Package ‘rzmq’

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**bind.socket**

Create an endpoint for accepting connections and bind it to the socket referenced by the socket argument.

### 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

connect.socket

See Also

classic.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)

---

**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** 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**

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

**Arguments**

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

**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)
```

**Description**

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

**Usage**

```r
init.context(threads=1L)
init.socket(context, socket.type)
```

**Arguments**

- **threads**: number of threads for the context to use
- **context**: 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.

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

## End(Not run)

# init.message
create a message object.

Description
Create a ZeroMQ message object that can be sent multiple times

Usage
init.message(data, serialize=TRUE, xdr=.Platform$endian="big")

Arguments
data
the R object to be sent
serialize
whether to call serialize before sending the data
xdr
passed directly to serialize command if serialize is requested

Value
a ZeroMQ message object as external pointer
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

send.message.object

Examples

```r
## Not run:

## remote execution server in rzmq
library(rzmq)
data = list(x=5)
msg = init.message(data)

## 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

```r
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 or 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>. 
rzmq was written by Whit Armstrong.

References


See Also

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

Examples

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

# 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")
bind.socket(in.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.socket(in.socket)

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

# The REQ socket is waiting for a response from 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)
paste("Is downstream REQ socket readable without blocking?", events[[2]]$read)
paste("Is downstream REQ socket writable without blocking?", events[[2]]$write)

send.socket(in.socket, "Greetings")

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

# The REP response is waiting to be read on the REQ socket.
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)

# Complete the REP-REQ transaction cycle by reading
# the REP response.
receive.socket(out.socket)

## End(Not run)

---

**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**

<table>
<thead>
<tr>
<th>function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>zmq_recv</td>
<td>The zmq_recv() function shall receive a message from the socket referenced by the socket argument.</td>
</tr>
<tr>
<td></td>
<td>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 recv.socket() call will return NULL immediately.</td>
</tr>
</tbody>
</table>

**Usage**

```python
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**

http://www.zeromq.org  
http://api.zeromq.org  
http://zguide.zeromq.org/page:all

**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)
}

context = 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

```r
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
**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**

```r
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

```r
## Not run:

## remote execution server in r zmq
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

- `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.last.endpoint(socket)
get.send.timeout(socket)
set.send.timeout(socket, option.value)
get.rcv.timeout(socket)
set.rcv.timeout(socket, option.value)

Arguments

socket a zmq socket object
option.value the new option value to bet 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")

g.c.wm(socket, 1L)
g.swap(socket, 100L)
gidentity(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


See Also

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

Examples

    ## Not run:

    library(rzmq)
    zmq.errno()
    zmq.strerror()

    ## End(Not run)
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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