

Pantheon Summary (Generated at Sun, 06 Aug 2017 09:06:53 +0000 with pantheon version a934ee3822380a12762347e6bc8bd1f3e836e73b)

Repeated the test of 15 congestion control schemes 3 times.

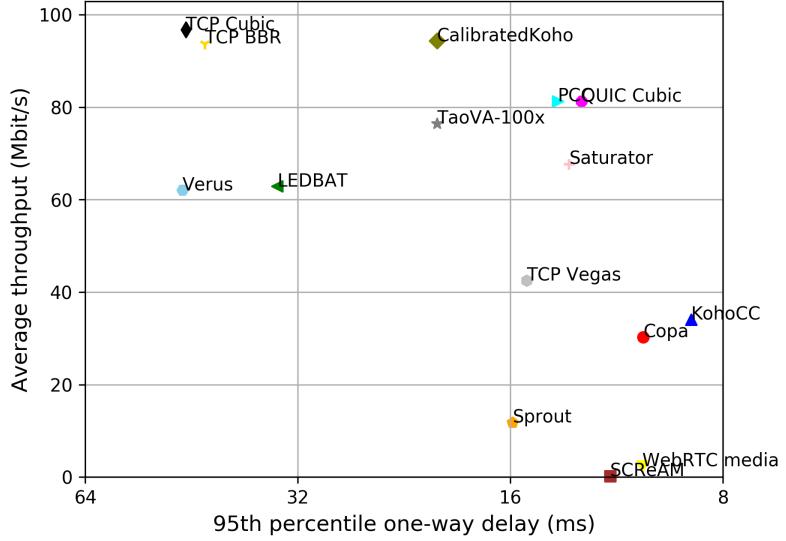
Each test lasted for 30 seconds running 1 flow.

Data path: AWS India 1 Ethernet (*local*) → India Ethernet (*remote*).

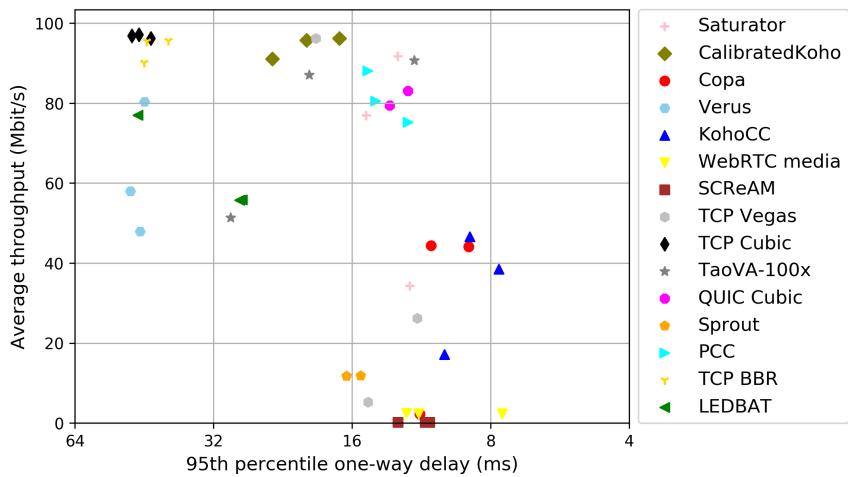
NTP offset measured against nets.org.sg and has been applied to correct the timestamps in logs.

```
git branch: master @ a934ee3822380a12762347e6bc8bd1f3e836e73b
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 @ b3465b942e2826f2b179aab4a906ce6bb7cf3cf
third_party/pantheon-stimuli @ fc73a85ca16c34366d1888dc8a0d0d88d4ebf2a7
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
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 AWS India 1 Ethernet to India Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS India 1 Ethernet to India Ethernet, 3 runs 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	3	93.73	43.35	8.74
CalibratedKoho	3	94.33	20.32	0.01
Copa	3	30.26	10.37	0.00
TCP Cubic	3	96.72	46.13	0.35
KohoCC	3	34.08	8.88	0.05
LEDBAT	3	62.86	34.21	0.09
PCC	3	81.27	13.71	0.75
QUIC Cubic	3	81.25	12.69	0.00
Saturator	3	67.66	13.21	0.00
SCReAM	3	0.20	11.56	0.05
Sprout	3	11.83	15.90	0.17
TaoVA-100x	3	76.40	20.32	0.00
TCP Vegas	3	42.54	15.17	0.06
Verus	3	62.07	46.63	37.58
WebRTC media	3	2.37	10.40	0.00

Run 1: Statistics of TCP BBR

Start at: Sun, 06 Aug 2017 08:12:00 +0000

End at: Sun, 06 Aug 2017 08:12:30 +0000

Local clock offset: 1.713 ms

Remote clock offset: -5.214 ms

Below is generated by plot.py at Sun, 06 Aug 2017 09:03:52 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 90.14 Mbit/s

95th percentile per-packet one-way delay: 45.258 ms

Loss rate: 23.90%

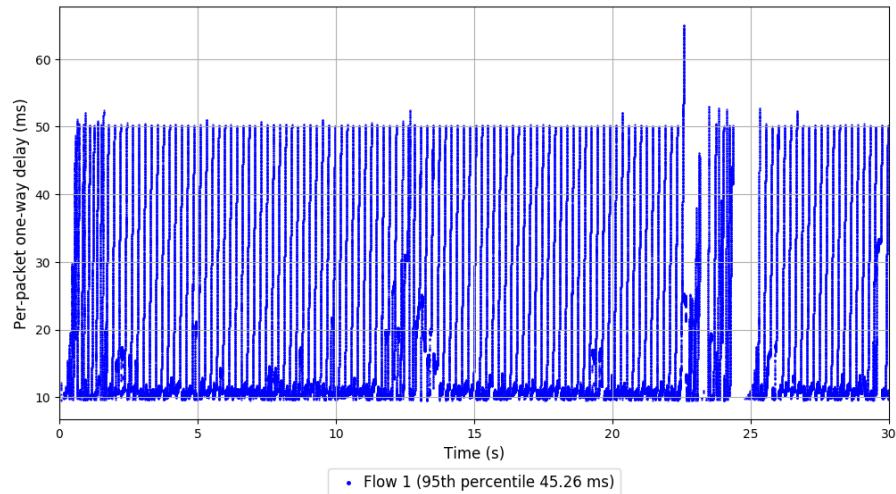
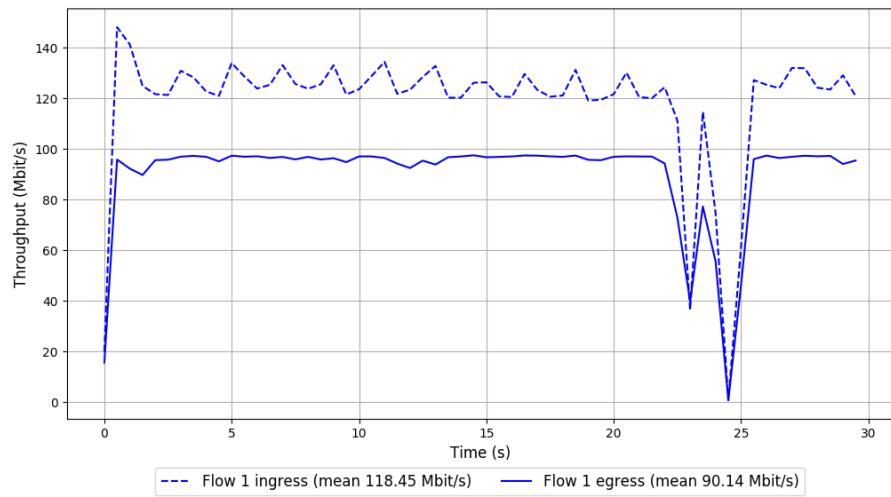
-- Flow 1:

Average throughput: 90.14 Mbit/s

95th percentile per-packet one-way delay: 45.258 ms

Loss rate: 23.90%

Run 1: Report of TCP BBR — Data Link

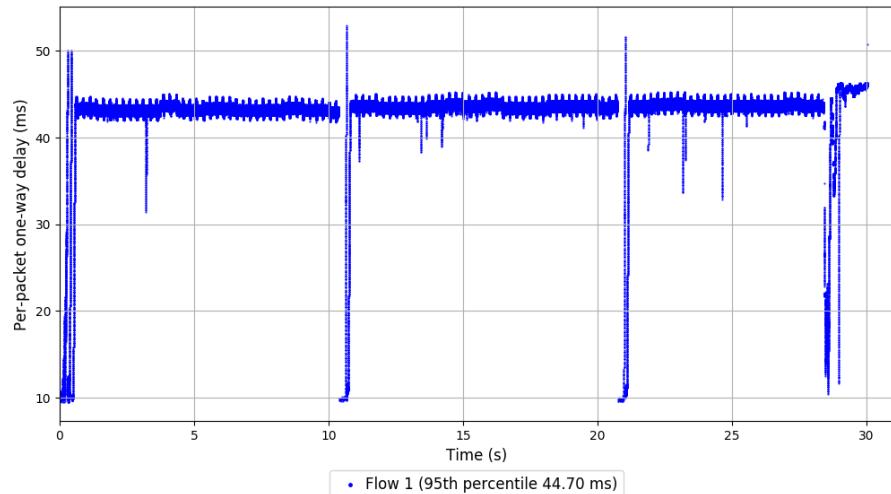
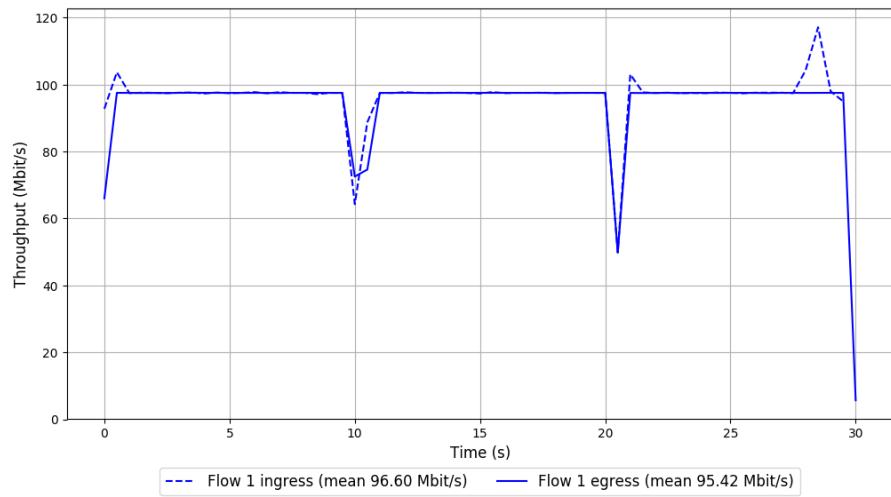


Run 2: Statistics of TCP BBR

```
Start at: Sun, 06 Aug 2017 08:29:46 +0000
End at: Sun, 06 Aug 2017 08:30:16 +0000
Local clock offset: -0.988 ms
Remote clock offset: -9.162 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:03:52 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.42 Mbit/s
95th percentile per-packet one-way delay: 44.697 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 95.42 Mbit/s
95th percentile per-packet one-way delay: 44.697 ms
Loss rate: 1.09%
```

Run 2: Report of TCP BBR — Data Link

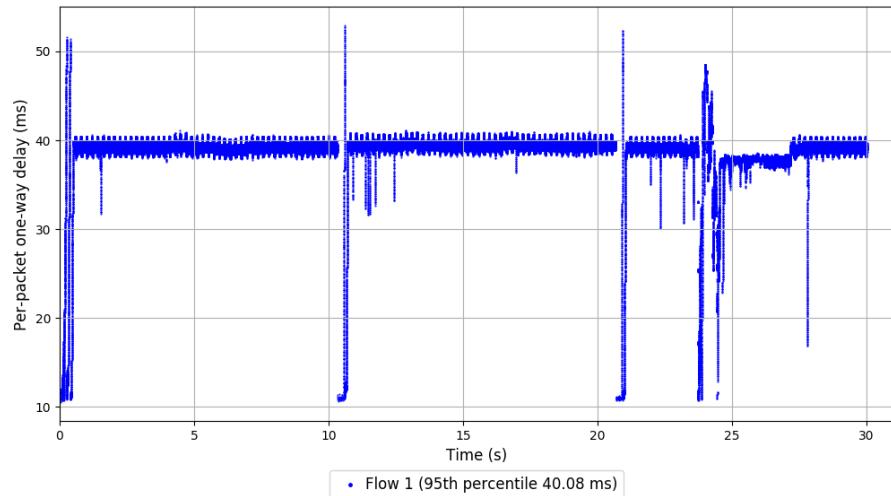
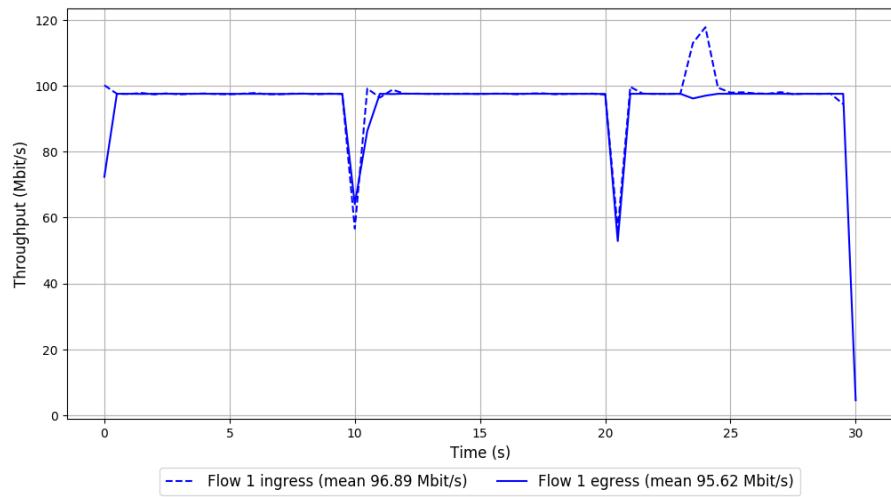


Run 3: Statistics of TCP BBR

```
Start at: Sun, 06 Aug 2017 08:47:49 +0000
End at: Sun, 06 Aug 2017 08:48:19 +0000
Local clock offset: -0.807 ms
Remote clock offset: -7.41 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:05 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.62 Mbit/s
95th percentile per-packet one-way delay: 40.083 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 95.62 Mbit/s
95th percentile per-packet one-way delay: 40.083 ms
Loss rate: 1.24%
```

Run 3: Report of TCP BBR — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:03:39 +0000
```

```
End at: Sun, 06 Aug 2017 08:04:09 +0000
```

```
Local clock offset: 1.271 ms
```

```
Remote clock offset: -4.491 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:05 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 91.08 Mbit/s
```

```
95th percentile per-packet one-way delay: 23.844 ms
```

```
Loss rate: 0.02%
```

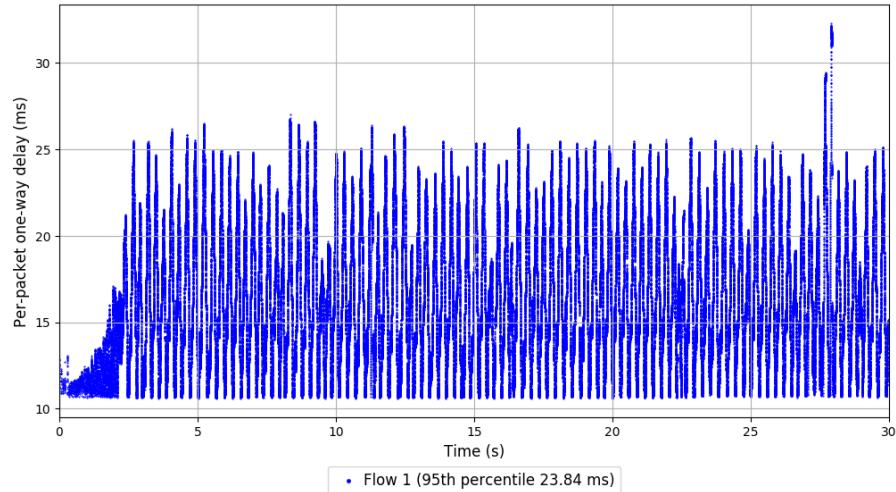
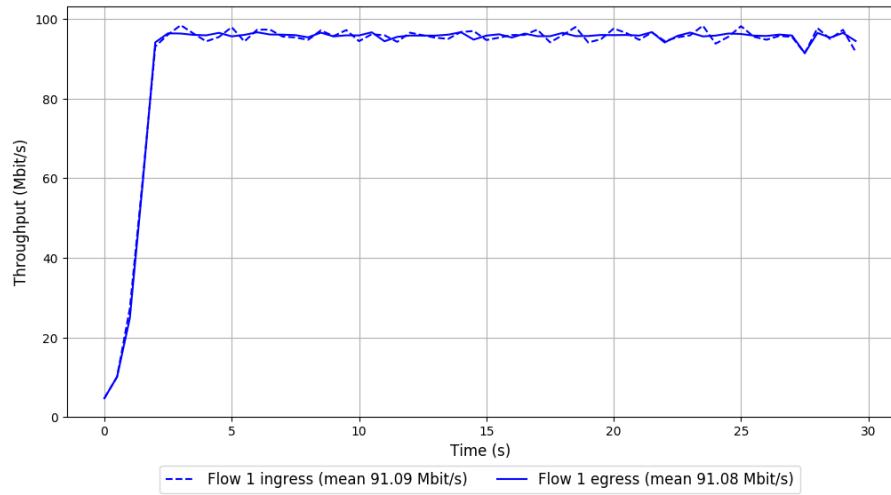
```
-- Flow 1:
```

```
Average throughput: 91.08 Mbit/s
```

```
95th percentile per-packet one-way delay: 23.844 ms
```

```
Loss rate: 0.02%
```

Run 1: Report of CalibratedKoho — Data Link

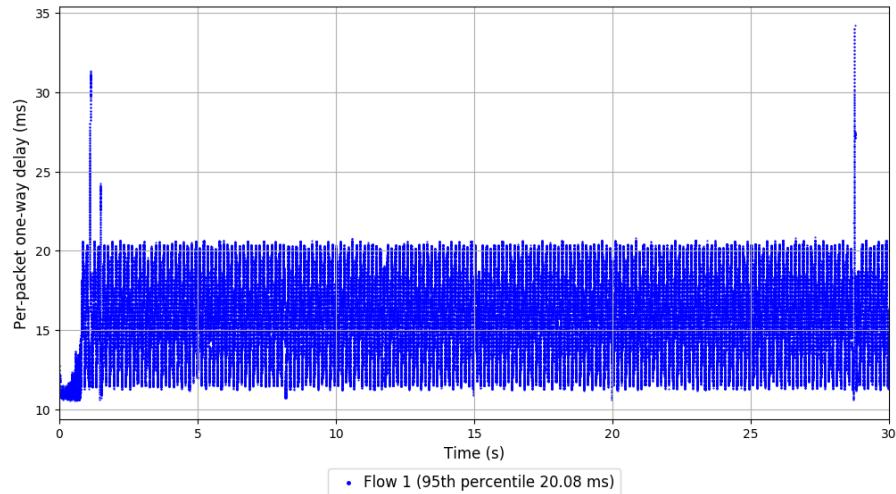
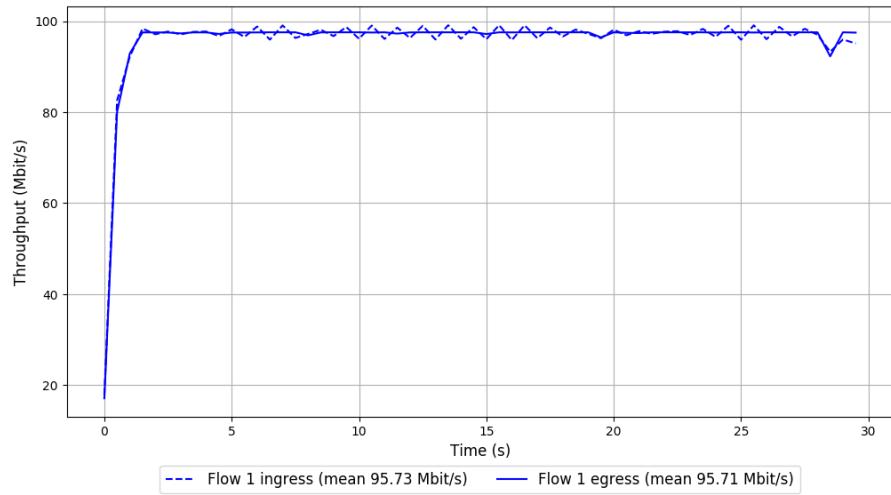


Run 2: Statistics of CalibratedKoho

```
Start at: Sun, 06 Aug 2017 08:21:24 +0000
End at: Sun, 06 Aug 2017 08:21:54 +0000
Local clock offset: -0.512 ms
Remote clock offset: -7.029 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:13 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.71 Mbit/s
95th percentile per-packet one-way delay: 20.078 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.71 Mbit/s
95th percentile per-packet one-way delay: 20.078 ms
Loss rate: 0.00%
```

Run 2: Report of CalibratedKoho — Data Link

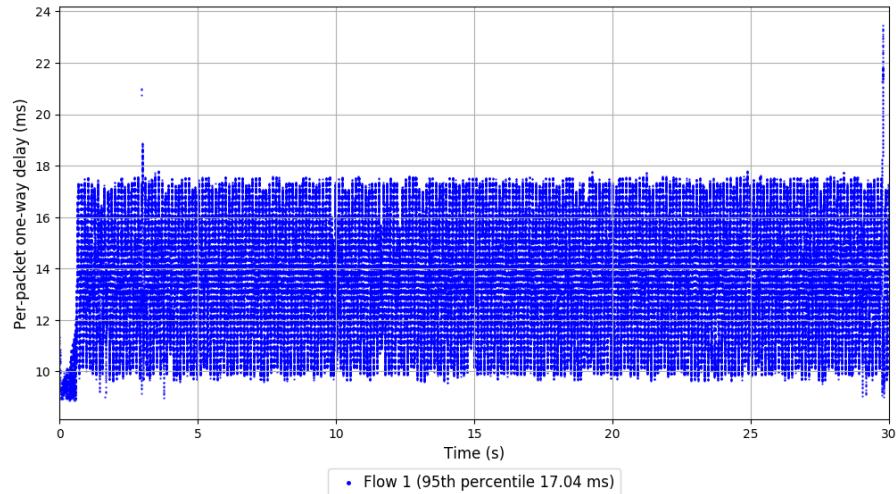
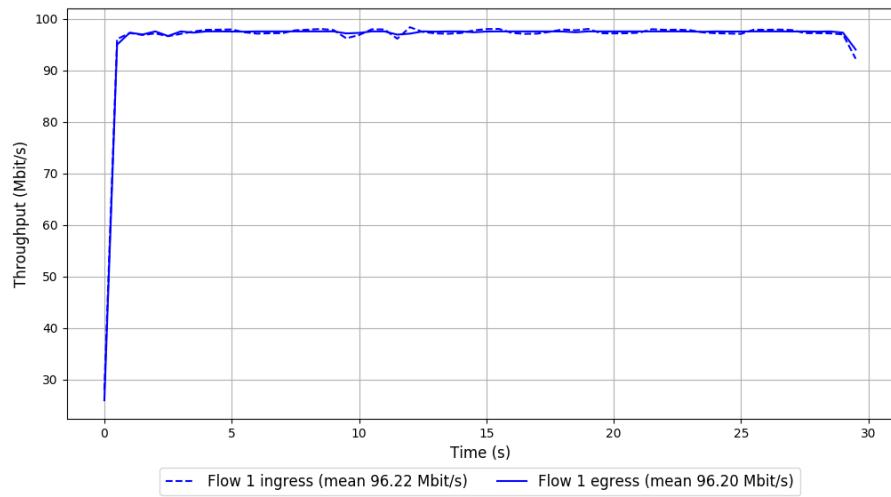


```
Run 3: Statistics of CalibratedKoho
```

```
Start at: Sun, 06 Aug 2017 08:39:10 +0000
End at: Sun, 06 Aug 2017 08:39:40 +0000
Local clock offset: -0.286 ms
Remote clock offset: -9.094 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:19 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.20 Mbit/s
95th percentile per-packet one-way delay: 17.044 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.20 Mbit/s
95th percentile per-packet one-way delay: 17.044 ms
Loss rate: 0.00%
```

Run 3: Report of CalibratedKoho — Data Link

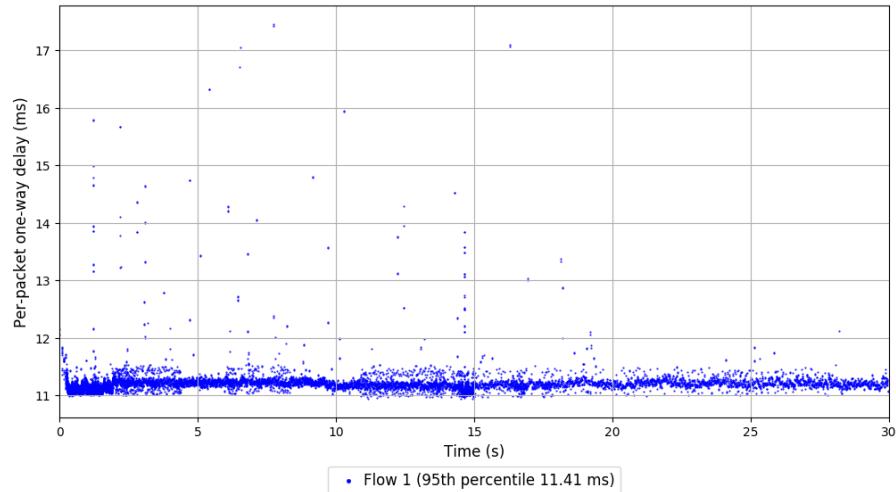
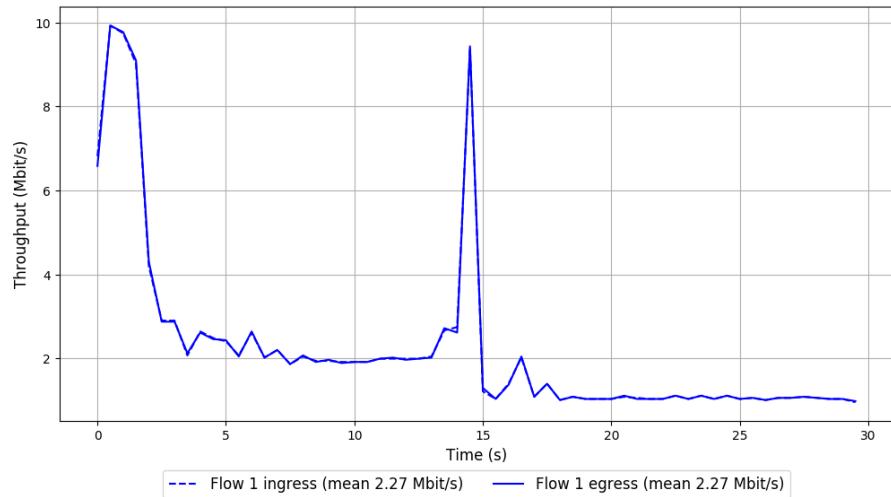


Run 1: Statistics of Copa

```
Start at: Sun, 06 Aug 2017 08:09:42 +0000
End at: Sun, 06 Aug 2017 08:10:12 +0000
Local clock offset: -0.514 ms
Remote clock offset: -5.922 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:19 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.27 Mbit/s
95th percentile per-packet one-way delay: 11.407 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.27 Mbit/s
95th percentile per-packet one-way delay: 11.407 ms
Loss rate: 0.00%
```

Run 1: Report of Copa — Data Link

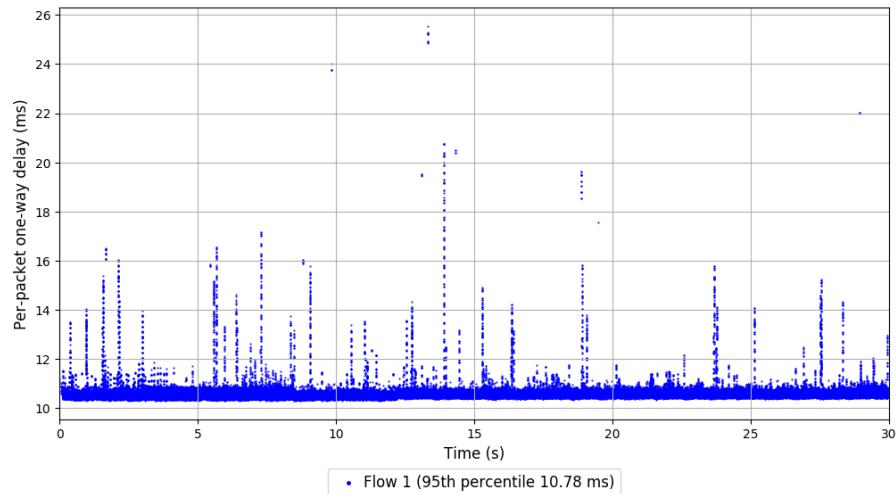
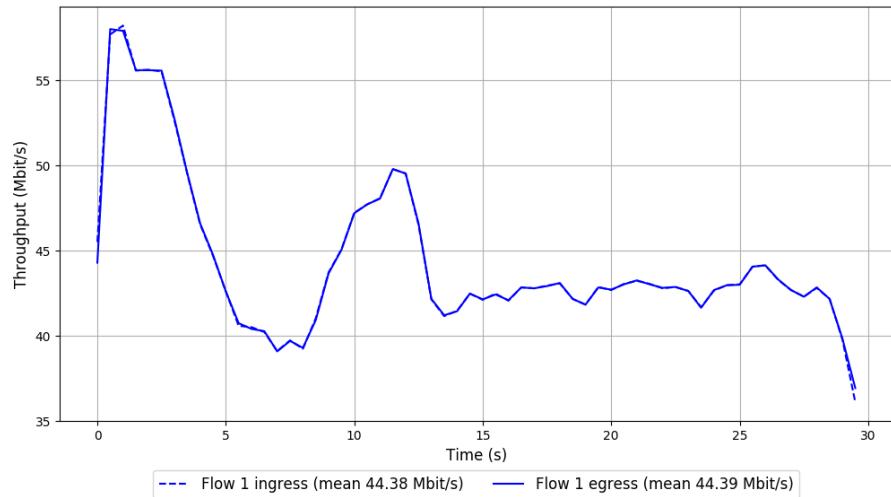


Run 2: Statistics of Copa

```
Start at: Sun, 06 Aug 2017 08:27:21 +0000
End at: Sun, 06 Aug 2017 08:27:51 +0000
Local clock offset: -0.713 ms
Remote clock offset: -7.876 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:26 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 44.39 Mbit/s
95th percentile per-packet one-way delay: 10.780 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 44.39 Mbit/s
95th percentile per-packet one-way delay: 10.780 ms
Loss rate: 0.00%
```

Run 2: Report of Copa — Data Link

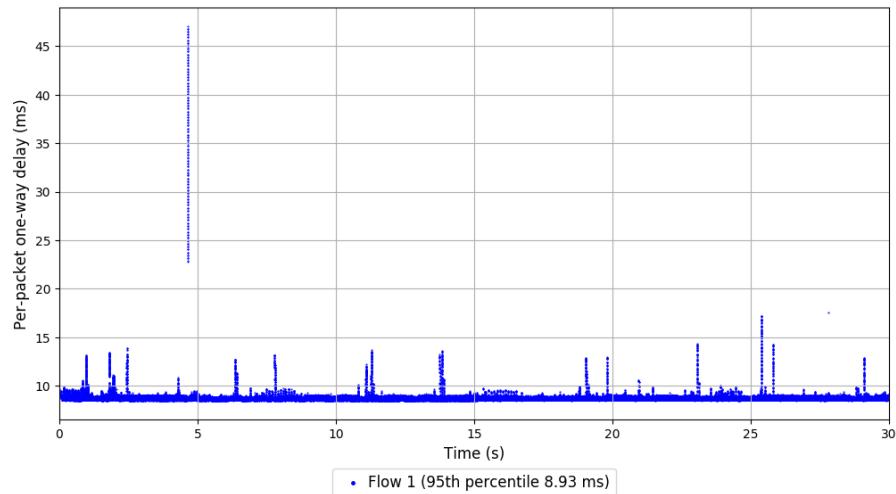
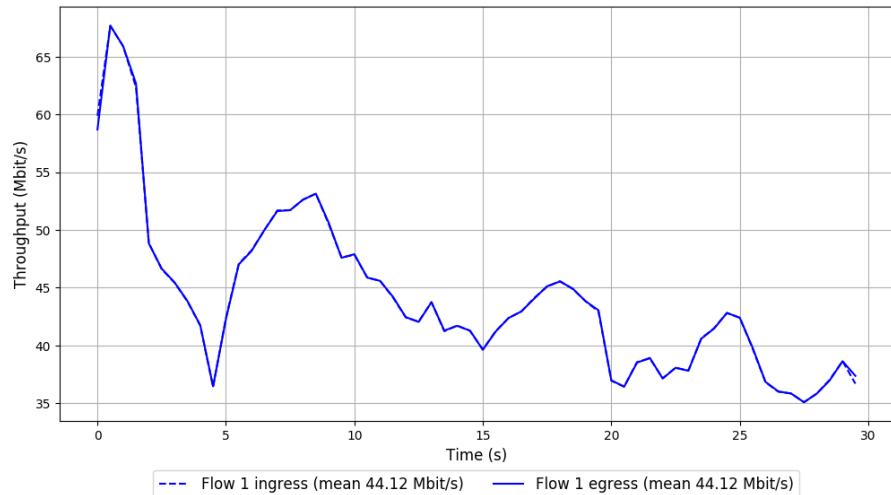


Run 3: Statistics of Copa

```
Start at: Sun, 06 Aug 2017 08:45:20 +0000
End at: Sun, 06 Aug 2017 08:45:50 +0000
Local clock offset: 1.141 ms
Remote clock offset: -7.693 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:30 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 44.12 Mbit/s
95th percentile per-packet one-way delay: 8.929 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 44.12 Mbit/s
95th percentile per-packet one-way delay: 8.929 ms
Loss rate: 0.00%
```

Run 3: Report of Copa — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:13:17 +0000
```

```
End at: Sun, 06 Aug 2017 08:13:47 +0000
```

```
Local clock offset: 0.557 ms
```

```
Remote clock offset: -6.691 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:38 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 96.18 Mbit/s
```

```
95th percentile per-packet one-way delay: 43.744 ms
```

```
Loss rate: 0.29%
```

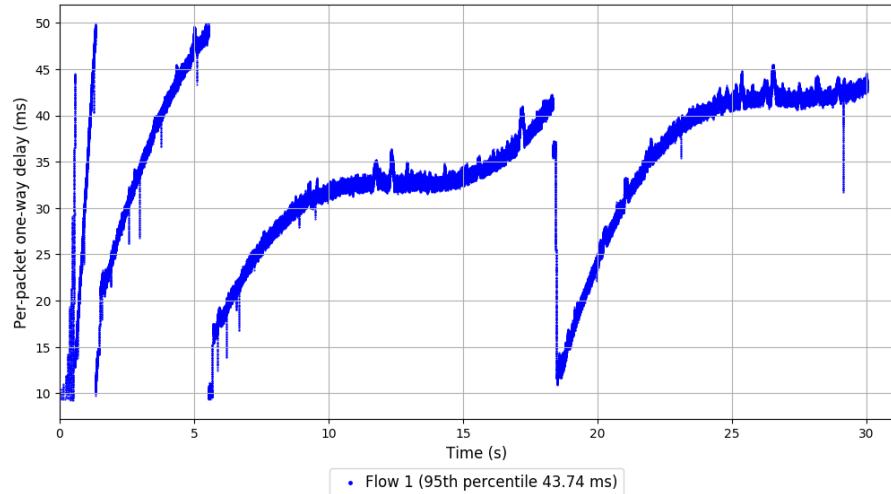
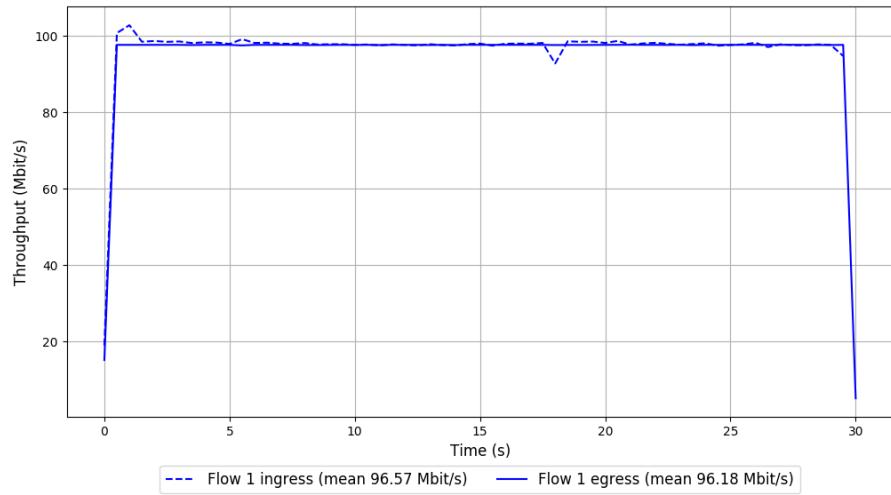
```
-- Flow 1:
```

```
Average throughput: 96.18 Mbit/s
```

```
95th percentile per-packet one-way delay: 43.744 ms
```

```
Loss rate: 0.29%
```

Run 1: Report of TCP Cubic — Data Link

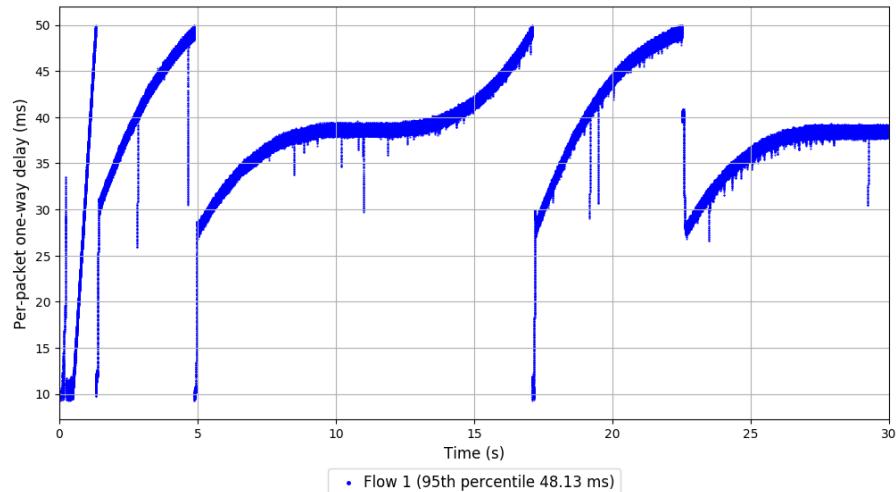
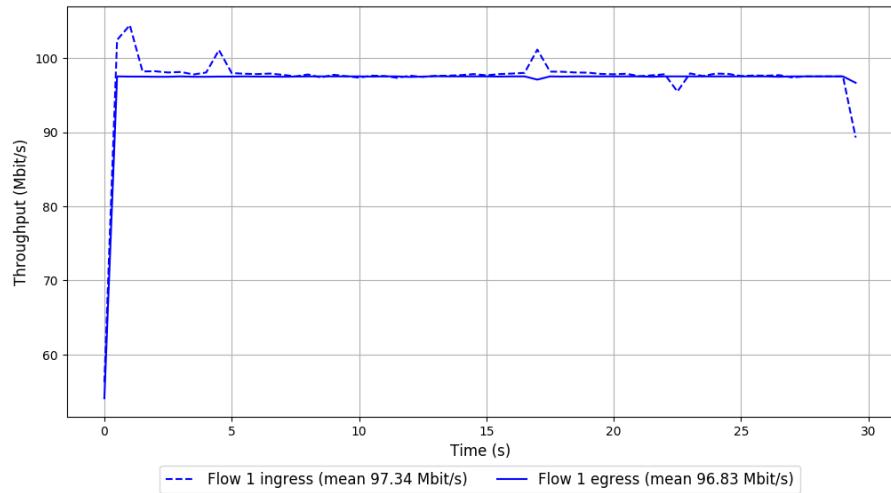


Run 2: Statistics of TCP Cubic

```
Start at: Sun, 06 Aug 2017 08:31:01 +0000
End at: Sun, 06 Aug 2017 08:31:31 +0000
Local clock offset: -0.538 ms
Remote clock offset: -9.005 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:43 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.83 Mbit/s
95th percentile per-packet one-way delay: 48.129 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 96.83 Mbit/s
95th percentile per-packet one-way delay: 48.129 ms
Loss rate: 0.43%
```

Run 2: Report of TCP Cubic — Data Link

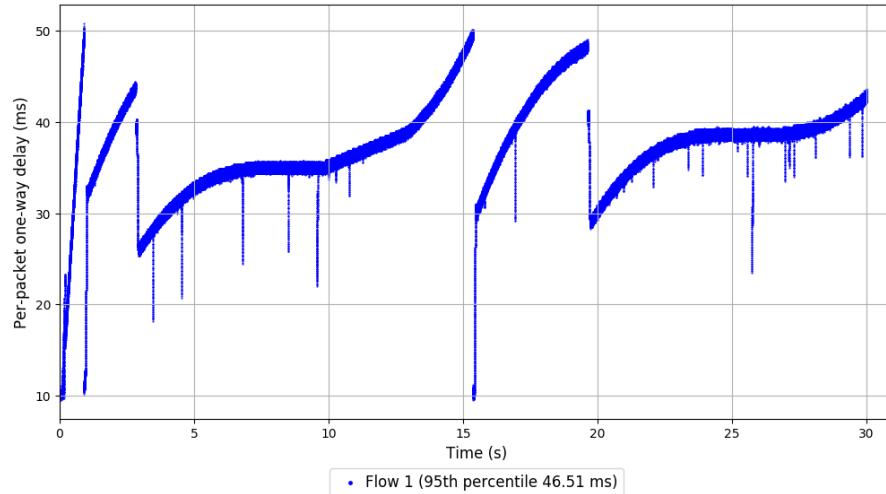
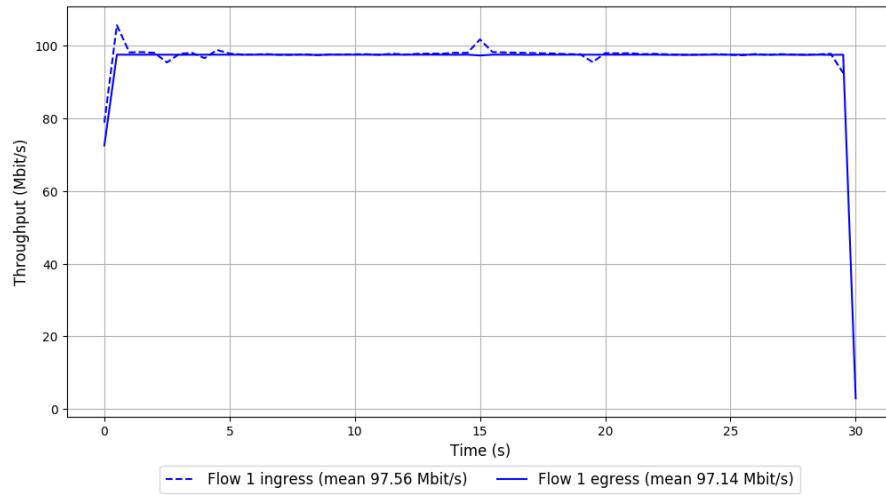


Run 3: Statistics of TCP Cubic

```
Start at: Sun, 06 Aug 2017 08:49:03 +0000
End at: Sun, 06 Aug 2017 08:49:33 +0000
Local clock offset: -1.304 ms
Remote clock offset: -8.902 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:53 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 97.14 Mbit/s
95th percentile per-packet one-way delay: 46.512 ms
Loss rate: 0.32%
-- Flow 1:
Average throughput: 97.14 Mbit/s
95th percentile per-packet one-way delay: 46.512 ms
Loss rate: 0.32%
```

Run 3: Report of TCP Cubic — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:14:32 +0000
```

```
End at: Sun, 06 Aug 2017 08:15:02 +0000
```

```
Local clock offset: 0.643 ms
```

```
Remote clock offset: -6.485 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:53 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 17.14 Mbit/s
```

```
95th percentile per-packet one-way delay: 10.075 ms
```

```
Loss rate: 0.00%
```

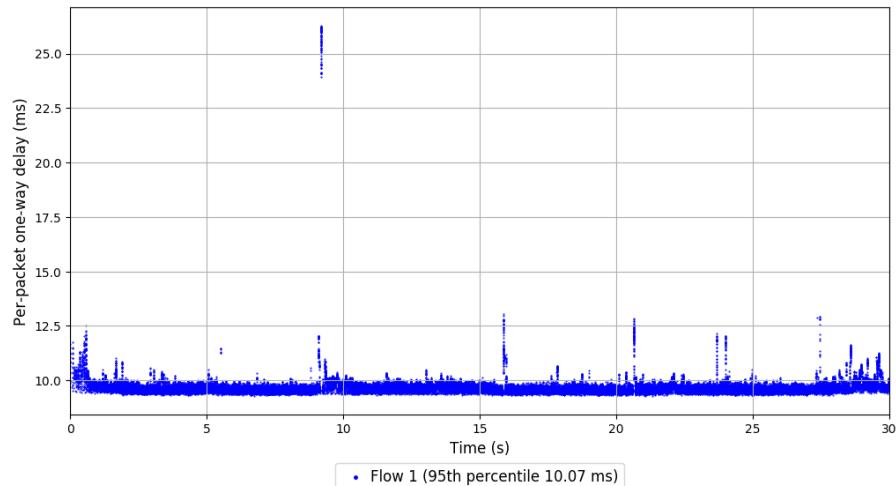
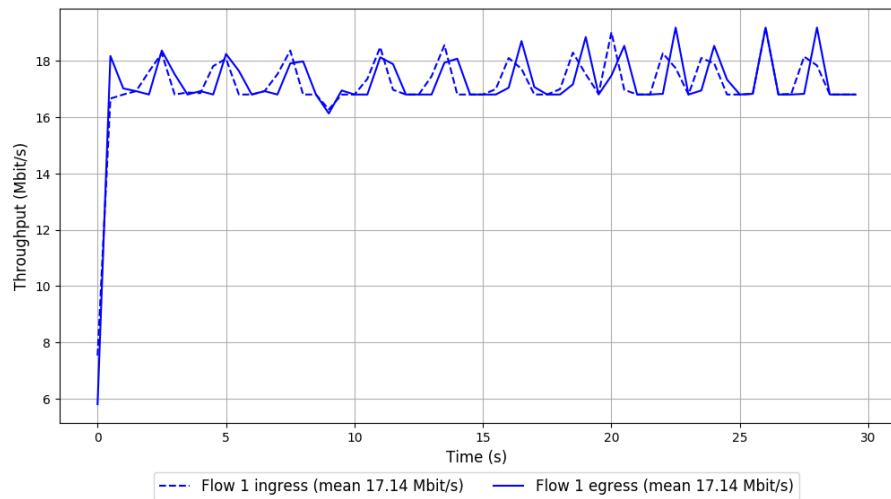
```
-- Flow 1:
```

```
Average throughput: 17.14 Mbit/s
```

```
95th percentile per-packet one-way delay: 10.075 ms
```

```
Loss rate: 0.00%
```

Run 1: Report of KohoCC — Data Link

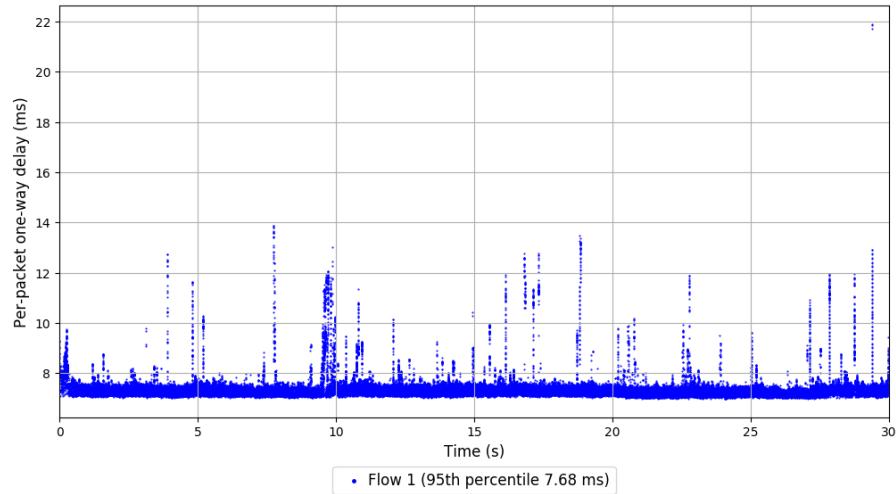
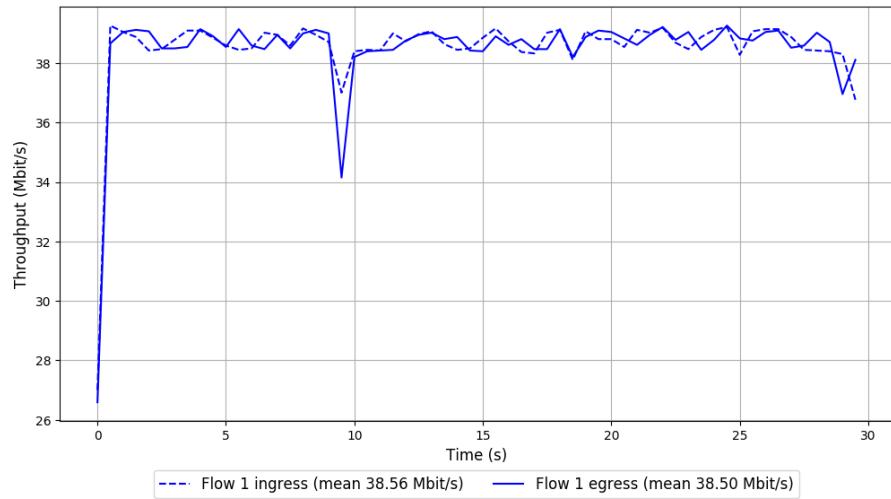


Run 2: Statistics of KohoCC

```
Start at: Sun, 06 Aug 2017 08:32:15 +0000
End at: Sun, 06 Aug 2017 08:32:45 +0000
Local clock offset: 1.217 ms
Remote clock offset: -9.52 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:04:53 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 38.50 Mbit/s
95th percentile per-packet one-way delay: 7.682 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 38.50 Mbit/s
95th percentile per-packet one-way delay: 7.682 ms
Loss rate: 0.15%
```

Run 2: Report of KohoCC — Data Link

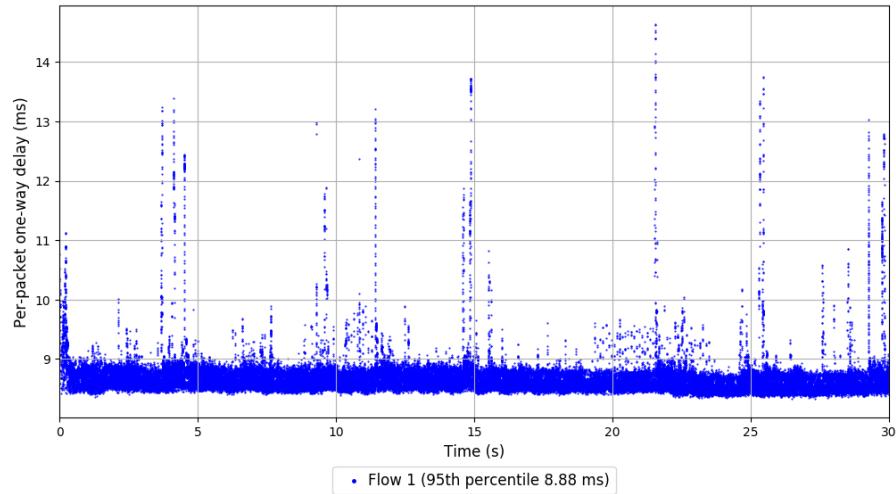
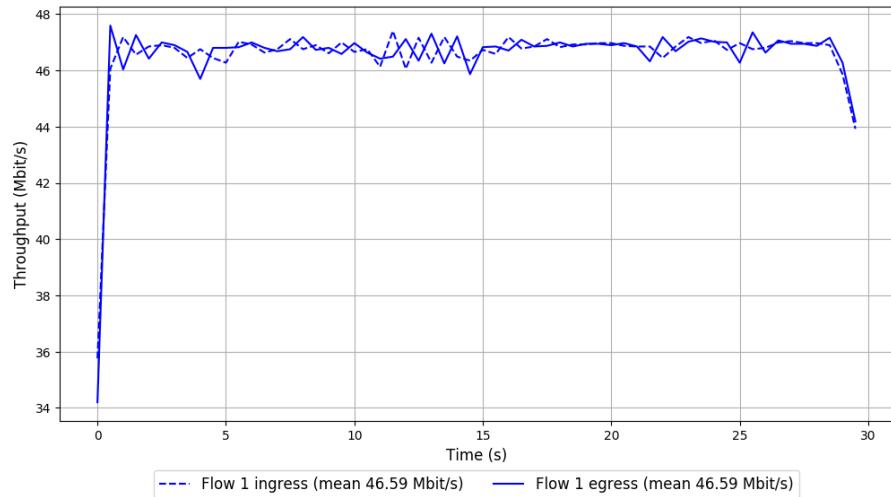


Run 3: Statistics of KohoCC

```
Start at: Sun, 06 Aug 2017 08:50:16 +0000
End at: Sun, 06 Aug 2017 08:50:46 +0000
Local clock offset: 1.34 ms
Remote clock offset: -7.33 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:00 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 46.59 Mbit/s
95th percentile per-packet one-way delay: 8.878 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 46.59 Mbit/s
95th percentile per-packet one-way delay: 8.878 ms
Loss rate: 0.00%
```

Run 3: Report of KohoCC — Data Link

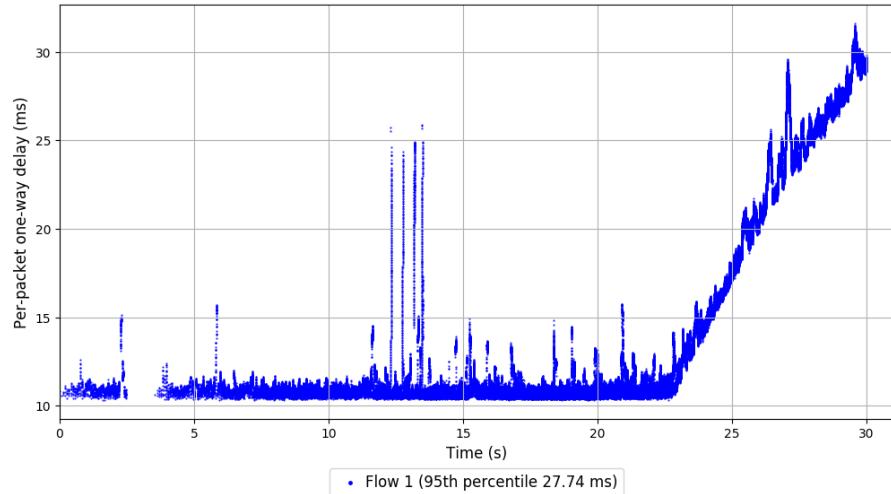
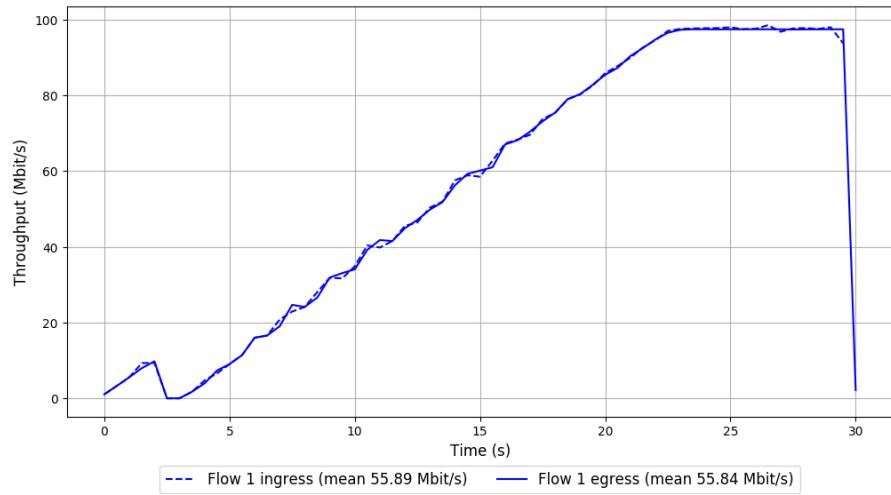


```
Run 1: Statistics of LEDBAT
```

```
Start at: Sun, 06 Aug 2017 08:06:14 +0000
End at: Sun, 06 Aug 2017 08:06:44 +0000
Local clock offset: -0.532 ms
Remote clock offset: -6.546 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:00 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.84 Mbit/s
95th percentile per-packet one-way delay: 27.744 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 55.84 Mbit/s
95th percentile per-packet one-way delay: 27.744 ms
Loss rate: 0.03%
```

Run 1: Report of LEDBAT — Data Link

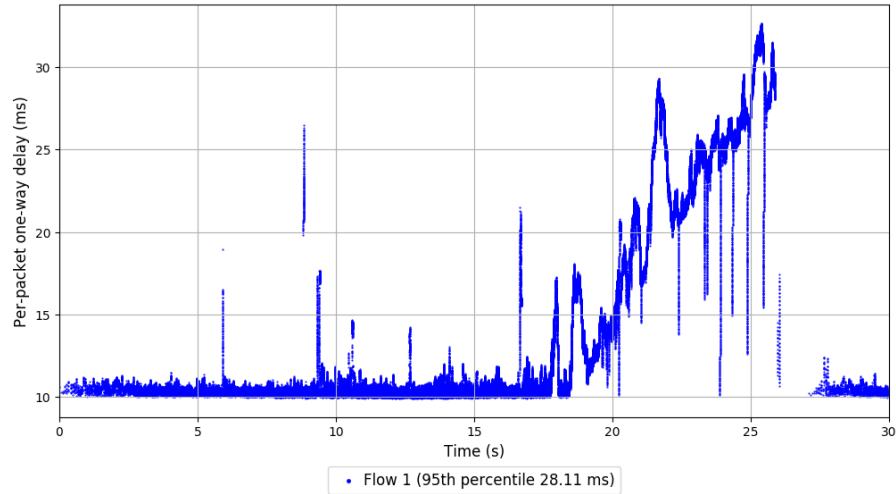
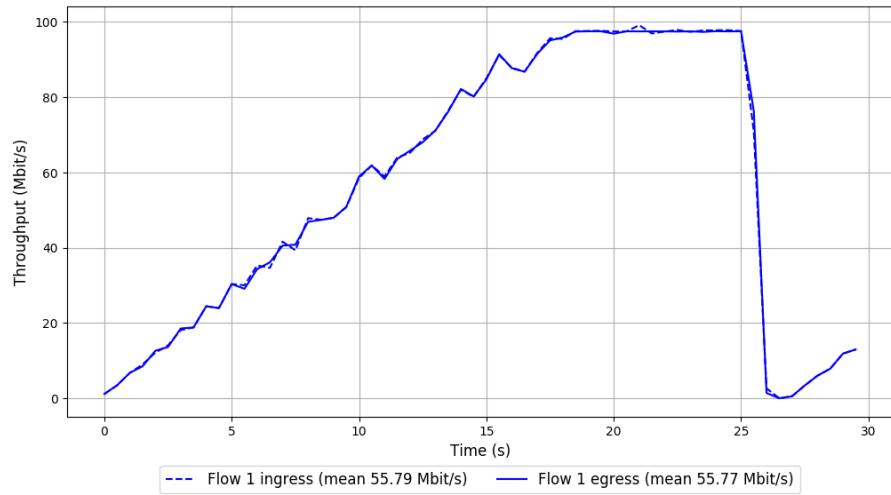


Run 2: Statistics of LEDBAT

```
Start at: Sun, 06 Aug 2017 08:23:51 +0000
End at: Sun, 06 Aug 2017 08:24:21 +0000
Local clock offset: -0.42 ms
Remote clock offset: -7.732 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:06 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.77 Mbit/s
95th percentile per-packet one-way delay: 28.113 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 55.77 Mbit/s
95th percentile per-packet one-way delay: 28.113 ms
Loss rate: 0.04%
```

Run 2: Report of LEDBAT — Data Link

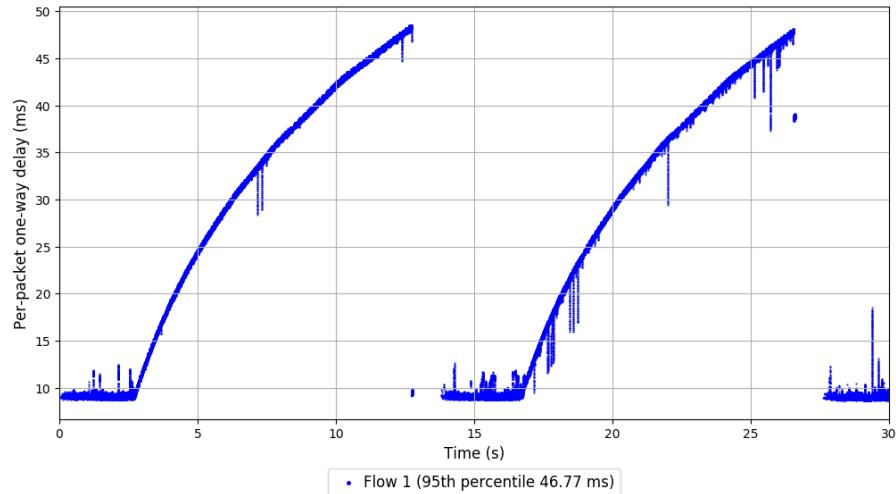
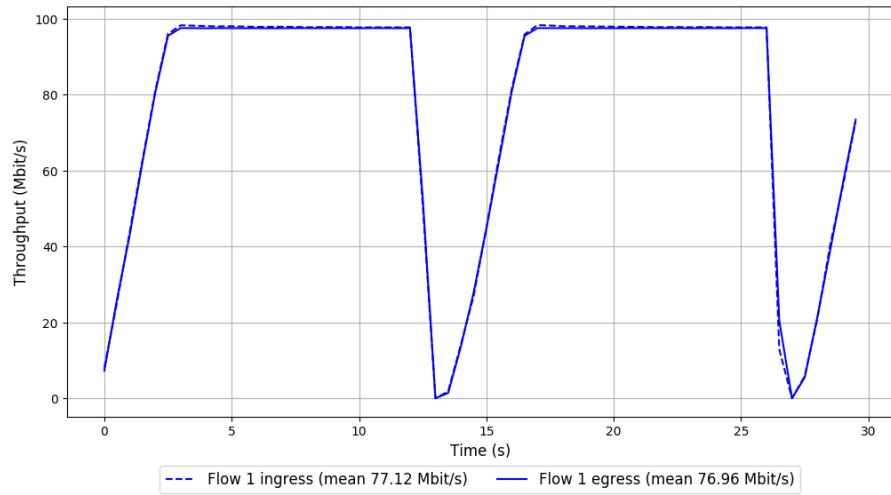


Run 3: Statistics of LEDBAT

```
Start at: Sun, 06 Aug 2017 08:41:43 +0000
End at: Sun, 06 Aug 2017 08:42:14 +0000
Local clock offset: 0.301 ms
Remote clock offset: -8.559 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:10 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.96 Mbit/s
95th percentile per-packet one-way delay: 46.769 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 76.96 Mbit/s
95th percentile per-packet one-way delay: 46.769 ms
Loss rate: 0.21%
```

Run 3: Report of LEDBAT — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:08:32 +0000
```

```
End at: Sun, 06 Aug 2017 08:09:02 +0000
```

```
Local clock offset: 0.662 ms
```

```
Remote clock offset: -5.05 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:17 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 75.20 Mbit/s
```

```
95th percentile per-packet one-way delay: 12.111 ms
```

```
Loss rate: 0.87%
```

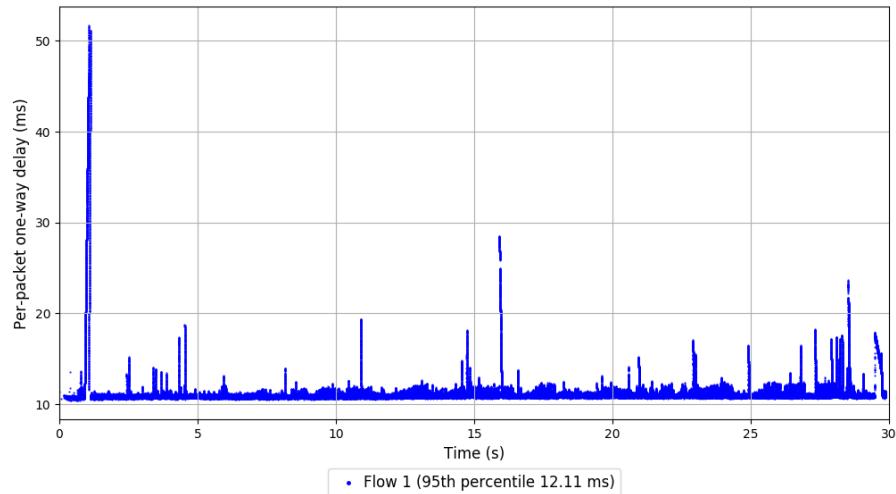
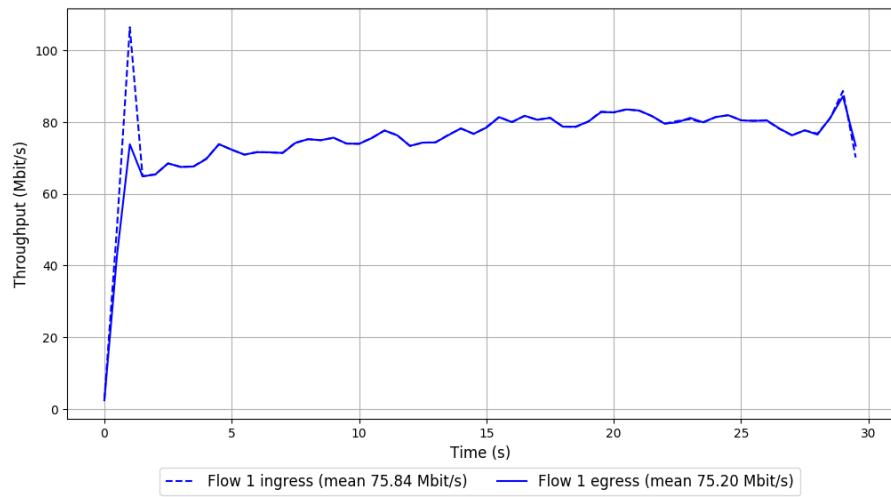
```
-- Flow 1:
```

```
Average throughput: 75.20 Mbit/s
```

```
95th percentile per-packet one-way delay: 12.111 ms
```

```
Loss rate: 0.87%
```

Run 1: Report of PCC — Data Link

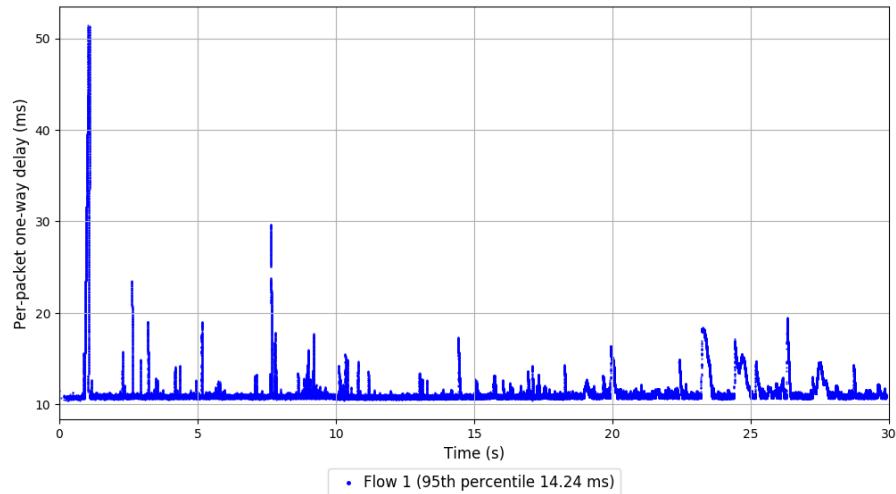
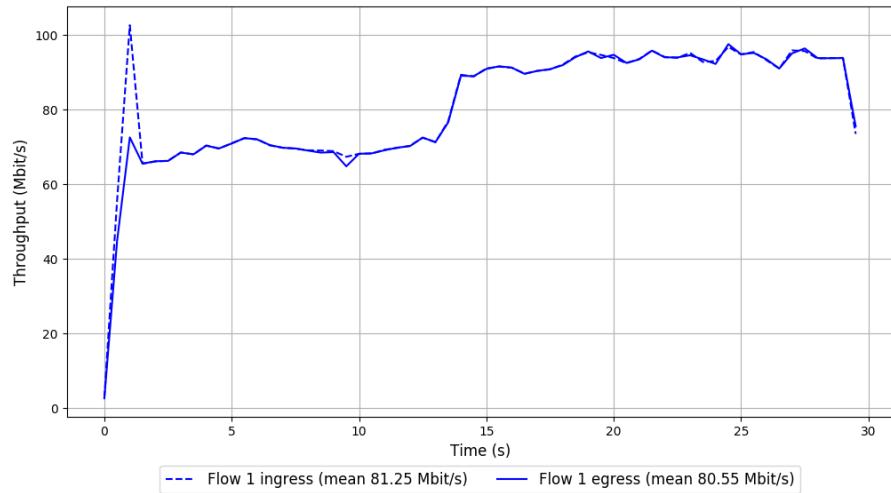


Run 2: Statistics of PCC

```
Start at: Sun, 06 Aug 2017 08:26:09 +0000
End at: Sun, 06 Aug 2017 08:26:40 +0000
Local clock offset: -0.307 ms
Remote clock offset: -7.189 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:21 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.55 Mbit/s
95th percentile per-packet one-way delay: 14.236 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 80.55 Mbit/s
95th percentile per-packet one-way delay: 14.236 ms
Loss rate: 0.89%
```

Run 2: Report of PCC — Data Link

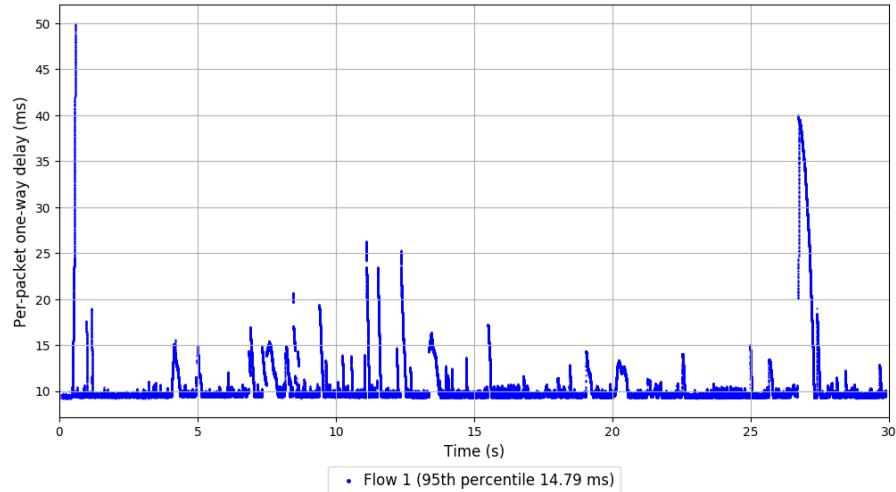
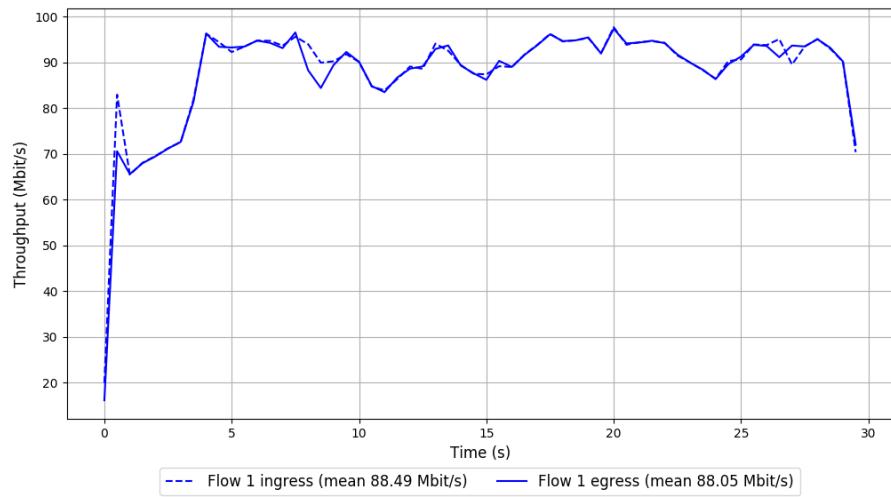


Run 3: Statistics of PCC

```
Start at: Sun, 06 Aug 2017 08:44:09 +0000
End at: Sun, 06 Aug 2017 08:44:39 +0000
Local clock offset: -0.369 ms
Remote clock offset: -8.527 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:29 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.05 Mbit/s
95th percentile per-packet one-way delay: 14.793 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 88.05 Mbit/s
95th percentile per-packet one-way delay: 14.793 ms
Loss rate: 0.50%
```

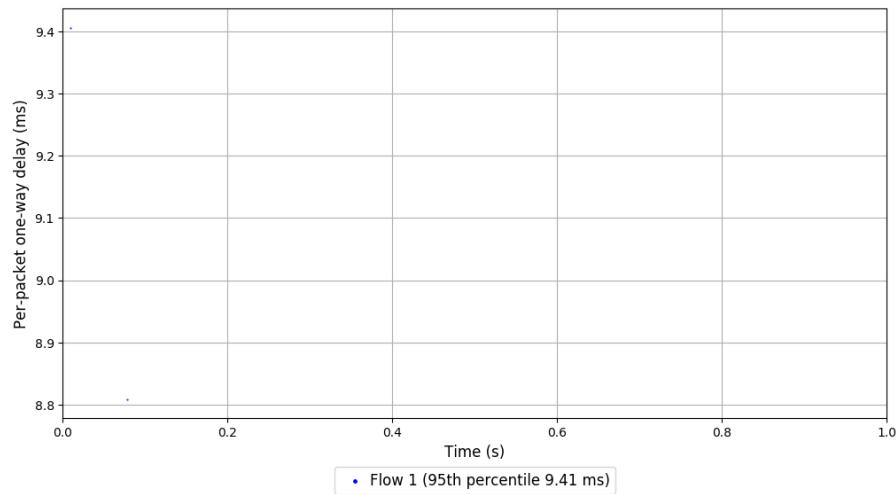
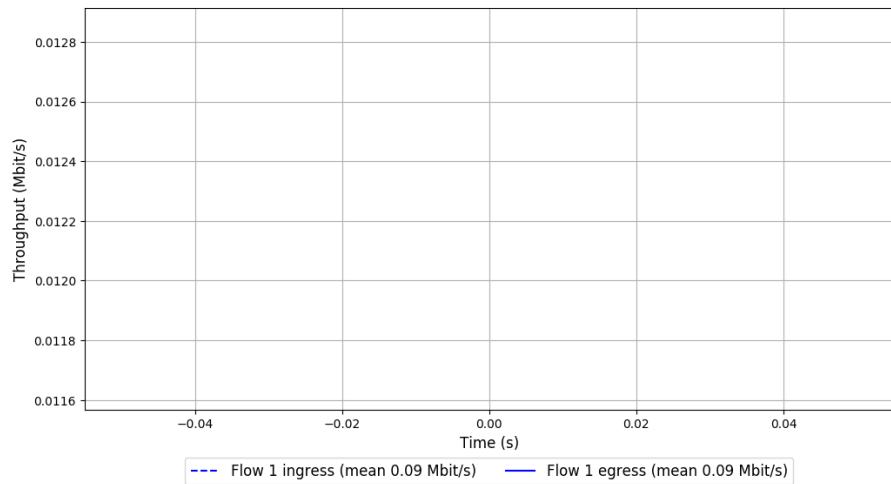
Run 3: Report of PCC — Data Link



Run 1: Statistics of QUIC Cubic

Start at: Sun, 06 Aug 2017 08:01:26 +0000
End at: Sun, 06 Aug 2017 08:01:57 +0000
Local clock offset: 1.107 ms
Remote clock offset: -6.338 ms

Run 1: Report of QUIC Cubic — Data Link

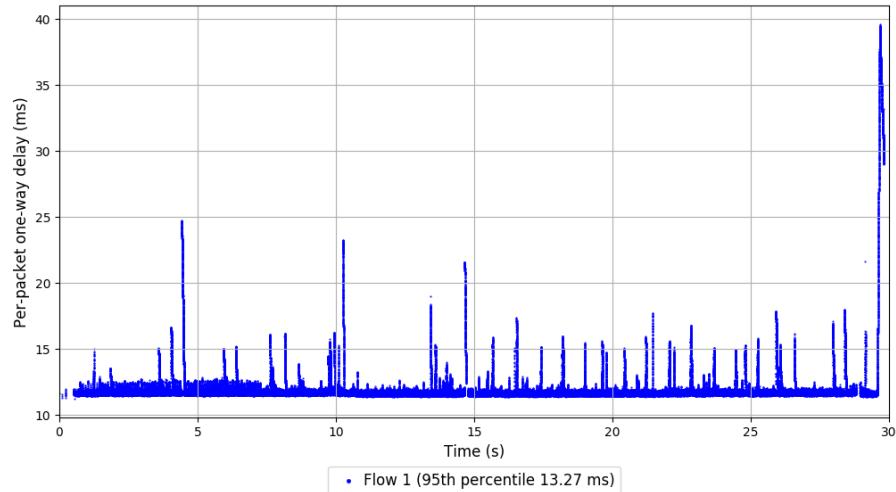
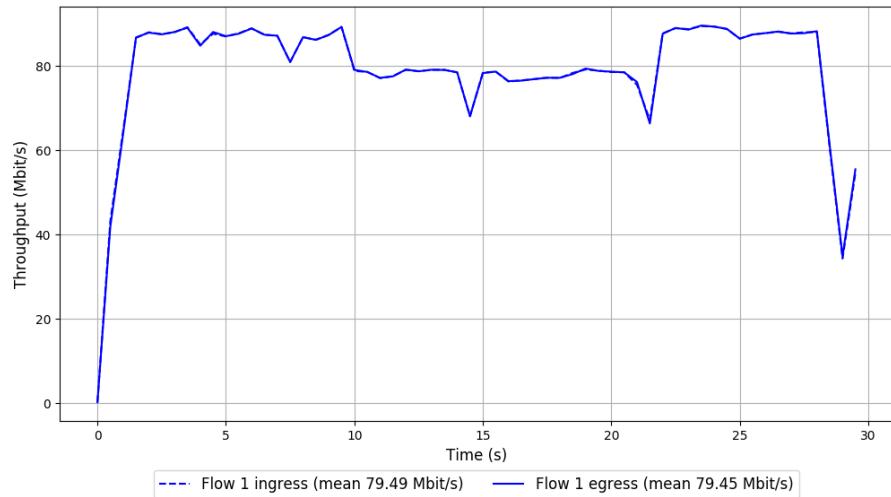


Run 2: Statistics of QUIC Cubic

```
Start at: Sun, 06 Aug 2017 08:19:05 +0000
End at: Sun, 06 Aug 2017 08:19:35 +0000
Local clock offset: -0.943 ms
Remote clock offset: -6.294 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:33 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 79.45 Mbit/s
95th percentile per-packet one-way delay: 13.267 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 79.45 Mbit/s
95th percentile per-packet one-way delay: 13.267 ms
Loss rate: 0.00%
```

Run 2: Report of QUIC Cubic — Data Link

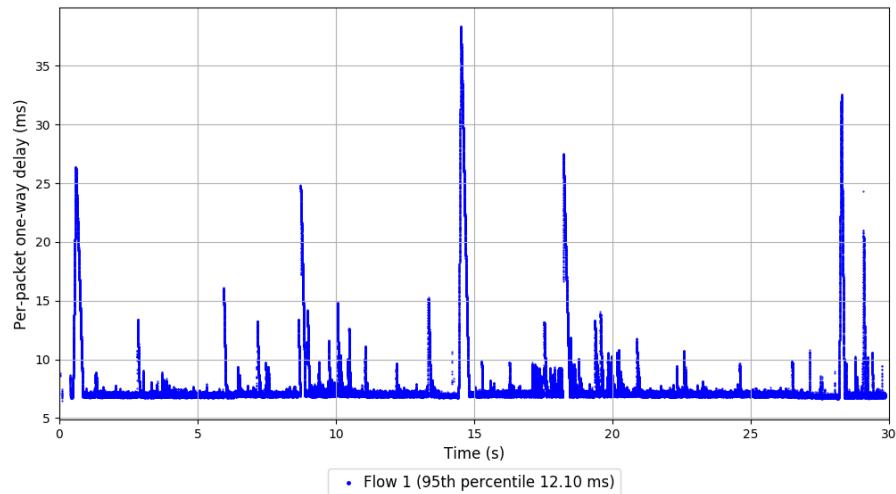
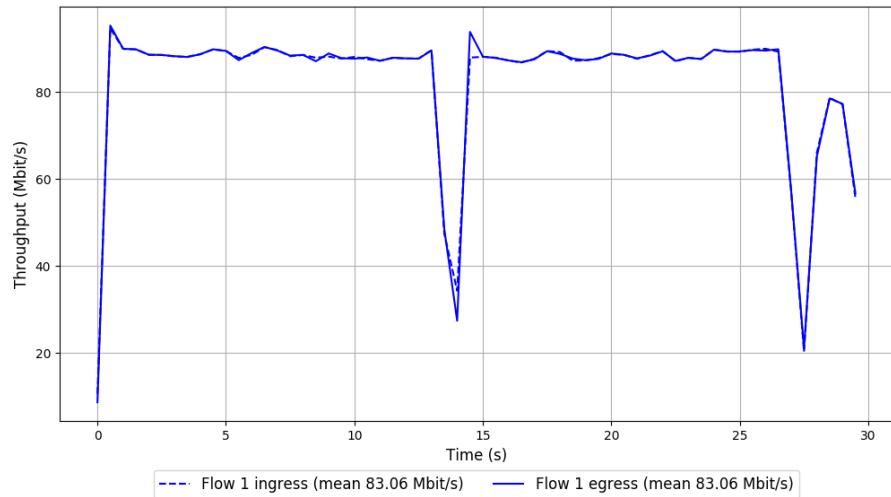


Run 3: Statistics of QUIC Cubic

```
Start at: Sun, 06 Aug 2017 08:36:51 +0000
End at: Sun, 06 Aug 2017 08:37:21 +0000
Local clock offset: 2.268 ms
Remote clock offset: -8.775 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:42 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.06 Mbit/s
95th percentile per-packet one-way delay: 12.104 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 83.06 Mbit/s
95th percentile per-packet one-way delay: 12.104 ms
Loss rate: 0.00%
```

Run 3: Report of QUIC Cubic — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:10:49 +0000
```

```
End at: Sun, 06 Aug 2017 08:11:19 +0000
```

```
Local clock offset: -0.502 ms
```

```
Remote clock offset: -5.689 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:42 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 34.33 Mbit/s
```

```
95th percentile per-packet one-way delay: 11.994 ms
```

```
Loss rate: 0.00%
```

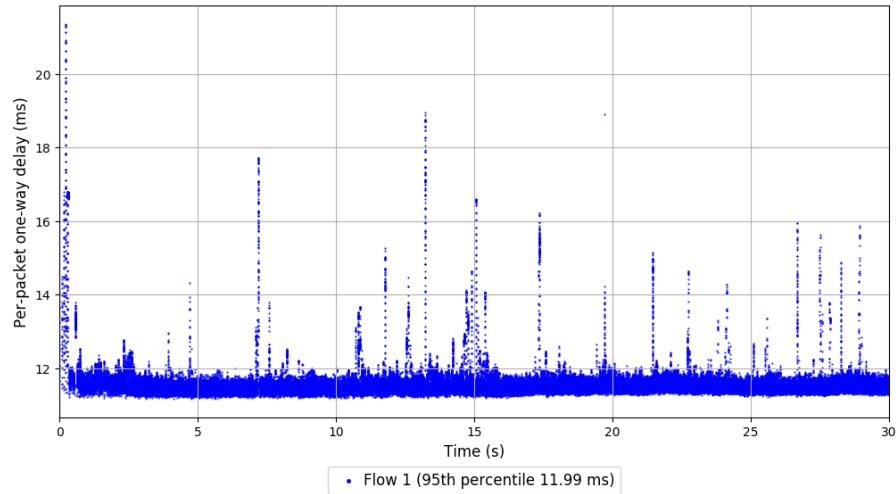
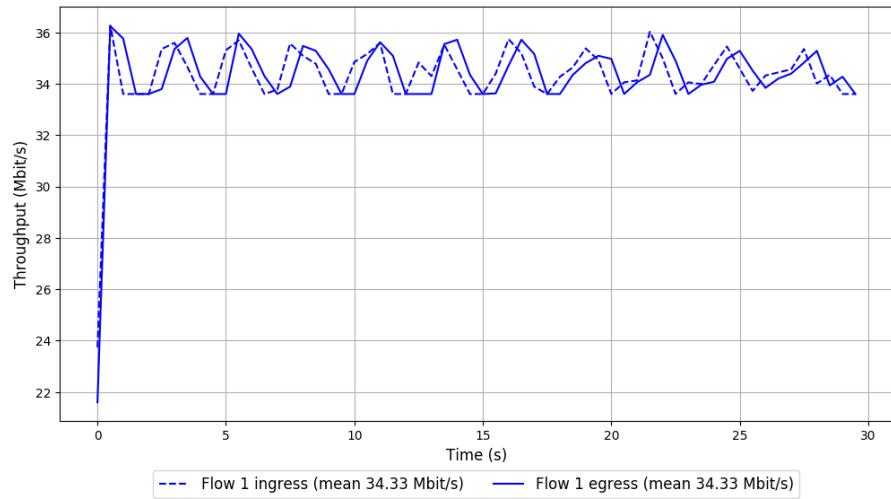
```
-- Flow 1:
```

```
Average throughput: 34.33 Mbit/s
```

```
95th percentile per-packet one-way delay: 11.994 ms
```

```
Loss rate: 0.00%
```

Run 1: Report of Saturator — Data Link

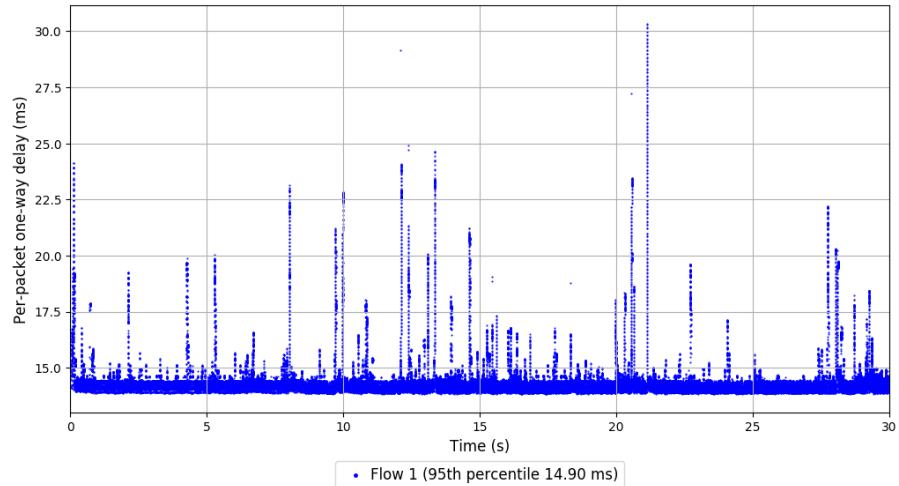
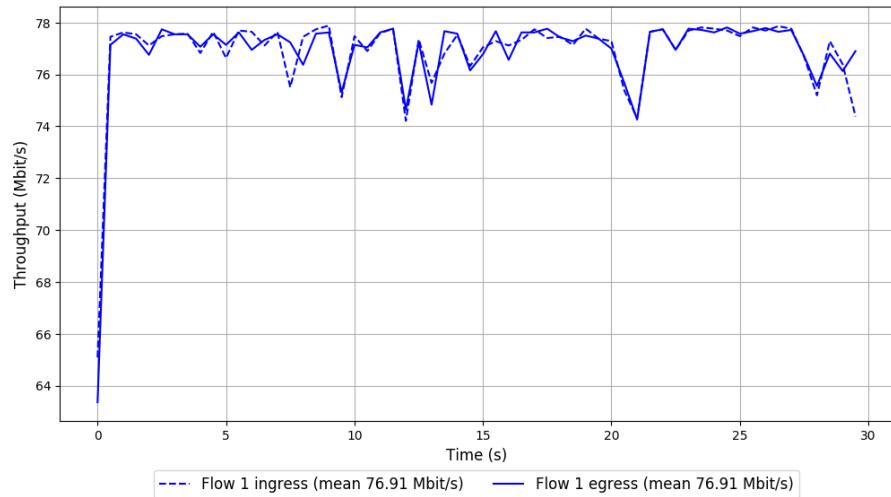


Run 2: Statistics of Saturator

```
Start at: Sun, 06 Aug 2017 08:28:32 +0000
End at: Sun, 06 Aug 2017 08:29:02 +0000
Local clock offset: -2.295 ms
Remote clock offset: -6.008 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:48 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.91 Mbit/s
95th percentile per-packet one-way delay: 14.903 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 76.91 Mbit/s
95th percentile per-packet one-way delay: 14.903 ms
Loss rate: 0.00%
```

Run 2: Report of Saturator — Data Link

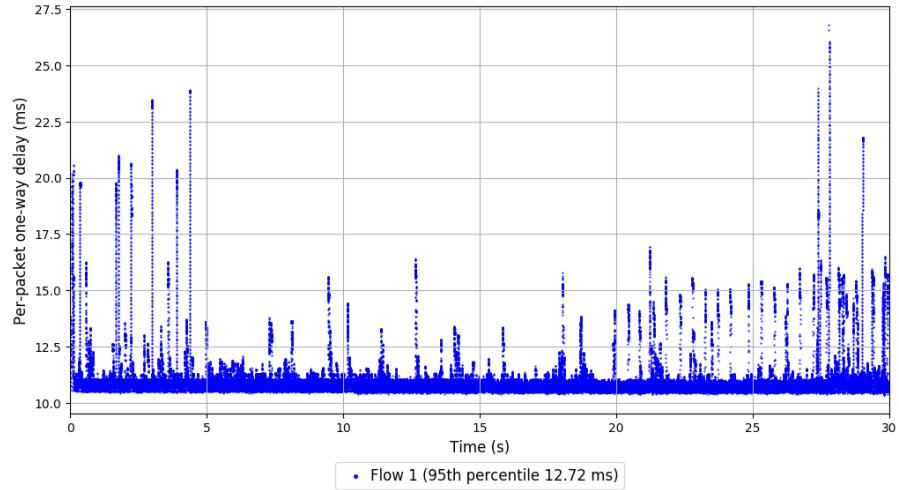
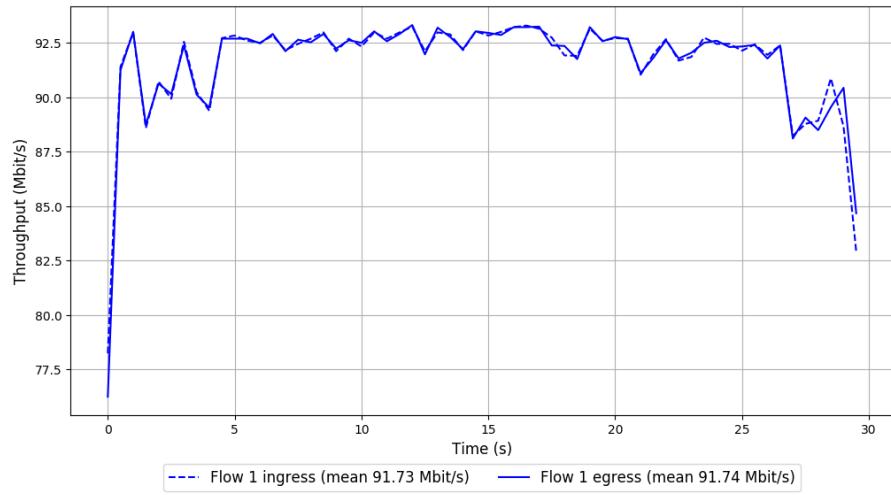


Run 3: Statistics of Saturator

```
Start at: Sun, 06 Aug 2017 08:46:32 +0000
End at: Sun, 06 Aug 2017 08:47:02 +0000
Local clock offset: -1.73 ms
Remote clock offset: -8.616 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:55 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.74 Mbit/s
95th percentile per-packet one-way delay: 12.725 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 91.74 Mbit/s
95th percentile per-packet one-way delay: 12.725 ms
Loss rate: 0.00%
```

Run 3: Report of Saturator — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:02:33 +0000
```

```
End at: Sun, 06 Aug 2017 08:03:03 +0000
```

```
Local clock offset: 1.015 ms
```

```
Remote clock offset: -4.671 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:55 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 0.21 Mbit/s
```

```
95th percentile per-packet one-way delay: 11.108 ms
```

```
Loss rate: 0.00%
```

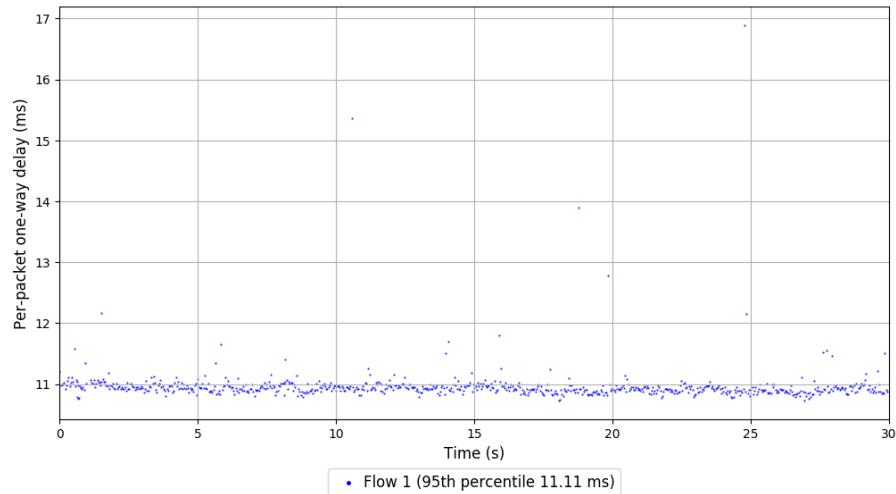
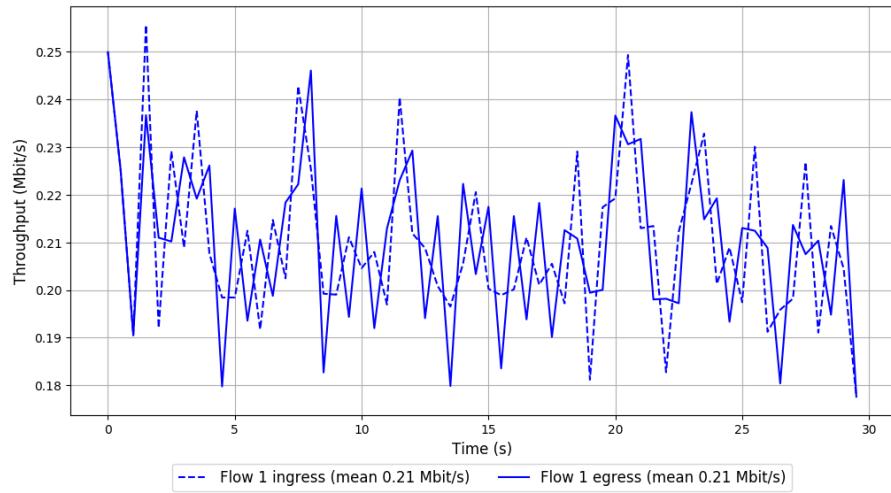
```
-- Flow 1:
```

```
Average throughput: 0.21 Mbit/s
```

```
95th percentile per-packet one-way delay: 11.108 ms
```

```
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

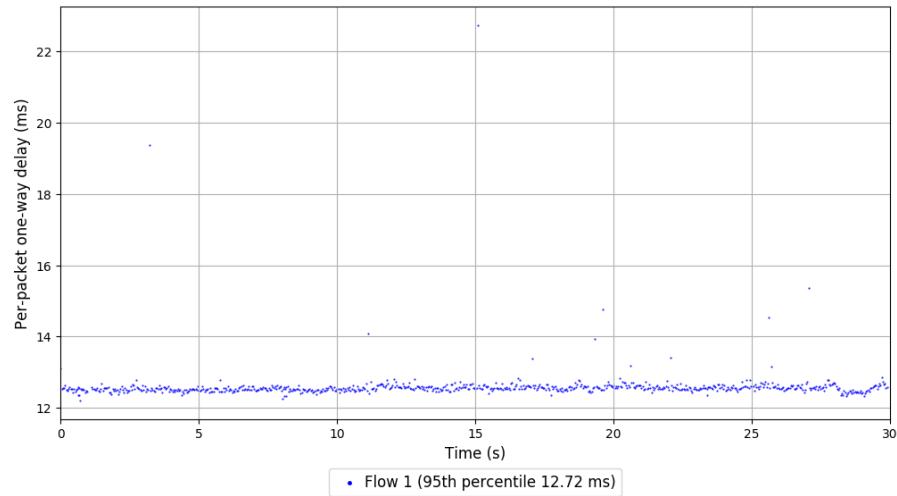
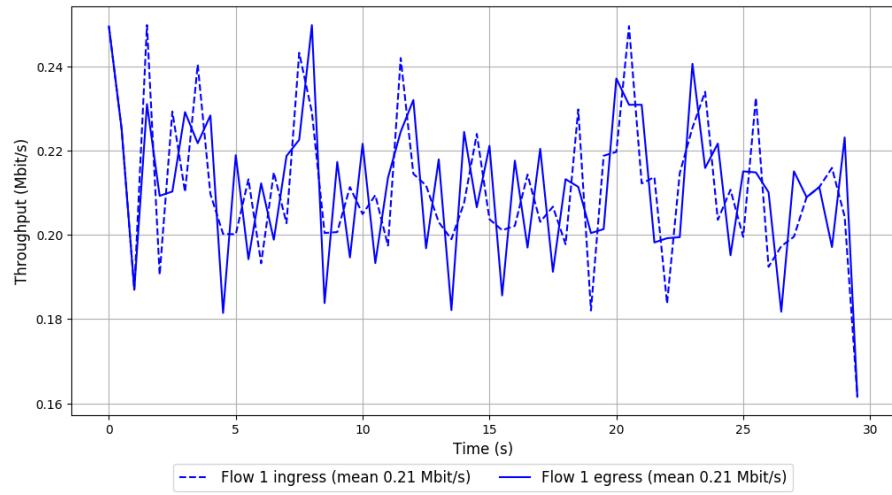


Run 2: Statistics of SCReAM

```
Start at: Sun, 06 Aug 2017 08:20:18 +0000
End at: Sun, 06 Aug 2017 08:20:48 +0000
Local clock offset: -2.248 ms
Remote clock offset: -6.858 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:55 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 12.719 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 12.719 ms
Loss rate: 0.00%
```

Run 2: Report of SCReAM — Data Link

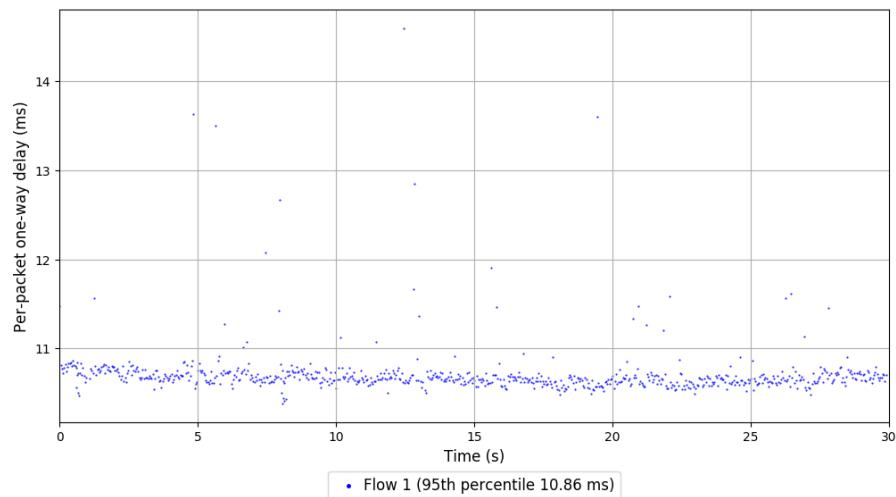
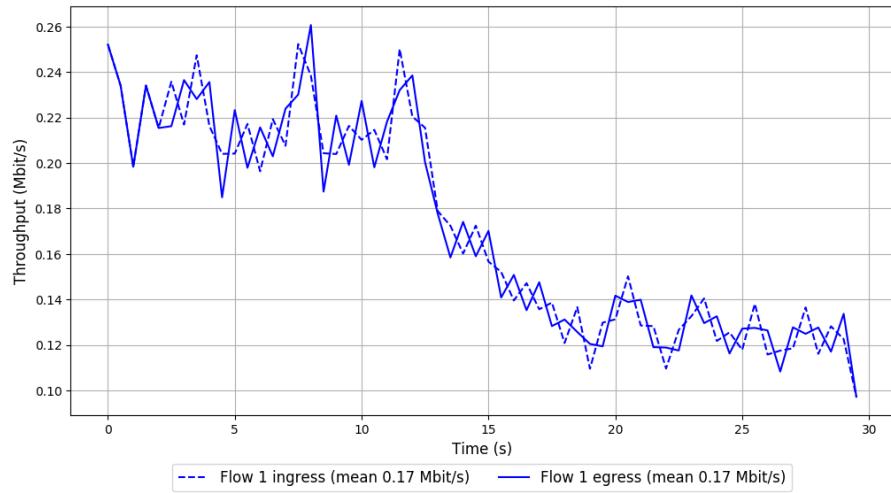


Run 3: Statistics of SCReAM

```
Start at: Sun, 06 Aug 2017 08:38:05 +0000
End at: Sun, 06 Aug 2017 08:38:35 +0000
Local clock offset: -0.086 ms
Remote clock offset: -7.29 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:55 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 10.862 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 10.862 ms
Loss rate: 0.16%
```

Run 3: Report of SCReAM — Data Link

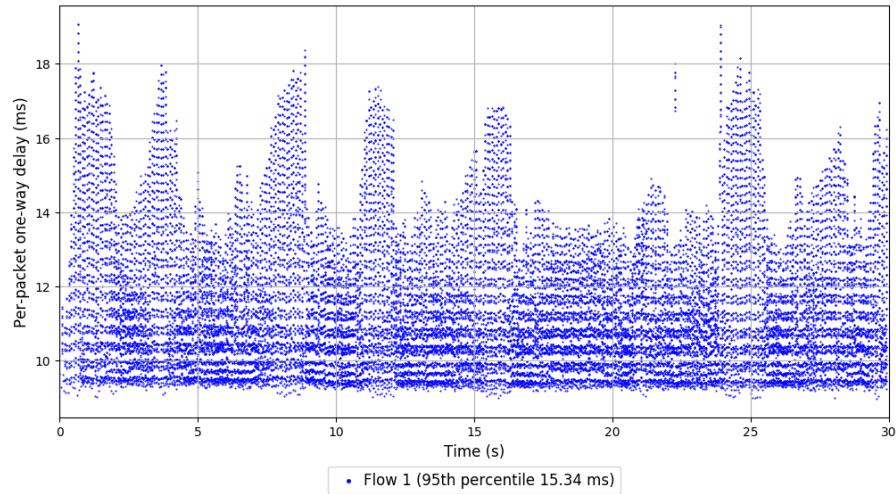
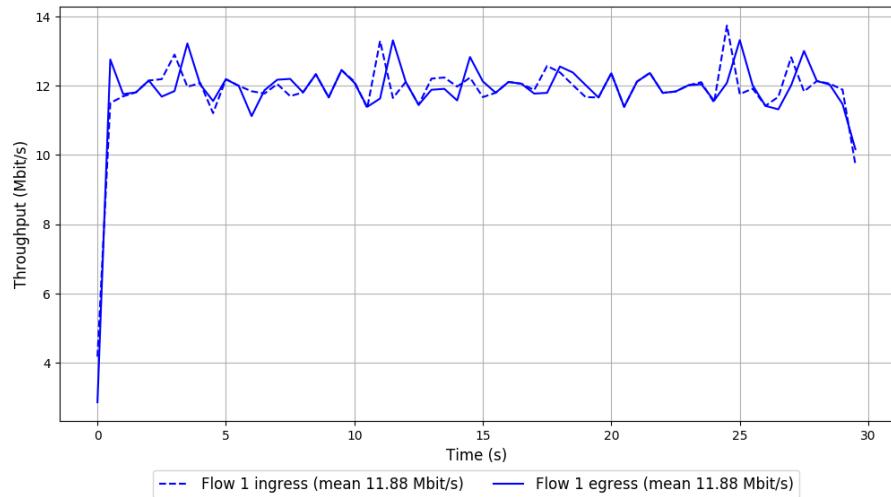


Run 1: Statistics of Sprout

```
Start at: Sun, 06 Aug 2017 08:00:18 +0000
End at: Sun, 06 Aug 2017 08:00:48 +0000
Local clock offset: 1.738 ms
Remote clock offset: -5.497 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:55 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.88 Mbit/s
95th percentile per-packet one-way delay: 15.338 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 11.88 Mbit/s
95th percentile per-packet one-way delay: 15.338 ms
Loss rate: 0.00%
```

Run 1: Report of Sprout — Data Link

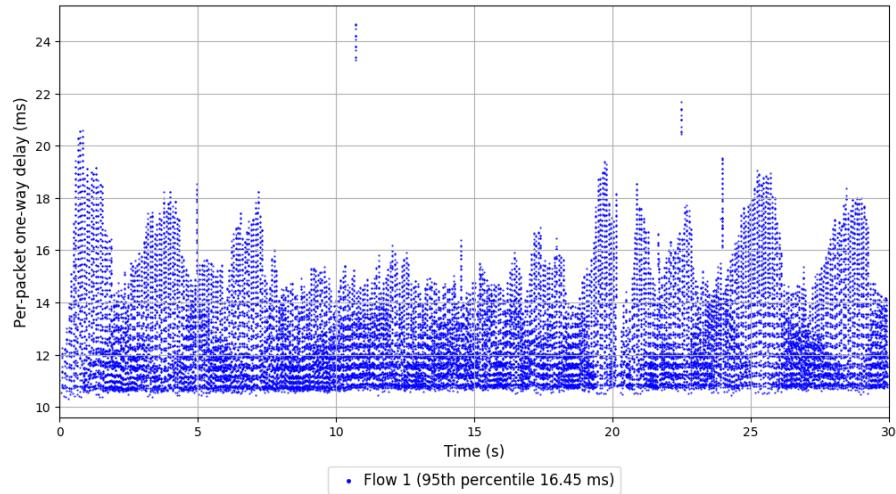
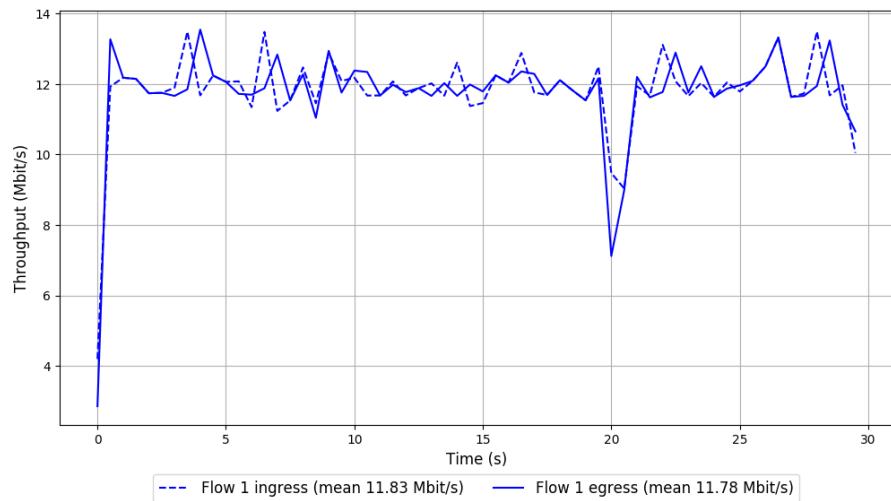


Run 2: Statistics of Sprout

```
Start at: Sun, 06 Aug 2017 08:17:58 +0000
End at: Sun, 06 Aug 2017 08:18:28 +0000
Local clock offset: -1.815 ms
Remote clock offset: -7.982 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:05:57 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 16.453 ms
Loss rate: 0.35%
-- Flow 1:
Average throughput: 11.78 Mbit/s
95th percentile per-packet one-way delay: 16.453 ms
Loss rate: 0.35%
```

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

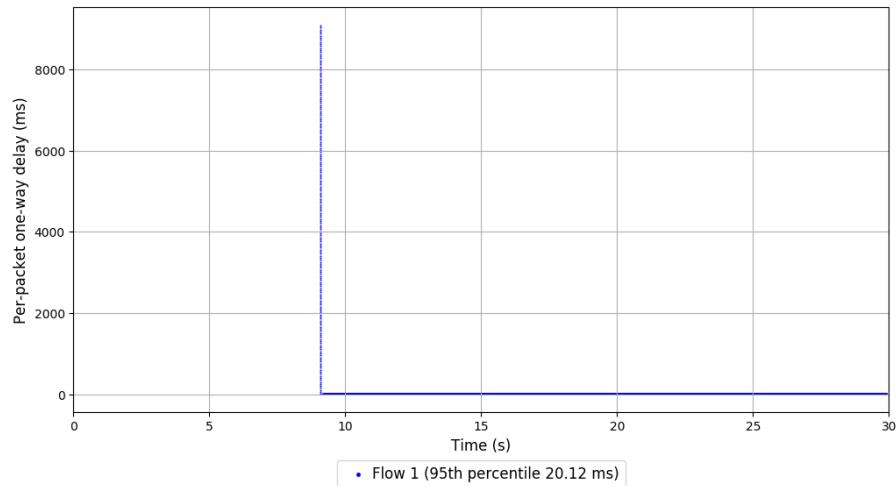
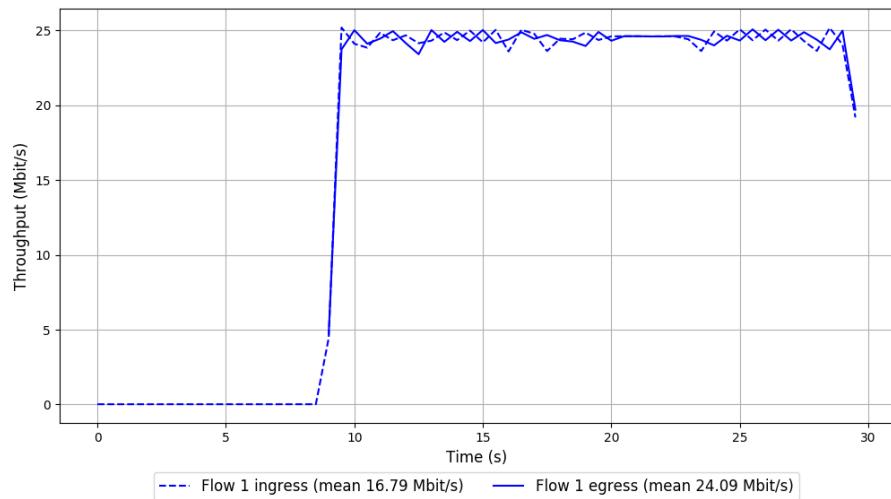
Start at: Sun, 06 Aug 2017 08:35:45 +0000

End at: Sun, 06 Aug 2017 08:36:15 +0000

Local clock offset: -2.797 ms

Remote clock offset: -6.576 ms

Run 3: Report of Sprout — Data Link

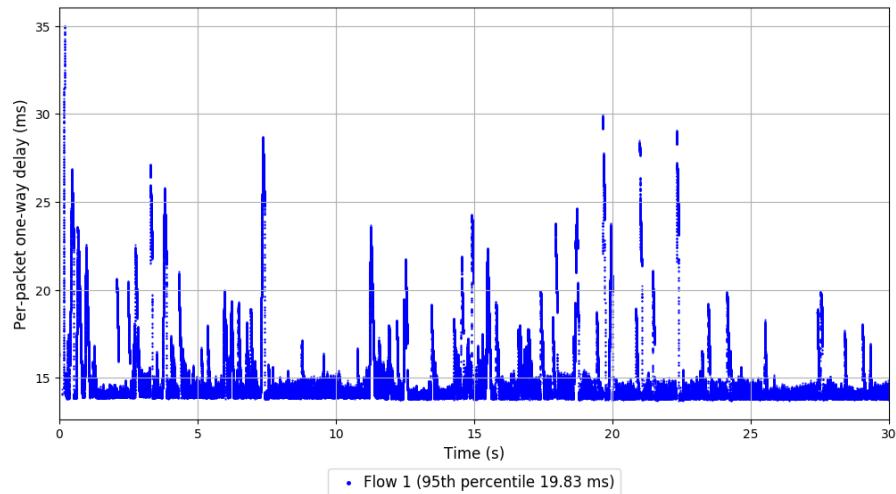
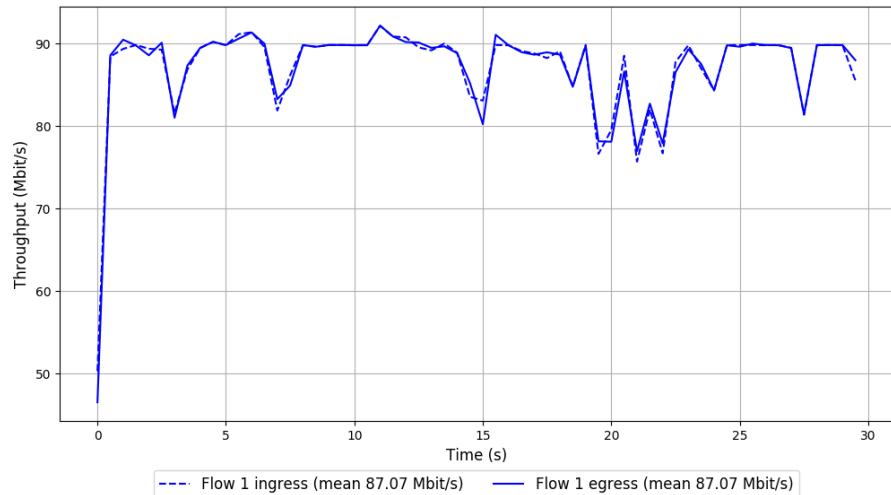


Run 1: Statistics of TaoVA-100x

```
Start at: Sun, 06 Aug 2017 08:04:58 +0000
End at: Sun, 06 Aug 2017 08:05:28 +0000
Local clock offset: -8.208 ms
Remote clock offset: -10.798 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:18 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.07 Mbit/s
95th percentile per-packet one-way delay: 19.829 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 87.07 Mbit/s
95th percentile per-packet one-way delay: 19.829 ms
Loss rate: 0.00%
```

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



Run 2: Statistics of TaoVA-100x

Start at: Sun, 06 Aug 2017 08:22:38 +0000

End at: Sun, 06 Aug 2017 08:23:08 +0000

Local clock offset: -1.663 ms

Remote clock offset: -6.223 ms

Below is generated by plot.py at Sun, 06 Aug 2017 09:06:18 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 51.39 Mbit/s

95th percentile per-packet one-way delay: 29.387 ms

Loss rate: 0.00%

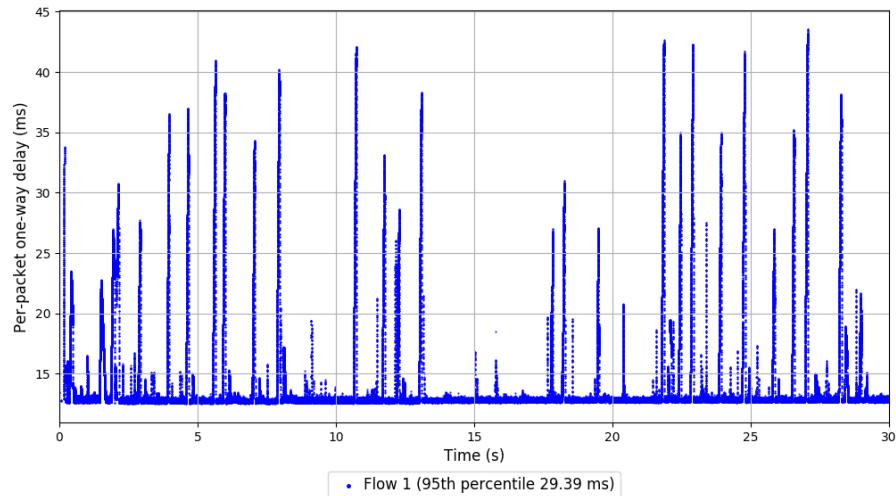
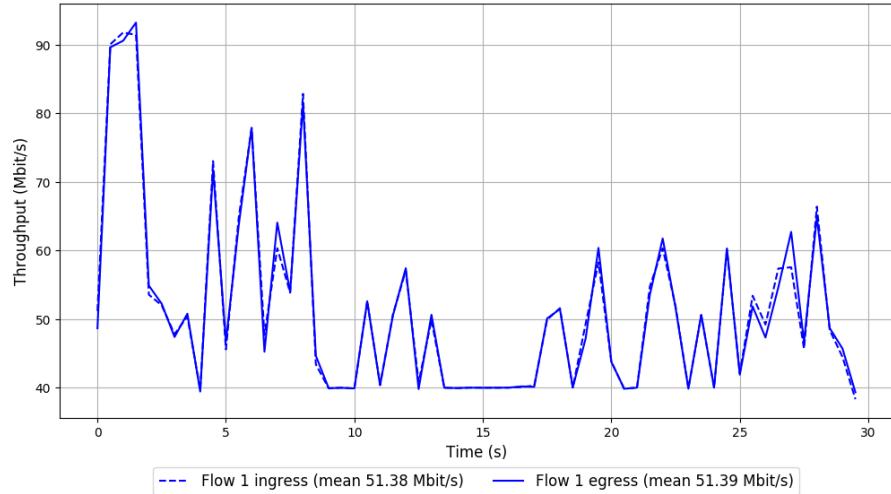
-- Flow 1:

Average throughput: 51.39 Mbit/s

95th percentile per-packet one-way delay: 29.387 ms

Loss rate: 0.00%

Run 2: Report of TaoVA-100x — Data Link

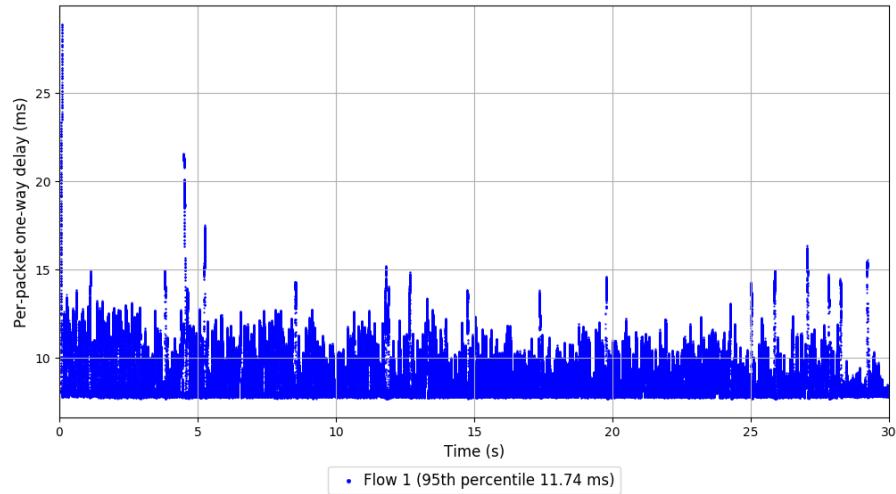
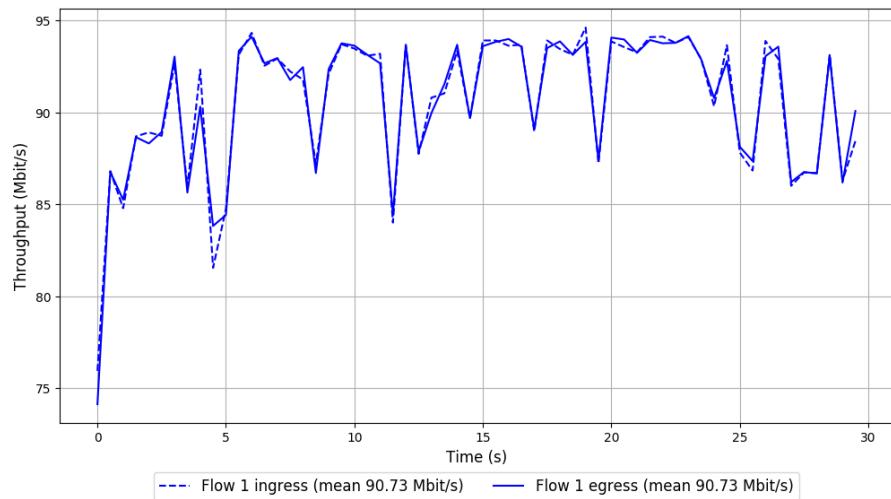


Run 3: Statistics of TaoVA-100x

```
Start at: Sun, 06 Aug 2017 08:40:25 +0000
End at: Sun, 06 Aug 2017 08:40:55 +0000
Local clock offset: 0.446 ms
Remote clock offset: -9.44 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:29 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.73 Mbit/s
95th percentile per-packet one-way delay: 11.736 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 90.73 Mbit/s
95th percentile per-packet one-way delay: 11.736 ms
Loss rate: 0.00%
```

Run 3: Report of TaoVA-100x — Data Link

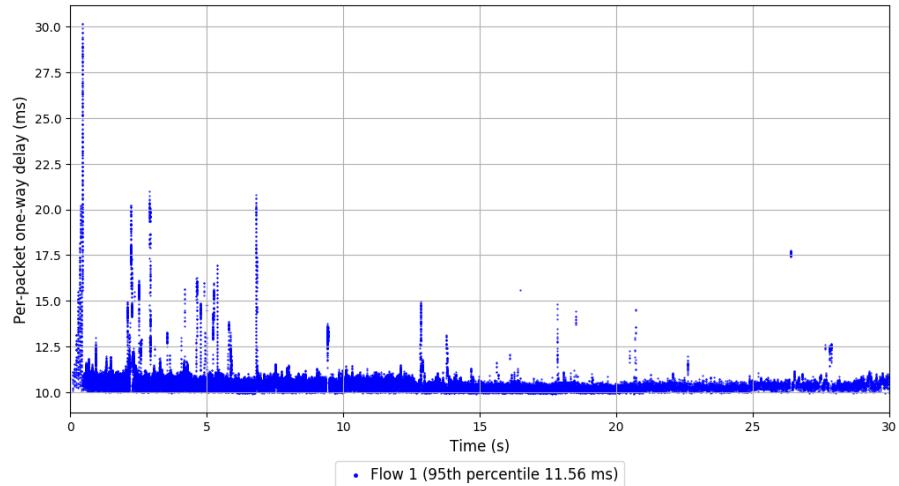
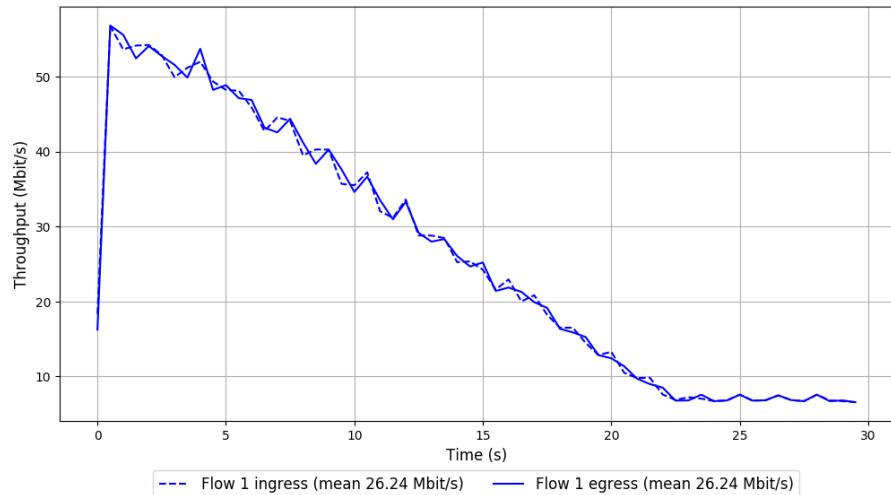


Run 1: Statistics of TCP Vegas

```
Start at: Sun, 06 Aug 2017 08:07:25 +0000
End at: Sun, 06 Aug 2017 08:07:55 +0000
Local clock offset: 0.022 ms
Remote clock offset: -6.359 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:29 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 26.24 Mbit/s
95th percentile per-packet one-way delay: 11.557 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 26.24 Mbit/s
95th percentile per-packet one-way delay: 11.557 ms
Loss rate: 0.00%
```

Run 1: Report of TCP Vegas — Data Link

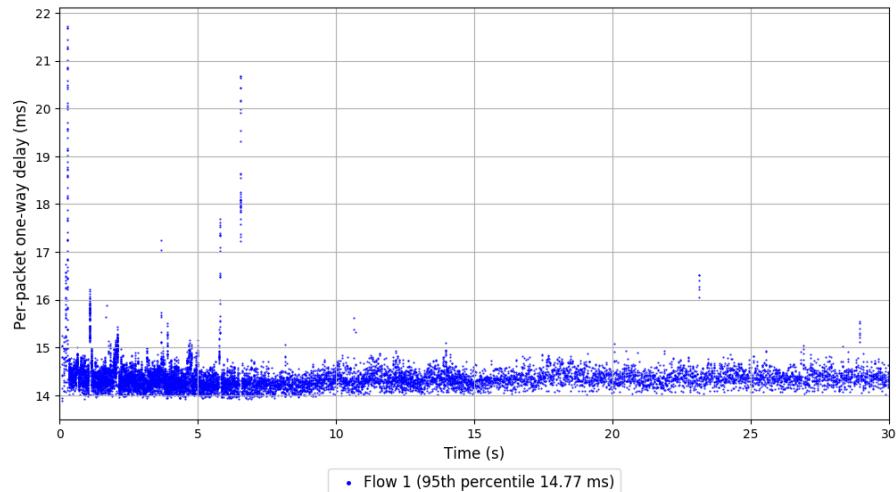
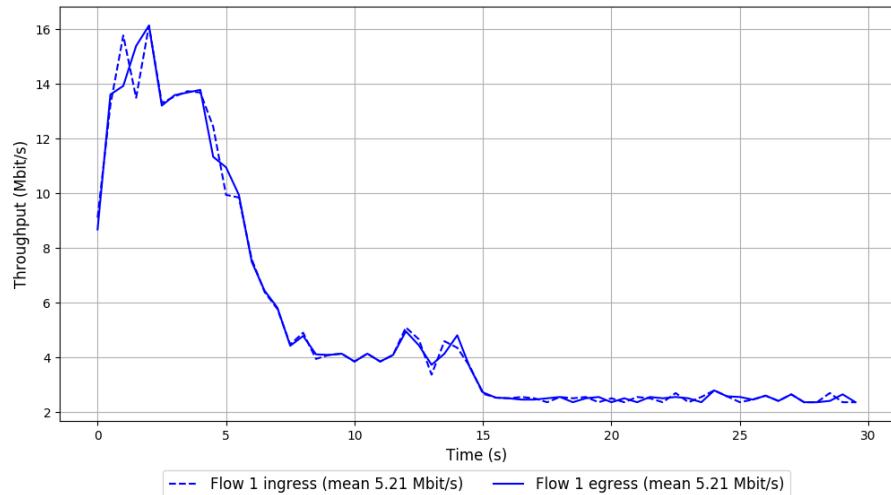


Run 2: Statistics of TCP Vegas

```
Start at: Sun, 06 Aug 2017 08:25:03 +0000
End at: Sun, 06 Aug 2017 08:25:33 +0000
Local clock offset: -2.538 ms
Remote clock offset: -6.002 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:29 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.21 Mbit/s
95th percentile per-packet one-way delay: 14.771 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 5.21 Mbit/s
95th percentile per-packet one-way delay: 14.771 ms
Loss rate: 0.00%
```

Run 2: Report of TCP Vegas — Data Link

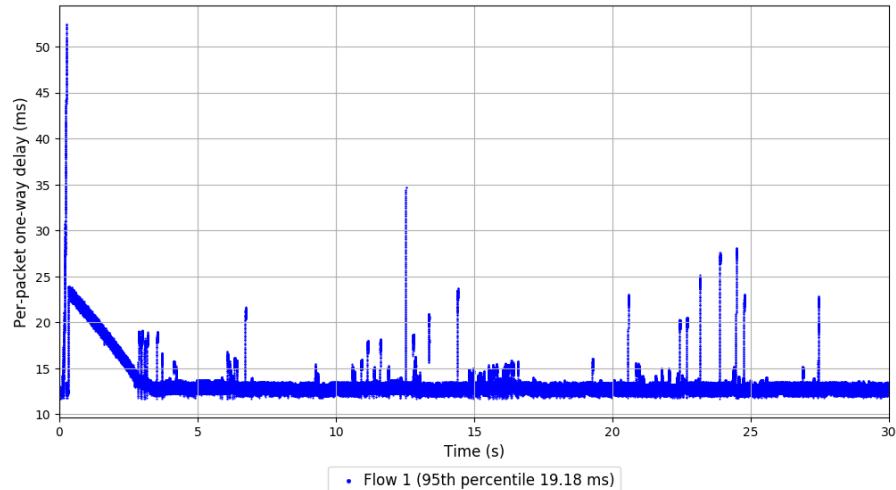
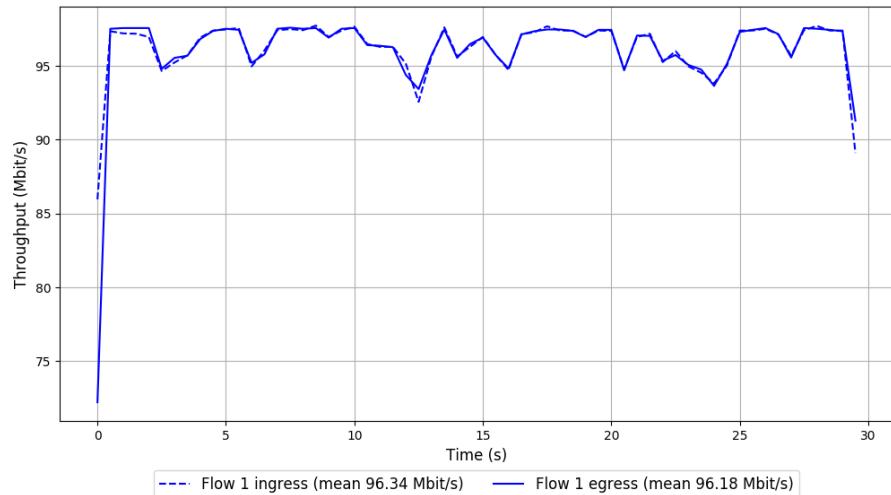


Run 3: Statistics of TCP Vegas

```
Start at: Sun, 06 Aug 2017 08:42:57 +0000
End at: Sun, 06 Aug 2017 08:43:27 +0000
Local clock offset: -1.048 ms
Remote clock offset: -6.858 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:37 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 96.18 Mbit/s
95th percentile per-packet one-way delay: 19.178 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 96.18 Mbit/s
95th percentile per-packet one-way delay: 19.178 ms
Loss rate: 0.17%
```

Run 3: Report of TCP Vegas — Data Link

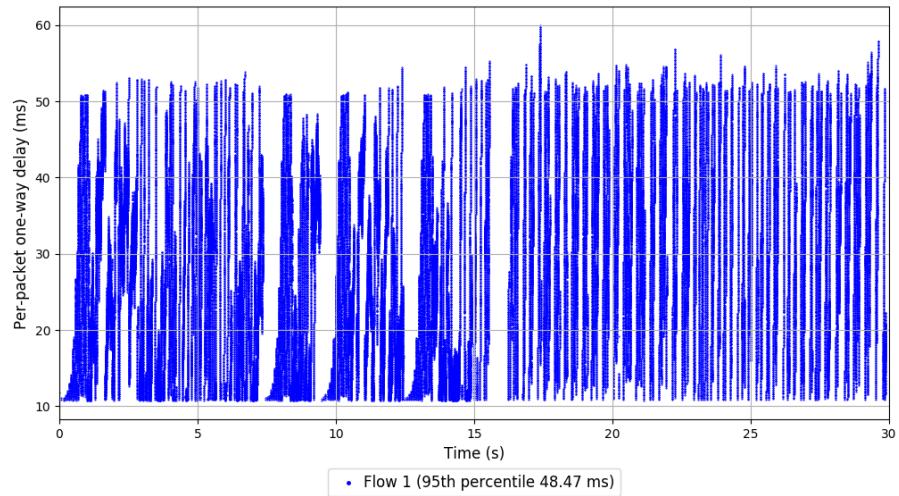
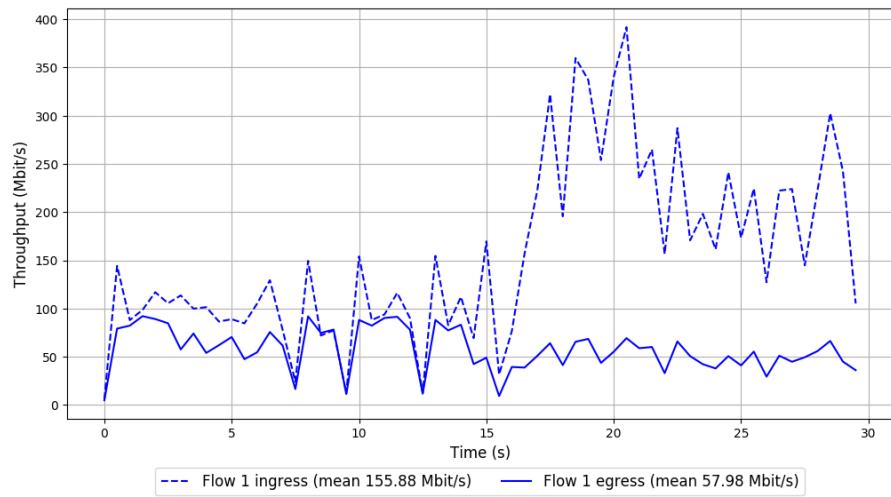


Run 1: Statistics of Verus

```
Start at: Sun, 06 Aug 2017 07:59:04 +0000
End at: Sun, 06 Aug 2017 07:59:34 +0000
Local clock offset: 1.017 ms
Remote clock offset: -4.611 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:40 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.98 Mbit/s
95th percentile per-packet one-way delay: 48.468 ms
Loss rate: 62.80%
-- Flow 1:
Average throughput: 57.98 Mbit/s
95th percentile per-packet one-way delay: 48.468 ms
Loss rate: 62.80%
```

Run 1: Report of Verus — Data Link

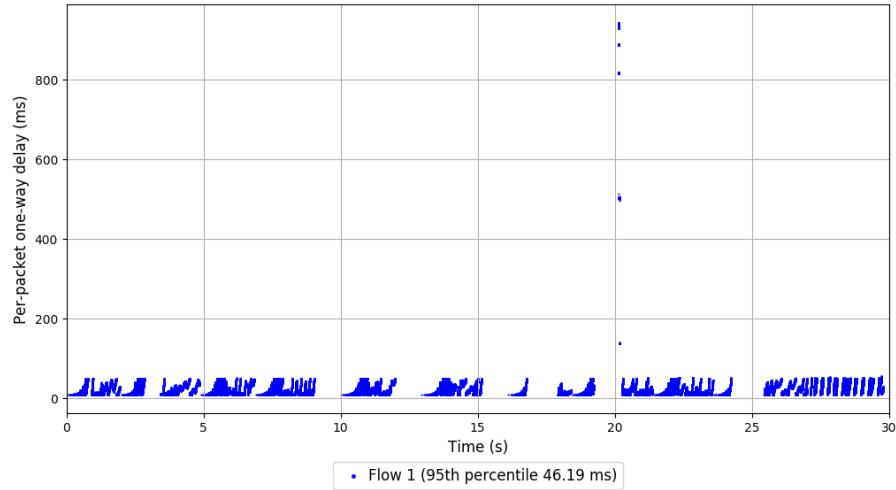
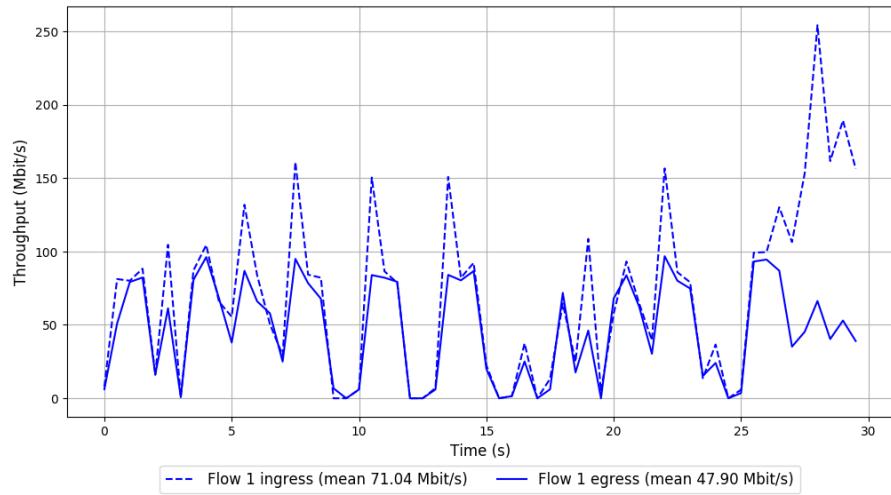


Run 2: Statistics of Verus

```
Start at: Sun, 06 Aug 2017 08:16:46 +0000
End at: Sun, 06 Aug 2017 08:17:16 +0000
Local clock offset: -0.853 ms
Remote clock offset: -7.831 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:45 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 47.90 Mbit/s
95th percentile per-packet one-way delay: 46.191 ms
Loss rate: 32.53%
-- Flow 1:
Average throughput: 47.90 Mbit/s
95th percentile per-packet one-way delay: 46.191 ms
Loss rate: 32.53%
```

Run 2: Report of Verus — Data Link

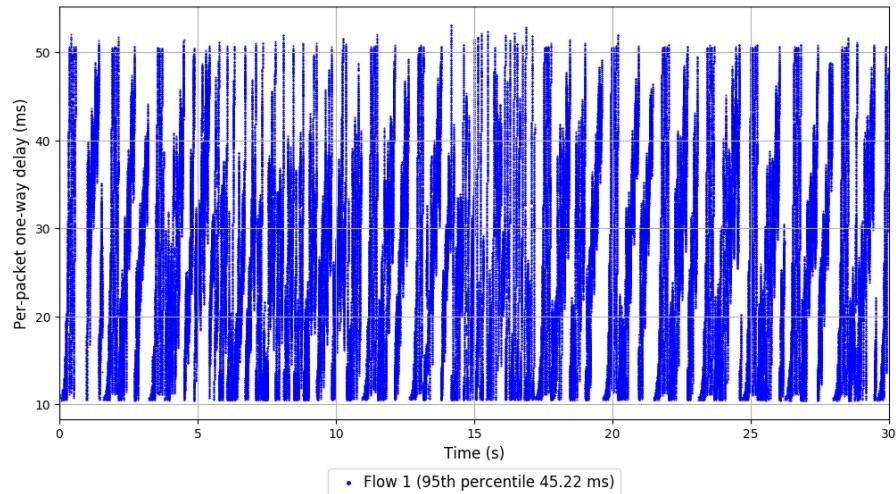
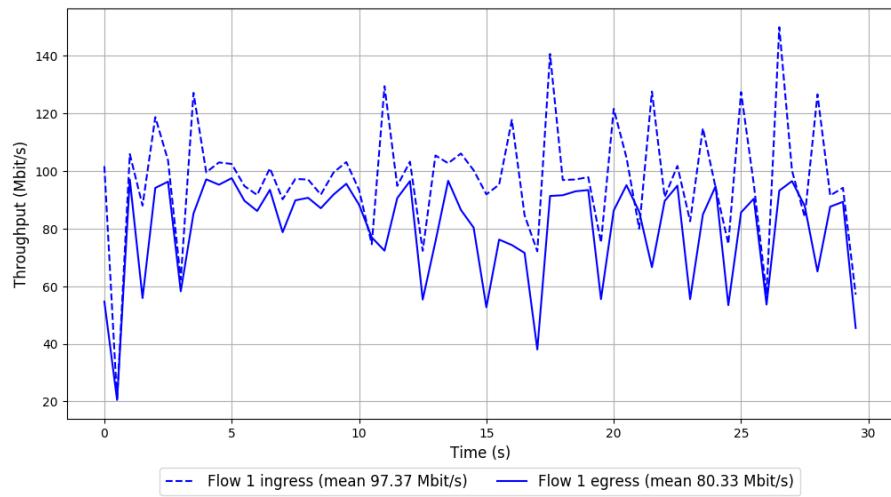


Run 3: Statistics of Verus

```
Start at: Sun, 06 Aug 2017 08:34:31 +0000
End at: Sun, 06 Aug 2017 08:35:01 +0000
Local clock offset: 0.065 ms
Remote clock offset: -7.273 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.33 Mbit/s
95th percentile per-packet one-way delay: 45.223 ms
Loss rate: 17.40%
-- Flow 1:
Average throughput: 80.33 Mbit/s
95th percentile per-packet one-way delay: 45.223 ms
Loss rate: 17.40%
```

Run 3: Report of Verus — Data Link

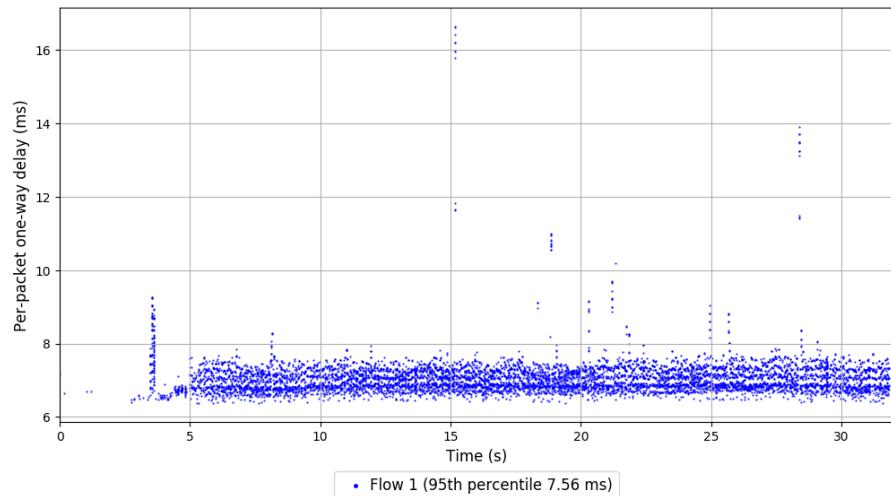
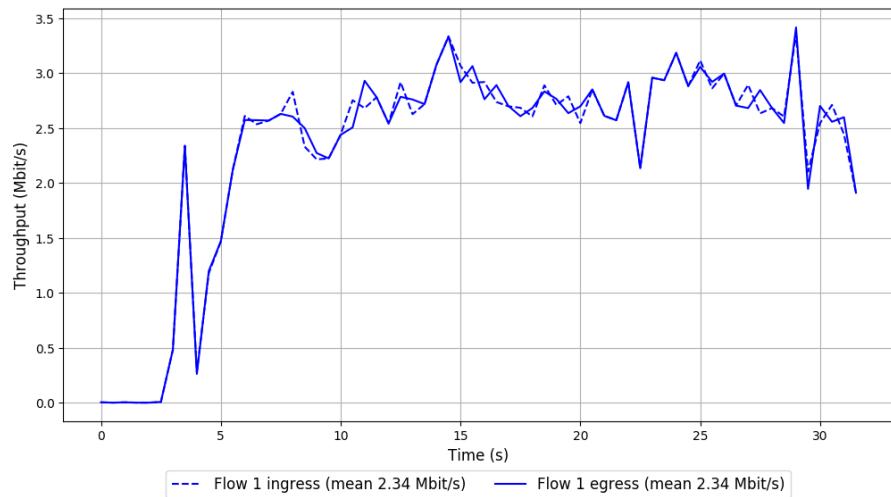


```
Run 1: Statistics of WebRTC media

Start at: Sun, 06 Aug 2017 08:15:40 +0000
End at: Sun, 06 Aug 2017 08:16:10 +0000
Local clock offset: 2.185 ms
Remote clock offset: -7.703 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 7.557 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.34 Mbit/s
95th percentile per-packet one-way delay: 7.557 ms
Loss rate: 0.00%
```

Run 1: Report of WebRTC media — Data Link

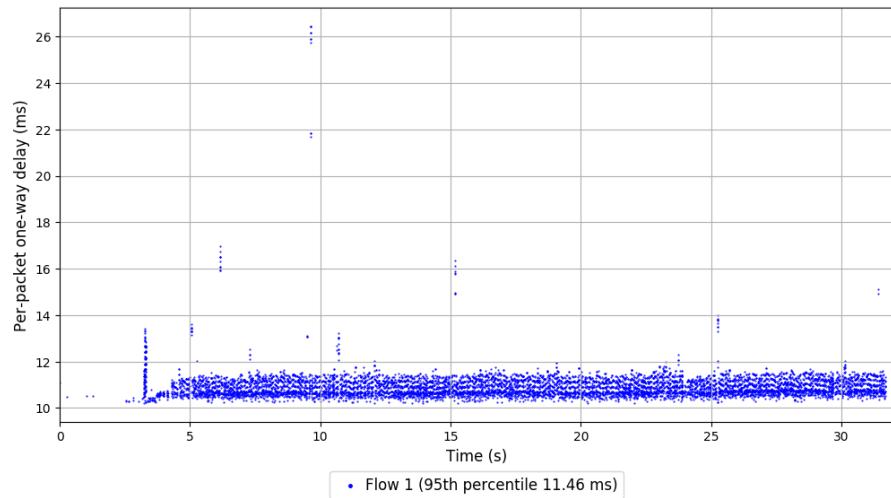
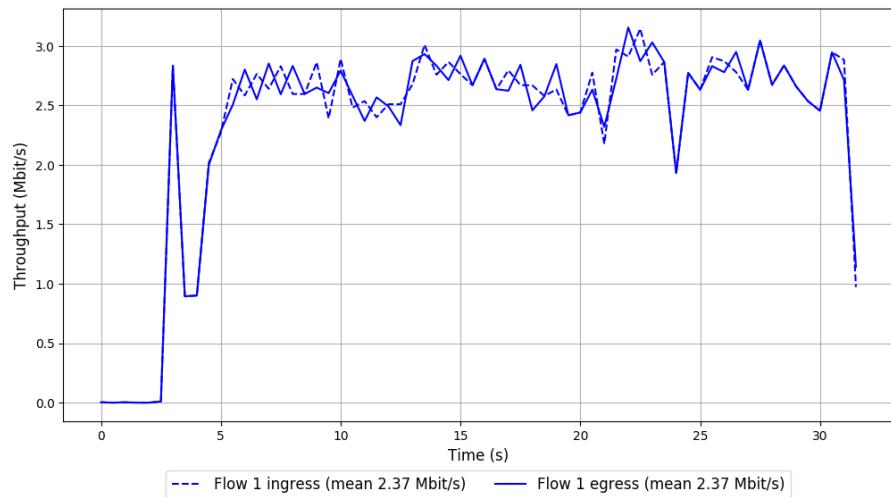


Run 2: Statistics of WebRTC media

```
Start at: Sun, 06 Aug 2017 08:33:26 +0000
End at: Sun, 06 Aug 2017 08:33:56 +0000
Local clock offset: -1.397 ms
Remote clock offset: -8.797 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 11.461 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 11.461 ms
Loss rate: 0.00%
```

Run 2: Report of WebRTC media — Data Link



```
Run 3: Statistics of WebRTC media
```

```
Start at: Sun, 06 Aug 2017 08:51:26 +0000
End at: Sun, 06 Aug 2017 08:51:56 +0000
Local clock offset: -0.674 ms
Remote clock offset: -6.49 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 12.183 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 12.183 ms
Loss rate: 0.00%
```

Run 3: Report of WebRTC media — Data Link

