# Package 'condor'

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**Title** Interact with 'Condor' from R via SSH

**Depends** ssh

**Imports** stats, utils

**SystemRequirements** htcondor

**Description** Interact with 'Condor' from R via SSH connection. Files are first uploaded from user machine to submitter machine, and the job is then submitted from the submitter machine to 'Condor'. Functions are provided to submit, list, and download 'Condor' jobs from R. 'Condor' is an open source high-throughput computing software framework for distributed parallelization of computationally intensive tasks.

**License** GPL-3

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`condor-package` *Interact with Condor from R via SSH*

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## Description

Interact with Condor from R via SSH connection. Files are first uploaded from user machine to submitter machine, and the job is then submitted from the submitter machine to Condor. Functions are provided to submit, list, and download Condor jobs from R.

Condor is an open source high-throughput computing software framework for distributed parallelization of computationally intensive tasks.

## Details

*Main interface:*

| | |
|---|---|
| `condor_submit` | submit |
| `condor_q` | list queue |
| `condor_dir` | list directories |
| `condor_download` | download |

*Stop and remove:*

| | |
|---|---|
| `condor_rm` | stop jobs |
| `condor_rmdir` | remove directories |

*Utilities:*

| | |
|---|---|
| `condor_log` | show log file |
| `dos2unix` | convert line endings |
| `summary.condor_log` | show log file summary |
| `ssh_exec_stdout` | execute command |
| `unix2dos` | convert line endings |

## Author(s)

Arni Magnusson and Nan Yao, with contributions by Jemery Day and Thomas Teears.

## References

https://github.com/PacificCommunity/condor

https://htcondor.org

## See Also

**condor** uses the **ssh** package to connect to the Condor submitter machine.

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`condor_dir` *Condor Directories*

---

## Description

List Condor run directories, either on submitter machine or on a local drive.

## Usage

```
condor_dir(top.dir = "condor", local.dir = NULL, pattern = "*",
  report = TRUE, sort = "job.id", session = NULL, ...)
```

## Arguments

| | |
|---|---|
| `top.dir` | top directory on submitter machine that contains Condor run directories. |
| `local.dir` | local directory to examine instead of `top.dir`. |
| `pattern` | regular expression identifying which run directories to show. The default is to show all directories inside `top.dir` or `local.dir`. |
| `report` | whether to return a detailed report of the run status in each directory. |
| `sort` | column name or column number used to sort the report data frame. |
| `session` | optional object of class `ssh_connect`. |
| `...` | passed to `grep`. |

## Details

If the user passes `top.dir` that resembles a Windows local directory (drive letter, colon, forward slash), it is automatically interpreted as a `local.dir`. In other words, `condor_dir("c:/myruns")` and `condor_dir(local.dir="c:/myruns")` are equivalent.

The default value of `session = NULL` looks for a `session` object in the user workspace. This allows the user to run Condor functions without explicitly specifying the `session`.

## Value

A data frame containing details about each directory, or if `report = FALSE` a `character` vector of directory names.

### Note

If there are many Condor run directories, the report generation can take substantial time (one SSH execution per run directory). To quickly return a vector of directory names, pass `report = FALSE`.

### Author(s)

Arni Magnusson.

### See Also

`condor_submit`, `condor_q`, `condor_dir`, and `condor_download` provide the main Condor interface.

`condor_rm` stops Condor jobs and `condor_rmdir` removes directories on the submitter machine.

`condor_log` and `summary.condor_log` are called to produce the detailed report if `report = TRUE`.

`condor-package` gives an overview of the package.

### Examples

```
## Not run:

# General workflow
session <- ssh_connect("servername")

condor_submit()
condor_q()
condor_dir()
condor_download()  # after job has finished

# Alternatively, examine runs on local drive
condor_dir(local.dir="myruns")
condor_dir("c:/myruns")

## End(Not run)
```

---

## condor_download *Condor Download*

---

### Description

Download results from a Condor job.

### Usage

```
condor_download(run.dir = NULL, local.dir = ".", top.dir = "condor",
  create.dir = FALSE, pattern = "End.tar.gz|condor.*(err|log|out)$",
  overwrite = FALSE, untar.end = TRUE, session = NULL)
```

## Arguments

| | |
|---|---|
| run.dir | name of a Condor run directory inside top.dir. |
| local.dir | local directory to download to. |
| top.dir | top directory on submitter machine that contains Condor run directories. |
| create.dir | whether to create local.dir if it does not exist. |
| pattern | regular expression identifying which result files to download. Passing pattern="*" will download all files. |
| overwrite | whether to overwrite local files if they already exist. |
| untar.end | whether to extract End.tar.gz into *local.dir* after downloading. (Ignored if a file named 'End.tar.gz' was not downloaded.) |
| session | optional object of class ssh_connect. |

## Details

The default value of run.dir = NULL looks for Condor job results in *top.dir*/*local.dir*. For example, if local.dir = "c:/yft/run01" then the default run.dir becomes "condor/run01".

The default value of pattern="End.tar.gz|condor.*(err|log|out)$" downloads End.tar.gz and Condor log files. For many analyses, it can be convenient to pack all results into End.tar.gz to make it easy to find, download, and manage output files.

The default value of session = NULL looks for a session object in the user workspace. This allows the user to run Condor functions without explicitly specifying the session.

## Value

No return value, called for side effects.

## Author(s)

Arni Magnusson.

## See Also

condor_submit, condor_q, condor_dir, and condor_download provide the main Condor interface.

condor_rm stops Condor jobs and condor_rmdir removes directories on the submitter machine.

condor-package gives an overview of the package.

## Examples

```
## Not run:

# General workflow
session <- ssh_connect("servername")

condor_submit()
condor_q()
```

```
condor_dir()
condor_download()  # after job has finished

# Alternatively, download specific run to specific folder
condor_download("01_this_model", "c:/myruns/01_this_model")

## End(Not run)
```

---

condor_log *Condor Log*

---

## Description

Show Condor log file from a run directory, either on submitter machine or on a local drive.

## Usage

```
condor_log(run.dir = ".", top.dir = "condor", local.dir = NULL,
  session = NULL)
```

## Arguments

| | |
|---|---|
| run.dir | name of a Condor run directory inside top.dir. |
| top.dir | top directory on submitter machine that contains Condor run directories. |
| local.dir | local directory to examine instead of *top.dir/run.dir*. |
| session | optional object of class ssh_connect. |

## Details

The default value of session = NULL looks for a session object in the user workspace. This allows the user to run Condor functions without explicitly specifying the session.

## Value

Log file contents as an object of class condor_log.

The condor_log class is simply a "character" vector with a print.condor_log method.

## Author(s)

Arni Magnusson.

## See Also

summary.condor_log shows Condor log file summary.

condor_dir lists Condor directories.

condor-package gives an overview of the package.

## Examples

```
## Not run:

# Examine log files on submitter machine
session <- ssh_connect("servername")

condor_dir()
condor_log()
summary(condor_log())

# Alternatively, examine log file on local drive
condor_dir(local.dir="c:/myruns")
condor_log(local.dir="c:/myruns/01_this_model")
summary(condor_log(local.dir="c:/myruns/01_this_model"))

## End(Not run)
```

---

# condor_q *Condor Queue*

---

## Description

List the Condor job queue.

## Usage

```
condor_q(all = FALSE, count = FALSE, global = FALSE, user = "",
  session = NULL)

condor_qq(all = TRUE, count = TRUE, global = TRUE, user = "",
  session = NULL)
```

## Arguments

| | |
|---|---|
| all | whether to list jobs from all users. |
| count | whether to only show the number of jobs. |
| global | whether to list jobs submitted from all submitter machines. |
| user | username to list jobs submitted by a given user. |
| session | optional object of class ssh_connect. |

## Details

The default value of session = NULL looks for a session object in the user workspace. This allows the user to run Condor functions without explicitly specifying the session.

## Value

Screen output from the condor_q shell command, or a table if count = TRUE.

## Note

The condor_q R function has the same defaults as the condor_q shell command, listing only jobs that were submitted by the current user from the current submitter machine.

The condor_qq alternative is the same function but with different default argument values, convenient for a *quick* overview of the *queue*.

## Author(s)

Arni Magnusson.

## See Also

condor_submit, condor_q, condor_dir, and condor_download provide the main Condor interface.

condor_rm stops Condor jobs and condor_rmdir removes directories on the submitter machine.

condor-package gives an overview of the package.

## Examples

```
## Not run:

# General workflow
session <- ssh_connect("servername")

condor_submit()
condor_q()
condor_dir()
condor_download()  # after job has finished

# Alternatively, list number of jobs being run by each user
condor_q(all=TRUE, count=TRUE)

## End(Not run)
```

---

# condor_rm *Condor Remove*

---

## Description

Stop Condor jobs.

## Usage

```
condor_rm(job.id = NULL, all = FALSE, top.dir = "condor",
  session = NULL)
```

## Arguments

| | |
|---|---|
| job.id | a vector of integers or directory names, indicating Condor jobs to stop. |
| all | whether to stop all Condor jobs owned by user. |
| top.dir | top directory on submitter machine that contains Condor run directories. |
| session | optional object of class ssh_connect. |

## Details

The top.dir argument only has an effect when job.id is a vector of directory names. For example, condor_rm("01_this") will stop the Condor job corresponding to directory condor/01_this on the submitter machine.

The default value of session = NULL looks for a session object in the user workspace. This allows the user to run Condor functions without explicitly specifying the session.

## Value

No return value, called for side effects.

## Author(s)

Nan Yao and Arni Magnusson.

## See Also

condor_submit, condor_q, condor_dir, and condor_download provide the main Condor interface.

condor_rm stops Condor jobs and condor_rmdir removes directories on the submitter machine.

condor-package gives an overview of the package.

## Examples

```
## Not run:

# General workflow
session <- ssh_connect("servername")

condor_submit()
condor_q()
condor_dir()
condor_download()  # after job has finished

# Stop one or multiple jobs
condor_rm(123456)                  # stop one job (integer)
```

```
condor_rm(c(123456, 123789))        # stop two jobs (integers)
condor_rm("01_this")                # stop one job (dirname)
condor_rm(c("01_this", "02_that"))  # stop two jobs (dirnames)
condor_rm(all=TRUE)                 # stop all jobs

## End(Not run)
```

---

`condor_rmdir` *Condor Remove Directory*

---

## Description

Remove directories on the submitter machine.

## Usage

```
condor_rmdir(run.dir, top.dir = "condor", quiet = FALSE, session = NULL)
```

## Arguments

| | |
|---|---|
| `run.dir` | name of a Condor run directory inside `top.dir`. |
| `top.dir` | top directory on submitter machine that contains Condor run directories. |
| `quiet` | whether to suppress messages. |
| `session` | optional object of class `ssh_connect`. |

## Details

The default value of `session = NULL` looks for a `session` object in the user workspace. This allows the user to run Condor functions without explicitly specifying the `session`.

## Value

No return value, called for side effects.

## Author(s)

Arni Magnusson.

## See Also

`condor_submit`, `condor_q`, `condor_dir`, and `condor_download` provide the main Condor interface.

`condor_rm` stops Condor jobs and `condor_rmdir` removes directories on the submitter machine.

`condor-package` gives an overview of the package.

## Examples

```
## Not run:

# General workflow
session <- ssh_connect("servername")

condor_submit()
condor_q()
condor_dir()
condor_download()  # after job has finished

# Remove one or more directories
condor_rmdir("01_this")                 # remove ~/condor/01_this (one run)
condor_rmdir(c("01_this", "02_that"))   # remove two model runs inside condor
condor_rmdir("test_runs", top.dir=".")  # remove ~/my_runs (many subdirs)

## End(Not run)
```

---

`condor_submit` *Condor Submit*

---

## Description

Submit a Condor job.

## Usage

```
condor_submit(local.dir = ".", run.dir = NULL, top.dir = "condor",
  unix = "\\.sh$", exclude = "condor_mfcl|tar.gz|End", session = NULL)
```

## Arguments

| | |
|---|---|
| `local.dir` | local directory containing a Condor `*.sub` file and any other files necessary to run the job. |
| `run.dir` | name of a Condor run directory to create inside `top.dir`. |
| `top.dir` | top directory on submitter machine that contains Condor run directories. |
| `unix` | pattern identifying files in `local.dir` that should have Unix line endings. |
| `exclude` | pattern identifying files in `local.dir` that should not be submitted to Condor. |
| `session` | optional object of class `ssh_connect`. |

## Details

The default value of `run.dir = NULL` runs the Condor job in *top.dir/local.dir*. For example, if `local.dir = "c:/yft/run01"` then the default `run.dir` becomes `"condor/run01"`.

It can be practical to organize Condor runs inside the default `top.dir = "condor"` directory, to keep Condor runs separate from other directories inside the user home. To organize Condor runs directly in the home folder on the submitter machine, pass `top.dir = "~"`.

The default value of `unix = "\.sh$"` ensures that shell scripts with a '`.sh`' file extension have Unix line endings. Pass `FALSE` to disable conversion of line endings.

The default value of `session = NULL` looks for a `session` object in the user workspace. This allows the user to run Condor functions without explicitly specifying the `session`.

## Value

Remote directory name with the job id as a name attribute.

## Note

This function performs two core tasks: (1) upload files from `local.dir` to submitter machine, and (2) execute shell command `condor_submit` on submitter machine to launch the Condor job.

## Author(s)

Arni Magnusson.

## See Also

`condor_submit`, `condor_q`, `condor_dir`, and `condor_download` provide the main Condor interface.

`condor_rm` stops Condor jobs and `condor_rmdir` removes directories on the submitter machine.

`dos2unix` converts line endings.

`condor-package` gives an overview of the package.

## Examples

```
## Not run:

# General workflow
session <- ssh_connect("servername")

condor_submit()
condor_q()
condor_dir()
condor_download()  # after job has finished

# Alternatively, submit a specific run
condor_submit("c:/myruns/01_this_model")

## End(Not run)
```

dos2unix *Convert Line Endings*

## Description

Convert line endings in a text file between Dos (CRLF) and Unix (LF) format.

## Usage

```
dos2unix(file, force = FALSE)

unix2dos(file, force = FALSE)
```

## Arguments

| | |
|---|---|
| file | a filename. |
| force | whether to proceed with the conversion when the file is not a standard text file. |

## Details

The default value of force = FALSE is a safety feature that can avoid corrupting files that are not standard text files, such as binary files. A standard text file is one that can be read using readLines without producing warnings.

## Value

No return value, called for side effects.

## Author(s)

Arni Magnusson.

## See Also

condor_submit calls dos2unix to convert the line endings of shell scripts.

condor-package gives an overview of the package.

## Examples

```
## Not run:
file <- "test.txt"
write("123", file)

dos2unix(file)
file.size(file)

unix2dos(file)
file.size(file)
```

```
file.remove(file)

## End(Not run)
```

---

ssh_exec_stdout *Execute and Capture Standard Output*

---

## Description

Call ssh_exec_internal and convert the standard output to characters.

## Usage

```
ssh_exec_stdout(command, session = NULL, ...)
```

## Arguments

| | |
|---|---|
| command | command or script to execute. |
| session | optional object of class ssh_connect. |
| ... | passed to ssh_exec_internal. |

## Details

The default value of session = NULL looks for a session object in the user workspace. This allows the user to run Condor functions without explicitly specifying the session.

## Value

A "character" vector containing the standard output.

## Author(s)

Arni Magnusson.

## See Also

ssh_exec_wait runs a command or script and shows the standard output in the R console, while returning the exit status.

ssh_exec_internal runs a command or script and buffers the standard output into a raw vector.

condor-package gives an overview of the package.

### Examples

```
## Not run:
session <- ssh_connect("servername")

ssh_exec_wait(session, "ls")             # returns 0
ssh_exec_internal(session, "ls")$stdout  # returns a raw vector
ssh_exec_stdout("ls")                    # returns directory names

## End(Not run)
```

---

`summary.condor_log` *Summary Condor Log*

---

### Description

Produce a summary of a Condor log file.

### Usage

```
## S3 method for class 'condor_log'
summary(object, ...)
```

### Arguments

| | |
|---|---|
| `object` | an object of class `condor_log`. |
| `...` | passed to `round`. |

### Value

Data frame with the following columns:

| | |
|---|---|
| `job.id` | job id. |
| `status` | text indicating whether job status is submitted, executing, aborted, or finished. |
| `submit.time` | date and time when job was submitted. |
| `runtime` | total duration of a job. |
| `disk` | disk space used by job (MB). |
| `memory` | memory used by job (MB). |

### Author(s)

Arni Magnusson.

### See Also

`condor_log` shows Condor log file.

`condor-package` gives an overview of the package.

## Examples

```
## Not run:

# Examine log files on submitter machine
session <- ssh_connect("servername")

condor_dir()
condor_log()
summary(condor_log())

#' # Alternatively, examine log files on local drive
condor_dir(local.dir="c:/myruns")
condor_log(local.dir="c:/myruns/01_this_model")
summary(condor_log(local.dir="c:/myruns/01_this_model"))

## End(Not run)
```

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