

Pantheon Summary (Generated at Mon, 10 Jul 2017 22:22:08 +0000 with
pantheon version c3610718e2bbac84102e8ac47b889a75d4392d79)

Repeated the test of 15 congestion control schemes once.

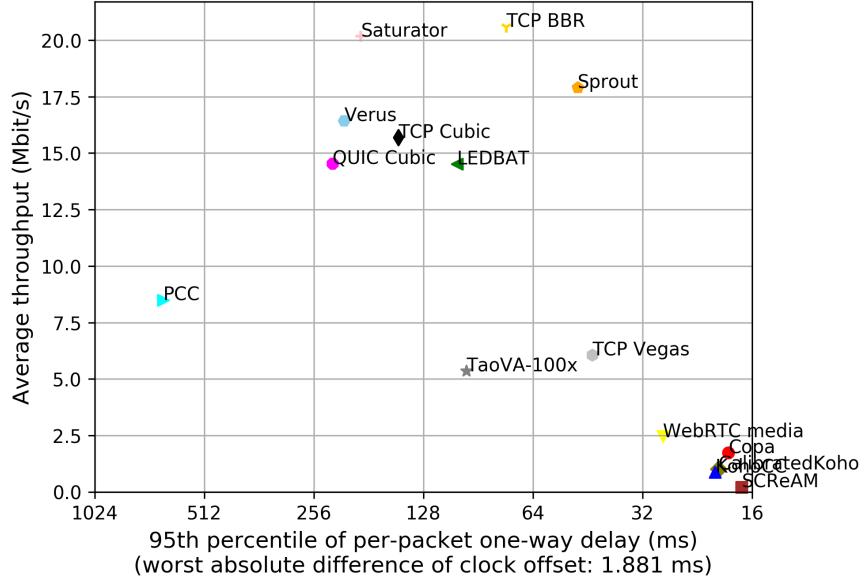
Each test lasted for 30 seconds running 1 flow.

Data path **from** AWS Brazil 1 Ethernet **to** Brazil ppp0.

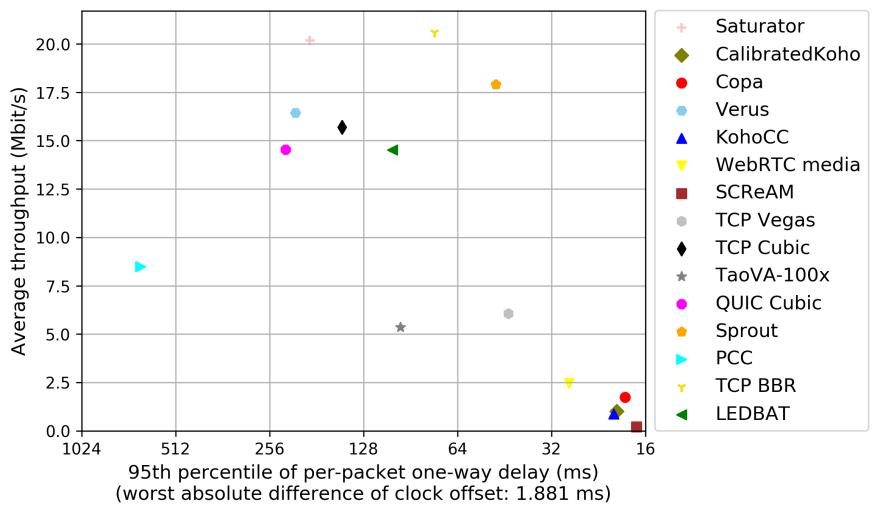
NTP offset measured against gps.ntp.br.

```
git branch: master @ c3610718e2bbac84102e8ac47b889a75d4392d79
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 @ c792f8e8e0704b1646a0e024766675d8e9a835f1
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 AWS Brazil 1 Ethernet to Brazil ppp0, 1 run of 30s each per scheme
(mean of all runs by scheme)



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



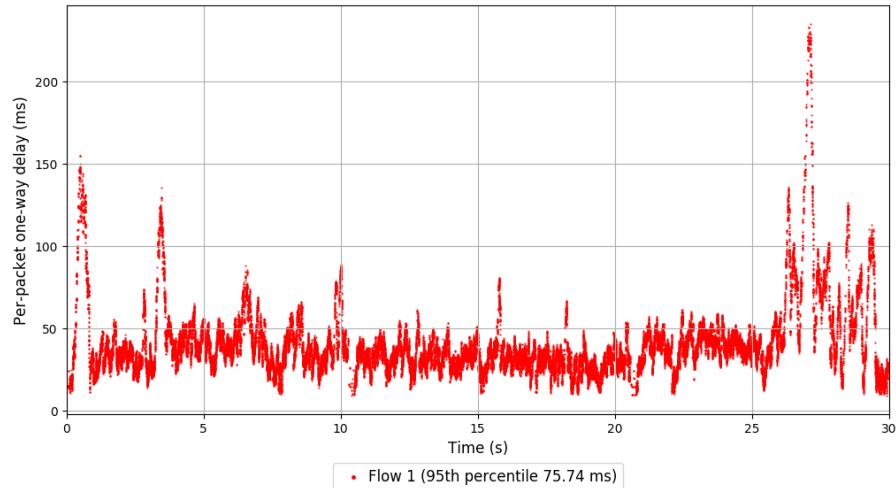
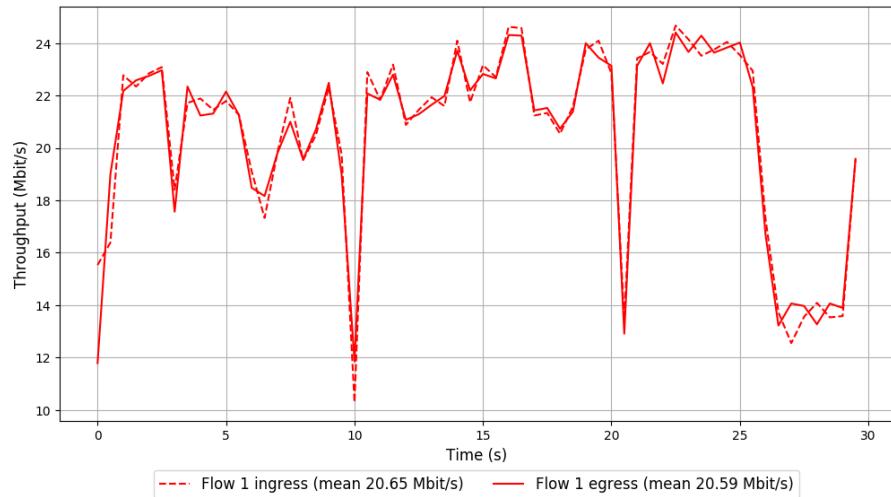
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	1	20.59	75.74	0.36
CalibratedKoho	1	1.01	19.78	0.04
Copa	1	1.73	18.57	0.05
TCP Cubic	1	15.70	149.72	0.40
KohoCC	1	0.88	20.18	0.05
LEDBAT	1	14.52	103.48	0.54
PCC	1	8.49	663.93	0.82
QUIC Cubic	1	14.54	227.05	0.24
Saturator	1	20.17	190.24	0.58
SCReAM	1	0.21	17.07	0.00
Sprout	1	17.90	48.25	0.32
TaoVA-100x	1	5.35	97.55	0.07
TCP Vegas	1	6.05	44.00	0.07
Verus	1	16.44	211.24	0.68
WebRTC media	1	2.45	28.13	0.00

Run 1: Statistics of TCP BBR

```
Start at: Mon, 10 Jul 2017 22:04:42 +0000
End at: Mon, 10 Jul 2017 22:05:12 +0000
Local clock offset: -1.928 ms
Remote clock offset: -0.135 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:52 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 20.59 Mbit/s
95th percentile per-packet one-way delay: 75.740 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 20.59 Mbit/s
95th percentile per-packet one-way delay: 75.740 ms
Loss rate: 0.36%
```

Run 1: Report of TCP BBR — Data Link



```
Run 1: Statistics of CalibratedKoho
```

```
Start at: Mon, 10 Jul 2017 21:59:21 +0000
```

```
End at: Mon, 10 Jul 2017 21:59:51 +0000
```

```
Local clock offset: -2.046 ms
```

```
Remote clock offset: -0.199 ms
```

```
# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:52 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 1.01 Mbit/s
```

```
95th percentile per-packet one-way delay: 19.776 ms
```

```
Loss rate: 0.04%
```

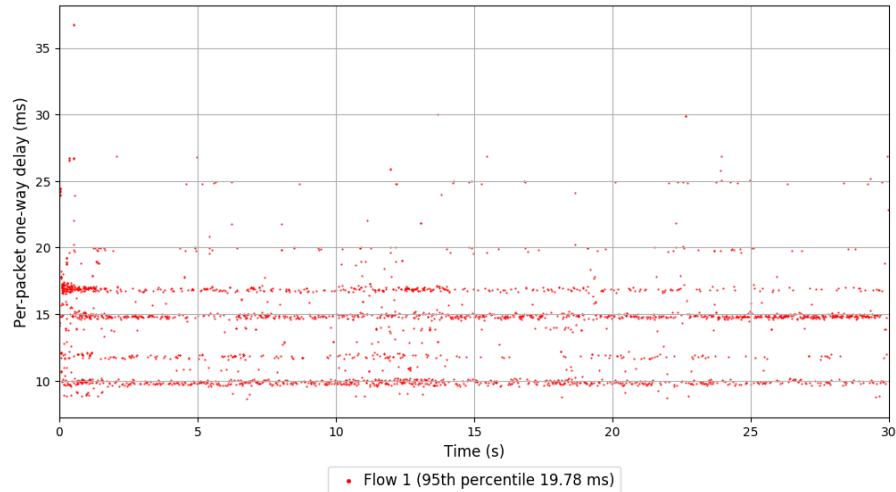
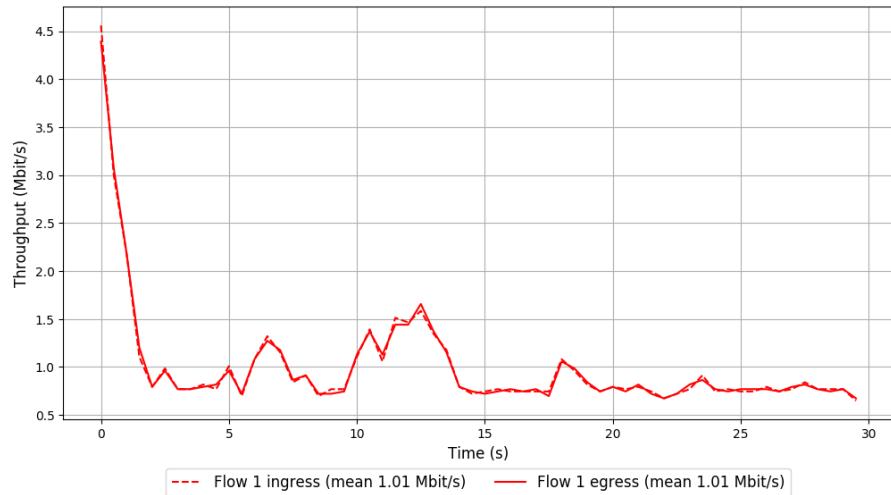
```
-- Flow 1:
```

```
Average throughput: 1.01 Mbit/s
```

```
95th percentile per-packet one-way delay: 19.776 ms
```

```
Loss rate: 0.04%
```

Run 1: Report of CalibratedKoho — Data Link

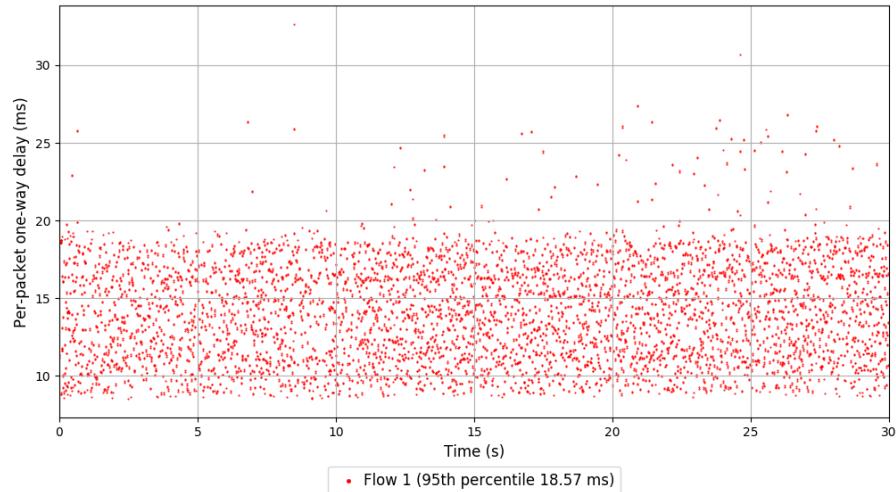
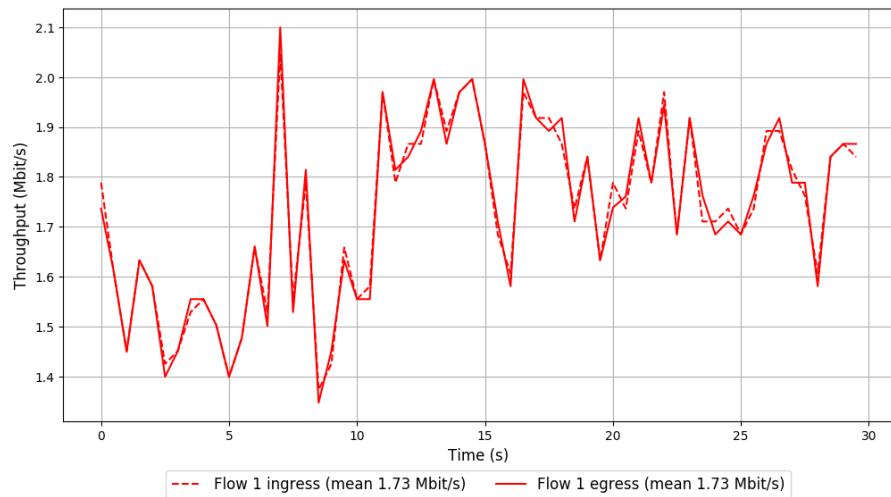


Run 1: Statistics of Copa

```
Start at: Mon, 10 Jul 2017 21:53:59 +0000
End at: Mon, 10 Jul 2017 21:54:29 +0000
Local clock offset: -2.007 ms
Remote clock offset: -0.224 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:52 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 18.570 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 18.570 ms
Loss rate: 0.05%
```

Run 1: Report of Copa — Data Link

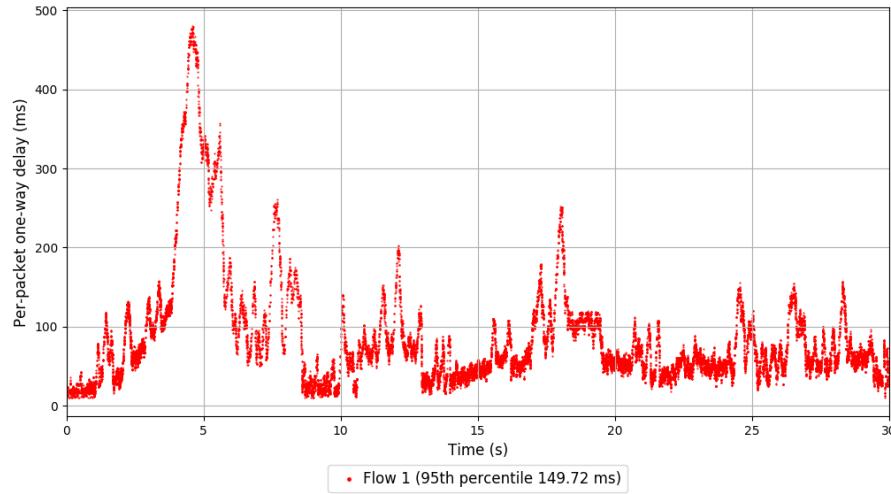
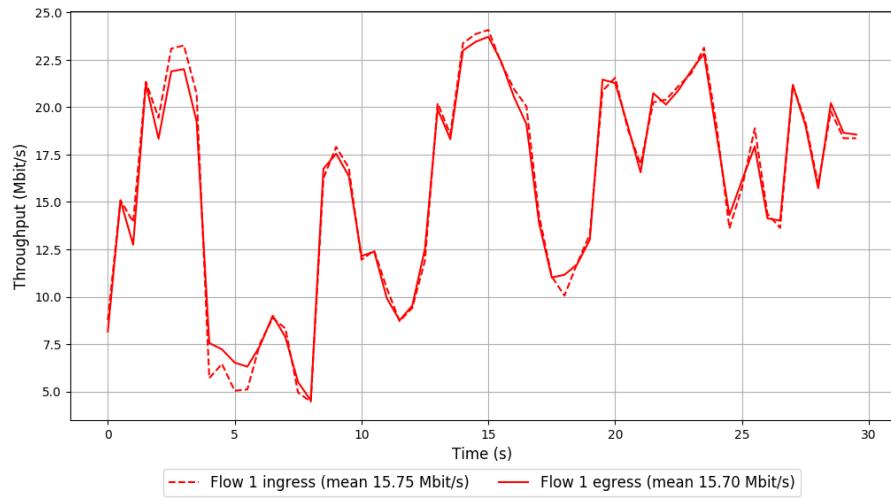


Run 1: Statistics of TCP Cubic

```
Start at: Mon, 10 Jul 2017 22:00:25 +0000
End at: Mon, 10 Jul 2017 22:00:55 +0000
Local clock offset: -1.972 ms
Remote clock offset: -0.128 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:54 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.70 Mbit/s
95th percentile per-packet one-way delay: 149.717 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 15.70 Mbit/s
95th percentile per-packet one-way delay: 149.717 ms
Loss rate: 0.40%
```

Run 1: Report of TCP Cubic — Data Link



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

```
Start at: Mon, 10 Jul 2017 21:51:50 +0000
```

```
End at: Mon, 10 Jul 2017 21:52:20 +0000
```

```
Local clock offset: -1.975 ms
```

```
Remote clock offset: -0.198 ms
```

```
# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:54 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 0.88 Mbit/s
```

```
95th percentile per-packet one-way delay: 20.185 ms
```

```
Loss rate: 0.05%
```

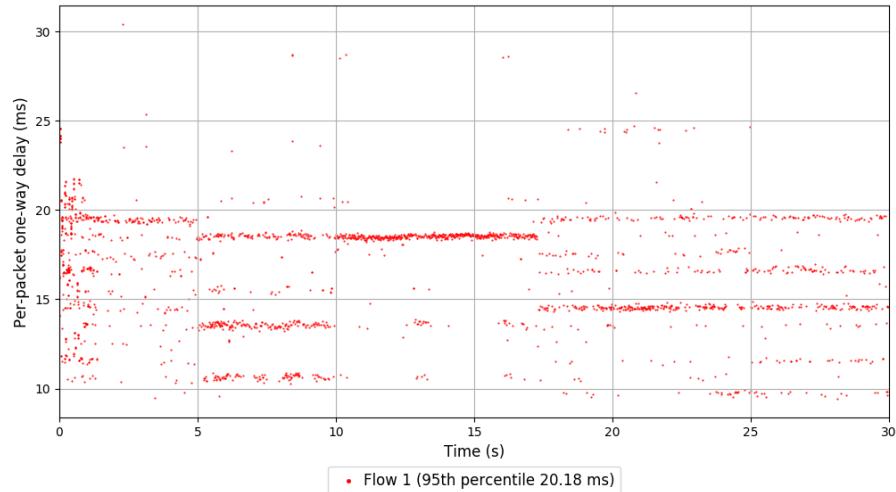
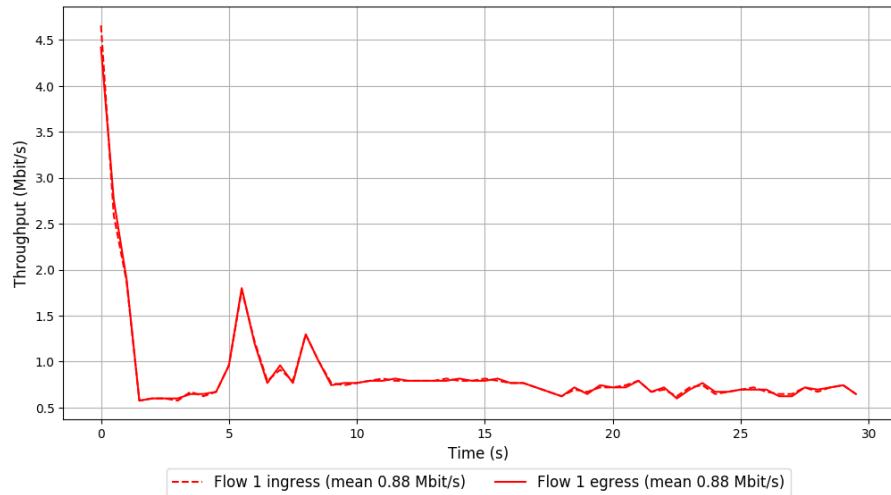
```
-- Flow 1:
```

```
Average throughput: 0.88 Mbit/s
```

```
95th percentile per-packet one-way delay: 20.185 ms
```

```
Loss rate: 0.05%
```

Run 1: Report of KohoCC — Data Link

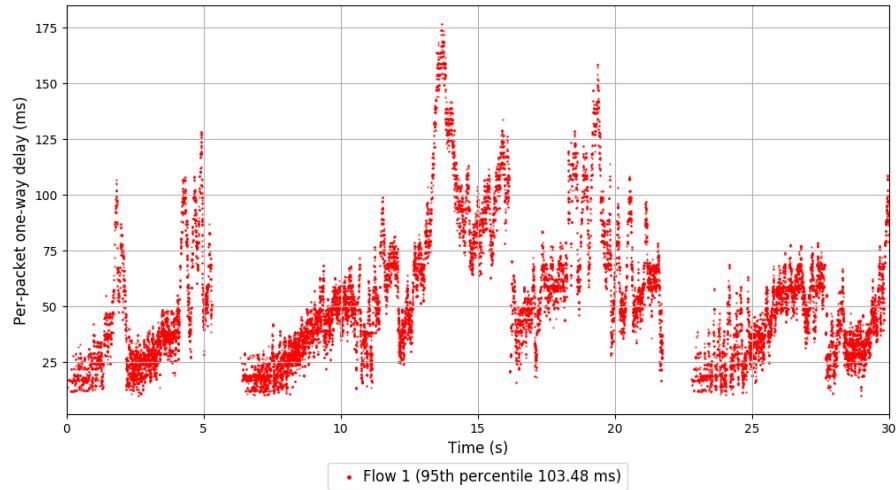
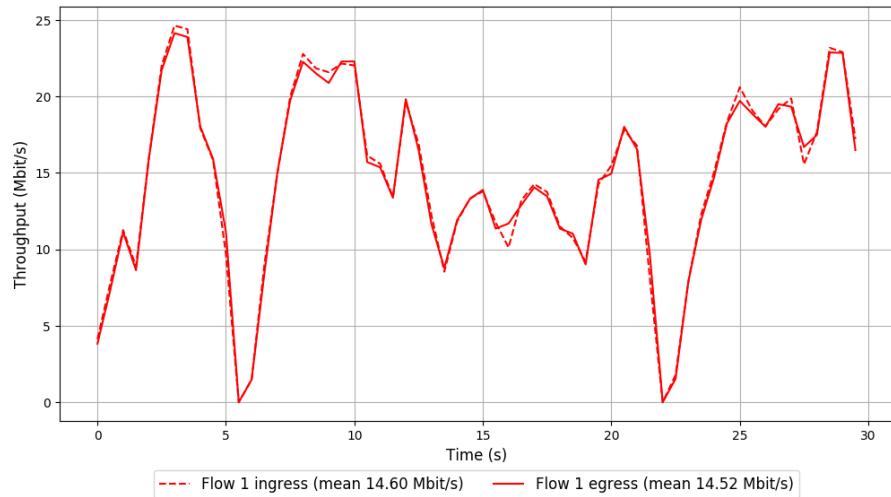


```
Run 1: Statistics of LEDBAT
```

```
Start at: Mon, 10 Jul 2017 21:49:41 +0000
End at: Mon, 10 Jul 2017 21:50:11 +0000
Local clock offset: -1.999 ms
Remote clock offset: -0.129 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:56 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.52 Mbit/s
95th percentile per-packet one-way delay: 103.485 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 14.52 Mbit/s
95th percentile per-packet one-way delay: 103.485 ms
Loss rate: 0.54%
```

Run 1: Report of LEDBAT — Data Link

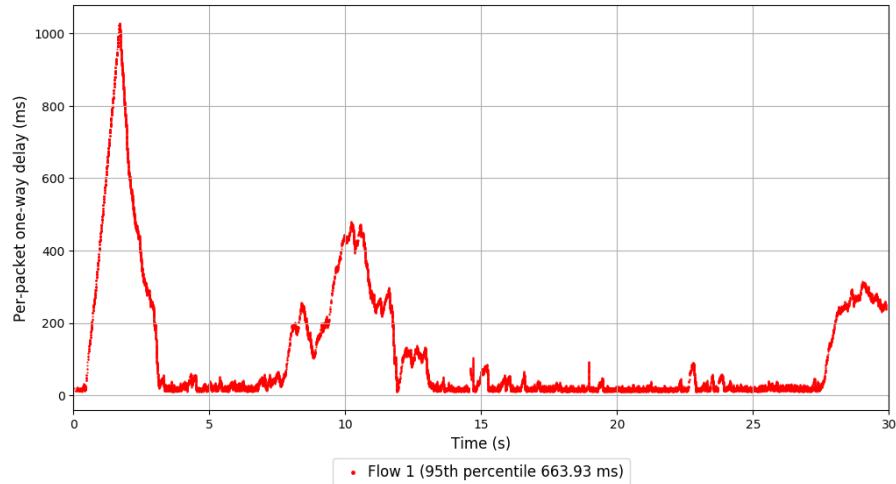
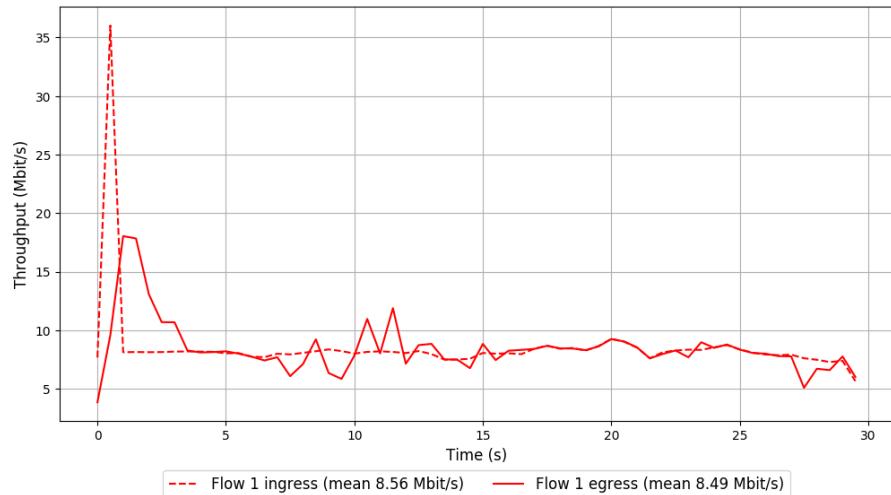


Run 1: Statistics of PCC

```
Start at: Mon, 10 Jul 2017 21:55:03 +0000
End at: Mon, 10 Jul 2017 21:55:33 +0000
Local clock offset: -2.016 ms
Remote clock offset: -0.167 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:56 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.49 Mbit/s
95th percentile per-packet one-way delay: 663.931 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 8.49 Mbit/s
95th percentile per-packet one-way delay: 663.931 ms
Loss rate: 0.82%
```

Run 1: Report of PCC — Data Link

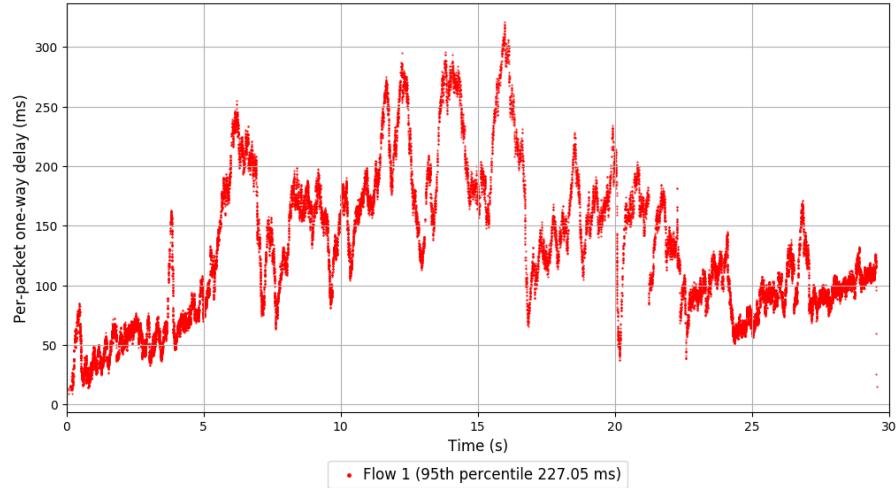
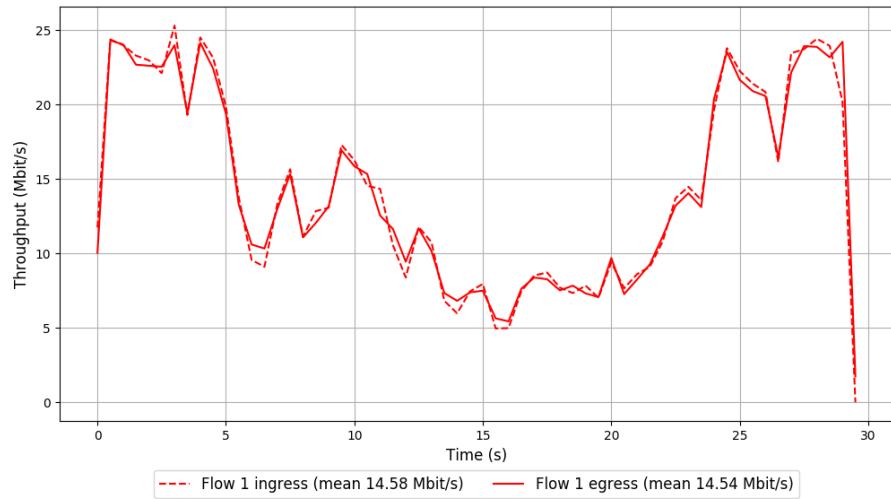


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: Mon, 10 Jul 2017 22:02:34 +0000
End at: Mon, 10 Jul 2017 22:03:04 +0000
Local clock offset: -1.951 ms
Remote clock offset: -0.122 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:21:58 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.54 Mbit/s
95th percentile per-packet one-way delay: 227.051 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 14.54 Mbit/s
95th percentile per-packet one-way delay: 227.051 ms
Loss rate: 0.24%
```

Run 1: Report of QUIC Cubic — Data Link



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

```
Start at: Mon, 10 Jul 2017 21:52:54 +0000
```

```
End at: Mon, 10 Jul 2017 21:53:24 +0000
```

```
Local clock offset: -1.994 ms
```

```
Remote clock offset: -0.143 ms
```

```
# Below is generated by plot.py at Mon, 10 Jul 2017 22:22:00 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 20.17 Mbit/s
```

```
95th percentile per-packet one-way delay: 190.236 ms
```

```
Loss rate: 0.58%
```

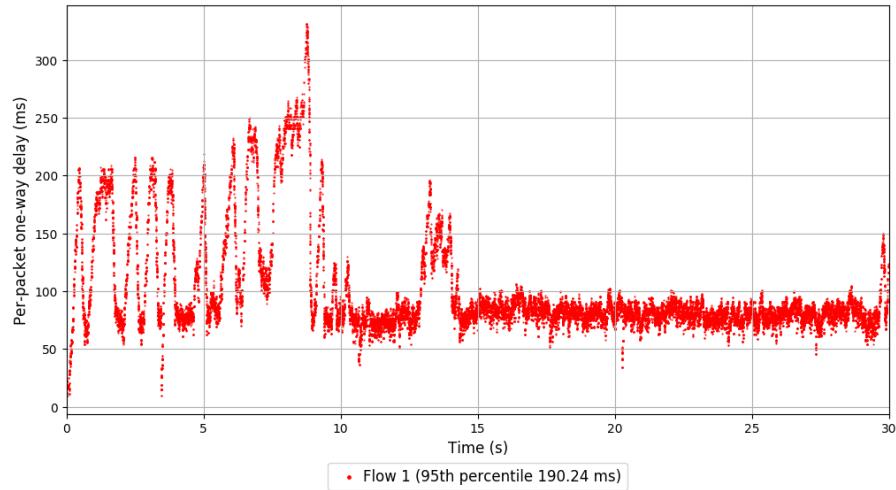
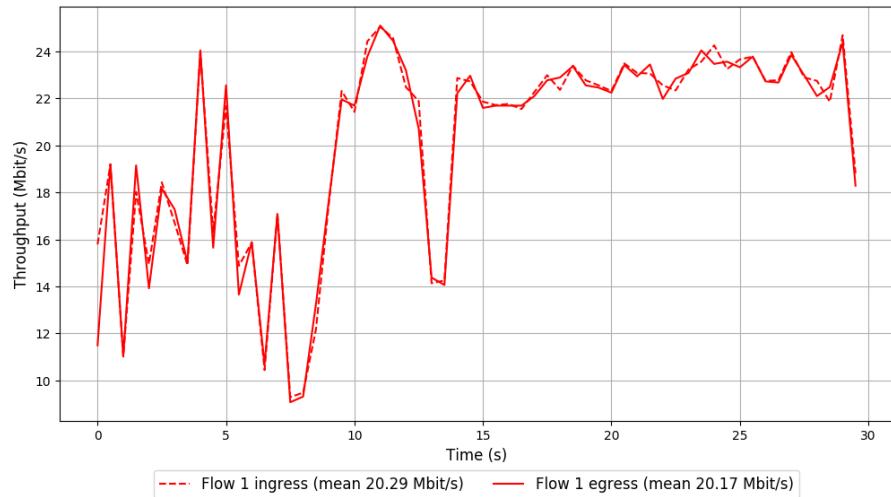
```
-- Flow 1:
```

```
Average throughput: 20.17 Mbit/s
```

```
95th percentile per-packet one-way delay: 190.236 ms
```

```
Loss rate: 0.58%
```

Run 1: Report of Saturator — Data Link

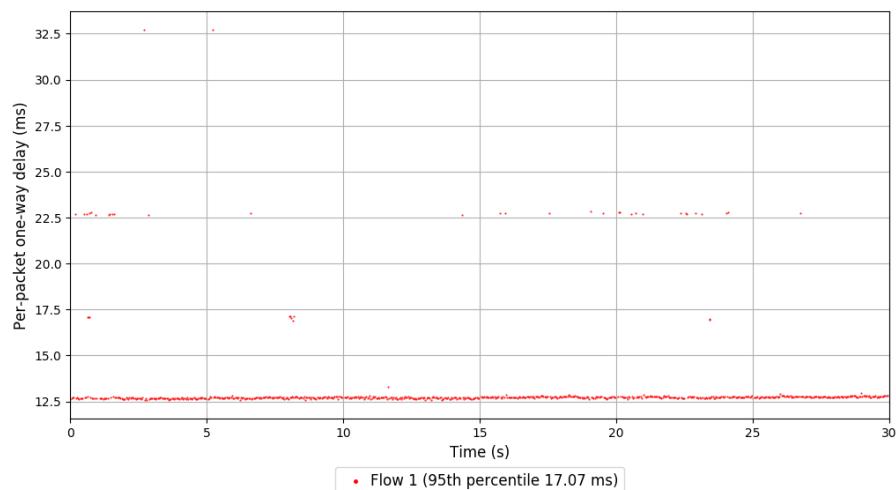
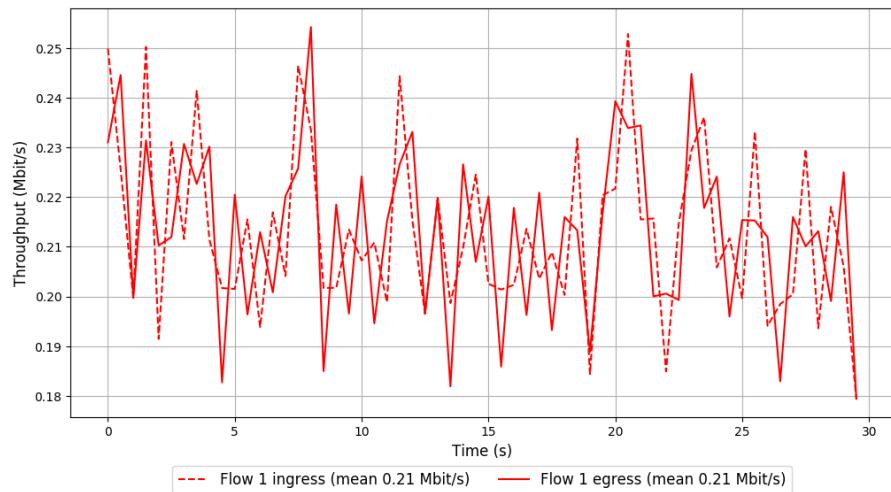


```
Run 1: Statistics of SCReAM
```

```
Start at: Mon, 10 Jul 2017 22:03:39 +0000
End at: Mon, 10 Jul 2017 22:04:09 +0000
Local clock offset: -1.957 ms
Remote clock offset: -0.172 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:22:00 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 17.067 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 17.067 ms
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

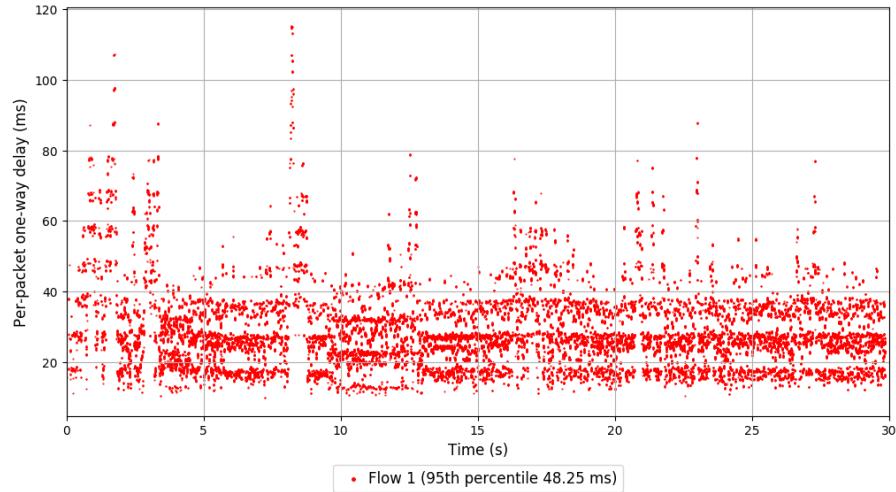
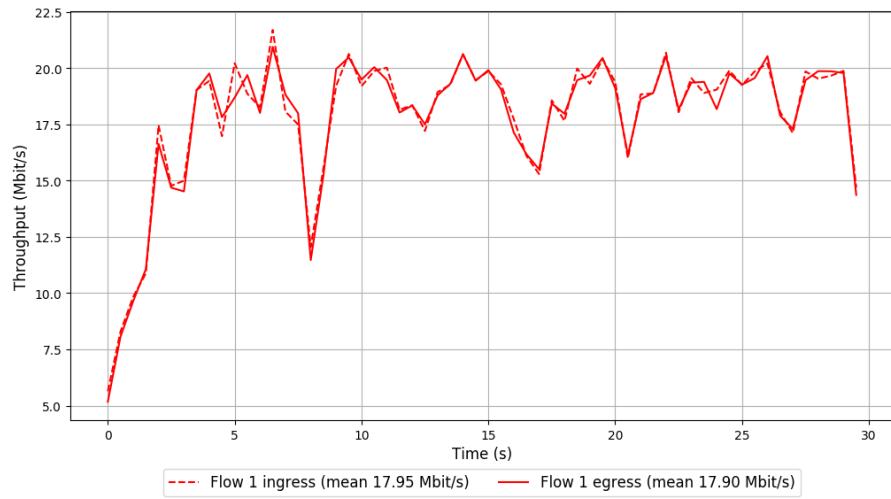


Run 1: Statistics of Sprout

```
Start at: Mon, 10 Jul 2017 21:50:46 +0000
End at: Mon, 10 Jul 2017 21:51:16 +0000
Local clock offset: -1.993 ms
Remote clock offset: -0.151 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:22:03 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.90 Mbit/s
95th percentile per-packet one-way delay: 48.248 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 17.90 Mbit/s
95th percentile per-packet one-way delay: 48.248 ms
Loss rate: 0.32%
```

Run 1: Report of Sprout — Data Link

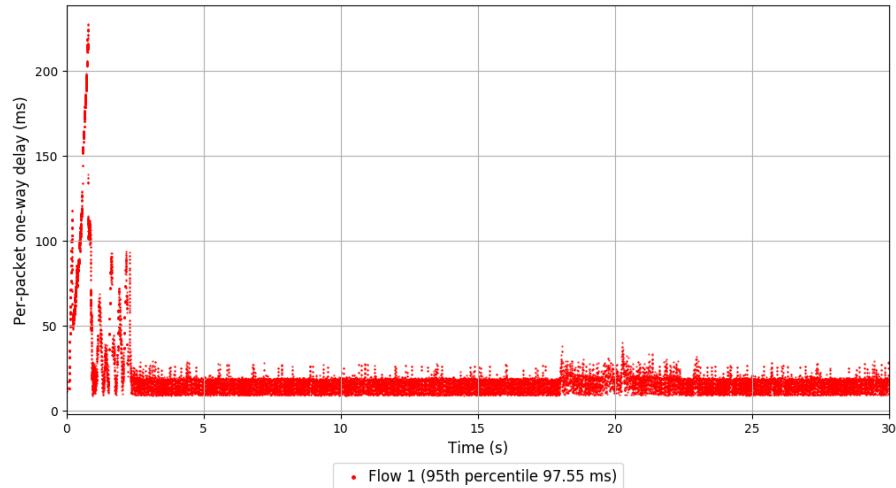
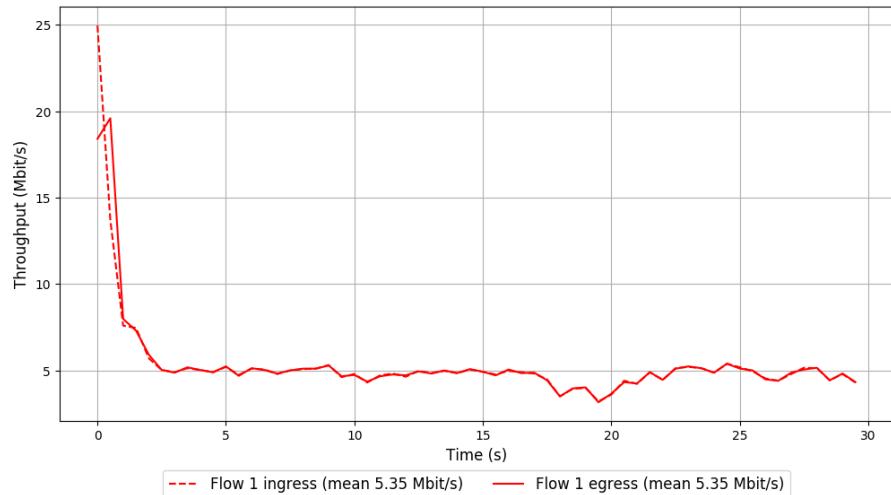


Run 1: Statistics of TaoVA-100x

```
Start at: Mon, 10 Jul 2017 22:01:30 +0000
End at: Mon, 10 Jul 2017 22:02:00 +0000
Local clock offset: -1.945 ms
Remote clock offset: -0.105 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:22:03 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.35 Mbit/s
95th percentile per-packet one-way delay: 97.547 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 5.35 Mbit/s
95th percentile per-packet one-way delay: 97.547 ms
Loss rate: 0.07%
```

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

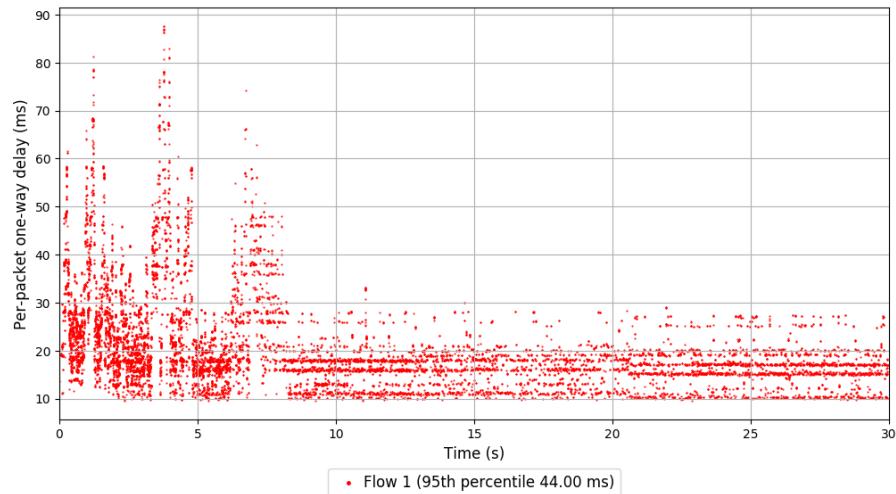


Run 1: Statistics of TCP Vegas

```
Start at: Mon, 10 Jul 2017 21:56:08 +0000
End at: Mon, 10 Jul 2017 21:56:38 +0000
Local clock offset: -2.007 ms
Remote clock offset: -0.223 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:22:04 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.05 Mbit/s
95th percentile per-packet one-way delay: 43.996 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 6.05 Mbit/s
95th percentile per-packet one-way delay: 43.996 ms
Loss rate: 0.07%
```

Run 1: Report of TCP Vegas — Data Link

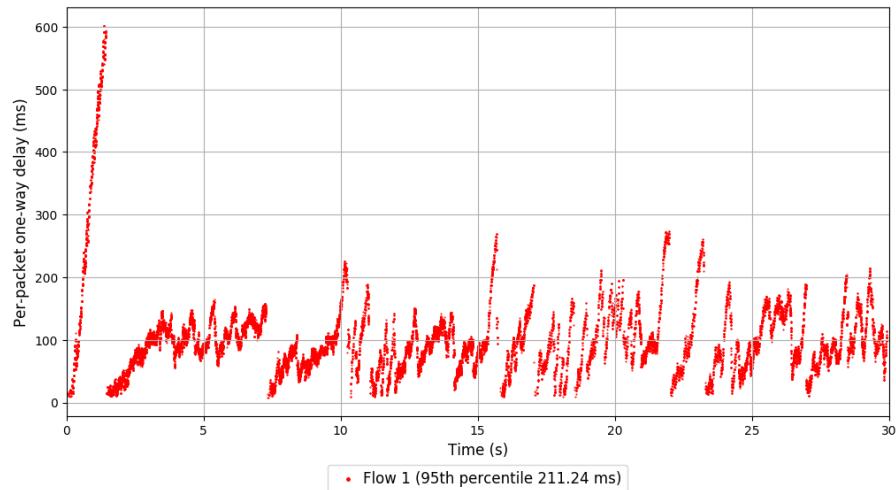
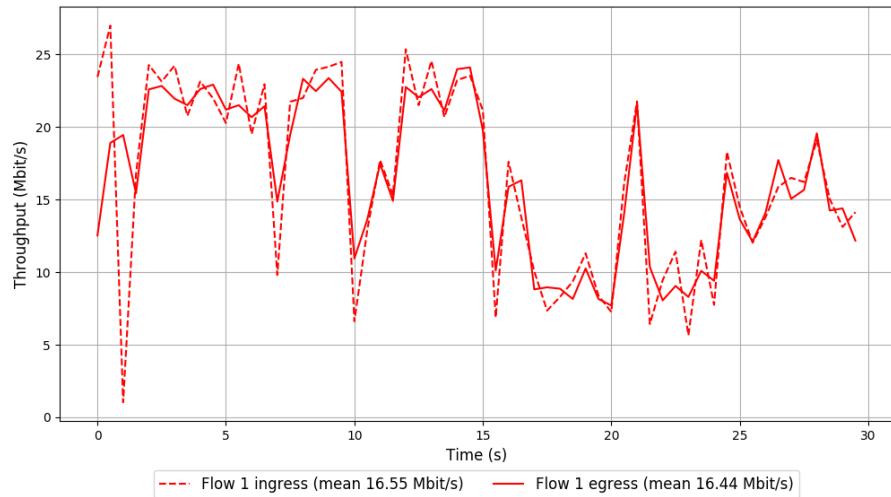


Run 1: Statistics of Verus

```
Start at: Mon, 10 Jul 2017 21:57:12 +0000
End at: Mon, 10 Jul 2017 21:57:42 +0000
Local clock offset: -2.046 ms
Remote clock offset: -0.165 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:22:06 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.44 Mbit/s
95th percentile per-packet one-way delay: 211.239 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 16.44 Mbit/s
95th percentile per-packet one-way delay: 211.239 ms
Loss rate: 0.68%
```

Run 1: Report of Verus — Data Link



```
Run 1: Statistics of WebRTC media

Start at: Mon, 10 Jul 2017 21:58:17 +0000
End at: Mon, 10 Jul 2017 21:58:47 +0000
Local clock offset: -1.972 ms
Remote clock offset: -0.195 ms

# Below is generated by plot.py at Mon, 10 Jul 2017 22:22:06 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 28.129 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.45 Mbit/s
95th percentile per-packet one-way delay: 28.129 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

