# :mod:`xmlrpc.server` --- Basic XML-RPC servers

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 1); backlink

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]xmlrpc.server.rst, line 4)

Unknown directive type "module".

```
.. module:: xmlrpc.server
    :synopsis: Basic XML-RPC server implementations.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 7)

Unknown directive type "moduleauthor".

.. moduleauthor:: Brian Quinlan <bri>dactivestate.com>

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Unknown directive type "sectionauthor".

.. sectionauthor:: Fred L. Drake, Jr. <fdrake@acm.org>

Source code: :source: Lib/xmlrpc/server.py

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Unknown interpreted text role "source".

The mod: xmlrpc.server' module provides a basic server framework for XML-RPC servers written in Python. Servers can either be free standing, using class: SimpleXMLRPCServer', or embedded in a CGI environment, using class: CGIXMLRPCRequestHandler'.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 14); backlink

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 14); backlink

Unknown interpreted text role "class".

 $System\,Message: ERROR/3~(\texttt{D:}\onboarding-resources}\cpython-main\Doc\library\[cpython-main\][Doc]~[library\]\xspace. server.rst, line~14); \\ \textit{backlink} \\$ 

Unknown interpreted text role "class".

#### Warning

The <u>mod:</u> 'xmlrpc.server' module is not secure against maliciously constructed data. If you need to parse untrusted or unauthenticated data see <u>ref.</u> 'xml-vulnerabilities'.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc]

```
[library]xmlrpc.server.rst, line 22); backlink
Unknown interpreted text role "mod".
```

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 22); backlink
```

Unknown interpreted text role 'ref'.

Create a new server instance. This class provides methods for registration of functions that can be called by the XML-RPC protocol. The request Handler parameter should be a factory for request handler instances; it defaults to class: Simple XMLRPC Request Handler. The addr and request Handler parameters are passed to the class: socketserver. TCPServer constructor. If logRequests is true (the default), requests will be logged; setting this parameter to false will turn off logging. The allow\_none and encoding parameters are passed on to mod: xmlrpc.client and control the XML-RPC responses that will be returned from the server. The bind\_and\_activate parameter controls whether meth: server\_bind and meth: server\_activate are called immediately by the constructor; it defaults to true. Setting it to false allows code to manipulate the allow\_reuse\_address class variable before the address is bound. The use\_builtin\_types parameter is passed to the func: "xmlrpc.client.loads" function and controls which types are processed when date/times values or binary data are received; it defaults to false.

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Unknown interpreted text role "class".

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Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 31); backlink

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 31); backlink

Unknown interpreted text role 'meth'.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 31); backlink

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 31); backlink

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 47)

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.3

The *use_builtin_types* flag was added.
```

Create a new instance to handle XML-RPC requests in a CGI environment. The *allow\_none* and *encoding* parameters are passed on to <a href="mod:"mod:"xmlrpc.client">mod:"xmlrpc.client</a> and control the XML-RPC responses that will be returned from the server. The *use\_builtin\_types* parameter is passed to the <a href="mod:"circle-xmlrpc.client.loads">function</a> and controls which types are processed when date/times values or binary data are received; it defaults to false.

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Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 54); backlink

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]xmlrpc.server.rst, line 61)

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.3

The *use builtin types* flag was added.
```

Create a new request handler instance. This request handler supports POST requests and modifies logging so that the *logRequests* parameter to the :class: SimpleXMLRPCServer` constructor parameter is honored.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 67); backlink

Unknown interpreted text role "class".

### **SimpleXMLRPCServer Objects**

The :class: SimpleXMLRPCServer' class is based on :class: socketserver. TCPServer' and provides a means of creating simple, stand alone XML-RPC servers.

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Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 77); backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 82)

Unknown directive type "method".

```
.. method:: SimpleXMLRPCServer.register_function(function=None, name=None)
```

```
Register a function that can respond to XML-RPC requests. If *name* is given, it will be the method name associated with *function*, otherwise ``function.__name__`` will be used. *name* is a string, and may contain characters not legal in Python identifiers, including the period character.
```

```
This method can also be used as a decorator. When used as a decorator, *name* can only be given as a keyword argument to register *function* under *name*. If no *name* is given, ``function.__name__`` will be used.
```

```
.. versionchanged:: 3.7
:meth:`register_function` can be used as a decorator.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 97)

Unknown directive type "method".

```
.. method:: SimpleXMLRPCServer.register instance(instance, allow dotted names=False)
```

Register an object which is used to expose method names which have not been registered using :meth: `register\_function`. If \*instance\* contains a :meth: `\_dispatch` method, it is called with the requested method name and the parameters from the request. Its API is ``def \_dispatch(self, method, params)` (note that \*params\* does not represent a variable argument list). If it calls an underlying function to perform its task, that function is called as ``func(\*params)``, expanding the parameter list. The return value from :meth: `\_dispatch` is returned to the client as the result. If \*instance\* does not have a :meth: `\_dispatch` method, it is searched for an attribute matching the name of the requested method.

If the optional \*allow\_dotted\_names\* argument is true and the instance does not have a :meth:`\_dispatch` method, then if the requested method name contains periods, each component of the method name is searched for individually, with the effect that a simple hierarchical search is performed. The value found from this search is then called with the parameters from the request, and the return value is passed back to the client.

.. warning::

Enabling the \*allow\_dotted\_names\* option allows intruders to access your module's global variables and may allow intruders to execute arbitrary code on your machine. Only use this option on a secure, closed network.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 124)

Unknown directive type "method".

.. method:: SimpleXMLRPCServer.register\_introspection\_functions()

Registers the XML-RPC introspection functions ``system.listMethods``, ``system.methodHelp`` and ``system.methodSignature``.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 130)

Unknown directive type "method".

.. method:: SimpleXMLRPCServer.register\_multicall\_functions()

Registers the XML-RPC multicall function system.multicall.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 135)

Unknown directive type "attribute".

 $\dots \ \, \text{attribute::} \ \, \text{SimpleXMLRPCRequestHandler.rpc\_paths}$ 

An attribute value that must be a tuple listing valid path portions of the URL for receiving XML-RPC requests. Requests posted to other paths will result in a 404 "no such page" HTTP error. If this tuple is empty, all paths will be considered valid. The default value is ``('/', '/RPC2')``.

### SimpleXMLRPCServer Example

#### Server code:

```
# Register pow() function; this will use the value of
# pow.__name__ as the name, which is just 'pow'.
server.register_function(pow)

# Register a function under a different name
def adder_function(x, y):
    return x + y
server.register_function(adder_function, 'add')

# Register an instance; all the methods of the instance are
# published as XML-RPC methods (in this case, just 'mul').
class MyFuncs:
    def mul(self, x, y):
        return x * y
server.register_instance(MyFuncs())

# Run the server's main loop
server.serve forever()
```

The following client code will call the methods made available by the preceding server:

```
import xmlrpc.client
s = xmlrpc.client.ServerProxy('http://localhost:8000')
print(s.pow(2,3))  # Returns 2**3 = 8
print(s.add(2,3))  # Returns 5
print(s.mul(5,2))  # Returns 5*2 = 10

# Print list of available methods
print(s.system.listMethods())
```

meth: register\_function` can also be used as a decorator. The previous server example can register functions in a decorator way:

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Unknown interpreted text role "meth".

```
from xmlrpc.server import SimpleXMLRPCServer
from xmlrpc.server import SimpleXMLRPCRequestHandler
class RequestHandler(SimpleXMLRPCRequestHandler):
    rpc paths = ('/RPC2',)
with SimpleXMLRPCServer(('localhost', 8000),
                       requestHandler=RequestHandler) as server:
    server.register_introspection_functions()
    # Register pow() function; this will use the value of
    # pow. name as the name, which is just 'pow'.
    server.register function(pow)
    # Register a function under a different name, using
    # register_function as a decorator. *name* can only be given
    # as a keyword argument.
    @server.register function(name='add')
    def adder function (x, y):
       return x + y
    # Register a function under function. name .
    @server.register_function
    def mul(x, y):
       return x * y
    server.serve forever()
```

The following example included in the :file: Lib/xmlrpc/server.py module shows a server allowing dotted names and registering a multicall function.

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Unknown interpreted text role "file".

Enabling the *allow\_dotted\_names* option allows intruders to access your module's global variables and may allow intruders to execute arbitrary code on your machine. Only use this example only within a secure, closed network.

```
import datetime
class ExampleService:
    def getData(self):
        return '42'
    class currentTime:
        @staticmethod
        def getCurrentTime():
            return datetime.datetime.now()
with SimpleXMLRPCServer(("localhost", 8000)) as server:
    server.register function(pow)
    \verb|server.register_function(lambda x,y: x+y, 'add')|\\
    server.register instance(ExampleService(), allow dotted names=True)
    server.register multicall functions()
    print('Serving XML-RPC on localhost port 8000')
    try:
        server.serve forever()
    except KeyboardInterrupt:
        print("\nKeyboard interrupt received, exiting.")
        sys.exit(0)
```

This ExampleService demo can be invoked from the command line:

```
python -m xmlrpc.server
```

The client that interacts with the above server is included in *Lib/xmlrpc/client.py*:

```
server = ServerProxy("http://localhost:8000")

try:
    print(server.currentTime.getCurrentTime())
except Error as v:
    print("ERROR", v)

multi = MultiCall(server)
multi.getData()
multi.pow(2,9)
multi.add(1,2)
try:
    for response in multi():
        print(response)
except Error as v:
    print("ERROR", v)
```

This client which interacts with the demo XMLRPC server can be invoked as:

```
python -m xmlrpc.client
```

# CGIXMLRPCR equest Handler

The :class: 'CGIXMLRPCRequestHandler' class can be used to handle XML-RPC requests sent to Python CGI scripts.

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Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 296)

Unknown directive type "method".

```
.. method:: CGIXMLRPCRequestHandler.register_function(function=None, name=None)

Register a function that can respond to XML-RPC requests. If *name* is given, it will be the method name associated with *function*, otherwise ``function.__name__`` will be used. *name* is a string, and may contain characters not legal in Python identifiers, including the period character.

This method can also be used as a decorator. When used as a decorator, *name* can only be given as a keyword argument to register *function* under *name*. If no *name* is given, ``function.__name__`` will be used.
```

```
.. versionchanged:: 3.7
   :meth:`register_function` can be used as a decorator.
```

 $System\,Message: ERROR/3~(\texttt{D:}\onboarding-resources}\cpython-main\Doc\library\[cpython-main\][Doc]~[library\]\xspace. Server.rst, line 311)$ 

Unknown directive type "method".

.. method:: CGIXMLRPCRequestHandler.register instance(instance)

Register an object which is used to expose method names which have not been registered using :meth: `register\_function`. If instance contains a :meth: `\_dispatch` method, it is called with the requested method name and the parameters from the request; the return value is returned to the client as the result. If instance does not have a :meth: `\_dispatch` method, it is searched for an attribute matching the name of the requested method; if the requested method name contains periods, each component of the method name is searched for individually, with the effect that a simple hierarchical search is performed. The value found from this search is then called with the parameters from the request, and the return value is passed back to the client.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 325)

Unknown directive type "method".

```
.. method:: CGIXMLRPCRequestHandler.register_introspection_functions()

Register the XML-RPC introspection functions ``system.listMethods``,
   ``system.methodHelp`` and ``system.methodSignature``.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]xmlrpc.server.rst, line 331)

Unknown directive type "method".

```
.. method:: CGIXMLRPCRequestHandler.register_multicall_functions()

Register the XML-RPC multicall function ``system.multicall``.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 336)

Unknown directive type "method".

```
.. method:: CGIXMLRPCRequestHandler.handle_request(request_text=None)

Handle an XML-RPC request. If *request_text* is given, it should be the POST data provided by the HTTP server, otherwise the contents of stdin will be used.
```

#### Example:

```
class MyFuncs:
    def mul(self, x, y):
        return x * y

handler = CGIXMLRPCRequestHandler()
handler.register_function(pow)
handler.register_function(lambda x,y: x+y, 'add')
handler.register_introspection_functions()
handler.register_instance(MyFuncs())
handler.handle_request()
```

# **Documenting XMLRPC server**

These classes extend the above classes to serve HTML documentation in response to HTTP GET requests. Servers can either be free standing, using <code>:class:`DocXMLRPCServer`</code>, or embedded in a CGI environment, using <code>:class:`DocCGIXMLRPCRequestHandler`</code>.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 359); backlink

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Unknown interpreted text role "class".

Create a new server instance. All parameters have the same meaning as for :class: SimpleXMLRPCServer'; requestHandler defaults to :class: DocXMLRPCRequestHandler'.

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Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 369); backlink

Unknown interpreted text role "class".

 $System\,Message: ERROR/3~(\texttt{D:}\onboarding-resources}\cpython-main\Doc\library\[cpython-main\][Doc]~[library\]\xspace\xspace\] xmlrpc.server.rst, line 373)$ 

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.3
The *use_builtin_types* flag was added.
```

Create a new instance to handle XML-RPC requests in a CGI environment.

Create a new request handler instance. This request handler supports XML-RPC POST requests, documentation GET requests, and modifies logging so that the *logRequests* parameter to the :class:`DocXMLRPCServer` constructor parameter is honored.

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Unknown interpreted text role "class".

# **DocXMLRPCServer Objects**

The :class:`DocXMLRPCServer` class is derived from :class:`SimpleXMLRPCServer` and provides a means of creating self-documenting, stand alone XML-RPC servers. HTTP POST requests are handled as XML-RPC method calls. HTTP GET requests are handled by generating pydoc-style HTML documentation. This allows a server to provide its own web-based documentation.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 395); backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 395); backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 402)

Unknown directive type "method".

.. method:: DocXMLRPCServer.set\_server\_title(server\_title)

Set the title used in the generated HTML documentation. This title will be used inside the HTML "title" element.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]xmlrpc.server.rst, line 408)

Unknown directive type "method".

.. method:: DocXMLRPCServer.set\_server\_name(server\_name)

Set the name used in the generated HTML documentation. This name will appear at the top of the generated documentation inside a "h1" element.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 414)

Unknown directive type "method".

.. method:: DocXMLRPCServer.set server documentation(server documentation)

Set the description used in the generated HTML documentation. This description will appear as a paragraph, below the server name, in the documentation.

### **DocCGIXMLRPCRequestHandler**

The :class:`DocCGIXMLRPCRequestHandler` class is derived from :class:`CGIXMLRPCRequestHandler` and provides a means of creating self-documenting, XML-RPC CGI scripts. HTTP POST requests are handled as XML-RPC method calls. HTTP GET requests are handled by generating pydoc-style HTML documentation. This allows a server to provide its own web-based documentation.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 423); backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 423); backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]xmlrpc.server.rst, line 430)

Unknown directive type "method".

.. method:: DocCGIXMLRPCRequestHandler.set server title(server title)

Set the title used in the generated HTML documentation. This title will be used inside the HTML "title" element.

 $System\,Message: ERROR/3~(\texttt{D:}\onboarding-resources}\cpython-main\Doc\library\[cpython-main\][Doc]~[library\]\xspress{line}~436)$ 

Unknown directive type "method".

.. method:: DocCGIXMLRPCRequestHandler.set server name(server name)

Set the name used in the generated HTML documentation. This name will appear at the top of the generated documentation inside a "h1" element.

 $System\,Message:\,ERROR/3\, (\mbox{D:\noboarding-resources}\xspace) ample-onboarding-resources\xspace \xspace, cpython-main] [Doc] [library] xmlrpc.server.rst, line 442)$ 

Unknown directive type "method".

 $\verb|...| method:: DocCGIXMLRPCRequestHandler.set_server_documentation(server_documentation)|$ 

Set the description used in the generated HTML documentation. This description will appear as a paragraph, below the server name, in the documentation.