# Experiment 1 – Performance (delay)

Equipment used in the experiment:

1 x Tofino Wedge 100B-32X:

➔ Bf-Sde-9.9.0;

1 x Servidor Trex/DPDK:

➔ 1 x Intel Xeon CPU D-1518 - 2.20GHz, 62GB RAM;
➔ 2 x Nic Intel Ethernet Connection X552 10GbE SFP+;
➔ version v2.82 @ STL;
➔ SO: Ubuntu 16.04.1 – kernel 4.15.0-142-generic;

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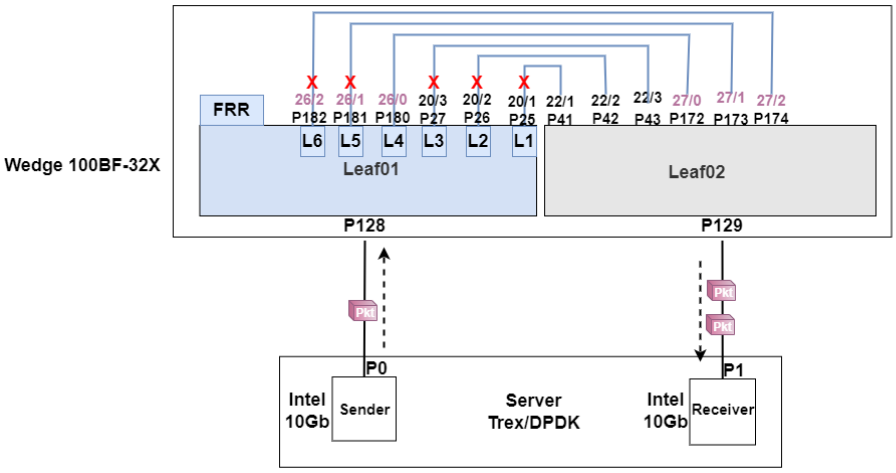


## Experiment 1: Impact of Recirculated Packet Latency on Tofino During Recovery

The experiment aims to assess the latency of recirculated packets during the application of the scenario of 5 simultaneous failures on the Tofino switch. Three types of unidirectional UDP packet flows were generated with different sizes and transmission rates:

- Large packets: 1514 bytes with rates of 100Mbps and 1Gbps;
- Medium packets: 814 bytes with rates of 100Mbps and 1Gbps;
- Small packets: 114 bytes with rates of 100Mbps and 1Gbps.

Each simulation of large, medium, and small packets was repeated five times in the scenario without failure and with 5 failures. Similarly to Experiment 01, each

packet flow was transmitted through interface P0 and received by interface P1 of the same Trex server for 10 seconds. In this experiment, more packets were collected in Trex's traffic capture/Wireshark compared to Experiment 01. Approximately between 50,000 and 5,000 packets were collected to allow for the calculation of the latency of each packet flow simulation. The latency average (minimum, maximum, and average) in simulations without failures and with 5 simultaneous failures was calculated and documented in the following table:

| Packet size | Total packets | Rates | Failures | Min DL (µs) | Max DL (µs) | Average DL (µs) |
|---|---|---|---|---|---|---|
| 1514 | 82346 | 100Mbps | No | 21 | 1365 | 515 |
| 1514 | 82346 | 100Mbps | 5 | 22,4 | 1639,6 | 514,2 |
| 814 | 152812 | 100Mbps | No | 18,8 | 1011,4 | 512,2 |
| 814 | 152812 | 100Mbps | 5 | 19,4 | 1014 | 512,2 |
| 114 | 1059323 | 100Mbps | No | 7 | 460 | 147,8 |
| 114 | 1059323 | 100Mbps | 5 | 7 | 312 | 147,4 |
| 1514 | 823452 | 1Gbps | No | 35,4 | 429,4 | 207 |
| 1514 | 823452 | 1Gbps | 5 | 34,6 | 414,6 | 208 |
| 814 | 1528118 | 1Gbps | No | 27,2 | 238,4 | 120,2 |
| 814 | 1528118 | 1Gbps | 5 | 25,6 | 227 | 118,4 |
| 114 | 10593221 | 1Gbps | No | 19,2 | 145 | 65 |
| 114 | 10593221 | 1Gbps | 5 | 17,2 | 141,4 | 62,8 |

Table of Impact on Packet Flow Latency without Failure and with Application of 5 Simultaneous Failures.