E-Center Portal

Developing a Network Path & Performance Center

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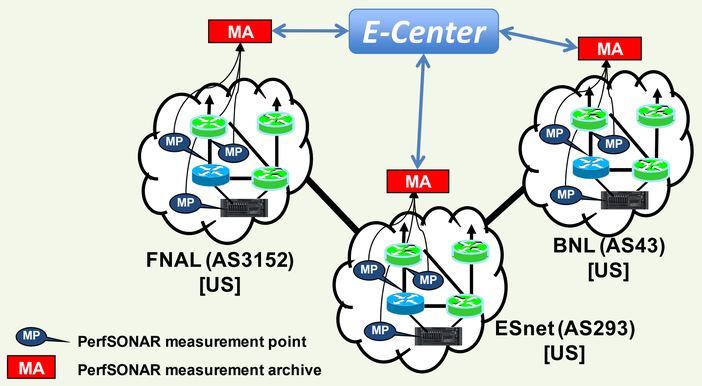
CHEP 2010; October 18-22; ASGC; Taipei, Taiwan

Problem Space

- PerfSONAR = PERFormance Service-Oriented Network monitoring ARchitecture
- PerfSONAR technology offers framework for standardized retrieval of network path data
  - PerfSONAR tools provide active measurements as well
- No coherent view of this data from an end-to-end perspective
- No central location to find the data or help in understanding it

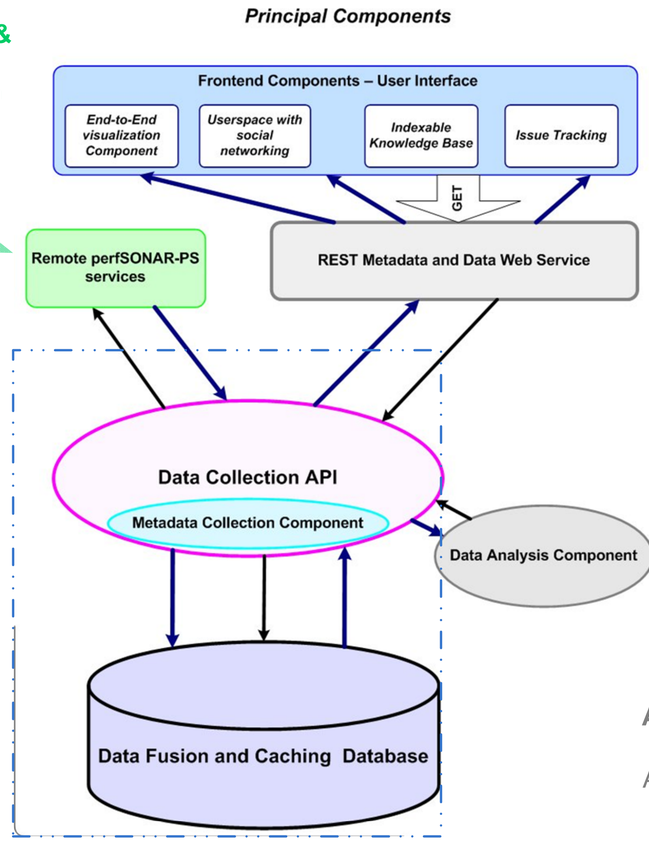
E-Center Solution

- A central network monitoring data collection system that crosses network domain boundaries
- A "weather" center for users to find out about conditions across their network path



Architecture

Network Monitoring & Measurement Data
(permanently archived within PerfSONAR infrastructure)

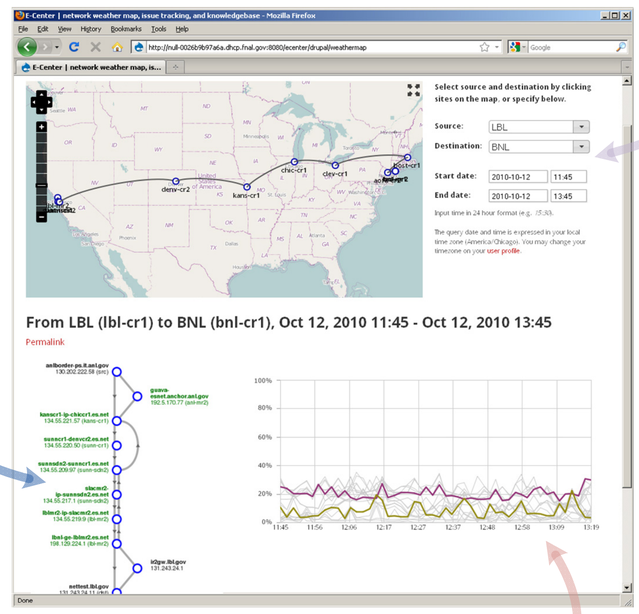


Back End (Data Collection Service)

External Data Analysis Services
(Forecasting & AnomalyDetection)

User Interface

User-selected source & destination
(map or menu selectable)



Hop-by-hop network path
(forward & reverse)

Link utilization on selected hop
(forward & reverse)

Objectives

- Dramatically improve network problem diagnoses abilities
- Provide end-to-end & hop-by-hop network path data extending across network domains
- Create portal for end users to capture and discuss network path-related issues with experts
- Develop traffic forecasting capability for user-specified network paths
- Scope - Enhance DOE Office of Science cyber infrastructure monitoring & performance measurement

Development Status

- Current Status:
  - Functional prototype
  - Hop-by-hop path capture, with utilization
  - End-to-end throughput, one-way delay, & RTT measurements
  - User "issue" tracking capability
  - Forecasting algorithm(s) developed
  - PerfSONAR TraceRoute MA service developed
- Future Features:
  - Hop-by-hop packet discards & errors
  - Integrated forecasting & anomaly identification support
  - Social networking (Web 2.0) collaboration capability