Measurement Project

UW Network Measurement Project
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Overview

- Introduction
- Problem description
- Solution
- Status / Future
Who we are?

- Network Architecture & Tools
- Customers:
  - PNWGP
  - Pacific Wave
  - K20
  - University of Washington
  - Medical Centers
- Wide range of customers and applications that the network needs to support
Motivation

- Need to provide metrics describing end-user experience
- Need to quantify network performance as a whole
- Ability to measure up through the network stack
  - Easy extensibility
- Desire to measure from many points
Solution

- Use existing tools to build on
- Straightforward extensibility
- Inexpensive probes
- Easy deployment
Advisor

- Easy to extend
  - Clean APIs
  - Bundles
- Best of breed measurement tools (bundles)
- Adding new tests is very straightforward
 Modifications to Advisor

- Scheduler
- More generic arguments to tests
- Generic sink/source of events
- Configuration of measurements
Platform (Probe)

- EPIA VIA Mini-ITX
  - Inexpensive (<$200)
  - No moving parts
  - Rack-mountable
- Linux 2.4
- Java 1.4
- Advisor 1.x
Platform (Server)

- Apache / Tomcat
  - Configuration server
  - Data sink
  - Bundle distribution (not used yet)
- PostgreSQL
  - Data repository
  - Reports
  - Data mining
- RRDtool
  - Visualization
Architecture

A website is provided for looking at reports, visualizing the data and configuring tests.
Sample config

```xml
</node>
<node name="measurements">
  <map/>
</node>
</node>
<node name="pingtest">
  <map/>
  <entry key="interval" value="60000"/>
</map>
<node name="config">
  <map>
    <entry key="bundle" value="/netops/lib/jar/linux-ping.jar"/>
  </map>
<node name="targets">
  <map/>
  <node name="target_0">
    <map>
      <entry key="remotehost" value="128.95.120.1"/>
    </map>
  </node>
</node>
<node name="sinks">
  <map/>
  <node name="debug sink">
    <map>
      <entry key="type" value="CSinkDebug"/>
    </map>
    <node name="config">
      <map>
        <entry key="sinkkey0" value="sinkvalue0"/>
        <entry key="sinkkey1" value="sinkvalue1"/>
      </map>
    </node>
  </node>
  <node name="SOAP Sink">
    <map>
      <entry key="type" value="CSinkMeasurement"/>
    </map>
    <node name="config">
      <map>
        <entry key="SOAP_URL" value="https://barista.cac.washington.edu/measurement_sink/soap_dish"/>
        <entry key="SOAP_PROXY" value="urn:Measurement:CMesurementSink"/>
        <entry key="SOAP_METHOD" value="UploadMeasurement"/>
      </map>
    </node>
  </node>
</node>
</node>
<node name="dnstest">
  <map>
    <entry key="interval" value="60000"/>
  </map>
<node name="config">
  <map>
    <entry key="bundle" value="/netops/lib/jar/dnstest.jar"/>
  </map>
</node>
```
Sample graphs
Pilot

- 10 probes for about a year
- Data utilized for:
  - Network upgrades
  - Planning new network designs
  - Troubleshooting intermittent problems
- Remaining problems
  - reboot/dhcp
Possible next steps

- Get more probes
- Build other bundles
  - voip
  - Other custom apps
- Migrate to latest Advisor
Thanks!

- Questions?
- We're hiring software engineers :)
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