Package ‘Rserve’
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Title Binary R server
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Depends R (>= 1.5.0)
Suggests RSclient
SystemRequirements libR, GNU make
Description Rserve acts as a socket server (TCP/IP or local sockets)
    which allows binary requests to be sent to R. Every
    connection has a separate workspace and working
    directory. Client-side implementations are available
    for popular languages such as C/C++ and Java, allowing
    any application to use facilities of R without the need of
    linking to R code. Rserve supports remote connection,
    user authentication and file transfer. A simple R client
    is included in this package as well.
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Object Capability (OCAP) Functions

Description

The following functions are only meaningful when used by code that is run inside Rserve in object-capability (OCAP) mode. See Rserve Wiki for details.

ocap registers a function as a capability and returns the reference.

resolve.ocap takes a capability reference and returns the function representing the capability.

Rserve.context retrieves or sets the current context for out-of-band (OOB) messages (see also Rserve.eval for specifying contexts during evaluation).

Usage

ocap(fun, name = deparse(substitute(fun)))
resolve.ocap(ocap)
Rserve.context(what)

Arguments

fun function to register
name description of the function, only for informational and logging purposes
ocap reference previously obtained by a call to ocap
what if present, sets the context to the supplied value. If missing, the function returns the current context

Value

ocap returns the new capability reference, it will be an object of the class "OCref".

resolve.ocap returns the function corresponding to the reference or NULL if the reference does not exist. It will raise an error if ocap is not a valid "OCref" object.

Rserve.context returns the current context

Author(s)

Simon Urbanek
Rserve

Server providing R functionality to applications via TCP/IP or local unix sockets

Description

Starts Rserve in daemon mode (unix only). Any additional parameters not related to Rserve will be passed straight to the underlying R. For configuration, usage and command line parameters please consult the online documentation at http://www.rforge.net/Rserve. Use R CMD Rserve --help for a brief help.

The Rserve function is provided for convenience only.

On Windows the Rserve() function sets up the PATH to include the current R.DLL so that Rserve can be run.

Usage

# R CMD Rserve [parameters]

Rserve(debug = FALSE, port, args = NULL, quote=(length(args) > 1), wait, ...)

Arguments

ddebug determines whether regular Rserve or debug version of Rserve (Rserve.dbg) should be started.

port port used by Rserve to listen for connections. If not specified, it will be taken from the configuration file (if present) or default to 6311

args further arguments passed to Rserve (as a string that will be passed to the system command - see quote below).

quote logical, if TRUE then arguments are quoted, otherwise they are just joined with spaces

wait wait argument for the system call. It defaults to FALSE on Windows and TRUE elsewhere.

... other arguments to be passes to system.

Details

Rserve is not just a package, but an application. It is provided as a R package for convenience only. For details see http://www.rforge.net/Rserve

Note

R CMD Rserve will only work on unix when installed from sources and with sufficient permissions to have write-rights in $R_HOME/bin. Binary installations have no way to write in $R_HOME/bin and thus Rserve() function described above is the only reliable way to start Rserve in that case.
Java developers may want to see the StartRserve class in java/Rserve/test examples for easy way to start Rserve from Java.

Rserve can be compiled with TLS/SSL support based on OpenSSL. Therefore the following statements may be true if Rserve binaries are shipped together with OpenSSL: This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/). This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com). They are not true otherwise.

Author(s)

Simon Urbanek

See Also

run.Rserve

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**Rserve.eval**

*Evaluate expressions in a REPL-like fashion*

**Description**

Rserve.eval evaluates a given expression in a way that is very close to the behavior on the console Read/Evaluate/Print Loop (REPL). Among other things this means printing the result of each expression if visible. The function is guaranteed to not raise an error and in case of an error it returns an object of class Rserve-eval-error with details including the error and the stack trace.

**Usage**

```r
Rserve.eval(what, where = .GlobalEnv, last.value = FALSE, exp.value = FALSE, context = NULL, handlers = list(error=.save.condition))
```

**Arguments**

- **what**: expressions to evaluate
- **where**: environment to evaluate in
- **last.value**: logical, if TRUE then the result of the evaluation is returned, otherwise the evaluation is only performed for its side-effects and returns TRUE instead.
- **exp.value**: logical, if TRUE then an error object will include the actual expression that triggered the error, otherwise it will only store the index of the expression in what.
- **context**: optional object that will be used as the Rserve context for the duration of the evaluation (see `Rserve.context`).
- **handlers**: optional named list of calling handlers to register for the duration of the evaluation. The default is to register an error handlers which stores the error condition so it can be reported in the result - see below.
Details

If what contains one or more expressions, they are evaluated one by one while printing the result of each if visible. Upon error subsequent expressions are not evaluated. If what is not an expression then the only a single evaluation of what is performed and the result is not printed.

The main purpose of this function is to implement console front-ends where the front-end uses `parse()` + `Rserve.eval()` to simulate the action of a GUI. Because the function returns in all circumstances it allows clients to rely on a well-defined messaging behavior.

Value

If the evaluation triggered an error, the result is an object of class `Rserve-eval-error` with components:

- error: character, error message
- traceback: list of contexts in the traceback
- expression: if what contains multiple expressions then this will be either an index to the expression that caused the error (exp.value=FALSE) or the actual expression (otherwise).
- context: current Rserve context, NULL if none has been set
- condition: if any condition has been saved via `.save.condition` (which is the default) then on error the captured condition object is stored here, NULL otherwise

If the evaluation finished without an error then the result is either `TRUE` if last.value=FALSE or the value of the last expression otherwise.

Note

Rserve versions up to 1.8-10 did not include the condition component, no calling handlers were registered and there was no condition component in the result. To replicate that behavior or if you don’t need that information, you can set handlers=NULL which removes the overhead of adding calling handlers.

No error checking is performed on the handlers parameter, so make sure it is a valid, named list of functions, otherwise an error will occur at evaluation time.

Author(s)

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Examples

```r
g <- function() stop("foo")
f <- function() g()
(Rserve.eval(expression(f())))
(Rserve.eval(parse(text="1:5\n1+1")))
(Rserve.eval(quote(1+1), last.value=TRUE))

error_with_condition = function(object = NULL) {
  cond = errorCondition("this is a custom error with condition",
```
run.Rserve

object = object,
class = "CustomError")
stop(cond)
}
str(Rserve.eval(quote(error_with_condition("hello")), last.value = TRUE))
Functions usable for R code run inside Rserve

Description

The following functions can only be used inside Rserve, they cannot be used in stand-alone R. They interact with special features of Rserve. All commands below will succeed only if Rserve has been started with `r-control enable` configuration setting for security reasons.

`self.ctrlEval` issues a control command to the Rserve parent instance that evaluates the given expression in the server. The expression is only queued for evaluation which will happen asynchronously in the server (see `RSserverEval` in `RSclient` package for details). Note that the current session is unaffected by the command.

`self.ctrlSource` issues a control command to the Rserve parent instance to source the given file in the server, see `RSserverSource` in the `RSclient` package for details.

`self.oobSend` sends a out-of-band (OOB) message with the encoded content of `what` to the client connected to this session. The OOB facility must be enabled in the Rserve configuration (using `oob enable`) and the client must support OOB messages for this to be meaningful. This facility is not used by Rserve itself, it is offered to specialized applications (e.g. Cairo supports asynchronous notification of web clients using WebSockets-QAPI tunnel to dynamically update graphics on the web during evaluation).

`self.oobMessage` is like `self.oobSend` except that it waits for a response and returns the response.

Usage

```r
self.ctrlEval(expr)
self.ctrlSource(file)
self.oobSend(what, code = 0L)
self.oobMessage(what, code = 0L)
```

Arguments

- `expr` R expression to evaluate remotely
- `file` path to a file that will be sourced into the main instance
- `what` object to include as the payload for the message
- `code` user-defined message code that will be ORed with the `OOB_SEND/OOB_MSG` message code

Value

- `oobMessage` returns data contained in the response message.
  All other functions return `TRUE` (invisibly).

Author(s)

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## Not run:
```r
self.ctrlEval("a <- rnorm(10)"
self.oobSend(list("url","http://foo/bar"))

## End(Not run)
```

### Description

`ulog` logs the supplied message using the `ulog` facility which typically corresponds to syslog. See `ulog` Rserve configuration for the various endpoints supported by `ulog` (local, UDP/TCP remote, ...).

This function is guaranteed to be silent regardless of the `ulog` setting and is intended to have minimal performance impact.

Note: if Rserve is compiled with `-DULOG_STDERR` (also implied in the debug build) then `ulog` messages are also emitted on `stderr` with "ULOG: " prefix.

Please note that this `ulog` function is governed by the Rserve settings, and NOT the `ulog` package settings. The latter is a general port of the `ulog` logging facility to R, while `Rserve::ulog` is specific to the Rserve process.

### Usage

```r
ulog(...)```

### Arguments

... message to log

### Value

The logged string constructed from the message, invisibly

### Author(s)

Simon Urbanek

### Examples

```r
ulog("INFO: My application started")```
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