

Joint APAN-Internet2-TEIN*CC

perfSONAR Workshop

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Date: 11 August 2014
Time: 9.00am – 5.00pm
Venue: APAN38th Meeting site – National Chi Nan University (NCNU),
Nantou, Taiwan

Interested participants must fill up an application form and send their request to TEIN*CC (tech@teincc.org) **by Friday, 20 June 2014**. Shortlisted participants will be notified by TEIN*CC by 4 July 2014.

Number of seats: 7

Abstract

perfSONAR is an open source software suite that provides a robust set of network performance monitoring tools. These tools make it easier to solve end-to-end network performance problems on paths crossing different network domains, as well as local monitoring. The perfSONAR toolkit provides a federated performance environment that is now the defacto measurement standard deploy on REN globally.

The proposed workshop will introduce the concept of network performance, and tools monitor tools. We will present an overview of network performance measurement tools and techniques, focusing on the deployment of the perfSONAR toolkit. Attendees will learn how to install and use perfSONAR, and how to integrate their testing needs with that of the large research community. Goals of this tutorial include familiarizing attendees with the proper way to install and configure software, as well as how these tools aid in debugging complex problems.

Tutorial Goals

Participants will be given instruction through lecture, as well as hands-on activities. The primary goals of the tutorial are:

- Install, configure, operate, and maintain measurement infrastructure
- Use performance measurement tools to diagnose network problems
- Interpret historical measurement results
- Learn the causes of performance abnormalities, and mitigation techniques

Tutorial Relevance

Global scientific innovation requires use of the network. Users, resources, and data sets are often physically distributed, thus placing extreme emphasis on the importance of network reliability and performance assurance in the overall research workflow. Network engineers are frequently asked by the end users about the performance of the network. With the perfSONAR infrastructure deployed we can better predict as well as answer the user questions on the network performance.

As the R&E community increases capacities beyond 100Gbps, grows the number of users and devices that are connected, and reaches into new locations around the globe, simple performance problems will still remain. Addressing the concerns through software and knowledge transfer will prepare those on the front lines to innovate without boundaries.

Tutorial Content

The tutorial content will broach the following subjects:

- Overview of Network Performance Considerations
- Deployment of the pS-Performance Toolkit (hardware selection, deployment strategies, configuration)
- Overview and Demonstration of Measurement Tools (Ping, Traceroute, OWAMP, BWCTL, NDT)
- Common debugging strategies

Tutorial Outline

The following outlines the full day workshop:

- Introduction to Performance Measurement and Monitoring
- Performance Primer, How TCP works
- Performance Primer, How TCP works (Cont.)
- Hardware Considerations
- Hands-on – Configuration of Remote Measurement Hosts
- Network Architecture Overview and Machine Placement
- Hands-on - Interpretation of Measurements from Remote Hosts
- Hands-on – Using Performance Tools
- Debugging Strategies
- Measurement Narratives and Use Cases in ASIA.
- Closing Remarks

Demonstration and Exercise Description

This tutorial features a hands-on component consisting of virtual servers, located offsite, which participants will access when installing the pS-Performance Toolkit software. Each participant will be given access to these resources before the workshop, and will continue to have access for a short period of time afterwards to perform experiments and become familiar with the operational requirements.

The following sections will detail the expected interactions by participants, the makeup of the testbed, and the prior experience in setting up/testing these proposed exercises.

Hands-on Activities

Participants will use their personal computers to access the remote testbed. This will be done through graphical web browsers and SSH clients. The following activities are planned:

Users will access the remote machines via the web browser and will be instructed on the proper way to configure basic administrative and security policies.

Users will configure regular performance tests between each other and with stationary beacons located on major research and education networks.

Users will access the machines via SSH and experiment with command-line tools.

After a period of data collection, users will interpret the results of regularly scheduled network tests.

Pre-requisite

The participants should have some understanding of Network protocols and preferably be the network engineer of an NREN or campus network. Participants must bring their own personal laptops.

Selection criteria

Participants will be selected based on the following criteria:

- Relevance to the participant work
- NREN support for the participant
- PerfSONAR deployment possibility

Follow-up after workshop

The participants are expected to set-up perfSONAR at their organisations after the workshop.