



pS-Performance Toolkit

psps.perfsonar.net/toolkit

Despite the availability of faster and faster networks, advanced networking application performance all too often falls short of expectations. A key reason is the significant challenge posed by diagnosing network performance problems across multiple domains.

Enter the **pS-Performance Toolkit** (formerly called the pS-Network Performance Toolkit). The pS-Performance Toolkit helps meet this challenge by providing a pre-configured suite of network performance tools—recommended and packaged by Internet2—designed to collect, store and analyze network performance data.

Easy to use

“The pS-Performance Toolkit provides an easy means for sites to deploy and configure perfSONAR monitoring and measurement tools,” said Phil DeMar, head of wide-area networking at Fermi National Accelerator Laboratory (Fermilab). “We expect the Toolkit’s ease-of-use factor to facilitate rapid development of a cross-domain monitoring infrastructure in support of our collaborations.”

Developed through a collaboration and integration of tools from ESnet, Fermilab, Georgia Institute of Technology, Indiana University, Internet2, Pittsburgh Supercomputing Center, SLAC National Accelerator Laboratory, and the University of Delaware, the perfSONAR-enabled Toolkit was introduced in the summer of 2008 at the ESCC/Internet2 Joint Techs Workshop and has quickly become a

key enabler of several high-profile science projects that depend on high-performance, distributed computing.

The latest pS-Performance Toolkit release, version 3.1, aligns with the project’s roadmap toward greater ease of use and more graphical displays. Available as a downloadable live CD image, the Toolkit can be burned to disc and used to turn any Intel-based computer into an active network performance node.

Users will immediately notice a more streamlined startup process, and will be able to use the Toolkit’s functionality even before it is configured and customized. The configuration process is driven by a wizard-like interface, and typically takes under 30 minutes to complete. The tools are available as soon as the CD boots up, and through the configuration process, users can register their performance node with the global perfSONAR infrastructure, allowing them to locate and share information with other registered performance nodes. With these tools, researchers and network engineers can not only monitor and debug their own networks, but access external network information, enabling them to diagnose and solve end-to-end performance problems.

More interfaces, more functionality

The Toolkit features several new interfaces, including data viewing enhancements, and new administration screens that make it easier to fine-tune settings. Users can quickly set up appropriate access and use policies to ensure that their Toolkit-created performance node only consumes the network resources and shares the information deemed appropriate by the administrator.

Significant functionalities have also been added. The most important is OWAMP support, added within perfSONAR-BUOY, which enables regular one-way latency monitoring, a long-standing request from the network research community. Driver enhancements have been added in response to user requests, so setup is smoother, with more equipment brands supported out of the box and less troubleshooting required.

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—Phil DeMar, Fermilab

FOR MORE INFORMATION



perfSONAR-PS web site
psps.perfsonar.net

pS-Performance Toolkit
psps.perfsonar.net/toolkit

Internet2 performance tools
internet2.edu/performance

perfSONAR community web site
perfsonar.net

psps.perfsonar.net

Removing network performance barriers

Research and Education Data Depot Network (REDDnet), a National Science Foundation-funded infrastructure project, provides distributed storage for data-intensive collaboration among U.S. researchers and educators in a wide variety of application areas, including the Large Hadron Collider (LHC) project. Scientists involved in the LHC CMS or ATLAS experiments use REDDnet “depots” to access their LHC data. In collaboration with Internet2, REDDnet deployed tools from the pS-Performance Toolkit at several of its depots, enabling the diagnosis of sub-optimal network performance problems and the establishment of a long-term monitoring and analysis infrastructure to help guarantee future performance.

Paul Sheldon, physicist with Vanderbilt University and principal investigator for REDDnet, noted the importance of constantly monitoring and debugging network performance to and from the data depots: “The tools in the pS-Performance Toolkit have been extremely valuable in our work. By leveraging these performance technologies, we have been able to better isolate problems on the network and resolve them quickly resulting in better data throughput and better use of our network capacity investments to support our scientific research.”

Telepresence initiatives represent another application area especially dependent on optimal network performance. Tools from the pS-Performance Toolkit were used to support a telehealth demonstration leveraging telepresence technology at Internet2’s 2009 Spring Member Meeting. Tools such as perfSONAR-BUOY and BWCTL—both available via the Toolkit—showed network engineers the “big picture” of network performance over the long-haul network route, and also helped them isolate network segments that did not meet the service’s demanding jitter and latency requirements. The demonstration underlined why the pS-Performance Toolkit will be a critical part of the Internet2 community’s implementation plan for telepresence services.

Development roadmap

Another major pS-Performance Toolkit release is anticipated in early 2010, with an even more streamlined user interface and further enhanced graphic visualizations. Additional functionality will be included, and the Toolkit will be installable directly from network accessible software repositories.

Questions and feedback on the pS-Performance Toolkit can be directed to the psps-users@perfsnar.net email list.

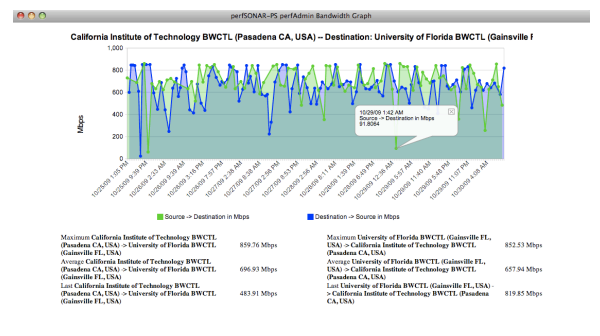
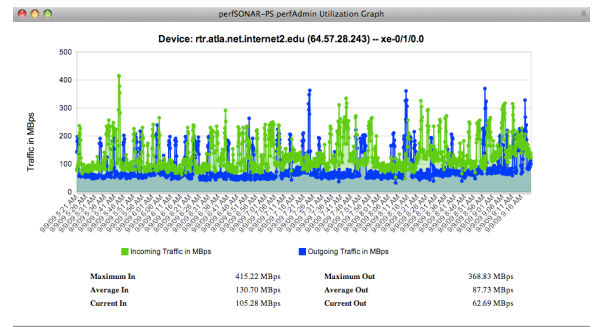
Developed in partnership with:



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The pS-Performance Toolkit home screen lists services currently running, not running or disabled along with version information. Menu links are available for user tools, service graphs, administration and documentation.



Graphs like these can be created to show the results of individual tests. These graphs show results for utilization (above) and bandwidth.