

Package ‘babelwhale’

June 25, 2021

Title Talking to 'Docker' and 'Singularity' Containers

Version 1.0.3

Description Provides a unified interface to interact with 'docker' and 'singularity' containers. You can execute a command inside a container, mount a volume or copy a file.

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URL <https://github.com/dynverse/babelwhale>

BugReports <https://github.com/dynverse/babelwhale/issues>

Depends R (>= 3.0.0)

Imports crayon, dplyr, dynutils, processx (>= 3.5.0), purrr, utils

Suggests covr, testthat (>= 3.0.0)

SystemRequirements Docker and/or Singularity (>=3.0)

Encoding UTF-8

RoxygenNote 7.1.1

NeedsCompilation no

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Repository CRAN

Date/Publication 2021-06-25 11:10:11 UTC

R topics documented:

babelwhale	2
copy_file	2
create_config	3
list_docker_images	4
pull_container	4
read_file	5

run	5
singularity_image_path	7
test_docker_installation	7
test_singularity_installation	8

Index	9
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babelwhale	<i>Talking to both Docker and Singularity containers from R</i>
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Description

Provides a unified interface to interact with docker' and 'singularity' containers. You can execute a command inside a container, mount a volume or copy a file.

copy_file	<i>Copy a file from a container to the host system</i>
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Description

Copy a file from a container to the host system

Usage

```
copy_file(container_id, path_container, path_local)
```

Arguments

container_id	The name of the container, usually the repository name on dockerhub.
path_container	The path of the file inside the container
path_local	The path of the file on the host system

Examples

```
if (test_docker_installation()) {
  set_default_config(create_docker_config(), permanent = FALSE)
  copy_file("alpine", "/bin/date", tempfile())
}
```

create_config *Backend configuration for containerisation*

Description

It is advised to define the "BABELWHALE_BACKEND" environment variable as "docker" or "singularity".

When using singularity, also define the "SINGULARITY_CACHEDIR" environment variable, which is the folder where the singularity images will be cached. Each TI method will require about 1GB of space.

Alternatively, you can create a config and save it using `set_default_config()`.

Usage

```
create_config(
  backend = get_env_or_null("BABELWHALE_BACKEND") %||% detect_backend()
)

create_docker_config(environment_variables = character(0))

create_singularity_config(
  cache_dir = get_env_or_null("SINGULARITY_CACHEDIR") %||% ".singularity/",
  environment_variables = character(0)
)

get_default_config()

set_default_config(config, permanent = TRUE)
```

Arguments

backend	Which backend to use. Can be either "docker" or "singularity".
environment_variables	A character vector of environment variables. Format: <code>c("ENVVAR=VALUE")</code> .
cache_dir	A folder in which to store the singularity images. A container typically requires 100MB to 2GB.
config	A config to save as default.
permanent	Whether or not to save the config file permanently

Examples

```
config <- create_docker_config()
set_default_config(config, permanent = FALSE)

config <- create_singularity_config(
  # ideally, this would be set to a non-temporary directory
  cache_dir = tempdir())
```

```
)  
set_default_config(config, permanent = FALSE)
```

list_docker_images *List docker containers*

Description

List docker containers

Usage

```
list_docker_images(container_id = NULL)
```

Arguments

container_id An optional container id

Examples

```
if (test_docker_installation()) {  
  set_default_config(create_docker_config(), permanent = FALSE)  
  list_docker_images()  
}
```

pull_container *Pull a container from dockerhub*

Description

Pull a container from dockerhub

Usage

```
pull_container(container_id)
```

Arguments

container_id The name of the container, usually the repository name on dockerhub.

Examples

```
if (test_docker_installation()) {  
  pull_container("alpine")  
}
```

read_file	<i>Read a file from a container</i>
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Description

Read a file from a container

Usage

```
read_file(container_id, path_container)
```

Arguments

container_id The name of the container, usually the repository name on dockerhub.
path_container The path of the file inside the container

Examples

```
if (test_docker_installation()) {  
  set_default_config(create_docker_config(), permanent = FALSE)  
  read_file("alpine", "/etc/hosts")  
}
```

run	<i>Run a containerised command, and wait until finished</i>
-----	---

Description

Run a containerised command, and wait until finished

Usage

```
run(  
  container_id,  
  command,  
  args = NULL,  
  volumes = NULL,  
  workspace = NULL,  
  environment_variables = NULL,  
  debug = FALSE,  
  verbose = FALSE,  
  stdout = "|",  
  stderr = "|"  
)
```

Arguments

container_id	The name of the container, usually the repository name on dockerhub.
command	Character scalar, the command to run. If you are running .bat or .cmd files on Windows, make sure you read the 'Batch files' section in the process manual page.
args	Character vector, arguments to the command.
volumes	Which volumes to be mounted. Format: a character vector, with each element containing the source path and container path concatenated with a ":". For example: c("/source_folder:/container_folder").
workspace	Which working directory to run the command in.
environment_variables	A character vector of environment variables. Format: c("ENVVAR=VALUE").
debug	If TRUE, a command will be printed that the user can execute to enter the container.
verbose	Whether or not to print output
stdout	What to do with standard output of the command. Default (" ") means to include it as an item in the results list. If it is the empty string (""), then the child process inherits the standard output stream of the R process. If it is a string other than " " and "", then it is taken as a file name and the output is redirected to this file.
stderr	What to do with standard error of the command. Default ("") means to include it as an item in the results list. If it is the empty string (""), then the child process inherits the standard error stream of the R process. If it is a string other than " " and "", then it is taken as a file name and the standard error is redirected to this file.

Examples

```
if (test_docker_installation()) {
  set_default_config(create_docker_config(), permanent = FALSE)

  # running a command
  run("alpine", "echo", c("hello"))

  # mounting a folder
  folder <- tempdir()
  write("i'm a mounted file", paste0(folder, "/file.txt"))
  run("alpine", "cat", c("/mounted_folder/file.txt"), volumes = paste0(folder, ":/mounted_folder"))
}
```

`singularity_image_path`*Determine the cached path of singularity images*

Description

Determine the cached path of singularity images

Usage

```
singularity_image_path(container_id)
```

Arguments

`container_id` The name of the container, usually the repository name on dockerhub.

`test_docker_installation`*Tests whether docker is correctly installed and available*

Description

Tests whether docker is correctly installed and available

Usage

```
test_docker_installation(detailed = FALSE)
```

Arguments

`detailed` Whether to do a detailed check

Examples

```
test_docker_installation()

if (test_docker_installation()) {
  test_docker_installation(detailed = TRUE)
}
```

`test_singularity_installation`*Tests whether singularity is correctly installed and available*

Description

Tests whether singularity is correctly installed and available

Usage

```
test_singularity_installation(detailed = FALSE)
```

Arguments

`detailed` Whether to do a detailed check

Examples

```
test_singularity_installation()

if (test_singularity_installation()) {
  test_singularity_installation(detailed = TRUE)
}
```


Index

babelwhale, 2

copy_file, 2

create_config, 3

create_docker_config (create_config), 3

create_singularity_config
(create_config), 3

get_default_config (create_config), 3

list_docker_images, 4

process, 6

pull_container, 4

read_file, 5

run, 5

set_default_config (create_config), 3

singularity_image_path, 7

test_docker_installation, 7

test_singularity_installation, 8