#### A Quick Look At Rpclib

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#### What is Rpclib?

Rpclib makes it convenient to expose your services using multiple protocols and/or transports.

What is Rpclib?

It also forces you to have a well-defined api.

# How?

## Here's a simple function:

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```
from datetime import datetime

def get_utc_time():
    return datetime.utcnow()
```

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# 1)

We wrap it in a ServiceBase subclass:

```
def get_utc_time():
    return datetime.utcnow()
```

```
from rpclib.model.primitive import DateTime
from rpclib.decorator import srpc
from rpclib.service import ServiceBase
```

```
def get_utc_time():
    return datetime.utcnow()
```

```
from rpclib.model.primitive import DateTime
from rpclib.decorator import srpc
from rpclib.service import ServiceBase

class DateTimeService(ServiceBase):
    def get_utc_time():
        return datetime.utcnow()
```

```
from rpclib.model.primitive import DateTime
from rpclib.decorator import srpc
from rpclib.service import ServiceBase

class DateTimeService(ServiceBase):
    @srpc(_returns=DateTime)
    def get_utc_time():
        return datetime.utcnow()
```

### 2)

Now, we have to wrap the service definition in an Application definition.

 $[\ \mathsf{DateTimeService}\ ]\ ,$ 

```
from rpclib.application import Application
from rpclib.protocol.http import HttpRpc

httprpc = Application(
          [DateTimeService],
          tns='rpclib.examples.multiprot',
```

```
from rpclib.application import Application
from rpclib.protocol.http import HttpRpc

httprpc = Application(
          [DateTimeService],
                tns='rpclib.examples.multiprot',
                in_protocol=HttpRpc(),
                out_protocol=HttpRpc()
)
```

3)

Finally, we wrap the application in a transport.

from rpclib.server.wsgi import WsgiApplication
application = WsgiApplication(httprpc)

This is now a regular WSGI Application that we can pass to WSGI-compliant servers like CherryPy, mod\_wsgi, Twisted, etc.

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application = WsgiApplication(httprpc)

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\$ curl http://localhost:9910/get\_utc\_time 2012-03-09T17:38:11.997784 Now, what if we wanted to expose this function using another protocol?

#### For example: SOAP

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#### 

```
<?xml version='1.0' encoding='utf-8'?>
<senv:Envelope xmlns:wsa="http://schemas.xmlsoap.org/ws/2003/03/addressing"</pre>
xmlns:tns="rpclib.examples.multiple_protocols"
xmlns:plink="http://schemas.xmlsoap.org/ws/2003/05/partner-link/"
xmlns:xop="http://www.w3.org/2004/08/xop/include"
xmlns:senc="http://schemas.xmlsoap.org/soap/encoding/"
xmlns:s12env="http://www.w3.org/2003/05/soap-envelope/"
xmlns:s12enc="http://www.w3.org/2003/05/soap-encoding/"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:senv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/">
  <senv:Body>
    <tns:get_utc_timeResponse>
      <tns:get_utc_timeResult>
        2012-03-06T17:43:30.894466
      </tns:get_utc_timeResult>
    </tns:get_utc_timeResponse>
  </senv:Body>
</senv:Envelope>
```

#### Or, just XML:

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#### Or, HTML:

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etc...

# Rpclib also makes it easy to implement custom protocols.

Let's implement an output protocol that renders the datetime value as an analog clock.

(without going into much detail ©)

To do that, we need to implement the serialize and create\_out\_string functions in a ProtocolBase subclass.

```
from rpclib.protocol import ProtocolBase

class SvgClock(ProtocolBase):
    mime_type = 'image/svg+xml'
```

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    mime_type = 'image/svg+xml'

def serialize(self, ctx, message):
    d = ctx.out_object[0] # the return value
```

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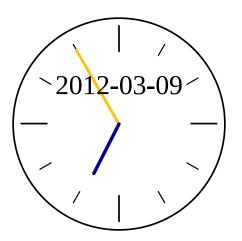
# (some math and boilerplate suppressed)
```

```
from rpclib.protocol import ProtocolBase
class SvgClock(ProtocolBase):
  mime_type = 'image/svg+xml'
  def serialize(self, ctx, message):
   d = ctx.out_object[0] # the return value
   # (some math and boilerplate suppressed)
   # clock is a svg file parsed as lxml Element
    ctx.out_document = clock
```

```
from rpclib.protocol import ProtocolBase
class SvgClock(ProtocolBase):
  mime_type = 'image/svg+xml'
  def serialize(self, ctx, message):
    d = ctx.out_object[0] # the return value
   # (some math and boilerplate suppressed)
   # clock is a svg file parsed as lxml Element
    ctx.out_document = clock
  def create_out_string(self, ctx, charset=None):
    ctx.out_string = [
        etree.tostring(ctx.out_document)
```

#### The custom SVG protocol:

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It's also easy to implement declarative restrictions on your input data.

#### So instead of doing this:

```
from datetime import datetime
def get_name_of_month(month):
    """ Takes an integer between 1-12 and
    returns the name of month as string
    value = int(month)
    if not (1 \le value \le 12):
             raise ValueError(value)
    return datetime (2000, month, 1). strftime ("%B")
```

#### You can do this:

```
from datetime import datetime
from rpclib.model.primitive import Integer, Unicode
from rpclib.decorator import srpc
from rpclib.service import ServiceBase

class NameOfMonthService(ServiceBase):
    @srpc(Integer(Ie=1,ge=12), _returns=Unicode)
    def get_name_of_month(month):
        return datetime(2000,month,1).strftime("%B")
```

#### And if you enable validation;

\$ curl localhost:9912/get\_name\_of\_month?month=3
March

Client . Validation Error

The string '13' could not be validated

## So, what's missing?

**Protocols**: JSON! ProtoBuf! XmlRpc! Thrift!

YAML! HTML! (The whole document)

**Transports**: SMTP! Files! SPDY! WebSockets!

and many other things! see the ROADMAP.rst in the source repo.

#### Additional Information:

## github.com/arskom/rpclib

This example and the presentation are in: examples/multiple\_protocols examples/validation.py