Internet2 Demonstrations at SC07

INTERNET 2

perfSONAR

perfSONAR simplifies the troubleshooting and evaluation of performance issues across multiple networks. The perfSONAR framework is an interoperable set of services implementing a performance middleware that allows users to collect, access, and evaluate network performance metrics. By using a secure, scalable, and federated approach, perfSONAR provides passive and active measurement to ensure that advanced networks operate at the highest quality and speeds possible.

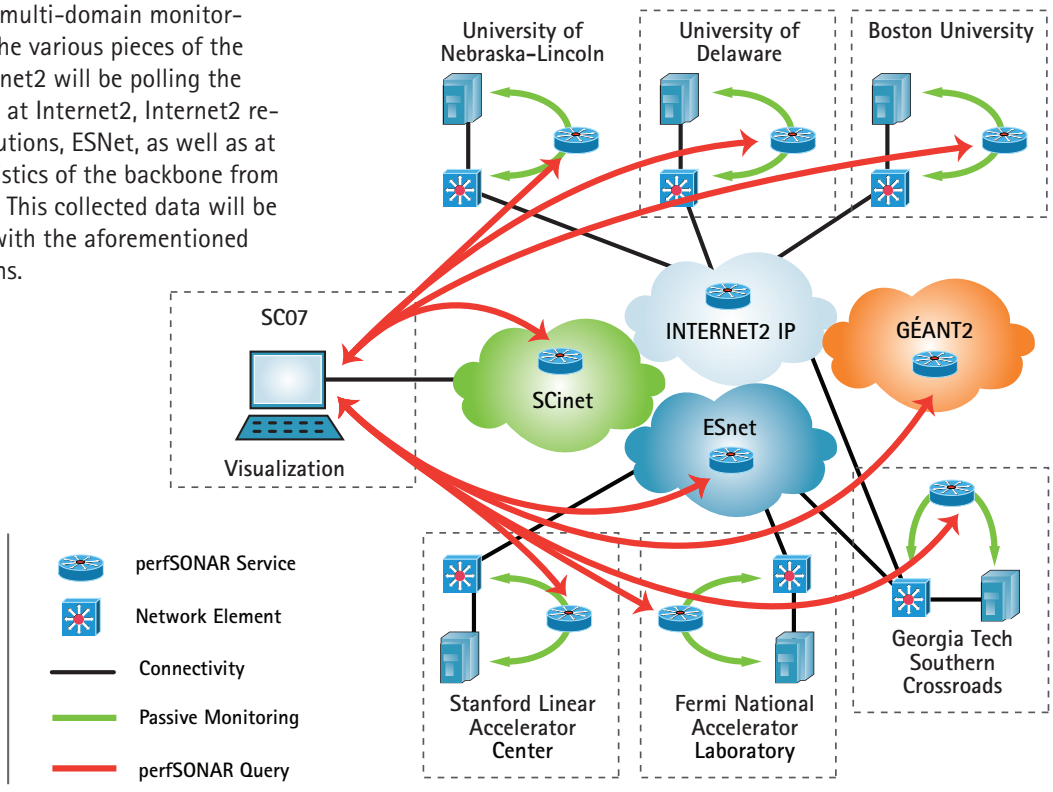
perfSONAR plays a fundamental role in the on-going monitoring of ESnet, GÉANT2, as well as the Internet2 Dynamic Circuit Network, the Internet2 IP Network, and regional Internet2 Connectors.

SCinet, the high-performance network built to support SC07, is using perfSONAR to expose performance monitoring information for conference participants and network engineers. The performance information monitored by perfSONAR at SC07 is being visualized in several ways:

- **perfOMeter** – A web based network speedometer for both live and historical data
- **Google Maps** – A geographical view of network performance
- **perfAdmin** – An administrative tool for managing perfSONAR deployments
- **perfSONAR-UI** – A Java client capable of supplying various network visualizations

Demonstration of the Various Components that Comprise the perfSONAR framework

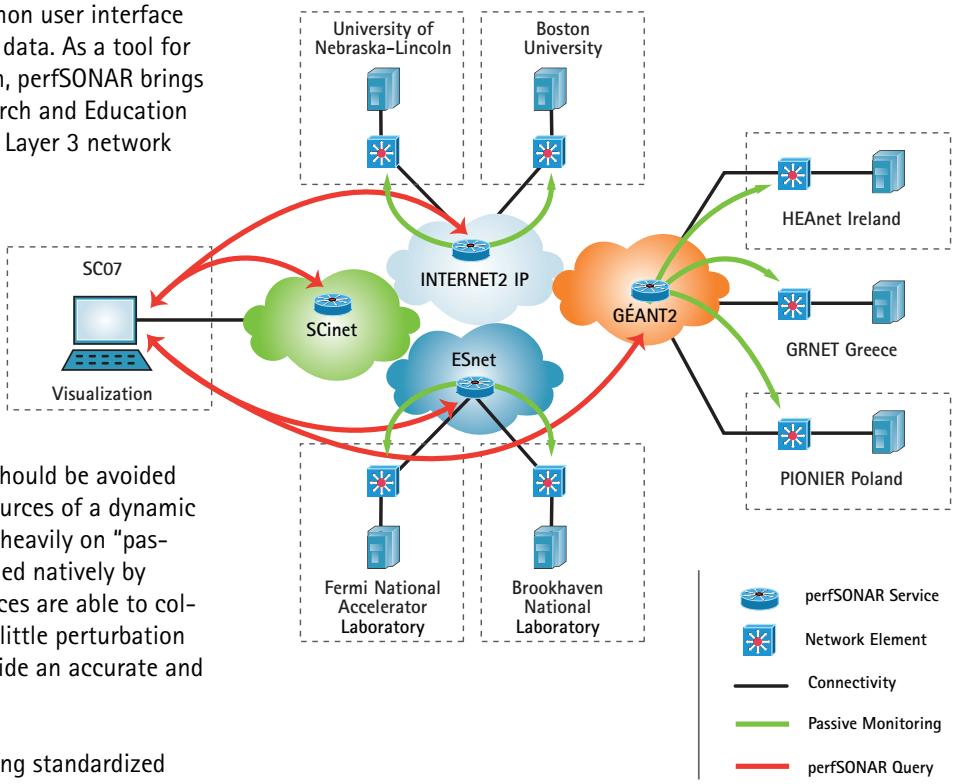
This demonstration shows a multi-domain monitoring deployment, exercising the various pieces of the perfSONAR framework. Internet2 will be polling the main instance of perfSONAR at Internet2, Internet2 regional connectors and institutions, ESNet, as well as at GEANT2 (which gathers statistics of the backbone from numerous European NRENs). This collected data will be displayed and manipulated with the aforementioned perfSONAR client applications.



Monitoring and Informational Support for the Internet2 Dynamic Circuit Network and Phoebus demos

perfSONAR demonstrates a multi-domain framework for performance measurement using a common user interface to analyze and display essential network data. As a tool for network troubleshooting and observation, perfSONAR brings value to the network research and Research and Education communities through the analysis of the Layer 3 network and also the less visible Layer 2 network.

perfSONAR is designed to closely integrate with the surrounding environment, such as the DC Network. When deployed, perfSONAR is able to provide instant performance feedback in support of on-demand circuit provisioning.



On-demand, or "active" measurements, should be avoided on the limited and time constrained resources of a dynamic circuit. The perfSONAR framework relies heavily on "passive" measurements such as those provided natively by many network devices. perfSONAR services are able to collect and store these measurements with little perturbation of the underlying mediums and still provide an accurate and complete view of network performance.

perfSONAR stores and transmits data using standardized methods developed in conjunction with the Open Grid Forum (OGF). This format, developed using the eXtensible Markup Language (XML), enables flexibility between all perfSONAR services and allows for easy expansion as additional protocols and use cases are devised. A typical interaction between perfSONAR services, for instance a visualization client and a measurement archive, will involve the exchange of XML-formatted messages.

perfSONAR is a joint collaboration between:

ESnet Energy Sciences Network · GÉANT2 · Internet2 · RNP

Internet2 perfSONAR SC07 Demo participants include:

Fermilab · Georgia Institute of Technology · Indiana University · OpenGridForum · SLAC · University of Delaware