Package 'targets'

May 8, 2025

Title Dynamic Function-Oriented 'Make'-Like Declarative Pipelines

Description Pipeline tools coordinate the pieces of computationally
demanding analysis projects.
The 'targets' package is a 'Make'-like pipeline tool for statistics and
data science in R. The package skips costly runtime for tasks
that are already up to date,
orchestrates the necessary computation with implicit parallel computing,
and abstracts files as R objects. If all the current output matches
the current upstream code and data, then the whole pipeline is up
to date, and the results are more trustworthy than otherwise.
The methodology in this package
borrows from GNU 'Make' (2015, ISBN:978-9881443519)
and 'drake' (2018, <doi:10.21105/joss.00550>).

Version 1.11.3

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URL https://docs.ropensci.org/targets/,
https://github.com/ropensci/targets

BugReports https://github.com/ropensci/targets/issues

Depends R (>= 3.5.0)

Imports base64url (>= 1.4), callr (>= 3.7.0), cli (>= 2.0.2),
codetools (>= 0.2.16), data.table (>= 1.12.8), igraph (>=
2.0.0), knitr (>= 1.34), prettyunits (>= 1.1.0), ps (>= 1.8.0),
R6 (>= 2.4.1), rlang (>= 1.0.0), secretbase (>= 0.5.0), stats,
tibble (>= 3.0.1), tidyselect (>= 1.1.0), tools, utils, vctrs
(>= 0.2.4), yaml (>= 2.2.1)

Suggests autometric (>= 0.1.0), bslib, clustermq (>= 0.9.2), crew (>=
0.9.0), curl (>= 4.3), DT (>= 0.14), dplyr (>= 1.0.0), fst (>=
0.9.2), future (>= 1.19.1), future.batchtools (>= 0.9.0),
future.callr (>= 0.6.0), gargle (>= 1.2.0), googleCloudStorageR
(>= 0.7.0), gt (>= 0.2.2), keras (>= 2.2.5.0), markdown (>=
1.1), nanonext (>= 0.12.0), rmarkdown (>= 2.4), parallelly (>=
1.35.0), paws.common (>= 0.6.4), paws.storage (>= 0.4.0),
pkgload (>= 1.1.0), processx (>= 3.4.3), qs2, reprex (>=

Contents

targets-package	*targets: Dynamic Function-Oriented Make-Like Declarative Pipelines for R*

Description

A pipeline toolkit for Statistics and data science in R, the `targets` package brings function-oriented programming to Make-like declarative pipelines. `targets` orchestrates a pipeline as a graph of dependencies, skips steps that are already up to date, runs the necessary computations with optional parallel workers, abstracts files as R objects, and provides tangible evidence that the results are reproducible given the underlying code and data. The methodology in this package borrows from GNU Make (2015, ISBN:978-9881443519) and drake (2018, doi:10.21105/joss.00550).

See Also

Other help: tar_reprex(), use_targets(), use_targets_rmd()

tar_active	*Show if the pipeline is running.*

Description

Return TRUE if called in a target or _targets.R and the pipeline is running.

Usage

```
tar_active()
```

Value

Logical of length 1, TRUE if called in a target or _targets.R and the pipeline is running (FALSE otherwise).

See Also

Other utilities: tar_backoff(), tar_call(), tar_cancel(), tar_definition(), tar_described_as(),
tar_envir(), tar_format_get(), tar_group(), tar_name(), tar_path(), tar_path_script(),
tar_path_script_support(), tar_path_store(), tar_path_target(), tar_source(), tar_store(),
tar_unblock_process()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_active() # FALSE
tar_script({
  library(targets)
  library(tarchetypes)
  message("Pipeline running? ", tar_active())
  tar_target(x, tar_active())
})
tar_manifest() # prints "Pipeline running? FALSE"
tar_make() # prints "pipeline running? TRUE"
tar_read(x) # TRUE
})
}
```

---

tar_assert   *Assertions*

Description

These functions assert the correctness of user inputs and generate custom error conditions as needed.
Useful for writing packages built on top of targets.

Usage

```
tar_assert_chr(x, msg = NULL)

tar_assert_dbl(x, msg = NULL)

tar_assert_df(x, msg = NULL)

tar_assert_equal_lengths(x, msg = NULL)

tar_assert_envir(x, msg = NULL)

tar_assert_expr(x, msg = NULL)

tar_assert_flag(x, choices, msg = NULL)

tar_assert_file(x)
```

```
tar_assert_finite(x, msg = NULL)

tar_assert_function(x, msg = NULL)

tar_assert_function_arguments(x, args, msg = NULL)

tar_assert_ge(x, threshold, msg = NULL)

tar_assert_identical(x, y, msg = NULL)

tar_assert_in(x, choices, msg = NULL)

tar_assert_not_dirs(x, msg = NULL)

tar_assert_not_dir(x, msg = NULL)

tar_assert_not_in(x, choices, msg = NULL)

tar_assert_inherits(x, class, msg = NULL)

tar_assert_int(x, msg = NULL)

tar_assert_internet(msg = NULL)

tar_assert_lang(x, msg = NULL)

tar_assert_le(x, threshold, msg = NULL)

tar_assert_list(x, msg = NULL)

tar_assert_lgl(x, msg = NULL)

tar_assert_name(x)

tar_assert_named(x, msg = NULL)

tar_assert_names(x, msg = NULL)

tar_assert_nonempty(x, msg = NULL)

tar_assert_null(x, msg = NULL)

tar_assert_not_expr(x, msg = NULL)

tar_assert_nzchar(x, msg = NULL)

tar_assert_package(package, msg = NULL)
```

```
tar_assert_path(path, msg = NULL)

tar_assert_match(x, pattern, msg = NULL)

tar_assert_nonmissing(x, msg = NULL)

tar_assert_positive(x, msg = NULL)

tar_assert_scalar(x, msg = NULL)

tar_assert_store(store)

tar_assert_target(x, msg = NULL)

tar_assert_target_list(x)

tar_assert_true(x, msg = NULL)

tar_assert_unique(x, msg = NULL)

tar_assert_unique_targets(x)
```

Arguments

x	R object, input to be validated. The kind of object depends on the specific assertion function called.
msg	Character of length 1, a message to be printed to the console if x is invalid.
choices	Character vector of choices of x for certain assertions.
args	Character vector of expected function argument names. Order matters.
threshold	Numeric of length 1, lower/upper bound for assertions like tar_assert_le()/tar_assert_ge().
y	R object, value to compare against x.
class	Character vector of expected class names.
package	Character of length 1, name of an R package.
path	Character, file path.
pattern	Character of length 1, a grep pattern for certain assertions.
store	Character of length 1, path to the data store of the pipeline.

See Also

Other utilities to extend targets: [tar_condition](), [tar_language](), [tar_test]()

Examples

```
tar_assert_chr("123")
try(tar_assert_chr(123))
```

---

tar_backoff   *Superseded: exponential backoff*

Description

Superseded: configure exponential backoff while polling for tasks during the pipeline.

Usage

```
tar_backoff(min = 0.001, max = 0.1, rate = 1.5)
```

Arguments

min
: Positive numeric of length 1, minimum polling interval in seconds. Must be at least sqrt(.Machine$double.eps).

max
: Positive numeric of length 1, maximum polling interval in seconds. Must be at least sqrt(.Machine$double.eps).

rate
: Positive numeric of length 1, greater than or equal to 1. Multiplicative rate parameter that allows the exponential backoff minimum polling interval to increase from min to max. Actual polling intervals are sampled uniformly from the current minimum to max.

Details

This function is superseded and is now only relevant to other superseded functions tar_make_clustermq() and tar_make_future(). tar_make() uses crew in an efficient non-polling way, making exponential backoff unnecessary.

Backoff

In high-performance computing it can be expensive to repeatedly poll the priority queue if no targets are ready to process. The number of seconds between polls is runif(1, min, max(max, min * rate ^ index)), where index is the number of consecutive polls so far that found no targets ready to skip or run, and min, max, and rate are arguments to tar_backoff(). (If no target is ready, index goes up by 1. If a target is ready, index resets to 0. For more information on exponential, backoff, visit https://en.wikipedia.org/wiki/Exponential_backoff). Raising min or max is kinder to the CPU etc. but may incur delays in some instances.

See Also

Other utilities: tar_active(), tar_call(), tar_cancel(), tar_definition(), tar_described_as(), tar_envir(), tar_format_get(), tar_group(), tar_name(), tar_path(), tar_path_script(), tar_path_script_support(), tar_path_store(), tar_path_target(), tar_source(), tar_store(), tar_unblock_process()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_option_set(backoff = tar_backoff(min = 0.001, max = 0.1, rate = 1.5))
})
}
```

---

tar_branches   *Reconstruct the branch names and the names of their dependencies.*

Description

Given a branching pattern, use available metadata to reconstruct branch names and the names of
each branch's dependencies. The metadata of each target must already exist and be consistent with
the metadata of the other targets involved.

Usage

```
tar_branches(
  name,
  pattern = NULL,
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

name   Symbol, name of the target.

pattern   Language to define branching for a target (just like in [tar_target()](#)) or NULL
                to get the pattern from the targets pipeline script specified in the script argu-
                ment (default: _targets.R).

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
                which in turn defaults to _targets.R. When you set this argument, the value of
                tar_config_get("script") is temporarily changed for the current function
                call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for de-
                tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                which in turn defaults to _targets/. When you set this argument, the value
                of tar_config_get("store") is temporarily changed for the current function
                call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                set the data store path persistently for a project.

Details

The results from this function can help you retroactively figure out correspondences between upstream branches and downstream branches. However, it does not always correctly predict what the names of the branches will be after the next run of the pipeline. Dynamic branching happens while the pipeline is running, so we cannot always know what the names of the branches will be in advance (or even how many there will be).

Value

A `tibble` with one row per branch and one column for each target (including the branched-over targets and the target with the pattern.)

See Also

Other branching: `tar_branch_index()`, `tar_branch_names()`, `tar_pattern()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, head(letters, 2)),
    tar_target(z, head(LETTERS, 2)),
    tar_target(dynamic, c(x, y, z), pattern = cross(z, map(x, y)))
  )
}, ask = FALSE)
tar_make()
tar_branches(dynamic)
tar_branches(dynamic, pattern = cross(z, map(x, y)))
})
}
```

---

tar_branch_index   *Integer branch indexes*

Description

Get the integer indexes of individual branch names within their corresponding dynamic branching targets.

Usage

```
tar_branch_index(names, store = targets::tar_config_get("store"))
```

Arguments

names   Character vector of branch names.

store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`,
               which in turn defaults to _targets/. When you set this argument, the value
               of `tar_config_get("store")` is temporarily changed for the current function
               call. See `tar_config_get()` and `tar_config_set()` for details about how to
               set the data store path persistently for a project.

Value

A named integer vector of branch indexes.

See Also

Other branching: `tar_branch_names()`, `tar_branches()`, `tar_pattern()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(4)),
    tar_target(y, 2 * x, pattern = map(x)),
    tar_target(z, y, pattern = map(y))
  )
}, ask = FALSE)
tar_make()
names <- c(
  tar_meta(y, children)$children[[1]][c(2, 3)],
  tar_meta(z, children)$children[[1]][2]
)
names
tar_branch_index(names) # c(2, 3, 2)
})
}
```

---

tar_branch_names   *Branch names*

Description

Get the branch names of a dynamic branching target using numeric indexes. `tar_branch_names()`
expects an unevaluated symbol for the name argument, whereas `tar_branch_names_raw()` expects
a character string for name.

Usage

```
tar_branch_names(name, index, store = targets::tar_config_get("store"))

tar_branch_names_raw(name, index, store = targets::tar_config_get("store"))
```

Arguments

name   Name of the dynamic branching target. `tar_branch_names()` expects an un-
                evaluated symbol for the name argument, whereas `tar_branch_names_raw()`
                expects a character string for name.

index   Integer vector of branch indexes.

store   Character string, directory path to the `targets` data store of the pipeline.

Value

A character vector of branch names.

See Also

Other branching: `tar_branch_index()`, `tar_branches()`, `tar_pattern()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(4)),
    tar_target(y, 2 * x, pattern = map(x)),
    tar_target(z, y, pattern = map(y))
  )
}, ask = FALSE)
tar_make()
tar_branch_names(z, c(2, 3))
})
}
```

---

tar_call   *Identify the called* targets *function.*

Description

Get the name of the currently running `targets` interface function. Returns NULL if not invoked
inside a target or _targets.R (i.e. if not directly invoked by `tar_make()`, `tar_visnetwork()`,
etc.).

Usage

```
tar_call()
```

Value

Character of length 1, name of the currently running `targets` interface function. For example, suppose you have a call to `tar_call()` inside a target or `_targets.R`. Then if you run `tar_make()`, `tar_call()` will return `"tar_make"`.

See Also

Other utilities: `tar_active()`, `tar_backoff()`, `tar_cancel()`, `tar_definition()`, `tar_described_as()`, `tar_envir()`, `tar_format_get()`, `tar_group()`, `tar_name()`, `tar_path()`, `tar_path_script()`, `tar_path_script_support()`, `tar_path_store()`, `tar_path_target()`, `tar_source()`, `tar_store()`, `tar_unblock_process()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_call() # NULL
tar_script({
  library(targets)
  library(tarchetypes)
  message("called function: ", tar_call())
  tar_target(x, tar_call())
})
tar_manifest() # prints "called function: tar_manifest"
tar_make() # prints "called function: tar_make"
tar_read(x) # "tar_make"
})
}
```

---

tar_cancel   *Cancel a target mid-execution under a custom condition.*

Description

Cancel a target while its command is running if a condition is met.

Usage

```
tar_cancel(condition = TRUE)
```

Arguments

condition   Logical of length 1, whether to cancel the target.

Details

Must be invoked by the target itself. tar_cancel() cannot interrupt a target from another process.

See Also

Other utilities: tar_active(), tar_backoff(), tar_call(), tar_definition(), tar_described_as(),
tar_envir(), tar_format_get(), tar_group(), tar_name(), tar_path(), tar_path_script(),
tar_path_script_support(), tar_path_store(), tar_path_target(), tar_source(), tar_store(),
tar_unblock_process()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(tar_target(x, tar_cancel(1 > 0)))
tar_make() # Should cancel target x.
})
}
```

---

tar_canceled   *List canceled targets.*

Description

List targets whose progress is "canceled".

Usage

```
tar_canceled(names = NULL, store = targets::tar_config_get("store"))
```

Arguments

names   Optional, names of the targets. If supplied, the output is restricted to the selected
               targets. The object supplied to names should be NULL or a tidyselect expres-
               sion like any_of() or starts_with() from tidyselect itself, or tar_described_as()
               to select target names based on their descriptions.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
               which in turn defaults to _targets/. When you set this argument, the value
               of tar_config_get("store") is temporarily changed for the current function
               call. See tar_config_get() and tar_config_set() for details about how to
               set the data store path persistently for a project.

Value

A character vector of canceled targets.

See Also

Other progress: `tar_completed()`, `tar_dispatched()`, `tar_errored()`, `tar_poll()`, `tar_progress()`,
`tar_progress_branches()`, `tar_progress_summary()`, `tar_skipped()`, `tar_watch()`, `tar_watch_server()`,
`tar_watch_ui()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
tar_canceled()
tar_canceled(starts_with("y_")) # see also any_of()
})
}
```

   `tar_completed`   *List completed targets.*

Description

List targets whose progress is `"completed"`.

Usage

```
tar_completed(names = NULL, store = targets::tar_config_get("store"))
```

Arguments

`names`	Optional, names of the targets. If supplied, the output is restricted to the selected targets. The object supplied to names should be NULL or a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.
`store`	Character of length 1, path to the `targets` data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

Value

A character vector of completed targets.

See Also

Other progress: [tar_canceled()](), [tar_dispatched()](), [tar_errored()](), [tar_poll()](), [tar_progress()](),
[tar_progress_branches()](), [tar_progress_summary()](), [tar_skipped()](), [tar_watch()](), [tar_watch_server()](),
[tar_watch_ui()]()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
tar_completed()
tar_completed(starts_with("y_")) # see also any_of()
})
}
```

---

tar_condition   *Conditions*

Description

These functions throw custom `targets`-specific error conditions. Useful for error handling in packages built on top of `targets`.

Usage

```
tar_message_run(...)

tar_throw_file(...)

tar_throw_run(..., class = character(0))

tar_throw_validate(...)

tar_warn_deprecate(...)

tar_warn_run(...)

tar_warn_validate(...)

tar_message_validate(...)
```

```
tar_print(...)

tar_error(message, class)

tar_warning(message, class)

tar_message(message, class)
```

Arguments

...	zero or more objects which can be coerced to character (and which are pasted together with no separator) or a single condition object.
class	Character vector of S3 classes of the message.
message	Character of length 1, text of the message.

See Also

Other utilities to extend targets: `tar_assert`, `tar_language`, `tar_test()`

Examples

```
try(tar_throw_validate("something is not valid"))
```

---

tar_config_get	*Get configuration settings.*

Description

Read the custom settings for the current project in the optional YAML configuration file.

Usage

```
tar_config_get(
  name,
  config = Sys.getenv("TAR_CONFIG", "_targets.yaml"),
  project = Sys.getenv("TAR_PROJECT", "main")
)
```

Arguments

name	Character of length 1, name of the specific configuration setting to retrieve.
config	Character of length 1, file path of the YAML configuration file with `targets` project settings. The `config` argument specifies which YAML configuration file that `tar_config_get()` reads from or `tar_config_set()` writes to in a single function call. It does not globally change which configuration file is used in subsequent function calls. The default file path of the YAML file is always

_targets.yaml unless you set another default path using the TAR_CONFIG environment variable, e.g. Sys.setenv(TAR_CONFIG = "custom.yaml"). This also has the effect of temporarily modifying the default arguments to other functions such as [tar_make()](#) because the default arguments to those functions are controlled by tar_config_get().

project   Character of length 1, name of the current targets project. Thanks to the config R package, targets YAML configuration files can store multiple sets of configuration settings, with each set corresponding to its own project. The project argument allows you to set or get a configuration setting for a specific project for a given call to tar_config_set() or tar_config_get(). The default project is always called "main" unless you set another default project using the TAR_PROJECT environment variable, e.g. Sys.setenv(tar_project = "custom"). This also has the effect of temporarily modifying the default arguments to other functions such as [tar_make()](#) because the default arguments to those functions are controlled by tar_config_get().

Value

The value of the configuration setting from the YAML configuration file (default: _targets.yaml) or the default value if the setting is not available. The data type of the return value depends on your choice of name.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

Configuration

For several key functions like [tar_make()](#), the default values of arguments are controlled though tar_config_get(). tar_config_get() retrieves data from an optional YAML configuration file. You can control the settings in the YAML file programmatically with tar_config_set(). The default file path of this YAML file is _targets.yaml, and you can set another path globally using the TAR_CONFIG environment variable. The YAML file can store configuration settings for multiple projects, and you can globally set the default project with the TAR_PROJECT environment variable. The structure of the YAML file follows rules similar to the config R package, e.g. projects can inherit settings from one another using the inherits field. Exceptions include:

1. There is no requirement to have a configuration named "default".

2. Other projects do not inherit from the default project' automatically.

3. Not all fields need values because targets already has defaults.

targets does not actually invoke the config package. The implementation in targets was written from scratch without viewing or copying any part of the source code of config.

See Also

Other configuration: tar_config_projects(), tar_config_set(), tar_config_unset(), tar_config_yaml(),
tar_envvars(), tar_option_get(), tar_option_reset(), tar_option_set(), tar_option_with()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(list(tar_target(x, 1 + 1)))
tar_config_get("store") # "_targets"
store_path <- tempfile()
tar_config_set(store = store_path)
tar_config_get("store") # Shows a temp file.
tar_make() # Writes to the custom data store identified in _targets.yaml.
tar_read(x) # tar_read() knows about _targets.yaml too.
file.exists("_targets") # FALSE
file.exists(store_path) # TRUE
})
}
```

---

tar_config_projects   *List projects.*

Description

List the names of projects defined in _targets.yaml.

Usage

```
tar_config_projects(config = Sys.getenv("TAR_CONFIG", "_targets.yaml"))
```

Arguments

config   Character of length 1, file path of the YAML configuration file with targets
                  project settings. The config argument specifies which YAML configuration file
                  that tar_config_get() reads from or tar_config_set() writes to in a sin-
                  gle function call. It does not globally change which configuration file is used
                  in subsequent function calls. The default file path of the YAML file is always
                  _targets.yaml unless you set another default path using the TAR_CONFIG envi-
                  ronment variable, e.g. Sys.setenv(TAR_CONFIG = "custom.yaml"). This also
                  has the effect of temporarily modifying the default arguments to other functions
                  such as tar_make() because the default arguments to those functions are con-
                  trolled by tar_config_get().

Value

Character vector of names of projects defined in _targets.yaml.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

Configuration

For several key functions like [tar_make()](), the default values of arguments are controlled though tar_config_get(). tar_config_get() retrieves data from an optional YAML configuration file. You can control the settings in the YAML file programmatically with tar_config_set(). The default file path of this YAML file is _targets.yaml, and you can set another path globally using the TAR_CONFIG environment variable. The YAML file can store configuration settings for multiple projects, and you can globally set the default project with the TAR_PROJECT environment variable. The structure of the YAML file follows rules similar to the config R package, e.g. projects can inherit settings from one another using the inherits field. Exceptions include:

1. There is no requirement to have a configuration named "default".

2. Other projects do not inherit from the default project' automatically.

3. Not all fields need values because targets already has defaults.

targets does not actually invoke the config package. The implementation in targets was written from scratch without viewing or copying any part of the source code of config.

See Also

Other configuration: [tar_config_get](), [tar_config_set](), [tar_config_unset](), [tar_config_yaml](), [tar_envvars](), [tar_option_get](), [tar_option_reset](), [tar_option_set](), [tar_option_with]()

Examples

```
yaml <- tempfile()
tar_config_set(store = "my_store_a", config = yaml, project = "project_a")
tar_config_set(store = "my_store_b", config = yaml, project = "project_b")
tar_config_projects(config = yaml)
```

---

tar_config_set   *Set configuration settings.*

Description

tar_config_set() writes special custom settings for the current project to an optional YAML configuration file.

Usage

```
tar_config_set(
  inherits = NULL,
  as_job = NULL,
  garbage_collection = NULL,
  label = NULL,
  label_width = NULL,
  level_separation = NULL,
  reporter_make = NULL,
  reporter_outdated = NULL,
  script = NULL,
  seconds_meta_append = NULL,
  seconds_meta_upload = NULL,
  seconds_reporter = NULL,
  seconds_reporter_outdated = NULL,
  seconds_interval = NULL,
  store = NULL,
  shortcut = NULL,
  use_crew = NULL,
  workers = NULL,
  config = Sys.getenv("TAR_CONFIG", "_targets.yaml"),
  project = Sys.getenv("TAR_PROJECT", "main")
)
```

Arguments

inherits   Character of length 1, name of the project from which the current project should
                    inherit configuration settings. The current project is the project argument,
                    which defaults to Sys.getenv("TAR_PROJECT", "main"). If the inherits ar-
                    gument NULL, the inherits setting is not modified. Use `tar_config_unset()`
                    to delete a setting.

as_job   Logical of length 1, as_job argument of `tar_make()`. TRUE to run as an RStudio
                    IDE / Posit Workbench job, FALSE to run as a callr process in the main R
                    session (depending on the callr_function argument). If as_job_ is TRUE,
                    then the rstudioapi package must be installed.

garbage_collection
                    Deprecated. Use the garbage_collection argument of `tar_option_set()`
                    instead to run garbage collection at regular intervals in a pipeline, or use the
                    argument of the same name in `tar_target()` to activate garbage collection for
                    a specific target.

label   Argument of `tar_glimpse()` and `tar_visnetwork()` to control node labels.

label_width   Argument of `tar_glimpse()` and `tar_visnetwork()` to control the maximum
                    width (number of characters wide) of the node labels.

level_separation
                    Argument of `tar_visnetwork()` and `tar_glimpse()` to control the space be-
                    tween hierarchical levels.

reporter_make   Character of length 1, reporter argument to `tar_make()` and related functions
                 that run the pipeline. If the argument NULL, the setting is not modified. Use
                 `tar_config_unset()` to delete a setting.

reporter_outdated

                 Character of length 1, reporter argument to `tar_outdated()` and related func-
                 tions that do not run the pipeline. If the argument NULL, the setting is not modi-
                 fied. Use `tar_config_unset()` to delete a setting.

script   Character of length 1, path to the target script file that defines the pipeline
                 (`_targets.R` by default). This path should be either an absolute path or a path
                 relative to the project root where you will call `tar_make()` and other functions.
                 When `tar_make()` and friends run the script from the current working directory.
                 If the argument NULL, the setting is not modified. Use `tar_config_unset()` to
                 delete a setting.

seconds_meta_append

                 Argument of `tar_make()`, `tar_make_clustermq()`, and `tar_make_future()`.
                 Positive numeric of length 1 with the minimum number of seconds between
                 saves to the local metadata and progress files in the data store. This is an aggres-
                 sive optimization setting not recommended for most users: higher values might
                 make the pipeline run faster, but unsaved work (in the event of a crash) is not up
                 to date.

                 When the pipeline ends, all the metadata and progress data is saved immediately,
                 regardless of seconds_meta_append. When the pipeline is just skipping targets,
                 the actual interval between saves is `max(1, seconds_meta_append)` to reduce
                 overhead.

seconds_meta_upload

                 Argument of `tar_make()`, `tar_make_clustermq()`, and `tar_make_future()`.
                 Positive numeric of length 1 with the minimum number of seconds between
                 uploads of the metadata and progress data to the cloud (see `https://books.`
                 `ropensci.org/targets/cloud-storage.html`). Higher values generally make
                 the pipeline run faster, but unsaved work (in the event of a crash) may not be
                 backed up to the cloud. When the pipeline ends, all the metadata and progress
                 data is uploaded immediately, regardless of seconds_meta_upload.

seconds_reporter

                 Deprecated in `targets` 1.10.1.9010 (2025-03-31).

seconds_reporter_outdated

                 Deprecated in `targets` 1.10.1.9010 (2025-03-31).

seconds_interval

                 Deprecated on 2023-08-24 (`targets` version 1.2.2.9001). Use seconds_meta_append,
                 seconds_meta_upload, and seconds_reporter instead.

store   Character of length 1, path to the data store of the pipeline. If NULL, the `store`
                 setting is left unchanged in the YAML configuration file (default: `_targets.yaml`).
                 Usually, the data store lives at `_targets`. Set `store` to a custom directory to
                 specify a path other than `_targets/`. The path need not exist before the pipeline
                 begins, and it need not end with "_targets", but it must be writeable. For opti-
                 mal performance, choose a storage location with fast read/write access. If the
                 argument NULL, the setting is not modified. Use `tar_config_unset()` to delete
                 a setting.

shortcut	logical of length 1, default shortcut argument to tar_make() and related functions. If the argument NULL, the setting is not modified. Use tar_config_unset() to delete a setting.
use_crew	Logical of length 1, whether to use crew in tar_make() if the controller option is set in tar_option_set() in the target script (_targets.R). See https://books.ropensci.org/targets/crew.html for details.
workers	Positive numeric of length 1, workers argument of tar_make_clustermq() and related functions that run the pipeline with parallel computing among targets. If the argument NULL, the setting is not modified. Use tar_config_unset() to delete a setting.
config	Character of length 1, file path of the YAML configuration file with targets project settings. The config argument specifies which YAML configuration file that tar_config_get() reads from or tar_config_set() writes to in a single function call. It does not globally change which configuration file is used in subsequent function calls. The default file path of the YAML file is always _targets.yaml unless you set another default path using the TAR_CONFIG environment variable, e.g. Sys.setenv(TAR_CONFIG = "custom.yaml"). This also has the effect of temporarily modifying the default arguments to other functions such as tar_make() because the default arguments to those functions are controlled by tar_config_get().
project	Character of length 1, name of the current targets project. Thanks to the config R package, targets YAML configuration files can store multiple sets of configuration settings, with each set corresponding to its own project. The project argument allows you to set or get a configuration setting for a specific project for a given call to tar_config_set() or tar_config_get(). The default project is always called "main" unless you set another default project using the TAR_PROJECT environment variable, e.g. Sys.setenv(tar_project = "custom"). This also has the effect of temporarily modifying the default arguments to other functions such as tar_make() because the default arguments to those functions are controlled by tar_config_get().

Value

NULL (invisibly)

Configuration

For several key functions like tar_make(), the default values of arguments are controlled though tar_config_get(). tar_config_get() retrieves data from an optional YAML configuration file. You can control the settings in the YAML file programmatically with tar_config_set(). The default file path of this YAML file is _targets.yaml, and you can set another path globally using the TAR_CONFIG environment variable. The YAML file can store configuration settings for multiple projects, and you can globally set the default project with the TAR_PROJECT environment variable. The structure of the YAML file follows rules similar to the config R package, e.g. projects can inherit settings from one another using the inherits field. Exceptions include:

1. There is no requirement to have a configuration named "default".

2. Other projects do not inherit from the default project' automatically.

3. Not all fields need values because `targets` already has defaults.

`targets` does not actually invoke the `config` package. The implementation in `targets` was written from scratch without viewing or copying any part of the source code of `config`.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other configuration: `tar_config_get()`, `tar_config_projects()`, `tar_config_unset()`, `tar_config_yaml()`, `tar_envvars()`, `tar_option_get()`, `tar_option_reset()`, `tar_option_set()`, `tar_option_with()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(list(tar_target(x, 1 + 1)))
tar_config_get("store") # NULL (data store defaults to "_targets/")
store_path <- tempfile()
tar_config_set(store = store_path)
tar_config_get("store") # Shows a temp file.
tar_make() # Writes to the custom data store identified in _targets.yaml.
tar_read(x) # tar_read() knows about _targets.yaml too.
file.exists("_targets") # FALSE
file.exists(store_path) # TRUE
})
}
```

---

tar_config_unset   *Unset configuration settings.*

Description

Unset (i.e. delete) one or more custom settings for the current project from the optional YAML configuration file. After that, `tar_option_get()` will return the original default values for those settings for the project.

Usage

```
tar_config_unset(
  names = character(0),
  config = Sys.getenv("TAR_CONFIG", "_targets.yaml"),
  project = Sys.getenv("TAR_PROJECT", "main")
)
```

Arguments

names   Character vector of configuration settings to delete from the current project.

config   Character of length 1, file path of the YAML configuration file with `targets`
                project settings. The `config` argument specifies which YAML configuration file
                that `tar_config_get()` reads from or `tar_config_set()` writes to in a sin-
                gle function call. It does not globally change which configuration file is used
                in subsequent function calls. The default file path of the YAML file is always
                `_targets.yaml` unless you set another default path using the `TAR_CONFIG` envi-
                ronment variable, e.g. `Sys.setenv(TAR_CONFIG = "custom.yaml")`. This also
                has the effect of temporarily modifying the default arguments to other functions
                such as [`tar_make()`](#) because the default arguments to those functions are con-
                trolled by `tar_config_get()`.

project   Character of length 1, name of the current `targets` project. Thanks to the
                `config` R package, `targets` YAML configuration files can store multiple sets
                of configuration settings, with each set corresponding to its own project. The
                `project` argument allows you to set or get a configuration setting for a spe-
                cific project for a given call to `tar_config_set()` or `tar_config_get()`. The
                default project is always called `"main"` unless you set another default project
                using the `TAR_PROJECT` environment variable, e.g. `Sys.setenv(tar_project
                = "custom")`. This also has the effect of temporarily modifying the default ar-
                guments to other functions such as [`tar_make()`](#) because the default arguments
                to those functions are controlled by `tar_config_get()`.

Value

NULL (invisibly)

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()`
read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is
running, and depending on how distributed computing or cloud computing is set up, not all targets
can even reach it. So please do not call these functions from inside a target as part of a running
pipeline. The only exception is literate programming target factories in the `tarchetypes` package
such as `tar_render()` and `tar_quarto()`.

Configuration

For several key functions like [`tar_make()`](#), the default values of arguments are controlled though
`tar_config_get()`. `tar_config_get()` retrieves data from an optional YAML configuration file.
You can control the settings in the YAML file programmatically with `tar_config_set()`. The
default file path of this YAML file is `_targets.yaml`, and you can set another path globally using
the `TAR_CONFIG` environment variable. The YAML file can store configuration settings for multiple
projects, and you can globally set the default project with the `TAR_PROJECT` environment variable.
The structure of the YAML file follows rules similar to the `config` R package, e.g. projects can
inherit settings from one another using the `inherits` field. Exceptions include:

1. There is no requirement to have a configuration named `"default"`.

2. Other projects do not inherit from the default project' automatically.

3. Not all fields need values because `targets` already has defaults.

`targets` does not actually invoke the `config` package. The implementation in `targets` was written from scratch without viewing or copying any part of the source code of `config`.

See Also

Other configuration: `tar_config_get()`, `tar_config_projects()`, `tar_config_set()`, `tar_config_yaml()`, `tar_envvars()`, `tar_option_get()`, `tar_option_reset()`, `tar_option_set()`, `tar_option_with()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(list(tar_target(x, 1 + 1)))
tar_config_get("store") # "_targets"
store_path <- tempfile()
tar_config_set(store = store_path)
tar_config_get("store") # Shows a temp file.
tar_config_unset("store")
tar_config_get("store") # _targets
})
}
```

---

tar_config_yaml   *Read _targets.yaml.*

Description

Read the YAML content of `_targets.yaml`.

Usage

```
tar_config_yaml(config = Sys.getenv("TAR_CONFIG", "_targets.yaml"))
```

Arguments

config   Character of length 1, file path of the YAML configuration file with `targets` project settings. The `config` argument specifies which YAML configuration file that `tar_config_get()` reads from or `tar_config_set()` writes to in a single function call. It does not globally change which configuration file is used in subsequent function calls. The default file path of the YAML file is always `_targets.yaml` unless you set another default path using the `TAR_CONFIG` environment variable, e.g. `Sys.setenv(TAR_CONFIG = "custom.yaml")`. This also has the effect of temporarily modifying the default arguments to other functions such as `tar_make()` because the default arguments to those functions are controlled by `tar_config_get()`.

Value

Nested list of fields defined in _targets.yaml.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress()
read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is
running, and depending on how distributed computing or cloud computing is set up, not all targets
can even reach it. So please do not call these functions from inside a target as part of a running
pipeline. The only exception is literate programming target factories in the tarchetypes package
such as tar_render() and tar_quarto().

Configuration

For several key functions like tar_make(), the default values of arguments are controlled though
tar_config_get(). tar_config_get() retrieves data from an optional YAML configuration file.
You can control the settings in the YAML file programmatically with tar_config_set(). The
default file path of this YAML file is _targets.yaml, and you can set another path globally using
the TAR_CONFIG environment variable. The YAML file can store configuration settings for multiple
projects, and you can globally set the default project with the TAR_PROJECT environment variable.
The structure of the YAML file follows rules similar to the config R package, e.g. projects can
inherit settings from one another using the inherits field. Exceptions include:

1. There is no requirement to have a configuration named "default".

2. Other projects do not inherit from the default project' automatically.

3. Not all fields need values because targets already has defaults.

targets does not actually invoke the config package. The implementation in targets was written
from scratch without viewing or copying any part of the source code of config.

See Also

Other configuration: tar_config_get(), tar_config_projects(), tar_config_set(), tar_config_unset(),
tar_envvars(), tar_option_get(), tar_option_reset(), tar_option_set(), tar_option_with()

Examples

```
yaml <- tempfile()
tar_config_set(store = "my_store_a", config = yaml, project = "project_a")
tar_config_set(store = "my_store_b", config = yaml, project = "project_b")
str(tar_config_yaml(config = yaml))
```

---

tar_crew   *Get crew worker info.*

Description

For the most recent run of the pipeline with [tar_make()](#) where a crew controller was started, get summary-level information of the workers.

Usage

```
tar_crew(store = targets::tar_config_get("store"))
```

Arguments

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                 which in turn defaults to _targets/. When you set this argument, the value
                 of tar_config_get("store") is temporarily changed for the current function
                 call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                 set the data store path persistently for a project.

Value

A data frame one row per crew controller (potentially multiple rows if tar_option_get("controller") is a controller group) and the following columns:

- controller: name of the crew controller.

- targets: number of times the controller attempted to run a target.

- seconds: number of seconds the workers spent running tasks.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

See Also

Other data: [tar_pid()](#), [tar_process()](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
if (requireNamespace("crew", quietly = TRUE)) {
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(controller = crew::crew_controller_local())
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
tar_process()
tar_process(pid)
}
})
}
```

---

tar_cue   *Declare the rules that cue a target.*

Description

Declare the rules that mark a target as outdated.

Usage

```
tar_cue(
  mode = c("thorough", "always", "never"),
  command = TRUE,
  depend = TRUE,
  format = TRUE,
  repository = TRUE,
  iteration = TRUE,
  file = TRUE,
  seed = TRUE
)
```

Arguments

mode   Cue mode. If "thorough", all the cues apply unless individually suppressed. If
                "always", then the target always runs. If "never", then the target does not run
                unless the metadata does not exist or the last run errored.

command   Logical, whether to rerun the target if command changed since last time.

depend   Logical, whether to rerun the target if the value of one of the dependencies
                changed.

format	Logical, whether to rerun the target if the user-specified storage format changed. The storage format is user-specified through `tar_target()` or `tar_option_set()`.
repository	Logical, whether to rerun the target if the user-specified storage repository changed. The storage repository is user-specified through `tar_target()` or `tar_option_set()`.
iteration	Logical, whether to rerun the target if the user-specified iteration method changed. The iteration method is user-specified through `tar_target()` or `tar_option_set()`.
file	Logical, whether to rerun the target if the file(s) with the return value changed or at least one is missing.
seed	Logical, whether to rerun the target if pseudo-random number generator seed either changed or is `NA`. The reproducible deterministic target-specific seeds are controlled by `tar_option_get("seed")` and the target names. See `tar_option_set()` for details.

Target invalidation rules

`targets` uses internal metadata and special cues to decide whether a target is up to date (can skip) or is outdated/invalidated (needs to rerun). By default, `targets` moves through the following list of cues and declares a target outdated if at least one is cue activated.

1. There is no metadata record of the target.

2. The target errored last run.

3. The target has a different class than it did before.

4. The cue mode equals `"always"`.

5. The cue mode does not equal `"never"`.

6. The `command` metadata field (the hash of the R command) is different from last time.

7. The `depend` metadata field (the hash of the immediate upstream dependency targets and global objects) is different from last time.

8. The storage format is different from last time.

9. The iteration mode is different from last time.

10. A target's file (either the one in `_targets/objects/` or a file target) does not exist or changed since last time.

The user can suppress many of the above cues using the `tar_cue()` function, which creates the cue argument of `tar_target()`. Cues objects also constitute more nuanced target invalidation rules. The `tarchetypes` package has many such examples, including `tar_age()`, `tar_download()`, `tar_cue_age()`, `tar_cue_force()`, and `tar_cue_skip()`.

Dependency-based invalidation and user-defined functions

If the cue of a target has depend = TRUE (default) then the target is marked invalidated/outdated when its upstream dependencies change. A target's dependencies include upstream targets, user-defined functions, and other global objects populated in the target script file (default: `_targets.R`). To determine if a given dependency changed since the last run of the pipeline, `targets` computes hashes. The hash of a target is computed on its files in storage (usually a file in `_targets/objects/`). The hash of a non-function global object dependency is computed directly on its in-memory data. User-defined functions are hashed in the following way:

1. Deparse the function with `targets:::tar_deparse_safe()`. This function computes a string representation of the function body and arguments. This string representation is invariant to changes in comments and whitespace, which means trivial changes to formatting do not cue targets to rerun.

2. Manually remove any literal pointers from the function string using `targets:::mask_pointers()`. Such pointers arise from inline compiled C/C++ functions.

3. Using static code analysis (i.e. `tar_deps()`, which is based on `codetools::findGlobals()`) identify any user-defined functions and global objects that the current function depends on. Append the hashes of those dependencies to the string representation of the current function.

4. Compute the hash of the final string representation using `targets:::hash_object()`.

Above, (3) is important because user-defined functions have dependencies of their own, such as other user-defined functions and other global objects. (3) ensures that a change to a function's dependencies invalidates the function itself, which in turn invalidates any calling functions and any targets downstream with the depend cue turned on.

See Also

Other targets: `tar_target()`

Examples

```
# The following target will always run when the pipeline runs.
x <- tar_target(x, download_data(), cue = tar_cue(mode = "always"))
```

| tar_definition | *For developers only: get the definition of the current target.* |

Description

For developers only: get the full definition of the target currently running. This target definition is the same kind of object produced by `tar_target()`.

Usage

```
tar_definition(
  default = targets::tar_target_raw("target_name", quote(identity()))
)
```

Arguments

default   Environment, value to return if `tar_definition()` is called on its own outside a `targets` pipeline. Having a default lets users run things without `tar_make()`, which helps peel back layers of code and troubleshoot bugs.

Details

Most users should not use `tar_definition()` because accidental modifications could break the pipeline. `tar_definition()` only exists in order to support third-party interface packages, and even then the returned target definition is not modified..

Value

If called from a running target, `tar_definition()` returns the target object of the currently running target. See the "Target objects" section for details.

Target objects

Functions like `tar_target()` produce target objects, special objects with specialized sets of S3 classes. Target objects represent skippable steps of the analysis pipeline as described at https://books.ropensci.org/targets/. Please read the walkthrough at https://books.ropensci.org/targets/walkthrough.html to understand the role of target objects in analysis pipelines.

For developers, https://wlandau.github.io/targetopia/contributing.html#target-factories explains target factories (functions like this one which generate targets) and the design specification at https://books.ropensci.org/targets-design/ details the structure and composition of target objects.

See Also

Other utilities: `tar_active()`, `tar_backoff()`, `tar_call()`, `tar_cancel()`, `tar_described_as()`, `tar_envir()`, `tar_format_get()`, `tar_group()`, `tar_name()`, `tar_path()`, `tar_path_script()`, `tar_path_script_support()`, `tar_path_store()`, `tar_path_target()`, `tar_source()`, `tar_store()`, `tar_unblock_process()`

Examples

```
class(tar_definition())
tar_definition()$name
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(
  tar_target(x, tar_definition()$settings$memory, memory = "transient")
)
tar_make(x)
tar_read(x)
})
}
```

---

tar_delete   *Delete target output values.*

Description

Delete the output values of targets in _targets/objects/ (or the cloud if applicable) but keep the records in the metadata.

Usage

```
tar_delete(
  names,
  cloud = TRUE,
  batch_size = 1000L,
  verbose = TRUE,
  store = targets::tar_config_get("store")
)
```

Arguments

names	Optional, names of the targets to delete. If supplied, the names argument restricts the targets which are deleted. The value is a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.
cloud	Logical of length 1, whether to delete objects from the cloud if applicable (e.g. AWS, GCP). If FALSE, files are not deleted from the cloud.
batch_size	Positive integer between 1 and 1000, number of target objects to delete from the cloud with each HTTP API request. Currently only supported for AWS. Cannot be more than 1000.
verbose	Logical of length 1, whether to print console messages to show progress when deleting each batch of targets from each cloud bucket. Batched deletion with verbosity is currently only supported for AWS.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

Details

If you have a small number of data-heavy targets you need to discard to conserve storage, this function can help. Local external files files (i.e. format = "file" and repository = "local") are not deleted. For targets with repository not equal "local", tar_delete() attempts to delete the file and errors out if the deletion is unsuccessful. If deletion fails, either log into the cloud platform and manually delete the file (e.g. the AWS web console in the case of repository = "aws") or call [tar_invalidate()](#) on that target so that targets does not try to delete the object. For patterns

recorded in the metadata, all the branches will be deleted. For patterns no longer in the metadata, branches are left alone.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

Cloud target data versioning

Some buckets in Amazon S3 or Google Cloud Storage are "versioned", which means they track historical versions of each data object. If you use `targets` with cloud storage (`https://books. ropensci.org/targets/cloud-storage.html`) and versioning is turned on, then `targets` will record each version of each target in its metadata.

Functions like `tar_read()` and `tar_load()` load the version recorded in the local metadata, which may not be the same as the "current" version of the object in the bucket. Likewise, functions `tar_delete()` and `tar_destroy()` only remove the version ID of each target as recorded in the local metadata.

If you want to interact with the *latest* version of an object instead of the version ID recorded in the local metadata, then you will need to delete the object from the metadata.

1. Make sure your local copy of the metadata is current and up to date. You may need to run `tar_meta_download()` or `tar_meta_sync()` first.
2. Run `tar_unversion()` to remove the recorded version IDs of your targets in the local metadata.
3. With the version IDs gone from the local metadata, functions like `tar_read()` and `tar_destroy()` will use the *latest* version of each target data object.
4. Optional: to back up the local metadata file with the version IDs deleted, use `tar_meta_upload()`.

See Also

Other clean: `tar_destroy()`, `tar_invalidate()`, `tar_prune()`, `tar_prune_list()`, `tar_unversion()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
```

```
}, ask = FALSE)
tar_make()
tar_delete(starts_with("y")) # Only deletes y1 and y2.
tar_make() # y1 and y2 rerun but return the same values, so z is up to date.
})
}
```

tar_deps   *Code dependencies*

Description

List the dependencies of a function or expression. `tar_deps()` expects the expr argument to be
an unevaluated expression, whereas `tar_deps_raw()` expects expr to be an evaluated expression
object. Functions can be passed normally in either case.

Usage

```
tar_deps(expr)

tar_deps_raw(expr)
```

Arguments

expr   An R expression or function. `tar_deps()` expects the expr argument to be
                an unevaluated expression, whereas `tar_deps_raw()` expects expr to be an
                evaluated expression object. Functions can be passed normally in either case.

Details

`targets` detects the dependencies of commands using static code analysis. Use tar_deps() to run
the code analysis and see the dependencies for yourself.

Value

Character vector of the dependencies of a function or expression.

See Also

[tar_branches()](), [tar_network()]()

Other inspect: [tar_manifest()](), [tar_network()](), [tar_outdated()](), [tar_sitrep()](), [tar_validate()]()

Examples

```
tar_deps(x <- y + z)
tar_deps(quote(x <- y + z))
tar_deps({
  x <- 1
  x + a
})
tar_deps(function(a = b) map_dfr(data, ~do_row(.x)))
tar_deps_raw(function(a = b) map_dfr(data, ~do_row(.x)))
```

---

tar_described_as   *Select targets using their descriptions.*

Description

Select a subset of targets in the _targets.R file based on their custom descriptions.

Usage

```
tar_described_as(
  described_as = NULL,
  tidyselect = TRUE,
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function),
  envir = parent.frame(),
  script = targets::tar_config_get("script")
)
```

Arguments

described_as   A tidyselect expression to select targets based on their descriptions. For ex-
                  ample, described_as = starts_with("survival model") matches all targets
                  in the pipeline whose description arguments of [tar_target()](#) start with the
                  text string "survival model".

tidyselect   If TRUE, return a call to tidyselect::all_of() identifying the selected targets,
                  which can then be supplied to any tidyselect-compatible namesargument of downstream functions
                  return a simple character vector of target names.

callr_function   A function from callr to start a fresh clean R process to do the work. Set to
                  NULL to run in the current session instead of an external process (but restart
                  your R session just before you do in order to clear debris out of the global
                  environment). callr_function needs to be NULL for interactive debugging,
                  e.g. tar_option_set(debug = "your_target"). However, callr_function
                  should not be NULL for serious reproducible work.

callr_arguments

                  A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if
                  callr_function is NULL. Ignored if callr_function is anything other than
                  NULL. callr_function should only be NULL for debugging and testing pur-
                  poses, not for serious runs of a pipeline, etc.

                  The envir argument of [tar_make()](#) and related functions always overrides the
                  current value of tar_option_get("envir") in the current R session just before
                  running the target script file, so whenever you need to set an alternative envir,
                  you should always set it with tar_option_set() from within the target script
                  file. In other words, if you call tar_option_set(envir = envir1) in an inter-
                  active session and then tar_make(envir = envir2, callr_function = NULL),
                  then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
                  which in turn defaults to _targets.R. When you set this argument, the value of
                  tar_config_get("script") is temporarily changed for the current function
                  call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for de-
                  tails about the target script file and how to set it persistently for a project.

Details

Targets with empty descriptions are ignored.

Value

If tidyselect is TRUE, then [tar_described_as()](#) returns a call to tidyselect::all_of() which
can be supplied to the names argument of functions like [tar_manifest()](#) and [tar_make()](#). This
allows functions like [tar_manifest()](#) and [tar_make()](#) to focus on only the targets with the match-
ing descriptions. If tidyselect is FALSE, then [tar_described_as()](#) returns a simple character
vector of the names of all the targets in the pipeline with matching descriptions.

See Also

Other utilities: [tar_active()](#), [tar_backoff()](#), [tar_call()](#), [tar_cancel()](#), [tar_definition()](#),
[tar_envir()](#), [tar_format_get()](#), [tar_group()](#), [tar_name()](#), [tar_path()](#), [tar_path_script()](#),
[tar_path_script_support()](#), [tar_path_store()](#), [tar_path_target()](#), [tar_source()](#), [tar_store()](#),
[tar_unblock_process()](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(b2, TRUE, description = "blue two"),
    tar_target(b3, TRUE, description = "blue three"),
    tar_target(g2, TRUE, description = "green two"),
    tar_target(g3, TRUE, description = "green three"),
    tar_target(g4, TRUE, description = "green three")
  )
```

```
}, ask = FALSE)
tar_described_as(starts_with("green"), tidyselect = FALSE)
tar_make(names = tar_described_as(starts_with("green")))
tar_progress() # Only `g2`, `g3`, and `g4` ran.
})
}
```

---

tar_destroy   *Destroy the data store.*

Description

Destroy the data store written by the pipeline.

Usage

```
tar_destroy(
  destroy = c("all", "cloud", "local", "meta", "process", "progress", "objects",
    "scratch", "workspaces", "user"),
  batch_size = 1000L,
  verbose = TRUE,
  ask = NULL,
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

destroy   Character of length 1, what to destroy. Choices:

- "all": entire data store (default: _targets/) including cloud data, as well as download/upload scratch files.
- "cloud": cloud data, including metadata, target object data from targets with tar_target(..., repository = "aws"), and workspace files saved on the cloud. Also deletes temporary staging files in file.path(tempdir(), "targets") that may have been accidentally left over from incomplete uploads or downloads.
- "local": all the local files in the data store but nothing on the cloud.
- "meta": metadata file at meta/meta in the data store, which invalidates all the targets but keeps the data.
- "process": progress data file at meta/process in the data store, which resets the metadata of the main process.
- "progress": progress data file at meta/progress in the data store, which resets the progress tracking info.
- "objects": all the target return values in objects/ in the data store but keep progress and metadata. Dynamic files are not deleted this way.
- "scratch": temporary files in saved during [tar_make()](#) that should automatically get deleted except if R crashed.

- "workspaces": compressed lightweight files locally saved to the workspaces/ folder in the data store with the saved workspaces of targets. Does not delete workspace files on the cloud. For that, consider destroy = "all" or destroy = "cloud". See `tar_workspace()` for details.
- "user": custom user-supplied files in the user/ folder in the data store.

batch_size   Positive integer between 1 and 1000, number of target objects to delete from the cloud with each HTTP API request. Currently only supported for AWS. Cannot be more than 1000.

verbose   Logical of length 1, whether to print console messages to show progress when deleting each batch of targets from each cloud bucket. Batched deletion with verbosity is currently only supported for AWS.

ask   Logical of length 1, whether to pause with a menu prompt before deleting files. To disable this menu, set the TAR_ASK environment variable to "false". usethis::edit_r_environ() can help set environment variables.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. If the script does not exist, then cloud metadata will not be deleted.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See `tar_config_get()` and `tar_config_set()` for details about how to set the data store path persistently for a project.

Details

The data store is a folder created by `tar_make()` (or `tar_make_future()` or `tar_make_clustermq()`). The details of the data store are explained at https://books.ropensci.org/targets/data. html#local-data-store. The data store folder contains the output data and metadata of the targets in the pipeline. Usually, the data store is a folder called _targets/ (see `tar_config_set()` to customize), and it may link to data on the cloud if you used AWS or GCP buckets. By default, tar_destroy() deletes the entire _targets/ folder (or wherever the data store is located), including custom user-supplied files in _targets/user/, as well as any cloud data that the pipeline uploaded. See the destroy argument to customize this behavior and only delete part of the data store, and see functions like `tar_invalidate()`, `tar_delete()`, and `tar_prune()` to remove information pertaining to some but not all targets in the pipeline. After calling tar_destroy() with default arguments, the entire data store is gone, which means all the output data from previous runs of the pipeline is gone (except for input/output files tracked with tar_target(..., format = "file")). The next run of the pipeline will start from scratch, and it will not skip any targets.

Value

NULL (invisibly).

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is

running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

Cloud target data versioning

Some buckets in Amazon S3 or Google Cloud Storage are "versioned", which means they track historical versions of each data object. If you use `targets` with cloud storage (`https://books.ropensci.org/targets/cloud-storage.html`) and versioning is turned on, then `targets` will record each version of each target in its metadata.

Functions like `tar_read()` and `tar_load()` load the version recorded in the local metadata, which may not be the same as the "current" version of the object in the bucket. Likewise, functions `tar_delete()` and `tar_destroy()` only remove the version ID of each target as recorded in the local metadata.

If you want to interact with the *latest* version of an object instead of the version ID recorded in the local metadata, then you will need to delete the object from the metadata.

1. Make sure your local copy of the metadata is current and up to date. You may need to run `tar_meta_download()` or `tar_meta_sync()` first.

2. Run `tar_unversion()` to remove the recorded version IDs of your targets in the local metadata.

3. With the version IDs gone from the local metadata, functions like `tar_read()` and `tar_destroy()` will use the *latest* version of each target data object.

4. Optional: to back up the local metadata file with the version IDs deleted, use `tar_meta_upload()`.

See Also

Other clean: `tar_delete()`, `tar_invalidate()`, `tar_prune()`, `tar_prune_list()`, `tar_unversion()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(tar_target(x, 1 + 1))
})
tar_make() # Creates the _targets/ data store.
tar_destroy()
print(file.exists("_targets")) # Should be FALSE.
})
}
```

`tar_dispatched`   *List dispatched targets.*

Description

List the targets with progress status `"dispatched"`.

Usage

```
tar_dispatched(names = NULL, store = targets::tar_config_get("store"))
```

Arguments

names	Optional, names of the targets. If supplied, the function restricts its output to these targets. You can supply symbols or `tidyselect` helpers like [any_of()](#) and [starts_with()](#).
store	Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`, which in turn defaults to _targets/. When you set this argument, the value of `tar_config_get("store")` is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

Details

A target is `"dispatched"` if it is sent off to be run. Depending on your high-performance computing configuration via the `crew` package, the may not actually start right away. This may happen if the target is ready to start but all available parallel workers are busy.

Value

A character vector of dispatched targets.

See Also

Other progress: [tar_canceled()](#), [tar_completed()](#), [tar_errored()](#), [tar_poll()](#), [tar_progress()](#), [tar_progress_branches()](#), [tar_progress_summary()](#), [tar_skipped()](#), [tar_watch()](#), [tar_watch_server()](#), [tar_watch_ui()](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
```

```
  )
}, ask = FALSE)
tar_make()
tar_dispatched()
tar_dispatched(starts_with("y_")) # see also any_of()
})
}
```

---

tar_edit   *Open the target script file for editing.*

Description

Open the target script file for editing. Requires the usethis package.

Usage

```
tar_edit(script = targets::tar_config_get("script"))
```

Arguments

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
                which in turn defaults to _targets.R. When you set this argument, the value of
                tar_config_get("script") is temporarily changed for the current function
                call. See tar_script(), tar_config_get(), and tar_config_set() for de-
                tails about the target script file and how to set it persistently for a project.

Details

The target script file is an R code file that defines the pipeline. The default path is _targets.R, but
the default for the current project can be configured with tar_config_set()

See Also

Other scripts: tar_github_actions(), tar_helper(), tar_renv(), tar_script()

---

tar_engine_knitr   *Target Markdown* knitr *engine*

Description

knitr language engine that runs targets code chunks in Target Markdown.

Usage

```
tar_engine_knitr(options)
```

Arguments

options   A named list of `knitr` chunk options.

Value

Character, output generated from `knitr::engine_output()`.

Target Markdown interactive mode

Target Markdown has two modes:

1. Non-interactive mode. This is the default when you run `knitr::knit()` or `rmarkdown::render()`.
    Here, the code in `targets` code chunks gets written to special script files in order to set up a
    `targets` pipeline to run later.

2. Interactive mode: here, no scripts are written to set up a pipeline. Rather, the globals or targets
    in question are run in the current environment and the values are assigned to that environment.

The mode is interactive if `!isTRUE(getOption("knitr.in.progress"))`, is `TRUE`. The `knitr.in.progress`
option is `TRUE` when you run `knitr::knit()` or `rmarkdown::render()` and `NULL` if you are run-
ning one chunk at a time interactively in an integrated development environment, e.g. the note-
book interface in RStudio: https://bookdown.org/yihui/rmarkdown/notebook.html. You can
choose the mode with the `tar_interactive` chunk option. (In `targets` 0.6.0, `tar_interactive`
defaults to `interactive()` instead of `!isTRUE(getOption("knitr.in.progress"))`.)

Target Markdown chunk options

Target Markdown introduces the following `knitr` code chunk options. Most other standard `knitr`
code chunk options should just work in non-interactive mode. In interactive mode, not all

*   `tar_globals`: Logical of length 1, whether to define globals or targets. If `TRUE`, the chunk
    code defines functions, objects, and options common to all the targets. If `FALSE` or `NULL`
    (default), then the chunk returns formal targets for the pipeline.

*   `tar_interactive`: Logical of length 1, whether to run in interactive mode or non-interactive
    mode. See the "Target Markdown interactive mode" section of this help file for details.

*   `tar_name`: name to use for writing helper script files (e.g. `_targets_r/targets/target_script.R`)
    and specifying target names if the `tar_simple` chunk option is `TRUE`. All helper scripts and tar-
    get names must have unique names, so please do not set this option globally with `knitr::opts_chunk$set()`.

*   `tar_script`: Character of length 1, where to write the target script file in non-interactive
    mode. Most users can skip this option and stick with the default `_targets.R` script path.
    Helper script files are always written next to the target script in a folder with an `"_r"` suffix.
    The `tar_script` path must either be absolute or be relative to the project root (where you call
    `tar_make()` or similar). If not specified, the target script path defaults to `tar_config_get("script")`
    (default: `_targets.R`; helpers default: `_targets_r/`). When you run `tar_make()` etc. with
    a non-default target script, you must select the correct target script file either with the `script`
    argument or with `tar_config_set(script = ...)`. The function will `source()` the script
    file from the current working directory (i.e. with `chdir = FALSE` in `source()`).

- `tar_simple`: Logical of length 1. Set to `TRUE` to define a single target with a simplified interface. In code chunks with `tar_simple` equal to `TRUE`, the chunk label (or the `tar_name` chunk option if you set it) becomes the name, and the chunk code becomes the command. In other words, a code chunk with label `targetname` and command `mycommand()` automatically gets converted to `tar_target(name = targetname, command = mycommand())`. All other arguments of `tar_target()` remain at their default values (configurable with `tar_option_set()` in a `tar_globals = TRUE` chunk).

See Also

https://books.ropensci.org/targets/literate-programming.html

Other Target Markdown: `tar_interactive()`, `tar_noninteractive()`, `tar_toggle()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
# Register the engine.
if (requireNamespace("knitr", quietly = TRUE)) {
  knitr::knit_engines$set(targets = targets::tar_engine_knitr)
}
# Then, `targets` code chunks in a knitr report will run
# as described at
# <https://books.ropensci.org/targets/literate-programming.html>.
}
```

---

tar_envir   *For developers only: get the environment of the current target.*

Description

For developers only: get the environment where a target runs its command. Designed to be called while the target is running. The environment inherits from `tar_option_get("envir")`.

Usage

```
tar_envir(default = parent.frame())
```

Arguments

default   Environment, value to return if `tar_envir()` is called on its own outside a `targets` pipeline. Having a default lets users run things without `tar_make()`, which helps peel back layers of code and troubleshoot bugs.

Details

Most users should not use `tar_envir()` because accidental modifications to `parent.env(tar_envir())` could break the pipeline. `tar_envir()` only exists in order to support third-party interface packages, and even then the returned environment is not modified.

Value

If called from a running target, `tar_envir()` returns the environment where the target runs its command. If called outside a pipeline, the return value is whatever the user supplies to `default` (which defaults to `parent.frame()`).

See Also

Other utilities: `tar_active()`, `tar_backoff()`, `tar_call()`, `tar_cancel()`, `tar_definition()`, `tar_described_as()`, `tar_format_get()`, `tar_group()`, `tar_name()`, `tar_path()`, `tar_path_script()`, `tar_path_script_support()`, `tar_path_store()`, `tar_path_target()`, `tar_source()`, `tar_store()`, `tar_unblock_process()`

Examples

```
tar_envir()
tar_envir(default = new.env(parent = emptyenv()))
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(tar_target(x, tar_envir(default = parent.frame())))
tar_make(x)
tar_read(x)
})
}
```

---

tar_envvars   *Show* `targets` *environment variables.*

Description

Show all the special environment variables available for customizing `targets`.

Usage

```
tar_envvars(unset = "")
```

Arguments

unset   Character of length 1, value to return for any environment variable that is not
                 set.

Details

You can customize the behavior of `targets` with special environment variables. The sections in this help file describe each environment variable, and the `tar_envvars()` function lists their current values.

If you modify environment variables, please set them in project-level `.Renviron` file so you do not lose your configuration when you restart your R session. Modify the project-level `.Renviron` file

with usethis::edit_r_environ(scope = "project"). Restart your R session after you are done editing.

For targets that run on parallel workers created by `tar_make_clustermq()` or `tar_make_future()`, only the environment variables listed by `tar_envvars()` are specifically exported to the targets. For all other environment variables, you will have to set the values manually, e.g. a project-level .Renviron file (for workers that have access to the local file system).

Value

A data frame with one row per environment variable and columns with the name and current value of each. An unset environment variable will have a value of "" by default. (Customize with the unset argument).

TAR_ASK

The TAR_ASK environment variable accepts values "true" and "false". If TAR_ASK is not set, or if it is set to "true", then targets asks permission in a menu before overwriting certain files, such as the target script file (default: _targets.R) in `tar_script()`. If TAR_ASK is "false", then targets overwrites the old files with the new ones without asking. Once you are comfortable with `tar_script()`, `tar_github_actions()`, and similar functions, you can safely set TAR_ASK to "false" in either a project-level or user-level .Renviron file.

TAR_CONFIG

The TAR_CONFIG environment variable controls the file path to the optional YAML configuration file with project settings. See the help file of `tar_config_set()` for details.

TAR_PROJECT

The TAR_PROJECT environment variable sets the name of project to set and get settings when working with the YAML configuration file. See the help file of `tar_config_set()` for details.

TAR_WARN

The TAR_WARN environment variable accepts values "true" and "false". If TAR_WARN is not set, or if it is set to "true", then targets throws warnings in certain edge cases, such as target/global name conflicts and dangerous use of devtools::load_all(). If TAR_WARN is "false", then targets does not throw warnings in these cases. These warnings can detect potentially serious issues with your pipeline, so please do not set TAR_WARN unless your use case absolutely requires it.

See Also

Other configuration: `tar_config_get()`, `tar_config_projects()`, `tar_config_set()`, `tar_config_unset()`, `tar_config_yaml()`, `tar_option_get()`, `tar_option_reset()`, `tar_option_set()`, `tar_option_with()`

Examples

```
tar_envvars()
```

---

tar_errored   *List errored targets.*

Description

List targets whose progress is "errored".

Usage

```
tar_errored(names = NULL, store = targets::tar_config_get("store"))
```

Arguments

names   Optional, names of the targets. If supplied, the output is restricted to the selected
                targets. The object supplied to names should be NULL or a tidyselect expres-
                sion like any_of() or starts_with() from tidyselect itself, or tar_described_as()
                to select target names based on their descriptions.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                which in turn defaults to _targets/. When you set this argument, the value
                of tar_config_get("store") is temporarily changed for the current function
                call. See tar_config_get() and tar_config_set() for details about how to
                set the data store path persistently for a project.

Value

A character vector of errored targets.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress()
read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is
running, and depending on how distributed computing or cloud computing is set up, not all targets
can even reach it. So please do not call these functions from inside a target as part of a running
pipeline. The only exception is literate programming target factories in the tarchetypes package
such as tar_render() and tar_quarto().

See Also

Other progress: tar_canceled(), tar_completed(), tar_dispatched(), tar_poll(), tar_progress(),
tar_progress_branches(), tar_progress_summary(), tar_skipped(), tar_watch(), tar_watch_server(),
tar_watch_ui()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
```

```
    library(tarchetypes)
    list(
      tar_target(x, seq_len(2)),
      tar_target(y, 2 * x, pattern = map(x))
    )
}, ask = FALSE)
tar_make()
tar_errored()
tar_errored(starts_with("y_")) # see also any_of()
})
}
```

---

tar_exist_meta   *Check if target metadata exists.*

Description

Check if the target metadata file _targets/meta/meta exists for the current project.

Usage

```
tar_exist_meta(store = targets::tar_config_get("store"))
```

Arguments

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                which in turn defaults to _targets/. When you set this argument, the value
                of tar_config_get("store") is temporarily changed for the current function
                call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                set the data store path persistently for a project.

Details

To learn more about data storage in targets, visit https://books.ropensci.org/targets/data.html.

Value

Logical of length 1, whether the current project's metadata exists.

See Also

Other existence: [tar_exist_objects()](#), [tar_exist_process()](#), [tar_exist_progress()](#), [tar_exist_script()](#)

Examples

```
tar_exist_meta()
```

---

tar_exist_objects   *Check if local output data exists for one or more targets.*

Description

Check if output target data exists in either _targets/objects/ or the cloud for one or more targets.

Usage

```
tar_exist_objects(
  names,
  cloud = TRUE,
  store = targets::tar_config_get("store")
)
```

Arguments

names   Character vector of target names. Not tidyselect-compatible.

cloud   Logical of length 1, whether to include cloud targets in the output (e.g. tar_target(...,
                repository = "aws")).

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                which in turn defaults to _targets/. When you set this argument, the value
                of tar_config_get("store") is temporarily changed for the current function
                call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                set the data store path persistently for a project.

Details

If a target has no metadata or if the repository argument of [tar_target()](#) was set to "local",
then the _targets/objects/ folder is checked. Otherwise, if there is metadata and repsitory is
not "local", then tar_exist_objects() checks the cloud repository selected.

Value

Logical of length length(names), whether each given target has an existing file in either _targets/objects/
or the cloud.

See Also

Other existence: [tar_exist_meta()](#), [tar_exist_process()](#), [tar_exist_progress()](#), [tar_exist_script()](#)

Examples

```
tar_exist_objects(c("target1", "target2"))
```

---

tar_exist_process   *Check if process metadata exists.*

Description

Check if the process metadata file `_targets/meta/process` exists for the current project.

Usage

```
tar_exist_process(store = targets::tar_config_get("store"))
```

Arguments

store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`,
               which in turn defaults to `_targets/`. When you set this argument, the value
               of `tar_config_get("store")` is temporarily changed for the current function
               call. See `tar_config_get()` and `tar_config_set()` for details about how to
               set the data store path persistently for a project.

Details

To learn more about data storage in targets, visit https://books.ropensci.org/targets/
data.html.

Value

Logical of length 1, whether the current project's metadata exists.

See Also

Other existence: `tar_exist_meta()`, `tar_exist_objects()`, `tar_exist_progress()`, `tar_exist_script()`

Examples

```
tar_exist_process()
```

---

tar_exist_progress   *Check if progress metadata exists.*

Description

Check if the progress metadata file `_targets/meta/progress` exists for the current project.

Usage

```
tar_exist_progress(store = targets::tar_config_get("store"))
```

Arguments

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                      which in turn defaults to _targets/. When you set this argument, the value
                      of tar_config_get("store") is temporarily changed for the current function
                      call. See tar_config_get() and tar_config_set() for details about how to
                      set the data store path persistently for a project.

Details

To learn more about data storage in targets, visit https://books.ropensci.org/targets/
data.html.

Value

Logical of length 1, whether the current project's metadata exists.

See Also

Other existence: tar_exist_meta(), tar_exist_objects(), tar_exist_process(), tar_exist_script()

Examples

```
tar_exist_progress()
```

---

tar_exist_script   *Check if the target script file exists.*

Description

Check if the target script file exists for the current project. The target script is _targets.R by
default, but the path can be configured for the current project using tar_config_set().

Usage

```
tar_exist_script(script = targets::tar_config_get("script"))
```

Arguments

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
                      which in turn defaults to _targets.R. When you set this argument, the value of
                      tar_config_get("script") is temporarily changed for the current function
                      call. See tar_script(), tar_config_get(), and tar_config_set() for de-
                      tails about the target script file and how to set it persistently for a project.

Value

Logical of length 1, whether the current project's metadata exists.

See Also

Other existence: `tar_exist_meta()`, `tar_exist_objects()`, `tar_exist_process()`, `tar_exist_progress()`

Examples

```
tar_exist_script()
```

---

tar_format   *Define a custom target storage format.*

Description

Define a custom target storage format for the `format` argument of `tar_target()` or `tar_option_set()`.

Usage

```
tar_format(
  read = NULL,
  write = NULL,
  marshal = NULL,
  unmarshal = NULL,
  convert = NULL,
  copy = NULL,
  substitute = list(),
  repository = NULL
)
```

Arguments

read
: A function with a single argument named `path`. This function should read and return the target stored at the file in the argument. It should have no side effects. See the "Format functions" section for specific requirements. If `NULL`, the `read` argument defaults to `readRDS()`.

write
: A function with two arguments: `object` and `path`, in that order. This function should save the R object `object` to the file path at `path` and have no other side effects. The function need not return a value, but the file written to `path` must be a single file, and it cannot be a directory. See the "Format functions" section for specific requirements. If `NULL`, the `write` argument defaults to `saveRDS()` with `version = 3`.

marshal
: A function with a single argument named `object`. This function should marshal the R object and return an in-memory object that can be exported to remote parallel workers. It should not read or write any persistent files. See the Marshalling section for details. See the "Format functions" section for specific requirements. If `NULL`, the `marshal` argument defaults to just returning the original object without any modifications.

unmarshal   A function with a single argument named `object`. This function should unmarshal the (marshalled) R object and return an in-memory object that is appropriate and valid for use on a parallel worker. It should not read or write any persistent files. See the Marshalling section for details. See the "Format functions" section for specific requirements. If `NULL`, the `unmarshal` argument defaults to just returning the original object without any modifications.

convert   The `convert` argument is a function with a single argument named `object`. It accepts the object returned by the command of the target and changes it into an acceptable format (e.g. can be saved with the `read` function). The `convert` ensures the in-memory copy of an object during the running pipeline session is the same as the copy of the object that is saved to disk. The function should be idempotent, and it should handle edge cases like `NULL` values (especially for `error =` "null" in [tar_target()](#) or [tar_option_set()](#)). If `NULL`, the `convert` argument defaults to just returning the original object without any modifications.

copy   The `copy` argument is a function with a single function named `object`. It accepts the object returned by the command of the target and makes a deep copy in memory. This method does is relevant to objects like `data.tables` that support in-place modification which could cause unpredictable side effects from target to target. In cases like these, the target should be deep-copied before a downstream target attempts to use it (in the case of `data.table` objects, using `data.table::copy()`). If `NULL`, the `copy` argument defaults to just returning the original object without any modifications.

substitute   Named list of values to be inserted into the body of each custom function in place of symbols in the body. For example, if `write = function(object, path) saveRDS(object, path, version = VERSION)` and `substitute = list(VERSION = 3)`, then the `write` function will actually end up being `function(object, path) saveRDS(object, path, version = 3)`.

     Please do not include temporary or sensitive information such as authentication credentials. If you do, then `targets` will write them to metadata on disk, and a malicious actor could steal and misuse them. Instead, pass sensitive information as environment variables using [tar_resources_custom_format()](#). These environment variables only exist in the transient memory spaces of the R sessions of the local and worker processes.

repository   Deprecated. Use the `repository` argument of [tar_target()](#) or [tar_option_set()](#) instead.

Value

A character string of length 1 encoding the custom format. You can supply this string directly to the `format` argument of [tar_target()](#) or [tar_option_set()](#).

Marshalling

If an object can only be used in the R session where it was created, it is called "non-exportable". Examples of non-exportable R objects are Keras models, Torch objects, xgboost matrices, xml2 documents, rstan model objects, sparklyr data objects, and database connection objects. These

objects cannot be exported to parallel workers (e.g. for `tar_make_future()`) without special treatment. To send an non-exportable object to a parallel worker, the object must be marshalled: converted into a form that can be exported safely (similar to serialization but not always the same). Then, the worker must unmarshal the object: convert it into a form that is usable and valid in the current R session. Arguments `marshal` and `unmarshal` of `tar_format()` let you control how marshalling and unmarshalling happens.

Format functions

In `tar_format()`, functions like `read`, `write`, `marshal`, and `unmarshal` must be perfectly pure and perfectly self-sufficient. They must load or namespace all their own packages, and they must not depend on any custom user-defined functions or objects in the global environment of your pipeline. `targets` converts each function to and from text, so it must not rely on any data in the closure. This disqualifies functions produced by `Vectorize()`, for example.

The `write` function must write only a single file, and the file it writes must not be a directory.

The functions to read and write the object should not do any conversions on the object. That is the job of the `convert` argument. The `convert` argument is a function that accepts the object returned by the command of the target and changes it into an acceptable format (e.g. can be saved with the `read` function). Working with the `convert` function is best because it ensures the in-memory copy of an object during the running pipeline session is the same as the copy of the object that is saved to disk.

See Also

Other storage: `tar_load()`, `tar_load_everything()`, `tar_objects()`, `tar_read()`

Examples

```
# The following target is equivalent to the current superseded
# tar_target(name, command(), format = "keras").
# An improved version of this would supply a `convert` argument
# to handle NULL objects, which are returned by the target if it
# errors and the error argument of tar_target() is "null".
tar_target(
  name = keras_target,
  command = your_function(),
  format = tar_format(
    read = function(path) {
      keras::load_model_hdf5(path)
    },
    write = function(object, path) {
      keras::save_model_hdf5(object = object, filepath = path)
    },
    marshal = function(object) {
      keras::serialize_model(object)
    },
    unmarshal = function(object) {
      keras::unserialize_model(object)
    }
  )
```

```
)
# And the following is equivalent to the current superseded
# tar_target(name, torch::torch_tensor(seq_len(4)), format = "torch"),
# except this version has a `convert` argument to handle
# cases when `NULL` is returned (e.g. if the target errors out
# and the `error` argument is "null" in tar_target()
# or tar_option_set())
tar_target(
  name = torch_target,
  command = torch::torch_tensor(),
  format = tar_format(
    read = function(path) {
      torch::torch_load(path)
    },
    write = function(object, path) {
      torch::torch_save(obj = object, path = path)
    },
    marshal = function(object) {
      con <- rawConnection(raw(), open = "wr")
      on.exit(close(con))
      torch::torch_save(object, con)
      rawConnectionValue(con)
    },
    unmarshal = function(object) {
      con <- rawConnection(object, open = "r")
      on.exit(close(con))
      torch::torch_load(con)
    }
  )
)
```

---

tar_format_get   *Current storage format.*

Description

Get the storage format of the target currently running.

Usage

```
tar_format_get()
```

Details

This function is meant to be called inside a target in a running pipeline. If it is called outside a target in the running pipeline, it will return the default format given by tar_option_get("format").

Value

A character string, storage format of the target currently running in the pipeline. If called outside a target in the running pipeline, `tar_format_get()` will return the default format given by `tar_option_get("format")`.

See Also

Other utilities: `tar_active()`, `tar_backoff()`, `tar_call()`, `tar_cancel()`, `tar_definition()`, `tar_described_as()`, `tar_envir()`, `tar_group()`, `tar_name()`, `tar_path()`, `tar_path_script()`, `tar_path_script_support()`, `tar_path_store()`, `tar_path_target()`, `tar_source()`, `tar_store()`, `tar_unblock_process()`

Examples

```
tar_target(x, tar_format_get(), format = "qs")
```

---

tar_github_actions	*Set up GitHub Actions to run a targets pipeline*

Description

Writes a GitHub Actions workflow file so the pipeline runs on every push to GitHub. Historical runs accumulate in the `targets-runs` branch, and the latest output is restored before `tar_make()` so up-to-date targets do not rerun.

Usage

```
tar_github_actions(
  path = file.path(".github", "workflows", "targets.yaml"),
  ask = NULL
)
```

Arguments

path	Character of length 1, file path to write the GitHub Actions workflow file.
ask	Logical, whether to ask before writing if the workflow file already exists. If NULL, defaults to Sys.getenv("TAR_ASK"). (Set to "true" or "false" with Sys.setenv()). If ask and the TAR_ASK environment variable are both indeterminate, defaults to interactive().

Details

Steps to set up continuous deployment:

1. Ensure your pipeline stays within the resource limitations of GitHub Actions and repositories, both for storage and compute. For storage, you may wish to reduce the burden with an alternative repository (e.g. `tar_target(..., repository = "aws")`).

2. Ensure Actions are enabled in your GitHub repository. You may have to visit the Settings tab.

3. Call `targets::tar_renv(extras = character(0))` to expose hidden package dependencies.

4. Set up `renv` for your project (with `renv::init()` or `renv::snapshot()`). Details at https://rstudio.github.io/renv/articles/ci.html.

5. Commit the `renv.lock` file to the `main` (recommended) or `master` Git branch.

6. Run `tar_github_actions()` to create the workflow file. Commit this file to `main` (recommended) or `master` in Git.

7. Push your project to GitHub. Verify that a GitHub Actions workflow runs and pushes results to `targets-runs`. Subsequent runs will only recompute the outdated targets.

Value

Nothing (invisibly). This function writes a GitHub Actions workflow file as a side effect.

See Also

Other scripts: [tar_edit()](), [tar_helper()](), [tar_renv()](), [tar_script]()

Examples

```
tar_github_actions(tempfile())
```

---

tar_glimpse   *Visualize an abridged fast dependency graph.*

Description

Analyze the pipeline defined in the target script file (default: _targets.R) and visualize the directed acyclic graph of targets. Unlike [tar_visnetwork()](), tar_glimpse() does not account for metadata or progress information, which means the graph renders faster. Also, tar_glimpse() omits functions and other global objects by default (but you can include them with targets_only = FALSE).

Usage

```
tar_glimpse(
  targets_only = TRUE,
  names = NULL,
  shortcut = FALSE,
  allow = NULL,
  exclude = ".Random.seed",
  label = targets::tar_config_get("label"),
  label_width = targets::tar_config_get("label_width"),
  level_separation = targets::tar_config_get("level_separation"),
  degree_from = 1L,
```

```
    degree_to = 1L,
    zoom_speed = 1,
    physics = FALSE,
    callr_function = callr::r,
    callr_arguments = targets::tar_callr_args_default(callr_function),
    envir = parent.frame(),
    script = targets::tar_config_get("script"),
    store = targets::tar_config_get("store")
)
```

Arguments

targets_only	Logical, whether to restrict the output to just targets (FALSE) or to also include global functions and objects.
names	Names of targets. The graph visualization will operate only on these targets (and unless shortcut is TRUE, all the targets upstream as well). Selecting a small subgraph using names could speed up the load time of the visualization. Unlike allow, names is invoked before the graph is generated. Set to NULL to check/run all the targets (default). Otherwise, the object supplied to names should be a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.
shortcut	Logical of length 1, how to interpret the names argument. If shortcut is FALSE (default) then the function checks all targets upstream of names as far back as the dependency graph goes. If TRUE, then the function only checks the targets in names and uses stored metadata for information about upstream dependencies as needed. shortcut = TRUE increases speed if there are a lot of up-to-date targets, but it assumes all the dependencies are up to date, so please use with caution. Also, shortcut = TRUE only works if you set names.
allow	Optional, define the set of allowable vertices in the graph. Unlike names, allow is invoked only after the graph is mostly resolved, so it will not speed up execution. Set to NULL to allow all vertices in the pipeline and environment (default). Otherwise, you can supply symbols or tidyselect helpers like [starts_with()](#).
exclude	Optional, define the set of exclude vertices from the graph. Unlike names, exclude is invoked only after the graph is mostly resolved, so it will not speed up execution. Set to NULL to exclude no vertices. Otherwise, you can supply symbols or tidyselect helpers like [any_of()](#) and [starts_with()](#).
label	Character vector of one or more aesthetics to add to the vertex labels. Currently, the only option is "description" to show each target's custom description, or character(0) to suppress it.
label_width	Positive numeric of length 1, maximum width (in number of characters) of the node labels.
level_separation	Numeric of length 1, levelSeparation argument of visNetwork::visHierarchicalLayout(). Controls the distance between hierarchical levels. Consider changing the value if the aspect ratio of the graph is far from 1. If level_separation is NULL, the levelSeparation argument of visHierarchicalLayout() defaults to a value chosen by targets.

degree_from   Integer of length 1. When you click on a node, the graph highlights a neighbor-
                  hood of that node. degree_from controls the number of edges the neighborhood
                  extends upstream.

degree_to   Integer of length 1. When you click on a node, the graph highlights a neighbor-
                  hood of that node. degree_to controls the number of edges the neighborhood
                  extends downstream.

zoom_speed   Positive numeric of length 1, scaling factor on the zoom speed. Above 1 zooms
                  faster than default, below 1 zooms lower than default.

physics   Logical of length 1, whether to implement interactive physics in the graph, e.g.
                  edge elasticity.

callr_function   A function from callr to start a fresh clean R process to do the work. Set to
                  NULL to run in the current session instead of an external process (but restart
                  your R session just before you do in order to clear debris out of the global
                  environment). callr_function needs to be NULL for interactive debugging,
                  e.g. tar_option_set(debug = "your_target"). However, callr_function
                  should not be NULL for serious reproducible work.

callr_arguments
                  A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if
                  callr_function is NULL. Ignored if callr_function is anything other than
                  NULL. callr_function should only be NULL for debugging and testing pur-
                  poses, not for serious runs of a pipeline, etc.

                  The envir argument of [tar_make()](#) and related functions always overrides the
                  current value of tar_option_get("envir") in the current R session just before
                  running the target script file, so whenever you need to set an alternative envir,
                  you should always set it with tar_option_set() from within the target script
                  file. In other words, if you call tar_option_set(envir = envir1) in an inter-
                  active session and then tar_make(envir = envir2, callr_function = NULL),
                  then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
                  which in turn defaults to _targets.R. When you set this argument, the value of
                  tar_config_get("script") is temporarily changed for the current function
                  call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for de-
                  tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                  which in turn defaults to _targets/. When you set this argument, the value
                  of tar_config_get("store") is temporarily changed for the current function
                  call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                  set the data store path persistently for a project.

Value

A visNetwork HTML widget object.

Dependency graph

The dependency graph of a pipeline is a directed acyclic graph (DAG) where each node indicates
a target or global object and each directed edge indicates where a downstream node depends on

an upstream node. The DAG is not always a tree, but it never contains a cycle because no target is allowed to directly or indirectly depend on itself. The dependency graph should show a natural progression of work from left to right. `targets` uses static code analysis to create the graph, so the order of `tar_target()` calls in the `_targets.R` file does not matter. However, targets does not support self-referential loops or other cycles. For more information on the dependency graph, please read <https://books.ropensci.org/targets/targets.html#dependencies>.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other visualize: `tar_mermaid()`, `tar_visnetwork()`

Examples

```
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set()
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_glimpse()
tar_glimpse(allow = starts_with("y")) # see also any_of()
})
}
```

---

tar_group | *Group a data frame to iterate over subsets of rows.*

Description

Like `dplyr::group_by()`, but for patterns. `tar_group()` allows you to map or cross over subsets of data frames. Requires `iteration = "group"` on the target. See the example.

Usage

```
tar_group(x)
```

Arguments

x   Grouped data frame from dplyr::group_by()

Details

The goal of tar_group() is to post-process the return value of a data frame target to allow down-
stream targets to branch over subsets of rows. It takes the groups defined by dplyr::group_by()
and translates that information into a special tar_group is a column. tar_group is a vector of
positive integers from 1 to the number of groups. Rows with the same integer in tar_group belong
to the same group, and branches are arranged in increasing order with respect to the integers in
tar_group. The assignment of tar_group integers to group levels depends on the orderings in-
side the grouping variables and not the order of rows in the dataset. dplyr::group_keys() on the
grouped data frame shows how the grouping variables correspond to the integers in the tar_group
column.

Value

A data frame with a special tar_group column that targets will use to find subsets of your data
frame.

See Also

Other utilities: tar_active(), tar_backoff(), tar_call(), tar_cancel(), tar_definition(),
tar_described_as(), tar_envir(), tar_format_get(), tar_name(), tar_path(), tar_path_script(),
tar_path_script_support(), tar_path_store(), tar_path_target(), tar_source(), tar_store(),
tar_unblock_process()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
# The tar_group() function simply creates
# a tar_group column to partition the rows
# of a data frame.
data.frame(
  x = seq_len(6),
  id = rep(letters[seq_len(3)], each = 2)
) %>%
  dplyr::group_by(id) %>%
  tar_group()
# We use tar_group() below to branch over
# subsets of a data frame defined with dplyr::group_by().
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
library(dplyr)
library(targets)
library(tarchetypes)
list(
  tar_target(
    data,
    data.frame(
      x = seq_len(6),
```

```
      id = rep(letters[seq_len(3)], each = 2)
    ) %>%
      group_by(id) %>%
      tar_group(),
    iteration = "group"
  ),
  tar_target(
    sums,
    sum(data$x),
    pattern = map(data),
    iteration = "vector"
  )
)
})
tar_make()
tar_read(sums) # Should be c(3, 7, 11).
})
}
```

---

tar_helper   *Write a helper R script.*

Description

Write a helper R script for a `targets` pipeline. Could be supporting functions or the target script file (default: _targets.R) itself.

[tar_helper()](#) expects an unevaluated expression for the code argument, whereas [tar_helper_raw()](#) expects an evaluated expression object.

Usage

```
tar_helper(path = NULL, code = NULL, tidy_eval = TRUE, envir = parent.frame())

tar_helper_raw(path = NULL, code = NULL)
```

Arguments

path	Character of length 1, path to write (or overwrite) code. If the parent directory does not exist, tar_helper_raw() creates it. tar_helper() overwrites the file if it already exists.
code	Code to write to path. [tar_helper()](#) expects an unevaluated expression for the code argument, whereas [tar_helper_raw()](#) expects an evaluated expression object.
tidy_eval	Logical, whether to use tidy evaluation on code. If turned on, you can substitute expressions and symbols using !! and !!!. See examples below.
envir	Environment for tidy evaluation.

Details

tar_helper() is a specialized version of tar_script() with flexible paths and tidy evaluation.

Value

NULL (invisibly)

See Also

Other scripts: tar_edit(), tar_github_actions(), tar_renv(), tar_script()

Examples

```
# Without tidy evaluation:
path <- tempfile()
tar_helper(path, code = x <- 1)
tar_helper_raw(path, code = quote(x <- 1)) # equivalent
writeLines(readLines(path))
# With tidy evaluation:
y <- 123
tar_helper(path, x <- !!y)
writeLines(readLines(path))
```

---

tar_interactive   *Run if Target Markdown interactive mode is on.*

Description

In Target Markdown, run the enclosed code only if interactive mode is activated. Otherwise, do not run the code.

Usage

```
tar_interactive(code)
```

Arguments

code   R code to run if Target Markdown interactive mode is turned on.

Details

Visit <books.ropensci.org/targets/literate-programming.html> to learn about Target Markdown and interactive mode.

Value

If Target Markdown interactive mode is turned on, the function returns the result of running the code. Otherwise, the function invisibly returns NULL.

See Also

Other Target Markdown: `tar_engine_knitr()`, `tar_noninteractive()`, `tar_toggle()`

Examples

```
tar_interactive(message("In interactive mode."))
```

---

tar_invalidate   *Delete one or more metadata records (e.g. to rerun a target).*

Description

Delete the metadata of records in `_targets/meta/meta` but keep the return values of targets in `_targets/objects/`.

Usage

```
tar_invalidate(names, store = targets::tar_config_get("store"))
```

Arguments

names   Names of the targets to remove from the metadata list. The object supplied to
               names should be a tidyselect expression like `any_of()` or `starts_with()`
               from tidyselect itself, or `tar_described_as()` to select target names based
               on their descriptions.

store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`,
               which in turn defaults to `_targets/`. When you set this argument, the value
               of `tar_config_get("store")` is temporarily changed for the current function
               call. See `tar_config_get()` and `tar_config_set()` for details about how to
               set the data store path persistently for a project.

Details

This function forces one or more targets to rerun on the next `tar_make()`, regardless of the cues
and regardless of how those targets are stored. After `tar_invalidate()`, you will still be able
to locate the data files with `tar_path_target()` and manually salvage them in an emergency.
However, `tar_load()` and `tar_read()` will not be able to read the data into R, and subsequent
calls to `tar_make()` will attempt to rerun those targets. For patterns recorded in the metadata, all
the branches will be invalidated. For patterns no longer in the metadata, branches are left alone.

Value

`NULL` (invisibly).

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

See Also

Other clean: [tar_delete()](#), [tar_destroy()](#), [tar_prune()](#), [tar_prune_list()](#), [tar_unversion()](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_make()
tar_invalidate(starts_with("y")) # Only invalidates y1 and y2.
tar_make() # y1 and y2 rerun but return same values, so z is up to date.
})
}
```

---

tar_language   *Language*

Description

These functions help with metaprogramming in packages built on top of targets.

Usage

```
tar_deparse_language(expr)

tar_deparse_safe(expr, collapse = "\n", backtick = TRUE)

tar_tidy_eval(expr, envir, tidy_eval)

tar_tidyselect_eval(names_quosure, choices)
```

Arguments

`expr`	A language object to modify or deparse.
`collapse`	Character of length 1, delimiter in deparsing.
`backtick`	logical indicating whether symbolic names should be enclosed in backticks if they do not follow the standard syntax.
`envir`	An environment to find objects for tidy evaluation.
`tidy_eval`	Logical of length 1, whether to apply tidy evaluation.
`names_quosure`	An `rlang` quosure with `tidyselect` expressions.
`choices`	A character vector of choices for character elements returned by tidy evaluation.

Details

- `tar_deparse_language()` is a wrapper around `tar_deparse_safe()` which leaves character vectors and `NULL` objects alone, which helps with subsequent user input validation.
- `tar_deparse_safe()` is a wrapper around `base::deparse()` with a custom set of fast default settings and guardrails to ensure the output always has length 1.
- `tar_tidy_eval()` applies tidy evaluation to a language object and returns another language object.
- `tar_tidyselect_eval()` applies `tidyselect` selection with some special guardrails around `NULL` inputs.

See Also

Other utilities to extend targets: [`tar_assert`](), [`tar_condition`](), [`tar_test`]`()`

Examples

```
tar_deparse_language(quote(run_model()))
```

---

tar_load   *Load the values of targets.*

Description

Load the return values of targets into the current environment (or the environment of your choosing). For a typical target, the return value lives in a file in _targets/objects/. For file targets (i.e. `format = "file"`) the paths loaded in place of the values. [`tar_load_everything()`]() is shorthand for tar_load(everything()) to load all targets.

[`tar_load()`]() uses non-standard evaluation in the names argument (example: tar_load(names = everything())), whereas [`tar_load_raw()`]() uses standard evaluation for names (example: tar_load_raw(names = quote(everything()))).

Usage

```
tar_load(
  names,
  branches = NULL,
  meta = targets::tar_meta(targets_only = TRUE, store = store),
  strict = TRUE,
  silent = FALSE,
  envir = parent.frame(),
  store = targets::tar_config_get("store")
)

tar_load_raw(
  names,
  branches = NULL,
  meta = tar_meta(store = store),
  strict = TRUE,
  silent = FALSE,
  envir = parent.frame(),
  store = targets::tar_config_get("store")
)
```

Arguments

names   Names of the targets to load. tar_load() uses non-standard evaluation in
             the names argument (example: tar_load(names = everything())), whereas
             tar_load_raw() uses standard evaluation for names (example: tar_load_raw(names
             = quote(everything()))).

             The object supplied to names should be a tidyselect expression like any_of()
             or starts_with() from tidyselect itself, or tar_described_as() to select
             target names based on their descriptions.

branches   Integer of indices of the branches to load for any targets that are patterns.

meta   Data frame of target metadata from tar_meta().

strict   Logical of length 1, whether to error out if one of the selected targets is in
             the metadata but cannot be loaded. Set to FALSE to just load the targets in the
             metadata that can be loaded and skip the others.

silent   Logical of length 1. Only relevant when strict is FALSE. If silent is FALSE
             and strict is FALSE, then a message will be printed if a target is in the metadata
             but cannot be loaded. However, load failures will not stop other targets from
             being loaded.

envir   R environment in which to load target return values.

store   Character of length 1, directory path to the data store of the pipeline.

Value

Nothing.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

Cloud target data versioning

Some buckets in Amazon S3 or Google Cloud Storage are "versioned", which means they track historical versions of each data object. If you use `targets` with cloud storage (https://books.ropensci.org/targets/cloud-storage.html) and versioning is turned on, then `targets` will record each version of each target in its metadata.

Functions like tar_read() and tar_load() load the version recorded in the local metadata, which may not be the same as the "current" version of the object in the bucket. Likewise, functions tar_delete() and tar_destroy() only remove the version ID of each target as recorded in the local metadata.

If you want to interact with the *latest* version of an object instead of the version ID recorded in the local metadata, then you will need to delete the object from the metadata.

1. Make sure your local copy of the metadata is current and up to date. You may need to run tar_meta_download() or tar_meta_sync() first.
2. Run tar_unversion() to remove the recorded version IDs of your targets in the local metadata.
3. With the version IDs gone from the local metadata, functions like tar_read() and tar_destroy() will use the *latest* version of each target data object.
4. Optional: to back up the local metadata file with the version IDs deleted, use tar_meta_upload().

See Also

Other storage: tar_format(), tar_load_everything(), tar_objects(), tar_read()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_make()
ls() # Does not have "y1", "y2", or "z".
tar_load(starts_with("y"))
```

```
ls() # Has "y1" and "y2" but not "z".
tar_load_raw(quote(any_of("z")))
ls() # Has "y1", "y2", and "z".
})
}
```

---

tar_load_everything   *Load the values of all available targets.*

Description

Shorthand for `tar_load(everything())` to load all targets with entries in the metadata.

Usage

```
tar_load_everything(
  branches = NULL,
  meta = tar_meta(targets_only = TRUE, store = store),
  strict = TRUE,
  silent = FALSE,
  envir = parent.frame(),
  store = targets::tar_config_get("store")
)
```

Arguments

branches	Integer of indices of the branches to load for any targets that are patterns.
meta	Data frame of target metadata from [tar_meta()]().
strict	Logical of length 1, whether to error out if one of the selected targets is in the metadata but cannot be loaded. Set to `FALSE` to just load the targets in the metadata that can be loaded and skip the others.
silent	Logical of length 1. Only relevant when `strict` is `FALSE`. If `silent` is `FALSE` and `strict` is `FALSE`, then a message will be printed if a target is in the metadata but cannot be loaded. However, load failures will not stop other targets from being loaded.
envir	R environment in which to load target return values.
store	Character of length 1, directory path to the data store of the pipeline.

Value

Nothing.

See Also

Other storage: [tar_format]()`()`, [tar_load]()`()`, [tar_objects]()`()`, [tar_read]()`()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_make()
ls() # Does not have "y1", "y2", or "z".
tar_load_everything()
ls() # Has "y1", "y2", and "z".
})
}
```

---

tar_load_globals   *Load globals for debugging, testing, and prototyping*

Description

Load user-defined packages, functions, global objects, and settings defined in the target script file (default: _targets.R). This function is for debugging, testing, and prototyping only. It is not recommended for use inside a serious pipeline or to report the results of a serious pipeline.

Usage

```
tar_load_globals(
  envir = parent.frame(),
  script = targets::tar_config_get("script")
)
```

Arguments

envir   Environment to source the target script (default: _targets.R). Defaults to the calling environment.

script   Character of length 1, path to the target script file that defines the pipeline (_targets.R by default). This path should be either an absolute path or a path relative to the project root where you will call tar_make() and other functions. When tar_make() and friends run the script from the current working directory. If the argument NULL, the setting is not modified. Use tar_config_unset() to delete a setting.

Details

This function first sources the target script file (default: _targets.R) to loads all user-defined functions, global objects, and settings into the current R process. Then, it loads all the packages defined in `tar_option_get("packages")` (default: `(.packages())`) using `library()` with `lib.loc` defined in `tar_option_get("library")` (default: `NULL`).

Value

`NULL` (invisibly).

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other debug: `tar_traceback()`, `tar_workspace()`, `tar_workspace_download()`, `tar_workspaces()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(packages = "callr")
  analyze_data <- function(data) {
    summary(data)
  }
  list(
    tar_target(x, 1 + 1),
    tar_target(y, 1 + 1)
  )
}, ask = FALSE)
tar_load_globals()
print(analyze_data)
print("callr" %in% (.packages()))
})
}
```

---

tar_make   *Run a pipeline of targets.*

Description

Run the pipeline you defined in the targets script file (default: _targets.R). tar_make() runs
the correct targets in the correct order and stores the return values in _targets/objects/. Use
[tar_read()](#) to read a target back into R, and see [https://docs.ropensci.org/targets/reference/index.html#clean](#) to manage output files.

Usage

```
tar_make(
  names = NULL,
  shortcut = targets::tar_config_get("shortcut"),
  reporter = targets::tar_config_get("reporter_make"),
  seconds_meta_append = targets::tar_config_get("seconds_meta_append"),
  seconds_meta_upload = targets::tar_config_get("seconds_meta_upload"),
  seconds_reporter = targets::tar_config_get("seconds_reporter"),
  seconds_interval = targets::tar_config_get("seconds_interval"),
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function, reporter),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store"),
  garbage_collection = NULL,
  use_crew = targets::tar_config_get("use_crew"),
  terminate_controller = TRUE,
  as_job = targets::tar_config_get("as_job")
)
```

Arguments

names   Names of the targets to run or check. Set to NULL to check/run all the targets
          (default). The object supplied to names should be a tidyselect expression like
          [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#)
          to select target names based on their descriptions.

shortcut Logical of length 1, how to interpret the names argument. If shortcut is FALSE
          (default) then the function checks all targets upstream of names as far back as the
          dependency graph goes. shortcut = TRUE increases speed if there are a lot of
          up-to-date targets, but it assumes all the dependencies are up to date, so please
          use with caution. It relies on stored metadata for information about upstream
          dependencies. shortcut = TRUE only works if you set names.

reporter Character of length 1, name of the reporter to user. Controls how messages are
          printed as targets run in the pipeline. Defaults to tar_config_get("reporter_make").

The default of tar_config_get("reporter_make") is "terse" if running inside a literate programming document (i.e. the knitr.in.progress global option is TRUE). Otherwise, the default is "balanced". Choices:

- "balanced": a reporter that balances efficiency with informative detail. Uses a cli progress bar instead of printing messages for individual dynamic branches. To the right of the progress bar is a text string like "22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets completed successfully so far, 124 targets skipped so far).

  For best results with the balanced reporter, you may need to adjust your cli settings. See global options cli.num_colors and cli.dynamic at https://cli.r-lib.org/reference/cli-config.html. On that page is also the CLI_TICK_TIME environment variable which controls the time delay between progress bar updates. If the delay is too low, then overhead from printing to the console may slow down the pipeline.

- "terse": like the "balanced" reporter, but without a progress bar.

- "silent": print nothing.

- "timestamp": same as the "verbose" reporter except that each message begins with a time stamp.

- "verbose": print messages for individual targets as they dispatch or complete. Each individual target-specific time (e.g. "3.487 seconds") is strictly the elapsed runtime of the target and does not include steps like data retrieval and output storage.

seconds_meta_append

Positive numeric of length 1 with the minimum number of seconds between saves to the local metadata and progress files in the data store. his is an aggressive optimization setting not recommended for most users: higher values generally make the pipeline run faster, but unsaved work (in the event of a crash) is not up to date. When the pipeline ends, all the metadata and progress data is saved immediately, regardless of seconds_meta_append.

When the pipeline is just skipping targets, the actual interval between saves is max(1, seconds_meta_append) to reduce overhead.

seconds_meta_upload

Positive numeric of length 1 with the minimum number of seconds between uploads of the metadata and progress data to the cloud (see https://books.ropensci.org/targets/cloud-storage.html). Higher values generally make the pipeline run faster, but unsaved work (in the event of a crash) may not be backed up to the cloud. When the pipeline ends, all the metadata and progress data is uploaded immediately, regardless of seconds_meta_upload.

seconds_reporter

Deprecated on 2025-03-31 (targets version 1.10.1.9010).

seconds_interval

Deprecated on 2023-08-24 (targets version 1.2.2.9001). Use seconds_meta_append and seconds_meta_upload instead.

callr_function A function from callr to start a fresh clean R process to do the work. Set to NULL to run in the current session instead of an external process (but restart your R session just before you do in order to clear debris out of the global

environment). callr_function needs to be NULL for interactive debugging, e.g. tar_option_set(debug = "your_target"). However, callr_function should not be NULL for serious reproducible work.

callr_arguments

A list of arguments to callr_function.

envir

An environment, where to run the target R script (default: _targets.R) if callr_function is NULL. Ignored if callr_function is anything other than NULL. callr_function should only be NULL for debugging and testing purposes, not for serious runs of a pipeline, etc.

The envir argument of [tar_make()](#) and related functions always overrides the current value of tar_option_get("envir") in the current R session just before running the target script file, so whenever you need to set an alternative envir, you should always set it with tar_option_set() from within the target script file. In other words, if you call tar_option_set(envir = envir1) in an interactive session and then tar_make(envir = envir2, callr_function = NULL), then envir2 will be used.

script

Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for details about the target script file and how to set it persistently for a project.

store

Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

garbage_collection

Deprecated. Use the garbage_collection argument of [tar_option_set()](#) instead to run garbage collection at regular intervals in a pipeline, or use the argument of the same name in [tar_target()](#) to activate garbage collection for a specific target.

use_crew

Logical of length 1, whether to use crew if the controller option is set in tar_option_set() in the target script (_targets.R). See https://books.ropensci.org/targets/crew.html for details.

terminate_controller

Logical of length 1. For a crew-integrated pipeline, whether to terminate the controller after stopping or finishing the pipeline. This should almost always be set to TRUE, but FALSE combined with callr_function = NULL will allow you to get the running controller using tar_option_get("controller") for debugging purposes. For example, tar_option_get("controller")$summary() produces a worker-by-worker summary of the work assigned and completed, tar_option_get("controller")$queue is the list of unresolved tasks, and tar_option_get("controller")$results is the list of tasks that completed but were not collected with pop(). You can manually terminate the controller with tar_option_get("controller")$summary() to close down the dispatcher and worker processes.

| as_job | TRUE to run as an RStudio IDE / Posit Workbench job, if running on RStudio IDE / Posit Workbench. FALSE to run as a `callr` process in the main R session (depending on the `callr_function` argument). If `as_job` is TRUE, then the `rstudioapi` package must be installed. |

Value

NULL except if `callr_function = callr::r_bg()`, in which case a handle to the `callr` background process is returned. Either way, the value is invisibly returned.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other pipeline: [tar_make_clustermq()](tar_make_clustermq), tar_make_future()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_make(starts_with("y")) # Only processes y1 and y2.
# Distributed computing with crew:
if (requireNamespace("crew", quietly = TRUE)) {
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(controller = crew::controller_local())
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_make()
}
})
```

```
  }
```

---

tar_make_clustermq　　　　*Superseded. Run a pipeline with persistent* clustermq *workers.*

Description

Superseded. Use [tar_make()](#) with crew: <https://books.ropensci.org/targets/crew.html>.

Usage

```
tar_make_clustermq(
  names = NULL,
  shortcut = targets::tar_config_get("shortcut"),
  reporter = targets::tar_config_get("reporter_make"),
  seconds_meta_append = targets::tar_config_get("seconds_meta_append"),
  seconds_meta_upload = targets::tar_config_get("seconds_meta_upload"),
  seconds_reporter = targets::tar_config_get("seconds_reporter"),
  seconds_interval = targets::tar_config_get("seconds_interval"),
  workers = targets::tar_config_get("workers"),
  log_worker = FALSE,
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function, reporter),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store"),
  garbage_collection = NULL
)
```

Arguments

names　　　　Names of the targets to run or check. Set to NULL to check/run all the targets
(default). The object supplied to names should be a tidyselect expression like
[any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#)
to select target names based on their descriptions.

shortcut　　　Logical of length 1, how to interpret the names argument. If shortcut is FALSE
(default) then the function checks all targets upstream of names as far back as the
dependency graph goes. shortcut = TRUE increases speed if there are a lot of
up-to-date targets, but it assumes all the dependencies are up to date, so please
use with caution. It relies on stored metadata for information about upstream
dependencies. shortcut = TRUE only works if you set names.

reporter　　　Character of length 1, name of the reporter to user. Controls how messages are
printed as targets run in the pipeline. Defaults to tar_config_get("reporter_make").

The default of tar_config_get("reporter_make") is "terse" if running in-
side a literate programming document (i.e. the knitr.in.progress global op-
tion is TRUE). Otherwise, the default is "balanced". Choices:

- "balanced": a reporter that balances efficiency with informative detail. Uses a cli progress bar instead of printing messages for individual dynamic branches. To the right of the progress bar is a text string like "22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets completed successfully so far, 124 targets skipped so far).

  For best results with the balanced reporter, you may need to adjust your cli settings. See global options cli.num_colors and cli.dynamic at https://cli.r-lib.org/reference/cli-config.html. On that page is also the CLI_TICK_TIME environment variable which controls the time delay between progress bar updates. If the delay is too low, then overhead from printing to the console may slow down the pipeline.

- "terse": like the "balanced" reporter, but without a progress bar.

- "silent": print nothing.

- "timestamp": same as the "verbose" reporter except that each message begins with a time stamp.

- "verbose": print messages for individual targets as they dispatch or complete. Each individual target-specific time (e.g. "3.487 seconds") is strictly the elapsed runtime of the target and does not include steps like data retrieval and output storage.

seconds_meta_append

Positive numeric of length 1 with the minimum number of seconds between saves to the local metadata and progress files in the data store. his is an aggressive optimization setting not recommended for most users: higher values generally make the pipeline run faster, but unsaved work (in the event of a crash) is not up to date. When the pipeline ends, all the metadata and progress data is saved immediately, regardless of seconds_meta_append.

When the pipeline is just skipping targets, the actual interval between saves is max(1, seconds_meta_append) to reduce overhead.

seconds_meta_upload

Positive numeric of length 1 with the minimum number of seconds between uploads of the metadata and progress data to the cloud (see https://books.ropensci.org/targets/cloud-storage.html). Higher values generally make the pipeline run faster, but unsaved work (in the event of a crash) may not be backed up to the cloud. When the pipeline ends, all the metadata and progress data is uploaded immediately, regardless of seconds_meta_upload.

seconds_reporter

Deprecated on 2025-03-31 (targets version 1.10.1.9010).

seconds_interval

Deprecated on 2023-08-24 (targets version 1.2.2.9001). Use seconds_meta_append and seconds_meta_upload instead.

workers   Positive integer, number of persistent clustermq workers to create.

log_worker   Logical, whether to write a log file for each worker. Same as the log_worker argument of clustermq::Q() and clustermq::workers().

callr_function   A function from callr to start a fresh clean R process to do the work. Set to NULL to run in the current session instead of an external process (but restart your R session just before you do in order to clear debris out of the global

environment). callr_function needs to be NULL for interactive debugging, e.g. tar_option_set(debug = "your_target"). However, callr_function should not be NULL for serious reproducible work.

callr_arguments
: A list of arguments to callr_function.

envir
: An environment, where to run the target R script (default: _targets.R) if callr_function is NULL. Ignored if callr_function is anything other than NULL. callr_function should only be NULL for debugging and testing purposes, not for serious runs of a pipeline, etc.

  The envir argument of [tar_make()](#) and related functions always overrides the current value of tar_option_get("envir") in the current R session just before running the target script file, so whenever you need to set an alternative envir, you should always set it with tar_option_set() from within the target script file. In other words, if you call tar_option_set(envir = envir1) in an interactive session and then tar_make(envir = envir2, callr_function = NULL), then envir2 will be used.

script
: Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for details about the target script file and how to set it persistently for a project.

store
: Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

garbage_collection
: Deprecated. Use the garbage_collection argument of [tar_option_set()](#) instead to run garbage collection at regular intervals in a pipeline, or use the argument of the same name in [tar_target()](#) to activate garbage collection for a specific target.

Details

tar_make_clustermq() is like [tar_make()](#) except that targets run in parallel on persistent workers. A persistent worker is an R process that runs for a long time and runs multiple targets during its lifecycle. Persistent workers launch as soon as the pipeline reaches an outdated target with deployment = "worker", and they keep running until the pipeline starts to wind down.

To configure tar_make_clustermq(), you must configure the clustermq package. To do this, set global options clustermq.scheduler and clustermq.template inside the target script file (default: _targets.R). To read more about configuring clustermq for your scheduler, visit https://mschubert.github.io/clustermq/articles/userguide.html#configuration # nolint or https://books.ropensci.org/targets/hpc.html. clustermq is not a strict dependency of targets, so you must install clustermq yourself.

Value

NULL except if `callr_function = callr::r_bg()`, in which case a handle to the `callr` background process is returned. Either way, the value is invisibly returned.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other pipeline: `tar_make()`, `tar_make_future()`

Examples

```
if (!identical(tolower(Sys.info()[["sysname"]]), "windows")) {
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  options(clustermq.scheduler = "multiprocess") # Does not work on Windows.
  tar_option_set()
  list(tar_target(x, 1 + 1))
}, ask = FALSE)
tar_make_clustermq()
})
}
}
```

---

tar_make_future   *Superseded. Run a pipeline of targets in parallel with transient* future *workers.*

Description

Superseded. Use `tar_make()` with crew: <https://books.ropensci.org/targets/crew.html>.

Usage

```
tar_make_future(
  names = NULL,
  shortcut = targets::tar_config_get("shortcut"),
  reporter = targets::tar_config_get("reporter_make"),
```

```
    seconds_meta_append = targets::tar_config_get("seconds_meta_append"),
    seconds_meta_upload = targets::tar_config_get("seconds_meta_upload"),
    seconds_reporter = targets::tar_config_get("seconds_reporter"),
    seconds_interval = targets::tar_config_get("seconds_interval"),
    workers = targets::tar_config_get("workers"),
    callr_function = callr::r,
    callr_arguments = targets::tar_callr_args_default(callr_function, reporter),
    envir = parent.frame(),
    script = targets::tar_config_get("script"),
    store = targets::tar_config_get("store"),
    garbage_collection = NULL
)
```

Arguments

names
: Names of the targets to run or check. Set to NULL to check/run all the targets (default). The object supplied to names should be a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.

shortcut
: Logical of length 1, how to interpret the names argument. If shortcut is FALSE (default) then the function checks all targets upstream of names as far back as the dependency graph goes. shortcut = TRUE increases speed if there are a lot of up-to-date targets, but it assumes all the dependencies are up to date, so please use with caution. It relies on stored metadata for information about upstream dependencies. shortcut = TRUE only works if you set names.

reporter
: Character of length 1, name of the reporter to user. Controls how messages are printed as targets run in the pipeline. Defaults to tar_config_get("reporter_make").

    The default of tar_config_get("reporter_make") is "terse" if running inside a literate programming document (i.e. the knitr.in.progress global option is TRUE). Otherwise, the default is "balanced". Choices:

    - "balanced": a reporter that balances efficiency with informative detail. Uses a cli progress bar instead of printing messages for individual dynamic branches. To the right of the progress bar is a text string like "22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets completed successfully so far, 124 targets skipped so far).
      For best results with the balanced reporter, you may need to adjust your cli settings. See global options cli.num_colors and cli.dynamic at https://cli.r-lib.org/reference/cli-config.html. On that page is also the CLI_TICK_TIME environment variable which controls the time delay between progress bar updates. If the delay is too low, then overhead from printing to the console may slow down the pipeline.
    - "terse": like the "balanced" reporter, but without a progress bar.
    - "silent": print nothing.
    - "timestamp": same as the "verbose" reporter except that each message begins with a time stamp.
    - "verbose": print messages for individual targets as they dispatch or complete. Each individual target-specific time (e.g. "3.487 seconds") is strictly

the elapsed runtime of the target and does not include steps like data re-
trieval and output storage.

seconds_meta_append

Positive numeric of length 1 with the minimum number of seconds between
saves to the local metadata and progress files in the data store. his is an aggres-
sive optimization setting not recommended for most users: higher values gen-
erally make the pipeline run faster, but unsaved work (in the event of a crash)
is not up to date. When the pipeline ends, all the metadata and progress data is
saved immediately, regardless of seconds_meta_append.

When the pipeline is just skipping targets, the actual interval between saves is
max(1, seconds_meta_append) to reduce overhead.

seconds_meta_upload

Positive numeric of length 1 with the minimum number of seconds between
uploads of the metadata and progress data to the cloud (see [https://books.](https://books.ropensci.org/targets/cloud-storage.html)
[ropensci.org/targets/cloud-storage.html](https://books.ropensci.org/targets/cloud-storage.html)). Higher values generally make
the pipeline run faster, but unsaved work (in the event of a crash) may not be
backed up to the cloud. When the pipeline ends, all the metadata and progress
data is uploaded immediately, regardless of seconds_meta_upload.

seconds_reporter

Deprecated on 2025-03-31 (targets version 1.10.1.9010).

seconds_interval

Deprecated on 2023-08-24 (targets version 1.2.2.9001). Use seconds_meta_append
and seconds_meta_upload instead.

workers   Positive integer, maximum number of transient future workers allowed to run
at any given time.

callr_function   A function from callr to start a fresh clean R process to do the work. Set to
NULL to run in the current session instead of an external process (but restart
your R session just before you do in order to clear debris out of the global
environment). callr_function needs to be NULL for interactive debugging,
e.g. tar_option_set(debug = "your_target"). However, callr_function
should not be NULL for serious reproducible work.

callr_arguments

A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if
callr_function is NULL. Ignored if callr_function is anything other than
NULL. callr_function should only be NULL for debugging and testing pur-
poses, not for serious runs of a pipeline, etc.

The envir argument of [tar_make()](#) and related functions always overrides the
current value of tar_option_get("envir") in the current R session just before
running the target script file, so whenever you need to set an alternative envir,
you should always set it with tar_option_set() from within the target script
file. In other words, if you call tar_option_set(envir = envir1) in an inter-
active session and then tar_make(envir = envir2, callr_function = NULL),
then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
which in turn defaults to _targets.R. When you set this argument, the value of

tar_config_get("script") is temporarily changed for the current function call. See [tar_script()](), [tar_config_get()](), and [tar_config_set()]() for details about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()]() and [tar_config_set()]() for details about how to set the data store path persistently for a project.

garbage_collection

Deprecated. Use the garbage_collection argument of [tar_option_set()]() instead to run garbage collection at regular intervals in a pipeline, or use the argument of the same name in [tar_target()]() to activate garbage collection for a specific target.

Details

This function is like [tar_make()]() except that targets run in parallel with transient future workers. It requires that you declare your future::plan() inside the target script file (default: _targets.R). future is not a strict dependency of targets, so you must install future yourself.

To configure tar_make_future() with a computing cluster, see the future.batchtools package documentation.

Value

NULL except if callr_function = callr::r_bg(), in which case a handle to the callr background process is returned. Either way, the value is invisibly returned.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

See Also

Other pipeline: [tar_make]()(), [tar_make_clustermq]()()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  future::plan(future::multisession, workers = 2)
  list(
```

```
    tar_target(x, 1 + 1),
    tar_target(y, 1 + 1)
  )
}, ask = FALSE)
tar_make_future()
})
}
```

---

tar_manifest   *Produce a data frame of information about your targets.*

Description

Along with [tar_visnetwork()](#) and [tar_glimpse()](#), tar_manifest() helps check that you con-
structed your pipeline correctly.

Usage

```
tar_manifest(
  names = NULL,
  fields = tidyselect::any_of(c("name", "command", "pattern", "description")),
  drop_missing = TRUE,
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function),
  envir = parent.frame(),
  script = targets::tar_config_get("script")
)
```

Arguments

names   Names of the targets to show. Set to NULL to show all the targets (default).
                Otherwise, the object supplied to names should be a tidyselect expression like
                [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#)
                to select target names based on their descriptions.

fields   Names of the fields, or columns, to show. Set to NULL to show all the fields
                (default). Otherwise, the value of fields should be a tidyselect expression
                like [starts_with()](#) to select the columns to show in the output. Possible fields
                are below. All of them can be set in [tar_target()](#), [tar_target_raw()](#), or
                [tar_option_set()](#).

                • name: Name of the target.
                • command: the R command that runs when the target runs.
                • description: custom free-form text description of the target, if available.
                • pattern: branching pattern of the target, if applicable.
                • format: Storage format.
                • repository: Storage repository.
                • iteration: Iteration mode for branching.

- error: Error mode, what to do when the target fails.
- memory: Memory mode, when to keep targets in memory.
- storage: Storage mode for high-performance computing scenarios.
- retrieval: Retrieval mode for high-performance computing scenarios.
- deployment: Where/whether to deploy the target in high-performance computing scenarios.
- priority: Numeric of length 1 between 0 and 1. Controls which targets get deployed first when multiple competing targets are ready simultaneously. Targets with priorities closer to 1 get dispatched earlier (and polled earlier in tar_make_future()).
- resources: A list of target-specific resource requirements for tar_make_future().
- cue_mode: Cue mode from tar_cue().
- cue_depend: Depend cue from tar_cue().
- cue_expr: Command cue from tar_cue().
- cue_file: File cue from tar_cue().
- cue_format: Format cue from tar_cue().
- cue_repository: Repository cue from tar_cue().
- cue_iteration: Iteration cue from tar_cue().
- packages: List columns of packages loaded before running the target.
- library: List column of library paths to load the packages.

drop_missing   Logical of length 1, whether to automatically omit empty columns and columns with all missing values.

callr_function   A function from callr to start a fresh clean R process to do the work. Set to NULL to run in the current session instead of an external process (but restart your R session just before you do in order to clear debris out of the global environment). callr_function needs to be NULL for interactive debugging, e.g. tar_option_set(debug = "your_target"). However, callr_function should not be NULL for serious reproducible work.

callr_arguments

   A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if callr_function is NULL. Ignored if callr_function is anything other than NULL. callr_function should only be NULL for debugging and testing purposes, not for serious runs of a pipeline, etc.

   The envir argument of tar_make() and related functions always overrides the current value of tar_option_get("envir") in the current R session just before running the target script file, so whenever you need to set an alternative envir, you should always set it with tar_option_set() from within the target script file. In other words, if you call tar_option_set(envir = envir1) in an interactive session and then tar_make(envir = envir2, callr_function = NULL), then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See tar_script(), tar_config_get(), and tar_config_set() for details about the target script file and how to set it persistently for a project.

Value

A data frame of information about the targets in the pipeline. Rows appear in topological order (the order they will run without any influence from parallel computing or priorities).

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other inspect: `tar_deps()`, `tar_network()`, `tar_outdated()`, `tar_sitrep()`, `tar_validate()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set()
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2),
    tar_target(m, z, pattern = map(z), description = "branching over z"),
    tar_target(c, z, pattern = cross(z))
  )
}, ask = FALSE)
tar_manifest()
tar_manifest(fields = any_of(c("name", "command")))
tar_manifest(fields = any_of("command"))
tar_manifest(fields = starts_with("cue"))
})
}
```

| tar_mermaid | `mermaid.js` *dependency graph.* |

Description

Visualize the dependency graph with a static `mermaid.js` graph.

Usage

```
tar_mermaid(
  targets_only = FALSE,
  names = NULL,
  shortcut = FALSE,
  allow = NULL,
  exclude = ".Random.seed",
  outdated = TRUE,
  label = targets::tar_config_get("label"),
  label_width = targets::tar_config_get("label_width"),
  legend = TRUE,
  color = TRUE,
  reporter = targets::tar_config_get("reporter_outdated"),
  seconds_reporter = targets::tar_config_get("seconds_reporter_outdated"),
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

targets_only	Logical, whether to restrict the output to just targets (FALSE) or to also include global functions and objects.
names	Names of targets. The graph visualization will operate only on these targets (and unless shortcut is TRUE, all the targets upstream as well). Selecting a small subgraph using names could speed up the load time of the visualization. Unlike allow, names is invoked before the graph is generated. Set to NULL to check/run all the targets (default). Otherwise, the object supplied to names should be a tidyselect expression like any_of() or starts_with() from tidyselect itself, or tar_described_as() to select target names based on their descriptions.
shortcut	Logical of length 1, how to interpret the names argument. If shortcut is FALSE (default) then the function checks all targets upstream of names as far back as the dependency graph goes. If TRUE, then the function only checks the targets in names and uses stored metadata for information about upstream dependencies as needed. shortcut = TRUE increases speed if there are a lot of up-to-date targets, but it assumes all the dependencies are up to date, so please use with caution. Also, shortcut = TRUE only works if you set names.
allow	Optional, define the set of allowable vertices in the graph. Unlike names, allow is invoked only after the graph is mostly resolved, so it will not speed up execution. Set to NULL to allow all vertices in the pipeline and environment (default). Otherwise, you can supply symbols or tidyselect helpers like starts_with().
exclude	Optional, define the set of exclude vertices from the graph. Unlike names, exclude is invoked only after the graph is mostly resolved, so it will not speed

up execution. Set to NULL to exclude no vertices. Otherwise, you can supply
symbols or tidyselect helpers like [any_of()](#) and [starts_with()](#).

outdated   Logical, whether to show colors to distinguish outdated targets from up-to-date
                  targets. (Global functions and objects still show these colors.) Looking for
                  outdated targets takes a lot of time for large pipelines with lots of branches, and
                  setting outdated to FALSE is a nice way to speed up the graph if you only want
                  to see dependency relationships and pipeline progress.

label   Character vector of one or more aesthetics to add to the vertex labels. Can con-
                  tain "description" to show each target's custom description, "time" to show
                  total runtime, "size" to show total storage size, or "branches" to show the
                  number of branches in each pattern. You can choose multiple aesthetics at once,
                  e.g. label = c("description", "time"). Only the description is enabled by
                  default.

label_width   Positive numeric of length 1, maximum width (in number of characters) of the
                  node labels.

legend   Logical of length 1, whether to display the legend.

color   Logical of length 1, whether to color the graph vertices by status.

reporter   Character of length 1, name of the reporter to user. Controls how messages are
                  printed as targets are checked.

                  The default of tar_config_get("reporter_make") is "terse" if running in-
                  side a literate programming document (i.e. the knitr.in.progress global op-
                  tion is TRUE). Otherwise, the default is "balanced". Choices:

```
* `"balanced"`: a reporter that balances efficiency
  with informative detail.
  Uses a `cli` progress bar instead of printing messages
  for individual dynamic branches.
  To the right of the progress bar is a text string like
  "22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets
  detected as outdated so far,
  124 targets detected as up to date so far).

  For best results with the balanced reporter, you may need to
  adjust your `cli` settings. See global options `cli.num_colors`
  and `cli.dynamic` at
  <https://cli.r-lib.org/reference/cli-config.html>.
  On that page is also the `CLI_TICK_TIME` environment variable
  which controls the time delay between progress bar updates.
 If the delay is too low, then overhead from printing to the console
  may slow down the pipeline.
* `"terse"`: like `"balanced"`, except without a progress bar.
* `"silent"`: print nothing.
```

seconds_reporter
                  Deprecated on 2025-03-31 (targets version 1.10.1.9010).

callr_function   A function from callr to start a fresh clean R process to do the work. Set to
                  NULL to run in the current session instead of an external process (but restart

your R session just before you do in order to clear debris out of the global environment). callr_function needs to be NULL for interactive debugging, e.g. tar_option_set(debug = "your_target"). However, callr_function should not be NULL for serious reproducible work.

callr_arguments

A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if callr_function is NULL. Ignored if callr_function is anything other than NULL. callr_function should only be NULL for debugging and testing purposes, not for serious runs of a pipeline, etc.

The envir argument of [tar_make()](#) and related functions always overrides the current value of tar_option_get("envir") in the current R session just before running the target script file, so whenever you need to set an alternative envir, you should always set it with tar_option_set() from within the target script file. In other words, if you call tar_option_set(envir = envir1) in an interactive session and then tar_make(envir = envir2, callr_function = NULL), then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for details about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

Details

mermaid.js is a JavaScript library for constructing static visualizations of graphs.

Value

A character vector of lines of code of the mermaid.js graph. You can visualize the graph by copying the text into a public online mermaid.js editor or a mermaid GitHub code chunk (https://github.blog/2022-02-14-incl Alternatively, you can render it inline in an R Markdown or Quarto document using a results = "asis" code chunk like so:

```
```{r, results = "asis", echo = FALSE}
cat(c("```{mermaid}", targets::tar_mermaid(), "```"), sep = "\n")
```
```

Dependency graph

The dependency graph of a pipeline is a directed acyclic graph (DAG) where each node indicates a target or global object and each directed edge indicates where a downstream node depends on an upstream node. The DAG is not always a tree, but it never contains a cycle because no target

is allowed to directly or indirectly depend on itself. The dependency graph should show a natural progression of work from left to right. `targets` uses static code analysis to create the graph, so the order of `tar_target()` calls in the `_targets.R` file does not matter. However, targets does not support self-referential loops or other cycles. For more information on the dependency graph, please read https://books.ropensci.org/targets/targets.html#dependencies.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other visualize: `tar_glimpse()`, `tar_visnetwork()`

Examples

```
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set()
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2, description = "sum of two other sums")
  )
})
# Copy the text into a mermaid.js online editor
# or a mermaid GitHub code chunk:
tar_mermaid()
})
}
```

tar_meta	*Read a project's metadata.*

Description

Read the metadata of all recorded targets and global objects.

Usage

```
tar_meta(
  names = NULL,
  fields = NULL,
  targets_only = FALSE,
  complete_only = FALSE,
  store = targets::tar_config_get("store")
)
```

Arguments

names
: Optional, names of the targets. If supplied, tar_meta() only returns metadata on these targets. You can supply symbols or tidyselect helpers like any_of() and starts_with(). If NULL, all names are selected.

fields
: Optional, names of columns/fields to select. If supplied, tar_meta() only returns the selected metadata columns. If NULL, all fields are selected. You can supply symbols or tidyselect helpers like any_of() and starts_with(). The name column is always included first no matter what you select. Choices:

  - name: name of the target or global object.
  - type: type of the object: either "function" or "object" for global objects, and "stem", "branch", "map", or "cross" for targets.
  - data: hash of the output data.
  - command: hash of the target's deparsed command.
  - depend: hash of the immediate upstream dependencies of the target.
  - seed: random number generator seed with which the target ran. A target's random number generator seed is a deterministic function of its name. In this way, each target runs with a reproducible seed so someone else running the same pipeline should get the same results, and no two targets in the same pipeline share the same seed. (Even dynamic branches have different names and thus different seeds.) You can recover the seed of a completed target with tar_meta(your_target, seed) and run tar_seed_set() on the result to locally recreate the target's initial RNG state.
  - path: A list column of paths to target data. Usually, each element is a single path, but there could be multiple paths per target for file targets (i.e. tar_target(format = "file")).
  - time: POSIXct object with the time the target's data in storage was last modified. If the target stores no local file, then the time stamp corresponds to the time the target last ran successfully. Only targets that run commands have time stamps: just non-branching targets and individual dynamic branches. Displayed in the current time zone of the system. If there are multiple outputs for that target, as with file targets, then the maximum time is shown.
  - size: hash of the sum of all the bytes of the files at path.
  - bytes: total file size in bytes of all files in path.
  - format: character, one of the admissible data storage formats. See the format argument in the tar_target() help file for details.

- iteration: character, either "list" or "vector" to describe the iteration and aggregation mode of the target. See the iteration argument in the tar_target() help file for details.
- parent: for branches, name of the parent pattern.
- children: list column, names of the children of targets that have them. These include buds of stems and branches of patterns.
- seconds: number of seconds it took to run the target.
- warnings: character string of warning messages from the last run of the target. Only the first 50 warnings are available, and only the first 2048 characters of the concatenated warning messages.
- error: character string of the error message if the target errored.

targets_only   Logical, whether to just show information about targets or also return metadata on functions and other global objects.

complete_only   Logical, whether to return only complete rows (no NA values).

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.

Details

A metadata row only updates when the target completes. tar_progress() shows information on targets that are running. That is why the number of branches may disagree between tar_meta() and tar_progress() for actively running pipelines.

Value

A data frame with one row per target/object and the selected fields.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

Cloud metadata

Metadata files help targets read data objects and decide if the pipeline is up to date. Usually, these metadata files live in files in the local _targets/meta/ folder in your project, e.g. _targets/meta/meta. But in addition, if you set repository to anything other than "local" in tar_option_set() in _targets.R, then tar_make() continuously uploads the metadata files to the bucket you specify in resources. tar_meta_delete() will delete those files from the cloud, and so will tar_destroy() if destroy is set to either "all" or "cloud".

Other functions in `targets`, such as `tar_meta()`, `tar_visnetwork()`, `tar_outdated()`, and `tar_invalidate()`, use the local metadata only and ignore the copies on the cloud. So if you are working on a different computer than the one running the pipeline, you will need to download the cloud metadata to your current machine using `tar_meta_download()`. Other functions `tar_meta_upload()`, `tar_meta_sync()`, and `tar_meta_delete()` also manage metadata across the cloud and the local file system.

Remarks:

- The `repository_meta` option in `tar_option_set()` is actually what controls where the metadata lives in the cloud, but it defaults to `repository`.

- Like `tar_make()`, `tar_make_future()` and `tar_make_clustermq()` also continuously upload metadata files to the cloud bucket specified in `resources`.

- `tar_meta_download()` and related functions need to run `_targets.R` to detect `tar_option_set()` options `repository_meta` and `resources`, so please be aware of side effects that may happen running your custom `_targets.R` file.

See Also

Other metadata: `tar_meta_delete()`, `tar_meta_download()`, `tar_meta_sync()`, `tar_meta_upload()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
tar_meta()
tar_meta(starts_with("y_")) # see also any_of()
})
}
```

---

tar_meta_delete *Delete metadata.*

Description

Delete the project metadata files from the local file system, the cloud, or both.

Usage

```
tar_meta_delete(
  meta = TRUE,
  progress = TRUE,
  process = TRUE,
  crew = TRUE,
  verbose = TRUE,
  delete = "all",
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

meta	Logical of length 1, whether to process the main metadata file at _targets/meta/meta.
progress	Logical of length 1, whether to process the progress file at _targets/meta/progress.
process	Logical of length 1, whether to process the process file at _targets/meta/process.
crew	Logical of length 1, whether to process the crew file at _targets/meta/crew. Only exists if running targets with crew.
verbose	Logical of length 1, whether to print informative console messages.
delete	Character of length 1, which location to delete the files. Choose "local" for local files, "cloud" for files on the cloud, or "all" to delete metadata files from both the local file system and the cloud.
script	Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See [tar_script()](), [tar_config_get()](), and [tar_config_set()]() for details about the target script file and how to set it persistently for a project.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()]() and [tar_config_set()]() for details about how to set the data store path persistently for a project.

See Also

Other metadata: [tar_meta](), [tar_meta_download](), [tar_meta_sync](), [tar_meta_upload]()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(
    resources = tar_resources(
```

```
      aws = tar_resources_aws(
        bucket = "YOUR_BUCKET_NAME",
        prefix = "YOUR_PROJECT_NAME"
      )
    ),
    repository = "aws"
  )
  list(
    tar_target(x, data.frame(x = seq_len(2), y = seq_len(2)))
  )
})
tar_make()
tar_meta_delete()
})
}
```

---

tar_meta_download   *download local metadata to the cloud.*

Description

download local metadata files to the cloud location (repository, bucket, and prefix) you set in
tar_option_set() in _targets.R.

Usage

```
tar_meta_download(
  meta = TRUE,
  progress = TRUE,
  process = TRUE,
  crew = TRUE,
  verbose = TRUE,
  strict = FALSE,
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

meta	Logical of length 1, whether to process the main metadata file at _targets/meta/meta.
progress	Logical of length 1, whether to process the progress file at _targets/meta/progress.
process	Logical of length 1, whether to process the process file at _targets/meta/process.
crew	Logical of length 1, whether to process the crew file at _targets/meta/crew. Only exists if running targets with crew.
verbose	Logical of length 1, whether to print informative console messages.
strict	Logical of length 1. TRUE to error out if the file does not exist in the bucket, FALSE to proceed without an error or warning. If strict is FALSE and verbose is TRUE, then an informative message will print to the R console.

script   Character of length 1, path to the target script file. Defaults to `tar_config_get("script")`,
                which in turn defaults to `_targets.R`. When you set this argument, the value of
                `tar_config_get("script")` is temporarily changed for the current function
                call. See `tar_script()`, `tar_config_get()`, and `tar_config_set()` for de-
                tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`,
                which in turn defaults to `_targets/`. When you set this argument, the value
                of `tar_config_get("store")` is temporarily changed for the current function
                call. See `tar_config_get()` and `tar_config_set()` for details about how to
                set the data store path persistently for a project.

See Also

Other metadata: `tar_meta()`, `tar_meta_delete()`, `tar_meta_sync()`, `tar_meta_upload()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(
    resources = tar_resources(
      aws = tar_resources_aws(
        bucket = "YOUR_BUCKET_NAME",
        prefix = "YOUR_PROJECT_NAME"
      )
    ),
    repository = "aws"
  )
  list(
    tar_target(x, data.frame(x = seq_len(2), y = seq_len(2)))
  )
})
tar_make()
tar_meta_download()
})
}
```

---

tar_meta_sync   *Synchronize cloud metadata.*

Description

Synchronize metadata in a cloud bucket with metadata in the local data store.

Usage

```
tar_meta_sync(
  meta = TRUE,
  progress = TRUE,
  process = TRUE,
  crew = TRUE,
  verbose = TRUE,
  prefer_local = TRUE,
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

meta	Logical of length 1, whether to process the main metadata file at _targets/meta/meta.
progress	Logical of length 1, whether to process the progress file at _targets/meta/progress.
process	Logical of length 1, whether to process the process file at _targets/meta/process.
crew	Logical of length 1, whether to process the crew file at _targets/meta/crew. Only exists if running targets with crew.
verbose	Logical of length 1, whether to print informative console messages.
prefer_local	Logical of length 1 to control which copy of each metadata file takes precedence if the local hash and cloud hash are different but the time stamps are the same. Set to TRUE to upload the local data file in that scenario, FALSE to download the cloud file.
script	Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See [tar_script()](), [tar_config_get()](), and [tar_config_set()]() for details about the target script file and how to set it persistently for a project.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()]() and [tar_config_set()]() for details about how to set the data store path persistently for a project.

Details

[tar_meta_sync()]() synchronizes the local and cloud copies of all the metadata files of the pipeline so that both have the most recent copy. For each metadata file, if the local file does not exist or is older than the cloud file, then the cloud file is downloaded to the local file path. Conversely, if the cloud file is older or does not exist, then the local file is uploaded to the cloud. If the time stamps of these files are equal, use the prefer_local argument to determine which copy takes precedence.

See Also

Other metadata: [tar_meta](), [tar_meta_delete](), [tar_meta_download](), [tar_meta_upload]()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(
    resources = tar_resources(
      aws = tar_resources_aws(
        bucket = "YOUR_BUCKET_NAME",
        prefix = "YOUR_PROJECT_NAME"
      )
    ),
    repository = "aws"
  )
  list(
    tar_target(x, data.frame(x = seq_len(2), y = seq_len(2)))
  )
}, ask = FALSE)
tar_make()
tar_meta_sync()
})
}
```

---

tar_meta_upload   *Upload local metadata to the cloud.*

Description

Upload local metadata files to the cloud location (repository, bucket, and prefix) you set in `tar_option_set()`
in _targets.R.

Usage

```
tar_meta_upload(
  meta = TRUE,
  progress = TRUE,
  process = TRUE,
  crew = TRUE,
  verbose = TRUE,
  strict = FALSE,
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

meta   Logical of length 1, whether to process the main metadata file at _targets/meta/meta.

progress	Logical of length 1, whether to process the progress file at _targets/meta/progress.
process	Logical of length 1, whether to process the process file at _targets/meta/process.
crew	Logical of length 1, whether to process the crew file at _targets/meta/crew. Only exists if running targets with crew.
verbose	Logical of length 1, whether to print informative console messages.
strict	Logical of length 1. TRUE to error out if the file does not exist locally, FALSE to proceed without an error or warning. If strict is FALSE and verbose is TRUE, then an informative message will print to the R console.
script	Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See tar_script(), tar_config_get(), and tar_config_set() for details about the target script file and how to set it persistently for a project.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.

See Also

Other metadata: tar_meta(), tar_meta_delete(), tar_meta_download(), tar_meta_sync()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(
    resources = tar_resources(
      aws = tar_resources_aws(
        bucket = "YOUR_BUCKET_NAME",
        prefix = "YOUR_PROJECT_NAME"
      )
    ),
    repository = "aws"
  )
  list(
    tar_target(x, data.frame(x = seq_len(2), y = seq_len(2)))
  )
}, ask = FALSE)
tar_make()
tar_meta_upload()
})
}
```

tar_name   *Get the name of the target currently running.*

Description

Get the name of the target currently running.

Usage

```
tar_name(default = "target")
```

Arguments

default   Character, value to return if tar_name() is called on its own outside a targets
                pipeline. Having a default lets users run things without tar_make(), which
                helps peel back layers of code and troubleshoot bugs.

Value

Character of length 1. If called inside a pipeline, tar_name() returns name of the target currently
running. Otherwise, the return value is default.

See Also

Other utilities: tar_active(), tar_backoff(), tar_call(), tar_cancel(), tar_definition(),
tar_described_as(), tar_envir(), tar_format_get(), tar_group(), tar_path(), tar_path_script(),
tar_path_script_support(), tar_path_store(), tar_path_target(), tar_source(), tar_store(),
tar_unblock_process()

Examples

```
tar_name()
tar_name(default = "custom_target_name")
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(tar_target(x, tar_name()), ask = FALSE)
tar_make()
tar_read(x)
})
}
```

---

tar_network   *Return the vertices and edges of a pipeline dependency graph.*

Description

Analyze the pipeline defined in the target script file (default: `_targets.R`) and return the vertices and edges of the directed acyclic graph of dependency relationships.

Usage

```
tar_network(
  targets_only = FALSE,
  names = NULL,
  shortcut = FALSE,
  allow = NULL,
  exclude = NULL,
  outdated = TRUE,
  reporter = targets::tar_config_get("reporter_outdated"),
  seconds_reporter = targets::tar_config_get("seconds_reporter_outdated"),
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function, reporter),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

targets_only	Logical, whether to restrict the output to just targets (`FALSE`) or to also include imported global functions and objects.
names	Names of targets. The graph visualization will operate only on these targets (and unless `shortcut` is `TRUE`, all the targets upstream as well). Selecting a small subgraph using `names` could speed up the load time of the visualization. Unlike `allow`, `names` is invoked before the graph is generated. Set to NULL to check/run all the targets (default). Otherwise, the object supplied to `names` should be a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.
shortcut	Logical of length 1, how to interpret the `names` argument. If `shortcut` is `FALSE` (default) then the function checks all targets upstream of `names` as far back as the dependency graph goes. If `TRUE`, then the function only checks the targets in `names` and uses stored metadata for information about upstream dependencies as needed. `shortcut = TRUE` increases speed if there are a lot of up-to-date targets, but it assumes all the dependencies are up to date, so please use with caution. Also, `shortcut = TRUE` only works if you set `names`.

allow   Optional, define the set of allowable vertices in the graph. Unlike names, allow
                     is invoked only after the graph is mostly resolved, so it will not speed up execu-
                     tion. Set to NULL to allow all vertices in the pipeline and environment (default).
                     Otherwise, you can supply symbols or tidyselect helpers like starts_with().

exclude   Optional, define the set of exclude vertices from the graph. Unlike names,
                     exclude is invoked only after the graph is mostly resolved, so it will not speed
                     up execution. Set to NULL to exclude no vertices. Otherwise, you can supply
                     symbols or tidyselect helpers like any_of() and starts_with().

outdated   Logical, whether to show colors to distinguish outdated targets from up-to-date
                     targets. (Global functions and objects still show these colors.) Looking for
                     outdated targets takes a lot of time for large pipelines with lots of branches, and
                     setting outdated to FALSE is a nice way to speed up the graph if you only want
                     to see dependency relationships and pipeline progress.

reporter   Character of length 1, name of the reporter to user. Controls how messages are
                     printed as targets are checked.

                     The default of tar_config_get("reporter_make") is "terse" if running in-
                     side a literate programming document (i.e. the knitr.in.progress global op-
                     tion is TRUE). Otherwise, the default is "balanced". Choices:

                     * `"balanced"`: a reporter that balances efficiency
                       with informative detail.
                       Uses a `cli` progress bar instead of printing messages
                       for individual dynamic branches.
                       To the right of the progress bar is a text string like
                       "22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets
                       detected as outdated so far,
                       124 targets detected as up to date so far).

                       For best results with the balanced reporter, you may need to
                       adjust your `cli` settings. See global options `cli.num_colors`
                       and `cli.dynamic` at
                       <https://cli.r-lib.org/reference/cli-config.html>.
                       On that page is also the `CLI_TICK_TIME` environment variable
                       which controls the time delay between progress bar updates.
                       If the delay is too low, then overhead from printing to the console
                       may slow down the pipeline.
                     * `"terse"`: like `"balanced"`, except without a progress bar.
                     * `"silent"`: print nothing.

seconds_reporter
                     Deprecated on 2025-03-31 (targets version 1.10.1.9010).

callr_function   A function from callr to start a fresh clean R process to do the work. Set to
                     NULL to run in the current session instead of an external process (but restart
                     your R session just before you do in order to clear debris out of the global
                     environment). callr_function needs to be NULL for interactive debugging,
                     e.g. tar_option_set(debug = "your_target"). However, callr_function
                     should not be NULL for serious reproducible work.

callr_arguments
                     A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if
               callr_function is NULL. Ignored if callr_function is anything other than
               NULL. callr_function should only be NULL for debugging and testing pur-
               poses, not for serious runs of a pipeline, etc.

               The envir argument of [tar_make()](#) and related functions always overrides the
               current value of tar_option_get("envir") in the current R session just before
               running the target script file, so whenever you need to set an alternative envir,
               you should always set it with tar_option_set() from within the target script
               file. In other words, if you call tar_option_set(envir = envir1) in an inter-
               active session and then tar_make(envir = envir2, callr_function = NULL),
               then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
               which in turn defaults to _targets.R. When you set this argument, the value of
               tar_config_get("script") is temporarily changed for the current function
               call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for de-
               tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
               which in turn defaults to _targets/. When you set this argument, the value
               of tar_config_get("store") is temporarily changed for the current function
               call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
               set the data store path persistently for a project.

Value

A list with two data frames: vertices and edges. The vertices data frame has one row per target
and columns with the the type of the target or object (stem, branch, map, cross, function, or object),
each target's description, and each target's status (up to date, outdated, dispatched, completed,
canceled, or errored), as well as metadata if available (seconds of runtime, bytes of storage, and
number of dynamic branches). The edges data frame has one row for every edge and columns to
and from to mark the starting and terminating vertices.

Dependency graph

The dependency graph of a pipeline is a directed acyclic graph (DAG) where each node indicates
a target or global object and each directed edge indicates where a downstream node depends on
an upstream node. The DAG is not always a tree, but it never contains a cycle because no target
is allowed to directly or indirectly depend on itself. The dependency graph should show a natural
progression of work from left to right. targets uses static code analysis to create the graph, so
the order of tar_target() calls in the _targets.R file does not matter. However, targets does
not support self-referential loops or other cycles. For more information on the dependency graph,
please read https://books.ropensci.org/targets/targets.html#dependencies.

See Also

Other inspect: [tar_deps()](#), [tar_manifest()](#), [tar_outdated()](#), [tar_sitrep()](#), [tar_validate()](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
```

```
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set()
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1, description = "y2 info"),
    tar_target(z, y1 + y2, description = "z info")
  )
}, ask = FALSE)
tar_network(targets_only = TRUE)
})
}
```

---

tar_newer   *List new targets*

Description

List all the targets whose last successful run occurred after a certain point in time.

Usage

```
tar_newer(
  time,
  names = NULL,
  inclusive = FALSE,
  store = targets::tar_config_get("store")
)
```

Arguments

time	A POSIXct object of length 1, time threshold. Targets newer than this time stamp are returned. For example, if time = Sys.time - as.difftime(1, units = "weeks") then tar_newer() returns targets newer than one week ago.
names	Names of eligible targets. Targets excluded from names will not be returned even if they are newer than the given time. The object supplied to names should be NULL or a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.
inclusive	Logical of length 1, whether to include targets completed at exactly the time given.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

Details

Only applies to targets with recorded time stamps: just non-branching targets and individual dynamic branches. As of `targets` version 0.6.0, these time stamps are available for these targets regardless of storage format. Earlier versions of `targets` do not record time stamps for remote storage such as `format = "url"` or `repository = "aws"` in `tar_target()`.

Value

A character vector of names of old targets with recorded timestamp metadata.

See Also

Other time: `tar_older()`, `tar_timestamp()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(tar_target(x, seq_len(2)))
}, ask = FALSE)
tar_make()
# targets newer than 1 week ago
tar_newer(Sys.time() - as.difftime(1, units = "weeks"))
# targets newer than 1 week from now
tar_newer(Sys.time() + as.difftime(1, units = "weeks"))
# Everything is still up to date.
tar_make()
# Invalidate all targets targets newer than 1 week ago
# so they run on the next tar_make().
invalidate_these <- tar_newer(Sys.time() - as.difftime(1, units = "weeks"))
tar_invalidate(any_of(invalidate_these))
tar_make()
})
}
```

---

    tar_noninteractive   *Run if Target Markdown interactive mode is not on.*

Description

In Target Markdown, run the enclosed code only if interactive mode is not activated. Otherwise, do not run the code.

Usage

```
tar_noninteractive(code)
```

Arguments

code   R code to run if Target Markdown interactive mode is not turned on.

Details

Visit <books.ropensci.org/targets/literate-programming.html> to learn about Target Markdown and interactive mode.

Value

If Target Markdown interactive mode is not turned on, the function returns the result of running the code. Otherwise, the function invisibly returns NULL.

See Also

Other Target Markdown: `tar_engine_knitr()`, `tar_interactive()`, `tar_toggle()`

Examples

```
tar_noninteractive(message("Not in interactive mode."))
```

---

tar_objects   *List saved targets*

Description

List targets currently saved to _targets/objects/ or the cloud. Does not include local files with `tar_target(..., format = "file", repository = "local")`.

Usage

```
tar_objects(
  names = NULL,
  cloud = TRUE,
  store = targets::tar_config_get("store")
)
```

Arguments

names   Names of targets to select. The object supplied to names should be NULL or a
              tidyselect expression like `any_of()` or `starts_with()` from tidyselect it-
              self, or `tar_described_as()` to select target names based on their descriptions.
cloud   Logical of length 1, whether to include cloud targets in the output (e.g. `tar_target(...,`
              `repository = "aws")`).
store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`,
              which in turn defaults to _targets/. When you set this argument, the value
              of `tar_config_get("store")` is temporarily changed for the current function
              call. See `tar_config_get()` and `tar_config_set()` for details about how to
              set the data store path persistently for a project.

Value

Character vector of targets saved to `_targets/objects/`.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other storage: [tar_format()](), [tar_load()](), [tar_load_everything()](), [tar_read()]()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(tar_target(x, "value"))
}, ask = FALSE)
tar_make()
tar_objects()
tar_objects(starts_with("x")) # see also any_of()
})
}
```

---

tar_older *List old targets*

Description

List all the targets whose last successful run occurred before a certain point in time. Combine with [tar_invalidate()](), you can use `tar_older()` to automatically rerun targets at regular intervals. See the examples for a demonstration.

Usage

```
tar_older(
  time,
  names = NULL,
  inclusive = FALSE,
  store = targets::tar_config_get("store")
)
```

Arguments

time	A POSIXct object of length 1, time threshold. Targets older than this time stamp are returned. For example, if time = Sys.time() - as.difftime(1, units = "weeks") then tar_older() returns targets older than one week ago.
names	Names of eligible targets. Targets excluded from names will not be returned even if they are old. The object supplied to names should be NULL or a tidyselect expression like any_of() or starts_with() from tidyselect itself, or tar_described_as() to select target names based on their descriptions.
inclusive	Logical of length 1, whether to include targets completed at exactly the time given.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.

Details

Only applies to targets with recorded time stamps: just non-branching targets and individual dynamic branches. As of targets version 0.6.0, these time stamps are available for these targets regardless of storage format. Earlier versions of targets do not record time stamps for remote storage such as format = "url" or repository = "aws" in tar_target().

Value

A character vector of names of old targets with recorded timestamp metadata.

See Also

Other time: tar_newer(), tar_timestamp()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(tar_target(x, seq_len(2)))
}, ask = FALSE)
tar_make()
# targets older than 1 week ago
tar_older(Sys.time() - as.difftime(1, units = "weeks"))
# targets older than 1 week from now
tar_older(Sys.time() + as.difftime(1, units = "weeks"))
# Everything is still up to date.
tar_make()
# Invalidate all targets targets older than 1 week from now
# so they run on the next tar_make().
```

```
invalidate_these <- tar_older(Sys.time() + as.difftime(1, units = "weeks"))
tar_invalidate(any_of(invalidate_these))
tar_make()
})
}
```

---

tar_option_get   *Get a target option.*

Description

Get a target option. These options include default arguments to [tar_target()](#) such as packages, storage format, iteration type, and cue. Needs to be called before any calls to [tar_target()](#) in order to take effect.

Usage

```
tar_option_get(name = NULL, option = NULL)
```

Arguments

name	Character of length 1, name of an option to get. Must be one of the argument names of [tar_option_set()](#).
option	Deprecated, use the name argument instead.

Details

This function goes well with [tar_target_raw()](#) when it comes to defining external interfaces on top of the targets package to create pipelines.

Value

Value of a target option.

See Also

Other configuration: [tar_config_get()](#), [tar_config_projects()](#), [tar_config_set()](#), [tar_config_unset()](#), [tar_config_yaml()](#), [tar_envvars()](#), [tar_option_reset()](#), [tar_option_set()](#), [tar_option_with()](#)

Examples

```
tar_option_get("format") # default format before we set anything
tar_target(x, 1)$settings$format
tar_option_set(format = "fst_tbl") # new default format
tar_option_get("format")
tar_target(x, 1)$settings$format
tar_option_reset() # reset the format
tar_target(x, 1)$settings$format
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
```

```
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(cue = tar_cue(mode = "always")) # All targets always run.
  list(tar_target(x, 1), tar_target(y, 2))
})
tar_make()
tar_make()
})
}
```

---

tar_option_reset   *Reset all target options.*

Description

Reset all target options you previously chose with `tar_option_set()`. These options are mostly configurable default arguments to `tar_target()` and `tar_target_raw()`.

Usage

```
tar_option_reset()
```

Value

NULL (invisibly).

See Also

Other configuration: `tar_config_get()`, `tar_config_projects()`, `tar_config_set()`, `tar_config_unset()`, `tar_config_yaml()`, `tar_envvars()`, `tar_option_get()`, `tar_option_set()`, `tar_option_with()`

Examples

```
tar_option_get("format") # default format before we set anything
tar_target(x, 1)$settings$format
tar_option_set(format = "fst_tbl") # new default format
tar_option_get("format")
tar_target(x, 1)$settings$format
tar_option_reset() # reset all options
tar_target(x, 1)$settings$format
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(cue = tar_cue(mode = "always"))
  tar_option_reset() # Undo option above.
  list(tar_target(x, 1), tar_target(y, 2))
```

```
  })
  tar_make()
  tar_make()
  })
  }
```

---

tar_option_set   *Set target options.*

Description

Set target options, including default arguments to `tar_target()` such as packages, storage format, iteration type, and cue. Only the non-null arguments are actually set as options. See currently set options with `tar_option_get()`. To use tar_option_set() effectively, put it in your workflow's target script file (default: _targets.R) before calls to `tar_target()` or `tar_target_raw()`.

Usage

```
tar_option_set(
  tidy_eval = NULL,
  packages = NULL,
  imports = NULL,
  library = NULL,
  envir = NULL,
  format = NULL,
  repository = NULL,
  repository_meta = NULL,
  iteration = NULL,
  error = NULL,
  memory = NULL,
  garbage_collection = NULL,
  deployment = NULL,
  priority = NULL,
  backoff = NULL,
  resources = NULL,
  storage = NULL,
  retrieval = NULL,
  cue = NULL,
  description = NULL,
  debug = NULL,
  workspaces = NULL,
  workspace_on_error = NULL,
  seed = NULL,
  controller = NULL,
  trust_timestamps = NULL,
  trust_object_timestamps = NULL
)
```

Arguments

tidy_eval	Logical, whether to enable tidy evaluation when interpreting command and pattern. If TRUE, you can use the "bang-bang" operator !! to programmatically insert the values of global objects.
packages	Character vector of packages to load right before the target runs or the output data is reloaded for downstream targets. Use tar_option_set() to set packages globally for all subsequent targets you define.
imports	Character vector of package names. For every package listed, targets tracks every dataset and every object in the package namespace as if it were part of the global namespace. As an example, say you have a package called customAnalysisPackage which contains an object called analysis_function(). If you write tar_option_set(imports = "yourAnalysisPackage") in your target script file (default: _targets.R), then a function called "analysis_function" will show up in the [tar_visnetwork()](#) graph, and any targets or functions referring to the symbol "analysis_function" will depend on the function analysis_function() from package yourAnalysisPackage. This is best combined with tar_option_set(packages = "yourAnalysisPackage") so that analysis_function() can actually be called in your code.

There are several important limitations: 1. Namespaced calls, e.g. yourAnalysisPackage::analysis_fu are ignored because of the limitations in codetools::findGlobals() which powers the static code analysis capabilities of targets. 2. The imports option only looks at R objects and R code. It not account for low-level compiled code such as C/C++ or Fortran. 3. If you supply multiple packages, e.g. tar_option_set(imports = c("p1", "p2")), then the objects in p1 override the objects in p2 if there are name conflicts. 4. Similarly, objects in tar_option_get("envir") override everything in tar_option_get("imports").

library	Character vector of library paths to try when loading packages.
envir	Environment containing functions and global objects common to all targets in the pipeline. The envir argument of [tar_make()](#) and related functions always overrides the current value of tar_option_get("envir") in the current R session just before running the target script file, so whenever you need to set an alternative envir, you should always set it with tar_option_set() from within the target script file. In other words, if you call tar_option_set(envir = envir1) in an interactive session and then tar_make(envir = envir2, callr_function = NULL), then envir2 will be used.

If envir is the global environment, all the promise objects are diffused before sending the data to parallel workers in [tar_make_future()](#) and [tar_make_clustermq()](#), but otherwise the environment is unmodified. This behavior improves performance by decreasing the size of data sent to workers.

If envir is not the global environment, then it should at least inherit from the global environment or base environment so targets can access attached packages. In the case of a non-global envir, targets attempts to remove potentially high memory objects that come directly from targets. That includes tar_target() objects of class "tar_target", as well as objects of class "tar_pipeline" or "tar_algorithm". This behavior improves performance by decreasing the size of data sent to workers.

Package environments should not be assigned to envir. To include package

                objects as upstream dependencies in the pipeline, assign the package to the packages and imports arguments of tar_option_set().

format   Optional storage format for the target's return value. With the exception of format = "file", each target gets a file in _targets/objects, and each format is a different way to save and load this file. See the "Storage formats" section for a detailed list of possible data storage formats.

repository   Character of length 1, remote repository for target storage. Choices:

- "local": file system of the local machine.
- "aws": Amazon Web Services (AWS) S3 bucket. Can be configured with a non-AWS S3 bucket using the endpoint argument of tar_resources_aws(), but versioning capabilities may be lost in doing so. See the cloud storage section of https://books.ropensci.org/targets/data.html for details for instructions.
- "gcp": Google Cloud Platform storage bucket. See the cloud storage section of https://books.ropensci.org/targets/data.html for details for instructions.
- A character string from tar_repository_cas() for content-addressable storage.

Note: if repository is not "local" and format is "file" then the target should create a single output file. That output file is uploaded to the cloud and tracked for changes where it exists in the cloud. As of targets version 1.11.0 and higher, the local file is no longer deleted after the target runs.

repository_meta

           Character of length 1 with the same values as repository but excluding content-addressable storage ("aws", "gcp", "local"). Cloud repository for the metadata text files in _targets/meta/, including target metadata and progress data. Also enables cloud backup of workspace files in _targets/workspaces/ which can be downloaded with tar_workspace_download(). repository_meta defaults to tar_option_get("repository") except in the case of content-addressable storage (CAS). When tar_option_get("repository") is a CAS repository, the default value of repository_meta is "local".

iteration   Character of length 1, name of the iteration mode of the target. Choices:

- "vector": branching happens with vctrs::vec_slice() and aggregation happens with vctrs::vec_c().
- "list", branching happens with [[]] and aggregation happens with list().
- "group": dplyr::group_by()-like functionality to branch over subsets of a non-dynamic data frame. For iteration = "group", the target must not by dynamic (the pattern argument of tar_target() must be left NULL). The target's return value must be a data frame with a special tar_group column of consecutive integers from 1 through the number of groups. Each integer designates a group, and a branch is created for each collection of rows in a group. See the tar_group() function to see how you can create the special tar_group column with dplyr::group_by().

error   Character of length 1, what to do if the target stops and throws an error. Options:

- "stop": the whole pipeline stops and throws an error.

- "continue": the whole pipeline keeps going.
- "null": The errored target continues and returns NULL. The data hash is deliberately wrong so the target is not up to date for the next run of the pipeline. In addition, as of targets version 1.8.0.9011, a value of NULL is given to upstream dependencies with error = "null" if loading fails.
- "abridge": any currently running targets keep running, but no new targets launch after that.
- "trim": all currently running targets stay running. A queued target is allowed to start if:
  1. It is not downstream of the error, and
  2. It is not a sibling branch from the same [tar_target()](#) call (if the error happened in a dynamic branch).

  The idea is to avoid starting any new work that the immediate error impacts. error = "trim" is just like error = "abridge", but it allows potentially healthy regions of the dependency graph to begin running. (Visit [https:// books.ropensci.org/targets/debugging.html](https://books.ropensci.org/targets/debugging.html) to learn how to debug targets using saved workspaces.)

memory   Character of length 1, memory strategy. Possible values:

- "auto" (default): equivalent to memory = "transient" in almost all cases. But to avoid superfluous reads from disk, memory = "auto" is equivalent to memory = "persistent" for for non-dynamically-branched targets that other targets dynamically branch over. For example: if your pipeline has tar_target(name = y, command = x, pattern = map(x)), then tar_target(name = x, command = f(), memory = "auto") will use persistent memory in order to avoid rereading all of x for every branch of y.
- "transient": the target gets unloaded after every new target completes. Either way, the target gets automatically loaded into memory whenever another target needs the value.
- "persistent": the target stays in memory until the end of the pipeline (unless storage is "worker", in which case targets unloads the value from memory right after storing it in order to avoid sending copious data over a network).

For cloud-based file targets (e.g. format = "file" with repository = "aws"), the memory option applies to the temporary local copy of the file: "persistent" means it remains until the end of the pipeline and is then deleted, and "transient" means it gets deleted as soon as possible. The former conserves bandwidth, and the latter conserves local storage.

garbage_collection

A non-negative integer. If 0, do not run garbage collection. If a positive integer n, run base::gc() just before every n'th target that runs. For the purposes of running garbage collection with this setting, each R process (whether the local process a parallel worker) maintains its own independent count of the number of targets that ran so far. The garbage_collection option in [tar_option_set()](#) is independent of the argument of the same name in [tar_target()](#).

deployment   Character of length 1. If deployment is "main", then the target will run on the central controlling R process. Otherwise, if deployment is "worker" and you

set up the pipeline with distributed/parallel computing, then the target runs on a parallel worker. For more on distributed/parallel computing in `targets`, please visit https://books.ropensci.org/targets/crew.html.

priority   Deprecated on 2025-04-08 (`targets` version 1.10.1.9013). `targets` has moved to a more efficient scheduling algorithm (https://github.com/ropensci/targets/issues/1458) which cannot support priorities. The `priority` argument of `tar_target()` no longer has a reliable effect on execution order.

backoff   An object from `tar_backoff()` configuring the exponential backoff algorithm of the pipeline. See `tar_backoff()` for details. A numeric argument for `backoff` is still allowed, but deprecated.

resources   Object returned by `tar_resources()` with optional settings for high-performance computing functionality, alternative data storage formats, and other optional capabilities of `targets`. See `tar_resources()` for details.

storage   Character string to control when the output of the target is saved to storage. Only relevant when using `targets` with parallel workers (https://books.ropensci.org/targets/crew.html). Must be one of the following values:

- `"worker"` (default): the worker saves/uploads the value.
- `"main"`: the target's return value is sent back to the host machine and saved/uploaded locally.
- `"none"`: `targets` makes no attempt to save the result of the target to storage in the location where `targets` expects it to be. Saving to storage is the responsibility of the user. Use with caution.

retrieval   Character string to control when the current target loads its dependencies into memory before running. (Here, a "dependency" is another target upstream that the current one depends on.) Only relevant when using `targets` with parallel workers (https://books.ropensci.org/targets/crew.html). Must be one of the following values:

- `"auto"` (default): equivalent to `retrieval = "worker"` in almost all cases. But to avoid unnecessary reads from disk, `retrieval = "auto"` is equivalent to `retrieval = "main"` for dynamic branches that branch over non-dynamic targets. For example: if your pipeline has `tar_target(x, command = f())`, then `tar_target(y, command = x, pattern = map(x), retrieval = "auto")` will use `"main"` retrieval in order to avoid rereading all of `x` for every branch of `y`.
- `"worker"`: the worker loads the target's dependencies.
- `"main"`: the target's dependencies are loaded on the host machine and sent to the worker before the target runs.
- `"none"`: `targets` makes no attempt to load its dependencies. With `retrieval = "none"`, loading dependencies is the responsibility of the user. Use with caution.

cue   An optional object from `tar_cue()` to customize the rules that decide whether the target is up to date.

description   Character of length 1, a custom free-form human-readable text description of the target. Descriptions appear as target labels in functions like `tar_manifest()` and `tar_visnetwork()`, and they let you select subsets of targets for the names

argument of functions like [`tar_make()`](). For example, tar_manifest(names = tar_described_as(starts_with("survival model"))) lists all the targets whose descriptions start with the character string "survival model".

debug   Character vector of names of targets to run in debug mode. To use effectively, you must set callr_function = NULL and restart your R session just before running. You should also [`tar_make()`](), [`tar_make_clustermq()`](), or [`tar_make_future()`](). For any target mentioned in debug, targets will force the target to run locally (with tar_cue(mode = "always") and deployment = "main" in the settings) and pause in an interactive debugger to help you diagnose problems. This is like inserting a browser() statement at the beginning of the target's expression, but without invalidating any targets.

workspaces   Character vector of target names. Could be non-branching targets, whole dynamic branching targets, or individual branch names. [`tar_make()`]() and friends will save workspace files for these targets even if the targets are skipped. Workspace files help with debugging. See [`tar_workspace()`]() for details about workspaces.

workspace_on_error
                 Logical of length 1, whether to save a workspace file for each target that throws an error. Workspace files help with debugging. See [`tar_workspace()`]() for details about workspaces.

seed   Integer of length 1, seed for generating target-specific pseudo-random number generator seeds. These target-specific seeds are deterministic and depend on tar_option_get("seed") and the target name. Target-specific seeds are safely and reproducibly applied to each target's command, and they are stored in the metadata and retrievable with [`tar_meta()`]() or [`tar_seed()`]().

                 Either the user or third-party packages built on top of targets may still set seeds inside the command of a target. For example, some target factories in the tarchetypes package assigns replicate-specific seeds for the purposes of reproducible within-target batched replication. In cases like these, the effect of the target-specific seed saved in the metadata becomes irrelevant and the seed defined in the command applies.

                 The seed option can also be NA to disable automatic seed-setting. Any targets defined while tar_option_get("seed") is NA will not set a seed. In this case, those targets will never be up to date unless they have cue = tar_cue(seed = FALSE).

controller   A controller or controller group object produced by the crew R package. crew brings auto-scaled distributed computing to [`tar_make()`]().

trust_timestamps
                 Logical of length 1, whether to use file system modification timestamps to check whether the target output data files in are up to date. This is an advanced setting and usually does not need to be set by the user except on old or difficult platforms.

                 If trust_timestamps was reset with [`tar_option_reset()`]() or never set at all (recommended) then targets makes a decision based on the type of file system of the given file.

                 If trust_timestamps is TRUE (default), then targets looks at the timestamp first. If it agrees with the timestamp recorded in the metadata, then targets

considers the file unchanged. If the timestamps disagree, then targets recomputes the hash to make a final determination. This practice reduces the number of hash computations and thus saves time.

However, timestamp precision varies from a few nanoseconds at best to 2 entire seconds at worst, and timestamps with poor precision should not be fully trusted if there is any possibility that you will manually change the file within 2 seconds after the pipeline finishes. If the data store is on a file system with low-precision timestamps, then you may consider setting trust_timestamps to FALSE so targets errs on the safe side and always recomputes the hashes of files.

To check if your file system has low-precision timestamps, you can run file.create("x"); nanonext:: from within the directory containing the _targets data store and then check difftime(file.mtime("y"), file.mtime("x"), units = "secs"). If the value from difftime() is around 0.001 seconds (must be strictly above 0 and below 1) then you do not need to set trust_timestamps = FALSE.

trust_object_timestamps

Deprecated. Use trust_timestamps instead.

Value

NULL (invisibly).

Storage formats

targets has several built-in storage formats to control how return values are saved and loaded from disk:

- "rds": Default, uses saveRDS() and readRDS(). Should work for most objects, but slow.

- "auto": either "file" or "qs", depending on the return value of the target. If the return value is a character vector of existing files (and/or directories), then the format becomes "file" before [tar_make()](#) saves the target. Otherwise, the format becomes "qs".

  NOTE: format = "auto" slows down pipelines with 10000+ targets because it creates deep copies of 20000+ internal data objects. Pipelines of this size should use a more explicit format instead of "auto".

- "qs": Uses qs2::qs_save() and qs2::qs_read(). Should work for most objects, much faster than "rds". Optionally configure settings through tar_resources() and tar_resources_qs().

  Prior to targets version 1.8.0.9014, format = "qs" used the qs package. qs has since been superseded in favor of qs2, and so later versions of targets use qs2 to save new data. To read existing data, targets first attempts [qs2::qs_read()](#), and then if that fails, it falls back on [qs::qread()](#).

- "feather": Uses arrow::write_feather() and arrow::read_feather() (version 2.0). Much faster than "rds", but the value must be a data frame. Optionally set compression and compression_level in arrow::write_feather() through tar_resources() and tar_resources_feather(). Requires the arrow package (not installed by default).

- "parquet": Uses arrow::write_parquet() and arrow::read_parquet() (version 2.0). Much faster than "rds", but the value must be a data frame. Optionally set compression and compression_level in arrow::write_parquet() through tar_resources() and tar_resources_parquet(). Requires the arrow package (not installed by default).

- `"fst"`: Uses `fst::write_fst()` and `fst::read_fst()`. Much faster than `"rds"`, but the value must be a data frame. Optionally set the compression level for `fst::write_fst()` through `tar_resources()` and `tar_resources_fst()`. Requires the `fst` package (not installed by default).

- `"fst_dt"`: Same as `"fst"`, but the value is a `data.table`. Deep copies are made as appropriate in order to protect against the global effects of in-place modification. Optionally set the compression level the same way as for `"fst"`.

- `"fst_tbl"`: Same as `"fst"`, but the value is a `tibble`. Optionally set the compression level the same way as for `"fst"`.

- `"keras"`: superseded by [tar_format()](#) and incompatible with `error = "null"` (in [tar_target()](#) or [tar_option_set()](#)). Uses `keras::save_model_hdf5()` and `keras::load_model_hdf5()`. The value must be a Keras model. Requires the `keras` package (not installed by default).

- `"torch"`: superseded by [tar_format()](#) and incompatible with `error = "null"` (in [tar_target()](#) or [tar_option_set()](#)). Uses `torch::torch_save()` and `torch::torch_load()`. The value must be an object from the `torch` package such as a tensor or neural network module. Requires the `torch` package (not installed by default).

- `"file"`: A file target. To use this format, the target needs to manually identify or save some data and return a character vector of paths to the data (must be a single file path if `repository` is not `"local"`). (These paths must be existing files and nonempty directories.) Then, `targets` automatically checks those files and cues the appropriate run/skip decisions if those files are out of date. Those paths must point to files or directories, and they must not contain characters `|` or `*`. All the files and directories you return must actually exist, or else `targets` will throw an error. (And if `storage` is `"worker"`, `targets` will first stall out trying to wait for the file to arrive over a network file system.) If the target does not create any files, the return value should be `character(0)`.

  If `repository` is not `"local"` and `format` is `"file"`, then the character vector returned by the target must be of length 1 and point to a single file. (Directories and vectors of multiple file paths are not supported for file targets on the cloud.) That output file is uploaded to the cloud and tracked for changes where it exists in the cloud. As of `targets` version >= 1.11.0, the physical file is retained locally after the target runs. (Previous versions of `targets` deleted the file locally.)

- `"url"`: An input URL. For this storage format, `repository` is implicitly `"local"`, URL format is like `format = "file"` except the return value of the target is a URL that already exists and serves as input data for downstream targets. Optionally supply a custom `curl` handle through `tar_resources()` and `tar_resources_url()`. in `new_handle()`, `nobody = TRUE` is important because it ensures `targets` just downloads the metadata instead of the entire data file when it checks time stamps and hashes. The data file at the URL needs to have an ETag or a Last-Modified time stamp, or else the target will throw an error because it cannot track the data. Also, use extreme caution when trying to use `format = "url"` to track uploads. You must be absolutely certain the ETag and Last-Modified time stamp are fully updated and available by the time the target's command finishes running. `targets` makes no attempt to wait for the web server.

- A custom format can be supplied with `tar_format()`. For this choice, it is the user's responsibility to provide methods for (un)serialization and (un)marshaling the return value of the target.

- The formats starting with `"aws_"` are deprecated as of 2022-03-13 (`targets` version > 0.10.0). For cloud storage integration, use the `repository` argument instead.

Formats ″rds″, ″file″, and ″url″ are general-purpose formats that belong in the targets package itself. Going forward, any additional formats should be implemented with [tar_format()](#) in third-party packages like tarchetypes and geotargets (for example: tarchetypes::tar_format_nanoparquet()). Formats ″qs″, ″fst″, etc. are legacy formats from before the existence of [tar_format()](#), and they will continue to remain in targets without deprecation.

See Also

Other configuration: [tar_config_get()](#), [tar_config_projects()](#), [tar_config_set()](#), [tar_config_unset()](#), [tar_config_yaml()](#), [tar_envvars()](#), [tar_option_get()](#), [tar_option_reset()](#), [tar_option_with()](#)

Examples

```
tar_option_get("format") # default format before we set anything
tar_target(x, 1)$settings$format
tar_option_set(format = "fst_tbl") # new default format
tar_option_get("format")
tar_target(x, 1)$settings$format
tar_option_reset() # reset the format
tar_target(x, 1)$settings$format
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(cue = tar_cue(mode = "always")) # All targets always run.
  list(tar_target(x, 1), tar_target(y, 2))
})
tar_make()
tar_make()
})
}
```

---

tar_option_with   *Locally set target options.*

Description

Locally set target options for the duration of an expression, without permanently modifying the global state.

Usage

```
tar_option_with(expression, ..., envir_with = parent.frame())
```

Arguments

`expression`	An R expression to run with the local option.
`...`	Named arguments to `tar_option_set()` to temporarily set for the duration of `expression`.
`envir_with`	Environment to evaluate `expression`.

Value

`NULL` (invisibly).

See Also

Other configuration: `tar_config_get()`, `tar_config_projects()`, `tar_config_set()`, `tar_config_unset()`, `tar_config_yaml()`, `tar_envvars()`, `tar_option_get()`, `tar_option_reset()`, `tar_option_set()`

Examples

```
tar_option_with(
  tar_target(data, get_data()),
  packages = "dplyr",
  cue = tar_cue(mode = "never")
)
```

---

tar_outdated   *Check which targets are outdated.*

Description

Checks for outdated targets in the pipeline, targets that will be rerun automatically if you call `tar_make()` or similar. See `tar_cue()` for the rules that decide whether a target needs to rerun.

Usage

```
tar_outdated(
  names = NULL,
  shortcut = targets::tar_config_get("shortcut"),
  branches = FALSE,
  targets_only = TRUE,
  reporter = targets::tar_config_get("reporter_outdated"),
  seconds_reporter = targets::tar_config_get("seconds_reporter_outdated"),
  seconds_interval = targets::tar_config_get("seconds_interval"),
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function, reporter),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

names
: Names of the targets. `tar_outdated()` will check these targets and all up-stream ancestors in the dependency graph. Set `names` to NULL to check/build all the targets (default). The object supplied to `names` should be NULL or a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.

shortcut
: Logical of length 1, how to interpret the `names` argument. If `shortcut` is FALSE (default) then the function checks all targets upstream of `names` as far back as the dependency graph goes. If TRUE, then the function only checks the targets in `names` and uses stored metadata for information about upstream dependencies as needed. `shortcut = TRUE` increases speed if there are a lot of up-to-date targets, but it assumes all the dependencies are up to date, so please use with caution. Also, `shortcut = TRUE` only works if you set `names`.

branches
: Logical of length 1, whether to include branch names. Including branches could get cumbersome for large pipelines. Individual branch names are still omitted when branch-specific information is not reliable: for example, when a pattern branches over an outdated target.

targets_only
: Logical of length 1, whether to just restrict to targets or to include functions and other global objects from the environment created by running the target script file (default: `_targets.R`).

reporter
: Character of length 1, name of the reporter to user. Controls how messages are printed as targets are checked.

  The default of `tar_config_get("reporter_make")` is `"terse"` if running inside a literate programming document (i.e. the `knitr.in.progress` global option is TRUE). Otherwise, the default is `"balanced"`. Choices:

  ```
  * `"balanced"`: a reporter that balances efficiency
    with informative detail.
    Uses a `cli` progress bar instead of printing messages
    for individual dynamic branches.
    To the right of the progress bar is a text string like
    "22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets
    detected as outdated so far,
    124 targets detected as up to date so far).

    For best results with the balanced reporter, you may need to
    adjust your `cli` settings. See global options `cli.num_colors`
    and `cli.dynamic` at
    <https://cli.r-lib.org/reference/cli-config.html>.
    On that page is also the `CLI_TICK_TIME` environment variable
    which controls the time delay between progress bar updates.
   If the delay is too low, then overhead from printing to the console
    may slow down the pipeline.
  * `"terse"`: like `"balanced"`, except without a progress bar.
  * `"silent"`: print nothing.
  ```

seconds_reporter
: Deprecated on 2025-03-31 (`targets` version 1.10.1.9010).

seconds_interval
                 Deprecated on 2023-08-24 (targets version 1.2.2.9001). Use seconds_meta_append
                 and seconds_meta_upload instead.

callr_function   A function from callr to start a fresh clean R process to do the work. Set to
                 NULL to run in the current session instead of an external process (but restart
                 your R session just before you do in order to clear debris out of the global
                 environment). callr_function needs to be NULL for interactive debugging,
                 e.g. tar_option_set(debug = "your_target"). However, callr_function
                 should not be NULL for serious reproducible work.

callr_arguments
                 A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if
                 callr_function is NULL. Ignored if callr_function is anything other than
                 NULL. callr_function should only be NULL for debugging and testing pur-
                 poses, not for serious runs of a pipeline, etc.

                 The envir argument of [tar_make()](#) and related functions always overrides the
                 current value of tar_option_get("envir") in the current R session just before
                 running the target script file, so whenever you need to set an alternative envir,
                 you should always set it with tar_option_set() from within the target script
                 file. In other words, if you call tar_option_set(envir = envir1) in an inter-
                 active session and then tar_make(envir = envir2, callr_function = NULL),
                 then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
                 which in turn defaults to _targets.R. When you set this argument, the value of
                 tar_config_get("script") is temporarily changed for the current function
                 call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for de-
                 tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                 which in turn defaults to _targets/. When you set this argument, the value
                 of tar_config_get("store") is temporarily changed for the current function
                 call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                 set the data store path persistently for a project.

Details

Requires that you define a pipeline with a target script file (default: _targets.R). (See [tar_script()](#)
for details.)

Value

Names of the outdated targets.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress()
read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is
running, and depending on how distributed computing or cloud computing is set up, not all targets
can even reach it. So please do not call these functions from inside a target as part of a running

pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other inspect: [tar_deps()](), [tar_manifest()](), [tar_network()](), [tar_sitrep()](), [tar_validate()]()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(list(tar_target(x, 1 + 1)))
tar_outdated()
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_outdated()
})
}
```

---

tar_path_script   *Current target script path*

Description

Identify the file path to the target script of the pipeline currently running.

Usage

```
tar_path_script()
```

Value

Character, file path to the target script of the pipeline currently running. If called outside of the pipeline currently running, tar_path_script() returns tar_config_get("script").

See Also

Other utilities: [tar_active()](), [tar_backoff()](), [tar_call()](), [tar_cancel()](), [tar_definition](), [tar_described_as()](), [tar_envir()](), [tar_format_get()](), [tar_group()](), [tar_name()](), [tar_path()](), [tar_path_script_support()](), [tar_path_store()](), [tar_path_target()](), [tar_source()](), [tar_store()](), [tar_unblock_process()]()

Examples

```
tar_path_script()
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
script <- tempfile()
tar_script(tar_target(x, tar_path_script()), script = script, ask = FALSE)
tar_make(script = script)
tar_read(x)
})
}
```

tar_path_script_support

Directory path to the support scripts of the current target script

Description

Identify the directory path to the support scripts of the current target script of the pipeline currently running.

Usage

```
tar_path_script_support()
```

Details

A target script (default: _targets.R) comes with support scripts if it is written by Target Markdown. These support scripts usually live in a folder called _targets_r/, but the path may vary from case to case. The tar_path_scipt_support() returns the path to the folder with the support scripts.

Value

Character, directory path to the target script of the pipeline currently running. If called outside of the pipeline currently running, tar_path_script() returns tar_config_get("script").

See Also

Other utilities: [tar_active](), [tar_backoff](), [tar_call](), [tar_cancel](), [tar_definition](),
[tar_described_as](), [tar_envir](), [tar_format_get](), [tar_group](), [tar_name](), [tar_path](),
[tar_path_script](), [tar_path_store](), [tar_path_target](), [tar_source](), [tar_store](),
[tar_unblock_process]()

Examples

```
tar_path_script_support()
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
script <- tempfile()
tar_script(
  tar_target(x, tar_path_script_support()),
  script = script,
  ask = FALSE
)
tar_make(script = script)
tar_read(x)
})
}
```

---

tar_path_store	*Current data store path*

Description

Identify the file path to the data store of the pipeline currently running.

Usage

```
tar_path_store()
```

Value

Character, file path to the data store of the pipeline currently running. If called outside of the pipeline currently running, tar_path_store() returns tar_config_get("store").

See Also

Other utilities: tar_active(), tar_backoff(), tar_call(), tar_cancel(), tar_definition(), tar_described_as(), tar_envir(), tar_format_get(), tar_group(), tar_name(), tar_path(), tar_path_script(), tar_path_script_support(), tar_path_target(), tar_source(), tar_store(), tar_unblock_process()

Examples

```
tar_path_store()
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(tar_target(x, tar_path_store()), ask = FALSE)
store <- tempfile()
tar_make(store = store)
tar_read(x, store = store)
})
}
```

---

tar_path_target   *Identify the file path where a target will be stored.*

Description

Identify the file path where a target will be stored after the target finishes running in the pipeline.

Usage

```
tar_path_target(
  name = NULL,
  default = NA_character_,
  create_dir = FALSE,
  store = targets::tar_config_get("store")
)
```

Arguments

name   Symbol, name of a target. If NULL, tar_path_target() returns the path of the
                target currently running in a pipeline.

default   Character, value to return if tar_path_target() is called on its own outside a
                targets pipeline. Having a default lets users run things without tar_make(),
                which helps peel back layers of code and troubleshoot bugs.

create_dir   Logical of length 1, whether to create dirname(tar_path_target()) in tar_path_target()
                itself. This is useful if you are writing to tar_path_target() from inside a
                storage = "none" target and need the parent directory of the file to exist.

store   Character of length 1, path to the data store if tar_path_target() is called
                outside a running pipeline. If tar_path_target() is called inside a running
                pipeline, this argument is ignored and actual the path to the running pipeline's
                data store is used instead.

Value

Character, file path of the return value of the target. If not called from inside a running target,
tar_path_target(name = your_target) just returns _targets/objects/your_target, the file
path where your_target will be saved unless format is equal to "file" or any of the supported
cloud-based storage formats.

For non-cloud storage formats, if you call tar_path_target() with no arguments while target x
is running, the name argument defaults to the name of the running target, so tar_path_target()
returns _targets/objects/x.

For cloud-backed formats, tar_path_target() returns the path to the staging file in _targets/scratch/.
That way, even if you select a cloud repository (e.g. tar_target(..., repository = "aws",
storage = "none")) then you can still manually write to tar_path_target(create_dir = TRUE)
and the targets package will automatically hash it and upload it to the AWS S3 bucket. This does
not apply to format = "file", where you would never need storage = "none" anyway.

See Also

Other utilities: tar_active(), tar_backoff(), tar_call(), tar_cancel(), tar_definition(),
tar_described_as(), tar_envir(), tar_format_get(), tar_group(), tar_name(), tar_path(),
tar_path_script(), tar_path_script_support(), tar_path_store(), tar_source(), tar_store(),
tar_unblock_process()

Examples

```
tar_path_target()
tar_path_target(your_target)
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(tar_target(returns_path, tar_path_target()), ask = FALSE)
tar_make()
tar_read(returns_path)
})
}
```

---

tar_pattern   *Emulate dynamic branching.*

Description

Emulate the dynamic branching process outside a pipeline. tar_pattern() can help you under-
stand the overall branching structure that comes from the pattern argument of tar_target().

Usage

```
tar_pattern(pattern, ..., seed = 0L)
```

Arguments

pattern	Function call with the pattern specification.
...	Named integers, each of length 1. Each name is the name of a dependency target, and each integer is the length of the target (number of branches or slices). Names must be unique.
seed	Integer of length 1, random number generator seed to emulate the pattern reproducibly. (The sample() pattern is random). In a real pipeline, the seed is automatically generated from the target name in deterministic fashion.

Details

Dynamic branching is a way to programmatically create multiple new targets based on the values
of other targets, all while the pipeline is running. Use the pattern argument of tar_target() to
get started. pattern accepts a function call composed of target names and any of the following
patterns:

- map(): iterate over one or more targets in sequence.

- cross(): iterate over combinations of slices of targets.
- slice(): select one or more slices by index, e.g. slice(x, index = c(3, 4)) selects the third and fourth slice or branch of x.
- head(): restrict branching to the first few elements.
- tail(): restrict branching to the last few elements.
- sample(): restrict branching to a random subset of elements.

Value

A tibble showing the kinds of dynamic branches that tar_target() would create in a real pipeline with the given pattern. Each row is a dynamic branch, each column is a dependency target, and each element is the name of an upstream bud or branch that the downstream branch depends on. Buds are pieces of non-branching targets ("stems") and branches are pieces of patterns. The returned bud and branch names are not the actual ones you will see when you run the pipeline, but they do communicate the branching structure of the pattern.

See Also

Other branching: tar_branch_index(), tar_branch_names(), tar_branches()

Examples

```
# To use dynamic map for real in a pipeline,
# call map() in a target's pattern.
# The following code goes at the bottom of
# your target script file (default: `_targets.R`).
list(
  tar_target(x, seq_len(2)),
  tar_target(y, head(letters, 2)),
  tar_target(dynamic, c(x, y), pattern = map(x, y)) # 2 branches
)
# Likewise for more complicated patterns.
list(
  tar_target(x, seq_len(2)),
  tar_target(y, head(letters, 2)),
  tar_target(z, head(LETTERS, 2)),
  tar_target(dynamic, c(x, y, z), pattern = cross(z, map(x, y))) #4 branches
)
# But you can emulate dynamic branching without running a pipeline
# in order to understand the patterns you are creating. Simply supply
# the pattern and the length of each dependency target.
# The returned data frame represents the branching structure of the pattern:
# One row per new branch, one column per dependency target, and
# one element per bud/branch in each dependency target.
tar_pattern(
  cross(x, map(y, z)),
  x = 2,
  y = 3,
  z = 3
)
```

```
tar_pattern(
  head(cross(x, map(y, z)), n = 2),
  x = 2,
  y = 3,
  z = 3
)
```

---

tar_pid *Get main process ID.*

Description

Get the process ID (PID) of the most recent main R process to orchestrate the targets of the current project.

Usage

```
tar_pid(store = targets::tar_config_get("store"))
```

Arguments

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                which in turn defaults to _targets/. When you set this argument, the value
                of tar_config_get("store") is temporarily changed for the current function
                call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                set the data store path persistently for a project.

Details

The main process is the R process invoked by [tar_make()](#) or similar. If callr_function is not
NULL, this is an external process, and the pid in the return value will not agree with Sys.getpid()
in your current interactive session. The process may or may not be alive. You may want to check it
with ps::ps_is_running(ps::ps_handle(targets::tar_pid())) before running another call
to [tar_make()](#) for the same project.

Value

Integer with the process ID (PID) of the most recent main R process to orchestrate the targets of the
current project.

See Also

Other data: [tar_crew()](#), [tar_process()](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
Sys.getpid()
tar_pid() # Different from the current PID.
})
}
```

---

tar_poll   *Repeatedly poll progress in the R console.*

Description

Print the information in [`tar_progress_summary()`](#) at regular intervals.

Usage

```
tar_poll(
  interval = 1,
  timeout = Inf,
 fields = c("skipped", "dispatched", "completed", "errored", "canceled", "since"),
  store = targets::tar_config_get("store")
)
```

Arguments

interval	Number of seconds to wait between iterations of polling progress.
timeout	How many seconds to run before exiting.
fields	Optional character vector of names of progress data columns to read. Set to NULL to read all fields.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [`tar_config_get()`](#) and [`tar_config_set()`](#) for details about how to set the data store path persistently for a project.

Value

NULL (invisibly). Called for its side effects.

See Also

Other progress: `tar_canceled()`, `tar_completed()`, `tar_dispatched()`, `tar_errored()`, `tar_progress()`, `tar_progress_branches()`, `tar_progress_summary()`, `tar_skipped()`, `tar_watch()`, `tar_watch_server()`, `tar_watch_ui()`

Examples

```
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  list(
    tar_target(x, seq_len(100)),
    tar_target(y, Sys.sleep(0.1), pattern = map(x))
  )
}, ask = FALSE)
px <- tar_make(callr_function = callr::r_bg, reporter = "silent")
tar_poll()
})
}
```

---

tar_process	*Get main process info.*

Description

Get info on the most recent main R process to orchestrate the targets of the current project.

Usage

```
tar_process(names = NULL, store = targets::tar_config_get("store"))
```

Arguments

names   Optional, names of the data points to return. If supplied, `tar_process()` returns only the rows of the names you select. The object supplied to `names` should be NULL or a tidyselect expression like `any_of()` or `starts_with()`.

store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`, which in turn defaults to _targets/. When you set this argument, the value of `tar_config_get("store")` is temporarily changed for the current function call. See `tar_config_get()` and `tar_config_set()` for details about how to set the data store path persistently for a project.

Details

The main process is the R process invoked by `tar_make()` or similar. If `callr_function` is not NULL, this is an external process, and the `pid` in the return value will not agree with `Sys.getpid()` in your current interactive session. The process may or may not be alive. You may want to check the status with `tar_pid() %in% ps::ps_pids()` before running another call to `tar_make()` for the same project.

Value

A data frame with metadata on the most recent main R process to orchestrate the targets of the current project. The output includes the `pid` of the main process.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other data: `tar_crew()`, `tar_pid()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
tar_process()
tar_process(pid)
})
}
```

---

tar_progress | *Read progress.*

Description

Read a project's target progress data for the most recent run of `tar_make()` or similar. Only the most recent record is shown.

Usage

```
tar_progress(
  names = NULL,
  fields = "progress",
  store = targets::tar_config_get("store")
)
```

Arguments

names	Optional, names of the targets. If supplied, the output is restricted to the selected targets. The object supplied to names should be NULL or a tidyselect expression like any_of() or starts_with() from tidyselect itself, or tar_described_as() to select target names based on their descriptions.
fields	Optional, names of progress data columns to read. Set to NULL to read all fields.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.

Value

A data frame with one row per target and the following columns:

- name: name of the target.
- type: type of target: "stem" for non-branching targets, "pattern" for dynamically branching targets, and "branch" for dynamic branches.
- parent: name of the target's parent. For branches, this is the name of the associated pattern. For other targets, the pattern is just itself.
- branches: number of dynamic branches of a pattern. 0 for non-patterns.
- progress: the most recent progress update of that target. Could be "dispatched", "completed", "skipped", "canceled", or "errored". "dispatched" means the target was sent off to be run, but in the case of tar_make() with a crew controller, the target might not actually start running right away if the crew workers are all busy.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

See Also

Other progress: tar_canceled(), tar_completed(), tar_dispatched(), tar_errored(), tar_poll(), tar_progress_branches(), tar_progress_summary(), tar_skipped(), tar_watch(), tar_watch_server(), tar_watch_ui()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
```

```
    library(tarchetypes)
    list(
      tar_target(x, seq_len(2)),
      tar_target(y, 2 * x, pattern = map(x))
    )
}, ask = FALSE)
tar_make()
tar_progress()
tar_progress(starts_with("y_")) # see also any_of()
})
}
```

---

tar_progress_branches   *Tabulate the progress of dynamic branches.*

Description

Read a project's target progress data for the most recent run of the pipeline and display the tabulated status of dynamic branches. Only the most recent record is shown.

Usage

```
tar_progress_branches(
  names = NULL,
  fields = NULL,
  store = targets::tar_config_get("store")
)
```

Arguments

names	Optional, names of the targets. If supplied, tar_progress() only returns progress information on these targets. The object supplied to names should be NULL or a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.
fields	Optional, names of progress data columns to read. Set to NULL to read all fields.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

Value

A data frame with one row per target per progress status and the following columns.

- name: name of the pattern.
- progress: progress status: "dispatched", "completed", "canceled", or "errored".

- branches: number of branches in the progress category.

- total: total number of branches planned for the whole pattern. Values within the same pattern should all be equal.

See Also

Other progress: `tar_canceled()`, `tar_completed()`, `tar_dispatched()`, `tar_errored()`, `tar_poll()`, `tar_progress()`, `tar_progress_summary()`, `tar_skipped()`, `tar_watch()`, `tar_watch_server()`, `tar_watch_ui()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, x, pattern = map(x)),
    tar_target(z, stopifnot(y < 1.5), pattern = map(y))
  )
}, ask = FALSE)
try(tar_make())
tar_progress_branches()
})
}
```

---

tar_progress_summary *Summarize target progress.*

Description

Summarize the progress of a run of the pipeline.

Usage

```
tar_progress_summary(
 fields = c("skipped", "dispatched", "completed", "errored", "canceled", "since"),
  store = targets::tar_config_get("store")
)
```

Arguments

fields   Optional character vector of names of progress data columns to read. Set to
                NULL to read all fields.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                    which in turn defaults to _targets/. When you set this argument, the value
                    of tar_config_get("store") is temporarily changed for the current function
                    call. See tar_config_get() and tar_config_set() for details about how to
                    set the data store path persistently for a project.

Value

A data frame with one row and the following optional columns that can be selected with fields.
(time is omitted by default.)

- dispatched: number of targets that were sent off to run and did not (yet) finish. These targets
  may not actually be running, depending on the status and workload of parallel workers.

- completed: number of targets that completed without error or cancellation.

- errored: number of targets that threw an error.

- canceled: number of canceled targets (see tar_cancel()).

- since: how long ago progress last changed (Sys.time() - time).

- time: the time when the progress last changed (modification timestamp of the _targets/meta/progress
  file).

See Also

Other progress: tar_canceled(), tar_completed(), tar_dispatched(), tar_errored(), tar_poll(),
tar_progress(), tar_progress_branches(), tar_skipped(), tar_watch(), tar_watch_server(),
tar_watch_ui()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, x, pattern = map(x)),
    tar_target(z, stopifnot(y < 1.5), pattern = map(y), error = "continue")
  )
}, ask = FALSE)
try(tar_make())
tar_progress_summary()
})
}
```

---

tar_prune   *Remove targets that are no longer part of the pipeline.*

Description

Remove target values from `_targets/objects/` and the cloud and remove target metadata from `_targets/meta/meta` for targets that are no longer part of the pipeline.

Usage

```
tar_prune(
  cloud = TRUE,
  batch_size = 1000L,
  verbose = TRUE,
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

cloud	Logical of length 1, whether to delete objects from the cloud if applicable (e.g. AWS, GCP). If `FALSE`, files are not deleted from the cloud.
batch_size	Positive integer between 1 and 1000, number of target objects to delete from the cloud with each HTTP API request. Currently only supported for AWS. Cannot be more than 1000.
verbose	Logical of length 1, whether to print console messages to show progress when deleting each batch of targets from each cloud bucket. Batched deletion with verbosity is currently only supported for AWS.
callr_function	A function from `callr` to start a fresh clean R process to do the work. Set to `NULL` to run in the current session instead of an external process (but restart your R session just before you do in order to clear debris out of the global environment). `callr_function` needs to be `NULL` for interactive debugging, e.g. `tar_option_set(debug = "your_target")`. However, `callr_function` should not be `NULL` for serious reproducible work.
callr_arguments	
	A list of arguments to `callr_function`.
envir	An environment, where to run the target R script (default: `_targets.R`) if `callr_function` is `NULL`. Ignored if `callr_function` is anything other than `NULL`. `callr_function` should only be `NULL` for debugging and testing purposes, not for serious runs of a pipeline, etc.
	The envir argument of [`tar_make()`](#) and related functions always overrides the current value of `tar_option_get("envir")` in the current R session just before

running the target script file, so whenever you need to set an alternative envir, you should always set it with tar_option_set() from within the target script file. In other words, if you call tar_option_set(envir = envir1) in an interactive session and then tar_make(envir = envir2, callr_function = NULL), then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See [tar_script()](), [tar_config_get()](), and [tar_config_set()]() for details about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See [tar_config_get()]() and [tar_config_set()]() for details about how to set the data store path persistently for a project.

Details

tar_prune() is useful if you recently worked through multiple changes to your project and are now trying to discard irrelevant data while keeping the results that still matter. Global objects and local files with format = "file" outside the data store are unaffected. Also removes _targets/scratch/, which is only needed while [tar_make()](), [tar_make_clustermq()](), or [tar_make_future()]() is running. To list the targets that will be pruned without actually removing anything, use [tar_prune_list()]().

Value

NULL except if callr_function is callr::r_bg, in which case a handle to the callr background process is returned. Either way, the value is invisibly returned.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

Cloud target data versioning

Some buckets in Amazon S3 or Google Cloud Storage are "versioned", which means they track historical versions of each data object. If you use targets with cloud storage (https://books.ropensci.org/targets/cloud-storage.html) and versioning is turned on, then targets will record each version of each target in its metadata.

Functions like [tar_read()]() and [tar_load()]() load the version recorded in the local metadata, which may not be the same as the "current" version of the object in the bucket. Likewise, functions [tar_delete()]() and [tar_destroy()]() only remove the version ID of each target as recorded in the local metadata.

If you want to interact with the *latest* version of an object instead of the version ID recorded in the local metadata, then you will need to delete the object from the metadata.

1. Make sure your local copy of the metadata is current and up to date. You may need to run `tar_meta_download()` or `tar_meta_sync()` first.

2. Run `tar_unversion()` to remove the recorded version IDs of your targets in the local metadata.

3. With the version IDs gone from the local metadata, functions like `tar_read()` and `tar_destroy()` will use the *latest* version of each target data object.

4. Optional: to back up the local metadata file with the version IDs deleted, use `tar_meta_upload()`.

See Also

tar_prune_inspect

Other clean: `tar_delete()`, `tar_destroy()`, `tar_invalidate()`, `tar_prune_list()`, `tar_unversion()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_make()
# Remove some targets from the pipeline.
tar_script(list(tar_target(y1, 1 + 1)), ask = FALSE)
# Keep only the remaining targets in the data store.
tar_prune()
})
}
```

---

tar_prune_list	*List targets that* `tar_prune()` *will remove.*

Description

List the targets that `tar_prune()` will remove. Does not actually remove any targets.

Usage

```
tar_prune_list(
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

callr_function   A function from callr to start a fresh clean R process to do the work. Set to
                 NULL to run in the current session instead of an external process (but restart
                 your R session just before you do in order to clear debris out of the global
                 environment). callr_function needs to be NULL for interactive debugging,
                 e.g. tar_option_set(debug = "your_target"). However, callr_function
                 should not be NULL for serious reproducible work.

callr_arguments
                 A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if
                 callr_function is NULL. Ignored if callr_function is anything other than
                 NULL. callr_function should only be NULL for debugging and testing pur-
                 poses, not for serious runs of a pipeline, etc.

                 The envir argument of [tar_make()](#) and related functions always overrides the
                 current value of tar_option_get("envir") in the current R session just before
                 running the target script file, so whenever you need to set an alternative envir,
                 you should always set it with tar_option_set() from within the target script
                 file. In other words, if you call tar_option_set(envir = envir1) in an inter-
                 active session and then tar_make(envir = envir2, callr_function = NULL),
                 then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
                 which in turn defaults to _targets.R. When you set this argument, the value of
                 tar_config_get("script") is temporarily changed for the current function
                 call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for de-
                 tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                 which in turn defaults to _targets/. When you set this argument, the value
                 of tar_config_get("store") is temporarily changed for the current function
                 call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
                 set the data store path persistently for a project.

Details

See [tar_prune()](#) for details.

Value

If callr_function is callr::r_bg, the return value is a handle to the callr background process is returned. Otherwise, the return value is a character vector of target names identifying targets that tar_prune() will remove.

See Also

tar_prune

Other clean: tar_delete(), tar_destroy(), tar_invalidate(), tar_prune(), tar_unversion()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2)
  )
}, ask = FALSE)
tar_make()
# Remove some targets from the pipeline.
tar_script(list(tar_target(y1, 1 + 1)), ask = FALSE)
# List targets that tar_prune() will remove.
tar_prune_list()
})
}
```

---

tar_read   *Read a target's value from storage.*

Description

Read a target's return value from its file in _targets/objects/. For file targets (i.e. format = "file") the paths are returned.

tar_read() expects an unevaluated symbol for the name argument, whereas tar_read_raw() expects a character string.

Usage

```
tar_read(
  name,
  branches = NULL,
  meta = tar_meta(store = store),
  store = targets::tar_config_get("store")
```

```
)

tar_read_raw(
  name,
  branches = NULL,
  meta = tar_meta(store = store),
  store = targets::tar_config_get("store")
)
```

Arguments

name	Name of the target to read. `tar_read()` expects an unevaluated symbol for the name argument, whereas `tar_read_raw()` expects a character string.
branches	Integer of indices of the branches to load if the target is a pattern.
meta	Data frame of metadata from `tar_meta()`. `tar_read()` with the default arguments can be inefficient for large pipelines because all the metadata is stored in a single file. However, if you call `tar_meta()` beforehand and supply it to the `meta` argument, then successive calls to `tar_read()` may run much faster.
store	Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`, which in turn defaults to `_targets/`. When you set this argument, the value of `tar_config_get("store")` is temporarily changed for the current function call. See `tar_config_get()` and `tar_config_set()` for details about how to set the data store path persistently for a project.

Value

The target's return value from its file in `_targets/objects/`, or the paths to the custom files and directories if `format = "file"` was set.

Cloud target data versioning

Some buckets in Amazon S3 or Google Cloud Storage are "versioned", which means they track historical versions of each data object. If you use `targets` with cloud storage (https://books. ropensci.org/targets/cloud-storage.html) and versioning is turned on, then `targets` will record each version of each target in its metadata.

Functions like `tar_read()` and `tar_load()` load the version recorded in the local metadata, which may not be the same as the "current" version of the object in the bucket. Likewise, functions `tar_delete()` and `tar_destroy()` only remove the version ID of each target as recorded in the local metadata.

If you want to interact with the *latest* version of an object instead of the version ID recorded in the local metadata, then you will need to delete the object from the metadata.

1. Make sure your local copy of the metadata is current and up to date. You may need to run `tar_meta_download()` or `tar_meta_sync()` first.

2. Run `tar_unversion()` to remove the recorded version IDs of your targets in the local metadata.

3. With the version IDs gone from the local metadata, functions like `tar_read()` and `tar_destroy()` will use the *latest* version of each target data object.

4. Optional: to back up the local metadata file with the version IDs deleted, use `tar_meta_upload()`.

Storage access

Several functions like tar_make(), tar_read(), tar_load(), tar_meta(), and tar_progress() read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the tarchetypes package such as tar_render() and tar_quarto().

See Also

Other storage: `tar_format()`, `tar_load()`, `tar_load_everything()`, `tar_objects()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(tar_target(x, 1 + 1))
})
tar_make()
tar_read(x)
tar_read_raw("x")
})
}
```

---

tar_renv *Set up package dependencies for compatibility with* renv

---

Description

Write package dependencies to a script file (by default, named _targets_packages.R in the root project directory). Each package is written to a separate line as a standard `library()` call (e.g. library(package)) so renv can identify them automatically.

Usage

```
tar_renv(
 extras = c("bslib", "crew", "gt", "markdown", "rstudioapi", "shiny", "shinybusy",
    "shinyWidgets", "visNetwork"),
 path = "_targets_packages.R",
 callr_function = callr::r,
 callr_arguments = targets::tar_callr_args_default(callr_function),
 envir = parent.frame(),
 script = targets::tar_config_get("script")
)
```

Arguments

`extras`	Character vector of additional packages to declare as project dependencies.
`path`	Character of length 1, path to the script file to populate with `library()` calls.
`callr_function`	A function from `callr` to start a fresh clean R process to do the work. Set to `NULL` to run in the current session instead of an external process (but restart your R session just before you do in order to clear debris out of the global environment). `callr_function` needs to be `NULL` for interactive debugging, e.g. `tar_option_set(debug = "your_target")`. However, `callr_function` should not be `NULL` for serious reproducible work.
`callr_arguments`	
	A list of arguments to `callr_function`.
`envir`	An environment, where to run the target R script (default: `_targets.R`) if `callr_function` is `NULL`. Ignored if `callr_function` is anything other than `NULL`. `callr_function` should only be `NULL` for debugging and testing purposes, not for serious runs of a pipeline, etc.
	The `envir` argument of [`tar_make()`](#) and related functions always overrides the current value of `tar_option_get("envir")` in the current R session just before running the target script file, so whenever you need to set an alternative `envir`, you should always set it with `tar_option_set()` from within the target script file. In other words, if you call `tar_option_set(envir = envir1)` in an interactive session and then `tar_make(envir = envir2, callr_function = NULL)`, then `envir2` will be used.
`script`	Character of length 1, path to the target script file. Defaults to `tar_config_get("script")`, which in turn defaults to `_targets.R`. When you set this argument, the value of `tar_config_get("script")` is temporarily changed for the current function call. See [`tar_script()`](#), [`tar_config_get()`](#), and [`tar_config_set()`](#) for details about the target script file and how to set it persistently for a project.

Details

This function gets called for its side-effect, which writes package dependencies to a script for compatibility with `renv`. The generated file should **not** be edited by hand and will be overwritten each time `tar_renv()` is called.

The behavior of `renv` is to create and manage a project-local R library and keep a record of project dependencies in a file called `renv.lock`. To identify dependencies, `renv` crawls through code to find packages explicitly mentioned using `library()`, `require()`, or `::`. However, `targets` manages packages in a way that hides dependencies from `renv`. `tar_renv()` finds package dependencies that would be otherwise hidden to `renv` because they are declared using the `targets` API. Thus, calling `tar_renv` this is only necessary if using [`tar_option_set()`](#) or [`tar_target()`](#) to use specialized storage formats or manage packages.

With the script written by `tar_renv()`, `renv` is able to crawl the file to identify package dependencies (with `renv::dependencies()`). `tar_renv()` only serves to make your `targets` project compatible with `renv`, it is still the users responsibility to call `renv::init()` and `renv::snapshot()` directly to initialize and manage a project-local R library. This allows your `targets` pipeline to have its own self-contained R library separate from your standard R library. See https://rstudio.github.io/renv/index.html for more information.

Value

Nothing, invisibly.

Performance

If you use renv, then overhead from project initialization could slow down `tar_make()` and friends. If you experience slowness, please make sure your renv library is on a fast file system. (For example, slow network drives can severely reduce performance.) In addition, you can disable the slowest renv initialization checks. After confirming at https://rstudio.github.io/renv/reference/config.html that you can safely disable these checks, you can write lines RENV_CONFIG_RSPM_ENABLED=false, RENV_CONFIG_SANDBOX_ENABLED=false, and RENV_CONFIG_SYNCHRONIZED_CHECK=false in your user-level .Renviron file. If you disable the synchronization check, remember to call renv::status() periodically to check the health of your renv project library.

See Also

https://rstudio.github.io/renv/articles/renv.html

Other scripts: `tar_edit()`, `tar_github_actions()`, `tar_helper()`, `tar_script()`

Examples

```
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
  tar_script({
    library(targets)
    library(tarchetypes)
    tar_option_set(packages = c("tibble", "qs"))
    list()
  }, ask = FALSE)
  tar_renv()
  writeLines(readLines("_targets_packages.R"))
})
tar_option_reset()
```

---

tar_repository_cas   *Define a custom content-addressable storage (CAS) repository (an ex-*
                            perimental feature).

Description

Define a custom storage repository that uses content-addressable storage (CAS).

Usage

```
tar_repository_cas(
  upload,
  download,
  exists = NULL,
  list = NULL,
```

```
    consistent = FALSE,
    substitute = base::list()
)
```

Arguments

upload   A function with arguments key and path, in that order. This function should
                  upload the file or directory from path to the CAS system. path is where the file
                  is originally saved to disk outside the CAS system. It could be a staging area
                  or a custom format = "file" location. key denotes the name of the destination
                  data object in the CAS system.

                  To differentiate between format = "file" targets and non-"file" targets, the
                  upload method can use `tar_format_get()`. For example, to make `tar_repository_cas_local()`
                  efficient, upload moves the file if targets::tar_format_get() == "file"
                  and copies it otherwise.

                  See the "Repository functions" section for more details.

download   A function with arguments key and path, in that order. This function should
                  download the data object at key from the CAS system to the file or directory at
                  path. key denotes the name of the data object in the CAS system. path is a
                  temporary staging area and not the final destination.

                  Please be careful to avoid deleting the object at key from the CAS system. If the
                  CAS system is a local file system, for example, download should copy the file
                  and not simply move it (e.g. please avoid file.rename()).

                  See the "Repository functions" section for more details.

exists   A function with a single argument key, where key is a single character string
                  (length(key) is 1) to identify a single object in the CAS system.

                  The exists function should check if there is a single object at a single key in
                  the CAS system. It is ignored if list is given and consistent is TRUE.

                  See the "Repository functions" section for more details.

list   Either NULL or an optional function with a single argument named keys.

                  The list function increases efficiency by reducing repeated calls to the exists
                  function (see above) or entirely avoiding them if consistent is 'TRUE.

                  The list function should return a character vector of keys that already exist in
                  the CAS system. The keys argument of list is a character vector of CAS keys
                  (hashes) which are already recorded in the pipeline metadata (tar_meta()). For
                  greater efficiency, the list function can restrict its query to these existing keys
                  instead of trying to list the billions of keys that could exist in a CAS system. See
                  the source code of `tar_cas_l()` for an example of how this can work for a local
                  file system CAS.

                  See the "Repository functions" section for more details.

consistent   Logical. Set to TRUE if the storage platform is strongly read-after-write con-
                  sistent. Set to FALSE if the platform is not necessarily strongly read-after-write
                  consistent.

                  A data storage system is said to have strong read-after-write consistency if a new
                  object is fully available for reading as soon as the write operation finishes. Many
                  modern cloud services like Amazon S3 and Google Cloud Storage have strong
```

read-after-write consistency, meaning that if you upload an object with a PUT request, then a GET request immediately afterwards will retrieve the precise version of the object you just uploaded.

Some storage systems do not have strong read-after-write consistency. One example is network file systems (NFS). On a computing cluster, if one node creates a file on an NFS, then there is a delay before other nodes can access the new file. `targets` handles this situation by waiting for the new file to appear with the correct hash before attempting to use it in downstream computations. `consistent = FALSE` imposes a waiting period in which `targets` repeatedly calls the `exists` method until the file becomes available (at time intervals configurable with `tar_resources_network()`). These extra calls to `exists` may come with a little extra latency / computational burden, but on systems which are not strongly read-after-write consistent, it is the only way `targets` can safely use the current results for downstream computations.

substitute          Named list of values to be inserted into the body of each custom function in place of symbols in the body. For example, if `upload = function(key, path) do_upload(key, path, bucket = X)` and `substitute = list(X = "my_aws_bucket")`, then the `upload` function will actually end up being `function(key, path) do_upload(key, path, bucket = "my_aws_bucket")`.

Please do not include temporary or sensitive information such as authentication credentials. If you do, then `targets` will write them to metadata on disk, and a malicious actor could steal and misuse them. Instead, pass sensitive information as environment variables using `tar_resources_repository_cas()`. These environment variables only exist in the transient memory spaces of the R sessions of the local and worker processes.

**Content-addressable storage**

Normally, `targets` organizes output data based on target names. For example, if a pipeline has a single target x with default settings, then `tar_make()` saves the output data to the file _targets/objects/x. When the output of x changes, `tar_make()` overwrites _targets/objects/x. In other words, no matter how many changes happen to x, the data store always looks like this:

```
_targets/
    meta/
        meta
    objects/
        x
```

By contrast, with content-addressable storage (CAS), `targets` organizes outputs based on the hashes of their contents. The name of each output file is its hash, and the metadata maps these hashes to target names. For example, suppose target x has `repository = tar_repository_cas_local("my_cas")`. When the output of x changes, `tar_make()` creates a new file inside my_cas/ without overwriting or deleting any other files in that folder. If you run `tar_make()` three different times with three different values of x, then storage will look like this:

```
_targets/
    meta/
```

```
        meta
my_cas/
    1fffeb09ad36e84a
    68328d833e6361d3
    798af464fb2f6b30
```

The next call to `tar_read(x)` uses `tar_meta(x)$data` to look up the current hash of `x`. If `tar_meta(x)$data` returns "1fffeb09ad36e84a", then `tar_read(x)` returns the data from `my_cas/1fffeb09ad36e84a`. Files `my_cas/68328d833e6361d3` and and `my_cas/798af464fb2f6b30` are left over from previous values of `x`.

Because CAS accumulates historical data objects, it is ideal for data versioning and collaboration. If you commit the `_targets/meta/meta` file to version control alongside the source code, then you can revert to a previous state of your pipeline with all your targets up to date, and a colleague can leverage your hard-won results using a fork of your code and metadata.

The downside of CAS is the cost of accumulating many data objects over time. Most pipelines that use CAS should have a garbage collection system or retention policy to remove data objects when they no longer needed.

The [tar_repository_cas()](#) function lets you create your own CAS system for `targets`. You can supply arbitrary custom methods to upload, download, and check for the existence of data objects. Your custom CAS system can exist locally on a shared file system or remotely on the cloud (e.g. in an AWS S3 bucket). See the "Repository functions" section and the documentation of individual arguments for advice on how to write your own methods.

The [tar_repository_cas_local()](#) function has an example CAS system based on a local folder on disk. It uses [tar_cas_u()](#) for uploads, [tar_cas_d()](#) for downloads, and [tar_cas_l()](#) for listing keys.

Repository functions

In [tar_repository_cas()](#), functions `upload`, `download`, `exists`, and `keys` must be completely pure and self-sufficient. They must load or namespace all their own packages, and they must not depend on any custom user-defined functions or objects in the global environment of your pipeline. `targets` converts each function to and from text, so it must not rely on any data in the closure. This disqualifies functions produced by `Vectorize()`, for example.

`upload` and `download` can assume `length(path)` is 1, but they should account for the possibility that `path` could be a directory. To simply avoid supporting directories, `upload` could simply call an assertion:

```
targets::tar_assert_not_dir(
  path,
  msg = "This CAS upload method does not support directories."
)
```

Otherwise, support for directories may require handling them as a special case. For example, `upload` and `download` could copy all the files in the given directory, or they could manage the directory as a zip archive.

Some functions may need to be adapted and configured based on other inputs. For example, you may want to define `upload = \(key, path) file.rename(path, file.path(folder, key))`

but do not want to hard-code a value of `folder` when you write the underlying function. The `substitute` argument handles this situation. For example, if `substitute` is `list(folder = "my_folder")`, then upload will end up as `\(key, path) file.rename(path, file.path("my_folder", key))`.

Temporary or sensitive such as authentication credentials should not be injected this way into the function body. Instead, pass them as environment variables using `tar_resources_repository_cas()`.

See Also

Other content-addressable storage: `tar_repository_cas_local()`, `tar_repository_cas_local_gc()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  repository <- tar_repository_cas(
    upload = function(key, path) {
      if (dir.exists(path)) {
        stop("This CAS repository does not support directory outputs.")
      }
      if (!file.exists("cas")) {
        dir.create("cas", recursive = TRUE)
      }
      file.rename(path, file.path("cas", key))
    },
    download = function(key, path) {
      file.copy(file.path("cas", key), path)
    },
    exists = function(key) {
      file.exists(file.path("cas", key))
    },
    list = function(keys) {
      keys[file.exists(file.path("cas", keys))]
    },
    consistent = FALSE
  )
  write_file <- function(object) {
    writeLines(as.character(object), "file.txt")
    "file.txt"
  }
  list(
    tar_target(x, c(2L, 4L), repository = repository),
    tar_target(
      y,
      x,
      pattern = map(x),
      format = "qs",
      repository = repository
    ),
    tar_target(z, write_file(y), format = "file", repository = repository)
```

```
    )
})
tar_make()
tar_read(y)
tar_read(z)
list.files("cas")
tar_meta(any_of(c("x", "z")), fields = any_of("data"))
})
}
```

---

tar_repository_cas_local

> *Local content-addressable storage (CAS) repository (an experimental
> feature).*

Description

Local content-addressable storage (CAS) repository.

Usage

```
tar_repository_cas_local(path = NULL, consistent = FALSE)
```

Arguments

path
: Character string, file path to the CAS repository where all the data object files will be stored. NULL to default to file.path(tar_config_get("store"), "cas") (usually "_targets/cas/").

consistent
: Logical. Set to TRUE if the storage platform is strongly read-after-write consistent. Set to FALSE if the platform is not necessarily strongly read-after-write consistent.

  A data storage system is said to have strong read-after-write consistency if a new object is fully available for reading as soon as the write operation finishes. Many modern cloud services like Amazon S3 and Google Cloud Storage have strong read-after-write consistency, meaning that if you upload an object with a PUT request, then a GET request immediately afterwards will retrieve the precise version of the object you just uploaded.

  Some storage systems do not have strong read-after-write consistency. One example is network file systems (NFS). On a computing cluster, if one node creates a file on an NFS, then there is a delay before other nodes can access the new file. targets handles this situation by waiting for the new file to appear with the correct hash before attempting to use it in downstream computations. consistent = FALSE imposes a waiting period in which targets repeatedly calls the exists method until the file becomes available (at time intervals configurable with tar_resources_network()). These extra calls to exists may come with a little extra latency / computational burden, but on systems which are not strongly read-after-write consistent, it is the only way targets can safely use the current results for downstream computations.

Details

Pass to the `repository` argument of [tar_target()](#) or [tar_option_set()](#) to use a local CAS system.

Value

A character string from [tar_repository_cas()](#) which may be passed to the `repository` argument of [tar_target()](#) or [tar_option_set()](#) to use a local CAS system.

Content-addressable storage

Normally, `targets` organizes output data based on target names. For example, if a pipeline has a single target x with default settings, then [tar_make()](#) saves the output data to the file _targets/objects/x. When the output of x changes, [tar_make()](#) overwrites _targets/objects/x. In other words, no matter how many changes happen to x, the data store always looks like this:

```
_targets/
    meta/
        meta
    objects/
        x
```

By contrast, with content-addressable storage (CAS), `targets` organizes outputs based on the hashes of their contents. The name of each output file is its hash, and the metadata maps these hashes to target names. For example, suppose target x has `repository = tar_repository_cas_local("my_cas")`. When the output of x changes, [tar_make()](#) creates a new file inside my_cas/ without overwriting or deleting any other files in that folder. If you run [tar_make()](#) three different times with three different values of x, then storage will look like this:

```
_targets/
    meta/
        meta
my_cas/
    1fffeb09ad36e84a
    68328d833e6361d3
    798af464fb2f6b30
```

The next call to tar_read(x) uses tar_meta(x)$data to look up the current hash of x. If tar_meta(x)$data returns "1fffeb09ad36e84a", then tar_read(x) returns the data from my_cas/1fffeb09ad36e84a. Files my_cas/68328d833e6361d3 and and my_cas/798af464fb2f6b30 are left over from previous values of x.

Because CAS accumulates historical data objects, it is ideal for data versioning and collaboration. If you commit the _targets/meta/meta file to version control alongside the source code, then you can revert to a previous state of your pipeline with all your targets up to date, and a colleague can leverage your hard-won results using a fork of your code and metadata.

The downside of CAS is the cost of accumulating many data objects over time. Most pipelines that use CAS should have a garbage collection system or retention policy to remove data objects when they no longer needed.

The `tar_repository_cas()` function lets you create your own CAS system for `targets`. You can supply arbitrary custom methods to upload, download, and check for the existence of data objects. Your custom CAS system can exist locally on a shared file system or remotely on the cloud (e.g. in an AWS S3 bucket). See the "Repository functions" section and the documentation of individual arguments for advice on how to write your own methods.

The `tar_repository_cas_local()` function has an example CAS system based on a local folder on disk. It uses `tar_cas_u()` for uploads, `tar_cas_d()` for downloads, and `tar_cas_l()` for listing keys.

See Also

Other content-addressable storage: `tar_repository_cas()`, `tar_repository_cas_local_gc()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  repository <- tar_repository_cas_local("cas")
  write_file <- function(object) {
    writeLines(as.character(object), "file.txt")
    "file.txt"
  }
  list(
    tar_target(x, c(2L, 4L), repository = repository),
    tar_target(
      y,
      x,
      pattern = map(x),
      format = "qs",
      repository = repository
    ),
    tar_target(z, write_file(y), format = "file", repository = repository)
  )
})
tar_make()
tar_read(y)
tar_read(z)
list.files("cas")
tar_meta(any_of(c("x", "z")), fields = any_of("data"))
})
}
```

---

tar_repository_cas_local_gc
                            Local CAS garbage collection

Description

Garbage collection for a local content-addressable storage system.

Usage

```
tar_repository_cas_local_gc(
  path = NULL,
  store = targets::tar_config_get("store")
)
```

Arguments

path   Character string, file path to the CAS repository where all the data object files will be stored. NULL to default to file.path(tar_config_get("store"), "cas") (usually "_targets/cas/").

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.

Details

Deletes all the files in the local CAS which are not in tar_meta(targets_only = TRUE)$data, including all locally saved historical data of the pipeline. This clears disk space, but at the expense of removing historical data and data from other colleagues who worked on the same project.

Value

NULL (invisibly). Called for its side effects. Removes files from the CAS repository at path.

Content-addressable storage

Normally, targets organizes output data based on target names. For example, if a pipeline has a single target x with default settings, then tar_make() saves the output data to the file _targets/objects/x. When the output of x changes, tar_make() overwrites _targets/objects/x. In other words, no matter how many changes happen to x, the data store always looks like this:

```
_targets/
    meta/
        meta
    objects/
        x
```

By contrast, with content-addressable storage (CAS), targets organizes outputs based on the hashes of their contents. The name of each output file is its hash, and the metadata maps these hashes to target names. For example, suppose target x has repository = tar_repository_cas_local("my_cas"). When the output of x changes, tar_make() creates a new file inside my_cas/ without overwriting

or deleting any other files in that folder. If you run [tar_make()](#) three different times with three different values of x, then storage will look like this:

```
_targets/
    meta/
        meta
my_cas/
    1fffeb09ad36e84a
    68328d833e6361d3
    798af464fb2f6b30
```

The next call to tar_read(x) uses tar_meta(x)$data to look up the current hash of x. If tar_meta(x)$data returns "1fffeb09ad36e84a", then tar_read(x) returns the data from my_cas/1fffeb09ad36e84a. Files my_cas/68328d833e6361d3 and and my_cas/798af464fb2f6b30 are left over from previous values of x.

Because CAS accumulates historical data objects, it is ideal for data versioning and collaboration. If you commit the _targets/meta/meta file to version control alongside the source code, then you can revert to a previous state of your pipeline with all your targets up to date, and a colleague can leverage your hard-won results using a fork of your code and metadata.

The downside of CAS is the cost of accumulating many data objects over time. Most pipelines that use CAS should have a garbage collection system or retention policy to remove data objects when they no longer needed.

The [tar_repository_cas()](#) function lets you create your own CAS system for targets. You can supply arbitrary custom methods to upload, download, and check for the existence of data objects. Your custom CAS system can exist locally on a shared file system or remotely on the cloud (e.g. in an AWS S3 bucket). See the "Repository functions" section and the documentation of individual arguments for advice on how to write your own methods.

The [tar_repository_cas_local()](#) function has an example CAS system based on a local folder on disk. It uses [tar_cas_u()](#) for uploads, [tar_cas_d()](#) for downloads, and [tar_cas_l()](#) for listing keys.

See Also

Other content-addressable storage: [tar_repository_cas](#)(), [tar_repository_cas_local](#)()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(seed = NA, repository = tar_repository_cas_local())
  list(tar_target(x, sample.int(n = 9e9, size = 1)))
})
for (index in seq_len(3)) tar_make(reporter = "silent")
list.files("_targets/cas")
tar_repository_cas_local_gc()
```

```
list.files("_targets/cas")
tar_meta(names = any_of("x"), fields = any_of("data"))
})
}
```

---

tar_reprex   *Reproducible example of* targets *with* reprex

Description

Create a reproducible example of a targets pipeline with the reprex package.

Usage

```
tar_reprex(pipeline = tar_target(example_target, 1), run = tar_make(), ...)
```

Arguments

pipeline	R code for the target script file _targets.R. library(targets) is automatically written at the top.
run	R code to inspect and run the pipeline.
...	Named arguments passed to reprex::reprex().

Details

The best way to get help with an issue is to create a reproducible example of the problem and post it to https://github.com/ropensci/targets/discussions tar_reprex() facilitates this process. It is like reprex::reprex({targets::tar_script(...); tar_make()}), but more convenient.

Value

A character vector of rendered the reprex, invisibly.

See Also

Other help: targets-package, use_targets(), use_targets_rmd()

Examples

```
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_reprex(
  pipeline = {
    list(
      tar_target(data, data.frame(x = sample.int(1e3))),
      tar_target(summary, mean(data$x, na.rm = TRUE))
    )
  },
```

```
    run = {
      tar_visnetwork()
      tar_make()
    }
  )
}
```

---

tar_resources   *Target resources*

Description

Create a `resources` argument for [`tar_target()`](#) or [`tar_option_set()`](#).

Usage

```
tar_resources(
  aws = tar_option_get("resources")$aws,
  clustermq = tar_option_get("resources")$clustermq,
  crew = tar_option_get("resources")$crew,
  custom_format = tar_option_get("resources")$custom_format,
  feather = tar_option_get("resources")$feather,
  fst = tar_option_get("resources")$fst,
  future = tar_option_get("resources")$future,
  gcp = tar_option_get("resources")$gcp,
  network = tar_option_get("resources")$network,
  parquet = tar_option_get("resources")$parquet,
  qs = tar_option_get("resources")$qs,
  repository_cas = tar_option_get("resources")$repository_cas,
  url = tar_option_get("resources")$url
)
```

Arguments

aws   Output of function `tar_resources_aws()`. Amazon Web Services (AWS) S3
               storage settings for `tar_target(..., repository = "aws")`. See the cloud
               storage section of <https://books.ropensci.org/targets/data.html> for de-
               tails for instructions.

clustermq   Output of function `tar_resources_clustermq()`. Optional clustermq set-
               tings for `tar_make_clustermq()`, including the `log_worker` and `template`
               arguments of `clustermq::workers()`. clustermq workers are *persistent*, so
               there is not a one-to-one correspondence between workers and targets. The
               `clustermq` resources apply to the workers, not the targets. So the correct way to
               assign clustermq resources is through [`tar_option_set()`](#), not [`tar_target()`](#).
               clustermq resources in individual [`tar_target()`](#) calls will be ignored.

crew	Output of function `tar_resources_crew()` with target-specific settings for integration with the `crew` R package. These settings are arguments to the `push()` method of the controller or controller group object which control things like auto-scaling behavior and the controller to use in the case of a controller group.
custom_format	Output of function `tar_resources_custom_format()` with configuration details for `tar_format()` storage formats.
feather	Output of function `tar_resources_feather()`. Non-default arguments to `arrow::read_feather()` and `arrow::write_feather()` for arrow/feather-based storage formats. Applies to all formats ending with the `"_feather"` suffix. For details on formats, see the format argument of `tar_target()`.
fst	Output of function `tar_resources_fst()`. Non-default arguments to `fst::read_fst()` and `fst::write_fst()` for fst-based storage formats. Applies to all formats ending with `"fst"` in the name. For details on formats, see the format argument of `tar_target()`.
future	Output of function `tar_resources_future()`. Optional `future` settings for `tar_make_future()`, including the `resources` argument of `future::future()`, which can include values to insert in template placeholders in `future.batchtools` template files. This is how to supply the `resources` argument of `future::future()` for targets. Resources supplied through `future::plan()` and `future::tweak()` are completely ignored.
gcp	Output of function `tar_resources_gcp()`. Google Cloud Storage bucket settings for `tar_target(..., repository = "gcp")`. See the cloud storage section of <https://books.ropensci.org/targets/data.html> for details for instructions.
network	Output of function `tar_resources_network()`. Settings to configure how to handle unreliable network connections in the case of uploading, downloading, and checking data in situations that rely on network file systems or HTTP/HTTPS requests. Examples include retries and timeouts for internal storage management operations for `storage = "worker"` or `format = "file"` (on network file systems), `format = "url"`, `repository = "aws"`, and `repository = "gcp"`. These settings do not apply to actions you take in the custom R command of the target.
parquet	Output of function `tar_resources_parquet()`. Non-default arguments to `arrow::read_parquet()` and `arrow::write_parquet()` for arrow/parquet-based storage formats. Applies to all formats ending with the `"_parquet"` suffix. For details on formats, see the format argument of `tar_target()`.
qs	Output of function `tar_resources_qs()`. Non-default arguments to `qs2::qs_read()` and `qs2::qs_save()` for targets with `format = "qs"`. For details on formats, see the format argument of `tar_target()`.
repository_cas	Output of function `tar_resources_repository_cas()` with configuration details for `tar_repository_cas()` storage repositories.
url	Output of function `tar_resources_url()`. Non-default settings for storage formats ending with the `"_url"` suffix. These settings include the `curl` handle for extra control over HTTP requests. For details on formats, see the format argument of `tar_target()`.

Value

A list of objects of class "tar_resources" with non-default settings of various optional backends for data storage and high-performance computing.

Resources

Functions tar_target() and tar_option_set() each takes an optional resources argument to supply non-default settings of various optional backends for data storage and high-performance computing. The tar_resources() function is a helper to supply those settings in the correct manner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from tar_option_get("resources"). For example, suppose you set tar_option_set(resources = tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix = "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition, if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below, options like prefix do not carry over from tar_option_set() if you supply non-default resources to tar_target().)

See Also

Other resources: tar_resources_aws(), tar_resources_clustermq(), tar_resources_crew(), tar_resources_custom_format(), tar_resources_feather(), tar_resources_fst(), tar_resources_future(), tar_resources_gcp(), tar_resources_network(), tar_resources_parquet(), tar_resources_qs(), tar_resources_repository_cas(), tar_resources_url()

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  format = "qs",
  resources = tar_resources(
    qs = tar_resources_qs(preset = "fast"),
    future = tar_resources_future(resources = list(n_cores = 1))
  )
)
```

---

tar_resources_aws   *Target resources: Amazon Web Services (AWS) S3 storage*

Description

Create the aws argument of tar_resources() to specify optional settings to AWS for tar_target(..., repository = "aws"). See the format argument of tar_target() for details.

Usage

```
tar_resources_aws(
  bucket = targets::tar_option_get("resources")$aws$bucket,
  prefix = targets::tar_option_get("resources")$aws$prefix,
  region = targets::tar_option_get("resources")$aws$region,
  endpoint = targets::tar_option_get("resources")$aws$endpoint,
  s3_force_path_style = targets::tar_option_get("resources")$aws$s3_force_path_style,
  part_size = targets::tar_option_get("resources")$aws$part_size,
  page_size = targets::tar_option_get("resources")$aws$page_size,
  max_tries = targets::tar_option_get("resources")$aws$max_tries,
  seconds_timeout = targets::tar_option_get("resources")$aws$seconds_timeout,
  close_connection = targets::tar_option_get("resources")$aws$close_connection,
  verbose = targets::tar_option_get("resources")$aws$verbose,
  ...
)
```

Arguments

bucket	Character of length 1, name of an existing bucket to upload and download the return values of the affected targets during the pipeline.
prefix	Character of length 1, "directory path" in the bucket where your target object and metadata will go. Please supply an explicit prefix unique to your `targets` project. In the future, `targets` will begin requiring explicitly user-supplied prefixes. (This last note was added on 2023-08-24: `targets` version 1.2.2.9000.)
region	Character of length 1, AWS region containing the S3 bucket. Set to `NULL` to use the default region.
endpoint	Character of length 1, URL endpoint for S3 storage. Defaults to the Amazon AWS endpoint if `NULL`. Example: To use the S3 protocol with Google Cloud Storage, set `endpoint = "https://storage.googleapis.com"` and `region = "auto"`. (A custom endpoint may require that you explicitly set a custom region directly in `tar_resources_aws()`. `region = "auto"` happens to work with Google Cloud.) Also make sure to create HMAC access keys in the Google Cloud Storage console (under Settings => Interoperability) and set the `AWS_ACCESS_KEY_ID` and `AWS_SECRET_ACCESS_KEY` environment variables accordingly. After that, you should be able to use S3 storage formats with Google Cloud storage buckets. There is one limitation, however: even if your bucket has object versioning turned on, `targets` may fail to record object versions. Google Cloud Storage in particular has this incompatibility.
s3_force_path_style	
	Logical of length 1, whether to use path-style addressing for S3 requests.
part_size	Positive numeric of length 1, number of bytes for each part of a multipart upload. (Except the last part, which is the remainder.) In a multipart upload, each part must be at least 5 MB. The default value of the `part_size` argument is `5 * (2 ^ 20)`.
page_size	Positive integer of length 1, number of items in each page for paginated HTTP requests such as listing objects.

max_tries   Positive integer of length 1, maximum number of attempts to access a network
                   resource on AWS.

seconds_timeout

                   Positive numeric of length 1, number of seconds until an HTTP connection times
                   out.

close_connection

                   Logical of length 1, whether to close HTTP connections immediately.

verbose   Logical of length 1, whether to print console messages when running computa-
                   tionally expensive operations such as listing objects in a large bucket.

...   Named arguments to functions in paws.storage::s3() to manage S3 storage.
                   The documentation of these specific functions is linked from https://www.paws-r-sdk.com/docs/s3.
                   The configurable functions themselves are:

                   • paws.storage::s3()$head_object()
                   • paws.storage::s3()$get_object()
                   • paws.storage::s3()$delete_object()
                   • paws.storage::s3()$put_object()
                   • paws.storage::s3()$create_multipart_upload()
                   • paws.storage::s3()$abort_multipart_upload()
                   • paws.storage::s3()$complete_multipart_upload()
                   • paws.storage::s3()$upload_part() The named arguments in ... must
                     not be any of "bucket", "Bucket", "key", "Key", "prefix", "region",
                     "part_size", "endpoint", "version", "VersionId", "body", "Body",
                     "metadata", "Metadata", "UploadId", "MultipartUpload", or "PartNumber".

Details

See the cloud storage section of https://books.ropensci.org/targets/data.html for details
for instructions.

Value

Object of class "tar_resources_aws", to be supplied to the aws argument of tar_resources().

Resources

Functions [tar_target()](...) and [tar_option_set()](...) each takes an optional resources argument to
supply non-default settings of various optional backends for data storage and high-performance
computing. The tar_resources() function is a helper to supply those settings in the correct man-
ner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from
tar_option_get("resources"). For example, suppose you set tar_option_set(resources =
tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix
= "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition,
if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then
tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but
it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below,
options like prefix do not carry over from tar_option_set() if you supply non-default resources
to tar_target().)

See Also

Other resources: `tar_resources()`, `tar_resources_clustermq()`, `tar_resources_crew()`, `tar_resources_custom_fo`
`tar_resources_feather()`, `tar_resources_fst()`, `tar_resources_future()`, `tar_resources_gcp()`,
`tar_resources_network()`, `tar_resources_parquet()`, `tar_resources_qs()`, `tar_resources_repository_cas()`,
`tar_resources_url()`

Examples

```
# Somewhere in you target script file (usually _targets.R):
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_target(
  name,
  command(),
  format = "qs",
  repository = "aws",
  resources = tar_resources(
    aws = tar_resources_aws(
      bucket = "yourbucketname",
      prefix = "_targets"
    ),
    qs = tar_resources_qs(preset = "fast"),
  )
)
}
```

---

tar_resources_clustermq

Target resources: `clustermq` *high-performance computing*

Description

Create the `clustermq` argument of `tar_resources()` to specify optional high-performance computing settings for `tar_make_clustermq()`. For details, see the documentation of the `clustermq` R package and the corresponding argument names in this help file.

Usage

```
tar_resources_clustermq(
  template = targets::tar_option_get("resources")$clustermq$template
)
```

Arguments

template   Named list, `template` argument to `clustermq::workers()`. Defaults to an
                  empty list.

Details

clustermq workers are *persistent*, so there is not a one-to-one correspondence between workers and targets. The clustermq resources apply to the workers, not the targets. So the correct way to assign clustermq resources is through tar_option_set(), not tar_target(). clustermq resources in individual tar_target() calls will be ignored.

Value

Object of class "tar_resources_clustermq", to be supplied to the clustermq argument of tar_resources().

Resources

Functions tar_target() and tar_option_set() each takes an optional resources argument to supply non-default settings of various optional backends for data storage and high-performance computing. The tar_resources() function is a helper to supply those settings in the correct manner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from tar_option_get("resources"). For example, suppose you set tar_option_set(resources = tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix = "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition, if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below, options like prefix do not carry over from tar_option_set() if you supply non-default resources to tar_target().)

See Also

Other resources: tar_resources(), tar_resources_aws(), tar_resources_crew(), tar_resources_custom_format() tar_resources_feather(), tar_resources_fst(), tar_resources_future(), tar_resources_gcp(), tar_resources_network(), tar_resources_parquet(), tar_resources_qs(), tar_resources_repository_cas(), tar_resources_url()

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  resources = tar_resources(
    clustermq = tar_resources_clustermq(template = list(n_cores = 2))
  )
)
```

---

tar_resources_crew *Target resources:* crew *high-performance computing*

Description

Create the crew argument of tar_resources() to specify optional target settings.

Usage

```
tar_resources_crew(
  controller = targets::tar_option_get("resources")$crew$controller,
  scale = NULL,
  seconds_timeout = targets::tar_option_get("resources")$crew$seconds_timeout
)
```

Arguments

controller   Character of length 1. If tar_option_get("controller") is a crew controller
                 group, the controller argument of tar_resources_crew() indicates which
                 controller in the controller group to use. If you need heterogeneous workers, you
                 can leverage this argument to send different targets to different worker groups.

scale   Deprecated in targets version 1.3.0.9002 (2023-10-02). No longer necessary.

seconds_timeout
                 Positive numeric of length 1, optional task timeout passed to the .timeout ar-
                 gument of mirai::mirai() (after converting to milliseconds).

Details

tar_resources_crew() accepts target-specific settings for integration with the crew R package.
These settings are arguments to the push() method of the controller or controller group object
which control things like auto-scaling behavior and the controller to use in the case of a controller
group.

Value

Object of class "tar_resources_crew", to be supplied to the crew argument of tar_resources().

Resources

Functions [tar_target()](#) and [tar_option_set()](#) each takes an optional resources argument to
supply non-default settings of various optional backends for data storage and high-performance
computing. The tar_resources() function is a helper to supply those settings in the correct man-
ner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from
tar_option_get("resources"). For example, suppose you set tar_option_set(resources =
tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix
= "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition,

if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below, options like prefix do not carry over from tar_option_set() if you supply non-default resources to tar_target().)

See Also

Other resources: tar_resources(), tar_resources_aws(), tar_resources_clustermq(), tar_resources_custom_for tar_resources_feather(), tar_resources_fst(), tar_resources_future(), tar_resources_gcp(), tar_resources_network(), tar_resources_parquet(), tar_resources_qs(), tar_resources_repository_cas(), tar_resources_url()

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  resources = tar_resources(
    crew = tar_resources_crew(seconds_timeout = 5)
  )
)
```

---

tar_resources_custom_format

Target resources for custom storage formats

Description

Create the custom_format argument of tar_resources() to specify optional target settings for custom storage formats.

Usage

```
tar_resources_custom_format(
  envvars = targets::tar_option_get("resources")$custom_format$envvars
)
```

Arguments

envvars   Named character vector of environment variables. These environment variables are temporarily set just before each call to the storage methods you define in tar_format(). Specific methods like read can retrieve values from these environment variables using Sys.getenv(). Set envvars to NULL to omit entirely.

Details

tar_resources_custom_format() accepts target-specific settings to customize [tar_format()](#)
storage formats.

Value

Object of class "tar_resources_custom_format", to be supplied to the custom_format argument
of tar_resources().

Resources

Functions [tar_target()](#) and [tar_option_set()](#) each takes an optional resources argument to
supply non-default settings of various optional backends for data storage and high-performance
computing. The tar_resources() function is a helper to supply those settings in the correct man-
ner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from
tar_option_get("resources"). For example, suppose you set tar_option_set(resources =
tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix
= "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition,
if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z")), then
tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but
it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below,
options like prefix do not carry over from tar_option_set() if you supply non-default resources
to tar_target().)

See Also

Other resources: [tar_resources()](#), [tar_resources_aws()](#), [tar_resources_clustermq()](#), [tar_resources_crew()](#),
[tar_resources_feather()](#), [tar_resources_fst()](#), [tar_resources_future()](#), [tar_resources_gcp()](#),
[tar_resources_network()](#), [tar_resources_parquet()](#), [tar_resources_qs()](#), [tar_resources_repository_cas()](#),
[tar_resources_url()](#)

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name = target_name,
  command = data.frame(x = 1),
  format = tar_format(
    read = function(path) {
      readRDS(file = path)
    },
    write = function(object, path) {
      version <- as.integer(Sys.getenv("SERIALIZATION", unset = "2"))
      saveRDS(object = object, file = path, version = version)
    }
  ),
  resources = tar_resources(
    custom_format = tar_resources_custom_format(
      envvars = c(SERIALIZATION = "3")
```

```
      )
    )
  )
```

---

tar_resources_feather   *Target resources: feather storage formats*

Description

Create the feather argument of `tar_resources()` to specify optional settings for feather data frame storage formats powered by the arrow R package. See the `format` argument of [`tar_target()`](#) for details.

Usage

```
tar_resources_feather(
  compression = targets::tar_option_get("resources")$feather$compression,
  compression_level = targets::tar_option_get("resources")$feather$compression_level
)
```

Arguments

compression   Character of length 1, compression argument of `arrow::write_feather()`. Defaults to `"default"`.

compression_level

                   Numeric of length 1, `compression_level` argument of `arrow::write_feather()`. Defaults to `NULL`.

Value

Object of class `"tar_resources_feather"`, to be supplied to the feather argument of `tar_resources()`.

Resources

Functions [`tar_target()`](#) and [`tar_option_set()`](#) each takes an optional `resources` argument to supply non-default settings of various optional backends for data storage and high-performance computing. The `tar_resources()` function is a helper to supply those settings in the correct manner.

In `targets` version 0.12.2 and above, resources are inherited one-by-one in nested fashion from `tar_option_get("resources")`. For example, suppose you set `tar_option_set(resources = tar_resources(aws = my_aws))`, where `my_aws` equals `tar_resources_aws(bucket = "x", prefix = "y")`. Then, `tar_target(data, get_data()` will have bucket `"x"` and prefix `"y"`. In addition, if `new_resources` equals `tar_resources(aws = tar_resources_aws(bucket = "z")))`, then `tar_target(data, get_data(), resources = new_resources)` will use the new bucket `"z"`, but it will still use the prefix `"y"` supplied through `tar_option_set()`. (In `targets` 0.12.1 and below, options like `prefix` do not carry over from `tar_option_set()` if you supply non-default resources to `tar_target()`.)

See Also

Other resources: `tar_resources()`, `tar_resources_aws()`, `tar_resources_clustermq()`, `tar_resources_crew()`, `tar_resources_custom_format()`, `tar_resources_fst()`, `tar_resources_future()`, `tar_resources_gcp()`, `tar_resources_network()`, `tar_resources_parquet()`, `tar_resources_qs()`, `tar_resources_repository_cas()`, `tar_resources_url()`

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  format = "feather",
  resources = tar_resources(
    feather = tar_resources_feather(compression = "lz4")
  )
)
```

---

tar_resources_fst   *Target resources:* fst *storage formats*

Description

Create the `fst` argument of `tar_resources()` to specify optional settings for big data frame storage formats powered by the `fst` R package. See the `format` argument of `tar_target()` for details.

Usage

```
tar_resources_fst(compress = targets::tar_option_get("resources")$fst$compress)
```

Arguments

compress   Numeric of length 1, compress argument of `fst::write_fst()`. Defaults to
                50.

Value

Object of class `"tar_resources_fst"`, to be supplied to the `fst` argument of `tar_resources()`.

Resources

Functions `tar_target()` and `tar_option_set()` each takes an optional `resources` argument to supply non-default settings of various optional backends for data storage and high-performance computing. The `tar_resources()` function is a helper to supply those settings in the correct manner.

In `targets` version 0.12.2 and above, resources are inherited one-by-one in nested fashion from `tar_option_get("resources")`. For example, suppose you set `tar_option_set(resources = tar_resources(aws = my_aws))`, where `my_aws` equals `tar_resources_aws(bucket = "x", prefix`

= ″y″). Then, tar_target(data, get_data() will have bucket ″x″ and prefix ″y″. In addition, if new_resources equals tar_resources(aws = tar_resources_aws(bucket = ″z″))), then tar_target(data, get_data(), resources = new_resources) will use the new bucket ″z″, but it will still use the prefix ″y″ supplied through tar_option_set(). (In targets 0.12.1 and below, options like prefix do not carry over from tar_option_set() if you supply non-default resources to tar_target().)

See Also

Other resources: tar_resources(), tar_resources_aws(), tar_resources_clustermq(), tar_resources_crew(), tar_resources_custom_format(), tar_resources_feather(), tar_resources_future(), tar_resources_gcp(), tar_resources_network(), tar_resources_parquet(), tar_resources_qs(), tar_resources_repository_cas(), tar_resources_url()

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  format = "fst_tbl",
  resources = tar_resources(
    fst = tar_resources_fst(compress = 100)
  )
)
```

---

tar_resources_future   *Target resources:* future *high-performance computing*

Description

Create the future argument of tar_resources() to specify optional high-performance computing settings for tar_make_future(). This is how to supply the resources argument of future::future() for targets. Resources supplied through future::plan() and future::tweak() are completely ignored. For details, see the documentation of the future R package and the corresponding argument names in this help file.

Usage

```
tar_resources_future(
  plan = NULL,
  resources = targets::tar_option_get("resources")$future$resources
)
```

Arguments

`plan`	A `future::plan()` object or `NULL`, a target-specific future plan. Defaults to `NULL`.
`resources`	Named list, `resources` argument to `future::future()`. This argument is not supported in some versions of `future`. For versions of `future` where `resources` is not supported, instead supply `resources` to `future::tweak()` and assign the returned plan to the `plan` argument of `tar_resources_future()`. The default value of `resources` in `tar_resources_future()` is an empty list.

Value

Object of class `"tar_resources_future"`, to be supplied to the `future` argument of `tar_resources()`.

Resources

Functions [tar_target()](#) and [tar_option_set()](#) each takes an optional `resources` argument to supply non-default settings of various optional backends for data storage and high-performance computing. The tar_resources() function is a helper to supply those settings in the correct manner.

In `targets` version 0.12.2 and above, resources are inherited one-by-one in nested fashion from `tar_option_get("resources")`. For example, suppose you set `tar_option_set(resources = tar_resources(aws = my_aws))`, where `my_aws` equals `tar_resources_aws(bucket = "x", prefix = "y")`. Then, `tar_target(data, get_data()` will have bucket `"x"` and prefix `"y"`. In addition, if `new_resources` equals `tar_resources(aws = tar_resources_aws(bucket = "z")))`, then `tar_target(data, get_data(), resources = new_resources)` will use the new bucket `"z"`, but it will still use the prefix `"y"` supplied through `tar_option_set()`. (In `targets` 0.12.1 and below, options like `prefix` do not carry over from `tar_option_set()` if you supply non-default resources to `tar_target()`.)

See Also

Other resources: [tar_resources()](#), [tar_resources_aws()](#), [tar_resources_clustermq()](#), [tar_resources_crew()](#), [tar_resources_custom_format()](#), [tar_resources_feather()](#), [tar_resources_fst()](#), [tar_resources_gcp()](#), [tar_resources_network()](#), [tar_resources_parquet()](#), [tar_resources_qs()](#), [tar_resources_repository_cas()](#), [tar_resources_url()](#)

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  resources = tar_resources(
    future = tar_resources_future(resources = list(n_cores = 2))
  )
)
```

---

tar_resources_gcp   *Target resources: Google Cloud Platform (GCP) Google Cloud Storage (GCS)*

Description

Create the gcp argument of tar_resources() to specify optional settings for Google Cloud Storage for targets with tar_target(..., repository = "gcp"). See the format argument of [tar_target()](#) for details.

Usage

```
tar_resources_gcp(
  bucket = targets::tar_option_get("resources")$gcp$bucket,
  prefix = targets::tar_option_get("resources")$gcp$prefix,
  predefined_acl = targets::tar_option_get("resources")$gcp$predefined_acl,
  max_tries = targets::tar_option_get("resources")$gcp$max_tries,
  verbose = targets::tar_option_get("resources")$gcp$verbose
)
```

Arguments

bucket	Character of length 1, name of an existing bucket to upload and download the return values of the affected targets during the pipeline.
prefix	Character of length 1, "directory path" in the bucket where your target object and metadata will go. Please supply an explicit prefix unique to your targets project. In the future, targets will begin requiring explicitly user-supplied prefixes. (This last note was added on 2023-08-24: targets version 1.2.2.9000.)
predefined_acl	Character of length 1, user access to the object. See ?googleCloudStorageR::gcs_upload for possible values. Defaults to "private".
max_tries	Positive integer of length 1, number of tries accessing a network resource on GCP.
verbose	Logical of length 1, whether to print extra messages like progress bars during uploads and downloads. Defaults to FALSE.

Details

See the cloud storage section of https://books.ropensci.org/targets/data.html for details for instructions.

Value

Object of class "tar_resources_gcp", to be supplied to the gcp argument of tar_resources().

Resources

Functions tar_target() and tar_option_set() each takes an optional resources argument to supply non-default settings of various optional backends for data storage and high-performance computing. The tar_resources() function is a helper to supply those settings in the correct manner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from tar_option_get("resources"). For example, suppose you set tar_option_set(resources = tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix = "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition, if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z")), then tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below, options like prefix do not carry over from tar_option_set() if you supply non-default resources to tar_target().)

See Also

Other resources: tar_resources(), tar_resources_aws(), tar_resources_clustermq(), tar_resources_crew(), tar_resources_custom_format(), tar_resources_feather(), tar_resources_fst(), tar_resources_future(), tar_resources_network(), tar_resources_parquet(), tar_resources_qs(), tar_resources_repository_cas(), tar_resources_url()

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  format = "qs",
  repository = "gcp",
  resources = tar_resources(
    gcp = tar_resources_gcp(
      bucket = "yourbucketname",
      prefix = "_targets"
    ),
    qs = tar_resources_qs(preset = "fast"),
  )
)
```

tar_resources_network   *Target resources for network file systems.*

Description

In high-performance computing on network file systems, if storage = "worker" in tar_target() or tar_option_set(), then targets waits for hashes to synchronize before continuing the pipeline. These resources control the retry mechanism.

Usage

```
tar_resources_network(
  max_tries = targets::tar_option_get("resources")$network$max_tries,
  seconds_interval = targets::tar_option_get("resources")$network$seconds_interval,
  seconds_timeout = targets::tar_option_get("resources")$network$seconds_timeout,
  verbose = targets::tar_option_get("resources")$network$verbose
)
```

Arguments

max_tries	Positive integer of length 1. Max number of tries.
seconds_interval	
	Positive numeric of length 1, seconds between retries.
seconds_timeout	
	Positive numeric of length 1. Timeout length in seconds.
verbose	Logical of length 1, whether to print informative console messages.

Value

Object of class "tar_resources_network", to be supplied to the network argument of tar_resources().

Resources

Functions tar_target() and tar_option_set() each takes an optional resources argument to supply non-default settings of various optional backends for data storage and high-performance computing. The tar_resources() function is a helper to supply those settings in the correct manner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from tar_option_get("resources"). For example, suppose you set tar_option_set(resources = tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix = "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition, if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below, options like prefix do not carry over from tar_option_set() if you supply non-default resources to tar_target().)

See Also

Other resources: tar_resources(), tar_resources_aws(), tar_resources_clustermq(), tar_resources_crew(), tar_resources_custom_format(), tar_resources_feather(), tar_resources_fst(), tar_resources_future(), tar_resources_gcp(), tar_resources_parquet(), tar_resources_qs(), tar_resources_repository_cas(), tar_resources_url()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
# Somewhere in you target script file (usually _targets.R):
```

```
tar_target(
  name = your_name,
  command = your_command(),
  storage = "worker",
  resources = tar_resources(
    network = tar_resources_network(max_tries = 3)
  )
)
}
```

---

tar_resources_parquet   *Target resources: parquet storage formats*

Description

Create the `parquet` argument of `tar_resources()` to specify optional settings for parquet data frame storage formats powered by the `arrow` R package. See the `format` argument of [`tar_target()`](#) for details.

Usage

```
tar_resources_parquet(
  compression = targets::tar_option_get("resources")$parquet$compression,
  compression_level = targets::tar_option_get("resources")$parquet$compression_level
)
```

Arguments

compression   Character of length 1, compression argument of `arrow::write_parquet()`.
               Defaults to `"snappy"`.

compression_level

               Numeric of length 1, `compression_level` argument of `arrow::write_parquet()`.
               Defaults to `NULL`.

Value

Object of class `"tar_resources_parquet"`, to be supplied to the parquet argument of `tar_resources()`.

Resources

Functions [`tar_target()`](#) and [`tar_option_set()`](#) each takes an optional `resources` argument to supply non-default settings of various optional backends for data storage and high-performance computing. The `tar_resources()` function is a helper to supply those settings in the correct manner.

In `targets` version 0.12.2 and above, resources are inherited one-by-one in nested fashion from `tar_option_get("resources")`. For example, suppose you set `tar_option_set(resources = tar_resources(aws = my_aws))`, where `my_aws` equals `tar_resources_aws(bucket = "x", prefix = "y")`. Then, `tar_target(data, get_data()` will have bucket `"x"` and prefix `"y"`. In addition,

if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then
tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but
it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below,
options like prefix do not carry over from tar_option_set() if you supply non-default resources
to tar_target().)

See Also

Other resources: `tar_resources()`, `tar_resources_aws()`, `tar_resources_clustermq()`, `tar_resources_crew()`,
`tar_resources_custom_format()`, `tar_resources_feather()`, `tar_resources_fst()`, `tar_resources_future()`,
`tar_resources_gcp()`, `tar_resources_network()`, `tar_resources_qs()`, `tar_resources_repository_cas()`,
`tar_resources_url()`

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  format = "parquet",
  resources = tar_resources(
    parquet = tar_resources_parquet(compression = "lz4")
  )
)
```

---

tar_resources_qs   *Target resources: qs storage formats*

Description

Create the qs argument of tar_resources() to specify optional settings for big data storage for-
mats powered by the qs R package. See the format argument of [tar_target()](#) for details.

Usage

```
tar_resources_qs(
  compress_level = targets::tar_option_get("resources")$qs$compress_level,
  shuffle = targets::tar_option_get("resources")$qs$shuffle,
  nthreads = targets::tar_option_get("resources")$qs$nthreads,
  preset = NULL
)
```

Arguments

compress_level	Positive integer, compress_level argument of [qs2::qs_save()](#) to control the compression level.
shuffle	TRUE to use byte shuffling in [qs2::qs_save()](#) to improve compression at the cost of some computation time, FALSE to forgo byte shuffling.

nthreads	Positive integer, number of threads to use for functions in the qs2 package to save and read the data.
preset	Deprecated in targets version 1.8.0.9014 (2024-11-11) and not used.

Value

Object of class "tar_resources_qs", to be supplied to the qs argument of tar_resources().

Resources

Functions [tar_target()](#) and [tar_option_set()](#) each takes an optional resources argument to supply non-default settings of various optional backends for data storage and high-performance computing. The tar_resources() function is a helper to supply those settings in the correct manner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from tar_option_get("resources"). For example, suppose you set tar_option_set(resources = tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix = "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition, if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below, options like prefix do not carry over from tar_option_set() if you supply non-default resources to tar_target().)

See Also

Other resources: [tar_resources()](#), [tar_resources_aws()](#), [tar_resources_clustermq()](#), [tar_resources_crew()](#), [tar_resources_custom_format()](#), [tar_resources_feather()](#), [tar_resources_fst()](#), [tar_resources_future](#), [tar_resources_gcp()](#), [tar_resources_network()](#), [tar_resources_parquet()](#), [tar_resources_repository_cas()](#), [tar_resources_url()](#)

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
  command(),
  format = "qs",
  resources = tar_resources(
    qs = tar_resources_qs(preset = "fast")
  )
)
```

tar_resources_repository_cas

Target resources for custom storage formats

Description

Create the `repository_cas` argument of `tar_resources()` to specify optional target settings for custom storage formats.

Usage

```
tar_resources_repository_cas(
  envvars = targets::tar_option_get("resources")$repository_cas$envvars
)
```

Arguments

envvars   Named character vector of environment variables. These environment variables
                 are temporarily set just before each call to the storage methods you define in
                 [`tar_format()`](). Specific methods like `read` can retrieve values from these envi-
                 ronment variables using `Sys.getenv()`. Set `envvars` to `NULL` to omit entirely.

Details

`tar_resources_repository_cas()` accepts target-specific settings to customize [`tar_repository_cas()`]()
storage repositories.

Value

Object of class `"tar_resources_repository_cas"`, to be supplied to the `repository_cas` argu-
ment of `tar_resources()`.

Resources

Functions [`tar_target()`]() and [`tar_option_set()`]() each takes an optional `resources` argument to
supply non-default settings of various optional backends for data storage and high-performance
computing. The `tar_resources()` function is a helper to supply those settings in the correct man-
ner.

In `targets` version 0.12.2 and above, resources are inherited one-by-one in nested fashion from
`tar_option_get("resources")`. For example, suppose you set `tar_option_set(resources = tar_resources(aws = my_aws))`, where `my_aws` equals `tar_resources_aws(bucket = "x", prefix = "y")`. Then, `tar_target(data, get_data()` will have bucket `"x"` and prefix `"y"`. In addition,
if `new_resources` equals `tar_resources(aws = tar_resources_aws(bucket = "z")))`, then
`tar_target(data, get_data(), resources = new_resources)` will use the new bucket `"z"`, but
it will still use the prefix `"y"` supplied through `tar_option_set()`. (In `targets` 0.12.1 and below,
options like `prefix` do not carry over from `tar_option_set()` if you supply non-default resources
to `tar_target()`.)

See Also

Other resources: `tar_resources()`, `tar_resources_aws()`, `tar_resources_clustermq()`, `tar_resources_crew()`, `tar_resources_custom_format()`, `tar_resources_feather()`, `tar_resources_fst()`, `tar_resources_future()`, `tar_resources_gcp()`, `tar_resources_network()`, `tar_resources_parquet()`, `tar_resources_qs()`, `tar_resources_url()`

Examples

```
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name = target_name,
  command = data.frame(x = 1),
  repository = tar_repository_cas(
    upload = function(key, path) {
      if (dir.exists(path)) {
        stop("This CAS repository does not support directory outputs.")
      }
      if (!file.exists("cas")) {
        dir.create("cas", recursive = TRUE)
      }
      file.copy(path, file.path("cas", key))
    },
    download = function(key, path) {
      file.copy(file.path("cas", key), path)
    },
    exists = function(key) {
      file.exists(file.path("cas", key))
    }
  ),
  resources = tar_resources(
    repository_cas = tar_resources_repository_cas(
      envvars = c(AUTHENTICATION_CREDENTIALS = "...")
    )
  )
)
```

---

tar_resources_url   *Target resources: URL storage formats*

Description

Create the `url` argument of `tar_resources()` to specify optional settings for URL storage formats. See the `format` argument of `tar_target()` for details.

Usage

```
tar_resources_url(
  handle = targets::tar_option_get("resources")$url$handle,
  max_tries = targets::tar_option_get("resources")$url$max_tries,
```

```
  seconds_interval = targets::tar_option_get("resources")$url$seconds_interval,
  seconds_timeout = targets::tar_option_get("resources")$url$seconds_interval
)
```

Arguments

handle   Object returned by curl::new_handle or NULL. Defaults to NULL.

max_tries   Positive integer of length 1, maximum number of tries to access a URL.

seconds_interval

                Nonnegative numeric of length 1, number of seconds to wait between individual
                retries while attempting to connect to the URL. Use tar_resources_network()
                instead.

seconds_timeout

                Nonnegative numeric of length 1, number of seconds to wait before timing out
                while trying to connect to the URL. Use tar_resources_network() instead.

Value

Object of class "tar_resources_url", to be supplied to the url argument of tar_resources().

Resources

Functions tar_target() and tar_option_set() each takes an optional resources argument to
supply non-default settings of various optional backends for data storage and high-performance
computing. The tar_resources() function is a helper to supply those settings in the correct man-
ner.

In targets version 0.12.2 and above, resources are inherited one-by-one in nested fashion from
tar_option_get("resources"). For example, suppose you set tar_option_set(resources =
tar_resources(aws = my_aws)), where my_aws equals tar_resources_aws(bucket = "x", prefix
= "y"). Then, tar_target(data, get_data() will have bucket "x" and prefix "y". In addition,
if new_resources equals tar_resources(aws = tar_resources_aws(bucket = "z"))), then
tar_target(data, get_data(), resources = new_resources) will use the new bucket "z", but
it will still use the prefix "y" supplied through tar_option_set(). (In targets 0.12.1 and below,
options like prefix do not carry over from tar_option_set() if you supply non-default resources
to tar_target().)

See Also

Other resources: tar_resources(), tar_resources_aws(), tar_resources_clustermq(), tar_resources_crew(),
tar_resources_custom_format(), tar_resources_feather(), tar_resources_fst(), tar_resources_future(),
tar_resources_gcp(), tar_resources_network(), tar_resources_parquet(), tar_resources_qs(),
tar_resources_repository_cas()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
# Somewhere in you target script file (usually _targets.R):
tar_target(
  name,
```

```
    command(),
    format = "url",
    resources = tar_resources(
      url = tar_resources_url(handle = curl::new_handle())
    )
  )
  }
```

---

tar_script   *Write a target script file.*

Description

The `tar_script()` function is a convenient way to create the required target script file (default:
`_targets.R`) in the current working directory. It always overwrites the existing target script, and it
requires you to be in the working directory where you intend to write the file, so be careful. See the
"Target script" section for details.

Usage

```
tar_script(
  code = NULL,
  library_targets = TRUE,
  ask = NULL,
  script = targets::tar_config_get("script")
)
```

Arguments

code   R code to write to the target script file. If `NULL`, an example target script file is
                written instead.

library_targets

                logical, whether to write a `library(targets)` line at the top of the target script
                file automatically (recommended). If `TRUE`, you do not need to explicitly put
                `library(targets)` in code.

ask   Logical, whether to ask before writing if the target script file already exists. If
                `NULL`, defaults to Sys.getenv("TAR_ASK"). (Set to "true" or "false" with
                Sys.setenv()). If ask and the TAR_ASK environment variable are both indeter-
                minate, defaults to `interactive()`.

script   Character of length 1, where to write the target script file. Defaults to `tar_config_get("script")`,
                which in turn defaults to `_targets.R`.

Value

`NULL` (invisibly).

Target script file

Every `targets` project requires a target script file. The target script file is usually a file called `_targets.R` Functions `tar_make()` and friends look for the target script and run it to set up the pipeline just prior to the main task. Every target script file should run the following steps in the order below:

1. Package: load the `targets` package. This step is automatically inserted at the top of the target script file produced by `tar_script()` if `library_targets` is `TRUE`, so you do not need to explicitly include it in `code`.

2. Globals: load custom functions and global objects into memory. Usually, this section is a bunch of calls to `source()` that run scripts defining user-defined functions. These functions support the R commands of the targets.

3. Options: call `tar_option_set()` to set defaults for targets-specific settings such as the names of required packages. Even if you have no specific options to set, it is still recommended to call `tar_option_set()` in order to register the proper environment.

4. Targets: define one or more target objects using `tar_target()`.

5. Pipeline: call `list()` to aggregate the targets from (4) into a list. Every target script file must return a pipeline object, which usually means ending with a call to `list()`. In practice, (4) and (5) can be combined together in the same function call.

See Also

Other scripts: `tar_edit()`, `tar_github_actions()`, `tar_helper()`, `tar_renv()`

Examples

```
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script() # Writes an example target script file.
# Writes a user-defined target script:
tar_script({
  library(targets)
  library(tarchetypes)
  x <- tar_target(x, 1 + 1)
  tar_option_set()
  list(x)
}, ask = FALSE)
writeLines(readLines("_targets.R"))
})
```

---

tar_seed_create   *Create a seed for a target.*

Description

Create a seed for a target.

Usage

```
tar_seed_create(name, global_seed = NULL)
```

Arguments

name	Character of length 1, target name.
global_seed	Integer of length 1, the overarching global pipeline seed which governs the seeds of all the targets. Set to NULL to default to tar_option_get("seed"). Set to NA to disable seed setting in targets and make tar_seed_create() return NA_integer_.

Value

Integer of length 1, the target seed.

Seeds

A target's random number generator seed is a deterministic function of its name and the global pipeline seed from tar_option_get("seed"). Consequently,

1. Each target runs with a reproducible seed so that
   different runs of the same pipeline in the same computing
   environment produce identical results.
2. No two targets in the same pipeline share the same seed.
   Even dynamic branches have different names and thus different seeds.

You can retrieve the seed of a completed target with tar_meta(your_target, seed) and run tar_seed_set() on the result to locally recreate the target's initial RNG state. tar_workspace() does this automatically as part of recovering a workspace.

RNG overlap

In theory, there is a risk that the pseudo-random number generator streams of different targets will overlap and produce statistically correlated results. (For a discussion of the motivating problem, see the Section 6: "Random-number generation" in the parallel package vignette: vignette(topic = "parallel", package = "parallel").) However, this risk is extremely small in practice, as shown by L'Ecuyer et al. (2017) doi:10.1016/j.matcom.2016.05.005 under "A single RNG with a 'random' seed for each stream" (Section 4: under "How to produce parallel streams and substreams"). targets and tarchetypes take the approach discussed in the aforementioned section of the paper using the secretbase package by Charlie Gao (2024) doi:10.5281/zenodo.10553140. To generate the 32-bit integer seed argument of set.seed() for each target, secretbase generates a cryptographic hash using the SHAKE256 extendable output function (XOF). secretbase uses algorithms from the Mbed TLS C library.

References

- Gao C (2024). secretbase: Cryptographic Hash and Extendable-Output Functions. R package version 0.1.0, doi:10.5281/zenodo.10553140.

- Pierre L'Ecuyer, David Munger, Boris Oreshkin, and Richard Simard (2017). Random numbers for parallel computers: Requirements and methods, with emphasis on GPUs. Mathematics and Computers in Simulation, 135, 3-17. doi:10.1016/j.matcom.2016.05.005.

See Also

Other pseudo-random number generation: tar_seed_get(), tar_seed_set()

---

tar_seed_get   *Get the random number generator seed of the target currently running.*

Description

Get the random number generator seed of the target currently running.

Usage

```
tar_seed_get(default = 1L)
```

Arguments

default   Integer, value to return if tar_seed_get() is called on its own outside a targets pipeline. Having a default lets users run things without tar_make(), which helps peel back layers of code and troubleshoot bugs.

Value

Integer of length 1. If invoked inside a targets pipeline, the return value is the seed of the target currently running, which is a deterministic function of the target name. Otherwise, the return value is default.

Seeds

A target's random number generator seed is a deterministic function of its name and the global pipeline seed from tar_option_get("seed"). Consequently,

1. Each target runs with a reproducible seed so that
   different runs of the same pipeline in the same computing
   environment produce identical results.
2. No two targets in the same pipeline share the same seed.
   Even dynamic branches have different names and thus different seeds.

You can retrieve the seed of a completed target with tar_meta(your_target, seed) and run tar_seed_set() on the result to locally recreate the target's initial RNG state. tar_workspace() does this automatically as part of recovering a workspace.

RNG overlap

In theory, there is a risk that the pseudo-random number generator streams of different targets will overlap and produce statistically correlated results. (For a discussion of the motivating problem, see the Section 6: "Random-number generation" in the `parallel` package vignette: `vignette(topic = "parallel", package = "parallel")`.) However, this risk is extremely small in practice, as shown by L'Ecuyer et al. (2017) doi:10.1016/j.matcom.2016.05.005 under "A single RNG with a 'random' seed for each stream" (Section 4: under "How to produce parallel streams and substreams"). `targets` and `tarchetypes` take the approach discussed in the aforementioned section of the paper using the `secretbase` package by Charlie Gao (2024) doi:10.5281/zenodo.10553140. To generate the 32-bit integer `seed` argument of `set.seed()` for each target, `secretbase` generates a cryptographic hash using the SHAKE256 extendable output function (XOF). `secretbase` uses algorithms from the `Mbed TLS` C library.

References

- Gao C (2024). `secretbase`: Cryptographic Hash and Extendable-Output Functions. R package version 0.1.0, doi:10.5281/zenodo.10553140.

- Pierre L'Ecuyer, David Munger, Boris Oreshkin, and Richard Simard (2017). Random numbers for parallel computers: Requirements and methods, with emphasis on GPUs. Mathematics and Computers in Simulation, 135, 3-17. doi:10.1016/j.matcom.2016.05.005.

See Also

Other pseudo-random number generation: `tar_seed_create()`, `tar_seed_set()`

Examples

```
tar_seed_get()
tar_seed_get(default = 123L)
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(tar_target(returns_seed, tar_seed_get()), ask = FALSE)
tar_make()
tar_read(returns_seed)
})
}
```

| tar_seed_set | *Set a seed to run a target.* |

Description

`targets` generates its own target-specific seeds using `tar_seed_create()`. Use `tar_seed_set()` to set one of these seeds in R.

Usage

```
tar_seed_set(seed)
```

Arguments

seed   Integer of length 1, value of the seed to set with set.seed().

Details

tar_seed_set() gives the user-supplied seed to set.seed() and sets arguments kind = "default", normal.kind = "default", and sample.kind = "default".

Value

NULL (invisibly).

Seeds

A target's random number generator seed is a deterministic function of its name and the global pipeline seed from tar_option_get("seed"). Consequently,

1. Each target runs with a reproducible seed so that
   different runs of the same pipeline in the same computing
   environment produce identical results.
2. No two targets in the same pipeline share the same seed.
   Even dynamic branches have different names and thus different seeds.

You can retrieve the seed of a completed target with tar_meta(your_target, seed) and run tar_seed_set() on the result to locally recreate the target's initial RNG state. tar_workspace() does this automatically as part of recovering a workspace.

RNG overlap

In theory, there is a risk that the pseudo-random number generator streams of different targets will overlap and produce statistically correlated results. (For a discussion of the motivating problem, see the Section 6: "Random-number generation" in the parallel package vignette: vignette(topic = "parallel", package = "parallel").) However, this risk is extremely small in practice, as shown by L'Ecuyer et al. (2017) doi:10.1016/j.matcom.2016.05.005 under "A single RNG with a 'random' seed for each stream" (Section 4: under "How to produce parallel streams and substreams"). targets and tarchetypes take the approach discussed in the aforementioned section of the paper using the secretbase package by Charlie Gao (2024) doi:10.5281/zenodo.10553140. To generate the 32-bit integer seed argument of set.seed() for each target, secretbase generates a cryptographic hash using the SHAKE256 extendable output function (XOF). secretbase uses algorithms from the Mbed TLS C library.

References

- Gao C (2024). secretbase: Cryptographic Hash and Extendable-Output Functions. R package version 0.1.0, doi:10.5281/zenodo.10553140.

- Pierre L'Ecuyer, David Munger, Boris Oreshkin, and Richard Simard (2017). Random numbers for parallel computers: Requirements and methods, with emphasis on GPUs. Mathematics and Computers in Simulation, 135, 3-17. doi:10.1016/j.matcom.2016.05.005.

See Also

Other pseudo-random number generation: `tar_seed_create()`, `tar_seed_get()`

Examples

```
seed <- tar_seed_create("target_name")
seed
sample(10)
tar_seed_set(seed)
sample(10)
tar_seed_set(seed)
sample(10)
```

---

tar_sitrep	*Show the cue-by-cue status of each target.*

Description

For each target, report which cues are activated. Except for the never cue, the target will rerun in `tar_make()` if any cue is activated. The target is suppressed if the never cue is TRUE. See `tar_cue()` for details.

Usage

```
tar_sitrep(
  names = NULL,
  fields = NULL,
  shortcut = targets::tar_config_get("shortcut"),
  reporter = targets::tar_config_get("reporter_outdated"),
  seconds_reporter = targets::tar_config_get("seconds_reporter_outdated"),
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function, reporter),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

names
Optional, names of the targets. If supplied, `tar_sitrep()` only returns metadata on these targets. The object supplied to names should be NULL or a tidyselect expression like `any_of()` or `starts_with()` from tidyselect itself, or `tar_described_as()` to select target names based on their descriptions.

fields
Optional, names of columns/fields to select. If supplied, `tar_sitrep()` only returns the selected metadata columns. You can supply symbols or tidyselect helpers like `any_of()` and `starts_with()`. The name column is always included first no matter what you select. Choices:

- name: name of the target or global object.
- meta: Whether the meta cue is activated: TRUE if the target is not in the metadata ([`tar_meta()`](#)), or if the target errored during the last [`tar_make()`](#), or if the class of the target changed.
- always: Whether mode in [`tar_cue()`](#) is "always". If TRUE, [`tar_make()`](#) always runs the target.
- never: Whether mode in [`tar_cue()`](#) is "never". If TRUE, [`tar_make()`](#) will only run if the meta cue activates.
- command: Whether the target's command changed since last time. Always TRUE if the meta cue is activated. Otherwise, always FALSE if the command cue is suppressed.
- depend: Whether the data/output of at least one of the target's dependencies changed since last time. Dependencies are targets, functions, and global objects directly upstream. Call tar_outdated(targets_only = FALSE) or tar_visnetwork(targets_only = FALSE) to see exactly which dependencies are outdated. Always NA if the meta cue is activated. Otherwise, always FALSE if the depend cue is suppressed.
- format: Whether the storage format of the target is different from last time. Always NA if the meta cue is activated. Otherwise, always FALSE if the format cue is suppressed.
- repository: Whether the storage repository of the target is different from last time. Always NA if the meta cue is activated. Otherwise, always FALSE if the format cue is suppressed.
- iteration: Whether the iteration mode of the target is different from last time. Always NA if the meta cue is activated. Otherwise, always FALSE if the iteration cue is suppressed.
- file: Whether the file(s) with the target's return value are missing or different from last time. Always NA if the meta cue is activated. Otherwise, always FALSE if the file cue is suppressed.

shortcut   Logical of length 1, how to interpret the names argument. If shortcut is FALSE (default) then the function checks all targets upstream of names as far back as the dependency graph goes. If TRUE, then the function only checks the targets in names and uses stored metadata for information about upstream dependencies as needed. shortcut = TRUE increases speed if there are a lot of up-to-date targets, but it assumes all the dependencies are up to date, so please use with caution. Use with caution. shortcut = TRUE only works if you set names.

reporter   Character of length 1, name of the reporter to user. Controls how messages are printed as targets are checked.

The default of tar_config_get("reporter_make") is "terse" if running inside a literate programming document (i.e. the knitr.in.progress global option is TRUE). Otherwise, the default is "balanced". Choices:

```
* `"balanced"`: a reporter that balances efficiency
  with informative detail.
  Uses a `cli` progress bar instead of printing messages
  for individual dynamic branches.
  To the right of the progress bar is a text string like
```

"22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets
detected as outdated so far,
124 targets detected as up to date so far).

For best results with the balanced reporter, you may need to
adjust your `cli` settings. See global options `cli.num_colors`
and `cli.dynamic` at
<https://cli.r-lib.org/reference/cli-config.html>.
On that page is also the `CLI_TICK_TIME` environment variable
which controls the time delay between progress bar updates.
If the delay is too low, then overhead from printing to the console
may slow down the pipeline.
* `"terse"`: like `"balanced"`, except without a progress bar.
* `"silent"`: print nothing.

seconds_reporter
            Deprecated on 2025-03-31 (targets version 1.10.1.9010).

callr_function A function from callr to start a fresh clean R process to do the work. Set to
            NULL to run in the current session instead of an external process (but restart
            your R session just before you do in order to clear debris out of the global
            environment). callr_function needs to be NULL for interactive debugging,
            e.g. tar_option_set(debug = "your_target"). However, callr_function
            should not be NULL for serious reproducible work.

callr_arguments
            A list of arguments to callr_function.

envir   An environment, where to run the target R script (default: _targets.R) if
            callr_function is NULL. Ignored if callr_function is anything other than
            NULL. callr_function should only be NULL for debugging and testing pur-
            poses, not for serious runs of a pipeline, etc.

            The envir argument of [tar_make()](#) and related functions always overrides the
            current value of tar_option_get("envir") in the current R session just before
            running the target script file, so whenever you need to set an alternative envir,
            you should always set it with tar_option_set() from within the target script
            file. In other words, if you call tar_option_set(envir = envir1) in an inter-
            active session and then tar_make(envir = envir2, callr_function = NULL),
            then envir2 will be used.

script   Character of length 1, path to the target script file. Defaults to tar_config_get("script"),
            which in turn defaults to _targets.R. When you set this argument, the value of
            tar_config_get("script") is temporarily changed for the current function
            call. See [tar_script()](#), [tar_config_get()](#), and [tar_config_set()](#) for de-
            tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
            which in turn defaults to _targets/. When you set this argument, the value
            of tar_config_get("store") is temporarily changed for the current function
            call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
            set the data store path persistently for a project.

Details

Caveats:

- [tar_cue()](tar_cue()) allows you to change/suppress cues, so the return value will depend on the settings you supply to [tar_cue()](tar_cue()).

- If a pattern tries to branches over a target that does not exist in storage, then the branches are omitted from the output.

- tar_sitrep() is myopic. It only considers what happens to the immediate target and its immediate upstream dependencies, and it makes no attempt to propagate invalidation downstream.

Value

A data frame with one row per target/object and one column per cue. Each element is a logical to indicate whether the cue is activated for the target. See the `field` argument in this help file for details.

See Also

Other inspect: tar_deps(), tar_manifest(), tar_network(), tar_outdated(), tar_validate()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
tar_sitrep()
tar_meta(starts_with("y_")) # see also any_of()
})
}
```

---

tar_skipped   *List skipped targets.*

Description

List targets whose progress is "skipped".

Usage

```
tar_skipped(names = NULL, store = targets::tar_config_get("store"))
```

Arguments

names	Optional, names of the targets. If supplied, the output is restricted to the selected targets. The object supplied to names should be NULL or a tidyselect expression like any_of() or starts_with() from tidyselect itself, or tar_described_as() to select target names based on their descriptions.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.

Value

A character vector of skipped targets.

See Also

Other progress: tar_canceled(), tar_completed(), tar_dispatched(), tar_errored(), tar_poll(), tar_progress(), tar_progress_branches(), tar_progress_summary(), tar_watch(), tar_watch_server(), tar_watch_ui()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  list(
    tar_target(x, seq_len(2)),
    tar_target(y, 2 * x, pattern = map(x))
  )
}, ask = FALSE)
tar_make()
tar_skipped()
tar_skipped(starts_with("y_")) # see also any_of()
})
}
```

---

tar_source   *Run R scripts.*

Description

Run all the R scripts in a directory in the environment specified.

Usage

```
tar_source(
  files = "R",
  envir = targets::tar_option_get("envir"),
  change_directory = FALSE
)
```

Arguments

files	Character vector of file and directory paths to look for R scripts to run. Paths must either be absolute paths or must be relative to the current working directory just before the function call.
envir	Environment to run the scripts. Defaults to `tar_option_get("envir")`, the environment of the pipeline.
change_directory	
	Logical, whether to temporarily change the working directory to the directory of each R script before running it.

Details

`tar_source()` is a convenient way to load R scripts in _targets.R to make custom functions available to the pipeline. `tar_source()` recursively looks for files ending in `.R` or `.r`, and it runs each with `eval(parse(text = readLines(script_file, warn = FALSE)), envir)`.

Value

`NULL` (invisibly)

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other utilities: [tar_active](), [tar_backoff](), [tar_call](), [tar_cancel](), [tar_definition](), [tar_described_as](), [tar_envir](), [tar_format_get](), [tar_group](), [tar_name](), [tar_path](), [tar_path_script](), [tar_path_script_support](), [tar_path_store](), [tar_path_target](), [tar_store](), [tar_unblock_process]()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
# Running in tar_dir(), these files are written in tempdir().
```

```
dir.create("R")
writeLines("f <- function(x) x + 1", file.path("R", "functions.R"))
tar_script({
  tar_source()
  list(tar_target(x, f(1)))
})
tar_make()
tar_read(x) # 2
})
}
```

---

tar_target   *Declare a target.*

Description

A target is a single step of computation in a pipeline. It runs an R command and returns a value. This value gets treated as an R object that can be used by the commands of targets downstream. Targets that are already up to date are skipped. See the user manual for more details.

[tar_target()](#) defines a target using non-standard evaluation. The `name` argument is an unevaluated symbol, and the `command` and `pattern` arguments are unevaluated expressions. Example: `tar_target(name = data, command = get_data())`.

[tar_target_raw()](#) defines a target with standard evaluation. The `name` argument is a character string, and the `command` and `pattern` arguments are evaluated expressions. Example: `tar_target_raw(name = "data", command = quote(get_data()))`. [tar_target_raw()](#) also has extra arguments `deps` and `string` for advanced customization.

Usage

```
tar_target(
  name,
  command,
  pattern = NULL,
  tidy_eval = targets::tar_option_get("tidy_eval"),
  packages = targets::tar_option_get("packages"),
  library = targets::tar_option_get("library"),
  format = targets::tar_option_get("format"),
  repository = targets::tar_option_get("repository"),
  iteration = targets::tar_option_get("iteration"),
  error = targets::tar_option_get("error"),
  memory = targets::tar_option_get("memory"),
  garbage_collection = isTRUE(targets::tar_option_get("garbage_collection")),
  deployment = targets::tar_option_get("deployment"),
  priority = targets::tar_option_get("priority"),
  resources = targets::tar_option_get("resources"),
  storage = targets::tar_option_get("storage"),
  retrieval = targets::tar_option_get("retrieval"),
```

```
  cue = targets::tar_option_get("cue"),
  description = targets::tar_option_get("description")
)

tar_target_raw(
  name,
  command,
  pattern = NULL,
  packages = targets::tar_option_get("packages"),
  library = targets::tar_option_get("library"),
  deps = NULL,
  string = NULL,
  format = targets::tar_option_get("format"),
  repository = targets::tar_option_get("repository"),
  iteration = targets::tar_option_get("iteration"),
  error = targets::tar_option_get("error"),
  memory = targets::tar_option_get("memory"),
  garbage_collection = isTRUE(targets::tar_option_get("garbage_collection")),
  deployment = targets::tar_option_get("deployment"),
  priority = targets::tar_option_get("priority"),
  resources = targets::tar_option_get("resources"),
  storage = targets::tar_option_get("storage"),
  retrieval = targets::tar_option_get("retrieval"),
  cue = targets::tar_option_get("cue"),
  description = targets::tar_option_get("description")
)
```

Arguments

name   Symbol, name of the target. In `tar_target()`, name is an unevaluated symbol,
                    e.g. tar_target(name = data). In `tar_target_raw()`, name is a character
                    string, e.g. tar_target_raw(name = "data").

                    A target name must be a valid name for a symbol in R, and it must not start with
                    a dot. Subsequent targets can refer to this name symbolically to induce a depen-
                    dency relationship: e.g. tar_target(downstream_target, f(upstream_target))
                    is a target named downstream_target which depends on a target upstream_target
                    and a function f().

                    In most cases, The target name is the name of its local data file in storage. Some
                    file systems are not case sensitive, which means converting a name to a different
                    case may overwrite a different target. Please ensure all target names have unique
                    names when converted to lower case.

                    In addition, a target's name determines its random number generator seed. In
                    this way, each target runs with a reproducible seed so someone else running
                    the same pipeline should get the same results, and no two targets in the same
                    pipeline share the same seed. (Even dynamic branches have different names
                    and thus different seeds.) You can recover the seed of a completed target with
                    tar_meta(your_target, seed) and run `tar_seed_set()` on the result to lo-
                    cally recreate the target's initial RNG state.

command	R code to run the target. In `tar_target()`, command is an unevaluated expression, e.g. `tar_target(command = data)`. In `tar_target_raw()`, command is an evaluated expression, e.g. `tar_target_raw(command = quote(data))`.
pattern	Code to define a dynamic branching branching for a target. In `tar_target()`, pattern is an unevaluated expression, e.g. `tar_target(pattern = map(data))`. In `tar_target_raw()`, command is an evaluated expression, e.g. `tar_target_raw(pattern = quote(map(data)))`. To demonstrate dynamic branching patterns, suppose we have a pipeline with numeric vector targets x and y. Then, `tar_target(z, x + y, pattern = map(x, y))` implicitly defines branches of z that each compute `x[1] + y[1]`, `x[2] + y[2]`, and so on. See the user manual for details.
tidy_eval	Logical, whether to enable tidy evaluation when interpreting command and pattern. If TRUE, you can use the "bang-bang" operator `!!` to programmatically insert the values of global objects.
packages	Character vector of packages to load right before the target runs or the output data is reloaded for downstream targets. Use `tar_option_set()` to set packages globally for all subsequent targets you define.
library	Character vector of library paths to try when loading packages.
format	Optional storage format for the target's return value. With the exception of `format = "file"`, each target gets a file in `_targets/objects`, and each format is a different way to save and load this file. See the "Storage formats" section for a detailed list of possible data storage formats.
repository	Character of length 1, remote repository for target storage. Choices: • `"local"`: file system of the local machine. • `"aws"`: Amazon Web Services (AWS) S3 bucket. Can be configured with a non-AWS S3 bucket using the endpoint argument of `tar_resources_aws()`, but versioning capabilities may be lost in doing so. See the cloud storage section of https://books.ropensci.org/targets/data.html for details for instructions. • `"gcp"`: Google Cloud Platform storage bucket. See the cloud storage section of https://books.ropensci.org/targets/data.html for details for instructions. • A character string from `tar_repository_cas()` for content-addressable storage. Note: if repository is not `"local"` and format is `"file"` then the target should create a single output file. That output file is uploaded to the cloud and tracked for changes where it exists in the cloud. As of targets version 1.11.0 and higher, the local file is no longer deleted after the target runs.
iteration	Character of length 1, name of the iteration mode of the target. Choices: • `"vector"`: branching happens with `vctrs::vec_slice()` and aggregation happens with `vctrs::vec_c()`. • `"list"`, branching happens with `[[]]` and aggregation happens with `list()`. • `"group"`: `dplyr::group_by()`-like functionality to branch over subsets of a non-dynamic data frame. For iteration = `"group"`, the target must not by dynamic (the pattern argument of `tar_target()` must be left NULL).

The target's return value must be a data frame with a special tar_group column of consecutive integers from 1 through the number of groups. Each integer designates a group, and a branch is created for each collection of rows in a group. See the [tar_group()](#) function to see how you can create the special tar_group column with dplyr::group_by().

error   Character of length 1, what to do if the target stops and throws an error. Options:

- "stop": the whole pipeline stops and throws an error.
- "continue": the whole pipeline keeps going.
- "null": The errored target continues and returns NULL. The data hash is deliberately wrong so the target is not up to date for the next run of the pipeline. In addition, as of targets version 1.8.0.9011, a value of NULL is given to upstream dependencies with error = "null" if loading fails.
- "abridge": any currently running targets keep running, but no new targets launch after that.
- "trim": all currently running targets stay running. A queued target is allowed to start if:
    1. It is not downstream of the error, and
    2. It is not a sibling branch from the same [tar_target()](#) call (if the error happened in a dynamic branch).

  The idea is to avoid starting any new work that the immediate error impacts. error = "trim" is just like error = "abridge", but it allows potentially healthy regions of the dependency graph to begin running. (Visit https://books.ropensci.org/targets/debugging.html to learn how to debug targets using saved workspaces.)

memory   Character of length 1, memory strategy. Possible values:

- "auto" (default): equivalent to memory = "transient" in almost all cases. But to avoid superfluous reads from disk, memory = "auto" is equivalent to memory = "persistent" for for non-dynamically-branched targets that other targets dynamically branch over. For example: if your pipeline has tar_target(name = y, command = x, pattern = map(x)), then tar_target(name = x, command = f(), memory = "auto") will use persistent memory in order to avoid rereading all of x for every branch of y.
- "transient": the target gets unloaded after every new target completes. Either way, the target gets automatically loaded into memory whenever another target needs the value.
- "persistent": the target stays in memory until the end of the pipeline (unless storage is "worker", in which case targets unloads the value from memory right after storing it in order to avoid sending copious data over a network).

For cloud-based file targets (e.g. format = "file" with repository = "aws"), the memory option applies to the temporary local copy of the file: "persistent" means it remains until the end of the pipeline and is then deleted, and "transient" means it gets deleted as soon as possible. The former conserves bandwidth, and the latter conserves local storage.

garbage_collection

> Logical: TRUE to run base::gc() just before the target runs, in whatever R process it is about to run (which could be a parallel worker). FALSE to omit garbage collection. Numeric values get converted to FALSE. The garbage_collection option in tar_option_set() is independent of the argument of the same name in tar_target().

deployment

> Character of length 1. If deployment is "main", then the target will run on the central controlling R process. Otherwise, if deployment is "worker" and you set up the pipeline with distributed/parallel computing, then the target runs on a parallel worker. For more on distributed/parallel computing in targets, please visit https://books.ropensci.org/targets/crew.html.

priority

> Deprecated on 2025-04-08 (targets version 1.10.1.9013). targets has moved to a more efficient scheduling algorithm (https://github.com/ropensci/targets/issues/1458) which cannot support priorities. The priority argument of tar_target() no longer has a reliable effect on execution order.

resources

> Object returned by tar_resources() with optional settings for high-performance computing functionality, alternative data storage formats, and other optional capabilities of targets. See tar_resources() for details.

storage

> Character string to control when the output of the target is saved to storage. Only relevant when using targets with parallel workers (https://books.ropensci.org/targets/crew.html). Must be one of the following values:
>
> - "worker" (default): the worker saves/uploads the value.
> - "main": the target's return value is sent back to the host machine and saved/uploaded locally.
> - "none": targets makes no attempt to save the result of the target to storage in the location where targets expects it to be. Saving to storage is the responsibility of the user. Use with caution.

retrieval

> Character string to control when the current target loads its dependencies into memory before running. (Here, a "dependency" is another target upstream that the current one depends on.) Only relevant when using targets with parallel workers (https://books.ropensci.org/targets/crew.html). Must be one of the following values:
>
> - "auto" (default): equivalent to retrieval = "worker" in almost all cases. But to avoid unnecessary reads from disk, retrieval = "auto" is equivalent to retrieval = "main" for dynamic branches that branch over non-dynamic targets. For example: if your pipeline has tar_target(x, command = f()), then tar_target(y, command = x, pattern = map(x), retrieval = "auto") will use "main" retrieval in order to avoid rereading all of x for every branch of y.
> - "worker": the worker loads the target's dependencies.
> - "main": the target's dependencies are loaded on the host machine and sent to the worker before the target runs.
> - "none": targets makes no attempt to load its dependencies. With retrieval = "none", loading dependencies is the responsibility of the user. Use with caution.

cue   An optional object from tar_cue() to customize the rules that decide whether
                 the target is up to date.

description   Character of length 1, a custom free-form human-readable text description of the
                 target. Descriptions appear as target labels in functions like tar_manifest()
                 and tar_visnetwork(), and they let you select subsets of targets for the names
                 argument of functions like tar_make(). For example, tar_manifest(names =
                 tar_described_as(starts_with("survival model"))) lists all the targets
                 whose descriptions start with the character string "survival model".

deps   Optional character vector of the adjacent upstream dependencies of the target,
                 including targets and global objects. If NULL, dependencies are resolved au-
                 tomatically as usual. The deps argument is only for developers of extension
                 packages such as tarchetypes, not for end users, and it should almost never
                 be used at all. In scenarios that at first appear to requires deps, there is almost
                 always a simpler and more robust workaround that avoids setting deps.

string   Optional string representation of the command. Internally, the string gets hashed
                 to check if the command changed since last run, which helps targets decide
                 whether the target is up to date. External interfaces can take control of string
                 to ignore changes in certain parts of the command. If NULL, the strings is just
                 deparsed from command (default).

Value

A target object. Users should not modify these directly, just feed them to list() in your target
script file (default: _targets.R).

Target objects

Functions like tar_target() produce target objects, special objects with specialized sets of S3
classes. Target objects represent skippable steps of the analysis pipeline as described at https:
//books.ropensci.org/targets/. Please read the walkthrough at https://books.ropensci.
org/targets/walkthrough.html to understand the role of target objects in analysis pipelines.

For developers, https://wlandau.github.io/targetopia/contributing.html#target-factories
explains target factories (functions like this one which generate targets) and the design specifica-
tion at https://books.ropensci.org/targets-design/ details the structure and composition
of target objects.

Storage formats

targets has several built-in storage formats to control how return values are saved and loaded from
disk:

- "rds": Default, uses saveRDS() and readRDS(). Should work for most objects, but slow.
- "auto": either "file" or "qs", depending on the return value of the target. If the return value
  is a character vector of existing files (and/or directories), then the format becomes "file"
  before tar_make() saves the target. Otherwise, the format becomes "qs".

  NOTE: format = "auto" slows down pipelines with 10000+ targets because it creates deep
  copies of 20000+ internal data objects. Pipelines of this size should use a more explicit format
  instead of "auto".

- "qs": Uses qs2::qs_save() and qs2::qs_read(). Should work for most objects, much faster than "rds". Optionally configure settings through tar_resources() and tar_resources_qs().

  Prior to targets version 1.8.0.9014, format = "qs" used the qs package. qs has since been superseded in favor of qs2, and so later versions of targets use qs2 to save new data. To read existing data, targets first attempts qs2::qs_read(), and then if that fails, it falls back on qs::qread().

- "feather": Uses arrow::write_feather() and arrow::read_feather() (version 2.0). Much faster than "rds", but the value must be a data frame. Optionally set compression and compression_level in arrow::write_feather() through tar_resources() and tar_resources_feather(). Requires the arrow package (not installed by default).

- "parquet": Uses arrow::write_parquet() and arrow::read_parquet() (version 2.0). Much faster than "rds", but the value must be a data frame. Optionally set compression and compression_level in arrow::write_parquet() through tar_resources() and tar_resources_parquet(). Requires the arrow package (not installed by default).

- "fst": Uses fst::write_fst() and fst::read_fst(). Much faster than "rds", but the value must be a data frame. Optionally set the compression level for fst::write_fst() through tar_resources() and tar_resources_fst(). Requires the fst package (not installed by default).

- "fst_dt": Same as "fst", but the value is a data.table. Deep copies are made as appropriate in order to protect against the global effects of in-place modification. Optionally set the compression level the same way as for "fst".

- "fst_tbl": Same as "fst", but the value is a tibble. Optionally set the compression level the same way as for "fst".

- "keras": superseded by tar_format() and incompatible with error = "null" (in tar_target() or tar_option_set()). Uses keras::save_model_hdf5() and keras::load_model_hdf5(). The value must be a Keras model. Requires the keras package (not installed by default).

- "torch": superseded by tar_format() and incompatible with error = "null" (in tar_target() or tar_option_set()). Uses torch::torch_save() and torch::torch_load(). The value must be an object from the torch package such as a tensor or neural network module. Requires the torch package (not installed by default).

- "file": A file target. To use this format, the target needs to manually identify or save some data and return a character vector of paths to the data (must be a single file path if repository is not "local"). (These paths must be existing files and nonempty directories.) Then, targets automatically checks those files and cues the appropriate run/skip decisions if those files are out of date. Those paths must point to files or directories, and they must not contain characters | or *. All the files and directories you return must actually exist, or else targets will throw an error. (And if storage is "worker", targets will first stall out trying to wait for the file to arrive over a network file system.) If the target does not create any files, the return value should be character(0).

  If repository is not "local" and format is "file", then the character vector returned by the target must be of length 1 and point to a single file. (Directories and vectors of multiple file paths are not supported for file targets on the cloud.) That output file is uploaded to the cloud and tracked for changes where it exists in the cloud. As of targets version >= 1.11.0, the physical file is retained locally after the target runs. (Previous versions of targets deleted the file locally.)

- "url": An input URL. For this storage format, repository is implicitly "local", URL format is like format = "file" except the return value of the target is a URL that already exists and serves as input data for downstream targets. Optionally supply a custom curl handle through tar_resources() and tar_resources_url(). in new_handle(), nobody = TRUE is important because it ensures targets just downloads the metadata instead of the entire data file when it checks time stamps and hashes. The data file at the URL needs to have an ETag or a Last-Modified time stamp, or else the target will throw an error because it cannot track the data. Also, use extreme caution when trying to use format = "url" to track uploads. You must be absolutely certain the ETag and Last-Modified time stamp are fully updated and available by the time the target's command finishes running. targets makes no attempt to wait for the web server.

- A custom format can be supplied with tar_format(). For this choice, it is the user's responsibility to provide methods for (un)serialization and (un)marshaling the return value of the target.

- The formats starting with "aws_" are deprecated as of 2022-03-13 (targets version > 0.10.0). For cloud storage integration, use the repository argument instead.

Formats "rds", "file", and "url" are general-purpose formats that belong in the targets package itself. Going forward, any additional formats should be implemented with [tar_format()](#) in third-party packages like tarchetypes and geotargets (for example: tarchetypes::tar_format_nanoparquet()). Formats "qs", "fst", etc. are legacy formats from before the existence of [tar_format()](#), and they will continue to remain in targets without deprecation.

See Also

Other targets: [tar_cue()](#)

Examples

```
# Defining targets does not run them.
data <- tar_target(target_name, get_data(), packages = "tidyverse")
analysis <- tar_target(analysis, analyze(x), pattern = map(x))
# In a pipeline:
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(name = x, command = 1 + 1),
    tar_target_raw(name = "y", command = quote(x + y))
  )
})
tar_make()
tar_read(x)
})
# Tidy evaluation
tar_option_set(envir = environment())
n_rows <- 30L
data <- tar_target(target_name, get_data(!!n_rows))
print(data)
```

```
# Disable tidy evaluation:
data <- tar_target(target_name, get_data(!!n_rows), tidy_eval = FALSE)
print(data)
tar_option_reset()
}
```

---

tar_test   *Test code in a temporary directory.*

Description

Runs a `test_that()` unit test inside a temporary directory to avoid writing to the user's file space.
This helps ensure compliance with CRAN policies. Also isolates `tar_option_set()` options and
environment variables specific to `targets` and skips the test on Solaris. Useful for writing tests for
[targetopia](https://) packages (extensions to `targets` tailored to specific use cases).

Usage

```
tar_test(label, code)
```

Arguments

label   Character of length 1, label for the test.

code   User-defined code for the test.

Value

`NULL` (invisibly).

See Also

Other utilities to extend targets: [tar_assert](#), [tar_condition](#), [tar_language](#)

Examples

```
tar_test("example test", {
  testing_variable_cafecfcb <- "only defined inside tar_test()"
  file.create("only_exists_in_tar_test")
})
exists("testing_variable_cafecfcb")
file.exists("only_exists_in_tar_test")
```

---

tar_timestamp *Get the timestamp(s) of a target.*

Description

Get the timestamp associated with a target's last successful run. tar_timestamp() expects the name argument to be an unevaluated symbol, whereas tar_timestamp_raw() expects name to be a character string.

Usage

```
tar_timestamp(
  name = NULL,
  format = NULL,
  tz = NULL,
  parse = NULL,
  store = targets::tar_config_get("store")
)

tar_timestamp_raw(
  name = NULL,
  format = NULL,
  tz = NULL,
  parse = NULL,
  store = targets::tar_config_get("store")
)
```

Arguments

name	Name of the target. If NULL (default) then tar_timestamp() will attempt to return the timestamp of the target currently running. Must be called inside a target's command or a supporting function in order to work.
	tar_timestamp() expects the name argument to be an unevaluated symbol, whereas tar_timestamp_raw() expects name to be a character string.
format	Deprecated in targets version 0.6.0 (2021-07-21).
tz	Deprecated in targets version 0.6.0 (2021-07-21).
parse	Deprecated in targets version 0.6.0 (2021-07-21).
store	Character string, directory path to the data store of the pipeline.

Details

tar_timestamp() checks the metadata in _targets/meta/meta, not the actual returned data of the target. The timestamp depends on the storage format of the target. If storage is local, e.g. formats like "rds" and "file", then the time stamp is the latest modification time of the target data files at the time the target last successfully ran. For non-local storage as with repository = "aws" and format = "url", targets chooses instead to simply record the time the target last successfully ran.

Value

If the target is not recorded in the metadata or cannot be parsed correctly, then `tar_timestamp()` returns a `POSIXct` object at `1970-01-01 UTC`.

See Also

Other time: `tar_newer()`, `tar_older()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  list(tar_target(x, 1))
}, ask = FALSE)
tar_make()
# Get the timestamp.
tar_timestamp(x)
# We can use the timestamp to cancel the target
# if it already ran within the last hour.
# Be sure to set `cue = tar_cue(mode = "always")`
# if you want the target to always check the timestamp.
tar_script({
  list(
  tar_target(
    x,
    tar_cancel((Sys.time() - tar_timestamp()) < 3600),
    cue = tar_cue(mode = "always")
  )
)}, ask = FALSE)
tar_make()
})
}
```

---

tar_toggle	*Choose code to run based on Target Markdown mode.*

Description

Run one piece of code if Target Markdown mode interactive mode is turned on and another piece of code otherwise.

Usage

```
tar_toggle(interactive, noninteractive)
```

Arguments

interactive   R code to run if Target Markdown interactive mode is activated.

noninteractive   R code to run if Target Markdown interactive mode is not activated.

Details

Visit <books.ropensci.org/targets/literate-programming.html> to learn about Target Markdown and interactive mode.

Value

If Target Markdown interactive mode is not turned on, the function returns the result of running the code. Otherwise, the function invisibly returns NULL.

See Also

Other Target Markdown: `tar_engine_knitr()`, `tar_interactive()`, `tar_noninteractive()`

Examples

```
tar_toggle(
  message("In interactive mode."),
  message("Not in interactive mode.")
)
```

---

tar_traceback   *Get a target's traceback*

Description

Return the saved traceback of a target. Assumes the target errored out in a previous run of the pipeline with workspaces enabled for that target. See `tar_workspace()` for details.

Usage

```
tar_traceback(
  name,
  envir = NULL,
  packages = NULL,
  source = NULL,
  characters = NULL,
  store = targets::tar_config_get("store")
)
```

Arguments

name	Symbol, name of the target whose workspace to read.
envir	Deprecated in `targets` > 0.3.1 (2021-03-28).
packages	Logical, whether to load the required packages of the target.
source	Logical, whether to run the target script file (default: `_targets.R`) to load user-defined global object dependencies into `envir`. If TRUE, then `envir` should either be the global environment or inherit from the global environment.
characters	Deprecated in `targets` 1.4.0 (2023-12-06).
store	Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`, which in turn defaults to `_targets/`. When you set this argument, the value of `tar_config_get("store")` is temporarily changed for the current function call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to set the data store path persistently for a project.

Value

Character vector, the traceback of a failed target if it exists.

See Also

Other debug: [tar_load_globals()](#), [tar_workspace()](#), [tar_workspace_download()](#), [tar_workspaces()](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tmp <- sample(1)
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(workspace_on_error = TRUE)
  list(
    tar_target(x, "loaded"),
    tar_target(y, stop(x))
  )
}, ask = FALSE)
try(tar_make())
tar_traceback(y, characters = 60)
})
}
```

---

tar_unblock_process   *Unblock the pipeline process*

Description

targets tries to avoid running two concurrent instances of `tar_make()` on the same pipeline writing to the same data store. Sometimes it generates false positives (meaning `tar_make()` throws this error even though there is only one instance of the pipeline running.) If there is a false positive, `tar_unblock_process()` gets the pipeline unstuck by removing the _targets/meta/process file. This allows the next call to `tar_make()` to resume.

Usage

```
tar_unblock_process(store = targets::tar_config_get("store"))
```

Arguments

store   Character string, path to the data store (usually `"_targets"`).

Value

NULL (invisibly). Called for its side effects.

See Also

Other utilities: `tar_active()`, `tar_backoff()`, `tar_call()`, `tar_cancel()`, `tar_definition()`, `tar_described_as()`, `tar_envir()`, `tar_format_get()`, `tar_group()`, `tar_name()`, `tar_path()`, `tar_path_script()`, `tar_path_script_support()`, `tar_path_store()`, `tar_path_target()`, `tar_source()`, `tar_store()`

---

tar_unscript   *Remove target script helper files.*

Description

Remove target script helper files (default: _targets_r/) that were created by Target Markdown.

Usage

```
tar_unscript(script = targets::tar_config_get("script"))
```

Arguments

script   Character of length 1, path to the target script file. Defaults to `tar_config_get("script")`, which in turn defaults to `_targets.R`. When you set this argument, the value of `tar_config_get("script")` is temporarily changed for the current function call. See `tar_script()`, `tar_config_get()`, and `tar_config_set()` for details about the target script file and how to set it persistently for a project.

Details

Target Markdown code chunks create R scripts in a folder called `_targets_r/` in order to aid the automatically supplied `_targets.R` file. Over time, the number of script files starts to build up, and `targets` has no way of automatically removing helper script files that are no longer necessary. To keep your pipeline up to date with the code chunks in the Target Markdown document(s), it is good practice to call `tar_unscript()` at the beginning of your first Target Markdown document. That way, extraneous/discarded targets are automatically removed from the pipeline when the document starts render.

If the target script is at some alternative path, e.g. `custom/script.R`, the helper scripts are in `custom/script_r/`. `tar_unscript()` works on the helper scripts as long as your project configuration settings correctly identify the correct target script.

Value

`NULL` (invisibly).

Examples

```
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_unscript()
})
```

---

tar_unversion	*Delete cloud object version IDs from local metadata.*

Description

Delete version IDs from local metadata.

Usage

```
tar_unversion(
  names = tidyselect::everything(),
  store = targets::tar_config_get("store")
)
```

Arguments

names   Tidyselect expression to identify the targets to drop version IDs. The object
               supplied to names should be `NULL` or a tidyselect expression like [any_of()](#)
               or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select
               target names based on their descriptions.

store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`,
               which in turn defaults to `_targets/`. When you set this argument, the value
               of `tar_config_get("store")` is temporarily changed for the current function
               call. See [tar_config_get()](#) and [tar_config_set()](#) for details about how to
               set the data store path persistently for a project.

Value

NULL (invisibly).

Cloud target data versioning

Some buckets in Amazon S3 or Google Cloud Storage are "versioned", which means they track historical versions of each data object. If you use targets with cloud storage (https://books.ropensci.org/targets/cloud-storage.html) and versioning is turned on, then targets will record each version of each target in its metadata.

Functions like `tar_read()` and `tar_load()` load the version recorded in the local metadata, which may not be the same as the "current" version of the object in the bucket. Likewise, functions `tar_delete()` and `tar_destroy()` only remove the version ID of each target as recorded in the local metadata.

If you want to interact with the *latest* version of an object instead of the version ID recorded in the local metadata, then you will need to delete the object from the metadata.

1. Make sure your local copy of the metadata is current and up to date. You may need to run `tar_meta_download()` or `tar_meta_sync()` first.

2. Run `tar_unversion()` to remove the recorded version IDs of your targets in the local metadata.

3. With the version IDs gone from the local metadata, functions like `tar_read()` and `tar_destroy()` will use the *latest* version of each target data object.

4. Optional: to back up the local metadata file with the version IDs deleted, use `tar_meta_upload()`.

See Also

Other clean: `tar_delete()`, `tar_destroy()`, `tar_invalidate()`, `tar_prune()`, `tar_prune_list()`

---

tar_validate   *Validate a pipeline of targets.*

Description

Inspect the pipeline for issues and throw an error or warning if a problem is detected.

Usage

```
tar_validate(
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

callr_function
A function from `callr` to start a fresh clean R process to do the work. Set to `NULL` to run in the current session instead of an external process (but restart your R session just before you do in order to clear debris out of the global environment). `callr_function` needs to be `NULL` for interactive debugging, e.g. `tar_option_set(debug = "your_target")`. However, `callr_function` should not be `NULL` for serious reproducible work.

callr_arguments
A list of arguments to `callr_function`.

envir
An environment, where to run the target R script (default: `_targets.R`) if `callr_function` is `NULL`. Ignored if `callr_function` is anything other than `NULL`. `callr_function` should only be `NULL` for debugging and testing purposes, not for serious runs of a pipeline, etc.

The `envir` argument of [`tar_make()`](#) and related functions always overrides the current value of `tar_option_get("envir")` in the current R session just before running the target script file, so whenever you need to set an alternative `envir`, you should always set it with `tar_option_set()` from within the target script file. In other words, if you call `tar_option_set(envir = envir1)` in an interactive session and then `tar_make(envir = envir2, callr_function = NULL)`, then `envir2` will be used.

script
Character of length 1, path to the target script file. Defaults to `tar_config_get("script")`, which in turn defaults to `_targets.R`. When you set this argument, the value of `tar_config_get("script")` is temporarily changed for the current function call. See [`tar_script()`](#), [`tar_config_get()`](#), and [`tar_config_set()`](#) for details about the target script file and how to set it persistently for a project.

store
Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`, which in turn defaults to `_targets/`. When you set this argument, the value of `tar_config_get("store")` is temporarily changed for the current function call. See [`tar_config_get()`](#) and [`tar_config_set()`](#) for details about how to set the data store path persistently for a project.

Value

NULL except if `callr_function = callr::r_bg()`, in which case a handle to the `callr` background process is returned. Either way, the value is invisibly returned.

See Also

Other inspect: [`tar_deps()`](#), [`tar_manifest()`](#), [`tar_network()`](#), [`tar_outdated()`](#), [`tar_sitrep()`](#)

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script(list(tar_target(x, 1 + 1)), ask = FALSE)
tar_validate()
})
}
```

---

tar_visnetwork   *visNetwork dependency graph.*

Description

Visualize the pipeline dependency graph with a visNetwork HTML widget.

Usage

```
tar_visnetwork(
  targets_only = FALSE,
  names = NULL,
  shortcut = FALSE,
  allow = NULL,
  exclude = ".Random.seed",
  outdated = TRUE,
  label = targets::tar_config_get("label"),
  label_width = targets::tar_config_get("label_width"),
  level_separation = targets::tar_config_get("level_separation"),
  degree_from = 1L,
  degree_to = 1L,
  zoom_speed = 1,
  physics = FALSE,
  reporter = targets::tar_config_get("reporter_outdated"),
  seconds_reporter = targets::tar_config_get("seconds_reporter_outdated"),
  callr_function = callr::r,
  callr_arguments = targets::tar_callr_args_default(callr_function),
  envir = parent.frame(),
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

targets_only	Logical, whether to restrict the output to just targets (FALSE) or to also include global functions and objects.
names	Names of targets. The graph visualization will operate only on these targets (and unless shortcut is TRUE, all the targets upstream as well). Selecting a small subgraph using names could speed up the load time of the visualization. Unlike allow, names is invoked before the graph is generated. Set to NULL to check/run all the targets (default). Otherwise, the object supplied to names should be a tidyselect expression like [any_of()](#) or [starts_with()](#) from tidyselect itself, or [tar_described_as()](#) to select target names based on their descriptions.
shortcut	Logical of length 1, how to interpret the names argument. If shortcut is FALSE (default) then the function checks all targets upstream of names as far back as

	the dependency graph goes. If TRUE, then the function only checks the targets in names and uses stored metadata for information about upstream dependencies as needed. shortcut = TRUE increases speed if there are a lot of up-to-date targets, but it assumes all the dependencies are up to date, so please use with caution. Also, shortcut = TRUE only works if you set names.
allow	Optional, define the set of allowable vertices in the graph. Unlike names, allow is invoked only after the graph is mostly resolved, so it will not speed up execution. Set to NULL to allow all vertices in the pipeline and environment (default). Otherwise, you can supply symbols or tidyselect helpers like starts_with().
exclude	Optional, define the set of exclude vertices from the graph. Unlike names, exclude is invoked only after the graph is mostly resolved, so it will not speed up execution. Set to NULL to exclude no vertices. Otherwise, you can supply symbols or tidyselect helpers like any_of() and starts_with().
outdated	Logical, whether to show colors to distinguish outdated targets from up-to-date targets. (Global functions and objects still show these colors.) Looking for outdated targets takes a lot of time for large pipelines with lots of branches, and setting outdated to FALSE is a nice way to speed up the graph if you only want to see dependency relationships and pipeline progress.
label	Character vector of one or more aesthetics to add to the vertex labels. Can contain "description" to show each target's custom description, "time" to show total runtime, "size" to show total storage size, or "branches" to show the number of branches in each pattern. You can choose multiple aesthetics at once, e.g. label = c("description", "time"). Only the description is enabled by default.
label_width	Positive numeric of length 1, maximum width (in number of characters) of the node labels.
level_separation	Numeric of length 1, levelSeparation argument of visNetwork::visHierarchicalLayout(). Controls the distance between hierarchical levels. Consider changing the value if the aspect ratio of the graph is far from 1. If level_separation is NULL, the levelSeparation argument of visHierarchicalLayout() defaults to a value chosen by targets.
degree_from	Integer of length 1. When you click on a node, the graph highlights a neighborhood of that node. degree_from controls the number of edges the neighborhood extends upstream.
degree_to	Integer of length 1. When you click on a node, the graph highlights a neighborhood of that node. degree_to controls the number of edges the neighborhood extends downstream.
zoom_speed	Positive numeric of length 1, scaling factor on the zoom speed. Above 1 zooms faster than default, below 1 zooms lower than default.
physics	Logical of length 1, whether to implement interactive physics in the graph, e.g. edge elasticity.
reporter	Character of length 1, name of the reporter to user. Controls how messages are printed as targets are checked. The default of tar_config_get("reporter_make") is "terse" if running inside a literate programming document (i.e. the knitr.in.progress global option is TRUE). Otherwise, the default is "balanced". Choices:

```
                              * `"balanced"`: a reporter that balances efficiency
                                with informative detail.
                                Uses a `cli` progress bar instead of printing messages
                                for individual dynamic branches.
                                To the right of the progress bar is a text string like
                                "22.6s, 4510+, 124-" (22.6 seconds elapsed, 4510 targets
                                detected as outdated so far,
                                124 targets detected as up to date so far).

                                For best results with the balanced reporter, you may need to
                                adjust your `cli` settings. See global options `cli.num_colors`
                                and `cli.dynamic` at
                                <https://cli.r-lib.org/reference/cli-config.html>.
                                On that page is also the `CLI_TICK_TIME` environment variable
                                which controls the time delay between progress bar updates.
                               If the delay is too low, then overhead from printing to the console
                               may slow down the pipeline.
                              * `"terse"`: like `"balanced"`, except without a progress bar.
                              * `"silent"`: print nothing.
```

seconds_reporter

> Deprecated on 2025-03-31 (`targets` version 1.10.1.9010).

callr_function A function from `callr` to start a fresh clean R process to do the work. Set to
                `NULL` to run in the current session instead of an external process (but restart
                your R session just before you do in order to clear debris out of the global
                environment). `callr_function` needs to be `NULL` for interactive debugging,
                e.g. `tar_option_set(debug = "your_target")`. However, `callr_function`
                should not be `NULL` for serious reproducible work.

callr_arguments

> A list of arguments to `callr_function`.

envir   An environment, where to run the target R script (default: `_targets.R`) if
                `callr_function` is `NULL`. Ignored if `callr_function` is anything other than
                `NULL`. `callr_function` should only be `NULL` for debugging and testing pur-
                poses, not for serious runs of a pipeline, etc.

> The `envir` argument of [`tar_make()`](#) and related functions always overrides the
> current value of `tar_option_get("envir")` in the current R session just before
> running the target script file, so whenever you need to set an alternative `envir`,
> you should always set it with `tar_option_set()` from within the target script
> file. In other words, if you call `tar_option_set(envir = envir1)` in an inter-
> active session and then `tar_make(envir = envir2, callr_function = NULL)`,
> then `envir2` will be used.

script   Character of length 1, path to the target script file. Defaults to `tar_config_get("script")`,
                which in turn defaults to `_targets.R`. When you set this argument, the value of
                `tar_config_get("script")` is temporarily changed for the current function
                call. See [`tar_script()`](#), [`tar_config_get()`](#), and [`tar_config_set()`](#) for de-
                tails about the target script file and how to set it persistently for a project.

store   Character of length 1, path to the `targets` data store. Defaults to `tar_config_get("store")`,
                which in turn defaults to `_targets/`. When you set this argument, the value

of `tar_config_get("store")` is temporarily changed for the current function call. See `tar_config_get()` and `tar_config_set()` for details about how to set the data store path persistently for a project.

Value

A `visNetwork` HTML widget object.

Dependency graph

The dependency graph of a pipeline is a directed acyclic graph (DAG) where each node indicates a target or global object and each directed edge indicates where a downstream node depends on an upstream node. The DAG is not always a tree, but it never contains a cycle because no target is allowed to directly or indirectly depend on itself. The dependency graph should show a natural progression of work from left to right. `targets` uses static code analysis to create the graph, so the order of `tar_target()` calls in the `_targets.R` file does not matter. However, targets does not support self-referential loops or other cycles. For more information on the dependency graph, please read https://books.ropensci.org/targets/targets.html#dependencies.

Storage access

Several functions like `tar_make()`, `tar_read()`, `tar_load()`, `tar_meta()`, and `tar_progress()` read or modify the local data store of the pipeline. The local data store is in flux while a pipeline is running, and depending on how distributed computing or cloud computing is set up, not all targets can even reach it. So please do not call these functions from inside a target as part of a running pipeline. The only exception is literate programming target factories in the `tarchetypes` package such as `tar_render()` and `tar_quarto()`.

See Also

Other visualize: `tar_glimpse()`, `tar_mermaid()`

Examples

```
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set()
  list(
    tar_target(y1, 1 + 1),
    tar_target(y2, 1 + 1),
    tar_target(z, y1 + y2, description = "sum of two other sums")
  )
})
tar_visnetwork()
tar_visnetwork(allow = starts_with("y")) # see also any_of()
})
}
```

---

tar_watch   *Shiny app to watch the dependency graph.*

Description

Launches a background process with a Shiny app that calls tar_visnetwork() every few seconds.
To embed this app in other apps, use the Shiny module in tar_watch_ui() and tar_watch_server().

Usage

```
tar_watch(
  seconds = 10,
  seconds_min = 1,
  seconds_max = 60,
  seconds_step = 1,
  targets_only = FALSE,
  exclude = ".Random.seed",
  outdated = FALSE,
  label = NULL,
  level_separation = 150,
  degree_from = 1L,
  degree_to = 1L,
  config = Sys.getenv("TAR_CONFIG", "_targets.yaml"),
  project = Sys.getenv("TAR_PROJECT", "main"),
  height = "650px",
  display = "summary",
  displays = c("summary", "branches", "progress", "graph", "about"),
  background = TRUE,
  browse = TRUE,
  host = getOption("shiny.host", "127.0.0.1"),
  port = getOption("shiny.port", targets::tar_random_port()),
  verbose = TRUE,
  supervise = TRUE,
  poll_connection = TRUE,
  stdout = "|",
  stderr = "|",
  title = "",
  theme = bslib::bs_theme(),
  spinner = TRUE
)
```

Arguments

seconds	Numeric of length 1, default number of seconds between refreshes of the graph. Can be changed in the app controls.
seconds_min	Numeric of length 1, lower bound of seconds in the app controls.

seconds_max	Numeric of length 1, upper bound of seconds in the app controls.
seconds_step	Numeric of length 1, step size of seconds in the app controls.
targets_only	Logical, whether to restrict the output to just targets (FALSE) or to also include global functions and objects.
exclude	Character vector of nodes to omit from the graph.
outdated	Logical, whether to show colors to distinguish outdated targets from up-to-date targets. (Global functions and objects still show these colors.) Looking for outdated targets takes a lot of time for large pipelines with lots of branches, and setting outdated to FALSE is a nice way to speed up the graph if you only want to see dependency relationships and pipeline progress.
label	Label argument to [tar_visnetwork()]().
level_separation	
	Numeric of length 1, levelSeparation argument of visNetwork::visHierarchicalLayout(). Controls the distance between hierarchical levels. Consider changing the value if the aspect ratio of the graph is far from 1. If level_separation is NULL, the levelSeparation argument of visHierarchicalLayout() defaults to a value chosen by targets.
degree_from	Integer of length 1. When you click on a node, the graph highlights a neighborhood of that node. degree_from controls the number of edges the neighborhood extends upstream.
degree_to	Integer of length 1. When you click on a node, the graph highlights a neighborhood of that node. degree_to controls the number of edges the neighborhood extends downstream.
config	Character of length 1, file path of the YAML configuration file with targets project settings. The config argument specifies which YAML configuration file that tar_config_get() reads from or tar_config_set() writes to in a single function call. It does not globally change which configuration file is used in subsequent function calls. The default file path of the YAML file is always _targets.yaml unless you set another default path using the TAR_CONFIG environment variable, e.g. Sys.setenv(TAR_CONFIG = "custom.yaml"). This also has the effect of temporarily modifying the default arguments to other functions such as [tar_make()]() because the default arguments to those functions are controlled by tar_config_get().
project	Character of length 1, name of the current targets project. Thanks to the config R package, targets YAML configuration files can store multiple sets of configuration settings, with each set corresponding to its own project. The project argument allows you to set or get a configuration setting for a specific project for a given call to tar_config_set() or tar_config_get(). The default project is always called "main" unless you set another default project using the TAR_PROJECT environment variable, e.g. Sys.setenv(tar_project = "custom"). This also has the effect of temporarily modifying the default arguments to other functions such as [tar_make()]() because the default arguments to those functions are controlled by tar_config_get().
height	Character of length 1, height of the visNetwork widget and branches table.
display	Character of length 1, which display to show first.

displays	Character vector of choices for the display. Elements can be any of "graph", "summary", "branches", or "about".
background	Logical, whether to run the app in a background process so you can still use the R console while the app is running.
browse	Whether to open the app in a browser when the app is ready. Only relevant if background is TRUE.
host	Character of length 1, IPv4 address to listen on. Only relevant if background is TRUE.
port	Positive integer of length 1, TCP port to listen on. Only relevant if background is TRUE.
verbose	whether to print a spinner and informative messages. Only relevant if background is TRUE.
supervise	Whether to register the process with a supervisor. If TRUE, the supervisor will ensure that the process is killed when the R process exits.
poll_connection	
	Whether to have a control connection to the process. This is used to transmit messages from the subprocess to the main process.
stdout	The name of the file the standard output of the child R process will be written to. If the child process runs with the --slave option (the default), then the commands are not echoed and will not be shown in the standard output. Also note that you need to call print() explicitly to show the output of the command(s). IF NULL (the default), then standard output is not returned, but it is recorded and included in the error object if an error happens.
stderr	The name of the file the standard error of the child R process will be written to. In particular message() sends output to the standard error. If nothing was sent to the standard error, then this file will be empty. This argument can be the same file as stdout, in which case they will be correctly interleaved. If this is the string "2>&1", then standard error is redirected to standard output. IF NULL (the default), then standard output is not returned, but it is recorded and included in the error object if an error happens.
title	Character of length 1, title of the UI.
theme	A call to bslib::bs_theme() with the bslib theme.
spinner	TRUE to add a busy spinner, FALSE to omit.

Details

The controls of the app are in the left panel. The seconds control is the number of seconds between refreshes of the graph, and the other settings match the arguments of tar_visnetwork().

Value

A handle to callr::r_bg() background process running the app.

See Also

Other progress: `tar_canceled()`, `tar_completed()`, `tar_dispatched()`, `tar_errored()`, `tar_poll()`, `tar_progress()`, `tar_progress_branches()`, `tar_progress_summary()`, `tar_skipped()`, `tar_watch_server()`, `tar_watch_ui()`

Examples

```r
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  sleep_run <- function(...) {
    Sys.sleep(10)
  }
  list(
    tar_target(settings, sleep_run()),
    tar_target(data1, sleep_run(settings)),
    tar_target(data2, sleep_run(settings))
  )
}, ask = FALSE)
# Launch the app in a background process.
tar_watch(seconds = 10, outdated = FALSE, targets_only = TRUE)
# Run the pipeline.
tar_make()
})
}
```

---

tar_watch_server   *Shiny module server for tar_watch()*

Description

Use `tar_watch_ui()` and tar_watch_server() to include `tar_watch()` as a Shiny module in an app.

Usage

```r
tar_watch_server(
  id,
  height = "650px",
  exclude = ".Random.seed",
  config = Sys.getenv("TAR_CONFIG", "_targets.yaml"),
  project = Sys.getenv("TAR_PROJECT", "main")
)
```

Arguments

`id`	Character of length 1, ID corresponding to the UI function of the module.
`height`	Character of length 1, height of the `visNetwork` widget and branches table.
`exclude`	Character vector of nodes to omit from the graph.
`config`	Character of length 1, file path of the YAML configuration file with `targets` project settings. The `config` argument specifies which YAML configuration file that `tar_config_get()` reads from or `tar_config_set()` writes to in a single function call. It does not globally change which configuration file is used in subsequent function calls. The default file path of the YAML file is always `_targets.yaml` unless you set another default path using the `TAR_CONFIG` environment variable, e.g. `Sys.setenv(TAR_CONFIG = "custom.yaml")`. This also has the effect of temporarily modifying the default arguments to other functions such as [tar_make()](#) because the default arguments to those functions are controlled by `tar_config_get()`.
`project`	Character of length 1, name of the current `targets` project. Thanks to the `config` R package, `targets` YAML configuration files can store multiple sets of configuration settings, with each set corresponding to its own project. The `project` argument allows you to set or get a configuration setting for a specific project for a given call to `tar_config_set()` or `tar_config_get()`. The default project is always called `"main"` unless you set another default project using the `TAR_PROJECT` environment variable, e.g. `Sys.setenv(tar_project = "custom")`. This also has the effect of temporarily modifying the default arguments to other functions such as [tar_make()](#) because the default arguments to those functions are controlled by `tar_config_get()`.

Value

A Shiny module server.

See Also

Other progress: [tar_canceled()](#), [tar_completed()](#), [tar_dispatched()](#), [tar_errored()](#), [tar_poll()](#), [tar_progress()](#), [tar_progress_branches()](#), [tar_progress_summary()](#), [tar_skipped()](#), [tar_watch()](#), [tar_watch_ui()](#)

`tar_watch_ui`	*Shiny module UI for tar_watch()*

Description

Use `tar_watch_ui()` and [tar_watch_server()](#) to include [tar_watch()](#) as a Shiny module in an app.

Usage

```
tar_watch_ui(
  id,
  label = "tar_watch_label",
  seconds = 10,
  seconds_min = 1,
  seconds_max = 60,
  seconds_step = 1,
  targets_only = FALSE,
  outdated = FALSE,
  label_tar_visnetwork = NULL,
  level_separation = 150,
  degree_from = 1L,
  degree_to = 1L,
  height = "650px",
  display = "summary",
  displays = c("summary", "branches", "progress", "graph", "about"),
  title = "",
  theme = bslib::bs_theme(),
  spinner = FALSE
)
```

Arguments

id	Character of length 1, ID corresponding to the UI function of the module.
label	Label for the module.
seconds	Numeric of length 1, default number of seconds between refreshes of the graph. Can be changed in the app controls.
seconds_min	Numeric of length 1, lower bound of seconds in the app controls.
seconds_max	Numeric of length 1, upper bound of seconds in the app controls.
seconds_step	Numeric of length 1, step size of seconds in the app controls.
targets_only	Logical, whether to restrict the output to just targets (FALSE) or to also include global functions and objects.
outdated	Logical, whether to show colors to distinguish outdated targets from up-to-date targets. (Global functions and objects still show these colors.) Looking for outdated targets takes a lot of time for large pipelines with lots of branches, and setting outdated to FALSE is a nice way to speed up the graph if you only want to see dependency relationships and pipeline progress.
label_tar_visnetwork	Character vector, label argument to [tar_visnetwork()]().
level_separation	Numeric of length 1, levelSeparation argument of visNetwork::visHierarchicalLayout(). Controls the distance between hierarchical levels. Consider changing the value if the aspect ratio of the graph is far from 1. If level_separation is NULL, the levelSeparation argument of visHierarchicalLayout() defaults to a value chosen by targets.

degree_from	Integer of length 1. When you click on a node, the graph highlights a neighborhood of that node. degree_from controls the number of edges the neighborhood extends upstream.
degree_to	Integer of length 1. When you click on a node, the graph highlights a neighborhood of that node. degree_to controls the number of edges the neighborhood extends downstream.
height	Character of length 1, height of the visNetwork widget and branches table.
display	Character of length 1, which display to show first.
displays	Character vector of choices for the display. Elements can be any of "graph", "summary", "branches", or "about".
title	Character of length 1, title of the UI.
theme	A call to bslib::bs_theme() with the bslib theme.
spinner	TRUE to add a busy spinner, FALSE to omit.

Value

A Shiny module UI.

See Also

Other progress: tar_canceled(), tar_completed(), tar_dispatched(), tar_errored(), tar_poll(), tar_progress(), tar_progress_branches(), tar_progress_summary(), tar_skipped(), tar_watch(), tar_watch_server()

---

tar_workspace	*Load a locally saved workspace and seed for debugging.*

Description

Load the packages, environment, and random number generator seed of a target.

Usage

```
tar_workspace(
  name,
  envir = parent.frame(),
  packages = TRUE,
  source = TRUE,
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store")
)
```

Arguments

name	Symbol, name of the target whose workspace to read.
envir	Environment in which to put the objects.
packages	Logical, whether to load the required packages of the target.
source	Logical, whether to run _targets.R to load user-defined global object dependencies into envir. If TRUE, then envir should either be the global environment or inherit from the global environment.
script	Character of length 1, path to the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R. When you set this argument, the value of tar_config_get("script") is temporarily changed for the current function call. See tar_script(), tar_config_get(), and tar_config_set() for details about the target script file and how to set it persistently for a project.
store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.

Details

If you activate workspaces through the workspaces argument of tar_option_set(), then under the circumstances you specify, targets will save a special workspace file to a location in in _targets/workspaces/. The workspace file is a compact reference that allows tar_workspace() to load the target's dependencies and random number generator seed as long as the data objects are still in the data store (usually files in _targets/objects/). When you are done debugging, you can remove the workspace files using tar_destroy(destroy = "workspaces").

If tar_option_get("repository_meta") is "aws" or "gcp", then tar_make() uploads workspaces to the bucket and prefix provided. Download one of these workspaces with tar_workspace_download(). Downloaded workspaces can be loaded the usual way with tar_workspace(), and you should see them in character vector returned by tar_workspaces().

Value

This function returns NULL, but it does load the target's required packages, as well as multiple objects into the environment (envir argument) in order to replicate the workspace where the error happened. These objects include the global objects at the time tar_make() was called and the dependency targets. The random number generator seed for the target is also assigned with tar_seed_set().

See Also

Other debug: tar_load_globals(), tar_traceback(), tar_workspace_download(), tar_workspaces()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
```

```
tmp <- sample(1)
tar_script({
  library(targets)
  library(tarchetypes)
  list(
    tar_target(x, "loaded"),
    tar_target(y, stop(x))
  )
}, ask = FALSE)
# The following code throws an error for demonstration purposes.
try(tar_make())
exists("x") # Should be FALSE.
tail(.Random.seed) # for comparison to the RNG state after tar_workspace(y)
tar_workspace(y)
exists("x") # Should be TRUE.
print(x) # "loaded"
# Should be different: tar_workspace() runs
# tar_seed_set(tar_meta(y, seed)$seed)
tail(.Random.seed)
})
}
```

---

tar_workspaces   *List locally saved target workspaces.*

Description

List target workspaces currently saved to _targets/workspaces/ locally. Does not include workspaces
saved to the cloud. See tar_workspace() and tar_workspace_download() for more information.

Usage

```
tar_workspaces(names = NULL, store = targets::tar_config_get("store"))
```

Arguments

names   Optional tidyselect selector to return a tactical subset of workspace names. If
                NULL, all names are selected. The object supplied to names should be NULL or a
                tidyselect expression like any_of() or starts_with() from tidyselect it-
                self, or tar_described_as() to select target names based on their descriptions.

store   Character of length 1, path to the targets data store. Defaults to tar_config_get("store"),
                which in turn defaults to _targets/. When you set this argument, the value
                of tar_config_get("store") is temporarily changed for the current function
                call. See tar_config_get() and tar_config_set() for details about how to
                set the data store path persistently for a project.

Value

Character vector of available workspaces to load with tar_workspace().

See Also

Other debug: `tar_load_globals()`, `tar_traceback()`, `tar_workspace()`, `tar_workspace_download()`

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(workspace_on_error = TRUE)
  list(
    tar_target(x, "value"),
    tar_target(y, x)
  )
}, ask = FALSE)
tar_make()
tar_workspaces()
tar_workspaces(contains("x"))
})
}
```

---

tar_workspace_download

Download a workspace from the cloud.

Description

Download a workspace file from the cloud so it can be loaded with `tar_workspace()`.

Usage

```
tar_workspace_download(
  name,
  script = targets::tar_config_get("script"),
  store = targets::tar_config_get("store"),
  verbose = TRUE
)
```

Arguments

name	Symbol, name of the target whose workspace to download.
script	Character string, file path to the _targets.R file defining the pipeline. Must be configured with the right aws and repository_meta options (in `tar_option_set()`) to support downloading workspaces from the cloud.

store	Character of length 1, path to the targets data store. Defaults to tar_config_get("store"), which in turn defaults to _targets/. When you set this argument, the value of tar_config_get("store") is temporarily changed for the current function call. See tar_config_get() and tar_config_set() for details about how to set the data store path persistently for a project.
verbose	TRUE to print an informative message describing the download, FALSE to stay silent.

Details

If tar_option_get("repository_meta") is "aws" or "gcp", then tar_make() uploads workspaces to the bucket and prefix provided. Download one of these workspaces with tar_workspace_download(). Downloaded workspaces can be loaded the usual way with tar_workspace(), and you should see them in character vector returned by tar_workspaces().

Value

NULL (invisibly). Returns an error if the workspace cannot be downloaded.

See Also

Other debug: tar_load_globals(), tar_traceback(), tar_workspace(), tar_workspaces()

Examples

```
if (identical(Sys.getenv("TAR_EXAMPLES"), "true")) { # for CRAN
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
tmp <- sample(1)
tar_script({
  library(targets)
  library(tarchetypes)
  tar_option_set(
    resources = tar_resources(
      tar_resources_aws(
        bucket = "YOUR_AWS_BUCKET",
        prefix = "_targets"
      )
    ),
    repository = "aws",
    repository_meta = "aws"
  )
  list(
    tar_target(x, stop("this is an error and thus triggers a workspace"))
  )
}, ask = FALSE)
# The following code throws an error for demonstration purposes.
try(tar_make())
# Say the workspace file for target x does not exist.
unlink("_targets/workspaces/x")
file.exists("_targets/workspaces/x")
# We can download it with tar_workspace_download()
```

```
tar_workspace_download(x)
file.exists("_targets/workspaces/x")
tar_workspace(x)
})
}
```

---

use_targets   *Use targets*

Description

Set up targets for an existing project.

Usage

```
use_targets(
  script = targets::tar_config_get("script"),
  open = interactive(),
  overwrite = FALSE,
  scheduler = NULL,
  job_name = NULL
)
```

Arguments

script	Character of length 1, where to write the target script file. Defaults to tar_config_get("script"), which in turn defaults to _targets.R.
open	Logical of length 1, whether to open the file for editing in the RStudio IDE.
overwrite	Logical of length 1, TRUE to overwrite the the target script file, FALSE otherwise.
scheduler	Deprecated in targets version 1.5.0.9001 (2024-02-12).
job_name	Deprecated in targets version 1.5.0.9001 (2024-02-12).

Details

use_targets() writes an example _targets.R script to get started with a targets pipeline for the current project. Follow the comments in this script to adapt it as needed. For more information, please visit https://books.ropensci.org/targets/walkthrough.html.

Value

NULL (invisibly).

See Also

Other help: tar_reprex(), targets-package, use_targets_rmd()

Examples

```
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
use_targets(open = FALSE)
})
}
```

---

use_targets_rmd   *Use targets with Target Markdown.*

Description

Create an example Target Markdown report to get started with `targets`.

Usage

```
use_targets_rmd(path = "_targets.Rmd", open = interactive())
```

Arguments

path	Character of length 1, output path of the Target Markdown report relative to the current active project.
open	Logical, whether to open the file for editing in the RStudio IDE.

Value

`NULL` (invisibly).

See Also

Other help: `tar_reprex()`, `targets-package`, `use_targets()`

Examples

```
if (identical(Sys.getenv("TAR_INTERACTIVE_EXAMPLES"), "true")) {
tar_dir({ # tar_dir() runs code from a temp dir for CRAN.
use_targets(open = FALSE)
})
}
```

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