
SWITCH

The Swiss Education & Research Network

Tools for Inter-Domain Measurement

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Introduction

Requirements

OWAMP

BWCTL

Web100 NDT server

Reasons for measurement:

research (how much can we achieve?)

SLA verification (can I get as much as they tell me?)

**troubleshooting (application does not work as desired...
is it the network?)**

What's the most important reason?

TROUBLESHOOTING (NOC point of view :)

Something does not work, we need to fix it

Goal: be able to debug a path from one end within your domain to another end out of your domain (find the bottleneck/problem zone)

Solution: access to well-connected workstations in other domains with measurement / troubleshooting tools

allows to divide and conquer (where is the problem?, fingerprinting)

Example: looking glass (traceroute, ping), bwctl (TCP throughput), owamp (one-way delay/loss/jitter)

Intra-domain: root access to dedicated machine for measuring

=> you can do whatever you like

Why can't we just have a special machine with root access in each network?

control - damage control

interference (with your own measurements)

cost

- hardware
- maintenance
- (test-)traffic

security

- ip based... machine is in another domain

accountability

- who did what? (who can i blame when something goes wrong)

easy, low cost installation / deployment

- no license cost
- off the shelf hardware
- easy configuration / setup

Authentication & Authorization

- identify user (IP-Address/AES/certificate)
- assign class

Policing

- class based (according to AA)
- specific limits according to class

Scheduling

- avoid conflicts of resources (only locally)

IETF standard protocol for one-way active measurement
Implementation by Internet 2 (owampd, owping)
allows authentication/authorization by AES key
policing (users/IP-range)
scheduling

for more information: <http://owamp.internet2.edu>

BWCTL = Bandwidth Control

wrapper around iperf

**adds simple authentication and authorization with AES
keys**

scheduling

policing

for more information: <http://bwctl.internet2.edu>

NDT = Network Diagnostic Tester

measure TCP throughput from and to server

analyses connection

can detect configuration issues (buffer size, duplex mismatch)

server: needs Web100 kernel (linux)

user-friendly

– for clients it's just a regular web-server with a java applet

firewall-friendly

more information: <http://ndt.internet2.edu>

by the tools mentioned here.

**Let us know if you have installed a measurement node with
any of the tools mentioned.**

We can setup mutual access to our measurement stations.

Contact: noc@switch.ch

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