

CAL-ITEC

Report

Jan 04

Prepared by Kevin Walsh
kwalsh@sdsc.edu

This report is a summary of recent and current activities of the CAL-ITEC. We have one pet project, the Laptop LectureCast Platform, and are moving ahead with several evaluations of passive monitoring. To enumerate our activities:

- 1) Presentation at Western Cooperative for Educational Telecommunications (WCET) on the Laptop LectureCast Platform.
- 2) Participation in Bandwidth Challenge at SC2003.
- 3) Planning and implementation start for comparative passive monitoring project on Abilene and CalREN circuits
- 4) Planning and implementation start for passive/active platform for campus departmental placement.

Descriptions:

The Laptop LectureCast Platform is a poor man's version of the MIT Opencourseware project. Basically, we give a faculty member teaching a lecture style course a laptop, a wireless livelier, and a mini-DV cam and an orientation that enables them to go into any lecture hall with decent network connectivity and be set up to webcast their class in six minutes. In addition to good student response, we have begun studying the relative performance of the ISPs that students use to access campus resources. Several interesting questions arise, such as why the differences among ISPs, and what is the impact of potentially hundreds of 300K streaming video flows? See diagrams on following pages for illustration.

For the Bandwidth Challenge, we used our Spirent 10 GigE gear to carrying out measurements for the BWC. The results page credit the Network Performance Reference Lab that is part of the CAL-ITEC.

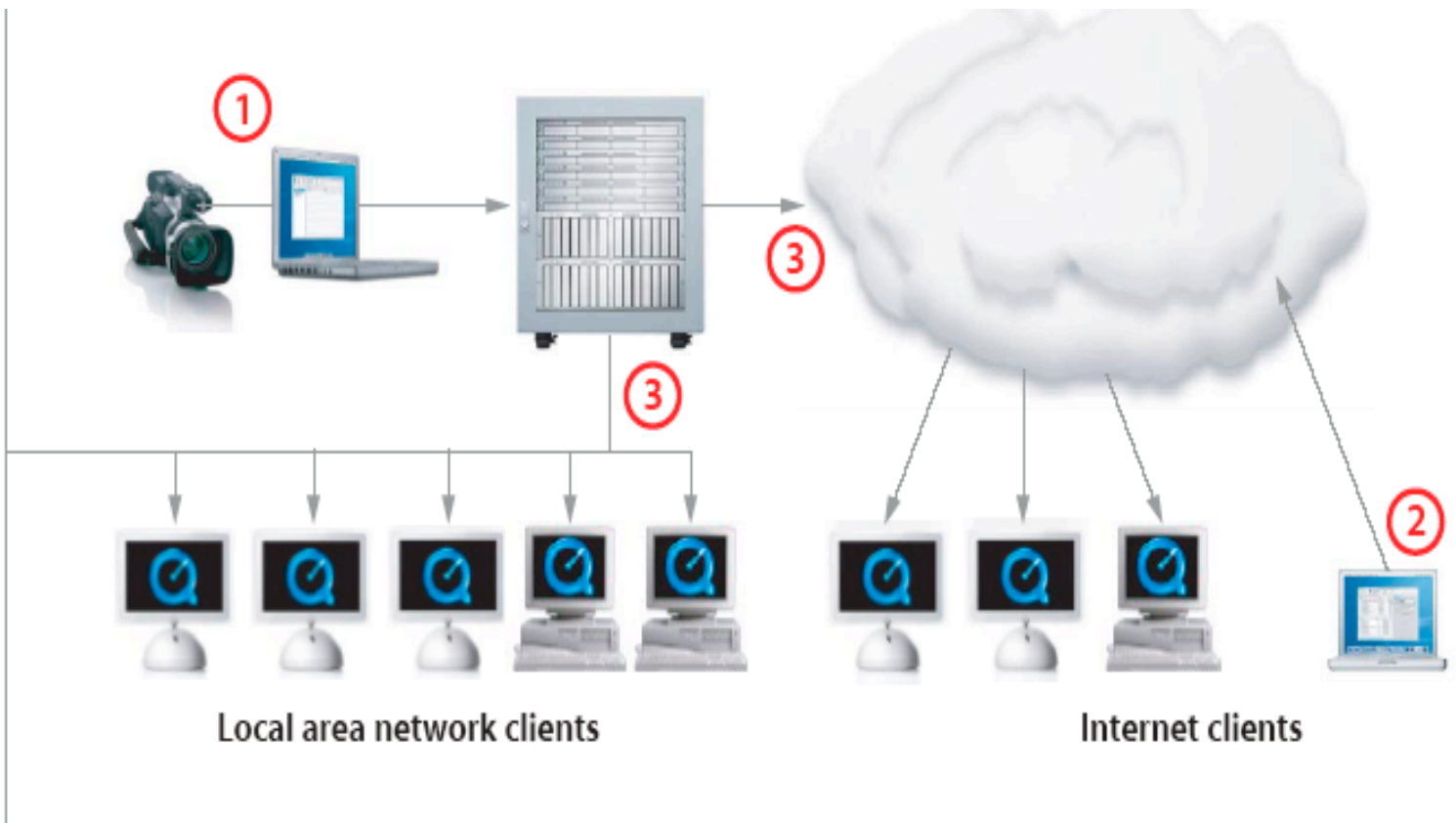
We have initiated a collaborative passive monitoring project with CAIDA, Netscout, and Network Instruments. We have placed multiport regen taps on all of our external GigE links to Abilene and CalREN. The regen taps allow us to concurrently connect multiple pieces of monitoring gear to the same circuit. This with will have Netramet from CAIDA, and RMON from both Netscout, and Network Instruments. Other passive monitoring technology that will be included

is CAIDA's Coralreef and Inmon's flow console. The Inmon console supports Sflow, Cflow, and Netflow.

For our campus departmental efforts on end-to-end testing, we are putting together some multipurpose platforms that will have active and passive capabilities. We are evaluating a platform that consists of dual processor AMD rack mount, a control net Ethernet interface, a RMON interface, and a GigE active interface.

We carried out some initial testing this week between SDSC and the Keck Lab, a lab across campus that uses the campus network to access Blue Horizon, and in turn Abilene. Our testing to date indicates that the network itself had the end-to-end performance that meets the stated requirements of the researcher. At this juncture, we simple use iperf and bftp to determine performance between SDSC and the remote lab from our reference machine. Low and behold the researcher cannot achieve the same level of performance. Thus, the next steps are tuning, and application profiling using the RMON technology.

Conceptual Diagram Laptop LetctureCast Platform



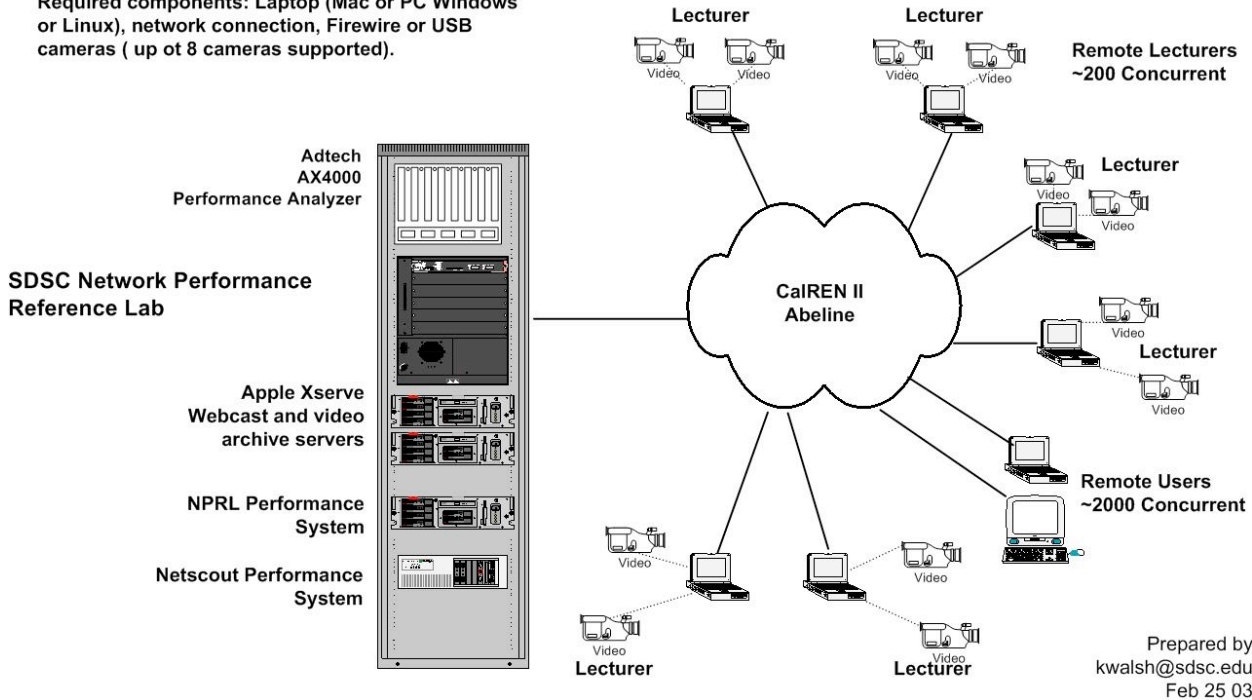
(1) and (3) Laptop with consumer level mini-DV camera. The presenter uses a wireless lavalier. Lecture is recorded and concurrently webcast and archived to streaming server. Network clients receive webcast stream or on-demand archive from streaming server.

Laptop LectureCast Platform Project Conceptual Diagram

Objectives:

- 1) Test and measure relative performance of three different Webcast platforms per number of users, unicast, multicast. end-to-end from lecturer to server to end user.
- 2) Assess impact of application on network.
- 3) Assess educational content delivery using Webcasting and ability of lecturer to assimilate.
- 4) Assess student ability to assimilate the technology, and effectiveness of learning experience.
- 5) Investigate various methods of student testing, participation and feedback over the network.

Required components: Laptop (Mac or PC Windows or Linux), network connection, Firewire or USB cameras (up to 8 cameras supported).



CAL-ITEC Passive Monitoring Evaluation Project

Participants include CAIDA, Netscout, Network Instruments, and Inmon

