

ZeroMQ Toolkit 1.4.0

ZeroMQ bindings for GNU Octave.

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To download a copy of the GNU Octave zeromq package, please visit <http://octave.sourceforge.net/zeromq/>.

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1 Installing and loading

The ZeroMQ toolkit must be installed and then loaded to be used.

It can be installed in GNU Octave directly from octave-forge, or can be installed in an off-line mode via a downloaded tarball.

The toolkit has a dependency on the zeromq library (<https://zeromq.org>), so it must be installed in order to successfully install the ZeroMQ toolkit.

For fedora: `yum install zeromq-devel`

For ubuntu: `apt install libzmq-dev`

The toolkit must be then be loaded once per each GNU Octave session in order to use its functionality.

1.1 Online Direct install

With an internet connection available, the ZeroMQ package can be installed from octave-forge using the following command within GNU Octave:

```
pkg install -forge zeromq
```

The latest released version of the toolkit will be downloaded and installed.

1.2 Off-line install

With the ZeroMQ toolkit package already downloaded, and in the current directory when running GNU Octave, the package can be installed using the following command within GNU Octave:

```
pkg install zeromq-1.4.0.tar.gz
```

1.3 Loading

Regardless of the method of installing the ZeroMQ toolkit, in order to use its functions, the toolkit must be loaded using the pkg load command:

```
pkg load zeromq
```

The toolkit must be loaded on each GNU Octave session.

2 Basic Usage Overview

The usage is very close to the ZeroMQ library C language bindings for the socket creation and manipulation with the exception of creating a zeromq context, which is automatically done in the bindings internals.

For example, a basic client that does a request / reply from a server on port local port 5555 (available as `zmq_example1.m`):

```
%% Create socket and connect to server
requester = zmq_socket (ZMQ_REQ);
zmq_connect (requester, "tcp://localhost:5555");

%% send some data
zmq_send (requester, uint8("Hello"), 5, 0);
%% try to read up to 10 bytes of reply data.
received = zmq_recv (requester, 10, 0);

zmq_close (requester);
```

An overview of the package can be displayed by running `help zeromq`

Help for each function can be displayed by `help thefunctionname`

ie:

```
help iszmq
```

3 Examples

There are several examples that come with the toolkit.

View example code using `edit examples/example_name`
ie:

```
edit examples/zmq_example1
```

3.1 Example1

Simple client REQ socket example that attempts to connect to a server and send a hello command and get back the response.

```
edit examples/zmq_example1
```

3.2 Example2

Simple server REP socket example that creates the server that the client from example 1 will connect to and responds back to client 'requests'

```
edit examples/zmq_example2
```

3.3 Example3

Simple server PUB socket example that creates 'weather' server sends weather updates for random zip codes.

```
edit examples/zmq_example3
```

3.4 Example4

Simple client SUB socket example that creates client that connects to the 'weather' server and subscribes for weather updates from zip-code 10001.

```
edit examples/zmq_example4
```

3.5 Example5

Simple client STREAM socket example that creates client that connects to octave.org and posts HEAD request.

```
edit examples/zmq_example5
```


4 Function Reference

The functions currently available in the ZeroMQ toolkit are described below;

4.1 ZeroMQ functions

4.1.1 iszmq

tf = *iszmq* (*h*) [Function File]

Determine whether *h* is a zeromq socket object.

if *h* is a zeromq socket object, returns true, otherwise returns false.

See also: *zmq-socket*.

4.1.2 zmq_bind

status = *zmq_bind* (*sock*, *endpoint*) [Loadable Function]

Bind a zeromq socket to a endpoint.

sock - the socket to bind.

endpoint - the endpoint string.

On success, bind will return a *status* of true

See also: *zmq-socket* .

4.1.3 zmq_close

zmq_close (*sock*) [Loadable Function]

Close a zeromq socket.

sock - the socket type to close.

See also: *zmq-socket* .

4.1.4 zmq_connect

status = *zmq_connect* (*sock*, *endpoint*) [Loadable Function]

Connect a zeromq socket to a endpoint.

sock - the socket to connect.

endpoint - the endpoint string.

On success, connect will return a *status* of true

See also: *zmq-socket*.

4.1.5 zmq_disconnect

status = *zmq_disconnect* (*sock*, *endpoint*) [Loadable Function]

Disconnect a zeromq socket from an endpoint.

sock - the socket to disconnect from.

endpoint - a previously connected endpoint string to disconnect.

On success, disconnect will return a *status* of true

See also: *zmq-socket*, *zmq-connect*.

4.1.6 zmq_errno

errornum = `zmq_errno ()` [Loadable Function]

Get the value of errno from zeromq.

errornum is the errno value of the calling thread.

4.1.7 zmq_getsockopt

value = `zmq_getsockopt (sock, optionid)` [Loadable Function]

Get the current value of an option.

sock - the socket to connect.

optionid - the setsockopt option to set.

value - the value set for the option, or [].

Valid *optionids* are:

ZMQ_RCVMORE

Flag for whether a message has been split into multiple messages. The return value will be either 0 or 1.

ZMQ_TYPE Socket type for zeromq socket created with `zmq_socket`. Valid types are the same as the socket type value specified with `zmq_socket`.

ZMQ_EVENTS

Get the event state of zeromq socket. The returned value is a bit mask that may contain the following set values:

- **ZMQ_POLLIN** set when at least one message available to read and `zmq_recv` will not block.
- **ZMQ_POLLOUT** set when at least one message can be written without `zmq_send` blocking.

ZMQ_IDENTITY

Get the socket identity value

ZMQ_LAST_ENDPOINT

Get the last endpoint the socket was connected to

ZMQ_CONNECT_TIMEOUT

Get the connect timeout value

See also: `zmq_socket`, `zmq_setsockopt`.

4.1.8 zmq_has

yesno = `zmq_has (feature)` [Loadable Function]

Check if the zmq library supports a given feature.

feature is the name of feature to check.

Currently known features are:

'ipc'	library supports the ipc:// protocol
'pgm'	library supports the pgm:// protocol
'tipc'	library supports the tipc:// protocol
'norm'	library supports the norm:// protocol
'curv'	library supports the CURVE security mechanism

'gssapi' library supports the GSSAPI security mechanism

'draft' library was built with the draft api

Returns the *yesno*, set to true if the feature is available, otherwise false.

4.1.9 zmq_poll

havedata = *zmq_poll* (*sock*, *timeout*) [Loadable Function]

indexlist = *zmq_poll* (*socklist*, *timeout*) [Loadable Function]

Wait up to *timeout* time for received data on socket.

sock - the socket to wait on.

socklist - the array of sockets to wait on.

timeout - timeout time in milliseconds. A value of 0 will return without waiting. A value of -1 will wait until there is data.

havedata - value of 1 if have data.

indexlist - cell array of indexes to sockets that have data.

See also: *zmq_socket*.

4.1.10 zmq_recv

data = *zmq_recv* (*sock*, *len*[, *flags*]) [Loadable Function]

Attempt to receive up to *len* bytes of data from zeromq socket.

sock - the socket to receive from.

len - number of bytes to read.

flags - optional flags to pass to *recv*

The read data is returned as *data* in an uint8 array.

See also: *zmq_socket*.

4.1.11 zmq_send

count = *zmq_send* (*sock*, *data*[, *flags*]) [Loadable Function]

Attempt to send to *data* bytes of data to zeromq socket.

sock - the socket to receive from.

data - data to send - either string or uint8 type.

flags - optional flags to pass to *send*

Returns *count* of bytes written to socket, or -1 on error.

See also: *zmq_socket*.

4.1.12 zmq_setsockopt

status = *zmq_setsockopt* (*sock*, *optionid*, *value*) [Loadable Function]

Set a socket option on a zeromq socket.

sock - the socket to connect.

optionid - the *setsockopt* option to set.

value - the value to set.

On success, *setsockopt* will return *status* of true

Known valid *optionids* are:

ZMQ_SUBSCRIBE

Subscribe to incoming messages matching the value. The value is either a string or a uint8 array that must match the start of any incoming message

ZMQ_UNSUBSCRIBE

Unsubscribe from incoming messages

ZMQ_CONNECT_TIMEOUT

Set timeout for connect calls

See also: `zmq-getsockopt`, `ZMQ_SUBSCRIBE`, `ZMQ_UNSUBSCRIBE`, `ZMQ_CONNECT_TIMEOUT`.

4.1.13 `zmq_socket`

`sock = zmq_socket (type)` [Loadable Function]

Create a zeromq socket.

type - the socket type to create.

Supported socket types are:

`ZMQ_PUB` Publish socket

`ZMQ_SUB` Subscribe socket

`ZMQ_REQ` Request socket

`ZMQ_REP` Reply socket

`ZMQ_PULL` Pull socket

`ZMQ_PUSH` Push socket

`ZMQ_PAIR` Pair socket

`ZMQ_DEALER`

Dealer socket

`ZMQ_ROUTER`

Router socket

`ZMQ_XPUB` Publish socket

`ZMQ_XSUB` Subscribe socket

`ZMQ_STREAM`

Stream socket

`zmq_socket()` returns an instance of *octave_zeromq_socket* class as the result.

See also: `ZMQ_PUB`, `ZMQ_SUB`, `ZMQ_PUSH`, `ZMQ_PULL`, `ZMQ_REQ`, `ZMQ_REP`, `ZMQ_PAIR`, `ZMQ_DEALER`, `ZMQ_ROUTER`, `ZMQ_XPUB`, `ZMQ_XSUB`, `ZMQ_STREAM`.

4.1.14 `zmq_strerror`

`errorstr = zmq_strerror ()` [Loadable Function]

Get the last error from zeromq.

errorstr is a string representation of the last error

4.1.15 `zmq_unbind`

`status = zmq_unbind (sock, endpoint)` [Loadable Function]

Unbind a previously bound zeromq socket from a endpoint.

sock - the socket to unbind.

endpoint - the endpoint string to unbind.

On success, unbind will return a *status* of true

See also: `zmq_socket`, `zmq_bind` .

4.1.16 zmq_version

[*major*, *minor*, *patch*] = zmq_version () [Loadable Function]
Get the ZeroMQ library version.
Returns the *major*, *minor* and *patch* level version of the ZeroMQ library.

4.2 ZeroMQ socket type constants

4.2.1 ZMQ_DEALER

ZMQ_DEALER [Command]
Constant for dealer socket type.
See also: zmq-socket.

4.2.2 ZMQ_PAIR

ZMQ_PAIR [Command]
Constant for pair socket type.
See also: zmq-socket.

4.2.3 ZMQ_PUB

ZMQ_PUB [Command]
Constant for publisher type.
See also: zmq-socket.

4.2.4 ZMQ_PULL

ZMQ_PULL [Command]
Constant for pull socket type.
See also: zmq-socket.

4.2.5 ZMQ_PUSH

ZMQ_PUSH [Command]
Constant for push socket type.
See also: zmq-socket.

4.2.6 ZMQ_REP

ZMQ_REP [Command]
Constant for reply socket type.
See also: zmq-socket.

4.2.7 ZMQ_REQ

ZMQ_REQ [Command]
Constant for request socket type.
See also: zmq-socket.

4.2.8 ZMQ_ROUTER

ZMQ_ROUTER [Command]

Constant for router socket type.

See also: zmq-socket.

4.2.9 ZMQ_STREAM

ZMQ_STREAM [Command]

Constant for stream socket type.

See also: zmq-socket.

4.2.10 ZMQ_SUB

ZMQ_SUB [Command]

Constant for subscriber type.

See also: zmq-socket.

4.2.11 ZMQ_XPUB

ZMQ_XPUB [Command]

Constant for publisher type.

See also: zmq-socket.

4.2.12 ZMQ_XSUB

ZMQ_XSUB [Command]

Constant for subscriber type.

See also: zmq-socket.

4.3 ZeroMQ get/setsockopt constants

4.3.1 ZMQ_CONNECT_TIMEOUT

ZMQ_CONNECT_TIMEOUT [Command]

Constant for get/setsockopt connect timeout value

See also: zmq-getsockopt, zmq-setsockopt.

4.3.2 ZMQ_EVENTS

ZMQ_EVENTS [Command]

Constant for getsockopt EVENTS value option

See also: zmq-getsockopt.

4.3.3 ZMQ_IDENTITY

ZMQ_IDENTITY [Command]

Constant for getsockopt and setsockopt IDENTITY value option

See also: zmq-getsockopt, zmq-setsockopt.

4.3.4 ZMQ_LAST_ENDPOINT

ZMQ_LAST_ENDPOINT [Command]

Constant for getsockopt last endpoint value option

See also: zmq-getsockopt.

4.3.5 ZMQ_RCVMORE

ZMQ_RCVMORE [Command]

Constant for getsockopt RCVMORE value option

See also: zmq-getsockopt.

4.3.6 ZMQ_SUBSCRIBE

ZMQ_SUBSCRIBE [Command]

Constant for setsockopt subscribe option

See also: zmq-setsockopt, ZMQ_UNSUBSCRIBE.

4.3.7 ZMQ_TYPE

ZMQ_TYPE [Command]

Constant for getsockopt TYPE value option

See also: zmq-getsockopt.

4.3.8 ZMQ_UNSUBSCRIBE

ZMQ_UNSUBSCRIBE [Command]

Constant for setsockopt unsubscribe option

See also: zmq-setsockopt, ZMQ_SUBSCRIBE.

4.4 ZeroMQ ZMQ_EVENTS flags

4.4.1 ZMQ_POLLIN

ZMQ_POLLIN [Command]

Constant bitmask value for getsockopt EVENTS value option

See also: zmq-getsockopt.

4.4.2 ZMQ_POLLOUT

ZMQ_POLLOUT [Command]

Constant bitmask value for getsockopt EVENTS value option

See also: zmq-getsockopt.

4.5 ZeroMQ receive send options

4.5.1 ZMQ_DONTWAIT

ZMQ_DONTWAIT [Command]

Constant for recv flag DONTWAIT

See also: zmq-recv.

4.5.2 ZMQ_SNDMORE

ZMQ_SNDMORE

[Command]

Constant for send flag SNDMORE

See also: zmq_send.

Appendix A GNU General Public License

Version 3, 29 June 2007

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