
Python EPC Documentation

Release 0.0.5


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Nov 03, 2018

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Links:

- [Documentation](#) (at Read the Docs)
- [Repository](#) (at GitHub)
- [Issue tracker](#) (at GitHub)
- [PyPI](#)
- [Travis CI](#) 

Other resources:

- [kiwanami/emacs-epc](#) (Client and server implementation in Emacs Lisp and Perl.)
- [tkf/emacs-jedi](#) (Python completion for Emacs using EPC server.)

CHAPTER 1

What is this?

EPC is an RPC stack for Emacs Lisp and Python-EPC is its server side and client side implementation in Python. Using Python-EPC, you can easily call Emacs Lisp functions from Python and Python functions from Emacs. For example, you can use Python GUI module to build widgets for Emacs (see [examples/gtk/server.py](#) for example).

Python-EPC is tested against Python 2.6, 2.7 and 3.2.

CHAPTER 2

Install

To install Python-EPC and its dependency [sexpdata](#), run the following command.:

```
pip install epc
```


CHAPTER 3

Usage

Save the following code as `my-server.py`. (You can find functionally the same code in [examples/echo/server.py](#)):

```
from epc.server import EPCServer

server = EPCServer(('localhost', 0))

@server.register_function
def echo(*a):
    return a

server.print_port()
server.serve_forever()
```

And then run the following code from Emacs. This is a stripped version of [examples/echo/client.el](#) included in Python-EPC repository.:

```
(require 'epc)

(defvar my-epc (epc:start-epc "python" '("my-server.py")))

(deferred:$
  (epc:call-deferred my-epc 'echo '(10))
  (deferred:nextc it
    (lambda (x) (message "Return : %S" x))))

(message "Return : %S" (epc:call-sync my-epc 'echo '(10 40)))
```

If you have [carton](#) installed, you can run the above sample by simply typing the following commands:

```
make elpa          # install EPC in a separated environment
make run-sample    # run examples/echo/client.el
```

For example of bidirectional communication and integration with GTK, see [examples/gtk/server.py](#). You can run this example by:

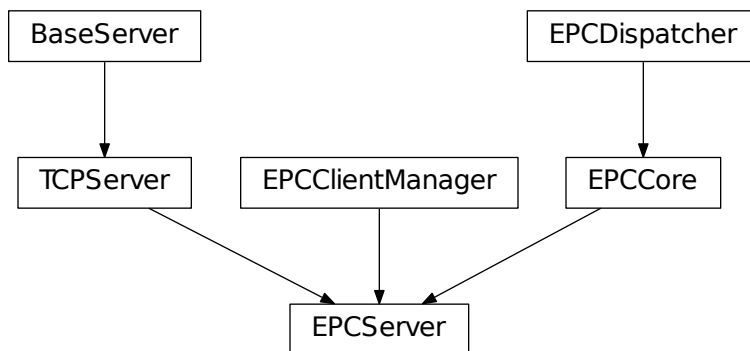
```
make elpa
make run-gtk-sample # run examples/gtk/client.el
```

CHAPTER 4

License

Python-EPC is licensed under GPL v3. See COPYING for details.

5.1 Server



```

class epc.server.EPCServer(server_address,
                             RequestHandlerClass=<class
                             epc.handler.EPCHandler>,
                             bind_and_activate=True,
                             debugger=None,
                             log_traceback=False)

```

A server class to publish functions and call functions via EPC protocol.

To publish Python functions, all you need is `register_function()`, `print_port()` and `serve_forever()`.

```

>>> server = EPCServer(('localhost', 0))
>>> def echo(*a):
...     return a

```

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```
>>> server.register_function(echo)                                #doctest: +ELLIPSIS
<function echo at 0x...>
>>> server.print_port()                                         #doctest: +SKIP
9999
>>> server.serve_forever()                                     #doctest: +SKIP
```

To call client's method, use `clients` attribute to get client handler and use its `EPCHandler.call()` and `EPCHandler.methods()` methods to communicate with connected client.

```
>>> handler = server.clients[0]                                #doctest: +SKIP
>>> def callback(reply):
...     print(reply)
>>> handler.call('method_name', ['arg-1', 'arg-2', 'arg-3'],
...             callback)                                     #doctest: +SKIP
```

See `SocketServer.TCPServer` and `SocketServer.BaseServer` for other usable methods.

register_function (*function*, *name=None*)

Register function to be called from EPC client.

Parameters

- **function** (*callable*) – Function to publish.
- **name** (*str*) – Name by which function is published.

This method returns the given *function* as-is, so that you can use it as a decorator.

register_instance (*instance*, *allow_dotted_names=False*)

Register an instance to respond to EPC requests.

Parameters

- **instance** (*object*) – An object with methods to provide to peer. If this instance has `_get_method` method, EPC method name resolution can be done by this method.
- **allow_dotted_names** (*bool*) – If it is true, method names containing dots are supported. They are resolved using `getattr` for each part of the name as long as it does not start with `'_'`.

Unlike `register_function()`, only one instance can be registered.

set_debugger (*debugger*)

Set debugger to run when an error occurs in published method.

You can also set debugger by passing *debugger* argument to the class constructor.

Parameters **debugger** (`{ 'pdb', 'ipdb', None }`) – type of debugger.

print_port (*stream=<open file 'stdout', mode 'w'>*)

Print port this EPC server runs on.

As Emacs client reads port number from STDOUT, you need to call this just before calling `serve_forever()`.

Parameters **stream** (*text stream*) – A stream object to write port on. Default is `sys.stdout`.

clients = []

A list of `EPCHandler` object for connected clients.

handle_client_connect (*handler*)

Handler which is called with a newly connected *client*.

Parameters `handler` (*EPCHandler*) – Object for handling request from the client.

Default implementation does nothing.

handle_client_disconnect (*handler*)

Handler which is called with a disconnected *client*.

Parameters `handler` (*EPCHandler*) – Object for handling request from the client.

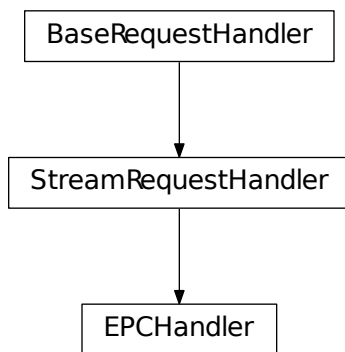
Default implementation does nothing.

class `epc.server.ThreadingEPCServer` (*args, **kws)

Class *EPCServer* mixed with `SocketServer.ThreadingMixIn`.

Use this class when combining *EPCServer* with other Python module which has event loop, such as GUI modules. For example, see [examples/gtk/server.py](#) for how to use this class with GTK

5.2 Handler



class `epc.server.EPCHandler` (*request*, *client_address*, *server*)

handle_error (*err*)

Handle error which is not handled by `errback`.

Parameters `err` (*Exception*) – An error not handled by other mechanisms.

Return type `boolean`

Return `True` from this function means that error is properly handled, so the error is not sent to client. Do not confuse this with `SocketServer.BaseServer.handle_error()`. This method is for handling error for each client, not for entire server. Default implementation logs the error and returns `True` if the error is coming from remote¹ or returns `False` otherwise. Therefore, only the error occurs in this handler class is sent to remote.

call (*name*, *args, **kws)

Call method connected to this handler.

¹ More specifically, it returns `True` if *err* is an instance of `BaseRemoteError` or `EPCClosed`.

Parameters

- **name** (*str*) – Method name to call.
- **args** (*list*) – Arguments for remote method to call.
- **callback** (*callable*) – A function to be called with returned value of the remote method.
- **errback** (*callable*) – A function to be called with an error occurred in the remote method. It is either an instance of `ReturnError` or `EPError`.

methods (**args, **kws*)

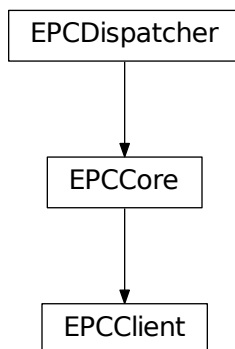
Request info of callable remote methods.

Arguments for `call()` except for *name* can be applied to this function too.**call_sync** (*name, args, timeout=None*)Blocking version of `call()`.**Parameters**

- **name** (*str*) – Remote function name to call.
- **args** (*list*) – Arguments passed to the remote function.
- **timeout** (*int or None*) – Timeout in second. None means no timeout.

If the called remote function raise an exception, this method raise an exception. If you give *timeout*, this method may raise an *Empty* exception.

methods_sync (*timeout=None*)Blocking version of `methods()`. See also `call_sync()`.



class `epc.client.EPCClient` (*socket_or_address=None, debugger=None, log_traceback=False*)
EPC client class to call remote functions and serve Python functions.

```
>>> client = EPCClient()
>>> client.connect(('localhost', 9999))                                     #doctest: +SKIP
>>> client.call_sync('echo', [111, 222, 333])                             #doctest: +SKIP
[111, 222, 333]
```

To serve Python functions, you can use `register_function()`.

```
>>> client.register_function(str.upper)
<method 'upper' of 'str' objects>
```

`register_function()` can be used as a decorator.

```
>>> @client.register_function
... def add(x, y):
...     return x + y
```

Also, you can initialize client and connect to the server by one line.

```
>>> client = EPCClient(('localhost', 9999)) #doctest: +SKIP
```

call()

Alias of *epc.server.EPCHandler.call()*.

call_sync()

Alias of *epc.server.EPCHandler.call_sync()*.

methods()

Alias of *epc.server.EPCHandler.methods()*.

methods_sync()

Alias of *epc.server.EPCHandler.methods_sync()*.

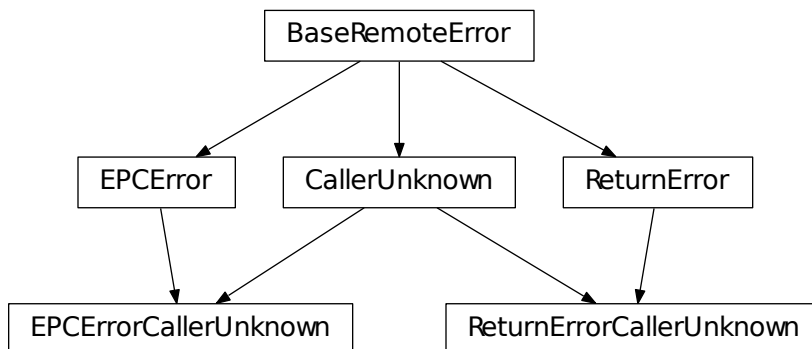
connect(socket_or_address)

Connect to server and start serving registered functions.

Parameters socket_or_address (*tuple or socket object*) - A (host, port) pair to be passed to *socket.create_connection*, or a socket object.

close()

Close connection.



class `epc.handler.BaseRemoteError`

All exceptions from remote method are derived from this class.

class `epc.handler.CallerUnknown`

Error raised in remote method, but caller of the method is unknown.

class `epc.handler.EPCError`

Error returned by *epc-error* protocol.

class `epc.handler.ReturnError`

Error returned by *return-error* protocol.

class `epc.handler.EPCErrorCallerUnknown`

Same as *EPCError*, but caller is unknown.

class `epc.handler.ReturnErrorCallerUnknown`

Same as *ReturnError*, but caller is unknown.

CHAPTER 8

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