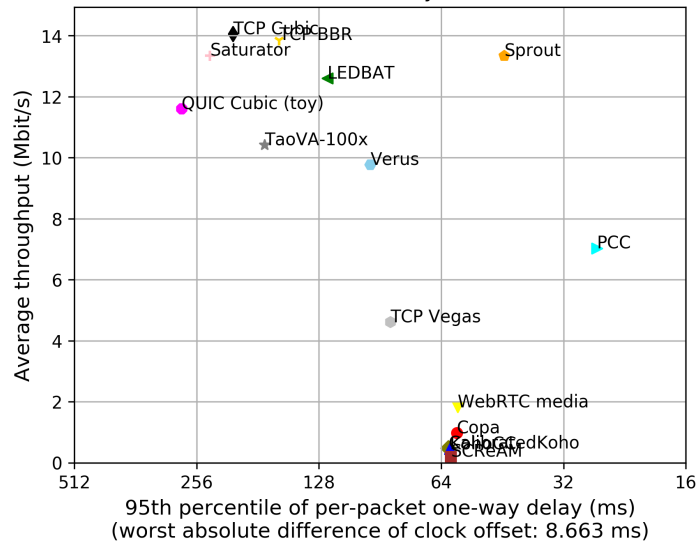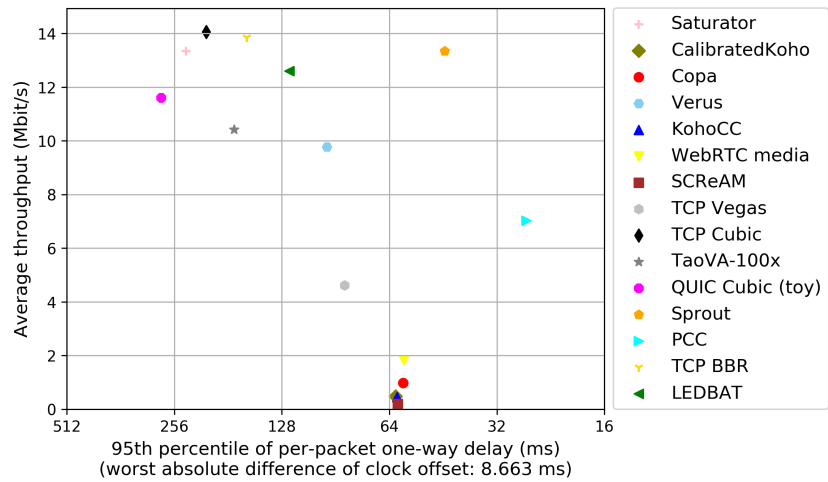**Pantheon Summary** (Generated at Tue, 13 Jun 2017 06:57:40 +0000 with pantheon version `a78272c2fc2acc3dce256a4fe0c8be153bc74953`)

Repeated the test of 15 congestion control schemes once.

Each test lasted for 30 seconds running 1 flow.

Data path **from** Stanford ppp0 **to** AWS California 1 Ethernet.

NTP offset measured against time.stanford.edu.

```
git branch: master @ a78272c2fc2acc3dce256a4fe0c8be153bc74953
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 @ 6f2efe6e088d91066a9f023df375eee2665089ce
 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
```
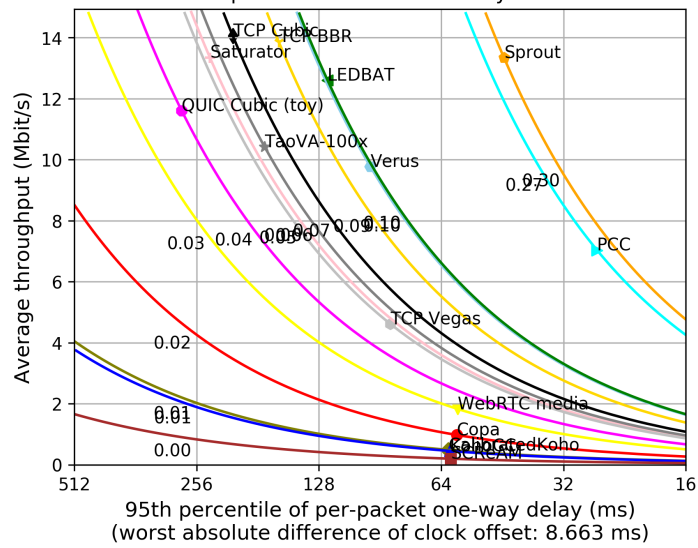
test from Stanford ppp0 to AWS California 1 Ethernet, run 1 of 30s each per scheme
mean of all runs by scheme

test from Stanford ppp0 to AWS California 1 Ethernet, run 1 of 30s each per scheme

test from Stanford ppp0 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: Tue, 13 Jun 2017 06:54:12 +0000
End at: Tue, 13 Jun 2017 06:54:42 +0000
Local clock offset: 4.351 ms
Remote clock offset: -3.718 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:23 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.86 Mbit/s
95th percentile per-packet one-way delay: 160.674 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 13.86 Mbit/s
95th percentile per-packet one-way delay: 160.674 ms
Loss rate: 0.50%
```
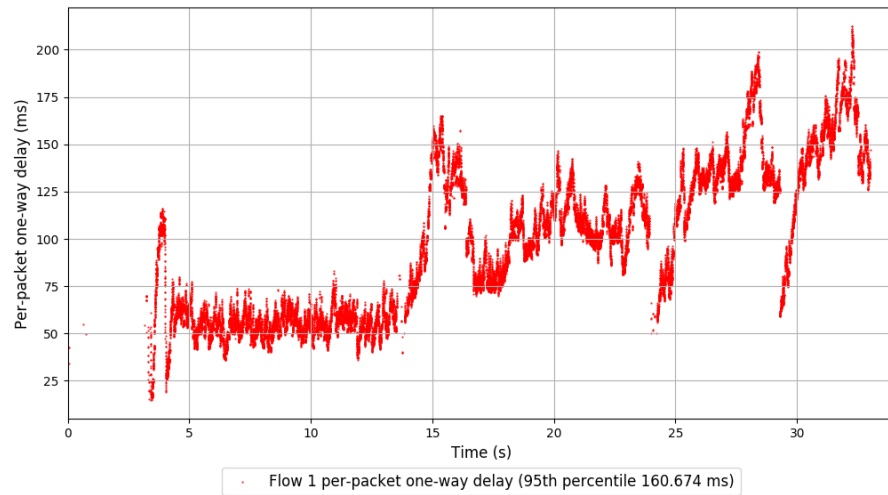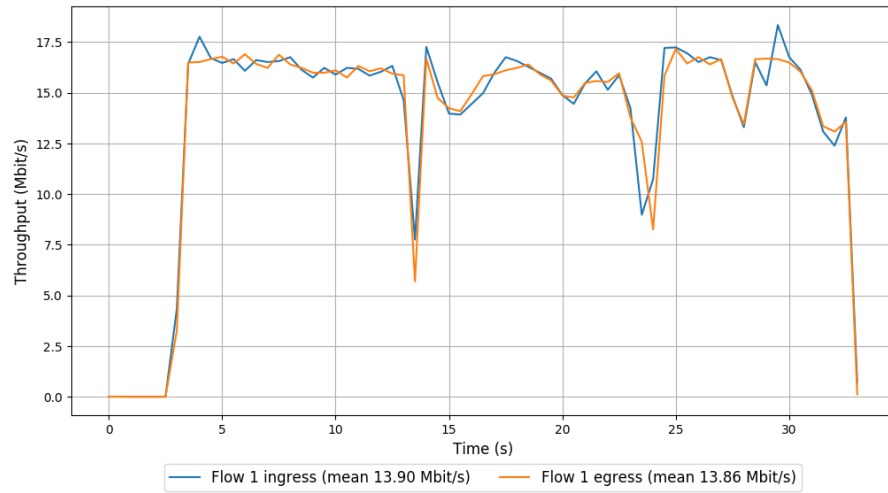
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 13.90 Mbit/s) ——— Flow 1 egress (mean 13.86 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 160.674 ms)

```
Run 1: Statistics of CalibratedKoho

Start at: Tue, 13 Jun 2017 06:40:22 +0000
End at: Tue, 13 Jun 2017 06:40:52 +0000
Local clock offset: 4.756 ms
Remote clock offset: -3.682 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:23 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 61.475 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 61.475 ms
Loss rate: 0.74%
```
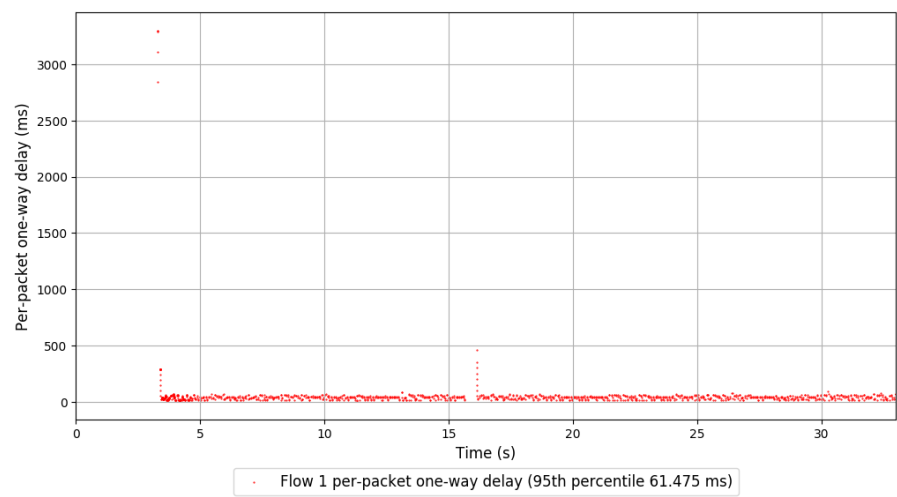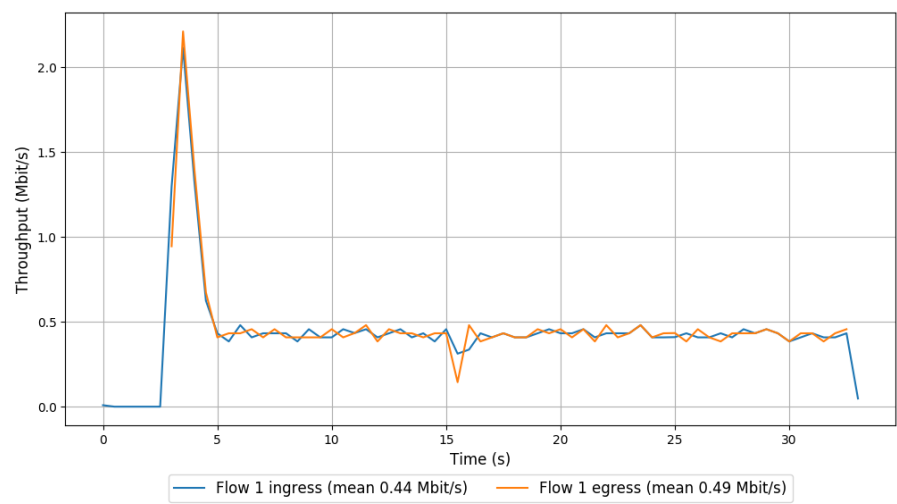
Run 1: Report of CalibratedKoho — Data Link

Flow 1 ingress (mean 0.44 Mbit/s) — Flow 1 egress (mean 0.49 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 61.475 ms)

7

```
Run 1: Statistics of Copa

Start at: Tue, 13 Jun 2017 06:52:56 +0000
End at: Tue, 13 Jun 2017 06:53:26 +0000
Local clock offset: 4.487 ms
Remote clock offset: -3.695 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:23 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 58.629 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 58.629 ms
Loss rate: 0.16%
```
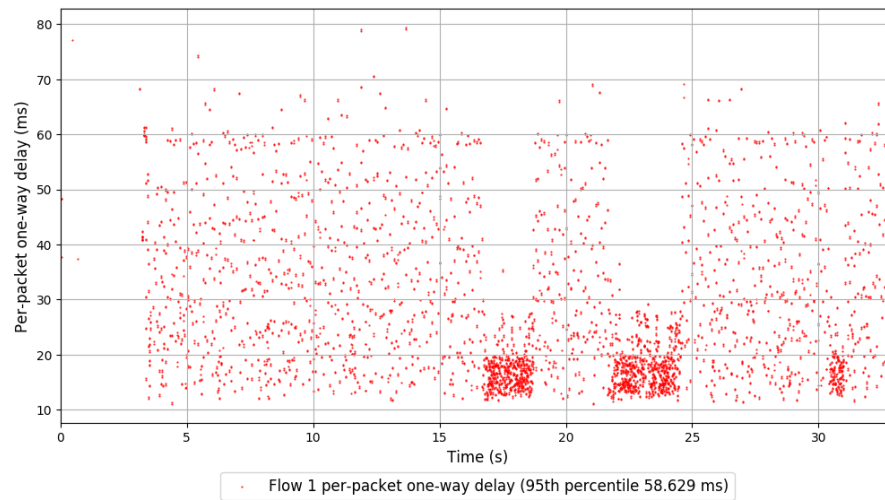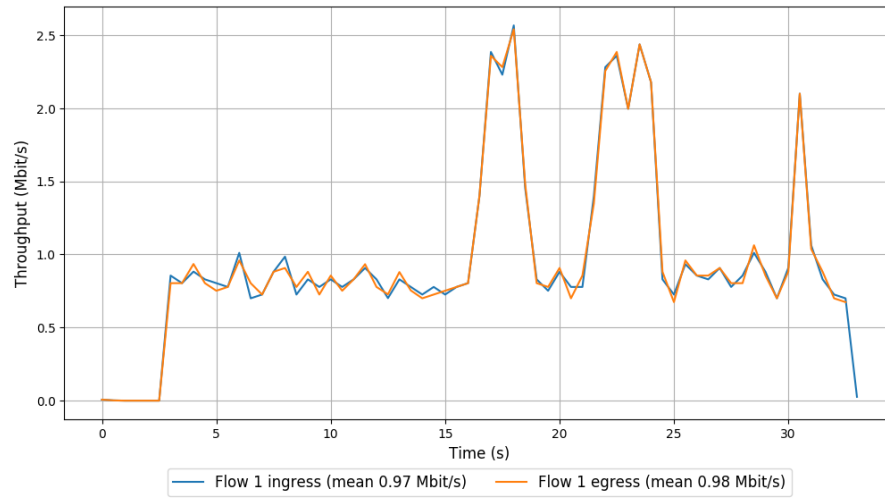
Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 0.97 Mbit/s)   Flow 1 egress (mean 0.98 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 58.629 ms)

```
Run 1: Statistics of TCP Cubic

Start at: Tue, 13 Jun 2017 06:39:06 +0000
End at: Tue, 13 Jun 2017 06:39:36 +0000
Local clock offset: 4.928 ms
Remote clock offset: -3.659 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:24 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.06 Mbit/s
95th percentile per-packet one-way delay: 208.635 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 14.06 Mbit/s
95th percentile per-packet one-way delay: 208.635 ms
Loss rate: 0.81%
```
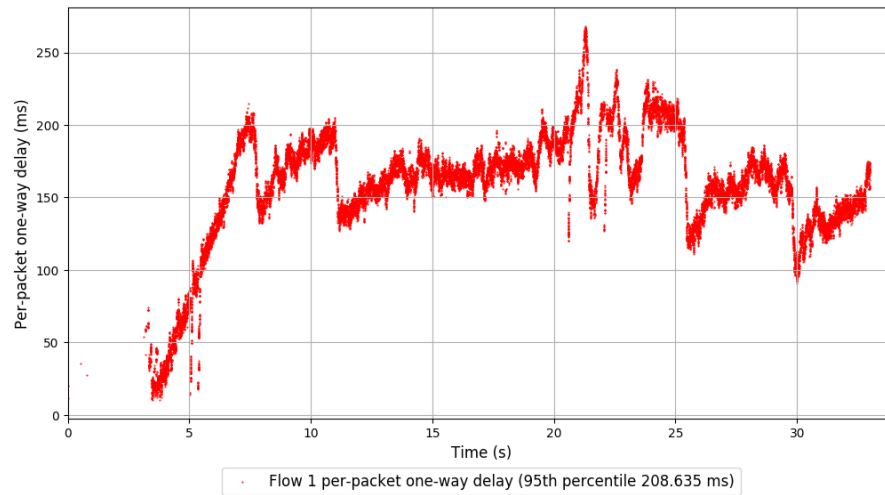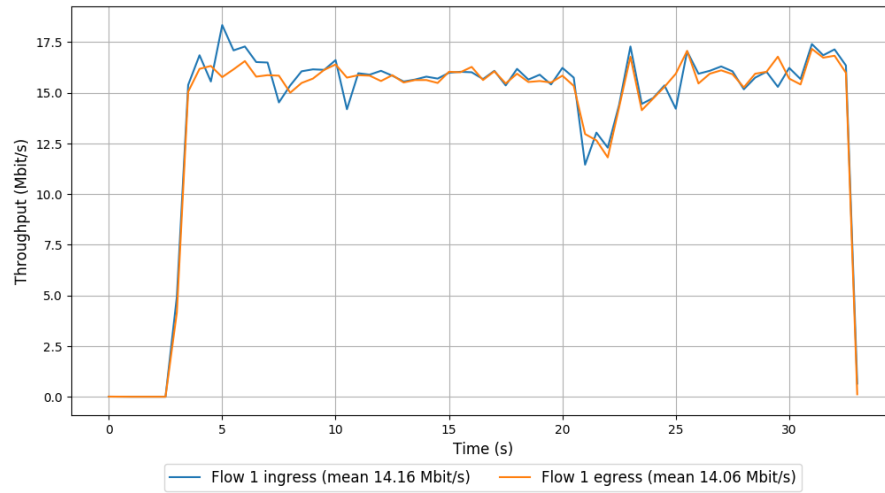
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 14.16 Mbit/s) — Flow 1 egress (mean 14.06 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 208.635 ms)

```
Run 1: Statistics of KohoCC

Start at: Tue, 13 Jun 2017 06:37:51 +0000
End at: Tue, 13 Jun 2017 06:38:21 +0000
Local clock offset: 5.011 ms
Remote clock offset: -3.652 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:24 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 60.998 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 60.998 ms
Loss rate: 0.16%
```
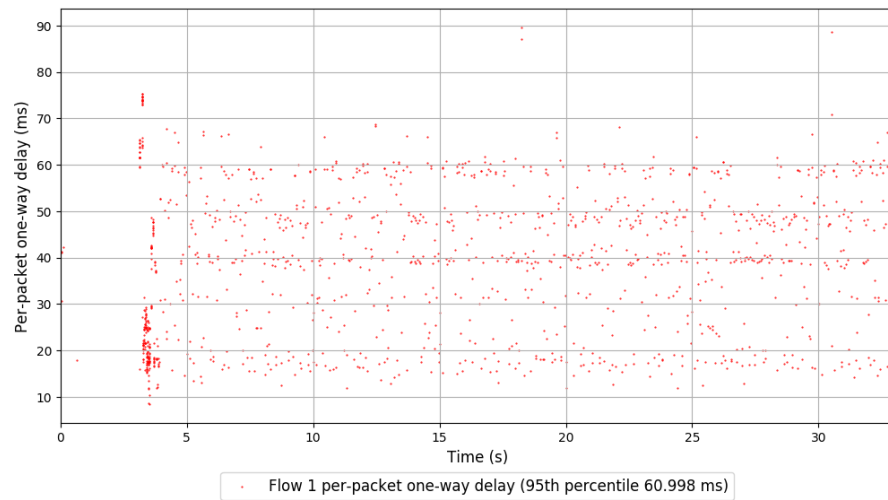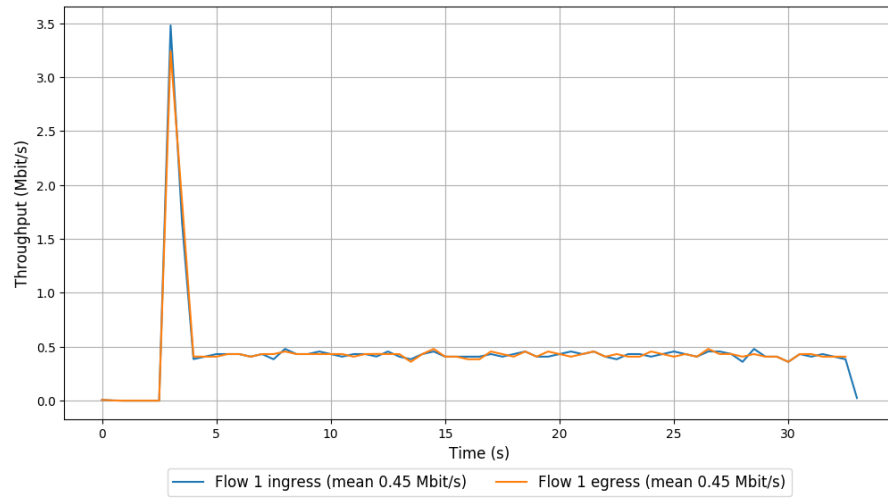
Run 1: Report of KohoCC — Data Link

Flow 1 ingress (mean 0.45 Mbit/s)   Flow 1 egress (mean 0.45 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 60.998 ms)

```
Run 1: Statistics of LEDBAT

Start at: Tue, 13 Jun 2017 06:45:23 +0000
End at: Tue, 13 Jun 2017 06:45:53 +0000
Local clock offset: 4.485 ms
Remote clock offset: -3.771 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:26 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 121.917 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 12.61 Mbit/s
95th percentile per-packet one-way delay: 121.917 ms
Loss rate: 0.45%
```
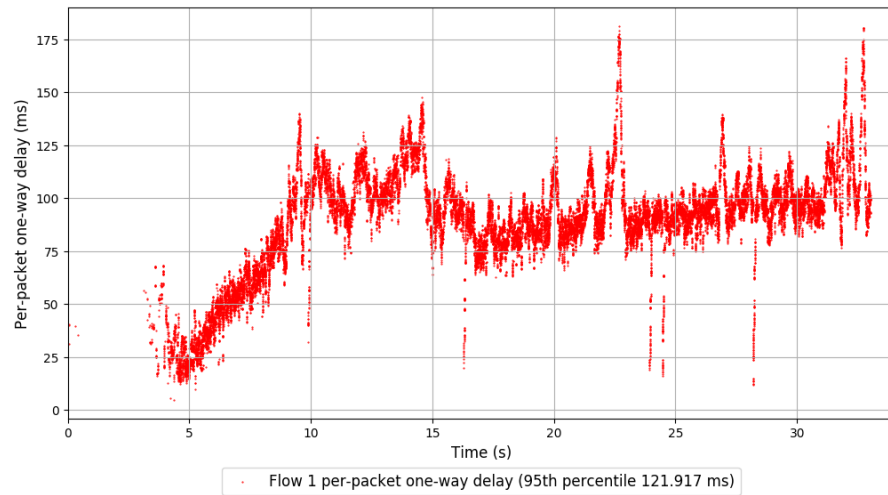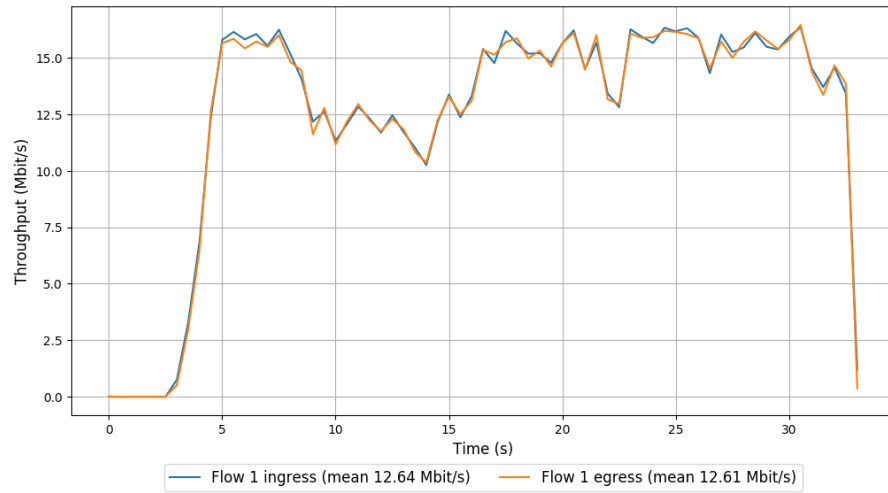
Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 12.64 Mbit/s) —— Flow 1 egress (mean 12.61 Mbit/s)

· Flow 1 per-packet one-way delay (95th percentile 121.917 ms)

```
Run 1: Statistics of PCC

Start at: Tue, 13 Jun 2017 06:44:08 +0000
End at: Tue, 13 Jun 2017 06:44:38 +0000
Local clock offset: 4.529 ms
Remote clock offset: -3.747 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:27 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.03 Mbit/s
95th percentile per-packet one-way delay: 26.454 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 7.03 Mbit/s
95th percentile per-packet one-way delay: 26.454 ms
Loss rate: 0.13%
```
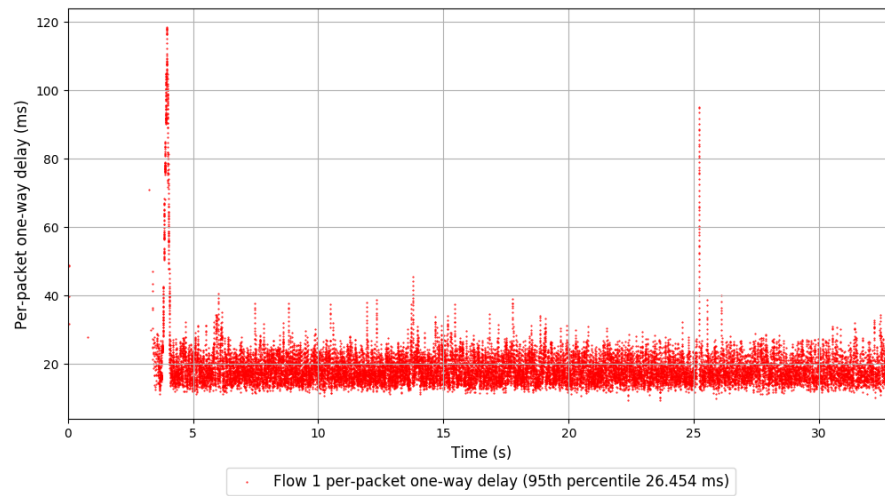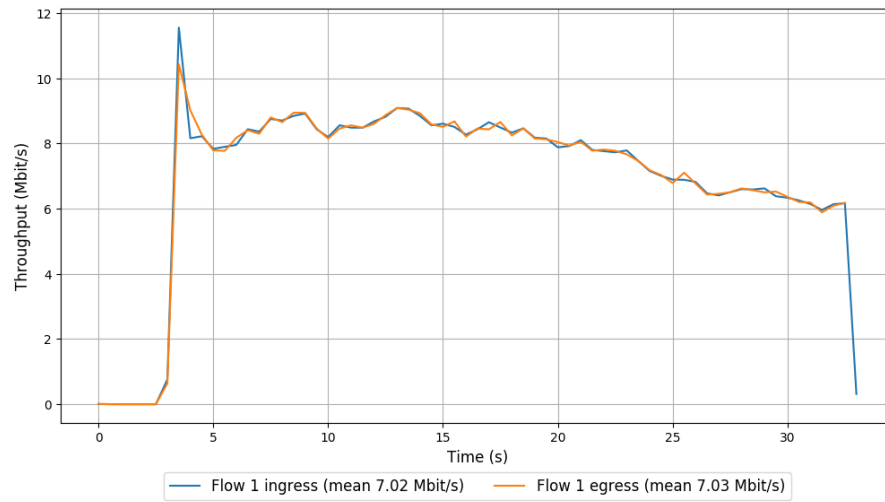
Run 1: Report of PCC — Data Link

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

Start at: Tue, 13 Jun 2017 06:49:10 +0000
End at: Tue, 13 Jun 2017 06:49:40 +0000
Local clock offset: 4.4 ms
Remote clock offset: -3.608 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:29 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.61 Mbit/s
95th percentile per-packet one-way delay: 278.695 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 11.61 Mbit/s
95th percentile per-packet one-way delay: 278.695 ms
Loss rate: 1.27%
```
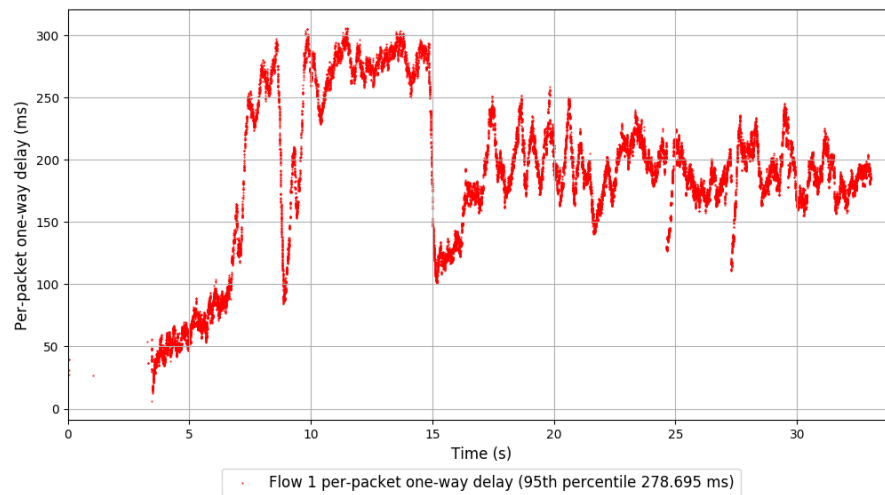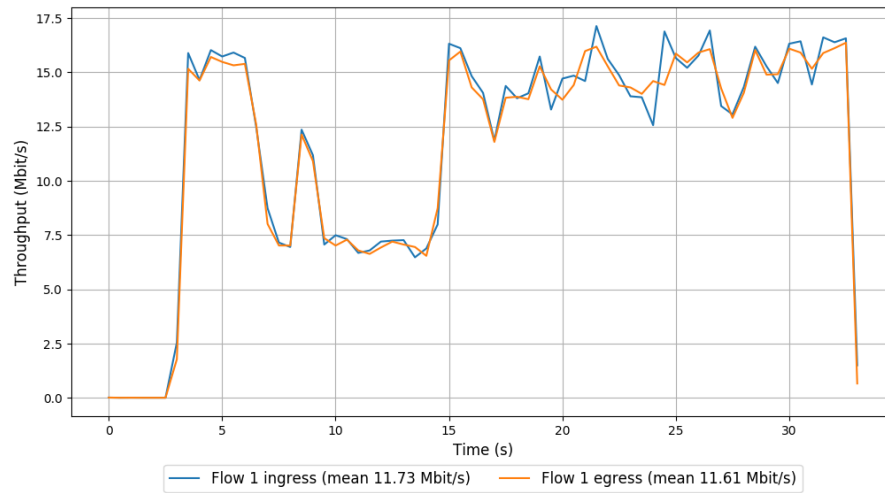
Run 1: Report of QUIC Cubic (toy) — Data Link

Flow 1 ingress (mean 11.73 Mbit/s) ——— Flow 1 egress (mean 11.61 Mbit/s)

· Flow 1 per-packet one-way delay (95th percentile 278.695 ms)

```
Run 1: Statistics of Saturator

Start at: Tue, 13 Jun 2017 06:47:54 +0000
End at: Tue, 13 Jun 2017 06:48:24 +0000
Local clock offset: 4.509 ms
Remote clock offset: -3.641 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:30 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.35 Mbit/s
95th percentile per-packet one-way delay: 237.458 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 13.35 Mbit/s
95th percentile per-packet one-way delay: 237.458 ms
Loss rate: 0.82%
```
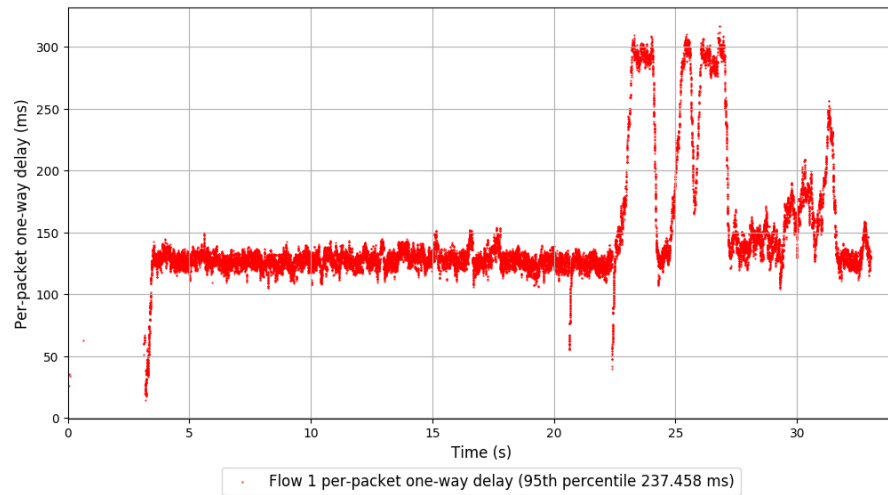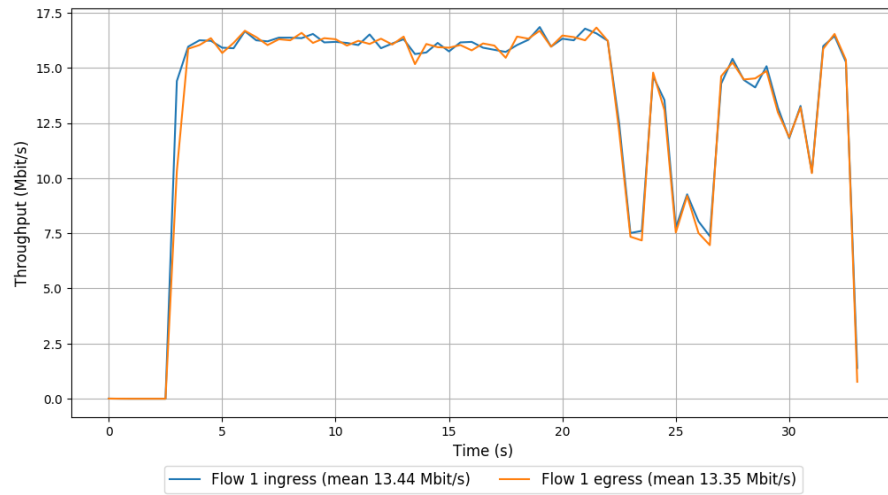
Run 1: Report of Saturator — Data Link

Flow 1 ingress (mean 13.44 Mbit/s) —— Flow 1 egress (mean 13.35 Mbit/s)

. Flow 1 per-packet one-way delay (95th percentile 237.458 ms)

```
Run 1: Statistics of SCReAM

Start at: Tue, 13 Jun 2017 06:42:53 +0000
End at: Tue, 13 Jun 2017 06:43:23 +0000
Local clock offset: 4.66 ms
Remote clock offset: -3.751 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:30 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 60.625 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 60.625 ms
Loss rate: 0.26%
```
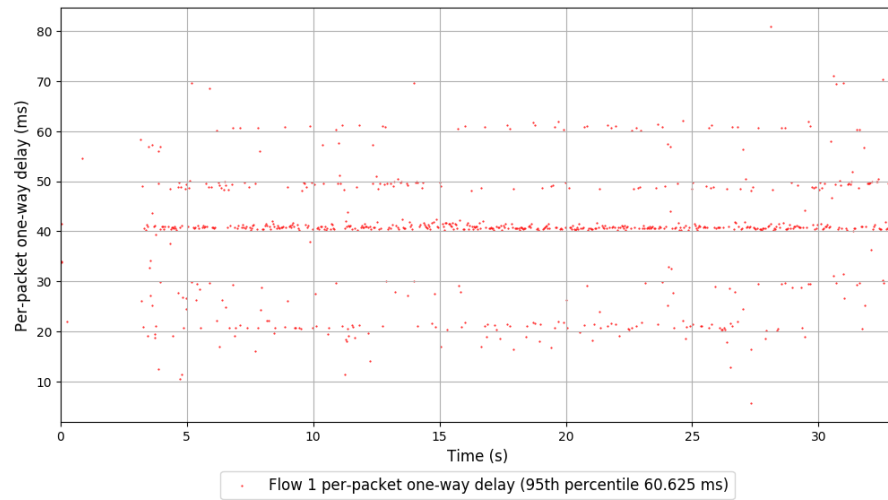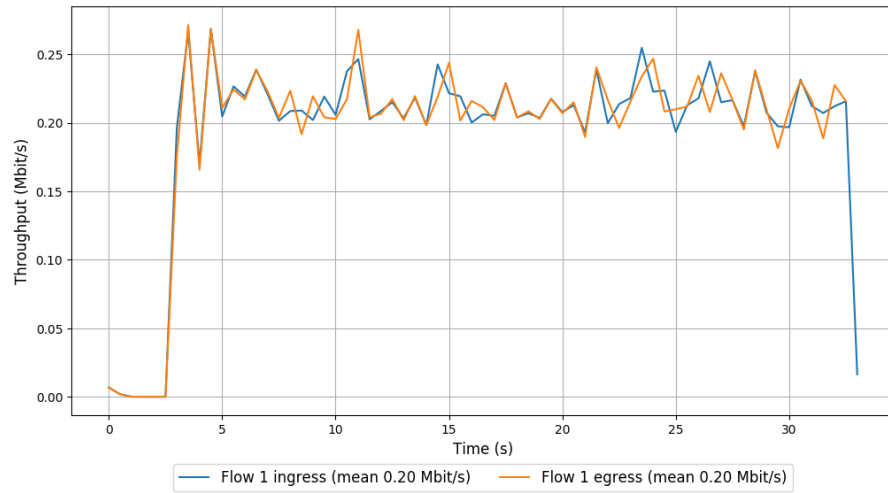
Run 1: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.20 Mbit/s) Flow 1 egress (mean 0.20 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 60.625 ms)

```
Run 1: Statistics of Sprout

Start at: Tue, 13 Jun 2017 06:51:41 +0000
End at: Tue, 13 Jun 2017 06:52:11 +0000
Local clock offset: 4.483 ms
Remote clock offset: -3.682 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:32 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.34 Mbit/s
95th percentile per-packet one-way delay: 44.842 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 13.34 Mbit/s
95th percentile per-packet one-way delay: 44.842 ms
Loss rate: 0.76%
```
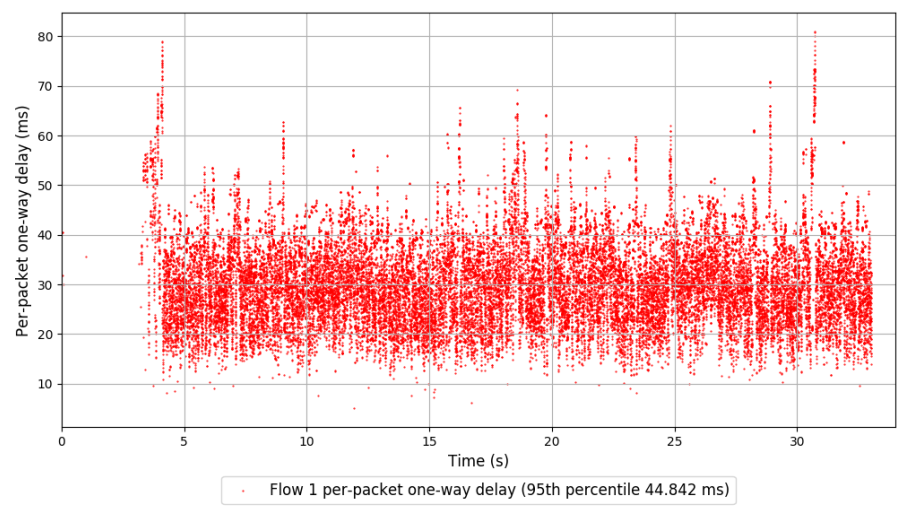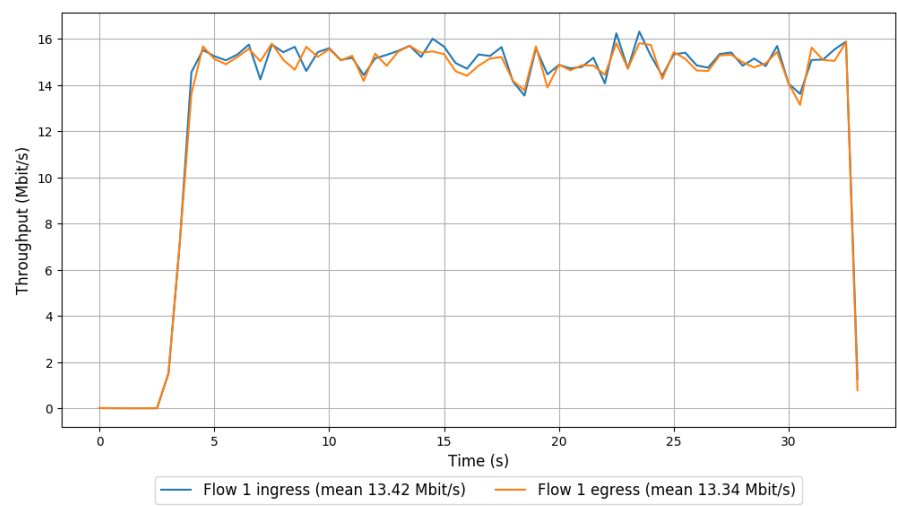
Run 1: Report of Sprout — Data Link

```
Run 1: Statistics of TaoVA-100x

Start at: Tue, 13 Jun 2017 06:41:37 +0000
End at: Tue, 13 Jun 2017 06:42:07 +0000
Local clock offset: 4.656 ms
Remote clock offset: -3.752 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:35 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.41 Mbit/s
95th percentile per-packet one-way delay: 174.080 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 10.41 Mbit/s
95th percentile per-packet one-way delay: 174.080 ms
Loss rate: 0.66%
```
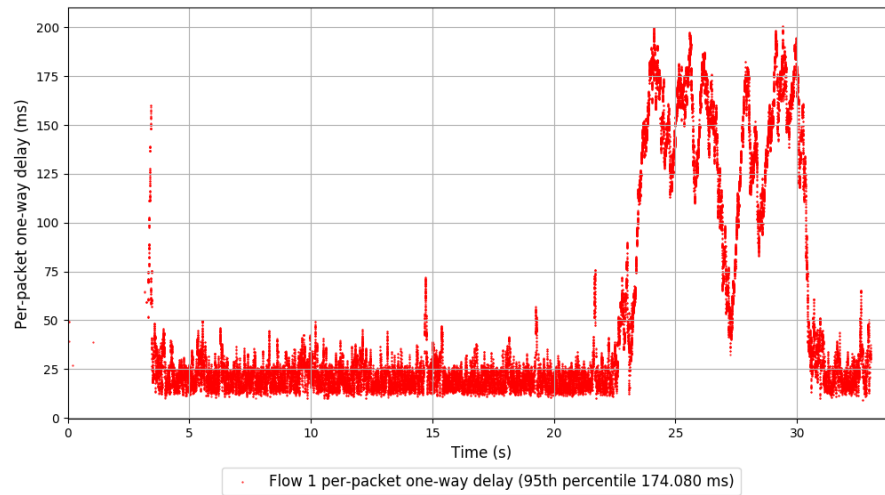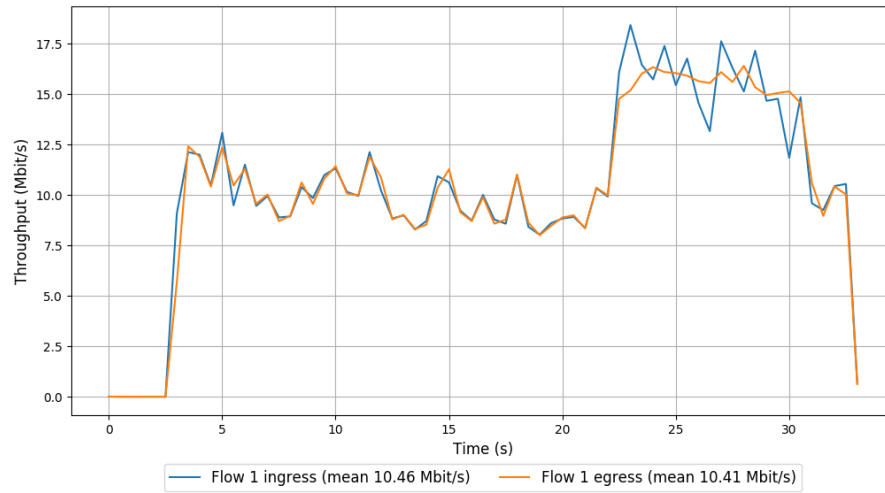
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 10.46 Mbit/s)   Flow 1 egress (mean 10.41 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 174.080 ms)

```
Run 1: Statistics of TCP Vegas

Start at: Tue, 13 Jun 2017 06:50:26 +0000
End at: Tue, 13 Jun 2017 06:50:56 +0000
Local clock offset: 4.492 ms
Remote clock offset: -3.628 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:35 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.61 Mbit/s
95th percentile per-packet one-way delay: 85.395 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 4.61 Mbit/s
95th percentile per-packet one-way delay: 85.395 ms
Loss rate: 0.03%
```
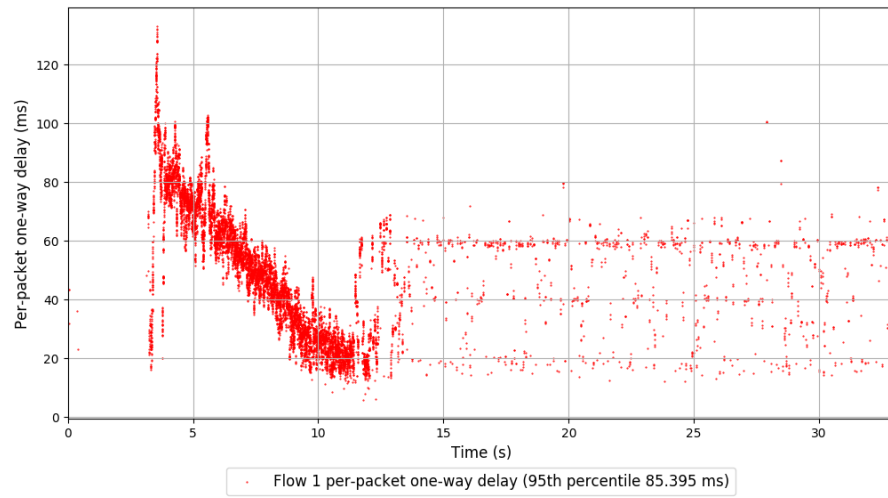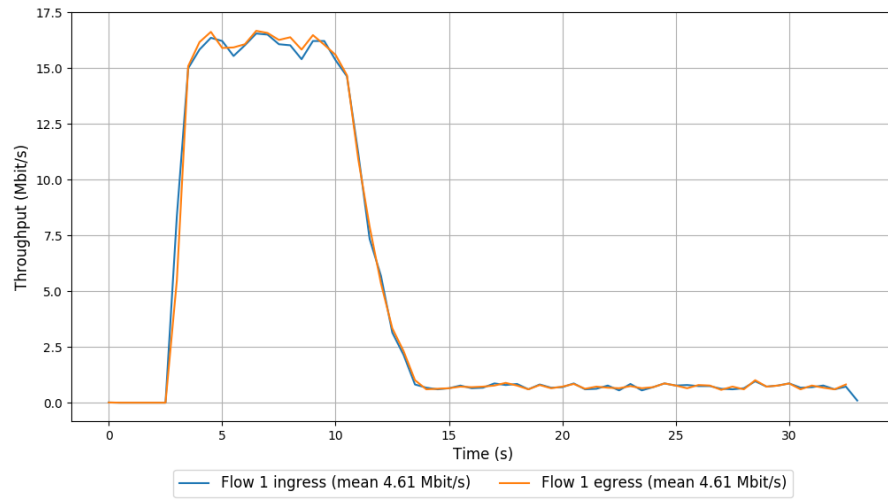
Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 4.61 Mbit/s)   Flow 1 egress (mean 4.61 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 85.395 ms)

```
Run 1: Statistics of Verus

Start at: Tue, 13 Jun 2017 06:46:39 +0000
End at: Tue, 13 Jun 2017 06:47:09 +0000
Local clock offset: 4.497 ms
Remote clock offset: -3.651 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:37 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.78 Mbit/s
95th percentile per-packet one-way delay: 95.694 ms
Loss rate: 13.79%
-- Flow 1:
Average throughput: 9.78 Mbit/s
95th percentile per-packet one-way delay: 95.694 ms
Loss rate: 13.79%
```
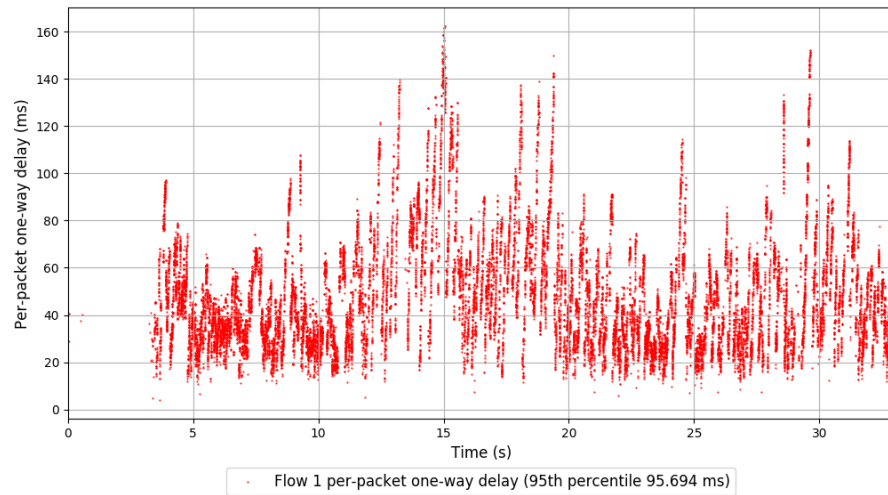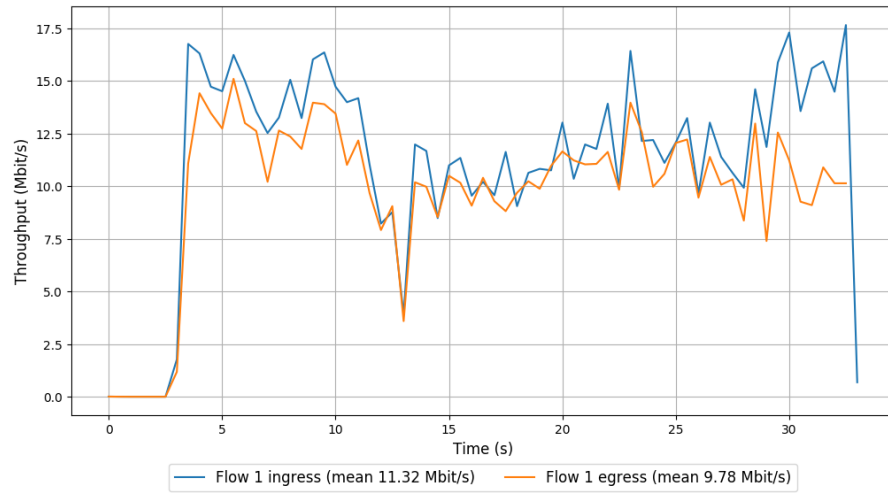
Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 11.32 Mbit/s)   Flow 1 egress (mean 9.78 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 95.694 ms)

```
Run 1: Statistics of WebRTC media

Start at: Tue, 13 Jun 2017 06:55:28 +0000
End at: Tue, 13 Jun 2017 06:55:58 +0000
Local clock offset: 4.417 ms
Remote clock offset: -3.726 ms


# Below is generated by plot.py at Tue, 13 Jun 2017 06:57:37 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 58.341 ms
Loss rate: 0.28%
-- Flow 1:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 58.341 ms
Loss rate: 0.28%
```

Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.83 Mbit/s)   Flow 1 egress (mean 1.83 Mbit/s)

Flow 1 per-packet one-way delay (95th percentile 58.341 ms)