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OSNT: Open Source Network Tester

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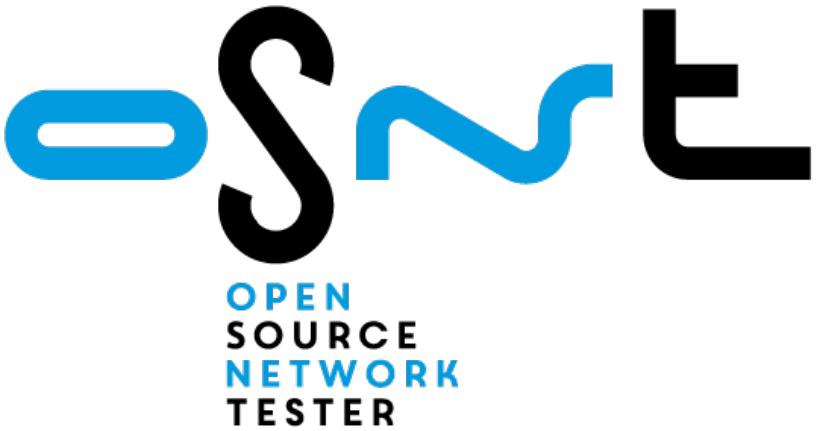
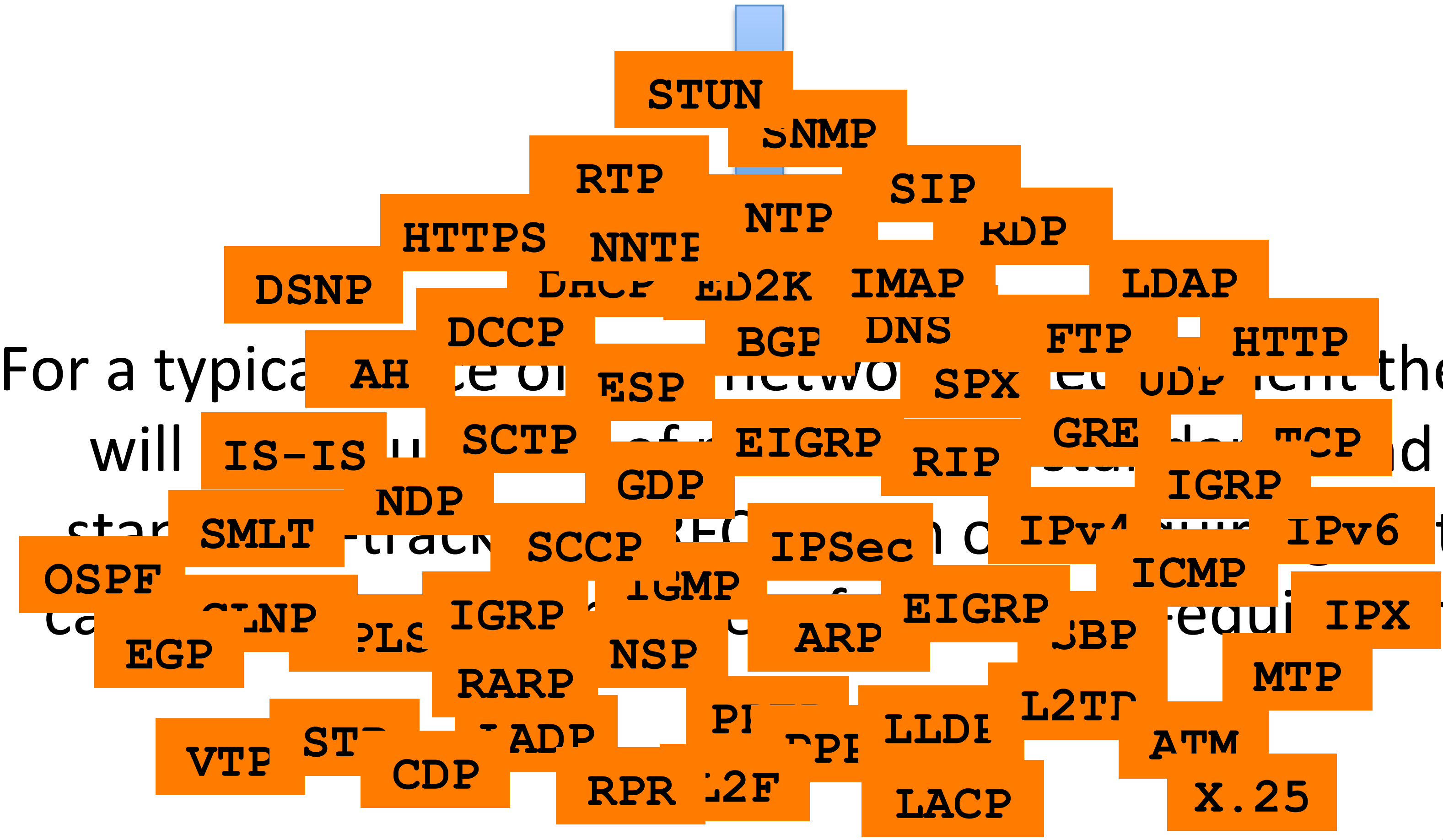
Outline

- Introduction
- Open Source Network Tester (OSNT)
  - Architecture
  - Traffic Generator (OSNT-TG)
  - Traffic Monitor (OSNT-MON)



Introduction

The continuous innovation of the Internet has led to a dilemma for network testing.



Introduction

…this has led to a multi-billion dollar industry in network test equipment…

- commonly closed and proprietary systems
- limited flexibility
- well outside the reach of most universities and research laboratories

Introduction

- a modest two port 10GbE network tester costs upward of $25000
  - additional protocol support increases cost

WHY?

- test equipment is often developed simultaneously with early prototype network equipment
- small market
- long HW and SW development cycles

Introduction

Long development cycles and high cost create a requirement for open-source network testing

- **Open-source hardware platform (NetFPGA)**
  - **For research and teaching community**

- high-performance (40GbE support)
- low-cost ($1600, cost of NF board)
- flexible
- scalable
- open-source community

www.osnt.org

OSNT architecture

OSNT flexibility provides support for a wide range of use-cases

- **OSNT-TG**
  - a single card, capable of generating packets on four 10GbE ports
  - to test a single networking system or a small network

- **OSNT-MON**
  - a single card, capable of capturing packets arriving through four 10GbE ports
  - to provide loss limited capture system with both high-resolution and high precision timestamping

OSNT architecture

- **Hybrid OSNT**
  - the combination of Traffic Generator and Traffic Monitor into single FPGA device and single card
  - to perform full line-rate, per-flow characterization of a network (device) under test

- **Scalable OSNT**
  - our approach for coordinating large numbers of multiple generators and monitors synchronized by a common time-base
  - still largely under work

OSNT-TG

The OSNT-TG generates packets according user-defined parameters

- PCAP replay function
  - loop through a PCAP file X times
  - replay packets at a given packet/sec
  - define the inter-packet gap

- Tx timestamp feature
  - configurable offset
  - fixed structure (signature, packet count, timestamp)

OSNT-TG evaluation

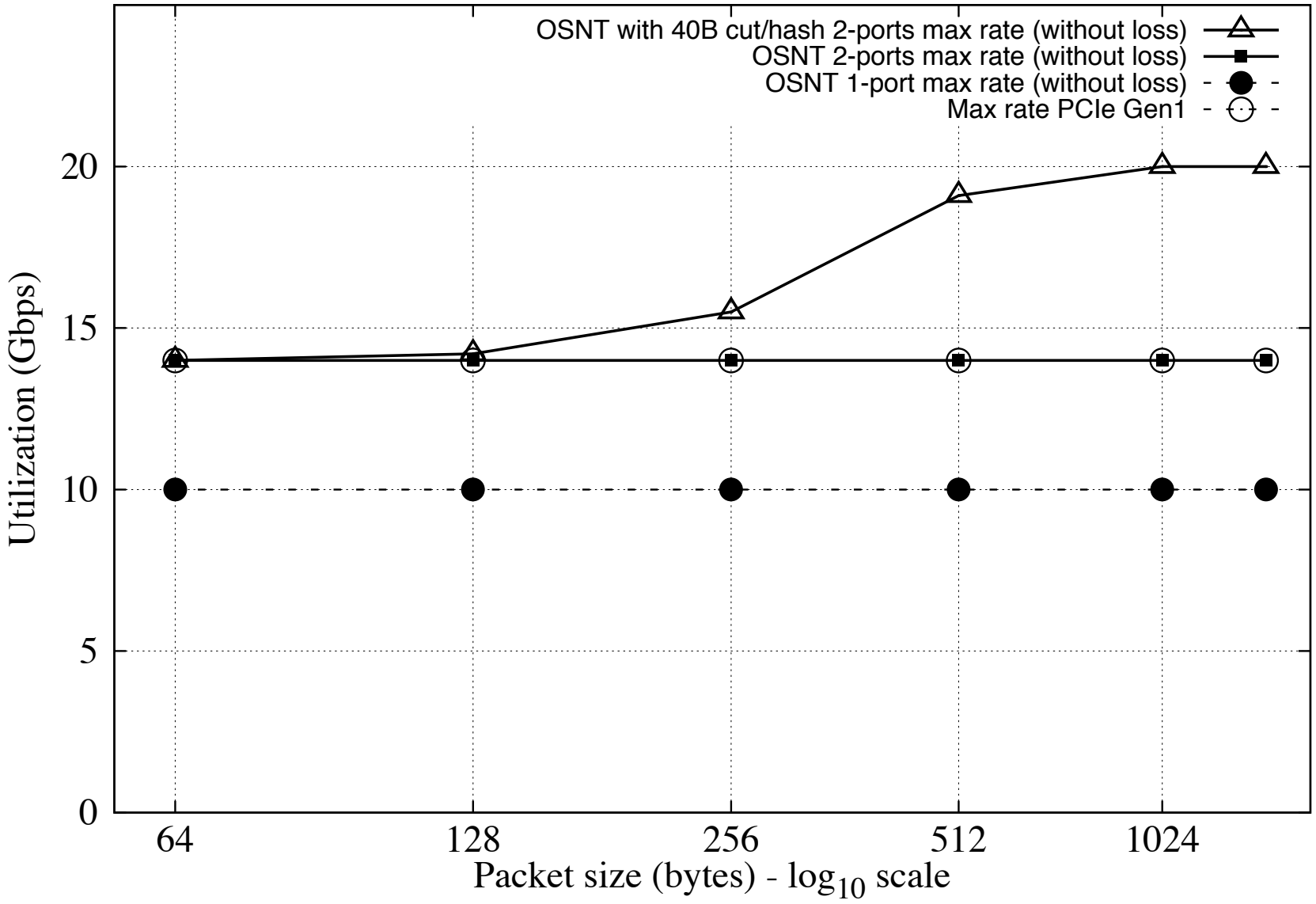
- performance tests against IXIA box
- full line rate regardless packet length on 2 ports
- full line rate over the 4 ports is work in progress
- IFG (Inter Frame Gap) is statically set to 96 bit

OSNT-MON

The OSNT-MON provides five main functions

- packet capture
- packet filtering permitting selection of traffic-of-interest (5-tuple)
- recording a fixed-length part of each packet along with a hash of the discarded part
- high precision, accurate, packet timestamping (GPS corrected)
- high-level traffic statistics

OSNT-MON evaluation



QUESTIONS?

THANKS