.schema.SchemaField.fields

`SchemaField.fields`

tuple – Subfields contained in this field.

If `field_type` is not ‘RECORD’, this property must be empty / unset.

google.cloud.bigquery.schema.SchemaField.is_nullable

`SchemaField.is_nullable`

Check whether ‘mode’ is ‘nullable’.

google.cloud.bigquery.schema.SchemaField.mode

`SchemaField.mode`

str – The mode of the field.

Will be one of ‘NULLABLE’, ‘REQUIRED’, or ‘REPEATED’.

google.cloud.bigquery.schema.SchemaField.name

SchemaField.**name**

str – The name of the field.

3.1.6 Query

<code>query.ArrayQueryParameter(name, array_type, ...)</code>	array	Named / positional query parameters for array values.
<code>query.ScalarQueryParameter(name, value)</code>	type_	Named / positional query parameters for scalar values.
<code>query.StructQueryParameter(name, *sub_params)</code>		Named / positional query parameters for struct values.
<code>query.UDFResource(udf_type, value)</code>		Describe a single user-defined function (UDF) resource.

google.cloud.bigquery.query.ArrayQueryParameter

class google.cloud.bigquery.query.**ArrayQueryParameter** (*name, array_type, values*)
Named / positional query parameters for array values.

Parameters

- **name** (*str* or *None*) – Parameter name, used via @foo syntax. If None, the parameter can only be addressed via position (?).
- **array_type** (*str*) – name of type of array elements. One of ‘STRING’, ‘INT64’, ‘FLOAT64’, ‘NUMERIC’, ‘BOOL’, ‘TIMESTAMP’, or ‘DATE’.
- **values** (*list of appropriate scalar type.*) – the parameter array values.

__init__ (*name, array_type, values*)
Initialize self. See help(type(self)) for accurate signature.

Methods

<code>from_api_repr(resource)</code>	Factory: construct parameter from JSON resource.
<code>positional(array_type, values)</code>	Factory for positional parameters.
<code>to_api_repr()</code>	Construct JSON API representation for the parameter.

google.cloud.bigquery.query.ArrayQueryParameter.from_api_repr

classmethod ArrayQueryParameter.**from_api_repr** (*resource*)
Factory: construct parameter from JSON resource.

Parameters **resource** (*dict*) – JSON mapping of parameter

Return type *ArrayQueryParameter*

Returns instance

google.cloud.bigquery.query.ArrayQueryParameter.positional

classmethod `ArrayQueryParameter.positional(array_type, values)`

Factory for positional parameters.

Parameters

- **array_type** (*str*) – name of type of array elements. One of ‘*STRING*’, ‘*INT64*’, ‘*FLOAT64*’, ‘*NUMERIC*’, ‘*BOOL*’, ‘*TIMESTAMP*’, or ‘*DATE*’.
- **values** (*list of appropriate scalar type*) – the parameter array values.

Return type `ArrayQueryParameter`

Returns instance without name

google.cloud.bigquery.query.ArrayQueryParameter.to_api_repr

`ArrayQueryParameter.to_api_repr()`

Construct JSON API representation for the parameter.

Return type `dict`

Returns JSON mapping

google.cloud.bigquery.query.ScalarQueryParameter

class `google.cloud.bigquery.query.ScalarQueryParameter(name, type_, value)`

Named / positional query parameters for scalar values.

Parameters

- **name** (*str or None*) – Parameter name, used via `@foo` syntax. If `None`, the parameter can only be addressed via position (`?`).
- **type** (*str*) – name of parameter type. One of ‘*STRING*’, ‘*INT64*’, ‘*FLOAT64*’, ‘*NUMERIC*’, ‘*BOOL*’, ‘*TIMESTAMP*’, ‘*DATETIME*’, or ‘*DATE*’.
- **value** (*str, int, float, decimal.Decimal, bool, datetime.datetime, or datetime.date.*) – the scalar parameter value.

__init__ (*name, type_, value*)

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct parameter from JSON resource.
<code>positional(type_, value)</code>	Factory for positional paramater.
<code>to_api_repr()</code>	Construct JSON API representation for the parameter.

google.cloud.bigquery.query.ScalarQueryParameter.from_api_repr**classmethod** `ScalarQueryParameter.from_api_repr(resource)`

Factory: construct parameter from JSON resource.

Parameters `resource` (*dict*) – JSON mapping of parameter**Return type** `ScalarQueryParameter`**Returns** instance**google.cloud.bigquery.query.ScalarQueryParameter.positional****classmethod** `ScalarQueryParameter.positional(type_, value)`

Factory for positional paramater.

Parameters

- **type** (*str*) – name of parameter type. One of ‘STRING’, ‘INT64’, ‘FLOAT64’, ‘NUMERIC’, ‘BOOL’, ‘TIMESTAMP’, ‘DATETIME’, or ‘DATE’.
- **value** (*str*, *int*, *float*, *decimal.Decimal*, *bool*, *datetime.datetime*, or *datetime.date*.) – the scalar parameter value.

Return type `ScalarQueryParameter`**Returns** instance without name**google.cloud.bigquery.query.ScalarQueryParameter.to_api_repr**`ScalarQueryParameter.to_api_repr()`

Construct JSON API representation for the parameter.

Return type *dict***Returns** JSON mapping**google.cloud.bigquery.query.StructQueryParameter****class** `google.cloud.bigquery.query.StructQueryParameter(name, *sub_params)`

Named / positional query parameters for struct values.

Parameters

- **name** (*str* or *None*) – Parameter name, used via @foo syntax. If None, the parameter can only be addressed via position (?).
- **sub_params** (tuple of *ScalarQueryParameter*, *ArrayQueryParameter*, or *StructQueryParameter*) – the sub-parameters for the struct

__init__ (*name*, **sub_params*)

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct parameter from JSON resource.
<code>positional(*sub_params)</code>	Factory for positional parameters.
<code>to_api_repr()</code>	Construct JSON API representation for the parameter.

`google.cloud.bigquery.query.StructQueryParameter.from_api_repr`

classmethod `StructQueryParameter.from_api_repr(resource)`

Factory: construct parameter from JSON resource.

Parameters `resource` (*dict*) – JSON mapping of parameter

Return type `StructQueryParameter`

Returns instance

`google.cloud.bigquery.query.StructQueryParameter.positional`

classmethod `StructQueryParameter.positional(*sub_params)`

Factory for positional parameters.

Parameters `sub_params` (tuple of `ScalarQueryParameter`, `ArrayQueryParameter`, or `StructQueryParameter`) – the sub-parameters for the struct

Return type `StructQueryParameter`

Returns instance without name

`google.cloud.bigquery.query.StructQueryParameter.to_api_repr`

`StructQueryParameter.to_api_repr()`

Construct JSON API representation for the parameter.

Return type `dict`

Returns JSON mapping

`google.cloud.bigquery.query.UDFResource`

class `google.cloud.bigquery.query.UDFResource(udf_type, value)`

Describe a single user-defined function (UDF) resource.

Parameters

- **udf_type** (*str*) – the type of the resource ('inlineCode' or 'resourceUri')
- **value** (*str*) – the inline code or resource URI.

See <https://cloud.google.com/bigquery/user-defined-functions#api>

__init__ (*udf_type, value*)

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

Methods

3.1.7 Retries

<code>retry.DEFAULT_RETRY</code>	Exponential retry decorator.
----------------------------------	------------------------------

google.cloud.bigquery.retry.DEFAULT_RETRY

`google.cloud.bigquery.retry.DEFAULT_RETRY` = <google.api_core.retry.Retry object>
Exponential retry decorator.

This class is a decorator used to add exponential back-off retry behavior to an RPC call.

Although the default behavior is to retry transient API errors, a different predicate can be provided to retry other exceptions.

Parameters

- **predicate** (*Callable[Exception]*) – A callable that should return `True` if the given exception is retryable.
- **initial** (*float*) – The minimum amount of time to delay in seconds. This must be greater than 0.
- **maximum** (*float*) – The maximum amount of time to delay in seconds.
- **multiplier** (*float*) – The multiplier applied to the delay.
- **deadline** (*float*) – How long to keep retrying in seconds.

3.1.8 External Configuration

<code>external_config.</code>	Description of an external data source.
-------------------------------	---

<code>ExternalConfig(source_format)</code>	
--	--

<code>external_config.BigtableOptions()</code>	Options that describe how to treat Bigtable tables as BigQuery tables.
--	--

<code>external_config.</code>	Options for a Bigtable column family.
-------------------------------	---------------------------------------

<code>BigtableColumnFamily()</code>	
-------------------------------------	--

<code>external_config.BigtableColumn()</code>	Options for a Bigtable column.
---	--------------------------------

<code>external_config.CSVOptions()</code>	Options that describe how to treat CSV files as BigQuery tables.
---	--

<code>external_config.GoogleSheetsOptions()</code>	Options that describe how to treat Google Sheets as BigQuery tables.
--	--

google.cloud.bigquery.external_config.ExternalConfig

class `google.cloud.bigquery.external_config.ExternalConfig(source_format)`
Description of an external data source.

Parameters `source_format` (*str*) – the format of the external data. See the `source_format` property on this class.

`__init__(source_format)`

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a CSVOptions given its API representation
<code>to_api_repr()</code>	Build an API representation of this object.

google.cloud.bigquery.external_config.ExternalConfig.from_api_repr

classmethod `ExternalConfig.from_api_repr(resource)`

Factory: construct a CSVOptions given its API representation

Parameters `resource` (*dict*) – An extract job configuration in the same representation as is returned from the API.

Return type *CSVOptions*

Returns Configuration parsed from `resource`.

google.cloud.bigquery.external_config.ExternalConfig.to_api_repr

`ExternalConfig.to_api_repr()`

Build an API representation of this object.

Return type *dict*

Returns A dictionary in the format used by the BigQuery API.

Attributes

<code>autodetect</code>	<i>bool</i> – If <i>True</i> , try to detect schema and format options automatically.
<code>compression</code>	<i>str</i> – The compression type of the data source.
<code>ignore_unknown_values</code>	<i>bool</i> – If <i>True</i> , extra values that are not represented in the table schema are ignored.
<code>max_bad_records</code>	<i>int</i> – The maximum number of bad records that BigQuery can ignore when reading data.
<code>options</code>	Source-specific options.
<code>schema</code>	<i>List[google.cloud.bigquery.schema.SchemaField]</i> – The schema for the data.
<code>source_format</code>	See https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).sourceFormat https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.sourceFormat
<code>source_uris</code>	<i>List[str]</i> – URIs that point to your data in Google Cloud.

google.cloud.bigquery.external_config.ExternalConfig.autodetect**ExternalConfig.autodetect***bool* – If *True*, try to detect schema and format options automatically.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).autodetect](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).autodetect)
<https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.autodetect>

google.cloud.bigquery.external_config.ExternalConfig.compression**ExternalConfig.compression***str* – The compression type of the data source.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).compression](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).compression)
<https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.compression>

google.cloud.bigquery.external_config.ExternalConfig.ignore_unknown_values**ExternalConfig.ignore_unknown_values***bool* – If *True*, extra values that are not represented in the table schema are ignored. Defaults to *False*.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).ignoreUnknownValues](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).ignoreUnknownValues)
<https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.ignoreUnknownValues>

google.cloud.bigquery.external_config.ExternalConfig.max_bad_records**ExternalConfig.max_bad_records***int* – The maximum number of bad records that BigQuery can ignore when reading data.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).maxBadRecords](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).maxBadRecords)
<https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.maxBadRecords>

google.cloud.bigquery.external_config.ExternalConfig.options**ExternalConfig.options**

Source-specific options.

google.cloud.bigquery.external_config.ExternalConfig.schema**ExternalConfig.schema***List[google.cloud.bigquery.schema.SchemaField]* – The schema for the data.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).schema](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).schema)
<https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.schema>

google.cloud.bigquery.external_config.ExternalConfig.source_format

`ExternalConfig.source_format`

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).sourceFormat](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).sourceFormat)
`externalDataConfiguration.sourceFormat`

google.cloud.bigquery.external_config.ExternalConfig.source_uris

`ExternalConfig.source_uris`

List[str] – URIs that point to your data in Google Cloud.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).sourceUri](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).sourceUri)
`externalDataConfiguration.sourceUri`

google.cloud.bigquery.external_config.BigtableOptions

class `google.cloud.bigquery.external_config.BigtableOptions`

Options that describe how to treat Bigtable tables as BigQuery tables.

`__init__()`

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a <code>BigtableOptions</code> given its API representation
<code>to_api_repr()</code>	Build an API representation of this object.

google.cloud.bigquery.external_config.BigtableOptions.from_api_repr

classmethod `BigtableOptions.from_api_repr(resource)`

Factory: construct a `BigtableOptions` given its API representation

Parameters `resource` (*dict*) – A `BigtableOptions` in the same representation as is returned from the API.

Return type `BigtableOptions`

Returns Configuration parsed from `resource`.

google.cloud.bigquery.external_config.BigtableOptions.to_api_repr

`BigtableOptions.to_api_repr()`

Build an API representation of this object.

Return type `dict`

Returns A dictionary in the format used by the BigQuery API.

Attributes

<code>column_families</code>	<i>List[google.cloud.bigquery.external_config.BigtableColumnFamily]</i> – List of column families to expose in the table schema along with their types.
<code>ignore_unspecified_column_families</code>	<i>bool</i> – If <i>True</i> , ignore columns not specified in columnFamilies list.
<code>read_rowkey_as_string</code>	<i>bool</i> – If <i>True</i> , rowkey column families will be read and converted to string.

google.cloud.bigquery.external_config.BigtableOptions.column_families

`BigtableOptions.column_families`

List[google.cloud.bigquery.external_config.BigtableColumnFamily] – List of column families to expose in the table schema along with their types.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.columnFamilies](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.columnFamilies) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies>

google.cloud.bigquery.external_config.BigtableOptions.ignore_unspecified_column_families

`BigtableOptions.ignore_unspecified_column_families`

bool – If *True*, ignore columns not specified in columnFamilies list. Defaults to *False*.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.ignoreUnspecifiedColumnFamilies](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.ignoreUnspecifiedColumnFamilies) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.ignoreUnspecifiedColumnFamilies>

google.cloud.bigquery.external_config.BigtableOptions.read_rowkey_as_string

`BigtableOptions.read_rowkey_as_string`

bool – If *True*, rowkey column families will be read and converted to string. Defaults to *False*.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.readRowkeyAsString](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.readRowkeyAsString) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.readRowkeyAsString>

google.cloud.bigquery.external_config.BigtableColumnFamily

class `google.cloud.bigquery.external_config.BigtableColumnFamily`

Options for a Bigtable column family.

`__init__()`

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a <code>BigtableColumnFamily</code> given its API representation
<code>to_api_repr()</code>	Build an API representation of this object.

`google.cloud.bigquery.external_config.BigtableColumnFamily.from_api_repr`

classmethod `BigtableColumnFamily.from_api_repr(resource)`

Factory: construct a `BigtableColumnFamily` given its API representation

Parameters `resource` (*dict*) – A column family in the same representation as is returned from the API.

Return type `BigtableColumnFamily`

Returns Configuration parsed from `resource`.

`google.cloud.bigquery.external_config.BigtableColumnFamily.to_api_repr`

`BigtableColumnFamily.to_api_repr()`

Build an API representation of this object.

Return type `dict`

Returns A dictionary in the format used by the BigQuery API.

Attributes

<code>columns</code>	<code>List[google.cloud.bigquery.external_config.BigtableColumn]</code> – Lists of columns that should be exposed as individual fields
<code>encoding</code>	<code>str</code> – The encoding of the values when the type is not <code>STRING</code>
<code>family_id</code>	<code>str</code> – Identifier of the column family.
<code>only_read_latest</code>	<code>bool</code> – If this is set only the latest version of value are exposed for all columns in this column family.
<code>type_</code>	<code>str</code> – The type to convert the value in cells of this column family.

`google.cloud.bigquery.external_config.BigtableColumnFamily.columns`

`BigtableColumnFamily.columns`

`List[google.cloud.bigquery.external_config.BigtableColumn]` – Lists of columns that should be exposed as individual fields

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.columnFamilies.columns](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.columnFamilies.columns) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.columns>

google.cloud.bigquery.external_config.BigtableColumnFamily.encoding**BigtableColumnFamily.encoding***str* – The encoding of the values when the type is not *STRING*

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.columnFamilies.encoding](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.columnFamilies.encoding) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.encoding>

google.cloud.bigquery.external_config.BigtableColumnFamily.family_id**BigtableColumnFamily.family_id***str* – Identifier of the column family.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.columnFamilies.familyId](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.columnFamilies.familyId) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.familyId>

google.cloud.bigquery.external_config.BigtableColumnFamily.only_read_latest**BigtableColumnFamily.only_read_latest***bool* – If this is set only the latest version of value are exposed for all columns in this column family.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.columnFamilies.onlyReadLatest](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.columnFamilies.onlyReadLatest) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.onlyReadLatest>

google.cloud.bigquery.external_config.BigtableColumnFamily.type_**BigtableColumnFamily.type_***str* – The type to convert the value in cells of this column family.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).bigtableOptions.columnFamilies.type](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).bigtableOptions.columnFamilies.type) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.type>

google.cloud.bigquery.external_config.BigtableColumn**class google.cloud.bigquery.external_config.BigtableColumn**

Options for a Bigtable column.

__init__()

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

Methods*from_api_repr(resource)*

Factory: construct a BigtableColumn given its API representation

to_api_repr()

Build an API representation of this object.

google.cloud.bigquery.external_config.BigtableColumn.from_api_repr**classmethod** `BigtableColumn.from_api_repr(resource)`Factory: construct a `BigtableColumn` given its API representation**Parameters** `resource` (*dict*) – A column in the same representation as is returned from the API.**Return type** `BigtableColumn`**Returns** Configuration parsed from `resource`.**google.cloud.bigquery.external_config.BigtableColumn.to_api_repr**`BigtableColumn.to_api_repr()`

Build an API representation of this object.

Return type `dict`**Returns** A dictionary in the format used by the BigQuery API.**Attributes**

<code>encoding</code>	<i>str</i> – The encoding of the values when the type is not <i>STRING</i>
<code>field_name</code>	<i>str</i> – An identifier to use if the qualifier is not a valid BigQuery field identifier
<code>only_read_latest</code>	<i>bool</i> – If this is set, only the latest version of value in this column are exposed.
<code>qualifier_encoded</code>	<i>Union[str, bytes]</i> – The qualifier encoded in binary.
<code>qualifier_string</code>	<i>str</i> – A valid UTF-8 string qualifier
<code>type_</code>	<i>str</i> – The type to convert the value in cells of this column.

google.cloud.bigquery.external_config.BigtableColumn.encoding`BigtableColumn.encoding`*str* – The encoding of the values when the type is not *STRING*

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.%28key%29.bigtableOptions.columnFamilies.columns.encoding> <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.columns.encoding>

google.cloud.bigquery.external_config.BigtableColumn.field_name`BigtableColumn.field_name`*str* – An identifier to use if the qualifier is not a valid BigQuery field identifier

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.%28key%29.bigtableOptions.columnFamilies.columns.fieldName> <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.columns.fieldName>

google.cloud.bigquery.external_config.BigtableColumn.only_read_latest**BigtableColumn.only_read_latest***bool* – If this is set, only the latest version of value in this column are exposed.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.%28key%29.bigtableOptions.columnFamilies.columns.onlyReadLatest> <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.columns.onlyReadLatest>

google.cloud.bigquery.external_config.BigtableColumn.qualifier_encoded**BigtableColumn.qualifier_encoded***Union[str, bytes]* – The qualifier encoded in binary.

The type is `str` (Python 2.x) or `bytes` (Python 3.x). The module will handle base64 encoding for you.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.%28key%29.bigtableOptions.columnFamilies.columns.qualifierEncoded> <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.columns.qualifierEncoded>

google.cloud.bigquery.external_config.BigtableColumn.qualifier_string**BigtableColumn.qualifier_string***str* – A valid UTF-8 string qualifier

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.%28key%29.bigtableOptions.columnFamilies.columns.qualifierEncoded> <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.columns.qualifierEncoded>

google.cloud.bigquery.external_config.BigtableColumn.type_**BigtableColumn.type_***str* – The type to convert the value in cells of this column.

See <https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.%28key%29.bigtableOptions.columnFamilies.columns.type> <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.bigtableOptions.columnFamilies.columns.type>

google.cloud.bigquery.external_config.CSVOptions**class google.cloud.bigquery.external_config.CSVOptions**

Options that describe how to treat CSV files as BigQuery tables.

__init__()Initialize self. See `help(type(self))` for accurate signature.**Methods**

<code>from_api_repr(resource)</code>	Factory: construct a <code>CSVOptions</code> given its API representation
<code>to_api_repr()</code>	Build an API representation of this object.

`google.cloud.bigquery.external_config.CSVOptions.from_api_repr`

classmethod `CSVOptions.from_api_repr(resource)`

Factory: construct a `CSVOptions` given its API representation

Parameters `resource` (*dict*) – A `CSVOptions` in the same representation as is returned from the API.

Return type `CSVOptions`

Returns Configuration parsed from `resource`.

`google.cloud.bigquery.external_config.CSVOptions.to_api_repr`

`CSVOptions.to_api_repr()`

Build an API representation of this object.

Return type `dict`

Returns A dictionary in the format used by the BigQuery API.

Attributes

<code>allow_jagged_rows</code>	<i>bool</i> – If <i>True</i> , BigQuery treats missing trailing columns as null values.
<code>allow_quoted_newlines</code>	<i>bool</i> – If <i>True</i> , quoted data sections that contain newline characters in a CSV file are allowed.
<code>encoding</code>	<i>str</i> – The character encoding of the data.
<code>field_delimiter</code>	<i>str</i> – The separator for fields in a CSV file.
<code>quote_character</code>	<i>str</i> – The value that is used to quote data sections in a CSV file.
<code>skip_leading_rows</code>	<i>int</i> – The number of rows at the top of a CSV file.

`google.cloud.bigquery.external_config.CSVOptions.allow_jagged_rows`

`CSVOptions.allow_jagged_rows`

bool – If *True*, BigQuery treats missing trailing columns as null values. Defaults to *False*.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).csvOptions.allowJaggedRows](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).csvOptions.allowJaggedRows) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.csvOptions.allowJaggedRows>

`google.cloud.bigquery.external_config.CSVOptions.allow_quoted_newlines`

`CSVOptions.allow_quoted_newlines`

bool – If *True*, quoted data sections that contain newline characters in a CSV file are allowed. Defaults to *False*.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).csvOptions.allowQuotedNewlines](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).csvOptions.allowQuotedNewlines) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.csvOptions.allowQuotedNewlines>

google.cloud.bigquery.external_config.CSVOptions.encoding

CSVOptions.encoding

str – The character encoding of the data.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).csvOptions.encoding](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).csvOptions.encoding) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.csvOptions.encoding>

google.cloud.bigquery.external_config.CSVOptions.field_delimiter

CSVOptions.field_delimiter

str – The separator for fields in a CSV file. Defaults a comma (`,`).

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).csvOptions.fieldDelimiter](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).csvOptions.fieldDelimiter) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.csvOptions.fieldDelimiter>

google.cloud.bigquery.external_config.CSVOptions.quote_character

CSVOptions.quote_character

str – The value that is used to quote data sections in a CSV file.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).csvOptions.quote](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).csvOptions.quote) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.csvOptions.quote>

google.cloud.bigquery.external_config.CSVOptions.skip_leading_rows

CSVOptions.skip_leading_rows

int – The number of rows at the top of a CSV file.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).csvOptions.skipLeadingRows](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).csvOptions.skipLeadingRows) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.csvOptions.skipLeadingRows>

google.cloud.bigquery.external_config.GoogleSheetsOptions

class google.cloud.bigquery.external_config.GoogleSheetsOptions

Options that describe how to treat Google Sheets as BigQuery tables.

__init__()

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

Methods

<code>from_api_repr(resource)</code>	Factory: construct a GoogleSheetsOptions given its API representation
<code>to_api_repr()</code>	Build an API representation of this object.

`google.cloud.bigquery.external_config.GoogleSheetsOptions.from_api_repr`

classmethod `GoogleSheetsOptions.from_api_repr(resource)`

Factory: construct a GoogleSheetsOptions given its API representation

Parameters `resource` (*dict*) – An GoogleSheetsOptions in the same representation as is returned from the API.

Return type `GoogleSheetsOptions`

Returns Configuration parsed from `resource`.

`google.cloud.bigquery.external_config.GoogleSheetsOptions.to_api_repr`

`GoogleSheetsOptions.to_api_repr()`

Build an API representation of this object.

Return type `dict`

Returns A dictionary in the format used by the BigQuery API.

Attributes

<code>skip_leading_rows</code>	<i>int</i> – The number of rows at the top of a sheet that BigQuery will skip when reading the data.
--------------------------------	--

`google.cloud.bigquery.external_config.GoogleSheetsOptions.skip_leading_rows`

`GoogleSheetsOptions.skip_leading_rows`

int – The number of rows at the top of a sheet that BigQuery will skip when reading the data.

See [https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.\(key\).googleSheetsOptions.skipLeadingRows](https://cloud.google.com/bigquery/docs/reference/rest/v2/jobs#configuration.query.tableDefinitions.(key).googleSheetsOptions.skipLeadingRows) <https://cloud.google.com/bigquery/docs/reference/rest/v2/tables#externalDataConfiguration.googleSheetsOptions.skipLeadingRows>

3.1.9 Magics

<code>magics</code>	IPython Magics
---------------------	----------------

`google.cloud.bigquery.magics`

IPython Magics

`%%bigquery`

IPython cell magic to run a query and display the result as a DataFrame

```
%%bigquery [<destination_var>] [--project <project>] [--use_legacy_sql]
          [--verbose]
<query>
```

Parameters:

- **<destination_var> (optional, line argument):** variable to store the query results.
- **--project <project> (optional, line argument):** Project to use for running the query. Defaults to the context `project`.
- **--use_legacy_sql (optional, line argument):** Runs the query using Legacy SQL syntax. Defaults to Standard SQL if this argument not used.
- **--verbose (optional, line argument):** If this flag is used, information including the query job ID and the amount of time for the query to complete will not be cleared after the query is finished. By default, this information will be displayed but will be cleared after the query is finished.
- **<query> (required, cell argument):** SQL query to run.

Returns: A `pandas.DataFrame` with the query results.

Note: All queries run using this magic will run using the context `credentials`.

Examples: The following examples can be run in an IPython notebook after loading the bigquery IPython extension (see `In[1]`) and setting up Application Default Credentials.

```
In [1]: %load_ext google.cloud.bigquery

In [2]: %%bigquery
...: SELECT name, SUM(number) as count
...: FROM `bigquery-public-data.usa_names.usa_1910_current`
...: GROUP BY name
...: ORDER BY count DESC
...: LIMIT 3

Out[2]:
```

	name	count
...	-----	
...	0 James	4987296
...	1 John	4866302
...	2 Robert	4738204

```

In [3]: %%bigquery df --project my-alternate-project --verbose
...: SELECT name, SUM(number) as count
...: FROM `bigquery-public-data.usa_names.usa_1910_current`
...: WHERE gender = 'F'
...: GROUP BY name
...: ORDER BY count DESC
...: LIMIT 3
Executing query with job ID: bf633912-af2c-4780-b568-5d868058632b
Query executing: 2.61s
Query complete after 2.92s

Out[3]:
```

	name	count
...	-----	

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```

...: 0      Mary  3736239
...: 1  Patricia 1568495
...: 2 Elizabeth 1519946

In [4]: df

Out[4]:
```

	name	count
...	-----	-----
...	0 Mary	3736239
...	1 Patricia	1568495
...	2 Elizabeth	1519946

Classes

<code>Context()</code>	Storage for objects to be used throughout an IPython notebook session.
------------------------	--

google.cloud.bigquery.magics.Context

class google.cloud.bigquery.magics.Context

Storage for objects to be used throughout an IPython notebook session.

A Context object is initialized when the `magics` module is imported, and can be found at `google.cloud.bigquery.magics.context`.

__init__()

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

Methods

Attributes

<code>credentials</code>	<code>google.auth.credentials.Credentials</code> – Credentials to use for queries performed through IPython magics
<code>project</code>	<code>str</code> – Default project to use for queries performed through IPython magics

google.cloud.bigquery.magics.Context.credentials

`Context.credentials`

`google.auth.credentials.Credentials` – Credentials to use for queries performed through IPython magics

Note: These credentials do not need to be explicitly defined if you are using Application Default Credentials. If you are not using Application Default Credentials, manually construct a `google.auth.credentials.Credentials` object and set it as the context credentials as demonstrated in the example below. See [auth docs](#) for more information on obtaining credentials.

Example

Manually setting the context credentials:

```
>>> from google.cloud.bigquery import magics
>>> from google.oauth2 import service_account
>>> credentials = (service_account
...                 .Credentials.from_service_account_file(
...                 '/path/to/key.json'))
>>> magics.context.credentials = credentials
```

google.cloud.bigquery.magics.Context.project

Context.**project**

str – Default project to use for queries performed through IPython magics

Note: The project does not need to be explicitly defined if you have an environment default project set. If you do not have a default project set in your environment, manually assign the project as demonstrated in the example below.

Example

Manually setting the context project:

```
>>> from google.cloud.bigquery import magics
>>> magics.context.project = 'my-project'
```

3.2 DB-API Reference

Google BigQuery implementation of the Database API Specification v2.0.

This module implements the [Python Database API Specification v2.0 \(DB-API\)](#) for Google BigQuery.

`google.cloud.bigquery.dbapi.connect` (*client=None*)

Construct a DB-API connection to Google BigQuery.

Parameters **client** (`Client`) – (Optional) A client used to connect to BigQuery. If not passed, a client is created using default options inferred from the environment.

Return type `Connection`

Returns A new DB-API connection to BigQuery.

class `google.cloud.bigquery.dbapi.Connection` (*client*)

Bases: `object`

DB-API Connection to Google BigQuery.

Parameters **client** (`Client`) – A client used to connect to BigQuery.

close ()

No-op.

commit()
No-op.

cursor()
Return a new cursor object.

Return type *Cursor*

Returns A DB-API cursor that uses this connection.

class `google.cloud.bigquery.dbapi.Cursor`(*connection*)
Bases: *object*

DB-API Cursor to Google BigQuery.

Parameters *connection* (*Connection*) – A DB-API connection to Google BigQuery.

close()
No-op.

execute(*operation*, *parameters=None*, *job_id=None*)
Prepare and execute a database operation.

Note: When setting query parameters, values which are “text” (unicode in Python2, str in Python3) will use the ‘STRING’ BigQuery type. Values which are “bytes” (str in Python2, bytes in Python3), will use using the ‘BYTES’ type.

A *~datetime.datetime* parameter without timezone information uses the ‘DATETIME’ BigQuery type (example: Global Pi Day Celebration March 14, 2017 at 1:59pm). A *~datetime.datetime* parameter with timezone information uses the ‘TIMESTAMP’ BigQuery type (example: a wedding on April 29, 2011 at 11am, British Summer Time).

For more information about BigQuery data types, see: <https://cloud.google.com/bigquery/docs/reference/standard-sql/data-types>

STRUCT/RECORD and REPEATED query parameters are not yet supported. See: <https://github.com/GoogleCloudPlatform/google-cloud-python/issues/3524>

Parameters

- **operation** (*str*) – A Google BigQuery query string.
- **parameters** (*Mapping[str, Any]* or *Sequence[Any]*) – (Optional) dictionary or sequence of parameter values.
- **job_id** (*str*) – (Optional) The job_id to use. If not set, a job ID is generated at random.

executemany(*operation*, *seq_of_parameters*)
Prepare and execute a database operation multiple times.

Parameters

- **operation** (*str*) – A Google BigQuery query string.
- **parameters** – Sequence of many sets of parameter values.

fetchall()
Fetch all remaining results from the last `execute*()` call.

Return type *List[tuple]*

Returns A list of all the rows in the results.

Raises `InterfaceError` if called before `execute()`.

fetchmany (*size=None*)

Fetch multiple results from the last `execute*` () call.

Note: The size parameter is not used for the request/response size. Set the `arraysize` attribute before calling `execute()` to set the batch size.

Parameters **size** (*int*) – (Optional) Maximum number of rows to return. Defaults to the `arraysize` property value.

Return type `List[tuple]`

Returns A list of rows.

Raises `InterfaceError` if called before `execute()`.

fetchone ()

Fetch a single row from the results of the last `execute*` () call.

Return type `tuple`

Returns A tuple representing a row or `None` if no more data is available.

Raises `InterfaceError` if called before `execute()`.

setinputsizes (*sizes*)

No-op.

setoutputsize (*size, column=None*)

No-op.

exception `google.cloud.bigquery.dbapi.Warning`

Bases: `Exception`

Exception raised for important DB-API warnings.

exception `google.cloud.bigquery.dbapi.Error`

Bases: `Exception`

Exception representing all non-warning DB-API errors.

exception `google.cloud.bigquery.dbapi.InterfaceError`

Bases: `google.cloud.bigquery.dbapi.exceptions.Error`

DB-API error related to the database interface.

exception `google.cloud.bigquery.dbapi.DatabaseError`

Bases: `google.cloud.bigquery.dbapi.exceptions.Error`

DB-API error related to the database.

exception `google.cloud.bigquery.dbapi.DataError`

Bases: `google.cloud.bigquery.dbapi.exceptions.DatabaseError`

DB-API error due to problems with the processed data.

exception `google.cloud.bigquery.dbapi.OperationalError`

Bases: `google.cloud.bigquery.dbapi.exceptions.DatabaseError`

DB-API error related to the database operation.

These errors are not necessarily under the control of the programmer.

exception `google.cloud.bigquery.dbapi.IntegrityError`

Bases: `google.cloud.bigquery.dbapi.exceptions.DatabaseError`

DB-API error when integrity of the database is affected.

exception `google.cloud.bigquery.dbapi.InternalError`

Bases: `google.cloud.bigquery.dbapi.exceptions.DatabaseError`

DB-API error when the database encounters an internal error.

exception `google.cloud.bigquery.dbapi.ProgrammingError`

Bases: `google.cloud.bigquery.dbapi.exceptions.DatabaseError`

DB-API exception raised for programming errors.

exception `google.cloud.bigquery.dbapi.NotSupportedError`

Bases: `google.cloud.bigquery.dbapi.exceptions.DatabaseError`

DB-API error for operations not supported by the database or API.

`google.cloud.bigquery.dbapi.Binary` (*string*)

Construct a DB-API binary value.

Parameters `string` (*str*) – A string to encode as a binary value.

Return type `bytes`

Returns The UTF-8 encoded bytes representing the string.

`google.cloud.bigquery.dbapi.Date`

alias of `datetime.date`

`google.cloud.bigquery.dbapi.DateFromTicks` ()

timestamp -> local date from a POSIX timestamp (like `time.time()`).

`google.cloud.bigquery.dbapi.Time`

alias of `datetime.time`

`google.cloud.bigquery.dbapi.TimeFromTicks` (*ticks*, *tz=None*)

Construct a DB-API time value from the given ticks value.

Parameters

- **ticks** (*float*) – a number of seconds since the epoch; see the documentation of the standard Python time module for details.
- **tz** (`datetime.tzinfo`) – (Optional) time zone to use for conversion

Return type `datetime.time`

Returns time represented by ticks.

`google.cloud.bigquery.dbapi.Timestamp`

alias of `datetime.datetime`

`google.cloud.bigquery.dbapi.TimestampFromTicks` ()

timestamp[, tz] -> tz's local time from POSIX timestamp.

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- [Projects](#)

- *Project ACLs*
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 - *Dataset operations*
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- *Using BigQuery with Pandas*
 - *Retrieve BigQuery data as a Pandas DataFrame*
 - *Load a Pandas DataFrame to a BigQuery Table*
- *Changelog*

3.3 Installation

Install the `google-cloud-bigquery` library using `pip`:

```
$ pip install google-cloud-bigquery
```

Note: This library changed significantly before the 1.0.0 release, especially between version 0.27 and 0.28. See [Migrating from the BigQuery Python client library version 0.27](#) for instructions on how to migrate your code to the most recent version of this library.

3.4 Authentication / Configuration

- Use `Client` objects to configure your applications.
- `Client` objects hold both a `project` and an authenticated connection to the BigQuery service.
- The authentication credentials can be implicitly determined from the environment or directly via `from_service_account_json` and `from_service_account_p12`.
- After setting `GOOGLE_APPLICATION_CREDENTIALS` and `GOOGLE_CLOUD_PROJECT` environment variables, create an instance of `Client`.

```
>>> from google.cloud import bigquery
>>> client = bigquery.Client()
```

3.5 Projects

A project is the top-level container in the BigQuery API: it is tied closely to billing, and can provide default access control across all its datasets. If no `project` is passed to the client container, the library attempts to infer a project using the environment (including explicit environment variables, GAE, and GCE).

To override the project inferred from the environment, pass an explicit `project` to the constructor, or to either of the alternative classmethod factories:

```
>>> from google.cloud import bigquery
>>> client = bigquery.Client(project='PROJECT_ID')
```

3.5.1 Project ACLs

Each project has an access control list granting reader / writer / owner permission to one or more entities. This list cannot be queried or set via the API; it must be managed using the Google Developer Console.

3.6 Datasets

A dataset represents a collection of tables, and applies several default policies to tables as they are created:

- An access control list (ACL). When created, a dataset has an ACL which maps to the ACL inherited from its project.
- A default table expiration period. If set, tables created within the dataset will have the value as their expiration period.

See BigQuery documentation for more information on [Datasets](#).

3.6.1 Dataset operations

List datasets for the client's project:

```
# from google.cloud import bigquery
# client = bigquery.Client()

datasets = list(client.list_datasets())
project = client.project

if datasets:
    print('Datasets in project {}'.format(project))
    for dataset in datasets: # API request(s)
        print('\t{}'.format(dataset.dataset_id))
else:
    print('{} project does not contain any datasets.'.format(project))
```

Create a new dataset for the client's project:

```
# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'

# Create a DatasetReference using a chosen dataset ID.
# The project defaults to the Client's project if not specified.
dataset_ref = client.dataset(dataset_id)

# Construct a full Dataset object to send to the API.
dataset = bigquery.Dataset(dataset_ref)
# Specify the geographic location where the dataset should reside.
dataset.location = 'US'

# Send the dataset to the API for creation.
# Raises google.api_core.exceptions.AlreadyExists if the Dataset already
# exists within the project.
dataset = client.create_dataset(dataset) # API request
```

Refresh metadata for a dataset (to pick up changes made by another client):

```
# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'

dataset_ref = client.dataset(dataset_id)
dataset = client.get_dataset(dataset_ref) # API request

# View dataset properties
print('Dataset ID: {}'.format(dataset_id))
print('Description: {}'.format(dataset.description))
print('Labels:')
labels = dataset.labels
if labels:
    for label, value in labels.items():
        print('\t{}: {}'.format(label, value))
else:
    print("\tDataset has no labels defined.")

# View tables in dataset
print('Tables:')
tables = list(client.list_tables(dataset_ref)) # API request(s)
if tables:
    for table in tables:
        print('\t{}'.format(table.table_id))
else:
    print('\tThis dataset does not contain any tables.')
```

Update a property in a dataset's metadata:

```
# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_ref = client.dataset('my_dataset')
# dataset = client.get_dataset(dataset_ref) # API request

assert dataset.description == 'Original description.'
dataset.description = 'Updated description.'
```

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```
dataset = client.update_dataset(dataset, ['description']) # API request

assert dataset.description == 'Updated description.'
```

Modify user permissions on a dataset:

```
# from google.cloud import bigquery
# client = bigquery.Client()
# dataset = client.get_dataset(client.dataset('my_dataset'))

entry = bigquery.AccessEntry(
    role='READER',
    entity_type='userByEmail',
    entity_id='sample.bigquery.dev@gmail.com')
assert entry not in dataset.access_entries
entries = list(dataset.access_entries)
entries.append(entry)
dataset.access_entries = entries

dataset = client.update_dataset(dataset, ['access_entries']) # API request

assert entry in dataset.access_entries
```

Delete a dataset:

```
# from google.cloud import bigquery
# client = bigquery.Client()

# Delete a dataset that does not contain any tables
# dataset1_id = 'my_empty_dataset'
dataset1_ref = client.dataset(dataset1_id)
client.delete_dataset(dataset1_ref) # API request

print('Dataset {} deleted.'.format(dataset1_id))

# Use the delete_contents parameter to delete a dataset and its contents
# dataset2_id = 'my_dataset_with_tables'
dataset2_ref = client.dataset(dataset2_id)
client.delete_dataset(dataset2_ref, delete_contents=True) # API request

print('Dataset {} deleted.'.format(dataset2_id))
```

3.7 Tables

Tables exist within datasets. See BigQuery documentation for more information on [Tables](#).

3.7.1 Table operations

List tables for the dataset:

```
# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_ref = client.dataset('my_dataset')
```

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```

tables = list(client.list_tables(dataset_ref)) # API request(s)
assert len(tables) == 0

table_ref = dataset.table('my_table')
table = bigquery.Table(table_ref)
client.create_table(table) # API request
tables = list(client.list_tables(dataset)) # API request(s)

assert len(tables) == 1
assert tables[0].table_id == 'my_table'

```

Create a table:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_ref = client.dataset('my_dataset')

schema = [
    bigquery.SchemaField('full_name', 'STRING', mode='REQUIRED'),
    bigquery.SchemaField('age', 'INTEGER', mode='REQUIRED'),
]
table_ref = dataset_ref.table('my_table')
table = bigquery.Table(table_ref, schema=schema)
table = client.create_table(table) # API request

assert table.table_id == 'my_table'

```

Get a table:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'
# table_id = 'my_table'

dataset_ref = client.dataset(dataset_id)
table_ref = dataset_ref.table(table_id)
table = client.get_table(table_ref) # API Request

# View table properties
print(table.schema)
print(table.description)
print(table.num_rows)

```

Update a property in a table's metadata:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# table_ref = client.dataset('my_dataset').table('my_table')
# table = client.get_table(table_ref) # API request

assert table.description == 'Original description.'
table.description = 'Updated description.'

table = client.update_table(table, ['description']) # API request

assert table.description == 'Updated description.'

```

Browse selected rows in a table:

```
# from google.cloud import bigquery
# client = bigquery.Client()

dataset_ref = client.dataset('samples', project='bigquery-public-data')
table_ref = dataset_ref.table('shakespeare')
table = client.get_table(table_ref) # API call

# Load all rows from a table
rows = client.list_rows(table)
assert len(list(rows)) == table.num_rows

# Load the first 10 rows
rows = client.list_rows(table, max_results=10)
assert len(list(rows)) == 10

# Specify selected fields to limit the results to certain columns
fields = table.schema[:2] # first two columns
rows = client.list_rows(table, selected_fields=fields, max_results=10)
assert len(rows.schema) == 2
assert len(list(rows)) == 10

# Use the start index to load an arbitrary portion of the table
rows = client.list_rows(table, start_index=10, max_results=10)

# Print row data in tabular format
format_string = '{!s:<16} ' * len(rows.schema)
field_names = [field.name for field in rows.schema]
print(format_string.format(*field_names)) # prints column headers
for row in rows:
    print(format_string.format(*row))      # prints row data
```

Insert rows into a table's data:

```
# from google.cloud import bigquery
# client = bigquery.Client()

rows_to_insert = [
    (u'Phred Phlyntstone', 32),
    (u'Wylma Phlyntstone', 29),
]

errors = client.insert_rows(table, rows_to_insert) # API request

assert errors == []
```

Copy a table:

```
# from google.cloud import bigquery
# client = bigquery.Client()

source_dataset = client.dataset('samples', project='bigquery-public-data')
source_table_ref = source_dataset.table('shakespeare')

# dataset_id = 'my_dataset'
dest_table_ref = client.dataset(dataset_id).table('destination_table')
```

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```

job = client.copy_table(
    source_table_ref,
    dest_table_ref,
    # Location must match that of the source and destination tables.
    location='US') # API request

job.result() # Waits for job to complete.

assert job.state == 'DONE'
dest_table = client.get_table(dest_table_ref) # API request
assert dest_table.num_rows > 0

```

Extract a table to Google Cloud Storage:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# bucket_name = 'my-bucket'
project = 'bigquery-public-data'
dataset_id = 'samples'
table_id = 'shakespeare'

destination_uri = 'gs://{}/{}/{}'.format(bucket_name, 'shakespeare.csv')
dataset_ref = client.dataset(dataset_id, project=project)
table_ref = dataset_ref.table(table_id)

extract_job = client.extract_table(
    table_ref,
    destination_uri,
    # Location must match that of the source table.
    location='US') # API request
extract_job.result() # Waits for job to complete.

print('Exported {}:{}.{} to {}'.format(
    project, dataset_id, table_id, destination_uri))

```

Delete a table:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'
# table_id = 'my_table'

table_ref = client.dataset(dataset_id).table(table_id)
client.delete_table(table_ref) # API request

print('Table {}:{} deleted.'.format(dataset_id, table_id))

```

Upload table data from a file:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# filename = '/path/to/file.csv'
# dataset_id = 'my_dataset'
# table_id = 'my_table'

dataset_ref = client.dataset(dataset_id)
table_ref = dataset_ref.table(table_id)

```

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```

job_config = bigquery.LoadJobConfig()
job_config.source_format = bigquery.SourceFormat.CSV
job_config.skip_leading_rows = 1
job_config.autodetect = True

with open(filename, 'rb') as source_file:
    job = client.load_table_from_file(
        source_file,
        table_ref,
        location='US', # Must match the destination dataset location.
        job_config=job_config) # API request

job.result() # Waits for table load to complete.

print('Loaded {} rows into {}:{}'.format(
    job.output_rows, dataset_id, table_id))

```

Load table data from Google Cloud Storage

See also: [Loading JSON data from Cloud Storage](#).

Load a CSV file from Cloud Storage:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'

dataset_ref = client.dataset(dataset_id)
job_config = bigquery.LoadJobConfig()
job_config.schema = [
    bigquery.SchemaField('name', 'STRING'),
    bigquery.SchemaField('post_abbr', 'STRING')
]
job_config.skip_leading_rows = 1
# The source format defaults to CSV, so the line below is optional.
job_config.source_format = bigquery.SourceFormat.CSV
uri = 'gs://cloud-samples-data/bigquery/us-states/us-states.csv'

load_job = client.load_table_from_uri(
    uri,
    dataset_ref.table('us_states'),
    job_config=job_config) # API request
print('Starting job {}'.format(load_job.job_id))

load_job.result() # Waits for table load to complete.
print('Job finished.')

destination_table = client.get_table(dataset_ref.table('us_states'))
print('Loaded {} rows.'.format(destination_table.num_rows))

```

Load a JSON file from Cloud Storage:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'

```

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```

dataset_ref = client.dataset(dataset_id)
job_config = bigquery.LoadJobConfig()
job_config.schema = [
    bigquery.SchemaField('name', 'STRING'),
    bigquery.SchemaField('post_abbr', 'STRING')
]
job_config.source_format = bigquery.SourceFormat.NEWLINE_DELIMITED_JSON
uri = 'gs://cloud-samples-data/bigquery/us-states/us-states.json'

load_job = client.load_table_from_uri(
    uri,
    dataset_ref.table('us_states'),
    location='US', # Location must match that of the destination dataset.
    job_config=job_config) # API request
print('Starting job {}'.format(load_job.job_id))

load_job.result() # Waits for table load to complete.
print('Job finished.')

destination_table = client.get_table(dataset_ref.table('us_states'))
print('Loaded {} rows.'.format(destination_table.num_rows))

```

Load a Parquet file from Cloud Storage:

```

# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'

dataset_ref = client.dataset(dataset_id)
job_config = bigquery.LoadJobConfig()
job_config.source_format = bigquery.SourceFormat.PARQUET
uri = 'gs://cloud-samples-data/bigquery/us-states/us-states.parquet'

load_job = client.load_table_from_uri(
    uri,
    dataset_ref.table('us_states'),
    job_config=job_config) # API request
print('Starting job {}'.format(load_job.job_id))

load_job.result() # Waits for table load to complete.
print('Job finished.')

destination_table = client.get_table(dataset_ref.table('us_states'))
print('Loaded {} rows.'.format(destination_table.num_rows))

```

3.7.2 Customer Managed Encryption Keys

Table data is always encrypted at rest, but BigQuery also provides a way for you to control what keys it uses to encrypt they data. See [Protecting data with Cloud KMS keys](#) in the BigQuery documentation for more details.

Create a new table, using a customer-managed encryption key from Cloud KMS to encrypt it.

```

# from google.cloud import bigquery
# client = bigquery.Client()

```

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```
# dataset_id = 'my_dataset'

table_ref = client.dataset(dataset_id).table('my_table')
table = bigquery.Table(table_ref)

# Set the encryption key to use for the table.
# TODO: Replace this key with a key you have created in Cloud KMS.
kms_key_name = 'projects/{}/locations/{}/keyRings/{}/cryptoKeys/{}'.format(
    'cloud-samples-tests', 'us-central1', 'test', 'test')
table.encryption_configuration = bigquery.EncryptionConfiguration(
    kms_key_name=kms_key_name)

table = client.create_table(table) # API request

assert table.encryption_configuration.kms_key_name == kms_key_name
```

Change the key used to encrypt a table.

```
# from google.cloud import bigquery
# client = bigquery.Client()

assert table.encryption_configuration.kms_key_name == original_kms_key_name

# Set a new encryption key to use for the destination.
# TODO: Replace this key with a key you have created in KMS.
updated_kms_key_name = (
    'projects/cloud-samples-tests/locations/us-central1/'
    'keyRings/test/cryptoKeys/otherkey')
table.encryption_configuration = bigquery.EncryptionConfiguration(
    kms_key_name=updated_kms_key_name)

table = client.update_table(
    table, ['encryption_configuration']) # API request

assert table.encryption_configuration.kms_key_name == updated_kms_key_name
assert original_kms_key_name != updated_kms_key_name
```

Load a file from Cloud Storage, using a customer-managed encryption key from Cloud KMS for the destination table.

```
# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'my_dataset'

dataset_ref = client.dataset(dataset_id)
job_config = bigquery.LoadJobConfig()
job_config.autodetect = True
job_config.source_format = bigquery.SourceFormat.NEWLINE_DELIMITED_JSON

# Set the encryption key to use for the destination.
# TODO: Replace this key with a key you have created in KMS.
kms_key_name = 'projects/{}/locations/{}/keyRings/{}/cryptoKeys/{}'.format(
    'cloud-samples-tests', 'us-central1', 'test', 'test')
encryption_config = bigquery.EncryptionConfiguration(
    kms_key_name=kms_key_name)
job_config.destination_encryption_configuration = encryption_config
uri = 'gs://cloud-samples-data/bigquery/us-states/us-states.json'
```

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```

load_job = client.load_table_from_uri(
    uri,
    dataset_ref.table('us_states'),
    location='US', # Location must match that of the destination dataset.
    job_config=job_config) # API request

assert load_job.job_type == 'load'

load_job.result() # Waits for table load to complete.

assert load_job.state == 'DONE'
table = client.get_table(dataset_ref.table('us_states'))
assert table.encryption_configuration.kms_key_name == kms_key_name

```

Copy a table, using a customer-managed encryption key from Cloud KMS for the destination table.

```

# from google.cloud import bigquery
# client = bigquery.Client()

source_dataset = bigquery.DatasetReference(
    'bigquery-public-data', 'samples')
source_table_ref = source_dataset.table('shakespeare')

# dataset_id = 'my_dataset'
dest_dataset_ref = client.dataset(dataset_id)
dest_table_ref = dest_dataset_ref.table('destination_table')

# Set the encryption key to use for the destination.
# TODO: Replace this key with a key you have created in KMS.
kms_key_name = 'projects/{}/locations/{}/keyRings/{}/cryptoKeys/{}'.format(
    'cloud-samples-tests', 'us-central1', 'test', 'test')
encryption_config = bigquery.EncryptionConfiguration(
    kms_key_name=kms_key_name)
job_config = bigquery.CopyJobConfig()
job_config.destination_encryption_configuration = encryption_config

job = client.copy_table(
    source_table_ref,
    dest_table_ref,
    # Location must match that of the source and destination tables.
    location='US',
    job_config=job_config) # API request
job.result() # Waits for job to complete.

assert job.state == 'DONE'
dest_table = client.get_table(dest_table_ref)
assert dest_table.encryption_configuration.kms_key_name == kms_key_name

```

Write query results to a table, using a customer-managed encryption key from Cloud KMS for the destination table.

```

# from google.cloud import bigquery
# client = bigquery.Client()

job_config = bigquery.QueryJobConfig()

# Set the destination table. Here, dataset_id is a string, such as:
# dataset_id = 'your_dataset_id'

```

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```

table_ref = client.dataset(dataset_id).table('your_table_id')
job_config.destination = table_ref

# Set the encryption key to use for the destination.
# TODO: Replace this key with a key you have created in KMS.
kms_key_name = 'projects/{}/locations/{}/keyRings/{}/cryptoKeys/{}'.format(
    'cloud-samples-tests', 'us-central1', 'test', 'test')
encryption_config = bigquery.EncryptionConfiguration(
    kms_key_name=kms_key_name)
job_config.destination_encryption_configuration = encryption_config

# Start the query, passing in the extra configuration.
query_job = client.query(
    'SELECT 17 AS my_col;',
    # Location must match that of the dataset(s) referenced in the query
    # and of the destination table.
    location='US',
    job_config=job_config) # API request - starts the query
query_job.result()

# The destination table is written using the encryption configuration.
table = client.get_table(table_ref)
assert table.encryption_configuration.kms_key_name == kms_key_name

```

3.8 Queries

3.8.1 Querying data

Run a query and wait for it to finish:

```

# from google.cloud import bigquery
# client = bigquery.Client()

query = (
    'SELECT name FROM `bigquery-public-data.usa_names.usa_1910_2013` '
    'WHERE state = "TX" '
    'LIMIT 100')
query_job = client.query(
    query,
    # Location must match that of the dataset(s) referenced in the query.
    location='US') # API request - starts the query

for row in query_job: # API request - fetches results
    # Row values can be accessed by field name or index
    assert row[0] == row.name == row['name']
    print(row)

```

3.8.2 Run a dry run query

```

# from google.cloud import bigquery
# client = bigquery.Client()

```

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```

job_config = bigquery.QueryJobConfig()
job_config.dry_run = True
job_config.use_query_cache = False
query_job = client.query(
    ('SELECT name, COUNT(*) as name_count '
     'FROM `bigquery-public-data.usa_names.usa_1910_2013` '
     "WHERE state = 'WA' "
     'GROUP BY name'),
    # Location must match that of the dataset(s) referenced in the query.
    location='US',
    job_config=job_config) # API request

# A dry run query completes immediately.
assert query_job.state == 'DONE'
assert query_job.dry_run

print("This query will process {} bytes.".format(
    query_job.total_bytes_processed))

```

3.8.3 Writing query results to a destination table

See BigQuery documentation for more information on [writing query results](#).

```

# from google.cloud import bigquery
# client = bigquery.Client()
# dataset_id = 'your_dataset_id'

job_config = bigquery.QueryJobConfig()
# Set the destination table
table_ref = client.dataset(dataset_id).table('your_table_id')
job_config.destination = table_ref
sql = """
    SELECT corpus
    FROM `bigquery-public-data.samples.shakespeare`
    GROUP BY corpus;
"""

# Start the query, passing in the extra configuration.
query_job = client.query(
    sql,
    # Location must match that of the dataset(s) referenced in the query
    # and of the destination table.
    location='US',
    job_config=job_config) # API request - starts the query

query_job.result() # Waits for the query to finish
print('Query results loaded to table {}'.format(table_ref.path))

```

3.8.4 Run a query using a named query parameter

See BigQuery documentation for more information on [parameterized queries](#).

```
# from google.cloud import bigquery
# client = bigquery.Client()

query = """
    SELECT word, word_count
    FROM `bigquery-public-data.samples.shakespeare`
    WHERE corpus = @corpus
    AND word_count >= @min_word_count
    ORDER BY word_count DESC;
"""

query_params = [
    bigquery.ScalarQueryParameter('corpus', 'STRING', 'romeoandjuliet'),
    bigquery.ScalarQueryParameter('min_word_count', 'INT64', 250)
]
job_config = bigquery.QueryJobConfig()
job_config.query_parameters = query_params
query_job = client.query(
    query,
    # Location must match that of the dataset(s) referenced in the query.
    location='US',
    job_config=job_config) # API request - starts the query

# Print the results
for row in query_job:
    print('{:} \t{:}'.format(row.word, row.word_count))

assert query_job.state == 'DONE'
```

3.9 List jobs for a project

Jobs describe actions performed on data in BigQuery tables:

- Load data into a table
- Run a query against data in one or more tables
- Extract data from a table
- Copy a table

```
# TODO(developer): Uncomment the lines below and replace with your values.
# from google.cloud import bigquery
# project = 'my_project' # replace with your project ID
# client = bigquery.Client(project=project)
import datetime

# List the 10 most recent jobs in reverse chronological order.
# Omit the max_results parameter to list jobs from the past 6 months.
print("Last 10 jobs:")
for job in client.list_jobs(max_results=10): # API request(s)
    print(job.job_id)

# The following are examples of additional optional parameters:

# Use min_creation_time and/or max_creation_time to specify a time window.
print("Jobs from the last ten minutes:")
```

(continues on next page)

(continued from previous page)

```

ten_mins_ago = datetime.datetime.utcnow() - datetime.timedelta(minutes=10)
for job in client.list_jobs(min_creation_time=ten_mins_ago):
    print(job.job_id)

# Use all_users to include jobs run by all users in the project.
print("Last 10 jobs run by all users:")
for job in client.list_jobs(max_results=10, all_users=True):
    print("{} run by user: {}".format(job.job_id, job.user_email))

# Use state_filter to filter by job state.
print("Jobs currently running:")
for job in client.list_jobs(state_filter='RUNNING'):
    print(job.job_id)

```

3.10 Using BigQuery with Pandas

3.10.1 Retrieve BigQuery data as a Pandas DataFrame

As of version 0.29.0, you can use the `to_dataframe()` function to retrieve query results or table rows as a `pandas.DataFrame`.

First, ensure that the `pandas` library is installed by running:

```
pip install --upgrade pandas
```

Alternatively, you can install the BigQuery python client library with `pandas` by running:

```
pip install --upgrade google-cloud-bigquery[pandas]
```

To retrieve query results as a `pandas.DataFrame`:

```

# from google.cloud import bigquery
# client = bigquery.Client()

sql = """
    SELECT name, SUM(number) as count
    FROM `bigquery-public-data.usa_names.usa_1910_current`
    GROUP BY name
    ORDER BY count DESC
    LIMIT 10
"""

df = client.query(sql).to_dataframe()

```

To retrieve table rows as a `pandas.DataFrame`:

```

# from google.cloud import bigquery
# client = bigquery.Client()

dataset_ref = client.dataset('samples', project='bigquery-public-data')
table_ref = dataset_ref.table('shakespeare')
table = client.get_table(table_ref)

df = client.list_rows(table).to_dataframe()

```

3.10.2 Load a Pandas DataFrame to a BigQuery Table

As of version 1.3.0, you can use the `load_table_from_dataframe()` function to load data from a `pandas.DataFrame` to a `Table`. To use this function, in addition to `pandas`, you will need to install the `pyarrow` library. You can install the BigQuery python client library with `pandas` and `pyarrow` by running:

```
pip install --upgrade google-cloud-bigquery[pandas,pyarrow]
```

The following example demonstrates how to create a `pandas.DataFrame` and load it into a new table:

```
# from google.cloud import bigquery
# import pandas
# client = bigquery.Client()
# dataset_id = 'my_dataset'

dataset_ref = client.dataset(dataset_id)
table_ref = dataset_ref.table('monty_python')
records = [
    {'title': 'The Meaning of Life', 'release_year': 1983},
    {'title': 'Monty Python and the Holy Grail', 'release_year': 1975},
    {'title': 'Life of Brian', 'release_year': 1979},
    {
        'title': 'And Now for Something Completely Different',
        'release_year': 1971
    },
]
# Optionally set explicit indices.
# If indices are not specified, a column will be created for the default
# indices created by pandas.
index = ['Q24980', 'Q25043', 'Q24953', 'Q16403']
dataframe = pandas.DataFrame(
    records, index=pandas.Index(index, name='wikidata_id'))

job = client.load_table_from_dataframe(dataframe, table_ref, location='US')

job.result() # Waits for table load to complete.

assert job.state == 'DONE'
table = client.get_table(table_ref)
assert table.num_rows == 4
```

3.11 Changelog

For a list of all `google-cloud-bigquery` releases:

3.11.1 Changelog

PyPI History

1.4.0

Implementation Changes

- Add 'internalError' to retryable error reasons. (#5599)
- Don't raise exception if viewing CREATE VIEW DDL results (#5602)

New Features

- Add Orc source format support and samples (#5500)
- Move 'DEFAULT_RETRY' (w/ its predicate) to a new public 'retry' module. (#5552)
- Allow listing rows on an empty table. (#5584)

Documentation

- Add load_table_from_dataframe() to usage docs and changelog and dedents snippets in usage page (#5501)
- Add samples for query external data sources (GCS & Sheets) (#5491)
- Add BigQuery authorized view samples (#5515)
- Update docs to show pyarrow as the only dependency of load_table_from_dataframe() (#5582)

Internal / Testing Changes

- Add missing explicit coverage for '_helpers' (#5550)
- Skip update_table and update_dataset tests until etag issue is resolved. (#5590)

1.3.0

New Features

- NUMERIC type support (#5331)
- Add timeline and top-level slot-millis to query statistics. (#5312)
- Add additional statistics to query plan stages. (#5307)
- Add client.load_table_from_dataframe() (#5387)

Documentation

- Use autosummary to split up API reference docs (#5340)
- Fix typo in Client docstrings (#5342)

Internal / Testing Changes

- Prune systests identified as redundant to snippets. (#5365)
- Modify system tests to use prerelease versions of grpcio (#5304)
- Improve system test performance (#5319)

1.2.0

Implementation Changes

- Switch `list_partitions` helper to a direct metatable read (#5273)
- Fix typo in `Encoding.ISO_8859_1` enum value (#5211)

New Features

- Add `UnknownJob` type for redacted jobs. (#5281)
- Add `project` parameter to `list_datasets` and `list_jobs` (#5217)
- Add `from_string` factory methods to `Dataset` and `Table` (#5255)
- Add column based time partitioning (#5267)

Documentation

- Standardize docstrings for constants (#5289)
- Fix docstring / impl of `ExtractJob.destination_uri_file_counts`. (#5245)

Internal / Testing Changes

- Add testing support for Python 3.7; remove testing support for Python 3.4. (#5295)

1.1.0

New Features

- Add `client.get_service_account_email` (#5203)

Documentation

- Update samples and standardize region tags (#5195)

Internal / Testing Changes

- Fix trove classifier to be Production/Stable
- Don't suppress 'dots' output on test (#5202)

1.0.0

Implementation Changes

- Remove deprecated Client methods (#5182)

0.32.0

:warning: Interface changes

- Use `job.configuration` resource for XXXJobConfig classes (#5036)

Interface additions

- Add `page_size` parameter for `list_rows` and use in DB-API for `arraysize` (#4931)
- Add IPython magics for running queries (#4983)

Documentation

- Add job string constant parameters in init and snippets documentation (#4987)

Internal / Testing changes

- Specify IPython version 5.5 when running Python 2.7 tests (#5145)
- Move all Dataset property conversion logic into properties (#5130)
- Remove unnecessary `_Table` class from `test_job.py` (#5126)
- Use explicit bytes to initialize 'BytesIO'. (#5116)
- Make SchemaField be able to include description via `from_api_repr` method (#5114)
- Remove `_ApiResourceProperty` class (#5107)
- Add dev version for 0.32.0 release (#5105)
- StringIO to BytesIO (#5101)
- Shorten snippets test name (#5091)
- Don't use `selected_fields` for listing query result rows (#5072)
- Add location property to job classes. (#5071)
- Use autospec for Connection in tests. (#5066)
- Add Parquet SourceFormat and samples (#5057)
- Remove `test_load_table_from_uri_w_autodetect_schema_then_get_job` because of duplicate test in snippets (#5004)
- Fix encoding variable and strings UTF-8 and ISO-8859-1 difference documentation (#4990)

0.31.0

Interface additions

- Add support for `EncryptionConfiguration` (#4845)

Implementation changes

- Allow listing/getting jobs even when there is an “invalid” job. (#4786)

Dependencies

- The minimum version for `google-api-core` has been updated to version 1.0.0. This may cause some incompatibility with older google-cloud libraries, you will need to update those libraries if you have a dependency conflict. (#4944, #4946)

Documentation

- Update format in `Table.full_table_id` and `TableListItem.full_table_id` docstrings. (#4906)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all `setup.py` files (#4909)
- Remove unnecessary debug print from tests (#4907)
- Use constant strings for job properties in tests (#4833)

0.30.0

This is the release candidate for v1.0.0.

Interface changes / additions

- Add `delete_contents` to `delete_dataset`. (#4724)

Bugfixes

- Add handling of missing properties in `SchemaField.from_api_repr()`. (#4754)
- Fix missing return value in `LoadJobConfig.from_api_repr`. (#4727)

Documentation

- Minor documentation and typo fixes. (#4782, #4718, #4784, #4835, #4836)

0.29.0

Interface changes / additions

- Add `to_dataframe()` method to row iterators. When Pandas is installed this method returns a `DataFrame` containing the query's or table's rows. (#4354)
- Iterate over a `QueryJob` to wait for and get the query results. (#4350)
- Add `Table.reference` and `Dataset.reference` properties to get the `TableReference` or `DatasetReference` corresponding to that `Table` or `Dataset`, respectively. (#4405)
- Add `Row.keys()`, `Row.items()`, and `Row.get()`. This makes `Row` act more like a built-in dictionary. (#4393, #4413)

Interface changes / breaking changes

- Add `Client.insert_rows()` and `Client.insert_rows_json()`, deprecate `Client.create_rows()` and `Client.create_rows_json()`. (#4657)
- Add `Client.list_tables`, deprecate `Client.list_dataset_tables`. (#4653)
- `Client.list_tables` returns an iterators of `TableListItem`. The API only returns a subset of properties of a table when listing. (#4427)
- Remove `QueryJob.query_results()`. Use `QueryJob.result()` instead. (#4652)
- Remove `Client.query_rows()`. Use `Client.query()` instead. (#4429)
- `Client.list_datasets` returns an iterator of `DatasetListItem`. The API only returns a subset of properties of a dataset when listing. (#4439)

0.28.0

0.28.0 significantly changes the interface for this package. For examples of the differences between 0.28.0 and previous versions, see [Migrating to the BigQuery Python client library 0.28](#). These changes can be summarized as follows:

- Query and view operations default to the standard SQL dialect. (#4192)
- Client functions related to [jobs](#), like running queries, immediately start the job.
- Functions to create, get, update, delete datasets and tables moved to the client class.

Fixes

- Populate timeout parameter correctly for queries (#4209)
- Automatically retry idempotent RPCs (#4148, #4178)
- Parse timestamps in query parameters using canonical format (#3945)
- Parse array parameters that contain a struct type. (#4040)
- Support Sub Second Datetimes in row data (#3901, #3915, #3926), h/t @page1

Interface changes / additions

- Support external table configuration (#4182) in query jobs (#4191) and tables (#4193).
- New `Row` class allows for access by integer index like a tuple, string index like a dictionary, or attribute access like an object. (#4149)
- Add option for job ID generation with user-supplied prefix (#4198)
- Add support for update of dataset access entries (#4197)
- Add support for atomic read-modify-write of a dataset using etag (#4052)
- Add support for labels to `Dataset` (#4026)
- Add support for labels to `Table` (#4207)
- Add `Table.streaming_buffer` property (#4161)
- Add `TableReference` class (#3942)
- Add `DatasetReference` class (#3938, #3942, #3993)
- Add `ExtractJob.destination_uri_file_counts` property. (#3803)
- Add `client.create_rows_json()` to bypass conversions on streaming writes. (#4189)
- Add `client.get_job()` to get arbitrary jobs. (#3804, #4213)
- Add filter to `client.list_datasets()` (#4205)
- Add `QueryJob.undeclared_query_parameters` property. (#3802)
- Add `QueryJob.referenced_tables` property. (#3801)
- Add new scalar statistics properties to `QueryJob` (#3800)
- Add `QueryJob.query_plan` property. (#3799)

Interface changes / breaking changes

- Remove `client.run_async_query()`, use `client.query()` instead. (#4130)
- Remove `client.run_sync_query()`, use `client.query_rows()` instead. (#4065, #4248)
- Make `QueryResults` read-only. (#4094, #4144)
- Make `get_query_results` private. Return rows for `QueryJob.result()` (#3883)
- Move `*QueryParameter` and `UDFResource` classes to `query` module (also exposed in `bigquery` module). (#4156)

Changes to tables

- Remove `client` from `Table` class (#4159)
- Remove `table.exists()` (#4145)
- Move `table.list_partitions` to `client.list_partitions` (#4146)
- Move `table.upload_from_file` to `client.load_table_from_file` (#4136)
- Move `table.update()` and `table.patch()` to `client.update_table()` (#4076)

- Move `table.insert_data()` to `client.create_rows()`. Automatically generates row IDs if not supplied. (#4151, #4173)
- Move `table.fetch_data()` to `client.list_rows()` (#4119, #4143)
- Move `table.delete()` to `client.delete_table()` (#4066)
- Move `table.create()` to `client.create_table()` (#4038, #4043)
- Move `table.reload()` to `client.get_table()` (#4004)
- Rename `Table.name` attribute to `Table.table_id` (#3959)
- `Table` constructor takes a `TableReference` as parameter (#3997)

Changes to datasets

- Remove `client` from `Dataset` class (#4018)
- Remove `dataset.exists()` (#3996)
- Move `dataset.list_tables()` to `client.list_dataset_tables()` (#4013)
- Move `dataset.delete()` to `client.delete_dataset()` (#4012)
- Move `dataset.patch()` and `dataset.update()` to `client.update_dataset()` (#4003)
- Move `dataset.create()` to `client.create_dataset()` (#3982)
- Move `dataset.reload()` to `client.get_dataset()` (#3973)
- Rename `Dataset.name` attribute to `Dataset.dataset_id` (#3955)
- `client.dataset()` returns a `DatasetReference` instead of `Dataset`. (#3944)
- Rename class: `dataset.AccessGrant` -> `dataset.AccessEntry`. (#3798)
- `dataset.table()` returns a `TableReference` instead of a `Table` (#4014)
- `Dataset` constructor takes a `DatasetReference` (#4036)

Changes to jobs

- Make `job.begin()` method private. (#4242)
- Add `LoadJobConfig` class and modify `LoadJob` (#4103, #4137)
- Add `CopyJobConfig` class and modify `CopyJob` (#4051, #4059)
- Type of `Job`'s and `Query`'s `default_dataset` changed from `Dataset` to `DatasetReference` (#4037)
- Rename `client.load_table_from_storage()` to `client.load_table_from_uri()` (#4235)
- Rename `client.extract_table_to_storage` to `client.extract_table()`. Method starts the extract job immediately. (#3991, #4177)
- Rename `XJob.name` to `XJob.job_id`. (#3962)
- Rename `job` classes. `LoadTableFromStorageJob` -> `LoadJob` and `ExtractTableToStorageJob` -> `jobs.ExtractJob` (#3797)

Dependencies

- Updating to `google-cloud-core` `~= 0.28`, in particular, the `google-api-core` package has been moved out of `google-cloud-core`. (#4221)

PyPI: <https://pypi.org/project/google-cloud-bigquery/0.28.0/>

0.27.0

- Remove client-side enum validation. (#3735)
- Add `Table.row_from_mapping` helper. (#3425)
- Move `google.cloud.future` to `google.api.core` (#3764)
- Fix `__eq__` and `__ne__`. (#3765)
- Move `google.cloud.iterator` to `google.api.core.page_iterator` (#3770)
- `nullMarker` support for BigQuery Load Jobs (#3777), h/t @leondealmeida
- Allow `job_id` to be explicitly specified in DB-API. (#3779)
- Add support for a custom null marker. (#3776)
- Add `SchemaField` serialization and deserialization. (#3786)
- Add `get_query_results` method to the client. (#3838)
- Poll for query completion via `getQueryResults` method. (#3844)
- Allow fetching more than the first page when `max_results` is set. (#3845)

PyPI: <https://pypi.org/project/google-cloud-bigquery/0.27.0/>

0.26.0

Notable implementation changes

- Using the `requests` transport attached to a `Client` for resumable media (i.e. downloads and uploads) (#3705) (this relates to the `httplib2` to `requests` switch)

Interface changes / additions

- Adding `autodetect` property on `LoadTableFromStorageJob` to enable schema autodetection. (#3648)
- Implementing the Python Futures interface for Jobs. Call `job.result()` to wait for jobs to complete instead of polling manually on the job status. (#3626)
- Adding `is_nullable` property on `SchemaField`. Can be used to check if a column is nullable. (#3620)
- `job_name` argument added to `Table.upload_from_file` for setting the job ID. (#3605)
- Adding `google.cloud.bigquery.dbapi` package, which implements PEP-249 DB-API specification. (#2921)
- Adding `Table.view_use_legacy_sql` property. Can be used to create views with legacy or standard SQL. (#3514)

Interface changes / breaking changes

- Removing `results()` method from the `QueryJob` class. Use `query_results()` instead. (#3661)
- `SchemaField` is now immutable. It is also hashable so that it can be used in sets. (#3601)

Dependencies

- Updating to `google-cloud-core` `~= 0.26`, in particular, the underlying HTTP transport switched from `httplib2` to `requests` (#3654, #3674)
- Adding dependency on `google-resumable-media` for loading BigQuery tables from local files. (#3555)

Packaging

- Fix inclusion of `tests` (vs. `unit_tests`) in `MANIFEST.in` (#3552)
- Updating `author_email` in `setup.py` to `googleapis-publisher@google.com`. (#3598)

PyPI: <https://pypi.org/project/google-cloud-bigquery/0.26.0/>

Python Client for BigQuery Data Transfer API (Alpha)

BigQuery Data Transfer API: Transfers data from partner SaaS applications to Google BigQuery on a scheduled, managed basis.

- [Client Library Documentation](#)
- [Product Documentation](#)

4.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. [Select or create a Cloud Platform project.](#)
2. [Enable the BigQuery Data Transfer API.](#)
3. [Setup Authentication.](#)

4.1.1 Installation

Install this library in a [virtualenv](#) using `pip`. [virtualenv](#) is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With [virtualenv](#), it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-bigquerydatatransfer
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-bigquerydatatransfer
```

4.1.2 Preview

DataTransferServiceClient

```
from google.cloud import bigquery_datatransfer_v1

client = bigquery_datatransfer_v1.DataTransferServiceClient()

parent = client.location_path('[PROJECT]', '[LOCATION]')

# Iterate over all results
for element in client.list_data_sources(parent):
    # process element
    pass

# Or iterate over results one page at a time
for page in client.list_data_sources(parent, options=CallOptions(page_token=INITIAL_
↪PAGE)):
    for element in page:
        # process element
        pass
```

4.1.3 Next Steps

- Read the [Client Library Documentation](#) for BigQuery Data Transfer API API to see other available methods on the client.
- Read the [BigQuery Data Transfer API Product documentation](#) to learn more about the product and see How-to Guides.
- View this repository's main [README](#) to see the full list of Cloud APIs that we cover.

4.2 Api Reference

4.2.1 Client for BigQuery Data Transfer API

```
class google.cloud.bigquery_datatransfer_v1.DataTransferServiceClient(channel=None,
    credentials=None,
    client_config={'interfaces':
    {'google.cloud.bigquery.datatransfer_v1':
    {'retry_codes':
    {'idempotent':
    ['DEADLINE_EXCEEDED',
    'UNAVAILABLE'],
    'non_idempotent':
    []},
    'retry_params':
    {'default':
    {'initial_retry_delay_millis':
    100,
    'retry_delay_multiplier':
    1.3,
    'max_retry_delay_millis':
    60000,
    'initial_rpc_timeout_millis':
    20000,
    'rpc_timeout_multiplier':
    1.0,
    'max_rpc_timeout_millis':
    20000,
    'total_timeout_millis':
    600000}}},
    'methods':
    {'GetDataTransferSource':
    {'timeout_millis':
    20000,
    'retry_codes_name':
    'idempotent',
    'retry_params_name':
    'default'},
    'ListDataSources':
    {'timeout_millis':
    20000,
    'retry_codes_name':
    'idempotent',
    'retry_params_name':
    'default'}}
```


from other Google Products into BigQuery. This service contains methods that are end user exposed. It backs up the frontend.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. If specified, then the `credentials` argument is ignored.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified the default configuration is used. Generally, you only need to set this if you're developing your own client library.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

check_valid_creds (*name*, *retry=<object object>*, *timeout=<object object>*)

Returns true if valid credentials exist for the given data source and requesting user. Some data sources doesn't support service account, so we need to talk to them on behalf of the end user. This API just checks whether we have OAuth token for the particular user, which is a pre-requisite before user can create a transfer config.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> name = client.location_data_source_path('[PROJECT]', '[LOCATION]',
→ '[DATA_SOURCE]')
>>>
>>> response = client.check_valid_creds(name)
```

Parameters

- **name** (*str*) – The data source in the form: `projects/{project_id}/dataSources/{data_source_id}`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *CheckValidCredsResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

create_transfer_config (*parent*, *transfer_config*, *authorization_code*=None, *retry*=<object object>, *timeout*=<object object>)

Creates a new data transfer configuration.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>> transfer_config = {}
>>>
>>> response = client.create_transfer_config(parent, transfer_config)
```

Parameters

- **parent** (*str*) – The BigQuery project id where the transfer configuration should be created. Must be in the format `/projects/{project_id}/locations/{location_id}` or `/projects/{project_id}/locations/-`. In case when `-` is specified as `location_id`, location is inferred from the destination dataset region.
- **transfer_config** (*Union[dict, TransferConfig]*) – Data transfer configuration to create. If a dict is provided, it must be of the same form as the protobuf message `TransferConfig`
- **authorization_code** (*str*) – Optional OAuth2 authorization code to use with this transfer configuration. This is required if new credentials are needed, as indicated by `CheckValidCreds`. In order to obtain `authorization_code`, please make a request to https://www.gstatic.com/bigquerydatatransfer/oauth/auth?client_id=<datatransferapiclientid>&scope=<data_source_scopes>&redirect_uri=<redirect_uri>
 - `client_id` should be OAuth `client_id` of BigQuery DTS API for the given data source returned by `ListDataSources` method.
 - `data_source_scopes` are the scopes returned by `ListDataSources` method.
 - `redirect_uri` is an optional parameter. If not specified, then authorization code is posted to the opener of authorization flow window. Otherwise it will be sent to the redirect uri. A special value of `urn:ietf:wg:oauth:2.0:oob` means that authorization code should be returned in the title bar of the browser, with the page text prompting the user to copy the code and paste it in the application.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `TransferConfig` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `data_source_path` (*project*, *data_source*)

Returns a fully-qualified data_source resource name string.

delete_transfer_config (*name*, *retry*=<object object>, *timeout*=<object object>)

Deletes a data transfer configuration, including any associated transfer runs and logs.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> name = client.location_transfer_config_path('[PROJECT]', '[LOCATION]',
→ '[TRANSFER_CONFIG]')
>>>
>>> client.delete_transfer_config(name)
```

Parameters

- **name** (*str*) – The field will contain name of the resource requested, for example: `projects/{project_id}/transferConfigs/{config_id}`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_transfer_run (*name*, *retry*=<object object>, *timeout*=<object object>)

Deletes the specified transfer run.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
```

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```
>>> name = client.location_run_path('[PROJECT]', '[LOCATION]', '[TRANSFER_
↳CONFIG]', '[RUN]')
>>>
>>> client.delete_transfer_run(name)
```

Parameters

- **name** (*str*) – The field will contain name of the resource requested, for example: `projects/{project_id}/transferConfigs/{config_id}/runs/{run_id}`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.bigquery_datatransfer_v1.gapic.enums' from '/home/docs/c
```

```
get_data_source(name, retry=<object object>, timeout=<object object>)
```

Retrieves a supported data source and returns its settings, which can be used for UI rendering.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> name = client.location_data_source_path('[PROJECT]', '[LOCATION]',
↳ '[DATA_SOURCE]')
>>>
>>> response = client.get_data_source(name)
```

Parameters

- **name** (*str*) – The field will contain name of the resource requested, for example: `projects/{project_id}/dataSources/{data_source_id}`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `DataSource` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_transfer_config(*name*, *retry*=<object object>, *timeout*=<object object>)

Returns information about a data transfer config.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> name = client.location_transfer_config_path('[PROJECT]', '[LOCATION]',
↳ '[TRANSFER_CONFIG]')
>>>
>>> response = client.get_transfer_config(name)
```

Parameters

- **name** (*str*) – The field will contain name of the resource requested, for example: `projects/{project_id}/transferConfigs/{config_id}`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `TransferConfig` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_transfer_run(*name*, *retry*=<object object>, *timeout*=<object object>)

Returns information about the particular transfer run.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
```

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```
>>>
>>> name = client.location_run_path('[PROJECT]', '[LOCATION]', '[TRANSFER_
↳CONFIG]', '[RUN]')
>>>
>>> response = client.get_transfer_run(name)
```

Parameters

- **name** (*str*) – The field will contain name of the resource requested, for example: `projects/{project_id}/transferConfigs/{config_id}/runs/{run_id}`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *TransferRun* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_data_sources (*parent*, *page_size=None*, *retry=<object object>*, *timeout=<object object>*)
Lists supported data sources and returns their settings, which can be used for UI rendering.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_data_sources(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_data_sources(parent, options=CallOptions(page_
↳token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – The BigQuery project id for which data sources should be returned. Must be in the form: `projects/{project_id}`
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `DataSource` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_transfer_configs (*parent*, *data_source_ids=None*, *page_size=None*, *retry=<object object>*, *timeout=<object object>*)
Returns information about all data transfers in the project.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_transfer_configs(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_transfer_configs(parent,
->options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – The BigQuery project id for which data sources should be returned: `projects/{project_id}`.

- **data_source_ids** (*list[str]*) – When specified, only configurations of requested data sources are returned.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `TransferConfig` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_transfer_logs (*parent, page_size=None, message_types=None, retry=<object object>, timeout=<object object>*)

Returns user facing log messages for the data transfer run.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> parent = client.location_run_path('[PROJECT]', '[LOCATION]', '[TRANSFER_
↳CONFIG]', '[RUN]')
>>>
>>>
>>> # Iterate over all results
>>> for element in client.list_transfer_logs(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_transfer_logs(parent, options=CallOptions(page_
↳token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – Transfer run name in the form: `projects/{project_id}/transferConfigs/{config_id}/runs/{run_id}`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **message_types** (*list[MessageSeverity]*) – Message types to return. If not populated - INFO, WARNING and ERROR messages are returned.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `TransferMessage` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_transfer_runs (*parent, states=None, page_size=None, run_attempt=None, retry=<object object>, timeout=<object object>*)

Returns information about running and completed jobs.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> parent = client.location_transfer_config_path('[PROJECT]', '[LOCATION]',
→ '[TRANSFER_CONFIG]')
>>>
>>>
>>> # Iterate over all results
>>> for element in client.list_transfer_runs(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_transfer_runs(parent, options=CallOptions(page_
→ token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – Name of transfer configuration for which transfer runs should be retrieved. Format of transfer configuration resource name is: `projects/{project_id}/transferConfigs/{config_id}`.
- **states** (*list[TransferState]*) – When specified, only transfer runs with requested states are returned.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **run_attempt** (*RunAttempt*) – Indicates how run attempts are to be pulled.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `TransferRun` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `location_data_source_path` (*project, location, data_source*)

Returns a fully-qualified `location_data_source` resource name string.

classmethod `location_path` (*project, location*)

Returns a fully-qualified `location` resource name string.

classmethod `location_run_path` (*project, location, transfer_config, run*)

Returns a fully-qualified `location_run` resource name string.

classmethod `location_transfer_config_path` (*project, location, transfer_config*)

Returns a fully-qualified `location_transfer_config` resource name string.

classmethod `project_path` (*project*)

Returns a fully-qualified `project` resource name string.

classmethod `run_path` (*project, transfer_config, run*)

Returns a fully-qualified `run` resource name string.

schedule_transfer_runs (*parent, start_time, end_time, retry=<object object>, timeout=<object object>*)

Creates transfer runs for a time range [`range_start_time`, `range_end_time`]. For each date - or whatever granularity the data source supports - in the range, one transfer run is created. Note that runs are created per UTC time in the time range.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
>>>
>>> parent = client.location_transfer_config_path('[PROJECT]', '[LOCATION]',
→ '[TRANSFER_CONFIG]')
>>> start_time = {}
>>> end_time = {}
>>>
>>> response = client.schedule_transfer_runs(parent, start_time, end_time)
```

Parameters

- **parent** (*str*) – Transfer configuration name in the form: `projects/{project_id}/transferConfigs/{config_id}`.
- **start_time** (*Union[dict, Timestamp]*) – Start time of the range of transfer runs. For example, "2017-05-25T00:00:00+00:00". If a dict is provided, it must be of the same form as the protobuf message *Timestamp*
- **end_time** (*Union[dict, Timestamp]*) – End time of the range of transfer runs. For example, "2017-05-30T00:00:00+00:00". If a dict is provided, it must be of the same form as the protobuf message *Timestamp*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *ScheduleTransferRunsResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod transfer_config_path (*project, transfer_config*)

Returns a fully-qualified transfer_config resource name string.

update_transfer_config (*transfer_config, update_mask, authorization_code=None, retry=<object object>, timeout=<object object>*)

Updates a data transfer configuration. All fields must be set, even if they are not updated.

Example

```
>>> from google.cloud import bigquery_datatransfer_v1
>>>
>>> client = bigquery_datatransfer_v1.DataTransferServiceClient()
```

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```
>>>
>>> transfer_config = {}
>>> update_mask = {}
>>>
>>> response = client.update_transfer_config(transfer_config, update_mask)
```

Parameters

- **transfer_config** (*Union[dict, TransferConfig]*) – Data transfer configuration to create. If a dict is provided, it must be of the same form as the protobuf message *TransferConfig*
- **update_mask** (*Union[dict, FieldMask]*) – Required list of fields to be updated in this request. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **authorization_code** (*str*) – Optional OAuth2 authorization code to use with this transfer configuration. If it is provided, the transfer configuration will be associated with the authorizing user. In order to obtain *authorization_code*, please make a request to https://www.gstatic.com/bigquerydatatransfer/oauthz/auth?client_id=<datatransferapiclientid>&scope=<data_source_scopes>&redirect_uri=<redirect_uri>
 - *client_id* should be OAuth *client_id* of BigQuery DTS API for the given data source returned by *ListDataSources* method.
 - *data_source_scopes* are the scopes returned by *ListDataSources* method.
 - *redirect_uri* is an optional parameter. If not specified, then authorization code is posted to the opener of authorization flow window. Otherwise it will be sent to the redirect uri. A special value of `urn:ietf:wg:oauth:2.0:oob` means that authorization code should be returned in the title bar of the browser, with the page text prompting the user to copy the code and paste it in the application.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *TransferConfig* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

4.2.2 Types for BigQuery Data Transfer API Client

```
class google.cloud.bigquery_datatransfer_v1.types.Any
```

```
class google.cloud.bigquery_datatransfer_v1.types.BoolValue
```

```
class google.cloud.bigquery_datatransfer_v1.types.BytesValue
```

class google.cloud.bigquery_datatransfer_v1.types.**CheckValidCredsRequest**

A request to determine whether the user has valid credentials. This method is used to limit the number of OAuth popups in the user interface. The user id is inferred from the API call context. If the data source has the Google+ authorization type, this method returns false, as it cannot be determined whether the credentials are already valid merely based on the user id.

name

The data source in the form: projects/{project_id}/dataSources/{data_source_id}

class google.cloud.bigquery_datatransfer_v1.types.**CheckValidCredsResponse**

A response indicating whether the credentials exist and are valid.

has_valid_creds

If set to true, the credentials exist and are valid.

class google.cloud.bigquery_datatransfer_v1.types.**CreateTransferConfigRequest**

A request to create a data transfer configuration. If new credentials are needed for this transfer configuration, an authorization code must be provided. If an authorization code is provided, the transfer configuration will be associated with the user id corresponding to the authorization code. Otherwise, the transfer configuration will be associated with the calling user.

parent

The BigQuery project id where the transfer configuration should be created. Must be in the format /projects/{project_id}/locations/{location_id} or /projects/{project_id}/locations/- In case when '-' is specified as location_id, location is inferred from the destination dataset region.

transfer_config

Data transfer configuration to create.

authorization_code

Optional OAuth2 authorization code to use with this transfer configuration. This is required if new credentials are needed, as indicated by CheckValidCreds. In order to obtain authorization_code, please make a request to https://www.gstatic.com/bigquerydatatransfer/oauthz/auth?client_id=&scope=&redirect_uri= - client_id should be OAuth client_id of BigQuery DTS API for the given data source returned by ListDataSources method. - data_source_scopes are the scopes returned by ListDataSources method. - redirect_uri is an optional parameter. If not specified, then authorization code is posted to the opener of authorization flow window. Otherwise it will be sent to the redirect uri. A special value of urn:ietf:wg:oauth:2.0:oob means that authorization code should be returned in the title bar of the browser, with the page text prompting the user to copy the code and paste it in the application.

class google.cloud.bigquery_datatransfer_v1.types.**CustomHttpPattern**

class google.cloud.bigquery_datatransfer_v1.types.**DataSource**

Represents data source metadata. Metadata is sufficient to render UI and request proper OAuth tokens.

name

Data source resource name.

data_source_id

Data source id.

display_name

User friendly data source name.

description

User friendly data source description string.

client_id

Data source client id which should be used to receive refresh token. When not supplied, no offline credentials are populated for data transfer.

scopes

Api auth scopes for which refresh token needs to be obtained. Only valid when `client_id` is specified. Ignored otherwise. These are scopes needed by a data source to prepare data and ingest them into BigQuery, e.g., <https://www.googleapis.com/auth/bigquery>

transfer_type

Transfer type. Currently supports only batch transfers, which are transfers that use the BigQuery batch APIs (load or query) to ingest the data.

supports_multiple_transfers

Indicates whether the data source supports multiple transfers to different BigQuery targets.

update_deadline_seconds

The number of seconds to wait for an update from the data source before BigQuery marks the transfer as failed.

default_schedule

Default data transfer schedule. Examples of valid schedules include: `1st,3rd monday of month 15:30`, `every wed,fri of jan,jun 13:15`, and `first sunday of quarter 00:00`.

supports_custom_schedule

Specifies whether the data source supports a user defined schedule, or operates on the default schedule. When set to `true`, user can override default schedule.

parameters

Data source parameters.

help_url

Url for the help document for this data source.

authorization_type

Indicates the type of authorization.

data_refresh_type

Specifies whether the data source supports automatic data refresh for the past few days, and how it's supported. For some data sources, data might not be complete until a few days later, so it's useful to refresh data automatically.

default_data_refresh_window_days

Default data refresh window on days. Only meaningful when `data_refresh_type = SLIDING_WINDOW`.

manual_runs_disabled

Disables backfilling and manual run scheduling for the data source.

minimum_schedule_interval

The minimum interval between two consecutive scheduled runs.

class `google.cloud.bigquery_datatransfer_v1.types.DataSourceParameter`

Represents a data source parameter with validation rules, so that parameters can be rendered in the UI. These parameters are given to us by supported data sources, and include all needed information for rendering and validation. Thus, whoever uses this api can decide to generate either generic ui, or custom data source specific forms.

param_id

Parameter identifier.

display_name

Parameter display name in the user interface.

description

Parameter description.

type
Parameter type.

required
Is parameter required.

repeated
Can parameter have multiple values.

validation_regex
Regular expression which can be used for parameter validation.

allowed_values
All possible values for the parameter.

min_value
For integer and double values specifies minimum allowed value.

max_value
For integer and double values specifies maximum allowed value.

fields
When parameter is a record, describes child fields.

validation_description
Description of the requirements for this field, in case the user input does not fulfill the regex pattern or min/max values.

validation_help_url
URL to a help document to further explain the naming requirements.

immutable
Cannot be changed after initial creation.

recurse
If set to true, schema should be taken from the parent with the same parameter_id. Only applicable when parameter type is RECORD.

class google.cloud.bigquery_datatransfer_v1.types.**DeleteTransferConfigRequest**
A request to delete data transfer information. All associated transfer runs and log messages will be deleted as well.

name
The field will contain name of the resource requested, for example: projects/{project_id}/transferConfigs/{config_id}

class google.cloud.bigquery_datatransfer_v1.types.**DeleteTransferRunRequest**
A request to delete data transfer run information.

name
The field will contain name of the resource requested, for example: projects/{project_id}/transferConfigs/{config_id}/runs/{run_id}

class google.cloud.bigquery_datatransfer_v1.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.bigquery_datatransfer_v1.types.**DoubleValue**

class google.cloud.bigquery_datatransfer_v1.types.**Duration**

```
class google.cloud.bigquery_datatransfer_v1.types.Empty
class google.cloud.bigquery_datatransfer_v1.types.EnumDescriptorProto

    class EnumReservedRange
class google.cloud.bigquery_datatransfer_v1.types.EnumOptions
class google.cloud.bigquery_datatransfer_v1.types.EnumValueDescriptorProto
class google.cloud.bigquery_datatransfer_v1.types.EnumValueOptions
class google.cloud.bigquery_datatransfer_v1.types.ExtensionRangeOptions
class google.cloud.bigquery_datatransfer_v1.types.FieldDescriptorProto
class google.cloud.bigquery_datatransfer_v1.types.FieldMask
class google.cloud.bigquery_datatransfer_v1.types.FieldOptions
class google.cloud.bigquery_datatransfer_v1.types.FileDescriptorProto
class google.cloud.bigquery_datatransfer_v1.types.FileDescriptorSet
class google.cloud.bigquery_datatransfer_v1.types.FileOptions
class google.cloud.bigquery_datatransfer_v1.types.FloatValue
class google.cloud.bigquery_datatransfer_v1.types.GeneratedCodeInfo

    class Annotation
class google.cloud.bigquery_datatransfer_v1.types.GetDataSourceRequest
    A request to get data source info.

    name
        The field will contain name of the resource requested, for example: projects/{project_id}/
        dataSources/{data_source_id}
class google.cloud.bigquery_datatransfer_v1.types.GetTransferConfigRequest
    A request to get data transfer information.

    name
        The field will contain name of the resource requested, for example: projects/{project_id}/
        transferConfigs/{config_id}
class google.cloud.bigquery_datatransfer_v1.types.GetTransferRunRequest
    A request to get data transfer run information.

    name
        The field will contain name of the resource requested, for example: projects/{project_id}/
        transferConfigs/{config_id}/runs/{run_id}
class google.cloud.bigquery_datatransfer_v1.types.Http
class google.cloud.bigquery_datatransfer_v1.types.HttpRule
class google.cloud.bigquery_datatransfer_v1.types.Int32Value
class google.cloud.bigquery_datatransfer_v1.types.Int64Value
class google.cloud.bigquery_datatransfer_v1.types.ListDataSourcesRequest
    Request to list supported data sources and their data transfer settings.
```


parent

The BigQuery project id for which data sources should be returned. Must be in the form: `projects/{project_id}`

page_token

Pagination token, which can be used to request a specific page of `ListDataSourcesRequest` list results. For multiple-page results, `ListDataSourcesResponse` outputs a `next_page` token, which can be used as the `page_token` value to request the next page of list results.

page_size

Page size. The default page size is the maximum value of 1000 results.

class `google.cloud.bigquery_datatransfer_v1.types.ListDataSourcesResponse`

Returns list of supported data sources and their metadata.

data_sources

List of supported data sources and their transfer settings.

next_page_token

Output only. The next-pagination token. For multiple-page list results, this token can be used as the `ListDataSourcesRequest.page_token` to request the next page of list results.

class `google.cloud.bigquery_datatransfer_v1.types.ListTransferConfigsRequest`

A request to list data transfers configured for a BigQuery project.

parent

The BigQuery project id for which data sources should be returned: `projects/{project_id}`.

data_source_ids

When specified, only configurations of requested data sources are returned.

page_token

Pagination token, which can be used to request a specific page of `ListTransfersRequest` list results. For multiple-page results, `ListTransfersResponse` outputs a `next_page` token, which can be used as the `page_token` value to request the next page of list results.

page_size

Page size. The default page size is the maximum value of 1000 results.

class `google.cloud.bigquery_datatransfer_v1.types.ListTransferConfigsResponse`

The returned list of pipelines in the project.

transfer_configs

Output only. The stored pipeline transfer configurations.

next_page_token

Output only. The next-pagination token. For multiple-page list results, this token can be used as the `ListTransferConfigsRequest.page_token` to request the next page of list results.

class `google.cloud.bigquery_datatransfer_v1.types.ListTransferLogsRequest`

A request to get user facing log messages associated with data transfer run.

parent

Transfer run name in the form: `projects/{project_id}/transferConfigs/{config_id}/runs/{run_id}`.

page_token

Pagination token, which can be used to request a specific page of `ListTransferLogsRequest` list results. For multiple-page results, `ListTransferLogsResponse` outputs a `next_page` token, which can be used as the `page_token` value to request the next page of list results.

page_size

Page size. The default page size is the maximum value of 1000 results.

message_types

Message types to return. If not populated - INFO, WARNING and ERROR messages are returned.

class google.cloud.bigquery_datatransfer_v1.types.**ListTransferLogsResponse**

The returned list transfer run messages.

transfer_messages

Output only. The stored pipeline transfer messages.

next_page_token

Output only. The next-pagination token. For multiple-page list results, this token can be used as the `GetTransferRunLogRequest.page_token` to request the next page of list results.

class google.cloud.bigquery_datatransfer_v1.types.**ListTransferRunsRequest**

A request to list data transfer runs. UI can use this method to show/filter specific data transfer runs. The data source can use this method to request all scheduled transfer runs.

parent

Name of transfer configuration for which transfer runs should be retrieved. Format of transfer configuration resource name is: `projects/{project_id}/transferConfigs/{config_id}`.

states

When specified, only transfer runs with requested states are returned.

page_token

Pagination token, which can be used to request a specific page of `ListTransferRunsRequest` list results. For multiple-page results, `ListTransferRunsResponse` outputs a `next_page` token, which can be used as the `page_token` value to request the next page of list results.

page_size

Page size. The default page size is the maximum value of 1000 results.

run_attempt

Indicates how run attempts are to be pulled.

class google.cloud.bigquery_datatransfer_v1.types.**ListTransferRunsResponse**

The returned list of pipelines in the project.

transfer_runs

Output only. The stored pipeline transfer runs.

next_page_token

Output only. The next-pagination token. For multiple-page list results, this token can be used as the `ListTransferRunsRequest.page_token` to request the next page of list results.

class google.cloud.bigquery_datatransfer_v1.types.**ListValue**

class google.cloud.bigquery_datatransfer_v1.types.**MessageOptions**

class google.cloud.bigquery_datatransfer_v1.types.**MethodDescriptorProto**

class google.cloud.bigquery_datatransfer_v1.types.**MethodOptions**

class google.cloud.bigquery_datatransfer_v1.types.**OneofDescriptorProto**

class google.cloud.bigquery_datatransfer_v1.types.**OneofOptions**

class google.cloud.bigquery_datatransfer_v1.types.**ScheduleTransferRunsRequest**

A request to schedule transfer runs for a time range.

parent

Transfer configuration name in the form: `projects/{project_id}/transferConfigs/{config_id}`.

start_time

Start time of the range of transfer runs. For example, `"2017-05-25T00:00:00+00:00"`.

end_time

End time of the range of transfer runs. For example, `"2017-05-30T00:00:00+00:00"`.

class `google.cloud.bigquery_datatransfer_v1.types.ScheduleTransferRunsResponse`

A response to schedule transfer runs for a time range.

runs

The transfer runs that were scheduled.

class `google.cloud.bigquery_datatransfer_v1.types.ServiceDescriptorProto`

class `google.cloud.bigquery_datatransfer_v1.types.ServiceOptions`

class `google.cloud.bigquery_datatransfer_v1.types.SourceCodeInfo`

class Location

class `google.cloud.bigquery_datatransfer_v1.types.Status`

class `google.cloud.bigquery_datatransfer_v1.types.StringValue`

class `google.cloud.bigquery_datatransfer_v1.types.Struct`

class FieldsEntry

class `google.cloud.bigquery_datatransfer_v1.types.Timestamp`

class `google.cloud.bigquery_datatransfer_v1.types.TransferConfig`

Represents a data transfer configuration. A transfer configuration contains all metadata needed to perform a data transfer. For example, `destination_dataset_id` specifies where data should be stored. When a new transfer configuration is created, the specified `destination_dataset_id` is created when needed and shared with the appropriate data source service account.

name

The resource name of the transfer config. Transfer config names have the form `projects/{project_id}/transferConfigs/{config_id}`. Where `config_id` is usually a uuid, even though it is not guaranteed or required. The name is ignored when creating a transfer config.

destination_dataset_id

The BigQuery target dataset id.

display_name

User specified display name for the data transfer.

data_source_id

Data source id. Cannot be changed once data transfer is created.

params

Data transfer specific parameters.

schedule

Data transfer schedule. If the data source does not support a custom schedule, this should be empty. If it is empty, the default value for the data source will be used. The specified times are in UTC. Examples of valid format: `1st,3rd monday of month 15:30`, `every wed,fri of jan,jun 13:15`, and `first sunday of quarter 00:00`. See more explanation about

the format here: https://cloud.google.com/appengine/docs/flexible/python/scheduling-jobs-with-cron-yaml#the_schedule_format NOTE: the granularity should be at least 8 hours, or less frequent.

data_refresh_window_days

The number of days to look back to automatically refresh the data. For example, if `data_refresh_window_days = 10`, then every day BigQuery reingests data for `[today-10, today-1]`, rather than ingesting data for just `[today-1]`. Only valid if the data source supports the feature. Set the value to 0 to use the default value.

disabled

Is this config disabled. When set to true, no runs are scheduled for a given transfer.

update_time

Output only. Data transfer modification time. Ignored by server on input.

next_run_time

Output only. Next time when data transfer will run.

state

Output only. State of the most recently updated transfer run.

user_id

Output only. Unique ID of the user on whose behalf transfer is done. Applicable only to data sources that do not support service accounts. When set to 0, the data source service account credentials are used.

dataset_region

Output only. Region in which BigQuery dataset is located.

class google.cloud.bigquery_datatransfer_v1.types.TransferMessage

Represents a user facing message for a particular data transfer run.

message_time

Time when message was logged.

severity

Message severity.

message_text

Message text.

class google.cloud.bigquery_datatransfer_v1.types.TransferRun

Represents a data transfer run. Next id: 23

name

The resource name of the transfer run. Transfer run names have the form `projects/{project_id}/locations/{location}/transferConfigs/{config_id}/runs/{run_id}`. The name is ignored when creating a transfer run.

destination_dataset_id

The BigQuery target dataset id.

schedule_time

Minimum time after which a transfer run can be started.

params

Data transfer specific parameters.

run_time

For batch transfer runs, specifies the date and time that data should be ingested.

start_time

Output only. Time when transfer run was started. Parameter ignored by server for input requests.

end_time

Output only. Time when transfer run ended. Parameter ignored by server for input requests.

update_time

Output only. Last time the data transfer run state was updated.

data_source_id

Output only. Data source id.

state

Data transfer run state. Ignored for input requests.

user_id

Output only. Unique ID of the user on whose behalf transfer is done. Applicable only to data sources that do not support service accounts. When set to 0, the data source service account credentials are used. May be negative.

schedule

Output only. Describes the schedule of this transfer run if it was created as part of a regular schedule. For batch transfer runs that are scheduled manually, this is empty. NOTE: the system might choose to delay the schedule depending on the current load, so `schedule_time` doesn't always matches this.

```
class google.cloud.bigquery_datatransfer_v1.types.UInt32Value
```

```
class google.cloud.bigquery_datatransfer_v1.types.UInt64Value
```

```
class google.cloud.bigquery_datatransfer_v1.types.UninterpretedOption
```

class NamePart

```
class google.cloud.bigquery_datatransfer_v1.types.UpdateTransferConfigRequest
```

A request to update a transfer configuration. To update the user id of the transfer configuration, an authorization code needs to be provided.

transfer_config

Data transfer configuration to create.

authorization_code

Optional OAuth2 authorization code to use with this transfer configuration. If it is provided, the transfer configuration will be associated with the authorizing user. In order to obtain `authorization_code`, please make a request to https://www.gstatic.com/bigquerydatatransfer/oauthz/auth?client_id=&scope=&redirect_uri= - `client_id` should be OAuth client_id of BigQuery DTS API for the given data source returned by `ListDataSources` method. - `data_source_scopes` are the scopes returned by `ListDataSources` method. - `redirect_uri` is an optional parameter. If not specified, then authorization code is posted to the opener of authorization flow window. Otherwise it will be sent to the redirect uri. A special value of `urn:ietf:wg:oauth:2.0:oob` means that authorization code should be returned in the title bar of the browser, with the page text prompting the user to copy the code and paste it in the application.

update_mask

Required list of fields to be updated in this request.

```
class google.cloud.bigquery_datatransfer_v1.types.Value
```

4.2.3 Changelog

PyPI History

0.1.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Documentation

- Fix package name in readme (#4670)
- BigQueryDataTransfer: update 404 link for API documentation (#4672)
- Replacing references to `stable/` docs with `latest/`. (#4638)

Testing and internal changes

- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Update index.rst (#4816)
- nox unittest updates (#4646)

0.1.0

The BigQuery Data Transfer Service automates data movement from SaaS applications to Google BigQuery on a scheduled, managed basis. Your analytics team can lay the foundation for a data warehouse without writing a single line of code. BigQuery Data Transfer Service initially supports Google application sources like Adwords, DoubleClick Campaign Manager, DoubleClick for Publishers and YouTube.

PyPI: <https://pypi.org/project/google-cloud-bigquery-datatransfer/0.1.0/>

5.1 Base for Everything

To use the API, the *Client* class defines a high-level interface which handles authorization and creating other objects:

```
from google.cloud.bigtable.client import Client
client = Client()
```

5.1.1 Long-lived Defaults

When creating a *Client*, the *user_agent* argument has sensible default (DEFAULT_USER_AGENT). However, you may over-ride it and the value will be used throughout all API requests made with the *client* you create.

5.1.2 Configuration

- For an overview of authentication in `google-cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you can also set the `GOOGLE_CLOUD_PROJECT` environment variable for the Google Cloud Console project you'd like to interact with. If your code is running in Google App Engine or Google Compute Engine the project will be detected automatically. (Setting this environment variable is not required, you may instead pass the `project` explicitly when constructing a *Client*).
- After configuring your environment, create a *Client*

```
>>> from google.cloud import bigtable
>>> client = bigtable.Client()
```

or pass in credentials and project explicitly

```
>>> from google.cloud import bigtable
>>> client = bigtable.Client(project='my-project', credentials=creds)
```

Tip: Be sure to use the **Project ID**, not the **Project Number**.

5.1.3 Admin API Access

If you'll be using your client to make [Instance Admin](#) and [Table Admin](#) API requests, you'll need to pass the `admin` argument:

```
client = bigtable.Client(admin=True)
```

5.1.4 Read-Only Mode

If, on the other hand, you only have (or want) read access to the data, you can pass the `read_only` argument:

```
client = bigtable.Client(read_only=True)
```

This will ensure that the `READ_ONLY_SCOPE` is used for API requests (so any accidental requests that would modify data will fail).

5.1.5 Next Step

After a *Client*, the next highest-level object is an *Instance*. You'll need one before you can interact with tables or data.

Head next to learn about the [Instance Admin API](#).

5.2 Client

Parent client for calling the Google Cloud Bigtable API.

This is the base from which all interactions with the API occur.

In the hierarchy of API concepts

- a *Client* owns an *Instance*
- an *Instance* owns a *Table*
- a *Table* owns a *ColumnFamily*
- a *Table* owns a *Row* (and all the cells in the row)

```
google.cloud.bigtable.client.ADMIN_SCOPE = 'https://www.googleapis.com/auth/bigtable.admin'
Scope for interacting with the Cluster Admin and Table Admin APIs.
```

```
class google.cloud.bigtable.client.Client(project=None, credentials=None,
                                          read_only=False, admin=False, channel=None)
Bases: google.cloud.client.ClientWithProject
```

Client for interacting with Google Cloud Bigtable API.

Note: Since the Cloud Bigtable API requires the gRPC transport, no `_http` argument is accepted by this class.

Parameters

- **project** (*str* or *unicode*) – (Optional) The ID of the project which owns the instances, tables and data. If not provided, will attempt to determine from the environment.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed, falls back to the default inferred from the environment.
- **read_only** (*bool*) – (Optional) Boolean indicating if the data scope should be for reading only (or for writing as well). Defaults to *False*.
- **admin** (*bool*) – (Optional) Boolean indicating if the client will be used to interact with the Instance Admin or Table Admin APIs. This requires the *ADMIN_SCOPE*. Defaults to *False*.
- **(grpc.Channel)** (*channel*) – (Optional) A Channel instance through which to make calls. This argument is mutually exclusive with *credentials*; providing both will raise an exception.

Raises *ValueError* if both *read_only* and *admin* are *True*

instance (*instance_id*, *display_name=None*, *instance_type=None*, *labels=None*)
Factory to create an instance associated with this client.

Parameters

- **instance_id** (*str*) – The ID of the instance.
- **display_name** (*str*) – (Optional) The display name for the instance in the Cloud Console UI. (Must be between 4 and 30 characters.) If this value is not set in the constructor, will fall back to the instance ID.
- **instance_type** (*int*) – (Optional) The type of the instance. Possible values are represented by the following constants: *google.cloud.bigtable.enums.InstanceType.PRODUCTION*, *google.cloud.bigtable.enums.InstanceType.DEVELOPMENT*, Defaults to *google.cloud.bigtable.enums.InstanceType.UNSPECIFIED*.
- **labels** (*dict*) – (Optional) Labels are a flexible and lightweight mechanism for organizing cloud resources into groups that reflect a customer's organizational needs and deployment strategies. They can be used to filter resources and aggregate metrics. Label keys must be between 1 and 63 characters long. Maximum 64 labels can be associated with a given resource. Label values must be between 0 and 63 characters long. Keys and values must both be under 128 bytes.

Return type *Instance*

Returns an instance owned by this client.

instance_admin_client

Getter for the gRPC stub used for the Table Admin API.

Return type *bigtable_admin_pb2.BigtableInstanceAdmin*

Returns A *BigtableInstanceAdmin* instance.

Raises *ValueError* if the current client is not an admin client or if it has not been *start()*-ed.

list_instances()

List instances owned by the project.

Return type *tuple*

Returns (instances, failed_locations), where ‘instances’ is list of `google.cloud.bigtable.instance.Instance`, and ‘failed_locations’ is a list of locations which could not be resolved.

project_path

Project name to be used with Instance Admin API.

Note: This property will not change if `project` does not, but the return value is not cached.

The project name is of the form

`"projects/{project}"`

Return type `str`

Returns Return a fully-qualified project string.

table_admin_client

Getter for the gRPC stub used for the Table Admin API.

Return type `bigtable_admin_pb2.BigtableTableAdmin`

Returns A `BigtableTableAdmin` instance.

Raises `ValueError` if the current client is not an admin client or if it has not been `start()`-ed.

table_data_client

Getter for the gRPC stub used for the Table Admin API.

Return type `bigtable_v2.BigtableClient`

Returns A `BigtableClient` object.

`google.cloud.bigtable.client.DATA_SCOPE = 'https://www.googleapis.com/auth/bigtable.data'`
Scope for reading and writing table data.

`google.cloud.bigtable.client.READ_ONLY_SCOPE = 'https://www.googleapis.com/auth/bigtable.data'`
Scope for reading table data.

5.3 Cluster

User friendly container for Google Cloud Bigtable Cluster.

class `google.cloud.bigtable.cluster.Cluster` (*cluster_id, instance, serve_nodes=3*)
Bases: `object`

Representation of a Google Cloud Bigtable Cluster.

We can use a *Cluster* to:

- `reload()` itself
- `create()` itself
- `update()` itself
- `delete()` itself

Parameters

- **cluster_id** (*str*) – The ID of the cluster.
- **instance** (*Instance*) – The instance where the cluster resides.
- **serve_nodes** (*int*) – (Optional) The number of nodes in the cluster. Defaults to *DEFAULT_SERVE_NODES*.

create()

Create this cluster.

Note: Uses the `project`, `instance` and `cluster_id` on the current *Cluster* in addition to the `serve_nodes`. To change them before creating, reset the values via

```
cluster.serve_nodes = 8
cluster.cluster_id = 'i-changed-my-mind'
```

before calling `create()`.

Return type *Operation*

Returns The long-running operation corresponding to the create operation.

delete()

Delete this cluster.

Marks a cluster and all of its tables for permanent deletion in 7 days.

Immediately upon completion of the request:

- Billing will cease for all of the cluster's reserved resources.
- The cluster's `delete_time` field will be set 7 days in the future.

Soon afterward:

- All tables within the cluster will become unavailable.

At the cluster's `delete_time`:

- The cluster and **all of its tables** will immediately and irrevocably disappear from the API, and their data will be permanently deleted.

name

Cluster name used in requests.

Note: This property will not change if `_instance` and `cluster_id` do not, but the return value is not cached.

The cluster name is of the form

```
"projects/{project}/instances/{instance}/clusters/
{cluster_id}"
```

Return type *str*

Returns The cluster name.

reload()

Reload the metadata for this cluster.

update (*location=""*, *serve_nodes=0*)
Update this cluster.

Note: Updates the `serve_nodes`. If you'd like to change them before updating, reset the values via

```
cluster.serve_nodes = 8
```

before calling `update()`.

Parameters

- **location** (:str:CreationOnly) – The location where this cluster's nodes and storage reside. For best performance, clients should be located as close as possible to this cluster. Currently only zones are supported, so values should be of the form `projects/<project>/locations/<zone>`.
- **serve_nodes** (:int) – The number of nodes allocated to this cluster. More nodes enable higher throughput and more consistent performance.

Return type Operation

Returns The long-running operation corresponding to the update operation.

`google.cloud.bigtable.cluster.DEFAULT_SERVE_NODES = 3`
Default number of nodes to use when creating a cluster.

5.4 Instance

User-friendly container for Google Cloud Bigtable Instance.

class `google.cloud.bigtable.instance.Instance` (*instance_id*, *client*, *display_name=None*,
instance_type=None, *labels=None*)

Bases: `object`

Representation of a Google Cloud Bigtable Instance.

We can use an *Instance* to:

- `reload()` itself
- `create()` itself
- `update()` itself
- `delete()` itself

Note: For now, we leave out the `default_storage_type` (an enum) which if not sent will end up as `data_v2_pb2.STORAGE_SSD`.

Parameters

- **instance_id** (*str*) – The ID of the instance.
- **client** (*Client*) – The client that owns the instance. Provides authorization and a project ID.

- **display_name** (*str*) – (Optional) The display name for the instance in the Cloud Console UI. (Must be between 4 and 30 characters.) If this value is not set in the constructor, will fall back to the instance ID.
- **instance_type** (*int*) – (Optional) The type of the instance. Possible values are represented by the following constants: `google.cloud.bigtable.enums.InstanceType.PRODUCTION`, `google.cloud.bigtable.enums.InstanceType.DEVELOPMENT`, Defaults to `google.cloud.bigtable.enums.InstanceType.UNSPECIFIED`.
- **labels** (*dict*) – (Optional) Labels are a flexible and lightweight mechanism for organizing cloud resources into groups that reflect a customer’s organizational needs and deployment strategies. They can be used to filter resources and aggregate metrics. Label keys must be between 1 and 63 characters long. Maximum 64 labels can be associated with a given resource. Label values must be between 0 and 63 characters long. Keys and values must both be under 128 bytes.

create (*location_id*=*'see-existing-cluster'*, *serve_nodes*=3, *default_storage_type*=None)
Create this instance.

Note: Uses the project and *instance_id* on the current *Instance* in addition to the *display_name*. To change them before creating, reset the values via

```
instance.display_name = 'New display name'
instance.instance_id = 'i-changed-my-mind'
```

before calling *create()*.

Parameters

- **location_id** (*str*) – ID of the location in which the instance will be created. Required for instances which do not yet exist.
- **serve_nodes** (*int*) – (Optional) The number of nodes in the instance’s cluster; used to set up the instance’s cluster.
- **default_storage_type** (*int*) – (Optional) The storage media type for persisting Bigtable data. Possible values are represented by the following constants: `google.cloud.bigtable.enums.StorageType.SSD`, `google.cloud.bigtable.enums.StorageType.SHD`, Defaults to `google.cloud.bigtable.enums.StorageType.UNSPECIFIED`.

Return type *Operation*

Returns The long-running operation corresponding to the create operation.

create_app_profile (*app_profile_id*, *routing_policy_type*, *description*=*"*
ignore_warnings=None, *cluster_id*=None, *al-*
low_transactional_writes=False)
Creates an app profile within an instance.

Type *app_profile_id*: str

Parameters *app_profile_id* – The unique name for the new app profile.

Type *routing_policy_type*: int

Param `routing_policy_type`: There are two routing policies `ROUTING_POLICY_TYPE_ANY` = 1 and `ROUTING_POLICY_TYPE_SINGLE` = 2. If `ROUTING_POLICY_TYPE_ANY` which will create a `MultiClusterRoutingUseAny` policy and if `ROUTING_POLICY_TYPE_SINGLE` is specified, a `SingleClusterRouting` policy will be created using the `cluster_id` and `allow_transactional_writes` parameters.

Type `description`: str

Param `description`: (Optional) Long form description of the use case for this `AppProfile`.

Type `ignore_warnings`: bool

Param `ignore_warnings`: (Optional) If true, ignore safety checks when creating the app profile.

Type `cluster_id`: str

Param `cluster_id`: (Optional) Unique `cluster_id` which is only required when `routing_policy_type` is `ROUTING_POLICY_TYPE_SINGLE`.

Type `allow_transactional_writes`: bool

Param `allow_transactional_writes`: (Optional) If true, allow transactional writes for `ROUTING_POLICY_TYPE_SINGLE`.

Return type `AppProfile`

Returns The `AppProfile` instance.

Raises `ValueError` If routing policy is not set.

delete()

Delete this instance.

Marks an instance and all of its tables for permanent deletion in 7 days.

Immediately upon completion of the request:

- Billing will cease for all of the instance's reserved resources.
- The instance's `delete_time` field will be set 7 days in the future.

Soon afterward:

- All tables within the instance will become unavailable.

At the instance's `delete_time`:

- The instance and **all of its tables** will immediately and irrevocably disappear from the API, and their data will be permanently deleted.

delete_app_profile(*app_profile_id*, *ignore_warnings=False*)

Deletes an app profile from an instance.

Type `app_profile_id`: str

Parameters `app_profile_id` – The unique name for the app profile to delete.

Raises `google.api_core.exceptions.GoogleAPICallError`: If the request failed for any reason.
`google.api_core.exceptions.RetryError`: If the request failed due to a retryable error and retry attempts failed. `ValueError`: If the parameters are invalid.

classmethod from_pb(*instance_pb*, *client*)

Creates an instance instance from a protobuf.

Parameters

- **instance_pb** (`instance_pb2.Instance`) – An instance protobuf object.
- **client** (`Client`) – The client that owns the instance.

Return type `Instance`

Returns The instance parsed from the protobuf response.

Raises `ValueError` if the instance name does not match `projects/{project}/instances/{instance_id}` or if the parsed project ID does not match the project ID on the client.

get_app_profile (`app_profile_id`)

Gets information about an app profile.

Type `app_profile_id`: `str`

Parameters **app_profile_id** – The unique name for the app profile.

Return type `AppProfile`

Returns The `AppProfile` instance.

list_app_profiles ()

Lists information about app profiles in an instance.

Return type `:list:[~google.cloud.bigtable_admin_v2.types.AppProfile]`

Returns A `:list:[~google.cloud.bigtable_admin_v2.types.AppProfile]`. By default, this is a list of `AppProfile` instances.

list_tables ()

List the tables in this instance.

Return type list of `Table`

Returns The list of tables owned by the instance.

Raises `ValueError` if one of the returned tables has a name that is not of the expected format.

name

Instance name used in requests.

Note: This property will not change if `instance_id` does not, but the return value is not cached.

The instance name is of the form

`"projects/{project}/instances/{instance_id}"`

Return type `str`

Returns Return a fully-qualified instance string.

reload ()

Reload the metadata for this instance.

table (`table_id`, `app_profile_id=None`)

Factory to create a table associated with this instance.

Parameters

- **table_id** (`str`) – The ID of the table.

- **app_profile_id**(*str*) – (Optional) The unique name of the AppProfile.

Return type *Table*

Returns The table owned by this instance.

update()

Update this instance.

Note: Updates the `display_name`. To change that value before updating, reset its values via

```
instance.display_name = 'New display name'
```

before calling `update()`.

update_app_profile(*app_profile_id*, *update_mask*, *routing_policy_type*, *de-*
scription=", *ignore_warnings*=None, *cluster_id*=None, *al-*
low_transactional_writes=False)

Updates an app profile within an instance.

Type *app_profile_id*: str

Parameters **app_profile_id** – The unique name for the new app profile.

Type *update_mask*: list

Param *update_mask*: Name of the parameters of AppProfiles that needed to update.

Type *routing_policy_type*: int

Param *routing_policy_type*: There are two routing policies ROUTING_POLICY_TYPE_ANY = 1 and ROUTING_POLICY_TYPE_SINGLE = 2. If ROUTING_POLICY_TYPE_ANY which will create a MultiClusterRoutingUseAny policy and if ROUTING_POLICY_TYPE_SINGLE is specified, a SingleClusterRouting policy will be created using the *cluster_id* and *allow_transactional_writes* parameters.

Type *description*: str

Param *description*: (Optional) Optional long form description of the use case for this App-Profile.

Type *ignore_warnings*: bool

Param *ignore_warnings*: (Optional) If true, ignore safety checks when creating the app profile.

Type *cluster_id*: str

Param *cluster_id*: (Optional) Unique *cluster_id* which is only required when *routing_policy_type* is ROUTING_POLICY_TYPE_SINGLE.

Type *allow_transactional_writes*: bool

Param *allow_transactional_writes*: (Optional) If true, allow transactional writes for ROUTING_POLICY_TYPE_SINGLE.

Return type AppProfile

Returns The AppProfile instance.

Raises ValueError If routing policy is not set.

5.5 Instance Admin API

After creating a *Client*, you can interact with individual instances for a project.

5.5.1 List Instances

If you want a comprehensive list of all existing instances, make a `ListInstances` API request with *Client*. `list_instances()`:

```
instances = client.list_instances()
```

5.5.2 Instance Factory

To create an *Instance* object:

```
instance = client.instance(instance_id, location_id,
                           display_name=display_name)
```

- `location_id` is the ID of the location in which the instance's cluster will be hosted, e.g. 'us-central1-c'. `location_id` is required for instances which do not already exist.
- `display_name` is optional. When not provided, `display_name` defaults to the `instance_id` value.

You can also use `Client.instance()` to create a local wrapper for instances that have already been created with the API, or through the web console:

```
instance = client.instance(existing_instance_id)
instance.reload()
```

5.5.3 Create a new Instance

After creating the instance object, make a `CreateInstance` API request with `create()`:

```
instance.display_name = 'My very own instance'
instance.create()
```

5.5.4 Check on Current Operation

Note: When modifying an instance (via a `CreateInstance` request), the Bigtable API will return a `long-running operation` and a corresponding `Operation` object will be returned by `create()`.

You can check if a long-running operation (for a `create()` has finished by making a `GetOperation` request with `Operation.finished()`:

```
>>> operation = instance.create()
>>> operation.finished()
True
```

Note: Once an `Operation` object has returned `True` from `finished()`, the object should not be re-used. Subsequent calls to `finished()` will result in a `ValueError`.

5.5.5 Get metadata for an existing Instance

After creating the instance object, make a `GetInstance` API request with `reload()`:

```
instance.reload()
```

This will load `display_name` for the existing instance object.

5.5.6 Update an existing Instance

After creating the instance object, make an `UpdateInstance` API request with `update()`:

```
client.display_name = 'New display_name'
instance.update()
```

5.5.7 Delete an existing Instance

Make a `DeleteInstance` API request with `delete()`:

```
instance.delete()
```

5.5.8 Next Step

Now we go down the hierarchy from `Instance` to a `Table`.

Head next to learn about the [Table Admin API](#).

5.6 Table

User-friendly container for Google Cloud Bigtable Table.

`google.cloud.bigtable.table.DEFAULT_RETRY = <google.api_core.retry.Retry object>`
The default retry strategy to be used on retry-able errors.

Used by `mutate_rows()`.

class `google.cloud.bigtable.table.Table` (`table_id`, `instance`, `app_profile_id=None`)
Bases: `object`

Representation of a Google Cloud Bigtable Table.

Note: We don't define any properties on a table other than the name. The only other fields are `column_families` and `granularity`. The `column_families` are not stored locally and `granularity` is an enum with only one value.

We can use a `Table` to:

- `create()` the table
- `delete()` the table
- `list_column_families()` in the table

Parameters

- **table_id** (*str*) – The ID of the table.
- **instance** (*Instance*) – The instance that owns the table.
- **app_profile_id** (*str*) – (Optional) The unique name of the AppProfile.

column_family (*column_family_id*, *gc_rule=None*)

Factory to create a column family associated with this table.

Parameters

- **column_family_id** (*str*) – The ID of the column family. Must be of the form `[_a-zA-Z0-9][_\.a-zA-Z0-9]*`.
- **gc_rule** (*GarbageCollectionRule*) – (Optional) The garbage collection settings for this column family.

Return type *ColumnFamily*

Returns A column family owned by this table.

create (*initial_split_keys=[]*, *column_families={}*)

Creates this table.

Note: A create request returns a `_generated.table_pb2.Table` but we don't use this response.

Parameters

- **initial_split_keys** (*list*) – (Optional) list of row keys in bytes that will be used to initially split the table into several tablets.
- **column_families** – (Optional) A map columns to create. The key is the `column_id` str and the value is a `GarbageCollectionRule`

delete ()

Delete this table.

drop_by_prefix (*row_key_prefix*, *timeout=None*)

Parameters

- **row_prefix** (*bytes*) – Delete all rows that start with this row key prefix. Prefix cannot be zero length.
- **timeout** (*float*) – (Optional) The amount of time, in seconds, to wait for the request to complete.

Raise `google.api_core.exceptions.GoogleAPICallError`: If the request failed for any reason.
`google.api_core.exceptions.RetryError`: If the request failed due to a retryable error and retry attempts failed.
`ValueError`: If the parameters are invalid.

exists ()

Check whether the table exists.

Return type `bool`

Returns True if the table exists, else False.

`list_column_families()`

List the column families owned by this table.

Return type `dict`

Returns Dictionary of column families attached to this table. Keys are strings (column family names) and values are `ColumnFamily` instances.

Raises `ValueError` if the column family name from the response does not agree with the computed name from the column family ID.

`mutate_rows(rows, retry=<google.api_core.retry.Retry object>)`

Mutates multiple rows in bulk.

The method tries to update all specified rows. If some of the rows weren't updated, it would not remove mutations. They can be applied to the row separately. If row mutations finished successfully, they would be cleaned up.

Optionally, a `retry` strategy can be specified to re-attempt mutations on rows that return transient errors. This method will retry until all rows succeed or until the request deadline is reached. To specify a `retry` strategy of "do-nothing", a deadline of `0.0` can be specified.

Parameters

- **`rows`** (`list`) – List or other iterable of `DirectRow` instances.
- **`retry`** (`Retry`) – (Optional) Retry delay and deadline arguments. To override, the default value `DEFAULT_RETRY` can be used and modified with the `with_delay()` method or the `with_deadline()` method.

Return type `list`

Returns A list of response statuses (`google.rpc.status_pb2.Status`) corresponding to success or failure of each row mutation sent. These will be in the same order as the `rows`.

`name`

Table name used in requests.

Note: This property will not change if `table_id` does not, but the return value is not cached.

The table name is of the form

`"projects/.../instances/.../tables/{table_id}"`

Return type `str`

Returns The table name.

`read_row(row_key, filter_=None)`

Read a single row from this table.

Parameters

- **`row_key`** (`bytes`) – The key of the row to read from.
- **`filter`** (`RowFilter`) – (Optional) The filter to apply to the contents of the row. If unset, returns the entire row.

Return type `PartialRowData`, `NoneType`

Returns The contents of the row if any chunks were returned in the response, otherwise `None`.

Raises `ValueError` if a commit row chunk is never encountered.

read_rows (*start_key=None, end_key=None, limit=None, filter_=None, end_inclusive=False*)

Read rows from this table.

Parameters

- **start_key** (*bytes*) – (Optional) The beginning of a range of row keys to read from. The range will include `start_key`. If left empty, will be interpreted as the empty string.
- **end_key** (*bytes*) – (Optional) The end of a range of row keys to read from. The range will not include `end_key`. If left empty, will be interpreted as an infinite string.
- **limit** (*int*) – (Optional) The read will terminate after committing to N rows' worth of results. The default (zero) is to return all results.
- **filter** (*RowFilter*) – (Optional) The filter to apply to the contents of the specified row(s). If unset, reads every column in each row.
- **end_inclusive** (*bool*) – (Optional) Whether the `end_key` should be considered inclusive. The default is `False` (exclusive).

Return type *PartialRowsData*

Returns A *PartialRowsData* convenience wrapper for consuming the streamed results.

row (*row_key, filter_=None, append=False*)

Factory to create a row associated with this table.

Warning: At most one of `filter_` and `append` can be used in a *Row*.

Parameters

- **row_key** (*bytes*) – The key for the row being created.
- **filter** (*RowFilter*) – (Optional) Filter to be used for conditional mutations. See *ConditionalRow* for more details.
- **append** (*bool*) – (Optional) Flag to determine if the row should be used for append mutations.

Return type *Row*

Returns A row owned by this table.

Raises `ValueError` if both `filter_` and `append` are used.

sample_row_keys ()

Read a sample of row keys in the table.

The returned row keys will delimit contiguous sections of the table of approximately equal size, which can be used to break up the data for distributed tasks like mapreduces.

The elements in the iterator are a *SampleRowKeys* response and they have the properties `offset_bytes` and `row_key`. They occur in sorted order. The table might have contents before the first row key in the list and after the last one, but a key containing the empty string indicates “end of table” and will be the last response given, if present.

Note: Row keys in this list may not have ever been written to or read from, and users should therefore not make any assumptions about the row key structure that are specific to their use case.

The `offset_bytes` field on a response indicates the approximate total storage space used by all rows in the table which precede `row_key`. Buffering the contents of all rows between two subsequent samples would require space roughly equal to the difference in their `offset_bytes` fields.

Return type `GrpcRendezvous`

Returns A cancel-able iterator. Can be consumed by calling `next()` or by casting to a `list` and can be cancelled by calling `cancel()`.

truncate (*timeout=None*)

Truncate the table

Parameters **timeout** (*float*) – (Optional) The amount of time, in seconds, to wait for the request to complete.

Raise `google.api_core.exceptions.GoogleAPICallError`: If the request failed for any reason.
`google.api_core.exceptions.RetryError`: If the request failed due to a retryable error and retry attempts failed. `ValueError`: If the parameters are invalid.

yield_rows (*start_key=None, end_key=None, limit=None, filter_=None, row_set=None*)

Read rows from this table.

Parameters

- **start_key** (*bytes*) – (Optional) The beginning of a range of row keys to read from. The range will include `start_key`. If left empty, will be interpreted as the empty string.
- **end_key** (*bytes*) – (Optional) The end of a range of row keys to read from. The range will not include `end_key`. If left empty, will be interpreted as an infinite string.
- **limit** (*int*) – (Optional) The read will terminate after committing to N rows' worth of results. The default (zero) is to return all results.
- **filter** (*RowFilter*) – (Optional) The filter to apply to the contents of the specified row(s). If unset, reads every column in each row.
- **filter** – (Optional) The row set containing multiple row keys and `row_ranges`.

Return type `PartialRowData`

Returns A `PartialRowData` for each row returned

exception `google.cloud.bigtable.table.TableMismatchError`

Bases: `ValueError`

Row from another table.

exception `google.cloud.bigtable.table.TooManyMutationsError`

Bases: `ValueError`

The number of mutations for bulk request is too big.

5.7 Table Admin API

After creating an *Instance*, you can interact with individual tables, groups of tables or column families within a table.

5.7.1 List Tables

If you want a comprehensive list of all existing tables in a instance, make a `ListTables` API request with `Instance.list_tables()`:

```
>>> instance.list_tables()
[<google.cloud.bigtable.table.Table at 0x7ff6a1de8f50>,
 <google.cloud.bigtable.table.Table at 0x7ff6a1de8350>]
```

5.7.2 Table Factory

To create a `Table` object:

```
table = instance.table(table_id)
```

Even if this `Table` already has been created with the API, you'll want this object to use as a parent of a `ColumnFamily` or `Row`.

5.7.3 Create a new Table

After creating the table object, make a `CreateTable` API request with `create()`:

```
table.create()
```

If you would like to initially split the table into several tablets (tablets are similar to HBase regions):

```
table.create(initial_split_keys=['s1', 's2'])
```

5.7.4 Delete an existing Table

Make a `DeleteTable` API request with `delete()`:

```
table.delete()
```

5.7.5 List Column Families in a Table

Though there is no **official** method for retrieving `column families` associated with a table, the `GetTable` API method returns a table object with the names of the column families.

To retrieve the list of column families use `list_column_families()`:

```
column_families = table.list_column_families()
```

5.7.6 Column Family Factory

To create a `ColumnFamily` object:

```
column_family = table.column_family(column_family_id)
```

There is no real reason to use this factory unless you intend to create or delete a column family.

In addition, you can specify an optional `gc_rule` (a *GarbageCollectionRule* or similar):

```
column_family = table.column_family(column_family_id,
                                     gc_rule=gc_rule)
```

This rule helps the backend determine when and how to clean up old cells in the column family.

See *Column Families* for more information about *GarbageCollectionRule* and related classes.

5.7.7 Create a new Column Family

After creating the column family object, make a *CreateColumnFamily* API request with *ColumnFamily.create()*

```
column_family.create()
```

5.7.8 Delete an existing Column Family

Make a *DeleteColumnFamily* API request with *ColumnFamily.delete()*

```
column_family.delete()
```

5.7.9 Update an existing Column Family

Make an *UpdateColumnFamily* API request with *ColumnFamily.delete()*

```
column_family.update()
```

5.7.10 Next Step

Now we go down the final step of the hierarchy from *Table* to *Row* as well as streaming data directly via a *Table*.

Head next to learn about the *Data API*.

5.8 Column Families

When creating a *ColumnFamily*, it is possible to set garbage collection rules for expired data.

By setting a rule, cells in the table matching the rule will be deleted during periodic garbage collection (which executes opportunistically in the background).

The types *MaxAgeGCRule*, *MaxVersionsGCRule*, *GarbageCollectionRuleUnion* and *GarbageCollectionRuleIntersection* can all be used as the optional `gc_rule` argument in the *ColumnFamily* constructor. This value is then used in the *create()* and *update()* methods.

These rules can be nested arbitrarily, with a *MaxAgeGCRule* or *MaxVersionsGCRule* at the lowest level of the nesting:


```
import datetime

max_age = datetime.timedelta(days=3)
rule1 = MaxAgeGCRule(max_age)
rule2 = MaxVersionsGCRule(1)

# Make a composite that matches anything older than 3 days **AND**
# with more than 1 version.
rule3 = GarbageCollectionIntersection(rules=[rule1, rule2])

# Make another composite that matches our previous intersection
# **OR** anything that has more than 3 versions.
rule4 = GarbageCollectionRule(max_num_versions=3)
rule5 = GarbageCollectionUnion(rules=[rule3, rule4])
```

User friendly container for Google Cloud Bigtable Column Family.

```
class google.cloud.bigtable.column_family.ColumnFamily(column_family_id, table,
                                                         gc_rule=None)
```

Bases: `object`

Representation of a Google Cloud Bigtable Column Family.

We can use a *ColumnFamily* to:

- *create()* itself
- *update()* itself
- *delete()* itself

Parameters

- **column_family_id** (*str*) – The ID of the column family. Must be of the form `[_a-zA-Z0-9][_._a-zA-Z0-9]*`.
- **table** (*Table*) – The table that owns the column family.
- **gc_rule** (*GarbageCollectionRule*) – (Optional) The garbage collection settings for this column family.

create()
Create this column family.

delete()
Delete this column family.

name
Column family name used in requests.

Note: This property will not change if `column_family_id` does not, but the return value is not cached.

The table name is of the form

```
"projects/.../zones/.../clusters/.../tables/.../columnFamilies/..."
```

Return type `str`

Returns The column family name.

to_pb()

Converts the column family to a protobuf.

Return type `table_v2_pb2.ColumnFamily`

Returns The converted current object.

update()

Update this column family.

Note: Only the GC rule can be updated. By changing the column family ID, you will simply be referring to a different column family.

class `google.cloud.bigtable.column_family.GCRuleIntersection(rules)`

Bases: `google.cloud.bigtable.column_family.GarbageCollectionRule`

Intersection of garbage collection rules.

Parameters **rules** (*list*) – List of `GarbageCollectionRule`.

to_pb()

Converts the intersection into a single GC rule as a protobuf.

Return type `table_v2_pb2.GcRule`

Returns The converted current object.

class `google.cloud.bigtable.column_family.GCRuleUnion(rules)`

Bases: `google.cloud.bigtable.column_family.GarbageCollectionRule`

Union of garbage collection rules.

Parameters **rules** (*list*) – List of `GarbageCollectionRule`.

to_pb()

Converts the union into a single GC rule as a protobuf.

Return type `table_v2_pb2.GcRule`

Returns The converted current object.

class `google.cloud.bigtable.column_family.GarbageCollectionRule`

Bases: `object`

Garbage collection rule for column families within a table.

Cells in the column family (within a table) fitting the rule will be deleted during garbage collection.

Note: This class is a do-nothing base class for all GC rules.

Note: A string `gc_expression` can also be used with API requests, but that value would be superceded by a `gc_rule`. As a result, we don't support that feature and instead support via native classes.

class `google.cloud.bigtable.column_family.MaxAgeGCRule(max_age)`

Bases: `google.cloud.bigtable.column_family.GarbageCollectionRule`

Garbage collection limiting the age of a cell.

Parameters `max_age` (`datetime.timedelta`) – The maximum age allowed for a cell in the table.

`to_pb()`

Converts the garbage collection rule to a protobuf.

Return type `table_v2_pb2.GcRule`

Returns The converted current object.

class `google.cloud.bigtable.column_family.MaxVersionsGCRule` (`max_num_versions`)
Bases: `google.cloud.bigtable.column_family.GarbageCollectionRule`

Garbage collection limiting the number of versions of a cell.

Parameters `max_num_versions` (`int`) – The maximum number of versions

`to_pb()`

Converts the garbage collection rule to a protobuf.

Return type `table_v2_pb2.GcRule`

Returns The converted current object.

5.9 Bigtable Row

User-friendly container for Google Cloud Bigtable Row.

class `google.cloud.bigtable.row.AppendRow` (`row_key`, `table`)
Bases: `google.cloud.bigtable.row.Row`

Google Cloud Bigtable Row for sending append mutations.

These mutations are intended to augment the value of an existing cell and uses the methods:

- `append_cell_value()`
- `increment_cell_value()`

The first works by appending bytes and the second by incrementing an integer (stored in the cell as 8 bytes). In either case, if the cell is empty, assumes the default empty value (empty string for bytes or 0 for integer).

Parameters

- `row_key` (`bytes`) – The key for the current row.
- `table` (`Table`) – The table that owns the row.

append_cell_value (`column_family_id`, `column`, `value`)
Appends a value to an existing cell.

Note: This method adds a read-modify rule protobuf to the accumulated read-modify rules on this row, but does not make an API request. To actually send an API request (with the rules) to the Google Cloud Bigtable API, call `commit()`.

Parameters

- `column_family_id` (`str`) – The column family that contains the column. Must be of the form `[_a-zA-Z0-9][_._a-zA-Z0-9]*`.
- `column` (`bytes`) – The column within the column family where the cell is located.

- **value** (*bytes*) – The value to append to the existing value in the cell. If the targeted cell is unset, it will be treated as containing the empty string.

clear()

Removes all currently accumulated modifications on current row.

commit()

Makes a ReadModifyWriteRow API request.

This commits modifications made by `append_cell_value()` and `increment_cell_value()`. If no modifications were made, makes no API request and just returns `{}`.

Modifies a row atomically, reading the latest existing timestamp / value from the specified columns and writing a new value by appending / incrementing. The new cell created uses either the current server time or the highest timestamp of a cell in that column (if it exceeds the server time).

After committing the accumulated mutations, resets the local mutations.

```
>>> append_row.commit()
{
  u'col-fam-id': {
    b'col-name1': [
      (b'cell-val', datetime.datetime(...)),
      (b'cell-val-newer', datetime.datetime(...)),
    ],
    b'col-name2': [
      (b'altcol-cell-val', datetime.datetime(...)),
    ],
  },
  u'col-fam-id2': {
    b'col-name3-but-other-fam': [
      (b'foo', datetime.datetime(...)),
    ],
  },
}
```

Return type `dict`

Returns The new contents of all modified cells. Returned as a dictionary of column families, each of which holds a dictionary of columns. Each column contains a list of cells modified. Each cell is represented with a two-tuple with the value (in bytes) and the timestamp for the cell.

Raises `ValueError` if the number of mutations exceeds the `MAX_MUTATIONS`.

increment_cell_value (*column_family_id*, *column*, *int_value*)

Increments a value in an existing cell.

Assumes the value in the cell is stored as a 64 bit integer serialized to bytes.

Note: This method adds a read-modify rule protobuf to the accumulated read-modify rules on this row, but does not make an API request. To actually send an API request (with the rules) to the Google Cloud Bigtable API, call `commit()`.

Parameters

- **column_family_id** (*str*) – The column family that contains the column. Must be of the form `[_a-zA-Z0-9][_._a-zA-Z0-9]*`.

- **column** (*bytes*) – The column within the column family where the cell is located.
- **int_value** (*int*) – The value to increment the existing value in the cell by. If the targeted cell is unset, it will be treated as containing a zero. Otherwise, the targeted cell must contain an 8-byte value (interpreted as a 64-bit big-endian signed integer), or the entire request will fail.

row_key

Row key.

Return type *bytes*

Returns The key for the current row.

table

Row table.

Return type table: *Table*

Returns table: The table that owns the row.

class google.cloud.bigtable.row.**ConditionalRow**(row_key, table, filter_)

Bases: google.cloud.bigtable.row._SetDeleteRow

Google Cloud Bigtable Row for sending mutations conditionally.

Each mutation has an associated state: *True* or *False*. When *commit()*-ed, the mutations for the *True* state will be applied if the filter matches any cells in the row, otherwise the *False* state will be applied.

A *ConditionalRow* accumulates mutations in the same way a *DirectRow* does:

- *set_cell()*
- *delete()*
- *delete_cell()*
- *delete_cells()*

with the only change the extra *state* parameter:

```
>>> row_cond = table.row(b'row-key2', filter_=row_filter)
>>> row_cond.set_cell(u'fam', b'col', b'cell-val', state=True)
>>> row_cond.delete_cell(u'fam', b'col', state=False)
```

Note: As with *DirectRow*, to actually send these mutations to the Google Cloud Bigtable API, you must call *commit()*.

Parameters

- **row_key** (*bytes*) – The key for the current row.
- **table** (*Table*) – The table that owns the row.
- **filter** (*RowFilter*) – Filter to be used for conditional mutations.

clear()

Removes all currently accumulated mutations on the current row.

commit()

Makes a CheckAndMutateRow API request.

If no mutations have been created in the row, no request is made.

The mutations will be applied conditionally, based on whether the filter matches any cells in the *ConditionalRow* or not. (Each method which adds a mutation has a `state` parameter for this purpose.)

Mutations are applied atomically and in order, meaning that earlier mutations can be masked / negated by later ones. Cells already present in the row are left unchanged unless explicitly changed by a mutation.

After committing the accumulated mutations, resets the local mutations.

Return type `bool`

Returns Flag indicating if the filter was matched (which also indicates which set of mutations were applied by the server).

Raises `ValueError` if the number of mutations exceeds the `MAX_MUTATIONS`.

delete (*state=True*)

Deletes this row from the table.

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call `commit()`.

Parameters `state` (*bool*) – (Optional) The state that the mutation should be applied in. Defaults to `True`.

delete_cell (*column_family_id, column, time_range=None, state=True*)

Deletes cell in this row.

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call `commit()`.

Parameters

- **column_family_id** (*str*) – The column family that contains the column or columns with cells being deleted. Must be of the form `[_a-zA-Z0-9][_a-zA-Z0-9]*`.
- **column** (*bytes*) – The column within the column family that will have a cell deleted.
- **time_range** (`TimestampRange`) – (Optional) The range of time within which cells should be deleted.
- **state** (*bool*) – (Optional) The state that the mutation should be applied in. Defaults to `True`.

delete_cells (*column_family_id, columns, time_range=None, state=True*)

Deletes cells in this row.

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call

`commit()`.

Parameters

- **column_family_id** (*str*) – The column family that contains the column or columns with cells being deleted. Must be of the form `[_a-zA-Z0-9][_a-zA-Z0-9]*`.
- **columns** (list of *str* / unicode, or *object*) – The columns within the column family that will have cells deleted. If `ALL_COLUMNS` is used then the entire column family will be deleted from the row.
- **time_range** (*TimestampRange*) – (Optional) The range of time within which cells should be deleted.
- **state** (*bool*) – (Optional) The state that the mutation should be applied in. Defaults to `True`.

row_key

Row key.

Return type *bytes*

Returns The key for the current row.

set_cell (*column_family_id*, *column*, *value*, *timestamp=None*, *state=True*)

Sets a value in this row.

The cell is determined by the `row_key` of this *ConditionalRow* and the `column`. The `column` must be in an existing *ColumnFamily* (as determined by `column_family_id`).

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call `commit()`.

Parameters

- **column_family_id** (*str*) – The column family that contains the column. Must be of the form `[_a-zA-Z0-9][_a-zA-Z0-9]*`.
- **column** (*bytes*) – The column within the column family where the cell is located.
- **value** (*bytes* or *int*) – The value to set in the cell. If an integer is used, will be interpreted as a 64-bit big-endian signed integer (8 bytes).
- **timestamp** (*datetime.datetime*) – (Optional) The timestamp of the operation.
- **state** (*bool*) – (Optional) The state that the mutation should be applied in. Defaults to `True`.

table

Row table.

Return type table: *Table*

Returns table: The table that owns the row.

class google.cloud.bigtable.row.**DirectRow**(row_key, table=None)

Bases: google.cloud.bigtable.row._SetDeleteRow

Google Cloud Bigtable Row for sending “direct” mutations.

These mutations directly set or delete cell contents:

- `set_cell()`
- `delete()`
- `delete_cell()`
- `delete_cells()`

These methods can be used directly:

```
>>> row = table.row(b'row-key1')
>>> row.set_cell(u'fam', b'col1', b'cell-val')
>>> row.delete_cell(u'fam', b'col2')
```

Note: A *DirectRow* accumulates mutations locally via the `set_cell()`, `delete()`, `delete_cell()` and `delete_cells()` methods. To actually send these mutations to the Google Cloud Bigtable API, you must call `commit()`.

Parameters

- **row_key** (*bytes*) – The key for the current row.
- **table** (*Table*) – (Optional) The table that owns the row. This is used for the :meth: `commit` only. Alternatively, DirectRows can be persisted via `mutate_rows()`.

clear()

Removes all currently accumulated mutations on the current row.

commit()

Makes a MutateRow API request.

If no mutations have been created in the row, no request is made.

Mutations are applied atomically and in order, meaning that earlier mutations can be masked / negated by later ones. Cells already present in the row are left unchanged unless explicitly changed by a mutation.

After committing the accumulated mutations, resets the local mutations to an empty list.

Raises `TooManyMutationsError` if the number of mutations is greater than 100,000.

delete()

Deletes this row from the table.

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call `commit()`.

delete_cell (*column_family_id*, *column*, *time_range=None*)

Deletes cell in this row.

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call `commit()`.

Parameters

- **column_family_id** (*str*) – The column family that contains the column or columns with cells being deleted. Must be of the form `[_a-zA-Z0-9][_a-zA-Z0-9]*`.
- **column** (*bytes*) – The column within the column family that will have a cell deleted.
- **time_range** (*TimestampRange*) – (Optional) The range of time within which cells should be deleted.

delete_cells (*column_family_id, columns, time_range=None*)

Deletes cells in this row.

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call `commit()`.

Parameters

- **column_family_id** (*str*) – The column family that contains the column or columns with cells being deleted. Must be of the form `[_a-zA-Z0-9][_a-zA-Z0-9]*`.
- **columns** (*list of str / unicode, or object*) – The columns within the column family that will have cells deleted. If `ALL_COLUMNS` is used then the entire column family will be deleted from the row.
- **time_range** (*TimestampRange*) – (Optional) The range of time within which cells should be deleted.

row_key

Row key.

Return type `bytes`

Returns The key for the current row.

set_cell (*column_family_id, column, value, timestamp=None*)

Sets a value in this row.

The cell is determined by the `row_key` of this *DirectRow* and the `column`. The `column` must be in an existing *ColumnFamily* (as determined by `column_family_id`).

Note: This method adds a mutation to the accumulated mutations on this row, but does not make an API request. To actually send an API request (with the mutations) to the Google Cloud Bigtable API, call `commit()`.

Parameters

- **column_family_id** (*str*) – The column family that contains the column. Must be of the form `[_a-zA-Z0-9][_._a-zA-Z0-9]*`.
- **column** (*bytes*) – The column within the column family where the cell is located.
- **value** (bytes or *int*) – The value to set in the cell. If an integer is used, will be interpreted as a 64-bit big-endian signed integer (8 bytes).
- **timestamp** (*datetime.datetime*) – (Optional) The timestamp of the operation.

table

Row table.

Return type table: *Table*

Returns table: The table that owns the row.

```
google.cloud.bigtable.row.MAX_MUTATIONS = 100000
```

The maximum number of mutations that a row can accumulate.

```
class google.cloud.bigtable.row.Row(row_key, table=None)
```

Bases: *object*

Base representation of a Google Cloud Bigtable Row.

This class has three subclasses corresponding to the three RPC methods for sending row mutations:

- *DirectRow* for `MutateRow`
- *ConditionalRow* for `CheckAndMutateRow`
- *AppendRow* for `ReadModifyWriteRow`

Parameters

- **row_key** (*bytes*) – The key for the current row.
- **table** (*Table*) – (Optional) The table that owns the row.

row_key

Row key.

Return type *bytes*

Returns The key for the current row.

table

Row table.

Return type table: *Table*

Returns table: The table that owns the row.

5.10 Row Data

Container for Google Cloud Bigtable Cells and Streaming Row Contents.

```
class google.cloud.bigtable.row_data.Cell(value, timestamp_micros, labels=None)
```

Bases: *object*

Representation of a Google Cloud Bigtable Cell.

Parameters

- **value** (*bytes*) – The value stored in the cell.
- **timestamp_micros** (*int*) – The timestamp_micros when the cell was stored.
- **labels** (*list*) – (Optional) List of strings. Labels applied to the cell.

classmethod `from_pb(cell_pb)`

Create a new cell from a Cell protobuf.

Parameters `cell_pb` (`_generated.data_pb2.Cell`) – The protobuf to convert.

Return type `Cell`

Returns The cell corresponding to the protobuf.

exception `google.cloud.bigtable.row_data.InvalidChunk`

Bases: `RuntimeError`

Exception raised to to invalid chunk data from back-end.

exception `google.cloud.bigtable.row_data.InvalidReadRowsResponse`

Bases: `RuntimeError`

Exception raised to to invalid response data from back-end.

class `google.cloud.bigtable.row_data.PartialCellData(row_key, family_name, qualifier, timestamp_micros, labels=(), value=b'')`

Bases: `object`

Representation of partial cell in a Google Cloud Bigtable Table.

These are expected to be updated directly from a `_generated.bigtable_service_messages_pb2.ReadRowsResponse`

Parameters

- **row_key** (*bytes*) – The key for the row holding the (partial) cell.
- **family_name** (*str*) – The family name of the (partial) cell.
- **qualifier** (*bytes*) – The column qualifier of the (partial) cell.
- **timestamp_micros** (*int*) – The timestamp (in microseconds) of the (partial) cell.
- **labels** (*list of str*) – labels assigned to the (partial) cell
- **value** (*bytes*) – The (accumulated) value of the (partial) cell.

append_value (*value*)

Append bytes from a new chunk to value.

Parameters `value` (*bytes*) – bytes to append

class `google.cloud.bigtable.row_data.PartialRowData(row_key)`

Bases: `object`

Representation of partial row in a Google Cloud Bigtable Table.

These are expected to be updated directly from a `_generated.bigtable_service_messages_pb2.ReadRowsResponse`

Parameters `row_key` (*bytes*) – The key for the row holding the (partial) data.

cell_value (*column_family_id*, *column*, *index=0*)

Get a single cell value stored on this instance.

Parameters

- **column_family_id** (*str*) – The ID of the column family. Must be of the form `[_a-zA-Z0-9][_\.a-zA-Z0-9]*`.
- **column** (*bytes*) – The column within the column family where the cell is located.
- **index** (*Optional[int]*) – The offset within the series of values. If not specified, will return the first cell.

Returns The cell value stored in the specified column and specified index.

Return type Cell value

Raises

- **KeyError** – If `column_family_id` is not among the cells stored in this row.
- **KeyError** – If `column` is not among the cells stored in this row for the given `column_family_id`.
- **IndexError** – If `index` cannot be found within the cells stored in this row for the given `column_family_id`, `column` pair.

cell_values (*column_family_id, column, max_count=None*)

Get a time series of cells stored on this instance.

Parameters

- **column_family_id** (*str*) – The ID of the column family. Must be of the form `[_a-zA-Z0-9][_\.a-zA-Z0-9]*`.
- **column** (*bytes*) – The column within the column family where the cells are located.
- **max_count** (*int*) – The maximum number of cells to use.

Returns

`cell.value`, `cell.timestamp_micros` for each cell in the list of cells

Return type A generator which provides

Raises

- **KeyError** – If `column_family_id` is not among the cells stored in this row.
- **KeyError** – If `column` is not among the cells stored in this row for the given `column_family_id`.

cells

Property returning all the cells accumulated on this partial row.

Return type `dict`

Returns Dictionary of the `Cell` objects accumulated. This dictionary has two-levels of keys (first for column families and second for column names/qualifiers within a family). For a given column, a list of `Cell` objects is stored.

find_cells (*column_family_id, column*)

Get a time series of cells stored on this instance.

Parameters

- **column_family_id** (*str*) – The ID of the column family. Must be of the form `[_a-zA-Z0-9][_\.a-zA-Z0-9]*`.

- **column** (*bytes*) – The column within the column family where the cells are located.

Returns The cells stored in the specified column.

Return type List[*Cell*]

Raises

- *KeyError* – If `column_family_id` is not among the cells stored in this row.
- *KeyError* – If `column` is not among the cells stored in this row for the given `column_family_id`.

row_key

Getter for the current (partial) row's key.

Return type *bytes*

Returns The current (partial) row's key.

to_dict()

Convert the cells to a dictionary.

This is intended to be used with HappyBase, so the column family and column qualiers are combined (with :).

Return type *dict*

Returns Dictionary containing all the data in the cells of this row.

class google.cloud.bigtable.row_data.**PartialRowsData** (*read_method, request*)

Bases: *object*

Convenience wrapper for consuming a ReadRows streaming response.

Parameters

- **read_method** (`client._table_data_client.read_rows`) – ReadRows method.
- **request** (`data_messages_v2_pb2.ReadRowsRequest`) – The ReadRowsRequest message used to create a ReadRowsResponse iterator.

consume_all (*max_loops=None*)

Consume the streamed responses until there are no more.

Parameters **max_loops** (*int*) – (Optional) Maximum number of times to try to consume an additional ReadRowsResponse. You can use this to avoid long wait times.

state

State machine state.

Return type *str*

Returns name of state corresponding to current row / chunk processing.

class google.cloud.bigtable.row_data.**YieldRowsData** (*read_method, request*)

Bases: *object*

Convenience wrapper for consuming a ReadRows streaming response.

Parameters

- **read_method** (`client._table_data_client.read_rows`) – ReadRows method.

- **request** (data_messages_v2_pb2.ReadRowsRequest) – The ReadRowsRequest message used to create a ReadRowsResponse iterator. If the iterator fails, a new iterator is created, allowing the scan to continue from the point just beyond the last successfully read row, identified by self.last_scanned_row_key. The retry happens inside of the Retry class, using a predicate for the expected exceptions during iteration.

cancel()

Cancels the iterator, closing the stream.

read_rows()

Consume the ReadRowsResponse's from the stream. Read the rows and yield each to the reader

Parse the response and its chunks into a new/existing row in `_rows`. Rows are returned in order by row key.

state

State machine state.

Return type `str`

Returns name of state corresponding to current row / chunk processing.

5.11 Bigtable Row Filters

It is possible to use a *RowFilter* when adding mutations to a *ConditionalRow* and when reading row data with *read_row()* or *read_rows()*.

As laid out in the *RowFilter* definition, the following basic filters are provided:

- *SinkFilter*
- *PassAllFilter*
- *BlockAllFilter*
- *RowKeyRegexFilter*
- *RowSampleFilter*
- *FamilyNameRegexFilter*
- *ColumnQualifierRegexFilter*
- *TimestampRangeFilter*
- *ColumnRangeFilter*
- *ValueRegexFilter*
- *ValueRangeFilter*
- *CellsRowOffsetFilter*
- *CellsRowLimitFilter*
- *CellsColumnLimitFilter*
- *StripValueTransformerFilter*
- *ApplyLabelFilter*

In addition, these filters can be combined into composite filters with

- *RowFilterChain*

- *RowFilterUnion*
- *ConditionalRowFilter*

These rules can be nested arbitrarily, with a basic filter at the lowest level. For example:

```
# Filter in a specified column (matching any column family).
coll_filter = ColumnQualifierRegexFilter(b'columnbia')

# Create a filter to label results.
label1 = u'label-red'
label1_filter = ApplyLabelFilter(label1)

# Combine the filters to label all the cells in columnbia.
chain1 = RowFilterChain(filters=[coll_filter, label1_filter])

# Create a similar filter to label cells blue.
col2_filter = ColumnQualifierRegexFilter(b'columnseeya')
label2 = u'label-blue'
label2_filter = ApplyLabelFilter(label2)
chain2 = RowFilterChain(filters=[col2_filter, label2_filter])

# Bring our two labeled columns together.
row_filter = RowFilterUnion(filters=[chain1, chain2])
```

Filters for Google Cloud Bigtable Row classes.

class google.cloud.bigtable.row_filters.**ApplyLabelFilter** (*label*)

Bases: *google.cloud.bigtable.row_filters.RowFilter*

Filter to apply labels to cells.

Intended to be used as an intermediate filter on a pre-existing filtered result set. This way if two sets are combined, the label can tell where the cell(s) originated. This allows the client to determine which results were produced from which part of the filter.

Note: Due to a technical limitation of the backend, it is not currently possible to apply multiple labels to a cell.

Parameters *label* (*str*) – Label to apply to cells in the output row. Values must be at most 15 characters long, and match the pattern `[a-z0-9\-_]+`.

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class google.cloud.bigtable.row_filters.**BlockAllFilter** (*flag*)

Bases: *google.cloud.bigtable.row_filters._BoolFilter*

Row filter that doesn't match any cells.

Parameters *flag* (*bool*) – Does not match any cells, regardless of input. Useful for temporarily disabling just part of a filter.

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class `google.cloud.bigtable.row_filters.CellsColumnLimitFilter` (*num_cells*)

Bases: `google.cloud.bigtable.row_filters._CellCountFilter`

Row filter to limit cells in a column.

Parameters `num_cells` (*int*) – Matches only the most recent N cells within each column. This filters a (family name, column) pair, based on timestamps of each cell.

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class `google.cloud.bigtable.row_filters.CellsRowLimitFilter` (*num_cells*)

Bases: `google.cloud.bigtable.row_filters._CellCountFilter`

Row filter to limit cells in a row.

Parameters `num_cells` (*int*) – Matches only the first N cells of the row.

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class `google.cloud.bigtable.row_filters.CellsRowOffsetFilter` (*num_cells*)

Bases: `google.cloud.bigtable.row_filters._CellCountFilter`

Row filter to skip cells in a row.

Parameters `num_cells` (*int*) – Skips the first N cells of the row.

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class `google.cloud.bigtable.row_filters.ColumnQualifierRegexFilter` (*regex*)

Bases: `google.cloud.bigtable.row_filters._RegexFilter`

Row filter for a column qualifier regular expression.

The regex must be valid RE2 patterns. See Google's [RE2 reference](#) for the accepted syntax.

Note: Special care need be used with the expression used. Since each of these properties can contain arbitrary bytes, the `\C` escape sequence must be used if a true wildcard is desired. The `.` character will not match the new line character `\n`, which may be present in a binary value.

Parameters `regex` (*bytes*) – A regular expression (RE2) to match cells from column that match this regex (irrespective of column family).

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

```
class google.cloud.bigtable.row_filters.ColumnRangeFilter(column_family_id,
                                                         start_column=None,
                                                         end_column=None,
                                                         inclusive_start=None,
                                                         inclusive_end=None)
```

Bases: `google.cloud.bigtable.row_filters.RowFilter`

A row filter to restrict to a range of columns.

Both the start and end column can be included or excluded in the range. By default, we include them both, but this can be changed with optional flags.

Parameters

- **column_family_id** (*str*) – The column family that contains the columns. Must be of the form `[_a-zA-Z0-9][_._a-zA-Z0-9]*`.
- **start_column** (*bytes*) – The start of the range of columns. If no value is used, the backend applies no upper bound to the values.
- **end_column** (*bytes*) – The end of the range of columns. If no value is used, the backend applies no upper bound to the values.
- **inclusive_start** (*bool*) – Boolean indicating if the start column should be included in the range (or excluded). Defaults to `True` if `start_column` is passed and no `inclusive_start` was given.
- **inclusive_end** (*bool*) – Boolean indicating if the end column should be included in the range (or excluded). Defaults to `True` if `end_column` is passed and no `inclusive_end` was given.

Raises `ValueError` if `inclusive_start` is set but no `start_column` is given or if `inclusive_end` is set but no `end_column` is given

to_pb()

Converts the row filter to a protobuf.

First converts to a `data_v2_pb2.ColumnRange` and then uses it in the `column_range_filter` field.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

```
class google.cloud.bigtable.row_filters.ConditionalRowFilter(base_filter,
                                                             true_filter=None,
                                                             false_filter=None)
```

Bases: `google.cloud.bigtable.row_filters.RowFilter`

Conditional row filter which exhibits ternary behavior.

Executes one of two filters based on another filter. If the `base_filter` returns any cells in the row, then `true_filter` is executed. If not, then `false_filter` is executed.

Note: The `base_filter` does not execute atomically with the true and false filters, which may lead to inconsistent or unexpected results.

Additionally, executing a `ConditionalRowFilter` has poor performance on the server, especially when `false_filter` is set.

Parameters

- **base_filter** (*RowFilter*) – The filter to condition on before executing the true/false filters.
- **true_filter** (*RowFilter*) – (Optional) The filter to execute if there are any cells matching `base_filter`. If not provided, no results will be returned in the true case.
- **false_filter** (*RowFilter*) – (Optional) The filter to execute if there are no cells matching `base_filter`. If not provided, no results will be returned in the false case.

`to_pb()`

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class `google.cloud.bigtable.row_filters.FamilyNameRegexFilter` (*regex*)

Bases: `google.cloud.bigtable.row_filters._RegexFilter`

Row filter for a family name regular expression.

The regex must be valid RE2 patterns. See Google's [RE2 reference](#) for the accepted syntax.

Parameters **regex** (*str*) – A regular expression (RE2) to match cells from columns in a given column family. For technical reasons, the regex must not contain the `:` character, even if it is not being used as a literal.

`to_pb()`

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class `google.cloud.bigtable.row_filters.PassAllFilter` (*flag*)

Bases: `google.cloud.bigtable.row_filters._BoolFilter`

Row filter equivalent to not filtering at all.

Parameters **flag** (*bool*) – Matches all cells, regardless of input. Functionally equivalent to leaving `filter` unset, but included for completeness.

`to_pb()`

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class `google.cloud.bigtable.row_filters.RowFilter`

Bases: `object`

Basic filter to apply to cells in a row.

These values can be combined via `RowFilterChain`, `RowFilterUnion` and `ConditionalRowFilter`.

Note: This class is a do-nothing base class for all row filters.

class google.cloud.bigtable.row_filters.**RowFilterChain** (*filters=None*)

Bases: google.cloud.bigtable.row_filters._FilterCombination

Chain of row filters.

Sends rows through several filters in sequence. The filters are “chained” together to process a row. After the first filter is applied, the second is applied to the filtered output and so on for subsequent filters.

Parameters **filters** (*list*) – List of *RowFilter*

to_pb()

Converts the row filter to a protobuf.

Return type data_v2_pb2.RowFilter

Returns The converted current object.

class google.cloud.bigtable.row_filters.**RowFilterUnion** (*filters=None*)

Bases: google.cloud.bigtable.row_filters._FilterCombination

Union of row filters.

Sends rows through several filters simultaneously, then merges / interleaves all the filtered results together.

If multiple cells are produced with the same column and timestamp, they will all appear in the output row in an unspecified mutual order.

Parameters **filters** (*list*) – List of *RowFilter*

to_pb()

Converts the row filter to a protobuf.

Return type data_v2_pb2.RowFilter

Returns The converted current object.

class google.cloud.bigtable.row_filters.**RowKeyRegexFilter** (*regex*)

Bases: google.cloud.bigtable.row_filters._RegexFilter

Row filter for a row key regular expression.

The *regex* must be valid RE2 patterns. See Google’s [RE2 reference](#) for the accepted syntax.

Note: Special care need be used with the expression used. Since each of these properties can contain arbitrary bytes, the `\C` escape sequence must be used if a true wildcard is desired. The `.` character will not match the new line character `\n`, which may be present in a binary value.

Parameters **regex** (*bytes*) – A regular expression (RE2) to match cells from rows with row keys that satisfy this regex. For a `CheckAndMutateRowRequest`, this filter is unnecessary since the row key is already specified.

to_pb()

Converts the row filter to a protobuf.

Return type data_v2_pb2.RowFilter

Returns The converted current object.

class google.cloud.bigtable.row_filters.**RowSampleFilter** (*sample*)

Bases: [google.cloud.bigtable.row_filters.RowFilter](#)

Matches all cells from a row with probability *p*.

Parameters **sample** (*float*) – The probability of matching a cell (must be in the interval (0, 1) The end points are excluded).

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class google.cloud.bigtable.row_filters.**SinkFilter** (*flag*)

Bases: [google.cloud.bigtable.row_filters._BoolFilter](#)

Advanced row filter to skip parent filters.

Parameters **flag** (*bool*) – ADVANCED USE ONLY. Hook for introspection into the row filter. Outputs all cells directly to the output of the read rather than to any parent filter. Cannot be used within the `predicate_filter`, `true_filter`, or `false_filter` of a [ConditionalRowFilter](#).

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class google.cloud.bigtable.row_filters.**StripValueTransformerFilter** (*flag*)

Bases: [google.cloud.bigtable.row_filters._BoolFilter](#)

Row filter that transforms cells into empty string (0 bytes).

Parameters **flag** (*bool*) – If `True`, replaces each cell's value with the empty string. As the name indicates, this is more useful as a transformer than a generic query / filter.

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

class google.cloud.bigtable.row_filters.**TimestampRange** (*start=None, end=None*)

Bases: [object](#)

Range of time with inclusive lower and exclusive upper bounds.

Parameters

- **start** (`datetime.datetime`) – (Optional) The (inclusive) lower bound of the timestamp range. If omitted, defaults to Unix epoch.
- **end** (`datetime.datetime`) – (Optional) The (exclusive) upper bound of the timestamp range. If omitted, no upper bound is used.

to_pb()

Converts the [TimestampRange](#) to a protobuf.

Return type `data_v2_pb2.TimestampRange`

Returns The converted current object.

class google.cloud.bigtable.row_filters.**TimestampRangeFilter**(range_)

Bases: *google.cloud.bigtable.row_filters.RowFilter*

Row filter that limits cells to a range of time.

Parameters range (*TimestampRange*) – Range of time that cells should match against.

to_pb()

Converts the row filter to a protobuf.

First converts the range_ on the current object to a protobuf and then uses it in the timestamp_range_filter field.

Return type data_v2_pb2.RowFilter

Returns The converted current object.

class google.cloud.bigtable.row_filters.**ValueRangeFilter**(start_value=None, end_value=None, inclusive_start=None, inclusive_end=None)

Bases: *google.cloud.bigtable.row_filters.RowFilter*

A range of values to restrict to in a row filter.

Will only match cells that have values in this range.

Both the start and end value can be included or excluded in the range. By default, we include them both, but this can be changed with optional flags.

Parameters

- **start_value** (*bytes*) – The start of the range of values. If no value is used, the backend applies no lower bound to the values.
- **end_value** (*bytes*) – The end of the range of values. If no value is used, the backend applies no upper bound to the values.
- **inclusive_start** (*bool*) – Boolean indicating if the start value should be included in the range (or excluded). Defaults to `True` if start_value is passed and no inclusive_start was given.
- **inclusive_end** (*bool*) – Boolean indicating if the end value should be included in the range (or excluded). Defaults to `True` if end_value is passed and no inclusive_end was given.

Raises ValueError if inclusive_start is set but no start_value is given or if inclusive_end is set but no end_value is given

to_pb()

Converts the row filter to a protobuf.

First converts to a data_v2_pb2.ValueRange and then uses it to create a row filter protobuf.

Return type data_v2_pb2.RowFilter

Returns The converted current object.

class google.cloud.bigtable.row_filters.**ValueRegexFilter**(regex)

Bases: *google.cloud.bigtable.row_filters._RegexFilter*

Row filter for a value regular expression.

The regex must be valid RE2 patterns. See Google's [RE2 reference](#) for the accepted syntax.

Note: Special care need be used with the expression used. Since each of these properties can contain arbitrary bytes, the `\C` escape sequence must be used if a true wildcard is desired. The `.` character will not match the new line character `\n`, which may be present in a binary value.

Parameters `regex` (*bytes*) – A regular expression (RE2) to match cells with values that match this regex.

to_pb()

Converts the row filter to a protobuf.

Return type `data_v2_pb2.RowFilter`

Returns The converted current object.

5.12 Data API

After creating a *Table* and some column families, you are ready to store and retrieve data.

5.12.1 Cells vs. Columns vs. Column Families

- As explained in the *table overview*, tables can have many column families.
- As described below, a table can also have many rows which are specified by row keys.
- Within a row, data is stored in a cell. A cell simply has a value (as bytes) and a timestamp. The number of cells in each row can be different, depending on what was stored in each row.
- Each cell lies in a column (**not** a column family). A column is really just a more **specific** modifier within a column family. A column can be present in every column family, in only one or anywhere in between.
- Within a column family there can be many columns. For example, within the column family `foo` we could have columns `bar` and `baz`. These would typically be represented as `foo:bar` and `foo:baz`.

5.12.2 Modifying Data

Since data is stored in cells, which are stored in rows, we use the metaphor of a **row** in classes that are used to modify (write, update, delete) data in a *Table*.

Direct vs. Conditional vs. Append

There are three ways to modify data in a table, described by the *MutateRow*, *CheckAndMutateRow* and *ReadModify-WriteRow* API methods.

- The **direct** way is via *MutateRow* which involves simply adding, overwriting or deleting cells. The *DirectRow* class handles direct mutations.
- The **conditional** way is via *CheckAndMutateRow*. This method first checks if some filter is matched in a given row, then applies one of two sets of mutations, depending on if a match occurred or not. (These mutation sets are called the “true mutations” and “false mutations”.) The *ConditionalRow* class handles conditional mutations.

- The **append** way is via `ReadModifyWriteRow`. This simply appends (as bytes) or increments (as an integer) data in a presumed existing cell in a row. The `AppendRow` class handles append mutations.

Row Factory

A single factory can be used to create any of the three row types. To create a `DirectRow`:

```
row = table.row(row_key)
```

Unlike the previous string values we've used before, the row key must be bytes.

To create a `ConditionalRow`, first create a `RowFilter` and then

```
cond_row = table.row(row_key, filter_=filter_)
```

To create an `AppendRow`

```
append_row = table.row(row_key, append=True)
```

Building Up Mutations

In all three cases, a set of mutations (or two sets) are built up on a row before they are sent of in a batch via

```
row.commit()
```

Direct Mutations

Direct mutations can be added via one of four methods

- `set_cell()` allows a single value to be written to a column

```
row.set_cell(column_family_id, column, value,
             timestamp=timestamp)
```

If the `timestamp` is omitted, the current time on the Google Cloud Bigtable server will be used when the cell is stored.

The value can either be bytes or an integer, which will be converted to bytes as a signed 64-bit integer.

- `delete_cell()` deletes all cells (i.e. for all timestamps) in a given column

```
row.delete_cell(column_family_id, column)
```

Remember, this only happens in the row we are using.

If we only want to delete cells from a limited range of time, a `TimestampRange` can be used

```
row.delete_cell(column_family_id, column,
               time_range=time_range)
```

- `delete_cells()` does the same thing as `delete_cell()`, but accepts a list of columns in a column family rather than a single one.

```
row.delete_cells(column_family_id, [column1, column2],
                 time_range=time_range)
```

In addition, if we want to delete cells from every column in a column family, the special `ALL_COLUMNS` value can be used

```
row.delete_cells(column_family_id, row.ALL_COLUMNS,
                 time_range=time_range)
```

- `delete()` will delete the entire row

```
row.delete()
```

Conditional Mutations

Making **conditional** modifications is essentially identical to **direct** modifications: it uses the exact same methods to accumulate mutations.

However, each mutation added must specify a `state`: will the mutation be applied if the filter matches or if it fails to match.

For example:

```
cond_row.set_cell(column_family_id, column, value,
                  timestamp=timestamp, state=True)
```

will add to the set of true mutations.

Append Mutations

Append mutations can be added via one of two methods

- `append_cell_value()` appends a bytes value to an existing cell:

```
append_row.append_cell_value(column_family_id, column, bytes_value)
```

- `increment_cell_value()` increments an integer value in an existing cell:

```
append_row.increment_cell_value(column_family_id, column, int_value)
```

Since only bytes are stored in a cell, the cell value is decoded as a signed 64-bit integer before being incremented. (This happens on the Google Cloud Bigtable server, not in the library.)

Notice that no timestamp was specified. This is because **append** mutations operate on the latest value of the specified column.

If there are no cells in the specified column, then the empty string (bytes case) or zero (integer case) are the assumed values.

Starting Fresh

If accumulated mutations need to be dropped, use

```
row.clear()
```


5.12.3 Reading Data

Read Single Row from a Table

To make a `ReadRows` API request for a single row key, use `Table.read_row()`:

```
>>> row_data = table.read_row(row_key)
>>> row_data.cells
{
  u'fam1': {
    b'col1': [
      <google.cloud.bigtable.row_data.Cell at 0x7f80d150ef10>,
      <google.cloud.bigtable.row_data.Cell at 0x7f80d150ef10>,
    ],
    b'col2': [
      <google.cloud.bigtable.row_data.Cell at 0x7f80d150ef10>,
    ],
  },
  u'fam2': {
    b'col3': [
      <google.cloud.bigtable.row_data.Cell at 0x7f80d150ef10>,
      <google.cloud.bigtable.row_data.Cell at 0x7f80d150ef10>,
      <google.cloud.bigtable.row_data.Cell at 0x7f80d150ef10>,
    ],
  },
}
>>> cell = row_data.cells[u'fam1'][b'col1'][0]
>>> cell
<google.cloud.bigtable.row_data.Cell at 0x7f80d150ef10>
>>> cell.value
b'vall'
>>> cell.timestamp
datetime.datetime(2016, 2, 27, 3, 41, 18, 122823, tzinfo=<UTC>)
```

Rather than returning a `DirectRow` or similar class, this method returns a `PartialRowData` instance. This class is used for reading and parsing data rather than for modifying data (as `DirectRow` is).

A filter can also be applied to the results:

```
row_data = table.read_row(row_key, filter_=filter_val)
```

The allowable `filter_` values are the same as those used for a `ConditionalRow`. For more information, see the `Table.read_row()` documentation.

Stream Many Rows from a Table

To make a `ReadRows` API request for a stream of rows, use `Table.read_rows()`:

```
row_data = table.read_rows()
```

Using gRPC over HTTP/2, a continual stream of responses will be delivered. In particular

- `consume_next()` pulls the next result from the stream, parses it and stores it on the `PartialRowsData` instance
- `consume_all()` pulls results from the stream until there are no more
- `cancel()` closes the stream

See the *PartialRowsData* documentation for more information.

As with *Table.read_row()*, an optional *filter_* can be applied. In addition a *start_key* and / or *end_key* can be supplied for the stream, a *limit* can be set and a boolean *allow_row_interleaving* can be specified to allow faster streamed results at the potential cost of non-sequential reads.

See the *Table.read_rows()* documentation for more information on the optional arguments.

Sample Keys in a Table

Make a *SampleRowKeys* API request with *Table.sample_row_keys()*:

```
keys_iterator = table.sample_row_keys()
```

The returned row keys will delimit contiguous sections of the table of approximately equal size, which can be used to break up the data for distributed tasks like mapreduces.

As with *Table.read_rows()*, the returned *keys_iterator* is connected to a cancellable HTTP/2 stream.

The next key in the result can be accessed via

```
next_key = keys_iterator.next()
```

or all keys can be iterated over via

```
for curr_key in keys_iterator:
    do_something(curr_key)
```

Just as with reading, the stream can be canceled:

```
keys_iterator.cancel()
```

5.13 Changelog

PyPI History

5.13.1 0.29.0

New features

- Use *api_core.retry* for *mutate_row* (#4665, #4341)
- Added a row generator on a table. (#4679)

Implementation changes

- Remove *gax* usage from *BigTable* (#4873)
- *BigTable*: *Cell.from_pb()* performance improvement (#4745)

Dependencies

- Update dependency range for *api-core* to include v1.0.0 releases (#4944)

Documentation

- Minor typo (#4758)
- Row filter end points documentation error (#4667)
- Removing “rename” from bigtable table.py comments (#4526)
- Small docs/hygiene tweaks after #4256. (#4333)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Timestamp system test fix (#4765)

5.13.2 0.28.1

Implementation Changes

- Bugfix: Distinguish between an unset column qualifier and an empty string column qualifier while parsing a `ReadRows` response (#4252)

Features added

- Add a `retry` strategy that will be used for retry-able errors in `Table.mutate_rows`. This will be used for gRPC errors of type `ABORTED`, `DEADLINE_EXCEEDED` and `SERVICE_UNAVAILABLE`. (#4256)

PyPI: <https://pypi.org/project/google-cloud-bigtable/0.28.1/>

5.13.3 0.28.0

Documentation

- Fixed referenced types in `Table.row` docstring (#3934, h/t to @MichaelTamm)
- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)

PyPI: <https://pypi.org/project/google-cloud-bigtable/0.28.0/>

5.14 Installation

Install the `google-cloud-bigtable` library using `pip`:

```
$ pip install google-cloud-bigtable
```

API requests are sent to the [Google Cloud Bigtable](#) API via RPC over HTTP/2. In order to support this, we'll rely on [gRPC](#). We are working with the gRPC team to rapidly make the install story more user-friendly.

Get started by learning about the *Client* on the *Base for Everything* page.

In the hierarchy of API concepts

- a *Client* owns an *Instance*
- an *Instance* owns a *Table*
- a *Table* owns a *ColumnFamily*
- a *Table* owns a *Row* (and all the cells in the row)

5.14.1 `google-cloud-happybase`

In addition to the core `google-cloud-bigtable`, we provide a `google-cloud-happybase` library with the same interface as the popular [HappyBase](#) library. Unlike `HappyBase`, `google-cloud-happybase` uses `google-cloud-bigtable` under the covers, rather than Apache HBase.

Python Client for Google Container Engine API (Beta)

Google Container Engine API: The Google Kubernetes Engine API is used for building and managing container based applications, powered by the open source Kubernetes technology.

- [Client Library Documentation](#)
- [Product Documentation](#)

6.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. [Select or create a Cloud Platform project.](#)
2. [Enable the Google Container Engine API.](#)
3. [Setup Authentication.](#)

6.1.1 Installation

Install this library in a [virtualenv](#) using `pip`. [virtualenv](#) is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With [virtualenv](#), it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-container
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-container
```

6.1.2 Next Steps

- Read the [Client Library Documentation](#) for Google Container Engine API to see other available methods on the client.
- Read the [Google Container Engine API Product documentation](#) to learn more about the product and see How-to Guides.
- View this repository's [main README](#) to see the full list of Cloud APIs that we cover.

6.2 Api Reference

6.2.1 Client for Google Container Engine API

```
class google.cloud.container_v1.ClusterManagerClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.container.v1.ClusterManager':
{'retry_codes': {'idempotent':
['DEADLINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent': []},
'retry_params': {'default':
{'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
20000,
'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
20000, 'total_timeout_millis':
600000}}}, 'methods':
{'ListClusters': {'time-
out_millis': 10000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'GetCluster':
{'timeout_millis': 10000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'CreateClus-
ter': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'}, 'UpdateClus-
ter': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'}, 'UpdateNode-
Pool': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'de-
fault'}, 'SetNodePoolAu-
toscaling': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'de-
fault'}, 'SetLoggingSer-
vice': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'de-
fault'}, 'SetMonitoringSer-
vice': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'de-
fault'}}})
```


Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you're developing your own client library.

cancel_operation (*project_id, zone, operation_id, retry=<object object>, timeout=<object object>*)

Cancels the specified operation.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> operation_id = ''
>>>
>>> client.cancel_operation(project_id, zone, operation_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine *zone* in which the operation resides.
- **operation_id** (*str*) – The server-assigned name of the operation.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

complete_ip_rotation (*project_id*, *zone*, *cluster_id*, *retry*=<object object>, *timeout*=<object object>)

Completes master IP rotation.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>>
>>> response = client.complete_ip_rotation(project_id, zone, cluster_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

create_cluster (*project_id*, *zone*, *cluster*, *retry*=<object object>, *timeout*=<object object>)

Creates a cluster, consisting of the specified number and type of Google Compute Engine instances.

By default, the cluster is created in the project's [default network](#).

One firewall is added for the cluster. After cluster creation, the cluster creates routes for each node to allow the containers on that node to communicate with all other instances in the cluster.

Finally, an entry is added to the project's global metadata indicating which CIDR range is being used by the cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster = {}
>>>
>>> response = client.create_cluster(project_id, zone, cluster)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster** (*Union[dict, Cluster]*) – A [cluster resource](/container-engine/reference/rest/v1/projects.zones.clusters) If a dict is provided, it must be of the same form as the protobuf message *Cluster*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_node_pool (*project_id, zone, cluster_id, node_pool, retry=<object object>, timeout=<object object>*)
Creates a node pool for a cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool = {}
```

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```
>>>
>>> response = client.create_node_pool(project_id, zone, cluster_id, node_
↳ pool)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.
- **node_pool** (*Union[dict, NodePool]*) – The node pool to create. If a dict is provided, it must be of the same form as the protobuf message [NodePool](#)
- **retry** (*Optional[google.api_core.retry.Retry]*) – A [retry](#) object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A [Operation](#) instance.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

delete_cluster (*project_id, zone, cluster_id, retry=<object object>, timeout=<object object>*)

Deletes the cluster, including the Kubernetes endpoint and all worker nodes.

Firewalls and routes that were configured during cluster creation are also deleted.

Other Google Compute Engine resources that might be in use by the cluster (e.g. load balancer resources) will not be deleted if they weren't present at the initial create time.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>>
>>> response = client.delete_cluster(project_id, zone, cluster_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to delete.
- **retry** (*Optional*[[google.api_core.retry.Retry](#)]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A [Operation](#) instance.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

delete_node_pool (*project_id*, *zone*, *cluster_id*, *node_pool_id*, *retry*=<object object>, *timeout*=<object object>)
Deletes a node pool from a cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool_id = ''
>>>
>>> response = client.delete_node_pool(project_id, zone, cluster_id, node_
↳ pool_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.
- **node_pool_id** (*str*) – The name of the node pool to delete.
- **retry** (*Optional*[[google.api_core.retry.Retry](#)]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

```
enums = <module 'google.cloud.container_v1.gapic.enums' from '/home/docs/checkouts/re
```

```
get_cluster(project_id, zone, cluster_id, retry=<object object>, timeout=<object object>)
```

Gets the details of a specific cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>>
>>> response = client.get_cluster(project_id, zone, cluster_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine *zone* in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to retrieve.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Cluster* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_node_pool (*project_id*, *zone*, *cluster_id*, *node_pool_id*, *retry*=<object object>, *timeout*=<object object>)
Retrieves the node pool requested.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool_id = ''
>>>
>>> response = client.get_node_pool(project_id, zone, cluster_id, node_pool_
↳ id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine *zone* in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.
- **node_pool_id** (*str*) – The name of the node pool.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *NodePool* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_operation (*project_id*, *zone*, *operation_id*, *retry*=<object object>, *timeout*=<object object>)
Gets the specified operation.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
```

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```
>>>
>>> project_id = ''
>>> zone = ''
>>> operation_id = ''
>>>
>>> response = client.get_operation(project_id, zone, operation_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **operation_id** (*str*) – The server-assigned name of the operation.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_server_config (*project_id, zone, retry=<object object>, timeout=<object object>*)

Returns configuration info about the Container Engine service.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>>
>>> response = client.get_server_config(project_id, zone)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) to return operations for.

- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `ServerConfig` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_clusters (*project_id*, *zone*, *retry*=<object object>, *timeout*=<object object>)
Lists all clusters owned by a project in either the specified zone or all zones.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>>
>>> response = client.list_clusters(project_id, zone)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine `zone` in which the cluster resides, or “-” for all zones.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `ListClustersResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_node_pools (*project_id*, *zone*, *cluster_id*, *retry*=<object object>, *timeout*=<object object>)
Lists the node pools for a cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>>
>>> response = client.list_node_pools(project_id, zone, cluster_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *ListNodePoolsResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_operations (*project_id*, *zone*, *retry*=<object object>, *timeout*=<object object>)
Lists all operations in a project in a specific zone or all zones.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>>
>>> response = client.list_operations(project_id, zone)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) to return operations for, or – for all zones.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `ListOperationsResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

rollback_node_pool_upgrade (*project_id, zone, cluster_id, node_pool_id, retry=<object object>, timeout=<object object>*)

Roll back the previously Aborted or Failed NodePool upgrade. This will be an no-op if the last upgrade successfully completed.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool_id = ''
>>>
>>> response = client.rollback_node_pool_upgrade(project_id, zone, cluster_
↳ id, node_pool_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to rollback.
- **node_pool_id** (*str*) – The name of the node pool to rollback.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

set_addons_config(*project_id, zone, cluster_id, addons_config, retry=<object object>, timeout=<object object>*)
Sets the addons of a specific cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> addons_config = {}
>>>
>>> response = client.set_addons_config(project_id, zone, cluster_id, addons_
↪config)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine *zone* in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **addons_config** (*Union[dict, AddonsConfig]*) – The desired configurations for the various addons available to run in the cluster. If a dict is provided, it must be of the same form as the protobuf message *AddonsConfig*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

set_labels (*project_id*, *zone*, *cluster_id*, *resource_labels*, *label_fingerprint*, *retry*=<object object>, *timeout*=<object object>)
Sets labels on a cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> resource_labels = {}
>>> label_fingerprint = ''
>>>
>>> response = client.set_labels(project_id, zone, cluster_id, resource_
↳ labels, label_fingerprint)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.
- **resource_labels** (*dict[str -> str]*) – The labels to set for that cluster.
- **label_fingerprint** (*str*) – The fingerprint of the previous set of labels for this resource, used to detect conflicts. The fingerprint is initially generated by Container Engine and changes after every request to modify or update labels. You must always provide an up-to-date fingerprint hash when updating or changing labels. Make a `get()` request to the resource to get the latest fingerprint.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

set_legacy_abac (*project_id*, *zone*, *cluster_id*, *enabled*, *retry*=<object object>, *timeout*=<object object>)

Enables or disables the ABAC authorization mechanism on a cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> enabled = False
>>>
>>> response = client.set_legacy_abac(project_id, zone, cluster_id, enabled)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to update.
- **enabled** (*bool*) – Whether ABAC authorization will be enabled in the cluster.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

set_locations (*project_id*, *zone*, *cluster_id*, *locations*, *retry*=<object object>, *timeout*=<object object>)

Sets the locations of a specific cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> locations = []
>>>
>>> response = client.set_locations(project_id, zone, cluster_id, locations)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **locations** (*list[str]*) – The desired list of Google Compute Engine [locations](#) in which the cluster's nodes should be located. Changing the locations a cluster is in will result in nodes being either created or removed from the cluster, depending on whether locations are being added or removed.

This list must always include the cluster's primary zone.

- **retry** (*Optional[google.api_core.retry.Retry]*) – A [retry](#) object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A [Operation](#) instance.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

set_logging_service (*project_id, zone, cluster_id, logging_service, retry=<object object>, timeout=<object object>*)

Sets the logging service of a specific cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
```

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```
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> logging_service = ''
>>>
>>> response = client.set_logging_service(project_id, zone, cluster_id,
↳ logging_service)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **logging_service** (*str*) – The logging service the cluster should use to write metrics. Currently available options:
 - “logging.googleapis.com” - the Google Cloud Logging service
 - “none” - no metrics will be exported from the cluster
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

set_maintenance_policy (*project_id, zone, cluster_id, maintenance_policy, retry=<object object>, timeout=<object object>*)

Sets the maintenance policy for a cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
```

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```
>>> maintenance_policy = {}
>>>
>>> response = client.set_maintenance_policy(project_id, zone, cluster_id,
↪ maintenance_policy)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to update.
- **maintenance_policy** (*Union[dict, MaintenancePolicy]*) – The maintenance policy to be set for the cluster. An empty field clears the existing maintenance policy. If a dict is provided, it must be of the same form as the protobuf message *MaintenancePolicy*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

set_master_auth(*project_id, zone, cluster_id, action, update, retry=<object object>, timeout=<object object>*)

Used to set master auth materials. Currently supports :- Changing the admin password of a specific cluster. This can be either via password generation or explicitly set the password.

Example

```
>>> from google.cloud import container_v1
>>> from google.cloud.container_v1 import enums
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> action = enums.SetMasterAuthRequest.Action.UNKNOWN
>>> update = {}
```

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```
>>>
>>> response = client.set_master_auth(project_id, zone, cluster_id, action,
↳update)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **action** (*Action*) – The exact form of action to be taken on the master auth.
- **update** (*Union[dict, MasterAuth]*) – A description of the update. If a dict is provided, it must be of the same form as the protobuf message [MasterAuth](#)
- **retry** (*Optional[google.api_core.retry.Retry]*) – A [retry](#) object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A [Operation](#) instance.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

set_monitoring_service (*project_id, zone, cluster_id, monitoring_service, retry=<object object>, timeout=<object object>*)
Sets the monitoring service of a specific cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> monitoring_service = ''
>>>
>>> response = client.set_monitoring_service(project_id, zone, cluster_id,
↳monitoring_service)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **monitoring_service** (*str*) – The monitoring service the cluster should use to write metrics. Currently available options:
 - “monitoring.googleapis.com” - the Google Cloud Monitoring service
 - “none” - no metrics will be exported from the cluster
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

set_network_policy (*project_id, zone, cluster_id, network_policy, retry=<object object>, timeout=<object object>*)
Enables/Disables Network Policy for a cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> network_policy = {}
>>>
>>> response = client.set_network_policy(project_id, zone, cluster_id,
↳ network_policy)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.

- **network_policy** (*Union[dict, NetworkPolicy]*) – Configuration options for the NetworkPolicy feature. If a dict is provided, it must be of the same form as the protobuf message *NetworkPolicy*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

set_node_pool_autoscaling(*project_id, zone, cluster_id, node_pool_id, autoscaling, retry=<object object>, timeout=<object object>*)
Sets the autoscaling settings of a specific node pool.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool_id = ''
>>> autoscaling = {}
>>>
>>> response = client.set_node_pool_autoscaling(project_id, zone, cluster_id,
↪ node_pool_id, autoscaling)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine *zone* in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **node_pool_id** (*str*) – The name of the node pool to upgrade.
- **autoscaling** (*Union[dict, NodePoolAutoscaling]*) – Autoscaling configuration for the node pool. If a dict is provided, it must be of the same form as the protobuf message *NodePoolAutoscaling*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

set_node_pool_management (*project_id*, *zone*, *cluster_id*, *node_pool_id*, *management*, *retry=<object object>*, *timeout=<object object>*)
Sets the NodeManagement options for a node pool.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool_id = ''
>>> management = {}
>>>
>>> response = client.set_node_pool_management(project_id, zone, cluster_id,
↪node_pool_id, management)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine *zone* in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to update.
- **node_pool_id** (*str*) – The name of the node pool to update.
- **management** (*Union[dict, NodeManagement]*) – NodeManagement configuration for the node pool. If a dict is provided, it must be of the same form as the protobuf message *NodeManagement*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

set_node_pool_size (*project_id*, *zone*, *cluster_id*, *node_pool_id*, *node_count*, *retry*=<object object>, *timeout*=<object object>)

Sets the size of a specific node pool.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool_id = ''
>>> node_count = 0
>>>
>>> response = client.set_node_pool_size(project_id, zone, cluster_id, node_
↳ pool_id, node_count)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to update.
- **node_pool_id** (*str*) – The name of the node pool to update.
- **node_count** (*int*) – The desired node count for the pool.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

start_ip_rotation(*project_id*, *zone*, *cluster_id*, *retry*=<object object>, *timeout*=<object object>)
 Start master IP rotation.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>>
>>> response = client.start_ip_rotation(project_id, zone, cluster_id)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://developers.google.com/console/help/new/#projectnumber>).
- **zone** (*str*) – The name of the Google Compute Engine *zone* in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

update_cluster(*project_id*, *zone*, *cluster_id*, *update*, *retry*=<object object>, *timeout*=<object object>)
 Updates the settings of a specific cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
```

(continues on next page)

(continued from previous page)

```
>>> cluster_id = ''
>>> update = {}
>>>
>>> response = client.update_cluster(project_id, zone, cluster_id, update)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **update** (*Union[dict, ClusterUpdate]*) – A description of the update. If a dict is provided, it must be of the same form as the protobuf message [ClusterUpdate](#)
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A [Operation](#) instance.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

update_master (*project_id, zone, cluster_id, master_version, retry=<object object>, timeout=<object object>*)
Updates the master of a specific cluster.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> master_version = ''
>>>
>>> response = client.update_master(project_id, zone, cluster_id, master_
↪version)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.
- **master_version** (*str*) – The Kubernetes version to change the master to. The only valid value is the latest supported version. Use “-” to have the server automatically select the latest version.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Operation` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

update_node_pool (*project_id*, *zone*, *cluster_id*, *node_pool_id*, *node_version*, *image_type*, *retry=<object object>*, *timeout=<object object>*)
 Updates the version and/or image type of a specific node pool.

Example

```
>>> from google.cloud import container_v1
>>>
>>> client = container_v1.ClusterManagerClient()
>>>
>>> project_id = ''
>>> zone = ''
>>> cluster_id = ''
>>> node_pool_id = ''
>>> node_version = ''
>>> image_type = ''
>>>
>>> response = client.update_node_pool(project_id, zone, cluster_id, node_
↪pool_id, node_version, image_type)
```

Parameters

- **project_id** (*str*) – The Google Developers Console [project ID or project number](<https://support.google.com/cloud/answer/6158840>).
- **zone** (*str*) – The name of the Google Compute Engine [zone](#) in which the cluster resides.
- **cluster_id** (*str*) – The name of the cluster to upgrade.

- **node_pool_id** (*str*) – The name of the node pool to upgrade.
- **node_version** (*str*) – The Kubernetes version to change the nodes to (typically an upgrade). Use – to upgrade to the latest version supported by the server.
- **image_type** (*str*) – The desired image type for the node pool.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Operation* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

6.2.2 Types for Google Container Engine API Client

class `google.cloud.container_v1.types.AcceleratorConfig`

AcceleratorConfig represents a Hardware Accelerator request.

accelerator_count

The number of the accelerator cards exposed to an instance.

accelerator_type

The accelerator type resource name. List of supported accelerators [here](#)

class `google.cloud.container_v1.types.AddonsConfig`

Configuration for the addons that can be automatically spun up in the cluster, enabling additional functionality.

http_load_balancing

Configuration for the HTTP (L7) load balancing controller addon, which makes it easy to set up HTTP load balancers for services in a cluster.

horizontal_pod_autoscaling

Configuration for the horizontal pod autoscaling feature, which increases or decreases the number of replica pods a replication controller has based on the resource usage of the existing pods.

kubernetes_dashboard

Configuration for the Kubernetes Dashboard.

network_policy_config

Configuration for NetworkPolicy. This only tracks whether the addon is enabled or not on the Master, it does not track whether network policy is enabled for the nodes.

class `google.cloud.container_v1.types.AutoUpgradeOptions`

AutoUpgradeOptions defines the set of options for the user to control how the Auto Upgrades will proceed.

auto_upgrade_start_time

[Output only] This field is set when upgrades are about to commence with the approximate start time for the upgrades, in [RFC3339](#) text format.

description

[Output only] This field is set when upgrades are about to commence with the description of the upgrade.

class google.cloud.container_v1.types.CancelOperationRequest

CancelOperationRequest cancels a single operation.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the operation resides.

operation_id

The server-assigned name of the operation.

class google.cloud.container_v1.types.ClientCertificateConfig

Configuration for client certificates on the cluster.

issue_client_certificate

Issue a client certificate.

class google.cloud.container_v1.types.Cluster

A Google Container Engine cluster.

name

The name of this cluster. The name must be unique within this project and zone, and can be up to 40 characters with the following restrictions: - Lowercase letters, numbers, and hyphens only. - Must start with a letter. - Must end with a number or a letter.

description

An optional description of this cluster.

initial_node_count

The number of nodes to create in this cluster. You must ensure that your Compute Engine resource quota is sufficient for this number of instances. You must also have available firewall and routes quota. For requests, this field should only be used in lieu of a “node_pool” object, since this configuration (along with the “node_config”) will be used to create a “NodePool” object with an auto-generated name. Do not use this and a node_pool at the same time.

node_config

Parameters used in creating the cluster’s nodes. See `nodeConfig` for the description of its properties. For requests, this field should only be used in lieu of a “node_pool” object, since this configuration (along with the “initial_node_count”) will be used to create a “NodePool” object with an auto-generated name. Do not use this and a node_pool at the same time. For responses, this field will be populated with the node configuration of the first node pool. If unspecified, the defaults are used.

master_auth

The authentication information for accessing the master endpoint.

logging_service

The logging service the cluster should use to write logs. Currently available options: - `logging.googleapis.com` - the Google Cloud Logging service. - `none` - no logs will be exported from the cluster. - if left as an empty string, `logging.googleapis.com` will be used.

monitoring_service

The monitoring service the cluster should use to write metrics. Currently available options: - `monitoring.googleapis.com` - the Google Cloud Monitoring service. - `none` - no metrics will be exported from the cluster. - if left as an empty string, `monitoring.googleapis.com` will be used.

network

The name of the Google Compute Engine [network](#) to which the cluster is connected. If left unspecified,

the default network will be used.

cluster_ipv4_cidr

The IP address range of the container pods in this cluster, in [CIDR](#) notation (e.g. 10.96.0.0/14). Leave blank to have one automatically chosen or specify a /14 block in 10.0.0.0/8.

addons_config

Configurations for the various addons available to run in the cluster.

subnetwork

The name of the Google Compute Engine [subnetwork](#) to which the cluster is connected.

node_pools

The node pools associated with this cluster. This field should not be set if “node_config” or “initial_node_count” are specified.

locations

The list of Google Compute Engine [locations](#) in which the cluster’s nodes should be located.

enable_kubernetes_alpha

Kubernetes alpha features are enabled on this cluster. This includes alpha API groups (e.g. v1alpha1) and features that may not be production ready in the kubernetes version of the master and nodes. The cluster has no SLA for uptime and master/node upgrades are disabled. Alpha enabled clusters are automatically deleted thirty days after creation.

resource_labels

The resource labels for the cluster to use to annotate any related Google Compute Engine resources.

label_fingerprint

The fingerprint of the set of labels for this cluster.

legacy_abac

Configuration for the legacy ABAC authorization mode.

network_policy

Configuration options for the NetworkPolicy feature.

ip_allocation_policy

Configuration for cluster IP allocation.

master_authorized_networks_config

Master authorized networks is a Beta feature. The configuration options for master authorized networks feature.

maintenance_policy

Configure the maintenance policy for this cluster.

self_link

[Output only] Server-defined URL for the resource.

zone

[Output only] The name of the Google Compute Engine [zone](#) in which the cluster resides.

endpoint

[Output only] The IP address of this cluster’s master endpoint. The endpoint can be accessed from the internet at https://username:password@endpoint/. See the masterAuth property of this resource for username and password information.

initial_cluster_version

The initial Kubernetes version for this cluster. Valid versions are those found in validMasterVersions returned by getServerConfig. The version can be upgraded over time; such upgrades are reflected in currentMasterVersion and currentNodeVersion.

current_master_version

[Output only] The current software version of the master endpoint.

current_node_version

[Output only] The current version of the node software components. If they are currently at multiple versions because they're in the process of being upgraded, this reflects the minimum version of all nodes.

create_time

[Output only] The time the cluster was created, in [RFC3339](#) text format.

status

[Output only] The current status of this cluster.

status_message

[Output only] Additional information about the current status of this cluster, if available.

node_ipv4_cidr_size

[Output only] The size of the address space on each node for hosting containers. This is provisioned from within the `container_ipv4_cidr` range.

services_ipv4_cidr

[Output only] The IP address range of the Kubernetes services in this cluster, in [CIDR](#) notation (e.g. `1.2.3.4/29`). Service addresses are typically put in the last /16 from the container CIDR.

instance_group_urls

Deprecated. Use `node_pools.instance_group_urls`.

current_node_count

[Output only] The number of nodes currently in the cluster.

expire_time

[Output only] The time the cluster will be automatically deleted in [RFC3339](#) text format.

class ResourceLabelsEntry**class google.cloud.container_v1.types.ClusterUpdate**

ClusterUpdate describes an update to the cluster. Exactly one update can be applied to a cluster with each request, so at most one field can be provided.

desired_node_version

The Kubernetes version to change the nodes to (typically an upgrade). Use `-` to upgrade to the latest version supported by the server.

desired_monitoring_service

The monitoring service the cluster should use to write metrics. Currently available options: `- "monitoring.googleapis.com"` - the Google Cloud Monitoring service - `"none"` - no metrics will be exported from the cluster

desired_addons_config

Configurations for the various addons available to run in the cluster.

desired_node_pool_id

The node pool to be upgraded. This field is mandatory if `"desired_node_version"`, `"desired_image_family"` or `"desired_node_pool_autoscaling"` is specified and there is more than one node pool on the cluster.

desired_image_type

The desired image type for the node pool. NOTE: Set the `"desired_node_pool"` field as well.

desired_node_pool_autoscaling

Autoscaler configuration for the node pool specified in `desired_node_pool_id`. If there is only one pool in the cluster and `desired_node_pool_id` is not provided then the change applies to that single node pool.

desired_locations

The desired list of Google Compute Engine [locations](#) in which the cluster's nodes should be located. Changing the locations a cluster is in will result in nodes being either created or removed from the cluster, depending on whether locations are being added or removed. This list must always include the cluster's primary zone.

desired_master_authorized_networks_config

Master authorized networks is a Beta feature. The desired configuration options for master authorized networks feature.

desired_master_version

The Kubernetes version to change the master to. The only valid value is the latest supported version. Use “-” to have the server automatically select the latest version.

class google.cloud.container_v1.types.CompleteIPRotationRequest

CompleteIPRotationRequest moves the cluster master back into single-IP mode.

project_id

The Google Developers Console *project ID* or *project number* [<https://developers.google.com/console/help/new/#projectnumber>](https://developers.google.com/console/help/new/#projectnumber) __.

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster.

class google.cloud.container_v1.types.CreateClusterRequest

CreateClusterRequest creates a cluster.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster

A [cluster resource](#)

class google.cloud.container_v1.types.CreateNodePoolRequest

CreateNodePoolRequest creates a node pool for a cluster.

project_id

The Google Developers Console *project ID* or *project number* [<https://developers.google.com/console/help/new/#projectnumber>](https://developers.google.com/console/help/new/#projectnumber) __.

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster.

node_pool

The node pool to create.

class google.cloud.container_v1.types.CustomHttpPattern**class google.cloud.container_v1.types.DailyMaintenanceWindow**

Time window specified for daily maintenance operations.

start_time

Time within the maintenance window to start the maintenance operations. Time format should be in [RFC3339](#) format “HH:MM”, where HH : [00-23] and MM : [00-59] GMT.

duration

[Output only] Duration of the time window, automatically chosen to be smallest possible in the given scenario. Duration will be in [RFC3339](#) format “PTnHnMnS”.

class google.cloud.container_v1.types.DeleteClusterRequest

DeleteClusterRequest deletes a cluster.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to delete.

class google.cloud.container_v1.types.DeleteNodePoolRequest

DeleteNodePoolRequest deletes a node pool for a cluster.

project_id

The Google Developers Console *project ID* or *project number* [<https://developers.google.com/console/help/new/#projectnumber>](https://developers.google.com/console/help/new/#projectnumber) __.

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster.

node_pool_id

The name of the node pool to delete.

class google.cloud.container_v1.types.DescriptorProto

class ExtensionRange

class ReservedRange

class google.cloud.container_v1.types.Empty

class google.cloud.container_v1.types.EnumDescriptorProto

class EnumReservedRange

class google.cloud.container_v1.types.EnumOptions

class google.cloud.container_v1.types.EnumValueDescriptorProto

class google.cloud.container_v1.types.EnumValueOptions

class google.cloud.container_v1.types.ExtensionRangeOptions

class google.cloud.container_v1.types.FieldDescriptorProto

class google.cloud.container_v1.types.FieldOptions

class google.cloud.container_v1.types.FileDescriptorProto

class google.cloud.container_v1.types.FileDescriptorSet

class google.cloud.container_v1.types.FileOptions

class google.cloud.container_v1.types.GeneratedCodeInfo

class Annotation**class** google.cloud.container_v1.types.**GetClusterRequest**

GetClusterRequest gets the settings of a cluster.

project_idThe Google Developers Console [project ID](#) or [project number](#).**zone**The name of the Google Compute Engine [zone](#) in which the cluster resides.**cluster_id**

The name of the cluster to retrieve.

class google.cloud.container_v1.types.**GetNodePoolRequest**

GetNodePoolRequest retrieves a node pool for a cluster.

project_idThe Google Developers Console *project ID* or *project number* [<https://developers.google.com/console/help/new/#projectnumber>](https://developers.google.com/console/help/new/#projectnumber) __.**zone**The name of the Google Compute Engine [zone](#) in which the cluster resides.**cluster_id**

The name of the cluster.

node_pool_id

The name of the node pool.

class google.cloud.container_v1.types.**GetOperationRequest**

GetOperationRequest gets a single operation.

project_idThe Google Developers Console [project ID](#) or [project number](#).**zone**The name of the Google Compute Engine [zone](#) in which the cluster resides.**operation_id**

The server-assigned name of the operation.

class google.cloud.container_v1.types.**GetServerConfigRequest**

Gets the current Container Engine service configuration.

project_idThe Google Developers Console [project ID](#) or [project number](#).**zone**The name of the Google Compute Engine [zone](#) to return operations for.**class** google.cloud.container_v1.types.**HorizontalPodAutoscaling**

Configuration options for the horizontal pod autoscaling feature, which increases or decreases the number of replica pods a replication controller has based on the resource usage of the existing pods.

disabled

Whether the Horizontal Pod Autoscaling feature is enabled in the cluster. When enabled, it ensures that a Heapster pod is running in the cluster, which is also used by the Cloud Monitoring service.

class google.cloud.container_v1.types.**Http****class** google.cloud.container_v1.types.**HttpLoadBalancing**

Configuration options for the HTTP (L7) load balancing controller addon, which makes it easy to set up HTTP load balancers for services in a cluster.

disabled

Whether the HTTP Load Balancing controller is enabled in the cluster. When enabled, it runs a small pod in the cluster that manages the load balancers.

```
class google.cloud.container_v1.types.HttpRule
```

```
class google.cloud.container_v1.types.IPAllocationPolicy
```

Configuration for controlling how IPs are allocated in the cluster.

use_ip_aliases

Whether alias IPs will be used for pod IPs in the cluster.

create_subnetwork

Whether a new subnetwork will be created automatically for the cluster. This field is only applicable when `use_ip_aliases` is true.

subnetwork_name

A custom subnetwork name to be used if `create_subnetwork` is true. If this field is empty, then an automatic name will be chosen for the new subnetwork.

cluster_ipv4_cidr

This field is deprecated, use `cluster_ipv4_cidr_block`.

node_ipv4_cidr

This field is deprecated, use `node_ipv4_cidr_block`.

services_ipv4_cidr

This field is deprecated, use `services_ipv4_cidr_block`.

cluster_secondary_range_name

The name of the secondary range to be used for the cluster CIDR block. The secondary range will be used for pod IP addresses. This must be an existing secondary range associated with the cluster subnetwork. This field is only applicable with `use_ip_aliases` is true and `create_subnetwork` is false.

services_secondary_range_name

The name of the secondary range to be used as for the services CIDR block. The secondary range will be used for service ClusterIPs. This must be an existing secondary range associated with the cluster subnetwork. This field is only applicable with `use_ip_aliases` is true and `create_subnetwork` is false.

cluster_ipv4_cidr_block

The IP address range for the cluster pod IPs. If this field is set, then `cluster.cluster_ipv4_cidr` must be left blank. This field is only applicable when `use_ip_aliases` is true. Set to blank to have a range chosen with the default size. Set to `/netmask` (e.g. `/14`) to have a range chosen with a specific netmask. Set to a [CIDR](#) notation (e.g. `10.96.0.0/14`) from the RFC-1918 private networks (e.g. `10.0.0.0/8`, `172.16.0.0/12`, `192.168.0.0/16`) to pick a specific range to use.

node_ipv4_cidr_block

The IP address range of the instance IPs in this cluster. This is applicable only if `create_subnetwork` is true. Set to blank to have a range chosen with the default size. Set to `/netmask` (e.g. `/14`) to have a range chosen with a specific netmask. Set to a [CIDR](#) notation (e.g. `10.96.0.0/14`) from the RFC-1918 private networks (e.g. `10.0.0.0/8`, `172.16.0.0/12`, `192.168.0.0/16`) to pick a specific range to use.

services_ipv4_cidr_block

The IP address range of the services IPs in this cluster. If blank, a range will be automatically chosen with the default size. This field is only applicable when `use_ip_aliases` is true. Set to blank to have a range chosen with the default size. Set to `/netmask` (e.g. `/14`) to have a range chosen with a specific netmask. Set to a [CIDR](#) notation (e.g. `10.96.0.0/14`) from the RFC-1918 private networks (e.g. `10.0.0.0/8`, `172.16.0.0/12`, `192.168.0.0/16`) to pick a specific range to use.

class google.cloud.container_v1.types.KubernetesDashboard

Configuration for the Kubernetes Dashboard.

disabled

Whether the Kubernetes Dashboard is enabled for this cluster.

class google.cloud.container_v1.types.LegacyAbac

Configuration for the legacy Attribute Based Access Control authorization mode.

enabled

Whether the ABAC authorizer is enabled for this cluster. When enabled, identities in the system, including service accounts, nodes, and controllers, will have statically granted permissions beyond those provided by the RBAC configuration or IAM.

class google.cloud.container_v1.types.ListClustersRequest

ListClustersRequest lists clusters.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides, or “-” for all zones.

class google.cloud.container_v1.types.ListClustersResponse

ListClustersResponse is the result of ListClustersRequest.

clusters

A list of clusters in the project in the specified zone, or across all ones.

missing_zones

If any zones are listed here, the list of clusters returned may be missing those zones.

class google.cloud.container_v1.types.ListNodePoolsRequest

ListNodePoolsRequest lists the node pool(s) for a cluster.

project_id

The Google Developers Console [project ID](#) or [project number](#) `<https://developers.google.com/console/help/new/#projectnumber>` __.

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster.

class google.cloud.container_v1.types.ListNodePoolsResponse

ListNodePoolsResponse is the result of ListNodePoolsRequest.

node_pools

A list of node pools for a cluster.

class google.cloud.container_v1.types.ListOperationsRequest

ListOperationsRequest lists operations.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) to return operations for, or – for all zones.

class google.cloud.container_v1.types.ListOperationsResponse

ListOperationsResponse is the result of ListOperationsRequest.

operations

A list of operations in the project in the specified zone.

missing_zones

If any zones are listed here, the list of operations returned may be missing the operations from those zones.

class google.cloud.container_v1.types.MaintenancePolicy

MaintenancePolicy defines the maintenance policy to be used for the cluster.

window

Specifies the maintenance window in which maintenance may be performed.

class google.cloud.container_v1.types.MaintenanceWindow

MaintenanceWindow defines the maintenance window to be used for the cluster.

daily_maintenance_window

DailyMaintenanceWindow specifies a daily maintenance operation window.

class google.cloud.container_v1.types.MasterAuth

The authentication information for accessing the master endpoint. Authentication can be done using HTTP basic auth or using client certificates.

username

The username to use for HTTP basic authentication to the master endpoint. For clusters v1.6.0 and later, you can disable basic authentication by providing an empty username.

password

The password to use for HTTP basic authentication to the master endpoint. Because the master endpoint is open to the Internet, you should create a strong password. If a password is provided for cluster creation, username must be non-empty.

client_certificate_config

Configuration for client certificate authentication on the cluster. If no configuration is specified, a client certificate is issued.

cluster_ca_certificate

[Output only] Base64-encoded public certificate that is the root of trust for the cluster.

client_certificate

[Output only] Base64-encoded public certificate used by clients to authenticate to the cluster endpoint.

client_key

[Output only] Base64-encoded private key used by clients to authenticate to the cluster endpoint.

class google.cloud.container_v1.types.MasterAuthorizedNetworksConfig

Master authorized networks is a Beta feature. Configuration options for the master authorized networks feature. Enabled master authorized networks will disallow all external traffic to access Kubernetes master through HTTPS except traffic from the given CIDR blocks, Google Compute Engine Public IPs and Google Prod IPs.

enabled

Whether or not master authorized networks is enabled.

cidr_blocks

cidr_blocks define up to 10 external networks that could access Kubernetes master through HTTPS.

class CidrBlock

CidrBlock contains an optional name and one CIDR block.

display_name

display_name is an optional field for users to identify CIDR blocks.

cidr_block

cidr_block must be specified in CIDR notation.

class google.cloud.container_v1.types.**MessageOptions**

class google.cloud.container_v1.types.**MethodDescriptorProto**

class google.cloud.container_v1.types.**MethodOptions**

class google.cloud.container_v1.types.**NetworkPolicy**

Configuration options for the NetworkPolicy feature. <https://kubernetes.io/docs/concepts/services-networking/networkpolicies/>

provider

The selected network policy provider.

enabled

Whether network policy is enabled on the cluster.

class google.cloud.container_v1.types.**NetworkPolicyConfig**

Configuration for NetworkPolicy. This only tracks whether the addon is enabled or not on the Master, it does not track whether network policy is enabled for the nodes.

disabled

Whether NetworkPolicy is enabled for this cluster.

class google.cloud.container_v1.types.**NodeConfig**

Parameters that describe the nodes in a cluster.

machine_type

The name of a Google Compute Engine [machine type](#) (e.g. `n1-standard-1`). If unspecified, the default machine type is `n1-standard-1`.

disk_size_gb

Size of the disk attached to each node, specified in GB. The smallest allowed disk size is 10GB. If unspecified, the default disk size is 100GB.

oauth_scopes

The set of Google API scopes to be made available on all of the node VMs under the “default” service account. The following scopes are recommended, but not required, and by default are not included: - <https://www.googleapis.com/auth/compute> is required for mounting persistent storage on your nodes. - https://www.googleapis.com/auth/devstorage.read_only is required for communicating with [gcr.io](#) (the [Google Container Registry](#)). If unspecified, no scopes are added, unless Cloud Logging or Cloud Monitoring are enabled, in which case their required scopes will be added.

service_account

The Google Cloud Platform Service Account to be used by the node VMs. If no Service Account is specified, the “default” service account is used.

metadata

The metadata key/value pairs assigned to instances in the cluster. Keys must conform to the regexp `[a-zA-Z0-9-_]+` and be less than 128 bytes in length. These are reflected as part of a URL in the metadata server. Additionally, to avoid ambiguity, keys must not conflict with any other metadata keys for the project or be one of the four reserved keys: “instance-template”, “kube-env”, “startup-script”, and “user-data”. Values are free-form strings, and only have meaning as interpreted by the image running in the instance. The only restriction placed on them is that each value’s size must be less than or equal to 32 KB. The total size of all keys and values must be less than 512 KB.

image_type

The image type to use for this node. Note that for a given image type, the latest version of it will be used.

labels

The map of Kubernetes labels (key/value pairs) to be applied to each node. These will added in addition

to any default label(s) that Kubernetes may apply to the node. In case of conflict in label keys, the applied set may differ depending on the Kubernetes version – it’s best to assume the behavior is undefined and conflicts should be avoided. For more information, including usage and the valid values, see: <https://kubernetes.io/docs/concepts/overview/working-with-objects/labels/>

local_ssd_count

The number of local SSD disks to be attached to the node. The limit for this value is dependant upon the maximum number of disks available on a machine per zone. See: https://cloud.google.com/compute/docs/disks/local-ssd#local_ssd_limits for more information.

tags

The list of instance tags applied to all nodes. Tags are used to identify valid sources or targets for network firewalls and are specified by the client during cluster or node pool creation. Each tag within the list must comply with RFC1035.

preemptible

Whether the nodes are created as preemptible VM instances. See: <https://cloud.google.com/compute/docs/instances/preemptible> for more information about preemptible VM instances.

accelerators

A list of hardware accelerators to be attached to each node. See <https://cloud.google.com/compute/docs/gpus> for more information about support for GPUs.

min_cpu_platform

Minimum CPU platform to be used by this instance. The instance may be scheduled on the specified or newer CPU platform. Applicable values are the friendly names of CPU platforms, such as minCpuPlatform: “Intel Haswell” or minCpuPlatform: “Intel Sandy Bridge”. For more information, read [how to specify min CPU platform](#)

class LabelsEntry

class MetadataEntry

class google.cloud.container_v1.types.NodeManagement

NodeManagement defines the set of node management services turned on for the node pool.

auto_upgrade

A flag that specifies whether node auto-upgrade is enabled for the node pool. If enabled, node auto-upgrade helps keep the nodes in your node pool up to date with the latest release version of Kubernetes.

auto_repair

A flag that specifies whether the node auto-repair is enabled for the node pool. If enabled, the nodes in this node pool will be monitored and, if they fail health checks too many times, an automatic repair action will be triggered.

upgrade_options

Specifies the Auto Upgrade knobs for the node pool.

class google.cloud.container_v1.types.NodePool

NodePool contains the name and configuration for a cluster’s node pool. Node pools are a set of nodes (i.e. VM’s), with a common configuration and specification, under the control of the cluster master. They may have a set of Kubernetes labels applied to them, which may be used to reference them during pod scheduling. They may also be resized up or down, to accommodate the workload.

name

The name of the node pool.

config

The node configuration of the pool.

initial_node_count

The initial node count for the pool. You must ensure that your Compute Engine resource quota is sufficient for this number of instances. You must also have available firewall and routes quota.

self_link

[Output only] Server-defined URL for the resource.

version

The version of the Kubernetes of this node.

instance_group_urls

[Output only] The resource URLs of the [managed instance groups](#) associated with this node pool.

status

[Output only] The status of the nodes in this pool instance.

status_message

[Output only] Additional information about the current status of this node pool instance, if available.

autoscaling

Autoscaler configuration for this NodePool. Autoscaler is enabled only if a valid configuration is present.

management

NodeManagement configuration for this NodePool.

class google.cloud.container_v1.types.NodePoolAutoscaling

NodePoolAutoscaling contains information required by cluster autoscaler to adjust the size of the node pool to the current cluster usage.

enabled

Is autoscaling enabled for this node pool.

min_node_count

Minimum number of nodes in the NodePool. Must be ≥ 1 and \leq max_node_count.

max_node_count

Maximum number of nodes in the NodePool. Must be \geq min_node_count. There has to enough quota to scale up the cluster.

class google.cloud.container_v1.types.OneofDescriptorProto**class** google.cloud.container_v1.types.OneofOptions**class** google.cloud.container_v1.types.Operation

This operation resource represents operations that may have happened or are happening on the cluster. All fields are output only.

name

The server-assigned ID for the operation.

zone

The name of the Google Compute Engine [zone](#) in which the operation is taking place.

operation_type

The operation type.

status

The current status of the operation.

detail

Detailed operation progress, if available.

status_message

If an error has occurred, a textual description of the error.

self_link

Server-defined URL for the resource.

target_link

Server-defined URL for the target of the operation.

start_time

[Output only] The time the operation started, in [RFC3339](#) text format.

end_time

[Output only] The time the operation completed, in [RFC3339](#) text format.

class google.cloud.container_v1.types.RollbackNodePoolUpgradeRequest

RollbackNodePoolUpgradeRequest rollbacks the previously Aborted or Failed NodePool upgrade. This will be an no-op if the last upgrade successfully completed.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to rollback.

node_pool_id

The name of the node pool to rollback.

class google.cloud.container_v1.types.ServerConfig

Container Engine service configuration.

default_cluster_version

Version of Kubernetes the service deploys by default.

valid_node_versions

List of valid node upgrade target versions.

default_image_type

Default image type.

valid_image_types

List of valid image types.

valid_master_versions

List of valid master versions.

class google.cloud.container_v1.types.ServiceDescriptorProto

class google.cloud.container_v1.types.ServiceOptions

class google.cloud.container_v1.types.SetAddonsConfigRequest

SetAddonsConfigRequest sets the addons associated with the cluster.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

addons_config

The desired configurations for the various addons available to run in the cluster.

class google.cloud.container_v1.types.SetLabelsRequest

SetLabelsRequest sets the Google Cloud Platform labels on a Google Container Engine cluster, which will in turn set them for Google Compute Engine resources used by that cluster

project_id

The Google Developers Console *project ID* or *project number* <<https://developers.google.com/console/help/new/#projectnumber>> __.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster.

resource_labels

The labels to set for that cluster.

label_fingerprint

The fingerprint of the previous set of labels for this resource, used to detect conflicts. The fingerprint is initially generated by Container Engine and changes after every request to modify or update labels. You must always provide an up-to-date fingerprint hash when updating or changing labels. Make a get() request to the resource to get the latest fingerprint.

class ResourceLabelsEntry

class google.cloud.container_v1.types.SetLegacyAbacRequest

SetLegacyAbacRequest enables or disables the ABAC authorization mechanism for a cluster.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster to update.

enabled

Whether ABAC authorization will be enabled in the cluster.

class google.cloud.container_v1.types.SetLocationsRequest

SetLocationsRequest sets the locations of the cluster.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

locations

The desired list of Google Compute Engine *locations* in which the cluster's nodes should be located. Changing the locations a cluster is in will result in nodes being either created or removed from the cluster, depending on whether locations are being added or removed. This list must always include the cluster's primary zone.

class google.cloud.container_v1.types.SetLoggingServiceRequest

SetLoggingServiceRequest sets the logging service of a cluster.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

logging_service

The logging service the cluster should use to write metrics. Currently available options: - “logging.googleapis.com” - the Google Cloud Logging service - “none” - no metrics will be exported from the cluster

class google.cloud.container_v1.types.SetMaintenancePolicyRequest

SetMaintenancePolicyRequest sets the maintenance policy for a cluster.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to update.

maintenance_policy

The maintenance policy to be set for the cluster. An empty field clears the existing maintenance policy.

class google.cloud.container_v1.types.SetMasterAuthRequest

SetMasterAuthRequest updates the admin password of a cluster.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

action

The exact form of action to be taken on the master auth.

update

A description of the update.

class google.cloud.container_v1.types.SetMonitoringServiceRequest

SetMonitoringServiceRequest sets the monitoring service of a cluster.

project_id

The Google Developers Console [project ID](#) or [project number](#).

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

monitoring_service

The monitoring service the cluster should use to write metrics. Currently available options: - “monitoring.googleapis.com” - the Google Cloud Monitoring service - “none” - no metrics will be exported from the cluster

class google.cloud.container_v1.types.SetNetworkPolicyRequest

SetNetworkPolicyRequest enables/disables network policy for a cluster.

project_id

The Google Developers Console *project ID* or *project number* <https://developers.google.com/console/help/new/#projectnumber> __.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster.

network_policy

Configuration options for the NetworkPolicy feature.

class google.cloud.container_v1.types.SetNodePoolAutoscalingRequest

SetNodePoolAutoscalingRequest sets the autoscaler settings of a node pool.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

node_pool_id

The name of the node pool to upgrade.

autoscaling

Autoscaling configuration for the node pool.

class google.cloud.container_v1.types.SetNodePoolManagementRequest

SetNodePoolManagementRequest sets the node management properties of a node pool.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster to update.

node_pool_id

The name of the node pool to update.

management

NodeManagement configuration for the node pool.

class google.cloud.container_v1.types.SetNodePoolSizeRequest

SetNodePoolSizeRequest sets the size a node pool.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster to update.

node_pool_id

The name of the node pool to update.

node_count

The desired node count for the pool.

```
class google.cloud.container_v1.types.SourceCodeInfo
```

class Location

```
class google.cloud.container_v1.types.StartIPRotationRequest
```

StartIPRotationRequest creates a new IP for the cluster and then performs a node upgrade on each node pool to point to the new IP.

project_id

The Google Developers Console *project ID* or *project number* <<https://developers.google.com/console/help/new/#projectnumber>> __.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster.

```
class google.cloud.container_v1.types.UninterpretedOption
```

class NamePart

```
class google.cloud.container_v1.types.UpdateClusterRequest
```

UpdateClusterRequest updates the settings of a cluster.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

update

A description of the update.

```
class google.cloud.container_v1.types.UpdateMasterRequest
```

UpdateMasterRequest updates the master of the cluster.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine *zone* in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

master_version

The Kubernetes version to change the master to. The only valid value is the latest supported version. Use “-” to have the server automatically select the latest version.

```
class google.cloud.container_v1.types.UpdateNodePoolRequest
```

UpdateNodePoolRequests update a node pool’s image and/or version.

project_id

The Google Developers Console *project ID* or *project number*.

zone

The name of the Google Compute Engine [zone](#) in which the cluster resides.

cluster_id

The name of the cluster to upgrade.

node_pool_id

The name of the node pool to upgrade.

node_version

The Kubernetes version to change the nodes to (typically an upgrade). Use `-` to upgrade to the latest version supported by the server.

image_type

The desired image type for the node pool.

6.2.3 Changelog

PyPI History

0.1.1

Dependencies

- Update dependency range for `api-core` to include v1.0.0 releases (#4944)

Documentation

- Replacing references to `stable/` docs with `latest/`. (#4638)

Testing and internal changes

- Re-enable lint for tests, remove usage of `pylint` (#4921)
- Normalize all `setup.py` files (#4909)
- `nox` unittest updates (#4646)

0.1.0

Google Kubernetes Engine is a managed environment for deploying containerized applications. It brings our latest innovations in developer productivity, resource efficiency, automated operations, and open source flexibility to accelerate your time to market.

PyPI: <https://pypi.org/project/google-cloud-container/0.1.0/>

Python Client for Google Cloud Dataproc API (Alpha)

Google Cloud Dataproc API: Manages Hadoop-based clusters and jobs on Google Cloud Platform.

- [Client Library Documentation](#)
- [Product Documentation](#)

7.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. Select or create a Cloud Platform project.
2. Enable billing for your project.
3. Enable the Google Cloud Dataproc API.
4. Setup Authentication.

7.1.1 Installation

Install this library in a `virtualenv` using `pip`. `virtualenv` is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With `virtualenv`, it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-dataproc
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-dataproc
```

7.1.2 Preview

ClusterControllerClient

```
from google.cloud import dataproc_v1

client = dataproc_v1.ClusterControllerClient()

project_id = ''
region = ''

# Iterate over all results
for element in client.list_clusters(project_id, region):
    # process element
    pass

# Or iterate over results one page at a time
for page in client.list_clusters(project_id, region, options=CallOptions(page_
    ↪token=INITIAL_PAGE)):
    for element in page:
        # process element
        pass
```

7.1.3 Next Steps

- Read the [Client Library Documentation](#) for Google Cloud Dataproc API API to see other available methods on the client.
- Read the [Google Cloud Dataproc API Product documentation](#) to learn more about the product and see How-to Guides.
- View this [repository's main README](#) to see the full list of Cloud APIs that we cover.

7.2 Api Reference

7.2.1 Client for Google Cloud Dataproc API

```
class google.cloud.dataproc_v1.ClusterControllerClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.cloud.dataproc.v1.ClusterController':
{'retry_codes': {'idempotent': ['DEADLINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent':
[]},
'retry_params':
{'default': {'initial_retry_delay_millis':
100,
'retry_delay_multiplier':
1.3,
'max_retry_delay_millis':
60000,
'initial_rpc_timeout_millis':
10000,
'rpc_timeout_multiplier':
1.0,
'max_rpc_timeout_millis':
10000,
'total_timeout_millis':
300000}}},
'methods':
{'CreateCluster': {'timeout_millis':
90000,
'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'},
'UpdateCluster': {'timeout_millis':
30000,
'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'},
>DeleteCluster': {'timeout_millis':
15000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'GetCluster': {'timeout_millis':
10000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
>ListClusters': {'timeout_millis':
10000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'DiagnoseCluster': {'timeout_millis':
10000,
'retry_codes_name':
'non_idempotent',
'retry_params_name':
'idempotent'}}
```


Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

create_cluster (*project_id, region, cluster, retry=<object object>, timeout=<object object>*)
Creates a cluster in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.ClusterControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> cluster = {}
>>>
>>> response = client.create_cluster(project_id, region, cluster)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the cluster belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **cluster** (*Union[dict, Cluster]*) – Required. The cluster to create. If a dict is provided, it must be of the same form as the protobuf message *Cluster*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_cluster (*project_id*, *region*, *cluster_name*, *retry*=<object object>, *timeout*=<object object>)

Deletes a cluster in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.ClusterControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> cluster_name = ''
>>>
>>> response = client.delete_cluster(project_id, region, cluster_name)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the cluster belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **cluster_name** (*str*) – Required. The cluster name.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

diagnose_cluster (*project_id*, *region*, *cluster_name*, *retry*=<object object>, *timeout*=<object object>)

Gets cluster diagnostic information. After the operation completes, the `Operation.response` field contains `DiagnoseClusterOutputLocation`.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.ClusterControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> cluster_name = ''
>>>
>>> response = client.diagnose_cluster(project_id, region, cluster_name)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the cluster belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **cluster_name** (*str*) – Required. The cluster name.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

enums = <module 'google.cloud.dataproc_v1.gapic.enums' from '/home/docs/checkouts/read

get_cluster (*project_id*, *region*, *cluster_name*, *retry*=<object object>, *timeout*=<object object>)
Gets the resource representation for a cluster in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.ClusterControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> cluster_name = ''
>>>
>>> response = client.get_cluster(project_id, region, cluster_name)
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the cluster belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **cluster_name** (*str*) – Required. The cluster name.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Cluster* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_clusters (*project_id*, *region*, *filter_=None*, *page_size=None*, *retry*=<object object>, *timeout*=<object object>)
Lists all regions/{region}/clusters in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.ClusterControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>>
>>> # Iterate over all results
>>> for element in client.list_clusters(project_id, region):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_clusters(project_id, region,
↳ options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the cluster belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **filter** (*str*) – Optional. A filter constraining the clusters to list. Filters are case-sensitive and have the following syntax:

field = value [AND [field = value]] ...

where **field** is one of `status.state`, `clusterName`, or `labels.[KEY]`, and `[KEY]` is a label key. **value** can be `*` to match all values. `status.state` can be one of the following: `ACTIVE`, `INACTIVE`, `CREATING`, `RUNNING`, `ERROR`, `DELETING`, or `UPDATING`. `ACTIVE` contains the `CREATING`, `UPDATING`, and `RUNNING` states. `INACTIVE` contains the `DELETING` and `ERROR` states. `clusterName` is the name of the cluster provided at creation time. Only the logical AND operator is supported; space-separated items are treated as having an implicit AND operator.

Example filter:

```
status.state = ACTIVE AND clusterName = mycluster AND labels.env = staging
AND labels.starred = *
```

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each

individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `Cluster` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

update_cluster (*project_id*, *region*, *cluster_name*, *cluster*, *update_mask*, *retry*=<object object>, *timeout*=<object object>)
Updates a cluster in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.ClusterControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> cluster_name = ''
>>> cluster = {}
>>> update_mask = {}
>>>
>>> response = client.update_cluster(project_id, region, cluster_name,
↳cluster, update_mask)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project the cluster belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **cluster_name** (*str*) – Required. The cluster name.
- **cluster** (*Union[dict, Cluster]*) – Required. The changes to the cluster. If a dict is provided, it must be of the same form as the protobuf message `Cluster`

- **update_mask** (*Union[dict, FieldMask]*) – Required. Specifies the path, relative to `Cluster`, of the field to update. For example, to change the number of workers in a cluster to 5, the `update_mask` parameter would be specified as `config.worker_config.num_instances`, and the PATCH request body would specify the new value, as follows:

```
{
  "config":{
    "workerConfig":{
      "numInstances":"5"
    }
  }
}
```

Similarly, to change the number of preemptible workers in a cluster to 5, the `update_mask` parameter would be `config.secondary_worker_config.num_instances`, and the PATCH request body would be set as follows:

```
{
  "config":{
    "secondaryWorkerConfig":{
      "numInstances":"5"
    }
  }
}
```

Note: Currently, only the following fields can be updated:

- `labels`: Update labels
- `config.worker_config.num_instances`: Resize primary worker group
- `config.secondary_worker_config.num_instances`: Resize secondary worker group

If a dict is provided, it must be of the same form as the protobuf message [*FieldMask*](#)

- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
class google.cloud.dataproc_v1.JobControllerClient (channel=None, credentials=None,
                                                    client_config={'interfaces':
{'google.cloud.dataproc.v1.JobController':
{'retry_codes':          {'idempotent':          ['DEAD-LINE_EXCEEDED', 'UNAVAILABLE'], 'non_idempotent': []},
'retry_params': {'default': {'initial_retry_delay_millis': 100,
'retry_delay_multiplier': 1.3,
'max_retry_delay_millis': 60000,
'initial_rpc_timeout_millis': 30000, 'rpc_timeout_multiplier': 1.0,
'max_rpc_timeout_millis': 30000, 'total_timeout_millis': 600000}},
'methods': {'SubmitJob': {'timeout_millis': 30000, 'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'}, 'GetJob': {'timeout_millis': 10000,
'retry_codes_name': 'idempotent', 'retry_params_name': 'default'},
'ListJobs': {'timeout_millis': 30000, 'retry_codes_name': 'idempotent',
'retry_params_name': 'default'}, 'UpdateJob': {'timeout_millis': 30000,
'retry_codes_name': 'non_idempotent', 'retry_params_name': 'default'},
'CancelJob': {'timeout_millis': 30000, 'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'}, 'DeleteJob': {'timeout_millis': 60000,
'retry_codes_name': 'idempotent', 'retry_params_name': 'default'}}}}, client_info=None)
```

The JobController provides methods to manage jobs.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.

- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If *None*, then default info will be used. Generally, you only need to set this if you're developing your own client library.

cancel_job (*project_id, region, job_id, retry=<object object>, timeout=<object object>*)

Starts a job cancellation request. To access the job resource after cancellation, call `regions/{region}/jobs.list` or `regions/{region}/jobs.get`.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.JobControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> job_id = ''
>>>
>>> response = client.cancel_job(project_id, region, job_id)
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the job belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **job_id** (*str*) – Required. The job ID.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Job* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_job (*project_id, region, job_id, retry=<object object>, timeout=<object object>*)

Deletes the job from the project. If the job is active, the delete fails, and the response returns `FAILED_PRECONDITION`.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.JobControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> job_id = ''
>>>
>>> client.delete_job(project_id, region, job_id)
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the job belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **job_id** (*str*) – Required. The job ID.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.dataproc_v1.gapic.enums' from '/home/docs/checkouts/read
```

```
get_job(project_id, region, job_id, retry=<object object>, timeout=<object object>)
```

Gets the resource representation for a job in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.JobControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> job_id = ''
>>>
>>> response = client.get_job(project_id, region, job_id)
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the job belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **job_id** (*str*) – Required. The job ID.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Job* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_jobs (*project_id*, *region*, *page_size=None*, *cluster_name=None*, *job_state_matcher=None*, *filter=None*, *retry=<object object>*, *timeout=<object object>*)
 Lists regions/{region}/jobs in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.JobControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>>
>>> # Iterate over all results
>>> for element in client.list_jobs(project_id, region):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_jobs(project_id, region,
→options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the job belongs to.

- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **cluster_name** (*str*) – Optional. If set, the returned jobs list includes only jobs that were submitted to the named cluster.
- **job_state_matcher** (*JobStateMatcher*) – Optional. Specifies enumerated categories of jobs to list. (default = match ALL jobs).

If *filter* is provided, *jobStateMatcher* will be ignored.

- **filter** (*str*) – Optional. A filter constraining the jobs to list. Filters are case-sensitive and have the following syntax:

[field = value] AND [field [= value]] ...

where **field** is `status.state` or `labels.[KEY]`, and `[KEY]` is a label key. **value** can be `*` to match all values. `status.state` can be either `ACTIVE` or `NON_ACTIVE`. Only the logical AND operator is supported; space-separated items are treated as having an implicit AND operator.

Example filter:

`status.state = ACTIVE AND labels.env = staging AND labels.starred = *`

- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `Job` instances. This object can also be configured to iterate over the pages of the response through the *options* parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

submit_job (*project_id, region, job, retry=<object object>, timeout=<object object>*)

Submits a job to a cluster.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.JobControllerClient()
>>>
```

(continues on next page)

(continued from previous page)

```
>>> project_id = ''
>>> region = ''
>>> job = {}
>>>
>>> response = client.submit_job(project_id, region, job)
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the job belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **job** (*Union[dict, Job]*) – Required. The job resource. If a dict is provided, it must be of the same form as the protobuf message *Job*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Job* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

update_job (*project_id, region, job_id, job, update_mask, retry=<object object>, timeout=<object object>*)
Updates a job in a project.

Example

```
>>> from google.cloud import dataproc_v1
>>>
>>> client = dataproc_v1.JobControllerClient()
>>>
>>> project_id = ''
>>> region = ''
>>> job_id = ''
>>> job = {}
>>> update_mask = {}
>>>
>>> response = client.update_job(project_id, region, job_id, job, update_
↪mask)
```

Parameters

- **project_id** (*str*) – Required. The ID of the Google Cloud Platform project that the job belongs to.
- **region** (*str*) – Required. The Cloud Dataproc region in which to handle the request.
- **job_id** (*str*) – Required. The job ID.
- **job** (*Union[dict, Job]*) – Required. The changes to the job. If a dict is provided, it must be of the same form as the protobuf message *Job*
- **update_mask** (*Union[dict, FieldMask]*) – Required. Specifies the path, relative to `Job`, of the field to update. For example, to update the labels of a Job the `update_mask` parameter would be specified as `labels`, and the PATCH request body would specify the new value. **Note:** Currently, `labels` is the only field that can be updated. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Job* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

7.2.2 Types for Google Cloud Dataproc API Client

class google.cloud.dataproc_v1.types.**AcceleratorConfig**

Specifies the type and number of accelerator cards attached to the instances of an instance group (see [GPUs on Compute Engine](#)).

accelerator_type_uri

Full URL, partial URI, or short name of the accelerator type resource to expose to this instance. See [Google Compute Engine AcceleratorTypes Examples](#) * `https://www.googleapis.com/compute/beta/projects/[project_id]/zones/us-east1-a/acceleratorTypes/nvidia-tesla-k80` * `projects/[project_id]/zones/us-east1-a/acceleratorTypes/nvidia-tesla-k80` * `nvidia-tesla-k80`

accelerator_count

The number of the accelerator cards of this type exposed to this instance.

class google.cloud.dataproc_v1.types.**Any**

class google.cloud.dataproc_v1.types.**CancelJobRequest**

A request to cancel a job.

project_id

Required. The ID of the Google Cloud Platform project that the job belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

job_id

Required. The job ID.

class google.cloud.dataproc_v1.types.**CancelOperationRequest**

class google.cloud.dataproc_v1.types.**Cluster**

Describes the identifying information, config, and status of a cluster of Google Compute Engine instances.

project_id

Required. The Google Cloud Platform project ID that the cluster belongs to.

cluster_name

Required. The cluster name. Cluster names within a project must be unique. Names of deleted clusters can be reused.

config

Required. The cluster config. Note that Cloud Dataproc may set default values, and values may change when clusters are updated.

labels

Optional. The labels to associate with this cluster. Label **keys** must contain 1 to 63 characters, and must conform to [RFC 1035](#). Label **values** may be empty, but, if present, must contain 1 to 63 characters, and must conform to [RFC 1035](#). No more than 32 labels can be associated with a cluster.

status

Output-only. Cluster status.

status_history

Output-only. The previous cluster status.

cluster_uuid

Output-only. A cluster UUID (Unique Universal Identifier). Cloud Dataproc generates this value when it creates the cluster.

metrics

Contains cluster daemon metrics such as HDFS and YARN stats. **Beta Feature:** This report is available for testing purposes only. It may be changed before final release.

class LabelsEntry

class google.cloud.dataproc_v1.types.**ClusterConfig**

The cluster config.

config_bucket

Optional. A Google Cloud Storage staging bucket used for sharing generated SSH keys and config. If you do not specify a staging bucket, Cloud Dataproc will determine an appropriate Cloud Storage location (US, ASIA, or EU) for your cluster's staging bucket according to the Google Compute Engine zone where your cluster is deployed, and then it will create and manage this project-level, per-location bucket for you.

gce_cluster_config

Required. The shared Google Compute Engine config settings for all instances in a cluster.

master_config

Optional. The Google Compute Engine config settings for the master instance in a cluster.

worker_config

Optional. The Google Compute Engine config settings for worker instances in a cluster.

secondary_worker_config

Optional. The Google Compute Engine config settings for additional worker instances in a cluster.

software_config

Optional. The config settings for software inside the cluster.

initialization_actions

Optional. Commands to execute on each node after config is completed. By default, executables are run on master and all worker nodes. You can test a node's `role` metadata to run an executable on a master or worker node, as shown below using `curl` (you can also use `wget`): `:: ROLE=$(curl -H Metadata-Flavor:Google http://metadata/computeMetadata/v1/instance/attributes/dataproc-role) if [["${ROLE}" == 'Master']]; then ... master specific actions ... else ... worker specific actions ... fi`

class `google.cloud.dataproc_v1.types.ClusterMetrics`

Contains cluster daemon metrics, such as HDFS and YARN stats.

Beta Feature: This report is available for testing purposes only. It may be changed before final release.

hdfs_metrics

The HDFS metrics.

yarn_metrics

The YARN metrics.

class `HdfsMetricsEntry`

class `YarnMetricsEntry`

class `google.cloud.dataproc_v1.types.ClusterOperationMetadata`

Metadata describing the operation.

cluster_name

Output-only. Name of the cluster for the operation.

cluster_uuid

Output-only. Cluster UUID for the operation.

status

Output-only. Current operation status.

status_history

Output-only. The previous operation status.

operation_type

Output-only. The operation type.

description

Output-only. Short description of operation.

labels

Output-only. Labels associated with the operation

warnings

Output-only. Errors encountered during operation execution.

class `LabelsEntry`

class `google.cloud.dataproc_v1.types.ClusterOperationStatus`

The status of the operation.

state

Output-only. A message containing the operation state.

inner_state

Output-only. A message containing the detailed operation state.

details

Output-only. A message containing any operation metadata details.

state_start_time

Output-only. The time this state was entered.

class google.cloud.dataproc_v1.types.**ClusterStatus**

The status of a cluster and its instances.

state

Output-only. The cluster's state.

detail

Output-only. Optional details of cluster's state.

state_start_time

Output-only. Time when this state was entered.

substate

Output-only. Additional state information that includes status reported by the agent.

class google.cloud.dataproc_v1.types.**CreateClusterRequest**

A request to create a cluster.

project_id

Required. The ID of the Google Cloud Platform project that the cluster belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

cluster

Required. The cluster to create.

class google.cloud.dataproc_v1.types.**CustomHttpPattern**

class google.cloud.dataproc_v1.types.**DeleteClusterRequest**

A request to delete a cluster.

project_id

Required. The ID of the Google Cloud Platform project that the cluster belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

cluster_name

Required. The cluster name.

class google.cloud.dataproc_v1.types.**DeleteJobRequest**

A request to delete a job.

project_id

Required. The ID of the Google Cloud Platform project that the job belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

job_id

Required. The job ID.

class google.cloud.dataproc_v1.types.**DeleteOperationRequest**

class google.cloud.dataproc_v1.types.**DescriptorProto**

class **ExtensionRange**

class `ReservedRange`

class `google.cloud.dataproc_v1.types.DiagnoseClusterRequest`

A request to collect cluster diagnostic information.

project_id

Required. The ID of the Google Cloud Platform project that the cluster belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

cluster_name

Required. The cluster name.

class `google.cloud.dataproc_v1.types.DiagnoseClusterResults`

The location of diagnostic output.

output_uri

Output-only. The Google Cloud Storage URI of the diagnostic output. The output report is a plain text file with a summary of collected diagnostics.

class `google.cloud.dataproc_v1.types.DiskConfig`

Specifies the config of disk options for a group of VM instances.

boot_disk_size_gb

Optional. Size in GB of the boot disk (default is 500GB).

num_local_ssds

Optional. Number of attached SSDs, from 0 to 4 (default is 0). If SSDs are not attached, the boot disk is used to store runtime logs and [HDFS](#) data. If one or more SSDs are attached, this runtime bulk data is spread across them, and the boot disk contains only basic config and installed binaries.

class `google.cloud.dataproc_v1.types.Duration`

class `google.cloud.dataproc_v1.types.Empty`

class `google.cloud.dataproc_v1.types.EnumDescriptorProto`

class `EnumReservedRange`

class `google.cloud.dataproc_v1.types.EnumOptions`

class `google.cloud.dataproc_v1.types.EnumValueDescriptorProto`

class `google.cloud.dataproc_v1.types.EnumValueOptions`

class `google.cloud.dataproc_v1.types.ExtensionRangeOptions`

class `google.cloud.dataproc_v1.types.FieldDescriptorProto`

class `google.cloud.dataproc_v1.types.FieldMask`

class `google.cloud.dataproc_v1.types.FieldOptions`

class `google.cloud.dataproc_v1.types.FileDescriptorProto`

class `google.cloud.dataproc_v1.types.FileDescriptorSet`

class `google.cloud.dataproc_v1.types.FileOptions`

class `google.cloud.dataproc_v1.types.GceClusterConfig`

Common config settings for resources of Google Compute Engine cluster instances, applicable to all instances in the cluster.

zone_uri

Optional. The zone where the Google Compute Engine cluster will be located. On a create request, it is required in the “global” region. If omitted in a non-global Cloud Dataproc region, the service will pick a zone in the corresponding Compute Engine region. On a get request, zone will always be present. A full URL, partial URI, or short name are valid. Examples: - `https://www.googleapis.com/compute/v1/projects/[project_id]/zones/[zone]` - `projects/[project_id]/zones/[zone]` - `us-central1-f`

network_uri

Optional. The Google Compute Engine network to be used for machine communications. Cannot be specified with `subnetwork_uri`. If neither `network_uri` nor `subnetwork_uri` is specified, the “default” network of the project is used, if it exists. Cannot be a “Custom Subnet Network” (see [Using Subnetworks](#) for more information). A full URL, partial URI, or short name are valid. Examples: - `https://www.googleapis.com/compute/v1/projects/[project_id]/regions/global/default` - `projects/[project_id]/regions/global/default` - `default`

subnetwork_uri

Optional. The Google Compute Engine subnetwork to be used for machine communications. Cannot be specified with `network_uri`. A full URL, partial URI, or short name are valid. Examples: - `https://www.googleapis.com/compute/v1/projects/[project_id]/regions/us-east1/sub0` - `projects/[project_id]/regions/us-east1/sub0` - `sub0`

internal_ip_only

Optional. If true, all instances in the cluster will only have internal IP addresses. By default, clusters are not restricted to internal IP addresses, and will have ephemeral external IP addresses assigned to each instance. This `internal_ip_only` restriction can only be enabled for subnetwork enabled networks, and all off-cluster dependencies must be configured to be accessible without external IP addresses.

service_account

Optional. The service account of the instances. Defaults to the default Google Compute Engine service account. Custom service accounts need permissions equivalent to the following IAM roles: - `roles/logging.logWriter` - `roles/storage.objectAdmin` (see https://cloud.google.com/compute/docs/access/service-accounts#custom_service_accounts for more information). Example: `[account_id]@[project_id].iam.gserviceaccount.com`

service_account_scopes

Optional. The URIs of service account scopes to be included in Google Compute Engine instances. The following base set of scopes is always included: - `https://www.googleapis.com/auth/cloud.useraccounts.readonly` - `https://www.googleapis.com/auth/devstorage.read_write` - `https://www.googleapis.com/auth/logging.write` If no scopes are specified, the following defaults are also provided: - `https://www.googleapis.com/auth/bigquery` - `https://www.googleapis.com/auth/bigtable.admin.table` - `https://www.googleapis.com/auth/bigtable.data` - `https://www.googleapis.com/auth/devstorage.full_control`

tags

The Google Compute Engine tags to add to all instances (see [Tagging instances](#)).

metadata

The Google Compute Engine metadata entries to add to all instances (see [Project and instance metadata](#)).

class MetadataEntry

```
class google.cloud.dataproc_v1.types.GeneratedCodeInfo
```

class Annotation

```
class google.cloud.dataproc_v1.types.GetClusterRequest
```

Request to get the resource representation for a cluster in a project.

project_id

Required. The ID of the Google Cloud Platform project that the cluster belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

cluster_name

Required. The cluster name.

class google.cloud.dataproc_v1.types.**GetJobRequest**

A request to get the resource representation for a job in a project.

project_id

Required. The ID of the Google Cloud Platform project that the job belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

job_id

Required. The job ID.

class google.cloud.dataproc_v1.types.**GetOperationRequest****class** google.cloud.dataproc_v1.types.**HadoopJob**

A Cloud Dataproc job for running [Apache Hadoop MapReduce](#) jobs on [Apache Hadoop YARN](#).

driver

Required. Indicates the location of the driver's main class. Specify either the jar file that contains the main class or the main class name. To specify both, add the jar file to `jar_file_uris`, and then specify the main class name in this property.

main_jar_file_uri

The HCFS URI of the jar file containing the main class. Examples: `'gs://foo-bucket/analytics-binaries/extract-useful-metrics-mr.jar'` `'hdfs://tmp/test-samples/custom-wordcount.jar'` `'file:///home/usr/lib/hadoop-mapreduce/hadoop-mapreduce-examples.jar'`

main_class

The name of the driver's main class. The jar file containing the class must be in the default CLASSPATH or specified in `jar_file_uris`.

args

Optional. The arguments to pass to the driver. Do not include arguments, such as `-libjars` or `-Dfoo=bar`, that can be set as job properties, since a collision may occur that causes an incorrect job submission.

jar_file_uris

Optional. Jar file URIs to add to the CLASSPATHs of the Hadoop driver and tasks.

file_uris

Optional. HCFS (Hadoop Compatible Filesystem) URIs of files to be copied to the working directory of Hadoop drivers and distributed tasks. Useful for naively parallel tasks.

archive_uris

Optional. HCFS URIs of archives to be extracted in the working directory of Hadoop drivers and tasks. Supported file types: `.jar`, `.tar`, `.tar.gz`, `.tgz`, or `.zip`.

properties

Optional. A mapping of property names to values, used to configure Hadoop. Properties that conflict with values set by the Cloud Dataproc API may be overwritten. Can include properties set in `/etc/hadoop/conf/*-site` and classes in user code.

logging_config

Optional. The runtime log config for job execution.

class PropertiesEntry**class** google.cloud.dataproc_v1.types.HiveJob

A Cloud Dataproc job for running [Apache Hive](#) queries on YARN.

queries

Required. The sequence of Hive queries to execute, specified as either an HCFS file URI or a list of queries.

query_file_uri

The HCFS URI of the script that contains Hive queries.

query_list

A list of queries.

continue_on_failure

Optional. Whether to continue executing queries if a query fails. The default value is `false`. Setting to `true` can be useful when executing independent parallel queries.

script_variables

Optional. Mapping of query variable names to values (equivalent to the Hive command: `SET name="value";`).

properties

Optional. A mapping of property names and values, used to configure Hive. Properties that conflict with values set by the Cloud Dataproc API may be overwritten. Can include properties set in `/etc/hadoop/conf/*-site.xml`, `/etc/hive/conf/hive-site.xml`, and classes in user code.

jar_file_uris

Optional. HCFS URIs of jar files to add to the CLASSPATH of the Hive server and Hadoop MapReduce (MR) tasks. Can contain Hive SerDes and UDFs.

class PropertiesEntry**class ScriptVariablesEntry****class** google.cloud.dataproc_v1.types.Http**class** google.cloud.dataproc_v1.types.HttpRule**class** google.cloud.dataproc_v1.types.InstanceGroupConfig

Optional. The config settings for Google Compute Engine resources in an instance group, such as a master or worker group.

num_instances

Optional. The number of VM instances in the instance group. For master instance groups, must be set to 1.

instance_names

Optional. The list of instance names. Cloud Dataproc derives the names from `cluster_name`, `num_instances`, and the instance group if not set by user (recommended practice is to let Cloud Dataproc derive the name).

image_uri

Output-only. The Google Compute Engine image resource used for cluster instances. Inferred from `SoftwareConfig.image_version`.

machine_type_uri

Optional. The Google Compute Engine machine type used for cluster instances. A full URL, partial URI, or short name are valid. Examples: - `https://www.googleapis.com/compute/v1/p`

```
projects/[project_id]/zones/us-east1-a/machineTypes/n1-standard-2 -  
projects/[project_id]/zones/us-east1-a/machineTypes/n1-standard-2 -  
n1-standard-2
```

disk_config

Optional. Disk option config settings.

is_preemptible

Optional. Specifies that this instance group contains preemptible instances.

managed_group_config

Output-only. The config for Google Compute Engine Instance Group Manager that manages this group. This is only used for preemptible instance groups.

accelerators

Optional. The Google Compute Engine accelerator configuration for these instances. **Beta Feature:** This feature is still under development. It may be changed before final release.

class google.cloud.dataproc_v1.types.Job

A Cloud Dataproc job resource.

reference

Optional. The fully qualified reference to the job, which can be used to obtain the equivalent REST path of the job resource. If this property is not specified when a job is created, the server generates a job_id.

placement

Required. Job information, including how, when, and where to run the job.

type_job

Required. The application/framework-specific portion of the job.

hadoop_job

Job is a Hadoop job.

spark_job

Job is a Spark job.

pyspark_job

Job is a Pyspark job.

hive_job

Job is a Hive job.

pig_job

Job is a Pig job.

spark_sql_job

Job is a SparkSql job.

status

Output-only. The job status. Additional application-specific status information may be contained in the type_job and yarn_applications fields.

status_history

Output-only. The previous job status.

yarn_applications

Output-only. The collection of YARN applications spun up by this job. **Beta Feature:** This report is available for testing purposes only. It may be changed before final release.

driver_output_resource_uri

Output-only. A URI pointing to the location of the stdout of the job's driver program.

driver_control_files_uri

Output-only. If present, the location of miscellaneous control files which may be used as part of job setup and handling. If not present, control files may be placed in the same location as `driver_output_uri`.

labels

Optional. The labels to associate with this job. Label **keys** must contain 1 to 63 characters, and must conform to [RFC 1035](#). Label **values** may be empty, but, if present, must contain 1 to 63 characters, and must conform to [RFC 1035](#). No more than 32 labels can be associated with a job.

scheduling

Optional. Job scheduling configuration.

class LabelsEntry

class google.cloud.dataproc_v1.types.JobPlacement

Cloud Dataproc job config.

cluster_name

Required. The name of the cluster where the job will be submitted.

cluster_uuid

Output-only. A cluster UUID generated by the Cloud Dataproc service when the job is submitted.

class google.cloud.dataproc_v1.types.JobReference

Encapsulates the full scoping used to reference a job.

project_id

Required. The ID of the Google Cloud Platform project that the job belongs to.

job_id

Optional. The job ID, which must be unique within the project. The job ID is generated by the server upon job submission or provided by the user as a means to perform retries without creating duplicate jobs. The ID must contain only letters (a-z, A-Z), numbers (0-9), underscores (`_`), or hyphens (`-`). The maximum length is 100 characters.

class google.cloud.dataproc_v1.types.JobScheduling

Job scheduling options.

Beta Feature: These options are available for testing purposes only. They may be changed before final release.

max_failures_per_hour

Optional. Maximum number of times per hour a driver may be restarted as a result of driver terminating with non-zero code before job is reported failed. A job may be reported as thrashing if driver exits with non-zero code 4 times within 10 minute window. Maximum value is 10.

class google.cloud.dataproc_v1.types.JobStatus

Cloud Dataproc job status.

state

Output-only. A state message specifying the overall job state.

details

Output-only. Optional job state details, such as an error description if the state is ERROR.

state_start_time

Output-only. The time when this state was entered.

substate

Output-only. Additional state information, which includes status reported by the agent.

class google.cloud.dataproc_v1.types.ListClustersRequest

A request to list the clusters in a project.

project_id

Required. The ID of the Google Cloud Platform project that the cluster belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

filter

Optional. A filter constraining the clusters to list. Filters are case-sensitive and have the following syntax: `field = value [AND [field = value]] ...` where **field** is one of `status.state`, `clusterName`, or `labels.[KEY]`, and `[KEY]` is a label key. **value** can be `*` to match all values. `status.state` can be one of the following: `ACTIVE`, `INACTIVE`, `CREATING`, `RUNNING`, `ERROR`, `DELETING`, or `UPDATING`. `ACTIVE` contains the `CREATING`, `UPDATING`, and `RUNNING` states. `INACTIVE` contains the `DELETING` and `ERROR` states. `clusterName` is the name of the cluster provided at creation time. Only the logical `AND` operator is supported; space-separated items are treated as having an implicit `AND` operator. Example filter: `status.state = ACTIVE AND clusterName = mycluster AND labels.env = staging AND labels.starred = *`

page_size

Optional. The standard List page size.

page_token

Optional. The standard List page token.

class `google.cloud.dataproc_v1.types.ListClustersResponse`

The list of all clusters in a project.

clusters

Output-only. The clusters in the project.

next_page_token

Output-only. This token is included in the response if there are more results to fetch. To fetch additional results, provide this value as the `page_token` in a subsequent `ListClustersRequest`.

class `google.cloud.dataproc_v1.types.ListJobsRequest`

A request to list jobs in a project.

project_id

Required. The ID of the Google Cloud Platform project that the job belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

page_size

Optional. The number of results to return in each response.

page_token

Optional. The page token, returned by a previous call, to request the next page of results.

cluster_name

Optional. If set, the returned jobs list includes only jobs that were submitted to the named cluster.

job_state_matcher

Optional. Specifies enumerated categories of jobs to list. (default = match ALL jobs). If `filter` is provided, `jobStateMatcher` will be ignored.

filter

Optional. A filter constraining the jobs to list. Filters are case-sensitive and have the following syntax: `[field = value] AND [field [= value]] ...` where **field** is `status.state` or `labels.[KEY]`, and `[KEY]` is a label key. **value** can be `*` to match all values. `status.state` can be either `ACTIVE` or `NON_ACTIVE`. Only the logical `AND` operator is supported; space-separated items are treated as hav-

ing an implicit AND operator. Example filter: status.state = ACTIVE AND labels.env = staging AND labels.starred = *

class google.cloud.dataproc_v1.types.**ListJobsResponse**

A list of jobs in a project.

jobs

Output-only. Jobs list.

next_page_token

Optional. This token is included in the response if there are more results to fetch. To fetch additional results, provide this value as the page_token in a subsequent ListJobsRequest.

class google.cloud.dataproc_v1.types.**ListOperationsRequest**

class google.cloud.dataproc_v1.types.**ListOperationsResponse**

class google.cloud.dataproc_v1.types.**LoggingConfig**

The runtime logging config of the job.

driver_log_levels

The per-package log levels for the driver. This may include “root” package name to configure rootLogger. Examples: ‘com.google = FATAL’, ‘root = INFO’, ‘org.apache = DEBUG’

class DriverLogLevelsEntry

class google.cloud.dataproc_v1.types.**ManagedGroupConfig**

Specifies the resources used to actively manage an instance group.

instance_template_name

Output-only. The name of the Instance Template used for the Managed Instance Group.

instance_group_manager_name

Output-only. The name of the Instance Group Manager for this group.

class google.cloud.dataproc_v1.types.**MessageOptions**

class google.cloud.dataproc_v1.types.**MethodDescriptorProto**

class google.cloud.dataproc_v1.types.**MethodOptions**

class google.cloud.dataproc_v1.types.**NodeInitializationAction**

Specifies an executable to run on a fully configured node and a timeout period for executable completion.

executable_file

Required. Google Cloud Storage URI of executable file.

execution_timeout

Optional. Amount of time executable has to complete. Default is 10 minutes. Cluster creation fails with an explanatory error message (the name of the executable that caused the error and the exceeded timeout period) if the executable is not completed at end of the timeout period.

class google.cloud.dataproc_v1.types.**OneofDescriptorProto**

class google.cloud.dataproc_v1.types.**OneofOptions**

class google.cloud.dataproc_v1.types.**Operation**

class google.cloud.dataproc_v1.types.**PigJob**

A Cloud Dataproc job for running [Apache Pig](#) queries on YARN.

queries

Required. The sequence of Pig queries to execute, specified as an HCFS file URI or a list of queries.

query_file_uri

The HCFS URI of the script that contains the Pig queries.

query_list

A list of queries.

continue_on_failure

Optional. Whether to continue executing queries if a query fails. The default value is `false`. Setting to `true` can be useful when executing independent parallel queries.

script_variables

Optional. Mapping of query variable names to values (equivalent to the Pig command: `name=[value]`).

properties

Optional. A mapping of property names to values, used to configure Pig. Properties that conflict with values set by the Cloud Dataproc API may be overwritten. Can include properties set in `/etc/hadoop/conf/*-site.xml`, `/etc/pig/conf/pig.properties`, and classes in user code.

jar_file_uris

Optional. HCFS URIs of jar files to add to the CLASSPATH of the Pig Client and Hadoop MapReduce (MR) tasks. Can contain Pig UDFs.

logging_config

Optional. The runtime log config for job execution.

class PropertiesEntry**class ScriptVariablesEntry****class google.cloud.dataproc_v1.types.PySparkJob**

A Cloud Dataproc job for running [Apache PySpark](#) applications on YARN.

main_python_file_uri

Required. The HCFS URI of the main Python file to use as the driver. Must be a `.py` file.

args

Optional. The arguments to pass to the driver. Do not include arguments, such as `--conf`, that can be set as job properties, since a collision may occur that causes an incorrect job submission.

python_file_uris

Optional. HCFS file URIs of Python files to pass to the PySpark framework. Supported file types: `.py`, `.egg`, and `.zip`.

jar_file_uris

Optional. HCFS URIs of jar files to add to the CLASSPATHs of the Python driver and tasks.

file_uris

Optional. HCFS URIs of files to be copied to the working directory of Python drivers and distributed tasks. Useful for naively parallel tasks.

archive_uris

Optional. HCFS URIs of archives to be extracted in the working directory of `.jar`, `.tar`, `.tar.gz`, `.tgz`, and `.zip`.

properties

Optional. A mapping of property names to values, used to configure PySpark. Properties that conflict with values set by the Cloud Dataproc API may be overwritten. Can include properties set in `/etc/spark/conf/spark-defaults.conf` and classes in user code.

logging_config

Optional. The runtime log config for job execution.

class PropertiesEntry

class google.cloud.dataproc_v1.types.QueryList

A list of queries to run on a cluster.

queries

Required. The queries to execute. You do not need to terminate a query with a semicolon. Multiple queries can be specified in one string by separating each with a semicolon. Here is an example of an Cloud Dataproc API snippet that uses a QueryList to specify a HiveJob: :: "hiveJob": { "queryList": { "queries": ["query1", "query2", "query3;query4",] } }

class google.cloud.dataproc_v1.types.ServiceDescriptorProto

class google.cloud.dataproc_v1.types.ServiceOptions

class google.cloud.dataproc_v1.types.SoftwareConfig

Specifies the selection and config of software inside the cluster.

image_version

Optional. The version of software inside the cluster. It must match the regular expression `[0-9]+\.[0-9]+`. If unspecified, it defaults to the latest version (see [Cloud Dataproc Versioning](#)).

properties

Optional. The properties to set on daemon config files. Property keys are specified in `prefix:property` format, such as `core:fs.defaultFS`. The following are supported prefixes and their mappings: - `capacity-scheduler`: `capacity-scheduler.xml` - `core`: `core-site.xml` - `distcp`: `distcp-default.xml` - `hdfs`: `hdfs-site.xml` - `hive`: `hive-site.xml` - `mapred`: `mapred-site.xml` - `pig`: `pig.properties` - `spark`: `spark-defaults.conf` - `yarn`: `yarn-site.xml` For more information, see [Cluster properties](#).

class PropertiesEntry

class google.cloud.dataproc_v1.types.SourceCodeInfo

class Location

class google.cloud.dataproc_v1.types.SparkJob

A Cloud Dataproc job for running [Apache Spark](#) applications on YARN.

driver

Required. The specification of the main method to call to drive the job. Specify either the jar file that contains the main class or the main class name. To pass both a main jar and a main class in that jar, add the jar to `CommonJob.jar_file_uris`, and then specify the main class name in `main_class`.

main_jar_file_uri

The HCFS URI of the jar file that contains the main class.

main_class

The name of the driver's main class. The jar file that contains the class must be in the default CLASSPATH or specified in `jar_file_uris`.

args

Optional. The arguments to pass to the driver. Do not include arguments, such as `--conf`, that can be set as job properties, since a collision may occur that causes an incorrect job submission.

jar_file_uris

Optional. HCFS URIs of jar files to add to the CLASSPATHs of the Spark driver and tasks.

file_uris

Optional. HCFS URIs of files to be copied to the working directory of Spark drivers and distributed tasks. Useful for naively parallel tasks.

archive_uris

Optional. HCFS URIs of archives to be extracted in the working directory of Spark drivers and tasks. Supported file types: .jar, .tar, .tar.gz, .tgz, and .zip.

properties

Optional. A mapping of property names to values, used to configure Spark. Properties that conflict with values set by the Cloud Dataproc API may be overwritten. Can include properties set in /etc/spark/conf/spark-defaults.conf and classes in user code.

logging_config

Optional. The runtime log config for job execution.

class PropertiesEntry**class** google.cloud.dataproc_v1.types.**SparkSqlJob**

A Cloud Dataproc job for running [Apache Spark SQL](#) queries.

queries

Required. The sequence of Spark SQL queries to execute, specified as either an HCFS file URI or as a list of queries.

query_file_uri

The HCFS URI of the script that contains SQL queries.

query_list

A list of queries.

script_variables

Optional. Mapping of query variable names to values (equivalent to the Spark SQL command: SET name="value";).

properties

Optional. A mapping of property names to values, used to configure Spark SQL's SparkConf. Properties that conflict with values set by the Cloud Dataproc API may be overwritten.

jar_file_uris

Optional. HCFS URIs of jar files to be added to the Spark CLASSPATH.

logging_config

Optional. The runtime log config for job execution.

class PropertiesEntry**class ScriptVariablesEntry****class** google.cloud.dataproc_v1.types.**Status****class** google.cloud.dataproc_v1.types.**SubmitJobRequest**

A request to submit a job.

project_id

Required. The ID of the Google Cloud Platform project that the job belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

job

Required. The job resource.

class google.cloud.dataproc_v1.types.**Timestamp****class** google.cloud.dataproc_v1.types.**UninterpretedOption**

class NamePart**class** google.cloud.dataproc_v1.types.UpdateClusterRequest

A request to update a cluster.

project_id

Required. The ID of the Google Cloud Platform project the cluster belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

cluster_name

Required. The cluster name.

cluster

Required. The changes to the cluster.

update_mask

Required. Specifies the path, relative to Cluster, of the field to update. For example, to change the number of workers in a cluster to 5, the update_mask parameter would be specified as config.worker_config.num_instances, and the PATCH request body would specify the new value, as follows: :: { "config":{ "workerConfig":{ "numInstances":5" } } } Similarly, to change the number of preemptible workers in a cluster to 5, the update_mask parameter would be config.secondary_worker_config.num_instances, and the PATCH request body would be set as follows: :: { "config":{ "secondaryWorkerConfig":{ "numInstances":5" } } } Note: Currently, only the following fields can be updated: .. raw:: html <table> .. raw:: html <tbody> .. raw:: html <tr> .. raw:: html <td> Mask .. raw:: html </td> .. raw:: html <td> Purpose .. raw:: html </td> .. raw:: html </tr> .. raw:: html <tr> .. raw:: html <td> labels .. raw:: html </td> .. raw:: html <td> Update labels .. raw:: html </td> .. raw:: html </tr> .. raw:: html <tr> .. raw:: html <td> config.worker_config.num_instances .. raw:: html </td> .. raw:: html <td> Resize primary worker group .. raw:: html </td> .. raw:: html </tr> .. raw:: html <tr> .. raw:: html <td> config.secondary_worker_config.num_instances .. raw:: html </td> .. raw:: html <td> Resize secondary worker group .. raw:: html </td> .. raw:: html </tr> .. raw:: html </tbody> .. raw:: html </table>

class google.cloud.dataproc_v1.types.UpdateJobRequest

A request to update a job.

project_id

Required. The ID of the Google Cloud Platform project that the job belongs to.

region

Required. The Cloud Dataproc region in which to handle the request.

job_id

Required. The job ID.

job

Required. The changes to the job.

update_mask

Required. Specifies the path, relative to Job, of the field to update. For example, to update the labels of a Job the update_mask parameter would be specified as labels, and the PATCH request body would specify the new value. Note: Currently, labels is the only field that can be updated.

class google.cloud.dataproc_v1.types.YarnApplication

A YARN application created by a job. Application information is a subset of org.apache.hadoop.yarn.proto.YarnProtos.ApplicationReportProto.

Beta Feature: This report is available for testing purposes only. It may be changed before final release.

name

Required. The application name.

state

Required. The application state.

progress

Required. The numerical progress of the application, from 1 to 100.

tracking_url

Optional. The HTTP URL of the ApplicationMaster, HistoryServer, or TimelineServer that provides application- specific information. The URL uses the internal hostname, and requires a proxy server for resolution and, possibly, access.

7.2.3 Changelog

PyPI History

0.1.2

Implementation Changes

- Avoid overwriting **'module'** of messages from shared modules. (#5364)

Internal / Testing Changes

- Modify system tests to use prerelease versions of grpcio (#5304)
- Add Test runs for Python 3.7 and remove 3.4 (#5295)
- Re-enable lint for tests, remove usage of pylint (#4921)

0.1.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)

8.1 Datastore Client

Convenience wrapper for invoking APIs/factories w/ a project.

```
class google.cloud.datastore.client.Client (project=None, namespace=None, credentials=None, _http=None, _use_grpc=None)
```

Bases: `google.cloud.client.ClientWithProject`

Convenience wrapper for invoking APIs/factories w/ a project.

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
```

Parameters

- **project** (*str*) – (Optional) The project to pass to proxied API methods.
- **namespace** (*str*) – (Optional) namespace to pass to proxied API methods.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.
- **_use_grpc** (*bool*) – (Optional) Explicitly specifies whether to use the gRPC transport (via GAX) or HTTP. If unset, falls back to the `GOOGLE_CLOUD_DISABLE_GRPC` environment variable. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/datastore',)

The scopes required for authenticating as a Cloud Datastore consumer.

allocate_ids (*incomplete_key*, *num_ids*)

Allocate a list of IDs from a partial key.

Parameters

- **incomplete_key** (*google.cloud.datastore.key.Key*) – Partial key to use as base for allocated IDs.
- **num_ids** (*int*) – The number of IDs to allocate.

Return type list of *google.cloud.datastore.key.Key*

Returns The (complete) keys allocated with *incomplete_key* as root.

Raises *ValueError* if *incomplete_key* is not a partial key.

batch ()

Proxy to *google.cloud.datastore.batch.Batch*.

current_batch

Currently-active batch.

Return type *google.cloud.datastore.batch.Batch*, or an object implementing its API, or *NoneType* (if no batch is active).

Returns The batch/transaction at the top of the batch stack.

current_transaction

Currently-active transaction.

Return type *google.cloud.datastore.transaction.Transaction*, or an object implementing its API, or *NoneType* (if no transaction is active).

Returns The transaction at the top of the batch stack.

delete (*key*)

Delete the key in the Cloud Datastore.

Note: This is just a thin wrapper over *delete_multi()*. The backend API does not make a distinction between a single key or multiple keys in a commit request.

Parameters **key** (*google.cloud.datastore.key.Key*) – The key to be deleted from the datastore.

delete_multi (*keys*)

Delete keys from the Cloud Datastore.

Parameters **keys** (list of *google.cloud.datastore.key.Key*) – The keys to be deleted from the Datastore.

get (*key*, *missing=None*, *deferred=None*, *transaction=None*, *eventual=False*)

Retrieve an entity from a single key (if it exists).

Note: This is just a thin wrapper over *get_multi()*. The backend API does not make a distinction between a single key or multiple keys in a lookup request.

Parameters

- **key** (*google.cloud.datastore.key.Key*) – The key to be retrieved from the datastore.
- **missing** (*list*) – (Optional) If a list is passed, the key-only entities returned by the backend as “missing” will be copied into it.
- **deferred** (*list*) – (Optional) If a list is passed, the keys returned by the backend as “deferred” will be copied into it.
- **transaction** (*Transaction*) – (Optional) Transaction to use for read consistency. If not passed, uses current transaction, if set.
- **eventual** (*bool*) – (Optional) Defaults to strongly consistent (False). Setting True will use eventual consistency, but cannot be used inside a transaction or will raise `ValueError`.

Return type *google.cloud.datastore.entity.Entity* or `NoneType`

Returns The requested entity if it exists.

Raises `ValueError` if eventual is True and in a transaction.

get_multi (*keys, missing=None, deferred=None, transaction=None, eventual=False*)

Retrieve entities, along with their attributes.

Parameters

- **keys** (list of *google.cloud.datastore.key.Key*) – The keys to be retrieved from the datastore.
- **missing** (*list*) – (Optional) If a list is passed, the key-only entities returned by the backend as “missing” will be copied into it. If the list is not empty, an error will occur.
- **deferred** (*list*) – (Optional) If a list is passed, the keys returned by the backend as “deferred” will be copied into it. If the list is not empty, an error will occur.
- **transaction** (*Transaction*) – (Optional) Transaction to use for read consistency. If not passed, uses current transaction, if set.
- **eventual** (*bool*) – (Optional) Defaults to strongly consistent (False). Setting True will use eventual consistency, but cannot be used inside a transaction or will raise `ValueError`.

Return type list of *google.cloud.datastore.entity.Entity*

Returns The requested entities.

Raises `ValueError` if one or more of *keys* has a project which does not match our project.

Raises `ValueError` if eventual is True and in a transaction.

key (**path_args, **kwargs*)

Proxy to *google.cloud.datastore.key.Key*.

Passes our project.

put (*entity*)

Save an entity in the Cloud Datastore.

Note: This is just a thin wrapper over `put_multi()`. The backend API does not make a distinction between a single entity or multiple entities in a commit request.

Parameters `entity` (`google.cloud.datastore.entity.Entity`) – The entity to be saved to the datastore.

put_multi (`entities`)

Save entities in the Cloud Datastore.

Parameters `entities` (list of `google.cloud.datastore.entity.Entity`) – The entities to be saved to the datastore.

Raises `ValueError` if `entities` is a single entity.

query (`**kwargs`)

Proxy to `google.cloud.datastore.query.Query`.

Passes our project.

Using query to search a datastore:

```
>>> query = client.query(kind='MyKind')
>>> query.add_filter('property', '=', 'val')
```

Using the query iterator

```
>>> query_iter = query.fetch()
>>> for entity in query_iter:
...     do_something(entity)
```

or manually page through results

```
>>> query_iter = query.fetch(start_cursor=cursor)
>>> pages = query_iter.pages
>>>
>>> first_page = next(pages)
>>> first_page_entities = list(first_page)
>>> query_iter.next_page_token is None
True
```

Parameters `kwargs` (`dict`) – Parameters for initializing and instance of `Query`.

Return type `Query`

Returns A query object.

transaction (`**kwargs`)

Proxy to `google.cloud.datastore.transaction.Transaction`.

Parameters `kwargs` (`dict`) – Keyword arguments to be passed in.

8.2 Entities

Class for representing a single entity in the Cloud Datastore.

```
class google.cloud.datastore.entity.Entity (key=None, exclude_from_indexes=())
    Bases: dict
```

Entities are akin to rows in a relational database

An entity storing the actual instance of data.

Each entity is officially represented with a *Key*, however it is possible that you might create an entity with only a partial key (that is, a key with a kind, and possibly a parent, but without an ID). In such a case, the datastore service will automatically assign an ID to the partial key.

Entities in this API act like dictionaries with extras built in that allow you to delete or persist the data stored on the entity.

Entities are mutable and act like a subclass of a dictionary. This means you could take an existing entity and change the key to duplicate the object.

Use *get()* to retrieve an existing entity:

```
>>> client.get(key)
<Entity('EntityKind', 1234) {'property': 'value'}>
```

You can the set values on the entity just like you would on any other dictionary.

```
>>> entity['age'] = 20
>>> entity['name'] = 'JJ'
```

However, not all types are allowed as a value for a Google Cloud Datastore entity. The following basic types are supported by the API:

- `datetime.datetime`
- *Key*
- `bool`
- `float`
- `int` (as well as `long` in Python 2)
- unicode (called `str` in Python 3)
- `bytes` (called `str` in Python 2)
- *GeoPoint*
- `None`

In addition, three container types are supported:

- `list`
- *Entity*
- `dict` (will just be treated like an *Entity* without a `key` or `exclude_from_indexes`)

Each entry in a list must be one of the value types (basic or container) and each value in an *Entity* must as well. In this case an *Entity* as a **container** acts as a `dict`, but also has the special annotations of `key` and `exclude_from_indexes`.

And you can treat an entity like a regular Python dictionary:

```
>>> sorted(entity.keys())
['age', 'name']
>>> sorted(entity.items())
[('age', 20), ('name', 'JJ')]
```

Note: When saving an entity to the backend, values which are “text” (unicode in Python2, str in Python3) will be saved using the ‘text_value’ field, after being encoded to UTF-8. When retrieved from the back-end, such values will be decoded to “text” again. Values which are “bytes” (str in Python2, bytes in Python3), will be saved using the ‘blob_value’ field, without any decoding / encoding step.

Parameters

- **key** (*google.cloud.datastore.key.Key*) – Optional key to be set on entity.
- **exclude_from_indexes** (*tuple of string*) – Names of fields whose values are not to be indexed for this entity.

exclude_from_indexes = None

Names of fields which are *not* to be indexed for this entity.

id

Get the ID of the current entity.

Note: This relies entirely on the *google.cloud.datastore.key.Key* set on the entity. That means that we’re not storing the ID of the entity at all, just the properties and a pointer to a Key which knows its ID.

kind

Get the kind of the current entity.

Note: This relies entirely on the *google.cloud.datastore.key.Key* set on the entity. That means that we’re not storing the kind of the entity at all, just the properties and a pointer to a Key which knows its Kind.

8.3 Keys

Create / interact with Google Cloud Datastore keys.

class google.cloud.datastore.key.**Key** (*path_args, **kwargs)

Bases: *object*

An immutable representation of a datastore Key.

To create a basic key directly:

```
>>> Key('EntityKind', 1234, project=project)
<Key('EntityKind', 1234), project=...>
>>> Key('EntityKind', 'foo', project=project)
<Key('EntityKind', 'foo'), project=...>
```

Though typical usage comes via the *key()* factory:

```
>>> client.key('EntityKind', 1234)
<Key('EntityKind', 1234), project=...>
>>> client.key('EntityKind', 'foo')
<Key('EntityKind', 'foo'), project=...>
```

To create a key with a parent:

```
>>> client.key('Parent', 'foo', 'Child', 1234)
<Key('Parent', 'foo', 'Child', 1234), project=...>
>>> client.key('Child', 1234, parent=parent_key)
<Key('Parent', 'foo', 'Child', 1234), project=...>
```

To create a partial key:

```
>>> client.key('Parent', 'foo', 'Child')
<Key('Parent', 'foo', 'Child'), project=...>
```

Parameters

- **path_args** (*tuple of string and integer*) – May represent a partial (odd length) or full (even length) key path.
- **kwargs** (*dict*) – Keyword arguments to be passed in.

Accepted keyword arguments are

- namespace (string): A namespace identifier for the key.
- project (string): The project associated with the key.
- parent (*Key*): The parent of the key.

The project argument is required unless it has been set implicitly.

completed_key (*id_or_name*)

Creates new key from existing partial key by adding final ID/name.

Parameters **id_or_name** (*str or integer*) – ID or name to be added to the key.

Return type *google.cloud.datastore.key.Key*

Returns A new Key instance with the same data as the current one and an extra ID or name added.

Raises *ValueError* if the current key is not partial or if *id_or_name* is not a string or integer.

flat_path

Getter for the key path as a tuple.

Return type tuple of string and integer

Returns The tuple of elements in the path.

classmethod from_legacy_urlsafe (*urlsafe*)

Convert urlsafe string to *Key*.

This is intended to work with the “legacy” representation of a datastore “Key” used within Google App Engine (a so-called “Reference”). This assumes that *urlsafe* was created within an App Engine app via something like `ndb.Key(...).urlsafe()`.

Parameters **urlsafe** (*bytes or unicode*) – The base64 encoded (ASCII) string corresponding to a datastore “Key” / “Reference”.

Return type `Key`.

Returns The key corresponding to `urlsafe`.

id

ID getter. Based on the last element of path.

Return type `int`

Returns The (integer) ID of the key.

id_or_name

Getter. Based on the last element of path.

Return type `int` (if `id`) or `string` (if `name`)

Returns The last element of the key's path if it is either an `id` or a `name`.

is_partial

Boolean indicating if the key has an ID (or name).

Return type `bool`

Returns `True` if the last element of the key's path does not have an `id` or a `name`.

kind

Kind getter. Based on the last element of path.

Return type `str`

Returns The kind of the current key.

name

Name getter. Based on the last element of path.

Return type `str`

Returns The (string) name of the key.

namespace

Namespace getter.

Return type `str`

Returns The namespace of the current key.

parent

The parent of the current key.

Return type `google.cloud.datastore.key.Key` or `NoneType`

Returns A new `Key` instance, whose path consists of all but the last element of current path.
If the current key has only one path element, returns `None`.

path

Path getter.

Returns a copy so that the key remains immutable.

Return type `list` of `dict`

Returns The (key) path of the current key.

project

Project getter.

Return type `str`

Returns The key’s project.

to_legacy_urlsafe (*location_prefix=None*)

Convert to a base64 encode urlsafe string for App Engine.

This is intended to work with the “legacy” representation of a datastore “Key” used within Google App Engine (a so-called “Reference”). The returned string can be used as the `urlsafe` argument to `ndb.Key(urlsafe=...)`. The base64 encoded values will have padding removed.

Note: The string returned by `to_legacy_urlsafe` is equivalent, but not identical, to the string returned by `ndb`. The location prefix may need to be specified to obtain identical urlsafe keys.

Parameters `location_prefix` (*str*) – The location prefix of an App Engine project ID. Often this value is ‘s~’, but may also be ‘e~’, or other location prefixes currently unknown.

Return type `bytes`

Returns A bytestring containing the key encoded as URL-safe base64.

to_protobuf ()

Return a protobuf corresponding to the key.

Return type `entity_pb2.Key`

Returns The protobuf representing the key.

8.4 Queries

Create / interact with Google Cloud Datastore queries.

```
class google.cloud.datastore.query.Iterator(query, client, limit=None, offset=None,
                                           start_cursor=None, end_cursor=None,
                                           eventual=False)
```

Bases: `google.api_core.page_iterator.Iterator`

Represent the state of a given execution of a Query.

Parameters

- **query** (*Query*) – Query object holding permanent configuration (i.e. things that don’t change on with each page in a results set).
- **client** (*Client*) – The client used to make a request.
- **limit** (*int*) – (Optional) Limit the number of results returned.
- **offset** (*int*) – (Optional) Offset used to begin a query.
- **start_cursor** (*bytes*) – (Optional) Cursor to begin paging through query results.
- **end_cursor** (*bytes*) – (Optional) Cursor to end paging through query results.
- **eventual** (*bool*) – (Optional) Defaults to strongly consistent (False). Setting True will use eventual consistency, but cannot be used inside a transaction or will raise `ValueError`.

```
class google.cloud.datastore.query.Query(client, kind=None, project=None, namespace=None,
                                          ancestor=None, filters=(), projection=(), order=(), distinct_on=())
```

Bases: `object`

A Query against the Cloud Datastore.

This class serves as an abstraction for creating a query over data stored in the Cloud Datastore.

Parameters

- **client** (*google.cloud.datastore.client.Client*) – The client used to connect to Datastore.
- **kind** (*str*) – The kind to query.
- **project** (*str*) – (Optional) The project associated with the query. If not passed, uses the client's value.
- **namespace** (*str*) – (Optional) The namespace to which to restrict results. If not passed, uses the client's value.
- **ancestor** (*Key*) – (Optional) key of the ancestor to which this query's results are restricted.
- **filters** (*tuple[str, str, str]*) – Property filters applied by this query. The sequence is (property_name, operator, value).
- **projection** (*sequence of string*) – fields returned as part of query results.
- **order** (*sequence of string*) – field names used to order query results. Prepend – to a field name to sort it in descending order.
- **distinct_on** (*sequence of string*) – field names used to group query results.

Raises `ValueError` if `project` is not passed and no implicit default is set.

OPERATORS = {'<': 1, '<=': 2, '=': 5, '>': 3, '>=': 4}

Mapping of operator strings and their protobuf equivalents.

add_filter (*property_name, operator, value*)

Filter the query based on a property name, operator and a value.

Expressions take the form of:

```
.add_filter('<property>', '<operator>', <value>)
```

where `property` is a property stored on the entity in the datastore and `operator` is one of `OPERATORS` (ie, `=`, `<`, `<=`, `>`, `>=`):

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
>>> query = client.query(kind='Person')
>>> query.add_filter('name', '=', 'James')
>>> query.add_filter('age', '>', 50)
```

Parameters

- **property_name** (*str*) – A property name.
- **operator** (*str*) – One of `=`, `<`, `<=`, `>`, `>=`.
- **value** (*int, str, bool, float, NoneType, datetime.datetime, google.cloud.datastore.key.Key*) – The value to filter on.

Raises `ValueError` if operation is not one of the specified values, or if a filter names `'__key__'` but passes an invalid value (a key is required).

ancestor

The ancestor key for the query.

Return type `Key` or `None`

Returns The ancestor for the query.

distinct_on

Names of fields used to group query results.

Return type sequence of string

Returns The “distinct on” fields set on the query.

fetch (*limit=None, offset=0, start_cursor=None, end_cursor=None, client=None, eventual=False*)

Execute the Query; return an iterator for the matching entities.

For example:

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
>>> query = client.query(kind='Person')
>>> query.add_filter('name', '=', 'Sally')
>>> list(query.fetch())
[<Entity object>, <Entity object>, ...]
>>> list(query.fetch(1))
[<Entity object>]
```

Parameters

- **limit** (*int*) – (Optional) limit passed through to the iterator.
- **offset** (*int*) – (Optional) offset passed through to the iterator.
- **start_cursor** (*bytes*) – (Optional) cursor passed through to the iterator.
- **end_cursor** (*bytes*) – (Optional) cursor passed through to the iterator.
- **client** (*google.cloud.datastore.client.Client*) – (Optional) client used to connect to datastore. If not supplied, uses the query’s value.
- **eventual** (*bool*) – (Optional) Defaults to strongly consistent (False). Setting True will use eventual consistency, but cannot be used inside a transaction or will raise `ValueError`.

Return type `Iterator`

Returns The iterator for the query.

filters

Filters set on the query.

Return type `tuple[str, str, str]`

Returns The filters set on the query. The sequence is (`property_name`, `operator`, `value`).

key_filter (*key, operator='='*)

Filter on a key.

Parameters

- **key** (*google.cloud.datastore.key.Key*) – The key to filter on.
- **operator** (*str*) – (Optional) One of `=`, `<`, `<=`, `>`, `>=`. Defaults to `=`.

keys_only()

Set the projection to include only keys.

kind

Get the Kind of the Query.

Return type `str`

Returns The kind for the query.

namespace

This query's namespace

Return type `str` or `None`

Returns the namespace assigned to this query

order

Names of fields used to sort query results.

Return type sequence of string

Returns The order(s) set on the query.

project

Get the project for this Query.

Return type `str`

Returns The project for the query.

projection

Fields names returned by the query.

Return type sequence of string

Returns Names of fields in query results.

8.5 Transactions

Create / interact with Google Cloud Datastore transactions.

class `google.cloud.datastore.transaction.Transaction` (*client*, *read_only=False*)

Bases: `google.cloud.datastore.batch.Batch`

An abstraction representing datastore Transactions.

Transactions can be used to build up a bulk mutation and ensure all or none succeed (transactionally).

For example, the following snippet of code will put the two `save` operations (either `insert` or `upsert`) into the same mutation, and execute those within a transaction:

```
>>> with client.transaction():
...     client.put_multi([entity1, entity2])
```

Because it derives from `Batch`, `Transaction` also provides `put()` and `delete()` methods:

```
>>> with client.transaction() as xact:
...     xact.put(entity1)
...     xact.delete(entity2.key)
```

By default, the transaction is rolled back if the transaction block exits with an error:

```
>>> with client.transaction():
...     do_some_work()
...     raise SomeException # rolls back
Traceback (most recent call last):
...
SomeException
```

If the transaction block exits without an exception, it will commit by default.

Warning:

Inside a transaction, automatically assigned IDs for entities will not be available at save time! That means, if you try:

```
>>> with client.transaction():
...     entity = Entity(key=client.key('Thing'))
...     client.put(entity)
```

entity won't have a complete key until the transaction is committed.

Once you exit the transaction (or call `commit()`), the automatically generated ID will be assigned to the entity:

```
>>> with client.transaction():
...     entity = Entity(key=client.key('Thing'))
...     client.put(entity)
...     print(entity.key.is_partial) # There is no ID on this key.
...
True
>>> print(entity.key.is_partial) # There is an ID.
False
```

If you don't want to use the context manager you can initialize a transaction manually:

```
>>> transaction = client.transaction()
>>> transaction.begin()
>>>
>>> entity = Entity(key=client.key('Thing'))
>>> transaction.put(entity)
>>>
>>> transaction.commit()
```

Parameters

- **client** (`google.cloud.datastore.client.Client`) – the client used to connect to datastore.
- **read_only** (`bool`) – indicates the transaction is read only.

`begin()`

Begins a transaction.

This method is called automatically when entering a with statement, however it can be called explicitly if you don't want to use a context manager.

Raises `ValueError` if the transaction has already begun.

commit()

Commits the transaction.

This is called automatically upon exiting a `with` statement, however it can be called explicitly if you don't want to use a context manager.

This method has necessary side-effects:

- Sets the current transaction's ID to `None`.

current()

Return the topmost transaction.

Note: If the topmost element on the stack is not a transaction, returns `None`.

Return type `google.cloud.datastore.transaction.Transaction` or `None`

Returns The current transaction (if any are active).

delete(key)

Remember a key to be deleted during `commit()`.

Parameters **key** (`google.cloud.datastore.key.Key`) – the key to be deleted.

Raises `ValueError` if the batch is not in progress, if key is not complete, or if the key's `project` does not match ours.

id

Getter for the transaction ID.

Return type `str`

Returns The ID of the current transaction.

mutations

Getter for the changes accumulated by this batch.

Every batch is committed with a single commit request containing all the work to be done as mutations. Inside a batch, calling `put()` with an entity, or `delete()` with a key, builds up the request by adding a new mutation. This getter returns the protobuf that has been built-up so far.

Return type `iterable`

Returns The list of `datastore_pb2.Mutation` protobufs to be sent in the commit request.

namespace

Getter for namespace in which the batch will run.

Return type `str`

Returns The namespace in which the batch will run.

project

Getter for project in which the batch will run.

Return type `str`

Returns The project in which the batch will run.

put(entity)

Adds an entity to be committed.

Ensures the transaction is not marked readonly. Please see documentation at `put()`

Parameters `entity` (`Entity`) – the entity to be saved.

Raises `RuntimeError` if the transaction is marked `ReadOnly`

rollback()

Rolls back the current transaction.

This method has necessary side-effects:

- Sets the current transaction's ID to `None`.

8.6 Batches

Create / interact with a batch of updates / deletes.

Batches provide the ability to execute multiple operations in a single request to the Cloud Datastore API.

See https://cloud.google.com/datastore/docs/concepts/entities#batch_operations

class `google.cloud.datastore.batch.Batch` (`client`)

Bases: `object`

An abstraction representing a collected group of updates / deletes.

Used to build up a bulk mutation.

For example, the following snippet of code will put the two `save` operations and the `delete` operation into the same mutation, and send them to the server in a single API request:

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
>>> batch = client.batch()
>>> batch.put(entity1)
>>> batch.put(entity2)
>>> batch.delete(key3)
>>> batch.commit()
```

You can also use a batch as a context manager, in which case `commit()` will be called automatically if its block exits without raising an exception:

```
>>> with batch:
...     batch.put(entity1)
...     batch.put(entity2)
...     batch.delete(key3)
```

By default, no updates will be sent if the block exits with an error:

```
>>> with batch:
...     do_some_work(batch)
...     raise Exception() # rolls back
```

Parameters `client` (`google.cloud.datastore.client.Client`) – The client used to connect to datastore.

begin()

Begins a batch.

This method is called automatically when entering a with statement, however it can be called explicitly if you don't want to use a context manager.

Overridden by `google.cloud.datastore.transaction.Transaction`.

Raises `ValueError` if the batch has already begun.

commit()

Commits the batch.

This is called automatically upon exiting a with statement, however it can be called explicitly if you don't want to use a context manager.

Raises `ValueError` if the batch is not in progress.

current()

Return the topmost batch / transaction, or None.

delete(key)

Remember a key to be deleted during `commit()`.

Parameters **key** (`google.cloud.datastore.key.Key`) – the key to be deleted.

Raises `ValueError` if the batch is not in progress, if key is not complete, or if the key's `project` does not match ours.

mutations

Getter for the changes accumulated by this batch.

Every batch is committed with a single commit request containing all the work to be done as mutations. Inside a batch, calling `put()` with an entity, or `delete()` with a key, builds up the request by adding a new mutation. This getter returns the protobuf that has been built-up so far.

Return type iterable

Returns The list of `datastore_pb2.Mutation` protobufs to be sent in the commit request.

namespace

Getter for namespace in which the batch will run.

Return type `str`

Returns The namespace in which the batch will run.

project

Getter for project in which the batch will run.

Return type `str`

Returns The project in which the batch will run.

put(entity)

Remember an entity's state to be saved during `commit()`.

Note: Any existing properties for the entity will be replaced by those currently set on this instance. Already-stored properties which do not correspond to keys set on this instance will be removed from the datastore.

Note: Property values which are "text" ('unicode' in Python2, 'str' in Python3) map to 'string_value' in the datastore; values which are "bytes" ('str' in Python2, 'bytes' in Python3) map to 'blob_value'.

When an entity has a partial key, calling `commit()` sends it as an `insert` mutation and the key is completed. On return, the key for the `entity` passed in is updated to match the key ID assigned by the server.

Parameters `entity` (`google.cloud.datastore.entity.Entity`) – the entity to be saved.

Raises `ValueError` if the batch is not in progress, if entity has no key assigned, or if the key's `project` does not match ours.

rollback()

Rolls back the current batch.

Marks the batch as aborted (can't be used again).

Overridden by `google.cloud.datastore.transaction.Transaction`.

Raises `ValueError` if the batch is not in progress.

8.7 Helpers

Helper functions for dealing with Cloud Datastore's Protobuf API.

The non-private functions are part of the API.

class `google.cloud.datastore.helpers.GeoPoint` (`latitude`, `longitude`)

Bases: `object`

Simple container for a geo point value.

Parameters

- **latitude** (`float`) – Latitude of a point.
- **longitude** (`float`) – Longitude of a point.

to_protobuf()

Convert the current object to protobuf.

Return type `google.type.latlng_pb2.LatLng`.

Returns The current point as a protobuf.

`google.cloud.datastore.helpers.entity_from_protobuf` (`pb`)

Factory method for creating an entity based on a protobuf.

The protobuf should be one returned from the Cloud Datastore Protobuf API.

Parameters `pb` (`entity_pb2.Entity`) – The Protobuf representing the entity.

Return type `google.cloud.datastore.entity.Entity`

Returns The entity derived from the protobuf.

`google.cloud.datastore.helpers.entity_to_protobuf` (`entity`)

Converts an entity into a protobuf.

Parameters `entity` (`google.cloud.datastore.entity.Entity`) – The entity to be turned into a protobuf.

Return type `entity_pb2.Entity`

Returns The protobuf representing the entity.

`google.cloud.datastore.helpers.get_read_options(eventual, transaction_id)`

Validate rules for read options, and assign to the request.

Helper method for `lookup()` and `run_query`.

Parameters

- **eventual** (*bool*) – Flag indicating if EVENTUAL or STRONG consistency should be used.
- **transaction_id** (*bytes*) – A transaction identifier (may be null).

Return type `datastore_pb2.ReadOptions`

Returns The read options corresponding to the inputs.

Raises `ValueError` if `eventual` is `True` and the `transaction_id` is not `None`.

`google.cloud.datastore.helpers.key_from_protobuf(pb)`

Factory method for creating a key based on a protobuf.

The protobuf should be one returned from the Cloud Datastore Protobuf API.

Parameters **pb** (`entity_pb2.Key`) – The Protobuf representing the key.

Return type `google.cloud.datastore.key.Key`

Returns a new `Key` instance

8.8 Installation

Install the `google-cloud-datastore` library using `pip`:

```
$ pip install google-cloud-datastore
```

8.9 Modules

Shortcut methods for getting set up with Google Cloud Datastore.

You'll typically use these to get started with the API:

```
>>> from google.cloud import datastore
>>>
>>> client = datastore.Client()
>>> key = client.key('EntityKind', 1234)
>>> key
<Key('EntityKind', 1234), project=...>
>>> entity = datastore.Entity(key)
>>> entity['question'] = u'Life, universe?' # Explicit unicode for text
>>> entity['answer'] = 42
>>> entity
<Entity('EntityKind', 1234) {'question': 'Life, universe?', 'answer': 42}>
>>> query = client.query(kind='EntityKind')
```

The main concepts with this API are:

- `Client` which represents a project (string) and namespace (string) bundled with a connection and has convenience methods for constructing objects with that project / namespace.

- *Entity* which represents a single entity in the datastore (akin to a row in relational database world).
- *Key* which represents a pointer to a particular entity in the datastore (akin to a unique identifier in relational database world).
- *Query* which represents a lookup or search over the rows in the datastore.
- *Transaction* which represents an all-or-none transaction and enables consistency when race conditions may occur.

class google.cloud.datastore.**Batch**(*client*)

Bases: `object`

An abstraction representing a collected group of updates / deletes.

Used to build up a bulk mutation.

For example, the following snippet of code will put the two `save` operations and the `delete` operation into the same mutation, and send them to the server in a single API request:

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
>>> batch = client.batch()
>>> batch.put(entity1)
>>> batch.put(entity2)
>>> batch.delete(key3)
>>> batch.commit()
```

You can also use a batch as a context manager, in which case `commit()` will be called automatically if its block exits without raising an exception:

```
>>> with batch:
...     batch.put(entity1)
...     batch.put(entity2)
...     batch.delete(key3)
```

By default, no updates will be sent if the block exits with an error:

```
>>> with batch:
...     do_some_work(batch)
...     raise Exception() # rolls back
```

Parameters *client* (`google.cloud.datastore.client.Client`) – The client used to connect to datastore.

begin()

Begins a batch.

This method is called automatically when entering a `with` statement, however it can be called explicitly if you don't want to use a context manager.

Overridden by `google.cloud.datastore.transaction.Transaction`.

Raises `ValueError` if the batch has already begun.

commit()

Commits the batch.

This is called automatically upon exiting a `with` statement, however it can be called explicitly if you don't want to use a context manager.

Raises `ValueError` if the batch is not in progress.

current ()

Return the topmost batch / transaction, or None.

delete (key)

Remember a key to be deleted during `commit ()`.

Parameters **key** (`google.cloud.datastore.key.Key`) – the key to be deleted.

Raises `ValueError` if the batch is not in progress, if key is not complete, or if the key's `project` does not match ours.

mutations

Getter for the changes accumulated by this batch.

Every batch is committed with a single commit request containing all the work to be done as mutations. Inside a batch, calling `put ()` with an entity, or `delete ()` with a key, builds up the request by adding a new mutation. This getter returns the protobuf that has been built-up so far.

Return type `iterable`

Returns The list of `datastore_pb2.Mutation` protobufs to be sent in the commit request.

namespace

Getter for namespace in which the batch will run.

Return type `str`

Returns The namespace in which the batch will run.

project

Getter for project in which the batch will run.

Return type `str`

Returns The project in which the batch will run.

put (entity)

Remember an entity's state to be saved during `commit ()`.

Note: Any existing properties for the entity will be replaced by those currently set on this instance. Already-stored properties which do not correspond to keys set on this instance will be removed from the datastore.

Note: Property values which are “text” (‘unicode’ in Python2, ‘str’ in Python3) map to ‘string_value’ in the datastore; values which are “bytes” (‘str’ in Python2, ‘bytes’ in Python3) map to ‘blob_value’.

When an entity has a partial key, calling `commit ()` sends it as an `insert` mutation and the key is completed. On return, the key for the `entity` passed in is updated to match the key ID assigned by the server.

Parameters **entity** (`google.cloud.datastore.entity.Entity`) – the entity to be saved.

Raises `ValueError` if the batch is not in progress, if entity has no key assigned, or if the key's `project` does not match ours.

rollback ()

Rolls back the current batch.

Marks the batch as aborted (can't be used again).

Overridden by `google.cloud.datastore.transaction.Transaction`.

Raises `ValueError` if the batch is not in progress.

class `google.cloud.datastore.Client` (*project=None, namespace=None, credentials=None, _http=None, _use_grpc=None*)

Bases: `google.cloud.client.ClientWithProject`

Convenience wrapper for invoking APIs/factories w/ a project.

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
```

Parameters

- **project** (*str*) – (Optional) The project to pass to proxied API methods.
- **namespace** (*str*) – (Optional) namespace to pass to proxied API methods.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.
- **_use_grpc** (*bool*) – (Optional) Explicitly specifies whether to use the gRPC transport (via GAX) or HTTP. If unset, falls back to the `GOOGLE_CLOUD_DISABLE_GRPC` environment variable. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/datastore',)

The scopes required for authenticating as a Cloud Datastore consumer.

allocate_ids (*incomplete_key, num_ids*)

Allocate a list of IDs from a partial key.

Parameters

- **incomplete_key** (*google.cloud.datastore.key.Key*) – Partial key to use as base for allocated IDs.
- **num_ids** (*int*) – The number of IDs to allocate.

Return type list of *google.cloud.datastore.key.Key*

Returns The (complete) keys allocated with `incomplete_key` as root.

Raises `ValueError` if `incomplete_key` is not a partial key.

batch ()

Proxy to `google.cloud.datastore.batch.Batch`.

current_batch

Currently-active batch.

Return type *google.cloud.datastore.batch.Batch*, or an object implementing its API, or `NoneType` (if no batch is active).

Returns The batch/transaction at the top of the batch stack.

current_transaction

Currently-active transaction.

Return type `google.cloud.datastore.transaction.Transaction`, or an object implementing its API, or `NoneType` (if no transaction is active).

Returns The transaction at the top of the batch stack.

delete (*key*)

Delete the key in the Cloud Datastore.

Note: This is just a thin wrapper over `delete_multi()`. The backend API does not make a distinction between a single key or multiple keys in a commit request.

Parameters **key** (`google.cloud.datastore.key.Key`) – The key to be deleted from the datastore.

delete_multi (*keys*)

Delete keys from the Cloud Datastore.

Parameters **keys** (list of `google.cloud.datastore.key.Key`) – The keys to be deleted from the Datastore.

get (*key*, *missing=None*, *deferred=None*, *transaction=None*, *eventual=False*)

Retrieve an entity from a single key (if it exists).

Note: This is just a thin wrapper over `get_multi()`. The backend API does not make a distinction between a single key or multiple keys in a lookup request.

Parameters

- **key** (`google.cloud.datastore.key.Key`) – The key to be retrieved from the datastore.
- **missing** (*list*) – (Optional) If a list is passed, the key-only entities returned by the backend as “missing” will be copied into it.
- **deferred** (*list*) – (Optional) If a list is passed, the keys returned by the backend as “deferred” will be copied into it.
- **transaction** (`Transaction`) – (Optional) Transaction to use for read consistency. If not passed, uses current transaction, if set.
- **eventual** (*bool*) – (Optional) Defaults to strongly consistent (`False`). Setting `True` will use eventual consistency, but cannot be used inside a transaction or will raise `ValueError`.

Return type `google.cloud.datastore.entity.Entity` or `NoneType`

Returns The requested entity if it exists.

Raises `ValueError` if `eventual` is `True` and in a transaction.

get_multi (*keys*, *missing=None*, *deferred=None*, *transaction=None*, *eventual=False*)

Retrieve entities, along with their attributes.

Parameters

- **keys** (list of `google.cloud.datastore.key.Key`) – The keys to be retrieved from the datastore.
- **missing** (`list`) – (Optional) If a list is passed, the key-only entities returned by the backend as “missing” will be copied into it. If the list is not empty, an error will occur.
- **deferred** (`list`) – (Optional) If a list is passed, the keys returned by the backend as “deferred” will be copied into it. If the list is not empty, an error will occur.
- **transaction** (`Transaction`) – (Optional) Transaction to use for read consistency. If not passed, uses current transaction, if set.
- **eventual** (`bool`) – (Optional) Defaults to strongly consistent (False). Setting True will use eventual consistency, but cannot be used inside a transaction or will raise `ValueError`.

Return type list of `google.cloud.datastore.entity.Entity`

Returns The requested entities.

Raises `ValueError` if one or more of `keys` has a project which does not match our project.

Raises `ValueError` if `eventual` is True and in a transaction.

key (`*path_args, **kwargs`)

Proxy to `google.cloud.datastore.key.Key`.

Passes our project.

put (`entity`)

Save an entity in the Cloud Datastore.

Note: This is just a thin wrapper over `put_multi()`. The backend API does not make a distinction between a single entity or multiple entities in a commit request.

Parameters **entity** (`google.cloud.datastore.entity.Entity`) – The entity to be saved to the datastore.

put_multi (`entities`)

Save entities in the Cloud Datastore.

Parameters **entities** (list of `google.cloud.datastore.entity.Entity`) – The entities to be saved to the datastore.

Raises `ValueError` if `entities` is a single entity.

query (`**kwargs`)

Proxy to `google.cloud.datastore.query.Query`.

Passes our project.

Using query to search a datastore:

```
>>> query = client.query(kind='MyKind')
>>> query.add_filter('property', '=', 'val')
```

Using the query iterator

```
>>> query_iter = query.fetch()
>>> for entity in query_iter:
...     do_something(entity)
```

or manually page through results

```
>>> query_iter = query.fetch(start_cursor=cursor)
>>> pages = query_iter.pages
>>>
>>> first_page = next(pages)
>>> first_page_entities = list(first_page)
>>> query_iter.next_page_token is None
True
```

Parameters `kwargs` (*dict*) – Parameters for initializing and instance of *Query*.

Return type *Query*

Returns A query object.

transaction (***kwargs*)

Proxy to *google.cloud.datastore.transaction.Transaction*.

Parameters `kwargs` (*dict*) – Keyword arguments to be passed in.

class *google.cloud.datastore.Entity* (*key=None, exclude_from_indexes=()*)

Bases: *dict*

Entities are akin to rows in a relational database

An entity storing the actual instance of data.

Each entity is officially represented with a *Key*, however it is possible that you might create an entity with only a partial key (that is, a key with a kind, and possibly a parent, but without an ID). In such a case, the datastore service will automatically assign an ID to the partial key.

Entities in this API act like dictionaries with extras built in that allow you to delete or persist the data stored on the entity.

Entities are mutable and act like a subclass of a dictionary. This means you could take an existing entity and change the key to duplicate the object.

Use *get()* to retrieve an existing entity:

```
>>> client.get(key)
<Entity('EntityKind', 1234) {'property': 'value'}>
```

You can the set values on the entity just like you would on any other dictionary.

```
>>> entity['age'] = 20
>>> entity['name'] = 'JJ'
```

However, not all types are allowed as a value for a Google Cloud Datastore entity. The following basic types are supported by the API:

- *datetime.datetime*
- *Key*
- *bool*
- *float*

- `int` (as well as `long` in Python 2)
- `unicode` (called `str` in Python 3)
- `bytes` (called `str` in Python 2)
- `GeoPoint`
- `None`

In addition, three container types are supported:

- `list`
- `Entity`
- `dict` (will just be treated like an `Entity` without a `key` or `exclude_from_indexes`)

Each entry in a list must be one of the value types (basic or container) and each value in an `Entity` must as well. In this case an `Entity` as a **container** acts as a `dict`, but also has the special annotations of `key` and `exclude_from_indexes`.

And you can treat an entity like a regular Python dictionary:

```
>>> sorted(entity.keys())
['age', 'name']
>>> sorted(entity.items())
[('age', 20), ('name', 'JJ')]
```

Note: When saving an entity to the backend, values which are “text” (`unicode` in Python2, `str` in Python3) will be saved using the ‘text_value’ field, after being encoded to UTF-8. When retrieved from the back-end, such values will be decoded to “text” again. Values which are “bytes” (`str` in Python2, `bytes` in Python3), will be saved using the ‘blob_value’ field, without any decoding / encoding step.

Parameters

- **key** (`google.cloud.datastore.key.Key`) – Optional key to be set on entity.
- **exclude_from_indexes** (*tuple of string*) – Names of fields whose values are not to be indexed for this entity.

exclude_from_indexes = None

Names of fields which are *not* to be indexed for this entity.

id

Get the ID of the current entity.

Note: This relies entirely on the `google.cloud.datastore.key.Key` set on the entity. That means that we’re not storing the ID of the entity at all, just the properties and a pointer to a `Key` which knows its ID.

kind

Get the kind of the current entity.

Note: This relies entirely on the `google.cloud.datastore.key.Key` set on the entity. That means that we’re not storing the kind of the entity at all, just the properties and a pointer to a `Key` which

knows its Kind.

class google.cloud.datastore.**Key**(*path_args, **kwargs)

Bases: `object`

An immutable representation of a datastore Key.

To create a basic key directly:

```
>>> Key('EntityKind', 1234, project=project)
<Key('EntityKind', 1234), project=...>
>>> Key('EntityKind', 'foo', project=project)
<Key('EntityKind', 'foo'), project=...>
```

Though typical usage comes via the `key()` factory:

```
>>> client.key('EntityKind', 1234)
<Key('EntityKind', 1234), project=...>
>>> client.key('EntityKind', 'foo')
<Key('EntityKind', 'foo'), project=...>
```

To create a key with a parent:

```
>>> client.key('Parent', 'foo', 'Child', 1234)
<Key('Parent', 'foo', 'Child', 1234), project=...>
>>> client.key('Child', 1234, parent=parent_key)
<Key('Parent', 'foo', 'Child', 1234), project=...>
```

To create a partial key:

```
>>> client.key('Parent', 'foo', 'Child')
<Key('Parent', 'foo', 'Child'), project=...>
```

Parameters

- **path_args** (*tuple of string and integer*) – May represent a partial (odd length) or full (even length) key path.
- **kwargs** (*dict*) – Keyword arguments to be passed in.

Accepted keyword arguments are

- **namespace** (string): A namespace identifier for the key.
- **project** (string): The project associated with the key.
- **parent** (*Key*): The parent of the key.

The project argument is required unless it has been set implicitly.

completed_key (*id_or_name*)

Creates new key from existing partial key by adding final ID/name.

Parameters **id_or_name** (*str or integer*) – ID or name to be added to the key.

Return type *google.cloud.datastore.key.Key*

Returns A new *Key* instance with the same data as the current one and an extra ID or name added.

Raises `ValueError` if the current key is not partial or if `id_or_name` is not a string or integer.

flat_path

Getter for the key path as a tuple.

Return type tuple of string and integer

Returns The tuple of elements in the path.

classmethod from_legacy_urlsafe (*urlsafe*)

Convert urlsafe string to `Key`.

This is intended to work with the “legacy” representation of a datastore “Key” used within Google App Engine (a so-called “Reference”). This assumes that `urlsafe` was created within an App Engine app via something like `ndb.Key(...).urlsafe()`.

Parameters `urlsafe` (*bytes* or *unicode*) – The base64 encoded (ASCII) string corresponding to a datastore “Key” / “Reference”.

Return type `Key`.

Returns The key corresponding to `urlsafe`.

id

ID getter. Based on the last element of path.

Return type `int`

Returns The (integer) ID of the key.

id_or_name

Getter. Based on the last element of path.

Return type `int` (if `id`) or `string` (if `name`)

Returns The last element of the key’s path if it is either an `id` or a `name`.

is_partial

Boolean indicating if the key has an ID (or name).

Return type `bool`

Returns `True` if the last element of the key’s path does not have an `id` or a `name`.

kind

Kind getter. Based on the last element of path.

Return type `str`

Returns The kind of the current key.

name

Name getter. Based on the last element of path.

Return type `str`

Returns The (string) name of the key.

namespace

Namespace getter.

Return type `str`

Returns The namespace of the current key.

parent

The parent of the current key.

Return type `google.cloud.datastore.key.Key` or `NoneType`

Returns A new `Key` instance, whose path consists of all but the last element of current path.
If the current key has only one path element, returns `None`.

path

Path getter.

Returns a copy so that the key remains immutable.

Return type `list of dict`

Returns The (key) path of the current key.

project

Project getter.

Return type `str`

Returns The key's project.

to_legacy_urlsafe (*location_prefix=None*)

Convert to a base64 encode urlsafe string for App Engine.

This is intended to work with the “legacy” representation of a datastore “Key” used within Google App Engine (a so-called “Reference”). The returned string can be used as the `urlsafe` argument to `ndb.Key(urlsafe=...)`. The base64 encoded values will have padding removed.

Note: The string returned by `to_legacy_urlsafe` is equivalent, but not identical, to the string returned by `ndb`. The location prefix may need to be specified to obtain identical urlsafe keys.

Parameters **location_prefix** (*str*) – The location prefix of an App Engine project ID.
Often this value is ‘s~’, but may also be ‘e~’, or other location prefixes currently unknown.

Return type `bytes`

Returns A bytestring containing the key encoded as URL-safe base64.

to_protobuf ()

Return a protobuf corresponding to the key.

Return type `entity_pb2.Key`

Returns The protobuf representing the key.

class `google.cloud.datastore.Query` (*client, kind=None, project=None, namespace=None, ancestor=None, filters=(), projection=(), order=(), distinct_on=()*)

Bases: `object`

A Query against the Cloud Datastore.

This class serves as an abstraction for creating a query over data stored in the Cloud Datastore.

Parameters

- **client** (`google.cloud.datastore.client.Client`) – The client used to connect to Datastore.
- **kind** (*str*) – The kind to query.

- **project** (*str*) – (Optional) The project associated with the query. If not passed, uses the client's value.
- **namespace** (*str*) – (Optional) The namespace to which to restrict results. If not passed, uses the client's value.
- **ancestor** (*Key*) – (Optional) key of the ancestor to which this query's results are restricted.
- **filters** (*tuple[str, str, str]*) – Property filters applied by this query. The sequence is (property_name, operator, value).
- **projection** (*sequence of string*) – fields returned as part of query results.
- **order** (*sequence of string*) – field names used to order query results. Prepend `-` to a field name to sort it in descending order.
- **distinct_on** (*sequence of string*) – field names used to group query results.

Raises `ValueError` if `project` is not passed and no implicit default is set.

OPERATORS = {'<': 1, '<=': 2, '=': 5, '>': 3, '>=': 4}

Mapping of operator strings and their protobuf equivalents.

add_filter (*property_name, operator, value*)

Filter the query based on a property name, operator and a value.

Expressions take the form of:

```
.add_filter('<property>', '<operator>', <value>)
```

where `property` is a property stored on the entity in the datastore and `operator` is one of `OPERATORS` (ie, `=`, `<`, `<=`, `>`, `>=`):

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
>>> query = client.query(kind='Person')
>>> query.add_filter('name', '=', 'James')
>>> query.add_filter('age', '>', 50)
```

Parameters

- **property_name** (*str*) – A property name.
- **operator** (*str*) – One of `=`, `<`, `<=`, `>`, `>=`.
- **value** (*int, str, bool, float, NoneType, datetime.datetime, google.cloud.datastore.key.Key*) – The value to filter on.

Raises `ValueError` if operation is not one of the specified values, or if a filter names `'__key__'` but passes an invalid value (a key is required).

ancestor

The ancestor key for the query.

Return type *Key* or `None`

Returns The ancestor for the query.

distinct_on

Names of fields used to group query results.

Return type *sequence of string*

Returns The “distinct on” fields set on the query.

fetch (*limit=None, offset=0, start_cursor=None, end_cursor=None, client=None, eventual=False*)
Execute the Query; return an iterator for the matching entities.

For example:

```
>>> from google.cloud import datastore
>>> client = datastore.Client()
>>> query = client.query(kind='Person')
>>> query.add_filter('name', '=', 'Sally')
>>> list(query.fetch())
[<Entity object>, <Entity object>, ...]
>>> list(query.fetch(1))
[<Entity object>]
```

Parameters

- **limit** (*int*) – (Optional) limit passed through to the iterator.
- **offset** (*int*) – (Optional) offset passed through to the iterator.
- **start_cursor** (*bytes*) – (Optional) cursor passed through to the iterator.
- **end_cursor** (*bytes*) – (Optional) cursor passed through to the iterator.
- **client** (*google.cloud.datastore.client.Client*) – (Optional) client used to connect to datastore. If not supplied, uses the query’s value.
- **eventual** (*bool*) – (Optional) Defaults to strongly consistent (False). Setting True will use eventual consistency, but cannot be used inside a transaction or will raise `ValueError`.

Return type `Iterator`

Returns The iterator for the query.

filters

Filters set on the query.

Return type `tuple[str, str, str]`

Returns The filters set on the query. The sequence is (`property_name`, `operator`, `value`).

key_filter (*key, operator='='*)

Filter on a key.

Parameters

- **key** (*google.cloud.datastore.key.Key*) – The key to filter on.
- **operator** (*str*) – (Optional) One of `=`, `<`, `<=`, `>`, `>=`. Defaults to `=`.

keys_only ()

Set the projection to include only keys.

kind

Get the Kind of the Query.

Return type `str`

Returns The kind for the query.

namespace

This query's namespace

Return type `str` or `None`

Returns the namespace assigned to this query

order

Names of fields used to sort query results.

Return type sequence of string

Returns The order(s) set on the query.

project

Get the project for this Query.

Return type `str`

Returns The project for the query.

projection

Fields names returned by the query.

Return type sequence of string

Returns Names of fields in query results.

class `google.cloud.datastore.Transaction` (*client*, *read_only=False*)

Bases: `google.cloud.datastore.batch.Batch`

An abstraction representing datastore Transactions.

Transactions can be used to build up a bulk mutation and ensure all or none succeed (transactionally).

For example, the following snippet of code will put the two `save` operations (either `insert` or `upsert`) into the same mutation, and execute those within a transaction:

```
>>> with client.transaction():
...     client.put_multi([entity1, entity2])
```

Because it derives from `Batch`, `Transaction` also provides `put()` and `delete()` methods:

```
>>> with client.transaction() as xact:
...     xact.put(entity1)
...     xact.delete(entity2.key)
```

By default, the transaction is rolled back if the transaction block exits with an error:

```
>>> with client.transaction():
...     do_some_work()
...     raise SomeException # rolls back
Traceback (most recent call last):
...
SomeException
```

If the transaction block exits without an exception, it will commit by default.

Warning:

Inside a transaction, automatically assigned IDs for entities will not be available at save time!
That means, if you try:

```
>>> with client.transaction():
...     entity = Entity(key=client.key('Thing'))
...     client.put(entity)
```

entity won't have a complete key until the transaction is committed.

Once you exit the transaction (or call `commit()`), the automatically generated ID will be assigned to the entity:

```
>>> with client.transaction():
...     entity = Entity(key=client.key('Thing'))
...     client.put(entity)
...     print(entity.key.is_partial)  # There is no ID on this key.
...
True
>>> print(entity.key.is_partial)  # There is an ID.
False
```

If you don't want to use the context manager you can initialize a transaction manually:

```
>>> transaction = client.transaction()
>>> transaction.begin()
>>>
>>> entity = Entity(key=client.key('Thing'))
>>> transaction.put(entity)
>>>
>>> transaction.commit()
```

Parameters

- **client** (*google.cloud.datastore.client.Client*) – the client used to connect to datastore.
- **read_only** (*bool*) – indicates the transaction is read only.

`begin()`

Begins a transaction.

This method is called automatically when entering a `with` statement, however it can be called explicitly if you don't want to use a context manager.

Raises `ValueError` if the transaction has already begun.

`commit()`

Commits the transaction.

This is called automatically upon exiting a `with` statement, however it can be called explicitly if you don't want to use a context manager.

This method has necessary side-effects:

- Sets the current transaction's ID to `None`.

`current()`

Return the topmost transaction.

Note: If the topmost element on the stack is not a transaction, returns `None`.

Return type `google.cloud.datastore.transaction.Transaction` or `None`

Returns The current transaction (if any are active).

id

Getter for the transaction ID.

Return type `str`

Returns The ID of the current transaction.

put (*entity*)

Adds an entity to be committed.

Ensures the transaction is not marked readonly. Please see documentation at `put()`

Parameters **entity** (*Entity*) – the entity to be saved.

Raises `RuntimeError` if the transaction is marked `ReadOnly`

rollback ()

Rolls back the current transaction.

This method has necessary side-effects:

- Sets the current transaction's ID to `None`.

8.10 Changelog

For a list of all `google-cloud-datastore` releases:

8.10.1 Changelog

PyPI History

1.6.0

Implementation changes

- Don't check 'exclude_from_indexes' for empty lists. (#4915)

Dependencies

- The minimum version for `google-api-core` has been updated to version 1.0.0. This may cause some incompatibility with older google-cloud libraries, you will need to update those libraries if you have a dependency conflict. (#4944, #4946)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)

- Exercise datastore query result paging (#4905)
- Pass ‘*session.posargs’ through on command line for system tests. (#4904)

1.5.0

Interface additions

- Added `Entity.id` property (#4640)
- Added optional `location_prefix` kwarg in `to_legacy_urlsaf` (#4635)
- Added support for transaction options (#4357)
- Added the ability to specify read consistency (#4343, #4376)

Implementation changes

- The underlying autogenerated code was regenerated to pick up new features and bugfixes. (#4348, #4877)
- Updated the HTTP implementation to match the gRPC implementation. (#4388)
- Set `next_page_token` to `None` if there are no more results (#4349)

Documentation

- Entity doc consistency (#4641)
- Fixing “Fore” -> “For” typo in README docs. (#4317)

Testing

- Update datastore doctests to reflect change in cursor behavior. (#4382)
- Making a `nox -s default` session for all packages. (#4324)
- Shorten test names (#4321)

1.4.0

Interface changes / additions

- Allowing `dict` (as an `Entity`) for property values. (#3927)

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)

PyPI: <https://pypi.org/project/google-cloud-datastore/1.4.0/>

Python Client for Cloud Data Loss Prevention (DLP) API (Alpha)

Cloud Data Loss Prevention (DLP) API: Provides methods for detection of privacy-sensitive fragments in text, images, and Google Cloud Platform storage repositories.

- [Client Library Documentation](#)
- [Product Documentation](#)

9.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. [Select or create a Cloud Platform project.](#)
2. [Enable billing for your project.](#)
3. [Enable the Cloud Data Loss Prevention \(DLP\) API.](#)
4. [Setup Authentication.](#)

9.1.1 Installation

Install this library in a [virtualenv](#) using `pip`. [virtualenv](#) is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With [virtualenv](#), it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-dlp
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-dlp
```

9.1.2 Next Steps

- Read the [Client Library Documentation](#) for Cloud Data Loss Prevention (DLP) API to see other available methods on the client.
- Read the [Cloud Data Loss Prevention \(DLP\) API Product documentation](#) to learn more about the product and see How-to Guides.
- View this [repository's main README](#) to see the full list of Cloud APIs that we cover.

9.2 Api Reference

9.2.1 Client for Cloud Data Loss Prevention (DLP) API

```
class google.cloud.dlp_v2.DlpServiceClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.privacy.dlp.v2.DlpService':
{'retry_codes': {'idempotent': ['DEAD-
LINE_EXCEEDED', 'UNAVAILABLE'],
'non_idempotent': []}, 'retry_params':
{'default': {'initial_retry_delay_millis':
100, 'retry_delay_multiplier': 1.3,
'max_retry_delay_millis': 60000,
'initial_rpc_timeout_millis': 20000,
'rpc_timeout_multiplier': 1.0,
'max_rpc_timeout_millis': 20000, 'to-
tal_timeout_millis': 600000}}}, 'methods':
{'InspectContent': {'timeout_millis':
300000, 'retry_codes_name': 'idem-
potent', 'retry_params_name': 'de-
fault'}, 'RedactImage': {'timeout_millis':
300000, 'retry_codes_name': 'idempo-
tent', 'retry_params_name': 'default'},
'DeidentifyContent': {'timeout_millis':
300000, 'retry_codes_name': 'idempo-
tent', 'retry_params_name': 'default'},
'ReidentifyContent': {'timeout_millis':
300000, 'retry_codes_name': 'idem-
potent', 'retry_params_name': 'de-
fault'}, 'ListInfoTypes': {'timeout_millis':
300000, 'retry_codes_name': 'idem-
potent', 'retry_params_name': 'de-
fault'}, 'CreateInspectTemplate': {'time-
out_millis': 300000, 'retry_codes_name':
'non_idempotent', 'retry_params_name':
'default'}, 'UpdateInspectTemplate': {'time-
out_millis': 300000, 'retry_codes_name':
'non_idempotent', 'retry_params_name':
'default'}, 'GetInspectTemplate': {'time-
out_millis': 300000, 'retry_codes_name':
'idempotent', 'retry_params_name': 'de-
fault'}, 'ListInspectTemplates': {'time-
out_millis': 300000, 'retry_codes_name':
'idempotent', 'retry_params_name': 'de-
fault'}, 'DeleteInspectTemplate': {'time-
out_millis': 300000, 'retry_codes_name':
'idempotent', 'retry_params_name': 'de-
fault'}, 'CreateDeidentifyTemplate': {'time-
out_millis': 300000, 'retry_codes_name':
'non_idempotent', 'retry_params_name': 'de-
fault'}, 'UpdateDeidentifyTemplate': {'time-
out_millis': 300000, 'retry_codes_name':
'non_idempotent', 'retry_params_name':
'default'}, 'GetDeidentifyTemplate': {'time-
out_millis': 300000, 'retry_codes_name':
'idempotent', 'retry_params_name': 'de-
fault'}, 'ListDeidentifyTemplates': {'time-
out_millis': 300000, 'retry_codes_name':
'idempotent', 'retry_params_name': 'de-
fault'}}})
```

Identifiable Information (PII) and other privacy-sensitive data in user-supplied, unstructured data streams, like text blocks or images. The service also includes methods for sensitive data redaction and scheduling of data scans on Google Cloud Platform based data sets.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

cancel_dlp_job (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Starts asynchronous cancellation on a long-running DlpJob. The server makes a best effort to cancel the DlpJob, but success is not guaranteed.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.dlp_job_path('[PROJECT]', '[DLP_JOB]')
>>>
>>> client.cancel_dlp_job(name)
```

Parameters

- **name** (*str*) – The name of the DlpJob resource to be cancelled.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.

- `ValueError` – If the parameters are invalid.

create_deidentify_template (*parent*, *deidentify_template=None*, *template_id=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Creates a DeidentifyTemplate for re-using frequently used configuration for de-identifying content, images, and storage.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.organization_path('[ORGANIZATION]')
>>>
>>> response = client.create_deidentify_template(parent)
```

Parameters

- **parent** (*str*) – The parent resource name, for example `projects/my-project-id` or `organizations/my-org-id`.
- **deidentify_template** (*Union[dict, DeidentifyTemplate]*) – The DeidentifyTemplate to create. If a dict is provided, it must be of the same form as the protobuf message `DeidentifyTemplate`
- **template_id** (*str*) – The template id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `DeidentifyTemplate` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

create_dlp_job (*parent*, *inspect_job=None*, *risk_job=None*, *job_id=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Creates a new job to inspect storage or calculate risk metrics. [How-to guide](#).

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> response = client.create_dlp_job(parent)
```

Parameters

- **parent** (*str*) – The parent resource name, for example projects/my-project-id.
- **inspect_job** (*Union[dict, InspectJobConfig]*) – If a dict is provided, it must be of the same form as the protobuf message *InspectJobConfig*
- **risk_job** (*Union[dict, RiskAnalysisJobConfig]*) – If a dict is provided, it must be of the same form as the protobuf message *RiskAnalysisJobConfig*
- **job_id** (*str*) – The job id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *DlpJob* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_inspect_template (*parent, inspect_template=None, template_id=None, retry=<object object>, timeout=<object object>, metadata=None*)

Creates an InspectTemplate for re-using frequently used configuration for inspecting content, images, and storage.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
```

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```
>>>
>>> parent = client.organization_path('[ORGANIZATION]')
>>>
>>> response = client.create_inspect_template(parent)
```

Parameters

- **parent** (*str*) – The parent resource name, for example projects/my-project-id or organizations/my-org-id.
- **inspect_template** (*Union[dict, InspectTemplate]*) – The Inspect-Template to create. If a dict is provided, it must be of the same form as the protobuf message *InspectTemplate*
- **template_id** (*str*) – The template id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *InspectTemplate* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_job_trigger (*parent, job_trigger=None, trigger_id=None, retry=<object object>, time-out=<object object>, metadata=None*)

Creates a job trigger to run DLP actions such as scanning storage for sensitive information on a set schedule.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> response = client.create_job_trigger(parent)
```

Parameters

- **parent** (*str*) – The parent resource name, for example projects/my-project-id.
- **job_trigger** (*Union[dict, JobTrigger]*) – The JobTrigger to create. If a dict is provided, it must be of the same form as the protobuf message *JobTrigger*
- **trigger_id** (*str*) – The trigger id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *JobTrigger* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

deidentify_content (*parent, deidentify_config=None, inspect_config=None, item=None, inspect_template_name=None, deidentify_template_name=None, retry=<object object>, timeout=<object object>, metadata=None*)

De-identifies potentially sensitive info from a ContentItem. This method has limits on input size and output size. [How-to guide](#)

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> response = client.deidentify_content(parent)
```

Parameters

- **parent** (*str*) – The parent resource name, for example projects/my-project-id.
- **deidentify_config** (*Union[dict, DeidentifyConfig]*) – Configuration for the de-identification of the content item. Items specified here will override the template referenced by the *deidentify_template_name* argument. If a dict is provided, it must be of the same form as the protobuf message *DeidentifyConfig*

- **inspect_config** (*Union[dict, InspectConfig]*) – Configuration for the inspector. Items specified here will override the template referenced by the `inspect_template_name` argument. If a dict is provided, it must be of the same form as the protobuf message *InspectConfig*
- **item** (*Union[dict, ContentItem]*) – The item to de-identify. Will be treated as text. If a dict is provided, it must be of the same form as the protobuf message *ContentItem*
- **inspect_template_name** (*str*) – Optional template to use. Any configuration directly specified in `inspect_config` will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.
- **deidentify_template_name** (*str*) – Optional template to use. Any configuration directly specified in `deidentify_config` will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *DeidentifyContentResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_deidentify_template (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Deletes a DeidentifyTemplate.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.organization_deidentify_template_path('[ORGANIZATION]',
→ '[DEIDENTIFY_TEMPLATE]')
>>>
>>> client.delete_deidentify_template(name)
```

Parameters

- **name** (*str*) – Resource name of the organization and deidentify template to be deleted, for example `organizations/433245324/deidentifyTemplates/432452342` or `projects/project-id/deidentifyTemplates/432452342`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_dlp_job (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Deletes a long-running DlpJob. This method indicates that the client is no longer interested in the DlpJob result. The job will be cancelled if possible.

Example

```
>>> from google.cloud import dlp_v2
>>> client = dlp_v2.DlpServiceClient()
>>> name = client.dlp_job_path('[PROJECT]', '[DLP_JOB]')
>>> client.delete_dlp_job(name)
```

Parameters

- **name** (*str*) – The name of the DlpJob resource to be deleted.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.

- `ValueError` – If the parameters are invalid.

delete_inspect_template (*name*, *retry*=<object object>, *timeout*=<object object>, *meta-data*=None)

Deletes an InspectTemplate.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.organization_inspect_template_path('[ORGANIZATION]',
↳ '[INSPECT_TEMPLATE]')
>>>
>>> client.delete_inspect_template(name)
```

Parameters

- **name** (*str*) – Resource name of the organization and inspectTemplate to be deleted, for example `organizations/433245324/inspectTemplates/432452342` or `projects/project-id/inspectTemplates/432452342`.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[*str*, *str*]]]) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_job_trigger (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Deletes a job trigger.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> # TODO: Initialize ``name``:
>>> name = ''
>>>
>>> client.delete_job_trigger(name)
```

Parameters

- **name** (*str*) – Resource name of the project and the triggeredJob, for example `projects/dlp-test-project/jobTriggers/53234423`.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[*str*, *str*]]]) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `dlp_job_path` (*project*, *dlp_job*)

Return a fully-qualified `dlp_job` string.

enums = <module 'google.cloud.dlp_v2.gapic.enums' from '/home/docs/checkouts/readthedocs

get_deidentify_template (*name*, *retry*=<object object>, *timeout*=<object object>, *meta-*
data=None)

Gets a `DeidentifyTemplate`.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.organization_deidentify_template_path('[ORGANIZATION]',
→ '[DEIDENTIFY_TEMPLATE]')
>>>
>>> response = client.get_deidentify_template(name)
```

Parameters

- **name** (*str*) – Resource name of the organization and deidentify template to be read, for example `organizations/433245324/deidentifyTemplates/432452342` or `projects/project-id/deidentifyTemplates/432452342`.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[*str*, *str*]]]) – Additional metadata that is provided to the method.

Returns A *DeidentifyTemplate* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_dlp_job (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)
Gets the latest state of a long-running DlpJob.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.dlp_job_path('[PROJECT]', '[DLP_JOB]')
>>>
>>> response = client.get_dlp_job(name)
```

Parameters

- **name** (*str*) – The name of the DlpJob resource.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *DlpJob* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_inspect_template (*name*=None, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)
Gets an InspectTemplate.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> response = client.get_inspect_template()
```

Parameters

- **name** (*str*) – Resource name of the organization and inspectTemplate to be read, for example `organizations/433245324/inspectTemplates/432452342` or `projects/project-id/inspectTemplates/432452342`.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[*str*, *str*]]]) – Additional metadata that is provided to the method.

Returns A `InspectTemplate` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_job_trigger (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)
Gets a job trigger.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.project_job_trigger_path('[PROJECT]', '[JOB_TRIGGER]')
>>>
>>> response = client.get_job_trigger(name)
```

Parameters

- **name** (*str*) – Resource name of the project and the triggeredJob, for example `projects/dlp-test-project/jobTriggers/53234423`.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *JobTrigger* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

inspect_content (*parent, inspect_config=None, item=None, inspect_template_name=None, retry=<object object>, timeout=<object object>, metadata=None*)

Finds potentially sensitive info in content. This method has limits on input size, processing time, and output size. [How-to guide for text](#), [\[How-to guide for images\]\(/dlp/docs/inspecting-images\)](#)

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> response = client.inspect_content(parent)
```

Parameters

- **parent** (*str*) – The parent resource name, for example `projects/my-project-id`.
- **inspect_config** (*Union[dict, InspectConfig]*) – Configuration for the inspector. What specified here will override the template referenced by the `inspect_template_name` argument. If a dict is provided, it must be of the same form as the protobuf message *InspectConfig*
- **item** (*Union[dict, ContentItem]*) – The item to inspect. If a dict is provided, it must be of the same form as the protobuf message *ContentItem*
- **inspect_template_name** (*str*) – Optional template to use. Any configuration directly specified in `inspect_config` will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

- **metadata** (*Optional[Sequence[Tuple[str, str]]*) – Additional metadata that is provided to the method.

Returns A *InspectContentResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_deidentify_templates (*parent*, *page_size=None*, *retry=<object object>*, *time-out=<object object>*, *metadata=None*)

Lists DeidentifyTemplates.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.organization_path('[ORGANIZATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_deidentify_templates(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_deidentify_templates(parent,
↳ options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – The parent resource name, for example projects/my-project-id or organizations/my-org-id.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `DeidentifyTemplate` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_dlp_jobs (*parent*, *filter_=None*, *page_size=None*, *type_=None*, *retry=<object object>*, *time-out=<object object>*, *metadata=None*)

Lists DlpJobs that match the specified filter in the request.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_dlp_jobs(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_dlp_jobs(parent, options=CallOptions(page_
→token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – The parent resource name, for example `projects/my-project-id`.
- **filter** (*str*) – Optional. Allows filtering.

Supported syntax:

- Filter expressions are made up of one or more restrictions.
- Restrictions can be combined by AND or OR logical operators. A sequence of restrictions implicitly uses AND.
- A restriction has the form of `<field> <operator> <value>`.
- Supported fields/values for inspect jobs:

```
- `state` - PENDING|RUNNING|CANCELED|FINISHED|FAILED
- `inspected_storage` - DATASTORE|CLOUD_STORAGE|BIGQUERY
- `trigger_name` - The resource name of the trigger that_
→created job.
```

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- Supported fields for risk analysis jobs:

```
- `state` - RUNNING|CANCELED|FINISHED|FAILED
```

- The operator must be = or !=.

Examples:

- `inspected_storage = cloud_storage AND state = done`
- `inspected_storage = cloud_storage OR inspected_storage = bigquery`
- `inspected_storage = cloud_storage AND (state = done OR state = canceled)`

The length of this field should be no more than 500 characters.

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **type** (*DlpJobType*) – The type of job. Defaults to `DlpJobType . INSPECT`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `DlpJob` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_info_types (*language_code=None, filter_=None, retry=<object object>, timeout=<object object>, metadata=None*)

Returns a list of the sensitive information types that the DLP API supports. For more information, see [Listing supported predefined infoTypes](/dlp/docs/listing-infotypes).

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
```

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```
>>>
>>> response = client.list_info_types()
```

Parameters

- **language_code** (*str*) – Optional BCP-47 language code for localized infoType friendly names. If omitted, or if localized strings are not available, en-US strings will be returned.
- **filter** (*str*) – Optional filter to only return infoTypes supported by certain parts of the API. Defaults to supported_by=INSPECT.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `ListInfoTypesResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_inspect_templates (*parent, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists InspectTemplates.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.organization_path('[ORGANIZATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_inspect_templates(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_inspect_templates(parent,
...     ↪options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
```

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```
...     # process element
...     pass
```

Parameters

- **parent** (*str*) – The parent resource name, for example projects/my-project-id or organizations/my-org-id.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `InspectTemplate` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_job_triggers (*parent, page_size=None, order_by=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists job triggers.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_job_triggers(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_job_triggers(parent, options=CallOptions(page_
    token=INITIAL_PAGE)):
```

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```

...     for element in page:
...         # process element
...         pass

```

Parameters

- **parent** (*str*) – The parent resource name, for example projects/my-project-id.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **order_by** (*str*) – Optional comma separated list of triggeredJob fields to order by, followed by 'asc/desc' postfix, i.e. "create_time asc,name desc,schedule_mode asc". This list is case-insensitive.

Example: "name asc,schedule_mode desc, status desc"

Supported filters keys and values are:

- create_time: corresponds to time the triggeredJob was created.
- update_time: corresponds to time the triggeredJob was last updated.
- name: corresponds to JobTrigger's display name.
- status: corresponds to the triggeredJob status.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if retry is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `JobTrigger` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod organization_deidentify_template_path (*organization*, *deidentify_template*)

Return a fully-qualified organization_deidentify_template string.

classmethod organization_inspect_template_path (*organization*, *inspect_template*)

Return a fully-qualified organization_inspect_template string.

classmethod organization_path (*organization*)

Return a fully-qualified organization string.

classmethod `project_deidentify_template_path` (*project*, *deidentify_template*)

Return a fully-qualified `project_deidentify_template` string.

classmethod `project_inspect_template_path` (*project*, *inspect_template*)

Return a fully-qualified `project_inspect_template` string.

classmethod `project_job_trigger_path` (*project*, *job_trigger*)

Return a fully-qualified `project_job_trigger` string.

classmethod `project_path` (*project*)

Return a fully-qualified `project` string.

redact_image (*parent*, *inspect_config*=None, *image_redaction_configs*=None, *byte_item*=None, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Redacts potentially sensitive info from an image. This method has limits on input size, processing time, and output size. [How-to guide](#)

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> response = client.redact_image(parent)
```

Parameters

- **parent** (*str*) – The parent resource name, for example `projects/my-project-id`.
- **inspect_config** (*Union[dict, InspectConfig]*) – Configuration for the inspector. If a dict is provided, it must be of the same form as the protobuf message *InspectConfig*
- **image_redaction_configs** (*list[Union[dict, ImageRedactionConfig]]*) – The configuration for specifying what content to redact from images. If a dict is provided, it must be of the same form as the protobuf message *ImageRedactionConfig*
- **byte_item** (*Union[dict, ByteContentItem]*) – The content must be PNG, JPEG, SVG or BMP. If a dict is provided, it must be of the same form as the protobuf message *ByteContentItem*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *RedactImageResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

reidentify_content (*parent*, *reidentify_config=None*, *inspect_config=None*, *item=None*, *inspect_template_name=None*, *reidentify_template_name=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Re-identifies content that has been de-identified.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> response = client.reidentify_content(parent)
```

Parameters

- **parent** (*str*) – The parent resource name.
- **reidentify_config** (*Union[dict, DeidentifyConfig]*) – Configuration for the re-identification of the content item. This field shares the same proto message type that is used for de-identification, however its usage here is for the reversal of the previous de-identification. Re-identification is performed by examining the transformations used to de-identify the items and executing the reverse. This requires that only reversible transformations be provided here. The reversible transformations are:

```
- ``CryptoReplaceFfxFpeConfig``
```

If a dict is provided, it must be of the same form as the protobuf message *DeidentifyConfig*

- **inspect_config** (*Union[dict, InspectConfig]*) – Configuration for the inspector. If a dict is provided, it must be of the same form as the protobuf message *InspectConfig*
- **item** (*Union[dict, ContentItem]*) – The item to re-identify. Will be treated as text. If a dict is provided, it must be of the same form as the protobuf message *ContentItem*
- **inspect_template_name** (*str*) – Optional template to use. Any configuration directly specified in *inspect_config* will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.
- **reidentify_template_name** (*str*) – Optional template to use. References an instance of *DeidentifyTemplate*. Any configuration directly specified in *reidentify_config* or *inspect_config* will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.

- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[*Sequence*[*Tuple*[*str*, *str*]]]) – Additional metadata that is provided to the method.

Returns A *ReidentifyContentResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

update_deidentify_template (*name*, *deidentify_template=None*, *update_mask=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Updates the DeidentifyTemplate.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.organization_deidentify_template_path('[ORGANIZATION]',
→ '[DEIDENTIFY_TEMPLATE]')
>>>
>>> response = client.update_deidentify_template(name)
```

Parameters

- **name** (*str*) – Resource name of organization and deidentify template to be updated, for example *organizations/433245324/deidentifyTemplates/432452342* or *projects/project-id/deidentifyTemplates/432452342*.
- **deidentify_template** (*Union*[*dict*, *DeidentifyTemplate*]) – New *DeidentifyTemplate* value. If a dict is provided, it must be of the same form as the protobuf message *DeidentifyTemplate*
- **update_mask** (*Union*[*dict*, *FieldMask*]) – Mask to control which fields get updated. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

- **metadata** (*Optional[Sequence[Tuple[str, str]]*) – Additional metadata that is provided to the method.

Returns A *DeidentifyTemplate* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

update_inspect_template (*name, inspect_template=None, update_mask=None, retry=<object object>, timeout=<object object>, metadata=None*)
Updates the InspectTemplate.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.organization_inspect_template_path('[ORGANIZATION]',
↳ '[INSPECT_TEMPLATE]')
>>>
>>> response = client.update_inspect_template(name)
```

Parameters

- **name** (*str*) – Resource name of organization and inspectTemplate to be updated, for example `organizations/433245324/inspectTemplates/432452342` or `projects/project-id/inspectTemplates/432452342`.
- **inspect_template** (*Union[dict, InspectTemplate]*) – New InspectTemplate value. If a dict is provided, it must be of the same form as the protobuf message *InspectTemplate*
- **update_mask** (*Union[dict, FieldMask]*) – Mask to control which fields get updated. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]*) – Additional metadata that is provided to the method.

Returns A *InspectTemplate* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

update_job_trigger (*name*, *job_trigger=None*, *update_mask=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Updates a job trigger.

Example

```
>>> from google.cloud import dlp_v2
>>>
>>> client = dlp_v2.DlpServiceClient()
>>>
>>> name = client.project_job_trigger_path('[PROJECT]', '[JOB_TRIGGER]')
>>>
>>> response = client.update_job_trigger(name)
```

Parameters

- **name** (*str*) – Resource name of the project and the triggeredJob, for example `projects/dlp-test-project/jobTriggers/53234423`.
- **job_trigger** (*Union[dict, JobTrigger]*) – New JobTrigger value. If a dict is provided, it must be of the same form as the protobuf message *JobTrigger*
- **update_mask** (*Union[dict, FieldMask]*) – Mask to control which fields get updated. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *JobTrigger* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

9.2.2 Types for Cloud Data Loss Prevention (DLP) API Client

class `google.cloud.dlp_v2.types.Action`

A task to execute on the completion of a job.

save_findings

Save resulting findings in a provided location.

pub_sub

Publish a notification to a pubsub topic.

publish_summary_to_csc

Publish summary to Cloud Security Command Center (Alpha).

class PublishSummaryToCsc

Publish the result summary of a DlpJob to the Cloud Security Command Center (CSCC Alpha). This action is only available for projects which are parts of an organization and whitelisted for the alpha Cloud Security Command Center. The action will publish count of finding instances and their info types. The summary of findings will be persisted in CSCC and are governed by CSCC service-specific policy, see <https://cloud.google.com/terms/service-terms> Only a single instance of this action can be specified. Compatible with: Inspect

class PublishToPubSub

Publish the results of a DlpJob to a pub sub channel. Compatible with: Inspect, Risk

topic

Cloud Pub/Sub topic to send notifications to. The topic must have given publishing access rights to the DLP API service account executing the long running DlpJob sending the notifications. Format is projects/{project}/topics/{topic}.

class SaveFindings

If set, the detailed findings will be persisted to the specified OutputStorageConfig. Only a single instance of this action can be specified. Compatible with: Inspect

class google.cloud.dlp_v2.types.AnalyzeDataSourceRiskDetails

Result of a risk analysis operation request.

requested_privacy_metric

Privacy metric to compute.

requested_source_table

Input dataset to compute metrics over.

result

Values associated with this metric.

class CategoricalStatsResult

Result of the categorical stats computation.

value_frequency_histogram_buckets

Histogram of value frequencies in the column.

class CategoricalStatsHistogramBucket**value_frequency_lower_bound**

Lower bound on the value frequency of the values in this bucket.

value_frequency_upper_bound

Upper bound on the value frequency of the values in this bucket.

bucket_size

Total number of values in this bucket.

bucket_values

Sample of value frequencies in this bucket. The total number of values returned per bucket is capped at 20.

bucket_value_count

Total number of distinct values in this bucket.

class KAnonymityResult

Result of the k-anonymity computation.

equivalence_class_histogram_buckets

Histogram of k-anonymity equivalence classes.

class KAnonymityEquivalenceClass

The set of columns' values that share the same ldiversity value

quasi_ids_values

Set of values defining the equivalence class. One value per quasi-identifier column in the original KAnonymity metric message. The order is always the same as the original request.

equivalence_class_size

Size of the equivalence class, for example number of rows with the above set of values.

class KAnonymityHistogramBucket

equivalence_class_size_lower_bound

Lower bound on the size of the equivalence classes in this bucket.

equivalence_class_size_upper_bound

Upper bound on the size of the equivalence classes in this bucket.

bucket_size

Total number of equivalence classes in this bucket.

bucket_values

Sample of equivalence classes in this bucket. The total number of classes returned per bucket is capped at 20.

bucket_value_count

Total number of distinct equivalence classes in this bucket.

class KMapEstimationResult

Result of the reidentifiability analysis. Note that these results are an estimation, not exact values.

k_map_estimation_histogram

The intervals [min_anonymity, max_anonymity] do not overlap. If a value doesn't correspond to any such interval, the associated frequency is zero. For example, the following records: {min_anonymity: 1, max_anonymity: 1, frequency: 17} {min_anonymity: 2, max_anonymity: 3, frequency: 42} {min_anonymity: 5, max_anonymity: 10, frequency: 99} mean that there are no record with an estimated anonymity of 4, 5, or larger than 10.

class KMapEstimationHistogramBucket

A KMapEstimationHistogramBucket message with the following values: min_anonymity: 3 max_anonymity: 5 frequency: 42 means that there are 42 records whose quasi-identifier values correspond to 3, 4 or 5 people in the overlying population. An important particular case is when min_anonymity = max_anonymity = 1: the frequency field then corresponds to the number of uniquely identifiable records.

min_anonymity

Always positive.

max_anonymity

Always greater than or equal to min_anonymity.

bucket_size

Number of records within these anonymity bounds.

bucket_values

Sample of quasi-identifier tuple values in this bucket. The total number of classes returned per bucket is capped at 20.

bucket_value_count

Total number of distinct quasi-identifier tuple values in this bucket.

class KMapEstimationQuasiIdValues

A tuple of values for the quasi-identifier columns.

quasi_ids_values

The quasi-identifier values.

estimated_anonymity

The estimated anonymity for these quasi-identifier values.

class LDiversityResult

Result of the l-diversity computation.

sensitive_value_frequency_histogram_buckets

Histogram of l-diversity equivalence class sensitive value frequencies.

class LDiversityEquivalenceClass

The set of columns' values that share the same ldiversity value.

quasi_ids_values

Quasi-identifier values defining the k-anonymity equivalence class. The order is always the same as the original request.

equivalence_class_size

Size of the k-anonymity equivalence class.

num_distinct_sensitive_values

Number of distinct sensitive values in this equivalence class.

top_sensitive_values

Estimated frequencies of top sensitive values.

class LDiversityHistogramBucket**sensitive_value_frequency_lower_bound**

Lower bound on the sensitive value frequencies of the equivalence classes in this bucket.

sensitive_value_frequency_upper_bound

Upper bound on the sensitive value frequencies of the equivalence classes in this bucket.

bucket_size

Total number of equivalence classes in this bucket.

bucket_values

Sample of equivalence classes in this bucket. The total number of classes returned per bucket is capped at 20.

bucket_value_count

Total number of distinct equivalence classes in this bucket.

class NumericalStatsResult

Result of the numerical stats computation.

min_value

Minimum value appearing in the column.

max_value

Maximum value appearing in the column.

quantile_values

List of 99 values that partition the set of field values into 100 equal sized buckets.

class google.cloud.dlp_v2.types.Any

class google.cloud.dlp_v2.types.BigQueryKey

Row key for identifying a record in BigQuery table.

table_reference

Complete BigQuery table reference.

row_number

Absolute number of the row from the beginning of the table at the time of scanning.

class google.cloud.dlp_v2.types.BigQueryOptions

Options defining BigQuery table and row identifiers.

table_reference

Complete BigQuery table reference.

identifying_fields

References to fields uniquely identifying rows within the table. Nested fields in the format, like `person.birthdate.year`, are allowed.

rows_limit

Max number of rows to scan. If the table has more rows than this value, the rest of the rows are omitted. If not set, or if set to 0, all rows will be scanned. Cannot be used in conjunction with TimespanConfig.

class google.cloud.dlp_v2.types.BigQueryTable

Message defining the location of a BigQuery table. A table is uniquely identified by its `project_id`, `dataset_id`, and `table_name`. Within a query a table is often referenced with a string in the format of: `<project_id>:<dataset_id>.<table_id>` or `<project_id>.<dataset_id>.<table_id>`.

project_id

The Google Cloud Platform project ID of the project containing the table. If omitted, project ID is inferred from the API call.

dataset_id

Dataset ID of the table.

table_id

Name of the table.

class google.cloud.dlp_v2.types.BoundingBox

Bounding box encompassing detected text within an image.

top

Top coordinate of the bounding box. (0,0) is upper left.

left

Left coordinate of the bounding box. (0,0) is upper left.

width

Width of the bounding box in pixels.

height

Height of the bounding box in pixels.

class google.cloud.dlp_v2.types.**BucketingConfig**

Generalization function that buckets values based on ranges. The ranges and replacement values are dynamically provided by the user for custom behavior, such as 1-30 -> LOW 31-65 -> MEDIUM 66-100 -> HIGH This can be used on data of type: number, long, string, timestamp. If the bound `Value` type differs from the type of data being transformed, we will first attempt converting the type of the data to be transformed to match the type of the bound before comparing.

buckets

Set of buckets. Ranges must be non-overlapping.

class **Bucket**

Bucket is represented as a range, along with replacement values.

min

Lower bound of the range, inclusive. Type should be the same as max if used.

max

Upper bound of the range, exclusive; type must match min.

replacement_value

Replacement value for this bucket. If not provided the default behavior will be to hyphenate the min-max range.

class google.cloud.dlp_v2.types.**ByteContentItem**

Container for bytes to inspect or redact.

type

The type of data stored in the bytes string. Default will be `TEXT_UTF8`.

data

Content data to inspect or redact.

class google.cloud.dlp_v2.types.**CancelDlpJobRequest**

The request message for canceling a DLP job.

name

The name of the `DlpJob` resource to be cancelled.

class google.cloud.dlp_v2.types.**CharacterMaskConfig**

Partially mask a string by replacing a given number of characters with a fixed character. Masking can start from the beginning or end of the string. This can be used on data of any type (numbers, longs, and so on) and when de-identifying structured data we'll attempt to preserve the original data's type. (This allows you to take a long like 123 and modify it to a string like `**3`).

masking_character

Character to mask the sensitive values—for example, `"*"` for an alphabetic string such as name, or `"0"` for a numeric string such as ZIP code or credit card number. String must have length 1. If not supplied, we will default to `"*"` for strings, 0 for digits.

number_to_mask

Number of characters to mask. If not set, all matching chars will be masked. Skipped characters do not count towards this tally.

reverse_order

Mask characters in reverse order. For example, if `masking_character` is `'0'`, `number_to_mask` is 14, and `reverse_order` is false, then 1234-5678-9012-3456 -> 00000000000000-3456 If `masking_character` is `*`, `number_to_mask` is 3, and `reverse_order` is true, then 12345 -> 12***

characters_to_ignore

When masking a string, items in this list will be skipped when replacing. For example, if your string is 555-555-5555 and you ask us to skip – and mask 5 chars with * we would produce **-55-5555.

class google.cloud.dlp_v2.types.CharsToIgnore

Characters to skip when doing deidentification of a value. These will be left alone and skipped.

class google.cloud.dlp_v2.types.CloudStorageOptions

Options defining a file or a set of files (path ending with *) within a Google Cloud Storage bucket.

bytes_limit_per_file

Max number of bytes to scan from a file. If a scanned file's size is bigger than this value then the rest of the bytes are omitted.

file_types

List of file type groups to include in the scan. If empty, all files are scanned and available data format processors are applied.

class FileSet

Set of files to scan.

url

The url, in the format gs://<bucket>/<path>. Trailing wildcard in the path is allowed.

class google.cloud.dlp_v2.types.CloudStoragePath

Message representing a path in Cloud Storage.

path

A url representing a file or path (no wildcards) in Cloud Storage. Example:
gs://[BUCKET_NAME]/dictionary.txt

class google.cloud.dlp_v2.types.Color

Represents a color in the RGB color space.

red

The amount of red in the color as a value in the interval [0, 1].

green

The amount of green in the color as a value in the interval [0, 1].

blue

The amount of blue in the color as a value in the interval [0, 1].

class google.cloud.dlp_v2.types.ContentItem

Container structure for the content to inspect.

data_item

Data of the item either in the byte array or UTF-8 string form, or table.

value

String data to inspect or redact.

table

Structured content for inspection.

byte_item

Content data to inspect or redact. Replaces type and data.

class google.cloud.dlp_v2.types.ContentLocation

Findings container location data.

container_name

Name of the container where the finding is located. The top level name is the source file name or table

name. Nested names could be absent if the embedded object has no string identifier (for an example an image contained within a document).

location

Type of the container within the file with location of the finding.

record_location

Location within a row or record of a database table.

image_location

Location within an image's pixels.

document_location

Location data for document files.

container_timestamp

Findings container modification timestamp, if applicable. For Google Cloud Storage contains last file modification timestamp. For BigQuery table contains last_modified_time property. For Datastore - not populated.

container_version

Findings container version, if available ("generation" for Google Cloud Storage).

class google.cloud.dlp_v2.types.CreateDeidentifyTemplateRequest

Request message for CreateDeidentifyTemplate.

parent

The parent resource name, for example projects/my-project-id or organizations/my-org-id.

deidentify_template

The DeidentifyTemplate to create.

template_id

The template id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.

class google.cloud.dlp_v2.types.CreateDlpJobRequest

Request message for CreateDlpJobRequest. Used to initiate long running jobs such as calculating risk metrics or inspecting Google Cloud Storage.

parent

The parent resource name, for example projects/my-project-id.

job

The configuration details for the specific type of job to run.

job_id

The job id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.

class google.cloud.dlp_v2.types.CreateInspectTemplateRequest

Request message for CreateInspectTemplate.

parent

The parent resource name, for example projects/my-project-id or organizations/my-org-id.

inspect_template

The InspectTemplate to create.

template_id

The template id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match

the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.

class `google.cloud.dlp_v2.types.CreateJobTriggerRequest`

Request message for CreateJobTrigger.

parent

The parent resource name, for example `projects/my-project-id`.

job_trigger

The JobTrigger to create.

trigger_id

The trigger id can contain uppercase and lowercase letters, numbers, and hyphens; that is, it must match the regular expression: `[a-zA-Z\d-]+`. The maximum length is 100 characters. Can be empty to allow the system to generate one.

class `google.cloud.dlp_v2.types.CryptoHashConfig`

Pseudonymization method that generates surrogates via cryptographic hashing. Uses SHA-256. The key size must be either 32 or 64 bytes. Outputs a 32 byte digest as an uppercase hex string (for example, `41D1567F7F99F1DC2A5FAB886DEE5BEE`). Currently, only string and integer values can be hashed.

crypto_key

The key used by the hash function.

class `google.cloud.dlp_v2.types.CryptoKey`

This is a data encryption key (DEK) (as opposed to a key encryption key (KEK) stored by KMS). When using KMS to wrap/unwrap DEKs, be sure to set an appropriate IAM policy on the KMS CryptoKey (KEK) to ensure an attacker cannot unwrap the data crypto key.

class `google.cloud.dlp_v2.types.CryptoReplaceFfxFpeConfig`

Replaces an identifier with a surrogate using FPE with the FFX mode of operation; however when used in the `ReidentifyContent` API method, it serves the opposite function by reversing the surrogate back into the original identifier. The identifier must be encoded as ASCII. For a given crypto key and context, the same identifier will be replaced with the same surrogate. Identifiers must be at least two characters long. In the case that the identifier is the empty string, it will be skipped. See [Pseudonymization](#) for example usage.

crypto_key

The key used by the encryption algorithm. [required]

context

The ‘tweak’, a context may be used for higher security since the same identifier in two different contexts won’t be given the same surrogate. If the context is not set, a default tweak will be used. If the context is set but: 1. there is no record present when transforming a given value or 2. the field is not present when transforming a given value, a default tweak will be used. Note that case (1) is expected when an `InfoTypeTransformation` is applied to both structured and non-structured `ContentItems`. Currently, the referenced field may be of value type integer or string. The tweak is constructed as a sequence of bytes in big endian byte order such that: - a 64 bit integer is encoded followed by a single byte of value 1 - a string is encoded in UTF-8 format followed by a single byte of value 2

custom_alphabet

This is supported by mapping these to the alphanumeric characters that the FFX mode natively supports. This happens before/after encryption/decryption. Each character listed must appear only once. Number of characters must be in the range [2, 62]. This must be encoded as ASCII. The order of characters does not matter.

radix

The native way to select the alphabet. Must be in the range [2, 62].

surrogate_info_type

The custom infoType to annotate the surrogate with. This annotation will be applied to the surrogate by prefixing it with the name of the custom infoType followed by the number of characters comprising the surrogate. The following scheme defines the format: `info_type_name(surrogate_character_count);surrogate` For example, if the name of custom infoType is 'MY_TOKEN_INFO_TYPE' and the surrogate is 'abc', the full replacement value will be: 'MY_TOKEN_INFO_TYPE(3);abc' This annotation identifies the surrogate when inspecting content using the custom infoType ``SurrogateType`` `</dlp/docs/reference/rest/v2/InspectConfig#surrogatetype>`__`. This facilitates reversal of the surrogate when it occurs in free text. In order for inspection to work properly, the name of this infoType must not occur naturally anywhere in your data; otherwise, inspection may find a surrogate that does not correspond to an actual identifier. Therefore, choose your custom infoType name carefully after considering what your data looks like. One way to select a name that has a high chance of yielding reliable detection is to include one or more unicode characters that are highly improbable to exist in your data. For example, assuming your data is entered from a regular ASCII keyboard, the symbol with the hex code point 29DD might be used like so: MY_TOKEN_TYPE

```
class google.cloud.dlp_v2.types.CustomHttpPattern
```

```
class google.cloud.dlp_v2.types.CustomInfoType
```

Custom information type provided by the user. Used to find domain-specific sensitive information configurable to the data in question.

info_type

Info type configuration. All custom info types must have configurations that do not conflict with built-in info types or other custom info types.

likelihood

Likelihood to return for this custom info type. This base value can be altered by a detection rule if the finding meets the criteria specified by the rule. Defaults to `VERY_LIKELY` if not specified.

dictionary

Dictionary-based custom info type.

regex

Regex-based custom info type.

surrogate_type

Surrogate info type.

detection_rules

Set of detection rules to apply to all findings of this custom info type. Rules are applied in order that they are specified. Not supported for the `surrogate_type` custom info type.

```
class DetectionRule
```

Rule for modifying a custom info type to alter behavior under certain circumstances, depending on the specific details of the rule. Not supported for the `surrogate_type` custom info type.

hotword_rule

Hotword-based detection rule.

```
class HotwordRule
```

Detection rule that adjusts the likelihood of findings within a certain proximity of hotwords.

hotword_regex

Regex pattern defining what qualifies as a hotword.

proximity

Proximity of the finding within which the entire hotword must reside. The total length of the window cannot exceed 1000 characters. Note that the finding itself will be included in the

window, so that hotwords may be used to match substrings of the finding itself. For example, the certainty of a phone number regex “(d{3}) d{3}d{4}” could be adjusted upwards if the area code is known to be the local area code of a company office using the hotword regex “(xxx)”, where “xxx” is the area code in question.

likelihood_adjustment

Likelihood adjustment to apply to all matching findings.

class LikelihoodAdjustment

Message for specifying an adjustment to the likelihood of a finding as part of a detection rule.

fixed_likelihood

Set the likelihood of a finding to a fixed value.

relative_likelihood

Increase or decrease the likelihood by the specified number of levels. For example, if a finding would be `POSSIBLE` without the detection rule and `relative_likelihood` is 1, then it is upgraded to `LIKELY`, while a value of -1 would downgrade it to `UNLIKELY`. Likelihood may never drop below `VERY_UNLIKELY` or exceed `VERY_LIKELY`, so applying an adjustment of 1 followed by an adjustment of -1 when base likelihood is `VERY_LIKELY` will result in a final likelihood of `LIKELY`.

class Proximity

Message for specifying a window around a finding to apply a detection rule.

window_before

Number of characters before the finding to consider.

window_after

Number of characters after the finding to consider.

class Dictionary

Custom information type based on a dictionary of words or phrases. This can be used to match sensitive information specific to the data, such as a list of employee IDs or job titles.

Dictionary words are case-insensitive and all characters other than letters and digits in the unicode [Basic Multilingual Plane](#) will be replaced with whitespace when scanning for matches, so the dictionary phrase “Sam Johnson” will match all three phrases “sam johnson”, “Sam, Johnson”, and “Sam (Johnson)”. Additionally, the characters surrounding any match must be of a different type than the adjacent characters within the word, so letters must be next to non-letters and digits next to non-digits. For example, the dictionary word “jen” will match the first three letters of the text “jen123” but will return no matches for “jennifer”.

Dictionary words containing a large number of characters that are not letters or digits may result in unexpected findings because such characters are treated as whitespace.

word_list

List of words or phrases to search for.

cloud_storage_path

Newline-delimited file of words in Cloud Storage. Only a single file is accepted.

class WordList

Message defining a list of words or phrases to search for in the data.

words

Words or phrases defining the dictionary. The dictionary must contain at least one phrase and every phrase must contain at least 2 characters that are letters or digits. [required]

class Regex

Message defining a custom regular expression.

pattern

Pattern defining the regular expression.

class SurrogateType

Message for detecting output from deidentification transformations such as

``CryptoReplaceFfxFpeConfig`` </dlp/docs/reference/rest/v2/organizations.deidentifyTemplates#cryptoreplaceffxfpe>

These types of transformations are those that perform pseudonymization, thereby producing a “surrogate” as output. This should be used in conjunction with a field on the transformation such as `surrogate_info_type`. This custom info type does not support the use of `detection_rules`.

class google.cloud.dlp_v2.types.DatastoreKey

Record key for a finding in Cloud Datastore.

entity_key

Datastore entity key.

class google.cloud.dlp_v2.types.DatastoreOptions

Options defining a data set within Google Cloud Datastore.

partition_id

A partition ID identifies a grouping of entities. The grouping is always by project and namespace, however the namespace ID may be empty.

kind

The kind to process.

class google.cloud.dlp_v2.types.Date**class google.cloud.dlp_v2.types.DateShiftConfig**

Shifts dates by random number of days, with option to be consistent for the same context.

upper_bound_days

Range of shift in days. Actual shift will be selected at random within this range (inclusive ends). Negative means shift to earlier in time. Must not be more than 365250 days (1000 years) each direction. For example, 3 means shift date to at most 3 days into the future. [Required]

lower_bound_days

For example, -5 means shift date to at most 5 days back in the past. [Required]

context

Points to the field that contains the context, for example, an entity id. If set, must also set method. If set, shift will be consistent for the given context.

method

Method for calculating shift that takes context into consideration. If set, must also set context. Can only be applied to table items.

crypto_key

Causes the shift to be computed based on this key and the context. This results in the same shift for the same context and `crypto_key`.

class google.cloud.dlp_v2.types.DateTime

Message for a date time object.

date

One or more of the following must be set. All fields are optional, but when set must be valid date or time values.

class TimeZone

offset_minutes

Set only if the offset can be determined. Positive for time ahead of UTC. E.g. For “UTC-9”, this value is -540.

class google.cloud.dlp_v2.types.DeidentifyConfig

The configuration that controls how the data will change.

info_type_transformations

Treat the dataset as free-form text and apply the same free text transformation everywhere.

record_transformations

Treat the dataset as structured. Transformations can be applied to specific locations within structured datasets, such as transforming a column within a table.

class google.cloud.dlp_v2.types.DeidentifyContentRequest

Request to de-identify a list of items.

parent

The parent resource name, for example projects/my-project-id.

deidentify_config

Configuration for the de-identification of the content item. Items specified here will override the template referenced by the deidentify_template_name argument.

inspect_config

Configuration for the inspector. Items specified here will override the template referenced by the inspect_template_name argument.

item

The item to de-identify. Will be treated as text.

inspect_template_name

Optional template to use. Any configuration directly specified in inspect_config will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.

deidentify_template_name

Optional template to use. Any configuration directly specified in deidentify_config will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.

class google.cloud.dlp_v2.types.DeidentifyContentResponse

Results of de-identifying a ContentItem.

item

The de-identified item.

overview

An overview of the changes that were made on the item.

class google.cloud.dlp_v2.types.DeidentifyTemplate

The DeidentifyTemplates contains instructions on how to deidentify content.

name

The template name. Output only. The template will have one of the following formats: projects/PROJECT_ID/deidentifyTemplates/TEMPLATE_ID OR organizations/ORGANIZATION_ID/deidentifyTemplates/TEMPLATE_ID

display_name

Display name (max 256 chars).

description

Short description (max 256 chars).

create_time

The creation timestamp of a inspectTemplate, output only field.

update_time

The last update timestamp of a inspectTemplate, output only field.

deidentify_config

The core content of the template

class google.cloud.dlp_v2.types.DeleteDeidentifyTemplateRequest

Request message for DeleteDeidentifyTemplate.

name

Resource name of the organization and deidentify template to be deleted, for example organizations/433245324/deidentifyTemplates/432452342 or projects/project-id/deidentifyTemplates/432452342.

class google.cloud.dlp_v2.types.DeleteDlpJobRequest

The request message for deleting a DLP job.

name

The name of the DlpJob resource to be deleted.

class google.cloud.dlp_v2.types.DeleteInspectTemplateRequest

Request message for DeleteInspectTemplate.

name

Resource name of the organization and inspectTemplate to be deleted, for example organizations/433245324/inspectTemplates/432452342 or projects/project-id/inspectTemplates/432452342.

class google.cloud.dlp_v2.types.DeleteJobTriggerRequest

Request message for DeleteJobTrigger.

name

Resource name of the project and the triggeredJob, for example projects/dlp-test-project/jobTriggers/53234423.

class google.cloud.dlp_v2.types.DescriptorProto

class ExtensionRange

class ReservedRange

class google.cloud.dlp_v2.types.DlpJob

Combines all of the information about a DLP job.

name

The server-assigned name.

type

The type of job.

state

State of a job.

risk_details

Results from analyzing risk of a data source.

inspect_details

Results from inspecting a data source.

create_time

Time when the job was created.

start_time

Time when the job started.

end_time

Time when the job finished.

job_trigger_name

If created by a job trigger, the resource name of the trigger that instantiated the job.

errors

A stream of errors encountered running the job.

class google.cloud.dlp_v2.types.DocumentLocation

Location of a finding within a document.

file_offset

Offset of the line, from the beginning of the file, where the finding is located.

class google.cloud.dlp_v2.types.Duration

class google.cloud.dlp_v2.types.Empty

class google.cloud.dlp_v2.types.EntityId

An entity in a dataset is a field or set of fields that correspond to a single person. For example, in medical records the `EntityId` might be a patient identifier, or for financial records it might be an account identifier. This message is used when generalizations or analysis must take into account that multiple rows correspond to the same entity.

field

Composite key indicating which field contains the entity identifier.

class google.cloud.dlp_v2.types.EnumDescriptorProto

class EnumReservedRange

class google.cloud.dlp_v2.types.EnumOptions

class google.cloud.dlp_v2.types.EnumValueDescriptorProto

class google.cloud.dlp_v2.types.EnumValueOptions

class google.cloud.dlp_v2.types.Error

Details information about an error encountered during job execution or the results of an unsuccessful activation of the `JobTrigger`. Output only field.

timestamps

The times the error occurred.

class google.cloud.dlp_v2.types.ExtensionRangeOptions

class google.cloud.dlp_v2.types.FieldDescriptorProto

class google.cloud.dlp_v2.types.FieldId

General identifier of a data field in a storage service.

name

Name describing the field.

```
class google.cloud.dlp_v2.types.FieldMask
class google.cloud.dlp_v2.types.FieldOptions
class google.cloud.dlp_v2.types.FieldTransformation
    The transformation to apply to the field.

    fields
        Input field(s) to apply the transformation to. [required]

    condition
        Only apply the transformation if the condition evaluates to true for the given RecordCondition. The
        conditions are allowed to reference fields that are not used in the actual transformation. [optional] Exam-
        ple Use Cases: - Apply a different bucket transformation to an age column if the zip code column for the
        same record is within a specific range. - Redact a field if the date of birth field is greater than 85.

    transformation
        Transformation to apply. [required]

    primitive_transformation
        Apply the transformation to the entire field.

    info_type_transformations
        Treat the contents of the field as free text, and selectively transform content that matches an InfoType.

class google.cloud.dlp_v2.types.FileDescriptorProto
class google.cloud.dlp_v2.types.FileDescriptorSet
class google.cloud.dlp_v2.types.FileOptions
class google.cloud.dlp_v2.types.Finding
    Represents a piece of potentially sensitive content.

    quote
        The content that was found. Even if the content is not textual, it may be converted to a textual represen-
        tation here. Provided if requested by the InspectConfig and the finding is less than or equal to 4096
        bytes long. If the finding exceeds 4096 bytes in length, the quote may be omitted.

    info_type
        The type of content that might have been found. Provided if requested by the InspectConfig.

    likelihood
        Estimate of how likely it is that the info_type is correct.

    location
        Where the content was found.

    create_time
        Timestamp when finding was detected.

    quote_info
        Contains data parsed from quotes. Only populated if include_quote was set to true and a supported
        infoType was requested. Currently supported infoTypes: DATE, DATE_OF_BIRTH and TIME.

class google.cloud.dlp_v2.types.FixedSizeBucketingConfig
    Buckets values based on fixed size ranges. The Bucketing transformation can provide all of this functionality,
    but requires more configuration. This message is provided as a convenience to the user for simple bucketing
    strategies.

    The transformed value will be a hyphenated string of -, i.e if lower_bound = 10 and upper_bound = 20 all values
    that are within this bucket will be replaced with "10-20".

    This can be used on data of type: double, long.
```

If the bound Value type differs from the type of data being transformed, we will first attempt converting the type of the data to be transformed to match the type of the bound before comparing.

lower_bound

Lower bound value of buckets. All values less than `lower_bound` are grouped together into a single bucket; for example if `lower_bound = 10`, then all values less than 10 are replaced with the value “-10”. [Required].

upper_bound

Upper bound value of buckets. All values greater than `upper_bound` are grouped together into a single bucket; for example if `upper_bound = 89`, then all values greater than 89 are replaced with the value “89+”. [Required].

bucket_size

Size of each bucket (except for minimum and maximum buckets). So if `lower_bound = 10`, `upper_bound = 89`, and `bucket_size = 10`, then the following buckets would be used: -10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70, 70-80, 80-89, 89+. Precision up to 2 decimals works. [Required].

class `google.cloud.dlp_v2.types.GeneratedCodeInfo`

class Annotation

class `google.cloud.dlp_v2.types.GetDeidentifyTemplateRequest`

Request message for GetDeidentifyTemplate.

name

Resource name of the organization and deidentify template to be read, for example `organizations/433245324/deidentifyTemplates/432452342` or `projects/project-id/deidentifyTemplates/432452342`.

class `google.cloud.dlp_v2.types.GetDlpJobRequest`

The request message for [DlpJobs.GetDlpJob][].

name

The name of the DlpJob resource.

class `google.cloud.dlp_v2.types.GetInspectTemplateRequest`

Request message for GetInspectTemplate.

name

Resource name of the organization and inspectTemplate to be read, for example `organizations/433245324/inspectTemplates/432452342` or `projects/project-id/inspectTemplates/432452342`.

class `google.cloud.dlp_v2.types.GetJobTriggerRequest`

Request message for GetJobTrigger.

name

Resource name of the project and the triggeredJob, for example `projects/dlp-test-project/jobTriggers/53234423`.

class `google.cloud.dlp_v2.types.Http`

class `google.cloud.dlp_v2.types.HttpRule`

class `google.cloud.dlp_v2.types.ImageLocation`

Location of the finding within an image.

bounding_boxes

Bounding boxes locating the pixels within the image containing the finding.

class google.cloud.dlp_v2.types.**InfoType**

Type of information detected by the API.

name

Name of the information type.

class google.cloud.dlp_v2.types.**InfoTypeDescription**

InfoType description.

name

Internal name of the infoType.

display_name

Human readable form of the infoType name.

supported_by

Which parts of the API supports this InfoType.

class google.cloud.dlp_v2.types.**InfoTypeStats**

Statistics regarding a specific InfoType.

info_type

The type of finding this stat is for.

count

Number of findings for this infoType.

class google.cloud.dlp_v2.types.**InfoTypeTransformations**

A type of transformation that will scan unstructured text and apply various `PrimitiveTransformations` to each finding, where the transformation is applied to only values that were identified as a specific `info_type`.

transformations

Transformation for each infoType. Cannot specify more than one for a given infoType. [required]

class **InfoTypeTransformation**

A transformation to apply to text that is identified as a specific `info_type`.

info_types

InfoTypes to apply the transformation to. Empty list will match all available infoTypes for this transformation.

primitive_transformation

Primitive transformation to apply to the infoType. [required]

class google.cloud.dlp_v2.types.**InspectConfig**

Configuration description of the scanning process. When used with `redactContent` only `info_types` and `min_likelihood` are currently used.

info_types

Restricts what `info_types` to look for. The values must correspond to InfoType values returned by `ListInfoTypes` or found in documentation.

min_likelihood

Only returns findings equal or above this threshold. The default is `POSSIBLE`.

include_quote

When true, a contextual quote from the data that triggered a finding is included in the response; see `Finding.quote`.

exclude_info_types

When true, excludes type information of the findings.

custom_info_types

Custom infoTypes provided by the user.

content_options

List of options defining data content to scan. If empty, text, images, and other content will be included.

class FindingLimits**max_findings_per_item**

Max number of findings that will be returned for each item scanned. When set within `InspectDataSourceRequest`, the maximum returned is 1000 regardless if this is set higher. When set within `InspectContentRequest`, this field is ignored.

max_findings_per_request

Max number of findings that will be returned per request/job. When set within `InspectContentRequest`, the maximum returned is 1000 regardless if this is set higher.

max_findings_per_info_type

Configuration of findings limit given for specified infoTypes.

class InfoTypeLimit

Max findings configuration per infoType, per content item or long running DlpJob.

info_type

Type of information the findings limit applies to. Only one limit per info_type should be provided. If `InfoTypeLimit` does not have an info_type, the DLP API applies the limit against all info_types that are found but not specified in another `InfoTypeLimit`.

max_findings

Max findings limit for the given infoType.

class google.cloud.dlp_v2.types.InspectContentRequest

Request to search for potentially sensitive info in a `ContentItem`.

parent

The parent resource name, for example `projects/my-project-id`.

inspect_config

Configuration for the inspector. What specified here will override the template referenced by the `inspect_template_name` argument.

item

The item to inspect.

inspect_template_name

Optional template to use. Any configuration directly specified in `inspect_config` will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.

class google.cloud.dlp_v2.types.InspectContentResponse

Results of inspecting an item.

result

The findings.

class google.cloud.dlp_v2.types.InspectDataSourceDetails

The results of an inspect `DataSource` job.

requested_options

The configuration used for this job.

result

A summary of the outcome of this inspect job.

class RequestedOptions**snapshot_inspect_template**

If run with an InspectTemplate, a snapshot of its state at the time of this run.

class Result**processed_bytes**

Total size in bytes that were processed.

total_estimated_bytes

Estimate of the number of bytes to process.

info_type_stats

Statistics of how many instances of each info type were found during inspect job.

class google.cloud.dlp_v2.types.InspectJobConfig**storage_config**

The data to scan.

inspect_config

How and what to scan for.

inspect_template_name

If provided, will be used as the default for all values in InspectConfig. `inspect_config` will be merged into the values persisted as part of the template.

actions

Actions to execute at the completion of the job. Are executed in the order provided.

class google.cloud.dlp_v2.types.InspectResult

All the findings for a single scanned item.

findings

List of findings for an item.

findings_truncated

If true, then this item might have more findings than were returned, and the findings returned are an arbitrary subset of all findings. The findings list might be truncated because the input items were too large, or because the server reached the maximum amount of resources allowed for a single API call. For best results, divide the input into smaller batches.

class google.cloud.dlp_v2.types.InspectTemplate

The inspectTemplate contains a configuration (set of types of sensitive data to be detected) to be used anywhere you otherwise would normally specify InspectConfig.

name

The template name. Output only. The template will have one of the following formats: `projects/PROJECT_ID/inspectTemplates/TEMPLATE_ID` OR `organizations/ORGANIZATION_ID/inspectTemplates/TEMPLATE_ID`

display_name

Display name (max 256 chars).

description

Short description (max 256 chars).

create_time

The creation timestamp of a inspectTemplate, output only field.

update_time

The last update timestamp of a inspectTemplate, output only field.

inspect_config

The core content of the template. Configuration of the scanning process.

class google.cloud.dlp_v2.types.JobTrigger

What event needs to occur for a new job to be started.

schedule

Create a job on a repeating basis based on the elapse of time.

name

Unique resource name for the triggeredJob, assigned by the service when the triggeredJob is created, for example `projects/dlp-test-project/triggeredJobs/53234423`.

display_name

Display name (max 100 chars)

description

User provided description (max 256 chars)

job

The configuration details for the specific type of job to run.

triggers

A list of triggers which will be OR'ed together. Only one in the list needs to trigger for a job to be started. The list may contain only a single Schedule trigger and must have at least one object.

errors

A stream of errors encountered when the trigger was activated. Repeated errors may result in the JobTrigger automatically being paused. Will return the last 100 errors. Whenever the JobTrigger is modified this list will be cleared. Output only field.

create_time

The creation timestamp of a triggeredJob, output only field.

update_time

The last update timestamp of a triggeredJob, output only field.

last_run_time

The timestamp of the last time this trigger executed, output only field.

status

A status for this trigger. [required]

class Trigger**class google.cloud.dlp_v2.types.Key**

A unique identifier for a Datastore entity. If a key's partition ID or any of its path kinds or names are reserved/read-only, the key is reserved/read-only. A reserved/read-only key is forbidden in certain documented contexts.

partition_id

Entities are partitioned into subsets, currently identified by a project ID and namespace ID. Queries are scoped to a single partition.

path

The entity path. An entity path consists of one or more elements composed of a kind and a string or numerical identifier, which identify entities. The first element identifies a *root entity*, the second element

identifies a *child* of the root entity, the third element identifies a child of the second entity, and so forth. The entities identified by all prefixes of the path are called the element's *ancestors*. A path can never be empty, and a path can have at most 100 elements.

class PathElement

A (kind, ID/name) pair used to construct a key path.

If either name or ID is set, the element is complete. If neither is set, the element is incomplete.

kind

The kind of the entity. A kind matching regex `__.*__` is reserved/read-only. A kind must not contain more than 1500 bytes when UTF-8 encoded. Cannot be "".

id_type

The type of ID.

id

The auto-allocated ID of the entity. Never equal to zero. Values less than zero are discouraged and may not be supported in the future.

name

The name of the entity. A name matching regex `__.*__` is reserved/read-only. A name must not be more than 1500 bytes when UTF-8 encoded. Cannot be "".

class google.cloud.dlp_v2.types.KindExpression

A representation of a Datastore kind.

name

The name of the kind.

class google.cloud.dlp_v2.types.KmsWrappedCryptoKey

Include to use an existing data crypto key wrapped by KMS. Authorization requires the following IAM permissions when sending a request to perform a crypto transformation using a kms-wrapped crypto key: `dlp.kms.encrypt`

wrapped_key

The wrapped data crypto key. [required]

crypto_key_name

The resource name of the KMS CryptoKey to use for unwrapping. [required]

class google.cloud.dlp_v2.types.ListDeidentifyTemplatesRequest

Request message for ListDeidentifyTemplates.

parent

The parent resource name, for example `projects/my-project-id` or `organizations/my-org-id`.

page_token

Optional page token to continue retrieval. Comes from previous call to `ListDeidentifyTemplates`.

page_size

Optional size of the page, can be limited by server. If zero server returns a page of max size 100.

class google.cloud.dlp_v2.types.ListDeidentifyTemplatesResponse

Response message for ListDeidentifyTemplates.

deidentify_templates

List of deidentify templates, up to `page_size` in `ListDeidentifyTemplatesRequest`.

next_page_token

If the next page is available then the next page token to be used in following `ListDeidentifyTemplates` request.

class google.cloud.dlp_v2.types.**ListDlpJobsRequest**

The request message for listing DLP jobs.

parent

The parent resource name, for example projects/my-project-id.

filter

Optional. Allows filtering. Supported syntax: - Filter expressions are made up of one or more restrictions. - Restrictions can be combined by AND or OR logical operators. A sequence of restrictions implicitly uses AND. - A restriction has the form of <field> <operator> <value>. - Supported fields/values for inspect jobs: - state - PENDING|RUNNING|CANCELED|FINISHED|FAILED - inspected_storage - DATASTORE|CLOUD_STORAGE|BIGQUERY - trigger_name - The resource name of the trigger that created job. - Supported fields for risk analysis jobs: - state - RUNNING|CANCELED|FINISHED|FAILED - The operator must be = or !=. Examples: - inspected_storage = cloud_storage AND state = done - inspected_storage = cloud_storage OR inspected_storage = bigquery - inspected_storage = cloud_storage AND (state = done OR state = canceled) The length of this field should be no more than 500 characters.

page_size

The standard list page size.

page_token

The standard list page token.

type

The type of job. Defaults to DlpJobType.INSPECT

class google.cloud.dlp_v2.types.**ListDlpJobsResponse**

The response message for listing DLP jobs.

jobs

A list of DlpJobs that matches the specified filter in the request.

next_page_token

The standard List next-page token.

class google.cloud.dlp_v2.types.**ListInfoTypesRequest**

Request for the list of infoTypes.

language_code

Optional BCP-47 language code for localized infoType friendly names. If omitted, or if localized strings are not available, en-US strings will be returned.

filter

Optional filter to only return infoTypes supported by certain parts of the API. Defaults to supported_by=INSPECT.

class google.cloud.dlp_v2.types.**ListInfoTypesResponse**

Response to the ListInfoTypes request.

info_types

Set of sensitive infoTypes.

class google.cloud.dlp_v2.types.**ListInspectTemplatesRequest**

Request message for ListInspectTemplates.

parent

The parent resource name, for example projects/my-project-id or organizations/my-org-id.

page_token

Optional page token to continue retrieval. Comes from previous call to ListInspectTemplates.

page_size

Optional size of the page, can be limited by server. If zero server returns a page of max size 100.

class google.cloud.dlp_v2.types.**ListInspectTemplatesResponse**

Response message for ListInspectTemplates.

inspect_templates

List of inspectTemplates, up to page_size in ListInspectTemplatesRequest.

next_page_token

If the next page is available then the next page token to be used in following ListInspectTemplates request.

class google.cloud.dlp_v2.types.**ListJobTriggersRequest**

Request message for ListJobTriggers.

parent

The parent resource name, for example projects/my-project-id.

page_token

Optional page token to continue retrieval. Comes from previous call to ListJobTriggers. `order_by` and `filter` should not change for subsequent calls, but can be omitted if token is specified.

page_size

Optional size of the page, can be limited by a server.

order_by

Optional comma separated list of triggeredJob fields to order by, followed by 'asc/desc' postfix, i.e. "create_time asc,name desc,schedule_mode asc". This list is case- insensitive. Example: "name asc,schedule_mode desc, status desc" Supported filters keys and values are: - create_time: corresponds to time the triggeredJob was created. - update_time: corresponds to time the triggeredJob was last updated. - name: corresponds to JobTrigger's display name. - status: corresponds to the triggeredJob status.

class google.cloud.dlp_v2.types.**ListJobTriggersResponse**

Response message for ListJobTriggers.

job_triggers

List of triggeredJobs, up to page_size in ListJobTriggersRequest.

next_page_token

If the next page is available then the next page token to be used in following ListJobTriggers request.

class google.cloud.dlp_v2.types.**Location**

Specifies the location of the finding.

byte_range

Zero-based byte offsets delimiting the finding. These are relative to the finding's containing element. Note that when the content is not textual, this references the UTF-8 encoded textual representation of the content. Omitted if content is an image.

codepoint_range

Unicode character offsets delimiting the finding. These are relative to the finding's containing element. Provided when the content is text.

content_locations

List of nested objects pointing to the precise location of the finding within the file or record.

class google.cloud.dlp_v2.types.**MessageOptions**

class google.cloud.dlp_v2.types.**MethodDescriptorProto**

class google.cloud.dlp_v2.types.**MethodOptions**

class google.cloud.dlp_v2.types.OneofDescriptorProto

class google.cloud.dlp_v2.types.OneofOptions

class google.cloud.dlp_v2.types.OutputStorageConfig

Cloud repository for storing output.

table

Store findings in an existing table or a new table in an existing dataset. Each column in an existing table must have the same name, type, and mode of a field in the `Finding` object. If `table_id` is not set a new one will be generated for you with the following format: `dlp_googleapis_yyyy_mm_dd_[dlp_job_id]`. Pacific timezone will be used for generating the date details.

output_schema

Schema used for writing the findings. Columns are derived from the `Finding` object. If appending to an existing table, any columns from the predefined schema that are missing will be added. No columns in the existing table will be deleted. If unspecified, then all available columns will be used for a new table, and no changes will be made to an existing table.

class google.cloud.dlp_v2.types.PartitionId

Datastore partition ID. A partition ID identifies a grouping of entities. The grouping is always by project and namespace, however the namespace ID may be empty.

A partition ID contains several dimensions: project ID and namespace ID.

project_id

The ID of the project to which the entities belong.

namespace_id

If not empty, the ID of the namespace to which the entities belong.

class google.cloud.dlp_v2.types.PrimitiveTransformation

A rule for transforming a value.

class google.cloud.dlp_v2.types.PrivacyMetric

Privacy metric to compute for reidentification risk analysis.

class CategoricalStatsConfig

Compute numerical stats over an individual column, including number of distinct values and value count distribution.

field

Field to compute categorical stats on. All column types are supported except for arrays and structs. However, it may be more informative to use `NumericalStats` when the field type is supported, depending on the data.

class KAnonymityConfig

k-anonymity metric, used for analysis of reidentification risk.

quasi_ids

Set of fields to compute k-anonymity over. When multiple fields are specified, they are considered a single composite key. Structs and repeated data types are not supported; however, nested fields are supported so long as they are not structs themselves or nested within a repeated field.

entity_id

Optional message indicating that multiple rows might be associated to a single individual. If the same `entity_id` is associated to multiple quasi-identifier tuples over distinct rows, we consider the entire collection of tuples as the composite quasi-identifier. This collection is a multiset: the order in which the different tuples appear in the dataset is ignored, but their frequency is taken into account. Important note: a maximum of 1000 rows can be associated to a single entity ID. If more rows are associated with the same entity ID, some might be ignored.

class KMapEstimationConfig

Reidentifiability metric. This corresponds to a risk model similar to what is called “journalist risk” in the literature, except the attack dataset is statistically modeled instead of being perfectly known. This can be done using publicly available data (like the US Census), or using a custom statistical model (indicated as one or several BigQuery tables), or by extrapolating from the distribution of values in the input dataset.

quasi_ids

Fields considered to be quasi-identifiers. No two columns can have the same tag. [required]

region_code

ISO 3166-1 alpha-2 region code to use in the statistical modeling. Required if no column is tagged with a region- specific InfoType (like US_ZIP_5) or a region code.

auxiliary_tables

Several auxiliary tables can be used in the analysis. Each custom_tag used to tag a quasi-identifiers column must appear in exactly one column of one auxiliary table.

class AuxiliaryTable

An auxiliary table contains statistical information on the relative frequency of different quasi-identifiers values. It has one or several quasi-identifiers columns, and one column that indicates the relative frequency of each quasi-identifier tuple. If a tuple is present in the data but not in the auxiliary table, the corresponding relative frequency is assumed to be zero (and thus, the tuple is highly reidentifiable).

table

Auxiliary table location. [required]

quasi_ids

Quasi-identifier columns. [required]

relative_frequency

The relative frequency column must contain a floating-point number between 0 and 1 (inclusive). Null values are assumed to be zero. [required]

class QuasiIdField

A quasi-identifier column has a custom_tag, used to know which column in the data corresponds to which column in the statistical model.

class TaggedField

A column with a semantic tag attached.

field

Identifies the column. [required]

tag

Semantic tag that identifies what a column contains, to determine which statistical model to use to estimate the reidentifiability of each value. [required]

info_type

A column can be tagged with a InfoType to use the relevant public dataset as a statistical model of population, if available. We currently support US ZIP codes, region codes, ages and genders. To programmatically obtain the list of supported InfoTypes, use ListInfoTypes with the supported_by=RISK_ANALYSIS filter.

custom_tag

A column can be tagged with a custom tag. In this case, the user must indicate an auxiliary table that contains statistical information on the possible values of this column (below).

inferred

If no semantic tag is indicated, we infer the statistical model from the distribution of values in the input data

class LDiversityConfig

l-diversity metric, used for analysis of reidentification risk.

quasi_ids

Set of quasi-identifiers indicating how equivalence classes are defined for the l-diversity computation. When multiple fields are specified, they are considered a single composite key.

sensitive_attribute

Sensitive field for computing the l-value.

class NumericalStatsConfig

Compute numerical stats over an individual column, including min, max, and quantiles.

field

Field to compute numerical stats on. Supported types are integer, float, date, datetime, timestamp, time.

class google.cloud.dlp_v2.types.QuoteInfo

Message for infoType-dependent details parsed from quote.

parsed_quote

Object representation of the quote.

class google.cloud.dlp_v2.types.Range

Generic half-open interval [start, end)

start

Index of the first character of the range (inclusive).

end

Index of the last character of the range (exclusive).

class google.cloud.dlp_v2.types.RecordCondition

The field type of `value` and `field` do not need to match to be considered equal, but not all comparisons are possible.

A value of type:

- `string` can be compared against all other types
- `boolean` can only be compared against other booleans
- `integer` can be compared against doubles or a string if the string value can be parsed as an integer.
- `double` can be compared against integers or a string if the string can be parsed as a double.
- `Timestamp` can be compared against strings in RFC 3339 date string format.
- `TimeOfDay` can be compared against timestamps and strings in the format of 'HH:mm:ss'.

If we fail to compare do to type mismatch, a warning will be given and the condition will evaluate to false.

field

Field within the record this condition is evaluated against. [required]

operator

Operator used to compare the field or infoType to the value. [required]

value

Value to compare against. [Required, except for `EXISTS` tests.]

expressions

An expression.

class Condition

class Conditions

A collection of conditions.

class Expressions

An expression, consisting or an operator and conditions.

logical_operator

The operator to apply to the result of conditions. Default and currently only supported value is AND.

class google.cloud.dlp_v2.types.RecordKey

Message for a unique key indicating a record that contains a finding.

class google.cloud.dlp_v2.types.RecordLocation

Location of a finding within a row or record.

record_key

Key of the finding.

field_id

Field id of the field containing the finding.

table_location

Location within a `ContentItem.Table`.

class google.cloud.dlp_v2.types.RecordSuppression

Configuration to suppress records whose suppression conditions evaluate to true.

condition

A condition that when it evaluates to true will result in the record being evaluated to be suppressed from the transformed content.

class google.cloud.dlp_v2.types.RecordTransformations

A type of transformation that is applied over structured data such as a table.

field_transformations

Transform the record by applying various field transformations.

record_suppressions

Configuration defining which records get suppressed entirely. Records that match any suppression rule are omitted from the output [optional].

class google.cloud.dlp_v2.types.RedactConfig

Redact a given value. For example, if used with an `InfoTypeTransformation` transforming `PHONE_NUMBER`, and input 'My phone number is 206-555-0123', the output would be 'My phone number is '.

class google.cloud.dlp_v2.types.RedactImageRequest

Request to search for potentially sensitive info in a list of items and replace it with a default or provided content.

parent

The parent resource name, for example `projects/my-project-id`.

inspect_config

Configuration for the inspector.

image_redaction_configs

The configuration for specifying what content to redact from images.

byte_item

The content must be PNG, JPEG, SVG or BMP.

class ImageRedactionConfig

Configuration for determining how redaction of images should occur.

target

Type of information to redact from images.

info_type

Only one per info_type should be provided per request. If not specified, and redact_all_text is false, the DLP API will redact all text that it matches against all info_types that are found, but not specified in another ImageRedactionConfig.

redact_all_text

If true, all text found in the image, regardless whether it matches an info_type, is redacted.

redaction_color

The color to use when redacting content from an image. If not specified, the default is black.

class google.cloud.dlp_v2.types.RedactImageResponse

Results of redacting an image.

redacted_image

The redacted image. The type will be the same as the original image.

extracted_text

If an image was being inspected and the InspectConfig's include_quote was set to true, then this field will include all text, if any, that was found in the image.

class google.cloud.dlp_v2.types.ReidentifyContentRequest

Request to re-identify an item.

parent

The parent resource name.

reidentify_config

Configuration for the re-identification of the content item. This field shares the same proto message type that is used for de-identification, however its usage here is for the reversal of the previous de-identification. Re-identification is performed by examining the transformations used to de-identify the items and executing the reverse. This requires that only reversible transformations be provided here. The reversible transformations are: - CryptoReplaceFfxFpeConfig

inspect_config

Configuration for the inspector.

item

The item to re-identify. Will be treated as text.

inspect_template_name

Optional template to use. Any configuration directly specified in inspect_config will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.

reidentify_template_name

Optional template to use. References an instance of DeidentifyTemplate. Any configuration directly specified in reidentify_config or inspect_config will override those set in the template. Singular fields that are set in this request will replace their corresponding fields in the template. Repeated fields are appended. Singular sub-messages and groups are recursively merged.

class google.cloud.dlp_v2.types.ReidentifyContentResponse

Results of re-identifying a item.

item

The re-identified item.

overview

An overview of the changes that were made to the `item`.

class `google.cloud.dlp_v2.types.ReplaceValueConfig`

Replace each input value with a given `Value`.

new_value

Value to replace it with.

class `google.cloud.dlp_v2.types.ReplaceWithInfoTypeConfig`

Replace each matching finding with the name of the `info_type`.

class `google.cloud.dlp_v2.types.RiskAnalysisJobConfig`

Configuration for a risk analysis job.

privacy_metric

Privacy metric to compute.

source_table

Input dataset to compute metrics over.

actions

Actions to execute at the completion of the job. Are executed in the order provided.

class `google.cloud.dlp_v2.types.Schedule`

Schedule for triggeredJobs.

recurrence_period_duration

With this option a job is started a regular periodic basis. For example: every 10 minutes. A scheduled start time will be skipped if the previous execution has not ended when its scheduled time occurs. This value must be set to a time duration greater than or equal to 60 minutes and can be no longer than 60 days.

class `google.cloud.dlp_v2.types.ServiceDescriptorProto`

class `google.cloud.dlp_v2.types.ServiceOptions`

class `google.cloud.dlp_v2.types.SourceCodeInfo`

class Location

class `google.cloud.dlp_v2.types.Status`

class `google.cloud.dlp_v2.types.StorageConfig`

Shared message indicating Cloud storage type.

datastore_options

Google Cloud Datastore options specification.

cloud_storage_options

Google Cloud Storage options specification.

big_query_options

BigQuery options specification.

class TimespanConfig

Configuration of the timespan of the items to include in scanning. Currently only supported when inspecting Google Cloud Storage and BigQuery.

start_time

Exclude files older than this value.

end_time

Exclude files newer than this value. If set to zero, no upper time limit is applied.

timestamp_field

Specification of the field containing the timestamp of scanned items. Required for data sources like Datastore or BigQuery. The valid data types of the timestamp field are: for BigQuery - timestamp, date, datetime; for Datastore - timestamp. Datastore entity will be scanned if the timestamp property does not exist or its value is empty or invalid.

enable_auto_population_of_timespan_config

When the job is started by a JobTrigger we will automatically figure out a valid start_time to avoid scanning files that have not been modified since the last time the JobTrigger executed. This will be based on the time of the execution of the last run of the JobTrigger.

class google.cloud.dlp_v2.types.Table

Structured content to inspect. Up to 50,000 Values per request allowed.

class Row**class google.cloud.dlp_v2.types.TableLocation**

Location of a finding within a table.

row_index

The zero-based index of the row where the finding is located.

class google.cloud.dlp_v2.types.TimeOfDay**class google.cloud.dlp_v2.types.TimePartConfig**

For use with Date, Timestamp, and TimeOfDay, extract or preserve a portion of the value.

class google.cloud.dlp_v2.types.Timestamp**class google.cloud.dlp_v2.types.TransformationOverview**

Overview of the modifications that occurred.

transformed_bytes

Total size in bytes that were transformed in some way.

transformation_summaries

Transformations applied to the dataset.

class google.cloud.dlp_v2.types.TransformationSummary

Summary of a single transformation. Only one of 'transformation', 'field_transformation', or 'record_suppress' will be set.

info_type

Set if the transformation was limited to a specific info_type.

field

Set if the transformation was limited to a specific FieldId.

transformation

The specific transformation these stats apply to.

field_transformations

The field transformation that was applied. If multiple field transformations are requested for a single field, this list will contain all of them; otherwise, only one is supplied.

record_suppress

The specific suppression option these stats apply to.

transformed_bytes

Total size in bytes that were transformed in some way.

class SummaryResult

A collection that informs the user the number of times a particular `TransformationResultCode` and error details occurred.

details

A place for warnings or errors to show up if a transformation didn't work as expected.

class google.cloud.dlp_v2.types.TransientCryptoKey

Use this to have a random data crypto key generated. It will be discarded after the request finishes.

name

Name of the key. [required] This is an arbitrary string used to differentiate different keys. A unique key is generated per name: two separate `TransientCryptoKey` protos share the same generated key if their names are the same. When the data crypto key is generated, this name is not used in any way (repeating the api call will result in a different key being generated).

class google.cloud.dlp_v2.types.UninterpretedOption**class NamePart****class google.cloud.dlp_v2.types.UnwrappedCryptoKey**

Using raw keys is prone to security risks due to accidentally leaking the key. Choose another type of key if possible.

key

The AES 128/192/256 bit key. [required]

class google.cloud.dlp_v2.types.UpdateDeidentifyTemplateRequest

Request message for UpdateDeidentifyTemplate.

name

Resource name of organization and deidentify template to be updated, for example `organizations/433245324/deidentifyTemplates/432452342` or `projects/project-id/deidentifyTemplates/432452342`.

deidentify_template

New DeidentifyTemplate value.

update_mask

Mask to control which fields get updated.

class google.cloud.dlp_v2.types.UpdateInspectTemplateRequest

Request message for UpdateInspectTemplate.

name

Resource name of organization and inspectTemplate to be updated, for example `organizations/433245324/inspectTemplates/432452342` or `projects/project-id/inspectTemplates/432452342`.

inspect_template

New InspectTemplate value.

update_mask

Mask to control which fields get updated.

class google.cloud.dlp_v2.types.UpdateJobTriggerRequest

Request message for UpdateJobTrigger.

name

Resource name of the project and the triggeredJob, for example `projects/dlp-test-project/jobTriggers/53234423`.

job_trigger

New JobTrigger value.

update_mask

Mask to control which fields get updated.

class google.cloud.dlp_v2.types.Value

Set of primitive values supported by the system. Note that for the purposes of inspection or transformation, the number of bytes considered to comprise a 'Value' is based on its representation as a UTF-8 encoded string. For example, if 'integer_value' is set to 123456789, the number of bytes would be counted as 9, even though an int64 only holds up to 8 bytes of data.

class google.cloud.dlp_v2.types.ValueFrequency

A value of a field, including its frequency.

value

A value contained in the field in question.

count

How many times the value is contained in the field.

9.2.3 Changelog

PyPI History

0.5.0

New Features

- Add PublishSummaryToCsc (#5246)
- Add configurable row limit (#5246)
- Add EntityID added to risk stats (#5246)
- Add dictionaries via GCS (#5246)

0.4.0

Implementation Changes

- Remove DLP client version V2Beta1 (#5155)

0.3.0

Implementation changes

- The library has been regenerated to pick up changes from the API's proto definition. (#5131)

0.2.0

Interface additions

- Add DLP v2 (#5059)

0.1.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Normalize all setup.py files (#4909)

0.1.0

Initial release of the DLP (Data Loss Prevention) client library. (#4879)

10.1 DNS Client

Client for interacting with the Google Cloud DNS API.

class `google.cloud.dns.client.Client` (*project=None, credentials=None, _http=None*)

Bases: `google.cloud.client.ClientWithProject`

Client to bundle configuration needed for API requests.

Parameters

- **project** (*str*) – the project which the client acts on behalf of. Will be passed when creating a zone. If not passed, falls back to the default inferred from the environment.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/ndev.cloudndns.readwrite',)

The scopes required for authenticating as a Cloud DNS consumer.

list_zones (*max_results=None, page_token=None*)

List zones for the project associated with this client.

See <https://cloud.google.com/dns/api/v1/managedZones/list>

Parameters

- **max_results** (*int*) – maximum number of zones to return, If not passed, defaults to a value set by the API.

- **page_token** (*str*) – opaque marker for the next “page” of zones. If not passed, the API will return the first page of zones.

Return type *Iterator*

Returns Iterator of *ManagedZone* belonging to this project.

quotas ()

Return DNS quotas for the project associated with this client.

See <https://cloud.google.com/dns/api/v1/projects/get>

Return type mapping

Returns keys for the mapping correspond to those of the quota sub-mapping of the project resource.

zone (*name*, *dns_name=None*, *description=None*)

Construct a zone bound to this client.

Parameters

- **name** (*str*) – Name of the zone.
- **dns_name** (*str*) – (Optional) DNS name of the zone. If not passed, then calls to `zone.create()` will fail.
- **description** (*str*) – (Optional) the description for the zone. If not passed, defaults to the value of ‘dns_name’.

Return type *google.cloud.dns.zone.ManagedZone*

Returns a new *ManagedZone* instance.

10.2 Managed Zones

Define API ManagedZones.

```
class google.cloud.dns.zone.ManagedZone (name, dns_name=None, client=None, description=None)
```

Bases: *object*

ManagedZones are containers for DNS resource records.

See <https://cloud.google.com/dns/api/v1/managedZones>

Parameters

- **name** (*str*) – the name of the zone
- **dns_name** (*str*) – (Optional) the DNS name of the zone. If not passed, then calls to `create()` will fail.
- **client** (*google.cloud.dns.client.Client*) – A client which holds credentials and project configuration for the zone (which requires a project).
- **description** (*str*) – (Optional) the description for the zone. If not passed, defaults to the value of ‘dns_name’.

changes ()

Construct a change set bound to this zone.

Return type *google.cloud.dns.changes.Changes*

Returns a new Changes instance

create (*client=None*)

API call: create the zone via a PUT request

See <https://cloud.google.com/dns/api/v1/managedZones/create>

Parameters **client** (*google.cloud.dns.client.Client*) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

created

Datetime at which the zone was created.

Return type `datetime.datetime`, or `NoneType`

Returns the creation time (None until set from the server).

delete (*client=None*)

API call: delete the zone via a DELETE request

See <https://cloud.google.com/dns/api/v1/managedZones/delete>

Parameters **client** (*google.cloud.dns.client.Client*) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

description

Description of the zone.

Return type `str`, or `NoneType`

Returns The description as set by the user, or None (the default).

exists (*client=None*)

API call: test for the existence of the zone via a GET request

See <https://cloud.google.com/dns/api/v1/managedZones/get>

Parameters **client** (*google.cloud.dns.client.Client*) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

Return type `bool`

Returns Boolean indicating existence of the managed zone.

classmethod from_api_repr (*resource, client*)

Factory: construct a zone given its API representation

Parameters

- **resource** (*dict*) – zone resource representation returned from the API
- **client** (*google.cloud.dns.client.Client*) – Client which holds credentials and project configuration for the zone.

Return type *google.cloud.dns.zone.ManagedZone*

Returns Zone parsed from `resource`.

list_changes (*max_results=None, page_token=None, client=None*)

List change sets for this zone.

See <https://cloud.google.com/dns/api/v1/resourceRecordSets/list>

Parameters

- **max_results** (*int*) – maximum number of zones to return, If not passed, defaults to a value set by the API.

- **page_token** (*str*) – opaque marker for the next “page” of zones. If not passed, the API will return the first page of zones.
- **client** (*google.cloud.dns.client.Client*) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

Return type *Iterator*

Returns Iterator of *Changes* belonging to this zone.

list_resource_record_sets (*max_results=None, page_token=None, client=None*)
List resource record sets for this zone.

See <https://cloud.google.com/dns/api/v1/resourceRecordSets/list>

Parameters

- **max_results** (*int*) – maximum number of zones to return, If not passed, defaults to a value set by the API.
- **page_token** (*str*) – opaque marker for the next “page” of zones. If not passed, the API will return the first page of zones.
- **client** (*google.cloud.dns.client.Client*) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

Return type *Iterator*

Returns Iterator of *ResourceRecordSet* belonging to this zone.

name_server_set
Named set of DNS name servers that all host the same ManagedZones.
Most users will leave this blank.

See <https://cloud.google.com/dns/api/v1/managedZones#nameServerSet>

Return type *str*, or *NoneType*

Returns The name as set by the user, or *None* (the default).

name_servers
Datetime at which the zone was created.

Return type list of strings, or *NoneType*.

Returns the assigned name servers (*None* until set from the server).

path
URL path for the zone’s APIs.

Return type *str*

Returns the path based on project and dataste name.

project
Project bound to the zone.

Return type *str*

Returns the project (derived from the client).

reload (*client=None*)
API call: refresh zone properties via a GET request

See <https://cloud.google.com/dns/api/v1/managedZones/get>

Parameters `client` (`google.cloud.dns.client.Client`) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

resource_record_set (`name`, `record_type`, `ttl`, `rrdatas`)

Construct a resource record set bound to this zone.

Parameters

- **name** (`str`) – Name of the record set.
- **record_type** (`str`) – RR type
- **ttl** (`int`) – TTL for the RR, in seconds
- **rrdatas** (`list of string`) – resource data for the RR

Return type `google.cloud.dns.resource_record_set.ResourceRecordSet`

Returns a new `ResourceRecordSet` instance

zone_id

ID for the zone resource.

Return type `str`, or `NoneType`

Returns the ID (None until set from the server).

10.3 Resource Record Sets

Define API `ResourceRecordSets`.

class `google.cloud.dns.resource_record_set.ResourceRecordSet` (`name`, `record_type`, `ttl`, `rrdatas`, `zone`)

Bases: `object`

`ResourceRecordSets` are DNS resource records.

RRS are owned by a `google.cloud.dns.zone.ManagedZone` instance.

See <https://cloud.google.com/dns/api/v1/resourceRecordSets>

Parameters

- **name** (`str`) – the name of the record set.
- **record_type** (`str`) – the RR type of the zone.
- **ttl** (`int`) – TTL (in seconds) for caching the record sets.
- **rrdatas** (`list of string`) – one or more lines containing the resource data.
- **zone** (`google.cloud.dns.zone.ManagedZone`) – A zone which holds one or more record sets.

classmethod `from_api_repr` (`resource`, `zone`)

Factory: construct a record set given its API representation

Parameters

- **resource** (`dict`) – record sets representation returned from the API
- **zone** (`google.cloud.dns.zone.ManagedZone`) – A zone which holds one or more record sets.

Return type `google.cloud.dns.zone.ResourceRecordSet`

Returns RRS parsed from `resource`.

10.4 Change Sets

Define API ResourceRecordSets.

class `google.cloud.dns.changes.Changes` (*zone*)

Bases: `object`

Changes are bundled additions / deletions of DNS resource records.

Changes are owned by a `google.cloud.dns.zone.ManagedZone` instance.

See <https://cloud.google.com/dns/api/v1/changes>

Parameters `zone` (`google.cloud.dns.zone.ManagedZone`) – A zone which holds one or more record sets.

add_record_set (*record_set*)

Append a record set to the ‘additions’ for the change set.

Parameters `record_set` (`google.cloud.dns.resource_record_set.ResourceRecordSet`) – the record set to append.

Raises `ValueError` if `record_set` is not of the required type.

additions

Resource record sets to be added to the zone.

Return type sequence of `google.cloud.dns.resource_record_set.ResourceRecordSet`.

Returns record sets appended via `add_record_set()`.

create (*client=None*)

API call: create the change set via a POST request.

See <https://cloud.google.com/dns/api/v1/changes/create>

Parameters `client` (`google.cloud.dns.client.Client`) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

delete_record_set (*record_set*)

Append a record set to the ‘deletions’ for the change set.

Parameters `record_set` (`google.cloud.dns.resource_record_set.ResourceRecordSet`) – the record set to append.

Raises `ValueError` if `record_set` is not of the required type.

deletions

Resource record sets to be deleted from the zone.

Return type sequence of `google.cloud.dns.resource_record_set.ResourceRecordSet`.

Returns record sets appended via `delete_record_set()`.

exists (*client=None*)

API call: test for the existence of the change set via a GET request.

See <https://cloud.google.com/dns/api/v1/changes/get>

Parameters `client` (*google.cloud.dns.client.Client*) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

Return type `bool`

Returns Boolean indicating existence of the changes.

classmethod `from_api_repr` (*resource, zone*)

Factory: construct a change set given its API representation

Parameters

- **resource** (*dict*) – change set representation returned from the API.
- **zone** (*google.cloud.dns.zone.ManagedZone*) – A zone which holds zero or more change sets.

Return type *google.cloud.dns.changes.Changes*

Returns RRS parsed from `resource`.

name

Name of the change set.

Return type `str` or `NoneType`

Returns Name, as set by the back-end, or `None`.

path

URL path for change set APIs.

Return type `str`

Returns the path based on project, zone, and change set names.

reload (*client=None*)

API call: refresh zone properties via a GET request.

See <https://cloud.google.com/dns/api/v1/changes/get>

Parameters `client` (*google.cloud.dns.client.Client*) – (Optional) the client to use. If not passed, falls back to the `client` stored on the current zone.

started

Time when the change set was started.

Return type `datetime.datetime` or `NoneType`

Returns Time, as set by the back-end, or `None`.

status

Status of the change set.

Return type `str` or `NoneType`

Returns Status, as set by the back-end, or `None`.

10.5 Installation

Install the `google-cloud-dns` library using `pip`:

```
$ pip install google-cloud-dns
```

10.6 Client

Client objects provide a means to configure your DNS applications. Each instance holds both a `project` and an authenticated connection to the DNS service.

For an overview of authentication in `google-cloud-python`, see [Authentication](#).

Assuming your environment is set up as described in that document, create an instance of *Client*.

```
>>> from google.cloud import dns
>>> client = dns.Client()
```

10.7 Projects

A project is the top-level container in the DNS API: it is tied closely to billing, and can provide default access control across all its datasets. If no `project` is passed to the client container, the library attempts to infer a project using the environment (including explicit environment variables, GAE, or GCE).

To override the project inferred from the environment, pass an explicit `project` to the constructor, or to either of the alternative classmethod factories:

```
>>> from google.cloud import dns
>>> client = dns.Client(project='PROJECT_ID')
```

10.8 Project Quotas

Query the quotas for a given project:

```
>>> from google.cloud import dns
>>> client = dns.Client(project='PROJECT_ID')
>>> quotas = client.quotas() # API request
>>> for key, value in sorted(quotas.items()):
...     print('%s: %s' % (key, value))
managedZones: 10000
resourceRecordsPerRrset: 100
rrsetsPerManagedZone: 10000
rrsetAdditionsPerChange: 100
rrsetDeletionsPerChange: 100
totalRrdataSizePerChange: 10000
```

10.8.1 Project ACLs

Each project has an access control list granting reader / writer / owner permission to one or more entities. This list cannot be queried or set via the API: it must be managed using the Google Developer Console.

10.9 Managed Zones

A “managed zone” is the container for DNS records for the same DNS name suffix and has a set of name servers that accept and responds to queries:

```
>>> from google.cloud import dns
>>> client = dns.Client(project='PROJECT_ID')
>>> zone = client.zone('acme-co', 'example.com',
...                    description='Acme Company zone')

>>> zone.exists() # API request
False
>>> zone.create() # API request
>>> zone.exists() # API request
True
```

List the zones for a given project:

```
>>> from google.cloud import dns
>>> client = dns.Client(project='PROJECT_ID')
>>> zones = client.list_zones() # API request
>>> [zone.name for zone in zones]
['acme-co']
```

10.10 Resource Record Sets

Each managed zone exposes a read-only set of resource records:

```
>>> from google.cloud import dns
>>> client = dns.Client(project='PROJECT_ID')
>>> zone = client.zone('acme-co', 'example.com')
>>> records, page_token = zone.list_resource_record_sets() # API request
>>> [(record.name, record.record_type, record.ttl, record.rdatas)
...  for record in records]
[('example.com.', 'SOA', 21600, ['ns-cloud1.googlecomains.com dns-admin.
→google.com 1 21600 3600 1209600 300'])]
```

Note: The `page_token` returned from `zone.list_resource_record_sets()` will be an opaque string if there are more resources than can be returned in a single request. To enumerate them all, repeat calling `zone.list_resource_record_sets()`, passing the `page_token`, until the token is `None`. E.g.

```
>>> records, page_token = zone.list_resource_record_sets() # API request
>>> while page_token is not None:
...     next_batch, page_token = zone.list_resource_record_sets(
...         page_token=page_token) # API request
...     records.extend(next_batch)
```

10.11 Change requests

Update the resource record set for a zone by creating a change request bundling additions to or deletions from the set.

```
>>> import time
>>> from google.cloud import dns
>>> client = dns.Client(project='PROJECT_ID')
>>> zone = client.zone('acme-co', 'example.com')
```

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```
>>> TWO_HOURS = 2 * 60 * 60 # seconds
>>> record_set = zone.resource_record_set(
...     'www.example.com.', 'CNAME', TWO_HOURS, ['www1.example.com.',])
>>> changes = zone.changes()
>>> changes.add_record_set(record_set)
>>> changes.create() # API request
>>> while changes.status != 'done':
...     print('Waiting for changes to complete')
...     time.sleep(60) # or whatever interval is appropriate
...     changes.reload() # API request
```

List changes made to the resource record set for a given zone:

```
>>> from google.cloud import dns
>>> client = dns.Client(project='PROJECT_ID')
>>> zone = client.zone('acme-co', 'example.com')
>>> changes = []
>>> changes, page_token = zone.list_changes() # API request
```

Note: The `page_token` returned from `zone.list_changes()` will be an opaque string if there are more changes than can be returned in a single request. To enumerate them all, repeat calling `zone.list_changes()`, passing the `page_token`, until the token is `None`. E.g.:

```
>>> changes, page_token = zone.list_changes() # API request
>>> while page_token is not None:
...     next_batch, page_token = zone.list_changes(
...         page_token=page_token) # API request
...     changes.extend(next_batch)
```

10.12 Changelog

For a list of all google-cloud-dns releases:

10.12.1 Changelog

PyPI History

0.29.0

Implementation changes

- Renaming `makeResource` -> `make_resource`. (#4355)

Dependencies

- Update dependency range for `api-core` to include `v1.0.0` releases (#4944)

Documentation

- Fixing “Fore” -> “For” typo in README docs. (#4317)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Making a `nox -s default` session for all packages. (#4324)
- Shorten test names (#4321)

0.28.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)

PyPI: <https://pypi.org/project/google-cloud-dns/0.28.0/>

11.1 Constants

Helpful constants to use for Google Cloud Firestore.

`google.cloud.firestore_v1beta1.constants.DELETE_FIELD = <object object>`
Sentinel value used to delete a field in a document.

`google.cloud.firestore_v1beta1.constants.SERVER_TIMESTAMP = <object object>`
Sentinel value – set a document field to the server timestamp.

11.2 Client

Client for interacting with the Google Cloud Firestore API.

This is the base from which all interactions with the API occur.

In the hierarchy of API concepts

- a *Client* owns a *CollectionReference*
- a *Client* owns a *DocumentReference*

class `google.cloud.firestore_v1beta1.client.Client` (*project=None, credentials=None, database='(default)'*)

Bases: `google.cloud.client.ClientWithProject`

Client for interacting with Google Cloud Firestore API.

Note: Since the Cloud Firestore API requires the gRPC transport, no `_http` argument is accepted by this class.

Parameters

- **project** (*Optional[str]*) – The project which the client acts on behalf of. If not passed, falls back to the default inferred from the environment.
- **credentials** (*Optional[Credentials]*) – The OAuth2 Credentials to use for this client. If not passed, falls back to the default inferred from the environment.
- **database** (*Optional[str]*) – The database name that the client targets. For now, `DEFAULT_DATABASE` (the default value) is the only valid database.

SCOPE = ('https://www.googleapis.com/auth/cloud-platform', 'https://www.googleapis.com/auth/datastore')
The scopes required for authenticating with the Firestore service.

batch()

Get a batch instance from this client.

Returns A “write” batch to be used for accumulating document changes and sending the changes all at once.

Return type WriteBatch

collection(*collection_path)

Get a reference to a collection.

For a top-level collection:

```
>>> client.collection('top')
```

For a sub-collection:

```
>>> client.collection('mydocs/doc/subcol')
>>> # is the same as
>>> client.collection('mydocs', 'doc', 'subcol')
```

Sub-collections can be nested deeper in a similar fashion.

Parameters **collection_path** (*Tuple[str, ...]*) – Can either be

- A single `/`-delimited path to a collection
- A tuple of collection path segments

Returns A reference to a collection in the Firestore database.

Return type CollectionReference

document(*document_path)

Get a reference to a document in a collection.

For a top-level document:

```
>>> client.document('collek/shun')
>>> # is the same as
>>> client.document('collek', 'shun')
```

For a document in a sub-collection:

```
>>> client.document('mydocs/doc/subcol/child')
>>> # is the same as
>>> client.document('mydocs', 'doc', 'subcol', 'child')
```

Documents in sub-collections can be nested deeper in a similar fashion.

Parameters **document_path** (*Tuple[str, ...]*) – Can either be

- A single /-delimited path to a document
- A tuple of document path segments

Returns A reference to a document in a collection.

Return type DocumentReference

static field_path (*field_names)

Create a **field path** from a list of nested field names.

A **field path** is a .-delimited concatenation of the field names. It is used to represent a nested field. For example, in the data

```
data = {
  'aa': {
    'bb': {
      'cc': 10,
    },
  },
}
```

the field path 'aa.bb.cc' represents the data stored in data['aa']['bb']['cc'].

Parameters **field_names** (Tuple[str, ...]) – The list of field names.

Returns The .-delimited field path.

Return type str

get_all (references, field_paths=None, transaction=None)

Retrieve a batch of documents.

Note: Documents returned by this method are not guaranteed to be returned in the same order that they are given in *references*.

Note: If multiple *references* refer to the same document, the server will only return one result.

See *field_path()* for more information on **field paths**.

If a *transaction* is used and it already has write operations added, this method cannot be used (i.e. read-after-write is not allowed).

Parameters

- **references** (List[DocumentReference, ...]) – Iterable of document references to be retrieved.
- **field_paths** (Optional[Iterable[str, ...]]) – An iterable of field paths (.-delimited list of field names) to use as a projection of document fields in the returned results. If no value is provided, all fields will be returned.
- **transaction** (Optional[Transaction]) – An existing transaction that these *references* will be retrieved in.

Yields DocumentSnapshot – The next document snapshot that fulfills the query, or *None* if the document does not exist.

transaction (**kwargs)

Get a transaction that uses this client.

See *Transaction* for more information on transactions and the constructor arguments.

Parameters **kwargs** (*Dict[str, Any]*) – The keyword arguments (other than `client`) to pass along to the *Transaction* constructor.

Returns A transaction attached to this client.

Return type *Transaction*

static `write_option(**kwargs)`

Create a write option for write operations.

Write operations include `set()`, `update()` and `delete()`.

One of the following keyword arguments must be provided:

- **last_update_time** (`google.protobuf.timestamp_pb2.Timestamp`): A timestamp. When set, the document must exist and have been last updated at that time. Protobuf `update_time` timestamps are typically returned from methods that perform write operations as part of a “write result” protobuf or directly.
- **exists** (`bool`): Indicates if the document being modified should already exist.

Providing no argument would make the option have no effect (so it is not allowed). Providing multiple would be an apparent contradiction, since `last_update_time` assumes that the document **was** updated (it can’t have been updated if it doesn’t exist) and `exists` indicate that it is unknown if the document exists or not.

Parameters **kwargs** (*Dict[str, Any]*) – The keyword arguments described above.

Raises *TypeError* – If anything other than exactly one argument is provided by the caller.

```
google.cloud.firestore_v1beta1.client.DEFAULT_DATABASE = ' (default) '
str – The default database used in a Client.
```

```
class google.cloud.firestore_v1beta1.client.ExistsOption(exists)
```

Bases: *google.cloud.firestore_v1beta1.client.WriteOption*

Option used to assert existence on a write operation.

This will typically be created by `write_option()`.

Parameters **exists** (`bool`) – Indicates if the document being modified should already exist.

```
modify_write(write_pb, **unused_kwargs)
```

Modify a Write protobuf based on the state of this write option.

If:

- `exists=True`, adds a precondition that requires existence
- `exists=False`, adds a precondition that requires non-existence

Parameters

- **write_pb** (`google.cloud.firestore_v1beta1.types.Write`) – A Write protobuf instance to be modified with a precondition determined by the state of this option.
- **unused_kwargs** (*Dict[str, Any]*) – Keyword arguments accepted by other subclasses that are unused here.

```
class google.cloud.firestore_v1beta1.client.LastUpdateOption(last_update_time)
```

Bases: *google.cloud.firestore_v1beta1.client.WriteOption*

Option used to assert a “last update” condition on a write operation.

This will typically be created by `write_option()`.

Parameters `last_update_time` (`google.protobuf.timestamp_pb2.Timestamp`)

– A timestamp. When set, the target document must exist and have been last updated at that time. Protobuf `update_time` timestamps are typically returned from methods that perform write operations as part of a “write result” protobuf or directly.

modify_write (`write_pb`, `**unused_kwargs`)

Modify a `Write` protobuf based on the state of this write option.

The `last_update_time` is added to `write_pb` as an “update time” precondition. When set, the target document must exist and have been last updated at that time.

Parameters

- **write_pb** (`google.cloud.firestore_v1beta1.types.Write`) – A `Write` protobuf instance to be modified with a precondition determined by the state of this option.
- **unused_kwargs** (`Dict[str, Any]`) – Keyword arguments accepted by other subclasses that are unused here.

class `google.cloud.firestore_v1beta1.client.WriteOption`

Bases: `object`

Option used to assert a condition on a write operation.

modify_write (`write_pb`, `no_create_msg=None`)

Modify a `Write` protobuf based on the state of this write option.

This is a virtual method intended to be implemented by subclasses.

Parameters

- **write_pb** (`google.cloud.firestore_v1beta1.types.Write`) – A `Write` protobuf instance to be modified with a precondition determined by the state of this option.
- **no_create_msg** (`Optional[str]`) – A message to use to indicate that a create operation is not allowed.

Raises `NotImplementedError` – Always, this method is virtual.

11.3 Collections

Classes for representing collections for the Google Cloud Firestore API.

class `google.cloud.firestore_v1beta1.collection.CollectionReference` (`*path`, `**kwargs`)

Bases: `object`

A reference to a collection in a Firestore database.

The collection may already exist or this class can facilitate creation of documents within the collection.

Parameters

- **path** (`Tuple[str, ...]`) – The components in the collection path. This is a series of strings representing each collection and sub-collection ID, as well as the document IDs for any documents that contain a sub-collection.

- **kwargs** (*dict*) – The keyword arguments for the constructor. The only supported keyword is `client` and it must be a *Client* if provided. It represents the client that created this collection reference.

Raises

- *ValueError* – if
 - the `path` is empty
 - there are an even number of elements
 - a collection ID in `path` is not a string
 - a document ID in `path` is not a string
- *TypeError* – If a keyword other than `client` is used.

add (*document_data*, *document_id=None*)

Create a document in the Firestore database with the provided data.

Parameters

- **document_data** (*dict*) – Property names and values to use for creating the document.
- **document_id** (*Optional[str]*) – The document identifier within the current collection. If not provided, an ID will be automatically assigned by the server (the assigned ID will be a random 20 character string composed of digits, uppercase and lowercase letters).

Returns

Pair of

- The `update_time` when the document was created (or overwritten).
- A document reference for the created document.

Return type `Tuple[google.protobuf.timestamp_pb2.Timestamp, DocumentReference]`

Raises *Conflict* – If `document_id` is provided and the document already exists.

document (*document_id=None*)

Create a sub-document underneath the current collection.

Parameters **document_id** (*Optional[str]*) – The document identifier within the current collection. If not provided, will default to a random 20 character string composed of digits, uppercase and lowercase and letters.

Returns The child document.

Return type `DocumentReference`

end_at (*document_fields*)

End query at a cursor with this collection as parent.

See `end_at()` for more information on this method.

Parameters **document_fields** (*Union[DocumentSnapshot, dict]*) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor.

Return type `Query`

end_before (*document_fields*)

End query before a cursor with this collection as parent.

See `end_before()` for more information on this method.

Parameters **document_fields** (*Union[DocumentSnapshot, dict]*) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor.

Return type Query

get (*transaction=None*)

Read the documents in this collection.

This sends a `RunQuery` RPC and then consumes each document returned in the stream of `RunQueryResponse` messages.

If a `transaction` is used and it already has write operations added, this method cannot be used (i.e. read-after-write is not allowed).

Parameters **transaction** (*Optional[Transaction]*) – An existing transaction that the query will run in.

Yields `~firestore_v1beta1.document.DocumentSnapshot` – The next document that fulfills the query.

id

The collection identifier.

Returns The last component of the path.

Return type `str`

limit (*count*)

Create a limited query with this collection as parent.

See `limit()` for more information on this method.

Parameters **count** (*int*) – Maximum number of documents to return that match the query.

Returns A limited query.

Return type Query

offset (*num_to_skip*)

Skip to an offset in a query with this collection as parent.

See `offset()` for more information on this method.

Parameters **num_to_skip** (*int*) – The number of results to skip at the beginning of query results. (Must be non-negative.)

Returns An offset query.

Return type Query

order_by (*field_path, **kwargs*)

Create an “order by” query with this collection as parent.

See `order_by()` for more information on this method.

Parameters

- **field_path** (*str*) – A field path (`.`-delimited list of field names) on which to order the query results.

- **kwargs** (*Dict[str, Any]*) – The keyword arguments to pass along to the query. The only supported keyword is `direction`, see `order_by()` for more information.

Returns An “order by” query.

Return type Query

parent

Document that owns the current collection.

Returns The parent document, if the current collection is not a top-level collection.

Return type Optional[DocumentReference]

select (*field_paths*)

Create a “select” query with this collection as parent.

See `select()` for more information on this method.

Parameters **field_paths** (*Iterable[str, ...]*) – An iterable of field paths (. - delimited list of field names) to use as a projection of document fields in the query results.

Returns A “projected” query.

Return type Query

start_after (*document_fields*)

Start query after a cursor with this collection as parent.

See `start_after()` for more information on this method.

Parameters **document_fields** (*Union[DocumentSnapshot, dict]*) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor.

Return type Query

start_at (*document_fields*)

Start query at a cursor with this collection as parent.

See `start_at()` for more information on this method.

Parameters **document_fields** (*Union[DocumentSnapshot, dict]*) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor.

Return type Query

where (*field_path, op_string, value*)

Create a “where” query with this collection as parent.

See `where()` for more information on this method.

Parameters

- **field_path** (*str*) – A field path (. - delimited list of field names) for the field to filter on.
- **op_string** (*str*) – A comparison operation in the form of a string. Acceptable values are `<`, `<=`, `=`, `>=` and `>`.

- **value** (*Any*) – The value to compare the field against in the filter. If `value` is `None` or a `NaN`, then `==` is the only allowed operation.

Returns A filtered query.

Return type Query

11.4 Documents

Classes for representing documents for the Google Cloud Firestore API.

class google.cloud.firestore_v1beta1.document.DocumentReference (**path*,
***kwargs*)

Bases: `object`

A reference to a document in a Firestore database.

The document may already exist or can be created by this class.

Parameters

- **path** (*Tuple[str, ...]*) – The components in the document path. This is a series of strings representing each collection and sub-collection ID, as well as the document IDs for any documents that contain a sub-collection (as well as the base document).
- **kwargs** (*dict*) – The keyword arguments for the constructor. The only supported keyword is `client` and it must be a `Client`. It represents the client that created this document reference.

Raises

- `ValueError` – if
 - the `path` is empty
 - there are an even number of elements
 - a collection ID in `path` is not a string
 - a document ID in `path` is not a string
- `TypeError` – If a keyword other than `client` is used.

collection (*collection_id*)

Create a sub-collection underneath the current document.

Parameters **collection_id** (*str*) – The sub-collection identifier (sometimes referred to as the “kind”).

Returns The child collection.

Return type CollectionReference

collections (*page_size=None*)

List subcollections of the current document.

Parameters **page_size** (*Optional[int]*) – Iterator page size.

Returns iterator of subcollections of the current document. If the document does not exist at the time of *snapshot*, the iterator will be empty

Return type Sequence[CollectionReference]

create (*document_data*)

Create the current document in the Firestore database.

Parameters **document_data** (*dict*) – Property names and values to use for creating a document.

Returns The write result corresponding to the committed document. A write result contains an `update_time` field.

Return type `google.cloud.firestore_v1beta1.types.WriteResult`

Raises `Conflict` – If the document already exists.

delete (*option=None*)

Delete the current document in the Firestore database.

Parameters **option** (*Optional[WriteOption]*) – A write option to make assertions / preconditions on the server state of the document before applying changes.

Returns The time that the delete request was received by the server. If the document did not exist when the delete was sent (i.e. nothing was deleted), this method will still succeed and will still return the time that the request was received by the server.

Return type `google.protobuf.timestamp_pb2.Timestamp`

get (*field_paths=None, transaction=None*)

Retrieve a snapshot of the current document.

See `field_path()` for more information on **field paths**.

If a `transaction` is used and it already has write operations added, this method cannot be used (i.e. read-after-write is not allowed).

Parameters

- **field_paths** (*Optional[Iterable[str, ...]]*) – An iterable of field paths (.-delimited list of field names) to use as a projection of document fields in the returned results. If no value is provided, all fields will be returned.
- **transaction** (*Optional[Transaction]*) – An existing transaction that this reference will be retrieved in.

Returns

A **snapshot of** the current document. If the document does not exist at the time of *snapshot*, the *snapshot reference*, *data*, *update_time*, and *create_time* attributes will all be *None* and *exists* will be *False*.

Return type `DocumentSnapshot`

id

The document identifier (within its collection).

Returns The last component of the path.

Return type `str`

parent

Collection that owns the current document.

Returns The parent collection.

Return type `CollectionReference`

set (*document_data*, *merge=False*)

Replace the current document in the Firestore database.

A write *option* can be specified to indicate preconditions of the “set” operation. If no *option* is specified and this document doesn’t exist yet, this method will create it.

Overwrites all content for the document with the fields in *document_data*. This method performs almost the same functionality as *create()*. The only difference is that this method doesn’t make any requirements on the existence of the document (unless *option* is used), whereas as *create()* will fail if the document already exists.

Parameters

- **document_data** (*dict*) – Property names and values to use for replacing a document.
- **option** (*Optional[WriteOption]*) – A write option to make assertions / preconditions on the server state of the document before applying changes.

Returns The write result corresponding to the committed document. A write result contains an *update_time* field.

Return type *google.cloud.firestore_v1beta1.types.WriteResult*

update (*field_updates*, *option=None*)

Update an existing document in the Firestore database.

By default, this method verifies that the document exists on the server before making updates. A write *option* can be specified to override these preconditions.

Each key in *field_updates* can either be a field name or a **field path** (For more information on **field paths**, see *field_path()*.) To illustrate this, consider a document with

```
>>> snapshot = document.get()
>>> snapshot.to_dict()
{
    'foo': {
        'bar': 'baz',
    },
    'other': True,
}
```

stored on the server. If the field name is used in the update:

```
>>> field_updates = {
...     'foo': {
...         'quux': 800,
...     },
... }
>>> document.update(field_updates)
```

then all of *foo* will be overwritten on the server and the new value will be

```
>>> snapshot = document.get()
>>> snapshot.to_dict()
{
    'foo': {
        'quux': 800,
    },
    'other': True,
}
```

On the other hand, if a `.`-delimited **field path** is used in the update:

```
>>> field_updates = {
...     'foo.quux': 800,
... }
>>> document.update(field_updates)
```

then only `foo.quux` will be updated on the server and the field `foo.bar` will remain intact:

```
>>> snapshot = document.get()
>>> snapshot.to_dict()
{
  'foo': {
    'bar': 'baz',
    'quux': 800,
  },
  'other': True,
}
```

Warning: A **field path** can only be used as a top-level key in `field_updates`.

To delete / remove a field from an existing document, use the `DELETE_FIELD` sentinel. So with the example above, sending

```
>>> field_updates = {
...     'other': firestore.DELETE_FIELD,
... }
>>> document.update(field_updates)
```

would update the value on the server to:

```
>>> snapshot = document.get()
>>> snapshot.to_dict()
{
  'foo': {
    'bar': 'baz',
  },
}
```

To set a field to the current time on the server when the update is received, use the `SERVER_TIMESTAMP` sentinel. Sending

```
>>> field_updates = {
...     'foo.now': firestore.SERVER_TIMESTAMP,
... }
>>> document.update(field_updates)
```

would update the value on the server to:

```
>>> snapshot = document.get()
>>> snapshot.to_dict()
{
  'foo': {
    'bar': 'baz',
    'now': datetime.datetime(2012, ...),
  },
}
```

(continues on next page)

(continued from previous page)

```

    },
    'other': True,
  }

```

Parameters

- **field_updates** (*dict*) – Field names or paths to update and values to update with.
- **option** (*Optional[WriteOption]*) – A write option to make assertions / pre-conditions on the server state of the document before applying changes.

Returns The write result corresponding to the updated document. A write result contains an `update_time` field.

Return type *google.cloud.firestore_v1beta1.types.WriteResult*

Raises `NotFound` – If the document does not exist.

```

class google.cloud.firestore_v1beta1.document.DocumentSnapshot (reference,
                                                                data,      exists,
                                                                read_time,
                                                                create_time,
                                                                update_time)

```

Bases: `object`

A snapshot of document data in a Firestore database.

This represents data retrieved at a specific time and may not contain all fields stored for the document (i.e. a hand-picked selection of fields may have been retrieved).

Instances of this class are not intended to be constructed by hand, rather they'll be returned as responses to various methods, such as `get()`.

Parameters

- **reference** (*DocumentReference*) – A document reference corresponding to the document that contains the data in this snapshot.
- **data** (*Dict[str, Any]*) – The data retrieved in the snapshot.
- **exists** (*bool*) – Indicates if the document existed at the time the snapshot was retrieved.
- **read_time** (*google.protobuf.timestamp_pb2.Timestamp*) – The time that this snapshot was read from the server.
- **create_time** (*google.protobuf.timestamp_pb2.Timestamp*) – The time that this document was created.
- **update_time** (*google.protobuf.timestamp_pb2.Timestamp*) – The time that this document was last updated.

create_time = `None`

google.protobuf.timestamp_pb2.Timestamp – Document's creation.

exists

Existence flag.

Indicates if the document existed at the time this snapshot was retrieved.

Returns The existence flag.

Return type `bool`

get (*field_path*)

Get a value from the snapshot data.

If the data is nested, for example:

```
>>> snapshot.to_dict()
{
  'top1': {
    'middle2': {
      'bottom3': 20,
      'bottom4': 22,
    },
    'middle5': True,
  },
  'top6': b'\{ foo',
}
```

a **field path** can be used to access the nested data. For example:

```
>>> snapshot.get('top1')
{
  'middle2': {
    'bottom3': 20,
    'bottom4': 22,
  },
  'middle5': True,
}
>>> snapshot.get('top1.middle2')
{
  'bottom3': 20,
  'bottom4': 22,
}
>>> snapshot.get('top1.middle2.bottom3')
20
```

See [`field_path\(\)`](#) for more information on **field paths**.

A copy is returned since the data may contain mutable values, but the data stored in the snapshot must remain immutable.

Parameters **field_path** (*str*) – A field path (`.`-delimited list of field names).

Returns (A copy of) the value stored for the `field_path` or `None` if snapshot document does not exist.

Return type *Any* or `None`

Raises `KeyError` – If the `field_path` does not match nested data in the snapshot.

id

The document identifier (within its collection).

Returns The last component of the path of the document.

Return type `str`

read_time = None

google.protobuf.timestamp_pb2.Timestamp – Time snapshot was read.

reference

Document reference corresponding to document that owns this data.

Returns A document reference corresponding to this document.

Return type DocumentReference

to_dict()

Retrieve the data contained in this snapshot.

A copy is returned since the data may contain mutable values, but the data stored in the snapshot must remain immutable.

Returns The data in the snapshot. Returns None if reference does not exist.

Return type Dict[str, Any] or None

update_time = None

google.protobuf.timestamp_pb2.Timestamp – Document’s last update.

11.5 Queries

Classes for representing queries for the Google Cloud Firestore API.

A [Query](#) can be created directly from a [Collection](#) and that can be a more common way to create a query than direct usage of the constructor.

```
class google.cloud.firestore_v1beta1.query.Query(parent, projection=None,
                                                  field_filters=(), orders=(),
                                                  limit=None, offset=None,
                                                  start_at=None, end_at=None)
```

Bases: [object](#)

Represents a query to the Firestore API.

Instances of this class are considered immutable: all methods that would modify an instance instead return a new instance.

Parameters

- **parent** (*Collection*) – The collection that this query applies to.
- **projection** (*Optional[google.cloud.proto.firestore.v1beta1.query_pb2.StructuredQuery.Projection]*) – A projection of document fields to limit the query results to.
- **field_filters** (*Optional[Tuple[google.cloud.proto.firestore.v1beta1.query_pb2.StructuredQuery.FieldFilter, ...]]*) – The filters to be applied in the query.
- **orders** (*Optional[Tuple[google.cloud.proto.firestore.v1beta1.query_pb2.StructuredQuery.Order, ...]]*) – The “order by” entries to use in the query.
- **limit** (*Optional[int]*) – The maximum number of documents the query is allowed to return.
- **offset** (*Optional[int]*) – The number of results to skip.
- **start_at** (*Optional[Tuple[dict, bool]]*) – Two-tuple of
 - a mapping of fields. Any field that is present in this mapping must also be present in `orders`
 - an after flag

The fields and the flag combine to form a cursor used as a starting point in a query result set. If the `after` flag is `True`, the results will start just after any documents which have fields matching the cursor, otherwise any matching documents will be included in the result set. When the query is formed, the document values will be used in the order given by `orders`.

- **end_at** (*Optional[Tuple[dict, bool]]*) – Two-tuple of
 - a mapping of fields. Any field that is present in this mapping must also be present in `orders`
 - a before flag

The fields and the flag combine to form a cursor used as an ending point in a query result set. If the `before` flag is `True`, the results will end just before any documents which have fields matching the cursor, otherwise any matching documents will be included in the result set. When the query is formed, the document values will be used in the order given by `orders`.

ASCENDING = 'ASCENDING'

str – Sort query results in ascending order on a field.

DESCENDING = 'DESCENDING'

str – Sort query results in descending order on a field.

end_at (*document_fields*)

End query results at a particular document value.

The result set will **include** the document specified by `document_fields`.

If the current query already has specified an end cursor – either via this method or `end_before()` – this will overwrite it.

When the query is sent to the server, the `document_fields` will be used in the order given by fields set by `order_by()`.

Parameters `document_fields` (*Union[DocumentSnapshot, dict]*) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor. Acts as a copy of the current query, modified with the newly added “end at” cursor.

Return type Query

end_before (*document_fields*)

End query results before a particular document value.

The result set will **exclude** the document specified by `document_fields`.

If the current query already has specified an end cursor – either via this method or `end_at()` – this will overwrite it.

When the query is sent to the server, the `document_fields` will be used in the order given by fields set by `order_by()`.

Parameters `document_fields` (*Union[DocumentSnapshot, dict]*) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor. Acts as a copy of the current query, modified with the newly added “end before” cursor.

Return type Query

get (*transaction=None*)

Read the documents in the collection that match this query.

This sends a `RunQuery` RPC and then consumes each document returned in the stream of `RunQueryResponse` messages.

If a `transaction` is used and it already has write operations added, this method cannot be used (i.e. read-after-write is not allowed).

Parameters `transaction` (*Optional[Transaction]*) – An existing transaction that this query will run in.

Yields `~firestore_v1beta1.document.DocumentSnapshot` – The next document that fulfills the query.

Raises

- `ValueError` – If the first response in the stream is empty, but then more responses follow.
- `ValueError` – If a response other than the first does not contain a document.

limit (*count*)

Limit a query to return a fixed number of results.

If the current query already has a limit set, this will overwrite it.

Parameters `count` (*int*) – Maximum number of documents to return that match the query.

Returns A limited query. Acts as a copy of the current query, modified with the newly added “limit” filter.

Return type `Query`

offset (*num_to_skip*)

Skip to an offset in a query.

If the current query already has specified an offset, this will overwrite it.

Parameters `num_to_skip` (*int*) – The number of results to skip at the beginning of query results. (Must be non-negative.)

Returns An offset query. Acts as a copy of the current query, modified with the newly added “offset” field.

Return type `Query`

order_by (*field_path, direction='ASCENDING'*)

Modify the query to add an order clause on a specific field.

See `field_path()` for more information on **field paths**.

Successive `order_by()` calls will further refine the ordering of results returned by the query (i.e. the new “order by” fields will be added to existing ones).

Parameters

- **field_path** (*str*) – A field path (`.`-delimited list of field names) on which to order the query results.
- **direction** (*Optional[str]*) – The direction to order by. Must be one of `ASCENDING` or `DESCENDING`, defaults to `ASCENDING`.

Returns An ordered query. Acts as a copy of the current query, modified with the newly added “order by” constraint.

Return type Query

Raises `ValueError` – If `direction` is not one of `ASCENDING` or `DESCENDING`.

select (*field_paths*)

Project documents matching query to a limited set of fields.

See `field_path()` for more information on **field paths**.

If the current query already has a projection set (i.e. has already called `select()`), this will overwrite it.

Parameters `field_paths` (`Iterable[str, ...]`) – An iterable of field paths (.-delimited list of field names) to use as a projection of document fields in the query results.

Returns A “projected” query. Acts as a copy of the current query, modified with the newly added projection.

Return type Query

start_after (*document_fields*)

Start query results after a particular document value.

The result set will **exclude** the document specified by `document_fields`.

If the current query already has specified a start cursor – either via this method or `start_at()` – this will overwrite it.

When the query is sent to the server, the `document_fields` will be used in the order given by fields set by `order_by()`.

Parameters `document_fields` (`Union[DocumentSnapshot, dict]`) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor. Acts as a copy of the current query, modified with the newly added “start after” cursor.

Return type Query

start_at (*document_fields*)

Start query results at a particular document value.

The result set will **include** the document specified by `document_fields`.

If the current query already has specified a start cursor – either via this method or `start_after()` – this will overwrite it.

When the query is sent to the server, the `document_fields` will be used in the order given by fields set by `order_by()`.

Parameters `document_fields` (`Union[DocumentSnapshot, dict]`) – Either a document snapshot or a dictionary of fields representing a query results cursor. A cursor is a collection of values that represent a position in a query result set.

Returns A query with cursor. Acts as a copy of the current query, modified with the newly added “start at” cursor.

Return type Query

where (*field_path, op_string, value*)

Filter the query on a field.

See `field_path()` for more information on **field paths**.

Returns a new *Query* that filters on a specific field path, according to an operation (e.g. `==` or “equals”) and a particular value to be paired with that operation.

Parameters

- **field_path** (*str*) – A field path (. -delimited list of field names) for the field to filter on.
- **op_string** (*str*) – A comparison operation in the form of a string. Acceptable values are `<`, `<=`, `==`, `>=` and `>`.
- **value** (*Any*) – The value to compare the field against in the filter. If `value` is `None` or a `NaN`, then `==` is the only allowed operation.

Returns A filtered query. Acts as a copy of the current query, modified with the newly added filter.

Return type *Query*

Raises *ValueError* – If `value` is a `NaN` or `None` and `op_string` is not `==`.

11.6 Batches

Helpers for batch requests to the Google Cloud Firestore API.

class `google.cloud.firestore_v1beta1.batch.WriteBatch` (*client*)

Bases: *object*

Accumulate write operations to be sent in a batch.

This has the same set of methods for write operations that *DocumentReference* does, e.g. `create()`.

Parameters **client** (*Client*) – The client that created this batch.

commit ()

Commit the changes accumulated in this batch.

Returns The write results corresponding to the changes committed, returned in the same order as the changes were applied to this batch. A write result contains an `update_time` field.

Return type `List[google.cloud.proto.firestore.v1beta1.write_pb2.WriteResult, ..]`

create (*reference, document_data*)

Add a “change” to this batch to create a document.

If the document given by *reference* already exists, then this batch will fail when `commit()`-ed.

Parameters

- **reference** (*DocumentReference*) – A document reference to be created in this batch.
- **document_data** (*dict*) – Property names and values to use for creating a document.

delete (*reference, option=None*)

Add a “change” to delete a document.

See `delete()` for more information on how `option` determines how the change is applied.

Parameters

- **reference** (*DocumentReference*) – A document reference that will be deleted in this batch.

- **option** (*Optional[WriteOption]*) – A write option to make assertions / pre-conditions on the server state of the document before applying changes.

set (*reference, document_data, merge=False*)

Add a “change” to replace a document.

See `set()` for more information on how `option` determines how the change is applied.

Parameters

- **reference** (*DocumentReference*) – A document reference that will have values set in this batch.
- **document_data** (*dict*) – Property names and values to use for replacing a document.
- **merge** (*Optional[bool]*) – If True, apply merging instead of overwriting the state of the document.

update (*reference, field_updates, option=None*)

Add a “change” to update a document.

See `update()` for more information on `field_updates` and `option`.

Parameters

- **reference** (*DocumentReference*) – A document reference that will be deleted in this batch.
- **field_updates** (*dict*) – Field names or paths to update and values to update with.
- **option** (*Optional[WriteOption]*) – A write option to make assertions / pre-conditions on the server state of the document before applying changes.

11.7 Transactions

Helpers for applying Google Cloud Firestore changes in a transaction.

`google.cloud.firestore_v1beta1.transaction.MAX_ATTEMPTS = 5`

int – Default number of transaction attempts (with retries).

```
class google.cloud.firestore_v1beta1.transaction.Transaction(client,  
                                                         max_attempts=5,  
                                                         read_only=False)
```

Bases: `google.cloud.firestore_v1beta1.batch.WriteBatch`

Accumulate read-and-write operations to be sent in a transaction.

Parameters

- **client** (*Client*) – The client that created this transaction.
- **max_attempts** (*Optional[int]*) – The maximum number of attempts for the transaction (i.e. allowing retries). Defaults to `MAX_ATTEMPTS`.
- **read_only** (*Optional[bool]*) – Flag indicating if the transaction should be read-only or should allow writes. Defaults to `False`.

commit ()

Commit the changes accumulated in this batch.

Returns The write results corresponding to the changes committed, returned in the same order as the changes were applied to this batch. A write result contains an `update_time` field.

Return type `List[google.cloud.proto.firestore.v1beta1.write_pb2.WriteResult, ..]`

create (*reference*, *document_data*)

Add a “change” to this batch to create a document.

If the document given by *reference* already exists, then this batch will fail when `commit()`-ed.

Parameters

- **reference** (*DocumentReference*) – A document reference to be created in this batch.
- **document_data** (*dict*) – Property names and values to use for creating a document.

delete (*reference*, *option=None*)

Add a “change” to delete a document.

See `delete()` for more information on how *option* determines how the change is applied.

Parameters

- **reference** (*DocumentReference*) – A document reference that will be deleted in this batch.
- **option** (*Optional[WriteOption]*) – A write option to make assertions / pre-conditions on the server state of the document before applying changes.

id

Get the current transaction ID.

Returns The transaction ID (or `None` if the current transaction is not in progress).

Return type `Optional[bytes]`

in_progress

Determine if this transaction has already begun.

Returns Indicates if the transaction has started.

Return type `bool`

set (*reference*, *document_data*, *merge=False*)

Add a “change” to replace a document.

See `set()` for more information on how *option* determines how the change is applied.

Parameters

- **reference** (*DocumentReference*) – A document reference that will have values set in this batch.
- **document_data** (*dict*) – Property names and values to use for replacing a document.
- **merge** (*Optional[bool]*) – If True, apply merging instead of overwriting the state of the document.

update (*reference*, *field_updates*, *option=None*)

Add a “change” to update a document.

See `update()` for more information on *field_updates* and *option*.

Parameters

- **reference** (*DocumentReference*) – A document reference that will be deleted in this batch.
- **field_updates** (*dict*) – Field names or paths to update and values to update with.
- **option** (*Optional[WriteOption]*) – A write option to make assertions / pre-conditions on the server state of the document before applying changes.

`google.cloud.firestore_v1beta1.transaction.transactional(to_wrap)`

Decorate a callable so that it runs in a transaction.

Parameters `to_wrap` (*Callable[Transaction, Any]*) – A callable that should be run (and retried) in a transaction.

Returns the wrapped callable.

Return type *Callable[Transaction, Any]*

11.8 Firestore Protobuf Types

class `google.cloud.firestore_v1beta1.types.Any`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`, `google.protobuf.internal.well_known_types.Any`

class `google.cloud.firestore_v1beta1.types.ArrayValue`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

An array value.

values

Values in the array.

class `google.cloud.firestore_v1beta1.types.BatchGetDocumentsRequest`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

The request for `[Firestore.BatchGetDocuments][google.firestore.v1beta1.Firestore.BatchGetDocuments]`.

database

The database name. In the format: `projects/{project_id}/databases/{database_id}`.

documents

The names of the documents to retrieve. In the format: `projects/{project_id}/databases/{database_id}/documents/{document_path}`. The request will fail if any of the document is not a child resource of the given database. Duplicate names will be elided.

mask

The fields to return. If not set, returns all fields. If a document has a field that is not present in this mask, that field will not be returned in the response.

consistency_selector

The consistency mode for this transaction. If not set, defaults to strong consistency.

transaction

Reads documents in a transaction.

new_transaction

Starts a new transaction and reads the documents. Defaults to a read-only transaction. The new transaction ID will be returned as the first response in the stream.

read_time

Reads documents as they were at the given time. This may not be older than 60 seconds.

class google.cloud.firestore_v1beta1.types.**BatchGetDocumentsResponse**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The streamed response for [Firestore.BatchGetDocuments][google.firestore.v1beta1.Firestore.BatchGetDocuments].

result

A single result. This can be empty if the server is just returning a transaction.

found

A document that was requested.

missing

A document name that was requested but does not exist. In the format: projects/{project_id}/databases/{database_id}/documents/{document_path}.

transaction

The transaction that was started as part of this request. Will only be set in the first response, and only if [BatchGetDocumentsRequest.new_transaction][google.firestore.v1beta1.BatchGetDocumentsRequest.new_transaction] was set in the request.

read_time

The time at which the document was read. This may be monotonically increasing, in this case the previous documents in the result stream are guaranteed not to have changed between their read_time and this one.

class google.cloud.firestore_v1beta1.types.**BeginTransactionRequest**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for [Firestore.BeginTransaction][google.firestore.v1beta1.Firestore.BeginTransaction].

database

The database name. In the format: projects/{project_id}/databases/{database_id}.

options

The options for the transaction. Defaults to a read-write transaction.

class google.cloud.firestore_v1beta1.types.**BeginTransactionResponse**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The response for [Firestore.BeginTransaction][google.firestore.v1beta1.Firestore.BeginTransaction].

transaction

The transaction that was started.

class google.cloud.firestore_v1beta1.types.**BoolValue**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**BytesValue**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**CommitRequest**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for [Firestore.Commit][google.firestore.v1beta1.Firestore.Commit].

database

The database name. In the format: projects/{project_id}/databases/{database_id}.

writes

The writes to apply. Always executed atomically and in order.

transaction

If set, applies all writes in this transaction, and commits it.

class google.cloud.firestore_v1beta1.types.**CommitResponse**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The response for [Firestore.Commit][google.firestore.v1beta1.Firestore.Commit].

write_results

The result of applying the writes. This i-th write result corresponds to the i-th write in the request.

commit_time

The time at which the commit occurred.

class google.cloud.firestore_v1beta1.types.**CreateDocumentRequest**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for [Firestore.CreateDocument][google.firestore.v1beta1.Firestore.CreateDocument].

parent

The parent resource. For example: projects/{project_id}/databases/{database_id}/documents or projects/{project_id}/databases/{database_id}/documents/chatrooms/{chatroom_id}

collection_id

The collection ID, relative to parent, to list. For example: chatrooms.

document_id

The client-assigned document ID to use for this document. Optional. If not specified, an ID will be assigned by the service.

document

The document to create. name must not be set.

mask

The fields to return. If not set, returns all fields. If the document has a field that is not present in this mask, that field will not be returned in the response.

class google.cloud.firestore_v1beta1.types.**Cursor**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A position in a query result set.

values

The values that represent a position, in the order they appear in the order by clause of a query. Can contain fewer values than specified in the order by clause.

before

If the position is just before or just after the given values, relative to the sort order defined by the query.

class google.cloud.firestore_v1beta1.types.**CustomHttpPattern**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

```
class google.cloud.firestore_v1beta1.types.DeleteDocumentRequest
```

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for [Firestore.DeleteDocument][google.firestore.v1beta1.Firestore.DeleteDocument].

name

The resource name of the Document to delete. In the format: “projects/{project_id}/databases/{database_id}/documents/{document_path}”.

current_document

An optional precondition on the document. The request will fail if this is set and not met by the target document.

```
class google.cloud.firestore_v1beta1.types.DescriptorProto
```

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

```
class ExtensionRange
```

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

```
class ReservedRange
```

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

```
class google.cloud.firestore_v1beta1.types.Document
```

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A Firestore document.

Must not exceed 1 MiB - 4 bytes.

name

The resource name of the document, for example projects/{project_id}/databases/{database_id}/documents/{document_path}.

fields

The document’s fields. The map keys represent field names. A simple field name contains only characters a to z, A to Z, 0 to 9, or `_`, and must not start with 0 to 9 or `_`. For example, `foo_bar_17`. Field names matching the regular expression `__.*__` are reserved. Reserved field names are forbidden except in certain documented contexts. The map keys, represented as UTF-8, must not exceed 1,500 bytes and cannot be empty. Field paths may be used in other contexts to refer to structured fields defined here. For `map_value`, the field path is represented by the simple or quoted field names of the containing fields, delimited by `..`. For example, the structured field `"foo" : { map_value: { "x&y" : { string_value: "hello" } } }` would be represented by the field path `foo.x&y`. Within a field path, a quoted field name starts and ends with ``` and may contain any character. Some characters, including ```, must be escaped using a `\`. For example, ``x&y`` represents `x&y` and ``bak\tik`` represents `bak\tik`.

create_time

Output only. The time at which the document was created. This value increases monotonically when a document is deleted then recreated. It can also be compared to values from other documents and the `read_time` of a query.

update_time

Output only. The time at which the document was last changed. This value is initially set to the `create_time` then increases monotonically with each change to the document. It can also be compared to values from other documents and the `read_time` of a query.

class FieldsEntry

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.DocumentChange

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A [Document][google.firestore.v1beta1.Document] has changed.

May be the result of multiple [writes][google.firestore.v1beta1.Write], including deletes, that ultimately resulted in a new value for the [Document][google.firestore.v1beta1.Document].

Multiple [DocumentChange][google.firestore.v1beta1.DocumentChange] messages may be returned for the same logical change, if multiple targets are affected.

document

The new state of the [Document][google.firestore.v1beta1.Document]. If `mask` is set, contains only fields that were updated or added.

target_ids

A set of target IDs of targets that match this document.

removed_target_ids

A set of target IDs for targets that no longer match this document.

class google.cloud.firestore_v1beta1.types.DocumentDelete

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A [Document][google.firestore.v1beta1.Document] has been deleted.

May be the result of multiple [writes][google.firestore.v1beta1.Write], including updates, the last of which deleted the [Document][google.firestore.v1beta1.Document].

Multiple [DocumentDelete][google.firestore.v1beta1.DocumentDelete] messages may be returned for the same logical delete, if multiple targets are affected.

document

The resource name of the [Document][google.firestore.v1beta1.Document] that was deleted.

removed_target_ids

A set of target IDs for targets that previously matched this entity.

read_time

The read timestamp at which the delete was observed. Greater or equal to the `commit_time` of the delete.

class google.cloud.firestore_v1beta1.types.DocumentMask

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A set of field paths on a document. Used to restrict a get or update operation on a document to a subset of its fields. This is different from standard field masks, as this is always scoped to a [Document][google.firestore.v1beta1.Document], and takes in account the dynamic nature of [Value][google.firestore.v1beta1.Value].

field_paths

The list of field paths in the mask. See [Document.fields][google.firestore.v1beta1.Document.fields] for a field path syntax reference.

class google.cloud.firestore_v1beta1.types.DocumentRemove

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A [Document][google.firestore.v1beta1.Document] has been removed from the view of the targets.

Sent if the document is no longer relevant to a target and is out of view. Can be sent instead of a DocumentDelete or a DocumentChange if the server can not send the new value of the document.

Multiple [DocumentRemove][google.firestore.v1beta1.DocumentRemove] messages may be returned for the same logical write or delete, if multiple targets are affected.

document

The resource name of the [Document][google.firestore.v1beta1.Document] that has gone out of view.

removed_target_ids

A set of target IDs for targets that previously matched this document.

read_time

The read timestamp at which the remove was observed. Greater or equal to the `commit_time` of the change/delete/remove.

class google.cloud.firestore_v1beta1.types.DocumentTransform

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A transformation of a document.

document

The name of the document to transform.

field_transforms

The list of transformations to apply to the fields of the document, in order. This must not be empty.

class FieldTransform

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A transformation of a field of the document.

field_path

The path of the field. See [Document.fields][google.firestore.v1beta1.Document.fields] for the field path syntax reference.

transform_type

The transformation to apply on the field.

set_to_server_value

Sets the field to the given server value.

class google.cloud.firestore_v1beta1.types.DoubleValue

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.Empty

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.EnumDescriptorProto

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

```
class EnumReservedRange
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.EnumOptions
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.EnumValueDescriptorProto
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.EnumValueOptions
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.ExistenceFilter
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

A digest of all the documents that match a given target.

target_id

The target ID to which this filter applies.

count

The total count of documents that match [target_id][google.firestore.v1beta1.ExistenceFilter.target_id]. If different from the count of documents in the client that match, the client must manually determine which documents no longer match the target.

```
class google.cloud.firestore_v1beta1.types.ExtensionRangeOptions
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.FieldDescriptorProto
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.FieldOptions
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.FileDescriptorProto
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.FileDescriptorSet
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.FileOptions
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.FloatValue
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.GeneratedCodeInfo
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

class Annotation

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.GetDocumentRequest

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for [Firestore.GetDocument][google.firestore.v1beta1.Firestore.GetDocument].

name

The resource name of the Document to get. In the format: projects/{project_id}/databases/{database_id}/documents/{document_path}.

mask

The fields to return. If not set, returns all fields. If the document has a field that is not present in this mask, that field will not be returned in the response.

consistency_selector

The consistency mode for this transaction. If not set, defaults to strong consistency.

transaction

Reads the document in a transaction.

read_time

Reads the version of the document at the given time. This may not be older than 60 seconds.

class google.cloud.firestore_v1beta1.types.Http

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.HttpRule

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.Int32Value

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.Int64Value

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.LatLng

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.ListCollectionIdsRequest

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for [Firestore.ListCollectionIds][google.firestore.v1beta1.Firestore.ListCollectionIds].

parent

The parent document. In the format: projects/{project_id}/databases/{database_id}/documents/{document_path}. For example: projects/my-project/databases/my-database/documents/chatrooms/my-chatroom

page_size

The maximum number of results to return.

page_token

A page token. Must be a value from [ListCollectionIdsResponse][google.firestore.v1beta1.ListCollectionIdsResponse].

class google.cloud.firestore_v1beta1.types.**ListCollectionIdsResponse**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The response from [Firestore.ListCollectionIds][google.firestore.v1beta1.Firestore.ListCollectionIds].

collection_ids

The collection ids.

next_page_token

A page token that may be used to continue the list.

class google.cloud.firestore_v1beta1.types.**ListDocumentsRequest**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for [Firestore.ListDocuments][google.firestore.v1beta1.Firestore.ListDocuments].

parent

The parent resource name. In the format: projects/{project_id}/databases/{database_id}/documents or projects/{project_id}/databases/{database_id}/documents/{document_path}. For example: projects/my-project/databases/my-database/documents or projects/my-project/databases/my-database/documents/chatrooms/my-chatroom

collection_id

The collection ID, relative to parent, to list. For example: chatrooms or messages.

page_size

The maximum number of documents to return.

page_token

The next_page_token value returned from a previous List request, if any.

order_by

The order to sort results by. For example: priority desc, name.

mask

The fields to return. If not set, returns all fields. If a document has a field that is not present in this mask, that field will not be returned in the response.

consistency_selector

The consistency mode for this transaction. If not set, defaults to strong consistency.

transaction

Reads documents in a transaction.

read_time

Reads documents as they were at the given time. This may not be older than 60 seconds.

show_missing

If the list should show missing documents. A missing document is a document that does not exist but has sub-documents. These documents will be returned with a key but will not have fields, [Document.create_time][google.firestore.v1beta1.Document.create_time], or [Document.update_time][google.firestore.v1beta1.Document.update_time] set. Requests with show_missing may not specify where or order_by.


```
class google.cloud.firestore_v1beta1.types.ListDocumentsResponse
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

    The response for [Firestore.ListDocuments][google.firestore.v1beta1.Firestore.ListDocuments].

    documents
        The Documents found.

    next_page_token
        The next page token.
```

```
class google.cloud.firestore_v1beta1.types.ListValue
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message, google.protobuf.internal.well_known_types.ListValue
```

```
class google.cloud.firestore_v1beta1.types.ListenRequest
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

    A request for [Firestore.Listen][google.firestore.v1beta1.Firestore.Listen]

    database
        The database name. In the format: projects/{project_id}/databases/{database_id}.

    target_change
        The supported target changes.

    add_target
        A target to add to this stream.

    remove_target
        The ID of a target to remove from this stream.

    labels
        Labels associated with this target change.

    class LabelsEntry
        Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
        Message
```

```
class google.cloud.firestore_v1beta1.types.ListenResponse
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

    The response for [Firestore.Listen][google.firestore.v1beta1.Firestore.Listen].

    response_type
        The supported responses.

    target_change
        Targets have changed.

    document_change
        A [Document][google.firestore.v1beta1.Document] has changed.

    document_delete
        A [Document][google.firestore.v1beta1.Document] has been deleted.

    document_remove
        A [Document][google.firestore.v1beta1.Document] has been removed from a target (because it is no
        longer relevant to that target).
```

filter

A filter to apply to the set of documents previously returned for the given target. Returned when documents may have been removed from the given target, but the exact documents are unknown.

class google.cloud.firestore_v1beta1.types.**MapValue**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A map value.

fields

The map's fields. The map keys represent field names. Field names matching the regular expression `__.*__` are reserved. Reserved field names are forbidden except in certain documented contexts. The map keys, represented as UTF-8, must not exceed 1,500 bytes and cannot be empty.

class FieldsEntry

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**MessageOptions**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**MethodDescriptorProto**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**MethodOptions**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**OneofDescriptorProto**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**OneofOptions**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.**Precondition**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A precondition on a document, used for conditional operations.

condition_type

The type of precondition.

exists

When set to `true`, the target document must exist. When set to `false`, the target document must not exist.

update_time

When set, the target document must exist and have been last updated at that time.

class google.cloud.firestore_v1beta1.types.**RollbackRequest**

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The request for `[Firestore.Rollback][google.firestore.v1beta1.Firestore.Rollback]`.

database

The database name. In the format: `projects/{project_id}/databases/{database_id}`.

transaction

The transaction to roll back.

class `google.cloud.firestore_v1beta1.types.RunQueryRequest`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

The request for `[Firestore.RunQuery][google.firestore.v1beta1.Firestore.RunQuery]`.

parent

The parent resource name. In the format: `projects/{project_id}/databases/{database_id}/documents` or `projects/{project_id}/databases/{database_id}/documents/{document_path}`. For example: `projects/my-project/databases/my-database/documents` or `projects/my-project/databases/my-database/documents/chatrooms/my-chatroom`

query_type

The query to run.

structured_query

A structured query.

consistency_selector

The consistency mode for this transaction. If not set, defaults to strong consistency.

transaction

Reads documents in a transaction.

new_transaction

Starts a new transaction and reads the documents. Defaults to a read-only transaction. The new transaction ID will be returned as the first response in the stream.

read_time

Reads documents as they were at the given time. This may not be older than 60 seconds.

class `google.cloud.firestore_v1beta1.types.RunQueryResponse`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

The response for `[Firestore.RunQuery][google.firestore.v1beta1.Firestore.RunQuery]`.

transaction

The transaction that was started as part of this request. Can only be set in the first response, and only if `[RunQueryRequest.new_transaction][google.firestore.v1beta1.RunQueryRequest.new_transaction]` was set in the request. If set, no other fields will be set in this response.

document

A query result. Not set when reporting partial progress.

read_time

The time at which the document was read. This may be monotonically increasing; in this case, the previous documents in the result stream are guaranteed not to have changed between their `read_time` and this one. If the query returns no results, a response with `read_time` and no document will be sent, and this represents the time at which the query was run.

skipped_results

The number of results that have been skipped due to an offset between the last response and the current response.

```
class google.cloud.firestore_v1beta1.types.ServiceDescriptorProto
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

class google.cloud.firestore_v1beta1.types.ServiceOptions
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

class google.cloud.firestore_v1beta1.types.SourceCodeInfo
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

    class Location
        Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
        Message

class google.cloud.firestore_v1beta1.types.Status
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

class google.cloud.firestore_v1beta1.types.StringValue
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

class google.cloud.firestore_v1beta1.types.Struct
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message, google.protobuf.internal.well_known_types.Struct

    class FieldsEntry
        Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
        Message

class google.cloud.firestore_v1beta1.types.StructuredQuery
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.
    Message

    A Firestore query.

    select
        The projection to return.

    from
        The collections to query.

    where
        The filter to apply.

    order_by
        The order to apply to the query results. Firestore guarantees a stable ordering through the following
        rules: - Any field required to appear in order_by, that is not already specified in order_by, is ap-
        pended to the order in field name order by default. - If an order on __name__ is not specified, it is
        appended by default. Fields are appended with the same sort direction as the last order specified, or
        'ASCENDING' if no order was specified. For example: - SELECT * FROM Foo ORDER BY A be-
        comes SELECT * FROM Foo ORDER BY A, __name__ - SELECT * FROM Foo ORDER BY
        A DESC becomes SELECT * FROM Foo ORDER BY A DESC, __name__ DESC - SELECT
        * FROM Foo WHERE A > 1 becomes SELECT * FROM Foo WHERE A > 1 ORDER BY A,
        __name__

    start_at
        A starting point for the query results.
```

end_at

A end point for the query results.

offset

The number of results to skip. Applies before limit, but after all other constraints. Must be ≥ 0 if specified.

limit

The maximum number of results to return. Applies after all other constraints. Must be ≥ 0 if specified.

class CollectionSelector

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

A selection of a collection, such as `messages as m1`.

collection_id

The collection ID. When set, selects only collections with this ID.

all_descendants

When false, selects only collections that are immediate children of the parent specified in the containing `RunQueryRequest`. When true, selects all descendant collections.

class CompositeFilter

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

A filter that merges multiple other filters using the given operator.

op

The operator for combining multiple filters.

filters

The list of filters to combine. Must contain at least one filter.

class FieldFilter

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

A filter on a specific field.

field

The field to filter by.

op

The operator to filter by.

value

The value to compare to.

class FieldReference

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

A reference to a field, such as `max(messages.time) as max_time`.

class Filter

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

A filter.

filter_type

The type of filter.

composite_filter

A composite filter.

field_filter

A filter on a document field.

unary_filter

A filter that takes exactly one argument.

class Order

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

An order on a field.

field

The field to order by.

direction

The direction to order by. Defaults to ASCENDING.

class Projection

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The projection of document's fields to return.

fields

The fields to return. If empty, all fields are returned. To only return the name of the document, use ['__name__'].

class UnaryFilter

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A filter with a single operand.

op

The unary operator to apply.

operand_type

The argument to the filter.

field

The field to which to apply the operator.

class google.cloud.firestore_v1beta1.types.Target

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A specification of a set of documents to listen to.

target_type

The type of target to listen to.

query

A target specified by a query.

documents

A target specified by a set of document names.

resume_type

When to start listening. If not specified, all matching Documents are returned before any subsequent changes.

resume_token

A resume token from a prior [TargetChange][google.firestore.v1beta1.TargetChange] for an identical target. Using a resume token with a different target is unsupported and may fail.

read_time

Start listening after a specific read_time. The client must know the state of matching documents at this time.

target_id

A client provided target ID. If not set, the server will assign an ID for the target. Used for resuming a target without changing IDs. The IDs can either be client-assigned or be server-assigned in a previous stream. All targets with client provided IDs must be added before adding a target that needs a server-assigned id.

once

If the target should be removed once it is current and consistent.

class DocumentsTarget

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A target specified by a set of documents names.

documents

The names of the documents to retrieve. In the format: projects/{project_id}/databases/{database_id}/documents/{document_path}. The request will fail if any of the document is not a child resource of the given database. Duplicate names will be elided.

class QueryTarget

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

A target specified by a query.

parent

The parent resource name. In the format: projects/{project_id}/databases/{database_id}/documents or projects/{project_id}/databases/{database_id}/documents/{document_path}. For example: projects/my-project/databases/my-database/documents or projects/my-project/databases/my-database/documents/chatrooms/my-chatroom

query_type

The query to run.

structured_query

A structured query.

class google.cloud.firestore_v1beta1.types.TargetChange

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

Targets being watched have changed.

target_change_type

The type of change that occurred.

target_ids

The target IDs of targets that have changed. If empty, the change applies to all targets. For target_change_type=ADD, the order of the target IDs matches the order of the requests to add the targets. This allows clients to unambiguously associate server-assigned target IDs with added targets. For other states, the order of the target IDs is not defined.

cause

The error that resulted in this change, if applicable.

resume_token

A token that can be used to resume the stream for the given `target_ids`, or all targets if `target_ids` is empty. Not set on every target change.

read_time

The consistent `read_time` for the given `target_ids` (omitted when the `target_ids` are not at a consistent snapshot). The stream is guaranteed to send a `read_time` with `target_ids` empty whenever the entire stream reaches a new consistent snapshot. ADD, CURRENT, and RESET messages are guaranteed to (eventually) result in a new consistent snapshot (while NO_CHANGE and REMOVE messages are not). For a given stream, `read_time` is guaranteed to be monotonically increasing.

```
class google.cloud.firestore_v1beta1.types.Timestamp
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message, google.protobuf.internal.well_known_types.Timestamp
```

```
class google.cloud.firestore_v1beta1.types.TransactionOptions
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

Options for creating a new transaction.

mode

The mode of the transaction.

read_only

The transaction can only be used for read operations.

read_write

The transaction can be used for both read and write operations.

class ReadOnly

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

Options for a transaction that can only be used to read documents.

consistency_selector

The consistency mode for this transaction. If not set, defaults to strong consistency.

read_time

Reads documents at the given time. This may not be older than 60 seconds.

class ReadWrite

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

Options for a transaction that can be used to read and write documents.

retry_transaction

An optional transaction to retry.

```
class google.cloud.firestore_v1beta1.types.UInt32Value
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.UInt64Value
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```



```
class google.cloud.firestore_v1beta1.types.UninterpretedOption
```

```
  Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
  class NamePart
```

```
    Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

```
class google.cloud.firestore_v1beta1.types.UpdateDocumentRequest
```

```
  Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

The request for [Firestore.UpdateDocument][google.firestore.v1beta1.Firestore.UpdateDocument].

document

The updated document. Creates the document if it does not already exist.

update_mask

The fields to update. None of the field paths in the mask may contain a reserved name. If the document exists on the server and has fields not referenced in the mask, they are left unchanged. Fields referenced in the mask, but not present in the input document, are deleted from the document on the server.

mask

The fields to return. If not set, returns all fields. If the document has a field that is not present in this mask, that field will not be returned in the response.

current_document

An optional precondition on the document. The request will fail if this is set and not met by the target document.

```
class google.cloud.firestore_v1beta1.types.Value
```

```
  Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message
```

A message that can hold any of the supported value types.

value_type

Must have a value set.

null_value

A null value.

boolean_value

A boolean value.

integer_value

An integer value.

double_value

A double value.

timestamp_value

A timestamp value. Precise only to microseconds. When stored, any additional precision is rounded down.

string_value

A string value. The string, represented as UTF-8, must not exceed 1 MiB - 89 bytes. Only the first 1,500 bytes of the UTF-8 representation are considered by queries.

bytes_value

A bytes value. Must not exceed 1 MiB - 89 bytes. Only the first 1,500 bytes are considered by queries.

reference_value

A reference to a document. For example: `projects/{project_id}/databases/{database_id}/documents/{document_path}`.

geo_point_value

A geo point value representing a point on the surface of Earth.

array_value

An array value. Cannot contain another array value.

map_value

A map value.

class `google.cloud.firestore_v1beta1.types.Value`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

A message that can hold any of the supported value types.

value_type

Must have a value set.

null_value

A null value.

boolean_value

A boolean value.

integer_value

An integer value.

double_value

A double value.

timestamp_value

A timestamp value. Precise only to microseconds. When stored, any additional precision is rounded down.

string_value

A string value. The string, represented as UTF-8, must not exceed 1 MiB - 89 bytes. Only the first 1,500 bytes of the UTF-8 representation are considered by queries.

bytes_value

A bytes value. Must not exceed 1 MiB - 89 bytes. Only the first 1,500 bytes are considered by queries.

reference_value

A reference to a document. For example: `projects/{project_id}/databases/{database_id}/documents/{document_path}`.

geo_point_value

A geo point value representing a point on the surface of Earth.

array_value

An array value. Cannot contain another array value.

map_value

A map value.

class `google.cloud.firestore_v1beta1.types.Write`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

A write on a document.

operation

The operation to execute.

update

A document to write.

delete

A document name to delete. In the format: `projects/{project_id}/databases/{database_id}/documents/{document_path}`.

transform

Applies a transformation to a document. At most one `transform` per document is allowed in a given request. An `update` cannot follow a `transform` on the same document in a given request.

update_mask

The fields to update in this write. This field can be set only when the operation is `update`. None of the field paths in the mask may contain a reserved name. If the document exists on the server and has fields not referenced in the mask, they are left unchanged. Fields referenced in the mask, but not present in the input document, are deleted from the document on the server. The field paths in this mask must not contain a reserved field name.

current_document

An optional precondition on the document. The write will fail if this is set and not met by the target document.

class `google.cloud.firestore_v1beta1.types.WriteRequest`

Bases: `google.protobuf.pyext._message.CMessage`, `google.protobuf.message.Message`

The request for `[Firestore.Write][google.firestore.v1beta1.Firestore.Write]`.

The first request creates a stream, or resumes an existing one from a token.

When creating a new stream, the server replies with a response containing only an ID and a token, to use in the next request.

When resuming a stream, the server first streams any responses later than the given token, then a response containing only an up-to-date token, to use in the next request.

database

The database name. In the format: `projects/{project_id}/databases/{database_id}`. This is only required in the first message.

stream_id

The ID of the write stream to resume. This may only be set in the first message. When left empty, a new write stream will be created.

writes

The writes to apply. Always executed atomically and in order. This must be empty on the first request. This may be empty on the last request. This must not be empty on all other requests.

stream_token

A stream token that was previously sent by the server. The client should set this field to the token from the most recent `[WriteResponse][google.firestore.v1beta1.WriteResponse]` it has received. This acknowledges that the client has received responses up to this token. After sending this token, earlier tokens may not be used anymore. The server may close the stream if there are too many unacknowledged responses. Leave this field unset when creating a new stream. To resume a stream at a specific point, set this field and the `stream_id` field. Leave this field unset when creating a new stream.

labels

Labels associated with this write request.

class LabelsEntry

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

class google.cloud.firestore_v1beta1.types.WriteResponse

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The response for [Firestore.Write][google.firestore.v1beta1.Firestore.Write].

stream_id

The ID of the stream. Only set on the first message, when a new stream was created.

stream_token

A token that represents the position of this response in the stream. This can be used by a client to resume the stream at this point. This field is always set.

write_results

The result of applying the writes. This i-th write result corresponds to the i-th write in the request.

commit_time

The time at which the commit occurred.

class google.cloud.firestore_v1beta1.types.WriteResult

Bases: google.protobuf.pyext._message.CMessage, google.protobuf.message.Message

The result of applying a write.

update_time

The last update time of the document after applying the write. Not set after a delete. If the write did not actually change the document, this will be the previous update_time.

transform_results

The results of applying each [DocumentTransform.FieldTransform][google.firestore.v1beta1.DocumentTransform.FieldTransform], in the same order.

11.9 Changelog

PyPI History

11.9.1 0.29.0

New features

- All non-simple field names are converted into unicode (#4859)

Implementation changes

- The underlying generated code has been re-generated to pick up new features and bugfixes. (#4916)
- The Admin API interface has been temporarily removed.

Dependencies

- Update dependency range for `api-core` to include v1.0.0 releases (#4944)
- The minimum version for `google-api-core` has been updated to version 1.0.0. This may cause some incompatibility with older google-cloud libraries, you will need to update those libraries if you have a dependency conflict. (#4944, #4946)

Documentation

- Fixing “Fore” -> “For” typo in README docs. (#4317)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all `setup.py` files (#4909)
- System test fix, changed `ALREADY_EXISTS` and `MISSING_ENTITY` to `DOCUMENT_EXISTS` and `MISSING_DOCUMENT` and updated wording (#4803)
- Cross-language tests (#4359)
- Fix import column lengths pass 79 (#4464)
- Making a `nox -s default` session for all packages. (#4324)
- Shorten test names (#4321)

11.9.2 0.28.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)

PyPI: <https://pypi.org/project/google-cloud-firestore/0.28.0/>

11.10 Installation

Install the `google-cloud-firestore` library using `pip`:

```
$ pip install google-cloud-firestore
```

11.11 Usage

Python idiomatic client for Google Cloud Firestore.

class `google.cloud.firestore_v1beta1.GeoPoint` (*latitude, longitude*)
Bases: `object`

Simple container for a geo point value.

Parameters

- **latitude** (*float*) – Latitude of a point.
- **longitude** (*float*) – Longitude of a point.

to_protobuf ()

Convert the current object to protobuf.

Returns The current point as a protobuf.

Return type `google.type.latlng_pb2.LatLng`

exception `google.cloud.firestore_v1beta1.ReadAfterWriteError`
Bases: `Exception`

Raised when a read is attempted after a write.

Raised by “read” methods that use transactions.

The [Google Natural Language API](#) can be used to reveal the structure and meaning of text via powerful machine learning models. You can use it to extract information about people, places, events and much more, mentioned in text documents, news articles or blog posts. You can use it to understand sentiment about your product on social media or parse intent from customer conversations happening in a call center or a messaging app. You can analyze text uploaded in your request or integrate with your document storage on Google Cloud Storage.

12.1 Installation

Install the `google-cloud-language` library using `pip`:

```
$ pip install google-cloud-language
```

12.2 Authentication and Configuration

- For an overview of authentication in `google-cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you should also set the `GOOGLE_CLOUD_PROJECT` environment variable for the project you'd like to interact with. If the `GOOGLE_CLOUD_PROJECT` environment variable is not present, the project ID from JSON file credentials is used.

If you are using Google App Engine or Google Compute Engine this will be detected automatically.

- After configuring your environment, create a `LanguageServiceClient`.

```
>>> from google.cloud import language
>>> client = language.LanguageServiceClient()
```

or pass in credentials explicitly.

```
>>> from google.cloud import language
>>> client = language.LanguageServiceClient(
...     credentials=creds,
... )
```

12.3 Documents

The Google Natural Language API has the following supported methods:

- `analyzeEntities`
- `analyzeSentiment`
- `analyzeEntitySentiment`
- `annotateText`
- `classifyText`

and each method uses a *Document* for representing text.

```
>>> document = language.types.Document(
...     content='Google, headquartered in Mountain View, unveiled the '
...             'new Android phone at the Consumer Electronic Show. '
...             'Sundar Pichai said in his keynote that users love '
...             'their new Android phones.',
...     language='en',
...     type='PLAIN_TEXT',
... )
```

The document's language defaults to `None`, which will cause the API to auto-detect the language.

In addition, you can construct an HTML document:

```
>>> html_content = """\
... <html>
...   <head>
...     <title>El Tiempo de las Historias</title>
...   </head>
...   <body>
...     <p>La vaca saltó sobre la luna.</p>
...   </body>
... </html>
... """
>>> document = language.types.Document(
...     content=html_content,
...     language='es',
...     type='HTML',
... )
```

The language argument can be either ISO-639-1 or BCP-47 language codes. The API reference page contains the full list of [supported languages](#).

In addition to supplying the text / HTML content, a document can refer to content stored in [Google Cloud Storage](#).

```
>>> document = language.types.Document(
...     gcs_content_uri='gs://my-text-bucket/sentiment-me.txt',
```

(continues on next page)

(continued from previous page)

```
...     type=language.enums.HTML,
... )
```

12.4 Analyze Entities

The `analyze_entities()` method finds named entities (i.e. proper names) in the text. This method returns a `AnalyzeEntitiesResponse`.

```
>>> document = language.types.Document(
...     content='Michelangelo Caravaggio, Italian painter, is '
...     'known for "The Calling of Saint Matthew".',
...     type=language.enums.Document.Type.PLAIN_TEXT,
... )
>>> response = client.analyze_entities(
...     document=document,
...     encoding_type='UTF32',
... )
>>> for entity in response.entities:
...     print('=' * 20)
...     print('         name: {}'.format(entity.name))
...     print('         type: {}'.format(entity.entity_type))
...     print('        metadata: {}'.format(entity.metadata))
...     print('        salience: {}'.format(entity.salience))
=====
        name: Michelangelo Caravaggio
        type: PERSON
        metadata: {'wikipedia_url': 'https://en.wikipedia.org/wiki/Caravaggio'}
        salience: 0.7615959
=====
        name: Italian
        type: LOCATION
        metadata: {'wikipedia_url': 'https://en.wikipedia.org/wiki/Italy'}
        salience: 0.19960518
=====
        name: The Calling of Saint Matthew
        type: EVENT
        metadata: {'wikipedia_url': 'https://en.wikipedia.org/wiki/The_Calling_
↪of_St_Matthew_(Caravaggio)'}
        salience: 0.038798928
```

Note: It is recommended to send an `encoding_type` argument to Natural Language methods, so they provide useful offsets for the data they return. While the correct value varies by environment, in Python you *usually* want UTF32.

12.5 Analyze Sentiment

The `analyze_sentiment()` method analyzes the sentiment of the provided text. This method returns a `AnalyzeSentimentResponse`.

```
>>> document = language.types.Document(
...     content='Jogging is not very fun.',
...     type='PLAIN_TEXT',
... )
>>> response = client.analyze_sentiment(
...     document=document,
...     encoding_type='UTF32',
... )
>>> sentiment = response.document_sentiment
>>> print(sentiment.score)
-1
>>> print(sentiment.magnitude)
0.8
```

Note: It is recommended to send an `encoding_type` argument to Natural Language methods, so they provide useful offsets for the data they return. While the correct value varies by environment, in Python you *usually* want UTF32.

12.6 Analyze Entity Sentiment

The `analyze_entity_sentiment()` method is effectively the amalgamation of `analyze_entities()` and `analyze_sentiment()`. This method returns a `AnalyzeEntitySentimentResponse`.

```
>>> document = language.types.Document(
...     content='Mona said that jogging is very fun.',
...     type='PLAIN_TEXT',
... )
>>> response = client.analyze_entity_sentiment(
...     document=document,
...     encoding_type='UTF32',
... )
>>> entities = response.entities
>>> entities[0].name
'Mona'
>>> entities[1].name
'jogging'
>>> entities[1].sentiment.magnitude
0.8
>>> entities[1].sentiment.score
0.8
```

Note: It is recommended to send an `encoding_type` argument to Natural Language methods, so they provide useful offsets for the data they return. While the correct value varies by environment, in Python you *usually* want UTF32.

12.7 Annotate Text

The `annotate_text()` method analyzes a document and is intended for users who are familiar with machine learning and need in-depth text features to build upon. This method returns a `AnnotateTextResponse`.

12.8 API Reference

This package includes clients for multiple versions of the Natural Language API. By default, you will get `v1`, the latest GA version.

12.8.1 Natural Language Client API

```
class google.cloud.language_v1.LanguageServiceClient (channel=None, credentials=None,
client_config={'interfaces':
{'google.cloud.language.v1.LanguageService':
{'retry_codes': {'idempotent':
['DEADLINE_EXCEEDED',
'UNAVAILABLE']},
'non_idempotent': []},
'retry_params': {'default':
{'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
60000,
'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
60000, 'total_timeout_millis':
600000}}}, 'methods':
{'AnalyzeSentiment':
{'timeout_millis': 30000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'AnalyzeEntities':
{'timeout_millis': 30000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'AnalyzeEntitySentiment':
{'timeout_millis': 30000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'AnalyzeSyntax':
{'timeout_millis': 30000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'ClassifyText':
{'timeout_millis': 30000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'AnnotateText':
{'timeout_millis': 30000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'}}}},
client_info=None)
```

Provides text analysis operations such as sentiment analysis and entity recognition.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A `Channel` instance through which to make calls. If specified, then the `credentials` argument is ignored.

- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified the default configuration is used. Generally, you only need to set this if you're developing your own client library.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If *None*, then default info will be used. Generally, you only need to set this if you're developing your own client library.

analyze_entities (*document, encoding_type=None, retry=<object object>, timeout=<object object>*)

Finds named entities (currently proper names and common nouns) in the text along with entity types, salience, mentions for each entity, and other properties.

Example

```
>>> from google.cloud import language_v1
>>>
>>> client = language_v1.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_entities(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeEntitiesResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

analyze_entity_sentiment (*document*, *encoding_type=None*, *retry=<object object>*, *time-out=<object object>*)

Finds entities, similar to `AnalyzeEntities` in the text and analyzes sentiment associated with each entity and its mentions.

Example

```
>>> from google.cloud import language_v1
>>>
>>> client = language_v1.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_entity_sentiment(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeEntitySentimentResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

analyze_sentiment (*document*, *encoding_type=None*, *retry=<object object>*, *timeout=<object object>*)

Analyzes the sentiment of the provided text.

Example

```
>>> from google.cloud import language_v1
>>>
>>> client = language_v1.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_sentiment(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate sentence offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeSentimentResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

analyze_syntax (*document, encoding_type=None, retry=<object object>, timeout=<object object>*)

Analyzes the syntax of the text and provides sentence boundaries and tokenization along with part of speech tags, dependency trees, and other properties.

Example

```
>>> from google.cloud import language_v1
>>>
>>> client = language_v1.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_syntax(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeSyntaxResponse* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

annotate_text (*document, features, encoding_type=None, retry=<object object>, timeout=<object object>*)

A convenience method that provides all the features that `analyzeSentiment`, `analyzeEntities`, and `analyzeSyntax` provide in one call.

Example

```
>>> from google.cloud import language_v1
>>>
>>> client = language_v1.LanguageServiceClient()
>>>
>>> document = {}
>>> features = {}
>>>
>>> response = client.annotate_text(document, features)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **features** (*Union[dict, Features]*) – The enabled features. If a dict is provided, it must be of the same form as the protobuf message *Features*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnnotateTextResponse* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classify_text (*document, retry=<object object>, timeout=<object object>*)

Classifies a document into categories.

Example

```
>>> from google.cloud import language_v1
>>>
>>> client = language_v1.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.classify_text(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *ClassifyTextResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

```
enums = <module 'google.cloud.language_v1.gapic.enums' from '/home/docs/checkouts/read
```

12.8.2 Natural Language Client Types

class google.cloud.language_v1.types.**AnalyzeEntitiesRequest**
The entity analysis request message.

document
Input document.

encoding_type
The encoding type used by the API to calculate offsets.

class google.cloud.language_v1.types.**AnalyzeEntitiesResponse**
The entity analysis response message.

entities
The recognized entities in the input document.

language
The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1.Document.language] field for more details.

class google.cloud.language_v1.types.**AnalyzeEntitySentimentRequest**
The entity-level sentiment analysis request message.

document

Input document.

encoding_type

The encoding type used by the API to calculate offsets.

class google.cloud.language_v1.types.**AnalyzeEntitySentimentResponse**

The entity-level sentiment analysis response message.

entities

The recognized entities in the input document with associated sentiments.

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1.Document.language] field for more details.

class google.cloud.language_v1.types.**AnalyzeSentimentRequest**

The sentiment analysis request message.

document

Input document.

encoding_type

The encoding type used by the API to calculate sentence offsets.

class google.cloud.language_v1.types.**AnalyzeSentimentResponse**

The sentiment analysis response message.

document_sentiment

The overall sentiment of the input document.

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1.Document.language] field for more details.

sentences

The sentiment for all the sentences in the document.

class google.cloud.language_v1.types.**AnalyzeSyntaxRequest**

The syntax analysis request message.

document

Input document.

encoding_type

The encoding type used by the API to calculate offsets.

class google.cloud.language_v1.types.**AnalyzeSyntaxResponse**

The syntax analysis response message.

sentences

Sentences in the input document.

tokens

Tokens, along with their syntactic information, in the input document.

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1.Document.language] field for more details.

class `google.cloud.language_v1.types.AnnotateTextRequest`

The request message for the text annotation API, which can perform multiple analysis types (sentiment, entities, and syntax) in one call.

document

Input document.

features

The enabled features.

encoding_type

The encoding type used by the API to calculate offsets.

class `Features`

All available features for sentiment, syntax, and semantic analysis. Setting each one to true will enable that specific analysis for the input.

extract_syntax

Extract syntax information.

extract_entities

Extract entities.

extract_document_sentiment

Extract document-level sentiment.

extract_entity_sentiment

Extract entities and their associated sentiment.

classify_text

Classify the full document into categories.

class `google.cloud.language_v1.types.AnnotateTextResponse`

The text annotations response message.

sentences

Sentences in the input document. Populated if the user enables `[AnnotateTextRequest.Features.extract_syntax][google.cloud.language_v1.AnnotateTextRequest.Features.extract_syntax]`.

tokens

Tokens, along with their syntactic information, in the input document. Populated if the user enables `[AnnotateTextRequest.Features.extract_syntax][google.cloud.language_v1.AnnotateTextRequest.Features.extract_syntax]`.

entities

Entities, along with their semantic information, in the input document. Populated if the user enables `[AnnotateTextRequest.Features.extract_entities][google.cloud.language_v1.AnnotateTextRequest.Features.extract_entities]`.

document_sentiment

The overall sentiment for the document. Populated if the user enables `[AnnotateTextRequest.Features.extract_document_sentiment][google.cloud.language_v1.AnnotateTextRequest.Features.extract_document_sentiment]`.

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See `[Document.language][google.cloud.language_v1.Document.language]` field for more details.

categories

Categories identified in the input document.

class google.cloud.language_v1.types.**ClassificationCategory**

Represents a category returned from the text classifier.

name

The name of the category representing the document.

confidence

The classifier's confidence of the category. Number represents how certain the classifier is that this category represents the given text.

class google.cloud.language_v1.types.**ClassifyTextRequest**

The document classification request message.

document

Input document.

class google.cloud.language_v1.types.**ClassifyTextResponse**

The document classification response message.

categories

Categories representing the input document.

class google.cloud.language_v1.types.**CustomHttpPattern**

class google.cloud.language_v1.types.**DependencyEdge**

Represents dependency parse tree information for a token. (For more information on dependency labels, see <http://www.aclweb.org/anthology/P13-2017>)

head_token_index

Represents the head of this token in the dependency tree. This is the index of the token which has an arc going to this token. The index is the position of the token in the array of tokens returned by the API method. If this token is a root token, then the `head_token_index` is its own index.

label

The parse label for the token.

class google.cloud.language_v1.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.language_v1.types.**Document**

Represents the input to API methods.

type

Required. If the type is not set or is `TYPE_UNSPECIFIED`, returns an `INVALID_ARGUMENT` error.

source

The source of the document: a string containing the content or a Google Cloud Storage URI.

content

The content of the input in string format.

gcs_content_uri

The Google Cloud Storage URI where the file content is located. This URI must be of the form: `gs://bucket_name/object_name`. For more details, see <https://cloud.google.com/storage/docs/reference-uris>. NOTE: Cloud Storage object versioning is not supported.

language

The language of the document (if not specified, the language is automatically detected). Both ISO and BCP-47 language codes are accepted. [Language Support](#) lists currently supported languages for each API

method. If the language (either specified by the caller or automatically detected) is not supported by the called API method, an `INVALID_ARGUMENT` error is returned.

class `google.cloud.language_v1.types.Entity`

Represents a phrase in the text that is a known entity, such as a person, an organization, or location. The API associates information, such as salience and mentions, with entities.

name

The representative name for the entity.

type

The entity type.

metadata

Metadata associated with the entity. Currently, Wikipedia URLs and Knowledge Graph MIDs are provided, if available. The associated keys are “wikipedia_url” and “mid”, respectively.

salience

The salience score associated with the entity in the [0, 1.0] range. The salience score for an entity provides information about the importance or centrality of that entity to the entire document text. Scores closer to 0 are less salient, while scores closer to 1.0 are highly salient.

mentions

The mentions of this entity in the input document. The API currently supports proper noun mentions.

sentiment

For calls to `[AnalyzeEntitySentiment][]` or if `[AnnotateTextRequest.Features.extract_entity_sentiment][google.cloud.language_v1.AnnotateTextRequest.Features.extract_entity_sentiment]` is set to true, this field will contain the aggregate sentiment expressed for this entity in the provided document.

class `MetadataEntry`

class `google.cloud.language_v1.types.EntityMention`

Represents a mention for an entity in the text. Currently, proper noun mentions are supported.

text

The mention text.

type

The type of the entity mention.

sentiment

For calls to `[AnalyzeEntitySentiment][]` or if `[AnnotateTextRequest.Features.extract_entity_sentiment][google.cloud.language_v1.AnnotateTextRequest.Features.extract_entity_sentiment]` is set to true, this field will contain the sentiment expressed for this mention of the entity in the provided document.

class `google.cloud.language_v1.types.EnumDescriptorProto`

class `EnumReservedRange`

class `google.cloud.language_v1.types.EnumOptions`

class `google.cloud.language_v1.types.EnumValueDescriptorProto`

class `google.cloud.language_v1.types.EnumValueOptions`

class `google.cloud.language_v1.types.ExtensionRangeOptions`

class `google.cloud.language_v1.types.FieldDescriptorProto`

class `google.cloud.language_v1.types.FieldOptions`

```
class google.cloud.language_v1.types.FileDescriptorProto  
class google.cloud.language_v1.types.FileDescriptorSet  
class google.cloud.language_v1.types.FileOptions  
class google.cloud.language_v1.types.GeneratedCodeInfo
```

class Annotation

```
class google.cloud.language_v1.types.Http  
class google.cloud.language_v1.types.HttpRule  
class google.cloud.language_v1.types.MessageOptions  
class google.cloud.language_v1.types.MethodDescriptorProto  
class google.cloud.language_v1.types.MethodOptions  
class google.cloud.language_v1.types.OneofDescriptorProto  
class google.cloud.language_v1.types.OneofOptions  
class google.cloud.language_v1.types.PartOfSpeech
```

Represents part of speech information for a token. Parts of speech are as defined in http://www.lrec-conf.org/proceedings/lrec2012/pdf/274_Paper.pdf

tag
The part of speech tag.

aspect
The grammatical aspect.

case
The grammatical case.

form
The grammatical form.

gender
The grammatical gender.

mood
The grammatical mood.

number
The grammatical number.

person
The grammatical person.

proper
The grammatical properness.

reciprocity
The grammatical reciprocity.

tense
The grammatical tense.

voice
The grammatical voice.

class google.cloud.language_v1.types.Sentence

Represents a sentence in the input document.

text

The sentence text.

sentiment

For calls to [AnalyzeSentiment][] or if [AnnotateTextRequest.Features.extract_document_sentiment][google.cloud.language.v1.AnnotateTextRequest.Features.extract_document_sentiment] is set to true, this field will contain the sentiment for the sentence.

class google.cloud.language_v1.types.Sentiment

Represents the feeling associated with the entire text or entities in the text.

magnitude

A non-negative number in the [0, +inf) range, which represents the absolute magnitude of sentiment regardless of score (positive or negative).

score

Sentiment score between -1.0 (negative sentiment) and 1.0 (positive sentiment).

class google.cloud.language_v1.types.ServiceDescriptorProto

class google.cloud.language_v1.types.ServiceOptions

class google.cloud.language_v1.types.SourceCodeInfo

class Location

class google.cloud.language_v1.types.TextSpan

Represents an output piece of text.

content

The content of the output text.

begin_offset

The API calculates the beginning offset of the content in the original document according to the [EncodingType][google.cloud.language.v1.EncodingType] specified in the API request.

class google.cloud.language_v1.types.Token

Represents the smallest syntactic building block of the text.

text

The token text.

part_of_speech

Parts of speech tag for this token.

dependency_edge

Dependency tree parse for this token.

lemma

[Lemma](#) of the token.

class google.cloud.language_v1.types.UninterpretedOption

class NamePart

If you are interested in beta features ahead of the latest GA, you may opt-in to the v1.1 beta, which is spelled `v1beta2`. In order to do this, you will want to import from `google.cloud.language_v1beta2` in lieu of `google.cloud.language`.

An API and type reference is provided for the v1.1 beta also:

12.8.3 Natural Language Beta Client API

```

class google.cloud.language_v1beta2.LanguageServiceClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.cloud.language.v1beta2.LanguageService':
{'retry_codes': {'idempotent': ['DEADLINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent':
[]},
'retry_params':
{'default': {'initial_retry_delay_millis':
100,
'retry_delay_multiplier':
1.3,
'max_retry_delay_millis':
60000,
'initial_rpc_timeout_millis':
60000,
'rpc_timeout_multiplier':
1.0,
'max_rpc_timeout_millis':
60000,
'total_timeout_millis':
600000}},
'methods': {'AnalyzeSentiment': {'timeout_millis':
30000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'AnalyzeEntities': {'timeout_millis':
30000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'AnalyzeEntitySentiment': {'timeout_millis':
30000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'AnalyzeSyntax': {'timeout_millis':
30000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'ClassifyText': {'timeout_millis':
30000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'AnnotateText': {'timeout_millis':
30000,

```

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. If specified, then the `credentials` argument is ignored.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified the default configuration is used. Generally, you only need to set this if you're developing your own client library.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

analyze_entities (*document, encoding_type=None, retry=<object object>, timeout=<object object>*)

Finds named entities (currently proper names and common nouns) in the text along with entity types, salience, mentions for each entity, and other properties.

Example

```
>>> from google.cloud import language_v1beta2
>>>
>>> client = language_v1beta2.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_entities(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeEntitiesResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.

- `ValueError` – If the parameters are invalid.

analyze_entity_sentiment (*document*, *encoding_type=None*, *retry=<object object>*, *time-out=<object object>*)

Finds entities, similar to `AnalyzeEntities` in the text and analyzes sentiment associated with each entity and its mentions.

Example

```
>>> from google.cloud import language_v1beta2
>>>
>>> client = language_v1beta2.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_entity_sentiment(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeEntitySentimentResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

analyze_sentiment (*document*, *encoding_type=None*, *retry=<object object>*, *timeout=<object object>*)

Analyzes the sentiment of the provided text.

Example

```
>>> from google.cloud import language_v1beta2
>>>
>>> client = language_v1beta2.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_sentiment(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate sentence offsets for the sentence sentiment.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeSentimentResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

analyze_syntax (*document, encoding_type=None, retry=<object object>, timeout=<object object>*)

Analyzes the syntax of the text and provides sentence boundaries and tokenization along with part of speech tags, dependency trees, and other properties.

Example

```
>>> from google.cloud import language_v1beta2
>>>
>>> client = language_v1beta2.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.analyze_syntax(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnalyzeSyntaxResponse* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

annotate_text (*document, features, encoding_type=None, retry=<object object>, timeout=<object object>*)

A convenience method that provides all syntax, sentiment, entity, and classification features in one call.

Example

```
>>> from google.cloud import language_v1beta2
>>>
>>> client = language_v1beta2.LanguageServiceClient()
>>>
>>> document = {}
>>> features = {}
>>>
>>> response = client.annotate_text(document, features)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **features** (*Union[dict, Features]*) – The enabled features. If a dict is provided, it must be of the same form as the protobuf message *Features*
- **encoding_type** (*EncodingType*) – The encoding type used by the API to calculate offsets.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *AnnotateTextResponse* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classify_text (*document, retry=<object object>, timeout=<object object>*)

Classifies a document into categories.

Example

```
>>> from google.cloud import language_v1beta2
>>>
>>> client = language_v1beta2.LanguageServiceClient()
>>>
>>> document = {}
>>>
>>> response = client.classify_text(document)
```

Parameters

- **document** (*Union[dict, Document]*) – Input document. If a dict is provided, it must be of the same form as the protobuf message *Document*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *ClassifyTextResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

```
enums = <module 'google.cloud.language_v1beta2.gapic.enums' from '/home/docs/checkouts
```

12.8.4 Natural Language Beta Client Types

class google.cloud.language_v1beta2.types.**AnalyzeEntitiesRequest**
The entity analysis request message.

document
Input document.

encoding_type
The encoding type used by the API to calculate offsets.

class google.cloud.language_v1beta2.types.**AnalyzeEntitiesResponse**
The entity analysis response message.

entities
The recognized entities in the input document.

language
The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1beta2.Document.language] field for more details.

class google.cloud.language_v1beta2.types.**AnalyzeEntitySentimentRequest**
The entity-level sentiment analysis request message.

document

Input document.

encoding_type

The encoding type used by the API to calculate offsets.

class google.cloud.language_v1beta2.types.**AnalyzeEntitySentimentResponse**

The entity-level sentiment analysis response message.

entities

The recognized entities in the input document with associated sentiments.

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1beta2.Document.language] field for more details.

class google.cloud.language_v1beta2.types.**AnalyzeSentimentRequest**

The sentiment analysis request message.

document

Input document.

encoding_type

The encoding type used by the API to calculate sentence offsets for the sentence sentiment.

class google.cloud.language_v1beta2.types.**AnalyzeSentimentResponse**

The sentiment analysis response message.

document_sentiment

The overall sentiment of the input document.

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1beta2.Document.language] field for more details.

sentences

The sentiment for all the sentences in the document.

class google.cloud.language_v1beta2.types.**AnalyzeSyntaxRequest**

The syntax analysis request message.

document

Input document.

encoding_type

The encoding type used by the API to calculate offsets.

class google.cloud.language_v1beta2.types.**AnalyzeSyntaxResponse**

The syntax analysis response message.

sentences

Sentences in the input document.

tokens

Tokens, along with their syntactic information, in the input document.

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language.v1beta2.Document.language] field for more details.

class google.cloud.language_v1beta2.types.**AnnotateTextRequest**

The request message for the text annotation API, which can perform multiple analysis types (sentiment, entities, and syntax) in one call.

document

Input document.

features

The enabled features.

encoding_type

The encoding type used by the API to calculate offsets.

class **Features**

All available features for sentiment, syntax, and semantic analysis. Setting each one to true will enable that specific analysis for the input.

extract_syntax

Extract syntax information.

extract_entities

Extract entities.

extract_document_sentiment

Extract document-level sentiment.

extract_entity_sentiment

Extract entities and their associated sentiment.

classify_text

Classify the full document into categories.

class google.cloud.language_v1beta2.types.**AnnotateTextResponse**

The text annotations response message.

sentences

Sentences in the input document. Populated if the user enables [AnnotateTextRequest.Features.extract_syntax][google.cloud.language_v1beta2.AnnotateTextRequest.Features.extract_syntax].

tokens

Tokens, along with their syntactic information, in the input document. Populated if the user enables [AnnotateTextRequest.Features.extract_syntax][google.cloud.language_v1beta2.AnnotateTextRequest.Features.extract_syntax].

entities

Entities, along with their semantic information, in the input document. Populated if the user enables [AnnotateTextRequest.Features.extract_entities][google.cloud.language_v1beta2.AnnotateTextRequest.Features.extract_entities].

document_sentiment

The overall sentiment for the document. Populated if the user enables [AnnotateTextRequest.Features.extract_document_sentiment][google.cloud.language_v1beta2.AnnotateTextRequest.Features.extract_document_sentiment].

language

The language of the text, which will be the same as the language specified in the request or, if not specified, the automatically-detected language. See [Document.language][google.cloud.language_v1beta2.Document.language] field for more details.

categories

Categories identified in the input document.

```
class google.cloud.language_v1beta2.types.Any
class google.cloud.language_v1beta2.types.CancelOperationRequest
class google.cloud.language_v1beta2.types.ClassificationCategory
    Represents a category returned from the text classifier.

    name
        The name of the category representing the document.

    confidence
        The classifier's confidence of the category. Number represents how certain the classifier is that this category represents the given text.

class google.cloud.language_v1beta2.types.ClassifyTextRequest
    The document classification request message.

    document
        Input document.

class google.cloud.language_v1beta2.types.ClassifyTextResponse
    The document classification response message.

    categories
        Categories representing the input document.

class google.cloud.language_v1beta2.types.CustomHttpPattern
class google.cloud.language_v1beta2.types.DeleteOperationRequest
class google.cloud.language_v1beta2.types.DependencyEdge
    Represents dependency parse tree information for a token.

    head_token_index
        Represents the head of this token in the dependency tree. This is the index of the token which has an arc going to this token. The index is the position of the token in the array of tokens returned by the API method. If this token is a root token, then the head_token_index is its own index.

    label
        The parse label for the token.

class google.cloud.language_v1beta2.types.DescriptorProto

    class ExtensionRange
    class ReservedRange

class google.cloud.language_v1beta2.types.Document
    Represents the input to API methods.

    type
        Required. If the type is not set or is TYPE_UNSPECIFIED, returns an INVALID_ARGUMENT error.

    source
        The source of the document: a string containing the content or a Google Cloud Storage URI.

    content
        The content of the input in string format.

    gcs_content_uri
        The Google Cloud Storage URI where the file content is located. This URI must be of the form: gs://bucket_name/object_name. For more details, see https://cloud.google.com/storage/docs/reference-uris. NOTE: Cloud Storage object versioning is not supported.
```

language

The language of the document (if not specified, the language is automatically detected). Both ISO and BCP-47 language codes are accepted. [Language Support](#) lists currently supported languages for each API method. If the language (either specified by the caller or automatically detected) is not supported by the called API method, an `INVALID_ARGUMENT` error is returned.

```
class google.cloud.language_v1beta2.types.Empty
```

```
class google.cloud.language_v1beta2.types.Entity
```

Represents a phrase in the text that is a known entity, such as a person, an organization, or location. The API associates information, such as salience and mentions, with entities.

name

The representative name for the entity.

type

The entity type.

metadata

Metadata associated with the entity. Currently, Wikipedia URLs and Knowledge Graph MIDs are provided, if available. The associated keys are “wikipedia_url” and “mid”, respectively.

salience

The salience score associated with the entity in the [0, 1.0] range. The salience score for an entity provides information about the importance or centrality of that entity to the entire document text. Scores closer to 0 are less salient, while scores closer to 1.0 are highly salient.

mentions

The mentions of this entity in the input document. The API currently supports proper noun mentions.

sentiment

For calls to `[AnalyzeEntitySentiment][]` or if `[AnnotateTextRequest.Features.extract_entity_sentiment][google.cloud.language_v1beta2.AnnotateTextRequest.Features.extract_entity_sentiment]` is set to true, this field will contain the aggregate sentiment expressed for this entity in the provided document.

```
class MetadataEntry
```

```
class google.cloud.language_v1beta2.types.EntityMention
```

Represents a mention for an entity in the text. Currently, proper noun mentions are supported.

text

The mention text.

type

The type of the entity mention.

sentiment

For calls to `[AnalyzeEntitySentiment][]` or if `[AnnotateTextRequest.Features.extract_entity_sentiment][google.cloud.language_v1beta2.AnnotateTextRequest.Features.extract_entity_sentiment]` is set to true, this field will contain the sentiment expressed for this mention of the entity in the provided document.

```
class google.cloud.language_v1beta2.types.EnumDescriptorProto
```

```
class EnumReservedRange
```

```
class google.cloud.language_v1beta2.types.EnumOptions
```

```
class google.cloud.language_v1beta2.types.EnumValueDescriptorProto
```

```
class google.cloud.language_v1beta2.types.EnumValueOptions
```

```
class google.cloud.language_v1beta2.types.ExtensionRangeOptions
class google.cloud.language_v1beta2.types.FieldDescriptorProto
class google.cloud.language_v1beta2.types.FieldOptions
class google.cloud.language_v1beta2.types.FileDescriptorProto
class google.cloud.language_v1beta2.types.FileDescriptorSet
class google.cloud.language_v1beta2.types.FileOptions
class google.cloud.language_v1beta2.types.GeneratedCodeInfo

    class Annotation
class google.cloud.language_v1beta2.types.GetOperationRequest
class google.cloud.language_v1beta2.types.Http
class google.cloud.language_v1beta2.types.HttpRule
class google.cloud.language_v1beta2.types.ListOperationsRequest
class google.cloud.language_v1beta2.types.ListOperationsResponse
class google.cloud.language_v1beta2.types.MessageOptions
class google.cloud.language_v1beta2.types.MethodDescriptorProto
class google.cloud.language_v1beta2.types.MethodOptions
class google.cloud.language_v1beta2.types.OneofDescriptorProto
class google.cloud.language_v1beta2.types.OneofOptions
class google.cloud.language_v1beta2.types.Operation
class google.cloud.language_v1beta2.types.PartOfSpeech
    Represents part of speech information for a token.

    tag
        The part of speech tag.

    aspect
        The grammatical aspect.

    case
        The grammatical case.

    form
        The grammatical form.

    gender
        The grammatical gender.

    mood
        The grammatical mood.

    number
        The grammatical number.

    person
        The grammatical person.

    proper
        The grammatical properness.
```

reciprocity

The grammatical reciprocity.

tense

The grammatical tense.

voice

The grammatical voice.

class google.cloud.language_v1beta2.types.**Sentence**

Represents a sentence in the input document.

text

The sentence text.

sentiment

For calls to [AnalyzeSentiment][] or if [AnnotateTextRequest.Features.extract_document_sentiment][google.cloud.language.v1beta2.AnnotateTextRequest.Features.extract_document_sentiment] is set to true, this field will contain the sentiment for the sentence.

class google.cloud.language_v1beta2.types.**Sentiment**

Represents the feeling associated with the entire text or entities in the text.

magnitude

A non-negative number in the [0, +inf) range, which represents the absolute magnitude of sentiment regardless of score (positive or negative).

score

Sentiment score between -1.0 (negative sentiment) and 1.0 (positive sentiment).

class google.cloud.language_v1beta2.types.**ServiceDescriptorProto**

class google.cloud.language_v1beta2.types.**ServiceOptions**

class google.cloud.language_v1beta2.types.**SourceCodeInfo**

class Location

class google.cloud.language_v1beta2.types.**Status**

class google.cloud.language_v1beta2.types.**TextSpan**

Represents an output piece of text.

content

The content of the output text.

begin_offset

The API calculates the beginning offset of the content in the original document according to the [EncodingType][google.cloud.language.v1beta2.EncodingType] specified in the API request.

class google.cloud.language_v1beta2.types.**Timestamp**

class google.cloud.language_v1beta2.types.**Token**

Represents the smallest syntactic building block of the text.

text

The token text.

part_of_speech

Parts of speech tag for this token.

dependency_edge

Dependency tree parse for this token.

`lemma`

Lemma of the token.

`class google.cloud.language_v1beta2.types.UninterpretedOption`

`class NamePart`

Note: The client for the beta API is provided on a provisional basis. The API surface is subject to change, and it is possible that this client will be deprecated or removed after its features become GA.

For a list of all `google-cloud-language` releases:

12.8.5 Changelog

PyPI History

1.0.2

Packaging

- Update setuptools before packaging (#5265)
- Update setup.py to use recommended method for python-version specific dependencies (#5266)
- Fix bad trove classifier

1.0.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Fix coveragerc to correctly omit generated files (#4843)

1.0.0

Features

General Availability

The `google-cloud-language` package is now supported at the **general availability** quality level. This means it is stable; the code and API surface will not change in backwards-incompatible ways unless absolutely necessary (e.g. because of critical security issues) or with an extensive deprecation period.

One exception to this: We will remove beta endpoints (as a semver-minor update) at whatever point the underlying endpoints go away.

0.31.0

Release Candidate

- This update is considered a final “release candidate”, and the `google-cloud-language` package is preparing for a GA release in the near future.

:warning: Breaking Changes!

- Some rarely-used arguments to the `LanguageServiceClient` constructor have been removed (in favor of a subclass or a custom gRPC channel). It is unlikely that you used these, but if you did, then this update will represent a breaking change.
 - The removed arguments are: `client_config`, `lib_name`, `lib_version` `metrics_headers`, `ssl_credentials`, and `scopes`.

Features

- Added the `classify_text` method on the primary (v1) endpoint. (#4283)

0.30.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Deferring to `google-api-core` for `grpcio` and `googleapis-common-protos` dependencies (#4096, #4098)

PyPI: <https://pypi.org/project/google-cloud-language/0.30.0/>

Google Cloud Pub/Sub is a fully-managed real-time messaging service that allows you to send and receive messages between independent applications. You can leverage Cloud Pub/Sub’s flexibility to decouple systems and components hosted on Google Cloud Platform or elsewhere on the Internet. By building on the same technology Google uses, Cloud Pub/Sub is designed to provide “at least once” delivery at low latency with on-demand scalability to 1 million messages per second (and beyond).

13.1 Installation

Install the `google-cloud-pubsub` library using `pip`:

```
$ pip install google-cloud-pubsub
```

13.2 Authentication and Configuration

- For an overview of authentication in `google-cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you should also set the `GOOGLE_CLOUD_PROJECT` environment variable for the project you’d like to interact with. If the `GOOGLE_CLOUD_PROJECT` environment variable is not present, the project ID from JSON file credentials is used.

If you are using Google App Engine or Google Compute Engine this will be detected automatically.

- After configuring your environment, create a `PublisherClient` or `SubscriberClient`.

```
>>> from google.cloud import pubsub
>>> publisher = pubsub.PublisherClient()
>>> subscriber = pubsub.SubscriberClient()
```

or pass in credentials explicitly.

```
>>> from google.cloud import pubsub
>>> client = pubsub.PublisherClient(
...     credentials=creds,
... )
```

13.3 Publishing

To publish data to Cloud Pub/Sub you must create a topic, and then publish messages to it

```
>>> import os
>>> from google.cloud import pubsub
>>>
>>> publisher = pubsub.PublisherClient()
>>> topic = 'projects/{project_id}/topics/{topic}'.format(
...     project_id=os.getenv('GOOGLE_CLOUD_PROJECT'),
...     topic='MY_TOPIC_NAME', # Set this to something appropriate.
... )
>>> publisher.create_topic(topic) # raises conflict if topic exists
>>> publisher.publish(topic, b'My first message!', spam='eggs')
```

To learn more, consult the [publishing documentation](#).

13.4 Subscribing

To subscribe to data in Cloud Pub/Sub, you create a subscription based on the topic, and subscribe to that.

```
>>> import os
>>> from google.cloud import pubsub
>>>
>>> subscriber = pubsub.SubscriberClient()
>>> topic = 'projects/{project_id}/topics/{topic}'.format(
...     project_id=os.getenv('GOOGLE_CLOUD_PROJECT'),
...     topic='MY_TOPIC_NAME', # Set this to something appropriate.
... )
>>> subscription_name = 'projects/{project_id}/subscriptions/{sub}'.format(
...     project_id=os.getenv('GOOGLE_CLOUD_PROJECT'),
...     sub='MY_SUBSCRIPTION_NAME', # Set this to something appropriate.
... )
>>> subscriber.create_subscription(subscription_name, topic)
```

To receive messages on the subscription, you *subscribe* to the subscription. The client opens a stream in a background process and calls a callback for each message received.

```
>>> def callback(message):
...     print(message.data)
...     message.ack()
>>> future = subscriber.subscribe(subscription_name, callback)
```

You can use the future to block the main thread, and raise any exceptions that originate asynchronously.

```
>>> future.result()
```

You can also cancel the future to stop receiving messages.

```
>>> future.cancel()
```

To learn more, consult the *[subscriber documentation](#)*.

13.5 Learn More

13.5.1 Publishing Messages

Publishing messages is handled through the *Client* class (aliased as `google.cloud.pubsub.PublisherClient`). This class provides methods to create topics, and (most importantly) a *`publish()`* method that publishes messages to Pub/Sub.

Instantiating a publishing client is straightforward:

```
from google.cloud import pubsub
publish_client = pubsub.PublisherClient()
```

Publish a Message

To publish a message, use the *`publish()`* method. This method accepts two positional arguments: the topic to publish to, and the body of the message. It also accepts arbitrary keyword arguments, which are passed along as attributes of the message.

The topic is passed along as a string; all topics have the canonical form of `projects/{project_name}/topics/{topic_name}`.

Therefore, a very basic publishing call looks like:

```
topic = 'projects/{project}/topics/{topic}'
publish_client.publish(topic, b'This is my message.')
```

Note: The message data in Pub/Sub is an opaque blob of bytes, and as such, you *must* send a `bytes` object in Python 3 (`str` object in Python 2). If you send a text string (`str` in Python 3, `unicode` in Python 2), the method will raise `TypeError`.

The reason it works this way is because there is no reasonable guarantee that the same language or environment is being used by the subscriber, and so it is the responsibility of the publisher to properly encode the payload.

If you want to include attributes, simply add keyword arguments:

```
topic = 'projects/{project}/topics/{topic}'
publish_client.publish(topic, b'This is my message.', foo='bar')
```

Batching

Whenever you publish a message, a `Batch` is automatically created. This way, if you publish a large volume of messages, it reduces the number of requests made to the server.

Note: By default, this uses `threading`, and you will need to be in an environment with `threading` enabled. It is possible to provide an alternative batch class that uses another concurrency strategy.

The way that this works is that on the first message that you send, a new `Batch` is created automatically. For every subsequent message, if there is already a valid batch that is still accepting messages, then that batch is used. When the batch is created, it begins a countdown that publishes the batch once sufficient time has elapsed (by default, this is 0.05 seconds).

If you need different batching settings, simply provide a `BatchSettings` object when you instantiate the `Client`:

```
from google.cloud import pubsub
from google.cloud.pubsub import types

client = pubsub.PublisherClient(
    batch_settings=BatchSettings(max_messages=500),
)
```

Pub/Sub accepts a maximum of 1,000 messages in a batch, and the size of a batch can not exceed 10 megabytes.

Futures

Every call to `publish()` will return a class that conforms to the `Future` interface. You can use this to ensure that the publish succeeded:

```
# The .result() method will block until the future is complete.
# If there is an error, it will raise an exception.
future = client.publish(topic, b'My awesome message.')
message_id = future.result()
```

You can also attach a callback to the future:

```
# Callbacks receive the future as their only argument, as defined in
# the Future interface.
def callback(future):
    message_id = future.result()
    do_something_with(message_id)

# The callback is added once you get the future. If you add a callback
# and the future is already done, it will simply be executed immediately.
future = client.publish(topic, b'My awesome message.')
future.add_done_callback(callback)
```

API Reference

Publisher Client API

```
class google.cloud.pubsub_v1.publisher.client.Client (batch_settings=(),
                                                         batch_class=<class
                                                         'google.cloud.pubsub_v1.publisher.batch.thread.Batch'>,
                                                         **kwargs)
```

A publisher client for Google Cloud Pub/Sub.

This creates an object that is capable of publishing messages. Generally, you can instantiate this client with no arguments, and you get sensible defaults.

Parameters

- **batch_settings** (`BatchSettings`) – The settings for batch publishing.

- **batch_class** (*Optional*[*Type*]) – A class that describes how to handle batches. You may subclass the `pubsub_v1.publisher.batch.base.BaseBatch` class in order to define your own batcher. This is primarily provided to allow use of different concurrency models; the default is based on `threading.Thread`. This class should also have a class method (or static method) that takes no arguments and produces a lock that can be used as a context manager.
- **kwargs** (*dict*) – Any additional arguments provided are sent as keyword arguments to the underlying `PublisherClient`. Generally, you should not need to set additional keyword arguments. Before being passed along to the GAPIC constructor, a channel may be added if `credentials` are passed explicitly or if the Pub / Sub emulator is detected as running.

batch (*topic*, *create=False*, *autocommit=True*)

Return the current batch for the provided topic.

This will create a new batch if `create=True` or if no batch currently exists.

Parameters

- **topic** (*str*) – A string representing the topic.
- **create** (*bool*) – Whether to create a new batch. Defaults to `False`. If `True`, this will create a new batch even if one already exists.
- **autocommit** (*bool*) – Whether to autocommit this batch. This is primarily useful for debugging and testing, since it allows the caller to avoid some side effects that batch creation might have (e.g. spawning a worker to publish a batch).

Returns The batch object.

Return type `Batch`

create_topic (*name*, *labels=None*, *retry=<object object>*, *timeout=<object object>*)

Creates the given topic with the given name.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> name = client.topic_path('[PROJECT]', '[TOPIC]')
>>>
>>> response = client.create_topic(name)
```

Parameters

- **name** (*str*) – The name of the topic. It must have the format `"projects/{project}/topics/{topic}"`. `{topic}` must start with a letter, and contain only letters (`[A-Za-z]`), numbers (`[0-9]`), dashes (`-`), underscores (`_`), periods (`.`), tildes (`~`), plus (`+`) or percent signs (`%`). It must be between 3 and 255 characters in length, and it must not start with `"goog"`.
- **labels** (*dict*[*str* -> *str*]) – User labels.
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A retry object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Topic* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_topic (*topic*, *retry*=<object object>, *timeout*=<object object>)

Deletes the topic with the given name. Returns `NOT_FOUND` if the topic does not exist. After a topic is deleted, a new topic may be created with the same name; this is an entirely new topic with none of the old configuration or subscriptions. Existing subscriptions to this topic are not deleted, but their `topic` field is set to `_deleted-topic_`.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> topic = client.topic_path('[PROJECT]', '[TOPIC]')
>>>
>>> client.delete_topic(topic)
```

Parameters

- **topic** (*str*) – Name of the topic to delete. Format is `projects/{project}/topics/{topic}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_iam_policy (*resource*, *retry*=<object object>, *timeout*=<object object>)

Gets the access control policy for a resource. Returns an empty policy if the resource exists and does not have a policy set.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> resource = client.topic_path('[PROJECT]', '[TOPIC]')
>>>
>>> response = client.get_iam_policy(resource)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Policy* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_topic (*topic*, *retry=<object object>*, *timeout=<object object>*)

Gets the configuration of a topic.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> topic = client.topic_path('[PROJECT]', '[TOPIC]')
>>>
>>> response = client.get_topic(topic)
```

Parameters

- **topic** (*str*) – The name of the topic to get. Format is `projects/{project}/topics/{topic}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Topic* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_topic_subscriptions (*topic*, *page_size=None*, *retry=<object object>*, *timeout=<object object>*)

Lists the name of the subscriptions for this topic.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> topic = client.topic_path('[PROJECT]', '[TOPIC]')
>>>
>>> # Iterate over all results
>>> for element in client.list_topic_subscriptions(topic):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_topic_subscriptions(topic,
↳ options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **topic** (*str*) – The name of the topic that subscriptions are attached to. Format is `projects/{project}/topics/{topic}`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `str` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_topics (*project*, *page_size=None*, *retry=<object object>*, *timeout=<object object>*)
Lists matching topics.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> project = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_topics(project):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_topics(project, options=CallOptions(page_
↪token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **project** (*str*) – The name of the cloud project that topics belong to. Format is `projects/{project}`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `Topic` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

project_path()

Returns a fully-qualified project resource name string.

publish(topic, data, **attrs)

Publish a single message.

Note: Messages in Pub/Sub are blobs of bytes. They are *binary* data, not text. You must send data as a bytestring (bytes in Python 3; str in Python 2), and this library will raise an exception if you send a text string.

The reason that this is so important (and why we do not try to coerce for you) is because Pub/Sub is also platform independent and there is no way to know how to decode messages properly on the other side; therefore, encoding and decoding is a required exercise for the developer.

Add the given message to this object; this will cause it to be published once the batch either has enough messages or a sufficient period of time has elapsed.

Example

```
>>> from google.cloud.pubsub_v1 import publisher_client
>>> client = publisher_client.PublisherClient()
>>> topic = client.topic_path('[PROJECT]', '[TOPIC]')
>>> data = b'The rain in Wales falls mainly on the snails.'
>>> response = client.publish(topic, data, username='guido')
```

Parameters

- **topic** (*str*) – The topic to publish messages to.
- **data** (*bytes*) – A bytestring representing the message body. This must be a bytestring.
- **attrs** (*Mapping[str, str]*) – A dictionary of attributes to be sent as metadata. (These may be text strings or byte strings.)

Returns An object conforming to the `concurrent.futures.Future` interface.

Return type `Future`

set_iam_policy(resource, policy, retry=<object object>, timeout=<object object>)

Sets the access control policy on the specified resource. Replaces any existing policy.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> resource = client.topic_path('[PROJECT]', '[TOPIC]')
>>> policy = {}
>>>
>>> response = client.set_iam_policy(resource, policy)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being specified. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **policy** (*Union[dict, Policy]*) – REQUIRED: The complete policy to be applied to the `resource`. The size of the policy is limited to a few 10s of KB. An empty policy is a valid policy but certain Cloud Platform services (such as Projects) might reject them. If a dict is provided, it must be of the same form as the protobuf message *Policy*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Policy* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

target

Return the target (where the API is).

Returns The location of the API.

Return type *str*

test_iam_permissions (*resource, permissions, retry=<object object>, timeout=<object object>*)

Returns permissions that a caller has on the specified resource. If the resource does not exist, this will return an empty set of permissions, not a `NOT_FOUND` error.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
```

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```
>>>
>>> resource = client.topic_path('[PROJECT]', '[TOPIC]')
>>> permissions = []
>>>
>>> response = client.test_iam_permissions(resource, permissions)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy detail is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **permissions** (*list[str]*) – The set of permissions to check for the resource. Permissions with wildcards (such as `*` or `storage.*`) are not allowed. For more information see [IAM Overview](#).
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `TestIamPermissionsResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

`topic_path(topic)`

Returns a fully-qualified topic resource name string.

`update_topic(topic, update_mask, retry=<object object>, timeout=<object object>)`

Updates an existing topic. Note that certain properties of a topic are not modifiable. Options settings follow the style guide: NOTE: The style guide requires body: `"topic"` instead of body: `"*"`. Keeping the latter for internal consistency in V1, however it should be corrected in V2. See https://cloud.google.com/apis/design/standard_methods#update for details.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.PublisherClient()
>>>
>>> topic = {}
>>> update_mask = {}
>>>
>>> response = client.update_topic(topic, update_mask)
```

Parameters

- **topic** (*Union[dict, Topic]*) – The topic to update. If a dict is provided, it must be of the same form as the protobuf message *Topic*
- **update_mask** (*Union[dict, FieldMask]*) – Indicates which fields in the provided topic to update. Must be specified and non-empty. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Topic* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

13.5.2 Subscribing to Messages

Subscribing to messages is handled through the *Client* class (aliased as *google.cloud.pubsub.SubscriberClient*). This class provides a *subscribe()* method to attach to subscriptions on existing topics, and (most importantly) a *open()* method that consumes messages from Pub/Sub.

Instantiating a subscriber client is straightforward:

```
from google.cloud import pubsub
subscriber = pubsub.SubscriberClient()
```

Creating a Subscription

In Pub/Sub, a **subscription** is a discrete pull of messages from a topic. If multiple clients pull the same subscription, then messages are split between them. If multiple clients create a subscription each, then each client will get every message.

Note: Remember that Pub/Sub operates under the principle of “everything at least once”. Even in the case where multiple clients pull the same subscription, *some* redundancy is likely.

Creating a subscription requires that you already know what topic you want to subscribe to, and it must already exist. Once you have that, it is easy:

```
# Substitute {project}, {topic}, and {subscription} with appropriate
# values for your application.
topic_name = 'projects/{project}/topics/{topic}'
sub_name = 'projects/{project}/subscriptions/{subscription}'
subscriber.create_subscription(sub_name, topic_name)
```

Pulling a Subscription

Once you have created a subscription (or if you already had one), the next step is to pull data from it. The subscriber client uses the `subscribe()` method to start a background thread to receive messages from Pub/Sub and calls a callback with each message received.

```
# As before, substitute {project} and {subscription} with appropriate
# values for your application.
future = subscriber.subscribe(
    'projects/{project}/subscriptions/{subscription}',
    callback
)
```

This will return a `StreamingPullFuture`. This future allows you to control the background thread that is managing the subscription.

Subscription Callbacks

Messages received from a subscription are processed asynchronously through **callbacks**.

The basic idea: Define a function that takes one argument; this argument will be a `Message` instance. This function should do whatever processing is necessary. At the end, the function should either `ack()` or `nack()` the message.

When you call `subscribe()`, you must pass the callback that will be used.

Here is an example:

```
# Define the callback.
# Note that the callback is defined *before* the subscription is opened.
def callback(message):
    do_something_with(message) # Replace this with your actual logic.
    message.ack()

# Open the subscription, passing the callback.
future = subscriber.subscribe(
    'projects/{project}/subscriptions/{subscription}',
    callback
)
```

The `subscribe()` method returns a `StreamingPullFuture`, which is both the interface to wait on messages (e.g. block the primary thread) and to address exceptions.

To block the thread you are in while messages are coming in the stream, use the `result()` method:

```
future.result()
```

You can also use this for error handling; any exceptions that crop up on a thread will be set on the future.

```
try:
    future.result()
except Exception as ex:
    subscription.close()
    raise
```

Finally, you can use `cancel()` to stop receiving messages.

```
future.cancel()
```

Explaining Ack

In Pub/Sub, the term **ack** stands for “acknowledge”. You should ack a message when your processing of that message *has completed*. When you ack a message, you are telling Pub/Sub that you do not need to see it again.

It might be tempting to ack messages immediately on receipt. While there are valid use cases for this, in general it is unwise. The reason why: If there is some error or edge case in your processing logic, and processing of the message fails, you will have already told Pub/Sub that you successfully processed the message. By contrast, if you ack only upon completion, then Pub/Sub will eventually re-deliver the unacknowledged message.

It is also possible to **nack** a message, which is the opposite. When you nack, it tells Pub/Sub that you are unable or unwilling to deal with the message, and that the service should redeliver it.

API Reference

Subscriber Client API

class google.cloud.pubsub_v1.subscriber.client.**Client** (**kwargs)

A subscriber client for Google Cloud Pub/Sub.

This creates an object that is capable of subscribing to messages. Generally, you can instantiate this client with no arguments, and you get sensible defaults.

Parameters **kwargs** (*dict*) – Any additional arguments provided are sent as keyword keyword arguments to the underlying SubscriberClient. Generally, you should not need to set additional keyword arguments.

acknowledge (*subscription, ack_ids, retry=<object object>, timeout=<object object>*)

Acknowledges the messages associated with the `ack_ids` in the `AcknowledgeRequest`. The Pub/Sub system can remove the relevant messages from the subscription.

Acknowledging a message whose ack deadline has expired may succeed, but such a message may be redelivered later. Acknowledging a message more than once will not result in an error.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>> ack_ids = []
>>>
>>> client.acknowledge(subscription, ack_ids)
```

Parameters

- **subscription** (*str*) – The subscription whose message is being acknowledged. Format is `projects/{project}/subscriptions/{sub}`.
- **ack_ids** (*list[str]*) – The acknowledgment ID for the messages being acknowledged that was returned by the Pub/Sub system in the `Pull` response. Must not be empty.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

api

The underlying gRPC API client.

create_snapshot (*name*, *subscription*, *retry*=<object object>, *timeout*=<object object>)

Creates a snapshot from the requested subscription. If the snapshot already exists, returns `ALREADY_EXISTS`. If the requested subscription doesn't exist, returns `NOT_FOUND`.

If the name is not provided in the request, the server will assign a random name for this snapshot on the same project as the subscription, conforming to the [resource name format](#). The generated name is populated in the returned Snapshot object. Note that for REST API requests, you must specify a name in the request.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> name = client.snapshot_path('[PROJECT]', '[SNAPSHOT]')
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>>
>>> response = client.create_snapshot(name, subscription)
```

Parameters

- **name** (*str*) – Optional user-provided name for this snapshot. If the name is not provided in the request, the server will assign a random name for this snapshot on the same project as the subscription. Note that for REST API requests, you must specify a name. Format is `projects/{project}/snapshots/{snap}`.
- **subscription** (*str*) – The subscription whose backlog the snapshot retains. Specifically, the created snapshot is guaranteed to retain:
 - The existing backlog on the subscription. More precisely, this is defined as the messages in the subscription's backlog that are unacknowledged upon the successful completion of the `CreateSnapshot` request; as well as:
 - Any messages published to the subscription's topic following the successful completion of the `CreateSnapshot` request.

Format is `projects/{project}/subscriptions/{sub}`.

- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Snapshot* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_subscription(*name*, *topic*, *push_config=None*, *ack_deadline_seconds=None*, *retain_acked_messages=None*, *message_retention_duration=None*, *labels=None*, *retry=<object object>*, *timeout=<object object>*)

Creates a subscription to a given topic. If the subscription already exists, returns `ALREADY_EXISTS`. If the corresponding topic doesn't exist, returns `NOT_FOUND`.

If the name is not provided in the request, the server will assign a random name for this subscription on the same project as the topic, conforming to the [resource name format](#). The generated name is populated in the returned Subscription object. Note that for REST API requests, you must specify a name in the request.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> name = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>> topic = client.topic_path('[PROJECT]', '[TOPIC]')
>>>
>>> response = client.create_subscription(name, topic)
```

Parameters

- **name** (*str*) – The name of the subscription. It must have the format `"projects/{project}/subscriptions/{subscription}"`. `{subscription}` must start with a letter, and contain only letters (`[A-Za-z]`), numbers (`[0-9]`), dashes (`-`), underscores (`_`), periods (`.`), tildes (`~`), plus (`+`) or percent signs (`%`). It must be between 3 and 255 characters in length, and it must not start with `"goog"`.
- **topic** (*str*) – The name of the topic from which this subscription is receiving messages. Format is `projects/{project}/topics/{topic}`. The value of this field will be `_deleted-topic_` if the topic has been deleted.
- **push_config** (*Union[dict, PushConfig]*) – If push delivery is used with this subscription, this field is used to configure it. An empty `pushConfig` signifies that the subscriber will pull and ack messages using API methods. If a dict is provided, it must be of the same form as the protobuf message [PushConfig](#).
- **ack_deadline_seconds** (*int*) – This value is the maximum time after a subscriber receives a message before the subscriber should acknowledge the message. After message delivery but before the ack deadline expires and before the message

is acknowledged, it is an outstanding message and will not be delivered again during that time (on a best-effort basis).

For pull subscriptions, this value is used as the initial value for the ack deadline. To override this value for a given message, call `ModifyAckDeadline` with the corresponding `ack_id` if using pull. The minimum custom deadline you can specify is 10 seconds. The maximum custom deadline you can specify is 600 seconds (10 minutes). If this parameter is 0, a default value of 10 seconds is used.

For push delivery, this value is also used to set the request timeout for the call to the push endpoint.

If the subscriber never acknowledges the message, the Pub/Sub system will eventually redeliver the message.

- **`retain_acked_messages`** (*bool*) – Indicates whether to retain acknowledged messages. If true, then messages are not expunged from the subscription's backlog, even if they are acknowledged, until they fall out of the `message_retention_duration` window.
- **`message_retention_duration`** (*Union[dict, Duration]*) – How long to retain unacknowledged messages in the subscription's backlog, from the moment a message is published. If `retain_acked_messages` is true, then this also configures the retention of acknowledged messages, and thus configures how far back in time a `Seek` can be done. Defaults to 7 days. Cannot be more than 7 days or less than 10 minutes. If a dict is provided, it must be of the same form as the protobuf message *Duration*
- **`labels`** (*dict[str -> str]*) – User labels.
- **`retry`** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **`timeout`** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Subscription* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

`delete_snapshot` (*snapshot*, *retry=<object object>*, *timeout=<object object>*)

Removes an existing snapshot. All messages retained in the snapshot are immediately dropped. After a snapshot is deleted, a new one may be created with the same name, but the new one has no association with the old snapshot or its subscription, unless the same subscription is specified.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
```

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```
>>>
>>> snapshot = client.snapshot_path('[PROJECT]', '[SNAPSHOT]')
>>>
>>> client.delete_snapshot(snapshot)
```

Parameters

- **snapshot** (*str*) – The name of the snapshot to delete. Format is `projects/{project}/snapshots/{snap}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_subscription (*subscription*, *retry=<object object>*, *timeout=<object object>*)

Deletes an existing subscription. All messages retained in the subscription are immediately dropped. Calls to `Pull` after deletion will return `NOT_FOUND`. After a subscription is deleted, a new one may be created with the same name, but the new one has no association with the old subscription or its topic unless the same topic is specified.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>>
>>> client.delete_subscription(subscription)
```

Parameters

- **subscription** (*str*) – The subscription to delete. Format is `projects/{project}/subscriptions/{sub}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_iam_policy (*resource*, *retry*=<object object>, *timeout*=<object object>)

Gets the access control policy for a resource. Returns an empty policy if the resource exists and does not have a policy set.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> resource = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>>
>>> response = client.get_iam_policy(resource)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being requested. *resource* is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Policy* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_subscription (*subscription*, *retry*=<object object>, *timeout*=<object object>)

Gets the configuration details of a subscription.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
```

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```
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>>
>>> response = client.get_subscription(subscription)
```

Parameters

- **subscription** (*str*) – The name of the subscription to get. Format is `projects/{project}/subscriptions/{sub}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Subscription* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_snapshots (*project*, *page_size=None*, *retry=<object object>*, *timeout=<object object>*)
Lists the existing snapshots.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> project = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_snapshots(project):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_snapshots(project, options=CallOptions(page_
→ token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **project** (*str*) – The name of the cloud project that snapshots belong to. Format is `projects/{project}`.

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `Snapshot` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_subscriptions (*project, page_size=None, retry=<object object>, timeout=<object object>*)
Lists matching subscriptions.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> project = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_subscriptions(project):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_subscriptions(project, options=CallOptions(page_
→ token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **project** (*str*) – The name of the cloud project that subscriptions belong to. Format is `projects/{project}`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not

affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.

- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `Subscription` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

modify_ack_deadline (*subscription*, *ack_ids*, *ack_deadline_seconds*, *retry*=<object object>, *timeout*=<object object>)

Modifies the ack deadline for a specific message. This method is useful to indicate that more time is needed to process a message by the subscriber, or to make the message available for redelivery if the processing was interrupted. Note that this does not modify the subscription-level `ackDeadlineSeconds` used for subsequent messages.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>> ack_ids = []
>>> ack_deadline_seconds = 0
>>>
>>> client.modify_ack_deadline(subscription, ack_ids, ack_deadline_seconds)
```

Parameters

- **subscription** (*str*) – The name of the subscription. Format is `projects/{project}/subscriptions/{sub}`.
- **ack_ids** (*list*[*str*]) – List of acknowledgment IDs.
- **ack_deadline_seconds** (*int*) – The new ack deadline with respect to the time this request was sent to the Pub/Sub system. For example, if the value is 10, the new ack deadline will expire 10 seconds after the `ModifyAckDeadline` call was made. Specifying zero may immediately make the message available for another pull request. The minimum deadline you can specify is 0 seconds. The maximum deadline you can specify is 600 seconds (10 minutes).
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

modify_push_config (*subscription*, *push_config*, *retry*=<object object>, *timeout*=<object object>)

Modifies the PushConfig for a specified subscription.

This may be used to change a push subscription to a pull one (signified by an empty PushConfig) or vice versa, or change the endpoint URL and other attributes of a push subscription. Messages will accumulate for delivery continuously through the call regardless of changes to the PushConfig.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>> push_config = {}
>>>
>>> client.modify_push_config(subscription, push_config)
```

Parameters

- **subscription** (*str*) – The name of the subscription. Format is `projects/{project}/subscriptions/{sub}`.
- **push_config** (*Union[dict, PushConfig]*) – The push configuration for future deliveries.

An empty pushConfig indicates that the Pub/Sub system should stop pushing messages from the given subscription and allow messages to be pulled and acknowledged - effectively pausing the subscription if Pull is not called. If a dict is provided, it must be of the same form as the protobuf message `PushConfig`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.

- `ValueError` – If the parameters are invalid.

`project_path()`

Returns a fully-qualified project resource name string.

pull (*subscription*, *max_messages*, *return_immediately=None*, *retry=<object object>*, *time-out=<object object>*)

Pulls messages from the server. Returns an empty list if there are no messages available in the backlog. The server may return UNAVAILABLE if there are too many concurrent pull requests pending for the given subscription.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>> max_messages = 0
>>>
>>> response = client.pull(subscription, max_messages)
```

Parameters

- **subscription** (*str*) – The subscription from which messages should be pulled. Format is `projects/{project}/subscriptions/{sub}`.
- **max_messages** (*int*) – The maximum number of messages returned for this request. The Pub/Sub system may return fewer than the number specified.
- **return_immediately** (*bool*) – If this field set to true, the system will respond immediately even if there are no messages available to return in the Pull response. Otherwise, the system may wait (for a bounded amount of time) until at least one message is available, rather than returning no messages. The client may cancel the request if it does not wish to wait any longer for the response.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PullResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

seek (*subscription*, *time=None*, *snapshot=None*, *retry=<object object>*, *timeout=<object object>*)

Seeks an existing subscription to a point in time or to a given snapshot, whichever is provided in the request.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> subscription = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>>
>>> response = client.seek(subscription)
```

Parameters

- **subscription** (*str*) – The subscription to affect.
- **time** (*Union[dict, Timestamp]*) – The time to seek to. Messages retained in the subscription that were published before this time are marked as acknowledged, and messages retained in the subscription that were published after this time are marked as unacknowledged. Note that this operation affects only those messages retained in the subscription (configured by the combination of `message_retention_duration` and `retain_acked_messages`). For example, if `time` corresponds to a point before the message retention window (or to a point before the system's notion of the subscription creation time), only retained messages will be marked as unacknowledged, and already-expunged messages will not be restored. If a dict is provided, it must be of the same form as the protobuf message *Timestamp*.
- **snapshot** (*str*) – The snapshot to seek to. The snapshot's topic must be the same as that of the provided subscription. Format is `projects/{project}/snapshots/{snap}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *SeekResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

set_iam_policy (*resource, policy, retry=<object object>, timeout=<object object>*)
Sets the access control policy on the specified resource. Replaces any existing policy.

Example

```
>>> from google.cloud import pubsub_v1
>>>
```

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```
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> resource = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>> policy = {}
>>>
>>> response = client.set_iam_policy(resource, policy)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being specified. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **policy** (*Union[dict, Policy]*) – REQUIRED: The complete policy to be applied to the `resource`. The size of the policy is limited to a few 10s of KB. An empty policy is a valid policy but certain Cloud Platform services (such as Projects) might reject them. If a dict is provided, it must be of the same form as the protobuf message *Policy*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Policy* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

snapshot_path (*snapshot*)

Returns a fully-qualified snapshot resource name string.

subscribe (*subscription, callback, flow_control=(), scheduler=None*)

Asynchronously start receiving messages on a given subscription.

This method starts a background thread to begin pulling messages from a Pub/Sub subscription and scheduling them to be processed using the provided `callback`.

The `callback` will be called with an individual *google.cloud.pubsub_v1.subscriber.message.Message*. It is the responsibility of the callback to either call `ack()` or `nack()` on the message when it finished processing. If an exception occurs in the callback during processing, the exception is logged and the message is `nack()` ed.

The `flow_control` argument can be used to control the rate of at which messages are pulled. The settings are relatively conservative by default to prevent “message hoarding” - a situation where the client pulls a large number of messages but can not process them fast enough leading it to “starve” other clients of messages. Increasing these settings may lead to faster throughput for messages that do not take a long time to process.

This method starts the receiver in the background and returns a *Future* representing its execution. Waiting on the future (calling `result()`) will block forever or until a non-recoverable error is encountered (such

as loss of network connectivity). Cancelling the future will signal the process to shutdown gracefully and exit.

Note: This uses Pub/Sub's *streaming pull* feature. This feature properties that may be surprising. Please take a look at <https://cloud.google.com/pubsub/docs/pull#streamingpull> for more details on how streaming pull behaves compared to the synchronous pull method.

Example:

```
from google.cloud.pubsub_v1 import subscriber

subscriber_client = pubsub.SubscriberClient()

# existing subscription
subscription = subscriber_client.subscription_path(
    'my-project-id', 'my-subscription')

def callback(message):
    print(message)
    message.ack()

future = subscriber.subscribe(
    subscription, callback)

try:
    future.result()
except KeyboardInterrupt:
    future.cancel()
```

Parameters

- **subscription** (*str*) – The name of the subscription. The subscription should have already been created (for example, by using `create_subscription()`).
- **callback** (*Callable[Message]*) – The callback function. This function receives the message as its only argument and will be called from a different thread/process depending on the scheduling strategy.
- **flow_control** (*FlowControl*) – The flow control settings. Use this to prevent situations where you are inundated with too many messages at once.
- **scheduler** (*Scheduler*) – An optional *scheduler* to use when executing the callback. This controls how callbacks are executed concurrently.

Returns

A **Future object** that can be used to manage the background stream.

Return type `google.cloud.pubsub_v1.futures.StreamingPullFuture`

subscription_path (*subscription*)

Returns a fully-qualified subscription resource name string.

target

Return the target (where the API is).

Returns The location of the API.

Return type `str`

test_iam_permissions (*resource*, *permissions*, *retry*=<object object>, *timeout*=<object object>)

Returns permissions that a caller has on the specified resource. If the resource does not exist, this will return an empty set of permissions, not a NOT_FOUND error.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> resource = client.subscription_path('[PROJECT]', '[SUBSCRIPTION]')
>>> permissions = []
>>>
>>> response = client.test_iam_permissions(resource, permissions)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy detail is being requested. *resource* is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **permissions** (*list[str]*) – The set of permissions to check for the resource. Permissions with wildcards (such as `*` or `storage.*`) are not allowed. For more information see [IAM Overview](#).
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A `TestIamPermissionsResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

topic_path (*topic*)

Returns a fully-qualified topic resource name string.

update_snapshot (*snapshot*, *update_mask*, *retry*=<object object>, *timeout*=<object object>)

Updates an existing snapshot. Note that certain properties of a snapshot are not modifiable. NOTE: The style guide requires body: “snapshot” instead of body: “*”. Keeping the latter for internal consistency in V1, however it should be corrected in V2. See https://cloud.google.com/apis/design/standard_methods#update for details.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> snapshot = {}
>>> update_mask = {}
>>>
>>> response = client.update_snapshot(snapshot, update_mask)
```

Parameters

- **snapshot** (*Union[dict, Snapshot]*) – The updated snapshot object. If a dict is provided, it must be of the same form as the protobuf message *Snapshot*
- **update_mask** (*Union[dict, FieldMask]*) – Indicates which fields in the provided snapshot to update. Must be specified and non-empty. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Snapshot* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

update_subscription (*subscription, update_mask, retry=<object object>, timeout=<object object>*)

Updates an existing subscription. Note that certain properties of a subscription, such as its topic, are not modifiable. NOTE: The style guide requires body: “subscription” instead of body: “*”. Keeping the latter for internal consistency in V1, however it should be corrected in V2. See https://cloud.google.com/apis/design/standard_methods#update for details.

Example

```
>>> from google.cloud import pubsub_v1
>>>
>>> client = pubsub_v1.SubscriberClient()
>>>
>>> subscription = {}
>>> update_mask = {}
>>>
>>> response = client.update_subscription(subscription, update_mask)
```

Parameters

- **subscription** (*Union[dict, Subscription]*) – The updated subscription object. If a dict is provided, it must be of the same form as the protobuf message *Subscription*
- **update_mask** (*Union[dict, FieldMask]*) – Indicates which fields in the provided subscription to update. Must be specified and non-empty. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns A *Subscription* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

Messages

class google.cloud.pubsub_v1.subscriber.message.**Message** (*message, ack_id, request_queue*)

A representation of a single Pub/Sub message.

The common way to interact with *Message* objects is to receive them in callbacks on subscriptions; most users should never have a need to instantiate them by hand. (The exception to this is if you are implementing a custom subclass to *Consumer*.)

message_id

str – The message ID. In general, you should not need to use this directly.

data

bytes – The data in the message. Note that this will be a *bytes*, not a text string.

attributes

.ScalarMapContainer – The attributes sent along with the message. See *attributes* for more information on this type.

publish_time

datetime – The time that this message was originally published.

Construct the Message.

Note: This class should not be constructed directly; it is the responsibility of *BasePolicy* subclasses to do so.

Parameters

- **message** (*PubsubMessage*) – The message received from Pub/Sub.

- **ack_id** (*str*) – The ack_id received from Pub/Sub.
- **request_queue** (*queue.Queue*) – A queue provided by the policy that can accept requests; the policy is responsible for handling those requests.

ack()

Acknowledge the given message.

Acknowledging a message in Pub/Sub means that you are done with it, and it will not be delivered to this subscription again. You should avoid acknowledging messages until you have *finished* processing them, so that in the event of a failure, you receive the message again.

Warning: Acks in Pub/Sub are best effort. You should always ensure that your processing code is idempotent, as you may receive any given message more than once.

attributes

Return the attributes of the underlying Pub/Sub Message.

Warning: A `ScalarMapContainer` behaves slightly differently than a `dict`. For a Pub / Sub message this is a `string->string` map. When trying to access a value via `map['key']`, if the key is not in the map, then the default value for the string type will be returned, which is an empty string. It may be more intuitive to just cast the map to a `dict` or to one use `map.get`.

Returns The message's attributes. This is a dict-like object provided by google.protobuf.

Return type `ScalarMapContainer`

data

Return the data for the underlying Pub/Sub Message.

Returns

The message data. This is always a bytestring; if you want a text string, call `bytes.decode()`.

Return type `bytes`

nack()

Decline to acknowledge the given message.

This will cause the message to be re-delivered to the subscription.

publish_time

Return the time that the message was originally published.

Returns The date and time that the message was published.

Return type `datetime`

Futures

class `google.cloud.pubsub_v1.subscriber.futures.StreamingPullFuture` (*manager*)

Represents a process that asynchronously performs streaming pull and schedules messages to be processed.

This future is resolved when the process is stopped (via `cancel()`) or if it encounters an unrecoverable error. Calling `.result()` will cause the calling thread to block indefinitely.

add_done_callback (*fn*)

Attach the provided callable to the future.

The provided function is called, with this future as its only argument, when the future finishes running.

cancel ()

Stops pulling messages and shutdowns the background thread consuming messages.

cancelled ()

bool: True if the subscription has been cancelled.

done ()

Return True the future is done, False otherwise.

This still returns True in failure cases; checking `result()` or `exception()` is the canonical way to assess success or failure.

exception (*timeout=None*)

Return the exception raised by the call, if any.

This blocks until the message has successfully been published, and returns the exception. If the call succeeded, return None.

Parameters **timeout** (*Union[int, float]*) – The number of seconds before this call times out and raises `TimeoutError`.

Raises `TimeoutError` – If the request times out.

Returns The exception raised by the call, if any.

Return type `Exception`

result (*timeout=None*)

Return the message ID, or raise an exception.

This blocks until the message has successfully been published, and returns the message ID.

Parameters **timeout** (*Union[int, float]*) – The number of seconds before this call times out and raises `TimeoutError`.

Returns The message ID.

Return type `str`

Raises

- `TimeoutError` – If the request times out.
- `Exception` – For undefined exceptions in the underlying call execution.

running ()

Actions in Pub/Sub generally may not be canceled.

Returns

True if this method has not yet completed, or `False` if it has completed.

Return type `bool`

set_exception (*exception*)

Set the result of the future to the given exception.

Parameters **exception** (`Exception`) – The exception raised.

set_result (*result*)

Set the result of the future to the provided result.

Parameters **result** (*Any*) – The result

Scheduler

Schedulers provide means to *schedule* callbacks asynchronously.

These are used by the subscriber to call the user-provided callback to process each message.

class google.cloud.pubsub_v1.subscriber.scheduler.**Scheduler**

Abstract base class for schedulers.

Schedulers are used to schedule callbacks asynchronously.

queue

Queue – A concurrency-safe queue specific to the underlying concurrency implementation.

This queue is used to send messages *back* to the scheduling actor.

schedule (*callback*, **args*, ***kwargs*)

Schedule the callback to be called asynchronously.

Parameters

- **callback** (*Callable*) – The function to call.
- **args** – Positional arguments passed to the function.
- **kwargs** – Key-word arguments passed to the function.

Returns None

shutdown ()

Shuts down the scheduler and immediately end all pending callbacks.

class google.cloud.pubsub_v1.subscriber.scheduler.**ThreadScheduler** (*executor=None*)

A thread pool-based scheduler.

This scheduler is useful in typical I/O-bound message processing.

Parameters **executor** (*concurrent.futures.ThreadPoolExecutor*) – An optional executor to use. If not specified, a default one will be created.

queue

Queue – A thread-safe queue used for communication between callbacks and the scheduling thread.

schedule (*callback*, **args*, ***kwargs*)

Schedule the callback to be called asynchronously in a thread pool.

Parameters

- **callback** (*Callable*) – The function to call.
- **args** – Positional arguments passed to the function.
- **kwargs** – Key-word arguments passed to the function.

Returns None

shutdown ()

Shuts down the scheduler and immediately end all pending callbacks.

13.5.3 Pub/Sub Client Types

class google.cloud.pubsub_v1.types.**AcknowledgeRequest**

Request for the Acknowledge method.

subscription

The subscription whose message is being acknowledged. Format is projects/{project}/subscriptions/{sub}.

ack_ids

The acknowledgment ID for the messages being acknowledged that was returned by the Pub/Sub system in the Pull response. Must not be empty.

class google.cloud.pubsub_v1.types.**AuditData**

Audit log information specific to Cloud IAM. This message is serialized as an Any type in the ServiceData message of an AuditLog message.

policy_delta

Policy delta between the original policy and the newly set policy.

class google.cloud.pubsub_v1.types.**BatchSettings** (*max_bytes*, *max_latency*,
max_messages)

Create new instance of BatchSettings(max_bytes, max_latency, max_messages)

max_bytes

Alias for field number 0

max_latency

Alias for field number 1

max_messages

Alias for field number 2

class google.cloud.pubsub_v1.types.**Binding**

Associates members with a role.

role

Role that is assigned to members. For example, roles/viewer, roles/editor, or roles/owner. Required

members

Specifies the identities requesting access for a Cloud Platform resource. members can have the following values: - allUsers: A special identifier that represents anyone who is on the internet; with or without a Google account. - allAuthenticatedUsers: A special identifier that represents anyone who is authenticated with a Google account or a service account. - user:{emailid}: An email address that represents a specific Google account. For example, alice@gmail.com or joe@example.com. - serviceAccount:{emailid}: An email address that represents a service account. For example, my-other-app@appspot.gserviceaccount.com. - group:{emailid}: An email address that represents a Google group. For example, admins@example.com. - domain:{domain}: A Google Apps domain name that represents all the users of that domain. For example, google.com or example.com.

class google.cloud.pubsub_v1.types.**BindingDelta**

One delta entry for Binding. Each individual change (only one member in each entry) to a binding will be a separate entry.

action

The action that was performed on a Binding. Required

role

Role that is assigned to members. For example, roles/viewer, roles/editor, or roles/owner. Required

member

A single identity requesting access for a Cloud Platform resource. Follows the same format of Binding.members. Required

class google.cloud.pubsub_v1.types.**CreateSnapshotRequest**

Request for the CreateSnapshot method.

name

Optional user-provided name for this snapshot. If the name is not provided in the request, the server will assign a random name for this snapshot on the same project as the subscription. Note that for REST API requests, you must specify a name. Format is projects/{project}/snapshots/{snap}.

subscription

The subscription whose backlog the snapshot retains. Specifically, the created snapshot is guaranteed to retain: (a) The existing backlog on the subscription. More precisely, this is defined as the messages in the subscription's backlog that are unacknowledged upon the successful completion of the CreateSnapshot request; as well as: (b) Any messages published to the subscription's topic following the successful completion of the CreateSnapshot request. Format is projects/{project}/subscriptions/{sub}.

class google.cloud.pubsub_v1.types.**CustomHttpPattern**

class google.cloud.pubsub_v1.types.**DeleteSnapshotRequest**

Request for the DeleteSnapshot method.

snapshot

The name of the snapshot to delete. Format is projects/{project}/snapshots/{snap}.

class google.cloud.pubsub_v1.types.**DeleteSubscriptionRequest**

Request for the DeleteSubscription method.

subscription

The subscription to delete. Format is projects/{project}/subscriptions/{sub}.

class google.cloud.pubsub_v1.types.**DeleteTopicRequest**

Request for the DeleteTopic method.

topic

Name of the topic to delete. Format is projects/{project}/topics/{topic}.

class google.cloud.pubsub_v1.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.pubsub_v1.types.**Duration**

class google.cloud.pubsub_v1.types.**Empty**

class google.cloud.pubsub_v1.types.**EnumDescriptorProto**

class **EnumReservedRange**

class google.cloud.pubsub_v1.types.**EnumOptions**

class google.cloud.pubsub_v1.types.**EnumValueDescriptorProto**

```

class google.cloud.pubsub_v1.types.EnumValueOptions
class google.cloud.pubsub_v1.types.ExtensionRangeOptions
class google.cloud.pubsub_v1.types.FieldDescriptorProto
class google.cloud.pubsub_v1.types.FieldMask
class google.cloud.pubsub_v1.types.FieldOptions
class google.cloud.pubsub_v1.types.FileDescriptorProto
class google.cloud.pubsub_v1.types.FileDescriptorSet
class google.cloud.pubsub_v1.types.FileOptions
class google.cloud.pubsub_v1.types.FlowControl (max_bytes,      max_messages,      re-
                                              sume_threshold,      max_requests,
                                              max_request_batch_size,
                                              max_request_batch_latency,
                                              max_lease_duration)
    Create new instance of FlowControl(max_bytes, max_messages, resume_threshold, max_requests,
    max_request_batch_size, max_request_batch_latency, max_lease_duration)

    max_bytes
        Alias for field number 0

    max_lease_duration
        Alias for field number 6

    max_messages
        Alias for field number 1

    max_request_batch_latency
        Alias for field number 5

    max_request_batch_size
        Alias for field number 4

    max_requests
        Alias for field number 3

    resume_threshold
        Alias for field number 2

class google.cloud.pubsub_v1.types.GeneratedCodeInfo

    class Annotation

class google.cloud.pubsub_v1.types.GetIamPolicyRequest
    Request message for GetIamPolicy method.

    resource
        REQUIRED: The resource for which the policy is being requested. resource is usually specified as a
        path. For example, a Project resource is specified as projects/{project}.

class google.cloud.pubsub_v1.types.GetSubscriptionRequest
    Request for the GetSubscription method.

    subscription
        The name of the subscription to get. Format is projects/{project}/subscriptions/{sub}.

class google.cloud.pubsub_v1.types.GetTopicRequest
    Request for the GetTopic method.

```

topic

The name of the topic to get. Format is `projects/{project}/topics/{topic}`.

class `google.cloud.pubsub_v1.types.Http`

class `google.cloud.pubsub_v1.types.HttpRule`

class `google.cloud.pubsub_v1.types.ListSnapshotsRequest`

Request for the `ListSnapshots` method.

project

The name of the cloud project that snapshots belong to. Format is `projects/{project}`.

page_size

Maximum number of snapshots to return.

page_token

The value returned by the last `ListSnapshotsResponse`; indicates that this is a continuation of a prior `ListSnapshots` call, and that the system should return the next page of data.

class `google.cloud.pubsub_v1.types.ListSnapshotsResponse`

Response for the `ListSnapshots` method.

snapshots

The resulting snapshots.

next_page_token

If not empty, indicates that there may be more snapshot that match the request; this value should be passed in a new `ListSnapshotsRequest`.

class `google.cloud.pubsub_v1.types.ListSubscriptionsRequest`

Request for the `ListSubscriptions` method.

project

The name of the cloud project that subscriptions belong to. Format is `projects/{project}`.

page_size

Maximum number of subscriptions to return.

page_token

The value returned by the last `ListSubscriptionsResponse`; indicates that this is a continuation of a prior `ListSubscriptions` call, and that the system should return the next page of data.

class `google.cloud.pubsub_v1.types.ListSubscriptionsResponse`

Response for the `ListSubscriptions` method.

subscriptions

The subscriptions that match the request.

next_page_token

If not empty, indicates that there may be more subscriptions that match the request; this value should be passed in a new `ListSubscriptionsRequest` to get more subscriptions.

class `google.cloud.pubsub_v1.types.ListTopicSubscriptionsRequest`

Request for the `ListTopicSubscriptions` method.

topic

The name of the topic that subscriptions are attached to. Format is `projects/{project}/topics/{topic}`.

page_size

Maximum number of subscription names to return.

page_token

The value returned by the last `ListTopicSubscriptionsResponse`; indicates that this is a continuation of a prior `ListTopicSubscriptions` call, and that the system should return the next page of data.

class `google.cloud.pubsub_v1.types.ListTopicSubscriptionsResponse`

Response for the `ListTopicSubscriptions` method.

subscriptions

The names of the subscriptions that match the request.

next_page_token

If not empty, indicates that there may be more subscriptions that match the request; this value should be passed in a new `ListTopicSubscriptionsRequest` to get more subscriptions.

class `google.cloud.pubsub_v1.types.ListTopicsRequest`

Request for the `ListTopics` method.

project

The name of the cloud project that topics belong to. Format is `projects/{project}`.

page_size

Maximum number of topics to return.

page_token

The value returned by the last `ListTopicsResponse`; indicates that this is a continuation of a prior `ListTopics` call, and that the system should return the next page of data.

class `google.cloud.pubsub_v1.types.ListTopicsResponse`

Response for the `ListTopics` method.

topics

The resulting topics.

next_page_token

If not empty, indicates that there may be more topics that match the request; this value should be passed in a new `ListTopicsRequest`.

class `google.cloud.pubsub_v1.types.MessageOptions`

class `google.cloud.pubsub_v1.types.MethodDescriptorProto`

class `google.cloud.pubsub_v1.types.MethodOptions`

class `google.cloud.pubsub_v1.types.ModifyAckDeadlineRequest`

Request for the `ModifyAckDeadline` method.

subscription

The name of the subscription. Format is `projects/{project}/subscriptions/{sub}`.

ack_ids

List of acknowledgment IDs.

ack_deadline_seconds

The new ack deadline with respect to the time this request was sent to the Pub/Sub system. For example, if the value is 10, the new ack deadline will expire 10 seconds after the `ModifyAckDeadline` call was made. Specifying zero may immediately make the message available for another pull request. The minimum deadline you can specify is 0 seconds. The maximum deadline you can specify is 600 seconds (10 minutes).

class `google.cloud.pubsub_v1.types.ModifyPushConfigRequest`

Request for the `ModifyPushConfig` method.

subscription

The name of the subscription. Format is `projects/{project}/subscriptions/{sub}`.

push_config

The push configuration for future deliveries. An empty `pushConfig` indicates that the Pub/Sub system should stop pushing messages from the given subscription and allow messages to be pulled and acknowledged - effectively pausing the subscription if `Pull` is not called.

class `google.cloud.pubsub_v1.types.OneofDescriptorProto`

class `google.cloud.pubsub_v1.types.OneofOptions`

class `google.cloud.pubsub_v1.types.Policy`

Defines an Identity and Access Management (IAM) policy. It is used to specify access control policies for Cloud Platform resources.

A `Policy` consists of a list of bindings. A `Binding` binds a list of members to a role, where the members can be user accounts, Google groups, Google domains, and service accounts. A role is a named list of permissions defined by IAM.

Example

```
{
  "bindings": [
    {
      "role": "roles/owner",
      "members": [
        "user:mike@example.com",
        "group:admins@example.com",
        "domain:google.com",
        "serviceAccount:my-other-app@appspot.gserviceaccount.com",
      ]
    },
    {
      "role": "roles/viewer",
      "members": ["user:sean@example.com"]
    }
  ]
}
```

For a description of IAM and its features, see the [IAM developer's guide](#).

version

Version of the `Policy`. The default version is 0.

bindings

Associates a list of members to a role. Multiple bindings must not be specified for the same role. bindings with no members will result in an error.

etag

`etag` is used for optimistic concurrency control as a way to help prevent simultaneous updates of a policy from overwriting each other. It is strongly suggested that systems make use of the `etag` in the read-modify-write cycle to perform policy updates in order to avoid race conditions: An `etag` is returned in the response to `getIamPolicy`, and systems are expected to put that `etag` in the request to `setIamPolicy` to ensure that their change will be applied to the same version of the policy. If no `etag` is provided in the call to `setIamPolicy`, then the existing policy is overwritten blindly.

class `google.cloud.pubsub_v1.types.PolicyDelta`

The difference delta between two policies.

binding_deltas

The delta for Bindings between two policies.

class google.cloud.pubsub_v1.types.**PublishRequest**

Request for the Publish method.

topic

The messages in the request will be published on this topic. Format is projects/{project}/topics/{topic}.

messages

The messages to publish.

class google.cloud.pubsub_v1.types.**PublishResponse**

Response for the Publish method.

message_ids

The server-assigned ID of each published message, in the same order as the messages in the request. IDs are guaranteed to be unique within the topic.

class google.cloud.pubsub_v1.types.**PubsubMessage**

A message data and its attributes. The message payload must not be empty; it must contain either a non-empty data field, or at least one attribute.

data

The message payload.

attributes

Optional attributes for this message.

message_id

ID of this message, assigned by the server when the message is published. Guaranteed to be unique within the topic. This value may be read by a subscriber that receives a PubsubMessage via a Pull call or a push delivery. It must not be populated by the publisher in a Publish call.

publish_time

The time at which the message was published, populated by the server when it receives the Publish call. It must not be populated by the publisher in a Publish call.

class AttributesEntry

class google.cloud.pubsub_v1.types.**PullRequest**

Request for the Pull method.

subscription

The subscription from which messages should be pulled. Format is projects/{project}/subscriptions/{sub}.

return_immediately

If this field set to true, the system will respond immediately even if there are no messages available to return in the Pull response. Otherwise, the system may wait (for a bounded amount of time) until at least one message is available, rather than returning no messages. The client may cancel the request if it does not wish to wait any longer for the response.

max_messages

The maximum number of messages returned for this request. The Pub/Sub system may return fewer than the number specified.

class google.cloud.pubsub_v1.types.**PullResponse**

Response for the Pull method.

received_messages

Received Pub/Sub messages. The Pub/Sub system will return zero messages if there are no more available in the backlog. The Pub/Sub system may return fewer than the `maxMessages` requested even if there are more messages available in the backlog.

class google.cloud.pubsub_v1.types.**PushConfig**

Configuration for a push delivery endpoint.

push_endpoint

A URL locating the endpoint to which messages should be pushed. For example, a Webhook endpoint might use “<https://example.com/push>”.

attributes

Endpoint configuration attributes. Every endpoint has a set of API supported attributes that can be used to control different aspects of the message delivery. The currently supported attribute is `x-goog-version`, which you can use to change the format of the pushed message. This attribute indicates the version of the data expected by the endpoint. This controls the shape of the pushed message (i.e., its fields and metadata). The endpoint version is based on the version of the Pub/Sub API. If not present during the `CreateSubscription` call, it will default to the version of the API used to make such call. If not present during a `ModifyPushConfig` call, its value will not be changed. `GetSubscription` calls will always return a valid version, even if the subscription was created without this attribute. The possible values for this attribute are: `-v1beta1`: uses the push format defined in the `v1beta1` Pub/Sub API. `-v1` or `v1beta2`: uses the push format defined in the `v1` Pub/Sub API.

class AttributesEntry

class google.cloud.pubsub_v1.types.**ReceivedMessage**

A message and its corresponding acknowledgment ID.

ack_id

This ID can be used to acknowledge the received message.

message

The message.

class google.cloud.pubsub_v1.types.**SeekRequest**

Request for the `Seek` method.

subscription

The subscription to affect.

time

The time to seek to. Messages retained in the subscription that were published before this time are marked as acknowledged, and messages retained in the subscription that were published after this time are marked as unacknowledged. Note that this operation affects only those messages retained in the subscription (configured by the combination of `message_retention_duration` and `retain_acked_messages`). For example, if `time` corresponds to a point before the message retention window (or to a point before the system’s notion of the subscription creation time), only retained messages will be marked as unacknowledged, and already- expunged messages will not be restored.

snapshot

The snapshot to seek to. The snapshot’s topic must be the same as that of the provided subscription. Format is `projects/{project}/snapshots/{snap}`.

class google.cloud.pubsub_v1.types.**SeekResponse**

class google.cloud.pubsub_v1.types.**ServiceDescriptorProto**

class google.cloud.pubsub_v1.types.**ServiceOptions**

class google.cloud.pubsub_v1.types.SetIamPolicyRequest

Request message for SetIamPolicy method.

resource

REQUIRED: The resource for which the policy is being specified. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.

policy

REQUIRED: The complete policy to be applied to the `resource`. The size of the policy is limited to a few 10s of KB. An empty policy is a valid policy but certain Cloud Platform services (such as Projects) might reject them.

class google.cloud.pubsub_v1.types.Snapshot

A snapshot resource.

name

The name of the snapshot.

topic

The name of the topic from which this snapshot is retaining messages.

expire_time

The snapshot is guaranteed to exist up until this time. A newly-created snapshot expires no later than 7 days from the time of its creation. Its exact lifetime is determined at creation by the existing backlog in the source subscription. Specifically, the lifetime of the snapshot is 7 days - (age of oldest unacked message in the subscription). For example, consider a subscription whose oldest unacked message is 3 days old. If a snapshot is created from this subscription, the snapshot - which will always capture this 3-day-old backlog as long as the snapshot exists - will expire in 4 days.

labels

User labels.

class LabelsEntry

class google.cloud.pubsub_v1.types.SourceCodeInfo

class Location

class google.cloud.pubsub_v1.types.StreamingPullRequest

Request for the StreamingPull streaming RPC method. This request is used to establish the initial stream as well as to stream acknowledgements and ack deadline modifications from the client to the server.

subscription

The subscription for which to initialize the new stream. This must be provided in the first request on the stream, and must not be set in subsequent requests from client to server. Format is `projects/{project}/subscriptions/{sub}`.

ack_ids

List of acknowledgement IDs for acknowledging previously received messages (received on this stream or a different stream). If an ack ID has expired, the corresponding message may be redelivered later. Acknowledging a message more than once will not result in an error. If the acknowledgement ID is malformed, the stream will be aborted with status `INVALID_ARGUMENT`.

modify_deadline_seconds

The list of new ack deadlines for the IDs listed in `modify_deadline_ack_ids`. The size of this list must be the same as the size of `modify_deadline_ack_ids`. If it differs the stream will be aborted with `INVALID_ARGUMENT`. Each element in this list is applied to the element in the same position in `modify_deadline_ack_ids`. The new ack deadline is with respect to the time this request was sent to the Pub/Sub system. Must be ≥ 0 . For example, if the value is 10, the new ack deadline will expire 10 seconds after this request is received. If the value is 0, the message is immediately made available for

another streaming or non-streaming pull request. If the value is < 0 (an error), the stream will be aborted with status `INVALID_ARGUMENT`.

modify_deadline_ack_ids

List of acknowledgement IDs whose deadline will be modified based on the corresponding element in `modify_deadline_seconds`. This field can be used to indicate that more time is needed to process a message by the subscriber, or to make the message available for redelivery if the processing was interrupted.

stream_ack_deadline_seconds

The ack deadline to use for the stream. This must be provided in the first request on the stream, but it can also be updated on subsequent requests from client to server. The minimum deadline you can specify is 10 seconds. The maximum deadline you can specify is 600 seconds (10 minutes).

class google.cloud.pubsub_v1.types.StreamingPullResponse

Response for the `StreamingPull` method. This response is used to stream messages from the server to the client.

received_messages

Received Pub/Sub messages. This will not be empty.

class google.cloud.pubsub_v1.types.Subscription

A subscription resource.

name

The name of the subscription. It must have the format `"projects/{project}/subscriptions/{subscription}"`. `{subscription}` must start with a letter, and contain only letters (`[A-Za-z]`), numbers (`[0-9]`), dashes (`-`), underscores (`_`), periods (`.`), tildes (`~`), plus (`+`) or percent signs (`%`). It must be between 3 and 255 characters in length, and it must not start with `"goog"`.

topic

The name of the topic from which this subscription is receiving messages. Format is `projects/{project}/topics/{topic}`. The value of this field will be `_deleted-topic_` if the topic has been deleted.

push_config

If push delivery is used with this subscription, this field is used to configure it. An empty `pushConfig` signifies that the subscriber will pull and ack messages using API methods.

ack_deadline_seconds

This value is the maximum time after a subscriber receives a message before the subscriber should acknowledge the message. After message delivery but before the ack deadline expires and before the message is acknowledged, it is an outstanding message and will not be delivered again during that time (on a best-effort basis). For pull subscriptions, this value is used as the initial value for the ack deadline. To override this value for a given message, call `ModifyAckDeadline` with the corresponding `ack_id` if using pull. The minimum custom deadline you can specify is 10 seconds. The maximum custom deadline you can specify is 600 seconds (10 minutes). If this parameter is 0, a default value of 10 seconds is used. For push delivery, this value is also used to set the request timeout for the call to the push endpoint. If the subscriber never acknowledges the message, the Pub/Sub system will eventually redeliver the message.

retain_acked_messages

Indicates whether to retain acknowledged messages. If true, then messages are not expunged from the subscription's backlog, even if they are acknowledged, until they fall out of the `message_retention_duration` window.

message_retention_duration

How long to retain unacknowledged messages in the subscription's backlog, from the moment a message is published. If `retain_acked_messages` is true, then this also configures the retention of acknowledged messages, and thus configures how far back in time a `Seek` can be done. Defaults to 7 days. Cannot

be more than 7 days or less than 10 minutes.

labels

User labels.

class LabelsEntry

class google.cloud.pubsub_v1.types.**TestIamPermissionsRequest**

Request message for TestIamPermissions method.

resource

REQUIRED: The resource for which the policy detail is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.

permissions

The set of permissions to check for the `resource`. Permissions with wildcards (such as `*` or `storage.*`) are not allowed. For more information see [IAM Overview](#).

class google.cloud.pubsub_v1.types.**TestIamPermissionsResponse**

Response message for TestIamPermissions method.

permissions

A subset of `TestPermissionsRequest.permissions` that the caller is allowed.

class google.cloud.pubsub_v1.types.**Timestamp**

class google.cloud.pubsub_v1.types.**Topic**

A topic resource.

name

The name of the topic. It must have the format `"projects/{project}/topics/{topic}"`. `{topic}` must start with a letter, and contain only letters (`[A-Za-z]`), numbers (`[0-9]`), dashes (`-`), underscores (`_`), periods (`.`), tildes (`~`), plus (`+`) or percent signs (`%`). It must be between 3 and 255 characters in length, and it must not start with `"goog"`.

labels

User labels.

class LabelsEntry

class google.cloud.pubsub_v1.types.**UninterpretedOption**

class NamePart

class google.cloud.pubsub_v1.types.**UpdateSnapshotRequest**

Request for the UpdateSnapshot method.

snapshot

The updated snapshot object.

update_mask

Indicates which fields in the provided snapshot to update. Must be specified and non-empty.

class google.cloud.pubsub_v1.types.**UpdateSubscriptionRequest**

Request for the UpdateSubscription method.

subscription

The updated subscription object.

update_mask

Indicates which fields in the provided subscription to update. Must be specified and non-empty.

class `google.cloud.pubsub_v1.types.UpdateTopicRequest`

Request for the UpdateTopic method.

topic

The topic to update.

update_mask

Indicates which fields in the provided topic to update. Must be specified and non-empty.

13.6 Changelog

For a list of all `google-cloud-pubsub` releases:

13.6.1 Changelog

PyPI History

0.35.4

Implementation Changes

- Recover streams during the gRPC error callback. (#5446)
- Use operational lock when checking for activity on streams. (#5445)

0.35.3

Implementation Changes

- Add additional error handling to unary RPCs (#5438)

0.35.2

Implementation Changes

- Add heartbeating to the streaming pull manager (#5413)
- Fix retrying of bidirectional RPCs and closing the streaming pull manager (#5412)

0.35.1

Implementation Changes

- Catch errors when re-retrying `send()` or `recv()` in addition to `open()` (#5402)

0.35.0

Implementation Changes

- Send requests during streaming pull over a separate unary RPC (#5377)
- Initialize references to helper threads before starting them (#5374)
- Make leaser exit more quickly (#5373)
- Make re-open failures bubble to callbacks (#5372)
- Avoid overwriting **'module'** of messages from shared modules. (#5364)
- Normalize overflow handling for max count and bytes (#5343)

New Features

- Restore the synchronous pull method (#5379)
- Promote `subscribe_experimental()` to `subscribe()`, remove old subscriber implementation. (#5274)
- Wire up scheduler argument for `subscribe()` (#5279)

Documentation

- Add link to streaming pull behavior documentation (#5378)
- Fix example in `subscribe`'s documentation (#5375)

Internal / Testing Changes

- Add Test runs for Python 3.7 and remove 3.4 (#5295)
- Modify system tests to use prerelease versions of `grpcio` (#5304)

0.34.0

Implementation Changes

- Lower the flow control defaults. (#5248)

New Features

- A new implementation of the subscriber has been added. This is available as `SubscriberClient.subscribe_experimental`. In the next release, this will replace the current `subscribe` method. If you use this, please report your findings to us on GitHub. (#5189, #5201, #5210, #5229, #5230, #5237, #5256)

Dependencies

- Remove `psutil` dependency. (#5248)

0.33.1

Implementation changes

- Surface publish RPC errors back to the publish futures (#5124)
- Make the pausable response iterator aware of the RPC state to prevent deadlock (#5108)
- Properly handle graceful stop in request generator (#5097)

0.33.0

Implementation changes

- Drop leased messages after flow_control.max_lease_duration has passed. (#5020)
- Fix maintain leases to not modack messages it just dropped (#5045)
- Avoid race condition in maintain_leases by copying leased_messages (#5035)
- Retry subscription stream on InternalServerError, Unknown, and GatewayTimeout (#5021)
- Use the rpc's status to determine when to exit the request generator thread (#5054)
- Fix missing iter on request stream (#5078)
- Nack messages when the subscriber callback errors (#5019)

Testing

- pubsub nox.py cleanup (#5056)
- Fix test that checks for retryable exceptions (#5034)

0.32.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)

0.32.0

Implementation changes

- Added support for streaming pull receipts. (#4878)

0.31.0

New features

- Added the ability for subscriber to batch requests. (#4895)
- Added pending request backpressure for subscriber. (#4892)

Implementation changes

- Raise `ValueError` when a message is too large for a batch. (#4872)
- Updated the default batch size to 10 MB. (#4857)
- Allow a custom `Event` type in Pub / Sub futures. (#4643)

Documentation

- Clarify that `modify_ack_deadline` resets the deadline. (#4822)

Testing

- Fix unit test for default `max_bytes` value. (#4860)

0.30.1

Notable Implementation Changes

- Moving lock factory used in publisher client to the Batch implementation (#4628).
- Use a UUID (rather than a sentinel object) on `Future` (#4634).
- Apply scopes to explicitly provided credentials if needed (#4594). Fixes #4479. This feature comes as part of `google-api-core==0.1.3`.

Dependencies

- Upgrading to `google-api-core==0.1.3` which depends on the latest `grpcio==1.8.2` (#4642). This fixes #4600. For details, see related gRPC [bug](#) and [fix](#).

PyPI: <https://pypi.org/project/google-cloud-pubsub/0.30.1/>

0.30.0

Notable Implementation Changes

- Dropping redundant `Policy._paused` data member (#4568).
- Removing redundant “active” check in policy (#4603).
- Adding a `Consumer.active` property (#4604).

- Making it impossible to call `Policy.open()` on an already opened policy (#4606).
- **Bug fix** (#4575): Fix bug with async publish for batches. There were two related bugs. The first: if a batch exceeds the `max_messages` from the batch settings, then the `commit()` will fail. The second: when a “monitor” worker calls `commit()` after `max_latency` seconds, a failure can occur if a new message is added to the batch **during** the commit. To fix, the following changes were implemented:
 - Adding a “STARTING” status for `Batch.commit()` (#4614). This fixes the issue when the batch exceeds `max_messages`.
 - Adding extra check in `Batch.will_accept` for the number of messages (#4612).
 - Moving `will_accept()` check out of `PublisherClient.batch()` factory (#4613).
 - Checking `Batch.will_accept` in thread-safe way (#4616).
- **Breaking API change**: As part of #4613, changing `PublisherClient.batch()` to no longer accept a message (since the `will_accept` check needs to happen in a more concurrency friendly way). In addition, changing the `create` argument so that it means “create even if batch already exists” rather than “create if missing”.

Documentation

- Add more explicit documentation for `Message.attributes` (#4601).
- Make `Message.__repr__` a bit prettier / more useful (#4602).

PyPI: <https://pypi.org/project/google-cloud-pubsub/0.30.0/>

0.29.4

Notable Implementation Changes

- **Bug fix**: Restore previous behavior of the subscription lease maintenance worker. This was accidentally “stopped” in 0.29.3 due to a change in implementation that went from an `active` boolean to an “inactive” / `stopped` boolean, so `True` became `False` and vice-versa (#4564).

PyPI: <https://pypi.org/project/google-cloud-pubsub/0.29.4/>

0.29.3

Notable Implementation Changes

- In subscription consumer thread: Making sure the request generator attached to an inactive bidirectional streaming pull is stopped before spawning a new request generator. This way we have a (fairly strong) guarantee that requests in the queue don’t get sent into an inactive stream (#4503, #4554).
- Adding `pause / resume` to subscription consumer thread and using these methods during flow control. The previous implementation tried to close the subscription (which involved 3 worker threads and 10 executors in a thread pool) and then re-open a new subscription. But, this was not entirely possible to shut down correctly from **within** one of the worker threads. Instead, we only pause the worker (of the 3) that is pulling new responses from the bidirectional streaming pull (#4558).
- **Bug fix** (#4516): Using `max` where `min` was used by mistake to ensure the number of bytes tracked for subscription flow control remained non-negative (#4514).
- Raising `TypeError` if `SubscriberClient.subscribe` receives a non-callable callback (#4497).

- Shutting down thread pool executor when closing a subscriber policy (#4522).
- Renaming `Policy.on_callback_request` to `Policy.dispatch_callback` and making the behavior much less dynamic (#4511).
- Make sure subscription consumer thread doesn't try to join itself when exiting in error (#4540).

Dependencies

- Upgrading `google-api-core` dependency to latest revision (0.1.2) since we rely on the latest version of the `concurrent.futures` backport to provide the `thread_name_prefix` argument for thread pool executor (#4521, #4559).

PyPI: <https://pypi.org/project/google-cloud-pubsub/0.29.3/>

0.29.2

Notable Implementation Changes

- **Bug fix** (#4463): Making a subscription consumer actually stop running after encountering an exception (#4472, #4498). This bug is the **only** reason for the 0.29.2 release.
- Thread Changes
 - Added names to all threads created directly by Pub / Sub (#4474, #4476, #4480). Also removing spaces and colons from thread names (#4476).
- Logging changes
 - Adding debug logs when lease management exits (#4484)
 - Adding debug logs when `QueueCallbackThread` exits (#4494). Instances handle the processing of messages in a subscription (e.g. to ack).
 - Using a named logger in `publisher.batch.thread` (#4473)
 - Adding newlines before logging protobuf payloads (#4471)

PyPI: <https://pypi.org/project/google-cloud-pubsub/0.29.2/>

0.29.1

Notable Implementation Changes

- **Bug fix** (#4234): Adding retries for connection `UNAVAILABLE`. This bug made the Pub / Sub client mostly unusable for subscribers to topics that don't have a steady stream of messages. After ~2 minutes of inactivity, the gRPC connection would timeout and raise `UNAVAILABLE` locally, i.e. not due to a response from the backend. (#4444)
- Updating autogenerated packages (#4438)

Documentation

- Fixing broken examples in quick start (#4398)
- Fixing broken example in README (#4402, h/t to @mehmetboraezer)

- Updating old/dead link to usage doc in README (#4406, h/t to @mehmetboraezer)

Dependencies

- Dropping dependency on google-cloud-core in exchange for google-api-core (#4438)

PyPI: <https://pypi.org/project/google-cloud-pubsub/0.29.1/>

0.29.0

Notable Implementation Changes

- Honor `max_messages` always (#4262)
- Add futures for subscriptions (#4265)
- Set gRPC message options and keepalive (#4269)

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to google-cloud-core `>= 0.28.0` and adding dependency on google-api-core (#4221, #4280)
- Deferring to google-api-core for grpcio and googleapis-common-protos dependencies (#4096, #4098)

PyPI: <https://pypi.org/project/google-cloud-pubsub/0.29.0/>

Python Client for Google Cloud OS Login API (Alpha)

Google Cloud OS Login API: Manages OS login configuration for Google account users.

- [Client Library Documentation](#)
- [Product Documentation](#)

14.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. [Select or create a Cloud Platform project.](#)
2. [Enable billing for your project.](#)
3. [Enable the Google Cloud OS Login API.](#)
4. [Setup Authentication.](#)

14.1.1 Installation

Install this library in a [virtualenv](#) using `pip`. [virtualenv](#) is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With [virtualenv](#), it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-os-login
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-os-login
```

14.1.2 Next Steps

- Read the [Client Library Documentation](#) for Google Cloud OS Login API API to see other available methods on the client.
- Read the [Google Cloud OS Login API Product documentation](#) to learn more about the product and see How-to Guides.
- View this repository's [main README](#) to see the full list of Cloud APIs that we cover.

14.2 Api Reference

14.2.1 Client for Google Cloud OS Login API

```
class google.cloud.oslogin_v1.OsLoginServiceClient(channel=None, credentials=None,
                                                    client_config={'interfaces':
{'google.cloud.oslogin.v1.OsLoginService':
{'retry_codes': {'idempotent': ['DEADLINE_EXCEEDED', 'UNAVAILABLE'], 'non_idempotent': []},
'retry_params': {'default': {'initial_retry_delay_millis': 100,
'retry_delay_multiplier': 1.3,
'max_retry_delay_millis': 60000,
'initial_rpc_timeout_millis': 10000,
'rpc_timeout_multiplier': 1.0,
'max_rpc_timeout_millis': 10000,
'total_timeout_millis': 600000}}},
'methods': {'DeletePosixAccount': {'timeout_millis': 10000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'DeleteSshPublicKey': {'timeout_millis': 10000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'GetLoginProfile': {'timeout_millis': 10000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'GetSshPublicKey': {'timeout_millis': 10000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'ImportSshPublicKey': {'timeout_millis': 10000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'UpdateSshPublicKey': {'timeout_millis': 10000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'}}}}, client_info=None)
```

Cloud OS Login API

The Cloud OS Login API allows you to manage users and their associated SSH public keys for logging into virtual machines on Google Cloud Platform.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A `Channel` instance through which to make calls. This

argument is mutually exclusive with `credentials`; providing both will raise an exception.

- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

delete_posix_account (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)
Deletes a POSIX account.

Example

```
>>> from google.cloud import oslogin_v1
>>>
>>> client = oslogin_v1.OsLoginServiceClient()
>>>
>>> name = client.project_path('[USER]', '[PROJECT]')
>>>
>>> client.delete_posix_account(name)
```

Parameters

- **name** (*str*) – A reference to the POSIX account to update. POSIX accounts are identified by the project ID they are associated with. A reference to the POSIX account is in format `users/{user}/projects/{project}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_ssh_public_key (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)
Deletes an SSH public key.

Example

```
>>> from google.cloud import oslogin_v1
>>>
>>> client = oslogin_v1.OsLoginServiceClient()
>>>
>>> name = client.fingerprint_path('[USER]', '[FINGERPRINT]')
>>>
>>> client.delete_ssh_public_key(name)
```

Parameters

- **name** (*str*) – The fingerprint of the public key to update. Public keys are identified by their SHA-256 fingerprint. The fingerprint of the public key is in format `users/{user}/sshPublicKeys/{fingerprint}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod fingerprint_path (*user, fingerprint*)

Return a fully-qualified fingerprint string.

get_login_profile (*name, retry=<object object>, timeout=<object object>, metadata=None*)

Retrieves the profile information used for logging in to a virtual machine on Google Compute Engine.

Example

```
>>> from google.cloud import oslogin_v1
>>>
>>> client = oslogin_v1.OsLoginServiceClient()
>>>
>>> name = client.user_path('[USER]')
>>>
>>> response = client.get_login_profile(name)
```

Parameters

- **name** (*str*) – The unique ID for the user in format `users/{user}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *LoginProfile* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_ssh_public_key (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)
Retrieves an SSH public key.

Example

```
>>> from google.cloud import oslogin_v1
>>>
>>> client = oslogin_v1.OsLoginServiceClient()
>>>
>>> name = client.fingerprint_path('[USER]', '[FINGERPRINT]')
>>>
>>> response = client.get_ssh_public_key(name)
```

Parameters

- **name** (*str*) – The fingerprint of the public key to retrieve. Public keys are identified by their SHA-256 fingerprint. The fingerprint of the public key is in format `users/{user}/sshPublicKeys/{fingerprint}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *SshPublicKey* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

import_ssh_public_key (*parent*, *ssh_public_key*, *project_id=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Adds an SSH public key and returns the profile information. Default POSIX account information is set when no username and UID exist as part of the login profile.

Example

```
>>> from google.cloud import oslogin_v1
>>>
>>> client = oslogin_v1.OsLoginServiceClient()
>>>
>>> parent = client.user_path('[USER]')
>>> ssh_public_key = {}
>>>
>>> response = client.import_ssh_public_key(parent, ssh_public_key)
```

Parameters

- **parent** (*str*) – The unique ID for the user in format `users/{user}`.
- **ssh_public_key** (*Union[dict, SshPublicKey]*) – The SSH public key and expiration time. If a dict is provided, it must be of the same form as the protobuf message *SshPublicKey*
- **project_id** (*str*) – The project ID of the Google Cloud Platform project.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *ImportSshPublicKeyResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod project_path (*user*, *project*)

Return a fully-qualified project string.

update_ssh_public_key (*name*, *ssh_public_key*, *update_mask=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Updates an SSH public key and returns the profile information. This method supports patch semantics.

Example

```
>>> from google.cloud import oslogin_v1
>>>
>>> client = oslogin_v1.OsLoginServiceClient()
>>>
>>> name = client.fingerprint_path('[USER]', '[FINGERPRINT]')
>>> ssh_public_key = {}
>>>
>>> response = client.update_ssh_public_key(name, ssh_public_key)
```

Parameters

- **name** (*str*) – The fingerprint of the public key to update. Public keys are identified by their SHA-256 fingerprint. The fingerprint of the public key is in format `users/{user}/sshPublicKeys/{fingerprint}`.
- **ssh_public_key** (*Union[dict, SshPublicKey]*) – The SSH public key and expiration time. If a dict is provided, it must be of the same form as the protobuf message *SshPublicKey*
- **update_mask** (*Union[dict, FieldMask]*) – Mask to control which fields get updated. Updates all if not present. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *SshPublicKey* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod **user_path** (*user*)
Return a fully-qualified user string.

14.2.2 Types for Google Cloud OS Login API Client

class `google.cloud.oslogin_v1.types.CustomHttpPattern`

class `google.cloud.oslogin_v1.types.DeletePosixAccountRequest`
A request message for deleting a POSIX account entry.

name
A reference to the POSIX account to update. POSIX accounts are identified by the project ID they

are associated with. A reference to the POSIX account is in format `users/{user}/projects/{project}`.

class `google.cloud.oslogin_v1.types.DeleteSshPublicKeyRequest`

A request message for deleting an SSH public key.

name

The fingerprint of the public key to update. Public keys are identified by their SHA-256 fingerprint. The fingerprint of the public key is in format `users/{user}/sshPublicKeys/{fingerprint}`.

class `google.cloud.oslogin_v1.types.DescriptorProto`

class `ExtensionRange`

class `ReservedRange`

class `google.cloud.oslogin_v1.types.Empty`

class `google.cloud.oslogin_v1.types.EnumDescriptorProto`

class `EnumReservedRange`

class `google.cloud.oslogin_v1.types.EnumOptions`

class `google.cloud.oslogin_v1.types.EnumValueDescriptorProto`

class `google.cloud.oslogin_v1.types.EnumValueOptions`

class `google.cloud.oslogin_v1.types.ExtensionRangeOptions`

class `google.cloud.oslogin_v1.types.FieldDescriptorProto`

class `google.cloud.oslogin_v1.types.FieldMask`

class `google.cloud.oslogin_v1.types.FieldOptions`

class `google.cloud.oslogin_v1.types.FileDescriptorProto`

class `google.cloud.oslogin_v1.types.FileDescriptorSet`

class `google.cloud.oslogin_v1.types.FileOptions`

class `google.cloud.oslogin_v1.types.GeneratedCodeInfo`

class `Annotation`

class `google.cloud.oslogin_v1.types.GetLoginProfileRequest`

A request message for retrieving the login profile information for a user.

name

The unique ID for the user in format `users/{user}`.

class `google.cloud.oslogin_v1.types.GetSshPublicKeyRequest`

A request message for retrieving an SSH public key.

name

The fingerprint of the public key to retrieve. Public keys are identified by their SHA-256 fingerprint. The fingerprint of the public key is in format `users/{user}/sshPublicKeys/{fingerprint}`.

class `google.cloud.oslogin_v1.types.Http`

class `google.cloud.oslogin_v1.types.HttpRule`

class google.cloud.oslogin_v1.types.**ImportSshPublicKeyRequest**

A request message for importing an SSH public key.

parent

The unique ID for the user in format users/{user}.

ssh_public_key

The SSH public key and expiration time.

project_id

The project ID of the Google Cloud Platform project.

class google.cloud.oslogin_v1.types.**ImportSshPublicKeyResponse**

A response message for importing an SSH public key.

login_profile

The login profile information for the user.

class google.cloud.oslogin_v1.types.**LoginProfile**

The user profile information used for logging in to a virtual machine on Google Compute Engine.

name

The primary email address that uniquely identifies the user.

posix_accounts

The list of POSIX accounts associated with the user.

ssh_public_keys

A map from SSH public key fingerprint to the associated key object.

suspended

Indicates if the user is suspended. A suspended user cannot log in but their profile information is retained.

class SshPublicKeysEntry

class google.cloud.oslogin_v1.types.**MessageOptions**

class google.cloud.oslogin_v1.types.**MethodDescriptorProto**

class google.cloud.oslogin_v1.types.**MethodOptions**

class google.cloud.oslogin_v1.types.**OneofDescriptorProto**

class google.cloud.oslogin_v1.types.**OneofOptions**

class google.cloud.oslogin_v1.types.**PosixAccount**

The POSIX account information associated with a Google account.

primary

Only one POSIX account can be marked as primary.

username

The username of the POSIX account.

uid

The user ID.

gid

The default group ID.

home_directory

The path to the home directory for this account.

shell

The path to the logic shell for this account.

gecos

The GECOS (user information) entry for this account.

system_id

System identifier for which account the username or uid applies to. By default, the empty value is used.

account_id

Output only. A POSIX account identifier.

```
class google.cloud.oslogin_v1.types.ServiceDescriptorProto
```

```
class google.cloud.oslogin_v1.types.ServiceOptions
```

```
class google.cloud.oslogin_v1.types.SourceCodeInfo
```

class Location

```
class google.cloud.oslogin_v1.types.SshPublicKey
```

The SSH public key information associated with a Google account.

key

Public key text in SSH format, defined by RFC4253 section 6.6.

expiration_time_usec

An expiration time in microseconds since epoch.

fingerprint

Output only. The SHA-256 fingerprint of the SSH public key.

```
class google.cloud.oslogin_v1.types.UninterpretedOption
```

class NamePart

```
class google.cloud.oslogin_v1.types.UpdateSshPublicKeyRequest
```

A request message for updating an SSH public key.

name

The fingerprint of the public key to update. Public keys are identified by their SHA-256 fingerprint. The fingerprint of the public key is in format `users/{user}/sshPublicKeys/{fingerprint}`.

ssh_public_key

The SSH public key and expiration time.

update_mask

Mask to control which fields get updated. Updates all if not present.

14.2.3 Changelog

PyPI History

0.1.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Normalize all setup.py files (#4909)

15.1 Client

A Client for interacting with the Resource Manager API.

class `google.cloud.resource_manager.client.Client` (*credentials=None, _http=None*)

Bases: `google.cloud.client.Client`

Client to bundle configuration needed for API requests.

See <https://cloud.google.com/resource-manager/reference/rest/> for more information on this API.

Automatically get credentials:

```
>>> from google.cloud import resource_manager
>>> client = resource_manager.Client()
```

Parameters

- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/cloud-platform',)

The scopes required for authenticating as a Resource Manager consumer.

fetch_project (*project_id*)

Fetch an existing project and its relevant metadata by ID.

Note: If the project does not exist, this will raise a `NotFound` error.

Parameters `project_id` (*str*) – The ID for this project.

Return type *Project*

Returns A *Project* with metadata fetched from the API.

list_projects (*filter_params=None, page_size=None*)

List the projects visible to this client.

Example:

```
>>> from google.cloud import resource_manager
>>> client = resource_manager.Client()
>>> for project in client.list_projects():
...     print(project.project_id)
```

List all projects with label 'environment' set to 'prod' (filtering by labels):

```
>>> from google.cloud import resource_manager
>>> client = resource_manager.Client()
>>> env_filter = {'labels.environment': 'prod'}
>>> for project in client.list_projects(env_filter):
...     print(project.project_id)
```

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects/list>

Complete filtering example:

```
>>> project_filter = { # Return projects with...
...     'name': 'My Project', # name set to 'My Project'.
...     'id': 'my-project-id', # id set to 'my-project-id'.
...     'labels.stage': 'prod', # the label 'stage' set to 'prod'
...     'labels.color': '*' # a label 'color' set to anything.
... }
>>> client.list_projects(project_filter)
```

Parameters

- **filter_params** (*dict*) – (Optional) A dictionary of filter options where each key is a property to filter on, and each value is the (case-insensitive) value to check (or the glob `*` to check for existence of the property). See the example above for more details.
- **page_size** (*int*) – (Optional) Maximum number of projects to return in a single page. If not passed, defaults to a value set by the API.

Return type *Iterator*

Returns Iterator of all *Project*. that the current user has access to.

new_project (*project_id, name=None, labels=None*)

Create a project bound to the current client.

Use *Project.reload()* to retrieve project metadata after creating a *Project* instance.

Parameters

- **project_id** (*str*) – The ID for this project.

- **name** (*str*) – The display name of the project.
- **labels** (*dict*) – A list of labels associated with the project.

Return type *Project*

Returns A new instance of a *Project* **without** any metadata loaded.

15.2 Projects

Utility for managing projects via the Cloud Resource Manager API.

class google.cloud.resource_manager.project.**Project** (*project_id*, *client*, *name=None*,
labels=None)

Bases: *object*

Projects are containers for your work on Google Cloud Platform.

Note: A *Project* can also be created via *Client.new_project()*

To manage labels on a *Project*:

```
>>> from google.cloud import resource_manager
>>> client = resource_manager.Client()
>>> project = client.new_project('purple-spaceship-123')
>>> project.labels = {'color': 'purple'}
>>> project.labels['environment'] = 'production'
>>> project.update()
```

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects>

Parameters

- **project_id** (*str*) – The globally unique ID of the project.
- **client** (*google.cloud.resource_manager.client.Client*) – The Client used with this project.
- **name** (*str*) – The display name of the project.
- **labels** (*dict*) – A list of labels associated with the project.

create (*client=None*)

API call: create the project via a POST request.

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects/create>

Parameters **client** (*google.cloud.resource_manager.client.Client* or *NoneType*) – the client to use. If not passed, falls back to the client stored on the current project.

delete (*client=None*, *reload_data=False*)

API call: delete the project via a DELETE request.

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects/delete>

This actually changes the status (*lifecycleState*) from *ACTIVE* to *DELETE_REQUESTED*. Later (it's not specified when), the project will move into the *DELETE_IN_PROGRESS* state, which means the deleting has actually begun.

Parameters

- **client** (*google.cloud.resource_manager.client.Client* or *NoneType*) – the client to use. If not passed, falls back to the client stored on the current project.
- **reload_data** (*bool*) – Whether to reload the project with the latest state. If you want to get the updated status, you'll want this set to *True* as the *DELETE* method doesn't send back the updated project. Default: *False*.

exists (*client=None*)

API call: test the existence of a project via a GET request.

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects/get>

Parameters **client** (*google.cloud.resource_manager.client.Client* or *NoneType*) – the client to use. If not passed, falls back to the client stored on the current project.

Return type *bool*

Returns Boolean indicating existence of the project.

classmethod from_api_repr (*resource, client*)

Factory: construct a project given its API representation.

Parameters

- **resource** (*dict*) – project resource representation returned from the API
- **client** (*google.cloud.resource_manager.client.Client*) – The Client used with this project.

Return type *google.cloud.resource_manager.project.Project*

Returns The project created.

full_name

Fully-qualified name (ie, 'projects/purple-spaceship-123').

path

URL for the project (ie, '/projects/purple-spaceship-123').

reload (*client=None*)

API call: reload the project via a GET request.

This method will reload the newest metadata for the project. If you've created a new *Project* instance via *Client.new_project()*, this method will retrieve project metadata.

Warning: This will overwrite any local changes you've made and not saved via *update()*.

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects/get>

Parameters **client** (*google.cloud.resource_manager.client.Client* or *NoneType*) – the client to use. If not passed, falls back to the client stored on the current project.

set_properties_from_api_repr (*resource*)

Update specific properties from its API representation.

undelelete (*client=None, reload_data=False*)

API call: undelete the project via a POST request.

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects/undelelete>

This actually changes the project status (`lifecycleState`) from `DELETE_REQUESTED` to `ACTIVE`. If the project has already reached a status of `DELETE_IN_PROGRESS`, this request will fail and the project cannot be restored.

Parameters

- **client** (`google.cloud.resource_manager.client.Client` or `NoneType`) – the client to use. If not passed, falls back to the client stored on the current project.
- **reload_data** (`bool`) – Whether to reload the project with the latest state. If you want to get the updated status, you'll want this set to `True` as the `DELETE` method doesn't send back the updated project. Default: `False`.

update (`client=None`)

API call: update the project via a PUT request.

See <https://cloud.google.com/resource-manager/reference/rest/v1beta1/projects/update>

Parameters **client** (`google.cloud.resource_manager.client.Client` or `NoneType`) – the client to use. If not passed, falls back to the client stored on the current project.

The Cloud Resource Manager API provides methods that you can use to programmatically manage your projects in the Google Cloud Platform. With this API, you can do the following:

- Get a list of all projects associated with an account
- Create new projects
- Update existing projects
- Delete projects
- Undelete, or recover, projects that you don't want to delete

Note: Don't forget to look at the [Authentication](#) section below. It's slightly different from the rest of this library.

Warning: Alpha

The `projects.create()` API method is in the Alpha stage. It might be changed in backward-incompatible ways and is not recommended for production use. It is not subject to any SLA or deprecation policy. Access to this feature is currently invite-only. For an invitation, contact our sales team at <https://cloud.google.com/contact>.

CHAPTER 16

Installation

Install the `google-cloud-resource-manager` library using `pip`:

```
$ pip install google-cloud-resource-manager
```


Here's a quick example of the full life-cycle:

```
>>> from google.cloud import resource_manager
>>> client = resource_manager.Client()

>>> # List all projects you have access to
>>> for project in client.list_projects():
...     print(project)

>>> # Create a new project
>>> new_project = client.new_project('your-project-id-here',
...                                  name='My new project')
>>> new_project.create()

>>> # Update an existing project
>>> project = client.fetch_project('my-existing-project')
>>> print(project)
<Project: Existing Project (my-existing-project)>
>>> project.name = 'Modified name'
>>> project.update()
>>> print(project)
<Project: Modified name (my-existing-project)>

>>> # Delete a project
>>> project = client.new_project('my-existing-project')
>>> project.delete()

>>> # Undelete a project
>>> project = client.new_project('my-existing-project')
>>> project.undelete()
```

17.1 Authentication

Unlike the other APIs, the Resource Manager API is focused on managing your various projects inside Google Cloud Platform. What this means (currently, as of August 2015) is that you can't use a Service Account to work with some parts of this API (for example, creating projects).

The reason is actually pretty simple: if your API call is trying to do something like create a project, what project's Service Account can you use? Currently none.

This means that for this API you should always use the credentials provided by the [Google Cloud SDK](#), which you can get by running `gcloud auth login`.

Once you run that command, `google-cloud-python` will automatically pick up the credentials, and you can use the “automatic discovery” feature of the library.

Start by authenticating:

```
$ gcloud auth login
```

And then simply create a client:

```
>>> from google.cloud import resource_manager
>>> client = resource_manager.Client()
```

17.2 Changelog

For a list of all `google-cloud-resource-manager` releases:

17.2.1 Changelog

PyPI History

0.28.1

Dependencies

- Update dependency range for `api-core` to include v1.0.0 releases (#4944)

Documentation

- Fixing “Fore” -> “For” typo in README docs. (#4317)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all `setup.py` files (#4909)
- Making a `nox -s default` session for all packages. (#4324)

- Shorten test names (#4321)

0.28.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)

PyPI: <https://pypi.org/project/google-cloud-resource-manager/0.28.0/>

18.1 Runtime Configuration Client

Client for interacting with the Google Cloud RuntimeConfig API.

class `google.cloud.runtimeconfig.client.Client` (*project=None*, *credentials=None*,
_http=None)

Bases: `google.cloud.client.ClientWithProject`

Client to bundle configuration needed for API requests.

Parameters

- **project** (*str*) – (Optional) The project which the client acts on behalf of. If not passed, falls back to the default inferred from the environment.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/cloudruntimeconfig',)

The scopes required for authenticating as a RuntimeConfig consumer.

config (*config_name*)

Factory constructor for config object.

Note: This will not make an HTTP request; it simply instantiates a config object owned by this client.

Parameters **config_name** (*str*) – The name of the config to be instantiated.

Return type `google.cloud.runtimeconfig.config.Config`

Returns The config object created.

18.2 Configuration

Create / interact with Google Cloud RuntimeConfig configs.

class `google.cloud.runtimeconfig.config.Config`(*client*, *name*)

Bases: `object`

A Config resource in the Cloud RuntimeConfig service.

This consists of metadata and a hierarchy of variables.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs>

Parameters

- **client** (`google.cloud.runtimeconfig.client.Client`) – A client which holds credentials and project configuration for the config (which requires a project).
- **name** (`str`) – The name of the config.

client

The client bound to this config.

description

Description of the config object.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs#resource-runtimeconfig>

Return type `str`, or `NoneType`

Returns the description (None until set from the server).

exists (*client=None*)

Determines whether or not this config exists.

Parameters **client** (`Client`) – (Optional) The client to use. If not passed, falls back to the `client` stored on the current config.

Return type `bool`

Returns True if the config exists in Cloud Runtime Configurator.

full_name

Fully-qualified name of this variable.

Example: `projects/my-project/configs/my-config`

Return type `str`

Returns The full name based on project and config names.

Raises `ValueError` if the config is missing a name.

get_variable (*variable_name*, *client=None*)

API call: get a variable via a GET request.

This will return None if the variable doesn't exist:

```
>>> from google.cloud import runtimeconfig
>>> client = runtimeconfig.Client()
>>> config = client.config('my-config')
>>> print(config.get_variable('variable-name'))
<Variable: my-config, variable-name>
>>> print(config.get_variable('does-not-exist'))
None
```

Parameters

- **variable_name** (*str*) – The name of the variable to retrieve.
- **client** (*Client*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the current config.

Return type *google.cloud.runtimeconfig.variable.Variable* or *None*

Returns The variable object if it exists, otherwise *None*.

list_variables (*page_size=None, page_token=None, client=None*)

API call: list variables for this config.

This only lists variable names, not the values.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables/list>

Parameters

- **page_size** (*int*) – (Optional) Maximum number of variables to return per page.
- **page_token** (*str*) – opaque marker for the next “page” of variables. If not passed, will return the first page of variables.
- **client** (*Client*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the current config.

Return type *Iterator*

Returns Iterator of *Variable* belonging to this project.

path

URL path for the config’s APIs.

Return type *str*

Returns The URL path based on project and config names.

project

Project bound to the config.

Return type *str*

Returns the project (derived from the client).

reload (*client=None*)

API call: reload the config via a GET request.

This method will reload the newest data for the config.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs/get>

Parameters `client` (*google.cloud.runtimeconfig.client.Client*) – (Optional) The client to use. If not passed, falls back to the client stored on the current config.

variable (*variable_name*)

Factory constructor for variable object.

Note: This will not make an HTTP request; it simply instantiates a variable object owned by this config.

Parameters `variable_name` (*str*) – The name of the variable to be instantiated.

Return type *google.cloud.runtimeconfig.variable.Variable*

Returns The variable object created.

18.3 Variables

Create / interact with Google Cloud RuntimeConfig variables.

`google.cloud.runtimeconfig.variable.STATE_UNSPECIFIED`

The default variable state. See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables#VariableState>

`google.cloud.runtimeconfig.variable.STATE_UPDATED`

Indicates the variable was updated, while `variables.watch` was executing. See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables#VariableState>

`google.cloud.runtimeconfig.variable.STATE_DELETED`

Indicates the variable was deleted, while `variables.watch` was executing. See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables#VariableState>

class `google.cloud.runtimeconfig.variable.Variable` (*name, config*)

Bases: `object`

A variable in the Cloud RuntimeConfig service.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables>

Parameters

- **name** (*str*) – The name of the variable. This corresponds to the unique path of the variable in the config.
- **config** (*google.cloud.runtimeconfig.config.Config*) – The config to which this variable belongs.

client

The client bound to this variable.

exists (*client=None*)

API call: test for the existence of the variable via a GET request

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables/get>

Parameters `client` (*Client*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the variable's config.

Return type `bool`

Returns True if the variable exists in Cloud RuntimeConfig.

classmethod `from_api_repr(resource, config)`

Factory: construct a Variable given its API representation

Parameters

- **resource** (`dict`) – change set representation returned from the API.
- **config** (`google.cloud.runtimeconfig.config.Config`) – The config to which this variable belongs.

Return type `google.cloud.runtimeconfig.variable.Variable`

Returns Variable parsed from resource.

full_name

Fully-qualified name of this variable.

Example: `projects/my-project/configs/my-config/variables/my-var`

Return type `str`

Returns The full name based on config and variable names.

Raises `ValueError` if the variable is missing a name.

path

URL path for the variable's APIs.

Return type `str`

Returns The URL path based on config and variable names.

reload (`client=None`)

API call: reload the variable via a GET request.

This method will reload the newest data for the variable.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs/get>

Parameters **client** (`google.cloud.runtimeconfig.client.Client`) – (Optional) The client to use. If not passed, falls back to the client stored on the current config.

state

Retrieve the state of the variable.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables#VariableState>

Return type `str`

Returns If set, one of “UPDATED”, “DELETED”, or defaults to “VARIABLE_STATE_UNSPECIFIED”.

update_time

Retrieve the timestamp at which the variable was updated.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables>

Returns `DatetimeWithNanoseconds`, `datetime.datetime` or `NoneType`: Date-time object parsed from RFC3339 valid timestamp, or `None` if the property is not set locally.

Raises `ValueError` – if value is not a valid RFC3339 timestamp

value

Value of the variable, as bytes.

See <https://cloud.google.com/deployment-manager/runtime-configurator/reference/rest/v1beta1/projects.configs.variables>

Return type bytes or `NoneType`

Returns The value of the variable or `None` if the property is not set locally.

18.4 Installation

Install the `google-cloud-runtimeconfig` library using `pip`:

```
$ pip install google-cloud-runtimeconfig
```

18.5 Modules

Google Cloud Runtime Configurator API package.

class `google.cloud.runtimeconfig.Client` (*project=None, credentials=None, _http=None*)

Bases: `google.cloud.client.ClientWithProject`

Client to bundle configuration needed for API requests.

Parameters

- **project** (*str*) – (Optional) The project which the client acts on behalf of. If not passed, falls back to the default inferred from the environment.
- **credentials** (`Credentials`) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (`Session`) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/cloudruntimeconfig',)

The scopes required for authenticating as a RuntimeConfig consumer.

config (*config_name*)

Factory constructor for config object.

Note: This will not make an HTTP request; it simply instantiates a config object owned by this client.

Parameters **config_name** (*str*) – The name of the config to be instantiated.

Return type `google.cloud.runtimeconfig.config.Config`

Returns The config object created.

18.6 Changelog

For a list of all `google-cloud-runtimeconfig` releases:

18.6.1 Changelog

PyPI History

0.28.1

Implementation changes

- Set default variable state to Unspecified (#4738)

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Documentation

- Fixing “Fore” -> “For” typo in README docs. (#4317)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Making a `nox -s default` session for all packages. (#4324)
- Shorten test names (#4321)

0.28.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)
- Fix example in `Config.get_variable()` (#3910)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)

PyPI: <https://pypi.org/project/google-cloud-runtimeconfig/0.28.0/>

Cloud Spanner is the world's first fully managed relational database service to offer both strong consistency and horizontal scalability for mission-critical online transaction processing (OLTP) applications. With Cloud Spanner you enjoy all the traditional benefits of a relational database; but unlike any other relational database service, Cloud Spanner scales horizontally to hundreds or thousands of servers to handle the biggest transactional workloads.

19.1 Instance Admin

After creating a `Client`, you can interact with individual instances for a project.

19.1.1 Instance Configurations

Each instance within a project maps to a named “instance configuration”, specifying the location and other parameters for a set of instances. These configurations are defined by the server, and cannot be changed.

To iterate over all instance configurations available to your project, use the `list_instance_configs()` method of the client:

```
for config in client.list_instance_configs():  
    # `config` is an instance of `InstanceConfig`
```

To fetch a single instance configuration, use the `get_instance_configuration()` method of the client:

```
config = client.get_instance_configuration('config-name')
```

Each of these methods provide `InstanceConfig` objects.

19.1.2 List Instances

If you want a comprehensive list of all existing instances, iterate over the `list_instances()` method of the client:

```
for instance in client.list_instances():
    # `instance` is an instance of `Instance`
```

This iterator yields *Instance* objects.

19.1.3 Instance Factory

To create a *Instance* object:

```
config = configs[0]
instance = client.instance(instance_id,
                           configuration_name=config.name,
                           node_count=10,
                           display_name='My Instance')
```

- `configuration_name` is the name of the instance configuration to which the instance will be bound. It must be one of the names configured for your project, discoverable via `list_instance_configs()`.
- `node_count` is a positive integral count of the number of nodes used by the instance. More nodes allows for higher performance, but at a higher billing cost.
- `display_name` is optional. When not provided, `display_name` defaults to the `instance_id` value.

You can also use `Client.instance()` to create a local wrapper for an instance that has already been created:

```
instance = client.instance(existing_instance_id)
instance.reload()
```

19.1.4 Create a new Instance

After creating the instance object, use its `create()` method to trigger its creation on the server:

```
instance.display_name = 'My very own instance'
operation = instance.create()
```

Note: Creating an instance triggers a “long-running operation” and returns an `google.cloud.spanner.Instance.Operation` object. See *Resolve Current Instance Operation* for polling to find out if the operation is completed.

19.1.5 Refresh metadata for an existing Instance

After creating the instance object, reload its server-side configuration using its `reload()` method:

```
instance.reload()
```

This will load `display_name`, `config_name`, and `node_count` for the existing instance object from the back-end.

19.1.6 Update an existing Instance

After creating the instance object, you can update its metadata via its `update()` method:

```
client.display_name = 'New display_name'
operation = instance.update()
```

Note: Update an instance triggers a “long-running operation” and returns a `google.cloud.spanner.Instance.Operation` object. See [Resolve Current Instance Operation](#) for polling to find out if the operation is completed.

19.1.7 Delete an existing Instance

Delete an instance using its `delete()` method:

```
instance.delete()
```

19.1.8 Resolve Current Instance Operation

The `create()` and `update()` methods of instance object trigger long-running operations on the server, and return instances of the `Operation` class.

If you want to block on the completion of those operations, use the `result` method on the returned objects:

```
>>> operation = instance.create()
>>> result = operation.result()
```

This method will raise an exception if the operation fails.

19.1.9 Next Step

Now we go down the hierarchy from `Instance` to a `Database`.

Next, learn about the [Database Admin](#).

19.2 Database Admin

After creating a `Instance`, you can interact with individual databases for that instance.

19.2.1 List Databases

To iterate over all existing databases for an instance, use its `list_databases()` method:

```
for database in instance.list_databases():
    # `database` is a `Database` object.
```

This method yields `Database` objects.

19.2.2 Database Factory

To create a Database object:

```
database = instance.database(database_id, ddl_statements)
```

- `ddl_statements` is a string containing DDL for the new database.

You can also use `Instance.database()` to create a local wrapper for a database that has already been created:

```
database = instance.database(existing_database_id)
```

19.2.3 Create a new Database

After creating the database object, use its `create()` method to trigger its creation on the server:

```
operation = database.create()
```

Note: Creating an instance triggers a “long-running operation” and returns an `Future`-like object. Use the `result()` method to wait for and inspect the result.

19.2.4 Update an existing Database

After creating the database object, you can apply additional DDL statements via its `update_ddl()` method:

```
operation = instance.update_ddl(ddl_statements, operation_id)
```

- `ddl_statements` is a string containing DDL to be applied to the database.
- `operation_id` is a string ID for the long-running operation.

Note: Update an instance triggers a “long-running operation” and returns a `google.cloud.spanner.database.Operation` object. See [Check on Current Database Operation](#) for polling to find out if the operation is completed.

19.2.5 Drop a Database

Drop a database using its `drop()` method:

```
database.drop()
```

19.2.6 Check on Current Database Operation

The `create()` and `update()` methods of instance object trigger long-running operations on the server, and return instances conforming to the `Future` class.

```
>>> operation = instance.create()
>>> operation.result()
```


19.3 Non-Admin Database Usage

19.3.1 Use a Snapshot to Read / Query the Database

A snapshot represents a read-only point-in-time view of the database.

Calling `snapshot()` with no arguments creates a snapshot with strong concurrency:

```
with database.snapshot() as snapshot:
    do_something_with(snapshot)
```

See `Snapshot` for the other options which can be passed.

Note: `snapshot()` returns an object intended to be used as a Python context manager (i.e., as the target of a `with` statement). Use the instance, and any result sets returned by its `read` or `execute_sql` methods, only inside the block created by the `with` statement.

See *Read-only Transactions via Snapshots* for more complete examples of snapshot usage.

19.3.2 Use a Batch to Modify Rows in the Database

A batch represents a bundled set of insert/upsert/update/delete operations on the rows of tables in the database.

```
with database.batch() as batch:
    batch.insert_or_update(table, columns, rows)
    batch.delete(table, keyset_to_delete)
```

Note: `batch()` returns an object intended to be used as a Python context manager (i.e., as the target of a `with` statement). It applies any changes made inside the block of its `with` statement when exiting the block, unless an exception is raised within the block. Use the batch only inside the block created by the `with` statement.

See *Batching Modifications* for more complete examples of batch usage.

19.3.3 Use a Transaction to Query / Modify Rows in the Database

A transaction represents the union of a “strong” snapshot and a batch: it allows `read` and `execute_sql` operations, and accumulates insert/upsert/update/delete operations.

Because other applications may be performing concurrent updates which would invalidate the reads / queries, the work done by a transaction needs to be bundled as a retryable “unit of work” function, which takes the transaction as a required argument:

```
def unit_of_work(transaction):
    result = transaction.execute_sql(QUERY)

    for emp_id, hours, pay in _compute_pay(result):
        transaction.insert_or_update(
            table='monthly_hours',
            columns=['employee_id', 'month', 'hours', 'pay'],
            values=[emp_id, month_start, hours, pay])
```

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```
database.run_in_transaction(unit_of_work)
```

Note: `run_in_transaction()` commits the transaction automatically if the “unit of work” function returns without raising an exception.

Note: `run_in_transaction()` retries the “unit of work” function if the read / query operations or the commit are aborted due to concurrent updates

See *Read-write Transactions* for more complete examples of transaction usage.

19.3.4 Configuring a session pool for a database

Under the covers, the `snapshot`, `batch`, and `run_in_transaction` methods use a pool of `Session` objects to manage their communication with the back-end. You can configure one of the pools manually to control the number of sessions, timeouts, etc., and then passing it to the `Database` constructor:

```
from google.cloud import spanner

# Instantiate the Spanner client, and get the appropriate instance.
client = spanner.Client()
instance = client.instance(INSTANCE_NAME)

# Create a database with a pool of a fixed size.
pool = spanner.FixedSizePool(size=10, default_timeout=5)
database = instance.database(DATABASE_NAME, pool=pool)
```

Note that creating a database with a pool may presume that its database already exists, as it may need to pre-create sessions (rather than creating them on demand, as the default implementation does).

You can supply your own pool implementation, which must satisfy the contract laid out in `AbstractSessionPool`:

```
from google.cloud.pool import AbstractSessionPool

class MyCustomPool(AbstractSessionPool):

    def __init__(self, database, custom_param):
        super(MyCustomPool, self).__init__(database)
        self.custom_param = custom_param

    def get(self, read_only=False):
        ...

    def put(self, session, discard_if_full=True):
        ...

database = instance.database(DATABASE_NAME, pool=pool)
pool = MyCustomPool(database, custom_param=42)
```

See *Advanced Session Pool Topics* for more advanced coverage of session pools.

19.4 Batching Modifications

A `Batch` represents a set of data modification operations to be performed on tables in a dataset. Use of a `Batch` does not require creating an explicit `Snapshot` or `Transaction`. Until `commit()` is called on a `Batch`, no changes are propagated to the back-end.

19.4.1 Starting a Batch

```
batch = client.batch()
```

19.4.2 Inserting records using a Batch

`Batch.insert()` adds one or more new records to a table. Fails if any of the records already exists.

```
batch.insert(
    'citizens', columns=['email', 'first_name', 'last_name', 'age'],
    values=[
        ['phred@example.com', 'Phred', 'Phlyntstone', 32],
        ['bharney@example.com', 'Bharney', 'Rhubble', 31],
    ])
```

Note: Ensure that data being sent for `STRING` columns uses a text string (`str` in Python 3; `unicode` in Python 2). Additionally, if you are writing data intended for a `BYTES` column, you must `base64` encode it.

19.4.3 Update records using a Batch

`Batch.update()` updates one or more existing records in a table. Fails if any of the records does not already exist.

```
batch.update(
    'citizens', columns=['email', 'age'],
    values=[
        ['phred@example.com', 33],
        ['bharney@example.com', 32],
    ])
```

Note: Ensure that data being sent for `STRING` columns uses a text string (`str` in Python 3; `unicode` in Python 2). Additionally, if you are writing data intended for a `BYTES` column, you must `base64` encode it.

19.4.4 Insert or update records using a Batch

`Batch.insert_or_update()` inserts *or* updates one or more records in a table. Existing rows have values for the supplied columns overwritten; other column values are preserved.

```
batch.insert_or_update(  
    'citizens', columns=['email', 'first_name', 'last_name', 'age'],  
    values=[  
        ['phred@example.com', 'Phred', 'Phlyntstone', 31],  
        ['wylma@example.com', 'Wylma', 'Phlyntstone', 29],  
    ])  
)
```

Note: Ensure that data being sent for STRING columns uses a text string (`str` in Python 3; `unicode` in Python 2). Additionally, if you are writing data intended for a BYTES column, you must `base64` encode it.

19.4.5 Replace records using a Batch

`Batch.replace()` inserts *or* updates one or more records in a table. Existing rows have values for the supplied columns overwritten; other column values are set to null.

```
batch.replace(  
    'citizens', columns=['email', 'first_name', 'last_name', 'age'],  
    values=[  
        ['bharney@example.com', 'Bharney', 'Rhubble', 30],  
        ['bhettye@example.com', 'Bhettye', 'Rhubble', 30],  
    ])  
)
```

Note: Ensure that data being sent for STRING columns uses a text string (`str` in Python 3; `unicode` in Python 2). Additionally, if you are writing data intended for a BYTES column, you must `base64` encode it.

19.4.6 Delete records using a Batch

`Batch.delete()` removes one or more records from a table. Non-existent rows do not cause errors.

```
from google.cloud.spanner.keyset import KeySet  
  
to_delete = KeySet(keys=[  
    ('bharney@example.com',),  
    ('nonesuch@example.com',),  
)  
)  
  
batch.delete('citizens', to_delete)
```

19.4.7 Commit changes for a Batch

After describing the modifications to be made to table data via the `Batch.insert()`, `Batch.update()`, `Batch.insert_or_update()`, `Batch.replace()`, and `Batch.delete()` methods above, send them to the back-end by calling `Batch.commit()`, which makes the Commit API call.

```
batch.commit()
```

19.4.8 Use a Batch as a Context Manager

Rather than calling `Batch.commit()` manually, you can use the `Batch` instance as a context manager, and have it called automatically if the `with` block exits without raising an exception.

```
from google.cloud.spanner.keyset import KeySet

to_delete = KeySet(keys=[
    ('bharney@example.com',),
    ('nonesuch@example.com',)
])

with session.batch() as batch:

    batch.insert(
        'citizens', columns=['email', 'first_name', 'last_name', 'age'],
        values=[
            ['phred@example.com', 'Phred', 'Phlyntstone', 32],
            ['bharney@example.com', 'Bharney', 'Rhubble', 31],
        ])

    batch.update(
        'citizens', columns=['email', 'age'],
        values=[
            ['phred@example.com', 33],
            ['bharney@example.com', 32],
        ])

    ...

    batch.delete('citizens', to_delete)
```

19.4.9 Next Step

Next, learn about *Read-only Transactions via Snapshots*.

19.5 Read-only Transactions via Snapshots

A Snapshot represents a read-only transaction: when multiple read operations are performed via a Snapshot, the results are consistent as of a particular point in time.

19.5.1 Beginning a Snapshot

To begin using a snapshot using the default “bound” (which is “strong”), meaning all reads are performed at a timestamp where all previously-committed transactions are visible:

```
snapshot = database.snapshot()
```

You can also specify a weaker bound, which can either be to perform all reads as of a given timestamp:

```
import datetime
from pytz import UTC
```

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```
TIMESTAMP = datetime.utcnow().replace(tzinfo=UTC)
snapshot = database.snapshot(read_timestamp=TIMESTAMP)
```

or as of a given duration in the past:

```
import datetime
DURATION = datetime.timedelta(seconds=5)
snapshot = database.snapshot(exact_staleness=DURATION)
```

19.5.2 Single Use and Multiple Use Snapshots

In the context of read only transactions, `read` and `execute_sql` methods can be used multiple times if you specify `multi_use=True` in the constructor of the snapshot. However, `multi_use=True` is incompatible with either `max_staleness` and/or `min_read_timestamp`.

Otherwise `multi_use` defaults to `False` and the snapshot cannot be reused.

```
snapshot = database.snapshot(multi_use=True)
```

`begin()` can only be used on a snapshot with `multi_use=True`. In which case it is also necessary to call if you need to have multiple pending operations.

19.5.3 Read Table Data

Read data for selected rows from a table in the database. Calls the `Read` API, which returns all rows specified in `key_set`, or else fails if the result set is too large,

```
with database.snapshot() as snapshot:
    result = snapshot.read(
        table='table-name', columns=['first_name', 'last_name', 'age'],
        key_set=['phred@example.com', 'bharney@example.com'])

    for row in result.rows:
        print(row)
```

Note: Perform all iteration within the context of the `with database.snapshot()` block.

19.5.4 Execute a SQL Select Statement

Read data from a query against tables in the database. Calls the `ExecuteSql` API, which returns all rows matching the query, or else fails if the result set is too large,

```
with database.snapshot() as snapshot:
    QUERY = (
        'SELECT e.first_name, e.last_name, p.telephone '
        'FROM employees as e, phones as p '
        'WHERE p.employee_id == e.employee_id')
    result = snapshot.execute_sql(QUERY)

    for row in list(result):
        print(row)
```

Note: Perform all iteration within the context of the `with database.snapshot()` block.

19.5.5 Next Step

Next, learn about *Read-write Transactions*.

19.6 Read-write Transactions

A `Transaction` represents a transaction: when the transaction commits, it will send any accumulated mutations to the server.

To understand more about how transactions work, visit `spanner-txn`. To learn more about how to use them in the Python client, continue reading.

19.6.1 Begin a Transaction

To begin using a transaction:

```
transaction = database.transaction()
```

19.6.2 Read Table Data

Read data for selected rows from a table in the database. Calls the `Read` API, which returns all rows specified in `key_set`, or else fails if the result set is too large,

```
result = transaction.read(
    table='table-name', columns=['first_name', 'last_name', 'age'],
    key_set=['phred@example.com', 'bharney@example.com'])

for row in list(result):
    print(row)
```

Note: If streaming a chunk fails due to a “resumable” error, `Snapshot.read()` retries the `StreamingRead` API request, passing the `resume_token` from the last partial result streamed.

19.6.3 Execute a SQL Select Statement

Read data from a query against tables in the database. Calls the `ExecuteSql` API, which returns all rows matching the query, or else fails if the result set is too large,

```
QUERY = (
    'SELECT e.first_name, e.last_name, p.telephone '
    'FROM employees as e, phones as p '
    'WHERE p.employee_id == e.employee_id')
result = transaction.execute_sql(QUERY)
```

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```
for row in list(result):  
    print(row)
```

19.6.4 Insert records using a Transaction

`Transaction.insert()` adds one or more new records to a table. Fails if any of the records already exists.

```
transaction.insert(  
    'citizens', columns=['email', 'first_name', 'last_name', 'age'],  
    values=[  
        ['phred@example.com', 'Phred', 'Phlyntstone', 32],  
        ['bharney@example.com', 'Bharney', 'Rhubble', 31],  
    ])
```

Note: Ensure that data being sent for `STRING` columns uses a text string (`str` in Python 3; `unicode` in Python 2). Additionally, if you are writing data intended for a `BYTES` column, you must `base64` encode it.

19.6.5 Update records using a Transaction

`Transaction.update()` updates one or more existing records in a table. Fails if any of the records does not already exist.

```
transaction.update(  
    'citizens', columns=['email', 'age'],  
    values=[  
        ['phred@example.com', 33],  
        ['bharney@example.com', 32],  
    ])
```

Note: Ensure that data being sent for `STRING` columns uses a text string (`str` in Python 3; `unicode` in Python 2). Additionally, if you are writing data intended for a `BYTES` column, you must `base64` encode it.

19.6.6 Insert or update records using a Transaction

`Transaction.insert_or_update()` inserts *or* updates one or more records in a table. Existing rows have values for the supplied columns overwritten; other column values are preserved.

```
transaction.insert_or_update(  
    'citizens', columns=['email', 'first_name', 'last_name', 'age'],  
    values=[  
        ['phred@example.com', 'Phred', 'Phlyntstone', 31],  
        ['wylma@example.com', 'Wylma', 'Phlyntstone', 29],  
    ])
```

Note: Ensure that data being sent for `STRING` columns uses a text string (`str` in Python 3; `unicode` in Python 2).

Additionally, if you are writing data intended for a BYTES column, you must base64 encode it.

19.6.7 Replace records using a Transaction

`Transaction.replace()` inserts *or* updates one or more records in a table. Existing rows have values for the supplied columns overwritten; other column values are set to null.

```
transaction.replace(
    'citizens', columns=['email', 'first_name', 'last_name', 'age'],
    values=[
        ['bharney@example.com', 'Bharney', 'Rhubble', 30],
        ['bhettye@example.com', 'Bhettye', 'Rhubble', 30],
    ])

```

Note: Ensure that data being sent for STRING columns uses a text string (`str` in Python 3; `unicode` in Python 2). Additionally, if you are writing data intended for a BYTES column, you must base64 encode it.

19.6.8 Delete records using a Transaction

`Transaction.delete()` removes one or more records from a table. Non-existent rows do not cause errors.

```
transaction.delete(
    'citizens', keyset=['bharney@example.com', 'nonesuch@example.com'])

```

19.6.9 Using `run_in_transaction()`

Rather than calling `commit()` or `rollback()` manually, you should use `run_in_transaction()` to run the function that you need. The transaction's `commit()` method will be called automatically if the `with` block exits without raising an exception. The function will automatically be retried for *Aborted* errors, but will raise on *GoogleAPICallError* and `rollback()` will be called on all others.

```
def _unit_of_work(transaction):
    transaction.insert(
        'citizens', columns=['email', 'first_name', 'last_name', 'age'],
        values=[
            ['phred@example.com', 'Phred', 'Phlyntstone', 32],
            ['bharney@example.com', 'Bharney', 'Rhubble', 31],
        ])

    transaction.update(
        'citizens', columns=['email', 'age'],
        values=[
            ['phred@example.com', 33],
            ['bharney@example.com', 32],
        ])

    ...

```

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```
transaction.delete('citizens',
                  keyset['bharney@example.com', 'nonesuch@example.com'])

db.run_in_transaction(_unit_of_work)
```

19.6.10 Use a Transaction as a Context Manager

Alternatively, you can use the `Transaction` instance as a context manager. The transaction's `commit()` method will be called automatically if the `with` block exits without raising an exception.

If an exception is raised inside the `with` block, the transaction's `rollback()` method will automatically be called.

```
with database.transaction() as transaction:

    transaction.insert(
        'citizens', columns=['email', 'first_name', 'last_name', 'age'],
        values=[
            ['phred@example.com', 'Phred', 'Phlyntstone', 32],
            ['bharney@example.com', 'Bharney', 'Rhubble', 31],
        ])

    transaction.update(
        'citizens', columns=['email', 'age'],
        values=[
            ['phred@example.com', 33],
            ['bharney@example.com', 32],
        ])

    ...

    transaction.delete('citizens',
                      keyset['bharney@example.com', 'nonesuch@example.com'])
```

19.6.11 Commit changes for a Transaction

This function should not be used manually. Rather, should consider using `run_in_transaction()` or the context manager as described above.

After modifications to be made to table data via the `Transaction.insert()`, `Transaction.update()`, `Transaction.insert_or_update()`, `Transaction.replace()`, and `Transaction.delete()` methods above, send them to the back-end by calling `Transaction.commit()`, which makes the Commit API call.

```
transaction.commit()
```

19.6.12 Roll back changes for a Transaction

This function should not be used manually. Rather, should consider using `run_in_transaction()` or the context manager as described above.

After describing the modifications to be made to table data via the `Transaction.insert()`, `Transaction.update()`, `Transaction.insert_or_update()`, `Transaction.replace()`, and `Transaction`.

`delete()` methods above, cancel the transaction on the the back-end by calling `Transaction.rollback()`, which makes the Rollback API call.

```
transaction.rollback()
```

19.7 Advanced Session Pool Topics

19.7.1 Custom Session Pool Implementations

You can supply your own pool implementation, which must satisfy the contract laid out in `AbstractSessionPool`:

```
from google.cloud.spanner.pool import AbstractSessionPool

class MyCustomPool(AbstractSessionPool):

    def __init__(self, custom_param):
        super(MyCustomPool, self).__init__()
        self.custom_param = custom_param

    def bind(self, database):
        ...

    def get(self, read_only=False):
        ...

    def put(self, session, discard_if_full=True):
        ...

pool = MyCustomPool(custom_param=42)
database = instance.database(DATABASE_NAME, pool=pool)
```

19.7.2 Lowering latency for read / query operations

Some applications may need to minimize latency for read operations, including particularly the overhead of making an API request to create or refresh a session. `PingingPool` is designed for such applications, which need to configure a background thread to do the work of keeping the sessions fresh.

Create an instance of `PingingPool`:

```
from google.cloud.spanner import Client
from google.cloud.spanner.pool import PingingPool

client = Client()
instance = client.instance(INSTANCE_NAME)
pool = PingingPool(size=10, default_timeout=5, ping_interval=300)
database = instance.database(DATABASE_NAME, pool=pool)
```

Set up a background thread to ping the pool's session, keeping them from becoming stale:

```
import threading

background = threading.Thread(target=pool.ping, name='ping-pool')
```

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```
background.daemon = True
background.start()
```

19.7.3 Lowering latency for mixed read-write operations

Some applications may need to minimize latency for read write operations, including particularly the overhead of making an API request to create or refresh a session or to begin a session's transaction. `TransactionPingingPool` is designed for such applications, which need to configure a background thread to do the work of keeping the sessions fresh and starting their transactions after use.

Create an instance of `TransactionPingingPool`:

```
from google.cloud.spanner import Client
from google.cloud.spanner.pool import TransactionPingingPool

client = Client()
instance = client.instance(INSTANCE_NAME)
pool = TransactionPingingPool(size=10, default_timeout=5, ping_interval=300)
database = instance.database(DATABASE_NAME, pool=pool)
```

Set up a background thread to ping the pool's session, keeping them from becoming stale, and ensuring that each session has a new transaction started before it is used:

```
import threading

background = threading.Thread(target=pool.ping, name='ping-pool')
background.daemon = True
background.start()
```

19.8 API Reference

The following classes and methods constitute the Spanner client. Most likely, you will be interacting almost exclusively with these:

19.8.1 Spanner Client

Parent client for calling the Cloud Spanner API.

This is the base from which all interactions with the API occur.

In the hierarchy of API concepts

- a *Client* owns an *Instance*
- a *Instance* owns a *Database*

class `google.cloud.spanner_v1.client.Client` (*project=None*, *credentials=None*,
user_agent='gcloud-python/0.28.1')

Bases: `google.cloud.client.ClientWithProject`

Client for interacting with Cloud Spanner API.

Note: Since the Cloud Spanner API requires the gRPC transport, no `_http` argument is accepted by this class.

Parameters

- **project** (`str` or `unicode`) – (Optional) The ID of the project which owns the instances, tables and data. If not provided, will attempt to determine from the environment.
- **credentials** (`OAuth2Credentials` or `NoneType`) – (Optional) The `OAuth2Credentials` to use for this client. If not provided, defaults to the Google Application Default Credentials.
- **user_agent** (`str`) – (Optional) The user agent to be used with API request. Defaults to `DEFAULT_USER_AGENT`.

Raises `ValueError` if both `read_only` and `admin` are `True`

SCOPE = ('https://www.googleapis.com/auth/spanner.admin',)

The scopes required for Google Cloud Spanner.

copy()

Make a copy of this client.

Copies the local data stored as simple types but does not copy the current state of any open connections with the Cloud Bigtable API.

Return type `Client`

Returns A copy of the current client.

credentials

Getter for client's credentials.

Return type `OAuth2Credentials`

Returns The credentials stored on the client.

database_admin_api

Helper for session-related API calls.

instance (`instance_id`, `configuration_name=None`, `display_name=None`, `node_count=1`)

Factory to create a instance associated with this client.

Parameters

- **instance_id** (`str`) – The ID of the instance.
- **configuration_name** (`string`) – (Optional) Name of the instance configuration used to set up the instance's cluster, in the form: `projects/<project>/instanceConfigs/<config>`. **Required** for instances which do not yet exist.
- **display_name** (`str`) – (Optional) The display name for the instance in the Cloud Console UI. (Must be between 4 and 30 characters.) If this value is not set in the constructor, will fall back to the instance ID.
- **node_count** (`int`) – (Optional) The number of nodes in the instance's cluster; used to set up the instance's cluster.

Return type `Instance`

Returns an instance owned by this client.

instance_admin_api

Helper for session-related API calls.

list_instance_configs (*page_size=None, page_token=None*)

List available instance configurations for the client's project.

See [RPC docs](#).

Parameters

- **page_size** (*int*) – (Optional) Maximum number of results to return.
- **page_token** (*str*) – (Optional) Token for fetching next page of results.

Return type *Iterator*

Returns Iterator of `InstanceConfig` resources within the client's project.

list_instances (*filter_=", page_size=None, page_token=None*)

List instances for the client's project.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.InstanceAdmin.ListInstances>

Parameters

- **filter** (*string*) – (Optional) Filter to select instances listed. See the `ListInstancesRequest` docs above for examples.
- **page_size** (*int*) – (Optional) Maximum number of results to return.
- **page_token** (*str*) – (Optional) Token for fetching next page of results.

Return type *Iterator*

Returns Iterator of `Instance` resources within the client's project.

project_name

Project name to be used with Spanner APIs.

Note: This property will not change if `project` does not, but the return value is not cached.

The project name is of the form

"projects/{project}"

Return type *str*

Returns The project name to be used with the Cloud Spanner Admin API RPC service.

class `google.cloud.spanner_v1.client.InstanceConfig` (*name, display_name*)

Bases: `object`

Named configurations for Spanner instances.

Parameters

- **name** (*str*) – ID of the instance configuration
- **display_name** (*str*) – Name of the instance configuration

classmethod `from_pb` (*config_pb*)

Construct an instance from the equivalent protobuf.

Parameters `config_pb` (`InstanceConfig`) – the protobuf to parse

Return type *InstanceConfig*

Returns an instance of this class

19.8.2 Instance API

User friendly container for Cloud Spanner Instance.

```
class google.cloud.spanner_v1.instance.Instance(instance_id, client, configuration_name=None, node_count=1, display_name=None)
```

Bases: *object*

Representation of a Cloud Spanner Instance.

We can use a *Instance* to:

- *reload()* itself
- *create()* itself
- *update()* itself
- *delete()* itself

Parameters

- **instance_id** (*str*) – The ID of the instance.
- **client** (*Client*) – The client that owns the instance. Provides authorization and a project ID.
- **configuration_name** (*str*) – Name of the instance configuration defining how the instance will be created. Required for instances which do not yet exist.
- **node_count** (*int*) – (Optional) Number of nodes allocated to the instance.
- **display_name** (*str*) – (Optional) The display name for the instance in the Cloud Console UI. (Must be between 4 and 30 characters.) If this value is not set in the constructor, will fall back to the instance ID.

copy()

Make a copy of this instance.

Copies the local data stored as simple types and copies the client attached to this instance.

Return type *Instance*

Returns A copy of the current instance.

create()

Create this instance.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.instance.v1#google.spanner.admin.instance.v1.InstanceAdmin.CreateInstance>

Note: Uses the project and instance_id on the current *Instance* in addition to the display_name. To change them before creating, reset the values via

```
instance.display_name = 'New display name'
instance.instance_id = 'i-changed-my-mind'
```

before calling `create()`.

Return type `google.api_core.operation.Operation`

Returns an operation instance

Raises `Conflict` – if the instance already exists

database (*database_id*, *ddl_statements*=(), *pool*=None)

Factory to create a database within this instance.

Parameters

- **database_id** (*str*) – The ID of the instance.
- **ddl_statements** (*list of string*) – (Optional) DDL statements, excluding the ‘CREATE DATABASE’ statement.
- **pool** (concrete subclass of `AbstractSessionPool`.) – (Optional) session pool to be used by database.

Return type `Database`

Returns a database owned by this instance.

delete()

Mark an instance and all of its databases for permanent deletion.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.instance.v1#google.spanner.admin.instance.v1.InstanceAdmin.DeleteInstance>

Immediately upon completion of the request:

- Billing will cease for all of the instance’s reserved resources.

Soon afterward:

- The instance and all databases within the instance will be deleted. All data in the databases will be permanently deleted.

exists()

Test whether this instance exists.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.instance.v1#google.spanner.admin.instance.v1.InstanceAdmin.GetInstanceConfig>

Return type `bool`

Returns True if the instance exists, else false

classmethod from_pb (*instance_pb*, *client*)

Creates an instance from a protobuf.

Parameters

- **instance_pb** (`google.spanner.v2.spanner_instance_admin_pb2.Instance`) – A instance protobuf object.
- **client** (*Client*) – The client that owns the instance.

Return type `Instance`

Returns The instance parsed from the protobuf response.

Raises `ValueError` – if the instance name does not match `projects/{project}/instances/{instance_id}` or if the parsed project ID does not match the project ID on the client.

list_databases (*page_size=None, page_token=None*)

List databases for the instance.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.DatabaseAdmin.ListDatabases>

Parameters

- **page_size** (*int*) – (Optional) Maximum number of results to return.
- **page_token** (*str*) – (Optional) Token for fetching next page of results.

Return type `Iterator`

Returns Iterator of `Database` resources within the current instance.

name

Instance name used in requests.

Note: This property will not change if `instance_id` does not, but the return value is not cached.

The instance name is of the form

```
"projects/{project}/instances/{instance_id}"
```

Return type `str`

Returns The instance name.

reload()

Reload the metadata for this instance.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.instance.v1#google.spanner.admin.instance.v1.InstanceAdmin.GetInstanceConfig>

Raises `NotFound` – if the instance does not exist

update()

Update this instance.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.instance.v1#google.spanner.admin.instance.v1.InstanceAdmin.UpdateInstance>

Note: Updates the `display_name` and `node_count`. To change those values before updating, set them via

```
instance.display_name = 'New display name'
instance.node_count = 5

before calling :meth:`update`.
```

Return type `google.api_core.operation.Operation`

Returns an operation instance

Raises *NotFound* – if the instance does not exist

19.8.3 Database API

User friendly container for Cloud Spanner Database.

class google.cloud.spanner_v1.database.**BatchCheckout** (*database*)

Bases: *object*

Context manager for using a batch from a database.

Inside the context manager, checks out a session from the database, creates a batch from it, making the batch available.

Caller must *not* use the batch to perform API requests outside the scope of the context manager.

Parameters **database** (*Database*) – database to use

class google.cloud.spanner_v1.database.**BatchSnapshot** (*database*,
read_timestamp=None, *exact_staleness=None*)

Bases: *object*

Wrapper for generating and processing read / query batches.

Parameters

- **database** (*Database*) – database to use
- **read_timestamp** (*datetime.datetime*) – Execute all reads at the given timestamp.
- **exact_staleness** (*datetime.timedelta*) – Execute all reads at a timestamp that is *exact_staleness* old.

close ()

Clean up underlying session.

Note: If the transaction has been shared across multiple machines, calling this on any machine would invalidate the transaction everywhere. Ideally this would be called when data has been read from all the partitions.

execute_sql (**args, **kw*)

Convenience method: perform query operation via snapshot.

See `execute_sql()`.

classmethod **from_dict** (*database, mapping*)

Reconstruct an instance from a mapping.

Parameters

- **database** (*Database*) – database to use
- **mapping** (*mapping*) – serialized state of the instance

Return type *BatchSnapshot*

generate_query_batches (*sql, params=None, param_types=None, partition_size_bytes=None, max_partitions=None*)

Start a partitioned query operation.

Uses the `PartitionQuery` API request to start a partitioned query operation. Returns a list of batch information needed to perform the actual queries.

Parameters

- **sql** (*str*) – SQL query statement
- **params** (*dict*, {*str* -> *column value*}) – values for parameter replacement. Keys must match the names used in `sql`.
- **param_types** (*dict*[*str* -> *Union*[*dict*, *types.Type*]]) – (Optional) maps explicit types for one or more param values; required if parameters are passed.
- **partition_size_bytes** (*int*) – (Optional) desired size for each partition generated. The service uses this as a hint, the actual partition size may differ.
- **partition_size_bytes** – (Optional) desired size for each partition generated. The service uses this as a hint, the actual partition size may differ.
- **max_partitions** (*int*) – (Optional) desired maximum number of partitions generated. The service uses this as a hint, the actual number of partitions may differ.

Return type iterable of dict

Returns mappings of information used to perform actual partitioned reads via `process_read_batch()`.

generate_read_batches (*table*, *columns*, *keyset*, *index*=", *partition_size_bytes*=None, *max_partitions*=None)

Start a partitioned batch read operation.

Uses the `PartitionRead` API request to initiate the partitioned read. Returns a list of batch information needed to perform the actual reads.

Parameters

- **table** (*str*) – name of the table from which to fetch data
- **columns** (*list of str*) – names of columns to be retrieved
- **keyset** (*KeySet*) – keys / ranges identifying rows to be retrieved
- **index** (*str*) – (Optional) name of index to use, rather than the table's primary key
- **partition_size_bytes** (*int*) – (Optional) desired size for each partition generated. The service uses this as a hint, the actual partition size may differ.
- **max_partitions** (*int*) – (Optional) desired maximum number of partitions generated. The service uses this as a hint, the actual number of partitions may differ.

Return type iterable of dict

Returns mappings of information used to perform actual partitioned reads via `process_read_batch()`.

process (*batch*)

Process a single, partitioned query or read.

Parameters **batch** (*mapping*) – one of the mappings returned from an earlier call to `generate_query_batches()`.

Return type *StreamedResultSet*

Returns a result set instance which can be used to consume rows.

Raises **ValueError** – if batch does not contain either 'read' or 'query'

process_query_batch (*batch*)

Process a single, partitioned query.

Parameters **batch** (*mapping*) – one of the mappings returned from an earlier call to `generate_query_batches()`.

Return type `StreamedResultSet`

Returns a result set instance which can be used to consume rows.

process_read_batch (*batch*)

Process a single, partitioned read.

Parameters **batch** (*mapping*) – one of the mappings returned from an earlier call to `generate_read_batches()`.

Return type `StreamedResultSet`

Returns a result set instance which can be used to consume rows.

read (*args, **kw)

Convenience method: perform read operation via snapshot.

See `read()`.

to_dict ()

Return state as a dictionary.

Result can be used to serialize the instance and reconstitute it later using `from_dict()`.

Return type `dict`

class google.cloud.spanner_v1.database.**Database** (*database_id*, *instance*,
ddl_statements=(), *pool*=None)

Bases: `object`

Representation of a Cloud Spanner Database.

We can use a `Database` to:

- `create()` the database
- `reload()` the database
- `update()` the database
- `drop()` the database

Parameters

- **database_id** (*str*) – The ID of the database.
- **instance** (*Instance*) – The instance that owns the database.
- **ddl_statements** (*list of string*) – (Optional) DDL statements, excluding the CREATE DATABASE statement.
- **pool** (concrete subclass of `AbstractSessionPool`.) – (Optional) session pool to be used by database. If not passed, the database will construct an instance of `BurstyPool`.

batch ()

Return an object which wraps a batch.

The wrapper *must* be used as a context manager, with the batch as the value returned by the wrapper.

Return type `BatchCheckout`

Returns new wrapper

batch_snapshot (*read_timestamp=None, exact_staleness=None*)

Return an object which wraps a batch read / query.

Parameters

- **read_timestamp** (*datetime.datetime*) – Execute all reads at the given timestamp.
- **exact_staleness** (*datetime.timedelta*) – Execute all reads at a timestamp that is *exact_staleness* old.

Return type *BatchSnapshot*

Returns new wrapper

create ()

Create this database within its instance

Includes any configured schema assigned to *ddl_statements*.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.DatabaseAdmin.CreateDatabase>

Return type *Operation*

Returns a future used to poll the status of the create request

Raises

- **Conflict** – if the database already exists
- **NotFound** – if the instance owning the database does not exist

ddl_statements

DDL Statements used to define database schema.

See cloud.google.com/spanner/docs/data-definition-language

Return type sequence of string

Returns the statements

drop ()

Drop this database.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.DatabaseAdmin.DropDatabase>

exists ()

Test whether this database exists.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.DatabaseAdmin.GetDatabaseDDL>

Return type *bool*

Returns True if the database exists, else false.

classmethod from_pb (*database_pb, instance, pool=None*)

Creates an instance of this class from a protobuf.

Parameters

- **database_pb** (*google.spanner.v2.spanner_instance_admin_pb2.Instance*) – A instance protobuf object.

- **instance** (*Instance*) – The instance that owns the database.
- **pool** (concrete subclass of *AbstractSessionPool*.) – (Optional) session pool to be used by database.

Return type *Database*

Returns The database parsed from the protobuf response.

Raises **ValueError** – if the instance name does not match the expected format or if the parsed project ID does not match the project ID on the instance’s client, or if the parsed instance ID does not match the instance’s ID.

name

Database name used in requests.

Note: This property will not change if `database_id` does not, but the return value is not cached.

The database name is of the form

```
"projects/../../instances/../../databases/{database_id}"
```

Return type *str*

Returns The database name.

reload()

Reload this database.

Refresh any configured schema into *ddl_statements*.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.DatabaseAdmin.GetDatabaseDDL>

Raises **NotFound** – if the database does not exist

run_in_transaction (*func*, **args*, ***kw*)

Perform a unit of work in a transaction, retrying on abort.

Parameters

- **func** (*callable*) – takes a required positional argument, the transaction, and additional positional / keyword arguments as supplied by the caller.
- **args** (*tuple*) – additional positional arguments to be passed to *func*.
- **kw** (*dict*) – optional keyword arguments to be passed to *func*. If passed, “time-out_secs” will be removed and used to override the default timeout.

Return type *datetime.datetime*

Returns timestamp of committed transaction

session()

Factory to create a session for this database.

Return type *Session*

Returns a session bound to this database.

snapshot (***kw*)

Return an object which wraps a snapshot.

The wrapper *must* be used as a context manager, with the snapshot as the value returned by the wrapper.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.v1#google.spanner.v1.TransactionOptions.ReadOnly>

Parameters **kw** (*dict*) – Passed through to *Snapshot* constructor.

Return type *SnapshotCheckout*

Returns new wrapper

spanner_api

Helper for session-related API calls.

update_ddl (*ddl_statements*)

Update DDL for this database.

Apply any configured schema from *ddl_statements*.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.DatabaseAdmin.UpdateDatabase>

Parameters **ddl_statements** (*Sequence[str]*) – a list of DDL statements to use on this database

Return type *google.api_core.operation.Operation*

Returns an operation instance

Raises *NotFound* – if the database does not exist

class `google.cloud.spanner_v1.database.SnapshotCheckout` (*database*, ***kw*)

Bases: *object*

Context manager for using a snapshot from a database.

Inside the context manager, checks out a session from the database, creates a snapshot from it, making the snapshot available.

Caller must *not* use the snapshot to perform API requests outside the scope of the context manager.

Parameters

- **database** (*Database*) – database to use
- **kw** (*dict*) – Passed through to *Snapshot* constructor.

19.8.4 Session API

Wrapper for Cloud Spanner Session objects.

`google.cloud.spanner_v1.session.DEFAULT_RETRY_TIMEOUT_SECS = 30`

Default timeout used by *Session.run_in_transaction()*.

class `google.cloud.spanner_v1.session.Session` (*database*)

Bases: *object*

Representation of a Cloud Spanner Session.

We can use a *Session* to:

- *create()* the session
- Use *exists()* to check for the existence of the session
- *drop()* the session

Parameters **database** (*Database*) – The database to which the session is bound.

batch()

Factory to create a batch for this session.

Return type *Batch*

Returns a batch bound to this session

Raises **ValueError** – if the session has not yet been created.

create()

Create this session, bound to its database.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.v1#google.spanner.v1.Spanner.CreateSession>

Raises **ValueError** if *session_id* is already set.

delete()

Delete this session.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.v1#google.spanner.v1.Spanner.GetSession>

Raises

- **ValueError** – if *session_id* is not already set.
- **NotFound** – if the session does not exist

execute_sql(sql, params=None, param_types=None, query_mode=None)

Perform an `ExecuteStreamingSql` API request.

Parameters

- **sql** (*str*) – SQL query statement
- **params** (*dict*, {*str* -> *column value*}) – values for parameter replacement. Keys must match the names used in *sql*.
- **param_types** (*dict*, {*str* -> `google.spanner.v1.type_pb2.TypeCode`}) – (Optional) explicit types for one or more param values; overrides default type detection on the back-end.
- **query_mode** (`google.spanner.v1.spanner_pb2.ExecuteSqlRequest.QueryMode`) – Mode governing return of results / query plan. See <https://cloud.google.com/spanner/reference/rpc/google.spanner.v1#google.spanner.v1.ExecuteSqlRequest.QueryMode1>

Return type *StreamedResultSet*

Returns a result set instance which can be used to consume rows.

exists()

Test for the existence of this session.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.v1#google.spanner.v1.Spanner.GetSession>

Return type *bool*

Returns True if the session exists on the back-end, else False.

name

Session name used in requests.

Note: This property will not change if `session_id` does not, but the return value is not cached.

The session name is of the form

```
"projects/.../instances/.../databases/.../sessions/{session_id}"
```

Return type `str`

Returns The session name.

Raises `ValueError` – if session is not yet created

read (*table*, *columns*, *keyset*, *index*=", *limit*=0)

Perform a `StreamingRead` API request for rows in a table.

Parameters

- **table** (*str*) – name of the table from which to fetch data
- **columns** (*list of str*) – names of columns to be retrieved
- **keyset** (*KeySet*) – keys / ranges identifying rows to be retrieved
- **index** (*str*) – (Optional) name of index to use, rather than the table’s primary key
- **limit** (*int*) – (Optional) maximum number of rows to return

Return type `StreamedResultSet`

Returns a result set instance which can be used to consume rows.

run_in_transaction (*func*, **args*, ***kw*)

Perform a unit of work in a transaction, retrying on abort.

Parameters

- **func** (*callable*) – takes a required positional argument, the transaction, and additional positional / keyword arguments as supplied by the caller.
- **args** (*tuple*) – additional positional arguments to be passed to *func*.
- **kw** (*dict*) – optional keyword arguments to be passed to *func*. If passed, “time-out_secs” will be removed and used to override the default timeout.

Return type *Any*

Returns The return value of *func*.

Raises `Exception` – reraises any non-ABORT exceptions raised by *func*.

session_id

Read-only ID, set by the back-end during `create()`.

snapshot (***kw*)

Create a snapshot to perform a set of reads with shared staleness.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.v1#google.spanner.v1.TransactionOptions.ReadOnly>

Parameters **kw** (*dict*) – Passed through to `Snapshot` ctor.

Return type `Snapshot`

Returns a snapshot bound to this session

Raises `ValueError` – if the session has not yet been created.

transaction ()

Create a transaction to perform a set of reads with shared staleness.

Return type `Transaction`

Returns a transaction bound to this session

Raises `ValueError` – if the session has not yet been created.

19.8.5 Session Pools API

Pools managing shared Session objects.

class `google.cloud.spanner_v1.pool.AbstractSessionPool`

Bases: `object`

Specifies required API for concrete session pool implementations.

bind (*database*)

Associate the pool with a database.

Parameters **database** (`Database`) – database used by the pool: used to create sessions when needed.

Concrete implementations of this method may pre-fill the pool using the database.

Raises `NotImplementedError` – abstract method

clear ()

Delete all sessions in the pool.

Concrete implementations of this method are allowed to raise an error to signal that the pool is full, or to block until it is not full.

Raises `NotImplementedError` – abstract method

get ()

Check a session out from the pool.

Concrete implementations of this method are allowed to raise an error to signal that the pool is exhausted, or to block until a session is available.

Raises `NotImplementedError` – abstract method

put (*session*)

Return a session to the pool.

Parameters **session** (`Session`) – the session being returned.

Concrete implementations of this method are allowed to raise an error to signal that the pool is full, or to block until it is not full.

Raises `NotImplementedError` – abstract method

session (***kwargs*)

Check out a session from the pool.

Parameters **kwargs** (`dict`) – (optional) keyword arguments, passed through to the returned checkout.

Return type `SessionCheckout`

Returns a checkout instance, to be used as a context manager for accessing the session and returning it to the pool.

class `google.cloud.spanner_v1.pool.BurstyPool` (*target_size=10*)

Bases: `google.cloud.spanner_v1.pool.AbstractSessionPool`

Concrete session pool implementation:

- “Pings” existing sessions via `session.exists()` before returning them.
- Creates a new session, rather than blocking, when `get()` is called on an empty pool.
- Discards the returned session, rather than blocking, when `put()` is called on a full pool.

Parameters `target_size` (*int*) – max pool size

bind (*database*)

Associate the pool with a database.

Parameters `database` (*Database*) – database used by the pool: used to create sessions when needed.

clear ()

Delete all sessions in the pool.

get ()

Check a session out from the pool.

Return type *Session*

Returns an existing session from the pool, or a newly-created session.

put (*session*)

Return a session to the pool.

Never blocks: if the pool is full, the returned session is discarded.

Parameters `session` (*Session*) – the session being returned.

class `google.cloud.spanner_v1.pool.FixedSizePool` (*size=10, default_timeout=10*)

Bases: `google.cloud.spanner_v1.pool.AbstractSessionPool`

Concrete session pool implementation:

- Pre-allocates / creates a fixed number of sessions.
- “Pings” existing sessions via `session.exists()` before returning them, and replaces expired sessions.
- Blocks, with a timeout, when `get()` is called on an empty pool. Raises after timing out.
- Raises when `put()` is called on a full pool. That error is never expected in normal practice, as users should be calling `get()` followed by `put()` whenever in need of a session.

Parameters

- **size** (*int*) – fixed pool size
- **default_timeout** (*int*) – default timeout, in seconds, to wait for a returned session.

bind (*database*)

Associate the pool with a database.

Parameters `database` (*Database*) – database used by the pool: used to create sessions when needed.

clear()

Delete all sessions in the pool.

get (*timeout=None*)

Check a session out from the pool.

Parameters **timeout** (*int*) – seconds to block waiting for an available session

Return type *Session*

Returns an existing session from the pool, or a newly-created session.

Raises `six.moves.queue.Empty` if the queue is empty.

put (*session*)

Return a session to the pool.

Never blocks: if the pool is full, raises.

Parameters **session** (*Session*) – the session being returned.

Raises `six.moves.queue.Full` if the queue is full.

class `google.cloud.spanner_v1.pool.PingingPool` (*size=10*, *default_timeout=10*,
ping_interval=3000)

Bases: `google.cloud.spanner_v1.pool.AbstractSessionPool`

Concrete session pool implementation:

- Pre-allocates / creates a fixed number of sessions.
- Sessions are used in “round-robin” order (LRU first).
- “Pings” existing sessions in the background after a specified interval via an API call (`session.exists()`).
- Blocks, with a timeout, when `get()` is called on an empty pool. Raises after timing out.
- Raises when `put()` is called on a full pool. That error is never expected in normal practice, as users should be calling `get()` followed by `put()` whenever in need of a session.

The application is responsible for calling `ping()` at appropriate times, e.g. from a background thread.

Parameters

- **size** (*int*) – fixed pool size
- **default_timeout** (*int*) – default timeout, in seconds, to wait for a returned session.
- **ping_interval** (*int*) – interval at which to ping sessions.

bind (*database*)

Associate the pool with a database.

Parameters **database** (*Database*) – database used by the pool: used to create sessions when needed.

clear()

Delete all sessions in the pool.

get (*timeout=None*)

Check a session out from the pool.

Parameters **timeout** (*int*) – seconds to block waiting for an available session

Return type *Session*

Returns an existing session from the pool, or a newly-created session.

Raises `six.moves.queue.Empty` if the queue is empty.

ping()

Refresh maybe-expired sessions in the pool.

This method is designed to be called from a background thread, or during the “idle” phase of an event loop.

put(session)

Return a session to the pool.

Never blocks: if the pool is full, raises.

Parameters `session` (*Session*) – the session being returned.

Raises `six.moves.queue.Full` if the queue is full.

class `google.cloud.spanner_v1.pool.SessionCheckout` (*pool*, ***kwargs*)

Bases: `object`

Context manager: hold session checked out from a pool.

Parameters

- **pool** (concrete subclass of `AbstractSessionPool`) – Pool from which to check out a session.
- **kwargs** (*dict*) – extra keyword arguments to be passed to `pool.get()`.

class `google.cloud.spanner_v1.pool.TransactionPingingPool` (*size=10*, *de-fault_timeout=10*, *ping_interval=3000*)

Bases: `google.cloud.spanner_v1.pool.PingingPool`

Concrete session pool implementation:

In addition to the features of *PingingPool*, this class creates and begins a transaction for each of its sessions at startup.

When a session is returned to the pool, if its transaction has been committed or rolled back, the pool creates a new transaction for the session and pushes the transaction onto a separate queue of “transactions to begin.” The application is responsible for flushing this queue as appropriate via the pool’s `begin_pending_transactions()` method.

Parameters

- **size** (*int*) – fixed pool size
- **default_timeout** (*int*) – default timeout, in seconds, to wait for a returned session.
- **ping_interval** (*int*) – interval at which to ping sessions.

begin_pending_transactions()

Begin all transactions for sessions added to the pool.

bind(database)

Associate the pool with a database.

Parameters `database` (*Database*) – database used by the pool: used to create sessions when needed.

put(session)

Return a session to the pool.

Never blocks: if the pool is full, raises.

Parameters `session` (*Session*) – the session being returned.

Raises `six.moves.queue.Full` if the queue is full.

19.8.6 Keyset API

Wrap representation of Spanner keys / ranges.

class `google.cloud.spanner_v1.keyset.KeyRange` (*start_open=None, start_closed=None, end_open=None, end_closed=None*)

Bases: `object`

Identify range of table rows via start / end points.

Specify either a *start_open* or *start_closed* key, or defaults to *start_closed* = []. Specify either an *end_open* or *end_closed* key, or defaults to *end_closed* = []. However, at least one key has to be specified. If no keys are specified, `ValueError` is raised.

Parameters

- **start_open** (*list of scalars*) – keys identifying start of range (this key excluded)
- **start_closed** (*list of scalars*) – keys identifying start of range (this key included)
- **end_open** (*list of scalars*) – keys identifying end of range (this key excluded)
- **end_closed** (*list of scalars*) – keys identifying end of range (this key included)

Raises `ValueError` – if no keys are specified

class `google.cloud.spanner_v1.keyset.KeySet` (*keys=(), ranges=(), all_=False*)

Bases: `object`

Identify table rows via keys / ranges.

Parameters

- **keys** (*list of list of scalars*) – keys identifying individual rows within a table.
- **ranges** (*list of KeyRange*) – ranges identifying rows within a table.
- **all** (*boolean*) – if True, identify all rows within a table

19.8.7 Snapshot API

Model a set of read-only queries to a database as a snapshot.

class `google.cloud.spanner_v1.snapshot.Snapshot` (*session, read_timestamp=None, min_read_timestamp=None, max_staleness=None, ex-act_staleness=None, multi_use=False*)

Bases: `google.cloud.spanner_v1.snapshot._SnapshotBase`

Allow a set of reads / SQL statements with shared staleness.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.v1#google.spanner.v1.TransactionOptions.ReadOnly>

If no options are passed, reads will use the `strong` model, reading at a timestamp where all previously committed transactions are visible.

Parameters

- **session** (*Session*) – the session used to perform the commit.
- **read_timestamp** (`datetime.datetime`) – Execute all reads at the given timestamp.
- **min_read_timestamp** (`datetime.datetime`) – Execute all reads at a timestamp \geq `min_read_timestamp`.
- **max_staleness** (`datetime.timedelta`) – Read data at a timestamp \geq NOW - `max_staleness` seconds.
- **exact_staleness** (`datetime.timedelta`) – Execute all reads at a timestamp that is `exact_staleness` old.
- **multi_use** (`bool`) – If true, multiple `read()` / `execute_sql()` calls can be performed with the snapshot in the context of a read-only transaction, used to ensure isolation / consistency. Incompatible with `max_staleness` and `min_read_timestamp`.

begin()

Begin a read-only transaction on the database.

Return type `bytes`

Returns the ID for the newly-begun transaction.

Raises `ValueError` – if the transaction is already begun, committed, or rolled back.

19.8.8 Batch API

Context manager for Cloud Spanner batched writes.

class `google.cloud.spanner_v1.batch.Batch` (*session*)
 Bases: `google.cloud.spanner_v1.batch._BatchBase`
 Accumulate mutations for transmission during `commit()`.

commit()

Commit mutations to the database.

Return type `datetime`

Returns timestamp of the committed changes.

committed = `None`

Timestamp at which the batch was successfully committed.

19.8.9 Transaction API

Spanner read-write transaction support.

class `google.cloud.spanner_v1.transaction.Transaction` (*session*)
 Bases: `google.cloud.spanner_v1.snapshot._SnapshotBase`, `google.cloud.spanner_v1.batch._BatchBase`

Implement read-write transaction semantics for a session.

Parameters **session** (*Session*) – the session used to perform the commit

Raises `ValueError` – if session has an existing transaction

begin()

Begin a transaction on the database.

Return type `bytes`

Returns the ID for the newly-begun transaction.

Raises `ValueError` – if the transaction is already begun, committed, or rolled back.

commit()

Commit mutations to the database.

Return type `datetime`

Returns timestamp of the committed changes.

Raises `ValueError` – if there are no mutations to commit.

committed = None

Timestamp at which the transaction was successfully committed.

rollback()

Roll back a transaction on the database.

19.8.10 StreamedResultSet API

Wrapper for streaming results.

class `google.cloud.spanner_v1.streamed.StreamedResultSet` (*response_iterator*,
source=None)

Bases: `object`

Process a sequence of partial result sets into a single set of row data.

Parameters

- **response_iterator** – Iterator yielding `google.cloud.spanner_v1.proto.result_set_pb2.PartialResultSet` instances.
- **source** (*Snapshot*) – Snapshot from which the result set was fetched.

fields

Field descriptors for result set columns.

Return type list of `Field`

Returns list of fields describing column names / types.

metadata

Result set metadata

Return type `ResultSetMetadata`

Returns structure describing the results

one()

Return exactly one result, or raise an exception.

Raises `NotFound`: If there are no results.

Raises `ValueError`: If there are multiple results.

Raises `RuntimeError`: If consumption has already occurred, in whole or in part.

one_or_none()

Return exactly one result, or None if there are no results.

Raises `ValueError`: If there are multiple results.

Raises `RuntimeError`: If consumption has already occurred, in whole or in part.

stats

Result set statistics

Return type `ResultSetStats`

Returns structure describing status about the response

exception `google.cloud.spanner_v1.streamed.Unmergeable` (*lhs, rhs, type_*)

Bases: `ValueError`

Unable to merge two values.

Parameters

- **lhs** (`google.protobuf.struct_pb2.Value`) – pending value to be merged
- **rhs** (`google.protobuf.struct_pb2.Value`) – remaining value to be merged
- **type** (`google.cloud.spanner_v1.proto.type_pb2.Type`) – field type of values being merged

The classes and methods above depend on the following, lower-level classes and methods. Documentation for these is provided for completion, and some advanced use cases may wish to interact with these directly:

19.8.11 Spanner Client API

class `google.cloud.spanner_v1.Client` (*project=None, credentials=None, user_agent='gcloud-python/0.28.1'*)

Client for interacting with Cloud Spanner API.

Note: Since the Cloud Spanner API requires the gRPC transport, no `_http` argument is accepted by this class.

Parameters

- **project** (`str` or `unicode`) – (Optional) The ID of the project which owns the instances, tables and data. If not provided, will attempt to determine from the environment.
- **credentials** (`OAuth2Credentials` or `NoneType`) – (Optional) The `OAuth2` Credentials to use for this client. If not provided, defaults to the Google Application Default Credentials.
- **user_agent** (`str`) – (Optional) The user agent to be used with API request. Defaults to `DEFAULT_USER_AGENT`.

Raises `ValueError` if both `read_only` and `admin` are `True`

SCOPE = (`'https://www.googleapis.com/auth/spanner.admin',`)

The scopes required for Google Cloud Spanner.

copy()

Make a copy of this client.

Copies the local data stored as simple types but does not copy the current state of any open connections with the Cloud Bigtable API.

Return type *Client*

Returns A copy of the current client.

credentials

Getter for client's credentials.

Return type *OAuth2Credentials*

Returns The credentials stored on the client.

database_admin_api

Helper for session-related API calls.

classmethod **from_service_account_json** (*json_credentials_path*, *args, **kwargs)

Factory to retrieve JSON credentials while creating client.

Parameters

- **json_credentials_path** (*str*) – The path to a private key file (this file was given to you when you created the service account). This file must contain a JSON object with a private key and other credentials information (downloaded from the Google APIs console).
- **args** (*tuple*) – Remaining positional arguments to pass to constructor.
- **kwargs** (*dict*) – Remaining keyword arguments to pass to constructor.

Return type *_ClientFactoryMixin*

Returns The client created with the retrieved JSON credentials.

Raises *TypeError* – if there is a conflict with the kwargs and the credentials created by the factory.

instance (*instance_id*, *configuration_name=None*, *display_name=None*, *node_count=1*)

Factory to create a instance associated with this client.

Parameters

- **instance_id** (*str*) – The ID of the instance.
- **configuration_name** (*string*) – (Optional) Name of the instance configuration used to set up the instance's cluster, in the form: `projects/<project>/instanceConfigs/<config>`. **Required** for instances which do not yet exist.
- **display_name** (*str*) – (Optional) The display name for the instance in the Cloud Console UI. (Must be between 4 and 30 characters.) If this value is not set in the constructor, will fall back to the instance ID.
- **node_count** (*int*) – (Optional) The number of nodes in the instance's cluster; used to set up the instance's cluster.

Return type *Instance*

Returns an instance owned by this client.

instance_admin_api

Helper for session-related API calls.

list_instance_configs (*page_size=None*, *page_token=None*)

List available instance configurations for the client's project.

See [RPC docs](#).

Parameters

- **page_size** (*int*) – (Optional) Maximum number of results to return.
- **page_token** (*str*) – (Optional) Token for fetching next page of results.

Return type *Iterator*

Returns Iterator of `InstanceConfig` resources within the client's project.

list_instances (*filter_*="", *page_size*=None, *page_token*=None)
List instances for the client's project.

See <https://cloud.google.com/spanner/reference/rpc/google.spanner.admin.database.v1#google.spanner.admin.database.v1.InstanceAdmin.ListInstances>

Parameters

- **filter** (*string*) – (Optional) Filter to select instances listed. See the `ListInstancesRequest` docs above for examples.
- **page_size** (*int*) – (Optional) Maximum number of results to return.
- **page_token** (*str*) – (Optional) Token for fetching next page of results.

Return type *Iterator*

Returns Iterator of *Instance* resources within the client's project.

project_name

Project name to be used with Spanner APIs.

Note: This property will not change if `project` does not, but the return value is not cached.

The project name is of the form

"projects/{project}"

Return type *str*

Returns The project name to be used with the Cloud Spanner Admin API RPC service.

class `google.cloud.spanner_v1.KeyRange` (*start_open*=None, *start_closed*=None,
end_open=None, *end_closed*=None)

Identify range of table rows via start / end points.

Specify either a *start_open* or *start_closed* key, or defaults to *start_closed* = []. Specify either an *end_open* or *end_closed* key, or defaults to *end_closed* = []. However, at least one key has to be specified. If no keys are specified, `ValueError` is raised.

Parameters

- **start_open** (*list of scalars*) – keys identifying start of range (this key excluded)
- **start_closed** (*list of scalars*) – keys identifying start of range (this key included)
- **end_open** (*list of scalars*) – keys identifying end of range (this key excluded)
- **end_closed** (*list of scalars*) – keys identifying end of range (this key included)

Raises `ValueError` – if no keys are specified

class `google.cloud.spanner_v1.KeySet` (*keys=()*, *ranges=()*, *all=False*)
Identify table rows via keys / ranges.

Parameters

- **keys** (*list of list of scalars*) – keys identifying individual rows within a table.
- **ranges** (*list of [KeyRange](#)*) – ranges identifying rows within a table.
- **all** (*boolean*) – if True, identify all rows within a table

class `google.cloud.spanner_v1.AbstractSessionPool`
Specifies required API for concrete session pool implementations.

bind (*database*)
Associate the pool with a database.

Parameters **database** (*Database*) – database used by the pool: used to create sessions when needed.

Concrete implementations of this method may pre-fill the pool using the database.

Raises `NotImplementedError` – abstract method

clear ()
Delete all sessions in the pool.

Concrete implementations of this method are allowed to raise an error to signal that the pool is full, or to block until it is not full.

Raises `NotImplementedError` – abstract method

get ()
Check a session out from the pool.

Concrete implementations of this method are allowed to raise an error to signal that the pool is exhausted, or to block until a session is available.

Raises `NotImplementedError` – abstract method

put (*session*)
Return a session to the pool.

Parameters **session** (*Session*) – the session being returned.

Concrete implementations of this method are allowed to raise an error to signal that the pool is full, or to block until it is not full.

Raises `NotImplementedError` – abstract method

session (***kwargs*)
Check out a session from the pool.

Parameters **kwargs** (*dict*) – (optional) keyword arguments, passed through to the returned checkout.

Return type `SessionCheckout`

Returns a checkout instance, to be used as a context manager for accessing the session and returning it to the pool.

class `google.cloud.spanner_v1.BurstyPool` (*target_size=10*)
Concrete session pool implementation:

- “Pings” existing sessions via `session.exists()` before returning them.

- Creates a new session, rather than blocking, when `get ()` is called on an empty pool.
- Discards the returned session, rather than blocking, when `put ()` is called on a full pool.

Parameters `target_size` (*int*) – max pool size

bind (*database*)

Associate the pool with a database.

Parameters `database` (*Database*) – database used by the pool: used to create sessions when needed.

clear ()

Delete all sessions in the pool.

get ()

Check a session out from the pool.

Return type *Session*

Returns an existing session from the pool, or a newly-created session.

put (*session*)

Return a session to the pool.

Never blocks: if the pool is full, the returned session is discarded.

Parameters `session` (*Session*) – the session being returned.

session (***kwargs*)

Check out a session from the pool.

Parameters `kwargs` (*dict*) – (optional) keyword arguments, passed through to the returned checkout.

Return type *SessionCheckout*

Returns a checkout instance, to be used as a context manager for accessing the session and returning it to the pool.

class `google.cloud.spanner_v1.FixedSizePool` (*size=10, default_timeout=10*)

Concrete session pool implementation:

- Pre-allocates / creates a fixed number of sessions.
- “Pings” existing sessions via `session.exists()` before returning them, and replaces expired sessions.
- Blocks, with a timeout, when `get ()` is called on an empty pool. Raises after timing out.
- Raises when `put ()` is called on a full pool. That error is never expected in normal practice, as users should be calling `get ()` followed by `put ()` whenever in need of a session.

Parameters

- **size** (*int*) – fixed pool size
- **default_timeout** (*int*) – default timeout, in seconds, to wait for a returned session.

bind (*database*)

Associate the pool with a database.

Parameters `database` (*Database*) – database used by the pool: used to create sessions when needed.

clear()

Delete all sessions in the pool.

get (*timeout=None*)

Check a session out from the pool.

Parameters **timeout** (*int*) – seconds to block waiting for an available session

Return type *Session*

Returns an existing session from the pool, or a newly-created session.

Raises `six.moves.queue.Empty` if the queue is empty.

put (*session*)

Return a session to the pool.

Never blocks: if the pool is full, raises.

Parameters **session** (*Session*) – the session being returned.

Raises `six.moves.queue.Full` if the queue is full.

session (***kwargs*)

Check out a session from the pool.

Parameters **kwargs** (*dict*) – (optional) keyword arguments, passed through to the returned checkout.

Return type *SessionCheckout*

Returns a checkout instance, to be used as a context manager for accessing the session and returning it to the pool.

`google.cloud.spanner_v1.COMMIT_TIMESTAMP = 'spanner.commit_timestamp()'`

Placeholder be used to store commit timestamp of a transaction in a column.

This value can only be used for timestamp columns that have set the option (`allow_commit_timestamp=true`) in the schema.

19.8.12 Spanner Client Types

class `google.cloud.spanner_v1.types.BeginTransactionRequest`

The request for `[BeginTransaction][google.spanner.v1.Spanner.BeginTransaction]`.

session

Required. The session in which the transaction runs.

options

Required. Options for the new transaction.

class `google.cloud.spanner_v1.types.CommitRequest`

The request for `[Commit][google.spanner.v1.Spanner.Commit]`.

session

Required. The session in which the transaction to be committed is running.

transaction

Required. The transaction in which to commit.

transaction_id

Commit a previously-started transaction.

single_use_transaction

Execute mutations in a temporary transaction. Note that unlike commit of a previously-started transaction, commit with a temporary transaction is non-idempotent. That is, if the `CommitRequest` is sent to Cloud Spanner more than once (for instance, due to retries in the application, or in the transport library), it is possible that the mutations are executed more than once. If this is undesirable, use `[BeginTransaction][google.spanner.v1.Spanner.BeginTransaction]` and `[Commit][google.spanner.v1.Spanner.Commit]` instead.

mutations

The mutations to be executed when this transaction commits. All mutations are applied atomically, in the order they appear in this list.

class `google.cloud.spanner_v1.types.CommitResponse`

The response for `[Commit][google.spanner.v1.Spanner.Commit]`.

commit_timestamp

The Cloud Spanner timestamp at which the transaction committed.

class `google.cloud.spanner_v1.types.CreateSessionRequest`

The request for `[CreateSession][google.spanner.v1.Spanner.CreateSession]`.

database

Required. The database in which the new session is created.

session

The session to create.

class `google.cloud.spanner_v1.types.CustomHttpPattern`

class `google.cloud.spanner_v1.types.DeleteSessionRequest`

The request for `[DeleteSession][google.spanner.v1.Spanner.DeleteSession]`.

name

Required. The name of the session to delete.

class `google.cloud.spanner_v1.types.DescriptorProto`

class `ExtensionRange`

class `ReservedRange`

class `google.cloud.spanner_v1.types.Duration`

class `google.cloud.spanner_v1.types.Empty`

class `google.cloud.spanner_v1.types.EnumDescriptorProto`

class `EnumReservedRange`

class `google.cloud.spanner_v1.types.EnumOptions`

class `google.cloud.spanner_v1.types.EnumValueDescriptorProto`

class `google.cloud.spanner_v1.types.EnumValueOptions`

class `google.cloud.spanner_v1.types.ExecuteSqlRequest`

The request for `[ExecuteSql][google.spanner.v1.Spanner.ExecuteSql]` and `[ExecuteStreamingSql][google.spanner.v1.Spanner.ExecuteStreamingSql]`.

session

Required. The session in which the SQL query should be performed.

transaction

The transaction to use. If none is provided, the default is a temporary read-only transaction with strong concurrency.

sql

Required. The SQL query string.

params

The SQL query string can contain parameter placeholders. A parameter placeholder consists of '@' followed by the parameter name. Parameter names consist of any combination of letters, numbers, and underscores. Parameters can appear anywhere that a literal value is expected. The same parameter name can be used more than once, for example: "WHERE id > @msg_id AND id < @msg_id + 100". It is an error to execute an SQL query with unbound parameters. Parameter values are specified using `params`, which is a JSON object whose keys are parameter names, and whose values are the corresponding parameter values.

param_types

It is not always possible for Cloud Spanner to infer the right SQL type from a JSON value. For example, values of type `BYTES` and values of type `STRING` both appear in `[params][google.spanner.v1.ExecuteSqlRequest.params]` as JSON strings. In these cases, `param_types` can be used to specify the exact SQL type for some or all of the SQL query parameters. See the definition of `[Type][google.spanner.v1.Type]` for more information about SQL types.

resume_token

If this request is resuming a previously interrupted SQL query execution, `resume_token` should be copied from the last `[PartialResultSet][google.spanner.v1.PartialResultSet]` yielded before the interruption. Doing this enables the new SQL query execution to resume where the last one left off. The rest of the request parameters must exactly match the request that yielded this token.

query_mode

Used to control the amount of debugging information returned in `[ResultSetStats][google.spanner.v1.ResultSetStats]`.

partition_token

If present, results will be restricted to the specified partition previously created using `PartitionQuery()`. There must be an exact match for the values of fields common to this message and the `PartitionQueryRequest` message used to create this `partition_token`.

class ParamTypesEntry

```
class google.cloud.spanner_v1.types.ExtensionRangeOptions
```

```
class google.cloud.spanner_v1.types.FieldDescriptorProto
```

```
class google.cloud.spanner_v1.types.FieldOptions
```

```
class google.cloud.spanner_v1.types.FileDescriptorProto
```

```
class google.cloud.spanner_v1.types.FileDescriptorSet
```

```
class google.cloud.spanner_v1.types.FileOptions
```

```
class google.cloud.spanner_v1.types.GeneratedCodeInfo
```

class Annotation

```
class google.cloud.spanner_v1.types.GetSessionRequest
```

The request for `[GetSession][google.spanner.v1.Spanner.GetSession]`.

name

Required. The name of the session to retrieve.


```
class google.cloud.spanner_v1.types.Http
```

```
class google.cloud.spanner_v1.types.HttpRule
```

```
class google.cloud.spanner_v1.types.KeyRange
```

KeyRange represents a range of rows in a table or index.

A range has a start key and an end key. These keys can be open or closed, indicating if the range includes rows with that key.

Keys are represented by lists, where the *i*th value in the list corresponds to the *i*th component of the table or index primary key. Individual values are encoded as described [\[here\]](#)`[google.spanner.v1.TypeCode]`.

For example, consider the following table definition:

```
CREATE TABLE UserEvents (
  UserName STRING(MAX),
  EventDate STRING(10)
) PRIMARY KEY(UserName, EventDate);
```

The following keys name rows in this table:

```
["Bob", "2014-09-23"]
["Alfred", "2015-06-12"]
```

Since the `UserEvents` table's `PRIMARY KEY` clause names two columns, each `UserEvents` key has two elements; the first is the `UserName`, and the second is the `EventDate`.

Key ranges with multiple components are interpreted lexicographically by component using the table or index key's declared sort order. For example, the following range returns all events for user "Bob" that occurred in the year 2015:

```
"start_closed": ["Bob", "2015-01-01"]
"end_closed": ["Bob", "2015-12-31"]
```

Start and end keys can omit trailing key components. This affects the inclusion and exclusion of rows that exactly match the provided key components: if the key is closed, then rows that exactly match the provided components are included; if the key is open, then rows that exactly match are not included.

For example, the following range includes all events for "Bob" that occurred during and after the year 2000:

```
"start_closed": ["Bob", "2000-01-01"]
"end_closed": ["Bob"]
```

The next example retrieves all events for "Bob":

```
"start_closed": ["Bob"]
"end_closed": ["Bob"]
```

To retrieve events before the year 2000:

```
"start_closed": ["Bob"]
"end_open": ["Bob", "2000-01-01"]
```

The following range includes all rows in the table:

```
"start_closed": []
"end_closed": []
```

This range returns all users whose `UserName` begins with any character from A to C:

```
"start_closed": ["A"]
"end_open": ["D"]
```

This range returns all users whose `UserName` begins with B:

```
"start_closed": ["B"]
"end_open": ["C"]
```

Key ranges honor column sort order. For example, suppose a table is defined as follows:

```
CREATE TABLE DescendingSortedTable {
  Key INT64,
  ...
} PRIMARY KEY(Key DESC);
```

The following range retrieves all rows with key values between 1 and 100 inclusive:

```
"start_closed": ["100"]
"end_closed": ["1"]
```

Note that 100 is passed as the start, and 1 is passed as the end, because `Key` is a descending column in the schema.

start_key_type

The start key must be provided. It can be either closed or open.

start_closed

If the start is closed, then the range includes all rows whose first `len(start_closed)` key columns exactly match `start_closed`.

start_open

If the start is open, then the range excludes rows whose first `len(start_open)` key columns exactly match `start_open`.

end_key_type

The end key must be provided. It can be either closed or open.

end_closed

If the end is closed, then the range includes all rows whose first `len(end_closed)` key columns exactly match `end_closed`.

end_open

If the end is open, then the range excludes rows whose first `len(end_open)` key columns exactly match `end_open`.

class google.cloud.spanner_v1.types.KeySet

`KeySet` defines a collection of Cloud Spanner keys and/or key ranges. All the keys are expected to be in the same table or index. The keys need not be sorted in any particular way.

If the same key is specified multiple times in the set (for example if two ranges, two keys, or a key and a range overlap), Cloud Spanner behaves as if the key were only specified once.

keys

A list of specific keys. Entries in `keys` should have exactly as many elements as there are columns in the primary or index key with which this `KeySet` is used. Individual key values are encoded as described [\[here\]](#)[\[google.spanner.v1.TypeCode\]](#).

ranges

A list of key ranges. See [\[KeyRange\]](#)[\[google.spanner.v1.KeyRange\]](#) for more information about key range specifications.

all

For convenience `all` can be set to `true` to indicate that this `KeySet` matches all keys in the table or index. Note that any keys specified in `keys` or `ranges` are only yielded once.

class `google.cloud.spanner_v1.types.ListSessionsRequest`

The request for `[ListSessions][google.spanner.v1.Spanner.ListSessions]`.

database

Required. The database in which to list sessions.

page_size

Number of sessions to be returned in the response. If 0 or less, defaults to the server's maximum allowed page size.

page_token

If non-empty, `page_token` should contain a `[next_page_token][google.spanner.v1.ListSessionsResponse.next_page_token]` from a previous `[ListSessionsResponse][google.spanner.v1.ListSessionsResponse]`.

filter

An expression for filtering the results of the request. Filter rules are case insensitive. The fields eligible for filtering are: - `labels.key` where `key` is the name of a label Some examples of using filters are: - `labels.env:* ->` The session has the label "env". - `labels.env:dev ->` The session has the label "env" and the value of the label contains the string "dev".

class `google.cloud.spanner_v1.types.ListSessionsResponse`

The response for `[ListSessions][google.spanner.v1.Spanner.ListSessions]`.

sessions

The list of requested sessions.

next_page_token

`next_page_token` can be sent in a subsequent `[ListSessions][google.spanner.v1.Spanner.ListSessions]` call to fetch more of the matching sessions.

class `google.cloud.spanner_v1.types.ListValue`**class** `google.cloud.spanner_v1.types.MessageOptions`**class** `google.cloud.spanner_v1.types.MethodDescriptorProto`**class** `google.cloud.spanner_v1.types.MethodOptions`**class** `google.cloud.spanner_v1.types.Mutation`

A modification to one or more Cloud Spanner rows. Mutations can be applied to a Cloud Spanner database by sending them in a `[Commit][google.spanner.v1.Spanner.Commit]` call.

operation

Required. The operation to perform.

insert

Insert new rows in a table. If any of the rows already exist, the write or transaction fails with error `ALREADY_EXISTS`.

update

Update existing rows in a table. If any of the rows does not already exist, the transaction fails with error `NOT_FOUND`.

insert_or_update

Like `[insert][google.spanner.v1.Mutation.insert]`, except that if the row already exists, then its column values are overwritten with the ones provided. Any column values not explicitly written are preserved.

replace

Like `[insert][google.spanner.v1.Mutation.insert]`, except that if the row already exists, it is deleted, and the column values provided are inserted instead. Unlike `[insert_or_update][google.spanner.v1.Mutation.insert_or_update]`, this means any values not explicitly written become `NULL`.

delete

Delete rows from a table. Succeeds whether or not the named rows were present.

class Delete

Arguments to `[delete][google.spanner.v1.Mutation.delete]` operations.

table

Required. The table whose rows will be deleted.

key_set

Required. The primary keys of the rows within `[table][google.spanner.v1.Mutation.Delete.table]` to delete.

class Write

Arguments to `[insert][google.spanner.v1.Mutation.insert]`, `[update][google.spanner.v1.Mutation.update]`, `[insert_or_update][google.spanner.v1.Mutation.insert_or_update]`, and `[replace][google.spanner.v1.Mutation.replace]` operations.

table

Required. The table whose rows will be written.

columns

The names of the columns in `[table][google.spanner.v1.Mutation.Write.table]` to be written. The list of columns must contain enough columns to allow Cloud Spanner to derive values for all primary key columns in the row(s) to be modified.

values

The values to be written. `values` can contain more than one list of values. If it does, then multiple rows are written, one for each entry in `values`. Each list in `values` must have exactly as many entries as there are entries in `[columns][google.spanner.v1.Mutation.Write.columns]` above. Sending multiple lists is equivalent to sending multiple `Mutations`, each containing one `values` entry and repeating `[table][google.spanner.v1.Mutation.Write.table]` and `[columns][google.spanner.v1.Mutation.Write.columns]`. Individual values in each list are encoded as described [\[here\]\[google.spanner.v1.TypeCode\]](#).

class `google.cloud.spanner_v1.types.OneofDescriptorProto`

class `google.cloud.spanner_v1.types.OneofOptions`

class `google.cloud.spanner_v1.types.PartialResultSet`

Partial results from a streaming read or SQL query. Streaming reads and SQL queries better tolerate large result sets, large rows, and large values, but are a little trickier to consume.

metadata

Metadata about the result set, such as row type information. Only present in the first response.

values

A streamed result set consists of a stream of values, which might be split into many `PartialResultSet` messages to accommodate large rows and/or large values. Every `N` complete values defines a row, where `N` is equal to the number of entries in `[metadata.row_type.fields][google.spanner.v1.StructType.fields]`. Most values are encoded based on type as described [\[here\]\[google.spanner.v1.TypeCode\]](#). It is possible that the last value in `values` is “chunked”, meaning that the rest of the value is sent in subsequent `PartialResultSet` (s). This is denoted by the

[`chunked_value`][`google.spanner.v1.PartialResultSet.chunked_value`] field. Two or more chunked values can be merged to form a complete value as follows: - `bool/number/null`: cannot be chunked - `string`: concatenate the strings - `list`: concatenate the lists. If the last element in a list is a `string`, `list`, or `object`, merge it with the first element in the next list by applying these rules recursively. - `object`: concatenate the (field name, field value) pairs. If a field name is duplicated, then apply these rules recursively to merge the field values. Some examples of merging: :: # Strings are concatenated. "foo", "bar" => "foobar" # Lists of non-strings are concatenated. [2, 3], [4] => [2, 3, 4] # Lists are concatenated, but the last and first elements are merged # because they are strings. ["a", "b"], ["c", "d"] => ["a", "bc", "d"] # Lists are concatenated, but the last and first elements are merged # because they are lists. Recursively, the last and first elements # of the inner lists are merged because they are strings. ["a", ["b", "c"]], [{"d": "e"}] => ["a", ["b", "cd"], "e"] # Non-overlapping object fields are combined. {"a": "1"}, {"b": "2"} => {"a": "1", "b": "2"} # Overlapping object fields are merged. {"a": "1"}, {"a": "2"} => {"a": "12"} # Examples of merging objects containing lists of strings. {"a": ["1"]}, {"a": ["2"]} => {"a": ["12"]} For a more complete example, suppose a streaming SQL query is yielding a result set whose rows contain a single string field. The following `PartialResultSets` might be yielded: :: { "metadata": { ... } "values": ["Hello", "W"] "chunked_value": true "resume_token": "Af65..." } { "values": ["orl"] "chunked_value": true "resume_token": "Bqp2..." } { "values": ["d"] "resume_token": "Zx1B..." } This sequence of `PartialResultSets` encodes two rows, one containing the field value "Hello", and a second containing the field value "World" = "W" + "orl" + "d".

chunked_value

If true, then the final value in [`values`][`google.spanner.v1.PartialResultSet.values`] is chunked, and must be combined with more values from subsequent `PartialResultSets` to obtain a complete field value.

resume_token

Streaming calls might be interrupted for a variety of reasons, such as TCP connection loss. If this occurs, the stream of results can be resumed by re-sending the original request and including `resume_token`. Note that executing any other transaction in the same session invalidates the token.

stats

Query plan and execution statistics for the query that produced this streaming result set. These can be requested by setting [`ExecuteSqlRequest.query_mode`][`google.spanner.v1.ExecuteSqlRequest.query_mode`] and are sent only once with the last response in the stream.

class google.cloud.spanner_v1.types.Partition

Information returned for each partition returned in a `PartitionResponse`.

partition_token

This token can be passed to `Read`, `StreamingRead`, `ExecuteSql`, or `ExecuteStreamingSql` requests to restrict the results to those identified by this partition token.

class google.cloud.spanner_v1.types.PartitionOptions

Options for a `PartitionQueryRequest` and `PartitionReadRequest`.

partition_size_bytes

The desired data size for each partition generated. The default for this option is currently 1 GiB. This is only a hint. The actual size of each partition may be smaller or larger than this size request.

max_partitions

The desired maximum number of partitions to return. For example, this may be set to the number of workers available. The default for this option is currently 10,000. The maximum value is currently 200,000. This is only a hint. The actual number of partitions returned may be smaller than this maximum count request.

class google.cloud.spanner_v1.types.PartitionQueryRequest

The request for [`PartitionQuery`][`google.spanner.v1.Spanner.PartitionQuery`]

session

Required. The session used to create the partitions.

transaction

Read only snapshot transactions are supported, read/write and single use transactions are not.

sql

The query request to generate partitions for. The request will fail if the query is not root partitionable. The query plan of a root partitionable query has a single distributed union operator. A distributed union operator conceptually divides one or more tables into multiple splits, remotely evaluates a subquery independently on each split, and then unions all results.

params

The SQL query string can contain parameter placeholders. A parameter placeholder consists of '@' followed by the parameter name. Parameter names consist of any combination of letters, numbers, and underscores. Parameters can appear anywhere that a literal value is expected. The same parameter name can be used more than once, for example: "WHERE id > @msg_id AND id < @msg_id + 100". It is an error to execute an SQL query with unbound parameters. Parameter values are specified using `params`, which is a JSON object whose keys are parameter names, and whose values are the corresponding parameter values.

param_types

It is not always possible for Cloud Spanner to infer the right SQL type from a JSON value. For example, values of type `BYTES` and values of type `STRING` both appear in `[params][google.spanner.v1.PartitionQueryRequest.params]` as JSON strings. In these cases, `param_types` can be used to specify the exact SQL type for some or all of the SQL query parameters. See the definition of `[Type][google.spanner.v1.Type]` for more information about SQL types.

partition_options

Additional options that affect how many partitions are created.

class ParamTypesEntry**class google.cloud.spanner_v1.types.PartitionReadRequest**

The request for `[PartitionRead][google.spanner.v1.Spanner.PartitionRead]`

session

Required. The session used to create the partitions.

transaction

Read only snapshot transactions are supported, read/write and single use transactions are not.

table

Required. The name of the table in the database to be read.

index

If non-empty, the name of an index on `[table][google.spanner.v1.PartitionReadRequest.table]`. This index is used instead of the table primary key when interpreting `[key_set][google.spanner.v1.PartitionReadRequest.key_set]` and sorting result rows. See `[key_set][google.spanner.v1.PartitionReadRequest.key_set]` for further information.

columns

The columns of `[table][google.spanner.v1.PartitionReadRequest.table]` to be returned for each row matching this request.

key_set

Required. `key_set` identifies the rows to be yielded. `key_set` names the primary keys of the rows in `[table][google.spanner.v1.PartitionReadRequest.table]` to be yielded, unless `[index][google.spanner.v1.PartitionReadRequest.index]` is present. If `[index][google.spanner.v1.PartitionReadRequest.index]` is present, then `[key_set][google.spanner.v1.PartitionReadRequest.key_set]` instead names index keys in `[index][google.spanner.v1.PartitionReadRequest.index]`. It is not an error for the `key_set` to name rows that do not exist in the database. Read yields nothing for nonexistent rows.

partition_options

Additional options that affect how many partitions are created.

class google.cloud.spanner_v1.types.PartitionResponse

The response for [PartitionQuery][google.spanner.v1.Spanner.PartitionQuery] or [PartitionRead][google.spanner.v1.Spanner.PartitionRead]

partitions

Partitions created by this request.

transaction

Transaction created by this request.

class google.cloud.spanner_v1.types.PlanNode

Node information for nodes appearing in a [QueryPlan.plan_nodes][google.spanner.v1.QueryPlan.plan_nodes].

index

The PlanNode's index in [node list][google.spanner.v1.QueryPlan.plan_nodes].

kind

Used to determine the type of node. May be needed for visualizing different kinds of nodes differently. For example, If the node is a [SCALAR][google.spanner.v1.PlanNode.Kind.SCALAR] node, it will have a condensed representation which can be used to directly embed a description of the node in its parent.

display_name

The display name for the node.

child_links

List of child node indexes and their relationship to this parent.

short_representation

Condensed representation for [SCALAR][google.spanner.v1.PlanNode.Kind.SCALAR] nodes.

metadata

Attributes relevant to the node contained in a group of key- value pairs. For example, a Parameter Reference node could have the following information in its metadata: :: { "parameter_reference": "param1", "parameter_type": "array" }

execution_stats

The execution statistics associated with the node, contained in a group of key-value pairs. Only present if the plan was returned as a result of a profile query. For example, number of executions, number of rows/time per execution etc.

class ChildLink

Metadata associated with a parent-child relationship appearing in a [PlanNode][google.spanner.v1.PlanNode].

child_index

The node to which the link points.

type

The type of the link. For example, in Hash Joins this could be used to distinguish between the build child and the probe child, or in the case of the child being an output variable, to represent the tag associated with the output variable.

variable

Only present if the child node is [SCALAR][google.spanner.v1.PlanNode.Kind.SCALAR] and corresponds to an output variable of the parent node. The field carries the name of the output variable. For example, a TableScan operator that reads rows from a table will have child links to the

SCALAR nodes representing the output variables created for each column that is read by the operator. The corresponding `variable` fields will be set to the variable names assigned to the columns.

class ShortRepresentation

Condensed representation of a node and its subtree. Only present for SCALAR [PlanNode(s)][google.spanner.v1.PlanNode].

description

A string representation of the expression subtree rooted at this node.

subqueries

A mapping of (subquery variable name) -> (subquery node id) for cases where the `description` string of this node references a SCALAR subquery contained in the expression subtree rooted at this node. The referenced SCALAR subquery may not necessarily be a direct child of this node.

class SubqueriesEntry**class google.cloud.spanner_v1.types.QueryPlan**

Contains an ordered list of nodes appearing in the query plan.

plan_nodes

The nodes in the query plan. Plan nodes are returned in pre- order starting with the plan root. Each [PlanNode][google.spanner.v1.PlanNode]'s `id` corresponds to its index in `plan_nodes`.

class google.cloud.spanner_v1.types.ReadRequest

The request for [Read][google.spanner.v1.Spanner.Read] and [StreamingRead][google.spanner.v1.Spanner.StreamingRead].

session

Required. The session in which the read should be performed.

transaction

The transaction to use. If none is provided, the default is a temporary read-only transaction with strong concurrency.

table

Required. The name of the table in the database to be read.

index

If non-empty, the name of an index on [table][google.spanner.v1.ReadRequest.table]. This index is used instead of the table primary key when interpreting [key_set][google.spanner.v1.ReadRequest.key_set] and sorting result rows. See [key_set][google.spanner.v1.ReadRequest.key_set] for further information.

columns

The columns of [table][google.spanner.v1.ReadRequest.table] to be returned for each row matching this request.

key_set

Required. `key_set` identifies the rows to be yielded. `key_set` names the primary keys of the rows in [table][google.spanner.v1.ReadRequest.table] to be yielded, unless [index][google.spanner.v1.ReadRequest.index] is present. If [index][google.spanner.v1.ReadRequest.index] is present, then [key_set][google.spanner.v1.ReadRequest.key_set] instead names index keys in [index][google.spanner.v1.ReadRequest.index]. If the [partition_token][google.spanner.v1.ReadRequest.partition_token] field is empty, rows are yielded in table primary key order (if [index][google.spanner.v1.ReadRequest.index] is empty) or index key order (if [index][google.spanner.v1.ReadRequest.index] is non-empty). If the [partition_token][google.spanner.v1.ReadRequest.partition_token] field is not empty, rows will be yielded in an unspecified order. It is not an error for the `key_set` to name rows that do not exist in the database. Read yields nothing for nonexistent rows.

limit

If greater than zero, only the first `limit` rows are yielded. If `limit` is zero, the default is no limit. A `limit` cannot be specified if `partition_token` is set.

resume_token

If this request is resuming a previously interrupted read, `resume_token` should be copied from the last `[PartialResultSet][google.spanner.v1.PartialResultSet]` yielded before the interruption. Doing this enables the new read to resume where the last read left off. The rest of the request parameters must exactly match the request that yielded this token.

partition_token

If present, results will be restricted to the specified partition previously created using `PartitionRead()`. There must be an exact match for the values of fields common to this message and the `PartitionReadRequest` message used to create this `partition_token`.

class google.cloud.spanner_v1.types.ResultSet

Results from `[Read][google.spanner.v1.Spanner.Read]` or `[ExecuteSql][google.spanner.v1.Spanner.ExecuteSql]`.

metadata

Metadata about the result set, such as row type information.

rows

Each element in `rows` is a row whose format is defined by `[metadata.row_type][google.spanner.v1.ResultSetMetadata.row_type]`. The *i*th element in each row matches the *i*th field in `[metadata.row_type][google.spanner.v1.ResultSetMetadata.row_type]`. Elements are encoded based on type as described [\[here\]\[google.spanner.v1.TypeCode\]](#).

stats

Query plan and execution statistics for the query that produced this result set. These can be requested by setting `[ExecuteSqlRequest.query_mode][google.spanner.v1.ExecuteSqlRequest.query_mode]`.

class google.cloud.spanner_v1.types.ResultSetMetadata

Metadata about a `[ResultSet][google.spanner.v1.ResultSet]` or `[PartialResultSet][google.spanner.v1.PartialResultSet]`.

row_type

Indicates the field names and types for the rows in the result set. For example, a SQL query like "SELECT UserId, UserName FROM Users" could return a `row_type` value like: `:: { "fields": [{ "name": "UserId", "type": { "code": "INT64" } }, { "name": "UserName", "type": { "code": "STRING" } },]`

transaction

If the read or SQL query began a transaction as a side-effect, the information about the new transaction is yielded here.

class google.cloud.spanner_v1.types.ResultSetStats

Additional statistics about a `[ResultSet][google.spanner.v1.ResultSet]` or `[PartialResultSet][google.spanner.v1.PartialResultSet]`.

query_plan

`[QueryPlan][google.spanner.v1.QueryPlan]` for the query associated with this result.

query_stats

Aggregated statistics from the execution of the query. Only present when the query is profiled. For example, a query could return the statistics as follows: `:: { "rows_returned": "3", "elapsed_time": "1.22 secs", "cpu_time": "1.19 secs" }`

class google.cloud.spanner_v1.types.RollbackRequest

The request for `[Rollback][google.spanner.v1.Spanner.Rollback]`.

session

Required. The session in which the transaction to roll back is running.

transaction_id

Required. The transaction to roll back.

class google.cloud.spanner_v1.types.**ServiceDescriptorProto**

class google.cloud.spanner_v1.types.**ServiceOptions**

class google.cloud.spanner_v1.types.**Session**

A session in the Cloud Spanner API.

name

The name of the session. This is always system-assigned; values provided when creating a session are ignored.

labels

The labels for the session. - Label keys must be between 1 and 63 characters long and must conform to the following regular expression: `[a-z]([-a-z0-9]*[a-z0-9])?`. - Label values must be between 0 and 63 characters long and must conform to the regular expression `([a-z]([-a-z0-9]*[a-z0-9])?)?`. - No more than 64 labels can be associated with a given session. See <https://goo.gl/xmQnxf> for more information on and examples of labels.

create_time

Output only. The timestamp when the session is created.

approximate_last_use_time

Output only. The approximate timestamp when the session is last used. It is typically earlier than the actual last use time.

class LabelsEntry

class google.cloud.spanner_v1.types.**SourceCodeInfo**

class Location

class google.cloud.spanner_v1.types.**Struct**

class FieldsEntry

class google.cloud.spanner_v1.types.**StructType**

StructType defines the fields of a [STRUCT][google.spanner.v1.TypeCode.STRUCT] type.

fields

The list of fields that make up this struct. Order is significant, because values of this struct type are represented as lists, where the order of field values matches the order of fields in the [StructType][google.spanner.v1.StructType]. In turn, the order of fields matches the order of columns in a read request, or the order of fields in the SELECT clause of a query.

class Field

Message representing a single field of a struct.

name

The name of the field. For reads, this is the column name. For SQL queries, it is the column alias (e.g., "Word" in the query "SELECT 'hello' AS Word"), or the column name (e.g., "ColName" in the query "SELECT ColName FROM Table"). Some columns might have an empty name (e.g., !"SELECT UPPER(ColName)"). Note that a query result can contain multiple fields with the same name.

type

The type of the field.

class google.cloud.spanner_v1.types.Timestamp

class google.cloud.spanner_v1.types.Transaction

A transaction. See spanner-txn for more information.

id

id may be used to identify the transaction in subsequent [Read][google.spanner.v1.Spanner.Read], [ExecuteSql][google.spanner.v1.Spanner.ExecuteSql], [Commit][google.spanner.v1.Spanner.Commit], or [Rollback][google.spanner.v1.Spanner.Rollback] calls. Single-use read-only transactions do not have IDs, because single-use transactions do not support multiple requests.

read_timestamp

For snapshot read-only transactions, the read timestamp chosen for the transaction. Not returned by default: see [TransactionOptions.ReadOnly.return_read_timestamp][google.spanner.v1.TransactionOptions.ReadOnly.return_read_timestamp]. A timestamp in RFC3339 UTC “Zulu” format, accurate to nanoseconds. Example: "2014-10-02T15:01:23.045123456Z".

class google.cloud.spanner_v1.types.TransactionOptions

See spanner-txn for more information about transactions.

mode

Required. The type of transaction.

read_write

Transaction may write. Authorization to begin a read-write transaction requires `spanner.databases.beginOrRollbackReadWriteTransaction` permission on the session resource.

read_only

Transaction will not write. Authorization to begin a read-only transaction requires `spanner.databases.beginReadOnlyTransaction` permission on the session resource.

class ReadOnly

Message type to initiate a read-only transaction.

timestamp_bound

How to choose the timestamp for the read-only transaction.

strong

Read at a timestamp where all previously committed transactions are visible.

min_read_timestamp

Executes all reads at a timestamp \geq `min_read_timestamp`. This is useful for requesting fresher data than some previous read, or data that is fresh enough to observe the effects of some previously committed transaction whose timestamp is known. Note that this option can only be used in single-use transactions. A timestamp in RFC3339 UTC “Zulu” format, accurate to nanoseconds. Example: "2014-10-02T15:01:23.045123456Z".

max_staleness

Read data at a timestamp \geq NOW - `max_staleness` seconds. Guarantees that all writes that have committed more than the specified number of seconds ago are visible. Because Cloud Spanner chooses the exact timestamp, this mode works even if the client’s local clock is substantially skewed from Cloud Spanner commit timestamps. Useful for reading the freshest data available at a nearby replica, while bounding the possible staleness if the local replica has fallen behind. Note that this option can only be used in single-use transactions.

read_timestamp

Executes all reads at the given timestamp. Unlike other modes, reads at a specific timestamp are

repeatable; the same read at the same timestamp always returns the same data. If the timestamp is in the future, the read will block until the specified timestamp, modulo the read's deadline. Useful for large scale consistent reads such as mapreduces, or for coordinating many reads against a consistent snapshot of the data. A timestamp in RFC3339 UTC "Zulu" format, accurate to nanoseconds. Example: "2014-10-02T15:01:23.045123456Z".

exact_staleness

Executes all reads at a timestamp that is `exact_staleness` old. The timestamp is chosen soon after the read is started. Guarantees that all writes that have committed more than the specified number of seconds ago are visible. Because Cloud Spanner chooses the exact timestamp, this mode works even if the client's local clock is substantially skewed from Cloud Spanner commit timestamps. Useful for reading at nearby replicas without the distributed timestamp negotiation overhead of `max_staleness`.

return_read_timestamp

If true, the Cloud Spanner-selected read timestamp is included in the `[Transaction][google.spanner.v1.Transaction]` message that describes the transaction.

class ReadWrite

Message type to initiate a read-write transaction. Currently this transaction type has no options.

class google.cloud.spanner_v1.types.TransactionSelector

This message is used to select the transaction in which a `[Read][google.spanner.v1.Spanner.Read]` or `[ExecuteSql][google.spanner.v1.Spanner.ExecuteSql]` call runs.

See `[TransactionOptions][google.spanner.v1.TransactionOptions]` for more information about transactions.

selector

If no fields are set, the default is a single use transaction with strong concurrency.

single_use

Execute the read or SQL query in a temporary transaction. This is the most efficient way to execute a transaction that consists of a single SQL query.

id

Execute the read or SQL query in a previously-started transaction.

begin

Begin a new transaction and execute this read or SQL query in it. The transaction ID of the new transaction is returned in `[ResultSetMetadata.transaction][google.spanner.v1.ResultSetMetadata.transaction]`, which is a `[Transaction][google.spanner.v1.Transaction]`.

class google.cloud.spanner_v1.types.Type

Type indicates the type of a Cloud Spanner value, as might be stored in a table cell or returned from an SQL query.

code

Required. The `[TypeCode][google.spanner.v1.TypeCode]` for this type.

array_element_type

If `[code][google.spanner.v1.Type.code] == [ARRAY][google.spanner.v1.TypeCode.ARRAY]`, then `array_element_type` is the type of the array elements.

struct_type

If `[code][google.spanner.v1.Type.code] == [STRUCT][google.spanner.v1.TypeCode.STRUCT]`, then `struct_type` provides type information for the struct's fields.

class google.cloud.spanner_v1.types.UninterpretedOption**class NamePart**

class google.cloud.spanner_v1.types.Value

The Cloud Spanner Database Admin API can be used to create, drop, and list databases. It also enables updating the schema of pre-existing databases.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you're developing your own client library.

create_database (*parent, create_statement, extra_statements=None, retry=<object object>, timeout=<object object>, metadata=None*)

Creates a new Cloud Spanner database and starts to prepare it for serving. The returned long-running operation will have a name of the format `<database_name>/operations/<operation_id>` and can be used to track preparation of the database. The metadata field type is `CreateDatabaseMetadata`. The response field type is `Database`, if successful.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> parent = client.instance_path('[PROJECT]', '[INSTANCE]')
>>> create_statement = ''
>>>
>>> response = client.create_database(parent, create_statement)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **parent** (*str*) – Required. The name of the instance that will serve the new database. Values are of the form `projects/<project>/instances/<instance>`.

- **create_statement** (*str*) – Required. A CREATE DATABASE statement, which specifies the ID of the new database. The database ID must conform to the regular expression `[a-z][a-z0-9_\-]*[a-z0-9]` and be between 2 and 30 characters in length. If the database ID is a reserved word or if it contains a hyphen, the database ID must be enclosed in backticks (`“”`).
- **extra_statements** (*list[str]*) – An optional list of DDL statements to run inside the newly created database. Statements can create tables, indexes, etc. These statements execute atomically with the creation of the database: if there is an error in any statement, the database is not created.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod database_path (*project, instance, database*)
Return a fully-qualified database string.

drop_database (*database, retry=<object object>, timeout=<object object>, metadata=None*)
Drops (aka deletes) a Cloud Spanner database.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> database = client.database_path('[PROJECT]', '[INSTANCE]', '[DATABASE]')
>>>
>>> client.drop_database(database)
```

Parameters

- **database** (*str*) – Required. The database to be dropped.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.spanner_admin_database_v1.gapic.enums' from '/home/docs/
```

```
get_database(name, retry=<object object>, timeout=<object object>, metadata=None)
```

Gets the state of a Cloud Spanner database.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> name = client.database_path('[PROJECT]', '[INSTANCE]', '[DATABASE]')
>>>
>>> response = client.get_database(name)
```

Parameters

- **name** (*str*) – Required. The name of the requested database. Values are of the form `projects/<project>/instances/<instance>/databases/<database>`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Database` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
get_database_ddl(database, retry=<object object>, timeout=<object object>, metadata=None)
```

Returns the schema of a Cloud Spanner database as a list of formatted DDL statements. This method does not show pending schema updates, those may be queried using the Operations API.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> database = client.database_path('[PROJECT]', '[INSTANCE]', '[DATABASE]')
>>>
>>> response = client.get_database_ddl(database)
```

Parameters

- **database** (*str*) – Required. The database whose schema we wish to get.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `GetDatabaseDdlResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_iam_policy (*resource*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets the access control policy for a database resource. Returns an empty policy if a database exists but does not have a policy set.

Authorization requires `spanner.databases.getIamPolicy` permission on resource.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> resource = client.database_path('[PROJECT]', '[INSTANCE]', '[DATABASE]')
>>>
>>> response = client.get_iam_policy(resource)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Policy* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod instance_path (*project, instance*)

Return a fully-qualified instance string.

list_databases (*parent, page_size=None, retry=<object object>, timeout=<object object>, meta-data=None*)

Lists Cloud Spanner databases.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> parent = client.instance_path('[PROJECT]', '[INSTANCE]')
>>>
>>>
>>> # Iterate over all results
>>> for element in client.list_databases(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_databases(parent, options=CallOptions(page_
→token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – Required. The instance whose databases should be listed. Values are of the form `projects/<project>/instances/<instance>`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `Database` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

set_iam_policy(*resource*, *policy*, *retry*=<object object>, *timeout*=<object object>, *meta-data*=None)

Sets the access control policy on a database resource. Replaces any existing policy.

Authorization requires `spanner.databases.setIamPolicy` permission on resource.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> resource = client.database_path('[PROJECT]', '[INSTANCE]', '[DATABASE]')
>>> policy = {}
>>>
>>> response = client.set_iam_policy(resource, policy)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being specified. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **policy** (*Union[dict, Policy]*) – REQUIRED: The complete policy to be applied to the `resource`. The size of the policy is limited to a few 10s of KB. An empty policy is a valid policy but certain Cloud Platform services (such as Projects) might reject them. If a dict is provided, it must be of the same form as the protobuf message `Policy`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Policy` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

test_iam_permissions (*resource, permissions, retry=<object object>, timeout=<object object>, metadata=None*)

Returns permissions that the caller has on the specified database resource.

Attempting this RPC on a non-existent Cloud Spanner database will result in a NOT_FOUND error if the user has `spanner.databases.list` permission on the containing Cloud Spanner instance. Otherwise returns an empty set of permissions.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> resource = client.database_path('[PROJECT]', '[INSTANCE]', '[DATABASE]')
>>> permissions = []
>>>
>>> response = client.test_iam_permissions(resource, permissions)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy detail is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **permissions** (*list[str]*) – The set of permissions to check for the resource. Permissions with wildcards (such as `*` or `storage.*`) are not allowed. For more information see [IAM Overview](#).
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `TestIamPermissionsResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

update_database_ddl (*database, statements, operation_id=None, retry=<object object>, timeout=<object object>, metadata=None*)

Updates the schema of a Cloud Spanner database by creating/altering/dropping tables, columns, indexes, etc. The returned long-running operation will have a name of the format `<database_name>/operations/<operation_id>` and can be used to track execution of the

schema change(s). The metadata field type is `UpdateDatabaseDdlMetadata`. The operation has no response.

Example

```
>>> from google.cloud import spanner_admin_database_v1
>>>
>>> client = spanner_admin_database_v1.DatabaseAdminClient()
>>>
>>> database = client.database_path('[PROJECT]', '[INSTANCE]', '[DATABASE]')
>>> statements = []
>>>
>>> response = client.update_database_ddl(database, statements)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **database** (*str*) – Required. The database to update.
- **statements** (*list[str]*) – DDL statements to be applied to the database.
- **operation_id** (*str*) – If empty, the new update request is assigned an automatically-generated operation ID. Otherwise, `operation_id` is used to construct the name of the resulting `Operation`.

Specifying an explicit operation ID simplifies determining whether the statements were executed in the event that the `UpdateDatabaseDdl` call is replayed, or the return value is otherwise lost: the `database` and `operation_id` fields can be combined to form the name of the resulting longrunning.`Operation`: `<database>/operations/<operation_id>`.

`operation_id` should be unique within the database, and must be a valid identifier: `[a-z][a-z0-9_]*`. Note that automatically-generated operation IDs always begin with an underscore. If the named operation already exists, `UpdateDatabaseDdl` returns `ALREADY_EXISTS`.

- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

19.8.14 Spanner Admin Database Client Types

class `google.cloud.spanner_admin_database_v1.types.Any`

class `google.cloud.spanner_admin_database_v1.types.AuditData`

Audit log information specific to Cloud IAM. This message is serialized as an Any type in the ServiceData message of an AuditLog message.

policy_delta

Policy delta between the original policy and the newly set policy.

class `google.cloud.spanner_admin_database_v1.types.Binding`

Associates members with a role.

role

Role that is assigned to members. For example, roles/viewer, roles/editor, or roles/owner. Required

members

Specifies the identities requesting access for a Cloud Platform resource. members can have the following values: - allUsers: A special identifier that represents anyone who is on the internet; with or without a Google account. - allAuthenticatedUsers: A special identifier that represents anyone who is authenticated with a Google account or a service account. - user:{emailid}: An email address that represents a specific Google account. For example, alice@gmail.com or joe@example.com. - serviceAccount:{emailid}: An email address that represents a service account. For example, my-other-app@appspot.gserviceaccount.com. - group:{emailid}: An email address that represents a Google group. For example, admins@example.com. - domain:{domain}: A Google Apps domain name that represents all the users of that domain. For example, google.com or example.com.

class `google.cloud.spanner_admin_database_v1.types.BindingDelta`

One delta entry for Binding. Each individual change (only one member in each entry) to a binding will be a separate entry.

action

The action that was performed on a Binding. Required

role

Role that is assigned to members. For example, roles/viewer, roles/editor, or roles/owner. Required

member

A single identity requesting access for a Cloud Platform resource. Follows the same format of Binding.members. Required

class `google.cloud.spanner_admin_database_v1.types.CancelOperationRequest`

class `google.cloud.spanner_admin_database_v1.types.CreateDatabaseMetadata`

Metadata type for the operation returned by [CreateDatabase][google.spanner.admin.database.v1.DatabaseAdmin.CreateDatabase]

database

The database being created.

class google.cloud.spanner_admin_database_v1.types.**CreateDatabaseRequest**

The request for [CreateDatabase][google.spanner.admin.database.v1.DatabaseAdmin.CreateDatabase].

parent

Required. The name of the instance that will serve the new database. Values are of the form `projects/<project>/instances/<instance>`.

create_statement

Required. A `CREATE DATABASE` statement, which specifies the ID of the new database. The database ID must conform to the regular expression `[a-z][a-z0-9_\-]*[a-z0-9]` and be between 2 and 30 characters in length. If the database ID is a reserved word or if it contains a hyphen, the database ID must be enclosed in backticks (```).

extra_statements

An optional list of DDL statements to run inside the newly created database. Statements can create tables, indexes, etc. These statements execute atomically with the creation of the database: if there is an error in any statement, the database is not created.

class google.cloud.spanner_admin_database_v1.types.**CustomHttpPattern**

class google.cloud.spanner_admin_database_v1.types.**Database**

A Cloud Spanner database.

name

Required. The name of the database. Values are of the form `p rojects/<project>/instances/<instance>/databases/<database>`, where `<database>` is as specified in the `CREATE DATABASE` statement. This name can be passed to other API methods to identify the database.

state

Output only. The current database state.

class google.cloud.spanner_admin_database_v1.types.**DeleteOperationRequest**

class google.cloud.spanner_admin_database_v1.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.spanner_admin_database_v1.types.**DropDatabaseRequest**

The request for [DropDatabase][google.spanner.admin.database.v1.DatabaseAdmin.DropDatabase].

database

Required. The database to be dropped.

class google.cloud.spanner_admin_database_v1.types.**Empty**

class google.cloud.spanner_admin_database_v1.types.**EnumDescriptorProto**

class **EnumReservedRange**

class google.cloud.spanner_admin_database_v1.types.**EnumOptions**

class google.cloud.spanner_admin_database_v1.types.**EnumValueDescriptorProto**

class google.cloud.spanner_admin_database_v1.types.**EnumValueOptions**

class google.cloud.spanner_admin_database_v1.types.**ExtensionRangeOptions**

class google.cloud.spanner_admin_database_v1.types.**FieldDescriptorProto**

class google.cloud.spanner_admin_database_v1.types.**FieldOptions**

class google.cloud.spanner_admin_database_v1.types.**FileDescriptorProto**

class google.cloud.spanner_admin_database_v1.types.**FileDescriptorSet**

class google.cloud.spanner_admin_database_v1.types.**FileOptions**

class google.cloud.spanner_admin_database_v1.types.**GeneratedCodeInfo**

class Annotation

class google.cloud.spanner_admin_database_v1.types.**GetDatabaseDdlRequest**

The request for [GetDatabaseDdl][google.spanner.admin.database.v1.DatabaseAdmin.GetDatabaseDdl].

database

Required. The database whose schema we wish to get.

class google.cloud.spanner_admin_database_v1.types.**GetDatabaseDdlResponse**

The response for [GetDatabaseDdl][google.spanner.admin.database.v1.DatabaseAdmin.GetDatabaseDdl].

statements

A list of formatted DDL statements defining the schema of the database specified in the request.

class google.cloud.spanner_admin_database_v1.types.**GetDatabaseRequest**

The request for [GetDatabase][google.spanner.admin.database.v1.DatabaseAdmin.GetDatabase].

name

Required. The name of the requested database. Values are of the form projects/<project>/instances/<instance>/databases/< database>.

class google.cloud.spanner_admin_database_v1.types.**GetIamPolicyRequest**

Request message for GetIamPolicy method.

resource

REQUIRED: The resource for which the policy is being requested. resource is usually specified as a path. For example, a Project resource is specified as projects/{project}.

class google.cloud.spanner_admin_database_v1.types.**GetOperationRequest**

class google.cloud.spanner_admin_database_v1.types.**Http**

class google.cloud.spanner_admin_database_v1.types.**HttpRule**

class google.cloud.spanner_admin_database_v1.types.**ListDatabasesRequest**

The request for [ListDatabases][google.spanner.admin.database.v1.DatabaseAdmin.ListDatabases].

parent

Required. The instance whose databases should be listed. Values are of the form projects/<project>/instances/<instance>.

page_size

Number of databases to be returned in the response. If 0 or less, defaults to the server's maximum allowed page size.

page_token

If non-empty, page_token should contain a [next_page_token][google.spanner.admin.database.v1.ListDatabasesResponse.next_page_token] from a previous [ListDatabasesResponse][google .spanner.admin.database.v1.ListDatabasesResponse].

class google.cloud.spanner_admin_database_v1.types.**ListDatabasesResponse**

The response for [ListDatabases][google.spanner.admin.database.v1.DatabaseAdmin.ListDatabases].

databases

Databases that matched the request.

next_page_token

`next_page_token` can be sent in a subsequent `[ListDatabases][google.spanner.admin.database.v1.DatabaseAdmin.ListDatabases]` call to fetch more of the matching databases.

class `google.cloud.spanner_admin_database_v1.types.ListOperationsRequest`

class `google.cloud.spanner_admin_database_v1.types.ListOperationsResponse`

class `google.cloud.spanner_admin_database_v1.types.MessageOptions`

class `google.cloud.spanner_admin_database_v1.types.MethodDescriptorProto`

class `google.cloud.spanner_admin_database_v1.types.MethodOptions`

class `google.cloud.spanner_admin_database_v1.types.OneofDescriptorProto`

class `google.cloud.spanner_admin_database_v1.types.OneofOptions`

class `google.cloud.spanner_admin_database_v1.types.Operation`

class `google.cloud.spanner_admin_database_v1.types.Policy`

Defines an Identity and Access Management (IAM) policy. It is used to specify access control policies for Cloud Platform resources.

A `Policy` consists of a list of bindings. A `Binding` binds a list of members to a role, where the members can be user accounts, Google groups, Google domains, and service accounts. A role is a named list of permissions defined by IAM.

Example

```
{
  "bindings": [
    {
      "role": "roles/owner",
      "members": [
        "user:mike@example.com",
        "group:admins@example.com",
        "domain:google.com",
        "serviceAccount:my-other-app@appspot.gserviceaccount.com",
      ]
    },
    {
      "role": "roles/viewer",
      "members": ["user:sean@example.com"]
    }
  ]
}
```

For a description of IAM and its features, see the [IAM developer's guide](#).

version

Version of the `Policy`. The default version is 0.

bindings

Associates a list of members to a role. Multiple bindings must not be specified for the same role. bindings with no members will result in an error.

etag

`etag` is used for optimistic concurrency control as a way to help prevent simultaneous updates of a policy from overwriting each other. It is strongly suggested that systems make use of the `etag` in the read-modify-write cycle to perform policy updates in order to avoid race conditions: An `etag` is returned in the response to `getIamPolicy`, and systems are expected to put that `etag` in the request to

`setIamPolicy` to ensure that their change will be applied to the same version of the policy. If no etag is provided in the call to `setIamPolicy`, then the existing policy is overwritten blindly.

class `google.cloud.spanner_admin_database_v1.types.PolicyDelta`

The difference delta between two policies.

binding_deltas

The delta for Bindings between two policies.

class `google.cloud.spanner_admin_database_v1.types.ServiceDescriptorProto`

class `google.cloud.spanner_admin_database_v1.types.ServiceOptions`

class `google.cloud.spanner_admin_database_v1.types.SetIamPolicyRequest`

Request message for `SetIamPolicy` method.

resource

REQUIRED: The resource for which the policy is being specified. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.

policy

REQUIRED: The complete policy to be applied to the `resource`. The size of the policy is limited to a few 10s of KB. An empty policy is a valid policy but certain Cloud Platform services (such as Projects) might reject them.

class `google.cloud.spanner_admin_database_v1.types.SourceCodeInfo`

class `Location`

class `google.cloud.spanner_admin_database_v1.types.Status`

class `google.cloud.spanner_admin_database_v1.types.TestIamPermissionsRequest`

Request message for `TestIamPermissions` method.

resource

REQUIRED: The resource for which the policy detail is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.

permissions

The set of permissions to check for the `resource`. Permissions with wildcards (such as `'*'` or `'storage.*'`) are not allowed. For more information see [IAM Overview](#).

class `google.cloud.spanner_admin_database_v1.types.TestIamPermissionsResponse`

Response message for `TestIamPermissions` method.

permissions

A subset of `TestPermissionsRequest.permissions` that the caller is allowed.

class `google.cloud.spanner_admin_database_v1.types.Timestamp`

class `google.cloud.spanner_admin_database_v1.types.UninterpretedOption`

class `NamePart`

class `google.cloud.spanner_admin_database_v1.types.UpdateDatabaseDdlMetadata`

Metadata type for the operation returned by `[UpdateDatabaseDdl][google.spanner.admin.database.v1.DatabaseAdmin.UpdateData`

database

The database being modified.

statements

For an update this list contains all the statements. For an individual statement, this list contains only that statement.

commit_timestamps

Reports the commit timestamps of all statements that have succeeded so far, where `commit_timestamps[i]` is the commit timestamp for the statement `statements[i]`.

class `google.cloud.spanner_admin_database_v1.types.UpdateDatabaseDdlRequest`

Enqueues the given DDL statements to be applied, in order but not necessarily all at once, to the database schema at some point (or points) in the future. The server checks that the statements are executable (syntactically valid, name tables that exist, etc.) before enqueueing them, but they may still fail upon later execution (e.g., if a statement from another batch of statements is applied first and it conflicts in some way, or if there is some data-related problem like a `NULL` value in a column to which `NOT NULL` would be added). If a statement fails, all subsequent statements in the batch are automatically cancelled.

Each batch of statements is assigned a name which can be used with the `[Operations][google.longrunning.Operations]` API to monitor progress. See the `[operation_id][google.spanner.admin.database.v1.UpdateDatabaseDdlRequest.operation_id]` field for more details.

database

Required. The database to update.

statements

DDL statements to be applied to the database.

operation_id

If empty, the new update request is assigned an automatically-generated operation ID. Otherwise, `operation_id` is used to construct the name of the resulting `[Operation][google.longrunning.Operation]`. Specifying an explicit operation ID simplifies determining whether the statements were executed in the event that the `[UpdateDatabaseDdl][google.spanner.admin.database.v1.DatabaseAdmin.UpdateDatabaseDdl]` call is replayed, or the return value is otherwise lost: the `[database][google.spanner.admin.database.v1.UpdateDatabaseDdlRequest.database]` and `operation_id` fields can be combined to form the `[name][google.longrunning.Operation.name]` of the resulting `[longrunning.Operation][google.longrunning.Operation]`: `<database>/operations/<operation_id>`. `operation_id` should be unique within the database, and must be a valid identifier: `[a-z][a-z0-9_]*`. Note that automatically-generated operation IDs always begin with an underscore. If the named operation already exists, `[UpdateDatabaseDdl][google.spanner.admin.database.v1.DatabaseAdmin.UpdateDatabaseDdl]` returns `ALREADY_EXISTS`.

The Cloud Spanner Instance Admin API can be used to create, delete, modify and list instances. Instances are dedicated Cloud Spanner serving and storage resources to be used by Cloud Spanner databases.

Each instance has a “configuration”, which dictates where the serving resources for the Cloud Spanner instance are located (e.g., US-central, Europe). Configurations are created by Google based on resource availability.

Cloud Spanner billing is based on the instances that exist and their sizes. After an instance exists, there are no additional per-database or per-operation charges for use of the instance (though there may be additional network bandwidth charges). Instances offer isolation: problems with databases in one instance will not affect other instances. However, within an instance databases can affect each other. For example, if one database in an instance receives a lot of requests and consumes most of the instance resources, fewer resources are available for other databases in that instance, and their performance may suffer.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you’re developing your own client library.

create_instance (*parent, instance_id, instance, retry=<object object>, timeout=<object object>, metadata=None*)

Creates an instance and begins preparing it to begin serving. The returned long-running operation can be used to track the progress of preparing the new instance. The instance name is assigned by the caller. If the named instance already exists, `CreateInstance` returns `ALREADY_EXISTS`.

Immediately upon completion of this request:

- The instance is readable via the API, with all requested attributes but no allocated resources. Its state is `CREATING`.

Until completion of the returned operation:

- Cancelling the operation renders the instance immediately unreadable via the API.
- The instance can be deleted.
- All other attempts to modify the instance are rejected.

Upon completion of the returned operation:

- Billing for all successfully-allocated resources begins (some types may have lower than the requested levels).
- Databases can be created in the instance.
- The instance’s allocated resource levels are readable via the API.
- The instance’s state becomes `READY`.

The returned long-running operation will have a name of the format `<instance_name>/operations/<operation_id>` and can be used to track creation of the instance. The metadata field type is `CreateInstanceMetadata`. The response field type is `Instance`, if successful.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>> instance_id = ''
>>> instance = {}
>>>
>>> response = client.create_instance(parent, instance_id, instance)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **parent** (*str*) – Required. The name of the project in which to create the instance. Values are of the form `projects/<project>`.
- **instance_id** (*str*) – Required. The ID of the instance to create. Valid identifiers are of the form `[a-z] [-a-z0-9]* [a-z0-9]` and must be between 6 and 30 characters in length.
- **instance** (*Union[dict, Instance]*) – Required. The instance to create. The name may be omitted, but if specified must be `<parent>/instances/<instance_id>`. If a dict is provided, it must be of the same form as the protobuf message *Instance*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_instance (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Deletes an instance.

Immediately upon completion of the request:

- Billing ceases for all of the instance's reserved resources.

Soon afterward:

- The instance and *all of its databases* immediately and irrevocably disappear from the API. All data in the databases is permanently deleted.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> name = client.instance_path('[PROJECT]', '[INSTANCE]')
>>>
>>> client.delete_instance(name)
```

Parameters

- **name** (*str*) – Required. The name of the instance to be deleted. Values are of the form `projects/<project>/instances/<instance>`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

enums = <module 'google.cloud.spanner_admin_instance_v1.gapic.enums' from '/home/docs/

get_iam_policy (*resource*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets the access control policy for an instance resource. Returns an empty policy if an instance exists but does not have a policy set.

Authorization requires `spanner.instances.getIamPolicy` on `resource`.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
```

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```
>>>
>>> resource = client.instance_path('[PROJECT]', '[INSTANCE]')
>>>
>>> response = client.get_iam_policy(resource)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Policy* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_instance (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)
Gets information about a particular instance.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> name = client.instance_path('[PROJECT]', '[INSTANCE]')
>>>
>>> response = client.get_instance(name)
```

Parameters

- **name** (*str*) – Required. The name of the requested instance. Values are of the form `projects/<project>/instances/<instance>`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A *Instance* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

get_instance_config (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)
Gets information about a particular instance configuration.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> name = client.instance_config_path('[PROJECT]', '[INSTANCE_CONFIG]')
>>>
>>> response = client.get_instance_config(name)
```

Parameters

- **name** (*str*) – Required. The name of the requested instance configuration. Values are of the form `projects/<project>/instanceConfigs/<config>`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `InstanceConfig` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod instance_config_path (*project*, *instance_config*)
Return a fully-qualified instance_config string.

classmethod instance_path (*project*, *instance*)
Return a fully-qualified instance string.

list_instance_configs (*parent*, *page_size*=None, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)
Lists the supported instance configurations for a given project.

Example

```

>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_instance_configs(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_instance_configs(parent,
... options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **parent** (*str*) – Required. The name of the project for which a list of supported instance configurations is requested. Values are of the form `projects/<project>`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `InstanceConfig` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_instances (*parent, page_size=None, filter_=None, retry=<object object>, timeout=<object object>, metadata=None*)
Lists all instances in the given project.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_instances(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_instances(parent, options=CallOptions(page_
->token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – Required. The name of the project for which a list of instances is requested. Values are of the form `projects/<project>`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **filter** (*str*) – An expression for filtering the results of the request. Filter rules are case insensitive. The fields eligible for filtering are:

- `name`
- `display_name`
- `labels.key` where `key` is the name of a label

Some examples of using filters are:

- `name:*` → The instance has a name.
- `name:Howl` → The instance’s name contains the string “howl”.
- `name:HOWL` → Equivalent to above.
- `NAME:howl` → Equivalent to above.
- `labels.env:*` → The instance has the label “env”.
- `labels.env:dev` → The instance has the label “env” and the value of the label contains the string “dev”.
- `name:howl labels.env:dev` → The instance’s name contains “howl” and it has the label “env” with its value containing “dev”.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `PageIterator` instance. By default, this is an iterable of `Instance` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `project_path(project)`

Return a fully-qualified project string.

set_iam_policy(resource, policy, retry=<object object>, timeout=<object object>, meta-data=None)

Sets the access control policy on an instance resource. Replaces any existing policy.

Authorization requires `spanner.instances.setIamPolicy` on resource.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> resource = client.instance_path('[PROJECT]', '[INSTANCE]')
>>> policy = {}
>>>
>>> response = client.set_iam_policy(resource, policy)
```

Parameters

- **resource** (*str*) – REQUIRED: The resource for which the policy is being specified. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **policy** (*Union[dict, Policy]*) – REQUIRED: The complete policy to be applied to the `resource`. The size of the policy is limited to a few 10s of KB. An empty policy is a valid policy but certain Cloud Platform services (such as Projects) might reject them. If a dict is provided, it must be of the same form as the protobuf message `Policy`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `Policy` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

test_iam_permissions (*resource, permissions, retry=<object object>, timeout=<object object>, metadata=None*)

Returns permissions that the caller has on the specified instance resource.

Attempting this RPC on a non-existent Cloud Spanner instance resource will result in a `NOT_FOUND` error if the user has `spanner.instances.list` permission on the containing Google Cloud Project. Otherwise returns an empty set of permissions.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> resource = client.instance_path('[PROJECT]', '[INSTANCE]')
>>> permissions = []
>>>
>>> response = client.test_iam_permissions(resource, permissions)
```

Parameters

- **resource** (*str*) – **REQUIRED:** The resource for which the policy detail is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.
- **permissions** (*list[str]*) – The set of permissions to check for the resource. Permissions with wildcards (such as `*` or `storage.*`) are not allowed. For more information see [IAM Overview](#).
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns A `TestIamPermissionsResponse` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

update_instance (*instance, field_mask, retry=<object object>, timeout=<object object>, metadata=None*)

Updates an instance, and begins allocating or releasing resources as requested. The returned [long-running

`operation][google.longrunning.Operation]` can be used to track the progress of updating the instance. If the named instance does not exist, returns `NOT_FOUND`.

Immediately upon completion of this request:

- For resource types for which a decrease in the instance's allocation has been requested, billing is based on the newly-requested level.

Until completion of the returned operation:

- Cancelling the operation sets its metadata's `[cancel_time][google.spanner.admin.instance.v1.UpdateInstanceMetadata]` and begins restoring resources to their pre-request values. The operation is guaranteed to succeed at undoing all resource changes, after which point it terminates with a *CANCELLED* status.
- All other attempts to modify the instance are rejected.
- Reading the instance via the API continues to give the pre-request resource levels.

Upon completion of the returned operation:

- Billing begins for all successfully-allocated resources (some types may have lower than the requested levels).
- All newly-reserved resources are available for serving the instance's tables.
- The instance's new resource levels are readable via the API.

The returned long-running operation will have a name of the format `<instance_name>/operations/<operation_id>` and can be used to track the instance modification. The metadata field type is `UpdateInstanceMetadata`. The response field type is `Instance`, if successful.

Authorization requires `spanner.instances.update` permission on resource name.

Example

```
>>> from google.cloud import spanner_admin_instance_v1
>>>
>>> client = spanner_admin_instance_v1.InstanceAdminClient()
>>>
>>> instance = {}
>>> field_mask = {}
>>>
>>> response = client.update_instance(instance, field_mask)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **instance** (`Union[dict, Instance]`) – Required. The instance to update, which must always include the instance name. Otherwise, only fields mentioned in `[google.spanner.admin.instance.v1.UpdateInstanceRequest.field_mask]` need be included. If a dict is provided, it must be of the same form as the protobuf message *Instance*

- **field_mask** (*Union[dict, FieldMask]*) – Required. A mask specifying which fields in `[]google.spanner.admin.instance.v1.UpdateInstanceRequest.instance` should be updated. The field mask must always be specified; this prevents any future fields in `[]google.spanner.admin.instance.v1.Instance` from being erased accidentally by clients that do not know about them. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.

Returns A `_OperationFuture` instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

19.8.16 Spanner Admin Instance Client Types

class `google.cloud.spanner_admin_instance_v1.types.Any`

class `google.cloud.spanner_admin_instance_v1.types.AuditData`

Audit log information specific to Cloud IAM. This message is serialized as an Any type in the ServiceData message of an AuditLog message.

policy_delta

Policy delta between the original policy and the newly set policy.

class `google.cloud.spanner_admin_instance_v1.types.Binding`

Associates members with a role.

role

Role that is assigned to members. For example, roles/viewer, roles/editor, or roles/owner. Required

members

Specifies the identities requesting access for a Cloud Platform resource. `members` can have the following values: - `allUsers`: A special identifier that represents anyone who is on the internet; with or without a Google account. - `allAuthenticatedUsers`: A special identifier that represents anyone who is authenticated with a Google account or a service account. - `user:{emailid}`: An email address that represents a specific Google account. For example, `alice@gmail.com` or `joe@example.com`. - `serviceAccount:{emailid}`: An email address that represents a service account. For example, `my-other-app@appspot.gserviceaccount.com`. - `group:{emailid}`: An email address that represents a Google group. For example, `admins@example.com`. - `domain:{domain}`: A Google Apps domain name that represents all the users of that domain. For example, `google.com` or `example.com`.

class `google.cloud.spanner_admin_instance_v1.types.BindingDelta`

One delta entry for Binding. Each individual change (only one member in each entry) to a binding will be a separate entry.

action

The action that was performed on a Binding. Required

role

Role that is assigned to members. For example, roles/viewer, roles/editor, or roles/owner. Required

member

A single identity requesting access for a Cloud Platform resource. Follows the same format of Binding.members. Required

class google.cloud.spanner_admin_instance_v1.types.**CancelOperationRequest**

class google.cloud.spanner_admin_instance_v1.types.**CreateInstanceMetadata**

Metadata type for the operation returned by [CreateInstance][google.spanner.admin.instance.v1.InstanceAdmin.CreateInstance].

instance

The instance being created.

start_time

The time at which the [CreateInstance][google.spanner.admin.instance.v1.InstanceAdmin.CreateInstance] request was received.

cancel_time

The time at which this operation was cancelled. If set, this operation is in the process of undoing itself (which is guaranteed to succeed) and cannot be cancelled again.

end_time

The time at which this operation failed or was completed successfully.

class google.cloud.spanner_admin_instance_v1.types.**CreateInstanceRequest**

The request for [CreateInstance][google.spanner.admin.instance.v1.InstanceAdmin.CreateInstance].

parent

Required. The name of the project in which to create the instance. Values are of the form projects/<project>.

instance_id

Required. The ID of the instance to create. Valid identifiers are of the form [a-z] [-a-z0-9] * [a-z0-9] and must be between 6 and 30 characters in length.

instance

Required. The instance to create. The name may be omitted, but if specified must be <parent>/instances/<instance_id>.

class google.cloud.spanner_admin_instance_v1.types.**CustomHttpPattern**

class google.cloud.spanner_admin_instance_v1.types.**DeleteInstanceRequest**

The request for [DeleteInstance][google.spanner.admin.instance.v1.InstanceAdmin.DeleteInstance].

name

Required. The name of the instance to be deleted. Values are of the form projects/<project>/instances/<instance>

class google.cloud.spanner_admin_instance_v1.types.**DeleteOperationRequest**

class google.cloud.spanner_admin_instance_v1.types.**DescriptorProto**

class ExtensionRange

class ReservedRange

```
class google.cloud.spanner_admin_instance_v1.types.Empty
class google.cloud.spanner_admin_instance_v1.types.EnumDescriptorProto

    class EnumReservedRange
class google.cloud.spanner_admin_instance_v1.types.EnumOptions
class google.cloud.spanner_admin_instance_v1.types.EnumValueDescriptorProto
class google.cloud.spanner_admin_instance_v1.types.EnumValueOptions
class google.cloud.spanner_admin_instance_v1.types.ExtensionRangeOptions
class google.cloud.spanner_admin_instance_v1.types.FieldDescriptorProto
class google.cloud.spanner_admin_instance_v1.types.FieldMask
class google.cloud.spanner_admin_instance_v1.types.FieldOptions
class google.cloud.spanner_admin_instance_v1.types.FileDescriptorProto
class google.cloud.spanner_admin_instance_v1.types.FileDescriptorSet
class google.cloud.spanner_admin_instance_v1.types.FileOptions
class google.cloud.spanner_admin_instance_v1.types.GeneratedCodeInfo

    class Annotation
class google.cloud.spanner_admin_instance_v1.types.GetIamPolicyRequest
    Request message for GetIamPolicy method.

    resource
        REQUIRED: The resource for which the policy is being requested. resource is usually specified as a
        path. For example, a Project resource is specified as projects/{project}.
class google.cloud.spanner_admin_instance_v1.types.GetInstanceConfigRequest
    The request for [GetInstanceConfigRequest][google.spanner.admin.instance.v1.InstanceAdmin.GetInstanceConfig].

    name
        Required. The name of the requested instance configuration. Values are of the form projects/
        <project>/instanceConfigs/<config>.
class google.cloud.spanner_admin_instance_v1.types.GetInstanceRequest
    The request for [GetInstance][google.spanner.admin.instance.v1.InstanceAdmin.GetInstance].

    name
        Required. The name of the requested instance. Values are of the form projects/<project>/
        instances/<instance>.
class google.cloud.spanner_admin_instance_v1.types.GetOperationRequest
class google.cloud.spanner_admin_instance_v1.types.Http
class google.cloud.spanner_admin_instance_v1.types.HttpRule
class google.cloud.spanner_admin_instance_v1.types.Instance
    An isolated set of Cloud Spanner resources on which databases can be hosted.
```

name

Required. A unique identifier for the instance, which cannot be changed after the instance is created. Values are of the form `projects/<project>/instances/[a-z][a-z0-9]*[a-z0-9]`. The final segment of the name must be between 6 and 30 characters in length.

config

Required. The name of the instance's configuration. Values are of the form `projects/<project>/instanceConfigs/<configuration>`. See also `[InstanceConfig][google.spanner.admin.instance.v1.InstanceAdmin.CreateInstance]` and `[ListInstanceConfigs][google.spanner.admin.instance.v1.InstanceAdmin.ListInstanceConfigs]`.

display_name

Required. The descriptive name for this instance as it appears in UIs. Must be unique per project and between 4 and 30 characters in length.

node_count

Required. The number of nodes allocated to this instance. This may be zero in API responses for instances that are not yet in state `READY`. See [the documentation](#) for more information about nodes.

state

Output only. The current instance state. For `[CreateInstance][google.spanner.admin.instance.v1.InstanceAdmin.CreateInstance]`, the state must be either omitted or set to `CREATING`. For `[UpdateInstance][google.spanner.admin.instance.v1.InstanceAdmin.UpdateInstance]`, the state must be either omitted or set to `READY`.

labels

Cloud Labels are a flexible and lightweight mechanism for organizing cloud resources into groups that reflect a customer's organizational needs and deployment strategies. Cloud Labels can be used to filter collections of resources. They can be used to control how resource metrics are aggregated. And they can be used as arguments to policy management rules (e.g. route, firewall, load balancing, etc.). - Label keys must be between 1 and 63 characters long and must conform to the following regular expression: `[a-z]([-a-z0-9]*[a-z0-9])?`. - Label values must be between 0 and 63 characters long and must conform to the regular expression `([a-z]([-a-z0-9]*[a-z0-9])?)?`. - No more than 64 labels can be associated with a given resource. See <https://goo.gl/xmQnxf> for more information on and examples of labels. If you plan to use labels in your own code, please note that additional characters may be allowed in the future. And so you are advised to use an internal label representation, such as JSON, which doesn't rely upon specific characters being disallowed. For example, representing labels as the string: `name + "*" + value` would prove problematic if we were to allow `"*"` in a future release.

class LabelsEntry**class google.cloud.spanner_admin_instance_v1.types.InstanceConfig**

A possible configuration for a Cloud Spanner instance. Configurations define the geographic placement of nodes and their replication.

name

A unique identifier for the instance configuration. Values are of the form `projects/<project>/instanceConfigs/[a-z][a-z0-9]*`

display_name

The name of this instance configuration as it appears in UIs.

class google.cloud.spanner_admin_instance_v1.types.ListInstanceConfigsRequest

The request for `[ListInstanceConfigs][google.spanner.admin.instance.v1.InstanceAdmin.ListInstanceConfigs]`.

parent

Required. The name of the project for which a list of supported instance configurations is requested. Values are of the form `projects/<project>`.

page_size

Number of instance configurations to be returned in the response. If 0 or less, defaults to the server's maximum allowed page size.

page_token

If non-empty, `page_token` should contain a `[next_page_token][google.spanner.admin.instance.v1.ListInstanceConfigsResponse.next_page_token]` from a previous `[ListInstanceConfigsResponse][google.spanner.admin.instance.v1.ListInstanceConfigsResponse]`.

class `google.cloud.spanner_admin_instance_v1.types.ListInstanceConfigsResponse`

The response for `[ListInstanceConfigs][google.spanner.admin.instance.v1.InstanceAdmin.ListInstanceConfigs]`.

instance_configs

The list of requested instance configurations.

next_page_token

`next_page_token` can be sent in a subsequent `[ListInstanceConfigs][google.spanner.admin.instance.v1.InstanceAdmin.ListInstanceConfigs]` call to fetch more of the matching instance configurations.

class `google.cloud.spanner_admin_instance_v1.types.ListInstancesRequest`

The request for `[ListInstances][google.spanner.admin.instance.v1.InstanceAdmin.ListInstances]`.

parent

Required. The name of the project for which a list of instances is requested. Values are of the form `projects/<project>`.

page_size

Number of instances to be returned in the response. If 0 or less, defaults to the server's maximum allowed page size.

page_token

If non-empty, `page_token` should contain a `[next_page_token][google.spanner.admin.instance.v1.ListInstancesResponse.next_page_token]` from a previous `[ListInstancesResponse][google.spanner.admin.instance.v1.ListInstancesResponse]`.

filter

An expression for filtering the results of the request. Filter rules are case insensitive. The fields eligible for filtering are: `- name - display_name - labels.key` where `key` is the name of a label. Some examples of using filters are: `- name:* -> The instance has a name.` `- name:Howl -> The instance's name contains the string "howl".` `- name:HOWL -> Equivalent to above.` `- NAME:howl -> Equivalent to above.` `- labels.env:* -> The instance has the label "env".` `- labels.env:dev -> The instance has the label "env" and the value of the label contains the string "dev".` `- name:howl labels.env:dev -> The instance's name contains "howl" and it has the label "env" with its value containing "dev".`

class `google.cloud.spanner_admin_instance_v1.types.ListInstancesResponse`

The response for `[ListInstances][google.spanner.admin.instance.v1.InstanceAdmin.ListInstances]`.

instances

The list of requested instances.

next_page_token

`next_page_token` can be sent in a subsequent `[ListInstances][google.spanner.admin.instance.v1.InstanceAdmin.ListInstances]` call to fetch more of the matching instances.

class `google.cloud.spanner_admin_instance_v1.types.ListOperationsRequest`

class `google.cloud.spanner_admin_instance_v1.types.ListOperationsResponse`

```

class google.cloud.spanner_admin_instance_v1.types.MessageOptions
class google.cloud.spanner_admin_instance_v1.types.MethodDescriptorProto
class google.cloud.spanner_admin_instance_v1.types.MethodOptions
class google.cloud.spanner_admin_instance_v1.types.OneofDescriptorProto
class google.cloud.spanner_admin_instance_v1.types.OneofOptions
class google.cloud.spanner_admin_instance_v1.types.Operation
class google.cloud.spanner_admin_instance_v1.types.Policy

```

Defines an Identity and Access Management (IAM) policy. It is used to specify access control policies for Cloud Platform resources.

A `Policy` consists of a list of bindings. A `Binding` binds a list of members to a role, where the members can be user accounts, Google groups, Google domains, and service accounts. A role is a named list of permissions defined by IAM.

Example

```

{
  "bindings": [
    {
      "role": "roles/owner",
      "members": [
        "user:mike@example.com",
        "group:admins@example.com",
        "domain:google.com",
        "serviceAccount:my-other-app@appspot.gserviceaccount.com",
      ]
    },
    {
      "role": "roles/viewer",
      "members": ["user:sean@example.com"]
    }
  ]
}

```

For a description of IAM and its features, see the [IAM developer's guide](#).

version

Version of the `Policy`. The default version is 0.

bindings

Associates a list of members to a role. Multiple bindings must not be specified for the same role. bindings with no members will result in an error.

etag

`etag` is used for optimistic concurrency control as a way to help prevent simultaneous updates of a policy from overwriting each other. It is strongly suggested that systems make use of the `etag` in the read-modify-write cycle to perform policy updates in order to avoid race conditions: An `etag` is returned in the response to `getIamPolicy`, and systems are expected to put that `etag` in the request to `setIamPolicy` to ensure that their change will be applied to the same version of the policy. If no `etag` is provided in the call to `setIamPolicy`, then the existing policy is overwritten blindly.

```

class google.cloud.spanner_admin_instance_v1.types.PolicyDelta

```

The difference delta between two policies.

binding_deltas

The delta for Bindings between two policies.

class google.cloud.spanner_admin_instance_v1.types.**ServiceDescriptorProto**

class google.cloud.spanner_admin_instance_v1.types.**ServiceOptions**

class google.cloud.spanner_admin_instance_v1.types.**SetIamPolicyRequest**

Request message for SetIamPolicy method.

resource

REQUIRED: The resource for which the policy is being specified. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.

policy

REQUIRED: The complete policy to be applied to the `resource`. The size of the policy is limited to a few 10s of KB. An empty policy is a valid policy but certain Cloud Platform services (such as Projects) might reject them.

class google.cloud.spanner_admin_instance_v1.types.**SourceCodeInfo**

class **Location**

class google.cloud.spanner_admin_instance_v1.types.**Status**

class google.cloud.spanner_admin_instance_v1.types.**TestIamPermissionsRequest**

Request message for TestIamPermissions method.

resource

REQUIRED: The resource for which the policy detail is being requested. `resource` is usually specified as a path. For example, a Project resource is specified as `projects/{project}`.

permissions

The set of permissions to check for the `resource`. Permissions with wildcards (such as '*' or 'storage.*') are not allowed. For more information see [IAM Overview](#).

class google.cloud.spanner_admin_instance_v1.types.**TestIamPermissionsResponse**

Response message for TestIamPermissions method.

permissions

A subset of TestPermissionsRequest.permissions that the caller is allowed.

class google.cloud.spanner_admin_instance_v1.types.**Timestamp**

class google.cloud.spanner_admin_instance_v1.types.**UninterpretedOption**

class **NamePart**

class google.cloud.spanner_admin_instance_v1.types.**UpdateInstanceMetadata**

Metadata type for the operation returned by [UpdateInstance][google.spanner.admin.instance.v1.InstanceAdmin.UpdateInstance].

instance

The desired end state of the update.

start_time

The time at which [UpdateInstance][google.spanner.admin.instance.v1.InstanceAdmin.UpdateInstance] request was received.

cancel_time

The time at which this operation was cancelled. If set, this operation is in the process of undoing itself (which is guaranteed to succeed) and cannot be cancelled again.

end_time

The time at which this operation failed or was completed successfully.

class `google.cloud.spanner_admin_instance_v1.types.UpdateInstanceRequest`

The request for `[UpdateInstance][google.spanner.admin.instance.v1.InstanceAdmin.UpdateInstance]`.

instance

Required. The instance to update, which must always include the instance name. Otherwise, only fields mentioned in `[][google.spanner.admin.instance.v1.UpdateInstanceRequest.field_mask]` need be included.

field_mask

Required. A mask specifying which fields in `[][google.spanner.admin.instance.v1.UpdateInstanceRequest.instance]` should be updated. The field mask must always be specified; this prevents any future fields in `[][google.spanner.admin.instance.v1.Instance]` from being erased accidentally by clients that do not know about them.

19.9 Installation

Install the `google-cloud-spanner` library using `pip`:

```
$ pip install google-cloud-spanner
```

19.10 Spanner Client

19.10.1 Instantiating a Client

To use the API, the `Client` class defines a high-level interface which handles authorization and creating other objects:

```
from google.cloud import spanner
client = spanner.Client()
```

19.10.2 Long-lived Defaults

When creating a `Client`, the `user_agent` and `timeout_seconds` arguments have sensible defaults (`DEFAULT_USER_AGENT` and `DEFAULT_TIMEOUT_SECONDS`). However, you may over-ride them and these will be used throughout all API requests made with the `client` you create.

19.10.3 Configuration

- For an overview of authentication in `google.cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you can also set the `G_CLOUD_PROJECT` environment variable for the Google Cloud Console project you'd like to interact with. If your code is running in Google App Engine or Google Compute Engine the project will be detected automatically. (Setting this environment variable is not required, you may instead pass the `project` explicitly when constructing a `Client`).
- After configuring your environment, create a `Client`

```
>>> from google.cloud import spanner
>>> client = spanner.Client()
```

or pass in `credentials` and `project` explicitly

```
>>> from google.cloud import spanner
>>> client = spanner.Client(project='my-project', credentials=creds)
```

Tip: Be sure to use the **Project ID**, not the **Project Number**.

19.10.4 Warnings about Multiprocessing

- When using multiprocessing, the application may hang if a `:class:`~google.cloud.spanner_v1.client.Client`` instance is created before `:class:multiprocessing.Pool` or `:class:multiprocessing.Process` invokes `:func:os.fork`. The issue is under investigation, but may be only happening on Macintosh and not Linux. See [GRPC/GRPC#12455](#) for more information.

19.10.5 Next Step

After a `Client`, the next highest-level object is an `Instance`. You'll need one before you can interact with databases.

Next, learn about the *[Instance Admin](#)*.

19.11 Changelog

For a list of all `google-cloud-spanner` releases:

19.11.1 Changelog

PyPI History

1.4.0

Implementation Changes

- Ensure that initial resume token is bytes, not text. (#5450)
- Prevent `process_read_batch` from mutating params (#5416)
- Avoid overwriting `'module'` of messages from shared modules. (#5364)

New Features

- Add support for Python 3.7 (#5288)
- Add support for Spanner struct params. (#5463)

Internal / Testing Changes

- Modify system tests to use prerelease versions of `grpcio` (#5304)

1.3.0

Interface additions

- Added `spanner_v1.COMMIT_TIMESTAMP`. (#5102)

1.2.0

New features

- Added batch query support (#4938)

Implementation changes

- Removed custom timestamp class in favor of the one in `google-api-core`. (#4980)

Dependencies

- Update minimum version for `google-api-core` to 1.1.0 (#5030)

Documentation

- Update package metadata release status to 'Stable' (#5031)

1.1.0

Dependencies

- The minimum version for `google-api-core` has been updated to version 1.0.0. This may cause some incompatibility with older google-cloud libraries, you will need to update those libraries if you have a dependency conflict. (#4944, #4946)

Testing and internal changes

- Fix `load_keys()` in YCSB-like benchmark for cloud spanner. (#4919)
- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all `setup.py` files (#4909)
- Fix system test util to populate streaming (#4888)
- Retry conflict errors in system test (#4850)

1.0.0

Breaking Changes

- `to_pb` has now been made private (`_to_pb`) in `KeySet` and `KeyRange` (#4740)

Documentation Changes

- Database `update_ddl` missing param in documentation (#4749)

0.30.0

Breaking Changes

- The underlying autogenerated client library was re-generated to pick up new features and resolve bugs, this may change the exceptions raised from various methods. (#4695)
- Made `StreamedResultSet`'s `row`, `consume_all`, and `consume_next` members private (#4492)

Implementation Changes

- `Keyset` can now infer defaults to `start_closed` or `end_closed` when only one argument is specified. (#4735)

Documentation

- Brought `Spanner` README more in line with others. (#4306, #4317)

Testing

- Added several new system tests and fixed minor issues with existing tests. (#4631, #4569, #4573, #4572, #4416, #4411, #4407, #4386, #4419, #4489, #4678, #4620, #4418, #4403, #4397, #4383, #4371, #4372, #4374, #4370, #4285, #4321)
- Excluded generated code from linting. (#4375)
- Added a `nox -s default` session for all packages. (#4324)

0.29.0

Implementation Changes

- **Bugfix:** Clear `session._transaction` before calling `_delay_until_retry` (#4185)
- **Bugfix:** Be permissive about merging an empty list. (#4170, fixes #4164)

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Deferring to `google-api-core` for `grpcio` and `googleapis-common-protos` dependencies (#4096, #4098)

PyPI: <https://pypi.org/project/google-cloud-spanner/0.29.0/>

The [Google Speech API](#) enables developers to convert audio to text. The API recognizes over 80 languages and variants, to support your global user base.

20.1 Installation

Install the `google-cloud-speech` library using `pip`:

```
$ pip install google-cloud-speech
```

20.2 Authentication and Configuration

`SpeechClient` objects provide a means to configure your application. Each instance holds an authenticated connection to the Cloud Speech Service.

For an overview of authentication in `google-cloud-python`, see [Authentication](#).

Assuming your environment is set up as described in that document, create an instance of `SpeechClient`.

```
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
```

20.3 Asynchronous Recognition

The `long_running_recognize()` method sends audio data to the Speech API and initiates a Long Running Operation.

Using this operation, you can periodically poll for recognition results. Use asynchronous requests for audio data of any duration up to 80 minutes.

See: [Speech Asynchronous Recognize](#)

```
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
>>> operation = client.long_running_recognize(
...     audio=speech.types.RecognitionAudio(
...         uri='gs://my-bucket/recording.flac',
...     ),
...     config=speech.types.RecognitionConfig(
...         encoding='LINEAR16',
...         language_code='en-US',
...         sample_rate_hertz=44100,
...     ),
... )
>>> op_result = operation.result()
>>> for result in op_result.results:
...     for alternative in result.alternatives:
...         print('=' * 20)
...         print(alternative.transcript)
...         print(alternative.confidence)
=====
'how old is the Brooklyn Bridge'
0.98267895
```

20.4 Synchronous Recognition

The `recognize()` method converts speech data to text and returns alternative text transcriptions.

This example uses `language_code='en-GB'` to better recognize a dialect from Great Britain.

```
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
>>> results = client.recognize(
...     audio=speech.types.RecognitionAudio(
...         uri='gs://my-bucket/recording.flac',
...     ),
...     config=speech.types.RecognitionConfig(
...         encoding='LINEAR16',
...         language_code='en-US',
...         sample_rate_hertz=44100,
...     ),
... )
>>> for result in results:
...     for alternative in result.alternatives:
...         print('=' * 20)
...         print('transcript: ' + alternative.transcript)
...         print('confidence: ' + str(alternative.confidence))
=====
transcript: Hello, this is a test
confidence: 0.81
=====
transcript: Hello, this is one test
confidence: 0
```

Example of using the profanity filter.


```
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
>>> results = client.recognize(
...     audio=speech.types.RecognitionAudio(
...         uri='gs://my-bucket/recording.flac',
...     ),
...     config=speech.types.RecognitionConfig(
...         encoding='LINEAR16',
...         language_code='en-US',
...         profanity_filter=True,
...         sample_rate_hertz=44100,
...     ),
... )
>>> for result in results:
...     for alternative in result.alternatives:
...         print('=' * 20)
...         print('transcript: ' + alternative.transcript)
...         print('confidence: ' + str(alternative.confidence))
=====
transcript: Hello, this is a f***** test
confidence: 0.81
```

Using speech context hints to get better results. This can be used to improve the accuracy for specific words and phrases. This can also be used to add new words to the vocabulary of the recognizer.

```
>>> from google.cloud import speech
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
>>> results = client.recognize(
...     audio=speech.types.RecognitionAudio(
...         uri='gs://my-bucket/recording.flac',
...     ),
...     config=speech.types.RecognitionConfig(
...         encoding='LINEAR16',
...         language_code='en-US',
...         sample_rate_hertz=44100,
...         speech_contexts=[speech.types.SpeechContext(
...             phrases=['hi', 'good afternoon'],
...         )],
...     ),
... )
>>> for result in results:
...     for alternative in result.alternatives:
...         print('=' * 20)
...         print('transcript: ' + alternative.transcript)
...         print('confidence: ' + str(alternative.confidence))
=====
transcript: Hello, this is a test
confidence: 0.81
```

20.5 Streaming Recognition

The `streaming_recognize()` method converts speech data to possible text alternatives on the fly.

Note: Streaming recognition requests are limited to 1 minute of audio.

See: <https://cloud.google.com/speech/limits#content>

```
>>> import io
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
>>> config = speech.types.RecognitionConfig(
...     encoding='LINEAR16',
...     language_code='en-US',
...     sample_rate_hertz=44100,
... )
>>> with io.open('./hello.wav', 'rb') as stream:
...     requests = [speech.types.StreamingRecognizeRequest(
...         audio_content=stream.read(),
...     )]
>>> results = sample.streaming_recognize(
...     config=speech.types.StreamingRecognitionConfig(config=config),
...     requests,
... )
>>> for result in results:
...     for alternative in result.alternatives:
...         print('=' * 20)
...         print('transcript: ' + alternative.transcript)
...         print('confidence: ' + str(alternative.confidence))
=====
transcript: hello thank you for using Google Cloud platform
confidence: 0.927983105183
```

By default the API will perform continuous recognition (continuing to process audio even if the speaker in the audio pauses speaking) until the client closes the output stream or until the maximum time limit has been reached.

If you only want to recognize a single utterance you can set `single_utterance` to `True` and only one result will be returned.

See: [Single Utterance](#)

```
>>> import io
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
>>> config = speech.types.RecognitionConfig(
...     encoding='LINEAR16',
...     language_code='en-US',
...     sample_rate_hertz=44100,
... )
>>> with io.open('./hello-pause-goodbye.wav', 'rb') as stream:
...     requests = [speech.types.StreamingRecognizeRequest(
...         audio_content=stream.read(),
...     )]
>>> results = sample.streaming_recognize(
...     config=speech.types.StreamingRecognitionConfig(
...         config=config,
...         single_utterance=False,
...     ),
...     requests,
... )
>>> for result in results:
...     for alternative in result.alternatives:
...         print('=' * 20)
```

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```

...     print('transcript: ' + alternative.transcript)
...     print('confidence: ' + str(alternative.confidence))
...     for result in results:
...         for alternative in result.alternatives:
...             print('=' * 20)
...             print('transcript: ' + alternative.transcript)
...             print('confidence: ' + str(alternative.confidence))
=====
transcript: testing a pause
confidence: 0.933770477772

```

If `interim_results` is set to `True`, interim results (tentative hypotheses) may be returned as they become available.

```

>>> import io
>>> from google.cloud import speech
>>> client = speech.SpeechClient()
>>> config = speech.types.RecognitionConfig(
...     encoding='LINEAR16',
...     language_code='en-US',
...     sample_rate_hertz=44100,
... )
>>> with io.open('./hello.wav', 'rb') as stream:
...     requests = [speech.types.StreamingRecognizeRequest(
...         audio_content=stream.read(),
...     )]
>>> config = speech.types.StreamingRecognitionConfig(config=config)
>>> responses = client.streaming_recognize(config, requests)
>>> for response in responses:
...     for result in response:
...         for alternative in result.alternatives:
...             print('=' * 20)
...             print('transcript: ' + alternative.transcript)
...             print('confidence: ' + str(alternative.confidence))
...             print('is_final: ' + str(result.is_final))
=====
'he'
None
False
=====
'hell'
None
False
=====
'hello'
0.973458576
True

```

20.6 API Reference

20.6.1 Speech Client API

```
class google.cloud.speech_v1.SpeechClient (transport=None, channel=None, creden-
                                         tials=None, client_config={'interfaces':
                                         {'google.cloud.speech.v1.Speech':
                                         {'retry_codes': {'idempotent': ['DEAD-
LINE_EXCEEDED', 'UNAVAILABLE'],
                                         'non_idempotent': []}, 'retry_params':
                                         {'default': {'initial_retry_delay_millis':
100, 'retry_delay_multiplier': 1.3,
                                         'max_retry_delay_millis': 60000, 'ini-
tial_rpc_timeout_millis': 1000000,
                                         'rpc_timeout_multiplier': 1.0,
                                         'max_rpc_timeout_millis': 1000000, 'to-
tal_timeout_millis': 5000000}}}, 'meth-
ods': {'Recognize': {'timeout_millis':
1000000, 'retry_codes_name': 'idem-
potent', 'retry_params_name': 'de-
fault'}, 'LongRunningRecognize': {'time-
out_millis': 60000, 'retry_codes_name':
'non_idempotent', 'retry_params_name':
'default'}, 'StreamingRecognize': {'time-
out_millis': 1000000, 'retry_codes_name':
'idempotent', 'retry_params_name': 'de-
fault'}}}}, client_info=None)
```

Service that implements Google Cloud Speech API.

Constructor.

Parameters

- **(Union[SpeechGrpcTransport, (transport) – Callable[[~.Credentials, type], ~.SpeechGrpcTransport])**: A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A *Channel* instance through which to make calls. This argument is mutually exclusive with *credentials*; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to *transport*; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If *None*, then default info will be used. Generally, you only need to set this if you're developing your own client library.

```
enums = <module 'google.cloud.speech_v1.gapic.enums' from '/home/docs/checkouts/readth
long_running_recognize (config, audio, retry=<object object>, timeout=<object object>, meta-
                        data=None)
```

Performs asynchronous speech recognition: receive results via the `google.longrunning.Operations` interface. Returns either an `Operation.error` or an `Operation.response` which contains a `LongRunningRecognizeResponse` message.

Example

```
>>> from google.cloud import speech_v1
>>> from google.cloud.speech_v1 import enums
>>>
>>> client = speech_v1.SpeechClient()
>>>
>>> encoding = enums.RecognitionConfig.AudioEncoding.FLAC
>>> sample_rate_hertz = 44100
>>> language_code = 'en-US'
>>> config = {'encoding': encoding, 'sample_rate_hertz': sample_rate_hertz,
→ 'language_code': language_code}
>>> uri = 'gs://bucket_name/file_name.flac'
>>> audio = {'uri': uri}
>>>
>>> response = client.long_running_recognize(config, audio)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **config** (`Union[dict, RecognitionConfig]`) – *Required* Provides information to the recognizer that specifies how to process the request. If a dict is provided, it must be of the same form as the protobuf message `RecognitionConfig`
- **audio** (`Union[dict, RecognitionAudio]`) – *Required* The audio data to be recognized. If a dict is provided, it must be of the same form as the protobuf message `RecognitionAudio`
- **retry** (`Optional[google.api_core.retry.Retry]`) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (`Optional[float]`) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (`Optional[Sequence[Tuple[str, str]]]`) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

recognize (*config*, *audio*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Performs synchronous speech recognition: receive results after all audio has been sent and processed.

Example

```
>>> from google.cloud import speech_v1
>>> from google.cloud.speech_v1 import enums
>>>
>>> client = speech_v1.SpeechClient()
>>>
>>> encoding = enums.RecognitionConfig.AudioEncoding.FLAC
>>> sample_rate_hertz = 44100
>>> language_code = 'en-US'
>>> config = {'encoding': encoding, 'sample_rate_hertz': sample_rate_hertz,
→ 'language_code': language_code}
>>> uri = 'gs://bucket_name/file_name.flac'
>>> audio = {'uri': uri}
>>>
>>> response = client.recognize(config, audio)
```

Parameters

- **config** (*Union[dict, RecognitionConfig]*) – *Required* Provides information to the recognizer that specifies how to process the request. If a dict is provided, it must be of the same form as the protobuf message *RecognitionConfig*
- **audio** (*Union[dict, RecognitionAudio]*) – *Required* The audio data to be recognized. If a dict is provided, it must be of the same form as the protobuf message *RecognitionAudio*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *RecognizeResponse* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

streaming_recognize (*config, requests, retry=<object object>, timeout=<object object>*)

Perform bi-directional speech recognition.

This method allows you to receive results while sending audio; it is only available via. gRPC (not REST).

Warning: This method is EXPERIMENTAL. Its interface might change in the future.

Example

```
>>> from google.cloud.speech_v1 import enums
>>> from google.cloud.speech_v1 import SpeechClient
>>> from google.cloud.speech_v1 import types
>>> client = SpeechClient()
>>> config = types.StreamingRecognitionConfig(
...     config=types.RecognitionConfig(
...         encoding=enums.RecognitionConfig.AudioEncoding.FLAC,
...     ),
... )
>>> request = types.StreamingRecognizeRequest(audio_content=b'...')
>>> requests = [request]
>>> for element in client.streaming_recognize(config, requests):
...     # process element
...     pass
```

Parameters

- **config** (*StreamingRecognitionConfig*) – The configuration to use for the stream.
- **requests** (Iterable[*StreamingRecognizeRequest*]) – The input objects.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.

Returns Iterable[*StreamingRecognizeResponse*]

Raises

- *google.gax.errors.GaxError* if the RPC is aborted.
- *ValueError* if the parameters are invalid.

20.6.2 Speech Client Types

```
class google.cloud.speech_v1.types.Any
class google.cloud.speech_v1.types.CancelOperationRequest
class google.cloud.speech_v1.types.CustomHttpPattern
class google.cloud.speech_v1.types.DeleteOperationRequest
class google.cloud.speech_v1.types.DescriptorProto
```

```
class ExtensionRange
class ReservedRange
class google.cloud.speech_v1.types.Duration
class google.cloud.speech_v1.types.Empty
class google.cloud.speech_v1.types.EnumDescriptorProto

class EnumReservedRange
class google.cloud.speech_v1.types.EnumOptions
class google.cloud.speech_v1.types.EnumValueDescriptorProto
class google.cloud.speech_v1.types.EnumValueOptions
class google.cloud.speech_v1.types.ExtensionRangeOptions
class google.cloud.speech_v1.types.FieldDescriptorProto
class google.cloud.speech_v1.types.FieldOptions
class google.cloud.speech_v1.types.FileDescriptorProto
class google.cloud.speech_v1.types.FileDescriptorSet
class google.cloud.speech_v1.types.FileOptions
class google.cloud.speech_v1.types.GeneratedCodeInfo

class Annotation
class google.cloud.speech_v1.types.GetOperationRequest
class google.cloud.speech_v1.types.Http
class google.cloud.speech_v1.types.HttpRule
class google.cloud.speech_v1.types.ListOperationsRequest
class google.cloud.speech_v1.types.ListOperationsResponse
class google.cloud.speech_v1.types.LongRunningRecognizeMetadata
    Describes the progress of a long-running LongRunningRecognize call. It is included
    in the metadata field of the Operation returned by the GetOperation call of the
    google::longrunning::Operations service.

    progress_percent
        Approximate percentage of audio processed thus far. Guaranteed to be 100 when the audio is fully pro-
        cessed and the results are available.

    start_time
        Time when the request was received.

    last_update_time
        Time of the most recent processing update.

class google.cloud.speech_v1.types.LongRunningRecognizeRequest
    The top-level message sent by the client for the LongRunningRecognize method.

    config
        Required Provides information to the recognizer that specifies how to process the request.
```


audio

Required The audio data to be recognized.

class google.cloud.speech_v1.types.LongRunningRecognizeResponse

The only message returned to the client by the LongRunningRecognize method. It contains the result as zero or more sequential SpeechRecognitionResult messages. It is included in the result.response field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

results

Output-only Sequential list of transcription results corresponding to sequential portions of audio.

class google.cloud.speech_v1.types.MessageOptions**class** google.cloud.speech_v1.types.MethodDescriptorProto**class** google.cloud.speech_v1.types.MethodOptions**class** google.cloud.speech_v1.types.OneofDescriptorProto**class** google.cloud.speech_v1.types.OneofOptions**class** google.cloud.speech_v1.types.Operation**class** google.cloud.speech_v1.types.RecognitionAudio

Contains audio data in the encoding specified in the RecognitionConfig. Either content or uri must be supplied. Supplying both or neither returns [google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]. See [audio limits](#).

audio_source

The audio source, which is either inline content or a Google Cloud Storage uri.

content

The audio data bytes encoded as specified in RecognitionConfig. Note: as with all bytes fields, protobuffers use a pure binary representation, whereas JSON representations use base64.

uri

URI that points to a file that contains audio data bytes as specified in RecognitionConfig. Currently, only Google Cloud Storage URIs are supported, which must be specified in the following format: gs://bucket_name/object_name (other URI formats return [google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#).

class google.cloud.speech_v1.types.RecognitionConfig

Provides information to the recognizer that specifies how to process the request.

encoding

Required Encoding of audio data sent in all RecognitionAudio messages.

sample_rate_hertz

Required Sample rate in Hertz of the audio data sent in all RecognitionAudio messages. Valid values are: 8000-48000. 16000 is optimal. For best results, set the sampling rate of the audio source to 16000 Hz. If that's not possible, use the native sample rate of the audio source (instead of re-sampling).

language_code

Required The language of the supplied audio as a [BCP-47](#) language tag. Example: "en-US". See [Language Support](#) for a list of the currently supported language codes.

max_alternatives

Optional Maximum number of recognition hypotheses to be returned. Specifically, the maximum number of SpeechRecognitionAlternative messages within each SpeechRecognitionResult.

The server may return fewer than `max_alternatives`. Valid values are 0-30. A value of 0 or 1 will return a maximum of one. If omitted, will return a maximum of one.

profanity_filter

Optional If set to `true`, the server will attempt to filter out profanities, replacing all but the initial character in each filtered word with asterisks, e.g. “f***”. If set to `false` or omitted, profanities won’t be filtered out.

speech_contexts

Optional A means to provide context to assist the speech recognition.

enable_word_time_offsets

Optional If `true`, the top result includes a list of words and the start and end time offsets (timestamps) for those words. If `false`, no word-level time offset information is returned. The default is `false`.

class google.cloud.speech_v1.types.**RecognizeRequest**

The top-level message sent by the client for the `Recognize` method.

config

Required Provides information to the recognizer that specifies how to process the request.

audio

Required The audio data to be recognized.

class google.cloud.speech_v1.types.**RecognizeResponse**

The only message returned to the client by the `Recognize` method. It contains the result as zero or more sequential `SpeechRecognitionResult` messages.

results

Output-only Sequential list of transcription results corresponding to sequential portions of audio.

class google.cloud.speech_v1.types.**ServiceDescriptorProto****class** google.cloud.speech_v1.types.**ServiceOptions****class** google.cloud.speech_v1.types.**SourceCodeInfo****class** Location**class** google.cloud.speech_v1.types.**SpeechContext**

Provides “hints” to the speech recognizer to favor specific words and phrases in the results.

phrases

Optional A list of strings containing words and phrases “hints” so that the speech recognition is more likely to recognize them. This can be used to improve the accuracy for specific words and phrases, for example, if specific commands are typically spoken by the user. This can also be used to add additional words to the vocabulary of the recognizer. See [usage limits](#).

class google.cloud.speech_v1.types.**SpeechRecognitionAlternative**

Alternative hypotheses (a.k.a. n-best list).

transcript

Output-only Transcript text representing the words that the user spoke.

confidence

Output-only The confidence estimate between 0.0 and 1.0. A higher number indicates an estimated greater likelihood that the recognized words are correct. This field is typically provided only for the top hypothesis, and only for `is_final=true` results. Clients should not rely on the `confidence` field as it is not guaranteed to be accurate or consistent. The default of 0.0 is a sentinel value indicating `confidence` was not set.

words

Output-only A list of word-specific information for each recognized word.

class google.cloud.speech_v1.types.SpeechRecognitionResult

A speech recognition result corresponding to a portion of the audio.

alternatives

Output-only May contain one or more recognition hypotheses (up to the maximum specified in `max_alternatives`). These alternatives are ordered in terms of accuracy, with the top (first) alternative being the most probable, as ranked by the recognizer.

class google.cloud.speech_v1.types.Status

class google.cloud.speech_v1.types.StreamingRecognitionConfig

Provides information to the recognizer that specifies how to process the request.

config

Required Provides information to the recognizer that specifies how to process the request.

single_utterance

Optional If `false` or omitted, the recognizer will perform continuous recognition (continuing to wait for and process audio even if the user pauses speaking) until the client closes the input stream (gRPC API) or until the maximum time limit has been reached. May return multiple `StreamingRecognitionResults` with the `is_final` flag set to `true`. If `true`, the recognizer will detect a single spoken utterance. When it detects that the user has paused or stopped speaking, it will return an `END_OF_SINGLE_UTTERANCE` event and cease recognition. It will return no more than one `StreamingRecognitionResult` with the `is_final` flag set to `true`.

interim_results

Optional If `true`, interim results (tentative hypotheses) may be returned as they become available (these interim results are indicated with the `is_final=false` flag). If `false` or omitted, only `is_final=true` result(s) are returned.

class google.cloud.speech_v1.types.StreamingRecognitionResult

A streaming speech recognition result corresponding to a portion of the audio that is currently being processed.

alternatives

Output-only May contain one or more recognition hypotheses (up to the maximum specified in `max_alternatives`).

is_final

Output-only If `false`, this `StreamingRecognitionResult` represents an interim result that may change. If `true`, this is the final time the speech service will return this particular `StreamingRecognitionResult`, the recognizer will not return any further hypotheses for this portion of the transcript and corresponding audio.

stability

Output-only An estimate of the likelihood that the recognizer will not change its guess about this interim result. Values range from 0.0 (completely unstable) to 1.0 (completely stable). This field is only provided for interim results (`is_final=false`). The default of 0.0 is a sentinel value indicating stability was not set.

class google.cloud.speech_v1.types.StreamingRecognizeRequest

The top-level message sent by the client for the `StreamingRecognize` method. Multiple `StreamingRecognizeRequest` messages are sent. The first message must contain a `streaming_config` message and must not contain audio data. All subsequent messages must contain audio data and must not contain a `streaming_config` message.

streaming_request

The streaming request, which is either a `streaming_config` or audio content.

streaming_config

Provides information to the recognizer that specifies how to process the request. The first `StreamingRecognizeRequest` message must contain a `streaming_config` message.

audio_content

The audio data to be recognized. Sequential chunks of audio data are sent in sequential `StreamingRecognizeRequest` messages. The first `StreamingRecognizeRequest` message must not contain `audio_content` data and all subsequent `StreamingRecognizeRequest` messages must contain `audio_content` data. The audio bytes must be encoded as specified in `RecognitionConfig`. Note: as with all bytes fields, `protobuffers` use a pure binary representation (not base64). See [audio limits](#).

class `google.cloud.speech_v1.types.StreamingRecognizeResponse`

`StreamingRecognizeResponse` is the only message returned to the client by `StreamingRecognize`. A series of zero or more `StreamingRecognizeResponse` messages are streamed back to the client. If there is no recognizable audio, and `single_utterance` is set to `false`, then no messages are streamed back to the client.

Here's an example of a series of ten `StreamingRecognizeResponses` that might be returned while processing audio:

1. `results { alternatives { transcript: "tube" } stability: 0.01 }`
2. `results { alternatives { transcript: "to be a" } stability: 0.01 }`
3. `results { alternatives { transcript: "to be" } stability: 0.9 } results { alternatives { transcript: " or not to be" } stability: 0.01 }`
4. `results { alternatives { transcript: "to be or not to be" confidence: 0.92 } alternatives { transcript: "to bee or not to bee" } is_final: true }`
5. `results { alternatives { transcript: " that's" } stability: 0.01 }`
6. `results { alternatives { transcript: " that is" } stability: 0.9 } results { alternatives { transcript: " the question" } stability: 0.01 }`
7. `results { alternatives { transcript: " that is the question" confidence: 0.98 } alternatives { transcript: " that was the question" } is_final: true }`

Notes:

- Only two of the above responses #4 and #7 contain final results; they are indicated by `is_final: true`. Concatenating these together generates the full transcript: "to be or not to be that is the question".
- The others contain interim results. #3 and #6 contain two interim results: the first portion has a high stability and is less likely to change; the second portion has a low stability and is very likely to change. A UI designer might choose to show only high stability results.
- The specific `stability` and `confidence` values shown above are only for illustrative purposes. Actual values may vary.
- In each response, only one of these fields will be set: `error`, `speech_event_type`, or one or more (repeated) `results`.

error

Output-only If set, returns a `[google.rpc.Status][google.rpc.Status]` message that specifies the error for the operation.

results

Output-only This repeated list contains zero or more results that correspond to consecutive portions of the audio currently being processed. It contains zero or more `is_final=false` results followed by zero or one `is_final=true` result (the newly settled portion).

speech_event_type

Output-only Indicates the type of speech event.

class google.cloud.speech_v1.types.Timestamp

class google.cloud.speech_v1.types.UninterpretedOption

class NamePart

class google.cloud.speech_v1.types.WordInfo

Word-specific information for recognized words. Word information is only included in the response when certain request parameters are set, such as `enable_word_time_offsets`.

start_time

Output-only Time offset relative to the beginning of the audio, and corresponding to the start of the spoken word. This field is only set if `enable_word_time_offsets=true` and only in the top hypothesis. This is an experimental feature and the accuracy of the time offset can vary.

end_time

Output-only Time offset relative to the beginning of the audio, and corresponding to the end of the spoken word. This field is only set if `enable_word_time_offsets=true` and only in the top hypothesis. This is an experimental feature and the accuracy of the time offset can vary.

word

Output-only The word corresponding to this set of information.

A new beta release, spelled `v1p1beta1`, is provided to provide for preview of upcoming features. In order to use this, you will want to import from `google.cloud.speech_v1p1beta1` in lieu of `google.cloud.speech`.

An API and type reference is provided the first beta also:

20.6.3 Client for Cloud Speech API

```
class google.cloud.speech_v1p1beta1.SpeechClient (transport=None, channel=None, credentials=None,
client_config={'interfaces':
{'google.cloud.speech.v1p1beta1.Speech':
{'retry_codes': {'idempotent':
['DEADLINE_EXCEEDED', 'UNAVAILABLE'], 'non_idempotent':
[]}, 'retry_params': {'default':
{'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
1000000, 'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
1000000, 'total_timeout_millis':
5000000}}, 'methods': {'Recognize': {'timeout_millis': 1000000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'LongRunningRecognize': {'timeout_millis': 60000,
'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'},
'StreamingRecognize': {'timeout_millis': 1000000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'}}}}},
client_info=None)
```

Service that implements Google Cloud Speech API.

Constructor.

Parameters

- **(Union[SpeechGrpcTransport, (transport) – Callable[[~.Credentials, type], ~.SpeechGrpcTransport]):** A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel (grpc.Channel) – DEPRECATED.** A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials (google.auth.credentials.Credentials) –** The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config (dict) – DEPRECATED.** A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info (google.api_core.gapic_v1.client_info.ClientInfo) –** The client info used to send a user-agent string along with API

requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

```
enums = <module 'google.cloud.speech_v1pbeta1.gapic.enums' from '/home/docs/checkouts
```

```
long_running_recognize (config, audio, retry=<object object>, timeout=<object object>, meta-  
                        data=None)
```

Performs asynchronous speech recognition: receive results via the `google.longrunning.Operations` interface. Returns either an `Operation.error` or an `Operation.response` which contains a `LongRunningRecognizeResponse` message.

Example

```
>>> from google.cloud import speech_v1pbeta1
>>> from google.cloud.speech_v1pbeta1 import enums
>>>
>>> client = speech_v1pbeta1.SpeechClient()
>>>
>>> encoding = enums.RecognitionConfig.AudioEncoding.FLAC
>>> sample_rate_hertz = 44100
>>> language_code = 'en-US'
>>> config = {'encoding': encoding, 'sample_rate_hertz': sample_rate_hertz,
→ 'language_code': language_code}
>>> uri = 'gs://bucket_name/file_name.flac'
>>> audio = {'uri': uri}
>>>
>>> response = client.long_running_recognize(config, audio)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **config** (*Union[dict, RecognitionConfig]*) – *Required* Provides information to the recognizer that specifies how to process the request. If a dict is provided, it must be of the same form as the protobuf message *RecognitionConfig*
- **audio** (*Union[dict, RecognitionAudio]*) – *Required* The audio data to be recognized. If a dict is provided, it must be of the same form as the protobuf message *RecognitionAudio*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

recognize (*config*, *audio*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Performs synchronous speech recognition: receive results after all audio has been sent and processed.

Example

```
>>> from google.cloud import speech_v1p1beta1
>>> from google.cloud.speech_v1p1beta1 import enums
>>>
>>> client = speech_v1p1beta1.SpeechClient()
>>>
>>> encoding = enums.RecognitionConfig.AudioEncoding.FLAC
>>> sample_rate_hertz = 44100
>>> language_code = 'en-US'
>>> config = {'encoding': encoding, 'sample_rate_hertz': sample_rate_hertz,
→ 'language_code': language_code}
>>> uri = 'gs://bucket_name/file_name.flac'
>>> audio = {'uri': uri}
>>>
>>> response = client.recognize(config, audio)
```

Parameters

- **config** (*Union[dict, RecognitionConfig]*) – *Required* Provides information to the recognizer that specifies how to process the request. If a dict is provided, it must be of the same form as the protobuf message *RecognitionConfig*
- **audio** (*Union[dict, RecognitionAudio]*) – *Required* The audio data to be recognized. If a dict is provided, it must be of the same form as the protobuf message *RecognitionAudio*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *RecognizeResponse* instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.

- `ValueError` – If the parameters are invalid.

streaming_recognize (*config, requests, retry=<object object>, timeout=<object object>*)
Perform bi-directional speech recognition.

This method allows you to receive results while sending audio; it is only available via. gRPC (not REST).

Warning: This method is EXPERIMENTAL. Its interface might change in the future.

Example

```
>>> from google.cloud.speech_v1 import enums
>>> from google.cloud.speech_v1 import SpeechClient
>>> from google.cloud.speech_v1 import types
>>> client = SpeechClient()
>>> config = types.StreamingRecognitionConfig(
...     config=types.RecognitionConfig(
...         encoding=enums.RecognitionConfig.AudioEncoding.FLAC,
...     ),
... )
>>> request = types.StreamingRecognizeRequest(audio_content=b'...')
>>> requests = [request]
>>> for element in client.streaming_recognize(config, requests):
...     # process element
...     pass
```

Parameters

- **config** (*StreamingRecognitionConfig*) – The configuration to use for the stream.
- **requests** (*Iterable[StreamingRecognizeRequest]*) – The input objects.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.

Returns *Iterable[StreamingRecognizeResponse]*

Raises

- `google.gax.errors.GaxError` if the RPC is aborted.
- `ValueError` if the parameters are invalid.

20.6.4 Types for Cloud Speech API Client

class `google.cloud.speech_v1pbeta1.types.Any`

class `google.cloud.speech_v1pbeta1.types.CancelOperationRequest`

class `google.cloud.speech_v1pbeta1.types.CustomHttpPattern`

class `google.cloud.speech_v1pbeta1.types.DeleteOperationRequest`

```
class google.cloud.speech_v1p1beta1.types.DescriptorProto

    class ExtensionRange
    class ReservedRange
class google.cloud.speech_v1p1beta1.types.Duration
class google.cloud.speech_v1p1beta1.types.Empty
class google.cloud.speech_v1p1beta1.types.EnumDescriptorProto

    class EnumReservedRange
class google.cloud.speech_v1p1beta1.types.EnumOptions
class google.cloud.speech_v1p1beta1.types.EnumValueDescriptorProto
class google.cloud.speech_v1p1beta1.types.EnumValueOptions
class google.cloud.speech_v1p1beta1.types.ExtensionRangeOptions
class google.cloud.speech_v1p1beta1.types.FieldDescriptorProto
class google.cloud.speech_v1p1beta1.types.FieldOptions
class google.cloud.speech_v1p1beta1.types.FileDescriptorProto
class google.cloud.speech_v1p1beta1.types.FileDescriptorSet
class google.cloud.speech_v1p1beta1.types.FileOptions
class google.cloud.speech_v1p1beta1.types.GeneratedCodeInfo

    class Annotation
class google.cloud.speech_v1p1beta1.types.GetOperationRequest
class google.cloud.speech_v1p1beta1.types.Http
class google.cloud.speech_v1p1beta1.types.HttpRule
class google.cloud.speech_v1p1beta1.types.ListOperationsRequest
class google.cloud.speech_v1p1beta1.types.ListOperationsResponse
class google.cloud.speech_v1p1beta1.types.LongRunningRecognizeMetadata
    Describes the progress of a long-running LongRunningRecognize call. It is included
    in the metadata field of the Operation returned by the GetOperation call of the
    google::longrunning::Operations service.

    progress_percent
        Approximate percentage of audio processed thus far. Guaranteed to be 100 when the audio is fully pro-
        cessed and the results are available.

    start_time
        Time when the request was received.

    last_update_time
        Time of the most recent processing update.
class google.cloud.speech_v1p1beta1.types.LongRunningRecognizeRequest
    The top-level message sent by the client for the LongRunningRecognize method.
```

config

Required Provides information to the recognizer that specifies how to process the request.

audio

Required The audio data to be recognized.

class google.cloud.speech_v1p1beta1.types.LongRunningRecognizeResponse

The only message returned to the client by the LongRunningRecognize method. It contains the result as zero or more sequential SpeechRecognitionResult messages. It is included in the result.response field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

results

Output only. Sequential list of transcription results corresponding to sequential portions of audio.

class google.cloud.speech_v1p1beta1.types.MessageOptions

class google.cloud.speech_v1p1beta1.types.MethodDescriptorProto

class google.cloud.speech_v1p1beta1.types.MethodOptions

class google.cloud.speech_v1p1beta1.types.OneofDescriptorProto

class google.cloud.speech_v1p1beta1.types.OneofOptions

class google.cloud.speech_v1p1beta1.types.Operation

class google.cloud.speech_v1p1beta1.types.RecognitionAudio

Contains audio data in the encoding specified in the RecognitionConfig. Either content or uri must be supplied. Supplying both or neither returns [google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]. See [audio limits](#).

audio_source

The audio source, which is either inline content or a Google Cloud Storage uri.

content

The audio data bytes encoded as specified in RecognitionConfig. Note: as with all bytes fields, protobufs use a pure binary representation, whereas JSON representations use base64.

uri

URI that points to a file that contains audio data bytes as specified in RecognitionConfig. Currently, only Google Cloud Storage URIs are supported, which must be specified in the following format: gs://bucket_name/object_name (other URI formats return [google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#).

class google.cloud.speech_v1p1beta1.types.RecognitionConfig

Provides information to the recognizer that specifies how to process the request.

encoding

Encoding of audio data sent in all RecognitionAudio messages. This field is optional for FLAC and WAV audio files and required for all other audio formats. For details, see [AudioEncoding][google.cloud.speech.v1p1beta1.RecognitionConfig.AudioEncoding].

sample_rate_hertz

Sample rate in Hertz of the audio data sent in all RecognitionAudio messages. Valid values are: 8000-48000. 16000 is optimal. For best results, set the sampling rate of the audio source to 16000 Hz. If that's not possible, use the native sample rate of the audio source (instead of re-sampling). This field is optional for FLAC and WAV audio files and required for all other audio formats. For details, see [AudioEncoding][google.cloud.speech.v1p1beta1.RecognitionConfig.AudioEncoding].

audio_channel_count

Optional The number of channels in the input audio data. ONLY set this for MULTI-CHANNEL recognition. Valid values for LINEAR16 and FLAC are 1-8. Valid values for OGG_OPUS are '1'-'254'. Valid value for MULAW, AMR, AMR_WB and SPEEX_WITH_HEADER_BYTE is only 1. If 0 or omitted, defaults to one channel (mono). NOTE: We only recognize the first channel by default. To perform independent recognition on each channel set `enable_separate_recognition_per_channel` to 'true'.

enable_separate_recognition_per_channel

This needs to be set to 'true' explicitly and `audio_channel_count > 1` to get each channel recognized separately. The recognition result will contain a `channel_tag` field to state which channel that result belongs to. If this is not 'true', we will only recognize the first channel. NOTE: The request is also billed cumulatively for all channels recognized: (`audio_channel_count` times the audio length)

language_code

Required The language of the supplied audio as a [BCP-47](#) language tag. Example: "en-US". See [Language Support](#) for a list of the currently supported language codes.

alternative_language_codes

Optional A list of up to 3 additional [BCP-47](#) language tags, listing possible alternative languages of the supplied audio. See [Language Support](#) for a list of the currently supported language codes. If alternative languages are listed, recognition result will contain recognition in the most likely language detected including the main `language_code`. The recognition result will include the language tag of the language detected in the audio. NOTE: This feature is only supported for Voice Command and Voice Search use cases and performance may vary for other use cases (e.g., phone call transcription).

max_alternatives

Optional Maximum number of recognition hypotheses to be returned. Specifically, the maximum number of `SpeechRecognitionAlternative` messages within each `SpeechRecognitionResult`. The server may return fewer than `max_alternatives`. Valid values are 0-30. A value of 0 or 1 will return a maximum of one. If omitted, will return a maximum of one.

profanity_filter

Optional If set to `true`, the server will attempt to filter out profanities, replacing all but the initial character in each filtered word with asterisks, e.g. "f***". If set to `false` or omitted, profanities won't be filtered out.

speech_contexts

Optional A means to provide context to assist the speech recognition.

enable_word_time_offsets

Optional If `true`, the top result includes a list of words and the start and end time offsets (timestamps) for those words. If `false`, no word-level time offset information is returned. The default is `false`.

enable_word_confidence

Optional If `true`, the top result includes a list of words and the confidence for those words. If `false`, no word-level confidence information is returned. The default is `false`.

enable_automatic_punctuation

Optional If 'true', adds punctuation to recognition result hypotheses. This feature is only available in select languages. Setting this for requests in other languages has no effect at all. The default 'false' value does not add punctuation to result hypotheses. NOTE: "This is currently offered as an experimental service, complimentary to all users. In the future this may be exclusively available as a premium feature."

enable_speaker_diarization

Optional If 'true', enables speaker detection for each recognized word in the top alternative of the recognition result using a `speaker_tag` provided in the `WordInfo`. Note: When this is true, we send all the words from the beginning of the audio for the top alternative in every consecutive responses. This is done in order to improve our speaker tags as our models learn to identify the speakers in the conversation over time.

diarization_speaker_count

Optional If set, specifies the estimated number of speakers in the conversation. If not set, defaults to '2'. Ignored unless `enable_speaker_diarization` is set to true."

metadata

Optional Metadata regarding this request.

model

Optional Which model to select for the given request. Select the model best suited to your domain to get best results. If a model is not explicitly specified, then we auto-select a model based on the parameters in the RecognitionConfig. .. raw:: html <table> .. raw:: html <tr> :: <td>Model</td> <td>Description</td> .. raw:: html </tr> .. raw:: html <tr> :: <td><code>command_and_search</code></td> <td>Best for short queries such as voice commands or voice search.</td> .. raw:: html </tr> .. raw:: html <tr> :: <td><code>phone_call</code></td> <td>Best for audio that originated from a phone call (typically recorded at an 8khz sampling rate).</td> .. raw:: html </tr> .. raw:: html <tr> :: <td><code>video</code></td> <td>Best for audio that originated from from video or includes multiple speakers. Ideally the audio is recorded at a 16khz or greater sampling rate. This is a premium model that costs more than the standard rate.</td> .. raw:: html </tr> .. raw:: html <tr> :: <td><code>default</code></td> <td>Best for audio that is not one of the specific audio models. For example, long-form audio. Ideally the audio is high-fidelity, recorded at a 16khz or greater sampling rate.</td> .. raw:: html </tr> .. raw:: html </table>

use_enhanced

Optional Set to true to use an enhanced model for speech recognition. You must also set the `model` field to a valid, enhanced model. If `use_enhanced` is set to true and the `model` field is not set, then `use_enhanced` is ignored. If `use_enhanced` is true and an enhanced version of the specified model does not exist, then the speech is recognized using the standard version of the specified model. Enhanced speech models require that you opt-in to the audio logging using instructions in the [alpha documentation](#). If you set `use_enhanced` to true and you have not enabled audio logging, then you will receive an error.

class google.cloud.speech_v1p1beta1.types.RecognitionMetadata

Description of audio data to be recognized.

interaction_type

The use case most closely describing the audio content to be recognized.

industry_naics_code_of_audio

The industry vertical to which this speech recognition request most closely applies. This is most indicative of the topics contained in the audio. Use the 6-digit NAICS code to identify the industry vertical - see <https://www.naics.com/search/>.

microphone_distance

The audio type that most closely describes the audio being recognized.

original_media_type

The original media the speech was recorded on.

recording_device_type

The type of device the speech was recorded with.

recording_device_name

The device used to make the recording. Examples 'Nexus 5X' or 'Polycom SoundStation IP 6000' or 'POTS' or 'VoIP' or 'Cardioid Microphone'.

original_mime_type

Mime type of the original audio file. For example `audio/m4a`, `audio/x-alaw-basic`, `audio/mp3`, `audio/3gpp`. A list of possible audio mime types is maintained at <http://www.iana.org/assignments/media-types/media-types.xhtml#audio>

obfuscated_id

Obfuscated (privacy-protected) ID of the user, to identify number of unique users using the service.

audio_topic

Description of the content. Eg. “Recordings of federal supreme court hearings from 2012”.

class google.cloud.speech_v1p1beta1.types.**RecognizeRequest**

The top-level message sent by the client for the `Recognize` method.

config

Required Provides information to the recognizer that specifies how to process the request.

audio

Required The audio data to be recognized.

class google.cloud.speech_v1p1beta1.types.**RecognizeResponse**

The only message returned to the client by the `Recognize` method. It contains the result as zero or more sequential `SpeechRecognitionResult` messages.

results

Output only. Sequential list of transcription results corresponding to sequential portions of audio.

class google.cloud.speech_v1p1beta1.types.**ServiceDescriptorProto**

class google.cloud.speech_v1p1beta1.types.**ServiceOptions**

class google.cloud.speech_v1p1beta1.types.**SourceCodeInfo**

class Location

class google.cloud.speech_v1p1beta1.types.**SpeechContext**

Provides “hints” to the speech recognizer to favor specific words and phrases in the results.

phrases

Optional A list of strings containing words and phrases “hints” so that the speech recognition is more likely to recognize them. This can be used to improve the accuracy for specific words and phrases, for example, if specific commands are typically spoken by the user. This can also be used to add additional words to the vocabulary of the recognizer. See [usage limits](#).

class google.cloud.speech_v1p1beta1.types.**SpeechRecognitionAlternative**

Alternative hypotheses (a.k.a. n-best list).

transcript

Output only. Transcript text representing the words that the user spoke.

confidence

Output only. The confidence estimate between 0.0 and 1.0. A higher number indicates an estimated greater likelihood that the recognized words are correct. This field is set only for the top alternative of a non-streaming result or, of a streaming result where `is_final=true`. This field is not guaranteed to be accurate and users should not rely on it to be always provided. The default of 0.0 is a sentinel value indicating confidence was not set.

words

Output only. A list of word-specific information for each recognized word. Note: When `enable_speaker_diarization` is true, you will see all the words from the beginning of the audio.

class google.cloud.speech_v1p1beta1.types.**SpeechRecognitionResult**

A speech recognition result corresponding to a portion of the audio.

alternatives

Output only. May contain one or more recognition hypotheses (up to the maximum specified in

`max_alternatives`). These alternatives are ordered in terms of accuracy, with the top (first) alternative being the most probable, as ranked by the recognizer.

channel_tag

For multi-channel audio, this is the channel number corresponding to the recognized result for the audio from that channel. For `audio_channel_count = N`, its output values can range from '1' to 'N'.

language_code

Output only. The [BCP-47](#) language tag of the language in this result. This language code was detected to have the most likelihood of being spoken in the audio.

class `google.cloud.speech_v1pbeta1.types.Status`

class `google.cloud.speech_v1pbeta1.types.StreamingRecognitionConfig`

Provides information to the recognizer that specifies how to process the request.

config

Required Provides information to the recognizer that specifies how to process the request.

single_utterance

Optional If `false` or omitted, the recognizer will perform continuous recognition (continuing to wait for and process audio even if the user pauses speaking) until the client closes the input stream (gRPC API) or until the maximum time limit has been reached. May return multiple `StreamingRecognitionResults` with the `is_final` flag set to `true`. If `true`, the recognizer will detect a single spoken utterance. When it detects that the user has paused or stopped speaking, it will return an `END_OF_SINGLE_UTTERANCE` event and cease recognition. It will return no more than one `StreamingRecognitionResult` with the `is_final` flag set to `true`.

interim_results

Optional If `true`, interim results (tentative hypotheses) may be returned as they become available (these interim results are indicated with the `is_final=false` flag). If `false` or omitted, only `is_final=true` result(s) are returned.

class `google.cloud.speech_v1pbeta1.types.StreamingRecognitionResult`

A streaming speech recognition result corresponding to a portion of the audio that is currently being processed.

alternatives

Output only. May contain one or more recognition hypotheses (up to the maximum specified in `max_alternatives`). These alternatives are ordered in terms of accuracy, with the top (first) alternative being the most probable, as ranked by the recognizer.

is_final

Output only. If `false`, this `StreamingRecognitionResult` represents an interim result that may change. If `true`, this is the final time the speech service will return this particular `StreamingRecognitionResult`, the recognizer will not return any further hypotheses for this portion of the transcript and corresponding audio.

stability

Output only. An estimate of the likelihood that the recognizer will not change its guess about this interim result. Values range from 0.0 (completely unstable) to 1.0 (completely stable). This field is only provided for interim results (`is_final=false`). The default of 0.0 is a sentinel value indicating `stability` was not set.

channel_tag

For multi-channel audio, this is the channel number corresponding to the recognized result for the audio from that channel. For `audio_channel_count = N`, its output values can range from '1' to 'N'.

language_code

Output only. The [BCP-47](#) language tag of the language in this result. This language code was detected to have the most likelihood of being spoken in the audio.

class google.cloud.speech_v1p1beta1.types.StreamingRecognizeRequest

The top-level message sent by the client for the `StreamingRecognize` method. Multiple `StreamingRecognizeRequest` messages are sent. The first message must contain a `streaming_config` message and must not contain audio data. All subsequent messages must contain audio data and must not contain a `streaming_config` message.

streaming_request

The streaming request, which is either a streaming config or audio content.

streaming_config

Provides information to the recognizer that specifies how to process the request. The first `StreamingRecognizeRequest` message must contain a `streaming_config` message.

audio_content

The audio data to be recognized. Sequential chunks of audio data are sent in sequential `StreamingRecognizeRequest` messages. The first `StreamingRecognizeRequest` message must not contain `audio_content` data and all subsequent `StreamingRecognizeRequest` messages must contain `audio_content` data. The audio bytes must be encoded as specified in `RecognitionConfig`. Note: as with all bytes fields, protobuffers use a pure binary representation (not base64). See [audio limits](#).

class google.cloud.speech_v1p1beta1.types.StreamingRecognizeResponse

`StreamingRecognizeResponse` is the only message returned to the client by `StreamingRecognize`. A series of zero or more `StreamingRecognizeResponse` messages are streamed back to the client. If there is no recognizable audio, and `single_utterance` is set to false, then no messages are streamed back to the client.

Here's an example of a series of ten `StreamingRecognizeResponses` that might be returned while processing audio:

1. results { alternatives { transcript: "tube" } stability: 0.01 }
2. results { alternatives { transcript: "to be a" } stability: 0.01 }
3. results { alternatives { transcript: "to be" } stability: 0.9 } results { alternatives { transcript: " or not to be" } stability: 0.01 }
4. results { alternatives { transcript: "to be or not to be" confidence: 0.92 } alternatives { transcript: "to bee or not to bee" } is_final: true }
5. results { alternatives { transcript: " that's" } stability: 0.01 }
6. results { alternatives { transcript: " that is" } stability: 0.9 } results { alternatives { transcript: " the question" } stability: 0.01 }
7. results { alternatives { transcript: " that is the question" confidence: 0.98 } alternatives { transcript: " that was the question" } is_final: true }

Notes:

- Only two of the above responses #4 and #7 contain final results; they are indicated by `is_final: true`. Concatenating these together generates the full transcript: "to be or not to be that is the question".
- The others contain interim results. #3 and #6 contain two interim results: the first portion has a high stability and is less likely to change; the second portion has a low stability and is very likely to change. A UI designer might choose to show only high stability results.
- The specific stability and confidence values shown above are only for illustrative purposes. Actual values may vary.
- In each response, only one of these fields will be set: `error`, `speech_event_type`, or one or more (repeated) `results`.

error

Output only. If set, returns a [google.rpc.Status][google.rpc.Status] message that specifies the error for the operation.

results

Output only. This repeated list contains zero or more results that correspond to consecutive portions of the audio currently being processed. It contains zero or one `is_final=true` result (the newly settled portion), followed by zero or more `is_final=false` results (the interim results).

speech_event_type

Output only. Indicates the type of speech event.

```
class google.cloud.speech_v1p1beta1.types.Timestamp
```

```
class google.cloud.speech_v1p1beta1.types.UninterpretedOption
```

class NamePart

```
class google.cloud.speech_v1p1beta1.types.WordInfo
```

Word-specific information for recognized words.

start_time

Output only. Time offset relative to the beginning of the audio, and corresponding to the start of the spoken word. This field is only set if `enable_word_time_offsets=true` and only in the top hypothesis. This is an experimental feature and the accuracy of the time offset can vary.

end_time

Output only. Time offset relative to the beginning of the audio, and corresponding to the end of the spoken word. This field is only set if `enable_word_time_offsets=true` and only in the top hypothesis. This is an experimental feature and the accuracy of the time offset can vary.

word

Output only. The word corresponding to this set of information.

confidence

Output only. The confidence estimate between 0.0 and 1.0. A higher number indicates an estimated greater likelihood that the recognized words are correct. This field is set only for the top alternative of a non-streaming result or, of a streaming result where `is_final=true`. This field is not guaranteed to be accurate and users should not rely on it to be always provided. The default of 0.0 is a sentinel value indicating `confidence` was not set.

speaker_tag

Output only. A distinct integer value is assigned for every speaker within the audio. This field specifies which one of those speakers was detected to have spoken this word. Value ranges from '1' to `diarization_speaker_count`. `speaker_tag` is set if `enable_speaker_diarization = 'true'` and only in the top alternative.

20.7 Changelog

For a list of all `google-cloud-speech` releases:

20.7.1 Changelog

PyPI History

0.35.0

Implementation Changes

- Re-generated the library to pick up new API features. (#5577)

Internal / Testing Changes

- Add Test runs for Python 3.7 and remove 3.4 (#5295)
- Avoid overwriting `'module'` of messages from shared modules. (#5364)
- Modify system tests to use prerelease versions of grpcio (#5304)

0.34.0

Implementation Changes

- Regenerate GAPIC to account for the removal of `GoogleDataCollectionConfig` and `google_data_collection_opt_in` (#5235)

0.33.0

New Features

- Add Audio Logging and Recognition Metadata. (#5123)

Internal / Testing Changes

- Fix bad trove classifier

0.32.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)

0.31.1

Bugfixes

- Fix speech helpers to properly pass retry and timeout args. (#4828, #4830)

0.31.0

This is the (hopefully) final release candidate before 1.0.

Breaking Changes

- The deprecated Speech layer (deprecated since 0.27.0) has been removed. If you are still using it, the [migration guide](#) is still available.
- The following changes are *technically* breaking but very unlikely to affect you directly:
 - `google.cloud.gapic.speech.v1` moved to `google.cloud.speech_v1.gapic`, in accordance with more recent clients.
 - `google.cloud.proto.speech.v1` moved to `google.cloud.speech_v1.proto`, in accordance with more recent clients.

Dependencies

- Removed dependency on `google-gax`.
- Added dependency on `google-api-core`, its replacement.

0.30.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Deferring to `google-api-core` for `grpcio` and `googleapis-common-protos` dependencies (#4096, #4098)

PyPI: <https://pypi.org/project/google-cloud-speech/0.30.0/>

21.1 Error Reporting Client

Client for interacting with the Stackdriver Error Reporting API

```
class google.cloud.error_reporting.client.Client (project=None, credentials=None,
                                                _http=None, service=None, version=None, _use_grpc=None)
```

Bases: *google.cloud.client.ClientWithProject*

Error Reporting client. Currently Error Reporting is done by creating a Logging client.

Parameters

- **project** (*str*) – the project which the client acts on behalf of. If not passed falls back to the default inferred from the environment.
- **credentials** (*oauth2client.client.OAuth2Credentials* or *NoneType*) – The OAuth2 Credentials to use for the connection owned by this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.
- **service** (*str*) – An identifier of the service, such as the name of the executable, job, or Google App Engine service name. This field is expected to have a low number of values that are relatively stable over time, as opposed to version, which can be changed whenever new code is deployed.
- **version** (*str*) – Represents the source code version that the developer provided, which could represent a version label or a Git SHA-1 hash, for example. If the developer did not provide a version, the value is set to default.

- **`_use_grpc`** (*bool*) – (Optional) Explicitly specifies whether to use the gRPC transport or HTTP. If unset, falls back to the `GOOGLE_CLOUD_DISABLE_GRPC` environment variable. This parameter should be considered private, and could change in the future.

Raises `ValueError` if the project is neither passed in nor set in the environment.

`SCOPE` = ('<https://www.googleapis.com/auth/cloud-platform>',)

The scopes required for authenticating as an API consumer.

`report` (*message*, *http_context=None*, *user=None*)

Reports a message to Stackdriver Error Reporting

<https://cloud.google.com/error-reporting/docs/formatting-error-messages>

Parameters

- **`message`** (*str*) – A user-supplied message to report
- **`http_context`** (*:class`google.cloud.error_reporting.HTTPContext`*) – The HTTP request which was processed when the error was triggered.
- **`user`** (*str*) – The user who caused or was affected by the crash. This can be a user ID, an email address, or an arbitrary token that uniquely identifies the user. When sending an error report, leave this field empty if the user was not logged in. In this case the Error Reporting system will use other data, such as remote IP address, to distinguish affected users.

Example:

```
>>> client.report("Something went wrong!")
```

`report_errors_api`

Helper for logging-related API calls.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/entries> or <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.logs>

Return type `_gapic._ErrorReportingGapicApi` or `_logging._ErrorReportingLoggingAPI`

Returns A class that implements the report errors API.

`report_exception` (*http_context=None*, *user=None*)

Reports the details of the latest exceptions to Stackdriver Error Reporting.

Parameters

- **`http_context`** (*:class`google.cloud.error_reporting.HTTPContext`*) – The HTTP request which was processed when the error was triggered.
- **`user`** (*str*) –

The user who caused or was affected by the crash. This can be a user ID, an email address, or an arbitrary token that uniquely identifies the user. When sending an error report, leave this field empty if the user was not logged in. In this case the Error Reporting system will use other data, such as remote IP address, to distinguish affected users.

Example:

```

>>>     try:
>>>         raise NameError
>>>     except Exception:
>>>         client.report_exception()

```

```

class google.cloud.error_reporting.client.HTTPContext (method=None, url=None,
                                                         user_agent=None,
                                                         referrer=None, re-
                                                         sponse_status_code=None,
                                                         remote_ip=None)

```

Bases: `object`

HTTPContext defines an object that captures the parameter for the `HttpRequest` part of Error Reporting API

Parameters

- **method** (*str*) – The type of HTTP request, such as GET, POST, etc.
- **url** (*str*) – The URL of the request
- **user_agent** (*str*) – The user agent information that is provided with the request.
- **referrer** (*str*) – The referrer information that is provided with the request.
- **response_status_code** (*int*) – The HTTP response status code for the request.
- **remote_ip** (*str*) – The IP address from which the request originated. This can be IPv4, IPv6, or a token which is derived from the IP address, depending on the data that has been provided in the error report.

21.2 Error Reporting Utilities

Utility functions for Stackdriver Error Reporting.

`google.cloud.error_reporting.util.build_flask_context(request)`

Builds an HTTP context object from a Flask (Werkzeug) request object.

This helper method extracts the relevant HTTP context from a Flask request object into an object ready to be sent to Error Reporting.

```

>>> @app.errorhandler(HTTPException)
... def handle_error(exc):
...     client.report_exception(
...         http_context=build_flask_context(request))
...     # rest of error response code here

```

Parameters **request** (`werkzeug.wrappers.request`) – The Flask request object to convert.

Return type `HTTPContext`

Returns An `HTTPContext` object ready to be sent to the Stackdriver Error Reporting API.

21.3 Installation

Install the `google-cloud-error-reporting` library using `pip`:

```
$ pip install google-cloud-error-reporting
```

21.4 Authentication and Configuration

- For an overview of authentication in `google-cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you should also set the `GOOGLE_CLOUD_PROJECT` environment variable for the project you'd like to interact with. If you are Google App Engine or Google Compute Engine this will be detected automatically.
- After configuring your environment, create a `Client`

```
>>> from google.cloud import error_reporting
>>> client = error_reporting.Client()
```

or pass in credentials and project explicitly

```
>>> from google.cloud import error_reporting
>>> client = error_reporting.Client(project='my-project', credentials=creds)
```

Error Reporting associates errors with a service, which is an identifier for an executable, App Engine service, or job. The default service is “python”, but a default can be specified for the client on construction time. You can also optionally specify a version for that service, which defaults to “default.”

```
>>> from google.cloud import error_reporting
>>> client = error_reporting.Client(project='my-project',
...                               service="login_service",
...                               version="0.1.0")
```

21.5 Reporting an exception

Report a stacktrace to Stackdriver Error Reporting after an exception

```
>>> from google.cloud import error_reporting
>>> client = error_reporting.Client()
>>> try:
>>>     raise NameError
>>> except Exception:
>>>     client.report_exception()
```

By default, the client will report the error using the service specified in the client's constructor, or the default service of “python”.

The user and HTTP context can also be included in the exception. The HTTP context can be constructed using `google.cloud.error_reporting.HTTPContext`. This will be used by Stackdriver Error Reporting to help group exceptions.

```
>>> from google.cloud import error_reporting
>>> client = error_reporting.Client()
>>> user = 'example@gmail.com'
>>> http_context = error_reporting.HTTPContext(
...     method='GET', url='/', user_agent='test agent',
```

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```
...     referrer='example.com', response_status_code=500,
...     remote_ip='1.2.3.4')
>>> try:
>>>     raise NameError
>>> except Exception:
>>>     client.report_exception(http_context=http_context, user=user)
```

An automatic helper to build the HTTP Context from a Flask (Werkzeug) request object is provided.

```
>>> from google.cloud.error_reporting import build_flask_context
>>> @app.errorhandler(HTTPException)
... def handle_error(exc):
...     client.report_exception(
...         http_context=build_flask_context(request))
...     # rest of error response code here
```

21.6 Reporting an error without an exception

Errors can also be reported to Stackdriver Error Reporting outside the context of an exception. The library will include the file path, function name, and line number of the location where the error was reported.

```
>>> from google.cloud import error_reporting
>>> client = error_reporting.Client()
>>> error_reporting.report("Found an error!")
```

Similarly to reporting an exception, the user and HTTP context can be provided:

```
>>> from google.cloud import error_reporting
>>> client = error_reporting.Client()
>>> user = 'example@gmail.com'
>>> http_context = error_reporting.HTTPContext(
...     method='GET', url='/', user_agent='test agent',
...     referrer='example.com', response_status_code=500,
...     remote_ip='1.2.3.4')
>>> error_reporting.report("Found an error!", http_context=http_context, user=user)
```

21.7 Changelog

For a list of all google-cloud-error-reporting releases:

21.7.1 Changelog

PyPI History

0.30.0

Implementation Changes

- Make dependency on logging less restrictive in error_reporting (#5345)

Internal / Testing Changes

- Modify system tests to use prerelease versions of grpcio (#5304)
- Add Test runs for Python 3.7 and remove 3.4 (#5295)
- Fix bad trove classifier

0.29.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)
- Fix missing extra in api-core dependency (#4764)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)

0.29.0

Breaking changes

- The underlying autogenerated client library was re-generated to pick up new features and resolve bugs, this may change the exceptions raised from various methods. (#4695)

0.28.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Upgrading to `google-cloud-logging >= 1.4.0` (#4296)

PyPI: <https://pypi.org/project/google-cloud-error-reporting/0.28.0/>

Python Client for Stackdriver Monitoring API (Alpha)

Stackdriver Monitoring API: Manages your Stackdriver Monitoring data and configurations. Most projects must be associated with a Stackdriver account, with a few exceptions as noted on the individual method pages.

- [Client Library Documentation](#)
- [Product Documentation](#)

22.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. [Select or create a Cloud Platform project.](#)
2. [Enable billing for your project.](#)
3. [Enable the Stackdriver Monitoring API.](#)
4. [Setup Authentication.](#)

22.1.1 Installation

Install this library in a [virtualenv](#) using `pip`. [virtualenv](#) is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With [virtualenv](#), it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-monitoring
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-monitoring
```

22.1.2 Preview

MetricServiceClient

```
from google.cloud import monitoring_v3

client = monitoring_v3.MetricServiceClient()

name = client.project_path('[PROJECT]')

# Iterate over all results
for element in client.list_monitored_resource_descriptors(name):
    # process element
    pass

# Or iterate over results one page at a time
for page in client.list_monitored_resource_descriptors(name, options=CallOptions(page_token=INITIAL_PAGE)):
    for element in page:
        # process element
        pass
```

22.1.3 Next Steps

- Read the [Client Library Documentation](#) for Stackdriver Monitoring API to see other available methods on the client.
- Read the [Stackdriver Monitoring API Product documentation](#) to learn more about the product and see How-to Guides.
- View this [repository's main README](#) to see the full list of Cloud APIs that we cover.

22.2 Api Reference

22.2.1 Time Series Query

Time series query for the [Google Stackdriver Monitoring API \(V3\)](#).

```
class google.cloud.monitoring_v3.query.Query(client, project, metric_type='compute.googleapis.com/instance/cpu/utilization',
                                             end_time=None, days=0, hours=0, minutes=0)
```

Bases: `object`

Query object for retrieving metric data.

Parameters

- **client** (`google.cloud.monitoring_v3.gapic.metric_service_client.MetricServiceClient`) – The client to use.
- **project** (`str`) – The project ID or number.
- **metric_type** (`str`) – The metric type name. The default value is `Query.DEFAULT_METRIC_TYPE`, but please note that this default value is provided only for demonstration purposes and is subject to change. See the [supported metrics](#).
- **end_time** (`datetime.datetime`) – (Optional) The end time (inclusive) of the time interval for which results should be returned, as a datetime object. The default is the start of the current minute.

The start time (exclusive) is determined by combining the values of `days`, `hours`, and `minutes`, and subtracting the resulting duration from the end time.

It is also allowed to omit the end time and duration here, in which case `select_interval()` must be called before the query is executed.

- **days** (`int`) – The number of days in the time interval.
- **hours** (`int`) – The number of hours in the time interval.
- **minutes** (`int`) – The number of minutes in the time interval.

Raises `ValueError` if `end_time` is specified but `days`, `hours`, and `minutes` are all zero. If you really want to specify a point in time, use `select_interval()`.

align (`per_series_aligner`, `seconds=0`, `minutes=0`, `hours=0`)

Copy the query and add temporal alignment.

If `per_series_aligner` is not `Aligner.ALIGN_NONE`, each time series will contain data points only on the period boundaries.

Example:

```
from google.cloud.monitoring import enums
query = query.align(
    enums.Aggregation.Aligner.ALIGN_MEAN, minutes=5)
```

It is also possible to specify the aligner as a literal string:

```
query = query.align('ALIGN_MEAN', minutes=5)
```

Parameters

- **per_series_aligner** (`str` or `Aligner`) – The approach to be used to align individual time series. For example: `Aligner.ALIGN_MEAN`. See `Aligner` and the descriptions of the [supported aligners](#).
- **seconds** (`int`) – The number of seconds in the alignment period.
- **minutes** (`int`) – The number of minutes in the alignment period.

- **hours** (*int*) – The number of hours in the alignment period.

Return type *Query*

Returns The new query object.

as_dataframe (*label=None, labels=None*)

Return all the selected time series as a *pandas* dataframe.

Note: Use of this method requires that you have *pandas* installed.

Examples:

```
# Generate a dataframe with a multi-level column header including
# the resource type and all available resource and metric labels.
# This can be useful for seeing what labels are available.
dataframe = query.as_dataframe()

# Generate a dataframe using a particular label for the column
# names.
dataframe = query.as_dataframe(label='instance_name')

# Generate a dataframe with a multi-level column header.
dataframe = query.as_dataframe(labels=['zone', 'instance_name'])

# Generate a dataframe with a multi-level column header, assuming
# the metric is issued by more than one type of resource.
dataframe = query.as_dataframe(
    labels=['resource_type', 'instance_id'])
```

Parameters

- **label** (*str*) – (Optional) The label name to use for the dataframe header. This can be the name of a resource label or metric label (e.g., "instance_name"), or the string "resource_type".
- **labels** (*list of strings, or None*) – A list or tuple of label names to use for the dataframe header. If more than one label name is provided, the resulting dataframe will have a multi-level column header. Providing values for both *label* and *labels* is an error.

Return type *pandas.DataFrame*

Returns A dataframe where each column represents one time series.

filter

The filter string.

This is constructed from the metric type, the resource type, and selectors for the group ID, monitored projects, resource labels, and metric labels.

iter (*headers_only=False, page_size=None*)

Yield all time series objects selected by the query.

The generator returned iterates over *TimeSeries* objects containing points ordered from oldest to newest.

Note that the *Query* object itself is an iterable, such that the following are equivalent:

```

for timeseries in query:
    ...

for timeseries in query.iter():
    ...

```

Parameters

- **headers_only** (*bool*) – Whether to omit the point data from the time series objects.
- **page_size** (*int*) – (Optional) Positive number specifying the maximum number of points to return per page. This can be used to control how far the iterator reads ahead.

Raises `ValueError` if the query time interval has not been specified.

metric_type

The metric type name.

reduce (*cross_series_reducer, *group_by_fields*)

Copy the query and add cross-series reduction.

Cross-series reduction combines time series by aggregating their data points.

For example, you could request an aggregated time series for each combination of project and zone as follows:

```

from google.cloud.monitoring import enums
query = query.reduce(enums.Aggregation.Reducer.REDUCE_MEAN,
                    'resource.project_id', 'resource.zone')

```

Parameters

- **cross_series_reducer** (*str* or *Reducer*) – The approach to be used to combine time series. For example: `Reducer.REDUCE_MEAN`. See `Reducer` and the descriptions of the [supported reducers](#).
- **group_by_fields** (*strs*) – Fields to be preserved by the reduction. For example, specifying just `"resource.zone"` will result in one time series per zone. The default is to aggregate all of the time series into just one.

Return type *Query*

Returns The new query object.

select_group (*group_id*)

Copy the query and add filtering by group.

Example:

```

query = query.select_group('1234567')

```

Parameters **group_id** (*str*) – The ID of a group to filter by.

Return type *Query*

Returns The new query object.

select_interval (*end_time*, *start_time=None*)

Copy the query and set the query time interval.

Example:

```
import datetime

now = datetime.datetime.utcnow()
query = query.select_interval(
    end_time=now,
    start_time=now - datetime.timedelta(minutes=5))
```

As a convenience, you can alternatively specify the end time and an interval duration when you create the query initially.

Parameters

- **end_time** (*datetime.datetime*) – The end time (inclusive) of the time interval for which results should be returned, as a datetime object.
- **start_time** (*datetime.datetime*) – (Optional) The start time (exclusive) of the time interval for which results should be returned, as a datetime object. If not specified, the interval is a point in time.

Return type *Query*

Returns The new query object.

select_metrics (**args*, ***kwargs*)

Copy the query and add filtering by metric labels.

Examples:

```
query = query.select_metrics(instance_name='myinstance')
query = query.select_metrics(instance_name_prefix='mycluster-')
```

A keyword argument `<label>=<value>` ordinarily generates a filter expression of the form:

```
metric.label.<label> = "<value>"
```

However, by adding `"_prefix"` or `"_suffix"` to the keyword, you can specify a partial match.

`<label>_prefix=<value>` generates:

```
metric.label.<label> = starts_with("<value>")
```

`<label>_suffix=<value>` generates:

```
metric.label.<label> = ends_with("<value>")
```

If the label's value type is INT64, a similar notation can be used to express inequalities:

`<label>_less=<value>` generates:

```
metric.label.<label> < <value>
```

`<label>_lessequal=<value>` generates:

```
metric.label.<label> <= <value>
```

`<label>_greater=<value>` generates:


```
metric.label.<label> > <value>
```

<label>_greaterorequal=<value> generates:

```
metric.label.<label> >= <value>
```

Parameters

- **args** (*tuple*) – Raw filter expression strings to include in the conjunction. If just one is provided and no keyword arguments are provided, it can be a disjunction.
- **kwargs** (*dict*) – Label filters to include in the conjunction as described above.

Return type *Query*

Returns The new query object.

select_projects (*args)

Copy the query and add filtering by monitored projects.

This is only useful if the target project represents a Stackdriver account containing the specified monitored projects.

Examples:

```
query = query.select_projects('project-1')
query = query.select_projects('project-1', 'project-2')
```

Parameters **args** (*tuple*) – Project IDs limiting the resources to be included in the query.

Return type *Query*

Returns The new query object.

select_resources (*args, **kwargs)

Copy the query and add filtering by resource labels.

Examples:

```
query = query.select_resources(zone='us-central1-a')
query = query.select_resources(zone_prefix='europe-')
query = query.select_resources(resource_type='gce_instance')
```

A keyword argument <label>=<value> ordinarily generates a filter expression of the form:

```
resource.label.<label> = "<value>"
```

However, by adding "_prefix" or "_suffix" to the keyword, you can specify a partial match.

<label>_prefix=<value> generates:

```
resource.label.<label> = starts_with("<value>")
```

<label>_suffix=<value> generates:

```
resource.label.<label> = ends_with("<value>")
```

As a special case, "resource_type" is treated as a special pseudo-label corresponding to the filter object `resource.type`. For example, `resource_type=<value>` generates:

```
resource.type = "<value>"
```

See the [defined resource types](#).

Note: The label "instance_name" is a metric label, not a resource label. You would filter on it using `select_metrics(instance_name=...)`.

Parameters

- **args** (*tuple*) – Raw filter expression strings to include in the conjunction. If just one is provided and no keyword arguments are provided, it can be a disjunction.
- **kwargs** (*dict*) – Label filters to include in the conjunction as described above.

Return type *Query*

Returns The new query object.

22.2.2 Client for Stackdriver Monitoring API

```
class google.cloud.monitoring_v3.AlertPolicyServiceClient (channel=None,
                                                            credentials=None,
                                                            client_config={'interfaces':
                                                                {'google.monitoring.v3.AlertPolicyService':
                                                                {'retry_codes': {'idempotent': ['DEAD-
                                                                LINE_EXCEEDED',
                                                                'UNAVAILABLE'],
                                                                'non_idempotent':
                                                                []}, 'retry_params':
                                                                {'default': {'initial_retry_delay_millis':
                                                                100,
                                                                'retry_delay_multiplier':
                                                                1.3,
                                                                'max_retry_delay_millis':
                                                                60000,
                                                                'initial_rpc_timeout_millis':
                                                                20000,
                                                                'rpc_timeout_multiplier':
                                                                1.0,
                                                                'max_rpc_timeout_millis':
                                                                20000,
                                                                'total_timeout_millis':
                                                                600000}}}, 'methods':
                                                                {'ListAlertPolicies': {'time-
                                                                out_millis': 60000,
                                                                'retry_codes_name':
                                                                'idempotent',
                                                                'retry_params_name':
                                                                'default'}, 'GetAlertPolicy': {'time-
                                                                out_millis': 60000,
                                                                'retry_codes_name':
                                                                'idempotent',
                                                                'retry_params_name':
                                                                'default'}, 'CreateAlertPolicy': {'time-
                                                                out_millis': 60000,
                                                                'retry_codes_name':
                                                                'non_idempotent',
                                                                'retry_params_name':
                                                                'default'}, 'DeleteAlertPolicy': {'time-
                                                                out_millis': 60000,
                                                                'retry_codes_name':
                                                                'idempotent',
                                                                'retry_params_name':
                                                                'default'}, 'UpdateAlertPolicy': {'time-
                                                                out_millis': 60000,
                                                                'retry_codes_name':
                                                                'non_idempotent',
                                                                'retry_params_name':
                                                                'default'}}}},
                                                            client_info=None)
```

An alerting policy is a description of the conditions under which some aspect of your system is considered to be “unhealthy” and the ways to notify people or services about this state. In addition to using this API, alert policies can also be managed through [Stackdriver Monitoring](#), which can be reached by clicking the “Monitoring” tab in [Cloud Console](#).

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you’re developing your own client library.

classmethod alert_policy_condition_path (*project, alert_policy, condition*)

Return a fully-qualified alert_policy_condition string.

classmethod alert_policy_path (*project, alert_policy*)

Return a fully-qualified alert_policy string.

create_alert_policy (*name, alert_policy, retry=<object object>, timeout=<object object>, metadata=None*)

Creates a new alerting policy.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.AlertPolicyServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # TODO: Initialize ``alert_policy``:
>>> alert_policy = {}
>>>
>>> response = client.create_alert_policy(name, alert_policy)
```

Parameters

- **name** (*str*) – The project in which to create the alerting policy. The format is `projects/[PROJECT_ID]`.

Note that this field names the parent container in which the alerting policy will be written, not the name of the created policy. The alerting policy that is returned will have a name that contains a normalized representation of this name as a prefix but adds a suffix of the form `/alertPolicies/[POLICY_ID]`, identifying the policy in the container.

- **alert_policy** (*Union[dict, AlertPolicy]*) – The requested alerting policy. You should omit the name field in this policy. The name will be returned in the new policy, including a new [ALERT_POLICY_ID] value. If a dict is provided, it must be of the same form as the protobuf message *AlertPolicy*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *AlertPolicy* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_alert_policy (*name, retry=<object object>, timeout=<object object>, metadata=None*)

Deletes an alerting policy.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.AlertPolicyServiceClient()
>>>
>>> name = client.alert_policy_path('[PROJECT]', '[ALERT_POLICY]')
>>>
>>> client.delete_alert_policy(name)
```

Parameters

- **name** (*str*) – The alerting policy to delete. The format is:
projects/[PROJECT_ID]/alertPolicies/[ALERT_POLICY_ID]
For more information, see *AlertPolicy*.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.monitoring_v3.gapic.enums' from '/home/docs/checkouts/re
```

```
get_alert_policy (name, retry=<object object>, timeout=<object object>, metadata=None)
```

Gets a single alerting policy.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.AlertPolicyServiceClient()
>>>
>>> name = client.alert_policy_path('[PROJECT]', '[ALERT_POLICY]')
>>>
>>> response = client.get_alert_policy(name)
```

Parameters

- **name** (*str*) – The alerting policy to retrieve. The format is `projects/[PROJECT_ID]/alertPolicies/[ALERT_POLICY_ID]`
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[`str`, `str`]]]) – Additional metadata that is provided to the method.

Returns A `AlertPolicy` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
list_alert_policies (name, filter_=None, order_by=None, page_size=None, retry=<object ob-
ject>, timeout=<object object>, metadata=None)
```

Lists the existing alerting policies for the project.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.AlertPolicyServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_alert_policies(name):
...     # process element
...     pass
>>>
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_alert_policies(name, options=CallOptions(page_
→token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **name** (*str*) – The project whose alert policies are to be listed. The format is `projects/[PROJECT_ID]`

Note that this field names the parent container in which the alerting policies to be listed are stored. To retrieve a single alerting policy by name, use the `GetAlertPolicy` operation, instead.
- **filter** (*str*) – If provided, this field specifies the criteria that must be met by alert policies to be included in the response.

For more details, see [\[sorting and filtering\]\(/monitoring/api/v3/sorting-and-filtering\)](#).
- **order_by** (*str*) – A comma-separated list of fields by which to sort the result. Supports the same set of field references as the `filter` field. Entries can be prefixed with a minus sign to sort by the field in descending order.

For more details, see [\[sorting and filtering\]\(/monitoring/api/v3/sorting-and-filtering\)](#).
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `AlertPolicy` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `project_path(project)`

Return a fully-qualified project string.

update_alert_policy(`alert_policy`, `update_mask=None`, `retry=<object object>`, `time-out=<object object>`, `metadata=None`)

Updates an alerting policy. You can either replace the entire policy with a new one or replace only certain fields in the current alerting policy by specifying the fields to be updated via `update_mask`. Returns the updated alerting policy.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.AlertPolicyServiceClient()
>>>
>>> # TODO: Initialize ``alert_policy``:
>>> alert_policy = {}
>>>
>>> response = client.update_alert_policy(alert_policy)
```

Parameters

- **alert_policy** (`Union[dict, AlertPolicy]`) – Required. The updated alerting policy or the updated values for the fields listed in `update_mask`. If `update_mask` is not empty, any fields in this policy that are not in `update_mask` are ignored. If a dict is provided, it must be of the same form as the protobuf message `AlertPolicy`
- **update_mask** (`Union[dict, FieldMask]`) – Optional. A list of alerting policy field names. If this field is not empty, each listed field in the existing alerting policy is set to the value of the corresponding field in the supplied policy (`alert_policy`), or to the field's default value if the field is not in the supplied alerting policy. Fields not listed retain their previous value.

Examples of valid field masks include `display_name`, `documentation`, `documentation.content`, `documentation.mime_type`, `user_labels`, `user_label.nameofkey`, `enabled`, `conditions`, `combiner`, etc.

If this field is empty, then the supplied alerting policy replaces the existing policy. It is the same as deleting the existing policy and adding the supplied policy, except for the following:

- The new policy will have the same `[ALERT_POLICY_ID]` as the former policy. This gives you continuity with the former policy in your notifications and incidents.
- Conditions in the new policy will keep their former `[CONDITION_ID]` if the supplied condition includes the *name* field with that `[CONDITION_ID]`. If the supplied condition omits the *name* field, then a new `[CONDITION_ID]` is created.

If a dict is provided, it must be of the same form as the protobuf message `FieldMask`

- **retry** (*Optional*`[google.api_core.retry.Retry]`) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*`[float]`) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*`[Sequence[Tuple[str, str]]]`) – Additional metadata that is provided to the method.

Returns A `AlertPolicy` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```

class google.cloud.monitoring_v3.GroupServiceClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.monitoring.v3.GroupService':
{'retry_codes': {'idempotent': ['DEADLINE_EXCEEDED', 'UNAVAILABLE'], 'non_idempotent': []},
'retry_params': {'default': {'initial_retry_delay_millis': 100,
'retry_delay_multiplier': 1.3,
'max_retry_delay_millis': 60000,
'initial_rpc_timeout_millis': 20000,
'rpc_timeout_multiplier': 1.0,
'max_rpc_timeout_millis': 20000,
'total_timeout_millis': 600000}},
'methods': {'ListGroup': {'timeout_millis': 60000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'GetGroup': {'timeout_millis': 60000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'CreateGroup': {'timeout_millis': 60000,
'retry_codes_name': 'non_idempotent',
'retry_params_name': 'default'},
'UpdateGroup': {'timeout_millis': 60000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'DeleteGroup': {'timeout_millis': 60000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'},
'ListGroupMembers': {'timeout_millis': 60000,
'retry_codes_name': 'idempotent',
'retry_params_name': 'default'}}}}, client_info=None)

```

The Group API lets you inspect and manage your [groups](#).

A group is a named filter that is used to identify a collection of monitored resources. Groups are typically used to mirror the physical and/or logical topology of the environment. Because group membership is computed dynamically, monitored resources that are started in the future are automatically placed in matching groups. By using a group to name monitored resources in, for example, an alert policy, the target of that alert policy is updated automatically as monitored resources are added and removed from the infrastructure.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A `Channel` instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

create_group (*name, group, validate_only=None, retry=<object object>, timeout=<object object>, metadata=None*)
Creates a new group.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.GroupServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # TODO: Initialize ``group``:
>>> group = {}
>>>
>>> response = client.create_group(name, group)
```

Parameters

- **name** (*str*) – The project in which to create the group. The format is "projects/{project_id_or_number}".
- **group** (*Union[dict, Group]*) – A group definition. It is an error to define the `name` field because the system assigns the name. If a dict is provided, it must be of the same form as the protobuf message `Group`.
- **validate_only** (*bool*) – If true, validate this request but do not create the group.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `Group` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_group (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Deletes an existing group.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.GroupServiceClient()
>>>
>>> name = client.group_path('[PROJECT]', '[GROUP]')
>>>
>>> client.delete_group(name)
```

Parameters

- **name** (*str*) – The group to delete. The format is "projects/{project_id_or_number}/groups/{group_id}".
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

enums = <module 'google.cloud.monitoring_v3.gapic.enums' from '/home/docs/checkouts/re

get_group (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets a single group.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.GroupServiceClient()
```

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```
>>>
>>> name = client.group_path('[PROJECT]', '[GROUP]')
>>>
>>> response = client.get_group(name)
```

Parameters

- **name** (*str*) – The group to retrieve. The format is "projects/{project_id_or_number}/groups/{group_id}".
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *Group* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod group_path (*project, group*)

Return a fully-qualified group string.

list_group_members (*name, page_size=None, filter_=None, interval=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists the monitored resources that are members of a group.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.GroupServiceClient()
>>>
>>> name = client.group_path('[PROJECT]', '[GROUP]')
>>>
>>> # Iterate over all results
>>> for element in client.list_group_members(name):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_group_members(name, options=CallOptions(page_
token=INITIAL_PAGE)):
```

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```
...     for element in page:
...         # process element
...         pass
```

Parameters

- **name** (*str*) – The group whose members are listed. The format is "projects/{project_id_or_number}/groups/{group_id}".
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **filter** (*str*) – An optional [list filter](#) describing the members to be returned. The filter may reference the type, labels, and metadata of monitored resources that comprise the group. For example, to return only resources representing Compute Engine VM instances, use this filter:

```
resource.type = "gce_instance"
```

- **interval** (*Union[dict, TimeInterval]*) – An optional time interval for which results should be returned. Only members that were part of the group during the specified interval are included in the response. If no interval is provided then the group membership over the last minute is returned. If a dict is provided, it must be of the same form as the protobuf message [TimeInterval](#).
- **retry** (*Optional[google.api_core.retry.Retry]*) – A [retry](#) object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A [PageIterator](#) instance. By default, this is an iterable of [MonitoredResource](#) instances. This object can also be configured to iterate over the pages of the response through the *options* parameter.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

```
list_groups(name, children_of_group=None, ancestors_of_group=None,
            descendants_of_group=None, page_size=None, retry=<object object>, timeout=<object
            object>, metadata=None)
```

Lists the existing groups.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.GroupServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_groups(name):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_groups(name, options=CallOptions(page_
→token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **name** (*str*) – The project whose groups are to be listed. The format is "projects/{project_id_or_number}".
- **children_of_group** (*str*) – A group name: "projects/{project_id_or_number}/groups/{group_id}". Returns groups whose parentName field contains the group name. If no groups have this parent, the results are empty.
- **ancestors_of_group** (*str*) – A group name: "projects/{project_id_or_number}/groups/{group_id}". Returns groups that are ancestors of the specified group. The groups are returned in order, starting with the immediate parent and ending with the most distant ancestor. If the specified group has no immediate parent, the results are empty.
- **descendants_of_group** (*str*) – A group name: "projects/{project_id_or_number}/groups/{group_id}". Returns the descendants of the specified group. This is a superset of the results returned by the childrenOfGroup filter, and includes children-of-children, and so forth.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `Group` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `project_path(project)`

Return a fully-qualified project string.

update_group(`group`, `validate_only=None`, `retry=<object object>`, `timeout=<object object>`, `metadata=None`)

Updates an existing group. You can change any group attributes except name.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.GroupServiceClient()
>>>
>>> # TODO: Initialize ``group``:
>>> group = {}
>>>
>>> response = client.update_group(group)
```

Parameters

- **group** (`Union[dict, Group]`) – The new definition of the group. All fields of the existing group, excepting name, are replaced with the corresponding fields of this group. If a dict is provided, it must be of the same form as the protobuf message `Group`
- **validate_only** (`bool`) – If true, validate this request but do not update the existing group.
- **retry** (`Optional[google.api_core.retry.Retry]`) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (`Optional[float]`) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (`Optional[Sequence[Tuple[str, str]]]`) – Additional metadata that is provided to the method.

Returns A `Group` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```

class google.cloud.monitoring_v3.MetricServiceClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.monitoring.v3.MetricService':
{'retry_codes': {'idempotent':
['DEADLINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent': []},
'retry_params': {'default':
{'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
20000,
'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
20000, 'total_timeout_millis':
600000}}, 'methods': {'ListMonitoredResourceDescri-
tors': {'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'GetMonitore-
dResourceDescriptor':
{'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'ListMetricDescri-
tors': {'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'GetMetricDescri-
tor': {'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'CreateMetricDe-
scriptor': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'de-
fault'}, 'DeleteMetricDescri-
tor': {'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'ListTimeSeries':
{'timeout_millis': 60000,
'retry_codes_name': 'idempo-
tent', 'retry_params_name':
'default'}, 'CreateTime-
Series': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'de-
fault'}}}}, client_info=None)

```

Manages metric descriptors, monitored resource descriptors, and time series data.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A `Channel` instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

create_metric_descriptor (*name, metric_descriptor, retry=<object object>, timeout=<object object>, metadata=None*)

Creates a new metric descriptor. User-created metric descriptors define [custom metrics](#).

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # TODO: Initialize ``metric_descriptor``:
>>> metric_descriptor = {}
>>>
>>> response = client.create_metric_descriptor(name, metric_descriptor)
```

Parameters

- **name** (*str*) – The project on which to execute the request. The format is "projects/{project_id_or_number}".
- **metric_descriptor** (*Union[dict, MetricDescriptor]*) – The new [custom metric](#) descriptor. If a dict is provided, it must be of the same form as the protobuf message `MetricDescriptor`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `MetricDescriptor` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

create_time_series (*name*, *time_series*, *retry*=<object object>, *timeout*=<object object>, *meta-data*=None)

Creates or adds data to one or more time series. The response is empty if all time series in the request were written. If any time series could not be written, a corresponding failure message is included in the error response.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # TODO: Initialize ``time_series``:
>>> time_series = []
>>>
>>> client.create_time_series(name, time_series)
```

Parameters

- **name** (*str*) – The project on which to execute the request. The format is "projects/{project_id_or_number}".
- **time_series** (*list[Union[dict, TimeSeries]]*) – The new data to be added to a list of time series. Adds at most one data point to each of several time series. The new data point must be more recent than any other point in its time series. Each `TimeSeries` value must fully specify a unique time series by supplying all label values for the metric and the monitored resource. If a dict is provided, it must be of the same form as the protobuf message `TimeSeries`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.

- `ValueError` – If the parameters are invalid.

delete_metric_descriptor (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Deletes a metric descriptor. Only user-created `custom metrics` can be deleted.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.metric_descriptor_path('[PROJECT]', '[METRIC_DESCRIPTOR]')
>>>
>>> client.delete_metric_descriptor(name)
```

Parameters

- **name** (*str*) – The metric descriptor on which to execute the request. The format is "projects/{project_id_or_number}/metricDescriptors/{metric_id}". An example of {metric_id} is: "custom.googleapis.com/my_test_metric".
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[*str*, *str*]]]) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

enums = <module 'google.cloud.monitoring_v3.gapic.enums' from '/home/docs/checkouts/re

get_metric_descriptor (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets a single metric descriptor. This method does not require a Stackdriver account.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.metric_descriptor_path('[PROJECT]', '[METRIC_DESCRIPTOR]')
```

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```
>>>
>>> response = client.get_metric_descriptor(name)
```

Parameters

- **name** (*str*) – The metric descriptor on which to execute the request. The format is "projects/{project_id_or_number}/metricDescriptors/{metric_id}". An example value of {metric_id} is "compute.googleapis.com/instance/disk/read_bytes_count".
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *MetricDescriptor* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_monitored_resource_descriptor (*name, retry=<object object>, timeout=<object object>, metadata=None*)

Gets a single monitored resource descriptor. This method does not require a Stackdriver account.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.monitored_resource_descriptor_path('[PROJECT]',
↳ '[MONITORED_RESOURCE_DESCRIPTOR]')
>>>
>>> response = client.get_monitored_resource_descriptor(name)
```

Parameters

- **name** (*str*) – The monitored resource descriptor to get. The format is "projects/{project_id_or_number}/monitoredResourceDescriptors/{resource_type}". The {resource_type} is a predefined type, such as `cloudsql_database`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *MonitoredResourceDescriptor* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_metric_descriptors (*name, filter_=None, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists metric descriptors that match a filter. This method does not require a Stackdriver account.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_metric_descriptors(name):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_metric_descriptors(name,
...     options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **name** (*str*) – The project on which to execute the request. The format is "projects/{project_id_or_number}".
- **filter** (*str*) – If this field is empty, all custom and system-defined metric descriptors are returned. Otherwise, the `filter` specifies which metric descriptors are to be returned. For example, the following filter matches all `custom metrics`:

```
metric.type = starts_with("custom.googleapis.com/")
```


- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `MetricDescriptor` instances. This object can also be configured to iterate over the pages of the response through the *options* parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_monitored_resource_descriptors (*name*, *filter_=None*, *page_size=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Lists monitored resource descriptors that match a filter. This method does not require a Stackdriver account.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_monitored_resource_descriptors(name):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_monitored_resource_descriptors(name,
↳ options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **name** (*str*) – The project on which to execute the request. The format is "projects/{project_id_or_number}".
- **filter** (*str*) – An optional [filter](#) describing the descriptors to be returned. The filter can reference the descriptor's type and labels. For example, the following filter returns only Google Compute Engine descriptors that have an `id` label:

```
resource.type = starts_with("gce_") AND resource.label:id
```

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A [retry](#) object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A [PageIterator](#) instance. By default, this is an iterable of [MonitoredResourceDescriptor](#) instances. This object can also be configured to iterate over the pages of the response through the *options* parameter.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

```
list_time_series(name, filter_, interval, view, aggregation=None, order_by=None,
                 page_size=None, retry=<object object>, timeout=<object object>, meta-
                 data=None)
```

Lists time series that match a filter. This method does not require a Stackdriver account.

Example

```
>>> from google.cloud import monitoring_v3
>>> from google.cloud.monitoring_v3 import enums
>>>
>>> client = monitoring_v3.MetricServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # TODO: Initialize ``filter_``:
>>> filter_ = ''
>>>
>>> # TODO: Initialize ``interval``:
```

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```

>>> interval = {}
>>>
>>> # TODO: Initialize ``view``:
>>> view = enums.ListTimeSeriesRequest.TimeSeriesView.FULL
>>>
>>> # Iterate over all results
>>> for element in client.list_time_series(name, filter_, interval, view):
...     # process element
...     pass
>>>
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_time_series(name, filter_, interval, view,
→options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **name** (*str*) – The project on which to execute the request. The format is “projects/{project_id_or_number}”.
- **filter** (*str*) – A [monitoring filter](#) that specifies which time series should be returned. The filter must specify a single metric type, and can additionally specify metric labels and other information. For example:

```

metric.type = "compute.googleapis.com/instance/cpu/usage_time
→" AND
metric.label.instance_name = "my-instance-name"

```

- **interval** (*Union[dict, TimeInterval]*) – The time interval for which results should be returned. Only time series that contain data points in the specified interval are included in the response. If a dict is provided, it must be of the same form as the protobuf message [TimeInterval](#)
- **view** (*TimeSeriesView*) – Specifies which information is returned about the time series.
- **aggregation** (*Union[dict, Aggregation]*) – By default, the raw time series data is returned. Use this field to combine multiple time series for different views of the data. If a dict is provided, it must be of the same form as the protobuf message [Aggregation](#)
- **order_by** (*str*) – Specifies the order in which the points of the time series should be returned. By default, results are not ordered. Currently, this field must be left blank.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A [retry object](#) used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `TimeSeries` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod **metric_descriptor_path** (*project, metric_descriptor*)

Return a fully-qualified `metric_descriptor` string.

classmethod **monitored_resource_descriptor_path** (*project, monitored_resource_descriptor*)

Return a fully-qualified `monitored_resource_descriptor` string.

classmethod **project_path** (*project*)

Return a fully-qualified `project` string.

The Notification Channel API provides access to configuration that controls how messages related to incidents are sent.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

create_notification_channel (*name, notification_channel, retry=<object object>, timeout=<object object>, metadata=None*)

Creates a new notification channel, representing a single notification endpoint such as an email address, SMS number, or pagerduty service.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.NotificationChannelServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # TODO: Initialize ``notification_channel``:
>>> notification_channel = {}
>>>
>>> response = client.create_notification_channel(name, notification_channel)
```

Parameters

- **name** (*str*) – The project on which to execute the request. The format is:

```
projects/[PROJECT_ID]
```

Note that this names the container into which the channel will be written. This does not name the newly created channel. The resulting channel's name will have a normalized version of this field as a prefix, but will add `/notificationChannels/[CHANNEL_ID]` to identify the channel.

- **notification_channel** (*Union[dict, NotificationChannel]*) – The definition of the NotificationChannel to create. If a dict is provided, it must be of the same form as the protobuf message *NotificationChannel*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *NotificationChannel* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_notification_channel (*name, force=None, retry=<object object>, timeout=<object object>, metadata=None*)

Deletes a notification channel.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.NotificationChannelServiceClient()
>>>
>>> name = client.notification_channel_path('[PROJECT]', '[NOTIFICATION_
↳CHANNEL]')
>>>
>>> client.delete_notification_channel(name)
```

Parameters

- **name** (*str*) – The channel for which to execute the request. The format is `projects/[PROJECT_ID]/notificationChannels/[CHANNEL_ID]`.
- **force** (*bool*) – If true, the notification channel will be deleted regardless of its use in alert policies (the policies will be updated to remove the channel). If false, channels that are still referenced by an existing alerting policy will fail to be deleted in a delete operation.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.

- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

`enums = <module 'google.cloud.monitoring_v3.gapic.enums' from '/home/docs/checkouts/re`

`get_notification_channel(name, retry=<object object>, timeout=<object object>, meta-`
`data=None)`

Gets a single notification channel. The channel includes the relevant configuration details with which the channel was created. However, the response may truncate or omit passwords, API keys, or other private key matter and thus the response may not be 100% identical to the information that was supplied in the call to the create method.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.NotificationChannelServiceClient()
>>>
>>> name = client.notification_channel_path('[PROJECT]', '[NOTIFICATION_
↳CHANNEL]')
>>>
>>> response = client.get_notification_channel(name)
```

Parameters

- **name** (*str*) – The channel for which to execute the request. The format is `projects/[PROJECT_ID]/notificationChannels/[CHANNEL_ID]`.
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[`str`, `str`]]]) – Additional metadata that is provided to the method.

Returns A `NotificationChannel` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

`get_notification_channel_descriptor(name, retry=<object object>, timeout=<object`
`object>, metadata=None)`

Gets a single channel descriptor. The descriptor indicates which fields are expected / permitted for a notification channel of the given type.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.NotificationChannelServiceClient()
>>>
>>> name = client.notification_channel_descriptor_path('[PROJECT]',
→ '[CHANNEL_DESCRIPTOR]')
>>>
>>> response = client.get_notification_channel_descriptor(name)
```

Parameters

- **name** (*str*) – The channel type for which to execute the request. The format is `projects/[PROJECT_ID]/notificationChannelDescriptors/{channel_type}`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *NotificationChannelDescriptor* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_notification_channel_descriptors (*name, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists the descriptors for supported channel types. The use of descriptors makes it possible for new channel types to be dynamically added.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.NotificationChannelServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_notification_channel_descriptors(name):
...     # process element
...     pass
>>>
```

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```

>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_notification_channel_descriptors(name,
↳options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **name** (*str*) – The REST resource name of the parent from which to retrieve the notification channel descriptors. The expected syntax is:

```
projects/[PROJECT_ID]
```

Note that this names the parent container in which to look for the descriptors; to retrieve a single descriptor by name, use the `GetNotificationChannelDescriptor` operation, instead.

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `NotificationChannelDescriptor` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
list_notification_channels(name, filter_=None, order_by=None, page_size=None,
                           retry=<object object>, timeout=<object object>, meta-
                           data=None)
```

Lists the notification channels that have been created for the project.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.NotificationChannelServiceClient()
>>>
>>> name = client.project_path('[PROJECT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_notification_channels(name):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_notification_channels(name,
→options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **name** (*str*) – The project on which to execute the request. The format is `projects/[PROJECT_ID]`. That is, this names the container in which to look for the notification channels; it does not name a specific channel. To query a specific channel by REST resource name, use the `GetNotificationChannel` operation.

- **filter** (*str*) – If provided, this field specifies the criteria that must be met by notification channels to be included in the response.

For more details, see [\[sorting and filtering\]\(/monitoring/api/v3/sorting-and-filtering\)](#).

- **order_by** (*str*) – A comma-separated list of fields by which to sort the result. Supports the same set of fields as in `filter`. Entries can be prefixed with a minus sign to sort in descending rather than ascending order.

For more details, see [\[sorting and filtering\]\(/monitoring/api/v3/sorting-and-filtering\)](#).

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `NotificationChannel` instances. This object can also be configured to iterate

over the pages of the response through the *options* parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `notification_channel_descriptor_path` (*project*, *channel_descriptor*)
Return a fully-qualified `notification_channel_descriptor` string.

classmethod `notification_channel_path` (*project*, *notification_channel*)
Return a fully-qualified `notification_channel` string.

classmethod `project_path` (*project*)
Return a fully-qualified `project` string.

update_notification_channel (*notification_channel*, *update_mask=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)
Updates a notification channel. Fields not specified in the field mask remain unchanged.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.NotificationChannelServiceClient()
>>>
>>> # TODO: Initialize ``notification_channel``:
>>> notification_channel = {}
>>>
>>> response = client.update_notification_channel(notification_channel)
```

Parameters

- **notification_channel** (`Union[dict, NotificationChannel]`) – A description of the changes to be applied to the specified notification channel. The description must provide a definition for fields to be updated; the names of these fields should also be included in the `update_mask`. If a dict is provided, it must be of the same form as the protobuf message `NotificationChannel`
- **update_mask** (`Union[dict, FieldMask]`) – The fields to update. If a dict is provided, it must be of the same form as the protobuf message `FieldMask`
- **retry** (`Optional[google.api_core.retry.Retry]`) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (`Optional[float]`) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (`Optional[Sequence[Tuple[str, str]]]`) – Additional metadata that is provided to the method.

Returns A `NotificationChannel` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
class google.cloud.monitoring_v3.UptimeCheckServiceClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.monitoring.v3.UptimeCheckService':
{'retry_codes': {'idempotent': ['DEADLINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent':
[]},
'retry_params':
{'default': {'initial_retry_delay_millis':
100,
'retry_delay_multiplier':
1.3,
'max_retry_delay_millis':
60000,
'initial_rpc_timeout_millis':
20000,
'rpc_timeout_multiplier':
1.0,
'max_rpc_timeout_millis':
20000,
'total_timeout_millis':
600000}}},
'methods':
{'ListUptimeCheckConfigs': {'timeout_millis': 60000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'GetUptimeCheckConfig': {'timeout_millis': 60000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
>CreateUptimeCheckConfig': {'timeout_millis': 60000,
'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'},
'UpdateUptimeCheckConfig': {'timeout_millis': 60000,
'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'},
'DeleteUptimeCheckConfig': {'timeout_millis': 60000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'}},
'ListUpti-
```

The UptimeCheckService API is used to manage (list, create, delete, edit) uptime check configurations in the Stackdriver Monitoring product. An uptime check is a piece of configuration that determines which resources and services to monitor for availability. These configurations can also be configured interactively by navigating to the [Cloud Console] (<http://console.cloud.google.com>), selecting the appropriate project, clicking on “Monitoring” on the left-hand side to navigate to Stackdriver, and then clicking on “Uptime”.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you’re developing your own client library.

create_uptime_check_config (*parent, uptime_check_config, retry=<object object>, timeout=<object object>, metadata=None*)

Creates a new uptime check configuration.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.UptimeCheckServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
>>>
>>> # TODO: Initialize ``uptime_check_config``:
>>> uptime_check_config = {}
>>>
>>> response = client.create_uptime_check_config(parent, uptime_check_config)
```

Parameters

- **parent** (*str*) – The project in which to create the uptime check. The format is: `projects/[PROJECT_ID]`.
- **uptime_check_config** (*Union[dict, UptimeCheckConfig]*) – The new uptime check configuration. If a dict is provided, it must be of the same form as the protobuf message *UptimeCheckConfig*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *UptimeCheckConfig* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_uptime_check_config (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Deletes an uptime check configuration. Note that this method will fail if the uptime check configuration is referenced by an alert policy or other dependent configs that would be rendered invalid by the deletion.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.UptimeCheckServiceClient()
>>>
>>> name = client.uptime_check_config_path('[PROJECT]', '[UPTIME_CHECK_
↳CONFIG]')
>>>
>>> client.delete_uptime_check_config(name)
```

Parameters

- **name** (*str*) – The uptime check configuration to delete. The format is `projects/[PROJECT_ID]/uptimeCheckConfigs/[UPTIME_CHECK_ID]`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.


```
enums = <module 'google.cloud.monitoring_v3.gapic.enums' from '/home/docs/checkouts/re
get_uptime_check_config(name, retry=<object object>, timeout=<object object>, meta-
                        data=None)
Gets a single uptime check configuration.
```

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.UptimeCheckServiceClient()
>>>
>>> name = client.uptime_check_config_path('[PROJECT]', '[UPTIME_CHECK_
↳CONFIG]')
>>>
>>> response = client.get_uptime_check_config(name)
```

Parameters

- **name** (*str*) – The uptime check configuration to retrieve. The format is `projects/[PROJECT_ID]/uptimeCheckConfigs/[UPTIME_CHECK_ID]`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *UptimeCheckConfig* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

```
list_uptime_check_configs(parent, page_size=None, retry=<object object>, time-
                        out=<object object>, metadata=None)
Lists the existing valid uptime check configurations for the project, leaving out any invalid configurations.
```

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.UptimeCheckServiceClient()
>>>
>>> parent = client.project_path('[PROJECT]')
```

(continues on next page)

(continued from previous page)

```

>>>
>>> # Iterate over all results
>>> for element in client.list_uptime_check_configs(parent):
...     # process element
...     pass
>>>
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_uptime_check_configs(parent,
↳ options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **parent** (*str*) – The project whose uptime check configurations are listed. The format is
projects/[PROJECT_ID].
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `UptimeCheckConfig` instances. This object can also be configured to iterate over the pages of the response through the *options* parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_uptime_check_ips (*page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Returns the list of IPs that checkers run from

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.UptimeCheckServiceClient()
>>>
>>> # Iterate over all results
>>> for element in client.list_uptime_check_ips():
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_uptime_check_ips(options=CallOptions(page_
→token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `UptimeCheckIp` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `project_path(project)`

Return a fully-qualified project string.

update_uptime_check_config (`uptime_check_config`, `update_mask=None`, `retry=<object object>`, `timeout=<object object>`, `metadata=None`)

Updates an uptime check configuration. You can either replace the entire configuration with a new

one or replace only certain fields in the current configuration by specifying the fields to be updated via "updateMask". Returns the updated configuration.

Example

```
>>> from google.cloud import monitoring_v3
>>>
>>> client = monitoring_v3.UptimeCheckServiceClient()
>>>
>>> # TODO: Initialize ``uptime_check_config``:
>>> uptime_check_config = {}
>>>
>>> response = client.update_uptime_check_config(uptime_check_config)
```

Parameters

- **uptime_check_config** (*Union[dict, UptimeCheckConfig]*) – Required. If an "updateMask" has been specified, this field gives the values for the set of fields mentioned in the "updateMask". If an "updateMask" has not been given, this uptime check configuration replaces the current configuration. If a field is mentioned in "updateMask" but the corresponding field is omitted in this partial uptime check configuration, it has the effect of deleting/clearing the field from the configuration on the server. If a dict is provided, it must be of the same form as the protobuf message *UptimeCheckConfig*
- **update_mask** (*Union[dict, FieldMask]*) – Optional. If present, only the listed fields in the current uptime check configuration are updated with values from the new configuration. If this field is empty, then the current configuration is completely replaced with the new configuration. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *UptimeCheckConfig* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod **uptime_check_config_path** (*project, uptime_check_config*)

Return a fully-qualified uptime_check_config string.

22.2.3 Types for Stackdriver Monitoring API Client

class google.cloud.monitoring_v3.types.Aggregation

Describes how to combine multiple time series to provide different views of the data. Aggregation consists of an alignment step on individual time series (`alignment_period` and `per_series_aligner`) followed by an optional reduction step of the data across the aligned time series (`cross_series_reducer` and `group_by_fields`). For more details, see [Aggregation](#).

alignment_period

The alignment period for per-[time series][google.monitoring.v3.TimeSeries] alignment. If present, `alignmentPeriod` must be at least 60 seconds. After per-time series alignment, each time series will contain data points only on the period boundaries. If `perSeriesAligner` is not specified or equals `ALIGN_NONE`, then this field is ignored. If `perSeriesAligner` is specified and does not equal `ALIGN_NONE`, then this field must be defined; otherwise an error is returned.

per_series_aligner

The approach to be used to align individual time series. Not all alignment functions may be applied to all time series, depending on the metric type and value type of the original time series. Alignment may change the metric type or the value type of the time series. Time series data must be aligned in order to perform cross-time series reduction. If `crossSeriesReducer` is specified, then `perSeriesAligner` must be specified and not equal `ALIGN_NONE` and `alignmentPeriod` must be specified; otherwise, an error is returned.

cross_series_reducer

The approach to be used to combine time series. Not all reducer functions may be applied to all time series, depending on the metric type and the value type of the original time series. Reduction may change the metric type or value type of the time series. Time series data must be aligned in order to perform cross-time series reduction. If `crossSeriesReducer` is specified, then `perSeriesAligner` must be specified and not equal `ALIGN_NONE` and `alignmentPeriod` must be specified; otherwise, an error is returned.

group_by_fields

The set of fields to preserve when `crossSeriesReducer` is specified. The `groupByFields` determine how the time series are partitioned into subsets prior to applying the aggregation function. Each subset contains time series that have the same value for each of the grouping fields. Each individual time series is a member of exactly one subset. The `crossSeriesReducer` is applied to each subset of time series. It is not possible to reduce across different resource types, so this field implicitly contains `resource.type`. Fields not specified in `groupByFields` are aggregated away. If `groupByFields` is not specified and all the time series have the same resource type, then the time series are aggregated into a single output time series. If `crossSeriesReducer` is not defined, this field is ignored.

class google.cloud.monitoring_v3.types.AlertPolicy

A description of the conditions under which some aspect of your system is considered to be “unhealthy” and the ways to notify people or services about this state. For an overview of alert policies, see [Introduction to Alerting](#).

name

Required if the policy exists. The resource name for this policy. The syntax is: `:: projects/[PROJECT_ID]/alertPolicies/[ALERT_POLICY_ID]` `[ALERT_POLICY_ID]` is assigned by Stackdriver Monitoring when the policy is created. When calling the `[alertPolicies.create][google.monitoring.v3.AlertPolicyService.CreateAlertPolicy]` method, do not include the `name` field in the alerting policy passed as part of the request.

display_name

A short name or phrase used to identify the policy in dashboards, notifications, and incidents. To avoid confusion, don't use the same display name for multiple policies in the same project. The name is limited to 512 Unicode characters.

documentation

Documentation that is included with notifications and incidents related to this policy. Best practice is for the documentation to include information to help responders understand, mitigate, escalate, and correct the underlying problems detected by the alerting policy. Notification channels that have limited capacity might not show this documentation.

user_labels

User-supplied key/value data to be used for organizing and identifying the `AlertPolicy` objects. The field can contain up to 64 entries. Each key and value is limited to 63 Unicode characters or 128 bytes, whichever is smaller. Labels and values can contain only lowercase letters, numerals, underscores, and dashes. Keys must begin with a letter.

conditions

A list of conditions for the policy. The conditions are combined by AND or OR according to the `combiner` field. If the combined conditions evaluate to true, then an incident is created. A policy can have from one to six conditions.

combiner

How to combine the results of multiple conditions to determine if an incident should be opened.

enabled

Whether or not the policy is enabled. On write, the default interpretation if unset is that the policy is enabled. On read, clients should not make any assumption about the state if it has not been populated. The field should always be populated on List and Get operations, unless a field projection has been specified that strips it out.

notification_channels

Identifies the notification channels to which notifications should be sent when incidents are opened or closed or when new violations occur on an already opened incident. Each element of this array corresponds to the `name` field in each of the `[NotificationChannel][google.monitoring.v3.NotificationChannel]` objects that are returned from the `[ListNotificationChannels][google.monitoring.v3.NotificationChannelService.ListNotificationChannels]` method. The syntax of the entries in this field is: `:: projects/[PROJECT_ID]/notificationChannels/[CHANNEL_ID]`

creation_record

A read-only record of the creation of the alerting policy. If provided in a call to create or update, this field will be ignored.

mutation_record

A read-only record of the most recent change to the alerting policy. If provided in a call to create or update, this field will be ignored.

class Condition

A condition is a true/false test that determines when an alerting policy should open an incident. If a condition evaluates to true, it signifies that something is wrong.

name

Required if the condition exists. The unique resource name for this condition. Its syntax is: `:: projects/[PROJECT_ID]/alertPolicies/[POLICY_ID]/conditions/[CONDITION_ID]` `[CONDITION_ID]` is assigned by Stackdriver Monitoring when the condition is created as part of a new or updated alerting policy. When calling the `[alertPolicies.create][google.monitoring.v3.AlertPolicyService.CreateAlertPolicy]` method, do not include the `name` field in the conditions of the requested alerting policy. Stackdriver Monitoring creates the condition identifiers and includes them in the new policy. When calling the `[alertPolicies.update][google.monitoring.v3.AlertPolicyService.UpdateAlertPolicy]` method to update a policy, including a condition `name` causes the existing condition to be updated. Conditions without names are added to the updated policy. Existing conditions are deleted if they are not updated. Best

practice is to preserve `[CONDITION_ID]` if you make only small changes, such as those to condition thresholds, durations, or trigger values. Otherwise, treat the change as a new condition and let the existing condition be deleted.

display_name

A short name or phrase used to identify the condition in dashboards, notifications, and incidents. To avoid confusion, don't use the same display name for multiple conditions in the same policy.

condition

Only one of the following condition types will be specified.

condition_threshold

A condition that compares a time series against a threshold.

condition_absent

A condition that checks that a time series continues to receive new data points.

class MetricAbsence

A condition type that checks that monitored resources are reporting data. The configuration defines a metric and a set of monitored resources. The predicate is considered in violation when a time series for the specified metric of a monitored resource does not include any data in the specified duration.

filter

A [filter](#) that identifies which time series should be compared with the threshold. The filter is similar to the one that is specified in the `MonitoringService.ListTimeSeries` request `</monitoring/api/ref_v3/rest/v3/projects.timeSeries/list>'` (that call is useful to verify the time series that will be retrieved / processed) and must specify the metric type and optionally may contain restrictions on resource type, resource labels, and metric labels. This field may not exceed 2048 Unicode characters in length.

aggregations

Specifies the alignment of data points in individual time series as well as how to combine the retrieved time series together (such as when aggregating multiple streams on each resource to a single stream for each resource or when aggregating streams across all members of a group of resources). Multiple aggregations are applied in the order specified. This field is similar to the one in the `MonitoringService.ListTimeSeries` request `</monitoring/api/ref_v3/rest/v3/projects.timeSeries/list>'`. It is advisable to use the `ListTimeSeries` method when debugging this field.

duration

The amount of time that a time series must fail to report new data to be considered failing. Currently, only values that are a multiple of a minute—e.g. 60, 120, or 300 seconds—are supported. If an invalid value is given, an error will be returned. The `Duration.nanos` field is ignored.

trigger

The number/percent of time series for which the comparison must hold in order for the condition to trigger. If unspecified, then the condition will trigger if the comparison is true for any of the time series that have been identified by `filter` and `aggregations`.

class MetricThreshold

A condition type that compares a collection of time series against a threshold.

filter

A [filter](#) that identifies which time series should be compared with the threshold. The filter is similar to the one that is specified in the `MonitoringService.ListTimeSeries` request `</monitoring/api/ref_v3/rest/v3/projects.timeSeries/list>'` (that call is useful to verify the time series that will be retrieved / processed) and must specify the metric type and optionally may contain

restrictions on resource type, resource labels, and metric labels. This field may not exceed 2048 Unicode characters in length.

aggregations

Specifies the alignment of data points in individual time series as well as how to combine the retrieved time series together (such as when aggregating multiple streams on each resource to a single stream for each resource or when aggregating streams across all members of a group of resources). Multiple aggregations are applied in the order specified. This field is similar to the one in the `MetricService.ListTimeSeries` request `</monitoring/api/ref_v3/rest/v3/projects.timeSeries/list>'`. It is advisable to use the `ListTimeSeries` method when debugging this field.

denominator_filter

A `filter` that identifies a time series that should be used as the denominator of a ratio that will be compared with the threshold. If a `denominator_filter` is specified, the time series specified by the `filter` field will be used as the numerator. The filter is similar to the one that is specified in the `MetricService.ListTimeSeries` request `</monitoring/api/ref_v3/rest/v3/projects.timeSeries/list>'` (that call is useful to verify the time series that will be retrieved / processed) and must specify the metric type and optionally may contain restrictions on resource type, resource labels, and metric labels. This field may not exceed 2048 Unicode characters in length.

denominator_aggregations

Specifies the alignment of data points in individual time series selected by `denominatorFilter` as well as how to combine the retrieved time series together (such as when aggregating multiple streams on each resource to a single stream for each resource or when aggregating streams across all members of a group of resources). When computing ratios, the `aggregations` and `denominator_aggregations` fields must use the same alignment period and produce time series that have the same periodicity and labels. This field is similar to the one in the `MetricService.ListTimeSeries` request `</monitoring/api/ref_v3/rest/v3/projects.timeSeries/list>'`. It is advisable to use the `ListTimeSeries` method when debugging this field.

comparison

The comparison to apply between the time series (indicated by `filter` and `aggregation`) and the threshold (indicated by `threshold_value`). The comparison is applied on each time series, with the time series on the left-hand side and the threshold on the right-hand side. Only `COMPARISON_LT` and `COMPARISON_GT` are supported currently.

threshold_value

A value against which to compare the time series.

duration

The amount of time that a time series must violate the threshold to be considered failing. Currently, only values that are a multiple of a minute—e.g. 60, 120, or 300 seconds—are supported. If an invalid value is given, an error will be returned. The `Duration.nanos` field is ignored. When choosing a duration, it is useful to keep in mind the frequency of the underlying time series data (which may also be affected by any alignments specified in the `aggregation` field); a good duration is long enough so that a single outlier does not generate spurious alerts, but short enough that unhealthy states are detected and alerted on quickly.

trigger

The number/percent of time series for which the comparison must hold in order for the condition to trigger. If unspecified, then the condition will trigger if the comparison is true for any of the time series that have been identified by `filter` and `aggregations`, or by the ratio, if `denominator_filter` and `denominator_aggregations` are specified.

class Trigger

Specifies how many time series must fail a predicate to trigger a condition. If not specified, then a `{count: 1}` trigger is used.

type

A type of trigger.

count

The absolute number of time series that must fail the predicate for the condition to be triggered.

percent

The percentage of time series that must fail the predicate for the condition to be triggered.

class Documentation

A content string and a MIME type that describes the content string's format.

content

The text of the documentation, interpreted according to `mime_type`. The content may not exceed 8,192 Unicode characters and may not exceed more than 10,240 bytes when encoded in UTF-8 format, whichever is smaller.

mime_type

The format of the `content` field. Presently, only the value "text/markdown" is supported. See [Markdown](#) for more information.

class UserLabelsEntry

class google.cloud.monitoring_v3.types.Any

class google.cloud.monitoring_v3.types.BoolValue

class google.cloud.monitoring_v3.types.BytesValue

class google.cloud.monitoring_v3.types.CreateAlertPolicyRequest

The protocol for the CreateAlertPolicy request.

name

The project in which to create the alerting policy. The format is `projects/[PROJECT_ID]`. Note that this field names the parent container in which the alerting policy will be written, not the name of the created policy. The alerting policy that is returned will have a name that contains a normalized representation of this name as a prefix but adds a suffix of the form `/alertPolicies/[POLICY_ID]`, identifying the policy in the container.

alert_policy

The requested alerting policy. You should omit the `name` field in this policy. The name will be returned in the new policy, including a new `[ALERT_POLICY_ID]` value.

class google.cloud.monitoring_v3.types.CreateGroupRequest

The CreateGroup request.

name

The project in which to create the group. The format is `"projects/{project_id_or_number}"`.

group

A group definition. It is an error to define the `name` field because the system assigns the name.

validate_only

If true, validate this request but do not create the group.

class google.cloud.monitoring_v3.types.CreateMetricDescriptorRequest

The CreateMetricDescriptor request.

name
The project on which to execute the request. The format is "projects/{project_id_or_number}".

metric_descriptor
The new [custom metric](#) descriptor.

class google.cloud.monitoring_v3.types.**CreateNotificationChannelRequest**
The CreateNotificationChannel request.

name
The project on which to execute the request. The format is: :: projects/[PROJECT_ID] Note that this names the container into which the channel will be written. This does not name the newly created channel. The resulting channel's name will have a normalized version of this field as a prefix, but will add /notificationChannels/[CHANNEL_ID] to identify the channel.

notification_channel
The definition of the NotificationChannel to create.

class google.cloud.monitoring_v3.types.**CreateTimeSeriesError**
Describes the result of a failed request to write data to a time series.

time_series
The time series, including the Metric, MonitoredResource, and Points (including timestamp and value) that resulted in the error. This field provides all of the context that would be needed to retry the operation.

status
The status of the requested write operation.

class google.cloud.monitoring_v3.types.**CreateTimeSeriesRequest**
The CreateTimeSeries request.

name
The project on which to execute the request. The format is "projects/{project_id_or_number}".

time_series
The new data to be added to a list of time series. Adds at most one data point to each of several time series. The new data point must be more recent than any other point in its time series. Each TimeSeries value must fully specify a unique time series by supplying all label values for the metric and the monitored resource.

class google.cloud.monitoring_v3.types.**CreateUptimeCheckConfigRequest**
The protocol for the CreateUptimeCheckConfig request.

parent
The project in which to create the uptime check. The format is: projects/[PROJECT_ID].

uptime_check_config
The new uptime check configuration.

class google.cloud.monitoring_v3.types.**CustomHttpPattern**

class google.cloud.monitoring_v3.types.**DeleteAlertPolicyRequest**
The protocol for the DeleteAlertPolicy request.

name
The alerting policy to delete. The format is: :: projects/[PROJECT_ID]/alertPolicies/[ALERT_POLICY_ID]
For more information, see [\[AlertPolicy\]\[google.monitoring.v3.AlertPolicy\]](#).

class google.cloud.monitoring_v3.types.DeleteGroupRequest

The DeleteGroup request. You can only delete a group if it has no children.

name

The group to delete. The format is "projects/{project_id_or_number}/groups/{group_id}".

class google.cloud.monitoring_v3.types.DeleteMetricDescriptorRequest

The DeleteMetricDescriptor request.

name

The metric descriptor on which to execute the request. The format is "projects/{project_id_or_number}/metricDescriptors/{metric_id}". An example of {metric_id} is: "custom.googleapis.com/my_test_metric".

class google.cloud.monitoring_v3.types.DeleteNotificationChannelRequest

The DeleteNotificationChannel request.

name

The channel for which to execute the request. The format is projects/[PROJECT_ID]/notificationChannels/[CHANNEL_ID].

force

If true, the notification channel will be deleted regardless of its use in alert policies (the policies will be updated to remove the channel). If false, channels that are still referenced by an existing alerting policy will fail to be deleted in a delete operation.

class google.cloud.monitoring_v3.types.DeleteUptimeCheckConfigRequest

The protocol for the DeleteUptimeCheckConfig request.

name

The uptime check configuration to delete. The format is projects/[PROJECT_ID]/uptimeCheckConfigs/[UPTIME_CHECK_ID].

class google.cloud.monitoring_v3.types.DescriptorProto

class ExtensionRange

class ReservedRange

class google.cloud.monitoring_v3.types.Distribution

class BucketOptions

class Explicit

class Exponential

class Linear

class Range

class google.cloud.monitoring_v3.types.DoubleValue

class google.cloud.monitoring_v3.types.Duration

class google.cloud.monitoring_v3.types.Empty

class google.cloud.monitoring_v3.types.EnumDescriptorProto

class EnumReservedRange

```
class google.cloud.monitoring_v3.types.EnumOptions
class google.cloud.monitoring_v3.types.EnumValueDescriptorProto
class google.cloud.monitoring_v3.types.EnumValueOptions
class google.cloud.monitoring_v3.types.ExtensionRangeOptions
class google.cloud.monitoring_v3.types.FieldDescriptorProto
class google.cloud.monitoring_v3.types.FieldMask
class google.cloud.monitoring_v3.types.FieldOptions
class google.cloud.monitoring_v3.types.FileDescriptorProto
class google.cloud.monitoring_v3.types.FileDescriptorSet
class google.cloud.monitoring_v3.types.FileOptions
class google.cloud.monitoring_v3.types.FloatValue
class google.cloud.monitoring_v3.types.GeneratedCodeInfo

    class Annotation

class google.cloud.monitoring_v3.types.GetAlertPolicyRequest
    The protocol for the GetAlertPolicy request.

    name
        The alerting policy to retrieve. The format is :: projects/[PROJECT_ID]/alertPolicies/[ALERT_POLICY_ID]

class google.cloud.monitoring_v3.types.GetGroupRequest
    The GetGroup request.

    name
        The group to retrieve. The format is "projects/{project_id_or_number}/groups/{group_id}".

class google.cloud.monitoring_v3.types.GetMetricDescriptorRequest
    The GetMetricDescriptor request.

    name
        The metric descriptor on which to execute the request. The format is "projects/{project_id_or_number}/metricDescriptors/{metric_id}". An example value of {metric_id} is "compute.googleapis.com/instance/disk/read_bytes_count".

class google.cloud.monitoring_v3.types.GetMonitoredResourceDescriptorRequest
    The GetMonitoredResourceDescriptor request.

    name
        The monitored resource descriptor to get. The format is "projects/{project_id_or_number}/monitoredResourceDescriptors/{resource_type}". The {resource_type} is a predefined type, such as cloudsql_database.

class google.cloud.monitoring_v3.types.GetNotificationChannelDescriptorRequest
    The GetNotificationChannelDescriptor response.

    name
        The channel type for which to execute the request. The format is projects/[PROJECT_ID]/notificationChannelDescriptors/{channel_type}.

class google.cloud.monitoring_v3.types.GetNotificationChannelRequest
    The GetNotificationChannel request.
```

name

The channel for which to execute the request. The format is `projects/[PROJECT_ID]/notificationChannels/[CHANNEL_ID]`.

class `google.cloud.monitoring_v3.types.GetNotificationChannelVerificationCodeRequest`
The `GetNotificationChannelVerificationCode` request.

name

The notification channel for which a verification code is to be generated and retrieved. This must name a channel that is already verified; if the specified channel is not verified, the request will fail.

expire_time

The desired expiration time. If specified, the API will guarantee that the returned code will not be valid after the specified timestamp; however, the API cannot guarantee that the returned code will be valid for at least as long as the requested time (the API puts an upper bound on the amount of time for which a code may be valid). If omitted, a default expiration will be used, which may be less than the max permissible expiration (so specifying an expiration may extend the code's lifetime over omitting an expiration, even though the API does impose an upper limit on the maximum expiration that is permitted).

class `google.cloud.monitoring_v3.types.GetNotificationChannelVerificationCodeResponse`
The `GetNotificationChannelVerificationCode` request.

code

The verification code, which may be used to verify other channels that have an equivalent identity (i.e. other channels of the same type with the same fingerprint such as other email channels with the same email address or other sms channels with the same number).

expire_time

The expiration time associated with the code that was returned. If an expiration was provided in the request, this is the minimum of the requested expiration in the request and the max permitted expiration.

class `google.cloud.monitoring_v3.types.GetUptimeCheckConfigRequest`
The protocol for the `GetUptimeCheckConfig` request.

name

The uptime check configuration to retrieve. The format is `projects/[PROJECT_ID]/uptimeCheckConfigs/[UPTIME_CHECK_ID]`.

class `google.cloud.monitoring_v3.types.Group`

The description of a dynamic collection of monitored resources. Each group has a filter that is matched against monitored resources and their associated metadata. If a group's filter matches an available monitored resource, then that resource is a member of that group. Groups can contain any number of monitored resources, and each monitored resource can be a member of any number of groups.

Groups can be nested in parent-child hierarchies. The `parentName` field identifies an optional parent for each group. If a group has a parent, then the only monitored resources available to be matched by the group's filter are the resources contained in the parent group. In other words, a group contains the monitored resources that match its filter and the filters of all the group's ancestors. A group without a parent can contain any monitored resource.

For example, consider an infrastructure running a set of instances with two user-defined tags: `"environment"` and `"role"`. A parent group has a filter, `environment="production"`. A child of that parent group has a filter, `role="transcoder"`. The parent group contains all instances in the production environment, regardless of their roles. The child group contains instances that have the transcoder role *and* are in the production environment.

The monitored resources contained in a group can change at any moment, depending on what resources exist and what filters are associated with the group and its ancestors.

name

Output only. The name of this group. The format is "projects/{project_id_or_number}/groups/{group_id}". When creating a group, this field is ignored and a new name is created consisting of the project specified in the call to `CreateGroup` and a unique {group_id} that is generated automatically.

display_name

A user-assigned name for this group, used only for display purposes.

parent_name

The name of the group's parent, if it has one. The format is "projects/{project_id_or_number}/groups/{group_id}". For groups with no parent, `parentName` is the empty string, "".

filter

The filter used to determine which monitored resources belong to this group.

is_cluster

If true, the members of this group are considered to be a cluster. The system can perform additional analysis on groups that are clusters.

```
class google.cloud.monitoring_v3.types.Http
```

```
class google.cloud.monitoring_v3.types.HttpRule
```

```
class google.cloud.monitoring_v3.types.Int32Value
```

```
class google.cloud.monitoring_v3.types.Int64Value
```

```
class google.cloud.monitoring_v3.types.LabelDescriptor
```

```
class google.cloud.monitoring_v3.types.ListAlertPoliciesRequest
```

The protocol for the `ListAlertPolicies` request.

name

The project whose alert policies are to be listed. The format is :: projects/[PROJECT_ID] Note that this field names the parent container in which the alerting policies to be listed are stored. To retrieve a single alerting policy by name, use the `[GetAlertPolicy][google.monitoring.v3.AlertPolicyService.GetAlertPolicy]` operation, instead.

filter

If provided, this field specifies the criteria that must be met by alert policies to be included in the response. For more details, see [sorting and filtering](#).

order_by

A comma-separated list of fields by which to sort the result. Supports the same set of field references as the `filter` field. Entries can be prefixed with a minus sign to sort by the field in descending order. For more details, see [sorting and filtering](#).

page_size

The maximum number of results to return in a single response.

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return more results from the previous method call.

```
class google.cloud.monitoring_v3.types.ListAlertPoliciesResponse
```

The protocol for the `ListAlertPolicies` response.

alert_policies

The returned alert policies.

next_page_token

If there might be more results than were returned, then this field is set to a non-empty value. To see the additional results, use that value as `pageToken` in the next call to this method.

class `google.cloud.monitoring_v3.types.ListGroupMembersRequest`

The `ListGroupMembers` request.

name

The group whose members are listed. The format is `"projects/{project_id_or_number}/groups/{group_id}"`.

page_size

A positive number that is the maximum number of results to return.

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return additional results from the previous method call.

filter

An optional [list filter](#) describing the members to be returned. The filter may reference the type, labels, and metadata of monitored resources that comprise the group. For example, to return only resources representing Compute Engine VM instances, use this filter: `:: resource.type = "gce_instance"`

interval

An optional time interval for which results should be returned. Only members that were part of the group during the specified interval are included in the response. If no interval is provided then the group membership over the last minute is returned.

class `google.cloud.monitoring_v3.types.ListGroupMembersResponse`

The `ListGroupMembers` response.

members

A set of monitored resources in the group.

next_page_token

If there are more results than have been returned, then this field is set to a non-empty value. To see the additional results, use that value as `pageToken` in the next call to this method.

total_size

The total number of elements matching this request.

class `google.cloud.monitoring_v3.types.ListGroupsRequest`

The `ListGroup` request.

name

The project whose groups are to be listed. The format is `"projects/{project_id_or_number}"`.

filter

An optional filter consisting of a single group name. The filters limit the groups returned based on their parent-child relationship with the specified group. If no filter is specified, all groups are returned.

children_of_group

A group name: `"projects/{project_id_or_number}/groups/{group_id}"`. Returns groups whose `parentName` field contains the group name. If no groups have this parent, the results are empty.

ancestors_of_group

A group name: `"projects/{project_id_or_number}/groups/{group_id}"`. Returns groups that are ancestors of the specified group. The groups are returned in order, starting with the

immediate parent and ending with the most distant ancestor. If the specified group has no immediate parent, the results are empty.

descendants_of_group

A group name: "projects/{project_id_or_number}/groups/{group_id}". Returns the descendants of the specified group. This is a superset of the results returned by the `childrenOfGroup` filter, and includes children-of-children, and so forth.

page_size

A positive number that is the maximum number of results to return.

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return additional results from the previous method call.

class google.cloud.monitoring_v3.types.**ListGroupsResponse**

The `ListGroups` response.

group

The groups that match the specified filters.

next_page_token

If there are more results than have been returned, then this field is set to a non-empty value. To see the additional results, use that value as `pageToken` in the next call to this method.

class google.cloud.monitoring_v3.types.**ListMetricDescriptorsRequest**

The `ListMetricDescriptors` request.

name

The project on which to execute the request. The format is "projects/{project_id_or_number}".

filter

If this field is empty, all custom and system-defined metric descriptors are returned. Otherwise, the `filter` specifies which metric descriptors are to be returned. For example, the following filter matches all `custom metrics`: `:: metric.type = starts_with("custom.googleapis.com/")`

page_size

A positive number that is the maximum number of results to return.

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return additional results from the previous method call.

class google.cloud.monitoring_v3.types.**ListMetricDescriptorsResponse**

The `ListMetricDescriptors` response.

metric_descriptors

The metric descriptors that are available to the project and that match the value of `filter`, if present.

next_page_token

If there are more results than have been returned, then this field is set to a non-empty value. To see the additional results, use that value as `pageToken` in the next call to this method.

class google.cloud.monitoring_v3.types.**ListMonitoredResourceDescriptorsRequest**

The `ListMonitoredResourceDescriptors` request.

name

The project on which to execute the request. The format is "projects/{project_id_or_number}".

filter

An optional [filter](#) describing the descriptors to be returned. The filter can reference the descriptor's type and labels. For example, the following filter returns only Google Compute Engine descriptors that have an `id` label:

```
resource.type = starts_with("gce_") AND resource.label:id
```

page_size

A positive number that is the maximum number of results to return.

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return additional results from the previous method call.

class `google.cloud.monitoring_v3.types.ListMonitoredResourceDescriptorsResponse`
The `ListMonitoredResourceDescriptors` response.

resource_descriptors

The monitored resource descriptors that are available to this project and that match `filter`, if present.

next_page_token

If there are more results than have been returned, then this field is set to a non-empty value. To see the additional results, use that value as `pageToken` in the next call to this method.

class `google.cloud.monitoring_v3.types.ListNotificationChannelDescriptorsRequest`
The `ListNotificationChannelDescriptors` request.

name

The REST resource name of the parent from which to retrieve the notification channel descriptors. The expected syntax is: `:: projects/[PROJECT_ID]` Note that this names the parent container in which to look for the descriptors; to retrieve a single descriptor by name, use the `[GetNotificationChannelDescriptor][google.monitoring.v3.NotificationChannelService.GetNotificationChannelDescriptor]` operation, instead.

page_size

The maximum number of results to return in a single response. If not set to a positive number, a reasonable value will be chosen by the service.

page_token

If non-empty, `page_token` must contain a value returned as the `next_page_token` in a previous response to request the next set of results.

class `google.cloud.monitoring_v3.types.ListNotificationChannelDescriptorsResponse`
The `ListNotificationChannelDescriptors` response.

channel_descriptors

The monitored resource descriptors supported for the specified project, optionally filtered.

next_page_token

If not empty, indicates that there may be more results that match the request. Use the value in the `page_token` field in a subsequent request to fetch the next set of results. If empty, all results have been returned.

class `google.cloud.monitoring_v3.types.ListNotificationChannelsRequest`
The `ListNotificationChannels` request.

name

The project on which to execute the request. The format is `projects/[PROJECT_ID]`. That is, this names the container in which to look for the notification channels; it does not name a specific channel. To query a specific channel by REST resource name, use the `[GetNotificationChannel][google.monitoring.v3.NotificationChannelService.GetNotificationChannel]` operation.

filter

If provided, this field specifies the criteria that must be met by notification channels to be included in the response. For more details, see [sorting and filtering](#).

order_by

A comma-separated list of fields by which to sort the result. Supports the same set of fields as in `filter`. Entries can be prefixed with a minus sign to sort in descending rather than ascending order. For more details, see [sorting and filtering](#).

page_size

The maximum number of results to return in a single response. If not set to a positive number, a reasonable value will be chosen by the service.

page_token

If non-empty, `page_token` must contain a value returned as the `next_page_token` in a previous response to request the next set of results.

class google.cloud.monitoring_v3.types.**ListNotificationChannelsResponse**

The ListNotificationChannels response.

notification_channels

The notification channels defined for the specified project.

next_page_token

If not empty, indicates that there may be more results that match the request. Use the value in the `page_token` field in a subsequent request to fetch the next set of results. If empty, all results have been returned.

class google.cloud.monitoring_v3.types.**ListTimeSeriesRequest**

The ListTimeSeries request.

name

The project on which to execute the request. The format is “projects/{project_id_or_number}”.

filter

A [monitoring filter](#) that specifies which time series should be returned. The filter must specify a single metric type, and can additionally specify metric labels and other information. For example: `:: metric.type = “compute.googleapis.com/instance/cpu/usage_time” AND metric.label.instance_name = “my-instance-name”`

interval

The time interval for which results should be returned. Only time series that contain data points in the specified interval are included in the response.

aggregation

By default, the raw time series data is returned. Use this field to combine multiple time series for different views of the data.

order_by

Specifies the order in which the points of the time series should be returned. By default, results are not ordered. Currently, this field must be left blank.

view

Specifies which information is returned about the time series.

page_size

A positive number that is the maximum number of results to return. When `view` field sets to `FULL`, it limits the number of `Points` server will return; if `view` field is `HEADERS`, it limits the number of `TimeSeries` server will return.

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return additional results from the previous method call.

class `google.cloud.monitoring_v3.types.ListTimeSeriesResponse`

The `ListTimeSeries` response.

time_series

One or more time series that match the filter included in the request.

next_page_token

If there are more results than have been returned, then this field is set to a non-empty value. To see the additional results, use that value as `pageToken` in the next call to this method.

class `google.cloud.monitoring_v3.types.ListUptimeCheckConfigsRequest`

The protocol for the `ListUptimeCheckConfigs` request.

parent

The project whose uptime check configurations are listed. The format is `projects/[PROJECT_ID]`.

page_size

The maximum number of results to return in a single response. The server may further constrain the maximum number of results returned in a single page. If the `page_size` is ≤ 0 , the server will decide the number of results to be returned.

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return more results from the previous method call.

class `google.cloud.monitoring_v3.types.ListUptimeCheckConfigsResponse`

The protocol for the `ListUptimeCheckConfigs` response.

uptime_check_configs

The returned uptime check configurations.

next_page_token

This field represents the pagination token to retrieve the next page of results. If the value is empty, it means no further results for the request. To retrieve the next page of results, the value of the `next_page_token` is passed to the subsequent `List` method call (in the request message's `page_token` field).

class `google.cloud.monitoring_v3.types.ListUptimeCheckIpsRequest`

The protocol for the `ListUptimeCheckIps` request.

page_size

The maximum number of results to return in a single response. The server may further constrain the maximum number of results returned in a single page. If the `page_size` is ≤ 0 , the server will decide the number of results to be returned. NOTE: this field is not yet implemented

page_token

If this field is not empty then it must contain the `nextPageToken` value returned by a previous call to this method. Using this field causes the method to return more results from the previous method call. NOTE: this field is not yet implemented

class `google.cloud.monitoring_v3.types.ListUptimeCheckIpsResponse`

The protocol for the `ListUptimeCheckIps` response.

uptime_check_ips

The returned list of IP addresses (including region and location) that the checkers run from.

next_page_token

This field represents the pagination token to retrieve the next page of results. If the value is empty, it means no further results for the request. To retrieve the next page of results, the value of the `next_page_token` is

passed to the subsequent List method call (in the request message's page_token field). NOTE: this field is not yet implemented

```
class google.cloud.monitoring_v3.types.ListValue
```

```
class google.cloud.monitoring_v3.types.MessageOptions
```

```
class google.cloud.monitoring_v3.types.MethodDescriptorProto
```

```
class google.cloud.monitoring_v3.types.MethodOptions
```

```
class google.cloud.monitoring_v3.types.Metric
```

```
class LabelsEntry
```

```
class google.cloud.monitoring_v3.types.MetricDescriptor
```

```
class google.cloud.monitoring_v3.types.MonitoredResource
```

```
class LabelsEntry
```

```
class google.cloud.monitoring_v3.types.MonitoredResourceDescriptor
```

```
class google.cloud.monitoring_v3.types.MutationRecord
```

Describes a change made to a configuration.

mutate_time

When the change occurred.

mutated_by

The email address of the user making the change.

```
class google.cloud.monitoring_v3.types.NotificationChannel
```

A NotificationChannel is a medium through which an alert is delivered when a policy violation is detected. Examples of channels include email, SMS, and third-party messaging applications. Fields containing sensitive information like authentication tokens or contact info are only partially populated on retrieval.

type

The type of the notification channel. This field matches the value of the [NotificationChannelDescriptor.type][google.monitoring.v3.NotificationChannelDescriptor.type] field.

name

The full REST resource name for this channel. The syntax is: `projects/[PROJECT_ID]/notificationChannels/[CHANNEL_ID]` The `[CHANNEL_ID]` is automatically assigned by the server on creation.

display_name

An optional human-readable name for this notification channel. It is recommended that you specify a non-empty and unique name in order to make it easier to identify the channels in your project, though this is not enforced. The display name is limited to 512 Unicode characters.

description

An optional human-readable description of this notification channel. This description may provide additional details, beyond the display name, for the channel. This may not exceed 1024 Unicode characters.

labels

Configuration fields that define the channel and its behavior. The permissible and required labels are specified in the [NotificationChannelDescriptor.labels][google.monitoring.v3.NotificationChannelDescriptor.labels] of the NotificationChannelDescriptor corresponding to the type field.

user_labels

User-supplied key/value data that does not need to conform to the corresponding

NotificationChannelDescriptor's schema, unlike the `labels` field. This field is intended to be used for organizing and identifying the `NotificationChannel` objects. The field can contain up to 64 entries. Each key and value is limited to 63 Unicode characters or 128 bytes, whichever is smaller. Labels and values can contain only lowercase letters, numerals, underscores, and dashes. Keys must begin with a letter.

verification_status

Indicates whether this channel has been verified or not. On a `[ListNotificationChannels][google.monitoring.v3.NotificationChannelService.ListNotificationChannels]` or `[GetNotificationChannel][google.monitoring.v3.NotificationChannelService.GetNotificationChannel]` operation, this field is expected to be populated. If the value is `UNVERIFIED`, then it indicates that the channel is non-functioning (it both requires verification and lacks verification); otherwise, it is assumed that the channel works. If the channel is neither `VERIFIED` nor `UNVERIFIED`, it implies that the channel is of a type that does not require verification or that this specific channel has been exempted from verification because it was created prior to verification being required for channels of this type. This field cannot be modified using a standard `[UpdateNotificationChannel][google.monitoring.v3.NotificationChannelService.UpdateNotificationChannel]` operation. To change the value of this field, you must call `[VerifyNotificationChannel][google.monitoring.v3.NotificationChannelService.VerifyNotificationChannel]`.

enabled

Whether notifications are forwarded to the described channel. This makes it possible to disable delivery of notifications to a particular channel without removing the channel from all alerting policies that reference the channel. This is a more convenient approach when the change is temporary and you want to receive notifications from the same set of alerting policies on the channel at some point in the future.

class LabelsEntry

class UserLabelsEntry

class google.cloud.monitoring_v3.types.NotificationChannelDescriptor

A description of a notification channel. The descriptor includes the properties of the channel and the set of labels or fields that must be specified to configure channels of a given type.

name

The full REST resource name for this descriptor. The syntax is: `projects/[PROJECT_ID]/notificationChannelDescriptors/[TYPE]` In the above, `[TYPE]` is the value of the `type` field.

type

The type of notification channel, such as "email", "sms", etc. Notification channel types are globally unique.

display_name

A human-readable name for the notification channel type. This form of the name is suitable for a user interface.

description

A human-readable description of the notification channel type. The description may include a description of the properties of the channel and pointers to external documentation.

labels

The set of labels that must be defined to identify a particular channel of the corresponding type. Each label includes a description for how that field should be populated.

supported_tiers

The tiers that support this notification channel; the project service tier must be one of the `supported_tiers`.

class google.cloud.monitoring_v3.types.OneofDescriptorProto

```
class google.cloud.monitoring_v3.types.OneofOptions
```

```
class google.cloud.monitoring_v3.types.Point
```

A single data point in a time series.

interval

The time interval to which the data point applies. For GAUGE metrics, only the end time of the interval is used. For DELTA metrics, the start and end time should specify a non-zero interval, with subsequent points specifying contiguous and non-overlapping intervals. For CUMULATIVE metrics, the start and end time should specify a non-zero interval, with subsequent points specifying the same start time and increasing end times, until an event resets the cumulative value to zero and sets a new start time for the following points.

value

The value of the data point.

```
class google.cloud.monitoring_v3.types.SendNotificationChannelVerificationCodeRequest
```

The SendNotificationChannelVerificationCode request.

name

The notification channel to which to send a verification code.

```
class google.cloud.monitoring_v3.types.ServiceDescriptorProto
```

```
class google.cloud.monitoring_v3.types.ServiceOptions
```

```
class google.cloud.monitoring_v3.types.SourceCodeInfo
```

class Location

```
class google.cloud.monitoring_v3.types.Status
```

```
class google.cloud.monitoring_v3.types.StringValue
```

```
class google.cloud.monitoring_v3.types.Struct
```

class FieldsEntry

```
class google.cloud.monitoring_v3.types.TimeInterval
```

A time interval extending just after a start time through an end time. If the start time is the same as the end time, then the interval represents a single point in time.

end_time

Required. The end of the time interval.

start_time

Optional. The beginning of the time interval. The default value for the start time is the end time. The start time must not be later than the end time.

```
class google.cloud.monitoring_v3.types.TimeSeries
```

A collection of data points that describes the time-varying values of a metric. A time series is identified by a combination of a fully-specified monitored resource and a fully-specified metric. This type is used for both listing and creating time series.

metric

The associated metric. A fully-specified metric used to identify the time series.

resource

The associated resource. A fully-specified monitored resource used to identify the time series.

metric_kind

The metric kind of the time series. When listing time series, this metric kind might be different from the

metric kind of the associated metric if this time series is an alignment or reduction of other time series. When creating a time series, this field is optional. If present, it must be the same as the metric kind of the associated metric. If the associated metric's descriptor must be auto-created, then this field specifies the metric kind of the new descriptor and must be either `GAUGE` (the default) or `CUMULATIVE`.

value_type

The value type of the time series. When listing time series, this value type might be different from the value type of the associated metric if this time series is an alignment or reduction of other time series. When creating a time series, this field is optional. If present, it must be the same as the type of the data in the `points` field.

points

The data points of this time series. When listing time series, the order of the points is specified by the list method. When creating a time series, this field must contain exactly one point and the point's type must be the same as the value type of the associated metric. If the associated metric's descriptor must be auto-created, then the value type of the descriptor is determined by the point's type, which must be `BOOL`, `INT64`, `DOUBLE`, or `DISTRIBUTION`.

```
class google.cloud.monitoring_v3.types.Timestamp
```

```
class google.cloud.monitoring_v3.types.TypedValue
```

A single strongly-typed value.

value

The typed value field.

bool_value

A Boolean value: `true` or `false`.

int64_value

A 64-bit integer. Its range is approximately $\pm 9.2 \times 10^{18}$.

double_value

A 64-bit double-precision floating-point number. Its magnitude is approximately $\pm 10 \pm 300$ and it has 16 significant digits of precision.

string_value

A variable-length string value.

distribution_value

A distribution value.

```
class google.cloud.monitoring_v3.types.UInt32Value
```

```
class google.cloud.monitoring_v3.types.UInt64Value
```

```
class google.cloud.monitoring_v3.types.UninterpretedOption
```

class NamePart

```
class google.cloud.monitoring_v3.types.UpdateAlertPolicyRequest
```

The protocol for the `UpdateAlertPolicy` request.

update_mask

Optional. A list of alerting policy field names. If this field is not empty, each listed field in the existing alerting policy is set to the value of the corresponding field in the supplied policy (`alert_policy`), or to the field's default value if the field is not in the supplied alerting policy. Fields not listed retain their previous value. Examples of valid field masks include `display_name`, `documentation`, `documentation.content`, `documentation.mime_type`, `user_labels`, `user_label.nameofkey`, `enabled`, `conditions`, `combiner`, etc. If this field is empty, then the supplied alerting policy replaces the existing policy. It is the same as deleting the existing policy and adding the

supplied policy, except for the following:

- The new policy will have the same [ALERT_POLICY_ID] as the former policy. This gives you continuity with the former policy in your notifications and incidents.
- Conditions in the new policy will keep their former [CONDITION_ID] if the supplied condition includes the name field with that [CONDITION_ID]. If the supplied condition omits the name field, then a new [CONDITION_ID] is created.

alert_policy

Required. The updated alerting policy or the updated values for the fields listed in `update_mask`. If `update_mask` is not empty, any fields in this policy that are not in `update_mask` are ignored.

class google.cloud.monitoring_v3.types.UpdateGroupRequest

The UpdateGroup request.

group

The new definition of the group. All fields of the existing group, excepting `name`, are replaced with the corresponding fields of this group.

validate_only

If true, validate this request but do not update the existing group.

class google.cloud.monitoring_v3.types.UpdateNotificationChannelRequest

The UpdateNotificationChannel request.

update_mask

The fields to update.

notification_channel

A description of the changes to be applied to the specified notification channel. The description must provide a definition for fields to be updated; the names of these fields should also be included in the `update_mask`.

class google.cloud.monitoring_v3.types.UpdateUptimeCheckConfigRequest

The protocol for the UpdateUptimeCheckConfig request.

update_mask

Optional. If present, only the listed fields in the current uptime check configuration are updated with values from the new configuration. If this field is empty, then the current configuration is completely replaced with the new configuration.

uptime_check_config

Required. If an "updateMask" has been specified, this field gives the values for the set of fields mentioned in the "updateMask". If an "updateMask" has not been given, this uptime check configuration replaces the current configuration. If a field is mentioned in "updateMask" but the corresponding field is omitted in this partial uptime check configuration, it has the effect of deleting/clearing the field from the configuration on the server.

class google.cloud.monitoring_v3.types.UptimeCheckConfig

This message configures which resources and services to monitor for availability.

name

A unique resource name for this UptimeCheckConfig. The format is: `projects/[PROJECT_ID]/uptimeCheckConfigs/[UPTIME_CHECK_ID]`. This field should be omitted when creating the uptime check configuration; on create, the resource name is assigned by the server and included in the response.

display_name

A human-friendly name for the uptime check configuration. The display name should be unique within a Stackdriver Account in order to make it easier to identify; however, uniqueness is not enforced. Required.

resource

The resource the check is checking. Required.

monitored_resource

The monitored resource associated with the configuration.

resource_group

The group resource associated with the configuration.

check_request_type

The type of uptime check request.

http_check

Contains information needed to make an HTTP or HTTPS check.

tcp_check

Contains information needed to make a TCP check.

period

How often the uptime check is performed. Currently, only 1, 5, 10, and 15 minutes are supported. Required.

timeout

The maximum amount of time to wait for the request to complete (must be between 1 and 60 seconds). Required.

content_matchers

The expected content on the page the check is run against. Currently, only the first entry in the list is supported, and other entries will be ignored. The server will look for an exact match of the string in the page response's content. This field is optional and should only be specified if a content match is required.

selected_regions

The list of regions from which the check will be run. If this field is specified, enough regions to include a minimum of 3 locations must be provided, or an error message is returned. Not specifying this field will result in uptime checks running from all regions.

internal_checkers

The internal checkers that this check will egress from.

class ContentMatcher

Used to perform string matching. Currently, this matches on the exact content. In the future, it can be expanded to allow for regular expressions and more complex matching.

content

String content to match

class HttpCheck

Information involved in an HTTP/HTTPS uptime check request.

use_ssl

If true, use HTTPS instead of HTTP to run the check.

path

The path to the page to run the check against. Will be combined with the host (specified within the MonitoredResource) and port to construct the full URL. Optional (defaults to "/").

port

The port to the page to run the check against. Will be combined with host (specified within the MonitoredResource) and path to construct the full URL. Optional (defaults to 80 without SSL, or 443 with SSL).

auth_info

The authentication information. Optional when creating an HTTP check; defaults to empty.

mask_headers

Boolean specifying whether to encrypt the header information. Encryption should be specified for any headers related to authentication that you do not wish to be seen when retrieving the configuration. The server will be responsible for encrypting the headers. On Get/List calls, if mask_headers is set to True then the headers will be obscured with *****.

headers

The list of headers to send as part of the uptime check request. If two headers have the same key and different values, they should be entered as a single header, with the value being a comma-separated list of all the desired values as described at <https://www.w3.org/Protocols/rfc2616/rfc2616.txt> (page 31). Entering two separate headers with the same key in a Create call will cause the first to be overwritten by the second.

class BasicAuthentication

A type of authentication to perform against the specified resource or URL that uses username and password. Currently, only Basic authentication is supported in Uptime Monitoring.

username

The username to authenticate.

password

The password to authenticate.

class HeadersEntry**class InternalChecker**

Nimbus InternalCheckers.

project_id

The GCP project ID. Not necessarily the same as the project_id for the config.

network

The internal network to perform this uptime check on.

gcp_zone

The GCP zone the uptime check should egress from. Only respected for internal uptime checks, where internal_network is specified.

checker_id

The checker ID.

display_name

The checker's human-readable name.

class ResourceGroup

The resource submessage for group checks. It can be used instead of a monitored resource, when multiple resources are being monitored.

group_id

The group of resources being monitored. Should be only the group_id, not projects//groups/.

resource_type

The resource type of the group members.

class TcpCheck

Information required for a TCP uptime check request.

port

The port to the page to run the check against. Will be combined with host (specified within the MonitoredResource) to construct the full URL. Required.

class google.cloud.monitoring_v3.types.UptimeCheckIp

Contains the region, location, and list of IP addresses where checkers in the location run from.

region

A broad region category in which the IP address is located.

location

A more specific location within the region that typically encodes a particular city/town/metro (and its containing state/province or country) within the broader umbrella region category.

ip_address

The IP address from which the uptime check originates. This is a full IP address (not an IP address range). Most IP addresses, as of this publication, are in IPv4 format; however, one should not rely on the IP addresses being in IPv4 format indefinitely and should support interpreting this field in either IPv4 or IPv6 format.

class google.cloud.monitoring_v3.types.Value

class google.cloud.monitoring_v3.types.VerifyNotificationChannelRequest

The VerifyNotificationChannel request.

name

The notification channel to verify.

code

The verification code that was delivered to the channel as a result of invoking the SendNotificationChannelVerificationCode API method or that was retrieved from a verified channel via GetNotificationChannelVerificationCode. For example, one might have “G-123456” or “TKNZGhhd2EyN3I1MnRnMjRv” (in general, one is only guaranteed that the code is valid UTF-8; one should not make any assumptions regarding the structure or format of the code).

23.1 Stackdriver Logging Client

Client for interacting with the Google Stackdriver Logging API.

class `google.cloud.logging.client.Client` (*project=None, credentials=None, _http=None, _use_grpc=None*)

Bases: `google.cloud.client.ClientWithProject`

Client to bundle configuration needed for API requests.

Parameters

- **project** (*str*) – the project which the client acts on behalf of. If not passed, falls back to the default inferred from the environment.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.
- **_use_grpc** (*bool*) – (Optional) Explicitly specifies whether to use the gRPC transport or HTTP. If unset, falls back to the `GOOGLE_CLOUD_DISABLE_GRPC` environment variable. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/logging.read', 'https://www.googleapis.com/auth/logging.admin')
The scopes required for authenticating as a Logging consumer.

get_default_handler()

Return the default logging handler based on the local environment.

Return type `logging.Handler`

Returns The default log handler based on the environment

list_entries (*projects=None, filter_=None, order_by=None, page_size=None, page_token=None*)
Return a page of log entries.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/entries/list>

Parameters

- **projects** (*list of strings*) – project IDs to include. If not passed, defaults to the project bound to the client.
- **filter** (*str*) – a filter expression. See https://cloud.google.com/logging/docs/view/advanced_filters
- **order_by** (*str*) – One of `ASCENDING` or `DESCENDING`.
- **page_size** (*int*) – maximum number of entries to return, If not passed, defaults to a value set by the API.
- **page_token** (*str*) – opaque marker for the next “page” of entries. If not passed, the API will return the first page of entries.

Return type *Iterator*

Returns Iterator of `_BaseEntry` accessible to the current client.

list_metrics (*page_size=None, page_token=None*)
List metrics for the project associated with this client.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics/list>

Parameters

- **page_size** (*int*) – maximum number of metrics to return, If not passed, defaults to a value set by the API.
- **page_token** (*str*) – opaque marker for the next “page” of metrics. If not passed, the API will return the first page of metrics.

Return type *Iterator*

Returns Iterator of `Metric` accessible to the current client.

list_sinks (*page_size=None, page_token=None*)
List sinks for the project associated with this client.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks/list>

Parameters

- **page_size** (*int*) – maximum number of sinks to return, If not passed, defaults to a value set by the API.
- **page_token** (*str*) – opaque marker for the next “page” of sinks. If not passed, the API will return the first page of sinks.

Return type *Iterator*

Returns Iterator of `Sink` accessible to the current client.

logger (*name*)
Creates a logger bound to the current client.

Parameters **name** (*str*) – the name of the logger to be constructed.

Return type `google.cloud.logging.logger.Logger`

Returns Logger created with the current client.

`logging_api`

Helper for logging-related API calls.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/entries> <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.logs>

metric (*name*, *filter_=None*, *description=""*)

Creates a metric bound to the current client.

Parameters

- **name** (*str*) – the name of the metric to be constructed.
- **filter** (*str*) – the advanced logs filter expression defining the entries tracked by the metric. If not passed, the instance should already exist, to be refreshed via `Metric.reload()`.
- **description** (*str*) – the description of the metric to be constructed. If not passed, the instance should already exist, to be refreshed via `Metric.reload()`.

Return type `google.cloud.logging.metric.Metric`

Returns Metric created with the current client.

`metrics_api`

Helper for log metric-related API calls.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics>

setup_logging (*log_level=20*, *excluded_loggers=('google.cloud', 'google.auth', 'google_auth_httplib2')*)

Attach default Stackdriver logging handler to the root logger.

This method uses the default log handler, obtained by `get_default_handler()`, and attaches it to the root Python logger, so that a call such as `logging.warn`, as well as all child loggers, will report to Stackdriver logging.

Parameters

- **log_level** (*int*) – (Optional) Python logging log level. Defaults to `logging.INFO`.
- **excluded_loggers** (*tuple*) – (Optional) The loggers to not attach the handler to. This will always include the loggers in the path of the logging client itself.

sink (*name*, *filter_=None*, *destination=None*)

Creates a sink bound to the current client.

Parameters

- **name** (*str*) – the name of the sink to be constructed.
- **filter** (*str*) – (optional) the advanced logs filter expression defining the entries exported by the sink. If not passed, the instance should already exist, to be refreshed via `Sink.reload()`.
- **destination** (*str*) – destination URI for the entries exported by the sink. If not passed, the instance should already exist, to be refreshed via `Sink.reload()`.

Return type `google.cloud.logging.sink.Sink`

Returns Sink created with the current client.

sinks_api

Helper for log sink-related API calls.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks>

23.2 Logger

Define API Loggers.

class `google.cloud.logging.logger.Batch` (*logger, client, resource=None*)

Bases: `object`

Context manager: collect entries to log via a single API call.

Helper returned by `Logger.batch()`

Parameters

- **logger** (`google.cloud.logging.logger.Logger`) – the logger to which entries will be logged.
- **client** (`google.cloud.logging.client.Client`) – The client to use.
- **resource** (`Resource`) – (Optional) Monitored resource of the batch, defaults to `None`, which requires that every entry should have a resource specified. Since the methods used to write entries default the entry's resource to the global resource type, this parameter is only required if explicitly set to `None`. If no entries' resource are set to `None`, this parameter will be ignored on the server.

commit (*client=None*)

Send saved log entries as a single API call.

Parameters **client** (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current batch.

log_proto (*message, labels=None, insert_id=None, severity=None, http_request=None, timestamp=None, resource=Resource(type='global', labels={})*)

Add a protobuf entry to be logged during `commit()`.

Parameters

- **message** (`protobuf message`) – the protobuf entry
- **labels** (`dict`) – (optional) mapping of labels for the entry.
- **insert_id** (`str`) – (optional) unique ID for log entry.
- **severity** (`str`) – (optional) severity of event being logged.
- **http_request** (`dict`) – (optional) info about HTTP request associated with the entry.
- **timestamp** (`datetime.datetime`) – (optional) timestamp of event being logged.
- **resource** (`Resource`) – (Optional) Monitored resource of the entry. Defaults to the global resource type. If set to `None`, the resource of the batch is used for this entry. If both this resource and the Batch resource are `None`, the API will return an error.

log_struct (*info, labels=None, insert_id=None, severity=None, http_request=None, timestamp=None, resource=Resource(type='global', labels={})*)

Add a struct entry to be logged during `commit()`.

Parameters

- **info** (*dict*) – the struct entry
- **labels** (*dict*) – (optional) mapping of labels for the entry.
- **insert_id** (*str*) – (optional) unique ID for log entry.
- **severity** (*str*) – (optional) severity of event being logged.
- **http_request** (*dict*) – (optional) info about HTTP request associated with the entry.
- **timestamp** (*datetime.datetime*) – (optional) timestamp of event being logged.
- **resource** (*Resource*) – (Optional) Monitored resource of the entry. Defaults to the global resource type. If set to None, the resource of the batch is used for this entry. If both this resource and the Batch resource are None, the API will return an error.

log_text (*text*, *labels=None*, *insert_id=None*, *severity=None*, *http_request=None*, *timestamp=None*, *resource=Resource(type='global', labels={})*)

Add a text entry to be logged during `commit()`.

Parameters

- **text** (*str*) – the text entry
- **labels** (*dict*) – (optional) mapping of labels for the entry.
- **insert_id** (*str*) – (optional) unique ID for log entry.
- **severity** (*str*) – (optional) severity of event being logged.
- **http_request** (*dict*) – (optional) info about HTTP request associated with the entry.
- **timestamp** (*datetime.datetime*) – (optional) timestamp of event being logged.
- **resource** (*Resource*) – (Optional) Monitored resource of the entry. Defaults to the global resource type. If set to None, the resource of the batch is used for this entry. If both this resource and the Batch resource are None, the API will return an error.

class google.cloud.logging.logger.**Logger** (*name*, *client*, *labels=None*)

Bases: `object`

Loggers represent named targets for log entries.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.logs>

Parameters

- **name** (*str*) – the name of the logger
- **client** (*google.cloud.logging.client.Client*) – A client which holds credentials and project configuration for the logger (which requires a project).
- **labels** (*dict*) – (optional) mapping of default labels for entries written via this logger.

batch (*client=None*)

Return a batch to use as a context manager.

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current topic.

Return type *Batch*

Returns A batch to use as a context manager.

client

Client bound to the logger.

delete (*client=None*)

API call: delete all entries in a logger via a DELETE request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.logs/delete>

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current logger.

full_name

Fully-qualified name used in logging APIs

list_entries (*projects=None, filter_=None, order_by=None, page_size=None, page_token=None*)

Return a page of log entries.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/entries/list>

Parameters

- **projects** (*list of strings*) – project IDs to include. If not passed, defaults to the project bound to the client.
- **filter** (*str*) – a filter expression. See https://cloud.google.com/logging/docs/view/advanced_filters
- **order_by** (*str*) – One of ASCENDING or DESCENDING.
- **page_size** (*int*) – maximum number of entries to return, If not passed, defaults to a value set by the API.
- **page_token** (*str*) – opaque marker for the next “page” of entries. If not passed, the API will return the first page of entries.

Return type *Iterator*

Returns Iterator of `_BaseEntry` accessible to the current logger.

log_proto (*message, client=None, labels=None, insert_id=None, severity=None, http_request=None, timestamp=None, resource=Resource(type='global', labels={})*)

API call: log a protobuf message via a POST request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/entries/list>

Parameters

- **message** (*Message*) – The protobuf message to be logged.
- **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current logger.
- **labels** (*dict*) – (optional) mapping of labels for the entry.
- **insert_id** (*str*) – (optional) unique ID for log entry.
- **severity** (*str*) – (optional) severity of event being logged.
- **http_request** (*dict*) – (optional) info about HTTP request associated with the entry.
- **resource** (*Resource*) – Monitored resource of the entry, defaults to the global resource type.

- **timestamp** (`datetime.datetime`) – (optional) timestamp of event being logged.

log_struct (*info*, *client=None*, *labels=None*, *insert_id=None*, *severity=None*, *http_request=None*, *timestamp=None*, *resource=Resource(type='global', labels={})*)

API call: log a structured message via a POST request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/entries/write>

Parameters

- **info** (*dict*) – the log entry information
- **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current logger.
- **labels** (*dict*) – (optional) mapping of labels for the entry.
- **insert_id** (*str*) – (optional) unique ID for log entry.
- **severity** (*str*) – (optional) severity of event being logged.
- **http_request** (*dict*) – (optional) info about HTTP request associated with the entry.
- **resource** (*Resource*) – Monitored resource of the entry, defaults to the global resource type.
- **timestamp** (`datetime.datetime`) – (optional) timestamp of event being logged.

log_text (*text*, *client=None*, *labels=None*, *insert_id=None*, *severity=None*, *http_request=None*, *timestamp=None*, *resource=Resource(type='global', labels={})*)

API call: log a text message via a POST request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/entries/write>

Parameters

- **text** (*str*) – the log message.
- **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current logger.
- **labels** (*dict*) – (optional) mapping of labels for the entry.
- **insert_id** (*str*) – (optional) unique ID for log entry.
- **severity** (*str*) – (optional) severity of event being logged.
- **http_request** (*dict*) – (optional) info about HTTP request associated with the entry
- **resource** (*Resource*) – Monitored resource of the entry, defaults to the global resource type.
- **timestamp** (`datetime.datetime`) – (optional) timestamp of event being logged.

path

URI path for use in logging APIs

project

Project bound to the logger.

23.3 Entries

Log entries within the Google Stackdriver Logging API.

```
class google.cloud.logging.entries.ProtobufEntry(payload, logger, insert_id=None,
                                                  timestamp=None, labels=None,
                                                  severity=None, http_request=None,
                                                  resource=None)
```

Bases: google.cloud.logging.entries._BaseEntry

Entry created with protoPayload.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/LogEntry>

Parameters

- **payload** (*str*, *dict* or *any_pb2.Any*) – The payload passed as textPayload, jsonPayload, or protoPayload. This also may be passed as a raw *any_pb2.Any* if the protoPayload could not be deserialized.
- **logger** (*Logger*) – the logger used to write the entry.
- **insert_id** (*str*) – (optional) the ID used to identify an entry uniquely.
- **timestamp** (*datetime.datetime*) – (optional) timestamp for the entry
- **labels** (*dict*) – (optional) mapping of labels for the entry
- **severity** (*str*) – (optional) severity of event being logged.
- **http_request** (*dict*) – (optional) info about HTTP request associated with the entry
- **resource** (*Resource*) – (Optional) Monitored resource of the entry

parse_message (*message*)

Parse payload into a protobuf message.

Mutates the passed-in message in place.

Parameters *message* (*Protobuf message*) – the message to be logged

```
class google.cloud.logging.entries.StructEntry(payload, logger, insert_id=None,
                                                  timestamp=None, labels=None,
                                                  severity=None, http_request=None,
                                                  resource=None)
```

Bases: google.cloud.logging.entries._BaseEntry

Entry created with jsonPayload.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/LogEntry>

```
class google.cloud.logging.entries.TextEntry(payload, logger, insert_id=None, timestamp=None, labels=None, severity=None,
                                              http_request=None, resource=None)
```

Bases: google.cloud.logging.entries._BaseEntry

Entry created with textPayload.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/LogEntry>

google.cloud.logging.entries.logger_name_from_path (*path*)

Validate a logger URI path and get the logger name.

Parameters *path* (*str*) – URI path for a logger API request.

Return type *str*

Returns Logger name parsed from path.

Raises `ValueError` if the path is ill-formed or if the project from the path does not agree with the project passed in.

23.4 Metrics

Define Stackdriver Logging API Metrics.

```
class google.cloud.logging.metric.Metric(name, filter_=None, client=None, description="")
```

Bases: `object`

Metrics represent named filters for log entries.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics>

Parameters

- **name** (`str`) – the name of the metric
- **filter** (`str`) – the advanced logs filter expression defining the entries tracked by the metric. If not passed, the instance should already exist, to be refreshed via `reload()`.
- **client** (`google.cloud.logging.client.Client`) – A client which holds credentials and project configuration for the metric (which requires a project).
- **description** (`str`) – an optional description of the metric.

client

Client bound to the logger.

create (`client=None`)

API call: create the metric via a PUT request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics/create>

Parameters **client** (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current metric.

delete (`client=None`)

API call: delete a metric via a DELETE request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics/delete>

Parameters **client** (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current metric.

exists (`client=None`)

API call: test for the existence of the metric via a GET request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics/get>

Parameters **client** (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current metric.

Return type `bool`

Returns Boolean indicating existence of the metric.

classmethod from_api_repr (`resource, client`)

Factory: construct a metric given its API representation

Parameters

- **resource** (*dict*) – metric resource representation returned from the API
- **client** (*google.cloud.logging.client.Client*) – Client which holds credentials and project configuration for the metric.

Return type *google.cloud.logging.metric.Metric*

Returns Metric parsed from resource.

full_name

Fully-qualified name used in metric APIs

path

URL path for the metric's APIs

project

Project bound to the logger.

reload (*client=None*)

API call: sync local metric configuration via a GET request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics/get>

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current metric.

update (*client=None*)

API call: update metric configuration via a PUT request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.metrics/update>

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current metric.

23.5 Sinks

Define Stackdriver Logging API Sinks.

class `google.cloud.logging.sink.Sink` (*name, filter_=None, destination=None, client=None*)

Bases: `object`

Sinks represent filtered exports for log entries.

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks>

Parameters

- **name** (*str*) – the name of the sink
- **filter** (*str*) – (optional) the advanced logs filter expression defining the entries exported by the sink.
- **destination** (*str*) – destination URI for the entries exported by the sink. If not passed, the instance should already exist, to be refreshed via `reload()`.
- **client** (*google.cloud.logging.client.Client*) – A client which holds credentials and project configuration for the sink (which requires a project).

client

Client bound to the sink.

create (*client=None, unique_writer_identity=False*)

API call: create the sink via a PUT request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks/create>

Parameters

- **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current sink.
- **unique_writer_identity** (*bool*) – (Optional) determines the kind of IAM identity returned as `writer_identity` in the new sink.

delete (*client=None*)

API call: delete a sink via a DELETE request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks/delete>

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current sink.

exists (*client=None*)

API call: test for the existence of the sink via a GET request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks/get>

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current sink.

Return type *bool*

Returns Boolean indicating existence of the sink.

classmethod from_api_repr (*resource, client*)

Factory: construct a sink given its API representation

Parameters

- **resource** (*dict*) – sink resource representation returned from the API
- **client** (*google.cloud.logging.client.Client*) – Client which holds credentials and project configuration for the sink.

Return type *google.cloud.logging.sink.Sink*

Returns Sink parsed from `resource`.

Raises *ValueError* if `client` is not *None* and the project from the resource does not agree with the project from the client.

full_name

Fully-qualified name used in sink APIs

path

URL path for the sink's APIs

project

Project bound to the sink.

reload (*client=None*)

API call: sync local sink configuration via a GET request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks/get>

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current sink.

`update` (*client=None*, *unique_writer_identity=False*)

API call: update sink configuration via a PUT request

See <https://cloud.google.com/logging/docs/reference/v2/rest/v2/projects.sinks/update>

Parameters

- **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the client stored on the current sink.
- **unique_writer_identity** (*bool*) – (Optional) determines the kind of IAM identity returned as *writer_identity* in the new sink.

writer_identity

Identity used for exports via the sink

23.6 Integration with Python logging module

It's possible to tie the Python `logging` module directly into Google Cloud Logging. To use it, create a `CloudLoggingHandler` instance from your Logging client.

```
>>> import logging
>>> import google.cloud.logging # Don't conflict with standard logging
>>> from google.cloud.logging.handlers import CloudLoggingHandler
>>> client = google.cloud.logging.Client()
>>> handler = CloudLoggingHandler(client)
>>> cloud_logger = logging.getLogger('cloud_logger')
>>> cloud_logger.setLevel(logging.INFO) # defaults to WARN
>>> cloud_logger.addHandler(handler)
>>> cloud_logger.error('bad news')
```

Note:

This handler by default uses an asynchronous transport that sends log entries on a background thread. However, the API call will still be made in the same process. For other transport options, see the transports section.

All logs will go to a single custom log, which defaults to “python”. The name of the Python logger will be included in the structured log entry under the “python_logger” field. You can change it by providing a name to the handler:

```
>>> handler = CloudLoggingHandler(client, name="mycustomlog")
```

It is also possible to attach the handler to the root Python logger, so that for example a plain `logging.warn` call would be sent to Cloud Logging, as well as any other loggers created. However, you must avoid infinite recursion from the logging calls the client itself makes. A helper method `setup_logging` is provided to configure this automatically:

```
>>> import logging
>>> import google.cloud.logging # Don't conflict with standard logging
>>> from google.cloud.logging.handlers import CloudLoggingHandler, setup_logging
>>> client = google.cloud.logging.Client()
>>> handler = CloudLoggingHandler(client)
>>> logging.getLogger().setLevel(logging.INFO) # defaults to WARN
>>> setup_logging(handler)
>>> logging.error('bad news')
```

You can also exclude certain loggers:


```
>>> setup_logging(handler, excluded_loggers=('werkzeug',))
```

23.6.1 Python logging handler transports

The Python logging handler can use different transports. The default is `google.cloud.logging.handlers.BackgroundThreadTransport`.

1. `google.cloud.logging.handlers.BackgroundThreadTransport` this is the default. It writes entries on a background `python.threading.Thread`.
1. `google.cloud.logging.handlers.SyncTransport` this handler does a direct API call on each logging statement to write the entry.

23.7 Python Logging Module Handler

Python `logging` handlers for Stackdriver Logging.

```
class google.cloud.logging.handlers.handlers.CloudLoggingHandler (client,
                                                                name='python',
                                                                trans-
                                                                port=<class
                                                                'google.cloud.logging.handlers.transp
                                                                re-
                                                                source=Resource(type='global',
                                                                labels={}),
                                                                la-
                                                                bels=None)
```

Bases: `logging.StreamHandler`

Handler that directly makes Stackdriver logging API calls.

This is a Python standard `logging` handler using that can be used to route Python standard logging messages directly to the Stackdriver Logging API.

This handler is used when not in GAE or GKE environment.

This handler supports both an asynchronous and synchronous transport.

Parameters

- **client** (*google.cloud.logging.client*) – the authenticated Google Cloud Logging client for this handler to use
- **name** (*str*) – the name of the custom log in Stackdriver Logging. Defaults to 'python'. The name of the Python logger will be represented in the `python_logger` field.
- **transport** (*type*) – Class for creating new transport objects. It should extend from the base `Transport` type and implement `:meth'.Transport.send'`. Defaults to `BackgroundThreadTransport`. The other option is `SyncTransport`.
- **resource** (*Resource*) – (Optional) Monitored resource of the entry, defaults to the global resource type.
- **labels** (*dict*) – (Optional) Mapping of labels for the entry.

Example:

```
import logging
import google.cloud.logging
from google.cloud.logging.handlers import CloudLoggingHandler

client = google.cloud.logging.Client()
handler = CloudLoggingHandler(client)

cloud_logger = logging.getLogger('cloudLogger')
cloud_logger.setLevel(logging.INFO)
cloud_logger.addHandler(handler)

cloud_logger.error('bad news') # API call
```

emit (*record*)

Actually log the specified logging record.

Overrides the default emit behavior of StreamHandler.

See <https://docs.python.org/2/library/logging.html#handler-objects>

Parameters **record** (`logging.LogRecord`) – The record to be logged.

```
google.cloud.logging.handlers.handlers.setup_logging(handler, excluded_loggers=('google.cloud',
                                     'google.auth',
                                     'google_auth_httplib2'),
                                     log_level=20)
```

Attach a logging handler to the Python root logger

Excludes loggers that this library itself uses to avoid infinite recursion.

Parameters

- **handler** (`logging.handler`) – the handler to attach to the global handler
- **excluded_loggers** (*tuple*) – (Optional) The loggers to not attach the handler to. This will always include the loggers in the path of the logging client itself.
- **log_level** (*int*) – (Optional) Python logging log level. Defaults to logging.INFO.

Example:

```
import logging
import google.cloud.logging
from google.cloud.logging.handlers import CloudLoggingHandler

client = google.cloud.logging.Client()
handler = CloudLoggingHandler(client)
google.cloud.logging.handlers.setup_logging(handler)
logging.getLogger().setLevel(logging.DEBUG)

logging.error('bad news') # API call
```

23.8 Google App Engine flexible Log Handler

Logging handler for App Engine Flexible

Sends logs to the Stackdriver Logging API with the appropriate resource and labels for App Engine logs.

```
class google.cloud.logging.handlers.app_engine.AppEngineHandler (client,
                                                             name='app',
                                                             trans-
                                                             port=<class
                                                             'google.cloud.logging.handlers.transpo
```

Bases: `logging.StreamHandler`

A logging handler that sends App Engine-formatted logs to Stackdriver.

Parameters

- **client** (*Client*) – The authenticated Google Cloud Logging client for this handler to use.
- **transport** (*type*) – The transport class. It should be a subclass of *Transport*. If unspecified, *BackgroundThreadTransport* will be used.

emit (*record*)

Actually log the specified logging record.

Overrides the default emit behavior of `StreamHandler`.

See <https://docs.python.org/2/library/logging.html#handler-objects>

Parameters **record** (`logging.LogRecord`) – The record to be logged.

get_gae_labels ()

Return the labels for GAE app.

If the trace ID can be detected, it will be included as a label. Currently, no other labels are included.

Return type `dict`

Returns Labels for GAE app.

get_gae_resource ()

Return the GAE resource using the environment variables.

Return type `Resource`

Returns Monitored resource for GAE.

23.9 Google Container Engine Log Handler

Logging handler for Google Container Engine (GKE).

Formats log messages in a JSON format, so that Kubernetes clusters with the fluentd Google Cloud plugin installed can format their log messages so that metadata such as log level is properly captured.

```
class google.cloud.logging.handlers.container_engine.ContainerEngineHandler (stream=None)
Bases: logging.StreamHandler
```

Handler to format log messages the format expected by GKE fluent.

This handler is written to format messages for the Google Container Engine (GKE) fluentd plugin, so that metadata such as log level are properly set.

Initialize the handler.

If stream is not specified, `sys.stderr` is used.

format (*record*)

Format the message into JSON expected by fluentd.

Parameters **record** (`LogRecord`) – the log record

Return type `str`

Returns A JSON string formatted for GKE fluentd.

23.10 Python Logging Handler Sync Transport

Transport for Python logging handler.

Logs directly to the the Stackdriver Logging API with a synchronous call.

class `google.cloud.logging.handlers.transports.sync.SyncTransport` (*client*,
name)
Bases: `google.cloud.logging.handlers.transports.base.Transport`

Basic synchronous transport.

Uses this library's Logging client to directly make the API call.

send (*record*, *message*, *resource=None*, *labels=None*)
Overrides `transport.send()`.

Parameters

- **record** (`logging.LogRecord`) – Python log record that the handler was called with.
- **message** (`str`) – The message from the `LogRecord` after being formatted by the associated log formatters.
- **resource** (`Resource`) – (Optional) Monitored resource of the entry.
- **labels** (`dict`) – (Optional) Mapping of labels for the entry.

23.11 Python Logging Handler Threaded Transport

Transport for Python logging handler

Uses a background worker to log to Stackdriver Logging asynchronously.

class `google.cloud.logging.handlers.transports.background_thread.BackgroundThreadTransport`

Bases: `google.cloud.logging.handlers.transports.base.Transport`

Asynchronous transport that uses a background thread.

Parameters

- **client** (`Client`) – The Logging client.
- **name** (`str`) – the name of the logger.
- **grace_period** (`float`) – The amount of time to wait for pending logs to be submitted when the process is shutting down.
- **batch_size** (`int`) – The maximum number of items to send at a time in the background thread.

- **max_latency** (*float*) – The amount of time to wait for new logs before sending a new batch. It is strongly recommended to keep this smaller than the `grace_period`. This means this is effectively the longest amount of time the background thread will hold onto log entries before sending them to the server.

flush()

Submit any pending log records.

send (*record, message, resource=None, labels=None*)

Overrides `Transport.send()`.

Parameters

- **record** (`logging.LogRecord`) – Python log record that the handler was called with.
- **message** (*str*) – The message from the `LogRecord` after being formatted by the associated log formatters.
- **resource** (`Resource`) – (Optional) Monitored resource of the entry.
- **labels** (*dict*) – (Optional) Mapping of labels for the entry.

23.12 Python Logging Handler Sync Transport

Module containing base class for logging transport.

class `google.cloud.logging.handlers.transports.base.Transport`

Bases: `object`

Base class for Google Cloud Logging handler transports.

Subclasses of `Transport` must have constructors that accept a client and name object, and must override `send()`.

flush()

Submit any pending log records.

For blocking/sync transports, this is a no-op.

send (*record, message, resource=None, labels=None*)

Transport send to be implemented by subclasses.

Parameters

- **record** (`logging.LogRecord`) – Python log record that the handler was called with.
- **message** (*str*) – The message from the `LogRecord` after being formatted by the associated log formatters.
- **resource** (`Resource`) – (Optional) Monitored resource of the entry.
- **labels** (*dict*) – (Optional) Mapping of labels for the entry.

23.13 Installation

Install the `google-cloud-logging` library using `pip`:

```
$ pip install google-cloud-logging
```

23.14 Authentication and Configuration

- For an overview of authentication in `google-cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you should also set the `GOOGLE_CLOUD_PROJECT` environment variable for the project you'd like to interact with. If you are using Google App Engine or Google Compute Engine this will be detected automatically.
- The library now enables the gRPC transport for the logging API by default, assuming that the required dependencies are installed and importable. To *disable* this transport, set the `GOOGLE_CLOUD_DISABLE_GRPC` environment variable to a non-empty string, e.g.: `$ export GOOGLE_CLOUD_DISABLE_GRPC=true`.
- After configuring your environment, create a *Client*

```
from google.cloud import logging
client = logging.Client()
```

or pass in credentials and project explicitly

```
from google.cloud import logging
client = logging.Client(project='my-project', credentials=credentials)
```

23.15 Writing log entries

To write log entries, first create a *Logger*, passing the “log name” with which to associate the entries:

```
logger = client.logger(LOG_NAME)
```

Write a simple text entry to the logger.

```
logger.log_text("A simple entry") # API call
```

Write a dictionary entry to the logger.

```
logger.log_struct({
    'message': 'My second entry',
    'weather': 'partly cloudy',
}) # API call
```

23.16 Retrieving log entries

Fetch entries for the default project.

```
for entry in client.list_entries(): # API call(s)
    do_something_with(entry)
```

Entries returned by *Client.list_entries* or *Logger.list_entries* will be instances of one of the following classes:

- `TextEntry`
- `StructEntry`
- `ProtobufEntry`

Fetch entries across multiple projects.

```
PROJECT_IDS = ['one-project', 'another-project']
for entry in client.list_entries(project_ids=PROJECT_IDS): # API call(s)
    do_something_with(entry)
```

Filter entries retrieved using the [Advanced Logs Filters](#) syntax

Fetch entries for the default project.

```
FILTER = 'logName:log_name AND textPayload:simple'
for entry in client.list_entries(filter_=FILTER): # API call(s)
    do_something_with(entry)
```

Sort entries in descending timestamp order.

```
from google.cloud.logging import DESCENDING
for entry in client.list_entries(order_by=DESCENDING): # API call(s)
    do_something_with(entry)
```

Retrieve entries in batches of 10, iterating until done.

```
iterator = client.list_entries()
pages = iterator.pages

page1 = next(pages) # API call
for entry in page1:
    do_something_with(entry)

page2 = next(pages) # API call
for entry in page2:
    do_something_with(entry)
```

Retrieve entries for a single logger, sorting in descending timestamp order:

```
from google.cloud.logging import DESCENDING
for entry in logger.list_entries(order_by=DESCENDING): # API call(s)
    do_something_with(entry)
```

23.17 Delete all entries for a logger

```
logger.delete() # API call
```

23.18 Manage log metrics

Metrics are counters of entries which match a given filter. They can be used within Stackdriver Monitoring to create charts and alerts.

List all metrics for a project:

```
for metric in client.list_metrics(): # API call(s)
    do_something_with(metric)
```

Create a metric:

```
metric = client.metric(
    METRIC_NAME, filter_=FILTER, description=DESCRIPTION)
assert not metric.exists() # API call
metric.create() # API call
assert metric.exists() # API call
```

Refresh local information about a metric:

```
existing_metric = client.metric(METRIC_NAME)
existing_metric.reload() # API call
```

Update a metric:

```
existing_metric.filter_ = UPDATED_FILTER
existing_metric.description = UPDATED_DESCRIPTION
existing_metric.update() # API call
```

Delete a metric:

```
metric.delete()
```

23.19 Export log entries using sinks

Sinks allow exporting entries which match a given filter to Cloud Storage buckets, BigQuery datasets, or Cloud Pub/Sub topics.

23.19.1 Export to Cloud Storage

Make sure that the storage bucket you want to export logs too has `cloud-logs@google.com` as the owner. See [Setting permissions for Cloud Storage](#).

Add `cloud-logs@google.com` as the owner of the bucket:

```
bucket.acl.reload() # API call
logs_group = bucket.acl.group('cloud-logs@google.com')
logs_group.grant_owner()
bucket.acl.add_entity(logs_group)
bucket.acl.save() # API call
```

Create a Cloud Storage sink:

```
DESTINATION = 'storage.googleapis.com/%s' % (bucket.name,)
sink = client.sink(SINK_NAME, filter_=FILTER, destination=DESTINATION)
assert not sink.exists() # API call
sink.create() # API call
assert sink.exists() # API call
```


23.19.2 Export to BigQuery

To export logs to BigQuery you must log into the Cloud Platform Console and add `cloud-logs@google.com` to a dataset.

See: [Setting permissions for BigQuery](#)

```
from google.cloud.bigquery.dataset import AccessGrant
grants = dataset.access_grants
grants.append(AccessGrant(
    'WRITER', 'groupByEmail', 'cloud-logs@google.com'))
dataset.access_grants = grants
dataset.update()  # API call
```

Create a BigQuery sink:

```
DESTINATION = 'bigquery.googleapis.com%s' % (dataset.path,)
sink = client.sink(SINK_NAME, filter_=FILTER, destination=DESTINATION)
assert not sink.exists()  # API call
sink.create()  # API call
assert sink.exists()  # API call
```

23.19.3 Export to Pub/Sub

To export logs to BigQuery you must log into the Cloud Platform Console and add `cloud-logs@google.com` to a topic.

See: [Setting permissions for Pub/Sub](#)

```
policy = topic.get_iam_policy()  # API call
policy.owners.add(policy.group('cloud-logs@google.com'))
topic.set_iam_policy(policy)  # API call
```

Create a Cloud Pub/Sub sink:

```
DESTINATION = 'pubsub.googleapis.com/%s' % (topic.full_name,)
sink = client.sink(SINK_NAME, filter_=FILTER, destination=DESTINATION)
assert not sink.exists()  # API call
sink.create()  # API call
assert sink.exists()  # API call
```

23.19.4 Manage Sinks

List all sinks for a project:

```
for sink in client.list_sinks():  # API call(s)
    do_something_with(sink)
```

Refresh local information about a sink:

```
existing_sink = client.sink(SINK_NAME)
existing_sink.reload()
```

Update a sink:

```
existing_sink.filter_ = UPDATED_FILTER
existing_sink.update()
```

Delete a sink:

```
sink.delete()
```

23.20 Integration with Python logging module

It's possible to tie the Python `logging` module directly into Google Stackdriver Logging. There are different handler options to accomplish this. To automatically pick the default for your current environment, use `get_default_handler()`.

```
import logging
handler = client.get_default_handler()
cloud_logger = logging.getLogger('cloudLogger')
cloud_logger.setLevel(logging.INFO)
cloud_logger.addHandler(handler)
cloud_logger.error('bad news')
```

It is also possible to attach the handler to the root Python logger, so that for example a plain `logging.warn` call would be sent to Stackdriver Logging, as well as any other loggers created. A helper method `setup_logging()` is provided to configure this automatically.

```
client.setup_logging(log_level=logging.INFO)
```

Note: To reduce cost and quota usage, do not enable Stackdriver logging handlers while testing locally.

You can also exclude certain loggers:

```
client.setup_logging(log_level=logging.INFO,
                    excluded_loggers=('werkzeug',))
```

23.20.1 Cloud Logging Handler

If you prefer not to use `get_default_handler()`, you can directly create a `CloudLoggingHandler` instance which will write directly to the API.

```
from google.cloud.logging.handlers import CloudLoggingHandler
handler = CloudLoggingHandler(client)
cloud_logger = logging.getLogger('cloudLogger')
cloud_logger.setLevel(logging.INFO)
cloud_logger.addHandler(handler)
cloud_logger.error('bad news')
```

Note: This handler by default uses an asynchronous transport that sends log entries on a background thread. However, the API call will still be made in the same process. For other transport options, see the transports section.

All logs will go to a single custom log, which defaults to “python”. The name of the Python logger will be included in the structured log entry under the “python_logger” field. You can change it by providing a name to the handler:

```
handler = CloudLoggingHandler(client, name='mycustomlog')
```

23.20.2 Cloud Logging Handler transports

The `CloudLoggingHandler` logging handler can use different transports. The default is `BackgroundThreadTransport`.

1. `BackgroundThreadTransport` this is the default. It writes entries on a background `python.threading.Thread`.
1. `SyncTransport` this handler does a direct API call on each logging statement to write the entry.

23.20.3 fluentd logging handlers

Besides `CloudLoggingHandler`, which writes directly to the API, two other handlers are provided. `AppEngineHandler`, which is recommended when running on the Google App Engine Flexible vanilla runtimes (i.e. your `app.yaml` contains `runtime: python`), and `ContainerEngineHandler`, which is recommended when running on Google Container Engine with the Stackdriver Logging plugin enabled.

`get_default_handler()` and `setup_logging()` will attempt to use the environment to automatically detect whether the code is running in these platforms and use the appropriate handler.

In both cases, the fluentd agent is configured to automatically parse log files in an expected format and forward them to Stackdriver logging. The handlers provided help set the correct metadata such as log level so that logs can be filtered accordingly.

23.20.4 Changelog

For a list of all `google-cloud-logging` releases:

Changelog

PyPI History

1.6.0

Dependencies

- The minimum version for `google-api-core` has been updated to version 1.0.0. This may cause some incompatibility with older `google-cloud` libraries, you will need to update those libraries if you have a dependency conflict. (#4944, #4946)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all `setup.py` files (#4909)

1.5.0

New features

- Added `max_latency` to `BackgroundThreadTransport`. (#4762)
- Added support for unique writer identity in `Sink`. (#4595, #4708, #4704, #4706)

Implementation changes

- The underlying auto-generated client library was re-generated to pick up new features and bugfixes. (#4759)
- Moved the code path of `get_gae_labels()` to `emit()`. (#4824)
- Removed a debug print statement. (#4838)
- `LogSink.create` captures the server-generated `writerIdentity`. (#4707)
- Accomodated a back-end change making `Sink.filter` optional. (#4699)

Testing

- Fixed system tests (#4768)
- Hardened test for `retrieve_metadata_server` against transparent DNS proxies. (#4698)
- Added cleanup for Pub / Sub topic in logging system test. (#4532)
- Added another check for Python 2.7 in Logging `nox -s default`. (#4523)
- Pinned `django` test dependency to `< 2.0` in Python 2.7. (#4519)
- Maked a `nox -s default` session for all packages. (#4324)
- Shortened test names. (#4321)

Documentation

- Added doc to highlight missing `uniqueWriterIdentity` field. (#4579)
- Fixing “Fore” -> “For” typo in README docs. (#4317)

1.4.0

Implementation Changes

- Remove `deepcopy` of `Client._http` in background transport (#3954)

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Deferring to `google-api-core` for `grpcio` and `googleapis-common-protos` dependencies (#4096, #4098)

PyPI: <https://pypi.org/project/google-cloud-logging/1.4.0/>

Python Client for Google Cloud Memorystore for Redis API (Alpha)

Google Cloud Memorystore for Redis API: The Google Cloud Memorystore for Redis API is used for creating and managing Redis instances on the Google Cloud Platform.

- [Client Library Documentation](#)
- [Product Documentation](#)

24.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. [Select or create a Cloud Platform project.](#)
2. [Enable billing for your project.](#)
3. [Enable the Google Cloud Memorystore for Redis API.](#)
4. [Setup Authentication.](#)

24.1.1 Installation

Install this library in a [virtualenv](#) using `pip`. [virtualenv](#) is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With [virtualenv](#), it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-redis
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-redis
```

24.1.2 Next Steps

- Read the [Client Library Documentation](#) for Google Cloud Memorystore for Redis API API to see other available methods on the client.
- Read the [Google Cloud Memorystore for Redis API Product documentation](#) to learn more about the product and see How-to Guides.
- View this [repository's main README](#) to see the full list of Cloud APIs that we cover.

24.2 Api Reference

24.2.1 Client for Google Cloud Memorystore for Redis API

```
class google.cloud.redis_v1beta1.CloudRedisClient (channel=None, credentials=None,
                                                    client_config={'interfaces':
{'google.cloud.redis.v1beta1.CloudRedis':
{'retry_codes': {'idempotent':
['DEADLINE_EXCEEDED', 'UNAVAILABLE'], 'non_idempotent':
[]}, 'retry_params': {'default':
{'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
20000, 'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
20000, 'total_timeout_millis':
600000}}, 'methods': {'ListInstances':
{'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'default'},
'GetInstance': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'default'},
'CreateInstance': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'},
'UpdateInstance': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name': 'default'},
'DeleteInstance': {'timeout_millis':
60000, 'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'}}}}, client_info=None)
```

Configures and manages Cloud Memorystore for Redis instances

Google Cloud Memorystore for Redis v1beta1

The `redis.googleapis.com` service implements the Google Cloud Memorystore for Redis API and defines the following resource model for managing Redis instances: * The service works with a collection of cloud projects, named: `/projects/` * Each project has a collection of available locations, named: `/locations/` * Each location has a collection of Redis instances, named: `/instances/` * As such, Redis instances are resources of the form:

```
/projects/{project_id}/locations/{location_id}/instances/
{instance_id}
```

Note that `location_id` must be referring to a GCP region; for example: `* projects/redpepper-1290/`

locations/us-central1/instances/my-redis

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

create_instance (*parent, instance_id, instance, retry=<object object>, timeout=<object object>, metadata=None*)

Creates a Redis instance based on the specified tier and memory size.

By default, the instance is peered to the project's [default network](#).

The creation is executed asynchronously and callers may check the returned operation to track its progress. Once the operation is completed the Redis instance will be fully functional. Completed long-running.Operation will contain the new instance object in the response field.

The returned operation is automatically deleted after a few hours, so there is no need to call DeleteOperation.

Example

```
>>> from google.cloud import redis_v1beta1
>>> from google.cloud.redis_v1beta1 import enums
>>>
>>> client = redis_v1beta1.CloudRedisClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>> instance_id = 'test_instance'
>>> tier = enums.Instance.Tier.BASIC
>>> memory_size_gb = 1
>>> instance = {'tier': tier, 'memory_size_gb': memory_size_gb}
>>>
>>> response = client.create_instance(parent, instance_id, instance)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **parent** (*str*) – Required. The resource name of the instance location using the form: `projects/{project_id}/locations/{location_id}` where `location_id` refers to a GCP region `instance_id` (*str*): Required. The logical name of the Redis instance in the customer project with the following restrictions:
 - Must contain only lowercase letters, numbers, and hyphens.
 - Must start with a letter.
 - Must be between 1-40 characters.
 - Must end with a number or a letter.
 - Must be unique within the customer project / location
- **instance** (*Union[dict, Instance]*) – Required. A Redis [Instance] resource. If a dict is provided, it must be of the same form as the protobuf message *Instance*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_instance (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Deletes a specific Redis instance. Instance stops serving and data is deleted.

Example

```
>>> from google.cloud import redis_v1beta1
>>>
>>> client = redis_v1beta1.CloudRedisClient()
>>>
>>> name = client.instance_path('[PROJECT]', '[LOCATION]', '[INSTANCE]')
>>>
>>> response = client.delete_instance(name)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
```

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```
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **name** (*str*) – Required. Redis instance resource name using the form: `projects/{project_id}/locations/{location_id}/instances/{instance_id}` where `location_id` refers to a GCP region
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.redis_v1beta1.gapic.enums' from '/home/docs/checkouts/re
```

```
get_instance(name, retry=<object object>, timeout=<object object>, metadata=None)
```

Gets the details of a specific Redis instance.

Example

```
>>> from google.cloud import redis_v1beta1
>>>
>>> client = redis_v1beta1.CloudRedisClient()
>>>
>>> name = client.instance_path('[PROJECT]', '[LOCATION]', '[INSTANCE]')
>>>
>>> response = client.get_instance(name)
```

Parameters

- **name** (*str*) – Required. Redis instance resource name using the form: `projects/{project_id}/locations/{location_id}/instances/{instance_id}` where `location_id` refers to a GCP region
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *Instance* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

classmethod instance_path (*project, location, instance*)

Return a fully-qualified instance string.

list_instances (*parent, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists all Redis instances owned by a project in either the specified location (region) or all locations.

The location should have the following format: * `projects/{project_id}/locations/{location_id}`

If `location_id` is specified as `-` (wildcard), then all regions available to the project are queried, and the results are aggregated.

Example

```
>>> from google.cloud import redis_v1beta1
>>>
>>> client = redis_v1beta1.CloudRedisClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_instances(parent):
...     # process element
...     pass
>>>
>>> # Or iterate over results one page at a time
>>> for page in client.list_instances(parent, options=CallOptions(page_
→token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – Required. The resource name of the instance location using the form: `projects/{project_id}/locations/{location_id}` where `location_id` refers to a GCP region

- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `Instance` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod location_path (*project, location*)

Return a fully-qualified location string.

update_instance (*update_mask, instance, retry=<object object>, timeout=<object object>, metadata=None*)

Updates the metadata and configuration of a specific Redis instance.

Completed longrunning.Operation will contain the new instance object in the response field. The returned operation is automatically deleted after a few hours, so there is no need to call `DeleteOperation`.

Example

```
>>> from google.cloud import redis_v1beta1
>>>
>>> client = redis_v1beta1.CloudRedisClient()
>>>
>>> paths_element = 'display_name'
>>> paths_element_2 = 'memory_size_gb'
>>> paths = [paths_element, paths_element_2]
>>> update_mask = {'paths': paths}
>>> display_name = 'UpdatedDisplayName'
>>> memory_size_gb = 4
>>> instance = {'display_name': display_name, 'memory_size_gb': memory_size_
↳ gb}
>>>
>>> response = client.update_instance(update_mask, instance)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
```

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```
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **update_mask** (*Union[dict, FieldMask]*) – Required. Mask of fields to update. At least one path must be supplied in this field. The elements of the repeated paths field may only include these fields from Instance: * display_name * labels * memory_size_gb * redis_config If a dict is provided, it must be of the same form as the protobuf message *FieldMask*
- **instance** (*Union[dict, Instance]*) – Required. Update description. Only fields specified in update_mask are updated. If a dict is provided, it must be of the same form as the protobuf message *Instance*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if retry is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *_OperationFuture* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

24.2.2 Types for Google Cloud Memorystore for Redis API Client

class google.cloud.redis_v1beta1.types.Any

class google.cloud.redis_v1beta1.types.CancelOperationRequest

class google.cloud.redis_v1beta1.types.CreateInstanceRequest

Request for [CreateInstance][google.cloud.redis.v1beta1.CloudRedis.CreateInstance].

parent

Required. The resource name of the instance location using the form: projects/{project_id}/locations/{location_id} where location_id refers to a GCP region

instance_id

Required. The logical name of the Redis instance in the customer project with the following restrictions:

- Must contain only lowercase letters, numbers, and hyphens.
- Must start with a letter.
- Must be between 1-40 characters.
- Must end with a number or a letter.
- Must be unique within the customer project / location

```
    instance
        Required. A Redis [Instance] resource

class google.cloud.redis_v1beta1.types.CustomHttpPattern

class google.cloud.redis_v1beta1.types.DeleteInstanceRequest
    Request for [DeleteInstance][google.cloud.redis.v1beta1.CloudRedis.DeleteInstance].

    name
        Required. Redis instance resource name using the form: projects/{project_id}/
        locations/{location_id}/instances/{instance_id} where location_id refers to
        a GCP region

class google.cloud.redis_v1beta1.types.DeleteOperationRequest

class google.cloud.redis_v1beta1.types.DescriptorProto

    class ExtensionRange
    class ReservedRange

class google.cloud.redis_v1beta1.types.Empty

class google.cloud.redis_v1beta1.types.EnumDescriptorProto

    class EnumReservedRange

class google.cloud.redis_v1beta1.types.EnumOptions
class google.cloud.redis_v1beta1.types.EnumValueDescriptorProto
class google.cloud.redis_v1beta1.types.EnumValueOptions
class google.cloud.redis_v1beta1.types.ExtensionRangeOptions
class google.cloud.redis_v1beta1.types.FieldDescriptorProto
class google.cloud.redis_v1beta1.types.FieldMask
class google.cloud.redis_v1beta1.types.FieldOptions
class google.cloud.redis_v1beta1.types.FileDescriptorProto
class google.cloud.redis_v1beta1.types.FileDescriptorSet
class google.cloud.redis_v1beta1.types.FileOptions
class google.cloud.redis_v1beta1.types.GeneratedCodeInfo

    class Annotation

class google.cloud.redis_v1beta1.types.GetInstanceRequest
    Request for [GetInstance][google.cloud.redis.v1beta1.CloudRedis.GetInstance].

    name
        Required. Redis instance resource name using the form: projects/{project_id}/
        locations/{location_id}/instances/{instance_id} where location_id refers to
        a GCP region

class google.cloud.redis_v1beta1.types.GetOperationRequest

class google.cloud.redis_v1beta1.types.Http

class google.cloud.redis_v1beta1.types.HttpRule
```


class google.cloud.redis_v1beta1.types.Instance

A Google Cloud Redis instance.

name

Required. Unique name of the resource in this scope including project and location using the form: projects/{project_id}/locations/{location_id}/instances/{instance_id} Note: Redis instances are managed and addressed at regional level so location_id here refers to a GCP region; however, users get to choose which specific zone (or collection of zones for cross-zone instances) an instance should be provisioned in. Refer to [location_id] and [alternative_location_id] fields for more details.

display_name

An arbitrary and optional user-provided name for the instance.

labels

Resource labels to represent user provided metadata

location_id

Optional. The zone where the instance will be provisioned. If not provided, the service will choose a zone for the instance. For STANDARD_HA tier, instances will be created across two zones for protection against zonal failures. If [alternative_location_id] is also provided, it must be different from [location_id].

alternative_location_id

Optional. Only applicable to STANDARD_HA tier which protects the instance against zonal failures by provisioning it across two zones. If provided, it must be a different zone from the one provided in [location_id].

redis_version

Optional. The version of Redis software. If not provided, latest supported version will be used.

reserved_ip_range

Optional. The CIDR range of internal addresses that are reserved for this instance. If not provided, the service will choose an unused /29 block, for example, 10.0.0.0/29 or 192.168.0.0/29. Ranges must be unique and non-overlapping with existing subnets in a network.

host

Output only. Hostname or IP address of the exposed redis endpoint used by clients to connect to the service.

port

Output only. The port number of the exposed redis endpoint.

current_location_id

Output only. The current zone where the Redis endpoint is placed. In single zone deployments, this will always be the same as [location_id] provided by the user at creation time. In cross-zone instances (only applicable in STANDARD_HA tier), this can be either [location_id] or [alternative_location_id] and can change on a failover event.

create_time

Output only. The time the instance was created.

state

Output only. The current state of this instance.

status_message

Output only. Additional information about the current status of this instance, if available.

redis_configs

Optional. Redis configuration parameters, according to <http://redis.io/topics/config>. Currently, the only supported parameters are: * maxmemory-policy * notify-keyspace-events

tier

Required. The service tier of the instance.

memory_size_gb

Required. Redis memory size in GB.

authorized_network

Optional. The full name of the Google Compute Engine [network](#) to which the instance is connected. If left unspecified, the default network will be used.

class LabelsEntry**class RedisConfigsEntry****class google.cloud.redis_v1beta1.types.ListInstancesRequest**

Request for [ListInstances][google.cloud.redis.v1beta1.CloudRedis.ListInstances].

parent

Required. The resource name of the instance location using the form: projects/{project_id}/locations/{location_id} where location_id refers to a GCP region

page_size

The maximum number of items to return. If not specified, a default value of 1000 will be used by the service. Regardless of the page_size value, the response may include a partial list and a caller should only rely on response's [next_page_token][CloudRedis.ListInstancesResponse.next_page_token] to determine if there are more instances left to be queried.

page_token

The next_page_token value returned from a previous List request, if any.

class google.cloud.redis_v1beta1.types.ListInstancesResponse

Response for [ListInstances][google.cloud.redis.v1beta1.CloudRedis.ListInstances].

instances

A list of Redis instances in the project in the specified location, or across all locations. If the location_id in the parent field of the request is “-“, all regions available to the project are queried, and the results aggregated. If in such an aggregated query a location is unavailable, a dummy Redis entry is included in the response with the “name” field set to a value of the form projects/{project_id}/locations/{location_id}/instances/- and the “status” field set to ERROR and “status_message” field set to “location not available for ListInstances”.

next_page_token

Token to retrieve the next page of results, or empty if there are no more results in the list.

class google.cloud.redis_v1beta1.types.ListOperationsRequest**class google.cloud.redis_v1beta1.types.ListOperationsResponse****class google.cloud.redis_v1beta1.types.LocationMetadata**

This location metadata represents additional configuration options for a given location where a Redis instance may be created. All fields are output only. It is returned as content of the google.cloud.location.Location.metadata field.

available_zones

Output only. The set of available zones in the location. The map is keyed by the lowercase ID of each zone, as defined by GCE. These keys can be specified in location_id or alternative_location_id fields when creating a Redis instance.

class AvailableZonesEntry**class google.cloud.redis_v1beta1.types.MessageOptions****class google.cloud.redis_v1beta1.types.MethodDescriptorProto**

```
class google.cloud.redis_v1beta1.types.MethodOptions
class google.cloud.redis_v1beta1.types.OneofDescriptorProto
class google.cloud.redis_v1beta1.types.OneofOptions
class google.cloud.redis_v1beta1.types.Operation
class google.cloud.redis_v1beta1.types.ServiceDescriptorProto
class google.cloud.redis_v1beta1.types.ServiceOptions
class google.cloud.redis_v1beta1.types.SourceCodeInfo
```

```
    class Location
```

```
class google.cloud.redis_v1beta1.types.Status
class google.cloud.redis_v1beta1.types.Timestamp
class google.cloud.redis_v1beta1.types.UninterpretedOption
```

```
    class NamePart
```

```
class google.cloud.redis_v1beta1.types.UpdateInstanceRequest
    Request for [UpdateInstance][google.cloud.redis.v1beta1.CloudRedis.UpdateInstance].
```

```
    update_mask
```

Required. Mask of fields to update. At least one path must be supplied in this field. The elements of the repeated paths field may only include these fields from [Instance][CloudRedis.Instance]: * display_name * labels * memory_size_gb * redis_config

```
    instance
```

Required. Update description. Only fields specified in update_mask are updated.

```
class google.cloud.redis_v1beta1.types.ZoneMetadata
    Defines specific information for a particular zone. Currently empty and reserved for future use only.
```


25.1 Blobs / Objects

Create / interact with Google Cloud Storage blobs.

```
class google.cloud.storage.blob.Blob (name, bucket, chunk_size=None, encryption_key=None, kms_key_name=None)
```

Bases: `google.cloud.storage._helpers._PropertyMixin`

A wrapper around Cloud Storage's concept of an Object.

Parameters

- **name** (*str*) – The name of the blob. This corresponds to the unique path of the object in the bucket. If bytes, will be converted to a unicode object. Blob / object names can contain any sequence of valid unicode characters, of length 1-1024 bytes when UTF-8 encoded.
- **bucket** (*google.cloud.storage.bucket.Bucket*) – The bucket to which this blob belongs.
- **chunk_size** (*int*) – The size of a chunk of data whenever iterating (in bytes). This must be a multiple of 256 KB per the API specification.
- **encryption_key** (*bytes*) – Optional 32 byte encryption key for customer-supplied encryption. See <https://cloud.google.com/storage/docs/encryption#customer-supplied>.
- **kms_key_name** (*str*) – Optional resource name of Cloud KMS key used to encrypt the blob's contents.

acl

Create our ACL on demand.

cache_control

HTTP 'Cache-Control' header for this object.

See RFC 7234 and [API reference docs](#).

Return type str or NoneType

chunk_size

Get the blob's default chunk size.

Return type int or NoneType

Returns The current blob's chunk size, if it is set.

client

The client bound to this blob.

component_count

Number of underlying components that make up this object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type int or NoneType

Returns The component count (in case of a composed object) or `None` if the blob's resource has not been loaded from the server. This property will not be set on objects not created via `compose`.

compose (*sources*, *client=None*)

Concatenate source blobs into this one.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **sources** (list of [Blob](#)) – blobs whose contents will be composed into this blob.
- **client** ([Client](#) or NoneType) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.

Raises [ValueError](#) if this blob does not have its `content_type` set.

content_disposition

HTTP 'Content-Disposition' header for this object.

See [RFC 6266](#) and [API reference docs](#).

Return type str or NoneType

content_encoding

HTTP 'Content-Encoding' header for this object.

See [RFC 7231](#) and [API reference docs](#).

Return type str or NoneType

content_language

HTTP 'Content-Language' header for this object.

See [BCP47](#) and [API reference docs](#).

Return type str or NoneType

content_type

HTTP 'Content-Type' header for this object.

See [RFC 2616](#) and [API reference docs](#).

Return type str or NoneType

crc32c

CRC32C checksum for this object.

See [RFC 4960](#) and [API reference docs](#).

If not set before upload, the server will compute the hash.

Return type `str` or `NoneType`

create_resumable_upload_session (*content_type=None, size=None, origin=None, client=None*)

Create a resumable upload session.

Resumable upload sessions allow you to start an upload session from one client and complete the session in another. This method is called by the initiator to set the metadata and limits. The initiator then passes the session URL to the client that will upload the binary data. The client performs a PUT request on the session URL to complete the upload. This process allows untrusted clients to upload to an access-controlled bucket. For more details, see the [documentation on signed URLs](#).

The content type of the upload will be determined in order of precedence:

- The value passed in to this method (if not `None`)
- The value stored on the current blob
- The default value ('application/octet-stream')

Note: The effect of uploading to an existing blob depends on the “versioning” and “lifecycle” policies defined on the blob’s bucket. In the absence of those policies, upload will overwrite any existing contents.

See the [object versioning](#) and [lifecycle](#) API documents for details.

If `encryption_key` is set, the blob will be encrypted with a [customer-supplied](#) encryption key.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **size** (*int*) – (Optional). The maximum number of bytes that can be uploaded using this session. If the size is not known when creating the session, this should be left blank.
- **content_type** (*str*) – (Optional) Type of content being uploaded.
- **origin** (*str*) – (Optional) If set, the upload can only be completed by a user-agent that uploads from the given origin. This can be useful when passing the session to a web client.
- **client** (*Client*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the blob’s bucket.

Return type `str`

Returns The resumable upload session URL. The upload can be completed by making an HTTP PUT request with the file’s contents.

Raises `google.cloud.exceptions.GoogleCloudError` if the session creation response returns an error status.

delete (*client=None*)

Deletes a blob from Cloud Storage.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters `client` (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.

Return type *Blob*

Returns The blob that was just deleted.

Raises `google.cloud.exceptions.NotFound` (propagated from `google.cloud.storage.bucket.Bucket.delete_blob()`).

download_as_string (*client=None, start=None, end=None*)

Download the contents of this blob as a string.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.
- **start** (*int*) – Optional, the first byte in a range to be downloaded.
- **end** (*int*) – Optional, The last byte in a range to be downloaded.

Return type *bytes*

Returns The data stored in this blob.

Raises `google.cloud.exceptions.NotFound`

download_to_file (*file_obj, client=None, start=None, end=None*)

Download the contents of this blob into a file-like object.

Note: If the server-set property, `media_link`, is not yet initialized, makes an additional API request to load it.

Downloading a file that has been encrypted with a [customer-supplied](#) encryption key:

```
from google.cloud.storage import Blob

client = storage.Client(project='my-project')
bucket = client.get_bucket('my-bucket')
encryption_key = 'c7f32af42e45e85b9848a6a14dd2a8f6'
blob = Blob('secure-data', bucket, encryption_key=encryption_key)
blob.upload_from_string('my secret message.')
with open('/tmp/my-secure-file', 'wb') as file_obj:
    blob.download_to_file(file_obj)
```

The `encryption_key` should be a str or bytes with a length of at least 32.

For more fine-grained control over the download process, check out [google-resumable-media](#). For example, this library allows downloading **parts** of a blob rather than the whole thing.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **file_obj** (*file*) – A file handle to which to write the blob's data.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.
- **start** (*int*) – Optional, the first byte in a range to be downloaded.

- **end** (*int*) – Optional, The last byte in a range to be downloaded.

Raises `google.cloud.exceptions.NotFound`

download_to_filename (*filename*, *client=None*, *start=None*, *end=None*)

Download the contents of this blob into a named file.

If *user_project* is set on the bucket, bills the API request to that project.

Parameters

- **filename** (*str*) – A filename to be passed to `open`.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.
- **start** (*int*) – Optional, the first byte in a range to be downloaded.
- **end** (*int*) – Optional, The last byte in a range to be downloaded.

Raises `google.cloud.exceptions.NotFound`

etag

Retrieve the ETag for the object.

See [RFC 2616 \(etags\)](#) and [API reference docs](#).

Return type `str` or `NoneType`

Returns The blob etag or `None` if the blob's resource has not been loaded from the server.

exists (*client=None*)

Determines whether or not this blob exists.

If *user_project* is set on the bucket, bills the API request to that project.

Parameters **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.

Return type `bool`

Returns True if the blob exists in Cloud Storage.

generate_signed_url (*expiration*, *method='GET'*, *content_type=None*, *generation=None*, *response_disposition=None*, *response_type=None*, *client=None*, *credentials=None*)

Generates a signed URL for this blob.

Note: If you are on Google Compute Engine, you can't generate a signed URL. Follow [Issue 50](#) for updates on this. If you'd like to be able to generate a signed URL from GCE, you can use a standard service account from a JSON file rather than a GCE service account.

If you have a blob that you want to allow access to for a set amount of time, you can use this method to generate a URL that is only valid within a certain time period.

This is particularly useful if you don't want publicly accessible blobs, but don't want to require users to explicitly log in.

Parameters

- **expiration** (*int*, *long*, *datetime.datetime*, *datetime.timedelta*) – When the signed URL should expire.
- **method** (*str*) – The HTTP verb that will be used when requesting the URL.

- **content_type** (*str*) – (Optional) The content type of the object referenced by resource.
- **generation** (*str*) – (Optional) A value that indicates which generation of the resource to fetch.
- **response_disposition** (*str*) – (Optional) Content disposition of responses to requests for the signed URL. For example, to enable the signed URL to initiate a file of `blog.png`, use the value `'attachment; filename=blog.png'`.
- **response_type** (*str*) – (Optional) Content type of responses to requests for the signed URL. Used to over-ride the content type of the underlying blob/object.
- **client** (*Client* or *NoneType*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the blob's bucket.
- **credentials** (*oauth2client.client.OAuth2Credentials* or *NoneType*) – (Optional) The OAuth2 credentials to use to sign the URL. Defaults to the credentials stored on the client used.

Return type *str*

Returns A signed URL you can use to access the resource until expiration.

generation

Retrieve the generation for the object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type *int* or *NoneType*

Returns The generation of the blob or `None` if the blob's resource has not been loaded from the server.

get_iam_policy (*client=None*)

Retrieve the IAM policy for the object.

If *user_project* is set on the bucket, bills the API request to that project.

Parameters **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the current object's bucket.

Return type *google.cloud.iam.Policy*

Returns the policy instance, based on the resource returned from the `getIamPolicy` API request.

id

Retrieve the ID for the object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

The ID consists of the bucket name, object name, and generation number.

Return type *str* or *NoneType*

Returns The ID of the blob or `None` if the blob's resource has not been loaded from the server.

kms_key_name

Resource name of Cloud KMS key used to encrypt the blob's contents.

Return type *str* or *NoneType*

Returns The resource name or `None` if no Cloud KMS key was used, or the blob's resource has not been loaded from the server.

make_private (*client=None*)

Make this blob private by removing *allusers* read access. Does not revoke access for anything other than the *allusers* group.

Parameters *client* (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the *client* stored on the blob's bucket.

make_public (*client=None*)

Make this blob public giving all users read access.

Parameters *client* (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the *client* stored on the blob's bucket.

md5_hash

MD5 hash for this object.

See [RFC 1321](#) and [API reference docs](#).

If not set before upload, the server will compute the hash.

Return type *str* or *NoneType*

media_link

Retrieve the media download URI for the object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type *str* or *NoneType*

Returns The media link for the blob or *None* if the blob's resource has not been loaded from the server.

metadata

Retrieve arbitrary/application specific metadata for the object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Setter Update arbitrary/application specific metadata for the object.

Getter Retrieve arbitrary/application specific metadata for the object.

Return type *dict* or *NoneType*

Returns The metadata associated with the blob or *None* if the property is not set.

metageneration

Retrieve the metageneration for the object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type *int* or *NoneType*

Returns The metageneration of the blob or *None* if the blob's resource has not been loaded from the server.

owner

Retrieve info about the owner of the object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type *dict* or *NoneType*

Returns Mapping of owner's role/ID, or *None* if the blob's resource has not been loaded from the server.

patch (*client=None*)

Sends all changed properties in a PATCH request.

Updates the `_properties` with the response from the backend.

If `user_project` is set, bills the API request to that project.

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current object.

path

Getter property for the URL path to this Blob.

Return type *str*

Returns The URL path to this Blob.

static path_helper (*bucket_path, blob_name*)

Relative URL path for a blob.

Parameters

- **bucket_path** (*str*) – The URL path for a bucket.
- **blob_name** (*str*) – The name of the blob.

Return type *str*

Returns The relative URL path for `blob_name`.

public_url

The public URL for this blob's object.

Return type *string*

Returns The public URL for this blob.

reload (*client=None*)

Reload properties from Cloud Storage.

If `user_project` is set, bills the API request to that project.

Parameters **client** (*Client* or *NoneType*) – the client to use. If not passed, falls back to the `client` stored on the current object.

rewrite (*source, token=None, client=None*)

Rewrite source blob into this one.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **source** (*Blob*) – blob whose contents will be rewritten into this blob.
- **token** (*str*) – Optional. Token returned from an earlier, not-completed call to rewrite the same source blob. If passed, result will include updated status, total bytes written.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.

Return type *tuple*

Returns (`token`, `bytes_rewritten`, `total_bytes`), where `token` is a rewrite token (`None` if the rewrite is complete), `bytes_rewritten` is the number of bytes rewritten so far, and `total_bytes` is the total number of bytes to be rewritten.

self_link

Retrieve the URI for the object.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type str or NoneType

Returns The self link for the blob or None if the blob's resource has not been loaded from the server.

set_iam_policy (*policy*, *client=None*)

Update the IAM policy for the bucket.

If *user_project* is set on the bucket, bills the API request to that project.

Parameters

- **policy** (*google.cloud.iam.Policy*) – policy instance used to update bucket's IAM policy.
- **client** (*Client* or NoneType) – Optional. The client to use. If not passed, falls back to the *client* stored on the current bucket.

Return type *google.cloud.iam.Policy*

Returns the policy instance, based on the resource returned from the `setIamPolicy` API request.

size

Size of the object, in bytes.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type int or NoneType

Returns The size of the blob or None if the blob's resource has not been loaded from the server.

storage_class

Retrieve the storage class for the object.

This can only be set at blob / object **creation** time. If you'd like to change the storage class **after** the blob / object already exists in a bucket, call `update_storage_class()` (which uses the "storage.objects.rewrite" method).

See <https://cloud.google.com/storage/docs/storage-classes>

Return type str or NoneType

Returns If set, one of "MULTI_REGIONAL", "REGIONAL", "NEARLINE", "COLD-LINE", "STANDARD", or "DURABLE_REDUCED_AVAILABILITY", else None.

test_iam_permissions (*permissions*, *client=None*)

API call: test permissions

If *user_project* is set on the bucket, bills the API request to that project.

Parameters

- **permissions** (*list of string*) – the permissions to check
- **client** (*Client* or NoneType) – Optional. The client to use. If not passed, falls back to the *client* stored on the current bucket.

Return type list of string

Returns the permissions returned by the `testIamPermissions` API request.

time_created

Retrieve the timestamp at which the object was created.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type `datetime.datetime` or `NoneType`

Returns Datetime object parsed from RFC3339 valid timestamp, or `None` if the blob's resource has not been loaded from the server (see `reload()`).

time_deleted

Retrieve the timestamp at which the object was deleted.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type `datetime.datetime` or `NoneType`

Returns Datetime object parsed from RFC3339 valid timestamp, or `None` if the blob's resource has not been loaded from the server (see `reload()`). If the blob has not been deleted, this will never be set.

update (*client=None*)

Sends all properties in a PUT request.

Updates the `_properties` with the response from the backend.

If `user_project` is set, bills the API request to that project.

Parameters **client** (*Client* or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current object.

update_storage_class (*new_class, client=None*)

Update blob's storage class via a rewrite-in-place.

See <https://cloud.google.com/storage/docs/per-object-storage-class>

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **new_class** (*str*) – new storage class for the object
- **client** (*Client*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob's bucket.

updated

Retrieve the timestamp at which the object was updated.

See https://cloud.google.com/storage/docs/json_api/v1/objects

Return type `datetime.datetime` or `NoneType`

Returns Datetime object parsed from RFC3339 valid timestamp, or `None` if the blob's resource has not been loaded from the server (see `reload()`).

upload_from_file (*file_obj, rewind=False, size=None, content_type=None, num_retries=None, client=None, predefined_acl=None*)

Upload the contents of this blob from a file-like object.

The content type of the upload will be determined in order of precedence:

- The value passed in to this method (if not `None`)
- The value stored on the current blob
- The default value ('application/octet-stream')

Note: The effect of uploading to an existing blob depends on the “versioning” and “lifecycle” policies defined on the blob’s bucket. In the absence of those policies, upload will overwrite any existing contents.

See the [object versioning](#) and [lifecycle](#) API documents for details.

Uploading a file with a [customer-supplied](#) encryption key:

```
from google.cloud.storage import Blob

client = storage.Client(project='my-project')
bucket = client.get_bucket('my-bucket')
encryption_key = 'aa426195405adee2c8081bb9e7e74b19'
blob = Blob('secure-data', bucket, encryption_key=encryption_key)
with open('my-file', 'rb') as my_file:
    blob.upload_from_file(my_file)
```

The `encryption_key` should be a str or bytes with a length of at least 32.

For more fine-grained over the upload process, check out [google-resumable-media](#).

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **file_obj** (*file*) – A file handle open for reading.
- **rewind** (*bool*) – If True, seek to the beginning of the file handle before writing the file to Cloud Storage.
- **size** (*int*) – The number of bytes to be uploaded (which will be read from `file_obj`). If not provided, the upload will be concluded once `file_obj` is exhausted.
- **content_type** (*str*) – Optional type of content being uploaded.
- **num_retries** (*int*) – Number of upload retries. (Deprecated: This argument will be removed in a future release.)
- **client** (*Client*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the blob’s bucket.
- **predefined_acl** (*str*) – (Optional) predefined access control list

Raises `GoogleCloudError` if the upload response returns an error status.

upload_from_filename (*filename*, *content_type=None*, *client=None*, *predefined_acl=None*)

Upload this blob’s contents from the content of a named file.

The content type of the upload will be determined in order of precedence:

- The value passed in to this method (if not `None`)
- The value stored on the current blob
- The value given by `mimetypes.guess_type`
- The default value (`'application/octet-stream'`)

Note: The effect of uploading to an existing blob depends on the “versioning” and “lifecycle” policies defined on the blob’s bucket. In the absence of those policies, upload will overwrite any existing contents.

See the [object versioning](#) and [lifecycle](#) API documents for details.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **filename** (*str*) – The path to the file.
- **content_type** (*str*) – Optional type of content being uploaded.
- **client** (*Client*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the blob’s bucket.
- **predefined_acl** (*str*) – (Optional) predefined access control list

upload_from_string (*data*, *content_type*=*'text/plain'*, *client*=*None*, *predefined_acl*=*None*)

Upload contents of this blob from the provided string.

Note: The effect of uploading to an existing blob depends on the “versioning” and “lifecycle” policies defined on the blob’s bucket. In the absence of those policies, upload will overwrite any existing contents.

See the [object versioning](#) and [lifecycle](#) API documents for details.

If `user_project` is set on the bucket, bills the API request to that project.

Parameters

- **data** (*bytes* or *str*) – The data to store in this blob. If the value is text, it will be encoded as UTF-8.
- **content_type** (*str*) – Optional type of content being uploaded. Defaults to *'text/plain'*.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the blob’s bucket.
- **predefined_acl** (*str*) – (Optional) predefined access control list

user_project

Project ID billed for API requests made via this blob.

Derived from bucket’s value.

Return type *str*

25.2 Buckets

Create / interact with Google Cloud Storage buckets.

class `google.cloud.storage.bucket.Bucket` (*client*, *name*=*None*, *user_project*=*None*)

Bases: `google.cloud.storage._helpers._PropertyMixin`

A class representing a Bucket on Cloud Storage.

Parameters

- **client** (`google.cloud.storage.client.Client`) – A client which holds credentials and project configuration for the bucket (which requires a project).
- **name** (*str*) – The name of the bucket. Bucket names must start and end with a number or letter.

- **user_project** (*str*) – (Optional) the project ID to be billed for API requests made via this instance.

acl

Create our ACL on demand.

blob (*blob_name*, *chunk_size=None*, *encryption_key=None*, *kms_key_name=None*)

Factory constructor for blob object.

Note: This will not make an HTTP request; it simply instantiates a blob object owned by this bucket.

Parameters

- **blob_name** (*str*) – The name of the blob to be instantiated.
- **chunk_size** (*int*) – The size of a chunk of data whenever iterating (in bytes). This must be a multiple of 256 KB per the API specification.
- **encryption_key** (*bytes*) – Optional 32 byte encryption key for customer-supplied encryption.
- **kms_key_name** (*str*) – Optional resource name of KMS key used to encrypt blob's content.

Return type `google.cloud.storage.blob.Blob`

Returns The blob object created.

client

The client bound to this bucket.

configure_website (*main_page_suffix=None*, *not_found_page=None*)

Configure website-related properties.

See <https://cloud.google.com/storage/docs/hosting-static-website>

Note: This (apparently) only works if your bucket name is a domain name (and to do that, you need to get approved somehow...).

If you want this bucket to host a website, just provide the name of an index page and a page to use when a blob isn't found:

```
client = storage.Client()
bucket = client.get_bucket(bucket_name)
bucket.configure_website('index.html', '404.html')
```

You probably should also make the whole bucket public:

```
bucket.make_public(recursive=True, future=True)
```

This says: “Make the bucket public, and all the stuff already in the bucket, and anything else I add to the bucket. Just make it all public.”

Parameters

- **main_page_suffix** (*str*) – The page to use as the main page of a directory. Typically something like index.html.
- **not_found_page** (*str*) – The file to use when a page isn't found.

copy_blob (*blob*, *destination_bucket*, *new_name=None*, *client=None*, *preserve_acl=True*, *source_generation=None*)

Copy the given blob to the given bucket, optionally with a new name.

If *user_project* is set, bills the API request to that project.

Parameters

- **blob** (*google.cloud.storage.blob.Blob*) – The blob to be copied.
- **destination_bucket** (*google.cloud.storage.bucket.Bucket*) – The bucket into which the blob should be copied.
- **new_name** (*str*) – (optional) the new name for the copied file.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the *client* stored on the current bucket.
- **preserve_acl** (*bool*) – Optional. Copies ACL from old blob to new blob. Default: True.
- **source_generation** (*long*) – Optional. The generation of the blob to be copied.

Return type *google.cloud.storage.blob.Blob*

Returns The new Blob.

cors

Retrieve or set CORS policies configured for this bucket.

See <http://www.w3.org/TR/cors/> and https://cloud.google.com/storage/docs/json_api/v1/buckets

Note: The getter for this property returns a list which contains *copies* of the bucket’s CORS policy mappings. Mutating the list or one of its dicts has no effect unless you then re-assign the dict via the setter. E.g.:

```
>>> policies = bucket.cors
>>> policies.append({'origin': '/foo', ...})
>>> policies[1]['maxAgeSeconds'] = 3600
>>> del policies[0]
>>> bucket.cors = policies
>>> bucket.update()
```

Setter Set CORS policies for this bucket.

Getter Gets the CORS policies for this bucket.

Return type list of dictionaries

Returns A sequence of mappings describing each CORS policy.

create (*client=None*, *project=None*)

Creates current bucket.

If the bucket already exists, will raise *google.cloud.exceptions.Conflict*.

This implements “storage.buckets.insert”.

If *user_project* is set, bills the API request to that project.

Parameters

- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.
- **project** (*str*) – (Optional) the project under which the bucket is to be created. If not passed, uses the project set on the client.

Raises

- **ValueError** – if `user_project` is set.
- **ValueError** – if `project` is `None` and client's `project` is also `None`.

default_kms_key_name

Retrieve / set default KMS encryption key for objects in the bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets

Setter Set default KMS encryption key for items in this bucket.

Getter Get default KMS encryption key for items in this bucket.

Return type *str*

Returns Default KMS encryption key, or `None` if not set.

default_object_acl

Create our defaultObjectACL on demand.

delete (*force=False, client=None*)

Delete this bucket.

The bucket **must** be empty in order to submit a delete request. If `force=True` is passed, this will first attempt to delete all the objects / blobs in the bucket (i.e. try to empty the bucket).

If the bucket doesn't exist, this will raise `google.cloud.exceptions.NotFound`. If the bucket is not empty (and `force=False`), will raise `google.cloud.exceptions.Conflict`.

If `force=True` and the bucket contains more than 256 objects / blobs this will cowardly refuse to delete the objects (or the bucket). This is to prevent accidental bucket deletion and to prevent extremely long runtime of this method.

If `user_project` is set, bills the API request to that project.

Parameters

- **force** (*bool*) – If `True`, empties the bucket's objects then deletes it.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Raises `ValueError` if `force` is `True` and the bucket contains more than 256 objects / blobs.

delete_blob (*blob_name, client=None*)

Deletes a blob from the current bucket.

If the blob isn't found (backend 404), raises a `google.cloud.exceptions.NotFound`.

For example:

```
from google.cloud.exceptions import NotFound
client = storage.Client()
bucket = client.get_bucket('my-bucket')
blobs = list(bucket.list_blobs())
assert len(blobs) > 0
```

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```
# [<Blob: my-bucket, my-file.txt>]
bucket.delete_blob('my-file.txt')
try:
    bucket.delete_blob('doesnt-exist')
except NotFound:
    pass
```

If `user_project` is set, bills the API request to that project.

Parameters

- **blob_name** (*str*) – A blob name to delete.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Raises `google.cloud.exceptions.NotFound` (to suppress the exception, call `delete_blobs`, passing a no-op `on_error` callback, e.g.:

```
bucket.delete_blobs([blob], on_error=lambda blob: None)
```

delete_blobs (*blobs*, *on_error=None*, *client=None*)

Deletes a list of blobs from the current bucket.

Uses `delete_blob()` to delete each individual blob.

If `user_project` is set, bills the API request to that project.

Parameters

- **blobs** (*list*) – A list of *Blob*-s or blob names to delete.
- **on_error** (*callable*) – (Optional) Takes single argument: `blob`. Called once for each blob raising `NotFound`; otherwise, the exception is propagated.
- **client** (*Client*) – (Optional) The client to use. If not passed, falls back to the `client` stored on the current bucket.

Raises `NotFound` (if `on_error` is not passed).

disable_logging ()

Disable access logging for this bucket.

See <https://cloud.google.com/storage/docs/access-logs#disabling>

disable_website ()

Disable the website configuration for this bucket.

This is really just a shortcut for setting the website-related attributes to `None`.

enable_logging (*bucket_name*, *object_prefix=""*)

Enable access logging for this bucket.

See <https://cloud.google.com/storage/docs/access-logs>

Parameters

- **bucket_name** (*str*) – name of bucket in which to store access logs
- **object_prefix** (*str*) – prefix for access log filenames

etag

Retrieve the ETag for the bucket.

See <https://tools.ietf.org/html/rfc2616#section-3.11> and https://cloud.google.com/storage/docs/json_api/v1/buckets

Return type `str` or `NoneType`

Returns The bucket etag or `None` if the bucket's resource has not been loaded from the server.

exists (*client=None*)

Determines whether or not this bucket exists.

If *user_project* is set, bills the API request to that project.

Parameters **client** (*Client* or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Return type `bool`

Returns True if the bucket exists in Cloud Storage.

generate_upload_policy (*conditions, expiration=None, client=None*)

Create a signed upload policy for uploading objects.

This method generates and signs a policy document. You can use [policy documents](#) to allow visitors to a website to upload files to Google Cloud Storage without giving them direct write access.

For example:

```
bucket = client.bucket('my-bucket')
conditions = [
    ['starts-with', '$key', ''],
    {'acl': 'public-read'}]

policy = bucket.generate_upload_policy(conditions)

# Generate an upload form using the form fields.
policy_fields = ''.join(
    '<input type="hidden" name="{key}" value="{value}">'.format(
        key=key, value=value)
    for key, value in policy.items()
)

upload_form = (
    '<form action="http://{bucket_name}.storage.googleapis.com"'
    '  method="post" enctype="multipart/form-data">'
    '<input type="text" name="key" value="my-test-key">'
    '<input type="hidden" name="bucket" value="{bucket_name}">'
    '<input type="hidden" name="acl" value="public-read">'
    '<input name="file" type="file">'
    '<input type="submit" value="Upload">'
    '{policy_fields}'
    '</form>'.format(bucket_name=bucket.name, policy_fields=policy_
↪fields)

print(upload_form)
```

Parameters

- **expiration** (*datetime*) – Optional expiration in UTC. If not specified, the policy will expire in 1 hour.

- **conditions** (*list*) – A list of conditions as described in the [policy documents](#) documentation.
- **client** (*Client*) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Return type `dict`

Returns A dictionary of (form field name, form field value) of form fields that should be added to your HTML upload form in order to attach the signature.

get_blob (*blob_name*, *client=None*, *encryption_key=None*, ***kwargs*)

Get a blob object by name.

This will return `None` if the blob doesn't exist:

```
client = storage.Client()
bucket = client.get_bucket('my-bucket')
assert isinstance(bucket.get_blob('/path/to/blob.txt'), Blob)
# <Blob: my-bucket, /path/to/blob.txt>
assert not bucket.get_blob('/does-not-exist.txt')
# None
```

If *user_project* is set, bills the API request to that project.

Parameters

- **blob_name** (*str*) – The name of the blob to retrieve.
- **client** (*Client* or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.
- **encryption_key** (*bytes*) – Optional 32 byte encryption key for customer-supplied encryption. See <https://cloud.google.com/storage/docs/encryption#customer-supplied>.
- **kwargs** (*dict*) – Keyword arguments to pass to the *Blob* constructor.

Return type `google.cloud.storage.blob.Blob` or `None`

Returns The blob object if it exists, otherwise `None`.

get_iam_policy (*client=None*)

Retrieve the IAM policy for the bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets/getIamPolicy

If *user_project* is set, bills the API request to that project.

Parameters **client** (*Client* or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Return type `google.cloud.iam.Policy`

Returns the policy instance, based on the resource returned from the `getIamPolicy` API request.

get_logging ()

Return info about access logging for this bucket.

See <https://cloud.google.com/storage/docs/access-logs#status>

Return type `dict` or `None`

Returns a dict w/ keys, `logBucket` and `logObjectPrefix` (if logging is enabled), or `None` (if not).

id

Retrieve the ID for the bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets

Return type `str` or `NoneType`

Returns The ID of the bucket or `None` if the bucket's resource has not been loaded from the server.

labels

Retrieve or set labels assigned to this bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets#labels

Note: The getter for this property returns a dict which is a *copy* of the bucket's labels. Mutating that dict has no effect unless you then re-assign the dict via the setter. E.g.:

```
>>> labels = bucket.labels
>>> labels['new_key'] = 'some-label'
>>> del labels['old_key']
>>> bucket.labels = labels
>>> bucket.update()
```

Setter Set labels for this bucket.

Getter Gets the labels for this bucket.

Return type `dict`

Returns Name-value pairs (string->string) labelling the bucket.

lifecycle_rules

Retrieve or set lifecycle rules configured for this bucket.

See <https://cloud.google.com/storage/docs/lifecycle> and https://cloud.google.com/storage/docs/json_api/v1/buckets

Note: The getter for this property returns a list which contains *copies* of the bucket's lifecycle rules mappings. Mutating the list or one of its dicts has no effect unless you then re-assign the dict via the setter. E.g.:

```
>>> rules = bucket.lifecycle_rules
>>> rules.append({'origin': '/foo', ...})
>>> rules[1]['rule']['action']['type'] = 'Delete'
>>> del rules[0]
>>> bucket.lifecycle_rules = rules
>>> bucket.update()
```

Setter Set lifestyle rules for this bucket.

Getter Gets the lifestyle rules for this bucket.

Return type `list(dict)`

Returns A sequence of mappings describing each lifecycle rule.

list_blobs (*max_results=None*, *page_token=None*, *prefix=None*, *delimiter=None*, *versions=None*,
projection='noAcl', *fields=None*, *client=None*)

Return an iterator used to find blobs in the bucket.

If *user_project* is set, bills the API request to that project.

Parameters

- **max_results** (*int*) – (Optional) Maximum number of blobs to return.
- **page_token** (*str*) – (Optional) Opaque marker for the next “page” of blobs. If not passed, will return the first page of blobs.
- **prefix** (*str*) – (Optional) prefix used to filter blobs.
- **delimiter** (*str*) – (Optional) Delimiter, used with *prefix* to emulate hierarchy.
- **versions** (*bool*) – (Optional) Whether object versions should be returned as separate blobs.
- **projection** (*str*) – (Optional) If used, must be ‘full’ or ‘noAcl’. Defaults to ‘noAcl’. Specifies the set of properties to return.
- **fields** (*str*) – (Optional) Selector specifying which fields to include in a partial response. Must be a list of fields. For example to get a partial response with just the next page token and the language of each blob returned: ‘items/contentLanguage,nextPageToken’.
- **client** (*Client*) – (Optional) The client to use. If not passed, falls back to the *client* stored on the current bucket.

Return type *Iterator*

Returns Iterator of all *Blob* in this bucket matching the arguments.

list_notifications (*client=None*)

List Pub / Sub notifications for this bucket.

See: https://cloud.google.com/storage/docs/json_api/v1/notifications/list

If *user_project* is set, bills the API request to that project.

Parameters **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the *client* stored on the current bucket.

Return type list of *BucketNotification*

Returns notification instances

location

Retrieve location configured for this bucket.

This can only be set at bucket **creation** time.

See https://cloud.google.com/storage/docs/json_api/v1/buckets and <https://cloud.google.com/storage/docs/bucket-locations>

Returns *None* if the property has not been set before creation, or if the bucket’s resource has not been loaded from the server.

Return type *str* or *NoneType*

make_private (*recursive=False, future=False, client=None*)

Undo the *make_public* method and make the bucket private.

If *recursive=True* and the bucket contains more than 256 objects / blobs this will cowardly refuse to make the objects private. This is to prevent extremely long runtime of this method.

Parameters

- **recursive** (*bool*) – If True, this will make all blobs inside the bucket private as well.
- **future** (*bool*) – If True, this will make all objects created in the future private as well.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the *client* stored on the current bucket.

make_public (*recursive=False, future=False, client=None*)

Make a bucket public.

If *recursive=True* and the bucket contains more than 256 objects / blobs this will cowardly refuse to make the objects public. This is to prevent extremely long runtime of this method.

Parameters

- **recursive** (*bool*) – If True, this will make all blobs inside the bucket public as well.
- **future** (*bool*) – If True, this will make all objects created in the future public as well.
- **client** (*Client* or *NoneType*) – Optional. The client to use. If not passed, falls back to the *client* stored on the current bucket.

metageneration

Retrieve the metageneration for the bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets

Return type *int* or *NoneType*

Returns The metageneration of the bucket or *None* if the bucket's resource has not been loaded from the server.

notification (*topic_name, topic_project=None, custom_attributes=None, event_types=None, blob_name_prefix=None, payload_format='NONE'*)

Factory: create a notification resource for the bucket.

See: *BucketNotification* for parameters.

Return type *BucketNotification*

owner

Retrieve info about the owner of the bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets

Return type *dict* or *NoneType*

Returns Mapping of owner's role/ID. Returns *None* if the bucket's resource has not been loaded from the server.

patch (*client=None*)

Sends all changed properties in a PATCH request.

Updates the *_properties* with the response from the backend.

If `user_project` is set, bills the API request to that project.

Parameters `client` (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current object.

path

The URL path to this bucket.

static path_helper (`bucket_name`)

Relative URL path for a bucket.

Parameters `bucket_name` (`str`) – The bucket name in the path.

Return type `str`

Returns The relative URL path for `bucket_name`.

project_number

Retrieve the number of the project to which the bucket is assigned.

See https://cloud.google.com/storage/docs/json_api/v1/buckets

Return type `int` or `NoneType`

Returns The project number that owns the bucket or `None` if the bucket's resource has not been loaded from the server.

reload (`client=None`)

Reload properties from Cloud Storage.

If `user_project` is set, bills the API request to that project.

Parameters `client` (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current object.

rename_blob (`blob`, `new_name`, `client=None`)

Rename the given blob using copy and delete operations.

If `user_project` is set, bills the API request to that project.

Effectively, copies blob to the same bucket with a new name, then deletes the blob.

Warning: This method will first duplicate the data and then delete the old blob. This means that with very large objects renaming could be a very (temporarily) costly or a very slow operation.

Parameters

- **blob** (`google.cloud.storage.blob.Blob`) – The blob to be renamed.
- **new_name** (`str`) – The new name for this blob.
- **client** (`Client` or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Return type `Blob`

Returns The newly-renamed blob.

requester_pays

Does the requester pay for API requests for this bucket?

See <https://cloud.google.com/storage/docs/requester-pays> for details.

Setter Update whether requester pays for this bucket.

Getter Query whether requester pays for this bucket.

Return type `bool`

Returns True if requester pays for API requests for the bucket, else False.

self_link

Retrieve the URI for the bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets

Return type `str` or `NoneType`

Returns The self link for the bucket or `None` if the bucket's resource has not been loaded from the server.

set_iam_policy (*policy*, *client=None*)

Update the IAM policy for the bucket.

See https://cloud.google.com/storage/docs/json_api/v1/buckets/setIamPolicy

If *user_project* is set, bills the API request to that project.

Parameters

- **policy** (*google.cloud.iam.Policy*) – policy instance used to update bucket's IAM policy.
- **client** (*Client* or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Return type *google.cloud.iam.Policy*

Returns the policy instance, based on the resource returned from the `setIamPolicy` API request.

storage_class

Retrieve or set the storage class for the bucket.

See <https://cloud.google.com/storage/docs/storage-classes>

Setter Set the storage class for this bucket.

Getter Gets the the storage class for this bucket.

Return type `str` or `NoneType`

Returns If set, one of “MULTI_REGIONAL”, “REGIONAL”, “NEARLINE”, “COLD-LINE”, “STANDARD”, or “DURABLE_REDUCED_AVAILABILITY”, else `None`.

test_iam_permissions (*permissions*, *client=None*)

API call: test permissions

See https://cloud.google.com/storage/docs/json_api/v1/buckets/testIamPermissions

If *user_project* is set, bills the API request to that project.

Parameters

- **permissions** (*list of string*) – the permissions to check
- **client** (*Client* or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the current bucket.

Return type `list of string`

Returns the permissions returned by the `testIamPermissions` API request.

time_created

Retrieve the timestamp at which the bucket was created.

See https://cloud.google.com/storage/docs/json_api/v1/buckets

Return type `datetime.datetime` or `NoneType`

Returns Datetime object parsed from RFC3339 valid timestamp, or `None` if the bucket's resource has not been loaded from the server.

update (*client=None*)

Sends all properties in a PUT request.

Updates the `_properties` with the response from the backend.

If `user_project` is set, bills the API request to that project.

Parameters `client` (`Client` or `NoneType`) – the client to use. If not passed, falls back to the `client` stored on the current object.

user_project

Project ID to be billed for API requests made via this bucket.

If unset, API requests are billed to the bucket owner.

Return type `str`

versioning_enabled

Is versioning enabled for this bucket?

See <https://cloud.google.com/storage/docs/object-versioning> for details.

Setter Update whether versioning is enabled for this bucket.

Getter Query whether versioning is enabled for this bucket.

Return type `bool`

Returns True if enabled, else False.

25.3 ACL

Manipulate access control lists that Cloud Storage provides.

`google.cloud.storage.bucket.Bucket` has a getting method that creates an ACL object under the hood, and you can interact with that using `google.cloud.storage.bucket.Bucket.acl()`:

```
client = storage.Client()
bucket = client.get_bucket(bucket_name)
acl = bucket.acl
```

Adding and removing permissions can be done with the following methods (in increasing order of granularity):

- `ACL.all()` corresponds to access for all users.
- `ACL.all_authenticated()` corresponds to access for all users that are signed into a Google account.
- `ACL.domain()` corresponds to access on a per Google Apps domain (ie, `example.com`).
- `ACL.group()` corresponds to access on a per group basis (either by ID or e-mail address).
- `ACL.user()` corresponds to access on a per user basis (either by ID or e-mail address).

And you are able to `grant` and `revoke` the following roles:

- **Reading:** `_ACLEntity.grant_read()` and `_ACLEntity.revoke_read()`
- **Writing:** `_ACLEntity.grant_write()` and `_ACLEntity.revoke_write()`
- **Owning:** `_ACLEntity.grant_owner()` and `_ACLEntity.revoke_owner()`

You can use any of these like any other factory method (these happen to be `_ACLEntity` factories):

```
acl.user('me@example.org').grant_read()
acl.all_authenticated().grant_write()
```

After that, you can save any changes you make with the `google.cloud.storage.acl.ACL.save()` method:

```
acl.save()
```

You can alternatively save any existing `google.cloud.storage.acl.ACL` object (whether it was created by a factory method or not) from a `google.cloud.storage.bucket.Bucket`:

```
bucket.acl.save(acl=acl)
```

To get the list of `entity` and `role` for each unique pair, the `ACL` class is iterable:

```
print(list(acl))
# [{ 'role': 'OWNER', 'entity': 'allUsers'}, ...]
```

This list of tuples can be used as the `entity` and `role` fields when sending metadata for ACLs to the API.

class `google.cloud.storage.acl.ACL`

Bases: `object`

Container class representing a list of access controls.

PREDEFINED_JSON_ACLS = `frozenset({'bucketOwnerRead', 'bucketOwnerFullControl', 'public'`

See <https://cloud.google.com/storage/docs/access-control/lists#predefined-acl>

add_entity (*entity*)

Add an entity to the ACL.

Parameters *entity* (`_ACLEntity`) – The entity to add to this ACL.

all ()

Factory method for an Entity representing all users.

Return type `_ACLEntity`

Returns An entity representing all users.

all_authenticated ()

Factory method for an Entity representing all authenticated users.

Return type `_ACLEntity`

Returns An entity representing all authenticated users.

clear (*client=None*)

Remove all ACL entries.

If `user_project` is set, bills the API request to that project.

Note that this won't actually remove *ALL* the rules, but it will remove all the non-default rules. In short, you'll still have access to a bucket that you created even after you clear ACL rules with this method.

Parameters *client* (`Client` or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the ACL's parent.

client

Abstract getter for the object client.

domain (*domain*)

Factory method for a domain Entity.

Parameters **domain** (*str*) – The domain for this entity.

Return type `_ACLEntity`

Returns An entity corresponding to this domain.

entity (*entity_type*, *identifier=None*)

Factory method for creating an Entity.

If an entity with the same type and identifier already exists, this will return a reference to that entity. If not, it will create a new one and add it to the list of known entities for this ACL.

Parameters

- **entity_type** (*str*) – The type of entity to create (ie, user, group, etc)
- **identifier** (*str*) – The ID of the entity (if applicable). This can be either an ID or an e-mail address.

Return type `_ACLEntity`

Returns A new Entity or a reference to an existing identical entity.

entity_from_dict (*entity_dict*)

Build an `_ACLEntity` object from a dictionary of data.

An entity is a mutable object that represents a list of roles belonging to either a user or group or the special types for all users and all authenticated users.

Parameters **entity_dict** (*dict*) – Dictionary full of data from an ACL lookup.

Return type `_ACLEntity`

Returns An Entity constructed from the dictionary.

get_entities ()

Get a list of all Entity objects.

Return type list of `_ACLEntity` objects

Returns A list of all Entity objects.

get_entity (*entity*, *default=None*)

Gets an entity object from the ACL.

Parameters

- **entity** (`_ACLEntity` or string) – The entity to get lookup in the ACL.
- **default** (*anything*) – This value will be returned if the entity doesn't exist.

Return type `_ACLEntity`

Returns The corresponding entity or the value provided to default.

group (*identifier*)

Factory method for a group Entity.

Parameters **identifier** (*str*) – An id or e-mail for this particular group.

Return type `_ACLEntity`

Returns An Entity corresponding to this group.

has_entity (*entity*)

Returns whether or not this ACL has any entries for an entity.

Parameters **entity** (`_ACLEntity`) – The entity to check for existence in this ACL.

Return type `bool`

Returns True if the entity exists in the ACL.

reload (*client=None*)

Reload the ACL data from Cloud Storage.

If `user_project` is set, bills the API request to that project.

Parameters **client** (`Client` or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the ACL's parent.

reset ()

Remove all entities from the ACL, and clear the `loaded` flag.

save (*acl=None, client=None*)

Save this ACL for the current bucket.

If `user_project` is set, bills the API request to that project.

Parameters

- **acl** (`google.cloud.storage.acl.ACL`, or a compatible list.) – The ACL object to save. If left blank, this will save current entries.
- **client** (`Client` or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the ACL's parent.

save_predefined (*predefined, client=None*)

Save this ACL for the current bucket using a predefined ACL.

If `user_project` is set, bills the API request to that project.

Parameters

- **predefined** (*str*) – An identifier for a predefined ACL. Must be one of the keys in `PREDEFINED_JSON_ACLS` or `PREDEFINED_XML_ACLS` (which will be aliased to the corresponding JSON name). If passed, `acl` must be `None`.
- **client** (`Client` or `NoneType`) – Optional. The client to use. If not passed, falls back to the `client` stored on the ACL's parent.

user (*identifier*)

Factory method for a user Entity.

Parameters **identifier** (*str*) – An id or e-mail for this particular user.

Return type `_ACLEntity`

Returns An Entity corresponding to this user.

classmethod validate_predefined (*predefined*)

Ensures predefined is in list of predefined json values

Parameters

- **predefined** (*str*) – name of a predefined acl
- **predefined** – validated JSON name of predefined acl

Raises

exc *ValueError*: If predefined is not a valid acl

class google.cloud.storage.acl.**BucketACL** (*bucket*)

Bases: *google.cloud.storage.acl.ACL*

An ACL specifically for a bucket.

Parameters **bucket** (*google.cloud.storage.bucket.Bucket*) – The bucket to which this ACL relates.

client

The client bound to this ACL's bucket.

reload_path

Compute the path for GET API requests for this ACL.

save_path

Compute the path for PATCH API requests for this ACL.

user_project

Compute the user project charged for API requests for this ACL.

class google.cloud.storage.acl.**DefaultObjectACL** (*bucket*)

Bases: *google.cloud.storage.acl.BucketACL*

A class representing the default object ACL for a bucket.

class google.cloud.storage.acl.**ObjectACL** (*blob*)

Bases: *google.cloud.storage.acl.ACL*

An ACL specifically for a Cloud Storage object / blob.

Parameters **blob** (*google.cloud.storage.blob.Blob*) – The blob that this ACL corresponds to.

client

The client bound to this ACL's blob.

reload_path

Compute the path for GET API requests for this ACL.

save_path

Compute the path for PATCH API requests for this ACL.

user_project

Compute the user project charged for API requests for this ACL.

25.4 Batches

Batch updates / deletes of storage buckets / blobs.

See https://cloud.google.com/storage/docs/json_api/v1/how-tos/batch

class google.cloud.storage.batch.**Batch** (*client*)

Bases: *google.cloud.storage._http.Connection*

Proxy an underlying connection, batching up change operations.

Parameters **client** (*google.cloud.storage.client.Client*) – The client to use for making connections.

current()

Return the topmost batch, or None.

finish()

Submit a single *multipart/mixed* request with deferred requests.

Return type list of tuples

Returns one (headers, payload) tuple per deferred request.

class google.cloud.storage.batch.**MIMEApplicationHTTP**(method, uri, headers, body)

Bases: `email.mime.application.MIMEApplication`

MIME type for application/http.

Constructs payload from headers and body

Parameters

- **method** (*str*) – HTTP method
- **uri** (*str*) – URI for HTTP request
- **headers** (*dict*) – HTTP headers
- **body** (*str*) – (Optional) HTTP payload

25.5 Changelog

PyPI History

25.5.1 1.10.0

New Features

- Add support for KMS keys (#5259)
- Add ‘{Blob,Bucket}make_private’ method (#5336)

Internal / Testing Changes

- Modify system tests to use prerelease versions of grpcio (#5304)

25.5.2 1.9.0

Implementation Changes

- Change GCS batch endpoint from /batch to /batch/storage/v1 (#5040)

New Features

- Allow uploading files larger than 2GB by using Resumable Media Requests (#5187)
- Add range downloads (#5081)

Documentation

- Update docstring to reflect correct units (#5277)
- Replace link to 404 object IAM docs with a note on limited utility. (#5181)
- Update doc reference in GCS client documentation (#5084)
- Add see also for `Bucket.create` method call for `Client.create_bucket()` documentation. (#5073)
- Link out to requester pays docs. (#5065)

Internal / Testing Changes

- Add testing support for Python 3.7; remove testing support for Python 3.4. (#5295)
- Fix bad trove classifier
- Remove unused var (flake8 warning) (#5280)
- Fix unit test moving batch to batch/storage/v1 (#5082)

25.5.3 1.8.0

New features

- Implement predefined acl (#4757)
- Add support for resumable signed url generation (#4789)

Implementation changes

- Do not quote embedded slashes for public / signed URLs (#4716)

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Documentation

- Missing word in docstring (#4763)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)

25.5.4 1.7.0

Features

- Enable anonymous access to blobs in public buckets (#4315)
- Make project optional / overridable for storage client (#4381)
- Relax regex used to test for valid project IDs (#4543)
- Add support for `source_generation` parameter to `Bucket.copy_blob` (#4546)

25.5.5 1.6.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Requiring `google-resumable-media >= 0.3.1` (#4244)

PyPI: <https://pypi.org/project/google-cloud-storage/1.6.0/>

25.6 Installation

Install the `google-cloud-storage` library using `pip`:

```
$ pip install google-cloud-storage
```

25.7 Usage

Client for interacting with the Google Cloud Storage API.

```
class google.cloud.storage.client.Client (project=<object object>, credentials=None,
                                           _http=None)
```

Bases: `google.cloud.client.ClientWithProject`

Client to bundle configuration needed for API requests.

Parameters

- **project** (*str or None*) – the project which the client acts on behalf of. Will be passed when creating a topic. If not passed, falls back to the default inferred from the environment.
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.

- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.

SCOPE = ('https://www.googleapis.com/auth/devstorage.full_control', 'https://www.googl

The scopes required for authenticating as a Cloud Storage consumer.

batch()

Factory constructor for batch object.

Note: This will not make an HTTP request; it simply instantiates a batch object owned by this client.

Return type `google.cloud.storage.batch.Batch`

Returns The batch object created.

bucket (*bucket_name*, *user_project=None*)

Factory constructor for bucket object.

Note: This will not make an HTTP request; it simply instantiates a bucket object owned by this client.

Parameters

- **bucket_name** (*str*) – The name of the bucket to be instantiated.
- **user_project** (*str*) – (Optional) the project ID to be billed for API requests made via the bucket.

Return type `google.cloud.storage.bucket.Bucket`

Returns The bucket object created.

classmethod create_anonymous_client()

Factory: return client with anonymous credentials.

Note: Such a client has only limited access to “public” buckets: listing their contents and downloading their blobs.

Return type `google.cloud.storage.client.Client`

Returns Instance w/ anonymous credentials and no project.

create_bucket (*bucket_name*, *requester_pays=None*, *project=None*)

Create a new bucket.

For example:

```
bucket = client.create_bucket('my-bucket')
assert isinstance(bucket, Bucket)
# <Bucket: my-bucket>
```

This implements “storage.buckets.insert”.

If the bucket already exists, will raise `google.cloud.exceptions.Conflict`.

To set additional properties when creating a bucket such as *location*, use *create()*.

Parameters

- **bucket_name** (*str*) – The bucket name to create.
- **requester_pays** (*bool*) – (Optional) Whether requester pays for API requests for this bucket and its blobs.
- **project** (*str*) – (Optional) the project under which the bucket is to be created. If not passed, uses the project set on the client.

Return type `google.cloud.storage.bucket.Bucket`

Returns The newly created bucket.

current_batch

Currently-active batch.

Return type `google.cloud.storage.batch.Batch` or `NoneType` (if no batch is active).

Returns The batch at the top of the batch stack.

get_bucket (*bucket_name*)

Get a bucket by name.

If the bucket isn’t found, this will raise a `google.cloud.exceptions.NotFound`.

For example:

```
try:
    bucket = client.get_bucket('my-bucket')
except google.cloud.exceptions.NotFound:
    print('Sorry, that bucket does not exist!')
```

This implements “storage.buckets.get”.

Parameters **bucket_name** (*str*) – The name of the bucket to get.

Return type `google.cloud.storage.bucket.Bucket`

Returns The bucket matching the name provided.

Raises `google.cloud.exceptions.NotFound`

list_buckets (*max_results=None, page_token=None, prefix=None, projection='noAcl', fields=None, project=None*)

Get all buckets in the project associated to the client.

This will not populate the list of blobs available in each bucket.

```
for bucket in client.list_buckets():
    print(bucket)
```

This implements “storage.buckets.list”.

Parameters

- **max_results** (*int*) – Optional. Maximum number of buckets to return.
- **page_token** (*str*) – Optional. Opaque marker for the next “page” of buckets. If not passed, will return the first page of buckets.

- **prefix** (*str*) – Optional. Filter results to buckets whose names begin with this prefix.
- **projection** (*str*) – (Optional) Specifies the set of properties to return. If used, must be ‘full’ or ‘noAcl’. Defaults to ‘noAcl’.
- **fields** (*str*) – (Optional) Selector specifying which fields to include in a partial response. Must be a list of fields. For example to get a partial response with just the next page token and the language of each bucket returned: ‘items/id,nextPageToken’
- **project** (*str*) – (Optional) the project whose buckets are to be listed. If not passed, uses the project set on the client.

Return type *Iterator*

Raises **ValueError** – if both `project` is `None` and the client’s project is also `None`.

Returns Iterator of all *Bucket* belonging to this project.

lookup_bucket (*bucket_name*)

Get a bucket by name, returning `None` if not found.

You can use this if you would rather check for a `None` value than catching an exception:

```
bucket = client.lookup_bucket('doesnt-exist')
assert not bucket
# None
bucket = client.lookup_bucket('my-bucket')
assert isinstance(bucket, Bucket)
# <Bucket: my-bucket>
```

Parameters **bucket_name** (*str*) – The name of the bucket to get.

Return type *google.cloud.storage.bucket.Bucket*

Returns The bucket matching the name provided or `None` if not found.

Python Client for Cloud Text-to-Speech API (Alpha)

Cloud Text-to-Speech API: Synthesizes natural-sounding speech by applying powerful neural network models.

- [Client Library Documentation](#)
- [Product Documentation](#)

26.1 Quick Start

In order to use this library, you first need to go through the following steps:

1. Select or create a Cloud Platform project.
2. Enable billing for your project.
3. Enable the Cloud Text-to-Speech API.
4. Setup Authentication.

26.1.1 Installation

Install this library in a `virtualenv` using `pip`. `virtualenv` is a tool to create isolated Python environments. The basic problem it addresses is one of dependencies and versions, and indirectly permissions.

With `virtualenv`, it's possible to install this library without needing system install permissions, and without clashing with the installed system dependencies.

Mac/Linux

```
pip install virtualenv
virtualenv <your-env>
source <your-env>/bin/activate
<your-env>/bin/pip install google-cloud-texttospeech
```

Windows

```
pip install virtualenv
virtualenv <your-env>
<your-env>\Scripts\activate
<your-env>\Scripts\pip.exe install google-cloud-texttospeech
```

26.1.2 Next Steps

- Read the [Client Library Documentation](#) for Cloud Text-to-Speech API API to see other available methods on the client.
- Read the [Cloud Text-to-Speech API Product documentation](#) to learn more about the product and see How-to Guides.
- View this [repository's main README](#) to see the full list of Cloud APIs that we cover.

26.2 Api Reference

26.2.1 API Reference

APIs

—

API types

—

API types

—

26.2.2 Client for Cloud Text-to-Speech API

```
class google.cloud.texttospeech_v1.TextToSpeechClient(channel=None, credentials=None,
client_config={'interfaces':
{'google.cloud.texttospeech.v1.TextToSpeech':
{'retry_codes': {'idempotent': ['DEADLINE_EXCEEDED',
'UNAVAILABLE']},
'non_idempotent':
[]},
'retry_params':
{'default': {'initial_retry_delay_millis': 100,
'retry_delay_multiplier': 1.3,
'max_retry_delay_millis': 60000,
'initial_rpc_timeout_millis': 20000,
'rpc_timeout_multiplier': 1.0,
'max_rpc_timeout_millis': 20000,
'total_timeout_millis': 600000}},
'methods':
{'ListVoices': {'timeout_millis': 30000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'SynthesizeSpeech': {'timeout_millis': 60000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'}}}}},
client_info=None)
```

Service that implements Google Cloud Text-to-Speech API.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A *Channel* instance through which to make calls. This argument is mutually exclusive with *credentials*; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If *None*, then default info will be used. Generally, you only need to set this if you're developing your own client library.

```
enums = <module 'google.cloud.texttospeech_v1.gapic.enums' from '/home/docs/checkouts/
```

```
list_voices(language_code=None, retry=<object object>, timeout=<object object>, meta-
    data=None)
```

Returns a list of Voice supported for synthesis.

Example

```
>>> from google.cloud import texttospeech_v1
>>>
>>> client = texttospeech_v1.TextToSpeechClient()
>>>
>>> response = client.list_voices()
```

Parameters

- **language_code** (*str*) – Optional (but recommended) [BCP-47](#) language tag. If specified, the ListVoices call will only return voices that can be used to synthesize this language_code. E.g. when specifying “en-NZ”, you will get supported “en-*” voices; when specifying “no”, you will get supported “no-*” (Norwegian) and “nb-*” (Norwegian Bokmal) voices; specifying “zh” will also get supported “cmn-*” voices; specifying “zh-hk” will also get supported “yue-*” voices.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if retry is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *ListVoicesResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

```
synthesize_speech(input_, voice, audio_config, retry=<object object>, timeout=<object object>,
    metadata=None)
```

Synthesizes speech synchronously: receive results after all text input has been processed.

Example

```
>>> from google.cloud import texttospeech_v1
>>>
>>> client = texttospeech_v1.TextToSpeechClient()
>>>
>>> # TODO: Initialize `input_`:
```

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```

>>> input_ = {}
>>>
>>> # TODO: Initialize ``voice``:
>>> voice = {}
>>>
>>> # TODO: Initialize ``audio_config``:
>>> audio_config = {}
>>>
>>> response = client.synthesize_speech(input_, voice, audio_config)

```

Parameters

- **input** (*Union[dict, SynthesisInput]*) – Required. The Synthesizer requires either plain text or SSML as input. If a dict is provided, it must be of the same form as the protobuf message *SynthesisInput*
- **voice** (*Union[dict, VoiceSelectionParams]*) – Required. The desired voice of the synthesized audio. If a dict is provided, it must be of the same form as the protobuf message *VoiceSelectionParams*
- **audio_config** (*Union[dict, AudioConfig]*) – Required. The configuration of the synthesized audio. If a dict is provided, it must be of the same form as the protobuf message *AudioConfig*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *SynthesizeSpeechResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

26.2.3 Types for Cloud Text-to-Speech API Client

class `google.cloud.texttospeech_v1.types.AudioConfig`

Description of audio data to be synthesized.

audio_encoding

Required. The format of the requested audio byte stream.

speaking_rate

Optional speaking rate/speed, in the range [0.25, 4.0]. 1.0 is the normal native speed supported by the specific voice. 2.0 is twice as fast, and 0.5 is half as fast. If unset(0.0), defaults to the native 1.0 speed. Any other values < 0.25 or > 4.0 will return an error.

pitch

Optional speaking pitch, in the range [-20.0, 20.0]. 20 means increase 20 semitones from the original pitch. -20 means decrease 20 semitones from the original pitch.

volume_gain_db

Optional volume gain (in dB) of the normal native volume supported by the specific voice, in the range [-96.0, 16.0]. If unset, or set to a value of 0.0 (dB), will play at normal native signal amplitude. A value of -6.0 (dB) will play at approximately half the amplitude of the normal native signal amplitude. A value of +6.0 (dB) will play at approximately twice the amplitude of the normal native signal amplitude. Strongly recommend not to exceed +10 (dB) as there's usually no effective increase in loudness for any value greater than that.

sample_rate_hertz

The synthesis sample rate (in hertz) for this audio. Optional. If this is different from the voice's natural sample rate, then the synthesizer will honor this request by converting to the desired sample rate (which might result in worse audio quality), unless the specified sample rate is not supported for the encoding chosen, in which case it will fail the request and return [google.rpc.Code.INVALID_ARGUMENT][].

```
class google.cloud.texttospeech_v1.types.CustomHttpPattern
```

```
class google.cloud.texttospeech_v1.types.DescriptorProto
```

```
class ExtensionRange
```

```
class ReservedRange
```

```
class google.cloud.texttospeech_v1.types.EnumDescriptorProto
```

```
class EnumReservedRange
```

```
class google.cloud.texttospeech_v1.types.EnumOptions
```

```
class google.cloud.texttospeech_v1.types.EnumValueDescriptorProto
```

```
class google.cloud.texttospeech_v1.types.EnumValueOptions
```

```
class google.cloud.texttospeech_v1.types.ExtensionRangeOptions
```

```
class google.cloud.texttospeech_v1.types.FieldDescriptorProto
```

```
class google.cloud.texttospeech_v1.types.FieldOptions
```

```
class google.cloud.texttospeech_v1.types.FileDescriptorProto
```

```
class google.cloud.texttospeech_v1.types.FileDescriptorSet
```

```
class google.cloud.texttospeech_v1.types.FileOptions
```

```
class google.cloud.texttospeech_v1.types.GeneratedCodeInfo
```

```
class Annotation
```

```
class google.cloud.texttospeech_v1.types.Http
```

```
class google.cloud.texttospeech_v1.types.HttpRule
```

```
class google.cloud.texttospeech_v1.types.ListVoicesRequest
```

The top-level message sent by the client for the ListVoices method.

language_code

Optional (but recommended) [BCP-47](#) language tag. If specified, the ListVoices call will only return voices that can be used to synthesize this language_code. E.g. when specifying “en- NZ”, you will get supported

“en-” voices; when specifying “no”, you will get supported “no-” (Norwegian) and “nb-” (Norwegian Bokmal) voices; specifying “zh” will also get supported “cmn-” voices; specifying “zh-hk” will also get supported “yue-*” voices.

class google.cloud.texttospeech_v1.types.**ListVoicesResponse**

The message returned to the client by the ListVoices method.

voices

The list of voices.

class google.cloud.texttospeech_v1.types.**MessageOptions**

class google.cloud.texttospeech_v1.types.**MethodDescriptorProto**

class google.cloud.texttospeech_v1.types.**MethodOptions**

class google.cloud.texttospeech_v1.types.**OneofDescriptorProto**

class google.cloud.texttospeech_v1.types.**OneofOptions**

class google.cloud.texttospeech_v1.types.**ServiceDescriptorProto**

class google.cloud.texttospeech_v1.types.**ServiceOptions**

class google.cloud.texttospeech_v1.types.**SourceCodeInfo**

class Location

class google.cloud.texttospeech_v1.types.**SynthesisInput**

Contains text input to be synthesized. Either text or ssml must be supplied. Supplying both or neither returns [google.rpc.Code.INVALID_ARGUMENT][]. The input size is limited to 5000 characters.

input_source

The input source, which is either plain text or SSML.

text

The raw text to be synthesized.

ssml

The SSML document to be synthesized. The SSML document must be valid and well-formed. Otherwise the RPC will fail and return [google.rpc.Code.INVALID_ARGUMENT][]. For more information, see [SSML](#).

class google.cloud.texttospeech_v1.types.**SynthesizeSpeechRequest**

The top-level message sent by the client for the SynthesizeSpeech method.

input

Required. The Synthesizer requires either plain text or SSML as input.

voice

Required. The desired voice of the synthesized audio.

audio_config

Required. The configuration of the synthesized audio.

class google.cloud.texttospeech_v1.types.**SynthesizeSpeechResponse**

The message returned to the client by the SynthesizeSpeech method.

audio_content

The audio data bytes encoded as specified in the request, including the header (For LINEAR16 audio, we include the WAV header). Note: as with all bytes fields, protobuffers use a pure binary representation, whereas JSON representations use base64.

```
class google.cloud.texttospeech_v1.types.UninterpretedOption
```

```
    class NamePart
```

```
class google.cloud.texttospeech_v1.types.Voice
```

Description of a voice supported by the TTS service.

```
    language_codes
```

The languages that this voice supports, expressed as [BCP-47](#) language tags (e.g. “en-US”, “es-419”, “cmn-tw”).

```
    name
```

The name of this voice. Each distinct voice has a unique name.

```
    ssml_gender
```

The gender of this voice.

```
    natural_sample_rate_hertz
```

The natural sample rate (in hertz) for this voice.

```
class google.cloud.texttospeech_v1.types.VoiceSelectionParams
```

Description of which voice to use for a synthesis request.

```
    language_code
```

The language (and optionally also the region) of the voice expressed as a [BCP-47](#) language tag, e.g. “en-US”. Required. This should not include a script tag (e.g. use “cmn- cn” rather than “cmn-Hant-cn”), because the script will be inferred from the input provided in the `SynthesisInput`. The TTS service will use this parameter to help choose an appropriate voice. Note that the TTS service may choose a voice with a slightly different language code than the one selected; it may substitute a different region (e.g. using en-US rather than en-CA if there isn’t a Canadian voice available), or even a different language, e.g. using “nb” (Norwegian Bokmal) instead of “no” (Norwegian”).

```
    name
```

The name of the voice. Optional; if not set, the service will choose a voice based on the other parameters such as `language_code` and `gender`.

```
    ssml_gender
```

The preferred gender of the voice. Optional; if not set, the service will choose a voice based on the other parameters such as `language_code` and `name`. Note that this is only a preference, not requirement; if a voice of the appropriate gender is not available, the synthesizer should substitute a voice with a different gender rather than failing the request.

26.2.4 Client for Cloud Text-to-Speech API

```
class google.cloud.texttospeech_v1beta1.TextToSpeechClient (channel=None,
                                                            credentials=None,
                                                            client_config={'interfaces':
{'google.cloud.texttospeech.v1beta1.TextToSpeech':
{'retry_codes':
{'idempotent':
['DEAD-
LINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent':
[]},
'retry_params':
{'default':
{'initial_retry_delay_millis':
100,
'retry_delay_multiplier':
1.3,
'max_retry_delay_millis':
60000,
'initial_rpc_timeout_millis':
20000,
'rpc_timeout_multiplier':
1.0,
'max_rpc_timeout_millis':
20000,
'total_timeout_millis':
600000}},
'methods':
{'ListVoices':
{'timeout_millis':
30000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'SynthesizeSpeech':
{'timeout_millis':
60000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'}}}}},
client_info=None)
```

Service that implements Google Cloud Text-to-Speech API.

Constructor.

Parameters

- **channel** (*grpc.Channel*) – A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment.
- **client_config** (*dict*) – A dictionary of call options for each method. If not speci-

fied, the default configuration is used.

- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If *None*, then default info will be used. Generally, you only need to set this if you’re developing your own client library.

```
enums = <module 'google.cloud.texttospeech_v1beta1.gapic.enums' from '/home/docs/check
```

```
list_voices(language_code=None, retry=<object object>, timeout=<object object>, meta-  
data=None)
```

Returns a list of *Voice* supported for synthesis.

Example

```
>>> from google.cloud import texttospeech_v1beta1  
>>>  
>>> client = texttospeech_v1beta1.TextToSpeechClient()  
>>>  
>>> response = client.list_voices()
```

Parameters

- **language_code** (*str*) – Optional (but recommended) [BCP-47](#) language tag. If specified, the *ListVoices* call will only return voices that can be used to synthesize this *language_code*. E.g. when specifying “en-NZ”, you will get supported “en-*” voices; when specifying “no”, you will get supported “no-*” (Norwegian) and “nb-*” (Norwegian Bokmal) voices; specifying “zh” will also get supported “cmn-*” voices; specifying “zh-hk” will also get supported “yue-*” voices.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *ListVoicesResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

```
synthesize_speech(input_, voice, audio_config, retry=<object object>, timeout=<object object>,  
metadata=None)
```

Synthesizes speech synchronously: receive results after all text input has been processed.

Example

```

>>> from google.cloud import texttospeech_v1beta1
>>>
>>> client = texttospeech_v1beta1.TextToSpeechClient()
>>>
>>> # TODO: Initialize ``input``:
>>> input_ = {}
>>>
>>> # TODO: Initialize ``voice``:
>>> voice = {}
>>>
>>> # TODO: Initialize ``audio_config``:
>>> audio_config = {}
>>>
>>> response = client.synthesize_speech(input_, voice, audio_config)

```

Parameters

- **input** (*Union[dict, SynthesisInput]*) – Required. The Synthesizer requires either plain text or SSML as input. If a dict is provided, it must be of the same form as the protobuf message *SynthesisInput*
- **voice** (*Union[dict, VoiceSelectionParams]*) – Required. The desired voice of the synthesized audio. If a dict is provided, it must be of the same form as the protobuf message *VoiceSelectionParams*
- **audio_config** (*Union[dict, AudioConfig]*) – Required. The configuration of the synthesized audio. If a dict is provided, it must be of the same form as the protobuf message *AudioConfig*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *SynthesizeSpeechResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

26.2.5 Types for Cloud Text-to-Speech API Client

class `google.cloud.texttospeech_v1beta1.types.AudioConfig`
Description of audio data to be synthesized.

audio_encoding

Required. The format of the requested audio byte stream.

speaking_rate

Optional speaking rate/speed, in the range [0.25, 4.0]. 1.0 is the normal native speed supported by the specific voice. 2.0 is twice as fast, and 0.5 is half as fast. If unset(0.0), defaults to the native 1.0 speed. Any other values < 0.25 or > 4.0 will return an error.

pitch

Optional speaking pitch, in the range [-20.0, 20.0]. 20 means increase 20 semitones from the original pitch. -20 means decrease 20 semitones from the original pitch.

volume_gain_db

Optional volume gain (in dB) of the normal native volume supported by the specific voice, in the range [-96.0, 16.0]. If unset, or set to a value of 0.0 (dB), will play at normal native signal amplitude. A value of -6.0 (dB) will play at approximately half the amplitude of the normal native signal amplitude. A value of +6.0 (dB) will play at approximately twice the amplitude of the normal native signal amplitude. Strongly recommend not to exceed +10 (dB) as there's usually no effective increase in loudness for any value greater than that.

sample_rate_hertz

The synthesis sample rate (in hertz) for this audio. Optional. If this is different from the voice's natural sample rate, then the synthesizer will honor this request by converting to the desired sample rate (which might result in worse audio quality), unless the specified sample rate is not supported for the encoding chosen, in which case it will fail the request and return [google.rpc.Code.INVALID_ARGUMENT][].

effects_profile_id

An identifier which selects 'audio effects' profiles that are applied on (post synthesized) text to speech. Effects are applied on top of each other in the order they are given.

```
class google.cloud.texttospeech_v1beta1.types.CustomHttpPattern
```

```
class google.cloud.texttospeech_v1beta1.types.DescriptorProto
```

```
class ExtensionRange
```

```
class ReservedRange
```

```
class google.cloud.texttospeech_v1beta1.types.EnumDescriptorProto
```

```
class EnumReservedRange
```

```
class google.cloud.texttospeech_v1beta1.types.EnumOptions
```

```
class google.cloud.texttospeech_v1beta1.types.EnumValueDescriptorProto
```

```
class google.cloud.texttospeech_v1beta1.types.EnumValueOptions
```

```
class google.cloud.texttospeech_v1beta1.types.ExtensionRangeOptions
```

```
class google.cloud.texttospeech_v1beta1.types.FieldDescriptorProto
```

```
class google.cloud.texttospeech_v1beta1.types.FieldOptions
```

```
class google.cloud.texttospeech_v1beta1.types.FileDescriptorProto
```

```
class google.cloud.texttospeech_v1beta1.types.FileDescriptorSet
```

```
class google.cloud.texttospeech_v1beta1.types.FileOptions
```

```
class google.cloud.texttospeech_v1beta1.types.GeneratedCodeInfo
```

class Annotation**class** google.cloud.texttospeech_v1beta1.types.Http**class** google.cloud.texttospeech_v1beta1.types.HttpRule**class** google.cloud.texttospeech_v1beta1.types.ListVoicesRequest

The top-level message sent by the client for the ListVoices method.

language_code

Optional (but recommended) [BCP-47](#) language tag. If specified, the ListVoices call will only return voices that can be used to synthesize this language_code. E.g. when specifying “en- NZ”, you will get supported “en-” voices; when specifying “no”, you will get supported “no-” (Norwegian) and “nb-” (Norwegian Bokmal) voices; specifying “zh” will also get supported “cmn-” voices; specifying “zh-hk” will also get supported “yue-*” voices.

class google.cloud.texttospeech_v1beta1.types.ListVoicesResponse

The message returned to the client by the ListVoices method.

voices

The list of voices.

class google.cloud.texttospeech_v1beta1.types.MessageOptions**class** google.cloud.texttospeech_v1beta1.types.MethodDescriptorProto**class** google.cloud.texttospeech_v1beta1.types.MethodOptions**class** google.cloud.texttospeech_v1beta1.types.OneofDescriptorProto**class** google.cloud.texttospeech_v1beta1.types.OneofOptions**class** google.cloud.texttospeech_v1beta1.types.ServiceDescriptorProto**class** google.cloud.texttospeech_v1beta1.types.ServiceOptions**class** google.cloud.texttospeech_v1beta1.types.SourceCodeInfo**class Location****class** google.cloud.texttospeech_v1beta1.types.SynthesisInput

Contains text input to be synthesized. Either text or ssml must be supplied. Supplying both or neither returns [google.rpc.Code.INVALID_ARGUMENT][]. The input size is limited to 5000 characters.

input_source

The input source, which is either plain text or SSML.

text

The raw text to be synthesized.

ssml

The SSML document to be synthesized. The SSML document must be valid and well-formed. Otherwise the RPC will fail and return [google.rpc.Code.INVALID_ARGUMENT][]. For more information, see [SSML](#).

class google.cloud.texttospeech_v1beta1.types.SynthesizeSpeechRequest

The top-level message sent by the client for the SynthesizeSpeech method.

input

Required. The Synthesizer requires either plain text or SSML as input.

voice

Required. The desired voice of the synthesized audio.

audio_config

Required. The configuration of the synthesized audio.

class google.cloud.texttospeech_v1beta1.types.SynthesizeSpeechResponse

The message returned to the client by the SynthesizeSpeech method.

audio_content

The audio data bytes encoded as specified in the request, including the header (For LINEAR16 audio, we include the WAV header). Note: as with all bytes fields, protobuffers use a pure binary representation, whereas JSON representations use base64.

class google.cloud.texttospeech_v1beta1.types.UninterpretedOption

class NamePart

class google.cloud.texttospeech_v1beta1.types.Voice

Description of a voice supported by the TTS service.

language_codes

The languages that this voice supports, expressed as [BCP-47](#) language tags (e.g. “en-US”, “es-419”, “cmn-tw”).

name

The name of this voice. Each distinct voice has a unique name.

ssml_gender

The gender of this voice.

natural_sample_rate_hertz

The natural sample rate (in hertz) for this voice.

class google.cloud.texttospeech_v1beta1.types.VoiceSelectionParams

Description of which voice to use for a synthesis request.

language_code

The language (and optionally also the region) of the voice expressed as a [BCP-47](#) language tag, e.g. “en-US”. Required. This should not include a script tag (e.g. use “cmn- cn” rather than “cmn-Hant-cn”), because the script will be inferred from the input provided in the SynthesisInput. The TTS service will use this parameter to help choose an appropriate voice. Note that the TTS service may choose a voice with a slightly different language code than the one selected; it may substitute a different region (e.g. using en-US rather than en-CA if there isn’t a Canadian voice available), or even a different language, e.g. using “nb” (Norwegian Bokmal) instead of “no” (Norwegian”).

name

The name of the voice. Optional; if not set, the service will choose a voice based on the other parameters such as language_code and gender.

ssml_gender

The preferred gender of the voice. Optional; if not set, the service will choose a voice based on the other parameters such as language_code and name. Note that this is only a preference, not requirement; if a voice of the appropriate gender is not available, the synthesizer should substitute a voice with a different gender rather than failing the request.

26.2.6 Changelog

PyPI History

0.2.0

New Features

- Add the text-to-speech v1 API surface. (#5468)
- Re-generate the text-to-speech v1beta1 API surface. (#5468)

Documentation

- Rename releases to changelog and include from CHANGELOG.md (#5191)

Internal / Testing Changes

- Add Test runs for Python 3.7 and remove 3.4 (#5295)

0.1.0

Interface additions

- Added text-to-speech v1beta1. (#5049)

27.1 Translation Client

Client for interacting with the Google Cloud Translation API.

`google.cloud.translate_v2.client.BASE = 'base'`
Base translation model.

class `google.cloud.translate_v2.client.Client` (*target_language='en', credentials=None, _http=None*)

Bases: `google.cloud.client.Client`

Client to bundle configuration needed for API requests.

Parameters

- **target_language** (*str*) – (Optional) The target language used for translations and language names. (Defaults to `ENGLISH_ISO_639`.)
- **credentials** (*Credentials*) – (Optional) The OAuth2 Credentials to use for this client. If not passed (and if no `_http` object is passed), falls back to the default inferred from the environment.
- **_http** (*Session*) – (Optional) HTTP object to make requests. Can be any object that defines `request()` with the same interface as `requests.Session.request()`. If not passed, an `_http` object is created that is bound to the `credentials` for the current object. This parameter should be considered private, and could change in the future.

SCOPE = (`'https://www.googleapis.com/auth/cloud-platform',`)
The scopes required for authenticating.

detect_language (*values*)
Detect the language of a string or list of strings.

See <https://cloud.google.com/translate/docs/detecting-language>

Parameters **values** (*str or list*) – String or list of strings that will have language detected.

Return type *dict or list*

Returns

A list of dictionaries for each queried value. Each dictionary typically contains three keys

- **confidence**: The confidence in language detection, a float between 0 and 1.
- **input**: The corresponding input value.
- **language**: The detected language (as an ISO 639-1 language code).

though the key **confidence** may not always be present.

If only a single value is passed, then only a single dictionary will be returned.

Raises `ValueError` if the number of detections is not equal to the number of values.
`ValueError` if a value produces a list of detections with 0 or multiple results in it.

get_languages (*target_language=None*)

Get list of supported languages for translation.

Response

See <https://cloud.google.com/translate/docs/discovering-supported-languages>

Parameters **target_language** (*str*) – (Optional) The language used to localize returned language names. Defaults to the target language on the current client.

Return type *list*

Returns List of dictionaries. Each dictionary contains a supported ISO 639-1 language code (using the dictionary key **language**). If **target_language** is passed, each dictionary will also contain the name of each supported language (localized to the target language).

translate (*values, target_language=None, format_=None, source_language=None, customization_ids=(), model=None*)

Translate a string or list of strings.

See <https://cloud.google.com/translate/docs/translating-text>

Parameters

- **values** (*str or list*) – String or list of strings to translate.
- **target_language** (*str*) – The language to translate results into. This is required by the API and defaults to the target language of the current instance.
- **format** (*str*) – (Optional) One of `text` or `html`, to specify if the input text is plain text or HTML.
- **source_language** (*str*) – (Optional) The language of the text to be translated.
- **customization_ids** (*str or list*) – (Optional) ID or list of customization IDs for translation. Sets the `cid` parameter in the query.
- **model** (*str*) – (Optional) The model used to translate the text, such as `'base'` or `'nmt'`.

Return type *str or list*

Returns

A list of dictionaries for each queried value. Each dictionary typically contains three keys (though not all will be present in all cases)

- `detectedSourceLanguage`: The detected language (as an ISO 639-1 language code) of the text.
- `translatedText`: The translation of the text into the target language.
- `input`: The corresponding input value.
- `model`: The model used to translate the text.

If only a single value is passed, then only a single dictionary will be returned.

Raises `ValueError` if the number of values and translations differ.

```
google.cloud.translate_v2.client.ENGLISH_ISO_639 = 'en'
```

ISO 639-1 language code for English.

```
google.cloud.translate_v2.client.NMT = 'nmt'
```

Neural Machine Translation model.

With [Google Cloud Translation](#), you can dynamically translate text between thousands of language pairs. The Google Cloud Translation API lets websites and programs integrate with Google Cloud Translation programmatically. Google Cloud Translation is available as a paid service. See the [Pricing](#) and [FAQ](#) pages for details.

27.2 Installation

Install the `google-cloud-translate` library using `pip`:

```
$ pip install google-cloud-translate
```

27.3 Authentication / Configuration

- Use `Client` objects to configure your applications.
- `Client` objects hold a connection to the Cloud Translation service.

27.4 Methods

To create a client:

```
>>> from google.cloud import translate
>>> client = translate.Client()
```

By default, the client targets English when doing detections and translations, but a non-default value can be used as well:

```
>>> from google.cloud import translate
>>> client = translate.Client(target_language='es')
```

The Google Cloud Translation API has three supported methods, and they map to three methods on a client: `get_languages()`, `detect_language()` and `translate()`.

To get a list of languages supported by the Google Cloud Translation API

```
>>> from google.cloud import translate
>>> client = translate.Client()
>>> client.get_languages()
[
  {
    'language': 'af',
    'name': 'Afrikaans',
  },
  ...
]
```

To detect the language that some given text is written in:

```
>>> from google.cloud import translate
>>> client = translate.Client()
>>> client.detect_language(['Me llamo', 'I am'])
[
  {
    'confidence': 0.25830904,
    'input': 'Me llamo',
    'language': 'es',
  }, {
    'confidence': 0.17112699,
    'input': 'I am',
    'language': 'en',
  },
]
```

The `confidence` value is an optional floating point value between 0 and 1. The closer this value is to 1, the higher the confidence level for the language detection. This member is not always available.

To translate text into the default destination language without knowing the source language:

```
>>> from google.cloud import translate
>>> client = translate.Client()
>>> client.translate('koszula')
{
  'translatedText': 'shirt',
  'detectedSourceLanguage': 'pl',
  'input': 'koszula',
}
```

If the source language is known:

```
>>> from google.cloud import translate
>>> client = translate.Client()
>>> client.translate('camisa', source_language='es')
{
  'translatedText': 'shirt',
  'input': 'camisa',
}
```

or to use a non-default target language:

```
>>> from google.cloud import translate
>>> client = translate.Client()
>>> client.translate(['Me llamo Jeff', 'My name is Jeff'],
...                  target_language='de')
[
  {
    'translatedText': 'Mein Name ist Jeff',
    'detectedSourceLanguage': 'es',
    'input': 'Me llamo Jeff',
  }, {
    'translatedText': 'Mein Name ist Jeff',
    'detectedSourceLanguage': 'en',
    'input': 'My name is Jeff',
  },
]
```

27.5 Changelog

For a list of all google-cloud-translate releases:

27.5.1 Changelog

PyPI History

1.3.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Documentation

- Fixing “Fore” -> “For” typo in README docs. (#4317)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Making a nox -s default session for all packages. (#4324)
- Shorten test names (#4321)

1.3.0

Notable Implementation Changes

- Use POST (rather than GET) for API `translate` requests (#4095, h/t to @Maerig)

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)
- Fix example in `Config.get_variable()` (#3910)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)

PyPI: <https://pypi.org/project/google-cloud-translate/1.3.0/>

The Google Cloud [Vision \(Vision API docs\)](#) API enables developers to understand the content of an image by encapsulating powerful machine learning models in an easy to use REST API. It quickly classifies images into thousands of categories (e.g., “sailboat”, “lion”, “Eiffel Tower”), detects individual objects and faces within images, and finds and reads printed words contained within images. You can build metadata on your image catalog, moderate offensive content, or enable new marketing scenarios through image sentiment analysis. Analyze images uploaded in the request or integrate with your image storage on Google Cloud Storage.

28.1 Installation

Install the `google-cloud-vision` library using `pip`:

```
$ pip install google-cloud-vision
```

28.2 Authentication and Configuration

- For an overview of authentication in `google-cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you should also set the `GOOGLE_CLOUD_PROJECT` environment variable for the project you’d like to interact with. If the `GOOGLE_CLOUD_PROJECT` environment variable is not present, the project ID from JSON file credentials is used.

If you are using Google App Engine or Google Compute Engine this will be detected automatically.

- After configuring your environment, create a `ImageAnnotatorClient`.

```
>>> from google.cloud import vision
>>> client = vision.ImageAnnotatorClient()
```

or pass in credentials explicitly.

```
>>> from google.cloud import vision
>>> client = vision.ImageAnnotatorClient(
...     credentials=creds,
... )
```

28.3 Annotate an Image

You can call the `annotate_image()` method directly:

```
>>> from google.cloud import vision
>>> client = vision.ImageAnnotatorClient()
>>> response = client.annotate_image({
...     'image': {'source': {'image_uri': 'gs://my-test-bucket/image.jpg'}},
...     'features': [{'type': vision.enums.Feature.Type.FACE_DETECTION}],
... })
>>> len(response.annotations)
2
>>> for face in response.annotations[0].faces:
...     print(face.joy)
Likelihood.VERY_LIKELY
Likelihood.VERY_LIKELY
Likelihood.VERY_LIKELY
>>> for logo in response.annotations[0].logos:
...     print(logo.description)
'google'
'github'
```

28.4 Single-feature Shortcuts

If you are only requesting a single feature, you may find it easier to ask for it using our direct methods:

```
>>> from google.cloud import vision
>>> client = vision.ImageAnnotatorClient()
>>> response = client.face_detection({
...     'source': {'image_uri': 'gs://my-test-bucket/image.jpg'},
... })
>>> len(response.annotations)
1
>>> for face in response.annotations[0].faces:
...     print(face.joy)
Likelihood.VERY_LIKELY
Likelihood.VERY_LIKELY
Likelihood.VERY_LIKELY
```

28.5 No results found

If no results for the detection performed can be extracted from the image, then an empty list is returned. This behavior is similar with all detection types.

Example with `logo_detection()`:

```
>>> from google.cloud import vision
>>> client = vision.ImageAnnotatorClient()
>>> with open('./image.jpg', 'rb') as image_file:
...     content = image_file.read()
>>> response = client.logo_detection({
...     'content': content,
... })
>>> len(response.annotations)
0
```

28.6 API Reference

This package includes clients for multiple versions of the Vision API. By default, you will get `v1`, the latest stable version.

28.6.1 Client for Cloud Vision API

```
class google.cloud.vision_v1.ImageAnnotatorClient (transport=None, channel=None, credentials=None,
client_config={'interfaces':
{'google.cloud.vision.v1.ImageAnnotator':
{'retry_codes': {'idempotent':
['DEADLINE_EXCEEDED', 'UNAVAILABLE'], 'non_idempotent':
[]}, 'retry_params': {'default':
{'initial_retry_delay_millis':
100, 'retry_delay_multiplier':
1.3, 'max_retry_delay_millis':
60000, 'initial_rpc_timeout_millis':
60000, 'rpc_timeout_multiplier':
1.0, 'max_rpc_timeout_millis':
60000, 'total_timeout_millis':
600000}}, 'methods': {'BatchAnnotateImages': {'timeout_millis':
60000, 'retry_codes_name': 'idempotent', 'retry_params_name':
'default'}, 'AsyncBatchAnnotateFiles': {'timeout_millis': 60000,
'retry_codes_name': 'idempotent', 'retry_params_name':
'default'}}}}, client_info=None)
```

Service that performs Google Cloud Vision API detection tasks over client images, such as face, landmark, logo, label, and text detection. The ImageAnnotator service returns detected entities from the images.

Constructor.

Parameters

- (**Union**[**ImageAnnotatorGrpcTransport**, *(transport)*], *Callable*[*[~.Credentials, type]*, *~.ImageAnnotatorGrpcTransport*]): A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance.

Callables will be sent the credentials as the first argument and the default transport class as the second argument.

- **channel** (*grpc.Channel*) – DEPRECATED. A *Channel* instance through which to make calls. This argument is mutually exclusive with *credentials*; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to *transport*; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If *None*, then default info will be used. Generally, you only need to set this if you're developing your own client library.

annotate_image (*request, retry=None, timeout=None*)

Run image detection and annotation for an image.

Example

```
>>> from google.cloud.vision_v1 import ImageAnnotatorClient
>>> client = ImageAnnotatorClient()
>>> request = {
...     'image': {
...         'source': {'image_uri': 'https://foo.com/image.jpg'},
...     },
... }
>>> response = client.annotate_image(request)
```

Parameters

- **request** (*AnnotateImageRequest*) –
- **options** (*google.gax.CallOptions*) – Overrides the default settings for this call, e.g, timeout, retries, etc.

Returns *AnnotateImageResponse* The API response.

async_batch_annotate_files (*requests, retry=<object object>, timeout=<object object>, metadata=None*)

Run asynchronous image detection and annotation for a list of generic files, such as PDF files, which may contain multiple pages and multiple images per page. Progress and results can be retrieved through the *google.longrunning.Operations* interface. *Operation.metadata* contains *OperationMetadata* (*metadata*). *Operation.response* contains *AsyncBatchAnnotateFilesResponse* (*results*).

Example


```

>>> from google.cloud import vision_v1
>>>
>>> client = vision_v1.ImageAnnotatorClient()
>>>
>>> # TODO: Initialize ``requests``:
>>> requests = []
>>>
>>> response = client.async_batch_annotate_files(requests)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()

```

Parameters

- **requests** (*list[Union[dict, AsyncAnnotateFileRequest]]*) – Individual async file annotation requests for this batch. If a dict is provided, it must be of the same form as the protobuf message *AsyncAnnotateFileRequest*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *_OperationFuture* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

batch_annotate_images (*requests, retry=<object object>, timeout=<object object>, metadata=None*)

Run image detection and annotation for a batch of images.

Example

```

>>> from google.cloud import vision_v1
>>>
>>> client = vision_v1.ImageAnnotatorClient()
>>>
>>> # TODO: Initialize ``requests``:

```

(continues on next page)

(continued from previous page)

```
>>> requests = []
>>>
>>> response = client.batch_annotate_images(requests)
```

Parameters

- **requests** (*list[Union[dict, AnnotateImageRequest]]*) – Individual image annotation requests for this batch. If a dict is provided, it must be of the same form as the protobuf message *AnnotateImageRequest*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *BatchAnnotateImagesResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

crop_hints (*image, max_results=None, retry=None, timeout=None, **kwargs*)

Return crop hints information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

document_text_detection (*image, max_results=None, retry=None, timeout=None, **kwargs*)

Perform document text detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.

- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

```
enums = <module 'google.cloud.vision_v1.gapic.enums' from '/home/docs/checkouts/readth
```

```
face_detection (image, max_results=None, retry=None, timeout=None, **kwargs)
```

Perform face detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

```
classmethod from_service_account_file (filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *ImageAnnotatorClient*

```
classmethod from_service_account_json (filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *ImageAnnotatorClient*

```
image_properties (image, max_results=None, retry=None, timeout=None, **kwargs)
```

Return image properties information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

label_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform label detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

landmark_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform landmark detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

logo_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform logo detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.

- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

safe_search_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform safe search detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

text_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform text detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

web_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform web detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.

- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

28.6.2 Types for Cloud Vision API Client

class google.cloud.vision_v1.types.**AnnotateFileResponse**

Response to a single file annotation request. A file may contain one or more images, which individually have their own responses.

input_config

Information about the file for which this response is generated.

responses

Individual responses to images found within the file.

class google.cloud.vision_v1.types.**AnnotateImageRequest**

Request for performing Google Cloud Vision API tasks over a user-provided image, with user-requested features.

image

The image to be processed.

features

Requested features.

image_context

Additional context that may accompany the image.

class google.cloud.vision_v1.types.**AnnotateImageResponse**

Response to an image annotation request.

face_annotations

If present, face detection has completed successfully.

landmark_annotations

If present, landmark detection has completed successfully.

logo_annotations

If present, logo detection has completed successfully.

label_annotations

If present, label detection has completed successfully.

text_annotations

If present, text (OCR) detection has completed successfully.

full_text_annotation

If present, text (OCR) detection or document (OCR) text detection has completed successfully. This annotation provides the structural hierarchy for the OCR detected text.

safe_search_annotation

If present, safe-search annotation has completed successfully.

image_properties_annotation

If present, image properties were extracted successfully.

crop_hints_annotation

If present, crop hints have completed successfully.

web_detection

If present, web detection has completed successfully.

error

If set, represents the error message for the operation. Note that filled-in image annotations are guaranteed to be correct, even when `error` is set.

context

If present, contextual information is needed to understand where this image comes from.

class google.cloud.vision_v1.types.**Any**

class google.cloud.vision_v1.types.**AsyncAnnotateFileRequest**

An offline file annotation request.

input_config

Required. Information about the input file.

features

Required. Requested features.

image_context

Additional context that may accompany the image(s) in the file.

output_config

Required. The desired output location and metadata (e.g. format).

class google.cloud.vision_v1.types.**AsyncAnnotateFileResponse**

The response for a single offline file annotation request.

output_config

The output location and metadata from AsyncAnnotateFileRequest.

class google.cloud.vision_v1.types.**AsyncBatchAnnotateFilesRequest**

Multiple async file annotation requests are batched into a single service call.

requests

Individual async file annotation requests for this batch.

class google.cloud.vision_v1.types.**AsyncBatchAnnotateFilesResponse**

Response to an async batch file annotation request.

responses

The list of file annotation responses, one for each request in AsyncBatchAnnotateFilesRequest.

class google.cloud.vision_v1.types.**BatchAnnotateImagesRequest**

Multiple image annotation requests are batched into a single service call.

requests

Individual image annotation requests for this batch.

class google.cloud.vision_v1.types.**BatchAnnotateImagesResponse**

Response to a batch image annotation request.

responses

Individual responses to image annotation requests within the batch.

class google.cloud.vision_v1.types.**Block**

Logical element on the page.

property

Additional information detected for the block.

bounding_box

The bounding box for the block. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: - when the text is horizontal it might look like: :: 0—1 || 3—2 - when it’s rotated 180 degrees around the top-left corner it becomes: :: 2—3 || 1—0 and the vertex order will still be (0, 1, 2, 3).

paragraphs

List of paragraphs in this block (if this blocks is of type text).

block_type

Detected block type (text, image etc) for this block.

confidence

Confidence of the OCR results on the block. Range [0, 1].

class google.cloud.vision_v1.types.BoolValue

class google.cloud.vision_v1.types.BoundingPoly

A bounding polygon for the detected image annotation.

vertices

The bounding polygon vertices.

normalized_vertices

The bounding polygon normalized vertices.

class google.cloud.vision_v1.types.BytesValue

class google.cloud.vision_v1.types.CancelOperationRequest

class google.cloud.vision_v1.types.Color

class google.cloud.vision_v1.types.ColorInfo

Color information consists of RGB channels, score, and the fraction of the image that the color occupies in the image.

color

RGB components of the color.

score

Image-specific score for this color. Value in range [0, 1].

pixel_fraction

The fraction of pixels the color occupies in the image. Value in range [0, 1].

class google.cloud.vision_v1.types.CropHint

Single crop hint that is used to generate a new crop when serving an image.

bounding_poly

The bounding polygon for the crop region. The coordinates of the bounding box are in the original image’s scale, as returned in ImageParams.

confidence

Confidence of this being a salient region. Range [0, 1].

importance_fraction

Fraction of importance of this salient region with respect to the original image.

class google.cloud.vision_v1.types.CropHintsAnnotation

Set of crop hints that are used to generate new crops when serving images.

crop_hints

Crop hint results.

class google.cloud.vision_v1.types.CropHintsParams

Parameters for crop hints annotation request.

aspect_ratios

Aspect ratios in floats, representing the ratio of the width to the height of the image. For example, if the desired aspect ratio is 4/3, the corresponding float value should be 1.33333. If not specified, the best possible crop is returned. The number of provided aspect ratios is limited to a maximum of 16; any aspect ratios provided after the 16th are ignored.

class google.cloud.vision_v1.types.CustomHttpPattern

class google.cloud.vision_v1.types.DeleteOperationRequest

class google.cloud.vision_v1.types.DescriptorProto

class ExtensionRange

class ReservedRange

class google.cloud.vision_v1.types.DominantColorsAnnotation

Set of dominant colors and their corresponding scores.

colors

RGB color values with their score and pixel fraction.

class google.cloud.vision_v1.types.DoubleValue

class google.cloud.vision_v1.types.Empty

class google.cloud.vision_v1.types.EntityAnnotation

Set of detected entity features.

mid

Opaque entity ID. Some IDs may be available in [Google Knowledge Graph Search API](#).

locale

The language code for the locale in which the entity textual description is expressed.

description

Entity textual description, expressed in its `locale` language.

score

Overall score of the result. Range [0, 1].

confidence

Deprecated. Use “score“ instead. The accuracy of the entity detection in an image. For example, for an image in which the “Eiffel Tower” entity is detected, this field represents the confidence that there is a tower in the query image. Range [0, 1].

topicality

The relevancy of the ICA (Image Content Annotation) label to the image. For example, the relevancy of “tower” is likely higher to an image containing the detected “Eiffel Tower” than to an image containing a detected distant towering building, even though the confidence that there is a tower in each image may be the same. Range [0, 1].

bounding_poly

Image region to which this entity belongs. Not produced for `LABEL_DETECTION` features.

locations

The location information for the detected entity. Multiple `LocationInfo` elements can be present

because one location may indicate the location of the scene in the image, and another location may indicate the location of the place where the image was taken. Location information is usually present for landmarks.

properties

Some entities may have optional user-supplied `Property` (name/value) fields, such a score or string that qualifies the entity.

```
class google.cloud.vision_v1.types.EnumDescriptorProto
```

```
class EnumReservedRange
```

```
class google.cloud.vision_v1.types.EnumOptions
```

```
class google.cloud.vision_v1.types.EnumValueDescriptorProto
```

```
class google.cloud.vision_v1.types.EnumValueOptions
```

```
class google.cloud.vision_v1.types.ExtensionRangeOptions
```

```
class google.cloud.vision_v1.types.FaceAnnotation
```

A face annotation object contains the results of face detection.

bounding_poly

The bounding polygon around the face. The coordinates of the bounding box are in the original image's scale, as returned in `ImageParams`. The bounding box is computed to “frame” the face in accordance with human expectations. It is based on the landmarker results. Note that one or more x and/or y coordinates may not be generated in the `BoundingBoxPoly` (the polygon will be unbounded) if only a partial face appears in the image to be annotated.

fd_bounding_poly

The `fd_bounding_poly` bounding polygon is tighter than the `boundingPoly`, and encloses only the skin part of the face. Typically, it is used to eliminate the face from any image analysis that detects the “amount of skin” visible in an image. It is not based on the landmarker results, only on the initial face detection, hence the fd (face detection) prefix.

landmarks

Detected face landmarks.

roll_angle

Roll angle, which indicates the amount of clockwise/anti- clockwise rotation of the face relative to the image vertical about the axis perpendicular to the face. Range [-180,180].

pan_angle

Yaw angle, which indicates the leftward/rightward angle that the face is pointing relative to the vertical plane perpendicular to the image. Range [-180,180].

tilt_angle

Pitch angle, which indicates the upwards/downwards angle that the face is pointing relative to the image's horizontal plane. Range [-180,180].

detection_confidence

Detection confidence. Range [0, 1].

landmarking_confidence

Face landmarking confidence. Range [0, 1].

joy_likelihoood

Joy likelihood.

sorrow_likelihoood

Sorrow likelihood.

anger_likelihood

Anger likelihood.

surprise_likelihood

Surprise likelihood.

under_exposed_likelihood

Under-exposed likelihood.

blurred_likelihood

Blurred likelihood.

headwear_likelihood

Headwear likelihood.

class Landmark

A face-specific landmark (for example, a face feature).

type

Face landmark type.

position

Face landmark position.

class google.cloud.vision_v1.types.Feature

The type of Google Cloud Vision API detection to perform, and the maximum number of results to return for that type. Multiple `Feature` objects can be specified in the `features` list.

type

The feature type.

max_results

Maximum number of results of this type. Does not apply to `TEXT_DETECTION`, `DOCUMENT_TEXT_DETECTION`, or `CROP_HINTS`.

model

Model to use for the feature. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.vision_v1.types.FieldDescriptorProto

class google.cloud.vision_v1.types.FieldOptions

class google.cloud.vision_v1.types.FileDescriptorProto

class google.cloud.vision_v1.types.FileDescriptorSet

class google.cloud.vision_v1.types.FileOptions

class google.cloud.vision_v1.types.FloatValue

class google.cloud.vision_v1.types.GcsDestination

The Google Cloud Storage location where the output will be written to.

uri

Google Cloud Storage URI where the results will be stored. Results will be in JSON format and preceded by its corresponding input URI. This field can either represent a single file, or a prefix for multiple outputs. Prefixes must end in a `/`. Examples: - File: `gs://bucket-name/filename.json` - Prefix: `gs://bucket-name/prefix/here/` - File: `gs://bucket-name/prefix/here` If multiple outputs, each response is still `AnnotateFileResponse`, each of which contains some subset of the full list of `AnnotateImageResponse`. Multiple outputs can happen if, for example, the output JSON is too large and overflows into multiple sharded files.

class google.cloud.vision_v1.types.GcsSource

The Google Cloud Storage location where the input will be read from.

uri

Google Cloud Storage URI for the input file. This must only be a Google Cloud Storage object. Wildcards are not currently supported.

```
class google.cloud.vision_v1.types.GeneratedCodeInfo
```

class Annotation

```
class google.cloud.vision_v1.types.GetOperationRequest
```

```
class google.cloud.vision_v1.types.Http
```

```
class google.cloud.vision_v1.types.HttpRule
```

```
class google.cloud.vision_v1.types.Image
```

Client image to perform Google Cloud Vision API tasks over.

content

Image content, represented as a stream of bytes. Note: As with all `bytes` fields, `protobuffers` use a pure binary representation, whereas `JSON` representations use `base64`.

source

Google Cloud Storage image location, or publicly-accessible image URL. If both `content` and `source` are provided for an image, `content` takes precedence and is used to perform the image annotation request.

```
class google.cloud.vision_v1.types.ImageAnnotationContext
```

If an image was produced from a file (e.g. a `PDF`), this message gives information about the source of that image.

uri

The URI of the file used to produce the image.

page_number

If the file was a `PDF` or `TIFF`, this field gives the page number within the file used to produce the image.

```
class google.cloud.vision_v1.types.ImageContext
```

Image context and/or feature-specific parameters.

lat_long_rect

Not used.

language_hints

List of languages to use for `TEXT_DETECTION`. In most cases, an empty value yields the best results since it enables automatic language detection. For languages based on the Latin alphabet, setting `language_hints` is not needed. In rare cases, when the language of the text in the image is known, setting a hint will help get better results (although it will be a significant hindrance if the hint is wrong). Text detection returns an error if one or more of the specified languages is not one of the [supported languages](#).

crop_hints_params

Parameters for crop hints annotation request.

web_detection_params

Parameters for web detection.

```
class google.cloud.vision_v1.types.ImageProperties
```

Stores image properties, such as dominant colors.

dominant_colors

If present, dominant colors completed successfully.

class google.cloud.vision_v1.types.ImageSource

External image source (Google Cloud Storage or web URL image location).

gcs_image_uri

Use “image_uri” instead. The Google Cloud Storage URI of the form `gs://bucket_name/object_name`. Object versioning is not supported. See [Google Cloud Storage Request URIs](#) for more info.

image_uri

The URI of the source image. Can be either: 1. A Google Cloud Storage URI of the form `gs://bucket_name/object_name`. Object versioning is not supported. See [Google Cloud Storage Request URIs](#) for more info. 2. A publicly-accessible image HTTP/HTTPS URL. When fetching images from HTTP/HTTPS URLs, Google cannot guarantee that the request will be completed. Your request may fail if the specified host denies the request (e.g. due to request throttling or DOS prevention), or if Google throttles requests to the site for abuse prevention. You should not depend on externally-hosted images for production applications. When both `gcs_image_uri` and `image_uri` are specified, `image_uri` takes precedence.

class google.cloud.vision_v1.types.InputConfig

The desired input location and metadata.

gcs_source

The Google Cloud Storage location to read the input from.

mime_type

The type of the file. Currently only “application/pdf” and “image/tiff” are supported. Wildcards are not supported.

class google.cloud.vision_v1.types.Int32Value

class google.cloud.vision_v1.types.Int64Value

class google.cloud.vision_v1.types.LatLng

class google.cloud.vision_v1.types.LatLngRect

Rectangle determined by min and max LatLng pairs.

min_lat_lng

Min lat/long pair.

max_lat_lng

Max lat/long pair.

class google.cloud.vision_v1.types.ListOperationsRequest

class google.cloud.vision_v1.types.ListOperationsResponse

class google.cloud.vision_v1.types.LocationInfo

Detected entity location information.

lat_lng

lat/long location coordinates.

class google.cloud.vision_v1.types.MessageOptions

class google.cloud.vision_v1.types.MethodDescriptorProto

class google.cloud.vision_v1.types.MethodOptions

class google.cloud.vision_v1.types.NormalizedVertex

X coordinate.

y

Y coordinate.

class google.cloud.vision_v1.types.OneofDescriptorProto

class google.cloud.vision_v1.types.OneofOptions

class google.cloud.vision_v1.types.Operation

class google.cloud.vision_v1.types.OperationMetadata

Contains metadata for the BatchAnnotateImages operation.

state

Current state of the batch operation.

create_time

The time when the batch request was received.

update_time

The time when the operation result was last updated.

class google.cloud.vision_v1.types.OutputConfig

The desired output location and metadata.

gcs_destination

The Google Cloud Storage location to write the output(s) to.

batch_size

The max number of response protos to put into each output JSON file on Google Cloud Storage. The valid range is [1, 100]. If not specified, the default value is 20. For example, for one pdf file with 100 pages, 100 response protos will be generated. If `batch_size = 20`, then 5 json files each containing 20 response protos will be written under the prefix `gcs_destination.uri`. Currently, `batch_size` only applies to `GcsDestination`, with potential future support for other output configurations.

class google.cloud.vision_v1.types.Page

Detected page from OCR.

property

Additional information detected on the page.

width

Page width. For PDFs the unit is points. For images (including TIFFs) the unit is pixels.

height

Page height. For PDFs the unit is points. For images (including TIFFs) the unit is pixels.

blocks

List of blocks of text, images etc on this page.

confidence

Confidence of the OCR results on the page. Range [0, 1].

class google.cloud.vision_v1.types.Paragraph

Structural unit of text representing a number of words in certain order.

property

Additional information detected for the paragraph.

bounding_box

The bounding box for the paragraph. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it’s rotated 180 degrees around the top-left corner it becomes: 2—3 || 1 —0 and the vertice order will still be (0, 1, 2, 3).

words

List of words in this paragraph.

confidence

Confidence of the OCR results for the paragraph. Range [0, 1].

class google.cloud.vision_v1.types.**Position**

A 3D position in the image, used primarily for Face detection landmarks. A valid Position must have both x and y coordinates. The position coordinates are in the same scale as the original image.

x

X coordinate.

y

Y coordinate.

z

Z coordinate (or depth).

class google.cloud.vision_v1.types.**Property**

A Property consists of a user-supplied name/value pair.

name

Name of the property.

value

Value of the property.

uint64_value

Value of numeric properties.

class google.cloud.vision_v1.types.**SafeSearchAnnotation**

Set of features pertaining to the image, computed by computer vision methods over safe-search verticals (for example, adult, spoof, medical, violence).

adult

Represents the adult content likelihood for the image. Adult content may contain elements such as nudity, pornographic images or cartoons, or sexual activities.

spoof

Spoof likelihood. The likelihood that an modification was made to the image's canonical version to make it appear funny or offensive.

medical

Likelihood that this is a medical image.

violence

Likelihood that this image contains violent content.

racy

Likelihood that the request image contains racy content. Racy content may include (but is not limited to) skimpy or sheer clothing, strategically covered nudity, lewd or provocative poses, or close-ups of sensitive body areas.

class google.cloud.vision_v1.types.**ServiceDescriptorProto****class** google.cloud.vision_v1.types.**ServiceOptions****class** google.cloud.vision_v1.types.**SourceCodeInfo****class** Location**class** google.cloud.vision_v1.types.**Status**

class google.cloud.vision_v1.types.StringValue

class google.cloud.vision_v1.types.Symbol

A single symbol representation.

property

Additional information detected for the symbol.

bounding_box

The bounding box for the symbol. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it’s rotated 180 degrees around the top-left corner it becomes: 2—3 || 1 —0 and the vertice order will still be (0, 1, 2, 3).

text

The actual UTF-8 representation of the symbol.

confidence

Confidence of the OCR results for the symbol. Range [0, 1].

class google.cloud.vision_v1.types.TextAnnotation

TextAnnotation contains a structured representation of OCR extracted text. The hierarchy of an OCR extracted text structure is like this: TextAnnotation -> Page -> Block -> Paragraph -> Word -> Symbol Each structural component, starting from Page, may further have their own properties. Properties describe detected languages, breaks etc.. Please refer to the [TextAnnotation.TextProperty][google.cloud.vision.v1.TextAnnotation.TextProperty] message definition below for more detail.

pages

List of pages detected by OCR.

text

UTF-8 text detected on the pages.

class DetectedBreak

Detected start or end of a structural component.

type

Detected break type.

is_prefix

True if break prepends the element.

class DetectedLanguage

Detected language for a structural component.

language_code

The BCP-47 language code, such as “en-US” or “sr-Latn”. For more information, see http://www.unicode.org/reports/tr35/#Unicode_locale_identifier.

confidence

Confidence of detected language. Range [0, 1].

class TextProperty

Additional information detected on the structural component.

detected_languages

A list of detected languages together with confidence.

detected_break

Detected start or end of a text segment.


```

class google.cloud.vision_v1.types.Timestamp
class google.cloud.vision_v1.types.UInt32Value
class google.cloud.vision_v1.types.UInt64Value
class google.cloud.vision_v1.types.UninterpretedOption

    class NamePart
class google.cloud.vision_v1.types.Vertex
    X coordinate.

    Y
        Y coordinate.
class google.cloud.vision_v1.types.WebDetection
    Relevant information for the image from the Internet.

    web_entities
        Deduced entities from similar images on the Internet.

    full_matching_images
        Fully matching images from the Internet. Can include resized copies of the query image.

    partial_matching_images
        Partial matching images from the Internet. Those images are similar enough to share some key-point
        features. For example an original image will likely have partial matching for its crops.

    pages_with_matching_images
        Web pages containing the matching images from the Internet.

    visually_similar_images
        The visually similar image results.

    best_guess_labels
        Best guess text labels for the request image.

class WebEntity
    Entity deduced from similar images on the Internet.

    entity_id
        Opaque entity ID.

    score
        Overall relevancy score for the entity. Not normalized and not comparable across different image
        queries.

    description
        Canonical description of the entity, in English.

class WebImage
    Metadata for online images.

    url
        The result image URL.

    score
        (Deprecated) Overall relevancy score for the image.

class WebLabel
    Label to provide extra metadata for the web detection.

```

label

Label for extra metadata.

language_code

The BCP-47 language code for `label`, such as “en-US” or “sr-Latn”. For more information, see http://www.unicode.org/reports/tr35/#Unicode_locale_identifier.

class WebPage

Metadata for web pages.

url

The result web page URL.

score

(Deprecated) Overall relevancy score for the web page.

page_title

Title for the web page, may contain HTML markups.

full_matching_images

Fully matching images on the page. Can include resized copies of the query image.

partial_matching_images

Partial matching images on the page. Those images are similar enough to share some key-point features. For example an original image will likely have partial matching for its crops.

class google.cloud.vision_v1.types.WebDetectionParams

Parameters for web detection request.

include_geo_results

Whether to include results derived from the geo information in the image.

class google.cloud.vision_v1.types.Word

A word representation.

property

Additional information detected for the word.

bounding_box

The bounding box for the word. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it’s rotated 180 degrees around the top-left corner it becomes: 2—3 || 1—0 and the vertice order will still be (0, 1, 2, 3).

symbols

List of symbols in the word. The order of the symbols follows the natural reading order.

confidence

Confidence of the OCR results for the word. Range [0, 1].

A new beta release with additional features over the current stable version, spelled `v1p2beta1`, is provided to allow you to use these new features. These are expected to move into the stable release soon; until then, the usual beta admonishment (changes are possible, etc.) applies.

An API and type reference is provided for this beta:

28.6.3 Client for Cloud Vision API

```
class google.cloud.vision_v1p3beta1.ProductSearchClient (transport=None,
                                                         channel=None,
                                                         credentials=None,
                                                         client_config={'interfaces':
                                                         {'google.cloud.vision_v1p3beta1.ProductSearch':
                                                         {'retry_codes': {'idempotent':
                                                         ['DEADLINE_EXCEEDED',
                                                         'UNAVAILABLE'],
                                                         'non_idempotent':
                                                         []},
                                                         'retry_params':
                                                         {'default': {'initial_retry_delay_millis':
                                                         100,
                                                         'retry_delay_multiplier':
                                                         1.3,
                                                         'max_retry_delay_millis':
                                                         60000,
                                                         'initial_rpc_timeout_millis':
                                                         20000,
                                                         'rpc_timeout_multiplier':
                                                         1.0,
                                                         'max_rpc_timeout_millis':
                                                         20000,
                                                         'total_timeout_millis':
                                                         600000}}},
                                                         'methods':
                                                         {'CreateProductSet':
                                                         {'timeout_millis': 60000,
                                                         'retry_codes_name':
                                                         'non_idempotent',
                                                         'retry_params_name':
                                                         'default'},
                                                         'ListProductSets':
                                                         {'timeout_millis': 60000,
                                                         'retry_codes_name':
                                                         'idempotent',
                                                         'retry_params_name':
                                                         'default'},
                                                         'GetProductSet':
                                                         {'timeout_millis': 60000,
                                                         'retry_codes_name':
                                                         'idempotent',
                                                         'retry_params_name':
                                                         'default'},
                                                         'UpdateProductSet':
                                                         {'timeout_millis': 60000,
                                                         'retry_codes_name':
                                                         'non_idempotent',
                                                         'retry_params_name':
                                                         'default'},
                                                         'DeleteProductSet':
                                                         {'timeout_millis': 60000,
                                                         'retry_codes_name':
                                                         'idempotent',
                                                         'retry_params_name':
                                                         'default'},
                                                         'CreateProduct':
                                                         {'timeout_millis': 60000,
```

model:

- The API has a collection of `ProductSet` resources, named `projects/*/locations/*/productSets/*`, which acts as a way to put different products into groups to limit identification.

In parallel,

- The API has a collection of `Product` resources, named `projects/*/locations/*/products/*`
- Each `Product` has a collection of `ReferenceImage` resources, named `projects/*/locations/*/products/*/referenceImages/*`

Constructor.

Parameters

- **(Union[ProductSearchGrpcTransport, (transport) Callable[[-Credentials, type], ~.ProductSearchGrpcTransport])**: A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

add_product_to_product_set (*name, product, retry=<object object>, timeout=<object object>, metadata=None*)

Adds a Product to the specified ProductSet. If the Product is already present, no change is made.

One Product can be added to at most 100 ProductSets.

Possible errors:

- Returns `NOT_FOUND` if the Product or the ProductSet doesn't exist.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.product_set_path('[PROJECT]', '[LOCATION]', '[PRODUCT_SET]
↪')
```

(continues on next page)

(continued from previous page)

```
>>>
>>> # TODO: Initialize ``product``:
>>> product = ''
>>>
>>> client.add_product_to_product_set(name, product)
```

Parameters

- **name** (*str*) – The resource name for the ProductSet to modify.
Format is: projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID
- **product** (*str*) – The resource name for the Product to be added to this ProductSet.
Format is: projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_product (*parent, product, product_id, retry=<object object>, timeout=<object object>, metadata=None*)

Creates and returns a new product resource.

Possible errors:

- Returns `INVALID_ARGUMENT` if `display_name` is missing or longer than 4096 characters.
- Returns `INVALID_ARGUMENT` if `description` is longer than 4096 characters.
- Returns `INVALID_ARGUMENT` if `product_category` is missing or invalid.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # TODO: Initialize ``product``:
```

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```
>>> product = {}
>>>
>>> # TODO: Initialize ``product_id``:
>>> product_id = ''
>>>
>>> response = client.create_product(parent, product, product_id)
```

Parameters

- **parent** (*str*) – The project in which the Product should be created.
Format is `projects/PROJECT_ID/locations/LOC_ID`.
- **product** (*Union[dict, Product]*) – The product to create. If a dict is provided, it must be of the same form as the protobuf message *Product*
- **product_id** (*str*) – A user-supplied resource id for this Product. If set, the server will attempt to use this value as the resource id. If it is already in use, an error is returned with code `ALREADY_EXISTS`. Must be at most 128 characters long. It cannot contain the character `/`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *Product* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_product_set(parent, product_set, product_set_id, retry=<object object>, timeout=<object object>, metadata=None)

Creates and returns a new ProductSet resource.

Possible errors:

- Returns `INVALID_ARGUMENT` if `display_name` is missing, or is longer than 4096 characters.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
```

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```

>>>
>>> # TODO: Initialize ``product_set``:
>>> product_set = {}
>>>
>>> # TODO: Initialize ``product_set_id``:
>>> product_set_id = ''
>>>
>>> response = client.create_product_set(parent, product_set, product_set_id)

```

Parameters

- **parent** (*str*) – The project in which the ProductSet should be created.
Format is `projects/PROJECT_ID/locations/LOC_ID`.
- **product_set** (*Union[dict, ProductSet]*) – The ProductSet to create. If a dict is provided, it must be of the same form as the protobuf message *ProductSet*
- **product_set_id** (*str*) – A user-supplied resource id for this ProductSet. If set, the server will attempt to use this value as the resource id. If it is already in use, an error is returned with code `ALREADY_EXISTS`. Must be at most 128 characters long. It cannot contain the character `/`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *ProductSet* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

create_reference_image (*parent, reference_image, reference_image_id, retry=<object object>, timeout=<object object>, metadata=None*)

Creates and returns a new ReferenceImage resource.

The `bounding_poly` field is optional. If `bounding_poly` is not specified, the system will try to detect regions of interest in the image that are compatible with the `product_category` on the parent product. If it is specified, detection is ALWAYS skipped. The system converts polygons into non-rotated rectangles.

Note that the pipeline will resize the image if the image resolution is too large to process (above 50MP).

Possible errors:

- Returns `INVALID_ARGUMENT` if the `image_uri` is missing or longer than 4096 characters.
- Returns `INVALID_ARGUMENT` if the product does not exist.

- Returns `INVALID_ARGUMENT` if `bounding_poly` is not provided, and nothing compatible with the parent product's `product_category` is detected.
- Returns `INVALID_ARGUMENT` if `bounding_poly` contains more than 10 polygons.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> parent = client.product_path('[PROJECT]', '[LOCATION]', '[PRODUCT]')
>>>
>>> # TODO: Initialize ``reference_image``:
>>> reference_image = {}
>>>
>>> # TODO: Initialize ``reference_image_id``:
>>> reference_image_id = ''
>>>
>>> response = client.create_reference_image(parent, reference_image,
↳reference_image_id)
```

Parameters

- **parent** (*str*) – Resource name of the product in which to create the reference image.
Format is `projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID`.
- **reference_image** (*Union[dict, ReferenceImage]*) – The reference image to create. If an image ID is specified, it is ignored. If a dict is provided, it must be of the same form as the protobuf message [ReferenceImage](#)
- **reference_image_id** (*str*) – A user-supplied resource id for the ReferenceImage to be added. If set, the server will attempt to use this value as the resource id. If it is already in use, an error is returned with code `ALREADY_EXISTS`. Must be at most 128 characters long. It cannot contain the character `/`.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A [ReferenceImage](#) instance.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

delete_product (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Permanently deletes a product and its reference images.

Metadata of the product and all its images will be deleted right away, but search queries against ProductSets containing the product may still work until all related caches are refreshed.

Possible errors:

- Returns NOT_FOUND if the product does not exist.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.product_path('[PROJECT]', '[LOCATION]', '[PRODUCT]')
>>>
>>> client.delete_product(name)
```

Parameters

- **name** (*str*) – Resource name of product to delete.
Format is: `projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID`
- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[`Sequence`[`Tuple`[`str`, `str`]]]) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

delete_product_set (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Permanently deletes a ProductSet. All Products and ReferenceImages in the ProductSet will be deleted.

The actual image files are not deleted from Google Cloud Storage.

Possible errors:

- Returns NOT_FOUND if the ProductSet does not exist.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.product_set_path('[PROJECT]', '[LOCATION]', '[PRODUCT_SET]
→')
>>>
>>> client.delete_product_set(name)
```

Parameters

- **name** (*str*) – Resource name of the ProductSet to delete.
Format is: projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[*Sequence*[*Tuple*[*str*, *str*]]]) – Additional metadata that is provided to the method.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

delete_reference_image (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Permanently deletes a reference image.

The image metadata will be deleted right away, but search queries against ProductSets containing the image may still work until all related caches are refreshed.

The actual image files are not deleted from Google Cloud Storage.

Possible errors:

- Returns NOT_FOUND if the reference image does not exist.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.reference_image_path('[PROJECT]', '[LOCATION]', '[PRODUCT]
→', '[REFERENCE_IMAGE]')
```

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```
>>>
>>> client.delete_reference_image(name)
```

Parameters

- **name** (*str*) – The resource name of the reference image to delete.
Format is:
projects/PROJECT_ID/locations/LOC_ID/products/
PRODUCT_ID/referenceImages/IMAGE_ID
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.vision_v1p3beta1.gapic.enums' from '/home/docs/checkouts
```

```
classmethod from_service_account_file(filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type `ProductSearchClient`

```
classmethod from_service_account_json(filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type `ProductSearchClient`

get_product (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets information associated with a Product.

Possible errors:

- Returns NOT_FOUND if the Product does not exist.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.product_path('[PROJECT]', '[LOCATION]', '[PRODUCT]')
>>>
>>> response = client.get_product(name)
```

Parameters

- **name** (*str*) – Resource name of the Product to get.
Format is: projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID
- **retry** (*Optional*[*google.api_core.retry.Retry*]) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional*[*float*]) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[*Sequence*[*Tuple*[*str*, *str*]]]) – Additional metadata that is provided to the method.

Returns A *Product* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_product_set (*name*, *retry*=<object object>, *timeout*=<object object>, *metadata*=None)

Gets information associated with a ProductSet.

Possible errors:

- Returns NOT_FOUND if the ProductSet does not exist.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.product_set_path('[PROJECT]', '[LOCATION]', '[PRODUCT_SET]
↳')
>>>
>>> response = client.get_product_set(name)
```

Parameters

- **name** (*str*) – Resource name of the ProductSet to get.
Format is: projects/PROJECT_ID/locations/LOG_ID/productSets/PRODUCT_SET_ID
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if retry is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *ProductSet* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

get_reference_image (*name*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)
Gets information associated with a ReferenceImage.

Possible errors:

- Returns NOT_FOUND if the specified image does not exist.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.reference_image_path('[PROJECT]', '[LOCATION]', '[PRODUCT]
↳', '[REFERENCE_IMAGE]')
>>>
>>> response = client.get_reference_image(name)
```

Parameters

- **name** (*str*) – The resource name of the ReferenceImage to get.

Format is:

```
projects/PROJECT_ID/locations/LOC_ID/products/
PRODUCT_ID/referenceImages/IMAGE_ID.
```

- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *ReferenceImage* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

import_product_sets (*parent, input_config, retry=<object object>, timeout=<object object>, metadata=None*)

Asynchronous API that imports a list of reference images to specified product sets based on a list of image information.

The `google.longrunning.Operation` API can be used to keep track of the progress and results of the request. `Operation.metadata` contains `BatchOperationMetadata`. (`progress`) `Operation.response` contains `ImportProductSetsResponse`. (`results`)

The input source of this method is a csv file on Google Cloud Storage. For the format of the csv file please see `ImportProductSetsGcsSource.csv_file_uri`.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # TODO: Initialize ``input_config``:
>>> input_config = {}
>>>
>>> response = client.import_product_sets(parent, input_config)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
```

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```
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **parent** (*str*) – The project in which the ProductSets should be imported.
Format is `projects/PROJECT_ID/locations/LOC_ID`.
- **input_config** (*Union[dict, ImportProductSetsInputConfig]*) – The input content for the list of requests. If a dict is provided, it must be of the same form as the protobuf message *ImportProductSetsInputConfig*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

list_product_sets (*parent, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists ProductSets in an unspecified order.

Possible errors:

- Returns `INVALID_ARGUMENT` if `page_size` is greater than 100, or less than 1.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_product_sets(parent):
...     # process element
...     pass
>>>
>>>
```

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```

>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_product_sets(parent, options=CallOptions(page_
    token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **parent** (*str*) – The project from which ProductSets should be listed.
Format is `projects/PROJECT_ID/locations/LOC_ID`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `ProductSet` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_products (*parent, page_size=None, retry=<object object>, timeout=<object object>, metadata=None*)

Lists products in an unspecified order.

Possible errors:

- Returns `INVALID_ARGUMENT` if `page_size` is greater than 100 or less than 1.

Example

```

>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>

```

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```

>>> parent = client.location_path('[PROJECT]', '[LOCATION]')
>>>
>>> # Iterate over all results
>>> for element in client.list_products(parent):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_products(parent, options=CallOptions(page_
    token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **parent** (*str*) – The project OR ProductSet from which Products should be listed.
Format: projects/PROJECT_ID/locations/LOC_ID
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `Product` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_products_in_product_set (*name*, *page_size=None*, *retry=<object object>*, *time-out=<object object>*, *metadata=None*)

Lists the Products in a ProductSet, in an unspecified order. If the ProductSet does not exist, the products field of the response will be empty.

Possible errors:

- Returns `INVALID_ARGUMENT` if `page_size` is greater than 100 or less than 1.

Example

```

>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.product_set_path('[PROJECT]', '[LOCATION]', '[PRODUCT_SET]
↳')
>>>
>>> # Iterate over all results
>>> for element in client.list_products_in_product_set(name):
...     # process element
...     pass
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_products_in_product_set(name,
↳options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass

```

Parameters

- **name** (*str*) – The ProductSet resource for which to retrieve Products.
Format is: projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per- resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `Product` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

list_reference_images (*parent*, *page_size=None*, *retry=<object object>*, *timeout=<object object>*, *metadata=None*)

Lists reference images.

Possible errors:

- Returns `NOT_FOUND` if the parent product does not exist.
- Returns `INVALID_ARGUMENT` if the `page_size` is greater than 100, or less than 1.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> parent = client.product_path('[PROJECT]', '[LOCATION]', '[PRODUCT]')
>>>
>>> # Iterate over all results
>>> for element in client.list_reference_images(parent):
...     # process element
...     pass
>>>
>>>
>>> # Alternatively:
>>>
>>> # Iterate over results one page at a time
>>> for page in client.list_reference_images(parent,
↳ options=CallOptions(page_token=INITIAL_PAGE)):
...     for element in page:
...         # process element
...         pass
```

Parameters

- **parent** (*str*) – Resource name of the product containing the reference images.
Format is `projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID`.
- **page_size** (*int*) – The maximum number of resources contained in the underlying API response. If page streaming is performed per-resource, this parameter does not affect the return value. If page streaming is performed per-page, this determines the maximum number of resources in a page.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `PageIterator` instance. By default, this is an iterable of `ReferenceImage` instances. This object can also be configured to iterate over the pages of the response through the `options` parameter.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

classmethod `location_path(project, location)`

Return a fully-qualified location string.

classmethod `product_path(project, location, product)`

Return a fully-qualified product string.

classmethod `product_set_path(project, location, product_set)`

Return a fully-qualified product_set string.

classmethod `reference_image_path(project, location, product, reference_image)`

Return a fully-qualified reference_image string.

remove_product_from_product_set (*name, product, retry=<object object>, timeout=<object object>, metadata=None*)

Removes a Product from the specified ProductSet.

Possible errors:

- Returns NOT_FOUND If the Product is not found under the ProductSet.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> name = client.product_set_path('[PROJECT]', '[LOCATION]', '[PRODUCT_SET]
↳')
>>>
>>> # TODO: Initialize ``product``:
>>> product = ''
>>>
>>> client.remove_product_from_product_set(name, product)
```

Parameters

- **name** (*str*) – The resource name for the ProductSet to modify.
Format is: `projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID`
- **product** (*str*) – The resource name for the Product to be removed from this ProductSet.
Format is: `projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID`
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.

- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

update_product (*product*, *update_mask*, *retry=<object object>*, *timeout=<object object>*, *meta-data=None*)

Makes changes to a Product resource. Only `display_name`, `description` and `labels` can be updated right now.

If labels are updated, the change will not be reflected in queries until the next index time.

Possible errors:

- Returns `NOT_FOUND` if the Product does not exist.
- Returns `INVALID_ARGUMENT` if `display_name` is present in `update_mask` but is missing from the request or longer than 4096 characters.
- Returns `INVALID_ARGUMENT` if `description` is present in `update_mask` but is longer than 4096 characters.
- Returns `INVALID_ARGUMENT` if `product_category` is present in `update_mask`.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> # TODO: Initialize ``product``:
>>> product = {}
>>>
>>> # TODO: Initialize ``update_mask``:
>>> update_mask = {}
>>>
>>> response = client.update_product(product, update_mask)
```

Parameters

- **product** (*Union[dict, Product]*) – The Product resource which replaces the one on the server. `product.name` is immutable. If a dict is provided, it must be of the same form as the protobuf message *Product*
- **update_mask** (*Union[dict, FieldMask]*) – The *FieldMask* that specifies which fields to update. If `update_mask` isn't specified, all mutable fields are to be updated. Valid mask paths include `product_labels`, `display_name` and

description. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*

- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if **retry** is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *Product* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

update_product_set (*product_set, update_mask, retry=<object object>, timeout=<object object>, metadata=None*)

Makes changes to a ProductSet resource. Only display_name can be updated currently.

Possible errors:

- Returns NOT_FOUND if the ProductSet does not exist.
- Returns INVALID_ARGUMENT if display_name is present in update_mask but missing from the request or longer than 4096 characters.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ProductSearchClient()
>>>
>>> # TODO: Initialize ``product_set``:
>>> product_set = {}
>>>
>>> # TODO: Initialize ``update_mask``:
>>> update_mask = {}
>>>
>>> response = client.update_product_set(product_set, update_mask)
```

Parameters

- **product_set** (*Union[dict, ProductSet]*) – The ProductSet resource which replaces the one on the server. If a dict is provided, it must be of the same form as the protobuf message *ProductSet*
- **update_mask** (*Union[dict, FieldMask]*) – The *FieldMask* that specifies which fields to update. If update_mask isn't specified, all mutable fields are to be updated. Valid mask path is display_name. If a dict is provided, it must be of the same form as the protobuf message *FieldMask*

- **retry** (*Optional*[`google.api_core.retry.Retry`]) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional*[`float`]) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional*[*Sequence*[*Tuple*[`str`, `str`]]]) – Additional metadata that is provided to the method.

Returns A `ProductSet` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.


```

class google.cloud.vision_v1p3beta1.ImageAnnotatorClient (transport=None,
                                                         channel=None,
                                                         credentials=None,
                                                         client_config={'interfaces':
{'google.cloud.vision.v1p3beta1.ImageAnnotator':
{'retry_codes': {'idempotent': ['DEADLINE_EXCEEDED',
'UNAVAILABLE'],
'non_idempotent':
[]},
'retry_params':
{'default': {'initial_retry_delay_millis':
100,
'retry_delay_multiplier':
1.3,
'max_retry_delay_millis':
60000,
'initial_rpc_timeout_millis':
60000,
'rpc_timeout_multiplier':
1.0,
'max_rpc_timeout_millis':
60000,
'total_timeout_millis':
600000}}},
'methods':
{'BatchAnnotateImages':
{'timeout_millis': 60000,
'retry_codes_name':
'idempotent',
'retry_params_name':
'default'},
'AsyncBatchAnnotateFiles':
{'timeout_millis': 60000,
'retry_codes_name':
'non_idempotent',
'retry_params_name':
'default'}}}},
client_info=None)

```

Service that performs Google Cloud Vision API detection tasks over client images, such as face, landmark, logo, label, and text detection. The ImageAnnotator service returns detected entities from the images.

Constructor.

Parameters

- **(Union[ImageAnnotatorGrpcTransport, (transport) –** Callable[[~.Credentials, type], ~.ImageAnnotatorGrpcTransport]): A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.

- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

annotate_image (*request, retry=None, timeout=None*)
Run image detection and annotation for an image.

Example

```
>>> from google.cloud.vision_v1 import ImageAnnotatorClient
>>> client = ImageAnnotatorClient()
>>> request = {
...     'image': {
...         'source': {'image_uri': 'https://foo.com/image.jpg'},
...     },
... }
>>> response = client.annotate_image(request)
```

Parameters

- **request** (*AnnotateImageRequest*) –
- **options** (*google.gax.CallOptions*) – Overrides the default settings for this call, e.g, timeout, retries, etc.

Returns *AnnotateImageResponse* The API response.

async_batch_annotate_files (*requests, retry=<object object>, timeout=<object object>, metadata=None*)

Run asynchronous image detection and annotation for a list of generic files, such as PDF files, which may contain multiple pages and multiple images per page. Progress and results can be retrieved through the `google.longrunning.Operations` interface. `Operation.metadata` contains `OperationMetadata` (*metadata*). `Operation.response` contains `AsyncBatchAnnotateFilesResponse` (*results*).

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ImageAnnotatorClient()
>>>
>>> # TODO: Initialize ``requests``:
>>> requests = []
>>>
>>> response = client.async_batch_annotate_files(requests)
```

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```
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **requests** (*list[Union[dict, AsyncAnnotateFileRequest]]*) – Individual async file annotation requests for this batch. If a dict is provided, it must be of the same form as the protobuf message *AsyncAnnotateFileRequest*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *_OperationFuture* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

batch_annotate_images (*requests, retry=<object object>, timeout=<object object>, metadata=None*)

Run image detection and annotation for a batch of images.

Example

```
>>> from google.cloud import vision_v1p3beta1
>>>
>>> client = vision_v1p3beta1.ImageAnnotatorClient()
>>>
>>> # TODO: Initialize ``requests``:
>>> requests = []
>>>
>>> response = client.batch_annotate_images(requests)
```

Parameters

- **requests** (*list[Union[dict, AnnotateImageRequest]]*) – Individual image annotation requests for this batch. If a dict is provided, it must be of the same form as the protobuf message *AnnotateImageRequest*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *BatchAnnotateImagesResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

crop_hints (*image, max_results=None, retry=None, timeout=None, **kwargs*)
Return crop hints information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for *TEXT_DETECTION*, *DOCUMENT_TEXT_DETECTION*, or *CROP_HINTS*.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

document_text_detection (*image, max_results=None, retry=None, timeout=None, **kwargs*)
Perform document text detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for *TEXT_DETECTION*, *DOCUMENT_TEXT_DETECTION*, or *CROP_HINTS*.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

```
enums = <module 'google.cloud.vision_v1p3beta1.gapic.enums' from '/home/docs/checkouts
```

```
face_detection (image, max_results=None, retry=None, timeout=None, **kwargs)
```

Perform face detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

```
classmethod from_service_account_file (filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *ImageAnnotatorClient*

```
classmethod from_service_account_json (filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *ImageAnnotatorClient*

```
image_properties (image, max_results=None, retry=None, timeout=None, **kwargs)
```

Return image properties information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.

- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

label_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform label detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

landmark_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform landmark detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

logo_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform logo detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

object_localization (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Return object localization information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

product_search (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Return product search information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

safe_search_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform safe search detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

text_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform text detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

web_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform web detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

28.6.4 Types for Cloud Vision API Client

class google.cloud.vision_v1p3beta1.types.**AddProductToProductSetRequest**
Request message for the AddProductToProductSet method.

name

The resource name for the ProductSet to modify. Format is: “projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID”

product

The resource name for the Product to be added to this ProductSet. Format is: projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID

class google.cloud.vision_v1p3beta1.types.**AnnotateFileResponse**

Response to a single file annotation request. A file may contain one or more images, which individually have their own responses.

input_config

Information about the file for which this response is generated.

responses

Individual responses to images found within the file.

class google.cloud.vision_v1p3beta1.types.**AnnotateImageRequest**

Request for performing Google Cloud Vision API tasks over a user-provided image, with user-requested features.

image

The image to be processed.

features

Requested features.

image_context

Additional context that may accompany the image.

class google.cloud.vision_v1p3beta1.types.**AnnotateImageResponse**

Response to an image annotation request.

face_annotations

If present, face detection has completed successfully.

landmark_annotations

If present, landmark detection has completed successfully.

logo_annotations

If present, logo detection has completed successfully.

label_annotations

If present, label detection has completed successfully.

localized_object_annotations

If present, localized object detection has completed successfully. This will be sorted descending by confidence score.

text_annotations

If present, text (OCR) detection has completed successfully.

full_text_annotation

If present, text (OCR) detection or document (OCR) text detection has completed successfully. This annotation provides the structural hierarchy for the OCR detected text.

safe_search_annotation

If present, safe-search annotation has completed successfully.

image_properties_annotation

If present, image properties were extracted successfully.

crop_hints_annotation

If present, crop hints have completed successfully.

web_detection

If present, web detection has completed successfully.

product_search_results

If present, product search has completed successfully.

error

If set, represents the error message for the operation. Note that filled-in image annotations are guaranteed to be correct, even when `error` is set.

context

If present, contextual information is needed to understand where this image comes from.

class google.cloud.vision_v1p3beta1.types.**Any**

class google.cloud.vision_v1p3beta1.types.**AsyncAnnotateFileRequest**
An offline file annotation request.

input_config
Required. Information about the input file.

features
Required. Requested features.

image_context
Additional context that may accompany the image(s) in the file.

output_config
Required. The desired output location and metadata (e.g. format).

class google.cloud.vision_v1p3beta1.types.**AsyncAnnotateFileResponse**
The response for a single offline file annotation request.

output_config
The output location and metadata from AsyncAnnotateFileRequest.

class google.cloud.vision_v1p3beta1.types.**AsyncBatchAnnotateFilesRequest**
Multiple async file annotation requests are batched into a single service call.

requests
Individual async file annotation requests for this batch.

class google.cloud.vision_v1p3beta1.types.**AsyncBatchAnnotateFilesResponse**
Response to an async batch file annotation request.

responses
The list of file annotation responses, one for each request in AsyncBatchAnnotateFilesRequest.

class google.cloud.vision_v1p3beta1.types.**BatchAnnotateImagesRequest**
Multiple image annotation requests are batched into a single service call.

requests
Individual image annotation requests for this batch.

class google.cloud.vision_v1p3beta1.types.**BatchAnnotateImagesResponse**
Response to a batch image annotation request.

responses
Individual responses to image annotation requests within the batch.

class google.cloud.vision_v1p3beta1.types.**BatchOperationMetadata**
Metadata for the batch operations such as the current state.

This is included in the metadata field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

state
The current state of the batch operation.

submit_time
The time when the batch request was submitted to the server.

end_time
The time when the batch request is finished and [google.longrunning.Operation.done][google.longrunning.Operation.done] is set to true.

class google.cloud.vision_v1p3beta1.types.**Block**
Logical element on the page.

property

Additional information detected for the block.

bounding_box

The bounding box for the block. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the 'natural' orientation. For example: - when the text is horizontal it might look like: :: 0—1 || 3—2 - when it's rotated 180 degrees around the top-left corner it becomes: :: 2—3 || 1—0 and the vertex order will still be (0, 1, 2, 3).

paragraphs

List of paragraphs in this block (if this blocks is of type text).

block_type

Detected block type (text, image etc) for this block.

confidence

Confidence of the OCR results on the block. Range [0, 1].

```
class google.cloud.vision_v1p3beta1.types.BoolValue
```

```
class google.cloud.vision_v1p3beta1.types.BoundingPoly
```

A bounding polygon for the detected image annotation.

vertices

The bounding polygon vertices.

normalized_vertices

The bounding polygon normalized vertices.

```
class google.cloud.vision_v1p3beta1.types.BytesValue
```

```
class google.cloud.vision_v1p3beta1.types.CancelOperationRequest
```

```
class google.cloud.vision_v1p3beta1.types.Color
```

```
class google.cloud.vision_v1p3beta1.types.ColorInfo
```

Color information consists of RGB channels, score, and the fraction of the image that the color occupies in the image.

color

RGB components of the color.

score

Image-specific score for this color. Value in range [0, 1].

pixel_fraction

The fraction of pixels the color occupies in the image. Value in range [0, 1].

```
class google.cloud.vision_v1p3beta1.types.CreateProductRequest
```

Request message for the CreateProduct method.

parent

The project in which the Product should be created. Format is projects/PROJECT_ID/locations/LOC_ID.

product

The product to create.

product_id

A user-supplied resource id for this Product. If set, the server will attempt to use this value as the resource id. If it is already in use, an error is returned with code ALREADY_EXISTS. Must be at most 128 characters long. It cannot contain the character /.

class google.cloud.vision_v1p3beta1.types.**CreateProductSetRequest**

Request message for the CreateProductSet method.

parent

The project in which the ProductSet should be created. Format is projects/PROJECT_ID/locations/LOC_ID.

product_set

The ProductSet to create.

product_set_id

A user-supplied resource id for this ProductSet. If set, the server will attempt to use this value as the resource id. If it is already in use, an error is returned with code ALREADY_EXISTS. Must be at most 128 characters long. It cannot contain the character /.

class google.cloud.vision_v1p3beta1.types.**CreateReferenceImageRequest**

Request message for the CreateReferenceImage method.

parent

Resource name of the product in which to create the reference image. Format is projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID.

reference_image

The reference image to create. If an image ID is specified, it is ignored.

reference_image_id

A user-supplied resource id for the ReferenceImage to be added. If set, the server will attempt to use this value as the resource id. If it is already in use, an error is returned with code ALREADY_EXISTS. Must be at most 128 characters long. It cannot contain the character /.

class google.cloud.vision_v1p3beta1.types.**CropHint**

Single crop hint that is used to generate a new crop when serving an image.

bounding_poly

The bounding polygon for the crop region. The coordinates of the bounding box are in the original image's scale, as returned in ImageParams.

confidence

Confidence of this being a salient region. Range [0, 1].

importance_fraction

Fraction of importance of this salient region with respect to the original image.

class google.cloud.vision_v1p3beta1.types.**CropHintsAnnotation**

Set of crop hints that are used to generate new crops when serving images.

crop_hints

Crop hint results.

class google.cloud.vision_v1p3beta1.types.**CropHintsParams**

Parameters for crop hints annotation request.

aspect_ratios

Aspect ratios in floats, representing the ratio of the width to the height of the image. For example, if the desired aspect ratio is 4/3, the corresponding float value should be 1.33333. If not specified, the best possible crop is returned. The number of provided aspect ratios is limited to a maximum of 16; any aspect ratios provided after the 16th are ignored.

class google.cloud.vision_v1p3beta1.types.**CustomHttpPattern**

class google.cloud.vision_v1p3beta1.types.**DeleteOperationRequest**

class google.cloud.vision_v1p3beta1.types.DeleteProductRequest

Request message for the DeleteProduct method.

name

Resource name of product to delete. Format is: projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID

class google.cloud.vision_v1p3beta1.types.DeleteProductSetRequest

Request message for the DeleteProductSet method.

name

Resource name of the ProductSet to delete. Format is: projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID

class google.cloud.vision_v1p3beta1.types.DeleteReferenceImageRequest

Request message for the DeleteReferenceImage method.

name

The resource name of the reference image to delete. Format is: projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID/referenceImages/IMAGE_ID

class google.cloud.vision_v1p3beta1.types.DescriptorProto

class ExtensionRange

class ReservedRange

class google.cloud.vision_v1p3beta1.types.DominantColorsAnnotation

Set of dominant colors and their corresponding scores.

colors

RGB color values with their score and pixel fraction.

class google.cloud.vision_v1p3beta1.types.DoubleValue

class google.cloud.vision_v1p3beta1.types.Empty

class google.cloud.vision_v1p3beta1.types.EntityAnnotation

Set of detected entity features.

mid

Opaque entity ID. Some IDs may be available in [Google Knowledge Graph Search API](#).

locale

The language code for the locale in which the entity textual description is expressed.

description

Entity textual description, expressed in its locale language.

score

Overall score of the result. Range [0, 1].

confidence

Deprecated. Use “score“ instead. The accuracy of the entity detection in an image. For example, for an image in which the “Eiffel Tower” entity is detected, this field represents the confidence that there is a tower in the query image. Range [0, 1].

topicality

The relevancy of the ICA (Image Content Annotation) label to the image. For example, the relevancy of “tower” is likely higher to an image containing the detected “Eiffel Tower” than to an image containing a detected distant towering building, even though the confidence that there is a tower in each image may be the same. Range [0, 1].

bounding_poly

Image region to which this entity belongs. Not produced for LABEL_DETECTION features.

locations

The location information for the detected entity. Multiple `LocationInfo` elements can be present because one location may indicate the location of the scene in the image, and another location may indicate the location of the place where the image was taken. Location information is usually present for landmarks.

properties

Some entities may have optional user-supplied `Property` (name/value) fields, such a score or string that qualifies the entity.

```
class google.cloud.vision_v1p3beta1.types.EnumDescriptorProto
```

```
class EnumReservedRange
```

```
class google.cloud.vision_v1p3beta1.types.EnumOptions
```

```
class google.cloud.vision_v1p3beta1.types.EnumValueDescriptorProto
```

```
class google.cloud.vision_v1p3beta1.types.EnumValueOptions
```

```
class google.cloud.vision_v1p3beta1.types.ExtensionRangeOptions
```

```
class google.cloud.vision_v1p3beta1.types.FaceAnnotation
```

A face annotation object contains the results of face detection.

bounding_poly

The bounding polygon around the face. The coordinates of the bounding box are in the original image's scale, as returned in `ImageParams`. The bounding box is computed to “frame” the face in accordance with human expectations. It is based on the landmarker results. Note that one or more x and/or y coordinates may not be generated in the `BoundingBoxPoly` (the polygon will be unbounded) if only a partial face appears in the image to be annotated.

fd_bounding_poly

The `fd_bounding_poly` bounding polygon is tighter than the `boundingPoly`, and encloses only the skin part of the face. Typically, it is used to eliminate the face from any image analysis that detects the “amount of skin” visible in an image. It is not based on the landmarker results, only on the initial face detection, hence the fd (face detection) prefix.

landmarks

Detected face landmarks.

roll_angle

Roll angle, which indicates the amount of clockwise/anti-clockwise rotation of the face relative to the image vertical about the axis perpendicular to the face. Range [-180,180].

pan_angle

Yaw angle, which indicates the leftward/rightward angle that the face is pointing relative to the vertical plane perpendicular to the image. Range [-180,180].

tilt_angle

Pitch angle, which indicates the upwards/downwards angle that the face is pointing relative to the image's horizontal plane. Range [-180,180].

detection_confidence

Detection confidence. Range [0, 1].

landmarking_confidence

Face landmarking confidence. Range [0, 1].

joy_likelihoood

Joy likelihood.

sorrow_likelihoood

Sorrow likelihood.

anger_likelihoood

Anger likelihood.

surprise_likelihoood

Surprise likelihood.

under_exposed_likelihoood

Under-exposed likelihood.

blurred_likelihoood

Blurred likelihood.

headwear_likelihoood

Headwear likelihood.

class Landmark

A face-specific landmark (for example, a face feature).

type

Face landmark type.

position

Face landmark position.

class google.cloud.vision_v1p3beta1.types.Feature

The type of Google Cloud Vision API detection to perform, and the maximum number of results to return for that type. Multiple Feature objects can be specified in the `features` list.

type

The feature type.

max_results

Maximum number of results of this type. Does not apply to `TEXT_DETECTION`, `DOCUMENT_TEXT_DETECTION`, or `CROP_HINTS`.

model

Model to use for the feature. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.vision_v1p3beta1.types.FieldDescriptorProto

class google.cloud.vision_v1p3beta1.types.FieldMask

class google.cloud.vision_v1p3beta1.types.FieldOptions

class google.cloud.vision_v1p3beta1.types.FileDescriptorProto

class google.cloud.vision_v1p3beta1.types.FileDescriptorSet

class google.cloud.vision_v1p3beta1.types.FileOptions

class google.cloud.vision_v1p3beta1.types.FloatValue

class google.cloud.vision_v1p3beta1.types.GcsDestination

The Google Cloud Storage location where the output will be written to.

uri

Google Cloud Storage URI where the results will be stored. Results will be in JSON format and preceded by its corresponding input URI. This field can either represent a single file, or a prefix for multiple

outputs. Prefixes must end in a /. Examples: - File: gs://bucket-name/filename.json - Prefix: gs://bucket-name/prefix/here/ - File: gs://bucket-name/prefix/here If multiple outputs, each response is still `AnnotateFileResponse`, each of which contains some subset of the full list of `AnnotateImageResponse`. Multiple outputs can happen if, for example, the output JSON is too large and overflows into multiple sharded files.

class google.cloud.vision_v1p3beta1.types.**GcsSource**

The Google Cloud Storage location where the input will be read from.

uri

Google Cloud Storage URI for the input file. This must only be a Google Cloud Storage object. Wildcards are not currently supported.

class google.cloud.vision_v1p3beta1.types.**GeneratedCodeInfo**

class **Annotation**

class google.cloud.vision_v1p3beta1.types.**GetOperationRequest**

class google.cloud.vision_v1p3beta1.types.**GetProductRequest**

Request message for the `GetProduct` method.

name

Resource name of the Product to get. Format is: `projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID`

class google.cloud.vision_v1p3beta1.types.**GetProductSetRequest**

Request message for the `GetProductSet` method.

name

Resource name of the ProductSet to get. Format is: `projects /PROJECT_ID/locations/LOG_ID/productSets/PRODUCT_SET_ID`

class google.cloud.vision_v1p3beta1.types.**GetReferenceImageRequest**

Request message for the `GetReferenceImage` method.

name

The resource name of the ReferenceImage to get. Format is: `projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID/referenceImages/IMAGE_ID`.

class google.cloud.vision_v1p3beta1.types.**Http**

class google.cloud.vision_v1p3beta1.types.**HttpRule**

class google.cloud.vision_v1p3beta1.types.**Image**

Client image to perform Google Cloud Vision API tasks over.

content

Image content, represented as a stream of bytes. Note: As with all bytes fields, protobufs use a pure binary representation, whereas JSON representations use base64.

source

Google Cloud Storage image location, or publicly-accessible image URL. If both `content` and `source` are provided for an image, `content` takes precedence and is used to perform the image annotation request.

class google.cloud.vision_v1p3beta1.types.**ImageAnnotationContext**

If an image was produced from a file (e.g. a PDF), this message gives information about the source of that image.

uri

The URI of the file used to produce the image.

page_number

If the file was a PDF or TIFF, this field gives the page number within the file used to produce the image.

class `google.cloud.vision_v1p3beta1.types.ImageContext`

Image context and/or feature-specific parameters.

lat_long_rect

Not used.

language_hints

List of languages to use for TEXT_DETECTION. In most cases, an empty value yields the best results since it enables automatic language detection. For languages based on the Latin alphabet, setting `language_hints` is not needed. In rare cases, when the language of the text in the image is known, setting a hint will help get better results (although it will be a significant hindrance if the hint is wrong). Text detection returns an error if one or more of the specified languages is not one of the [supported languages](#).

crop_hints_params

Parameters for crop hints annotation request.

product_search_params

Parameters for product search.

web_detection_params

Parameters for web detection.

class `google.cloud.vision_v1p3beta1.types.ImageProperties`

Stores image properties, such as dominant colors.

dominant_colors

If present, dominant colors completed successfully.

class `google.cloud.vision_v1p3beta1.types.ImageSource`

External image source (Google Cloud Storage or web URL image location).

gcs_image_uri

Use “`image_uri`” instead. The Google Cloud Storage URI of the form `gs://bucket_name/object_name`. Object versioning is not supported. See [Google Cloud Storage Request URIs](#) for more info.

image_uri

The URI of the source image. Can be either: 1. A Google Cloud Storage URI of the form `gs://bucket_name/object_name`. Object versioning is not supported. See [Google Cloud Storage Request URIs](#) for more info. 2. A publicly-accessible image HTTP/HTTPS URL. When fetching images from HTTP/HTTPS URLs, Google cannot guarantee that the request will be completed. Your request may fail if the specified host denies the request (e.g. due to request throttling or DOS prevention), or if Google throttles requests to the site for abuse prevention. You should not depend on externally-hosted images for production applications. When both `gcs_image_uri` and `image_uri` are specified, `image_uri` takes precedence.

class `google.cloud.vision_v1p3beta1.types.ImportProductSetsGcsSource`

The Google Cloud Storage location for a csv file which preserves a list of `ImportProductSetRequests` in each line.

csv_file_uri

The Google Cloud Storage URI of the input csv file. The URI must start with `gs://` The format of the input csv file should be one image per line. In each line, there are 6 columns. 1. `image_uri` 2. `image_id` 3. `product_set_id` 4. `product_id` 5. `product_category` 6. `product_display_name` 7. `labels` 8. `bounding_poly` Columns 1, 3, 4, and 5 are required, other columns are optional. A new `ProductSet/Product` with the same id will be created on the fly if the `ProductSet/Product` specified by `product_set_id/product_id` does not exist. The `image_id` field is optional but has to be unique

if provided. If it is empty, we will automatically assign an unique id to the image. The `product_display_name` field is optional. If it is empty, a space (" ") is used as the place holder for the product display_name, which can be updated later through the realtime API. If the Product with `product_id` already exists, the fields `product_display_name`, `product_category` and `labels` are ignored. If a Product doesn't exist and needs to be created on the fly, the `product_display_name` field refers to `[Product.display_name][google.cloud.vision.v1p3beta1.Product.display_name]`, the `product_category` field refers to `[Product.product_category][google.cloud.vision.v1p3beta1.Product.product_category]`, and the `labels` field refers to `[Product.labels][]`. Labels (optional) should be a line containing a list of comma-separated key-value pairs, with the format "`key_1=value_1,key_2=value_2,...,key_n=value_n`". The `bounding_poly` (optional) field is used to identify one region of interest from the image in the same manner as `CreateReferenceImage`. If no `bounding_poly` is specified, the system will try to detect regions of interest automatically. Note that the pipeline will resize the image if the image resolution is too large to process (above 20MP). Also note that at most one `bounding_poly` is allowed per line. If the image contains multiple regions of interest, the csv should contain one line per region of interest. The `bounding_poly` column should contain an even number of comma-separated numbers, with the format "`p1_x,p1_y,p2_x,p2_y,...,pn_x,pn_y`". Nonnegative integers should be used for absolute bounding polygons, and float values in `[0, 1]` should be used for normalized bounding polygons.

class `google.cloud.vision_v1p3beta1.types.ImportProductSetsInputConfig`

The input content for the `ImportProductSets` method.

source

The source of the input.

gcs_source

The Google Cloud Storage location for a csv file which preserves a list of `ImportProductSetRequests` in each line.

class `google.cloud.vision_v1p3beta1.types.ImportProductSetsRequest`

Request message for the `ImportProductSets` method.

parent

The project in which the `ProductSets` should be imported. Format is `projects/PROJECT_ID/locations/LOC_ID`.

input_config

The input content for the list of requests.

class `google.cloud.vision_v1p3beta1.types.ImportProductSetsResponse`

Response message for the `ImportProductSets` method.

This message is returned by the `[google.longrunning.Operations.GetOperation][google.longrunning.Operations.GetOperation]` method in the returned `[google.longrunning.Operation.response][google.longrunning.Operation.response]` field.

reference_images

The list of `reference_images` that are imported successfully.

statuses

The rpc status for each `ImportProductSet` request, including both successes and errors. The number of statuses here matches the number of lines in the csv file, and `statuses[i]` stores the success or failure status of processing the i-th line of the csv, starting from line 0.

class `google.cloud.vision_v1p3beta1.types.InputConfig`

The desired input location and metadata.

gcs_source

The Google Cloud Storage location to read the input from.

mime_type

The type of the file. Currently only “application/pdf” and “image/tiff” are supported. Wildcards are not supported.

class google.cloud.vision_v1p3beta1.types.**Int32Value**

class google.cloud.vision_v1p3beta1.types.**Int64Value**

class google.cloud.vision_v1p3beta1.types.**LatLng**

class google.cloud.vision_v1p3beta1.types.**LatLongRect**
Rectangle determined by min and max LatLng pairs.

min_lat_lng

Min lat/long pair.

max_lat_lng

Max lat/long pair.

class google.cloud.vision_v1p3beta1.types.**ListOperationsRequest**

class google.cloud.vision_v1p3beta1.types.**ListOperationsResponse**

class google.cloud.vision_v1p3beta1.types.**ListProductSetsRequest**
Request message for the ListProductSets method.

parent

The project from which ProductSets should be listed. Format is projects/PROJECT_ID/locations/LOC_ID.

page_size

The maximum number of items to return. Default 10, maximum 100.

page_token

The next_page_token returned from a previous List request, if any.

class google.cloud.vision_v1p3beta1.types.**ListProductSetsResponse**
Response message for the ListProductSets method.

product_sets

List of ProductSets.

next_page_token

Token to retrieve the next page of results, or empty if there are no more results in the list.

class google.cloud.vision_v1p3beta1.types.**ListProductsInProductSetRequest**
Request message for the ListProductsInProductSet method.

name

The ProductSet resource for which to retrieve Products. Format is: projects/PROJECT_ID/locations/LOC_ID/productSets/ PRODUCT_SET_ID

page_size

The maximum number of items to return. Default 10, maximum 100.

page_token

The next_page_token returned from a previous List request, if any.

class google.cloud.vision_v1p3beta1.types.**ListProductsInProductSetResponse**
Response message for the ListProductsInProductSet method.

products

The list of Products.

next_page_token

Token to retrieve the next page of results, or empty if there are no more results in the list.

class google.cloud.vision_v1p3beta1.types.**ListProductsRequest**

Request message for the ListProducts method.

parent

The project OR ProductSet from which Products should be listed. Format: projects/PROJECT_ID/locations/LOC_ID

page_size

The maximum number of items to return. Default 10, maximum 100.

page_token

The next_page_token returned from a previous List request, if any.

class google.cloud.vision_v1p3beta1.types.**ListProductsResponse**

Response message for the ListProducts method.

products

List of products.

next_page_token

Token to retrieve the next page of results, or empty if there are no more results in the list.

class google.cloud.vision_v1p3beta1.types.**ListReferenceImagesRequest**

Request message for the ListReferenceImages method.

parent

Resource name of the product containing the reference images. Format is projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID.

page_size

The maximum number of items to return. Default 10, maximum 100.

page_token

A token identifying a page of results to be returned. This is the value of nextPageToken returned in a previous reference image list request. Defaults to the first page if not specified.

class google.cloud.vision_v1p3beta1.types.**ListReferenceImagesResponse**

Response message for the ListReferenceImages method.

reference_images

The list of reference images.

page_size

The maximum number of items to return. Default 10, maximum 100.

next_page_token

The next_page_token returned from a previous List request, if any.

class google.cloud.vision_v1p3beta1.types.**LocalizedObjectAnnotation**

Set of detected objects with bounding boxes.

mid

Object ID that should align with EntityAnnotation mid.

language_code

The BCP-47 language code, such as “en-US” or “sr-Latn”. For more information, see http://www.unicode.org/reports/tr35/#Unicode_locale_identifier.

name

Object name, expressed in its language_code language.

score

Score of the result. Range [0, 1].

bounding_poly

Image region to which this object belongs. This must be populated.

class google.cloud.vision_v1p3beta1.types.LocationInfo

Detected entity location information.

lat_lng

lat/long location coordinates.

class google.cloud.vision_v1p3beta1.types.MessageOptions

class google.cloud.vision_v1p3beta1.types.MethodDescriptorProto

class google.cloud.vision_v1p3beta1.types.MethodOptions

class google.cloud.vision_v1p3beta1.types.NormalizedBoundingPoly

A normalized bounding polygon around a portion of an image.

vertices

Normalized vertices of the bounding polygon.

class google.cloud.vision_v1p3beta1.types.NormalizedVertex

X coordinate.

y

Y coordinate.

class google.cloud.vision_v1p3beta1.types.OneofDescriptorProto

class google.cloud.vision_v1p3beta1.types.OneofOptions

class google.cloud.vision_v1p3beta1.types.Operation

class google.cloud.vision_v1p3beta1.types.OperationMetadata

Contains metadata for the BatchAnnotateImages operation.

state

Current state of the batch operation.

create_time

The time when the batch request was received.

update_time

The time when the operation result was last updated.

class google.cloud.vision_v1p3beta1.types.OutputConfig

The desired output location and metadata.

gcs_destination

The Google Cloud Storage location to write the output(s) to.

batch_size

The max number of response protos to put into each output JSON file on Google Cloud Storage. The valid range is [1, 100]. If not specified, the default value is 20. For example, for one pdf file with 100 pages, 100 response protos will be generated. If `batch_size = 20`, then 5 json files each containing 20 response protos will be written under the prefix `gcs_destination.uri`. Currently, `batch_size` only applies to `GcsDestination`, with potential future support for other output configurations.

class google.cloud.vision_v1p3beta1.types.Page

Detected page from OCR.

property

Additional information detected on the page.

width

Page width. For PDFs the unit is points. For images (including TIFFs) the unit is pixels.

height

Page height. For PDFs the unit is points. For images (including TIFFs) the unit is pixels.

blocks

List of blocks of text, images etc on this page.

confidence

Confidence of the OCR results on the page. Range [0, 1].

class `google.cloud.vision_v1p3beta1.types.Paragraph`

Structural unit of text representing a number of words in certain order.

property

Additional information detected for the paragraph.

bounding_box

The bounding box for the paragraph. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it’s rotated 180 degrees around the top-left corner it becomes: 2—3 || 1 —0 and the vertice order will still be (0, 1, 2, 3).

words

List of words in this paragraph.

confidence

Confidence of the OCR results for the paragraph. Range [0, 1].

class `google.cloud.vision_v1p3beta1.types.Position`

A 3D position in the image, used primarily for Face detection landmarks. A valid Position must have both x and y coordinates. The position coordinates are in the same scale as the original image.

x

X coordinate.

y

Y coordinate.

z

Z coordinate (or depth).

class `google.cloud.vision_v1p3beta1.types.Product`

A Product contains ReferenceImages.

name

The resource name of the product. Format is: `projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID`. This field is ignored when creating a product.

display_name

The user-provided name for this Product. Must not be empty. Must be at most 4096 characters long.

description

User-provided metadata to be stored with this product. Must be at most 4096 characters long.

product_category

The category for the product identified by the reference image. This should be either “homegoods” or “apparel”. This field is immutable.

product_labels

Key-value pairs that can be attached to a product. At query time, constraints can be specified based on the `product_labels`. Note that integer values can be provided as strings, e.g. “1199”. Only strings with integer values can match a range-based restriction which is to be supported soon. Multiple values can be assigned to the same key. One product may have up to 100 `product_labels`.

class KeyValue

A product label represented as a key-value pair.

key

The key of the label attached to the product. Cannot be empty and cannot exceed 128 bytes.

value

The value of the label attached to the product. Cannot be empty and cannot exceed 128 bytes.

class google.cloud.vision_v1p3beta1.types.ProductSearchParams

Parameters for a product search request.

catalog_name

The resource name of the catalog to search. Format is: `productSearch/catalogs/CATALOG_NAME`.

category

The category to search in. Optional. It is inferred by the system if it is not specified. [Deprecated] Use `product_category`.

product_category

The product category to search in. Optional. It is inferred by the system if it is not specified. Supported values are `bag`, `shoe`, `sunglasses`, `dress`, `outerwear`, `skirt`, `top`, `shorts`, and `pants`.

normalized_bounding_poly

The bounding polygon around the area of interest in the image. Optional. If it is not specified, system discretion will be applied. [Deprecated] Use `bounding_poly`.

bounding_poly

The bounding polygon around the area of interest in the image. Optional. If it is not specified, system discretion will be applied.

view

Specifies the verbosity of the product search results. Optional. Defaults to `BASIC`.

product_set

The resource name of a `[ProductSet][google.cloud.vision.v1p3beta1.ProductSet]` to be searched for similar images. Format is: `projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID`.

product_categories

The list of product categories to search in. Currently, we only consider the first category, and either “homegoods” or “apparel” should be specified.

filter

The filtering expression. This can be used to restrict search results based on Product labels. We currently support an AND of OR of key-value expressions, where each expression within an OR must have the same key. For example, “(color = red OR color = blue) AND brand = Google” is acceptable, but not “(color = red OR brand = Google)” or “color: red”.

class google.cloud.vision_v1p3beta1.types.ProductSearchResults

Results for a product search request.

category

Product category. [Deprecated] Use `product_category`.

product_category

Product category. Supported values are `bag` and `shoe`. [Deprecated] `product_category` is provided in each `Product`.

index_time

Timestamp of the index which provided these results. Changes made after this time are not reflected in the current results.

products

List of detected products.

results

List of results, one for each product match.

class ProductInfo

Information about a product.

product_id

Product ID.

image_uri

The URI of the image which matched the query image. This field is returned only if `view` is set to `FULL` in the request.

score

A confidence level on the match, ranging from 0 (no confidence) to 1 (full confidence). This field is returned only if `view` is set to `FULL` in the request.

class Result

Information about a product.

product

The Product.

score

A confidence level on the match, ranging from 0 (no confidence) to 1 (full confidence). This field is returned only if `view` is set to `FULL` in the request.

image

The resource name of the image from the product that is the closest match to the query.

class google.cloud.vision_v1p3beta1.types.ProductSet

A `ProductSet` contains `Products`. A `ProductSet` can contain a maximum of 1 million reference images. If the limit is exceeded, periodic indexing will fail.

name

The resource name of the `ProductSet`. Format is: `projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID`. This field is ignored when creating a `ProductSet`.

display_name

The user-provided name for this `ProductSet`. Must not be empty. Must be at most 4096 characters long.

index_time

Output only. The time at which this `ProductSet` was last indexed. Query results will reflect all updates before this time. If this `ProductSet` has never been indexed, this field is 0. This field is ignored when creating a `ProductSet`.

index_error

Output only. If there was an error with indexing the product set, the field is populated. This field is ignored when creating a `ProductSet`.

class google.cloud.vision_v1p3beta1.types.**Property**

A Property consists of a user-supplied name/value pair.

name

Name of the property.

value

Value of the property.

uint64_value

Value of numeric properties.

class google.cloud.vision_v1p3beta1.types.**ReferenceImage**

A ReferenceImage represents a product image and its associated metadata, such as bounding boxes.

name

The resource name of the reference image. Format is: projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID/referenceImages/IMAGE_ID. This field is ignored when creating a reference image.

uri

The Google Cloud Storage URI of the reference image. The URI must start with gs://. Required.

bounding_polys

Bounding polygons around the areas of interest in the reference image. Optional. If this field is empty, the system will try to detect regions of interest. At most 10 bounding polygons will be used. The provided shape is converted into a non-rotated rectangle. Once converted, the small edge of the rectangle must be greater than or equal to 300 pixels. The aspect ratio must be 1:4 or less (i.e. 1:3 is ok; 1:5 is not).

class google.cloud.vision_v1p3beta1.types.**RemoveProductFromProductSetRequest**

Request message for the RemoveProductFromProductSet method.

name

The resource name for the ProductSet to modify. Format is: “projects/PROJECT_ID/locations/LOC_ID/productSets/PRODUCT_SET_ID”

product

The resource name for the Product to be removed from this ProductSet. Format is: projects/PROJECT_ID/locations/LOC_ID/products/PRODUCT_ID

class google.cloud.vision_v1p3beta1.types.**SafeSearchAnnotation**

Set of features pertaining to the image, computed by computer vision methods over safe-search verticals (for example, adult, spoof, medical, violence).

adult

Represents the adult content likelihood for the image. Adult content may contain elements such as nudity, pornographic images or cartoons, or sexual activities.

spoof

Spoof likelihood. The likelihood that an modification was made to the image’s canonical version to make it appear funny or offensive.

medical

Likelihood that this is a medical image.

violence

Likelihood that this image contains violent content.

racy

Likelihood that the request image contains racy content. Racy content may include (but is not limited to) skimpy or sheer clothing, strategically covered nudity, lewd or provocative poses, or close-ups of sensitive body areas.

```
class google.cloud.vision_v1p3beta1.types.ServiceDescriptorProto
```

```
class google.cloud.vision_v1p3beta1.types.ServiceOptions
```

```
class google.cloud.vision_v1p3beta1.types.SourceCodeInfo
```

```
    class Location
```

```
class google.cloud.vision_v1p3beta1.types.Status
```

```
class google.cloud.vision_v1p3beta1.types.StringValue
```

```
class google.cloud.vision_v1p3beta1.types.Symbol
```

A single symbol representation.

property

Additional information detected for the symbol.

bounding_box

The bounding box for the symbol. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it’s rotated 180 degrees around the top-left corner it becomes: 2—3 || 1—0 and the vertice order will still be (0, 1, 2, 3).

text

The actual UTF-8 representation of the symbol.

confidence

Confidence of the OCR results for the symbol. Range [0, 1].

```
class google.cloud.vision_v1p3beta1.types.TextAnnotation
```

TextAnnotation contains a structured representation of OCR extracted text. The hierarchy of an OCR extracted text structure is like this: TextAnnotation -> Page -> Block -> Paragraph -> Word -> Symbol Each structural component, starting from Page, may further have their own properties. Properties describe detected languages, breaks etc.. Please refer to the [TextAnnotation.TextProperty][google.cloud.vision.v1p3beta1.TextAnnotation.TextProperty] message definition below for more detail.

pages

List of pages detected by OCR.

text

UTF-8 text detected on the pages.

```
class DetectedBreak
```

Detected start or end of a structural component.

type

Detected break type.

is_prefix

True if break prepends the element.

```
class DetectedLanguage
```

Detected language for a structural component.

language_code

The BCP-47 language code, such as “en-US” or “sr-Latn”. For more information, see http://www.unicode.org/reports/tr35/#Unicode_locale_identifier.

confidence

Confidence of detected language. Range [0, 1].

class TextProperty

Additional information detected on the structural component.

detected_languages

A list of detected languages together with confidence.

detected_break

Detected start or end of a text segment.

```
class google.cloud.vision_v1p3beta1.types.Timestamp
```

```
class google.cloud.vision_v1p3beta1.types.UInt32Value
```

```
class google.cloud.vision_v1p3beta1.types.UInt64Value
```

```
class google.cloud.vision_v1p3beta1.types.UninterpretedOption
```

class NamePart

```
class google.cloud.vision_v1p3beta1.types.UpdateProductRequest
```

Request message for the UpdateProduct method.

product

The Product resource which replaces the one on the server. product.name is immutable.

update_mask

The [FieldMask][google.protobuf.FieldMask] that specifies which fields to update. If update_mask isn't specified, all mutable fields are to be updated. Valid mask paths include product_labels, display_name and description.

```
class google.cloud.vision_v1p3beta1.types.UpdateProductSetRequest
```

Request message for the UpdateProductSet method.

product_set

The ProductSet resource which replaces the one on the server.

update_mask

The [FieldMask][google.protobuf.FieldMask] that specifies which fields to update. If update_mask isn't specified, all mutable fields are to be updated. Valid mask path is display_name.

```
class google.cloud.vision_v1p3beta1.types.Vertex
```

X coordinate.

y

Y coordinate.

```
class google.cloud.vision_v1p3beta1.types.WebDetection
```

Relevant information for the image from the Internet.

web_entities

Deduced entities from similar images on the Internet.

full_matching_images

Fully matching images from the Internet. Can include resized copies of the query image.

partial_matching_images

Partial matching images from the Internet. Those images are similar enough to share some key-point features. For example an original image will likely have partial matching for its crops.

pages_with_matching_images

Web pages containing the matching images from the Internet.

visually_similar_images

The visually similar image results.

best_guess_labels

Best guess text labels for the request image.

class WebEntity

Entity deduced from similar images on the Internet.

entity_id

Opaque entity ID.

score

Overall relevancy score for the entity. Not normalized and not comparable across different image queries.

description

Canonical description of the entity, in English.

class WebImage

Metadata for online images.

url

The result image URL.

score

(Deprecated) Overall relevancy score for the image.

class WebLabel

Label to provide extra metadata for the web detection.

label

Label for extra metadata.

language_code

The BCP-47 language code for `label`, such as “en-US” or “sr-Latn”. For more information, see http://www.unicode.org/reports/tr35/#Unicode_locale_identifier.

class WebPage

Metadata for web pages.

url

The result web page URL.

score

(Deprecated) Overall relevancy score for the web page.

page_title

Title for the web page, may contain HTML markups.

full_matching_images

Fully matching images on the page. Can include resized copies of the query image.

partial_matching_images

Partial matching images on the page. Those images are similar enough to share some key-point features. For example an original image will likely have partial matching for its crops.

class google.cloud.vision_v1p3beta1.types.WebDetectionParams

Parameters for web detection request.

include_geo_results

Whether to include results derived from the geo information in the image.

class google.cloud.vision_v1p3beta1.types.Word

A word representation.

property

Additional information detected for the word.

bounding_box

The bounding box for the word. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the 'natural' orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it's rotated 180 degrees around the top-left corner it becomes: 2—3 || 1 —0 and the vertice order will still be (0, 1, 2, 3).

symbols

List of symbols in the word. The order of the symbols follows the natural reading order.

confidence

Confidence of the OCR results for the word. Range [0, 1].

A previous beta release spelled `v1p2beta1`, is provided as well.

An API and type reference is provided for this beta:

28.6.5 Client for Google Cloud Vision API

```
class google.cloud.vision_v1p2beta1.ImageAnnotatorClient (transport=None,
                                                         channel=None,
                                                         credentials=None,
                                                         client_config={'interfaces':
                                                         {'google.cloud.vision.v1p2beta1.ImageAnnotator':
                                                         {'retry_codes': {'idem-
                                                         potent': ['DEAD-
                                                         LINE_EXCEEDED',
                                                         'UNAVAILABLE'],
                                                         'non_idempotent':
                                                         []},
                                                         'retry_params':
                                                         {'default': {'ini-
                                                         tial_retry_delay_millis':
                                                         100,
                                                         'retry_delay_multiplier':
                                                         1.3,
                                                         'max_retry_delay_millis':
                                                         60000,
                                                         'ini-
                                                         tial_rpc_timeout_millis':
                                                         60000,
                                                         'rpc_timeout_multiplier':
                                                         1.0,
                                                         'max_rpc_timeout_millis':
                                                         60000,
                                                         'to-
                                                         tal_timeout_millis':
                                                         600000}}},
                                                         'methods':
                                                         {'BatchAnnotateImages':
                                                         {'timeout_millis': 60000,
                                                         'retry_codes_name':
                                                         'idempotent',
                                                         'retry_params_name':
                                                         'default'},
                                                         'Async-
                                                         BatchAnnotateFiles':
                                                         {'timeout_millis': 60000,
                                                         'retry_codes_name':
                                                         'idempotent',
                                                         'retry_params_name':
                                                         'default'}}}}},
                                                         client_info=None)
```

Service that performs Google Cloud Vision API detection tasks over client images, such as face, landmark, logo, label, and text detection. The ImageAnnotator service returns detected entities from the images.

Constructor.

Parameters

- **(Union[ImageAnnotatorGrpcTransport, Callable[[~.Credentials, type], ~.ImageAnnotatorGrpcTransport])** (*transport*) – A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which

to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.

- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If `None`, then default info will be used. Generally, you only need to set this if you're developing your own client library.

annotate_image (*request, retry=None, timeout=None*)

Run image detection and annotation for an image.

Example

```
>>> from google.cloud.vision_v1 import ImageAnnotatorClient
>>> client = ImageAnnotatorClient()
>>> request = {
...     'image': {
...         'source': {'image_uri': 'https://foo.com/image.jpg'},
...     },
... }
>>> response = client.annotate_image(request)
```

Parameters

- **request** (*AnnotateImageRequest*) –
- **options** (*google.gax.CallOptions*) – Overrides the default settings for this call, e.g, timeout, retries, etc.

Returns *AnnotateImageResponse* The API response.

async_batch_annotate_files (*requests, retry=<object object>, timeout=<object object>, metadata=None*)

Run async image detection and annotation for a list of generic files (e.g. PDF) which may contain multiple pages and multiple images per page. Progress and results can be retrieved through the `google.longrunning.Operations` interface. `Operation.metadata` contains `OperationMetadata` (*metadata*). `Operation.response` contains `AsyncBatchAnnotateFilesResponse` (*results*).

Example

```
>>> from google.cloud import vision_v1p2beta1
>>>
>>> client = vision_v1p2beta1.ImageAnnotatorClient()
>>>
>>> # TODO: Initialize ``requests``:
```

(continues on next page)

(continued from previous page)

```

>>> requests = []
>>>
>>> response = client.async_batch_annotate_files(requests)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()

```

Parameters

- **requests** (*list[Union[dict, AsyncAnnotateFileRequest]]*) – Individual async file annotation requests for this batch. If a dict is provided, it must be of the same form as the protobuf message *AsyncAnnotateFileRequest*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A retry object used to retry requests. If None is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *_OperationFuture* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

batch_annotate_images (*requests, retry=<object object>, timeout=<object object>, metadata=None*)

Run image detection and annotation for a batch of images.

Example

```

>>> from google.cloud import vision_v1p2beta1
>>>
>>> client = vision_v1p2beta1.ImageAnnotatorClient()
>>>
>>> # TODO: Initialize ``requests``:
>>> requests = []
>>>
>>> response = client.batch_annotate_images(requests)

```

Parameters

- **requests** (*list[Union[dict, AnnotateImageRequest]]*) – Individual image annotation requests for this batch. If a dict is provided, it must be of the same form as the protobuf message *AnnotateImageRequest*
- **retry** (*Optional[google.api_core.retry.Retry]*) – A *retry* object used to retry requests. If *None* is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if *retry* is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A *BatchAnnotateImagesResponse* instance.

Raises

- *google.api_core.exceptions.GoogleAPICallError* – If the request failed for any reason.
- *google.api_core.exceptions.RetryError* – If the request failed due to a retryable error and retry attempts failed.
- *ValueError* – If the parameters are invalid.

crop_hints (*image, max_results=None, retry=None, timeout=None, **kwargs*)

Return crop hints information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for *TEXT_DETECTION*, *DOCUMENT_TEXT_DETECTION*, or *CROP_HINTS*.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

document_text_detection (*image, max_results=None, retry=None, timeout=None, **kwargs*)

Perform document text detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for *TEXT_DETECTION*, *DOCUMENT_TEXT_DETECTION*, or *CROP_HINTS*.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

```
enums = <module 'google.cloud.vision_v1p2beta1.gapic.enums' from '/home/docs/checkouts
```

```
face_detection (image, max_results=None, retry=None, timeout=None, **kwargs)
```

Perform face detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

```
classmethod from_service_account_file (filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *ImageAnnotatorClient*

```
classmethod from_service_account_json (filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *ImageAnnotatorClient*

```
image_properties (image, max_results=None, retry=None, timeout=None, **kwargs)
```

Return image properties information.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.

- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

label_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform label detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

landmark_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform landmark detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

logo_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)

Perform logo detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

safe_search_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform safe search detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

text_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform text detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

web_detection (*image*, *max_results=None*, *retry=None*, *timeout=None*, ***kwargs*)
Perform web detection.

Parameters

- **image** (*Image*) – The image to analyze.
- **max_results** (*int*) – Number of results to return, does not apply for TEXT_DETECTION, DOCUMENT_TEXT_DETECTION, or CROP_HINTS.
- **retry** (*int*) – Number of retries to do before giving up.
- **timeout** (*int*) – Number of seconds before timing out.
- **kwargs** (*dict*) – Additional properties to be set on the *AnnotateImageRequest*.

Returns The API response.

Return type *AnnotateImageResponse*

28.6.6 Types for Google Cloud Vision API Client

class `google.cloud.vision_v1p2beta1.types.AnnotateFileResponse`

Response to a single file annotation request. A file may contain one or more images, which individually have their own responses.

input_config

Information about the file for which this response is generated.

responses

Individual responses to images found within the file.

class `google.cloud.vision_v1p2beta1.types.AnnotateImageRequest`

Request for performing Google Cloud Vision API tasks over a user-provided image, with user-requested features.

image

The image to be processed.

features

Requested features.

image_context

Additional context that may accompany the image.

class `google.cloud.vision_v1p2beta1.types.AnnotateImageResponse`

Response to an image annotation request.

face_annotations

If present, face detection has completed successfully.

landmark_annotations

If present, landmark detection has completed successfully.

logo_annotations

If present, logo detection has completed successfully.

label_annotations

If present, label detection has completed successfully.

text_annotations

If present, text (OCR) detection has completed successfully.

full_text_annotation

If present, text (OCR) detection or document (OCR) text detection has completed successfully. This annotation provides the structural hierarchy for the OCR detected text.

safe_search_annotation

If present, safe-search annotation has completed successfully.

image_properties_annotation

If present, image properties were extracted successfully.

crop_hints_annotation

If present, crop hints have completed successfully.

web_detection

If present, web detection has completed successfully.

error

If set, represents the error message for the operation. Note that filled-in image annotations are guaranteed to be correct, even when `error` is set.

context

If present, contextual information is needed to understand where this image comes from.

class google.cloud.vision_v1p2beta1.types.Any

class google.cloud.vision_v1p2beta1.types.AsyncAnnotateFileRequest

An offline file annotation request.

input_config

Required. Information about the input file.

features

Required. Requested features.

image_context

Additional context that may accompany the image(s) in the file.

output_config

Required. The desired output location and metadata (e.g. format).

class google.cloud.vision_v1p2beta1.types.AsyncAnnotateFileResponse

The response for a single offline file annotation request.

output_config

The output location and metadata from AsyncAnnotateFileRequest.

class google.cloud.vision_v1p2beta1.types.AsyncBatchAnnotateFilesRequest

Multiple async file annotation requests are batched into a single service call.

requests

Individual async file annotation requests for this batch.

class google.cloud.vision_v1p2beta1.types.AsyncBatchAnnotateFilesResponse

Response to an async batch file annotation request.

responses

The list of file annotation responses, one for each request in AsyncBatchAnnotateFilesRequest.

class google.cloud.vision_v1p2beta1.types.BatchAnnotateImagesRequest

Multiple image annotation requests are batched into a single service call.

requests

Individual image annotation requests for this batch.

class google.cloud.vision_v1p2beta1.types.BatchAnnotateImagesResponse

Response to a batch image annotation request.

responses

Individual responses to image annotation requests within the batch.

class google.cloud.vision_v1p2beta1.types.Block

Logical element on the page.

property

Additional information detected for the block.

bounding_box

The bounding box for the block. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the 'natural' orientation. For example: - when the text is horizontal it might look like: :: 0—1 || 3—2 - when it's rotated 180 degrees around the top-left corner it becomes: :: 2—3 || 1—0 and the vertice order will still be (0, 1, 2, 3).

paragraphs

List of paragraphs in this block (if this blocks is of type text).

block_type

Detected block type (text, image etc) for this block.

confidence

Confidence of the OCR results on the block. Range [0, 1].

class google.cloud.vision_v1p2beta1.types.BoolValue

class google.cloud.vision_v1p2beta1.types.BoundingPoly

A bounding polygon for the detected image annotation.

vertices

The bounding polygon vertices.

normalized_vertices

The bounding polygon normalized vertices.

class google.cloud.vision_v1p2beta1.types.BytesValue

class google.cloud.vision_v1p2beta1.types.CancelOperationRequest

class google.cloud.vision_v1p2beta1.types.Color

class google.cloud.vision_v1p2beta1.types.ColorInfo

Color information consists of RGB channels, score, and the fraction of the image that the color occupies in the image.

color

RGB components of the color.

score

Image-specific score for this color. Value in range [0, 1].

pixel_fraction

The fraction of pixels the color occupies in the image. Value in range [0, 1].

class google.cloud.vision_v1p2beta1.types.CropHint

Single crop hint that is used to generate a new crop when serving an image.

bounding_poly

The bounding polygon for the crop region. The coordinates of the bounding box are in the original image's scale, as returned in ImageParams.

confidence

Confidence of this being a salient region. Range [0, 1].

importance_fraction

Fraction of importance of this salient region with respect to the original image.

class google.cloud.vision_v1p2beta1.types.CropHintsAnnotation

Set of crop hints that are used to generate new crops when serving images.

crop_hints

Crop hint results.

class google.cloud.vision_v1p2beta1.types.CropHintsParams

Parameters for crop hints annotation request.

aspect_ratios

Aspect ratios in floats, representing the ratio of the width to the height of the image. For example, if the desired aspect ratio is 4/3, the corresponding float value should be 1.33333. If not specified, the best

possible crop is returned. The number of provided aspect ratios is limited to a maximum of 16; any aspect ratios provided after the 16th are ignored.

class google.cloud.vision_v1p2beta1.types.CustomHttpPattern

class google.cloud.vision_v1p2beta1.types.DeleteOperationRequest

class google.cloud.vision_v1p2beta1.types.DescriptorProto

class ExtensionRange

class ReservedRange

class google.cloud.vision_v1p2beta1.types.DominantColorsAnnotation

Set of dominant colors and their corresponding scores.

colors

RGB color values with their score and pixel fraction.

class google.cloud.vision_v1p2beta1.types.DoubleValue

class google.cloud.vision_v1p2beta1.types.Empty

class google.cloud.vision_v1p2beta1.types.EntityAnnotation

Set of detected entity features.

mid

Opaque entity ID. Some IDs may be available in [Google Knowledge Graph Search API](#).

locale

The language code for the locale in which the entity textual description is expressed.

description

Entity textual description, expressed in its `locale` language.

score

Overall score of the result. Range [0, 1].

confidence

Deprecated. Use “score“ instead. The accuracy of the entity detection in an image. For example, for an image in which the “Eiffel Tower” entity is detected, this field represents the confidence that there is a tower in the query image. Range [0, 1].

topicality

The relevancy of the ICA (Image Content Annotation) label to the image. For example, the relevancy of “tower” is likely higher to an image containing the detected “Eiffel Tower” than to an image containing a detected distant towering building, even though the confidence that there is a tower in each image may be the same. Range [0, 1].

bounding_poly

Image region to which this entity belongs. Not produced for LABEL_DETECTION features.

locations

The location information for the detected entity. Multiple `LocationInfo` elements can be present because one location may indicate the location of the scene in the image, and another location may indicate the location of the place where the image was taken. Location information is usually present for landmarks.

properties

Some entities may have optional user-supplied `Property` (name/value) fields, such a score or string that qualifies the entity.


```
class google.cloud.vision_v1p2beta1.types.EnumDescriptorProto
```

```
    class EnumReservedRange
```

```
class google.cloud.vision_v1p2beta1.types.EnumOptions
```

```
class google.cloud.vision_v1p2beta1.types.EnumValueDescriptorProto
```

```
class google.cloud.vision_v1p2beta1.types.EnumValueOptions
```

```
class google.cloud.vision_v1p2beta1.types.ExtensionRangeOptions
```

```
class google.cloud.vision_v1p2beta1.types.FaceAnnotation
```

A face annotation object contains the results of face detection.

bounding_poly

The bounding polygon around the face. The coordinates of the bounding box are in the original image's scale, as returned in `ImageParams`. The bounding box is computed to “frame” the face in accordance with human expectations. It is based on the landmarker results. Note that one or more x and/or y coordinates may not be generated in the `BoundingBoxPoly` (the polygon will be unbounded) if only a partial face appears in the image to be annotated.

fd_bounding_poly

The `fd_bounding_poly` bounding polygon is tighter than the `boundingPoly`, and encloses only the skin part of the face. Typically, it is used to eliminate the face from any image analysis that detects the “amount of skin” visible in an image. It is not based on the landmarker results, only on the initial face detection, hence the fd (face detection) prefix.

landmarks

Detected face landmarks.

roll_angle

Roll angle, which indicates the amount of clockwise/anti- clockwise rotation of the face relative to the image vertical about the axis perpendicular to the face. Range [-180,180].

pan_angle

Yaw angle, which indicates the leftward/rightward angle that the face is pointing relative to the vertical plane perpendicular to the image. Range [-180,180].

tilt_angle

Pitch angle, which indicates the upwards/downwards angle that the face is pointing relative to the image's horizontal plane. Range [-180,180].

detection_confidence

Detection confidence. Range [0, 1].

landmarking_confidence

Face landmarking confidence. Range [0, 1].

joy_likelihood

Joy likelihood.

sorrow_likelihood

Sorrow likelihood.

anger_likelihood

Anger likelihood.

surprise_likelihood

Surprise likelihood.

under_exposed_likelihood

Under-exposed likelihood.

blurred_likelihood

Blurred likelihood.

headwear_likelihood

Headwear likelihood.

class Landmark

A face-specific landmark (for example, a face feature).

type

Face landmark type.

position

Face landmark position.

class google.cloud.vision_v1p2beta1.types.**Feature**

The type of Google Cloud Vision API detection to perform, and the maximum number of results to return for that type. Multiple `Feature` objects can be specified in the `features` list.

type

The feature type.

max_results

Maximum number of results of this type. Does not apply to `TEXT_DETECTION`, `DOCUMENT_TEXT_DETECTION`, or `CROP_HINTS`.

model

Model to use for the feature. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.vision_v1p2beta1.types.**FieldDescriptorProto**

class google.cloud.vision_v1p2beta1.types.**FieldOptions**

class google.cloud.vision_v1p2beta1.types.**FileDescriptorProto**

class google.cloud.vision_v1p2beta1.types.**FileDescriptorSet**

class google.cloud.vision_v1p2beta1.types.**FileOptions**

class google.cloud.vision_v1p2beta1.types.**FloatValue**

class google.cloud.vision_v1p2beta1.types.**GcsDestination**

The Google Cloud Storage location where the output will be written to.

uri

Google Cloud Storage URI where the results will be stored. Results will be in JSON format and preceded by its corresponding input URI. This field can either represent a single file, or a prefix for multiple outputs. Prefixes must end in a `/`. Examples: - File: `gs://bucket-name/filename.json` - Prefix: `gs://bucket-name/prefix/here/` - File: `gs://bucket-name/prefix/here` If multiple outputs, each response is still `Annotate-FileResponse`, each of which contains some subset of the full list of `AnnotateImageResponse`. Multiple outputs can happen if, for example, the output JSON is too large and overflows into multiple sharded files.

class google.cloud.vision_v1p2beta1.types.**GcsSource**

The Google Cloud Storage location where the input will be read from.

uri

Google Cloud Storage URI for the input file. This must only be a GCS object. Wildcards are not currently supported.

class google.cloud.vision_v1p2beta1.types.**GeneratedCodeInfo**

class Annotation**class** google.cloud.vision_v1p2beta1.types.GetOperationRequest**class** google.cloud.vision_v1p2beta1.types.Http**class** google.cloud.vision_v1p2beta1.types.HttpRule**class** google.cloud.vision_v1p2beta1.types.Image

Client image to perform Google Cloud Vision API tasks over.

content

Image content, represented as a stream of bytes. Note: As with all `bytes` fields, `protobuffers` use a pure binary representation, whereas `JSON` representations use `base64`.

source

Google Cloud Storage image location, or publicly-accessible image URL. If both `content` and `source` are provided for an image, `content` takes precedence and is used to perform the image annotation request.

class google.cloud.vision_v1p2beta1.types.ImageAnnotationContext

If an image was produced from a file (e.g. a `PDF`), this message gives information about the source of that image.

uri

The URI of the file used to produce the image.

page_number

If the file was a `PDF` or `TIFF`, this field gives the page number within the file used to produce the image.

class google.cloud.vision_v1p2beta1.types.ImageContext

Image context and/or feature-specific parameters.

lat_long_rect

Not used.

language_hints

List of languages to use for `TEXT_DETECTION`. In most cases, an empty value yields the best results since it enables automatic language detection. For languages based on the Latin alphabet, setting `language_hints` is not needed. In rare cases, when the language of the text in the image is known, setting a hint will help get better results (although it will be a significant hindrance if the hint is wrong). Text detection returns an error if one or more of the specified languages is not one of the [supported languages](#).

crop_hints_params

Parameters for crop hints annotation request.

web_detection_params

Parameters for web detection.

class google.cloud.vision_v1p2beta1.types.ImageProperties

Stores image properties, such as dominant colors.

dominant_colors

If present, dominant colors completed successfully.

class google.cloud.vision_v1p2beta1.types.ImageSource

External image source (Google Cloud Storage or web URL image location).

gcs_image_uri

Use “`image_uri`” instead. The Google Cloud Storage URI of the form `gs://bucket_name/object_name`. Object versioning is not supported. See [Google Cloud Storage Request URIs](#) for more info.

image_uri

The URI of the source image. Can be either: 1. A Google Cloud Storage URI of the form `gs://bucket_name/object_name`. Object versioning is not supported. See [Google Cloud Storage Request URIs](#) for more info. 2. A publicly-accessible image HTTP/HTTPS URL. When fetching images from HTTP/HTTPS URLs, Google cannot guarantee that the request will be completed. Your request may fail if the specified host denies the request (e.g. due to request throttling or DOS prevention), or if Google throttles requests to the site for abuse prevention. You should not depend on externally-hosted images for production applications. When both `gcs_image_uri` and `image_uri` are specified, `image_uri` takes precedence.

class google.cloud.vision_v1p2beta1.types.InputConfig

The desired input location and metadata.

gcs_source

The Google Cloud Storage location to read the input from.

mime_type

The type of the file. Currently only “application/pdf” and “image/tiff” are supported. Wildcards are not supported.

class google.cloud.vision_v1p2beta1.types.Int32Value

class google.cloud.vision_v1p2beta1.types.Int64Value

class google.cloud.vision_v1p2beta1.types.LatLng

class google.cloud.vision_v1p2beta1.types.LatLngRect

Rectangle determined by min and max LatLng pairs.

min_lat_lng

Min lat/long pair.

max_lat_lng

Max lat/long pair.

class google.cloud.vision_v1p2beta1.types.ListOperationsRequest

class google.cloud.vision_v1p2beta1.types.ListOperationsResponse

class google.cloud.vision_v1p2beta1.types.LocationInfo

Detected entity location information.

lat_lng

lat/long location coordinates.

class google.cloud.vision_v1p2beta1.types.MessageOptions

class google.cloud.vision_v1p2beta1.types.MethodDescriptorProto

class google.cloud.vision_v1p2beta1.types.MethodOptions

class google.cloud.vision_v1p2beta1.types.NormalizedVertex

X coordinate.

y

Y coordinate.

class google.cloud.vision_v1p2beta1.types.OneofDescriptorProto

class google.cloud.vision_v1p2beta1.types.OneofOptions

class google.cloud.vision_v1p2beta1.types.Operation

class google.cloud.vision_v1p2beta1.types.OperationMetadata

Contains metadata for the BatchAnnotateImages operation.

state

Current state of the batch operation.

create_time

The time when the batch request was received.

update_time

The time when the operation result was last updated.

class google.cloud.vision_v1p2beta1.types.OutputConfig

The desired output location and metadata.

gcs_destination

The Google Cloud Storage location to write the output(s) to.

batch_size

The max number of response protos to put into each output JSON file on GCS. The valid range is [1, 100]. If not specified, the default value is 20. For example, for one pdf file with 100 pages, 100 response protos will be generated. If `batch_size = 20`, then 5 json files each containing 20 response protos will be written under the prefix `gcs_destination.uri`. Currently, `batch_size` only applies to `GcsDestination`, with potential future support for other output configurations.

class google.cloud.vision_v1p2beta1.types.Page

Detected page from OCR.

property

Additional information detected on the page.

width

Page width. For PDFs the unit is points. For images (including TIFFs) the unit is pixels.

height

Page height. For PDFs the unit is points. For images (including TIFFs) the unit is pixels.

blocks

List of blocks of text, images etc on this page.

confidence

Confidence of the OCR results on the page. Range [0, 1].

class google.cloud.vision_v1p2beta1.types.Paragraph

Structural unit of text representing a number of words in certain order.

property

Additional information detected for the paragraph.

bounding_box

The bounding box for the paragraph. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it’s rotated 180 degrees around the top-left corner it becomes: 2—3 || 1 —0 and the vertice order will still be (0, 1, 2, 3).

words

List of words in this paragraph.

confidence

Confidence of the OCR results for the paragraph. Range [0, 1].

class google.cloud.vision_v1p2beta1.types.Position

A 3D position in the image, used primarily for Face detection landmarks. A valid Position must have both x and y coordinates. The position coordinates are in the same scale as the original image.

x
X coordinate.

y
Y coordinate.

z
Z coordinate (or depth).

class google.cloud.vision_v1p2beta1.types.**Property**
A Property consists of a user-supplied name/value pair.

name
Name of the property.

value
Value of the property.

uint64_value
Value of numeric properties.

class google.cloud.vision_v1p2beta1.types.**SafeSearchAnnotation**
Set of features pertaining to the image, computed by computer vision methods over safe-search verticals (for example, adult, spoof, medical, violence).

adult
Represents the adult content likelihood for the image. Adult content may contain elements such as nudity, pornographic images or cartoons, or sexual activities.

spoof
Spoof likelihood. The likelihood that an modification was made to the image's canonical version to make it appear funny or offensive.

medical
Likelihood that this is a medical image.

violence
Likelihood that this image contains violent content.

racy
Likelihood that the request image contains racy content. Racy content may include (but is not limited to) skimpy or sheer clothing, strategically covered nudity, lewd or provocative poses, or close-ups of sensitive body areas.

class google.cloud.vision_v1p2beta1.types.**ServiceDescriptorProto**

class google.cloud.vision_v1p2beta1.types.**ServiceOptions**

class google.cloud.vision_v1p2beta1.types.**SourceCodeInfo**

class Location

class google.cloud.vision_v1p2beta1.types.**Status**

class google.cloud.vision_v1p2beta1.types.**StringValue**

class google.cloud.vision_v1p2beta1.types.**Symbol**
A single symbol representation.

property
Additional information detected for the symbol.

bounding_box

The bounding box for the symbol. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the ‘natural’ orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it’s rotated 180 degrees around the top-left corner it becomes: 2—3 || 1—0 and the vertice order will still be (0, 1, 2, 3).

text

The actual UTF-8 representation of the symbol.

confidence

Confidence of the OCR results for the symbol. Range [0, 1].

class google.cloud.vision_v1p2beta1.types.TextAnnotation

TextAnnotation contains a structured representation of OCR extracted text. The hierarchy of an OCR extracted text structure is like this: TextAnnotation -> Page -> Block -> Paragraph -> Word -> Symbol Each structural component, starting from Page, may further have their own properties. Properties describe detected languages, breaks etc.. Please refer to the [TextAnnotation.TextProperty][google.cloud.vision.v1p2beta1.TextAnnotation.TextProperty] message definition below for more detail.

pages

List of pages detected by OCR.

text

UTF-8 text detected on the pages.

class DetectedBreak

Detected start or end of a structural component.

type

Detected break type.

is_prefix

True if break prepends the element.

class DetectedLanguage

Detected language for a structural component.

language_code

The BCP-47 language code, such as “en-US” or “sr-Latn”. For more information, see http://www.unicode.org/reports/tr35/#Unicode_locale_identifier.

confidence

Confidence of detected language. Range [0, 1].

class TextProperty

Additional information detected on the structural component.

detected_languages

A list of detected languages together with confidence.

detected_break

Detected start or end of a text segment.

class google.cloud.vision_v1p2beta1.types.Timestamp**class** google.cloud.vision_v1p2beta1.types.UInt32Value**class** google.cloud.vision_v1p2beta1.types.UInt64Value**class** google.cloud.vision_v1p2beta1.types.UninterpretedOption

class NamePart

class google.cloud.vision_v1p2beta1.types.Vertex
X coordinate.

y
Y coordinate.

class google.cloud.vision_v1p2beta1.types.WebDetection
Relevant information for the image from the Internet.

web_entities
Deduced entities from similar images on the Internet.

full_matching_images
Fully matching images from the Internet. Can include resized copies of the query image.

partial_matching_images
Partial matching images from the Internet. Those images are similar enough to share some key-point features. For example an original image will likely have partial matching for its crops.

pages_with_matching_images
Web pages containing the matching images from the Internet.

visually_similar_images
The visually similar image results.

best_guess_labels
Best guess text labels for the request image.

class WebEntity
Entity deduced from similar images on the Internet.

entity_id
Opaque entity ID.

score
Overall relevancy score for the entity. Not normalized and not comparable across different image queries.

description
Canonical description of the entity, in English.

class WebImage
Metadata for online images.

url
The result image URL.

score
(Deprecated) Overall relevancy score for the image.

class WebLabel
Label to provide extra metadata for the web detection.

label
Label for extra metadata.

language_code
The BCP-47 language code for `label`, such as “en-US” or “sr-Latn”. For more information, see http://www.unicode.org/reports/tr35/#Unicode_locale_identifier.

class WebPage
Metadata for web pages.

url

The result web page URL.

score

(Deprecated) Overall relevancy score for the web page.

page_title

Title for the web page, may contain HTML markups.

full_matching_images

Fully matching images on the page. Can include resized copies of the query image.

partial_matching_images

Partial matching images on the page. Those images are similar enough to share some key-point features. For example an original image will likely have partial matching for its crops.

class google.cloud.vision_v1p2beta1.types.WebDetectionParams

Parameters for web detection request.

include_geo_results

Whether to include results derived from the geo information in the image.

class google.cloud.vision_v1p2beta1.types.Word

A word representation.

property

Additional information detected for the word.

bounding_box

The bounding box for the word. The vertices are in the order of top-left, top-right, bottom-right, bottom-left. When a rotation of the bounding box is detected the rotation is represented as around the top-left corner as defined when the text is read in the 'natural' orientation. For example: * when the text is horizontal it might look like: 0—1 || 3 —2 * when it's rotated 180 degrees around the top-left corner it becomes: 2—3 || 1 —0 and the vertice order will still be (0, 1, 2, 3).

symbols

List of symbols in the word. The order of the symbols follows the natural reading order.

confidence

Confidence of the OCR results for the word. Range [0, 1].

28.7 Changelog

For a list of all google-cloud-vision releases:

28.7.1 Changelog

PyPI History

0.33.0

New Features

- Add v1p3beta1 endpoint to vision client library (#5638)

0.32.0

Implementation Changes

- Avoid overwriting `'module'` of messages from shared modules. (#5364)
- Regenerate underlying client library (#5467)

Internal / Testing Changes

- Add Test runs for Python 3.7 and remove 3.4 (#5295)
- Modify system tests to use prerelease versions of grpcio (#5304)

0.31.1

Packaging

- Update setuptools before packaging (#5265)

0.31.0

- Vision v1p2beta1: PDF/TIFF OCR (#5127)
- Use `install_requires` for platform dependencies instead of `extras_require` (#4991)
- Add vision v1p2beta1 (#4998)
- Fix bad trove classifier
- Add max results to feature (#4817)

0.30.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Install local dependencies when running lint (#4936)
- Re-enable lint for tests, remove usage of pylint (#4921)
- Normalize all setup.py files (#4909)
- Fix coveragerc to correctly omit generated files (#4843)

0.29.0

:warning: Breaking Changes

- The HTTP/JSON based client that was deprecated in 0.25.0 is completely removed.

Release Candidate

- This is the (hopefully) final release candidate before declaring a stable release.

Features

- The `v1p1beta1` endpoint has been added. (#4493)

This is a superset of `v1` and includes features that are still in beta on the API side. You can opt in to this endpoint by importing it explicitly:

```
from google.cloud import vision_v1p1beta1
client = vision_v1p1beta1.ImageAnnotatorClient()
```

PyPI: <https://pypi.org/project/google-cloud-vision/0.29.0/>

0.28.0

Notable Implementation Changes

- Update and re-organize autogenerated code (#3952)

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Deferring to `google-api-core` for `grpcio` and `googleapis-common-protos` dependencies (#4096, #4098)

PyPI: <https://pypi.org/project/google-cloud-vision/0.28.0/>

Video Intelligence

Google Cloud Video Intelligence API makes videos searchable, and discoverable, by extracting metadata with an easy to use API. You can now search every moment of every video file in your catalog and find every occurrence as well as its significance. It quickly annotates videos stored in [Google Cloud Storage](#), and helps you identify key nouns entities of your video, and when they occur within the video. Separate signal from noise, by retrieving relevant information at the video, shot or per frame.

29.1 Installation

Install the `google-cloud-videointelligence` library using `pip`:

```
$ pip install google-cloud-videointelligence
```

29.2 Authentication and Configuration

- For an overview of authentication in `google-cloud-python`, see [Authentication](#).
- In addition to any authentication configuration, you should also set the `GOOGLE_CLOUD_PROJECT` environment variable for the project you'd like to interact with. If the `GOOGLE_CLOUD_PROJECT` environment variable is not present, the project ID from JSON file credentials is used.

If you are using Google App Engine or Google Compute Engine this will be detected automatically.

- After configuring your environment, create a `VideoIntelligenceServiceClient`.

```
>>> from google.cloud import videointelligence
>>> client = videointelligence.VideoIntelligenceServiceClient()
```

or pass in credentials explicitly.

```
>>> from google.cloud import videointelligence
>>> client = videointelligence.VideoIntelligenceServiceClient(
...     credentials=creds,
... )
```

29.3 Annotating a Video

To annotate a video, just determine which annotation features you want, and point the API at your video:

```
>>> from google.cloud import videointelligence
>>>
>>> client = videointelligence.VideoIntelligenceServiceClient()
>>> result = client.annotate_video(
...     input_uri='gs://cloudmleap/video/next/animals.mp4',
...     features=['LABEL_DETECTION', 'SHOT_CHANGE_DETECTION'],
... ).result()
>>> result.annotationResults[0].labelAnnotations[0].description
'Android'
>>> result.annotationResults[0].labelAnnotations[1].description
'Animation'
```

29.4 API Reference

This package includes clients for multiple versions of the Video Intelligence API. By default, you will get v1, the latest stable version.

29.4.1 Client for Cloud Video Intelligence API

```

class google.cloud.videointelligence_v1.VideoIntelligenceServiceClient (transport=None,
                                                                    chan-
                                                                    nel=None,
                                                                    cre-
                                                                    den-
                                                                    tials=None,
                                                                    client_config={'interfaces':
                                                                    {'google.cloud.videointellige
                                                                    {'retry_codes':
                                                                    {'idem-
                                                                    po-
                                                                    tent':
                                                                    ['DEAD-
                                                                    LINE_EXCEEDED',
                                                                    'UN-
                                                                    AVAIL-
                                                                    ABLE'],
                                                                    'non_idempotent':
                                                                    []},
                                                                    'retry_params':
                                                                    {'de-
                                                                    fault':
                                                                    {'ini-
                                                                    tial_retry_delay_millis':
                                                                    1000,
                                                                    'retry_delay_multiplier':
                                                                    2.5,
                                                                    'max_retry_delay_millis':
                                                                    120000,
                                                                    'ini-
                                                                    tial_rpc_timeout_millis':
                                                                    120000,
                                                                    'rpc_timeout_multiplier':
                                                                    1.0,
                                                                    'max_rpc_timeout_millis':
                                                                    120000,
                                                                    'to-
                                                                    tal_timeout_millis':
                                                                    600000}},
                                                                    'meth-
                                                                    ods':
                                                                    {'An-
                                                                    no-
                                                                    tat-
                                                                    eV-
                                                                    ideo':
                                                                    {'time-
                                                                    out_millis':
                                                                    60000,
                                                                    'retry_codes_name':
                                                                    'idem-
                                                                    po-
                                                                    tent',
                                                                    'retry_params_name':
                                                                    'de-
                                                                    fault'}}}},
                                                                    client_info=None)

```


Constructor.

Parameters

- **(Union[VideoIntelligenceServiceGrpcTransport, (transport) – Callable[[~.Credentials, type], ~.VideoIntelligenceServiceGrpcTransport])**: A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you're developing your own client library.

annotate_video (*input_uri=None, input_content=None, features=None, video_context=None, output_uri=None, location_id=None, retry=<object object>, timeout=<object object>, metadata=None*)

Performs asynchronous video annotation. Progress and results can be retrieved through the `google.longrunning.Operations` interface. `Operation.metadata` contains `AnnotateVideoProgress` (progress). `Operation.response` contains `AnnotateVideoResponse` (results).

Example

```
>>> from google.cloud import videointelligence_v1
>>> from google.cloud.videointelligence_v1 import enums
>>>
>>> client = videointelligence_v1.VideoIntelligenceServiceClient()
>>>
>>> input_uri = 'gs://demomaker/cat.mp4'
>>> features_element = enums.Feature.LABEL_DETECTION
>>> features = [features_element]
>>>
>>> response = client.annotate_video(input_uri=input_uri, features=features)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
```

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```
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **input_uri** (*str*) – Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#). A video URI may include wildcards in `object-id`, and thus identify multiple videos. Supported wildcards: `*` to match 0 or more characters; `?` to match 1 character. If unset, the input video should be embedded in the request as `input_content`. If set, `input_content` should be unset.
- **input_content** (*bytes*) – The video data bytes. If unset, the input video(s) should be specified via `input_uri`. If set, `input_uri` should be unset.
- **features** (*list[Feature]*) – Requested video annotation features.
- **video_context** (*Union[dict, VideoContext]*) – Additional video context and/or feature-specific parameters. If a dict is provided, it must be of the same form as the protobuf message [VideoContext](#).
- **output_uri** (*str*) – Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#).
- **location_id** (*str*) – Optional cloud region where annotation should take place. Supported cloud regions: `us-east1`, `us-west1`, `eu-west1`, `asia-east1`. If no region is specified, a region will be determined based on video file location.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.videointelligence_v1.gapic.enums' from '/home/docs/check
```

```
classmethod from_service_account_file(filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

classmethod **from_service_account_json** (*filename*, **args*, ***kwargs*)

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

29.4.2 Types for Cloud Video Intelligence API Client

class google.cloud.videointelligence_v1.types.**AnnotateVideoProgress**

Video annotation progress. Included in the metadata field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

annotation_progress

Progress metadata for all videos specified in AnnotateVideoRequest.

class google.cloud.videointelligence_v1.types.**AnnotateVideoRequest**

Video annotation request.

input_uri

Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: gs://bucket-id/object-id (other URI formats return [google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#). A video URI may include wildcards in object-id, and thus identify multiple videos. Supported wildcards: '*' to match 0 or more characters; '?' to match 1 character. If unset, the input video should be embedded in the request as input_content. If set, input_content should be unset.

input_content

The video data bytes. If unset, the input video(s) should be specified via input_uri. If set, input_uri should be unset.

features

Requested video annotation features.

video_context

Additional video context and/or feature-specific parameters.

output_uri

Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: gs://bucket-id/object-id (other URI formats return [google

.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#).

location_id

Optional cloud region where annotation should take place. Supported cloud regions: us-east1, us-west1, europe-west1, asia-east1. If no region is specified, a region will be determined based on video file location.

class google.cloud.videointelligence_v1.types.**AnnotateVideoResponse**

Video annotation response. Included in the response field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

annotation_results

Annotation results for all videos specified in AnnotateVideoRequest.

class google.cloud.videointelligence_v1.types.**Any**

class google.cloud.videointelligence_v1.types.**CancelOperationRequest**

class google.cloud.videointelligence_v1.types.**CustomHttpPattern**

class google.cloud.videointelligence_v1.types.**DeleteOperationRequest**

class google.cloud.videointelligence_v1.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.videointelligence_v1.types.**Duration**

class google.cloud.videointelligence_v1.types.**Empty**

class google.cloud.videointelligence_v1.types.**Entity**

Detected entity from video analysis.

entity_id

Opaque entity ID. Some IDs may be available in [Google Knowledge Graph Search API](#).

description

Textual description, e.g. Fixed-gear bicycle.

language_code

Language code for description in BCP-47 format.

class google.cloud.videointelligence_v1.types.**EnumDescriptorProto**

class **EnumReservedRange**

class google.cloud.videointelligence_v1.types.**EnumOptions**

class google.cloud.videointelligence_v1.types.**EnumValueDescriptorProto**

class google.cloud.videointelligence_v1.types.**EnumValueOptions**

class google.cloud.videointelligence_v1.types.**ExplicitContentAnnotation**

Explicit content annotation (based on per-frame visual signals only). If no explicit content has been detected in a frame, no annotations are present for that frame.

frames

All video frames where explicit content was detected.

class google.cloud.videointelligence_v1.types.**ExplicitContentDetectionConfig**

Config for EXPLICIT_CONTENT_DETECTION.

model

Model to use for explicit content detection. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.videointelligence_v1.types.**ExplicitContentFrame**

Video frame level annotation results for explicit content.

time_offset

Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.

pornography_likelihood

Likelihood of the pornography content..

class google.cloud.videointelligence_v1.types.**ExtensionRangeOptions**

class google.cloud.videointelligence_v1.types.**FaceAnnotation**

Face annotation.

thumbnail

Thumbnail of a representative face view (in JPEG format).

segments

All video segments where a face was detected.

frames

All video frames where a face was detected.

class google.cloud.videointelligence_v1.types.**FaceDetectionConfig**

Config for FACE_DETECTION.

model

Model to use for face detection. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

include_bounding_boxes

Whether bounding boxes be included in the face annotation output.

class google.cloud.videointelligence_v1.types.**FaceFrame**

Video frame level annotation results for face detection.

normalized_bounding_boxes

Normalized Bounding boxes in a frame. There can be more than one boxes if the same face is detected in multiple locations within the current frame.

time_offset

Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.

class google.cloud.videointelligence_v1.types.**FaceSegment**

Video segment level annotation results for face detection.

segment

Video segment where a face was detected.

class google.cloud.videointelligence_v1.types.**FieldDescriptorProto**

class google.cloud.videointelligence_v1.types.**FieldOptions**

class google.cloud.videointelligence_v1.types.**FileDescriptorProto**

class google.cloud.videointelligence_v1.types.**FileDescriptorSet**

class google.cloud.videointelligence_v1.types.**FileOptions**

class google.cloud.videointelligence_v1.types.**GeneratedCodeInfo**

```
class Annotation
class google.cloud.videointelligence_v1.types.GetOperationRequest
class google.cloud.videointelligence_v1.types.Http
class google.cloud.videointelligence_v1.types.HttpRule
class google.cloud.videointelligence_v1.types.LabelAnnotation
    Label annotation.
    entity
        Detected entity.
    category_entities
        Common categories for the detected entity. E.g. when the label is Terrier the category is likely dog.
        And in some cases there might be more than one categories e.g. Terrier could also be a pet.
    segments
        All video segments where a label was detected.
    frames
        All video frames where a label was detected.
class google.cloud.videointelligence_v1.types.LabelDetectionConfig
    Config for LABEL_DETECTION.
    label_detection_mode
        What labels should be detected with LABEL_DETECTION, in addition to video-level labels or segment-
        level labels. If unspecified, defaults to SHOT_MODE.
    stationary_camera
        Whether the video has been shot from a stationary (i.e. non- moving) camera. When set to true, might im-
        prove detection accuracy for moving objects. Should be used with SHOT_AND_FRAME_MODE enabled.
    model
        Model to use for label detection. Supported values: “builtin/stable” (the default if unset) and
        “builtin/latest”.
class google.cloud.videointelligence_v1.types.LabelFrame
    Video frame level annotation results for label detection.
    time_offset
        Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.
    confidence
        Confidence that the label is accurate. Range: [0, 1].
class google.cloud.videointelligence_v1.types.LabelSegment
    Video segment level annotation results for label detection.
    segment
        Video segment where a label was detected.
    confidence
        Confidence that the label is accurate. Range: [0, 1].
class google.cloud.videointelligence_v1.types.ListOperationsRequest
class google.cloud.videointelligence_v1.types.ListOperationsResponse
class google.cloud.videointelligence_v1.types.MessageOptions
class google.cloud.videointelligence_v1.types.MethodDescriptorProto
```

```

class google.cloud.videointelligence_v1.types.MethodOptions
class google.cloud.videointelligence_v1.types.NormalizedBoundingBox
    Normalized bounding box. The normalized vertex coordinates are relative to the original image. Range: [0, 1].

    left
        Left X coordinate.

    top
        Top Y coordinate.

    right
        Right X coordinate.

    bottom
        Bottom Y coordinate.

class google.cloud.videointelligence_v1.types.OneofDescriptorProto
class google.cloud.videointelligence_v1.types.OneofOptions
class google.cloud.videointelligence_v1.types.Operation
class google.cloud.videointelligence_v1.types.ServiceDescriptorProto
class google.cloud.videointelligence_v1.types.ServiceOptions
class google.cloud.videointelligence_v1.types.ShotChangeDetectionConfig
    Config for SHOT_CHANGE_DETECTION.

    model
        Model to use for shot change detection. Supported values: "builtin/stable" (the default if unset) and
        "builtin/latest".

class google.cloud.videointelligence_v1.types.SourceCodeInfo

    class Location

class google.cloud.videointelligence_v1.types.Status
class google.cloud.videointelligence_v1.types.Timestamp
class google.cloud.videointelligence_v1.types.UninterpretedOption

    class NamePart

class google.cloud.videointelligence_v1.types.VideoAnnotationProgress
    Annotation progress for a single video.

    input_uri
        Video file location in Google Cloud Storage.

    progress_percent
        Approximate percentage processed thus far. Guaranteed to be 100 when fully processed.

    start_time
        Time when the request was received.

    update_time
        Time of the most recent update.

class google.cloud.videointelligence_v1.types.VideoAnnotationResults
    Annotation results for a single video.

```

input_uri

Video file location in [Google Cloud Storage](#).

segment_label_annotations

Label annotations on video level or user specified segment level. There is exactly one element for each unique label.

shot_label_annotations

Label annotations on shot level. There is exactly one element for each unique label.

frame_label_annotations

Label annotations on frame level. There is exactly one element for each unique label.

face_annotations

Face annotations. There is exactly one element for each unique face.

shot_annotations

Shot annotations. Each shot is represented as a video segment.

explicit_annotation

Explicit content annotation.

error

If set, indicates an error. Note that for a single `AnnotateVideoRequest` some videos may succeed and some may fail.

class `google.cloud.videointelligence_v1.types.VideoContext`

Video context and/or feature-specific parameters.

segments

Video segments to annotate. The segments may overlap and are not required to be contiguous or span the whole video. If unspecified, each video is treated as a single segment.

label_detection_config

Config for LABEL_DETECTION.

shot_change_detection_config

Config for SHOT_CHANGE_DETECTION.

explicit_content_detection_config

Config for EXPLICIT_CONTENT_DETECTION.

face_detection_config

Config for FACE_DETECTION.

class `google.cloud.videointelligence_v1.types.VideoSegment`

Video segment.

start_time_offset

Time-offset, relative to the beginning of the video, corresponding to the start of the segment (inclusive).

end_time_offset

Time-offset, relative to the beginning of the video, corresponding to the end of the segment (inclusive).

A new beta release with additional features over the current stable version, spelled `v1p1beta1`, is provided to allow you to use these new features. These are expected to move into the stable release soon; until then, the usual beta admonishment (changes are possible, etc.) applies.

An API and type reference is provided for this beta:

29.4.3 Client for Cloud Video Intelligence API

```

class google.cloud.videointelligence_v1pbeta1.VideoIntelligenceServiceClient (transport=None,
chan-
nel=None,
cre-
den-
tials=None,
client_config={'in-
{'google.cloud.vid
{'retry_codes':
{'idem-
po-
tent':
['DEAD-
LINE_EXCEEDED',
'UN-
AVAIL-
ABLE'],
'non_idempotent':
[]},
'retry_params':
{'de-
fault':
{'ini-
tial_retry_delay_n
1000,
'retry_delay_multi
2.5,
'max_retry_delay_
120000,
'ini-
tial_rpc_timeout_
120000,
'rpc_timeout_multi
1.0,
'max_rpc_timeout_
120000,
'to-
tal_timeout_millis
600000}},
'meth-
ods':
{'An-
no-
tat-
e-
V-
ideo':
{'time-
out_millis':
60000,
'retry_codes_name
'idem-
po-
tent',
'retry_params_name
'de-
fault'}}}},
client_info=None)

```

Constructor.

Parameters

- **(Union[VideoIntelligenceServiceGrpcTransport, (transport) – Callable[[~.Credentials, type], ~.VideoIntelligenceServiceGrpcTransport])**: A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you're developing your own client library.

annotate_video (*input_uri=None, input_content=None, features=None, video_context=None, output_uri=None, location_id=None, retry=<object object>, timeout=<object object>, metadata=None*)

Performs asynchronous video annotation. Progress and results can be retrieved through the `google.longrunning.Operations` interface. `Operation.metadata` contains `AnnotateVideoProgress` (progress). `Operation.response` contains `AnnotateVideoResponse` (results).

Example

```
>>> from google.cloud import videointelligence_v1p1beta1
>>> from google.cloud.videointelligence_v1p1beta1 import enums
>>>
>>> client = videointelligence_v1p1beta1.VideoIntelligenceServiceClient()
>>>
>>> input_uri = 'gs://demomaker/cat.mp4'
>>> features_element = enums.Feature.LABEL_DETECTION
>>> features = [features_element]
>>>
>>> response = client.annotate_video(input_uri=input_uri, features=features)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
```

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```
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **input_uri** (*str*) – Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#). A video URI may include wildcards in `object-id`, and thus identify multiple videos. Supported wildcards: `*` to match 0 or more characters; `?` to match 1 character. If unset, the input video should be embedded in the request as `input_content`. If set, `input_content` should be unset.
- **input_content** (*bytes*) – The video data bytes. If unset, the input video(s) should be specified via `input_uri`. If set, `input_uri` should be unset.
- **features** (*list[Feature]*) – Requested video annotation features.
- **video_context** (*Union[dict, VideoContext]*) – Additional video context and/or feature-specific parameters. If a dict is provided, it must be of the same form as the protobuf message [VideoContext](#).
- **output_uri** (*str*) – Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#).
- **location_id** (*str*) – Optional cloud region where annotation should take place. Supported cloud regions: `us-east1`, `us-west1`, `eu-west1`, `asia-east1`. If no region is specified, a region will be determined based on video file location.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.videointelligence_v1p1beta1.gapic.enums' from '/home/doc
```

```
classmethod from_service_account_file(filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

classmethod **from_service_account_json** (*filename*, **args*, ***kwargs*)

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

29.4.4 Types for Cloud Video Intelligence API Client

class google.cloud.videointelligence_v1p1beta1.types.**AnnotateVideoProgress**

Video annotation progress. Included in the metadata field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

annotation_progress

Progress metadata for all videos specified in AnnotateVideoRequest.

class google.cloud.videointelligence_v1p1beta1.types.**AnnotateVideoRequest**

Video annotation request.

input_uri

Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: gs://bucket-id/object-id (other URI formats return [google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#). A video URI may include wildcards in object-id, and thus identify multiple videos. Supported wildcards: '*' to match 0 or more characters; '?' to match 1 character. If unset, the input video should be embedded in the request as input_content. If set, input_content should be unset.

input_content

The video data bytes. If unset, the input video(s) should be specified via input_uri. If set, input_uri should be unset.

features

Requested video annotation features.

video_context

Additional video context and/or feature-specific parameters.

output_uri

Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: gs://bucket-id/object-id (other URI formats return [google

.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#).

location_id

Optional cloud region where annotation should take place. Supported cloud regions: us-east1, us-west1, europe-west1, asia-east1. If no region is specified, a region will be determined based on video file location.

class google.cloud.videointelligence_v1p1beta1.types.**AnnotateVideoResponse**

Video annotation response. Included in the response field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

annotation_results

Annotation results for all videos specified in AnnotateVideoRequest.

class google.cloud.videointelligence_v1p1beta1.types.**Any**

class google.cloud.videointelligence_v1p1beta1.types.**CancelOperationRequest**

class google.cloud.videointelligence_v1p1beta1.types.**CustomHttpPattern**

class google.cloud.videointelligence_v1p1beta1.types.**DeleteOperationRequest**

class google.cloud.videointelligence_v1p1beta1.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.videointelligence_v1p1beta1.types.**Duration**

class google.cloud.videointelligence_v1p1beta1.types.**Empty**

class google.cloud.videointelligence_v1p1beta1.types.**Entity**

Detected entity from video analysis.

entity_id

Opaque entity ID. Some IDs may be available in [Google Knowledge Graph Search API](#).

description

Textual description, e.g. Fixed-gear bicycle.

language_code

Language code for description in BCP-47 format.

class google.cloud.videointelligence_v1p1beta1.types.**EnumDescriptorProto**

class **EnumReservedRange**

class google.cloud.videointelligence_v1p1beta1.types.**EnumOptions**

class google.cloud.videointelligence_v1p1beta1.types.**EnumValueDescriptorProto**

class google.cloud.videointelligence_v1p1beta1.types.**EnumValueOptions**

class google.cloud.videointelligence_v1p1beta1.types.**ExplicitContentAnnotation**

Explicit content annotation (based on per-frame visual signals only). If no explicit content has been detected in a frame, no annotations are present for that frame.

frames

All video frames where explicit content was detected.

class google.cloud.videointelligence_v1p1beta1.types.**ExplicitContentDetectionConfig**

Config for EXPLICIT_CONTENT_DETECTION.

model

Model to use for explicit content detection. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.videointelligence_v1p1beta1.types.**ExplicitContentFrame**
Video frame level annotation results for explicit content.

time_offset

Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.

pornography_likelihood

Likelihood of the pornography content..

class google.cloud.videointelligence_v1p1beta1.types.**ExtensionRangeOptions**

class google.cloud.videointelligence_v1p1beta1.types.**FieldDescriptorProto**

class google.cloud.videointelligence_v1p1beta1.types.**FieldOptions**

class google.cloud.videointelligence_v1p1beta1.types.**FileDescriptorProto**

class google.cloud.videointelligence_v1p1beta1.types.**FileDescriptorSet**

class google.cloud.videointelligence_v1p1beta1.types.**FileOptions**

class google.cloud.videointelligence_v1p1beta1.types.**GeneratedCodeInfo**

class Annotation

class google.cloud.videointelligence_v1p1beta1.types.**GetOperationRequest**

class google.cloud.videointelligence_v1p1beta1.types.**Http**

class google.cloud.videointelligence_v1p1beta1.types.**HttpRule**

class google.cloud.videointelligence_v1p1beta1.types.**LabelAnnotation**
Label annotation.

entity

Detected entity.

category_entities

Common categories for the detected entity. E.g. when the label is Terrier the category is likely dog. And in some cases there might be more than one categories e.g. Terrier could also be a pet.

segments

All video segments where a label was detected.

frames

All video frames where a label was detected.

class google.cloud.videointelligence_v1p1beta1.types.**LabelDetectionConfig**
Config for LABEL_DETECTION.

label_detection_mode

What labels should be detected with LABEL_DETECTION, in addition to video-level labels or segment-level labels. If unspecified, defaults to SHOT_MODE.

stationary_camera

Whether the video has been shot from a stationary (i.e. non- moving) camera. When set to true, might improve detection accuracy for moving objects. Should be used with SHOT_AND_FRAME_MODE enabled.

model

Model to use for label detection. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.videointelligence_v1p1beta1.types.**LabelFrame**

Video frame level annotation results for label detection.

time_offset

Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.

confidence

Confidence that the label is accurate. Range: [0, 1].

class google.cloud.videointelligence_v1p1beta1.types.**LabelSegment**

Video segment level annotation results for label detection.

segment

Video segment where a label was detected.

confidence

Confidence that the label is accurate. Range: [0, 1].

class google.cloud.videointelligence_v1p1beta1.types.**ListOperationsRequest**

class google.cloud.videointelligence_v1p1beta1.types.**ListOperationsResponse**

class google.cloud.videointelligence_v1p1beta1.types.**MessageOptions**

class google.cloud.videointelligence_v1p1beta1.types.**MethodDescriptorProto**

class google.cloud.videointelligence_v1p1beta1.types.**MethodOptions**

class google.cloud.videointelligence_v1p1beta1.types.**OneofDescriptorProto**

class google.cloud.videointelligence_v1p1beta1.types.**OneofOptions**

class google.cloud.videointelligence_v1p1beta1.types.**Operation**

class google.cloud.videointelligence_v1p1beta1.types.**ServiceDescriptorProto**

class google.cloud.videointelligence_v1p1beta1.types.**ServiceOptions**

class google.cloud.videointelligence_v1p1beta1.types.**ShotChangeDetectionConfig**
Config for SHOT_CHANGE_DETECTION.

model

Model to use for shot change detection. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.videointelligence_v1p1beta1.types.**SourceCodeInfo**

class Location

class google.cloud.videointelligence_v1p1beta1.types.**SpeechContext**

Provides “hints” to the speech recognizer to favor specific words and phrases in the results.

phrases

Optional A list of strings containing words and phrases “hints” so that the speech recognition is more likely to recognize them. This can be used to improve the accuracy for specific words and phrases, for example, if specific commands are typically spoken by the user. This can also be used to add additional words to the vocabulary of the recognizer. See [usage limits](#).

class google.cloud.videointelligence_v1p1beta1.types.**SpeechRecognitionAlternative**

Alternative hypotheses (a.k.a. n-best list).

transcript

Output only. Transcript text representing the words that the user spoke.

confidence

Output only. The confidence estimate between 0.0 and 1.0. A higher number indicates an estimated greater likelihood that the recognized words are correct. This field is typically provided only for the top hypothesis, and only for `is_final=true` results. Clients should not rely on the `confidence` field as it is not guaranteed to be accurate or consistent. The default of 0.0 is a sentinel value indicating confidence was not set.

words

Output only. A list of word-specific information for each recognized word.

class `google.cloud.videointelligence_v1p1beta1.types.SpeechTranscription`

A speech recognition result corresponding to a portion of the audio.

alternatives

Output only. May contain one or more recognition hypotheses (up to the maximum specified in `max_alternatives`). These alternatives are ordered in terms of accuracy, with the top (first) alternative being the most probable, as ranked by the recognizer.

class `google.cloud.videointelligence_v1p1beta1.types.SpeechTranscriptionConfig`

Config for SPEECH_TRANSCRIPTION.

language_code

Required The language of the supplied audio as a [BCP-47](#) language tag. Example: “en-US”. See [Language Support](#) for a list of the currently supported language codes.

max_alternatives

Optional Maximum number of recognition hypotheses to be returned. Specifically, the maximum number of `SpeechRecognitionAlternative` messages within each `SpeechRecognitionResult`. The server may return fewer than `max_alternatives`. Valid values are 0-30. A value of 0 or 1 will return a maximum of one. If omitted, will return a maximum of one.

filter_profanity

Optional If set to `true`, the server will attempt to filter out profanities, replacing all but the initial character in each filtered word with asterisks, e.g. “f***”. If set to `false` or omitted, profanities won’t be filtered out.

speech_contexts

Optional A means to provide context to assist the speech recognition.

enable_automatic_punctuation

Optional If ‘true’, adds punctuation to recognition result hypotheses. This feature is only available in select languages. Setting this for requests in other languages has no effect at all. The default ‘false’ value does not add punctuation to result hypotheses. NOTE: “This is currently offered as an experimental service, complimentary to all users. In the future this may be exclusively available as a premium feature.”

audio_tracks

Optional For file formats, such as MXF or MKV, supporting multiple audio tracks, specify up to two tracks. Default: track 0.

class `google.cloud.videointelligence_v1p1beta1.types.Status`

class `google.cloud.videointelligence_v1p1beta1.types.Timestamp`

class `google.cloud.videointelligence_v1p1beta1.types.UninterpretedOption`

class `NamePart`

class google.cloud.videointelligence_v1p1beta1.types.VideoAnnotationProgress
Annotation progress for a single video.

input_uri
Output only. Video file location in [Google Cloud Storage](#).

progress_percent
Output only. Approximate percentage processed thus far. Guaranteed to be 100 when fully processed.

start_time
Output only. Time when the request was received.

update_time
Output only. Time of the most recent update.

class google.cloud.videointelligence_v1p1beta1.types.VideoAnnotationResults
Annotation results for a single video.

input_uri
Output only. Video file location in [Google Cloud Storage](#).

segment_label_annotations
Label annotations on video level or user specified segment level. There is exactly one element for each unique label.

shot_label_annotations
Label annotations on shot level. There is exactly one element for each unique label.

frame_label_annotations
Label annotations on frame level. There is exactly one element for each unique label.

shot_annotations
Shot annotations. Each shot is represented as a video segment.

explicit_annotation
Explicit content annotation.

speech_transcriptions
Speech transcription.

error
Output only. If set, indicates an error. Note that for a single AnnotateVideoRequest some videos may succeed and some may fail.

class google.cloud.videointelligence_v1p1beta1.types.VideoContext
Video context and/or feature-specific parameters.

segments
Video segments to annotate. The segments may overlap and are not required to be contiguous or span the whole video. If unspecified, each video is treated as a single segment.

label_detection_config
Config for LABEL_DETECTION.

shot_change_detection_config
Config for SHOT_CHANGE_DETECTION.

explicit_content_detection_config
Config for EXPLICIT_CONTENT_DETECTION.

speech_transcription_config
Config for SPEECH_TRANSCRIPTION.

class google.cloud.videointelligence_v1p1beta1.types.VideoSegment

Video segment.

start_time_offset

Time-offset, relative to the beginning of the video, corresponding to the start of the segment (inclusive).

end_time_offset

Time-offset, relative to the beginning of the video, corresponding to the end of the segment (inclusive).

class google.cloud.videointelligence_v1p1beta1.types.WordInfo

Word-specific information for recognized words. Word information is only included in the response when certain request parameters are set, such as `enable_word_time_offsets`.

start_time

Output only. Time offset relative to the beginning of the audio, and corresponding to the start of the spoken word. This field is only set if `enable_word_time_offsets=true` and only in the top hypothesis. This is an experimental feature and the accuracy of the time offset can vary.

end_time

Output only. Time offset relative to the beginning of the audio, and corresponding to the end of the spoken word. This field is only set if `enable_word_time_offsets=true` and only in the top hypothesis. This is an experimental feature and the accuracy of the time offset can vary.

word

Output only. The word corresponding to this set of information.

The previous beta releases, spelled `v1beta1` and `v1beta2`, are provided to continue to support code previously written against them. In order to use this, you will want to import from `google.cloud.videointelligence_v1beta2` in lieu of `google.cloud.videointelligence_v1`.

An API and type reference is provided the these betas also:

29.4.5 Client for Google Cloud Video Intelligence API

```
class google.cloud.videointelligence_v1beta1.VideoIntelligenceServiceClient (transport=None,
chan-
nel=None,
cre-
den-
tials=None,
client_config={'interj
{'google.cloud.videoi
{'retry_codes':
{'idem-
po-
tent':
['DEAD-
LINE_EXCEEDED',
'UN-
AVAIL-
ABLE'],
'non_idempotent':
[]},
'retry_params':
{'de-
fault':
{'ini-
tial_retry_delay_mill
1000,
'retry_delay_multipli
2.5,
'max_retry_delay_mi
120000,
'ini-
tial_rpc_timeout_mil
120000,
'rpc_timeout_multipl
1.0,
'max_rpc_timeout_m
120000,
'to-
tal_timeout_millis':
600000}},
'meth-
ods':
{'An-
no-
tat-
e-
V-
ideo':
{'time-
out_millis':
60000,
'retry_codes_name':
'idem-
po-
tent',
'retry_params_name':
'de-
fault'}}}},
client_info=None)
```

Constructor.

Parameters

- **(Union[VideoIntelligenceServiceGrpcTransport, (transport) – Callable[[~.Credentials, type], ~.VideoIntelligenceServiceGrpcTransport])**: A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you're developing your own client library.

annotate_video (*input_uri, features, input_content=None, video_context=None, output_uri=None, location_id=None, retry=<object object>, timeout=<object object>, metadata=None*)

Performs asynchronous video annotation. Progress and results can be retrieved through the `google.longrunning.Operations` interface. `Operation.metadata` contains `AnnotateVideoProgress` (progress). `Operation.response` contains `AnnotateVideoResponse` (results).

Example

```
>>> from google.cloud import videointelligence_v1beta1
>>> from google.cloud.videointelligence_v1beta1 import enums
>>>
>>> client = videointelligence_v1beta1.VideoIntelligenceServiceClient()
>>>
>>> input_uri = 'gs://demomaker/cat.mp4'
>>> features_element = enums.Feature.LABEL_DETECTION
>>> features = [features_element]
>>>
>>> response = client.annotate_video(input_uri, features)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **input_uri** (*str*) – Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#). A video URI may include wildcards in `object-id`, and thus identify multiple videos. Supported wildcards: `*` to match 0 or more characters; `?` to match 1 character. If unset, the input video should be embedded in the request as `input_content`. If set, `input_content` should be unset.
- **features** (*list[Feature]*) – Requested video annotation features.
- **input_content** (*str*) – The video data bytes. Encoding: base64. If unset, the input video(s) should be specified via `input_uri`. If set, `input_uri` should be unset.
- **video_context** (*Union[dict, VideoContext]*) – Additional video context and/or feature-specific parameters. If a dict is provided, it must be of the same form as the protobuf message [VideoContext](#)
- **output_uri** (*str*) – Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#).
- **location_id** (*str*) – Optional cloud region where annotation should take place. Supported cloud regions: `us-east1`, `us-west1`, `eu-west1`, `asia-east1`. If no region is specified, a region will be determined based on video file location.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- [google.api_core.exceptions.GoogleAPICallError](#) – If the request failed for any reason.
- [google.api_core.exceptions.RetryError](#) – If the request failed due to a retryable error and retry attempts failed.
- [ValueError](#) – If the parameters are invalid.

```
enums = <module 'google.cloud.videointelligence_v1beta1.gapic.enums' from '/home/docs/
```

```
classmethod from_service_account_file(filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.

- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

classmethod **from_service_account_json** (*filename*, **args*, ***kwargs*)
Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

29.4.6 Types for Google Cloud Video Intelligence API Client

class `google.cloud.videointelligence_v1beta1.types.AnnotateVideoProgress`
Video annotation progress. Included in the metadata field of the Operation returned by the GetOperation call of the `google::longrunning::Operations` service.

annotation_progress

Progress metadata for all videos specified in AnnotateVideoRequest.

class `google.cloud.videointelligence_v1beta1.types.AnnotateVideoRequest`
Video annotation request.

input_uri

Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `[google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]`). For more information, see [Request URIs](#). A video URI may include wildcards in `object-id`, and thus identify multiple videos. Supported wildcards: `*` to match 0 or more characters; `?` to match 1 character. If unset, the input video should be embedded in the request as `input_content`. If set, `input_content` should be unset.

input_content

The video data bytes. Encoding: base64. If unset, the input video(s) should be specified via `input_uri`. If set, `input_uri` should be unset.

features

Requested video annotation features.

video_context

Additional video context and/or feature-specific parameters.

output_uri

Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `[google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]`). For more information, see [Request URIs](#).

location_id

Optional cloud region where annotation should take place. Supported cloud regions: us-east1, us-west1, europe-west1, asia-east1. If no region is specified, a region will be determined based on video file location.

class google.cloud.videointelligence_v1beta1.types.**AnnotateVideoResponse**

Video annotation response. Included in the response field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

annotation_results

Annotation results for all videos specified in AnnotateVideoRequest.

class google.cloud.videointelligence_v1beta1.types.**Any**

class google.cloud.videointelligence_v1beta1.types.**BoundingBox**

Bounding box.

left

Left X coordinate.

right

Right X coordinate.

bottom

Bottom Y coordinate.

top

Top Y coordinate.

class google.cloud.videointelligence_v1beta1.types.**CancelOperationRequest**

class google.cloud.videointelligence_v1beta1.types.**CustomHttpPattern**

class google.cloud.videointelligence_v1beta1.types.**DeleteOperationRequest**

class google.cloud.videointelligence_v1beta1.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.videointelligence_v1beta1.types.**Empty**

class google.cloud.videointelligence_v1beta1.types.**EnumDescriptorProto**

class **EnumReservedRange**

class google.cloud.videointelligence_v1beta1.types.**EnumOptions**

class google.cloud.videointelligence_v1beta1.types.**EnumValueDescriptorProto**

class google.cloud.videointelligence_v1beta1.types.**EnumValueOptions**

class google.cloud.videointelligence_v1beta1.types.**ExtensionRangeOptions**

class google.cloud.videointelligence_v1beta1.types.**FaceAnnotation**

Face annotation.

thumbnail

Thumbnail of a representative face view (in JPEG format). Encoding: base64.

segments

All locations where a face was detected. Faces are detected and tracked on a per-video basis (as opposed to across multiple videos).

locations

Face locations at one frame per second.

```
class google.cloud.videointelligence_v1beta1.types.FaceLocation
```

Face location.

bounding_box

Bounding box in a frame.

time_offset

Video time offset in microseconds.

```
class google.cloud.videointelligence_v1beta1.types.FieldDescriptorProto
```

```
class google.cloud.videointelligence_v1beta1.types.FieldOptions
```

```
class google.cloud.videointelligence_v1beta1.types.FileDescriptorProto
```

```
class google.cloud.videointelligence_v1beta1.types.FileDescriptorSet
```

```
class google.cloud.videointelligence_v1beta1.types.FileOptions
```

```
class google.cloud.videointelligence_v1beta1.types.GeneratedCodeInfo
```

class Annotation

```
class google.cloud.videointelligence_v1beta1.types.GetOperationRequest
```

```
class google.cloud.videointelligence_v1beta1.types.Http
```

```
class google.cloud.videointelligence_v1beta1.types.HttpRule
```

```
class google.cloud.videointelligence_v1beta1.types.LabelAnnotation
```

Label annotation.

description

Textual description, e.g. Fixed-gear bicycle.

language_code

Language code for description in BCP-47 format.

locations

Where the label was detected and with what confidence.

```
class google.cloud.videointelligence_v1beta1.types.LabelLocation
```

Label location.

segment

Video segment. Set to [-1, -1] for video-level labels. Set to [timestamp, timestamp] for frame-level labels. Otherwise, corresponds to one of `AnnotateSpec.segments` (if specified) or to shot boundaries (if requested).

confidence

Confidence that the label is accurate. Range: [0, 1].

level

Label level.

```
class google.cloud.videointelligence_v1beta1.types.ListOperationsRequest
```

```
class google.cloud.videointelligence_v1beta1.types.ListOperationsResponse
```

```
class google.cloud.videointelligence_v1beta1.types.MessageOptions
```

```
class google.cloud.videointelligence_v1beta1.types.MethodDescriptorProto
```

```

class google.cloud.videointelligence_v1beta1.types.MethodOptions
class google.cloud.videointelligence_v1beta1.types.OneofDescriptorProto
class google.cloud.videointelligence_v1beta1.types.OneofOptions
class google.cloud.videointelligence_v1beta1.types.Operation
class google.cloud.videointelligence_v1beta1.types.SafeSearchAnnotation
    Safe search annotation (based on per-frame visual signals only). If no unsafe content has been detected in a
    frame, no annotations are present for that frame. If only some types of unsafe content have been detected in a
    frame, the likelihood is set to UNKNOWN for all other types of unsafe content.

    adult
        Likelihood of adult content.

    spoof
        Likelihood that an obvious modification was made to the original version to make it appear funny or
        offensive.

    medical
        Likelihood of medical content.

    violent
        Likelihood of violent content.

    racy
        Likelihood of racy content.

    time_offset
        Video time offset in microseconds.

class google.cloud.videointelligence_v1beta1.types.ServiceDescriptorProto
class google.cloud.videointelligence_v1beta1.types.ServiceOptions
class google.cloud.videointelligence_v1beta1.types.SourceCodeInfo

    class Location

class google.cloud.videointelligence_v1beta1.types.Status
class google.cloud.videointelligence_v1beta1.types.Timestamp
class google.cloud.videointelligence_v1beta1.types.UninterpretedOption

    class NamePart

class google.cloud.videointelligence_v1beta1.types.VideoAnnotationProgress
    Annotation progress for a single video.

    input_uri
        Video file location in Google Cloud Storage.

    progress_percent
        Approximate percentage processed thus far. Guaranteed to be 100 when fully processed.

    start_time
        Time when the request was received.

    update_time
        Time of the most recent update.

```

class google.cloud.videointelligence_v1beta1.types.VideoAnnotationResults
Annotation results for a single video.

input_uri
Video file location in [Google Cloud Storage](#).

label_annotations
Label annotations. There is exactly one element for each unique label.

face_annotations
Face annotations. There is exactly one element for each unique face.

shot_annotations
Shot annotations. Each shot is represented as a video segment.

safe_search_annotations
Safe search annotations.

error
If set, indicates an error. Note that for a single AnnotateVideoRequest some videos may succeed and some may fail.

class google.cloud.videointelligence_v1beta1.types.VideoContext
Video context and/or feature-specific parameters.

segments
Video segments to annotate. The segments may overlap and are not required to be contiguous or span the whole video. If unspecified, each video is treated as a single segment.

label_detection_mode
If label detection has been requested, what labels should be detected in addition to video-level labels or segment-level labels. If unspecified, defaults to SHOT_MODE.

stationary_camera
Whether the video has been shot from a stationary (i.e. non- moving) camera. When set to true, might improve detection accuracy for moving objects.

label_detection_model
Model to use for label detection. Supported values: “latest” and “stable” (the default).

face_detection_model
Model to use for face detection. Supported values: “latest” and “stable” (the default).

shot_change_detection_model
Model to use for shot change detection. Supported values: “latest” and “stable” (the default).

safe_search_detection_model
Model to use for safe search detection. Supported values: “latest” and “stable” (the default).

class google.cloud.videointelligence_v1beta1.types.VideoSegment
Video segment.

start_time_offset
Start offset in microseconds (inclusive). Unset means 0.

end_time_offset
End offset in microseconds (inclusive). Unset means 0.

29.4.7 Client for Google Cloud Video Intelligence API

```
class google.cloud.videointelligence_v1beta2.VideoIntelligenceServiceClient (transport=None,
chan-
nel=None,
cre-
den-
tials=None,
client_config={'interj
{'google.cloud.videoi
{'retry_codes':
{'idem-
po-
tent':
['DEAD-
LINE_EXCEEDED',
'UN-
AVAIL-
ABLE'],
'non_idempotent':
[]},
'retry_params':
{'de-
fault':
{'ini-
tial_retry_delay_mill
1000,
'retry_delay_multipli
2.5,
'max_retry_delay_mi
120000,
'ini-
tial_rpc_timeout_mil
120000,
'rpc_timeout_multipl
1.0,
'max_rpc_timeout_m
120000,
'to-
tal_timeout_millis':
600000}},
'meth-
ods':
{'An-
no-
tat-
e-
V-
ideo':
{'time-
out_millis':
60000,
'retry_codes_name':
'idem-
po-
tent',
'retry_params_name':
'de-
fault'}}}},
client_info=None)
```

Constructor.

Parameters

- **(Union[VideoIntelligenceServiceGrpcTransport, (transport) – Callable[[~.Credentials, type], ~.VideoIntelligenceServiceGrpcTransport])**: A transport instance, responsible for actually making the API calls. The default transport uses the gRPC protocol. This argument may also be a callable which returns a transport instance. Callables will be sent the credentials as the first argument and the default transport class as the second argument.
- **channel** (*grpc.Channel*) – DEPRECATED. A Channel instance through which to make calls. This argument is mutually exclusive with `credentials`; providing both will raise an exception.
- **credentials** (*google.auth.credentials.Credentials*) – The authorization credentials to attach to requests. These credentials identify this application to the service. If none are specified, the client will attempt to ascertain the credentials from the environment. This argument is mutually exclusive with providing a transport instance to `transport`; doing so will raise an exception.
- **client_config** (*dict*) – DEPRECATED. A dictionary of call options for each method. If not specified, the default configuration is used.
- **client_info** (*google.api_core.gapic_v1.client_info.ClientInfo*) – The client info used to send a user-agent string along with API requests. If None, then default info will be used. Generally, you only need to set this if you're developing your own client library.

annotate_video (*input_uri=None, input_content=None, features=None, video_context=None, output_uri=None, location_id=None, retry=<object object>, timeout=<object object>, metadata=None*)

Performs asynchronous video annotation. Progress and results can be retrieved through the `google.longrunning.Operations` interface. `Operation.metadata` contains `AnnotateVideoProgress` (progress). `Operation.response` contains `AnnotateVideoResponse` (results).

Example

```
>>> from google.cloud import videointelligence_v1beta2
>>> from google.cloud.videointelligence_v1beta2 import enums
>>>
>>> client = videointelligence_v1beta2.VideoIntelligenceServiceClient()
>>>
>>> input_uri = 'gs://demomaker/cat.mp4'
>>> features_element = enums.Feature.LABEL_DETECTION
>>> features = [features_element]
>>>
>>> response = client.annotate_video(input_uri=input_uri, features=features)
>>>
>>> def callback(operation_future):
...     # Handle result.
...     result = operation_future.result()
>>>
>>> response.add_done_callback(callback)
>>>
```

(continues on next page)

(continued from previous page)

```
>>> # Handle metadata.
>>> metadata = response.metadata()
```

Parameters

- **input_uri** (*str*) – Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#). A video URI may include wildcards in `object-id`, and thus identify multiple videos. Supported wildcards: `*` to match 0 or more characters; `?` to match 1 character. If unset, the input video should be embedded in the request as `input_content`. If set, `input_content` should be unset.
- **input_content** (*bytes*) – The video data bytes. If unset, the input video(s) should be specified via `input_uri`. If set, `input_uri` should be unset.
- **features** (*list[Feature]*) – Requested video annotation features.
- **video_context** (*Union[dict, VideoContext]*) – Additional video context and/or feature-specific parameters. If a dict is provided, it must be of the same form as the protobuf message [VideoContext](#).
- **output_uri** (*str*) – Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: `gs://bucket-id/object-id` (other URI formats return `google.rpc.Code.INVALID_ARGUMENT`). For more information, see [Request URIs](#).
- **location_id** (*str*) – Optional cloud region where annotation should take place. Supported cloud regions: `us-east1`, `us-west1`, `eu-west1`, `asia-east1`. If no region is specified, a region will be determined based on video file location.
- **retry** (*Optional[google.api_core.retry.Retry]*) – A `retry` object used to retry requests. If `None` is specified, requests will not be retried.
- **timeout** (*Optional[float]*) – The amount of time, in seconds, to wait for the request to complete. Note that if `retry` is specified, the timeout applies to each individual attempt.
- **metadata** (*Optional[Sequence[Tuple[str, str]]]*) – Additional metadata that is provided to the method.

Returns A `_OperationFuture` instance.

Raises

- `google.api_core.exceptions.GoogleAPICallError` – If the request failed for any reason.
- `google.api_core.exceptions.RetryError` – If the request failed due to a retryable error and retry attempts failed.
- `ValueError` – If the parameters are invalid.

```
enums = <module 'google.cloud.videointelligence_v1beta2.gapic.enums' from '/home/docs/
```

```
classmethod from_service_account_file(filename, *args, **kwargs)
```

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

classmethod **from_service_account_json** (*filename*, **args*, ***kwargs*)

Creates an instance of this client using the provided credentials file.

Parameters

- **filename** (*str*) – The path to the service account private key json file.
- **args** – Additional arguments to pass to the constructor.
- **kwargs** – Additional arguments to pass to the constructor.

Returns The constructed client.

Return type *VideoIntelligenceServiceClient*

29.4.8 Types for Google Cloud Video Intelligence API Client

class google.cloud.videointelligence_v1beta2.types.**AnnotateVideoProgress**

Video annotation progress. Included in the metadata field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

annotation_progress

Progress metadata for all videos specified in AnnotateVideoRequest.

class google.cloud.videointelligence_v1beta2.types.**AnnotateVideoRequest**

Video annotation request.

input_uri

Input video location. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: gs://bucket-id/object-id (other URI formats return [google.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#). A video URI may include wildcards in object-id, and thus identify multiple videos. Supported wildcards: '*' to match 0 or more characters; '?' to match 1 character. If unset, the input video should be embedded in the request as input_content. If set, input_content should be unset.

input_content

The video data bytes. If unset, the input video(s) should be specified via input_uri. If set, input_uri should be unset.

features

Requested video annotation features.

video_context

Additional video context and/or feature-specific parameters.

output_uri

Optional location where the output (in JSON format) should be stored. Currently, only [Google Cloud Storage](#) URIs are supported, which must be specified in the following format: gs://bucket-id/object-id (other URI formats return [google

.rpc.Code.INVALID_ARGUMENT][google.rpc.Code.INVALID_ARGUMENT]). For more information, see [Request URIs](#).

location_id

Optional cloud region where annotation should take place. Supported cloud regions: us-east1, us-west1, europe-west1, asia-east1. If no region is specified, a region will be determined based on video file location.

class google.cloud.videointelligence_v1beta2.types.**AnnotateVideoResponse**

Video annotation response. Included in the response field of the Operation returned by the GetOperation call of the google::longrunning::Operations service.

annotation_results

Annotation results for all videos specified in AnnotateVideoRequest.

class google.cloud.videointelligence_v1beta2.types.**Any**

class google.cloud.videointelligence_v1beta2.types.**CancelOperationRequest**

class google.cloud.videointelligence_v1beta2.types.**CustomHttpPattern**

class google.cloud.videointelligence_v1beta2.types.**DeleteOperationRequest**

class google.cloud.videointelligence_v1beta2.types.**DescriptorProto**

class **ExtensionRange**

class **ReservedRange**

class google.cloud.videointelligence_v1beta2.types.**Duration**

class google.cloud.videointelligence_v1beta2.types.**Empty**

class google.cloud.videointelligence_v1beta2.types.**Entity**

Detected entity from video analysis.

entity_id

Opaque entity ID. Some IDs may be available in [Google Knowledge Graph Search API](#).

description

Textual description, e.g. Fixed-gear bicycle.

language_code

Language code for description in BCP-47 format.

class google.cloud.videointelligence_v1beta2.types.**EnumDescriptorProto**

class **EnumReservedRange**

class google.cloud.videointelligence_v1beta2.types.**EnumOptions**

class google.cloud.videointelligence_v1beta2.types.**EnumValueDescriptorProto**

class google.cloud.videointelligence_v1beta2.types.**EnumValueOptions**

class google.cloud.videointelligence_v1beta2.types.**ExplicitContentAnnotation**

Explicit content annotation (based on per-frame visual signals only). If no explicit content has been detected in a frame, no annotations are present for that frame.

frames

All video frames where explicit content was detected.

class google.cloud.videointelligence_v1beta2.types.**ExplicitContentDetectionConfig**

Config for EXPLICIT_CONTENT_DETECTION.

model

Model to use for explicit content detection. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

class google.cloud.videointelligence_v1beta2.types.**ExplicitContentFrame**
Video frame level annotation results for explicit content.

time_offset

Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.

pornography_likelihood

Likelihood of the pornography content..

class google.cloud.videointelligence_v1beta2.types.**ExtensionRangeOptions**

class google.cloud.videointelligence_v1beta2.types.**FaceAnnotation**
Face annotation.

thumbnail

Thumbnail of a representative face view (in JPEG format).

segments

All video segments where a face was detected.

frames

All video frames where a face was detected.

class google.cloud.videointelligence_v1beta2.types.**FaceDetectionConfig**
Config for FACE_DETECTION.

model

Model to use for face detection. Supported values: “builtin/stable” (the default if unset) and “builtin/latest”.

include_bounding_boxes

Whether bounding boxes be included in the face annotation output.

class google.cloud.videointelligence_v1beta2.types.**FaceFrame**
Video frame level annotation results for face detection.

normalized_bounding_boxes

Normalized Bounding boxes in a frame. There can be more than one boxes if the same face is detected in multiple locations within the current frame.

time_offset

Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.

class google.cloud.videointelligence_v1beta2.types.**FaceSegment**
Video segment level annotation results for face detection.

segment

Video segment where a face was detected.

class google.cloud.videointelligence_v1beta2.types.**FieldDescriptorProto**

class google.cloud.videointelligence_v1beta2.types.**FieldOptions**

class google.cloud.videointelligence_v1beta2.types.**FileDescriptorProto**

class google.cloud.videointelligence_v1beta2.types.**FileDescriptorSet**

class google.cloud.videointelligence_v1beta2.types.**FileOptions**

class google.cloud.videointelligence_v1beta2.types.**GeneratedCodeInfo**

```
class Annotation
class google.cloud.videointelligence_v1beta2.types.GetOperationRequest
class google.cloud.videointelligence_v1beta2.types.Http
class google.cloud.videointelligence_v1beta2.types.HttpRule
class google.cloud.videointelligence_v1beta2.types.LabelAnnotation
    Label annotation.
    entity
        Detected entity.
    category_entities
        Common categories for the detected entity. E.g. when the label is Terrier the category is likely dog.
        And in some cases there might be more than one categories e.g. Terrier could also be a pet.
    segments
        All video segments where a label was detected.
    frames
        All video frames where a label was detected.
class google.cloud.videointelligence_v1beta2.types.LabelDetectionConfig
    Config for LABEL_DETECTION.
    label_detection_mode
        What labels should be detected with LABEL_DETECTION, in addition to video-level labels or segment-
        level labels. If unspecified, defaults to SHOT_MODE.
    stationary_camera
        Whether the video has been shot from a stationary (i.e. non- moving) camera. When set to true, might im-
        prove detection accuracy for moving objects. Should be used with SHOT_AND_FRAME_MODE enabled.
    model
        Model to use for label detection. Supported values: “builtin/stable” (the default if unset) and
        “builtin/latest”.
class google.cloud.videointelligence_v1beta2.types.LabelFrame
    Video frame level annotation results for label detection.
    time_offset
        Time-offset, relative to the beginning of the video, corresponding to the video frame for this location.
    confidence
        Confidence that the label is accurate. Range: [0, 1].
class google.cloud.videointelligence_v1beta2.types.LabelSegment
    Video segment level annotation results for label detection.
    segment
        Video segment where a label was detected.
    confidence
        Confidence that the label is accurate. Range: [0, 1].
class google.cloud.videointelligence_v1beta2.types.ListOperationsRequest
class google.cloud.videointelligence_v1beta2.types.ListOperationsResponse
class google.cloud.videointelligence_v1beta2.types.MessageOptions
class google.cloud.videointelligence_v1beta2.types.MethodDescriptorProto
```

```

class google.cloud.videointelligence_v1beta2.types.MethodOptions
class google.cloud.videointelligence_v1beta2.types.NormalizedBoundingBox
    Normalized bounding box. The normalized vertex coordinates are relative to the original image. Range: [0, 1].

    left
        Left X coordinate.

    top
        Top Y coordinate.

    right
        Right X coordinate.

    bottom
        Bottom Y coordinate.

class google.cloud.videointelligence_v1beta2.types.OneofDescriptorProto
class google.cloud.videointelligence_v1beta2.types.OneofOptions
class google.cloud.videointelligence_v1beta2.types.Operation
class google.cloud.videointelligence_v1beta2.types.ServiceDescriptorProto
class google.cloud.videointelligence_v1beta2.types.ServiceOptions
class google.cloud.videointelligence_v1beta2.types.ShotChangeDetectionConfig
    Config for SHOT_CHANGE_DETECTION.

    model
        Model to use for shot change detection. Supported values: "builtin/stable" (the default if unset) and
        "builtin/latest".

class google.cloud.videointelligence_v1beta2.types.SourceCodeInfo

    class Location

class google.cloud.videointelligence_v1beta2.types.Status
class google.cloud.videointelligence_v1beta2.types.Timestamp
class google.cloud.videointelligence_v1beta2.types.UninterpretedOption

    class NamePart

class google.cloud.videointelligence_v1beta2.types.VideoAnnotationProgress
    Annotation progress for a single video.

    input_uri
        Video file location in Google Cloud Storage.

    progress_percent
        Approximate percentage processed thus far. Guaranteed to be 100 when fully processed.

    start_time
        Time when the request was received.

    update_time
        Time of the most recent update.

class google.cloud.videointelligence_v1beta2.types.VideoAnnotationResults
    Annotation results for a single video.

```

input_uri

Video file location in [Google Cloud Storage](#).

segment_label_annotations

Label annotations on video level or user specified segment level. There is exactly one element for each unique label.

shot_label_annotations

Label annotations on shot level. There is exactly one element for each unique label.

frame_label_annotations

Label annotations on frame level. There is exactly one element for each unique label.

face_annotations

Face annotations. There is exactly one element for each unique face.

shot_annotations

Shot annotations. Each shot is represented as a video segment.

explicit_annotation

Explicit content annotation.

error

If set, indicates an error. Note that for a single `AnnotateVideoRequest` some videos may succeed and some may fail.

class `google.cloud.videointelligence_v1beta2.types.VideoContext`

Video context and/or feature-specific parameters.

segments

Video segments to annotate. The segments may overlap and are not required to be contiguous or span the whole video. If unspecified, each video is treated as a single segment.

label_detection_config

Config for LABEL_DETECTION.

shot_change_detection_config

Config for SHOT_CHANGE_DETECTION.

explicit_content_detection_config

Config for EXPLICIT_CONTENT_DETECTION.

face_detection_config

Config for FACE_DETECTION.

class `google.cloud.videointelligence_v1beta2.types.VideoSegment`

Video segment.

start_time_offset

Time-offset, relative to the beginning of the video, corresponding to the start of the segment (inclusive).

end_time_offset

Time-offset, relative to the beginning of the video, corresponding to the end of the segment (inclusive).

For a list of all `google-cloud-videointelligence` releases:

29.4.9 Changelog

PyPI History

1.3.0

Implementation Changes

- Avoid overwriting **'module'** of messages from shared modules. (#5364)

New Features

- Regenerate Video Intelligence v1p1beta1 endpoint to add new features (#5617)

Internal / Testing Changes

- Add Test runs for Python 3.7 and remove 3.4 (#5295)

1.2.0

New Features

- Add v1p1beta1 version of videointelligence (#5165)

Internal / Testing Changes

- Fix v1p1beta1 unit tests (#5064)

1.1.0

Interface additions

- Added video v1p1beta1 (#5048)

1.0.1

Dependencies

- Update dependency range for api-core to include v1.0.0 releases (#4944)

Testing and internal changes

- Normalize all setup.py files (#4909)

1.0.0

Features

General Availability

The `google-cloud-videointelligence` package is now supported at the **general availability** quality level. This means it is stable; the code and API surface will not change in backwards-incompatible ways unless absolutely necessary (e.g. because of critical security issues) or with an extensive deprecation period.

One exception to this: We will remove beta endpoints (as a semver-minor update) at whatever point the underlying endpoints go away.

v1 endpoint

The underlying video intelligence API has also gone general availability, and this library by default now uses the `v1` endpoint (rather than `v1beta2`) unless you explicitly used something else. This is a backwards compatible change as the `v1` and `v1beta2` endpoints are identical. If you pinned to `v1beta2`, you are encouraged to move to `v1`.

0.28.0

Documentation

- Added link to “Python Development Environment Setup Guide” in project README (#4187, h/t to @michaelawyu)

Dependencies

- Upgrading to `google-cloud-core >= 0.28.0` and adding dependency on `google-api-core` (#4221, #4280)
- Deferring to `google-api-core` for `grpcio` and `googleapis-common-protos` dependencies (#4096, #4098)

Packaging

- Change “Development Status” in package metadata from 3 - Alpha to 4 - Beta (eb43849569556c6e47f11b8310864c5a280507f2)

PyPI: <https://pypi.org/project/google-cloud-videointelligence/0.28.0/>

30.1 Getting started

For more information on setting up your Python development environment, such as installing `pip` and `virtualenv` on your system, please refer to [Python Development Environment Setup Guide](#) for Google Cloud Platform.

30.1.1 Cloud Datastore

[Google Cloud Datastore](#) is a fully managed, schemaless database for storing non-relational data.

Install the `google-cloud-datastore` library using `pip`:

```
$ pip install google-cloud-datastore
```

Example

```
from google.cloud import datastore

client = datastore.Client()
key = client.key('Person')

entity = datastore.Entity(key=key)
entity['name'] = 'Your name'
entity['age'] = 25
client.put(entity)
```

30.1.2 Cloud Storage

[Google Cloud Storage](#) allows you to store data on Google infrastructure.

Install the `google-cloud-storage` library using `pip`:

```
$ pip install google-cloud-storage
```

Example

```
from google.cloud import storage

client = storage.Client()
bucket = client.get_bucket('<your-bucket-name>')
blob = bucket.blob('my-test-file.txt')
blob.upload_from_string('this is test content!')
```

30.1.3 Resources

- [GitHub](#)
- [Issues](#)
- [Stack Overflow](#)
- [PyPI](#)

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