

Package ‘gargle’

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Title Utilities for Working with Google APIs

Version 0.3.1

Description Provides utilities for working with Google APIs
<<https://developers.google.com/apis-explorer>>. This includes
functions and classes for handling common credential types and for
preparing, executing, and processing HTTP requests.

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URL <https://gargle.r-lib.org>, <https://github.com/r-lib/gargle>

BugReports <https://github.com/r-lib/gargle/issues>

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Author Jennifer Bryan [aut, cre] (<<https://orcid.org/0000-0002-6983-2759>>),
Craig Citro [aut],
Hadley Wickham [aut] (<<https://orcid.org/0000-0003-4757-117X>>),
Google Inc [cph],
RStudio [cph, fnd]

Maintainer Jennifer Bryan <jenny@rstudio.com>

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R topics documented:

AuthState-class	2
credentials_app_default	3
credentials_byo_oauth2	4
credentials_gce	5
credentials_service_account	6
credentials_user_oauth2	7
cred_funs	9
gargle2.0_token	10
gargle_app	11
gargle_oauth_sitrep	12
gargle_options	13
GceToken	14
init_AuthState	14
oauth_app_from_json	15
request_develop	16
request_make	19
response_process	20
token-info	22
token_fetch	23

AuthState-class *Authorization state*

Description

An `AuthState` object manages an authorization state, typically on behalf of a client package that makes requests to a Google API.

The [How to use gargle for auth in a client package](#)¹ vignette describes a design for wrapper packages that relies on an `AuthState` object. This state can then be incorporated into the package's requests for tokens and can control the inclusion of tokens in requests to the target API.

- `api_key` is the simplest way to associate a request with a specific Google Cloud Platform project². A few calls to certain APIs, e.g. reading a public Sheet, can succeed with an API key, but this is the exception.
- `app` is an OAuth app associated with a specific Google Cloud Platform project³. This is used in the OAuth flow, in which an authenticated user authorizes the app to access or manipulate data on their behalf.
- `auth_active` reflects whether outgoing requests will be authorized by an authenticated user or are unauthorized requests for public resources. These two states correspond to sending a request with a token versus an API key, respectively.

¹<https://gargle.r-lib.org/articles/gargle-auth-in-client-package.html>

²<https://cloud.google.com/resource-manager/docs/cloud-platform-resource-hierarchy#projects>

³<https://cloud.google.com/resource-manager/docs/cloud-platform-resource-hierarchy#projects>

- `cred` is where the current token is cached within a session, once one has been fetched. It is generally assumed to be an instance of `httr::TokenServiceAccount` or `httr::Token2.0` (or a subclass thereof), probably obtained via `token_fetch()` (or one of its constituent credential fetching functions).

An `AuthState` should be created through the constructor function `init_AuthState()`.

Usage

```
AuthState
```

Format

An R6 class object.

```
credentials_app_default
      Load Application Default Credentials
```

Description

Loads credentials from a file identified via a search strategy known as Application Default Credentials (ADC). The hope is to make auth "just work" for someone working on Google-provided infrastructure or who has used Google tooling to get started. A sequence of paths is consulted, which we describe here, with some abuse of notation. `ALL_CAPS` represents the value of an environment variable and `%||%` is used in the spirit of a null coalescing operator⁴.

```
GOOGLE_APPLICATION_CREDENTIALS
CLOUDSDK_CONFIG/application_default_credentials.json
# on Windows:
(APPDATA %||% SystemDrive %||% C:)\gcloud\application_default_credentials.json
# on not-Windows:
~/.config/gcloud/application_default_credentials.json
```

If the above search successfully identifies a JSON file, it is parsed and ingested either as a service account token or a user OAuth2 credential.

Usage

```
credentials_app_default(scopes = NULL, ...)
```

⁴https://en.wikipedia.org/wiki/Null_coalescing_operator

Arguments

scopes	A character vector of scopes to request. Pick from those listed at https://developers.google.com/identity/protocols/googlescopes . For certain token flows, the "https://www.googleapis.com/auth/userinfo.email" scope is unconditionally included. This grants permission to retrieve the email address associated with a token; gargle uses this to index cached OAuth tokens. This grants no permission to view or send email. It is considered a low value scope and does not appear on the consent screen.
...	Additional arguments passed to all credential functions.

Value

An `httr::TokenServiceAccount` or an `httr::Token2.0` or `NULL`.

See Also

https://cloud.google.com/docs/authentication/production#providing_credentials_to_your_application

<https://cloud.google.com/sdk/docs/>

Other credential functions: `credentials_byo_oauth2`, `credentials_gce`, `credentials_service_account`, `credentials_user_oauth2`, `token_fetch`

Examples

```
## Not run:
credentials_app_default()

## End(Not run)
```

```
credentials_byo_oauth2
```

Load a user-provided token

Description

This function does very little when called directly with a token:

- If input has class `request`, i.e. it is a token that has been prepared with `httr::config()`, the `auth_token` component is extracted. For example, such input could be produced by `googledrive::drive_token()` or `bigrquery::bq_token()`.
- Checks that the input appears to be a Google OAuth token, based on the embedded `oauth_endpoint`.
- Refreshes the token, if it's refreshable.
- Returns its input.

There is no point providing `scopes`. They are ignored because the `scopes` associated with the token have already been baked in to the token itself and `gargle` does not support incremental authorization. The main point of `credentials_byo_oauth2()` is to allow `token_fetch()` (and packages that wrap it) to accommodate a "bring your own token" workflow.

This also makes it possible to obtain a token with one package and then register it for use with another package. For example, the default scope requested by `googledrive` is also sufficient for operations available in `googlesheets4`. You could use a shared token like so:

```
library(googledrive)
library(googlesheets4)
drive_auth(email = "jane_doe@example.com")
sheets_auth(token = drive_token())
# work with both packages freely now
```

Usage

```
credentials_byo_oauth2(scopes = NULL, token, ...)
```

Arguments

<code>scopes</code>	A character vector of scopes to request. Pick from those listed at https://developers.google.com/identity/protocols/googlescopes . For certain token flows, the <code>"https://www.googleapis.com/auth/userinfo.email"</code> scope is unconditionally included. This grants permission to retrieve the email address associated with a token; <code>gargle</code> uses this to index cached OAuth tokens. This grants no permission to view or send email. It is considered a low value scope and does not appear on the consent screen.
<code>token</code>	A token with class <code>Token2.0</code> or an object of <code>httr</code> 's class <code>request</code> , i.e. a token that has been prepared with <code>httr::config()</code> and has a <code>Token2.0</code> in the <code>auth_token</code> component.
<code>...</code>	Additional arguments passed to all credential functions.

Value

An `Token2.0`.

See Also

Other credential functions: `credentials_app_default`, `credentials_gce`, `credentials_service_account`, `credentials_user_oauth2`, `token_fetch`

Examples

```
## Not run:
# assume `my_token` is a Token2.0 object returned by a function such as
# httr::oauth2.0_token() or gargle::gargle2.0_token()
credentials_byo_oauth2(token = my_token)

## End(Not run)
```

credentials_gce *Get a token for Google Compute Engine*

Description

Uses the metadata service available on GCE VMs to fetch an access token.

Usage

```
credentials_gce(scopes = NULL, service_account = "default", ...)
```

Arguments

`scopes` A character vector of scopes to request. Pick from those listed at <https://developers.google.com/identity/protocols/googlescopes>. For certain token flows, the "<https://www.googleapis.com/auth/userinfo.email>" scope is unconditionally included. This grants permission to retrieve the email address associated with a token; gargle uses this to index cached OAuth tokens. This grants no permission to view or send email. It is considered a low value scope and does not appear on the consent screen.

`service_account` Name of the GCE service account to use.

`...` Additional arguments passed to all credential functions.

Value

A `GceToken()` or `NULL`.

See Also

<https://cloud.google.com/compute/docs/storing-retrieving-metadata>

Other credential functions: `credentials_app_default`, `credentials_byo_oauth2`, `credentials_service_account`, `credentials_user_oauth2`, `token_fetch`

Examples

```
## Not run:  
credentials_gce()  
  
## End(Not run)
```

```
credentials_service_account
```

Load a service account token

Description

Load a service account token

Usage

```
credentials_service_account(scopes = NULL, path = "", ...)
```

Arguments

scopes	A character vector of scopes to request. Pick from those listed at https://developers.google.com/identity/protocols/googlescopes . For certain token flows, the "https://www.googleapis.com/auth/userinfo.email" scope is unconditionally included. This grants permission to retrieve the email address associated with a token; gargle uses this to index cached OAuth tokens. This grants no permission to view or send email. It is considered a low value scope and does not appear on the consent screen.
path	JSON identifying the service account, in one of the forms supported for the <code>txt</code> argument of <code>jsonlite::fromJSON()</code> (typically, a file path or JSON string).
...	Additional arguments passed to all credential functions.

Value

An `httr::TokenServiceAccount` or `NULL`.

See Also

Other credential functions: `credentials_app_default`, `credentials_byo_oauth2`, `credentials_gce`, `credentials_user_oauth2`, `token_fetch`

Examples

```
## Not run:
token <- credentials_service_account(
  scopes = "https://www.googleapis.com/auth/userinfo.email",
  path = "/path/to/your/service-account.json"
)

## End(Not run)
```

```
credentials_user_oauth2
```

Get an OAuth token for a user

Description

Consults the token cache for a suitable OAuth token and, if unsuccessful, gets a token via the browser flow. A cached token is suitable if it's compatible with the user's request in this sense:

- OAuth app must be same.
- Scopes must be same.
- Email, if provided, must be same.

gargle is very conservative about using OAuth tokens discovered in the user's cache and will generally seek interactive confirmation. Therefore, in a non-interactive setting, it's important to explicitly specify the "email" of the target account or to explicitly authorize automatic discovery. See `gargle2.0_token()`, which this function wraps, for more. Non-interactive use also suggests it might be time to use a service account token.

Usage

```
credentials_user_oauth2(scopes = NULL, app = gargle_app(),
  package = "gargle", ...)
```

Arguments

scopes	A character vector of scopes to request. Pick from those listed at https://developers.google.com/identity/protocols/googlescopes . For certain token flows, the "https://www.googleapis.com/auth/userinfo.email" scope is unconditionally included. This grants permission to retrieve the email address associated with a token; gargle uses this to index cached OAuth tokens. This grants no permission to view or send email. It is considered a low value scope and does not appear on the consent screen.
app	An OAuth consumer application, created by <code>http::oauth_app()</code> .
package	Name of the package requesting a token. Used in messages.
...	Arguments passed on to <code>gargle2.0_token</code>

email Optional. Allows user to target a specific Google identity. If specified, this is used for token lookup, i.e. to determine if a suitable token is already available in the cache. If no such token is found, email is used to pre-select the targetted Google identity in the OAuth chooser. Note, however, that the email associated with a token when it's cached is always determined from the token itself, never from this argument. Use `NA` or `FALSE` to match nothing and force the OAuth dance in the browser. Use `TRUE` to allow email auto-discovery, if exactly one matching token is found in the cache. Defaults to the option named "gargle_oauth_email", retrieved by `gargle::gargle_oauth_email()`.

use_oob Whether to prefer "out of band" authentication. Defaults to the option named "gargle_oob_default", retrieved via `gargle::gargle_oob_default()`.

cache Specifies the OAuth token cache. Defaults to the option named "gargle_oauth_cache", retrieved via `gargle::gargle_oauth_cache()`.

user_params Named list holding endpoint specific parameters to pass to the server when posting the request for obtaining or refreshing the access token.

type content type used to override incorrect server response

credentials Advanced use only: allows you to completely customise token generation.

Value

A Gargle2.0 token.

See Also

Other credential functions: `credentials_app_default`, `credentials_byo_oauth2`, `credentials_gce`, `credentials_service_account`, `token_fetch`

Examples

```
## Not run:
## Drive scope, built-in gargle demo app
scopes <- "https://www.googleapis.com/auth/drive"
credentials_user_oauth2(scopes, app = gargle_app())

## bring your own app
app <- httr::oauth_app(
  appname = "my_awesome_app",
  key = "keykeykeykeykeykey",
  secret = "secretsecretsecret"
)
credentials_user_oauth2(scopes, app)

## End(Not run)
```

cred_funs

Credential function registry

Description

Functions to query or manipulate the registry of credential functions consulted by `token_fetch()`.

Usage

```
cred_funs_list()

cred_funs_add(...)

cred_funs_set(ls)

cred_funs_clear()

cred_funs_set_default()
```

Arguments

`...` One or more functions with the right signature: its first argument is named `scopes`, and it includes `...` as an argument.

`ls` A list of credential functions.

Value

A list of credential functions or `NULL`.

Functions

- `cred_funs_list`: Get the list of registered credential functions.
- `cred_funs_add`: Register one or more new credential fetching functions. Function(s) are added to the *front* of the list. So:
 - * "First registered, last tried."
 - * "Last registered, first tried."
- `cred_funs_set`: Register a list of credential fetching functions.
- `cred_funs_clear`: Clear the credential function registry.
- `cred_funs_set_default`: Reset the registry to the gargle default.

See Also

`token_fetch()`, which is where the registry is actually used.

Examples

```
names(cred_funs_list())

creds_one <- function(scopes, ...) {}
cred_funs_add(creds_one)
cred_funs_add(one = creds_one)
cred_funs_add(one = creds_one, two = creds_one)
cred_funs_add(one = creds_one, creds_one)

# undo all of the above and return to default
cred_funs_set_default()
```

`gargle2.0_token` *Generate a gargle token*

Description

Constructor function for objects of class `Gargle2.0`.

Usage

```
gargle2.0_token(email = gargle_oauth_email(), app = gargle_app(),
  package = "gargle", scope = NULL, user_params = NULL,
  type = NULL, use_oob = gargle_oob_default(), credentials = NULL,
  cache = if (is.null(credentials)) gargle_oauth_cache() else FALSE, ...)
```

Arguments

<code>email</code>	Optional. Allows user to target a specific Google identity. If specified, this is used for token lookup, i.e. to determine if a suitable token is already available in the cache. If no such token is found, <code>email</code> is used to pre-select the targetted Google identity in the OAuth chooser. Note, however, that the email associated with a token when it's cached is always determined from the token itself, never from this argument. Use <code>NA</code> or <code>FALSE</code> to match nothing and force the OAuth dance in the browser. Use <code>TRUE</code> to allow email auto-discovery, if exactly one matching token is found in the cache. Defaults to the option named <code>"gargle_oauth_email"</code> , retrieved by <code>gargle::gargle_oauth_email()</code> .
<code>app</code>	An OAuth consumer application, created by <code>httr::oauth_app()</code> .
<code>package</code>	Name of the package requesting a token. Used in messages.
<code>scope</code>	A character vector of scopes to request.
<code>user_params</code>	Named list holding endpoint specific parameters to pass to the server when posting the request for obtaining or refreshing the access token.
<code>type</code>	content type used to override incorrect server response
<code>use_oob</code>	Whether to prefer "out of band" authentication. Defaults to the option named <code>"gargle_oob_default"</code> , retrieved via <code>gargle::gargle_oob_default()</code> .
<code>credentials</code>	Advanced use only: allows you to completely customise token generation.
<code>cache</code>	Specifies the OAuth token cache. Defaults to the option named <code>"gargle_oauth_cache"</code> , retrieved via <code>gargle::gargle_oauth_cache()</code> .
<code>...</code>	Absorbs arguments intended for use by other credential functions. Not used.

Value

An object of class `Gargle2.0`, either new or loaded from the cache.

Examples

```
## Not run:
gargle2.0_token()

## End(Not run)
```

`gargle_app`*OAuth app for demonstration purposes*

Description

Invisibly returns an OAuth app that can be used to test drive gargle before obtaining your own client ID and secret. This OAuth app may be deleted or rotated at any time. There are no guarantees about which APIs are enabled. **DO NOT USE THIS IN A PACKAGE** or for anything other than interactive, small-scale experimentation.

You can get your own OAuth app (client ID and secret), without these limitations. See the [How to get your own API credentials](#)⁵ vignette for more details.

Usage

```
gargle_app()
```

Value

An OAuth consumer application, produced by `httr::oauth_app()`, invisibly.

Examples

```
## Not run:
gargle_app()

## End(Not run)
```

`gargle_oauth_sitrep`*OAuth token situation report*

⁵<https://gargle.r-lib.org/articles/get-api-credentials.html>

Description

Get a human-oriented overview of the existing gargle OAuth tokens:

- Filepath of the current cache
- Number of tokens found there
- Compact summary of the associated
 - Email = Google identity
 - OAuth app (actually, just its nickname)
 - Scopes
 - Hash (actually, just the first 7 characters) Mostly useful for the development of gargle and client packages.

Usage

```
gargle_oauth_sitrep(cache = NULL)
```

Arguments

`cache` Specifies the OAuth token cache. Defaults to the option named "gargle_oauth_cache", retrieved via `gargle::gargle_oauth_cache()`.

Value

A data frame with one row per cached token, invisibly.

Examples

```
gargle_oauth_sitrep()
```

`gargle_options` *Options consulted by gargle*

Description

Wrapper functions around options consulted by gargle, which provide:

- A place to hang documentation.
- The mechanism for setting a default.

If the built-in defaults don't suit you, set one or more of these options. Typically, this is done in the `.Rprofile` startup file, with code along these lines:

```
options(
  gargle_oauth_email = "jane@example.com",
  gargle_oauth_cache = "/path/to/folder/that/does/not/sync/to/cloud"
)
```

Usage

```
gargle_oauth_email()
```

```
gargle_oob_default()
```

```
gargle_oauth_cache()
```

```
gargle_quiet()
```

gargle_oauth_email

`gargle_oauth_email()` returns the option named "gargle_oauth_email", which is undefined by default. If set, this option should be one of:

- An actual email address corresponding to your preferred Google identity. Example: `janedoe@gmail.com`.
- `TRUE` to allow email and OAuth token auto-discovery, if exactly one suitable token is found in the cache.
- `FALSE` or `NA` to force the OAuth dance in the browser.

gargle_oob_default

`gargle_oob_default()` returns the option named "gargle_oob_default", defaulting to `FALSE`. This controls whether to prefer "out of band" authentication. This is ultimately passed to `httr::init_oauth2.0()` as `use_oob`. If `FALSE` (and `httpuv` is installed), a local webserver is used for the OAuth dance. Otherwise, user gets a URL and prompt for a validation code.

gargle_oauth_cache

`gargle_oauth_cache()` returns the option named "gargle_oauth_cache", defaulting to `NA`. If defined, the option must be set to a logical value or a string. `TRUE` means to cache using the default user-level cache file, `~/R/gargle/gargle-oauth`, `FALSE` means don't cache, and `NA` means to guess using some sensible heuristics.

gargle_quiet

`gargle_quiet()` returns the option named "gargle_quiet", which defaults to `TRUE`. Set this option to `FALSE` to see more info about gargle's activities, which can be helpful for troubleshooting.

Examples

```
gargle_oauth_email()
```

```
gargle_oob_default()
```

```
gargle_oauth_cache()
```

```
gargle_quiet()
```

GceToken	<i>Token for use on Google Compute Engine instances</i>
----------	---------------------------------------------------------

Description

This class uses the metadata service available on GCE VMs to fetch access tokens. Not intended for direct use. See `credentials_gce()` instead.

Usage

```
GceToken
```

Format

An object of class `R6ClassGenerator` of length 24.

<code>init_AuthState</code>	<i>Create an AuthState</i>
-----------------------------	----------------------------

Description

Constructor function for objects of class `AuthState`.

Usage

```
init_AuthState(package = NA_character_, app = NULL, api_key = NULL,
  auth_active = TRUE, cred = NULL)
```

Arguments

<code>package</code>	Package name, an optional string. The associated package will generally be implied by the namespace within which the <code>AuthState</code> is defined. But it's possible to record the package name explicitly and seems like a good practice.
<code>app</code>	Optional. An OAuth consumer application, as produced by <code>httr::oauth_app()</code> .
<code>api_key</code>	Optional. API key (a string). Some APIs accept unauthorized, "token-free" requests for public resources, but only if the request includes an API key.
<code>auth_active</code>	Logical. <code>TRUE</code> means requests should include a token (and probably not an API key). <code>FALSE</code> means requests should include an API key (and probably not a token).
<code>cred</code>	Credentials. Typically populated indirectly via <code>token_fetch()</code> .

Value

An object of class `AuthState`.

Examples

```
my_app <- httr::oauth_app(
  appname = "my_package",
  key = "keykeykeykeykeykey",
  secret = "secretsecretsecret"
)

init_AuthState(
  package = "my_package",
  app = my_app,
  api_key = "api_key_api_key_api_key",
)
```

```
oauth_app_from_json
```

Create an OAuth app from JSON

Description

Essentially a wrapper around `httr::oauth_app()` that extracts the necessary info from JSON obtained from Google Cloud Platform Console⁶. If no `appname` is given, the `"project_id"` from the JSON is used.

Usage

```
oauth_app_from_json(path, appname = NULL)
```

Arguments

<code>path</code>	JSON downloaded from Google Cloud Platform Console, containing a client id (aka key) and secret, in one of the forms supported for the <code>txt</code> argument of <code>jsonlite::fromJSON()</code> (typically, a file path or JSON string).
<code>appname</code>	name of the application. This is not used for OAuth, but is used to make it easier to identify different applications.

Examples

```
## Not run:
oauth_app(
  path = "/path/to/the/JSON/you/downloaded/from/gcp/console.json"
)

## End(Not run)
```

⁶<https://console.cloud.google.com>

request_develop *Build a Google API request*

Description

Intended primarily for internal use in client packages that provide high-level wrappers for users. The vignette Request helper functions⁷ describes how one might use these functions inside a wrapper package.

Usage

```
request_develop(endpoint, params = list(),
  base_url = "https://www.googleapis.com")

request_build(method = "GET", path = "", params = list(),
  body = list(), token = NULL, key = NULL,
  base_url = "https://www.googleapis.com")
```

Arguments

endpoint	List of information about the target endpoint or, in Google's vocabulary, the target "method". Presumably prepared from the Discovery Document ⁸ for the target API.
params	Named list. Values destined for URL substitution, the query, or, for <code>request_develop()</code> only, the body. For <code>request_build()</code> , body parameters must be passed via the <code>body</code> argument.
base_url	Character.
method	Character. An HTTP verb, such as GET or POST.
path	Character. Path to the resource, not including the API's <code>base_url</code> . Examples: <code>drive/v3/about</code> or <code>drive/v3/files/{fileId}</code> . The path can be a template, i.e. it can include variables inside curly brackets, such as <code>{fileId}</code> in the example. Such variables are substituted by <code>request_build()</code> , using named parameters found in <code>params</code> .
body	List. Values to send in the API request body.
token	Token, ready for inclusion in a request, i.e. prepared with <code>httr::config()</code> .
key	API key. Needed for requests that don't contain a token. For more, see Google's document Credentials, access, security, and identity ⁹ . A key can be passed as a named component of <code>params</code> , but note that the formal argument <code>key</code> will clobber it, if non-NULL.

⁷<https://gargle.r-lib.org/articles/request-helper-functions.html>

⁸https://developers.google.com/discovery/v1/getting_started#background-resources

⁹https://support.google.com/googleapi/answer/6158857?hl=en&ref_topic=7013279

Value

`request_develop()`: list () with components `method`, `path`, `params`, `body`, and `base_url`.

`request_build()`: list () with components `method`, `path` (post-substitution), `query` (the input `params` not used in URL substitution), `body`, `token`, `url` (the full URL, post-substitution, including the query).

`request_develop()`

Combines user input (`params`) with information about an API endpoint. `endpoint` should contain these components:

- `path`: See documentation for argument.
- `method`: See documentation for argument.
- `parameters`: Compared with `params` supplied by user. An error is thrown if user-supplied `params` aren't named in `endpoint$parameters` or if user fails to supply all required parameters. In the return value, `body` parameters are separated from those destined for path substitution or the query.

The return value is typically used as input to `request_build()`.

`request_build()`

Builds a request, in a purely mechanical sense. This function does nothing specific to any particular Google API or endpoint.

- Use with the output of `request_develop()` or with hand-crafted input.
- `params` are used for variable substitution in `path`. Leftover `params` that are not bound by the `path` template automatically become HTTP query parameters.
- Adds an API key to the query iff `token = NULL` and removes the API key otherwise. Client packages should generally pass their own API key in, but note that `gargle_api_key()` is available for small-scale experimentation.

See `googledrive::generate_request()` for an example of usage in a client package. `googledrive` has an internal list of selected endpoints, derived from the Drive API Discovery Document¹⁰, exposed via `googledrive::drive_endpoints()`. An element from such a list is the expected input for `endpoint`. `googledrive::generate_request()` is a wrapper around `request_develop()` and `request_build()` that inserts a `googledrive`-managed API key and some logic about Team Drives. All user-facing functions use `googledrive::generate_request()` under the hood.

See Also

Other requests and responses: `request_make`, `response_process`

¹⁰<https://www.googleapis.com/discovery/v1/apis/drive/v3/rest>

Examples

```
## Not run:
## Example with a prepared endpoint
ept <- googledrive::drive_endpoints("drive.files.update")[[1]]
req <- request_develop(
  ept,
  params = list(
    fileId = "abc",
    addParents = "123",
    description = "Exciting File"
  )
)
req

req <- request_build(
  method = req$method,
  path = req$path,
  params = req$params,
  body = req$body,
  token = "PRETEND_I_AM_A_TOKEN"
)
req

## Example with no previous knowledge of the endpoint
## List a file's comments
## https://developers.google.com/drive/v3/reference/comments/list
req <- request_build(
  method = "GET",
  path = "drive/v3/files/{fileId}/comments",
  params = list(
    fileId = "your-file-id-goes-here",
    fields = "*"
  ),
  token = "PRETEND_I_AM_A_TOKEN"
)
req

# Example with no previous knowledge of the endpoint and no token
# use an API key for which the Places API is enabled!
API_KEY <- "1234567890"

# get restaurants close to a location in Vancouver, BC
req <- request_build(
  method = "GET",
  path = "maps/api/place/nearbysearch/json",
  params = list(
    location = "49.268682,-123.167117",
    radius = 100,
    type = "restaurant"
  ),
  key = API_KEY,
  base_url = "https://maps.googleapis.com"
```

```

)
resp <- request_make(req)
out <- response_process(resp)
vapply(out$results, function(x) x$name, character(1))

## End(Not run)

```

request_make *Make a Google API request*

Description

Intended primarily for internal use in client packages that provide high-level wrappers for users. `request_make()` does very little: calls an HTTP method, only adding a user agent. Typically the input is created with `request_build()` and the output is processed with `response_process()`.

Usage

```
request_make(x, ..., user_agent = gargle_user_agent())
```

Arguments

<code>x</code>	List. Holds the components for an HTTP request, presumably created with <code>request_develop()</code> or <code>request_build()</code> . Must contain a method and url. If present, body and token are used.
<code>...</code>	Optional arguments passed through to the HTTP method.
<code>user_agent</code>	A user agent string, prepared by <code>httr::user_agent()</code> . When in doubt, a client package should have an internal function that extends <code>gargle_user_agent()</code> by prepending its return value with the client package's name and version.

Value

Object of class `response` from `httr`.

See Also

Other requests and responses: `request_develop`, `response_process`

Examples

```

## Not run:
req <- gargle::request_build(
  method = "GET",
  path = "path/to/the/resource",
  token = "PRETEND_I_AM_TOKEN"
)
gargle::request_make(req)

## End(Not run)

```

response_process *Process a Google API response*

Description

`response_process()` is intended primarily for internal use in client packages that provide high-level wrappers for users. Typically applied as the final step in this sequence of calls:

- Request prepared with `request_build()`.
- Request made with `request_make()`.
- Response processed with `response_process()`.

All that's needed for a successful request is to parse the JSON extracted via `httr::content()`. Therefore, the main point of `response_process()` is to handle less happy outcomes:

- Status codes in the 400s (client error) and 500s (server error). The structure of the error payload varies across Google APIs and we try to create a useful message for all variants we know about.
- Non-JSON content type, such as HTML.
- Status code in the 100s (information) or 300s (redirection). These are unexpected.

Usage

```
response_process(resp, error_message = gargle_error_message)
```

```
response_as_json(resp)
```

```
gargle_error_message(resp)
```

Arguments

<code>resp</code>	Object of class <code>response</code> from <code>httr</code> .
<code>error_message</code>	Function that produces an informative error message from the primary input, <code>resp</code> . It must return a character vector.

Details

If `process_response()` results in an error, a redacted version of the `resp` input is returned in the condition (auth tokens are removed). Use functions such as `rlang::last_error()` or `rlang::catch_cnd()` to capture the condition and do a more detailed forensic examination.

The `response_as_json()` helper is exported only as an aid to maintainers who wish to use their own `error_message` function, instead of gargle's built-in `gargle_error_message()`. When implementing a custom `error_message` function, call `response_as_json()` immediately on the input in order to inherit gargle's handling of non-JSON input.

Value

The content of the request, as a list. An HTTP status code of 204 (No content) is a special case returning TRUE.

See Also

Other requests and responses: `request_develop`, `request_make`

Examples

```
## Not run:
# get an OAuth2 token with 'userinfo.email' scope
token <- token_fetch(scopes = "https://www.googleapis.com/auth/userinfo.email")

# see the email associated with this token
req <- gargle::request_build(
  method = "GET",
  path = "v1/userinfo",
  token = token,
  base_url = "https://openidconnect.googleapis.com"
)
resp <- gargle::request_make(req)
response_process(resp)

# make a bad request (this token has incorrect scope)
req <- gargle::request_build(
  method = "GET",
  path = "fitness/v1/users/{userId}/dataSources",
  token = token,
  params = list(userId = 12345)
)
resp <- gargle::request_make(req)
response_process(resp)

## End(Not run)
```

token-info

Get info from a token

Description

These functions send the `token` to Google endpoints that return info about a token or a user.

Usage

```
token_userinfo(token)
```

```
token_email(token)
```

```
token_tokeninfo(token)
```

Arguments

`token` A token with class `Token2.0` or an object of `httr`'s class `request`, i.e. a token that has been prepared with `httr::config()` and has a `Token2.0` in the `auth_token` component.

Details

It's hard to say exactly what info will be returned by the "userinfo" endpoint targetted by `token_userinfo()`. It depends on the token's scopes. OAuth2 tokens obtained via the `gargle` package include the `https://www.googleapis.com/auth/userinfo.email` scope, which guarantees we can learn the email associated with the token. If the token has the `https://www.googleapis.com/auth/userinfo` scope, there will be even more information available. But for a token with unknown or arbitrary scopes, we can't make any promises about what information will be returned.

Value

A list containing:

- `token_userinfo()`: user info
- `token_email()`: user's email (obtained from a call to `token_userinfo()`)
- `token_tokeninfo()`: token info

Examples

```
## Not run:
# with service account token
t <- token_fetch(
  scopes = "https://www.googleapis.com/auth/drive",
  path   = "path/to/service/account/token/blah-blah-blah.json"
)
# or with an OAuth token
t <- token_fetch(
  scopes = "https://www.googleapis.com/auth/drive",
  email  = "janedoe@example.com"
)
token_userinfo(t)
token_email(t)
tokens_tokeninfo(t)

## End(Not run)
```

token_fetch

Fetch a token for the given scopes

Description

This is a rather magical function that calls a series of concrete credential-fetching functions, each wrapped in a `tryCatch()`. `token_fetch()` keeps trying until it succeeds or there are no more functions to try. Use `cred_funs_list()` to see the current registry, in order. See the vignette [How gargle gets tokens](#)¹¹ for a full description of `token_fetch()`.

Usage

```
token_fetch(scopes = NULL, ...)
```

Arguments

<code>scopes</code>	A character vector of scopes to request. Pick from those listed at https://developers.google.com/identity/protocols/googlescopes . For certain token flows, the <code>"https://www.googleapis.com/auth/userinfo.email"</code> scope is unconditionally included. This grants permission to retrieve the email address associated with a token; gargle uses this to index cached OAuth tokens. This grants no permission to view or send email. It is considered a low value scope and does not appear on the consent screen.
<code>...</code>	Additional arguments passed to all credential functions.

Value

An `httr::Token` or `NULL`.

See Also

Other credential functions: `credentials_app_default`, `credentials_byo_oauth2`, `credentials_gce`, `credentials_service_account`, `credentials_user_oauth2`

Examples

```
## Not run:
token_fetch(scopes = "https://www.googleapis.com/auth/userinfo.email")

## End(Not run)
```

¹¹<https://gargle.r-lib.org/articles/how-gargle-gets-tokens.html>