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

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

#!/usr/bin/perl

use SOAP::Lite;

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

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

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

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>
<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)
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 unit32 0
  - Downs unit32 0
  - Median-Outage-Length unit32 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
  - Includes links to latest WSDL and XSD

• Send email
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• Profile:
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 E2E Achievable TCP Statistics
  - 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