Status of perfSONAR Tools

Jason Zurawski
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Spring Member Meeting
Outline

• What is perfSONAR?
• Who is perfSONAR?
• Current Tools/Development Status
• Looking Ahead
What is perfSONAR?

• Performance Middleware
  • Set of protocol standards
    • Fosters interoperability between measurement and monitoring systems
  • Set of open source web services
    • mix / match (extend?) each to create a performance monitoring infrastructure
  • International consortium of partners
High Level Description

• Standards-based
• Modular
• Decentralized
• Locally controlled
• Open Source
• Extensible
• Customizable
Who is perfSONAR?

• perfSONAR is a joint effort:
  • ESnet
  • GÉANT2 JRA1
  • Internet2
  • RNP

• ESnet includes:
  • ESnet/LBL staff
  • Fermilab

• Internet2 includes:
  • University of Delaware
  • Georgia Tech
  • SLAC
  • Internet2 staff

• GÉANT2 JRA1 includes:
  • Arnes
  • Belnet
  • Carnet
  • Cesnet
  • CYNet
  • DANTE
  • DFN
  • FCCN
  • GRNet
  • GARR
  • ISTF
  • PSNC
  • Nordunet (Uninett)
  • Renater
  • RedIRIS
  • Surfnet
  • SWITCH
But What is it REALLY?

- Network measurement tools
  - Network measurement archives / points
  - Discovery
  - Authentication and authorization
  - Data manipulation
  - Resource protection
  - Topology
Current Development

• Network measurement archives/points
  • Data Gathering / Storage

• Discovery
  • Service Discovery/Catalog

• Authentication and authorization
  • Centralized Authentication/Identity management (In progress)

• Data manipulation/Presentation
  • Prepare/Present data in different formats (N/A yet)

• Resource protection
  • Limit access to and quantity of data from other services.

• Topology
  • Glean useful network makeup/state.
Current State of the Art

- **Network measurement archives**
  - RRD/SQL MA (Maturing, Deployed)

- **Discovery**
  - LS (Maturing, Limited Deployment)

- **Data manipulation/Presentation**
  - perfSONAR UI (Maturing)
  - Google Maps
    - Utilization
    - Topology
  - Speedometer / Utilization
Measurement Archives/Points

• MA/MP Service(s)
  • Publishes measurement data
  • Accepts and writes measurement data

• Formats:
  • RRD (Round Robin Database) Format
  • SQL (MySQL currently) Format
  • Native XML (eXist, BDB) Format

• Available in many flavors
  • Java
  • Python
  • Perl
Measurement Archives/Points

- Currently Deployed:
  - Geant
  - RNP (Brazil)
  - Internet2
    - Limited 'new' network deployment
    - Full monitoring as network comes up
Measurement Archives/Points

address: 128.4.40.10
index: 101001
S. Time: 1177340830
E. Time: 1177340850
Res: 5 seconds

1177340835 = 30.27
1177340840 = 41.72
1177340845 = 22.33
1177340850 = 39.23
1177340855 = 32.76
Lookup Service

• LS Service:
  • Use of native XML DB backend (eXist currently, BDB soon)
  • Service registration operations
    • (Register/De-register/Refresh/Query)
  • Lookup request and reply interface, using XPath/XQuery
  • Client API to help build XQuery based request messages (In Progress)
Lookup Service

- LS Service:
  - Currently limited deployment for use in 'single domain' situations ('local' lookup)
  - Multi-domain use in development
- Flavors:
  - Java
  - Perl (In Progress)
Lookup Service

Data Query...

MA

Register...

Data...

MP

Register...

LS

address: 128.4.40.10
index: 101001

Client(s)
GUI/Data Presentation

- perfSONAR UI
  - Visualization tool (Java Client) that allows seamless access to deployed MA instances (utilization data commonly).

- Google Maps
  - Similar to perfSONAR UI
  - Map of Monitored Routers (Long/Lat Based)
  -Clickable Utilization Statistics

- perfSONAR Speedometer
perfSONAR UI

- Easy to use / powerful GUI client
  - capable of querying a range of perfSONAR services.
- targets:
  - NOC and PERT staff
  - Research that demands network performance information
  - End-users
Google Maps

• Demo during Performance Update Tomorrow
  • Map routers across a gmap based on LOC records
  • 'clickable' balloons will trigger LS/MA queries for data
  • Display Utilization/Summary information
Google Maps
perfSONAR Speedometer

- Demo during the HOPI session
  - perfSONAR-PS (Perl based) MP/MA to extract and store SNMP Data
  - Javascript based GUI to display utilization, current speed
perfSONAR Speedometer
Looking Ahead

- Improved installer(s) (Perl, Java)
- Deployment to I2, Local Partners
- Additional data sets will be come available over time
- Visualization Improvements
Resources

- Web:
  - www.perfsonar.net
  - wiki.perfsonar.net
- Mailing List:
  - mail.internet2.edu/wws/info/perfsonar-user
- Me:
  - zurawski@internet2.edu