Package ‘rzmq’

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**Title**  R Bindings for 'ZeroMQ'

**Version**  0.9.2

**Description**  Interface to the 'ZeroMQ' lightweight messaging kernel (see <http://www.zeromq.org/> for more information).

**License**  GPL-3

**Depends**  R (>= 3.1.0)

**SystemRequirements**  ZeroMQ >= 3.0.0: libzmq3-dev (deb) or zeromq3-devel (rpm)

**URL**  http://github.com/ropensci/rzmq#readme (devel)

  http://www.zeromq.org (upstream)

**BugReports**  http://github.com/ropensci/rzmq/issues

**NeedsCompilation**  yes

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**Repository**  CRAN

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**Description**

The `zmq_bind()` function shall create an endpoint for accepting connections and bind it to the socket referenced by the socket argument.

The endpoint argument is a string consisting of two parts as follows: transport ://address. The transport part specifies the underlying transport protocol to use. The meaning of the address part is specific to the underlying transport protocol selected.

The following transports are defined:

- `inproc` local in-process (inter-thread) communication transport, see `zmq_inproc(7)`
- `ipc` local inter-process communication transport, see `zmq_ipc(7)`
- `tcp` unicast transport using TCP, see `zmq_tcp(7)`
- `pgm`, `epgm` reliable multicast transport using PGM, see `zmq_pgm(7)`

With the exception of ZMQ_PAIR sockets, a single socket may be connected to multiple endpoints using `zmq_connect()`, while simultaneously accepting incoming connections from multiple endpoints bound to the socket using `zmq_bind()`. Refer to `zmq_socket(3)` for a description of the exact semantics involved when connecting or binding a socket to multiple endpoints.

**Usage**

`bind.socket(socket, address)`

**Arguments**

- `socket` a zmq socket object.
- `address` a transport as described above.

**Value**

TRUE if operation succeeds or FALSE if the operation fails

**Author(s)**

ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>. rzmq was written by Whit Armstrong.

**References**


**See Also**

`connect.socket, bind.socket, receive.socket, send.socket, poll.socket`
**Examples**

```cpp
library(rzmq)
context = init.context()
in.socket = init.socket(context,"ZMQ_PULL")
bind.socket(in.socket,"tcp://*:5557")

out.socket = init.socket(context,"ZMQ_PUSH")
bind.socket(out.socket,"tcp://*:5558")

## End(Not run)
```

---

**connect.socket**

> Connect the socket referenced by the socket argument to the endpoint specified by the endpoint argument.

**Description**

The `zmq_connect()` function shall connect the socket referenced by the socket argument to the endpoint specified by the endpoint argument.

The endpoint argument is a string consisting of two parts as follows: transport ://address. The transport part specifies the underlying transport protocol to use. The meaning of the address part is specific to the underlying transport protocol selected.

The following transports are defined:

- `inproc` local in-process (inter-thread) communication transport, see `zmq_inproc(7)`
- `ipc` local inter-process communication transport, see `zmq_ipc(7)`
- `tcp` unicast transport using TCP, see `zmq_tcp(7)`
- `pgm`, `epgm` reliable multicast transport using PGM, see `zmq_pgm(7)`

With the exception of ZMQ_PAIR sockets, a single socket may be connected to multiple endpoints using `zmq_connect()`, while simultaneously accepting incoming connections from multiple endpoints bound to the socket using `zmq_bind()`. Refer to `zmq_socket(3)` for a description of the exact semantics involved when connecting or binding a socket to multiple endpoints.

**Usage**

```cpp
connect.socket(socket, address)
disconnect.socket(socket, address)
```

**Arguments**

- **socket** a zmq socket object.
- **address** a transport as described above.

**Value**

TRUE if operation succeeds or FALSE if the operation fails
Author(s)

ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>. rzmq was written by Whit Armstrong.

References


See Also

connect.socket, bind.socket, receive.socket, send.socket, poll.socket

Examples

```r
## Not run:
library(rzmq)
context = init.context()
in.socket = init.socket(context,"ZMQ_PULL")
bind.socket(in.socket,"tcp://*:5557")

out.socket = init.socket(context,"ZMQ_PUSH")
bind.socket(out.socket,"tcp://*:5558")

## End(Not run)
```

init.context (initialize zmq context and zmq socket)

Description

initialize zmq context and zmq socket for to be used for further zmq operations.

Usage

init.context()

init.socket(context, socket.type)

Arguments

context returns a zmq context object.

socket.type The ZMQ socket type requested e.g. ZMQ_REQ,ZMQ_REP,ZMQ_PULL,ZMQ_PUSH, etc.

Value

init.context returns a zmq context object. init.socket returns a zmq socket object.
poll.socket

Author(s)

ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>.

rzmq was written by Whit Armstrong.

References


See Also

connect.socket, bind.socket, receive.socket, send.socket, poll.socket

Examples

```r
## Not run:

library(rzmq)
context = init.context()
in.socket = init.socket(context,"ZMQ_PULL")

## End(Not run)
```

poll.socket

Polls a list of sockets, waiting for the presence of a nonblocking read, write, or error event.

Description

The zmq_poll() function shall poll a list of sockets for either read, write, or error conditions subject to a millisecond resolution timeout.

Usage

```
poll.socket(sockets, events, timeout=0L)
```

Arguments

- `sockets`: a list of zmq socket objects.
- `events`: a list of character vectors containing one or more events in \{read, write, error\}. The first element in the list corresponds to the first zmq socket, and so on...
- `timeout`: the numbers of seconds to wait for events. Fractional seconds are supported. ZeroMQ guarantees at most millisecond resolution. A timeout of -1L blocks until an event occurs; a timeout of 0L is non-blocking.

Value

A list of pairlists corresponding to the polled zmq sockets. Each list has one of more tags from \{read, write, error\} with logical values indicating the results of the poll operation.
Author(s)

ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>.
rmq was written by Whit Armstrong.

References


See Also

connect.socket, bind.socket, receive.socket, send.socket, poll.socket

Examples

```R
## Not run:
library(rmq)

# Create a set of REP-REQ sockets that
# have a Send, Receive, Send, Receive, ...
# pattern.
context = init.context()
in.socket = init.socket(context,"ZMQ_REP")
binding(socket, "tcp://*:5557")

out.socket = init.socket(context,"ZMQ_REQ")
connect.socket(out.socket,"tcp://*:5557")

# Poll the REP and REQ sockets for all events.
events <- poll.socket(list(in.socket, out.socket),
                     list(c("read", "write", "error"),
                          c("read", "write", "error")),
                     timeout=0L)

# The REQ socket is writable without blocking.
paste("Is upstream REP socket readable without blocking?", events[1]$read)
paste("Is upstream REP socket writable without blocking?", events[1]$write)
paste("Is downstream REQ socket readable without blocking?", events[2]$read)
paste("Is downstream REQ socket writable without blocking?", events[2]$write)

# Send a message to the REP socket from the REQ socket. The
# REQ socket must respond before the REP socket can send
# another message.
send.socket(out.socket, "Hello World")

events <- poll.socket(list(in.socket, out.socket),
                     list(c("read", "write", "error"),
                          c("read", "write", "error")),
                     timeout=0L)

# The incoming message is readable on the REP socket.
paste("Is upstream REP socket readable without blocking?", events[1]$read)
paste("Is upstream REP socket writable without blocking?", events[1]$write)
```
receive.multipart

Receive multipart ZMQ message

Description

Returns a list of raw vectors for the parts of a multipart message.

Usage

receive.multipart(socket)

Arguments

socket               The ZMQ socket from which to receive data
receive.socket

Receive a message from the socket referenced by the socket argument.

Description

The zmq_recv() function shall receive a message from the socket referenced by the socket argument. If there are no messages available on the specified socket, by default the function shall block until the request can be satisfied. A non-blocking receive can be obtained by setting dont.wait to TRUE. If there are no messages available on the specified socket, the receive.socket() call will return NULL immediately.

Usage

receive.socket(socket, unserialize=TRUE, dont.wait=FALSE)
receive.null.msg(socket)
receive.string(socket)
receive.int(socket)
receive.double(socket)

Arguments

- socket: a zmq socket object
- unserialize: whether to call unserialize on the received data
- dont.wait: defaults to false, for blocking receive. Set to TRUE for non-blocking receive.

Value

the value sent from the remote server or NULL on failure. If dont.wait was TRUE and a message was not immediately available for receipt, NULL is returned and get.zmq.errno() is set to 11 or get.zmq.strerror() is set to EAGAIN.

Author(s)

ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>. rzmq was written by Whit Armstrong.

References


See Also

connect.socket, bind.socket, receive.socket, send.socket, poll.socket
Examples

```r
## Not run:
library(rzmq)

remote.exec <- function(out.socket, in.socket, fun,...) {
  send.socket(out.socket, data=list(fun=fun, args=list(...)))
  receive.socket(in.socket)
}

c = init.context()
out.socket = init.socket(context,"ZMQ_PUSH")
bind.socket(out.socket,"tcp://*:5557")

in.socket = init.socket(context,"ZMQ_PULL")
bind.socket(in.socket,"tcp://*:5558")

myfun <- function(x) {
  sum(abs(x))
}

remote.exec(out.socket, in.socket, myfun, rnorm(1e3))

## End(Not run)
```

---

**send.multipart**

*Send multipart ZMQ message.*

**Description**

Queue a list of raw vectors to be sent as a series of ZMQ message parts. Each part before the last will be sent with the SNDMORE flag.

**Usage**

`send.multipart(socket, parts)`

**Arguments**

- `socket` The ZMQ socket on which to send data
- `parts` A list of raw vectors; each component will be sent as one part of the message, in the order of the list
send.socket  

send a message.

Description
Queue the message referenced by the msg argument to be sent to the socket referenced by the socket argument.
A successful invocation of send.socket does not indicate that the message has been transmitted to the network, only that it has been queued on the socket and ZMQ has assumed responsibility for the message.

Usage
send.socket(socket, data, send.more=FALSE, serialize=TRUE, xdr=.Platform$ endian=="big")
send.null.msg(socket, send.more=FALSE)
send.raw.string(socket, data, send.more=FALSE)

Arguments
socket: a zmq socket object
data: the R object to be sent
send.more: whether this message has more frames to be sent
serialize: whether to call serialize before sending the data
xdr: passed directly to serialize command if serialize is requested

Value
a boolean indicating success or failure of the operation.

Author(s)
ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>. rzmq was written by Whit Armstrong.

References

See Also
connect.socket, bind.socket, receive.socket, send.socket, poll.socket
Examples

```c
## Not run:

## remote execution server in rzmq
library(rzmq)
context = init.context()
in.socket = init.socket(context,"ZMQ_PULL")
bind.socket(in.socket,"tcp://*:5557")

out.socket = init.socket(context,"ZMQ_PUSH")
bind.socket(out.socket,"tcp://*:5558")

while(1) {
    msg = receive.socket(in.socket)
    fun <- msg$fun
    args <- msg$args
    print(args)
    ans <- do.call(fun,args)
    send.socket(out.socket,ans)
}

## End(Not run)
```

socket.options

set a socket option.

Description

The zmq_setsockopt() function shall set the option specified by the option_name argument to the value pointed to by the option_value argument for the ZMQ socket pointed to by the socket argument.

Usage

```c
set.hwm(socket, option.value)
set.swap(socket, option.value)
set.affinity(socket, option.value)
set.identity(socket, option.value)
subscribe(socket, option.value)
unsubscribe(socket, option.value)
set.rate(socket, option.value)
set.recovery.ivl(socket, option.value)
set.recovery.ivl.msec(socket, option.value)
set.mcast.loop(socket, option.value)
set.sndbuf(socket, option.value)
set.rcvbuf(socket, option.value)
set.linger(socket, option.value)
set.reconnect.ivl(socket, option.value)
```
socket.options

set.zmq.backlog(socket, option.value)
set.reconnect.ivl.max(socket, option.value)
get.rcvmore(socket)
get.send.timeout(socket)
set.send.timeout(socket, option.value)

Arguments

socket a zmq socket object
option.value the new option value to be set

Value

a boolean indicating success or failure of the operation or in the case of getsocketoptions, the value of the requested option.

Author(s)

ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>. rzmq was written by Whit Armstrong.

References


See Also

connect.socket, bind.socket, receive.socket, send.socket, poll.socket

Examples

## Not run:

library(rzmq)
context = init.context()
socket = init.socket(context,"ZMQ_REQ")

set.hwm(socket, 1L)
set.swap(socket, 100L)
set.identity(socket, "big.ass.socket")

## End(Not run)
### zmq.error

*get libzmq error numbers and error strings*

#### Description

return the error number or error description after a zmq call

#### Usage

- `zmq.errno()`
- `zmq.strerror()`

#### Value

- an integer for `zmq.errno` or a string for `zmq.strerror`

#### Author(s)

ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>.

rzmq was written by Whit Armstrong.

#### References

- [http://www.zeromq.org](http://www.zeromq.org)
- [http://api.zeromq.org](http://api.zeromq.org)
- [http://zguide.zeromq.org/page:all](http://zguide.zeromq.org/page:all)

#### See Also

- `connect.socket`, `bind.socket`, `receive.socket`, `send.socket`

#### Examples

```r
## Not run:
library(rzmq)
zmq.errno()
zmq.strerror()
## End(Not run)
```
zmq.version

Description
return the version string of the system zmq library

Usage
zmq.version()  

Value
a string of the following format: major.minor.patch

Author(s)
ZMQ was written by Martin Sustrik <sustrik@250bpm.com> and Martin Lucina <mato@kotelna.sk>.  
rzmq was written by Whit Armstrong.

References

See Also
connect.socket bind.socket receive.socket send.socket

Examples
## Not run:

library(rzmq)
zmq.version()

## End(Not run)
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