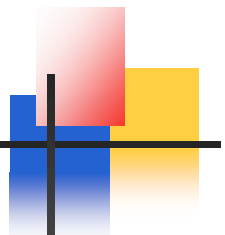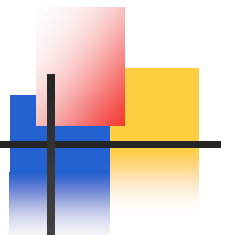# "Bandwidth Estimation Tool Testing: Initial methods and results from the CalNGI lab"

Introduction

- Tools to be tested:
  - End to end tools: Pathrate, iperf and sprobe
  - Hop-by-hop tools: Pathchar, Pchar, Pipechar
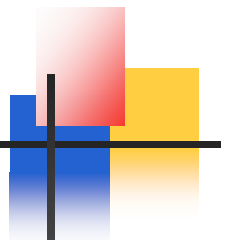
Introduction

- All of these tools measure "capacity" of link, except for iperf

    - Testing done under controlled conditions in CalNGI lab

Characteristics

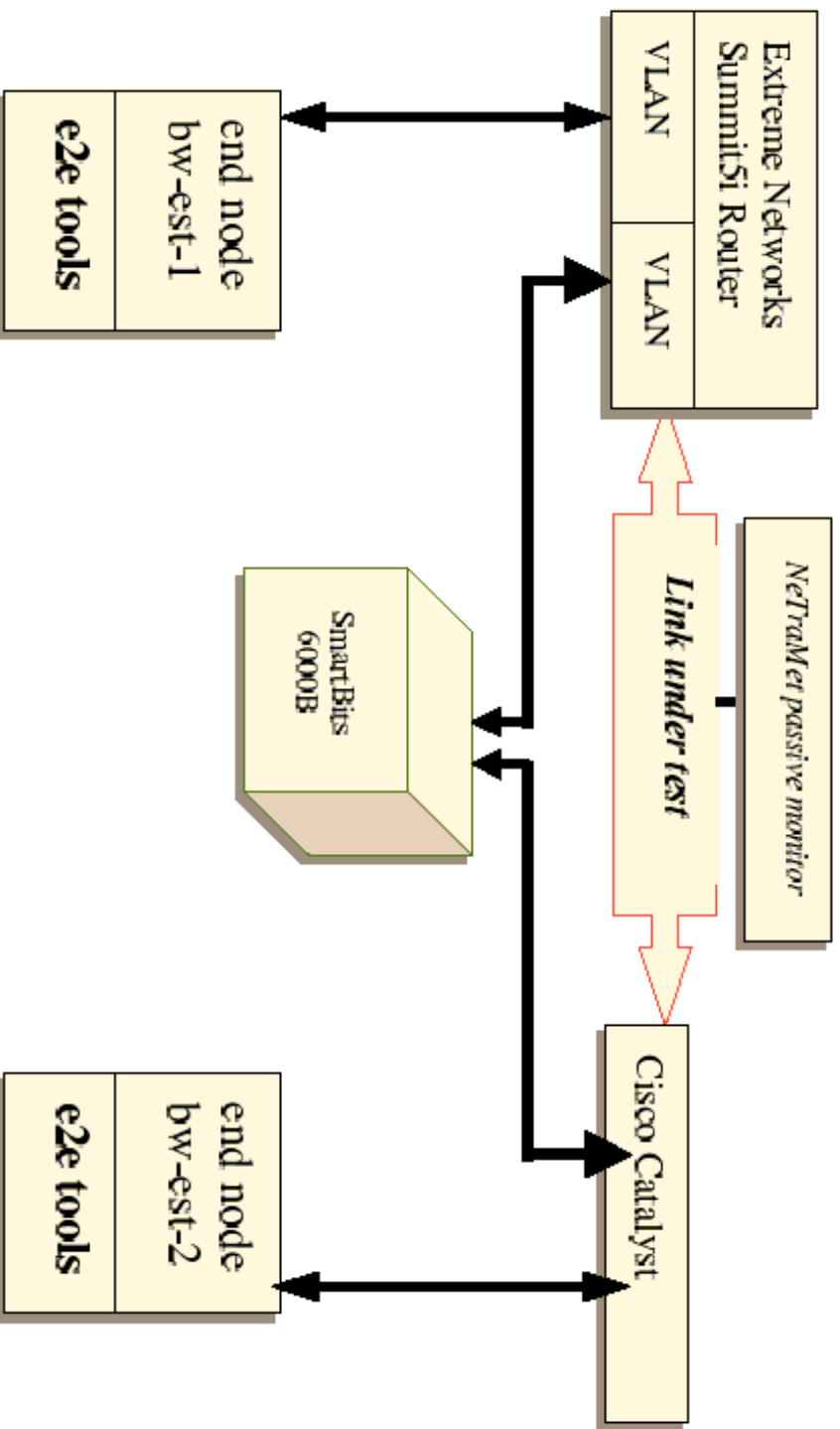Attempt to charecterize tools based on:

- Accuracy
- Time to measure
- Susceptibility to cross-traffic
- Consistency
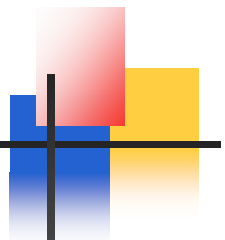- Intrusiveness (Overhead on network)

Testing Infrastructure

- Traffic Generation using Smartbits

- Cisco Catalyst switch and Extreme Summit Router used to connect end-nodes

Testing Infrastructure

e2e tools	end node bw-est-1

Extreme Networks Summit5i Router	
VLAN	VLAN

e2e tools	end node bw-est-2

Cisco Catalyst

SmartBits 6000B
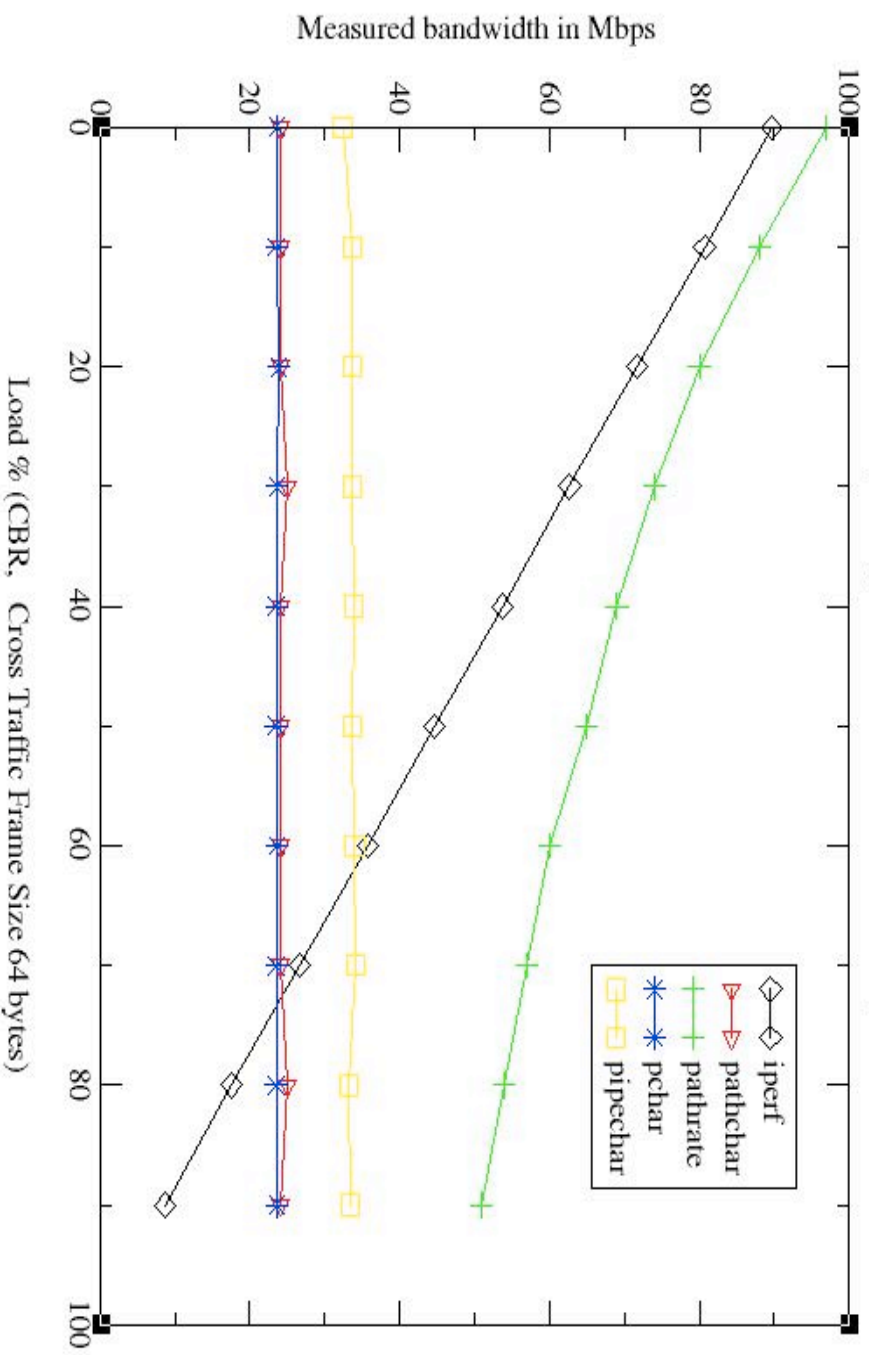
Link under test

NeTraMet passive monitor

Cross Traffic

- Constant Rate IP/UDP Traffic with a single frame size

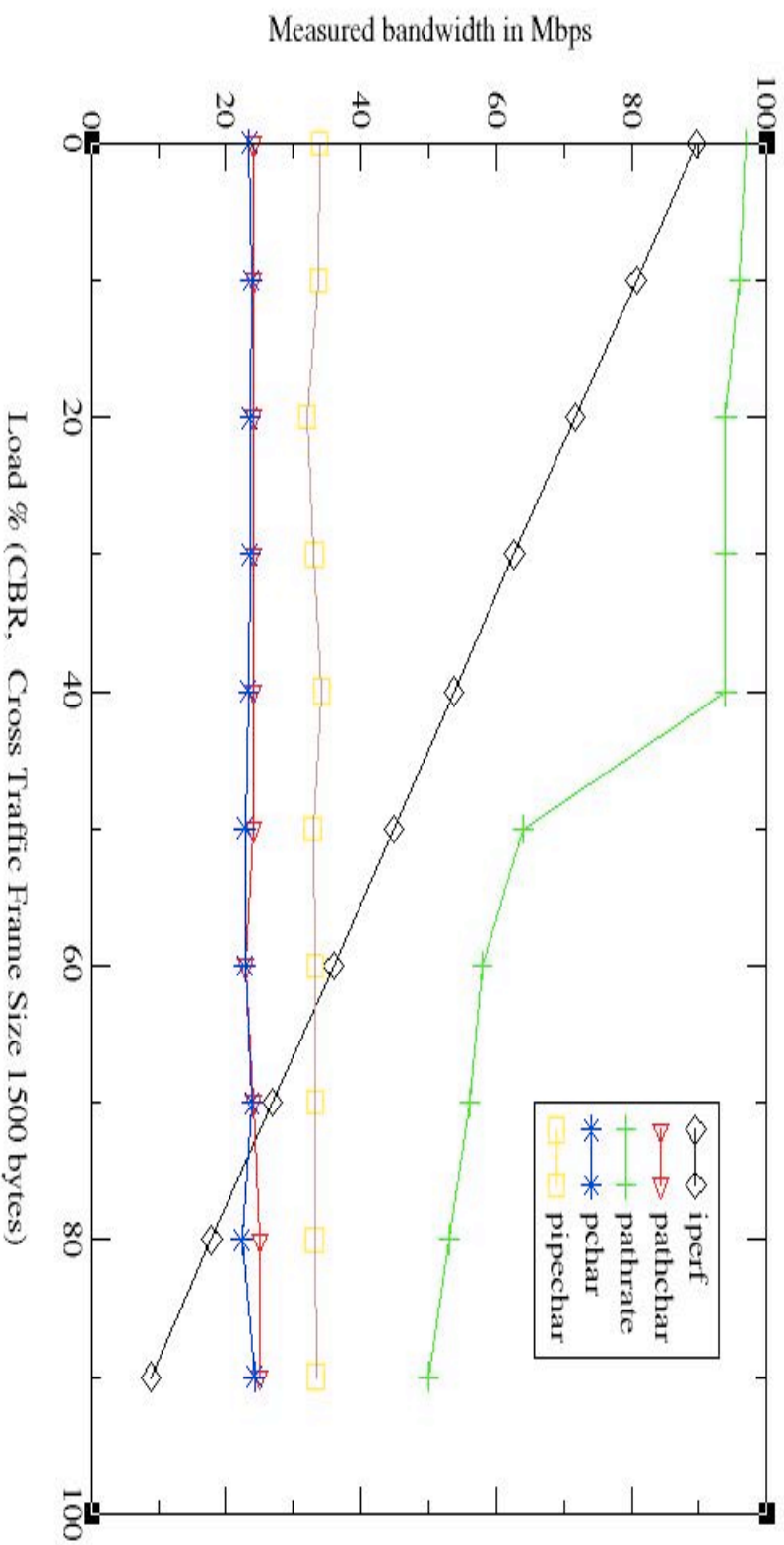- Trying to generate TCP streams
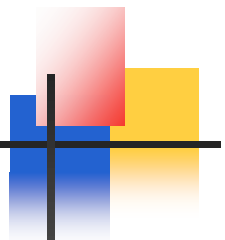
Initial results

Measured bandwidth of tools
2-hop configuration with bottleneck 100 Mbps

Initial results

Measured bandwidth of tools
2-hop configuration with bottleneck 100 Mbps

Planned tests

- Run multiple flows
- TCP flows
- Multiple hop tests
- Distribution of packet sizes : Open

Thanks!