

**Pantheon Summary** (Generated at Sun, 11 Jun 2017 01:22:53 +0000 with  
pantheon version e44e21ab50520045378f626dc5b5e21d0473d7b8)

Repeated the test of 15 congestion control schemes once.

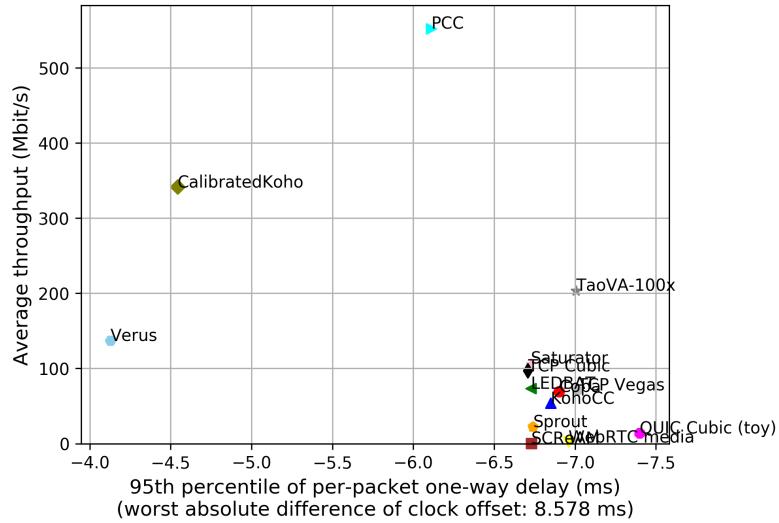
Each test lasted for 30 seconds running 1 flow.

Data path **from** Stanford Ethernet **to** AWS California 1 Ethernet.

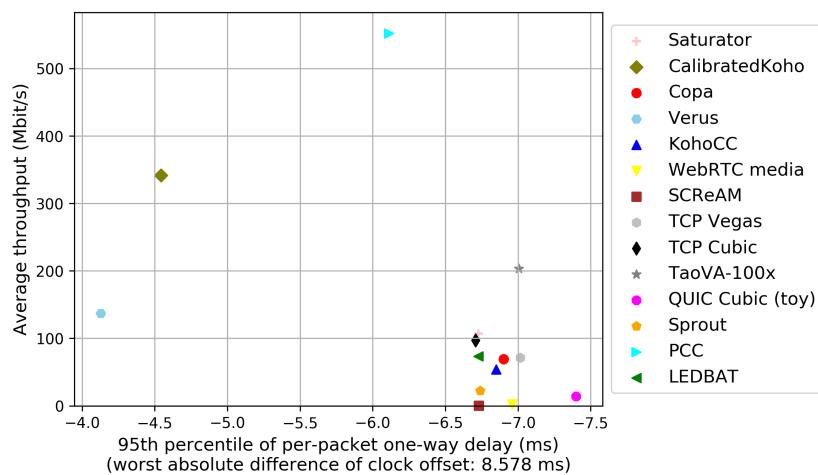
NTP offset measured against time.stanford.edu.

```
git branch: master @ e44e21ab50520045378f626dc5b5e21d0473d7b8
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
M datagrump/sender.cc
third_party/genericCC @ dae96123232f1bcb37725348fa2378691ce26725
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-stimuli @ fc73a85ca16c34366d1888dc8a0d0d88d4ebf2a7
third_party/pantheon-tunnel @ 4893799ab83a43fa2d3236507d168f461e1243ed
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efef6e088d91066a9f023df375eee2665089ce
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

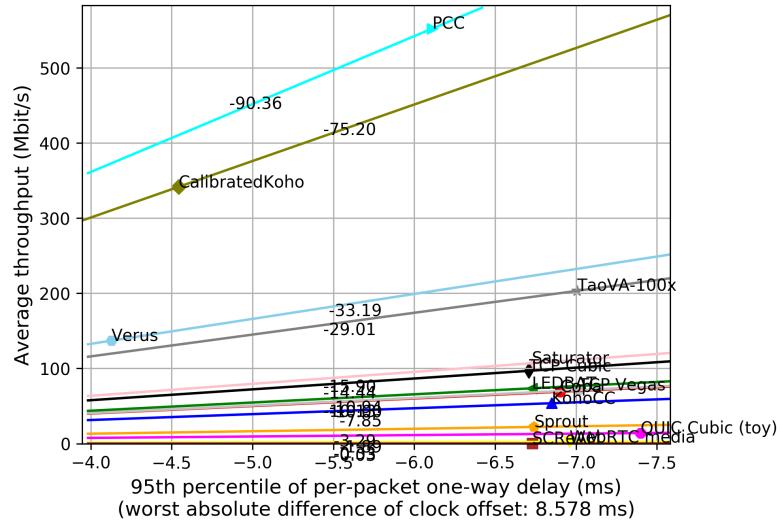
test from Stanford Ethernet to AWS California 1 Ethernet, run 1 of 30s each per scheme  
mean of all runs by scheme



test from Stanford Ethernet to AWS California 1 Ethernet, run 1 of 30s each per scheme



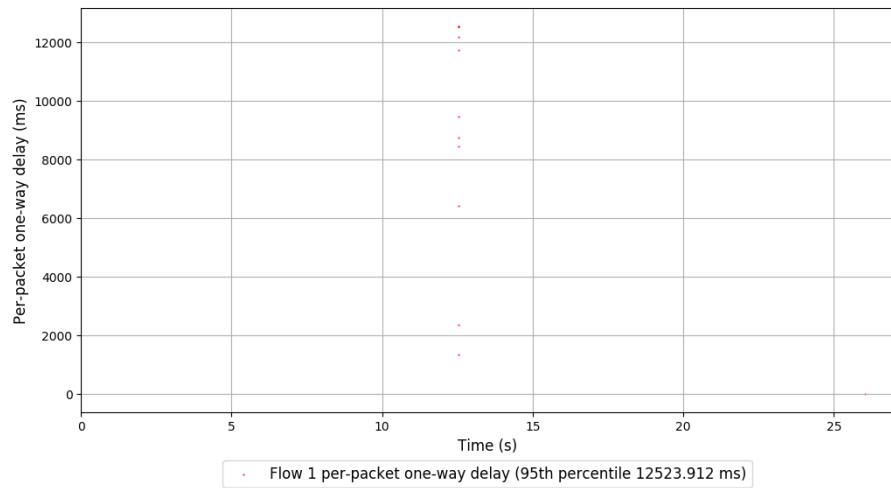
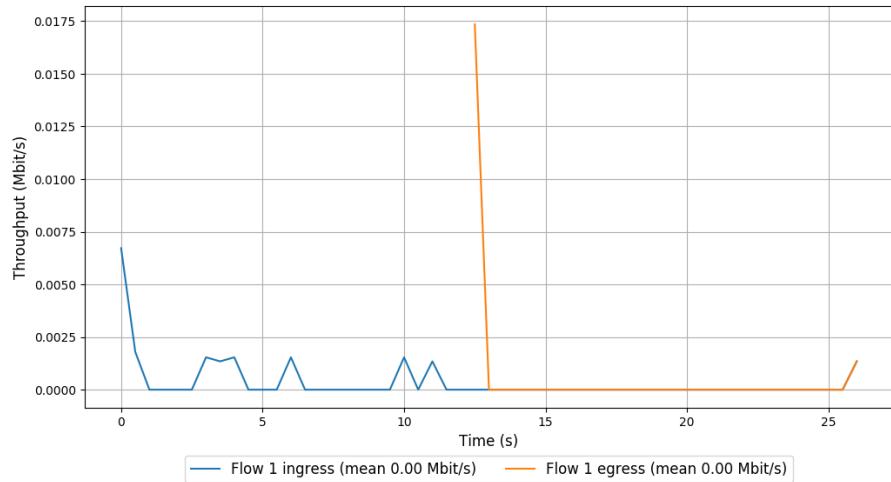
test from Stanford Ethernet to AWS California 1 Ethernet, run 1 of 30s each per scheme  
 mean power scores of all runs by scheme



Run 1: Statistics of TCP BBR

Start at: Sun, 11 Jun 2017 00:46:25 +0000  
End at: Sun, 11 Jun 2017 00:46:55 +0000  
Local clock offset: 6.128 ms  
Remote clock offset: -1.823 ms

## Run 1: Report of TCP BBR — Data Link

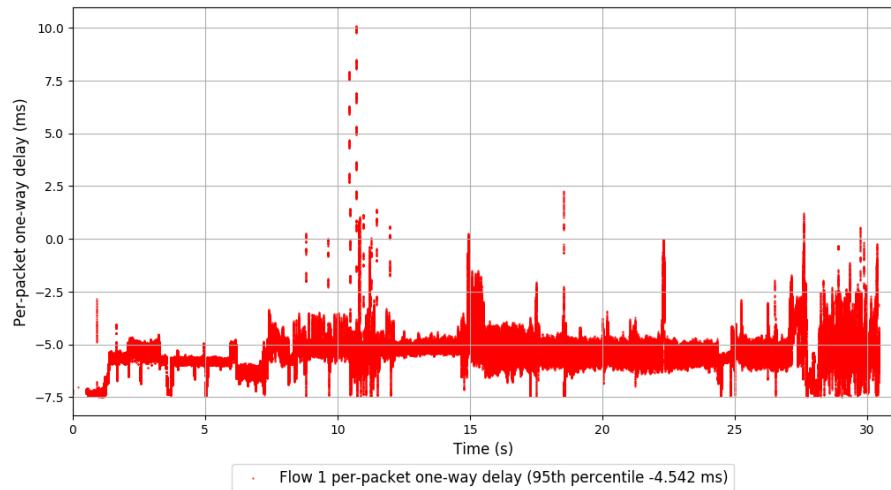
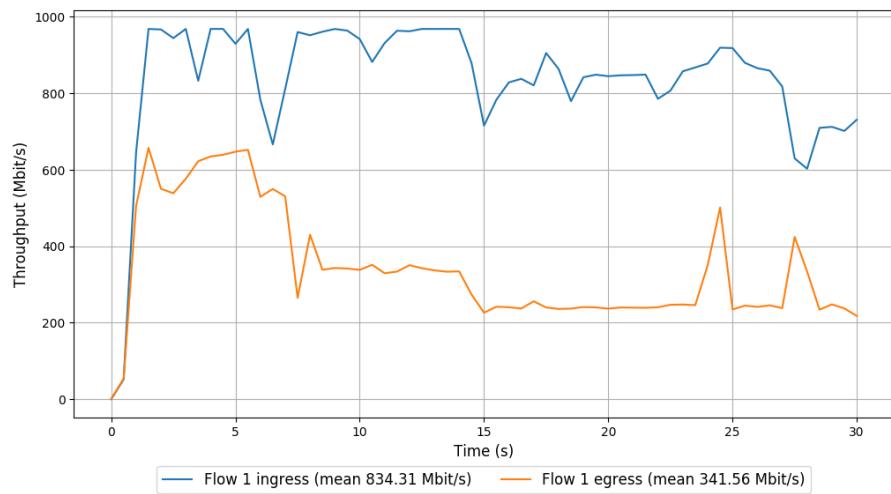


```
Run 1: Statistics of CalibratedKoho

Start at: Sun, 11 Jun 2017 01:02:33 +0000
End at: Sun, 11 Jun 2017 01:03:03 +0000
Local clock offset: 6.764 ms
Remote clock offset: -1.723 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:21:24 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 341.56 Mbit/s
95th percentile per-packet one-way delay: -4.542 ms
Loss rate: 59.09%
-- Flow 1:
Average throughput: 341.56 Mbit/s
95th percentile per-packet one-way delay: -4.542 ms
Loss rate: 59.09%
```

## Run 1: Report of CalibratedKoho — Data Link

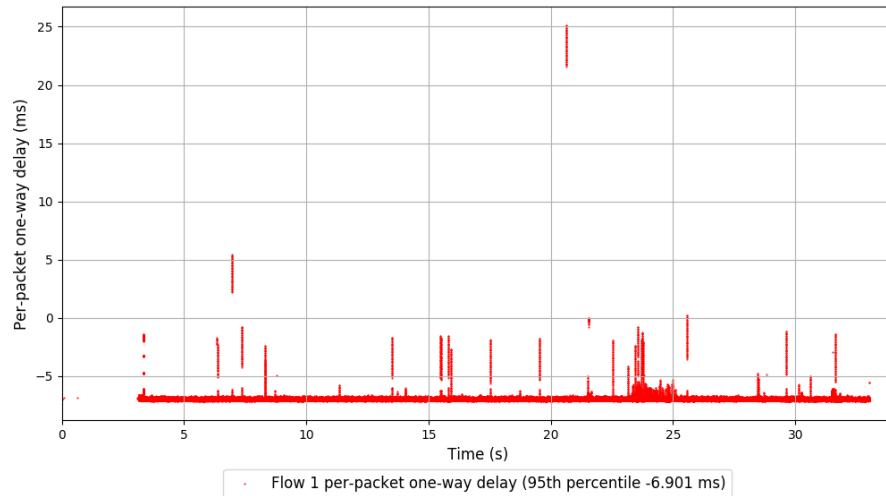
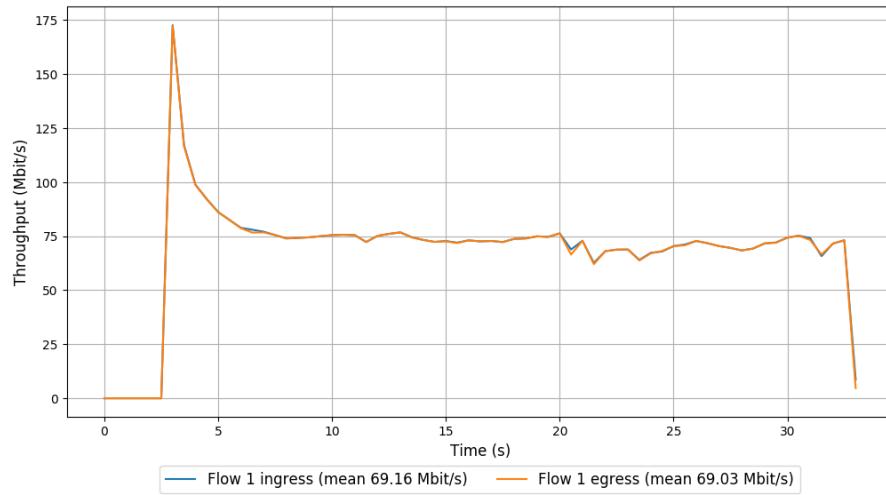


Run 1: Statistics of Copa

```
Start at: Sun, 11 Jun 2017 00:54:25 +0000
End at: Sun, 11 Jun 2017 00:54:55 +0000
Local clock offset: 6.413 ms
Remote clock offset: -1.599 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:21:24 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.03 Mbit/s
95th percentile per-packet one-way delay: -6.901 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 69.03 Mbit/s
95th percentile per-packet one-way delay: -6.901 ms
Loss rate: 0.25%
```

## Run 1: Report of Copa — Data Link



```
Run 1: Statistics of TCP Cubic
```

```
Start at: Sun, 11 Jun 2017 00:50:23 +0000
```

```
End at: Sun, 11 Jun 2017 00:50:53 +0000
```

```
Local clock offset: 6.291 ms
```

```
Remote clock offset: -1.749 ms
```

```
# Below is generated by plot.py at Sun, 11 Jun 2017 01:21:24 +0000
```

```
# Datalink statistics
```

```
-- Total of 1 flow:
```

```
Average throughput: 96.85 Mbit/s
```

```
95th percentile per-packet one-way delay: -6.708 ms
```

```
Loss rate: 0.28%
```

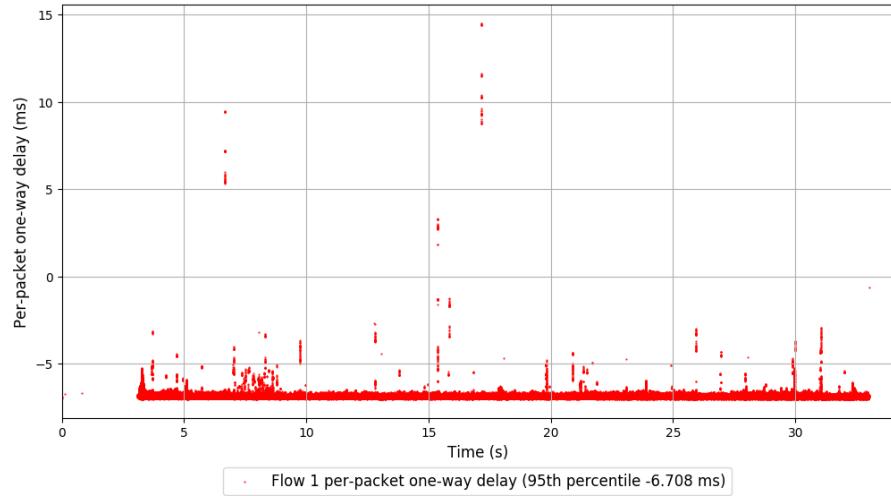
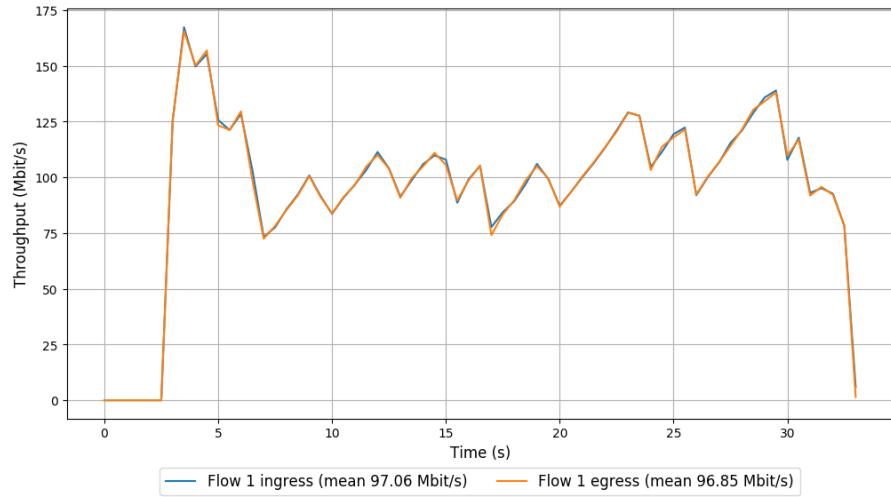
```
-- Flow 1:
```

```
Average throughput: 96.85 Mbit/s
```

```
95th percentile per-packet one-way delay: -6.708 ms
```

```
Loss rate: 0.28%
```

## Run 1: Report of TCP Cubic — Data Link



```
Run 1: Statistics of KohoCC
```

```
Start at: Sun, 11 Jun 2017 00:53:06 +0000
```

```
End at: Sun, 11 Jun 2017 00:53:36 +0000
```

```
Local clock offset: 6.368 ms
```

```
Remote clock offset: -1.712 ms
```

```
# Below is generated by plot.py at Sun, 11 Jun 2017 01:21:24 +0000
```

```
# Datalink statistics
```

```
-- Total of 1 flow:
```

```
Average throughput: 53.75 Mbit/s
```

```
95th percentile per-packet one-way delay: -6.850 ms
```

```
Loss rate: 0.17%
```

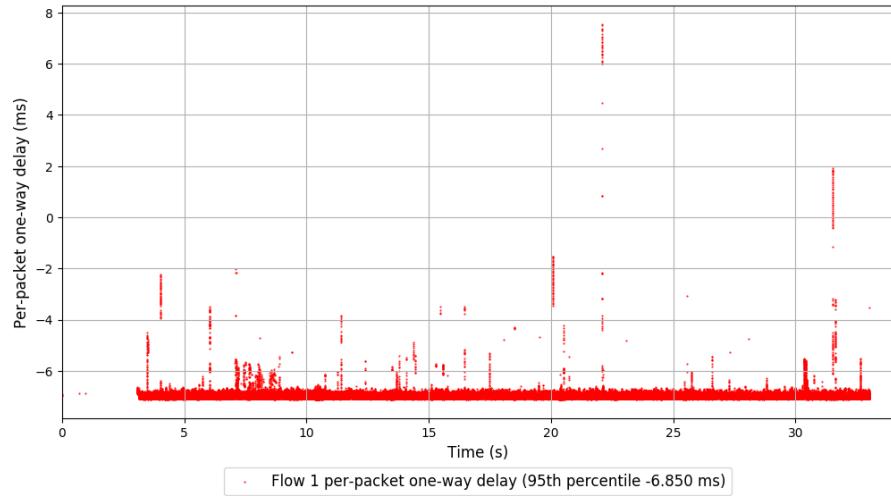
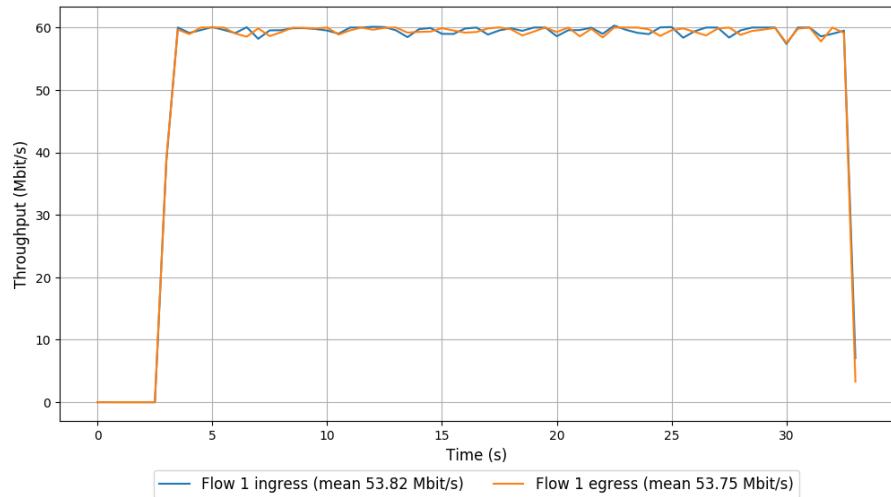
```
-- Flow 1:
```

```
Average throughput: 53.75 Mbit/s
```

```
95th percentile per-packet one-way delay: -6.850 ms
```

```
Loss rate: 0.17%
```

## Run 1: Report of KohoCC — Data Link

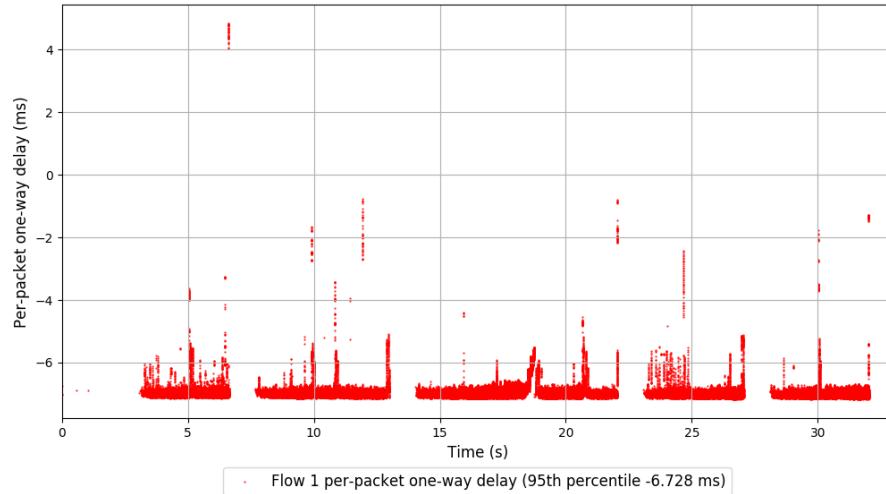
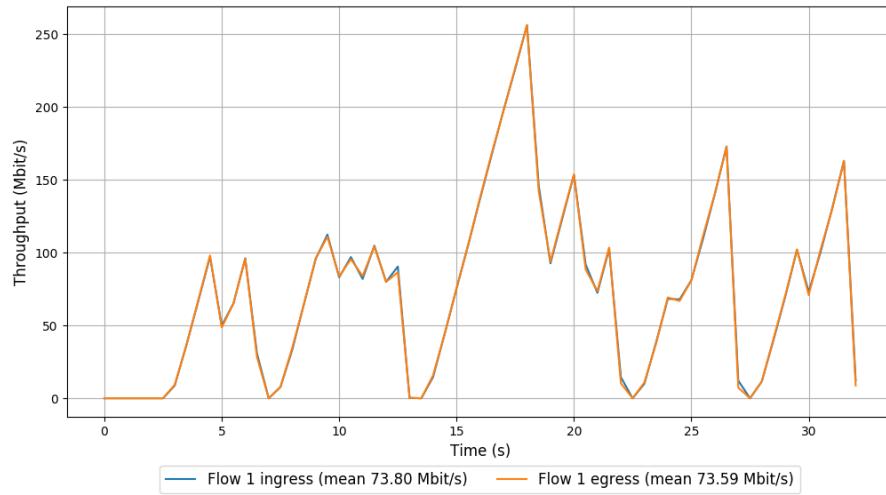


```
Run 1: Statistics of LEDBAT
```

```
Start at: Sun, 11 Jun 2017 00:57:01 +0000
End at: Sun, 11 Jun 2017 00:57:31 +0000
Local clock offset: 6.467 ms
Remote clock offset: -1.605 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:21:24 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 73.59 Mbit/s
95th percentile per-packet one-way delay: -6.728 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 73.59 Mbit/s
95th percentile per-packet one-way delay: -6.728 ms
Loss rate: 0.29%
```

## Run 1: Report of LEDBAT — Data Link

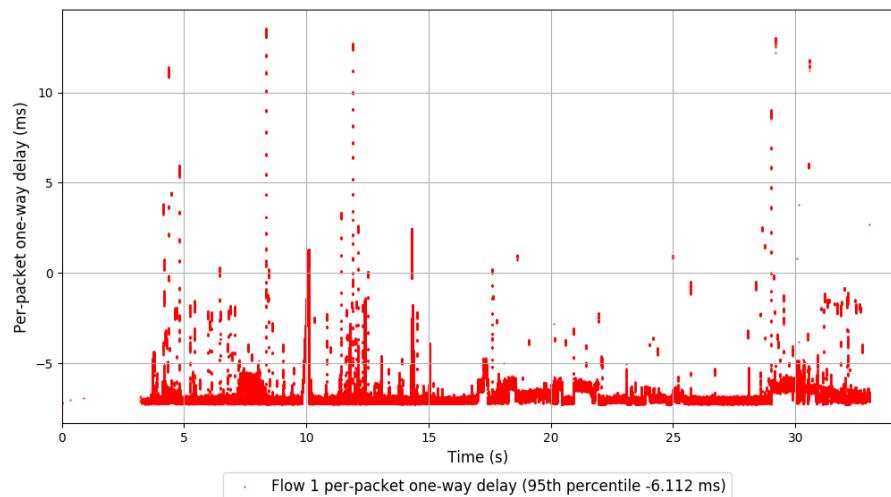
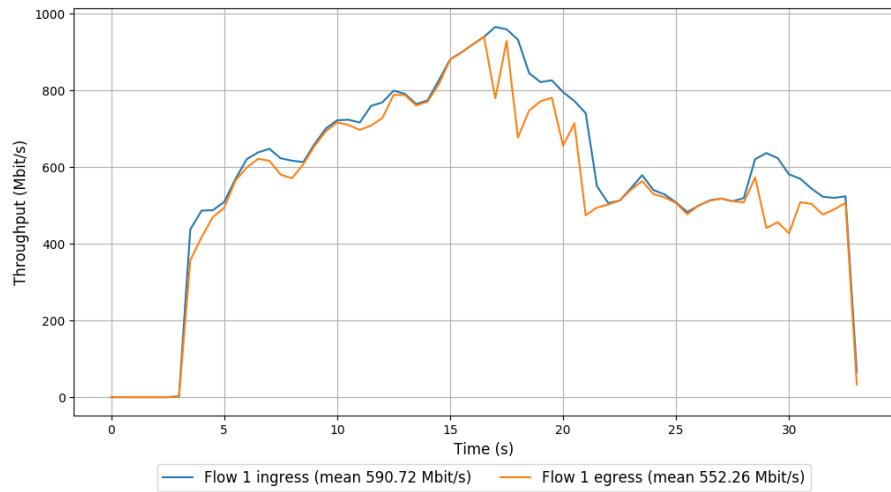


```
Run 1: Statistics of PCC
```

```
Start at: Sun, 11 Jun 2017 00:58:21 +0000
End at: Sun, 11 Jun 2017 00:58:51 +0000
Local clock offset: 6.6 ms
Remote clock offset: -1.644 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:19 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 552.26 Mbit/s
95th percentile per-packet one-way delay: -6.112 ms
Loss rate: 6.56%
-- Flow 1:
Average throughput: 552.26 Mbit/s
95th percentile per-packet one-way delay: -6.112 ms
Loss rate: 6.56%
```

## Run 1: Report of PCC — Data Link



```
Run 1: Statistics of QUIC Cubic (toy)
```

```
Start at: Sun, 11 Jun 2017 01:05:58 +0000
```

```
End at: Sun, 11 Jun 2017 01:06:28 +0000
```

```
Local clock offset: 6.915 ms
```

```
Remote clock offset: -1.663 ms
```

```
# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:19 +0000
```

```
# Datalink statistics
```

```
-- Total of 1 flow:
```

```
Average throughput: 14.02 Mbit/s
```

```
95th percentile per-packet one-way delay: -7.399 ms
```

```
Loss rate: 0.34%
```

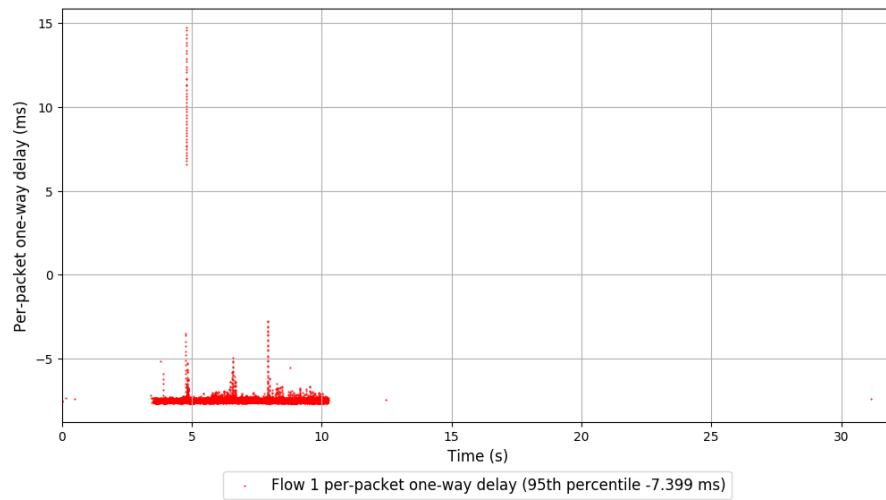
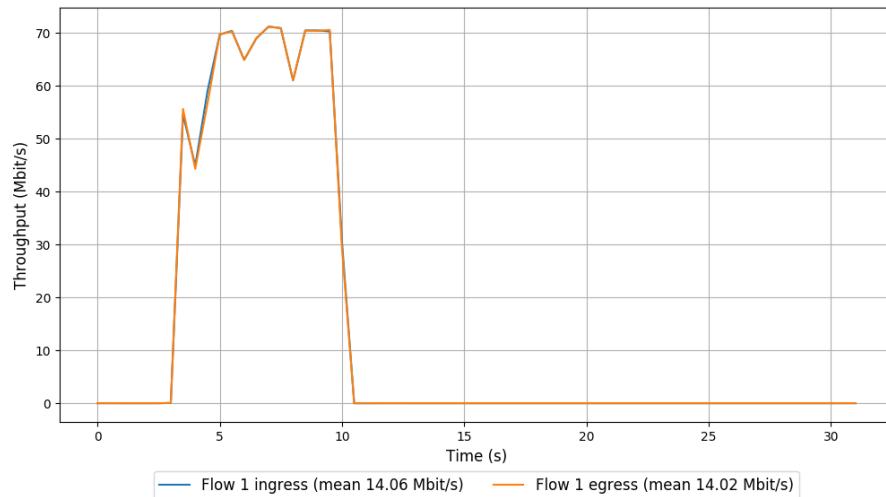
```
-- Flow 1:
```

```
Average throughput: 14.02 Mbit/s
```

```
95th percentile per-packet one-way delay: -7.399 ms
```

```
Loss rate: 0.34%
```

## Run 1: Report of QUIC Cubic (toy) — Data Link



```
Run 1: Statistics of Saturator
```

```
Start at: Sun, 11 Jun 2017 00:51:43 +0000
```

```
End at: Sun, 11 Jun 2017 00:52:13 +0000
```

```
Local clock offset: 6.294 ms
```

```
Remote clock offset: -1.734 ms
```

```
# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:19 +0000
```

```
# Datalink statistics
```

```
-- Total of 1 flow:
```

```
Average throughput: 106.97 Mbit/s
```

```
95th percentile per-packet one-way delay: -6.726 ms
```

```
Loss rate: 0.54%
```

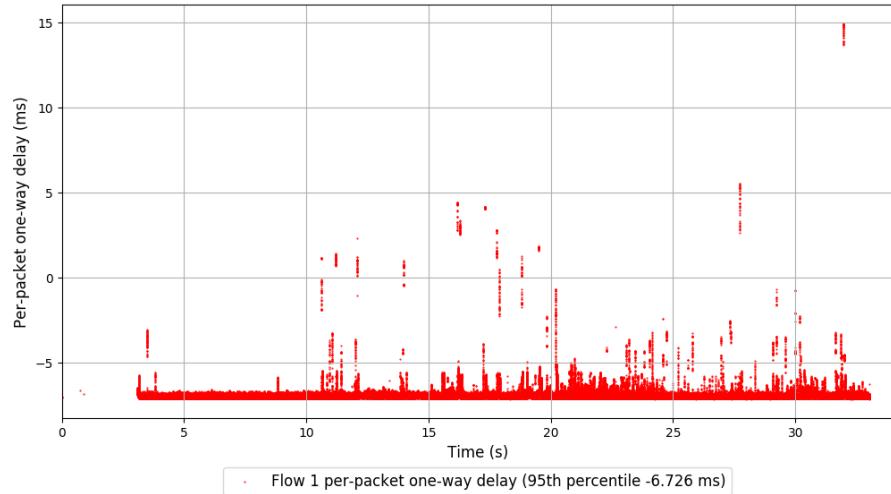
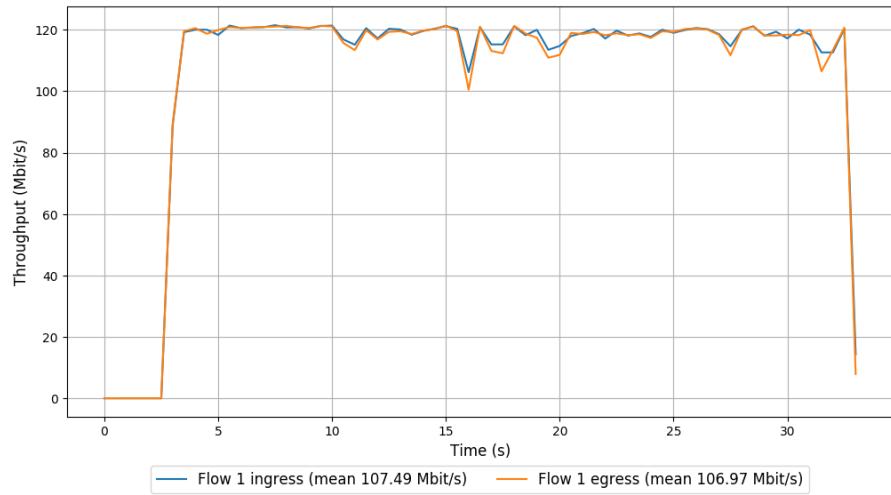
```
-- Flow 1:
```

```
Average throughput: 106.97 Mbit/s
```

```
95th percentile per-packet one-way delay: -6.726 ms
```

```
Loss rate: 0.54%
```

### Run 1: Report of Saturator — Data Link

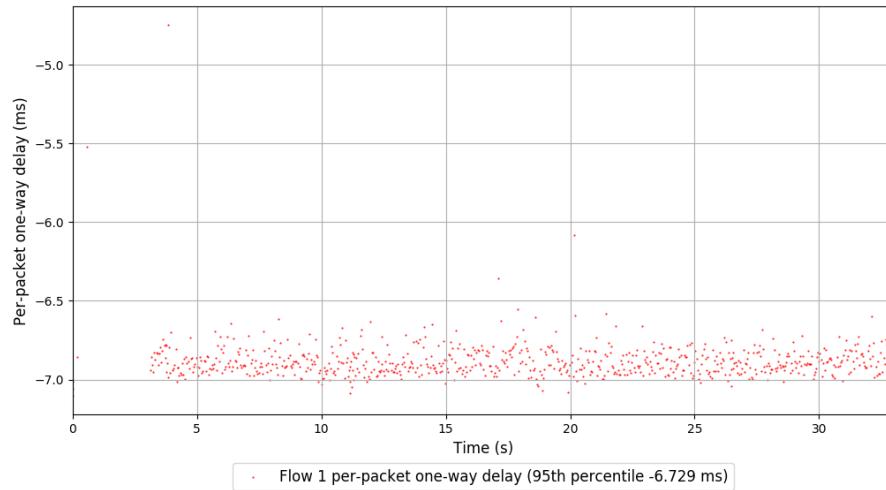
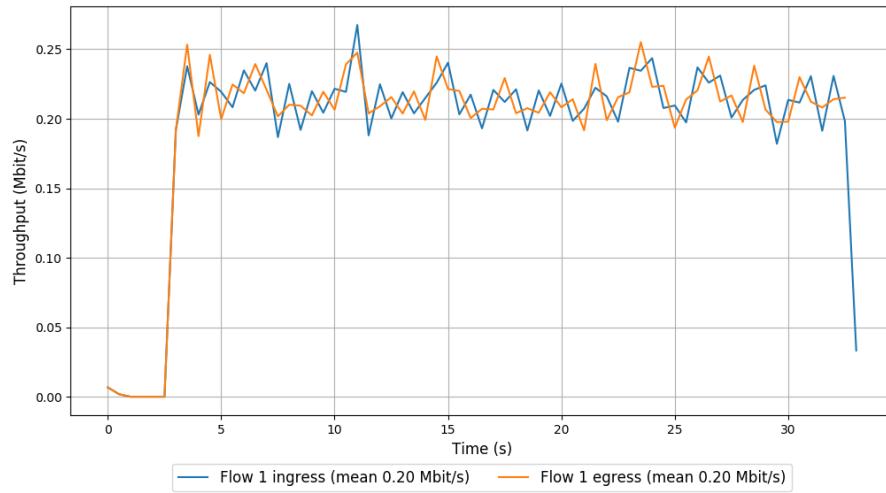


```
Run 1: Statistics of SCReAM
```

```
Start at: Sun, 11 Jun 2017 00:55:46 +0000
End at: Sun, 11 Jun 2017 00:56:16 +0000
Local clock offset: 6.429 ms
Remote clock offset: -1.661 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:19 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: -6.729 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: -6.729 ms
Loss rate: 0.13%
```

## Run 1: Report of SCReAM — Data Link

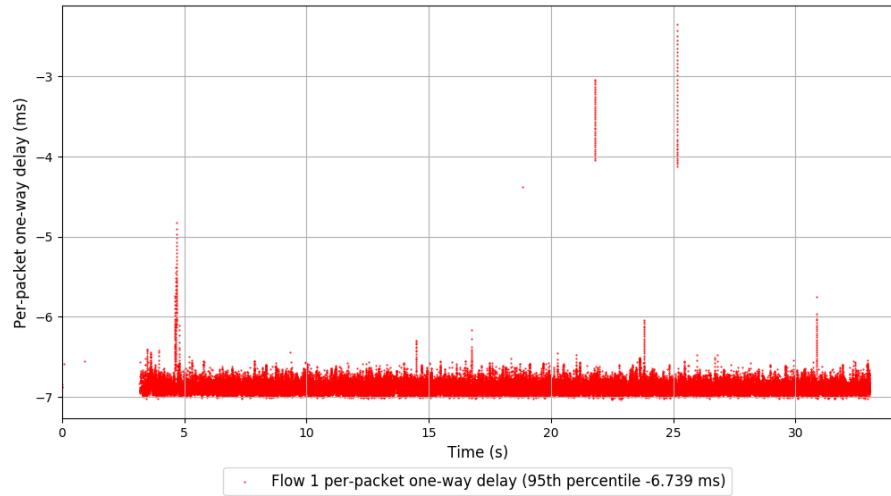
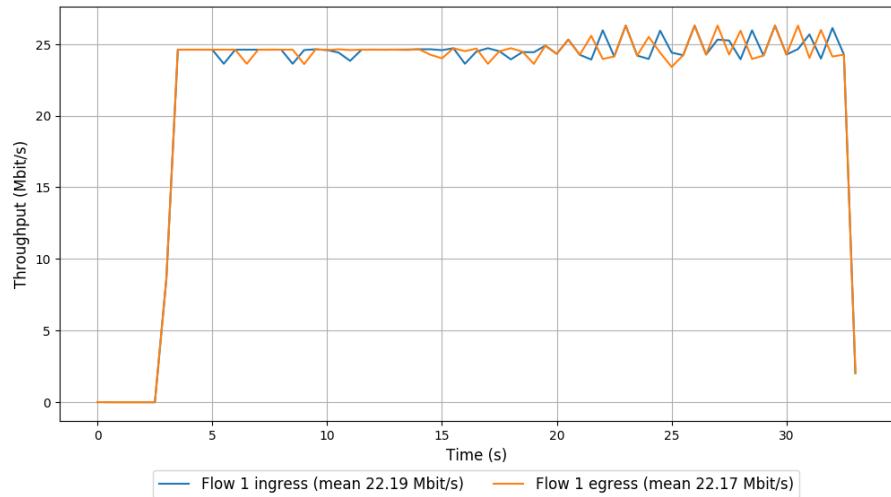


Run 1: Statistics of Sprout

```
Start at: Sun, 11 Jun 2017 00:49:08 +0000
End at: Sun, 11 Jun 2017 00:49:38 +0000
Local clock offset: 6.27 ms
Remote clock offset: -1.682 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:19 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.17 Mbit/s
95th percentile per-packet one-way delay: -6.739 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 22.17 Mbit/s
95th percentile per-packet one-way delay: -6.739 ms
Loss rate: 0.09%
```

## Run 1: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: Sun, 11 Jun 2017 01:04:22 +0000

End at: Sun, 11 Jun 2017 01:04:52 +0000

Local clock offset: 6.747 ms

Remote clock offset: -1.745 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:43 +0000

# Datalink statistics

-- Total of 1 flow:

Average throughput: 203.26 Mbit/s

95th percentile per-packet one-way delay: -7.006 ms

Loss rate: 1.47%

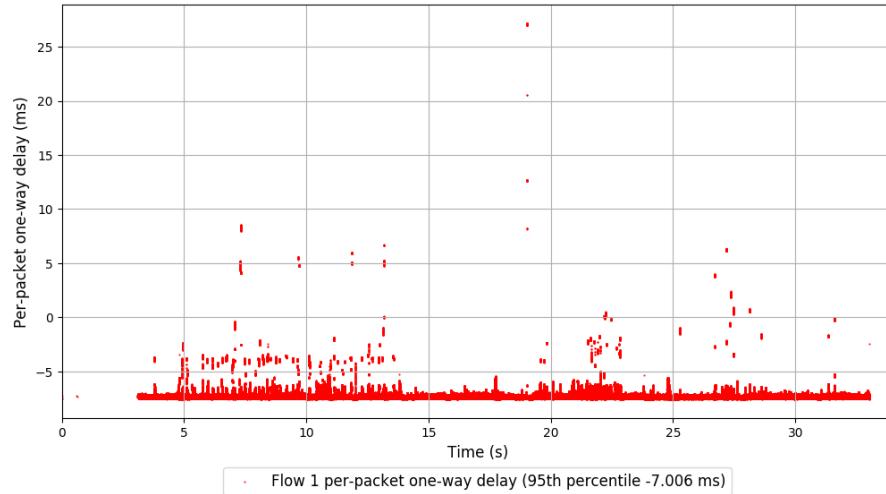
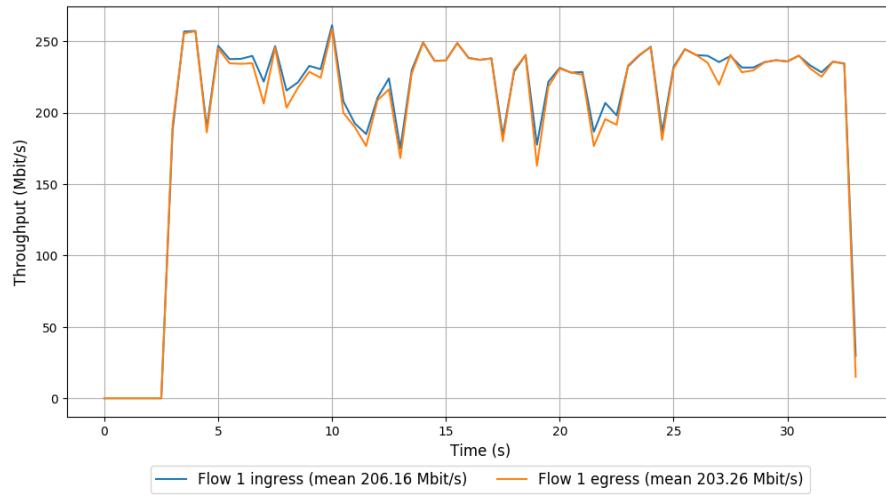
-- Flow 1:

Average throughput: 203.26 Mbit/s

95th percentile per-packet one-way delay: -7.006 ms

Loss rate: 1.47%

Run 1: Report of TaoVA-100x — Data Link

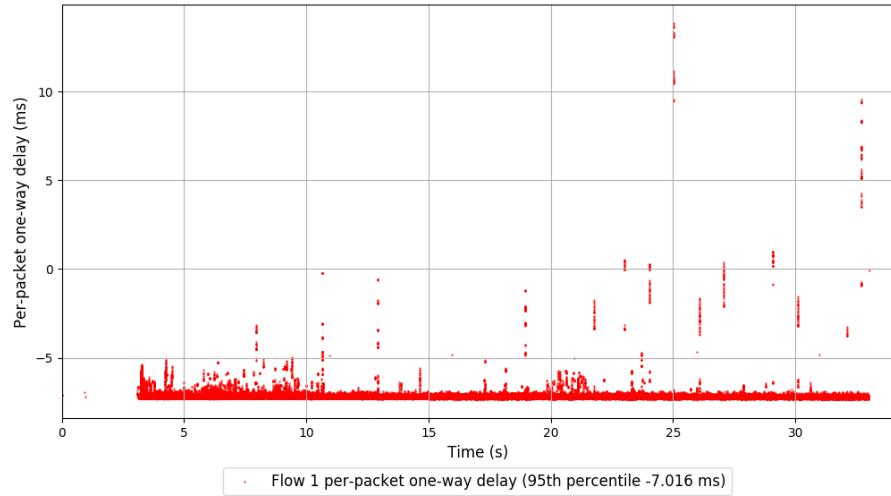
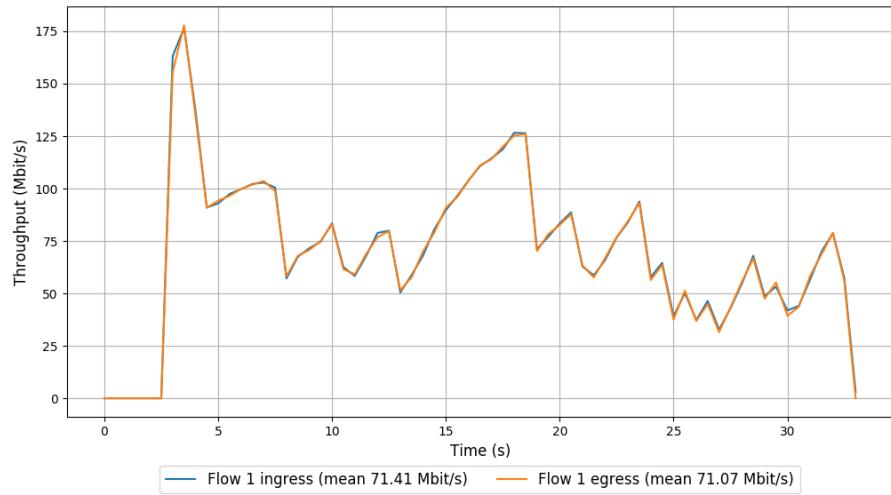


Run 1: Statistics of TCP Vegas

```
Start at: Sun, 11 Jun 2017 00:59:59 +0000
End at: Sun, 11 Jun 2017 01:00:30 +0000
Local clock offset: 6.655 ms
Remote clock offset: -1.682 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:43 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.07 Mbit/s
95th percentile per-packet one-way delay: -7.016 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 71.07 Mbit/s
95th percentile per-packet one-way delay: -7.016 ms
Loss rate: 0.48%
```

### Run 1: Report of TCP Vegas — Data Link

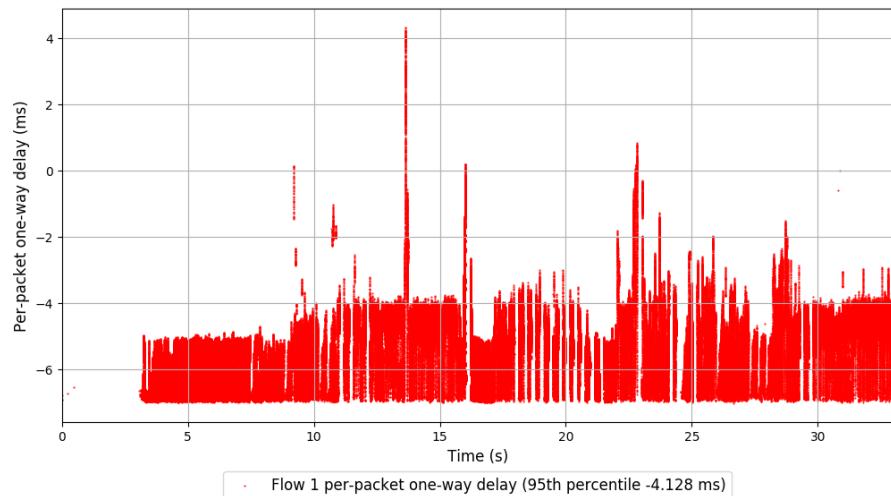
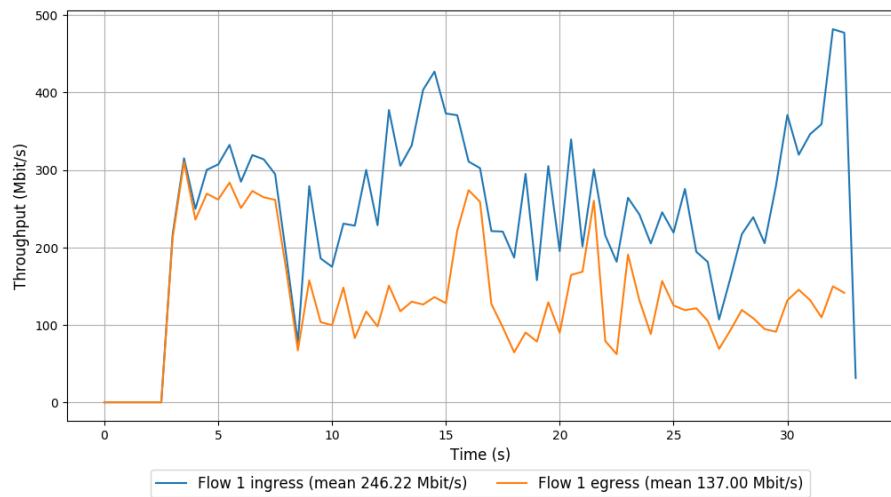


```
Run 1: Statistics of Verus
```

```
Start at: Sun, 11 Jun 2017 00:47:41 +0000
End at: Sun, 11 Jun 2017 00:48:11 +0000
Local clock offset: 6.182 ms
Remote clock offset: -1.781 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 137.00 Mbit/s
95th percentile per-packet one-way delay: -4.128 ms
Loss rate: 44.42%
-- Flow 1:
Average throughput: 137.00 Mbit/s
95th percentile per-packet one-way delay: -4.128 ms
Loss rate: 44.42%
```

## Run 1: Report of Verus — Data Link



```
Run 1: Statistics of WebRTC media

Start at: Sun, 11 Jun 2017 01:01:18 +0000
End at: Sun, 11 Jun 2017 01:01:48 +0000
Local clock offset: 6.731 ms
Remote clock offset: -1.71 ms

# Below is generated by plot.py at Sun, 11 Jun 2017 01:22:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.30 Mbit/s
95th percentile per-packet one-way delay: -6.959 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.30 Mbit/s
95th percentile per-packet one-way delay: -6.959 ms
Loss rate: 0.00%
```

### Run 1: Report of WebRTC media — Data Link

