



An Implementation of the Profile Document.

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Overview

- Implementation of Brian's *Schema/Profile for Network Performance Measurements for Grids:*
 - Version 0.06
- As applied to:
 - IEPM-PingER and IEPM-BW measurement projects
 - I2 E2Epi OWAMP
 - RIPE-tt
- Work in progress

Characteristics

- path.delay.oneWay, path.delay.roundTrip
- path.loss.oneWay, path.loss.roundTrip
- **path.availability.roundtrip**
- path.bandwidth.achievable.TCP
- path.bandwidth.achievable.TCP.multiStream
- path.bandwidth.available
- hop.bandwidth.capacity, hop.bandwidth.utilized
- properties

The first stumbling block

- Seemed reasonable that characteristics are separate methods
- But naming convention is **NOT** language neutral
 - Based on GGF DAMED document
 - Some languages use periods for special purposes
- Delimiters
 - `path.delay.oneWay` -> `pathDelayOneWay`
- Or
 - `get(path.delay.oneWay:source:destination)`
 - `getAll(source:destination)`

Client

```
#!/usr/bin/perl

use SOAP::Lite;

my $characteristic = SOAP::Lite
  -> service('http://www-iepm.slac.stanford.edu/tools/soap/wsd/profile_06.wsd')
  -> pathDelayOneWay("tt81.ripe.net:tt28.ripe.net");

print $characteristic->{NetworkTestTool}->{toolName}, "\n";
print $characteristic->{NetworkPathDelayStatistics}->{value}, "\n";
```

- Currently only latest measurement
- Adding startTime:endTime
 - pathDelayOneWay("tt81.ripe.net:tt28.ripe.net", "20021220003957:20021220004157");

Demo Output

```
ripe-tt  
tt81.ripe.net  
tt28.ripe.net  
20030620113520.0623730421066  
20030620113520.1406199932098  
100  
1  
20  
0.078247
```

WSDL: input definition

```
<message name="Input">  
  <part name="target" type="xsd:string"/>  
</message>
```

```
target=source[:destination]
```

WSDL: characteristic definition

```
<message name="pathDelayOneWayOutput">  
  <part name="NetworkTestTool"  
        type="xsd1:NetworkTestToolType"/>  
  <part name="NetworkTestInfo"  
        type="xsd1:NetworkTestInfoType"/>  
  <part name="NetworkToolSetting"  
        type="xsd1:NetworkToolSettingType"/>  
  <part name="NetworkPathDelayStatistics"  
        type="xsd1:NetworkPathDelayStatisticsType"/>  
</message>
```


WSDL: definition of (xsd1) NetworkTestToolType subclass

```
<xsd:complexType name="NetworkTestToolType">  
  <xsd:sequence>  
    <xsd:element name="toolName" type="xsd:string"/>  
    <xsd:element name="toolVersion" type="xsd:string"/>  
    <xsd:element name="toolAccuracy" type="xsd:real32"/>  
  </xsd:sequence>  
</xsd:complexType>
```

path.delay.oneWay

- NetworkTestToolType->toolName = ripe-tt
 - Real time access to local copy of RIPE data
 - Master copy archived at RIPE-NCC
- NetworkTestToolType->toolName = owamp
 - Real time access to OWAMP central database
 - Owamp creates its own summaries
 - Number of events in a bin (how do we return multiple values)

path.bandwidth.achievable.*

- IEPM-BW uses several TCP tools
 - iperf, bbcp, bbftp, gridftp
- How should this be returned?
 - Input contains toolName?
 - Return 3 objects with the same name
 - Which should be the value of
\$characteristic->{NetworkPathE2EAchievableStatistics}->{value}

path.bandwidth.achievable.*

- E2EAchievableTCPStatistics
 - Average (value)
 - peak
 - Standard deviation, what about multiple streams

Adding: `path.availability.roundTrip`

- Based on PingER unpredictability
- `NetworkPathAvailabilityStatisticsType`
 - MTBF `uint32` 0
 - MTTR `uint32` 0
 - Downs `uint32` 0
 - Median-Outage-Length `uint32` 0
 - Value `real32` M

In General

- Time series
 - Ability to extract individual measurements for previously unthought of statistics (CDF, skew, kurtosis, error-free seconds, conditional loss ...)

Further Work

- *OGSA/OGSI*
- *Globus3*

Any Questions?

- Visit the documentation of the implementation
 - <http://www-iepm.slac.stanford.edu/tools/soap/MAGGIE.html>
 - Includes links to latest WSDL and XSD
- Send email
 - warrenm@slac.stanford.edu
- Profile:
 - <http://www-didc.lbl.gov/NMWG/NMWG-profile.html>

Some Issues

- Names with embedded periods
- Add time selection: `pathDelayOneWay("tt81.ripe.net:tt28.ripe.net", "20021220003957:20021220004157");`
 - Is it optional?
 - Return average value, what about a list of the component values
 - Is this a database query?
- `path.bandwidth.achievable.[TCP|disk].*`
- Characteristic names returned if requesting multiple characteristics:
 - `getAll(source:destination)`
 - Use of asterisk?
- Accessing service with multiple tools for a single characteristic – how to select the right characteristic:tool, if return all then how to know which is which
- `path.bandwidth.achievable.TCP.prediction`
 - How to do predictions, e.g. future time or another level
 - Type is still `E2EAchievableTCPStatistics`
 - Integrated/total property especially useful
- `path.hops.oneWay`
 - Single string, comma delimited list of hops?
 - Route change boolean
 - Cannot be summarized (median route)
 - `path.hops.roundTrip` asymmetric routing