

Pantheon Summary (Generated at Sun, 06 Aug 2017 09:07:42 +0000 with
pantheon version a934ee3822380a12762347e6bc8bd1f3e836e73b)

Repeated the test of 15 congestion control schemes 3 times.

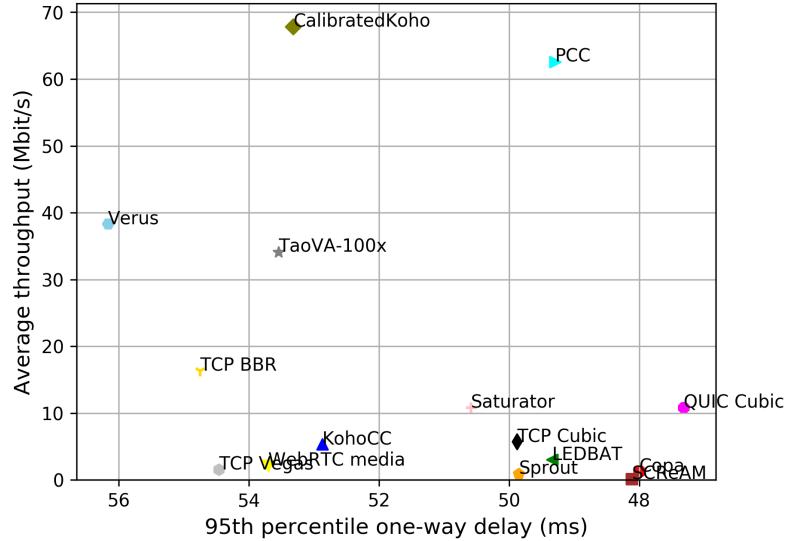
Each test lasted for 30 seconds running 1 flow.

Data path: AWS Korea Ethernet (*local*) → China Ethernet (*remote*).

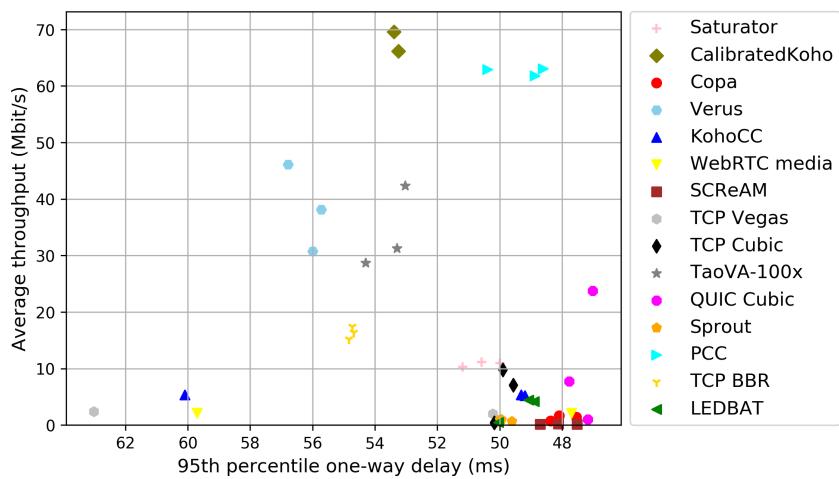
NTP offset measured against ntp.nict.jp and has been applied to correct the
timestamps in logs.

```
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 Korea Ethernet to China Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS Korea Ethernet to China Ethernet, 3 runs of 30s each per scheme



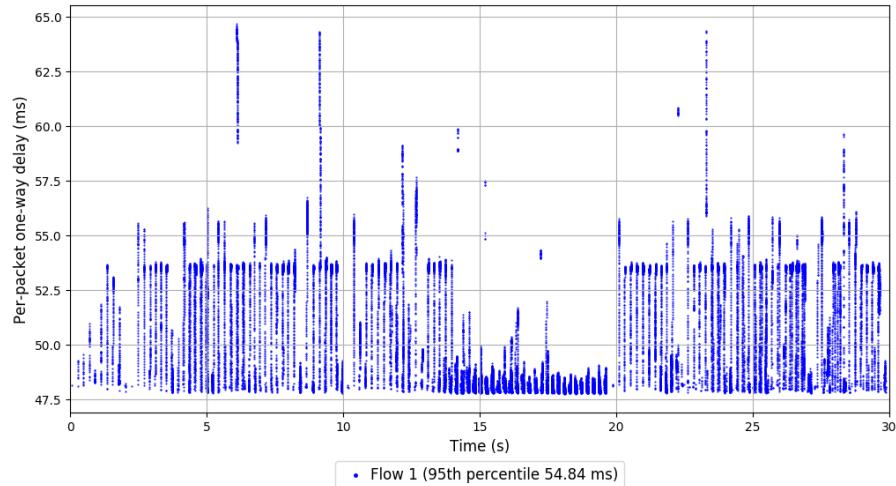
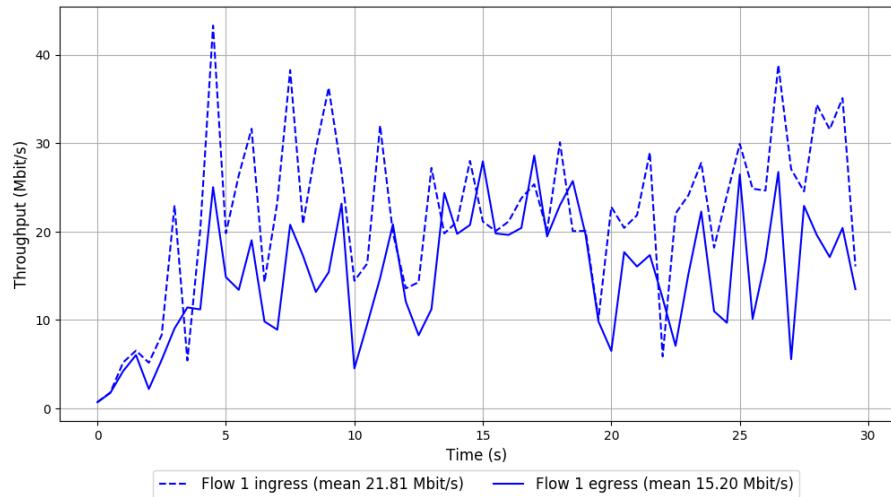
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	16.32	54.75	31.98
CalibratedKoho	3	67.88	53.32	7.77
Copa	3	1.27	48.00	0.92
TCP Cubic	3	5.75	49.88	1.39
KohoCC	3	5.33	52.87	0.95
LEDBAT	3	3.01	49.34	1.38
PCC	3	62.60	49.29	3.36
QUIC Cubic	3	10.84	47.32	1.00
Saturator	3	10.80	50.59	1.16
SCReAM	3	0.15	48.12	0.41
Sprout	3	0.90	49.85	0.89
TaoVA-100x	3	34.11	53.54	2.78
TCP Vegas	3	1.58	54.46	2.19
Verus	3	38.33	56.17	75.58
WebRTC media	3	2.15	53.71	0.05

Run 1: Statistics of TCP BBR

```
Start at: Sun, 06 Aug 2017 08:13:49 +0000
End at: Sun, 06 Aug 2017 08:14:19 +0000
Local clock offset: 1.81 ms
Remote clock offset: 0.949 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:24 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.20 Mbit/s
95th percentile per-packet one-way delay: 54.837 ms
Loss rate: 30.67%
-- Flow 1:
Average throughput: 15.20 Mbit/s
95th percentile per-packet one-way delay: 54.837 ms
Loss rate: 30.67%
```

Run 1: Report of TCP BBR — Data Link

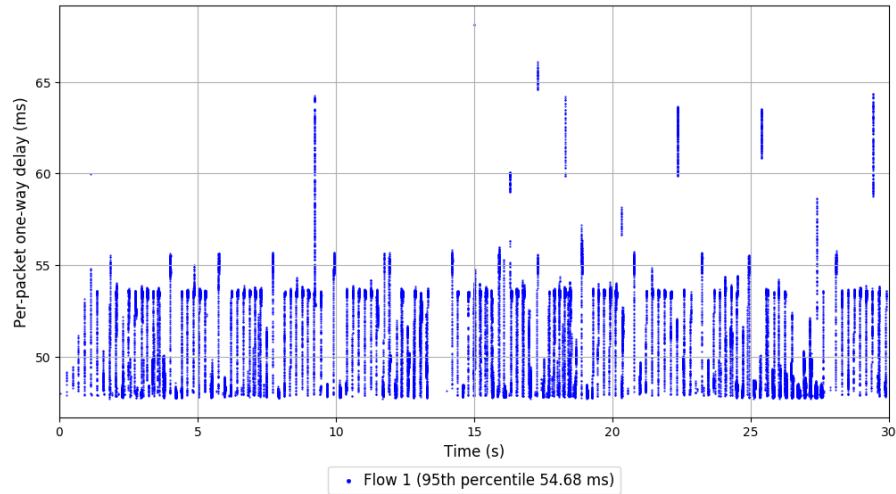
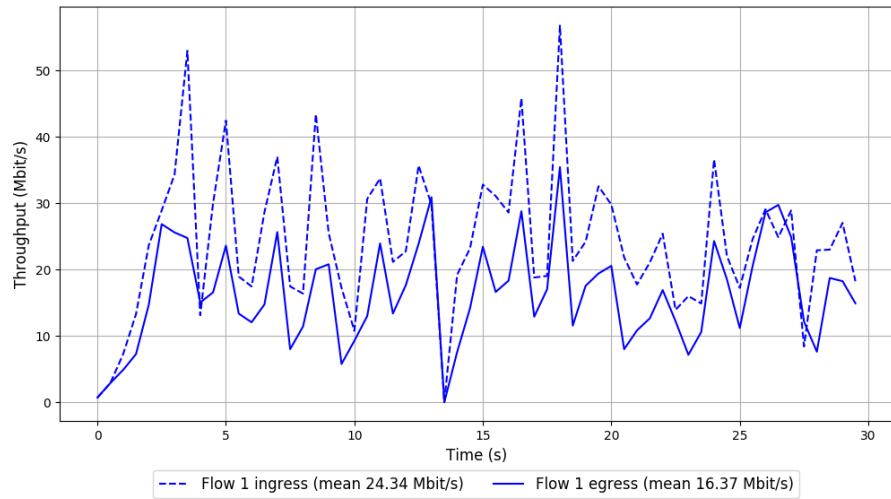


Run 2: Statistics of TCP BBR

```
Start at: Sun, 06 Aug 2017 08:33:14 +0000
End at: Sun, 06 Aug 2017 08:33:44 +0000
Local clock offset: 1.672 ms
Remote clock offset: 0.949 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:24 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 16.37 Mbit/s
95th percentile per-packet one-way delay: 54.684 ms
Loss rate: 32.71%
-- Flow 1:
Average throughput: 16.37 Mbit/s
95th percentile per-packet one-way delay: 54.684 ms
Loss rate: 32.71%
```

Run 2: Report of TCP BBR — Data Link

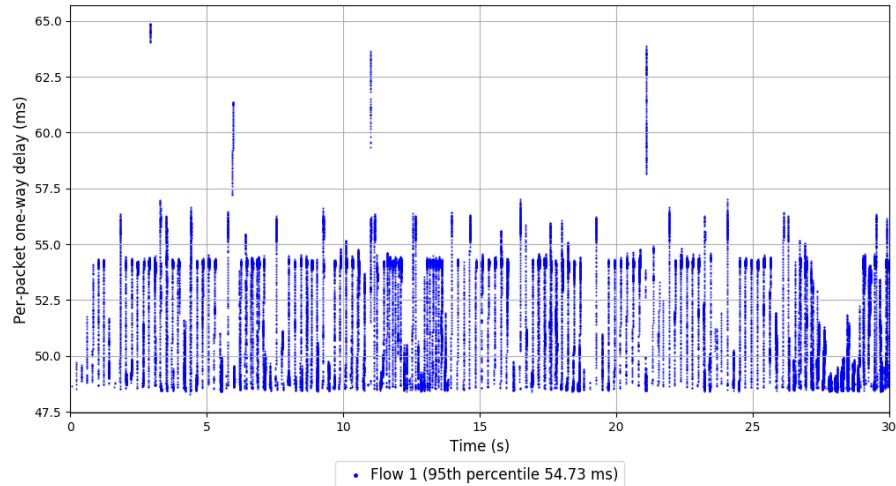
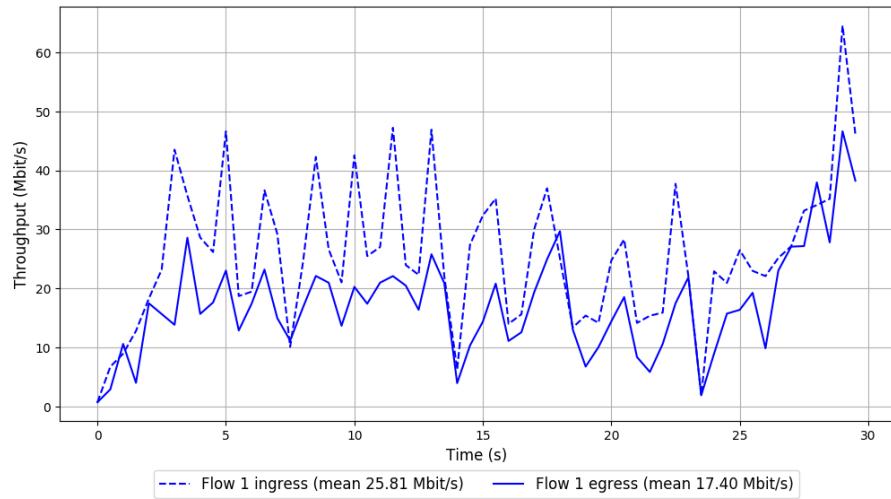


Run 3: Statistics of TCP BBR

```
Start at: Sun, 06 Aug 2017 08:52:13 +0000
End at: Sun, 06 Aug 2017 08:52:43 +0000
Local clock offset: 0.81 ms
Remote clock offset: 0.929 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:27 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 17.40 Mbit/s
95th percentile per-packet one-way delay: 54.729 ms
Loss rate: 32.56%
-- Flow 1:
Average throughput: 17.40 Mbit/s
95th percentile per-packet one-way delay: 54.729 ms
Loss rate: 32.56%
```

Run 3: Report of TCP BBR — Data Link



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

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

```
End at: Sun, 06 Aug 2017 08:06:38 +0000
```

```
Local clock offset: 2.032 ms
```

```
Remote clock offset: 0.814 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:32 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 69.61 Mbit/s
```

```
95th percentile per-packet one-way delay: 53.393 ms
```

```
Loss rate: 6.70%
```

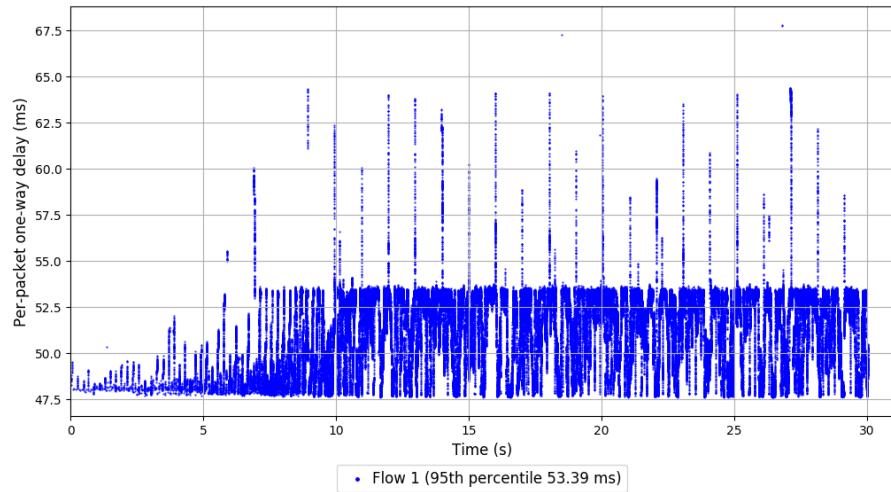
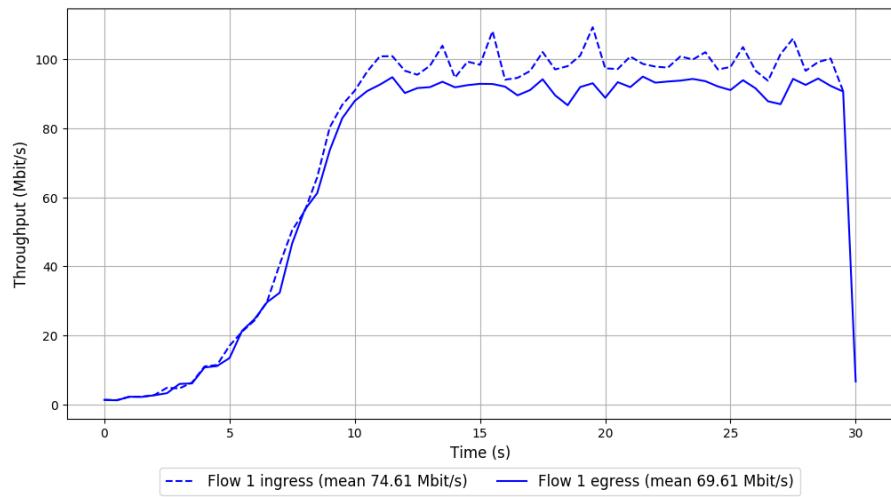
```
-- Flow 1:
```

```
Average throughput: 69.61 Mbit/s
```

```
95th percentile per-packet one-way delay: 53.393 ms
```

```
Loss rate: 6.70%
```

Run 1: Report of CalibratedKoho — Data Link



Run 2: Statistics of CalibratedKoho

Start at: Sun, 06 Aug 2017 08:25:05 +0000

End at: Sun, 06 Aug 2017 08:25:35 +0000

Local clock offset: 1.743 ms

Remote clock offset: 0.962 ms

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

Datalink statistics

-- Total of 1 flow:

Average throughput: 66.14 Mbit/s

95th percentile per-packet one-way delay: 53.246 ms

Loss rate: 8.84%

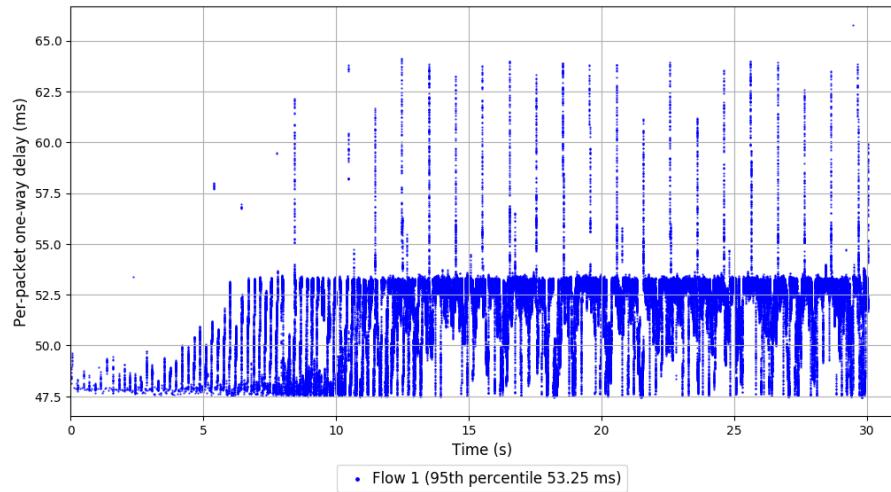
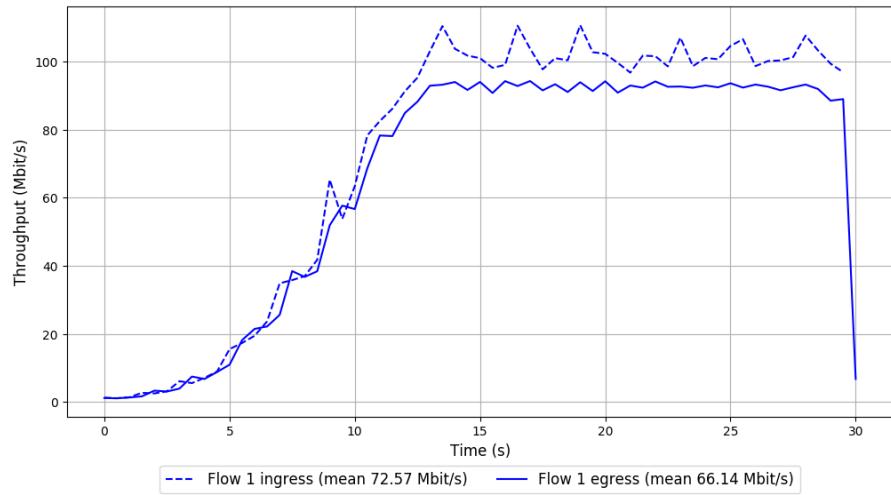
-- Flow 1:

Average throughput: 66.14 Mbit/s

95th percentile per-packet one-way delay: 53.246 ms

Loss rate: 8.84%

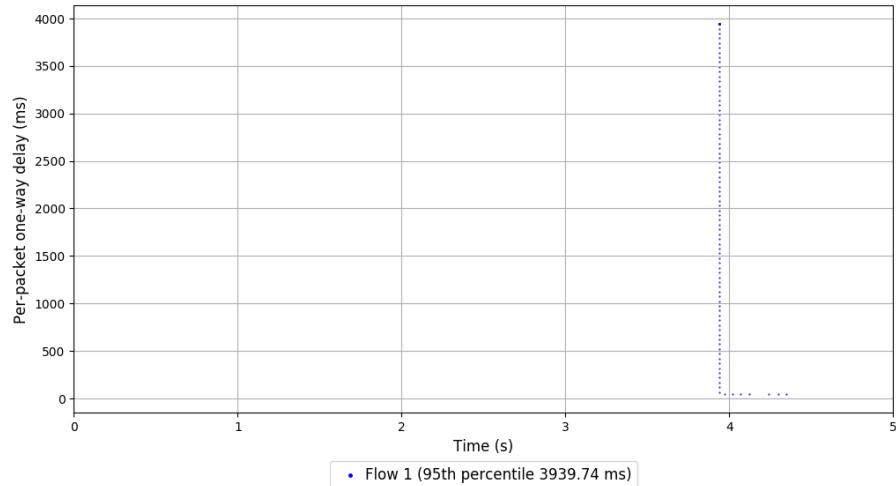
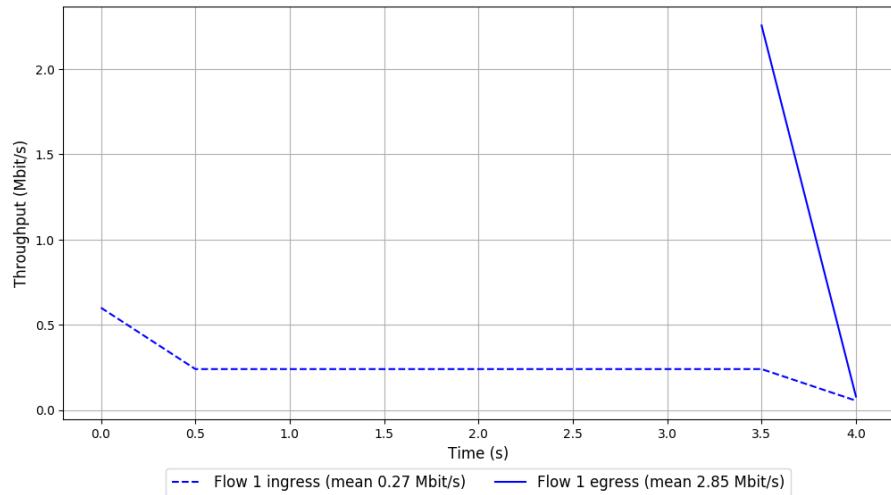
Run 2: Report of CalibratedKoho — Data Link



Run 3: Statistics of CalibratedKoho

Start at: Sun, 06 Aug 2017 08:44:31 +0000
End at: Sun, 06 Aug 2017 08:45:01 +0000
Local clock offset: 1.56 ms
Remote clock offset: 0.93 ms

Run 3: Report of CalibratedKoho — Data Link

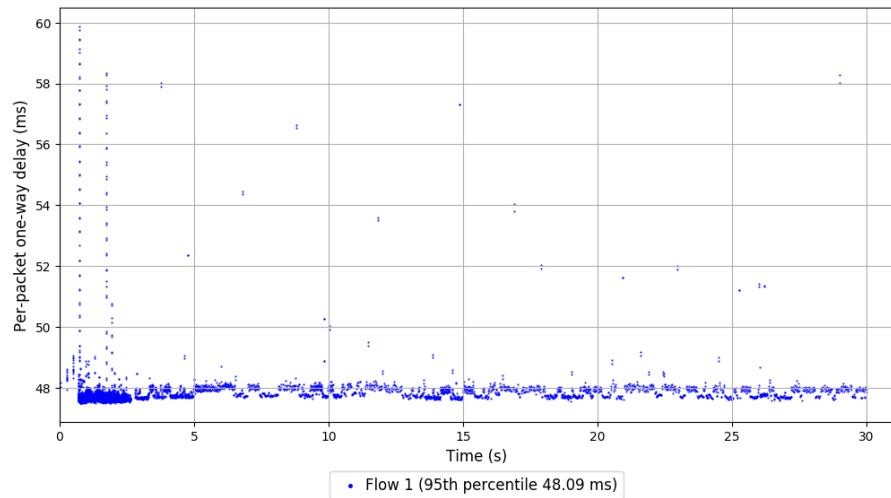
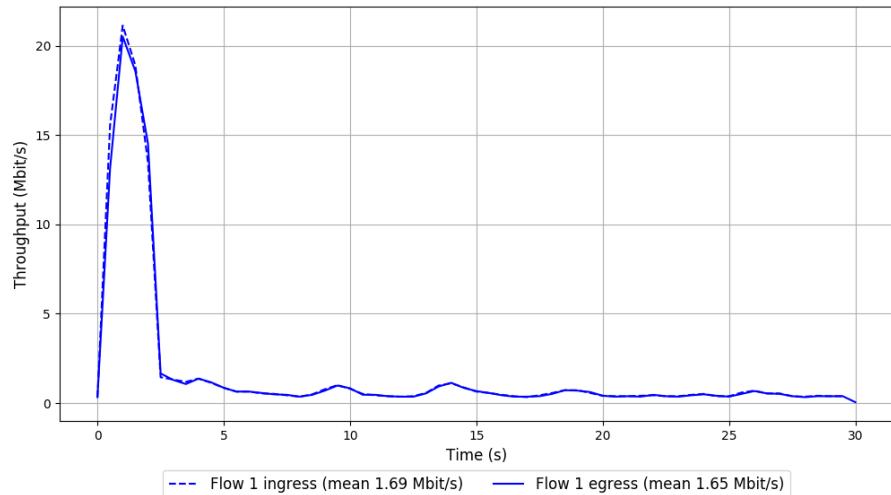


Run 1: Statistics of Copa

```
Start at: Sun, 06 Aug 2017 08:22:38 +0000
End at: Sun, 06 Aug 2017 08:23:08 +0000
Local clock offset: 1.747 ms
Remote clock offset: 0.969 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:38 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.65 Mbit/s
95th percentile per-packet one-way delay: 48.091 ms
Loss rate: 2.68%
-- Flow 1:
Average throughput: 1.65 Mbit/s
95th percentile per-packet one-way delay: 48.091 ms
Loss rate: 2.68%
```

Run 1: Report of Copa — Data Link

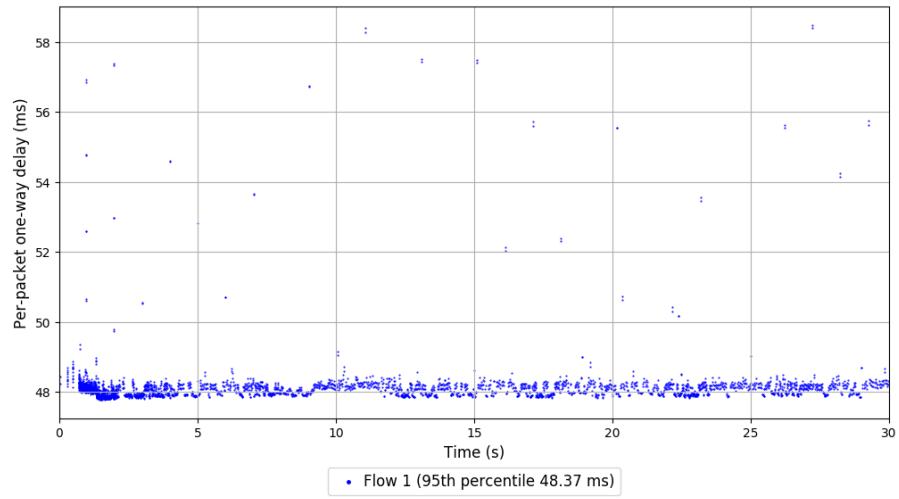
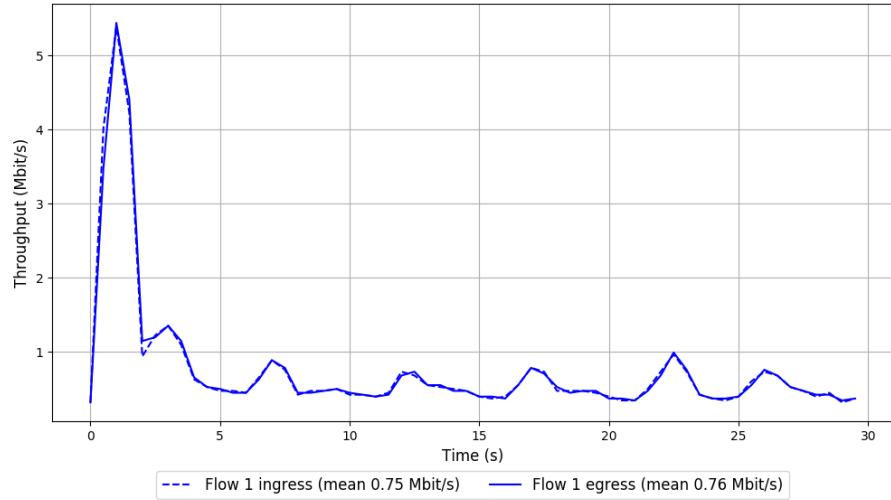


Run 2: Statistics of Copa

```
Start at: Sun, 06 Aug 2017 08:42:04 +0000
End at: Sun, 06 Aug 2017 08:42:34 +0000
Local clock offset: 1.572 ms
Remote clock offset: 0.911 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:38 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 48.368 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 48.368 ms
Loss rate: 0.06%
```

Run 2: Report of Copa — Data Link

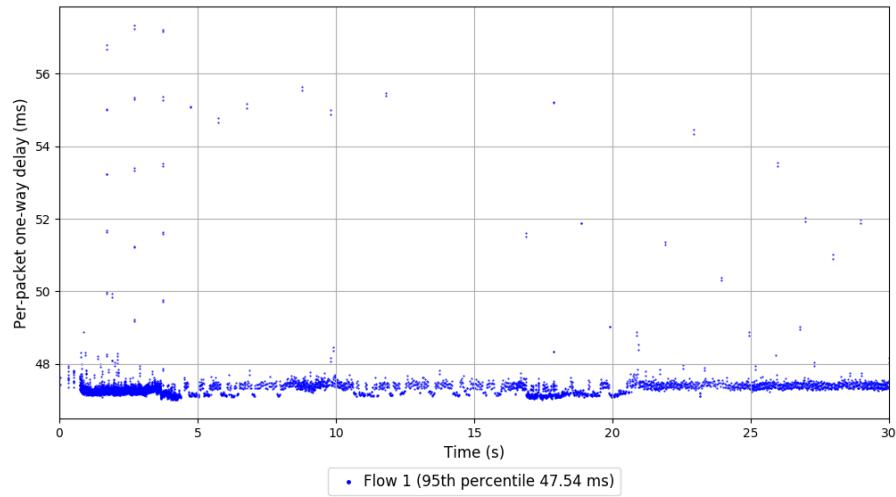
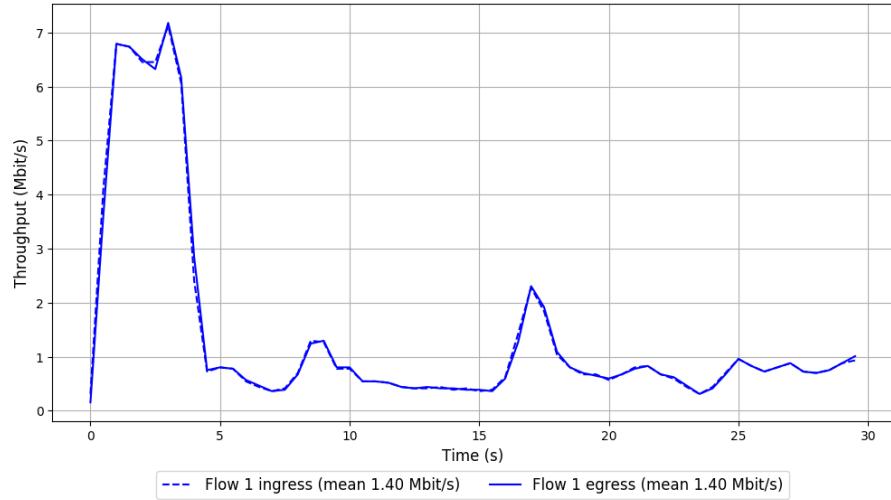


Run 3: Statistics of Copa

```
Start at: Sun, 06 Aug 2017 09:01:01 +0000
End at: Sun, 06 Aug 2017 09:01:31 +0000
Local clock offset: 2.175 ms
Remote clock offset: 0.933 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:38 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 47.541 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 47.541 ms
Loss rate: 0.03%
```

Run 3: Report of Copa — Data Link

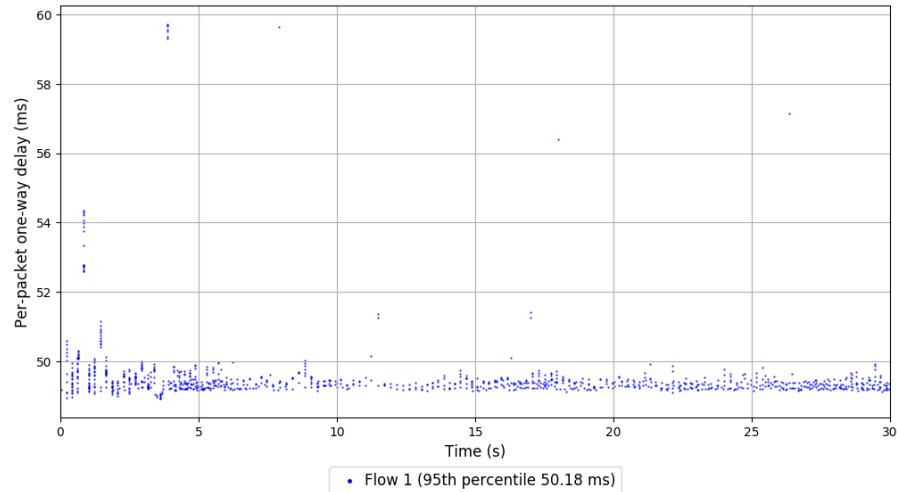
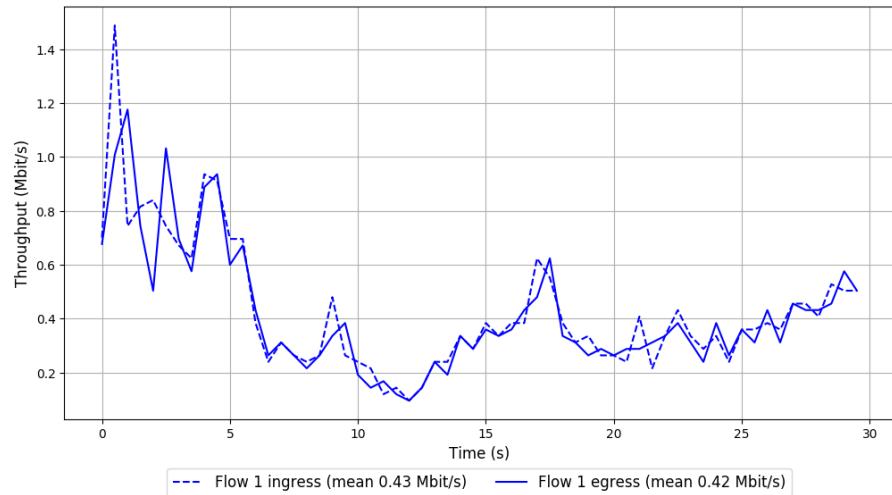


Run 1: Statistics of TCP Cubic

```
Start at: Sun, 06 Aug 2017 08:10:04 +0000
End at: Sun, 06 Aug 2017 08:10:34 +0000
Local clock offset: 0.865 ms
Remote clock offset: 0.963 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:39 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 50.177 ms
Loss rate: 2.80%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 50.177 ms
Loss rate: 2.80%
```

Run 1: Report of TCP Cubic — Data Link

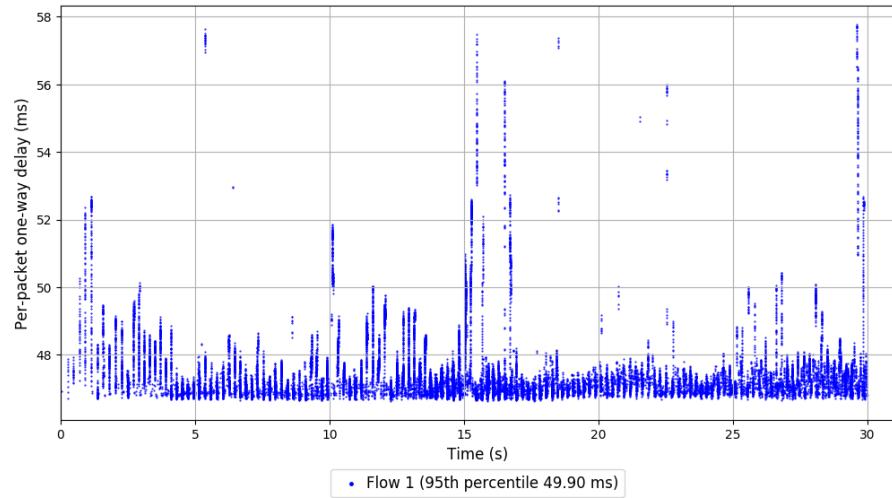
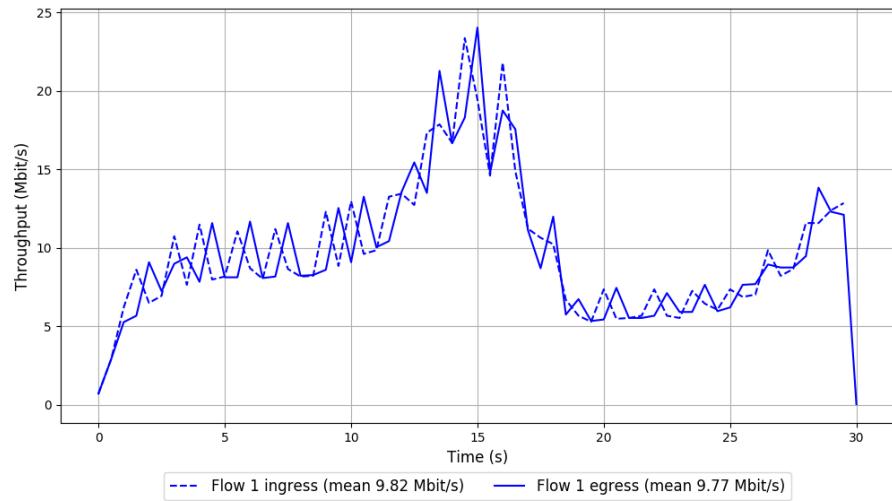


Run 2: Statistics of TCP Cubic

```
Start at: Sun, 06 Aug 2017 08:29:24 +0000
End at: Sun, 06 Aug 2017 08:29:54 +0000
Local clock offset: 2.529 ms
Remote clock offset: 0.967 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:41 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.77 Mbit/s
95th percentile per-packet one-way delay: 49.899 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 9.77 Mbit/s
95th percentile per-packet one-way delay: 49.899 ms
Loss rate: 0.53%
```

Run 2: Report of TCP Cubic — Data Link

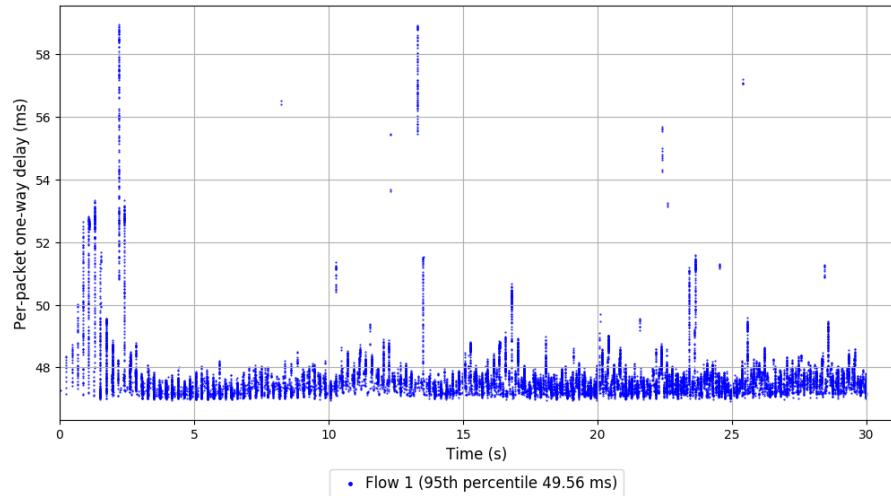
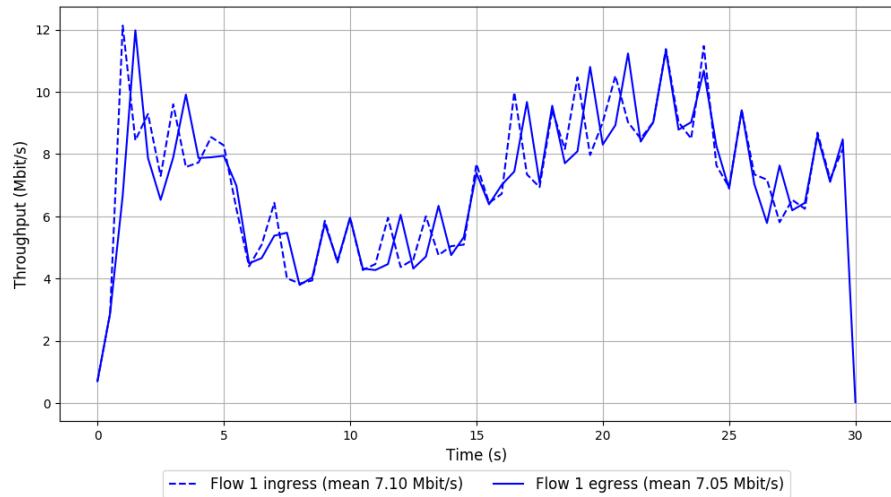


Run 3: Statistics of TCP Cubic

```
Start at: Sun, 06 Aug 2017 08:48:17 +0000
End at: Sun, 06 Aug 2017 08:48:47 +0000
Local clock offset: 2.279 ms
Remote clock offset: 0.941 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:41 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.05 Mbit/s
95th percentile per-packet one-way delay: 49.565 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 7.05 Mbit/s
95th percentile per-packet one-way delay: 49.565 ms
Loss rate: 0.83%
```

Run 3: Report of TCP Cubic — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:12:35 +0000
```

```
End at: Sun, 06 Aug 2017 08:13:05 +0000
```

```
Local clock offset: 1.914 ms
```

```
Remote clock offset: 0.946 ms
```

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

```
# Datalink statistics
```

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

```
Average throughput: 5.25 Mbit/s
```

```
95th percentile per-packet one-way delay: 49.198 ms
```

```
Loss rate: 2.78%
```

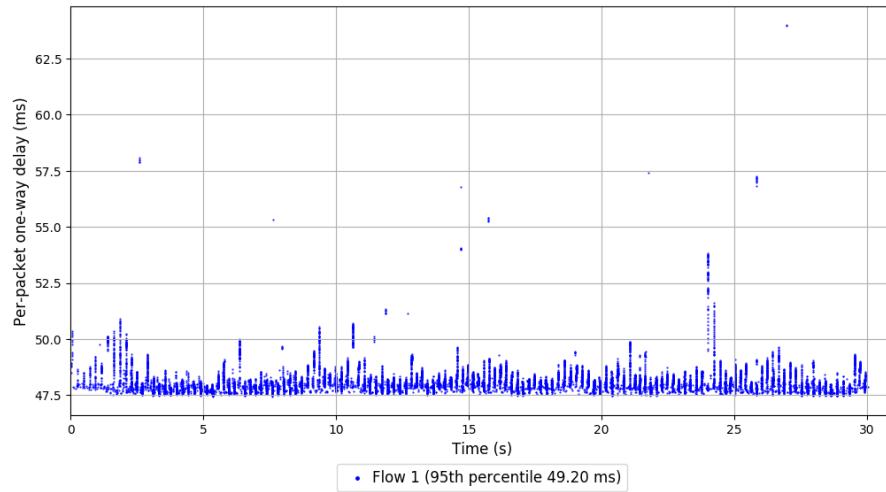
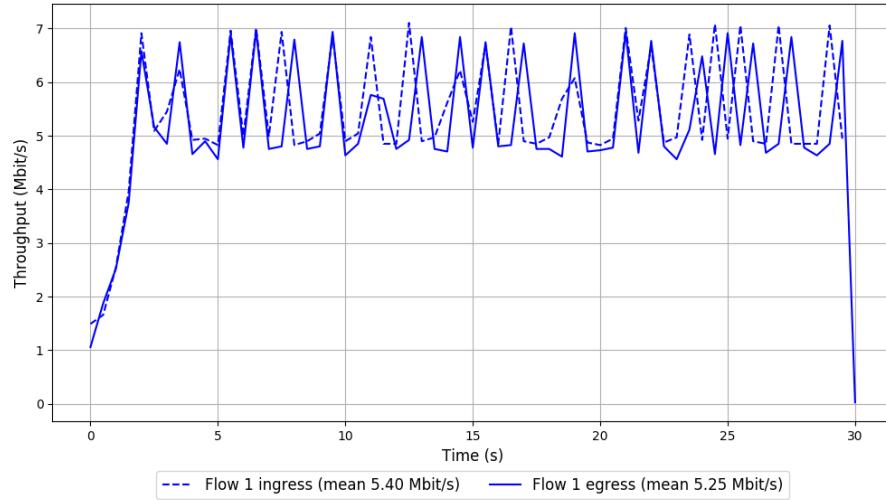
```
-- Flow 1:
```

```
Average throughput: 5.25 Mbit/s
```

```
95th percentile per-packet one-way delay: 49.198 ms
```

```
Loss rate: 2.78%
```

Run 1: Report of KohoCC — Data Link

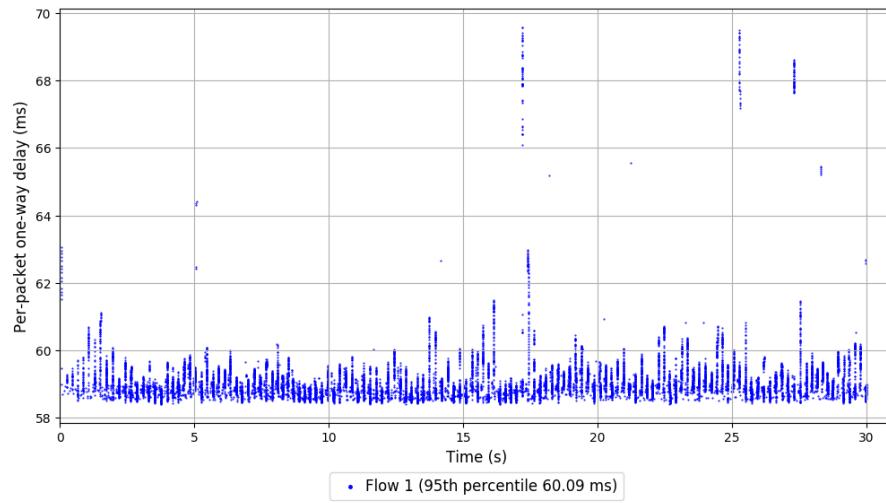
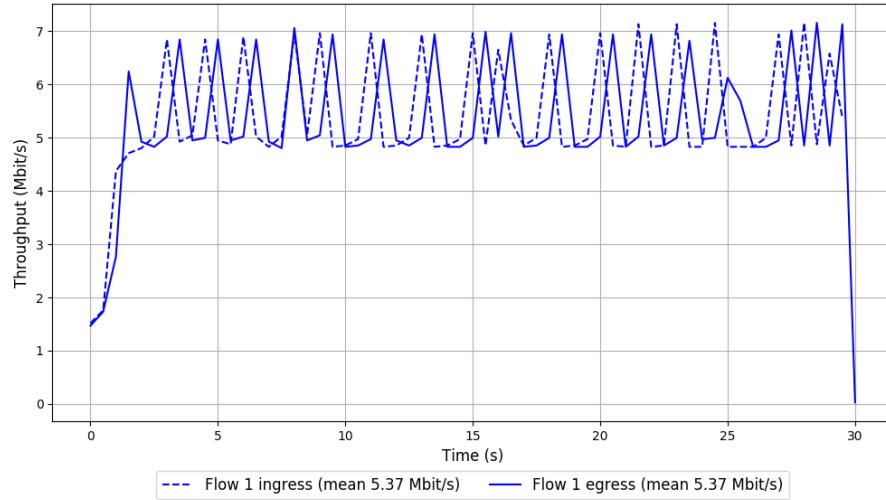


Run 2: Statistics of KohoCC

```
Start at: Sun, 06 Aug 2017 08:32:00 +0000
End at: Sun, 06 Aug 2017 08:32:30 +0000
Local clock offset: -9.256 ms
Remote clock offset: 0.964 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:43 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.37 Mbit/s
95th percentile per-packet one-way delay: 60.095 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 5.37 Mbit/s
95th percentile per-packet one-way delay: 60.095 ms
Loss rate: 0.02%
```

Run 2: Report of KohoCC — Data Link

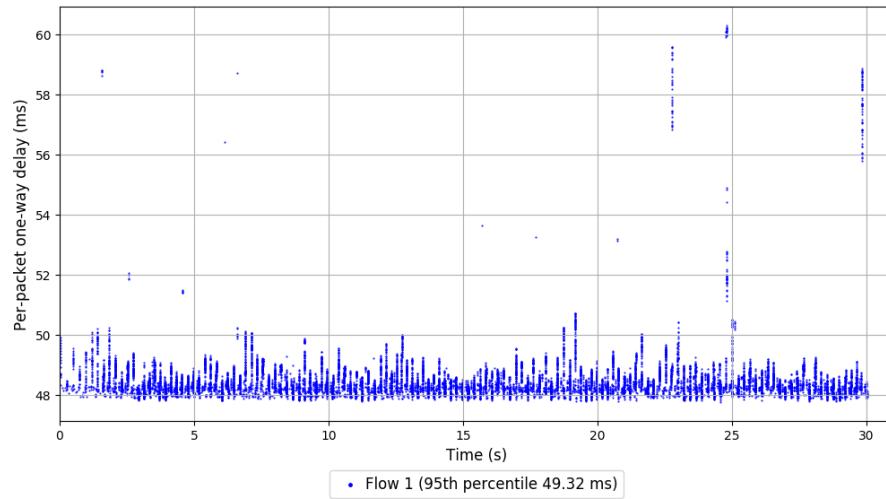
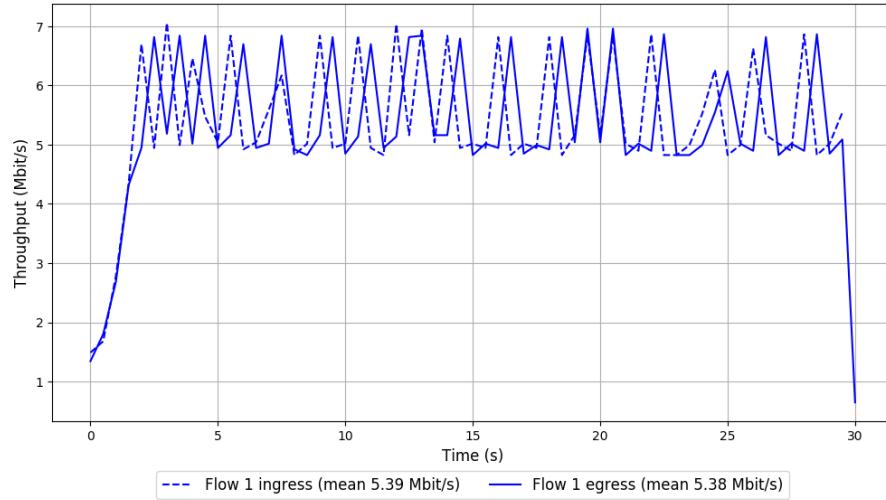


Run 3: Statistics of KohoCC

```
Start at: Sun, 06 Aug 2017 08:50:53 +0000
End at: Sun, 06 Aug 2017 08:51:23 +0000
Local clock offset: 1.446 ms
Remote clock offset: 0.957 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:44 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.38 Mbit/s
95th percentile per-packet one-way delay: 49.321 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 5.38 Mbit/s
95th percentile per-packet one-way delay: 49.321 ms
Loss rate: 0.04%
```

Run 3: Report of KohoCC — Data Link

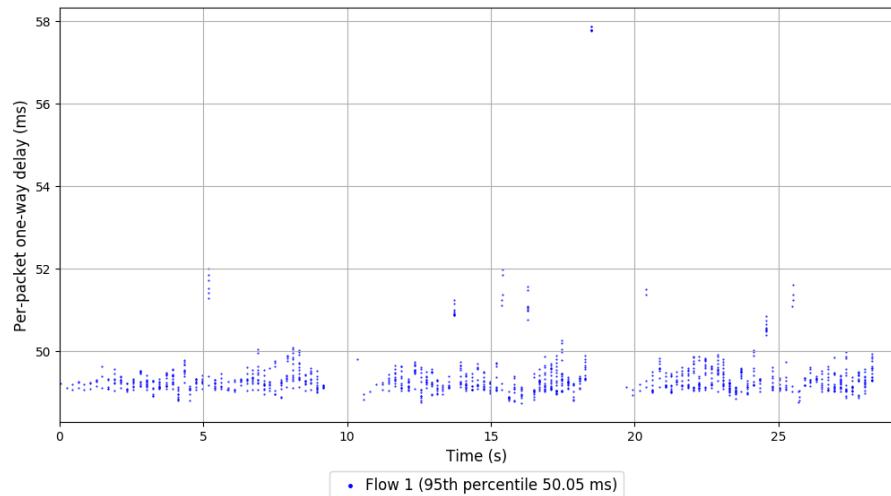
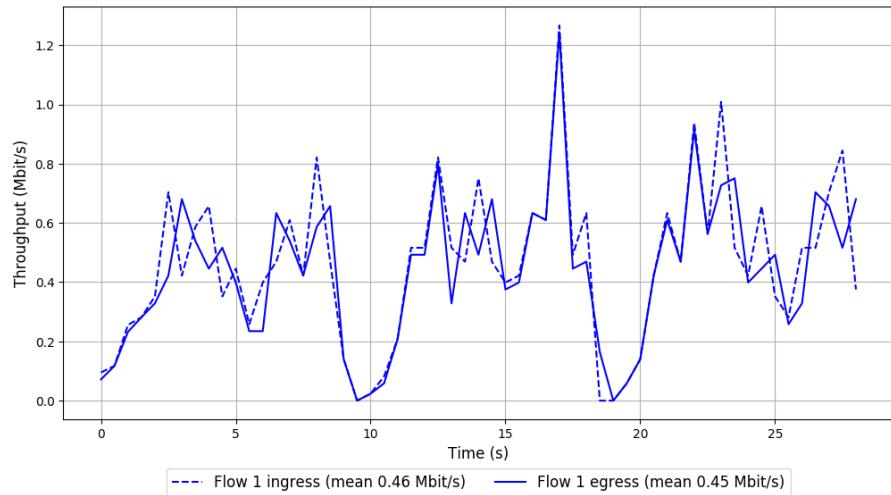


```
Run 1: Statistics of LEDBAT
```

```
Start at: Sun, 06 Aug 2017 08:23:52 +0000
End at: Sun, 06 Aug 2017 08:24:22 +0000
Local clock offset: 0.594 ms
Remote clock offset: 0.99 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:44 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 50.049 ms
Loss rate: 3.59%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 50.049 ms
Loss rate: 3.59%
```

Run 1: Report of LEDBAT — Data Link

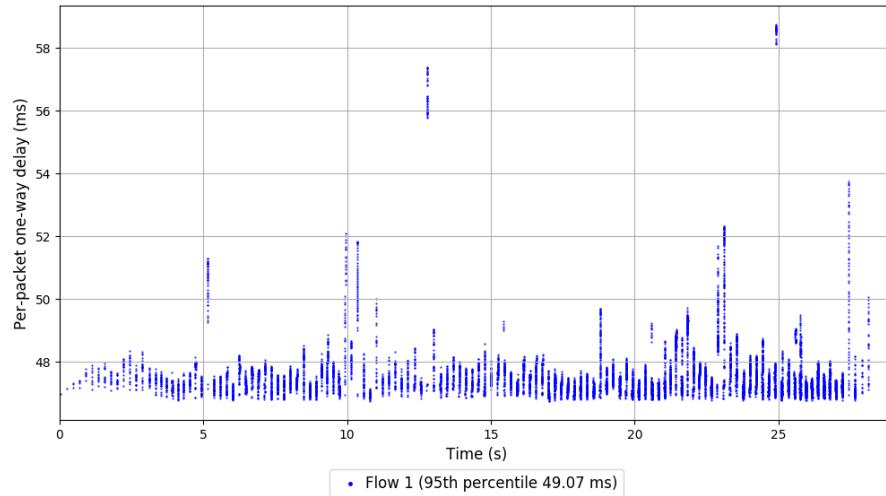
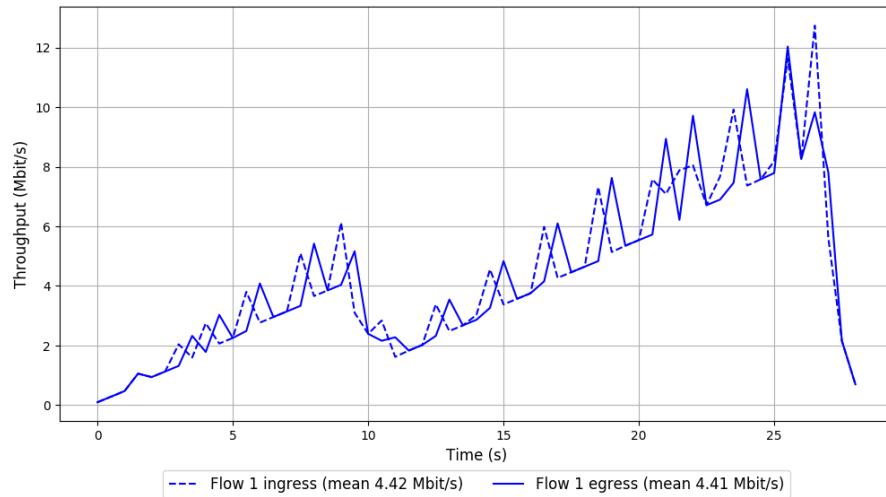


Run 2: Statistics of LEDBAT

```
Start at: Sun, 06 Aug 2017 08:43:17 +0000
End at: Sun, 06 Aug 2017 08:43:47 +0000
Local clock offset: 2.295 ms
Remote clock offset: 0.964 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:45 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.41 Mbit/s
95th percentile per-packet one-way delay: 49.072 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 4.41 Mbit/s
95th percentile per-packet one-way delay: 49.072 ms
Loss rate: 0.30%
```

Run 2: Report of LEDBAT — Data Link

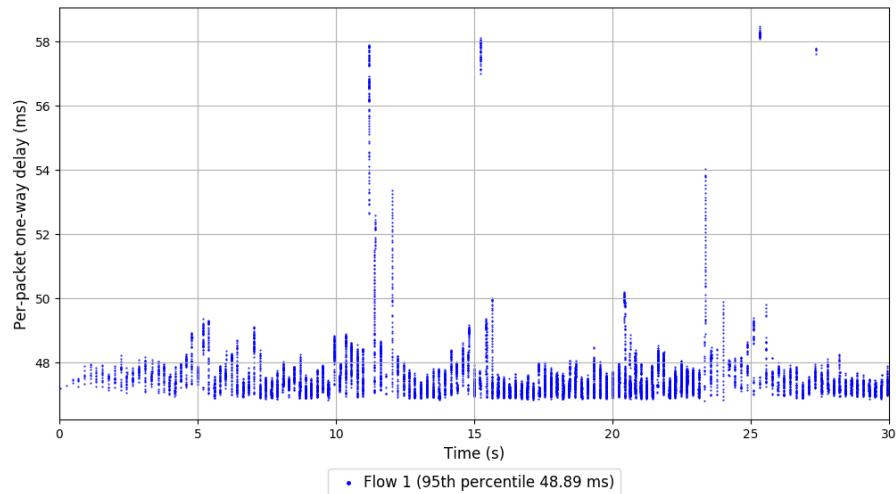
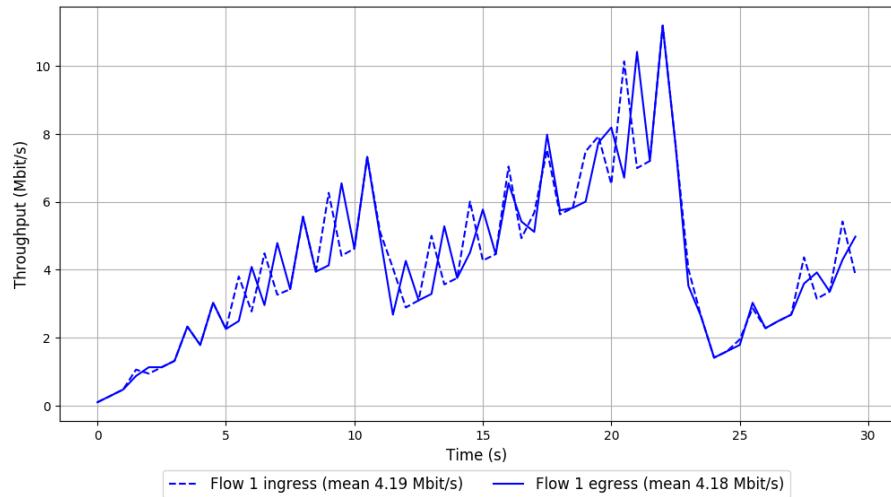


```
Run 3: Statistics of LEDBAT
```

```
Start at: Sun, 06 Aug 2017 09:02:15 +0000
End at: Sun, 06 Aug 2017 09:02:45 +0000
Local clock offset: 2.209 ms
Remote clock offset: 0.892 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:46 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.18 Mbit/s
95th percentile per-packet one-way delay: 48.894 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 4.18 Mbit/s
95th percentile per-packet one-way delay: 48.894 ms
Loss rate: 0.26%
```

Run 3: Report of LEDBAT — Data Link

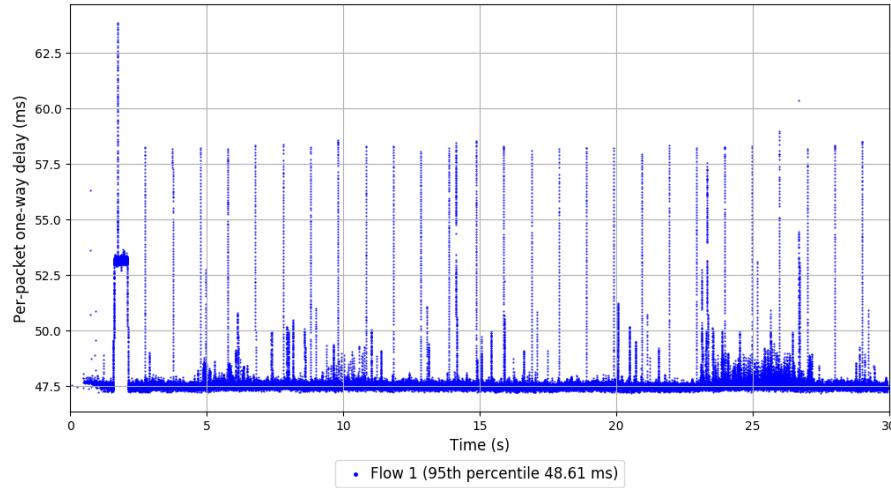
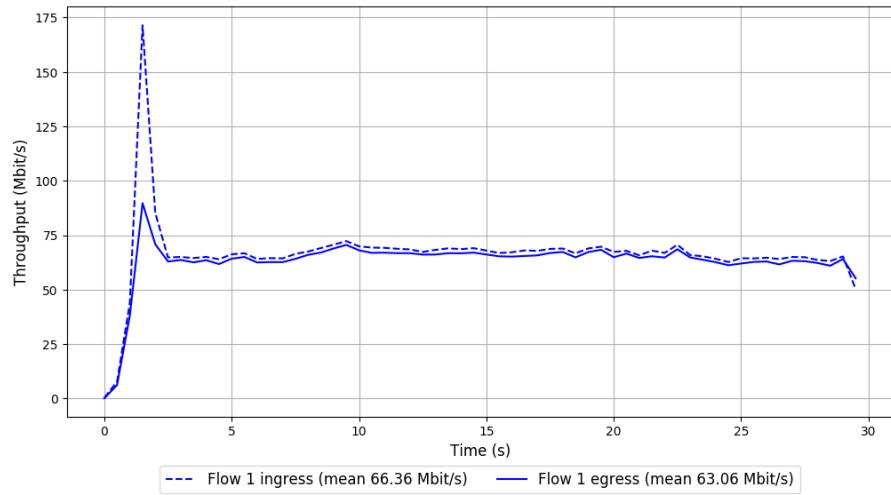


Run 1: Statistics of PCC

```
Start at: Sun, 06 Aug 2017 08:17:36 +0000
End at: Sun, 06 Aug 2017 08:18:06 +0000
Local clock offset: 2.007 ms
Remote clock offset: 1.083 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 63.06 Mbit/s
95th percentile per-packet one-way delay: 48.613 ms
Loss rate: 4.99%
-- Flow 1:
Average throughput: 63.06 Mbit/s
95th percentile per-packet one-way delay: 48.613 ms
Loss rate: 4.99%
```

Run 1: Report of PCC — Data Link

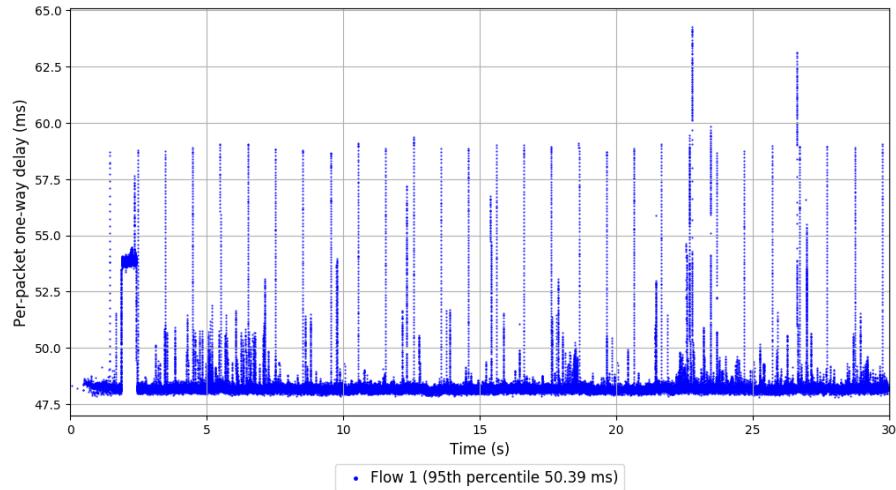
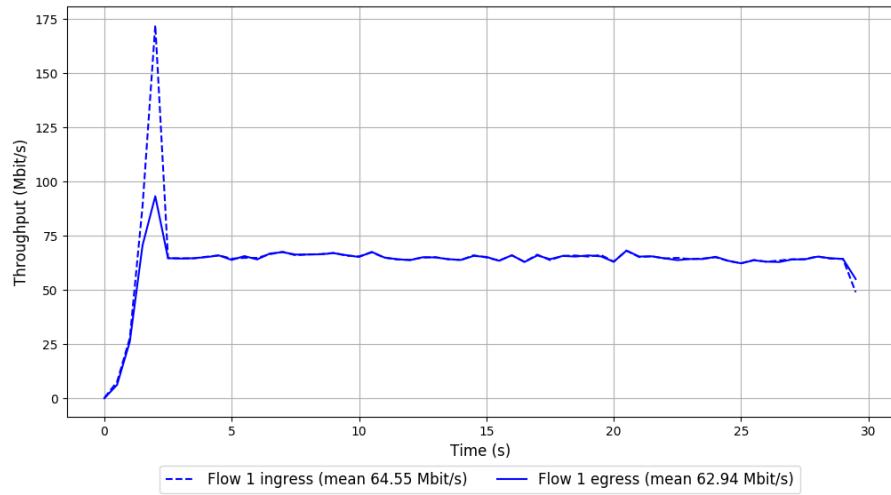


Run 2: Statistics of PCC

```
Start at: Sun, 06 Aug 2017 08:37:03 +0000
End at: Sun, 06 Aug 2017 08:37:33 +0000
Local clock offset: 1.032 ms
Remote clock offset: 0.916 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:06:55 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 62.94 Mbit/s
95th percentile per-packet one-way delay: 50.393 ms
Loss rate: 2.51%
-- Flow 1:
Average throughput: 62.94 Mbit/s
95th percentile per-packet one-way delay: 50.393 ms
Loss rate: 2.51%
```

Run 2: Report of PCC — Data Link

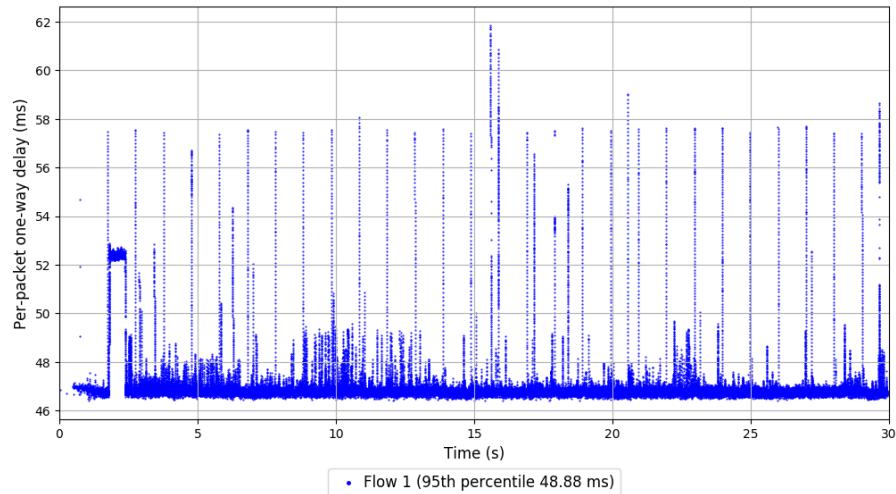
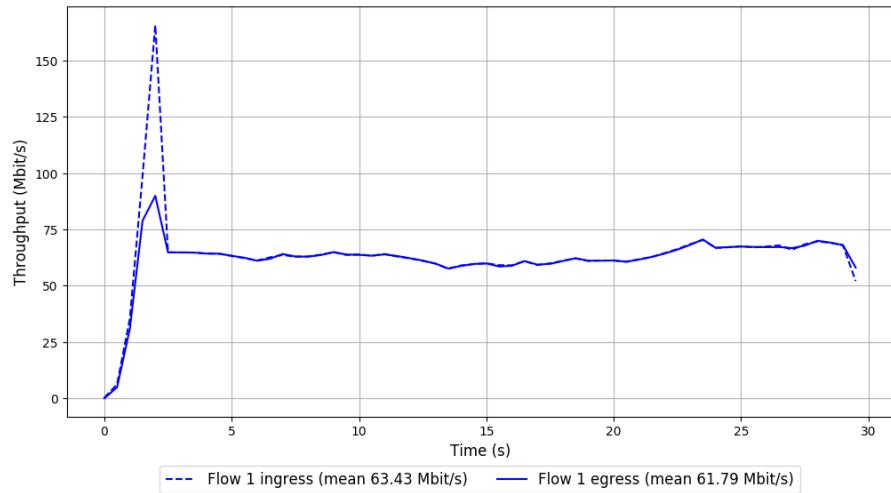


Run 3: Statistics of PCC

```
Start at: Sun, 06 Aug 2017 08:55:57 +0000
End at: Sun, 06 Aug 2017 08:56:27 +0000
Local clock offset: 2.27 ms
Remote clock offset: 0.899 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:03 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 61.79 Mbit/s
95th percentile per-packet one-way delay: 48.877 ms
Loss rate: 2.58%
-- Flow 1:
Average throughput: 61.79 Mbit/s
95th percentile per-packet one-way delay: 48.877 ms
Loss rate: 2.58%
```

Run 3: Report of PCC — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:20:07 +0000
```

```
End at: Sun, 06 Aug 2017 08:20:37 +0000
```

```
Local clock offset: 2.621 ms
```

```
Remote clock offset: 0.985 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:03 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 1.00 Mbit/s
```

```
95th percentile per-packet one-way delay: 47.177 ms
```

```
Loss rate: 2.85%
```

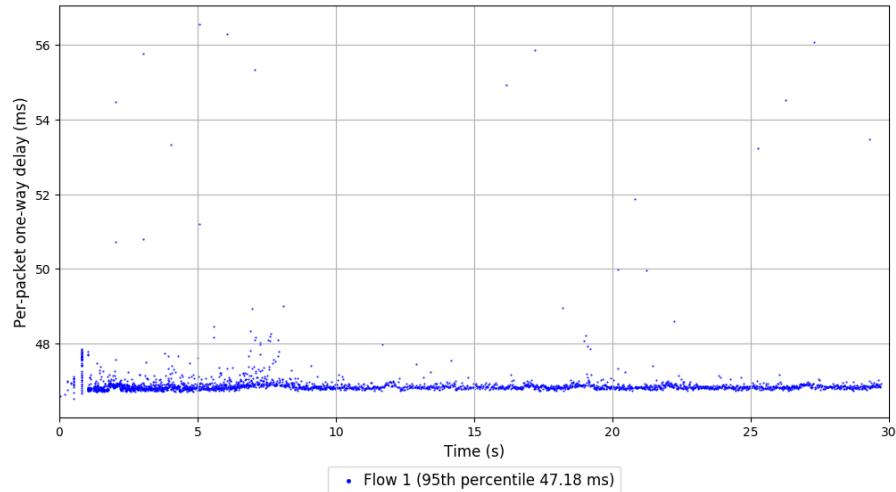
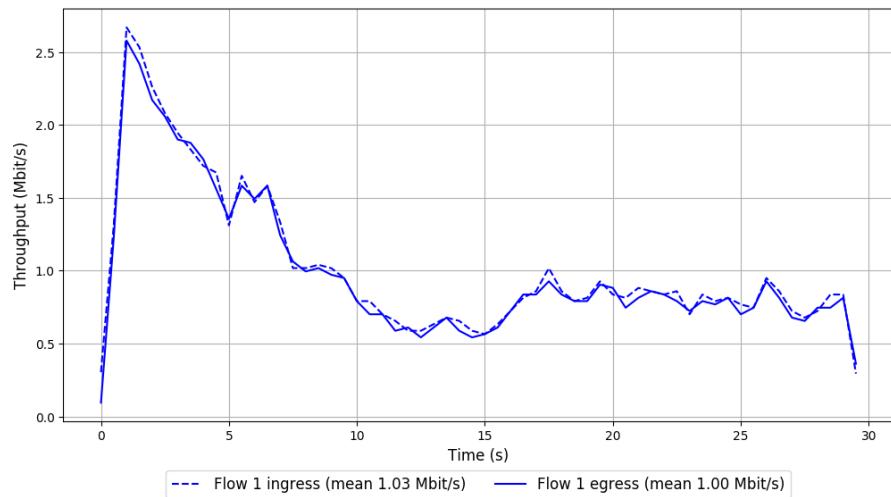
```
-- Flow 1:
```

```
Average throughput: 1.00 Mbit/s
```

```
95th percentile per-packet one-way delay: 47.177 ms
```

```
Loss rate: 2.85%
```

Run 1: Report of QUIC Cubic — Data Link

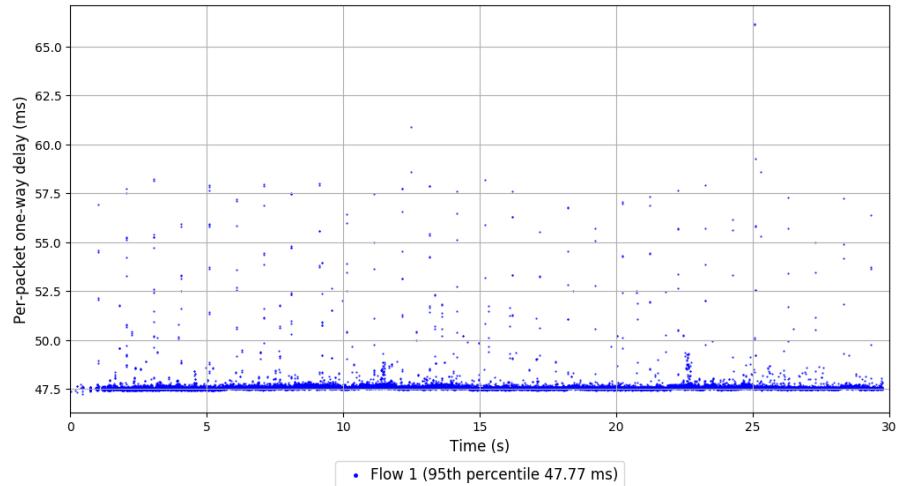
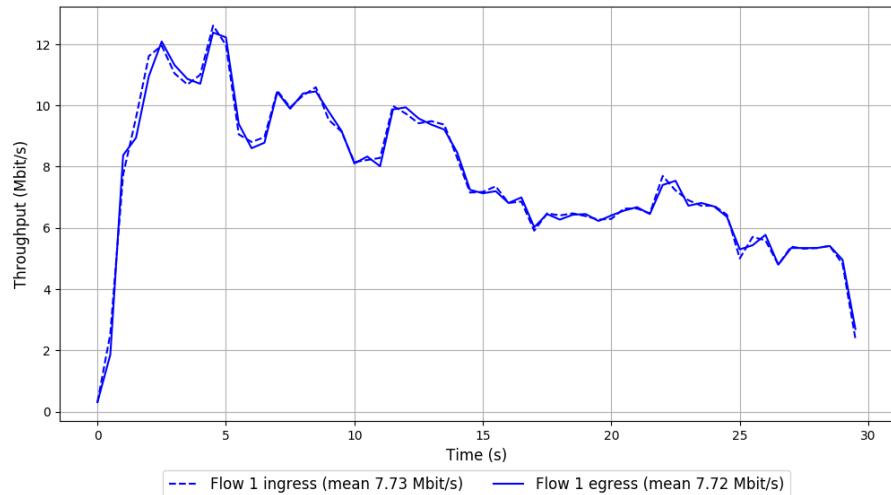


Run 2: Statistics of QUIC Cubic

```
Start at: Sun, 06 Aug 2017 08:39:36 +0000
End at: Sun, 06 Aug 2017 08:40:06 +0000
Local clock offset: 1.625 ms
Remote clock offset: 0.917 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:03 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.72 Mbit/s
95th percentile per-packet one-way delay: 47.772 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 7.72 Mbit/s
95th percentile per-packet one-way delay: 47.772 ms
Loss rate: 0.11%
```

Run 2: Report of QUIC Cubic — Data Link

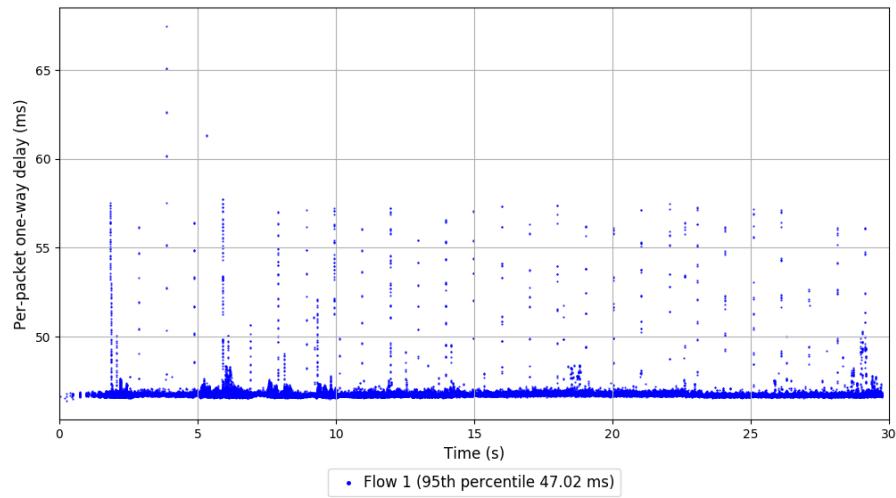
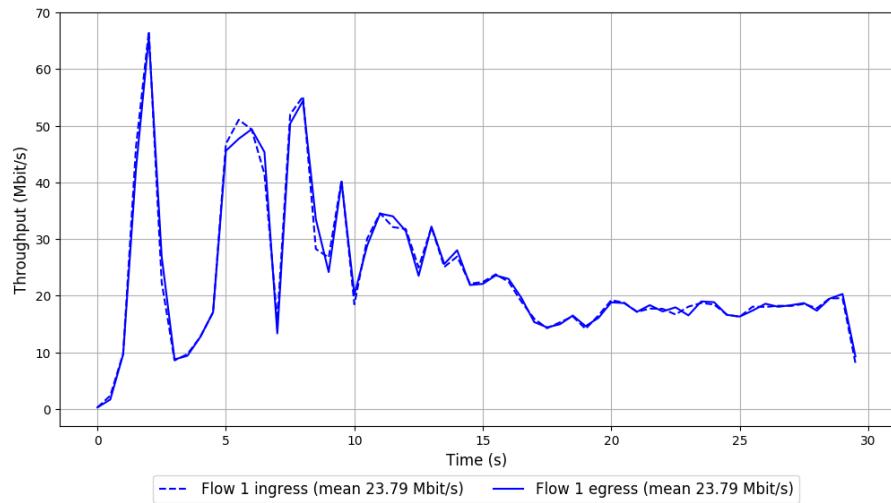


Run 3: Statistics of QUIC Cubic

```
Start at: Sun, 06 Aug 2017 08:58:27 +0000
End at: Sun, 06 Aug 2017 08:58:57 +0000
Local clock offset: 2.264 ms
Remote clock offset: 0.92 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:03 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 23.79 Mbit/s
95th percentile per-packet one-way delay: 47.019 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 23.79 Mbit/s
95th percentile per-packet one-way delay: 47.019 ms
Loss rate: 0.04%
```

Run 3: Report of QUIC Cubic — Data Link



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

```
Start at: Sun, 06 Aug 2017 08:16:17 +0000
```

```
End at: Sun, 06 Aug 2017 08:16:47 +0000
```

```
Local clock offset: 1.907 ms
```

```
Remote clock offset: 1.047 ms
```

```
# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:05 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 10.30 Mbit/s
```

```
95th percentile per-packet one-way delay: 51.193 ms
```

```
Loss rate: 2.74%
```

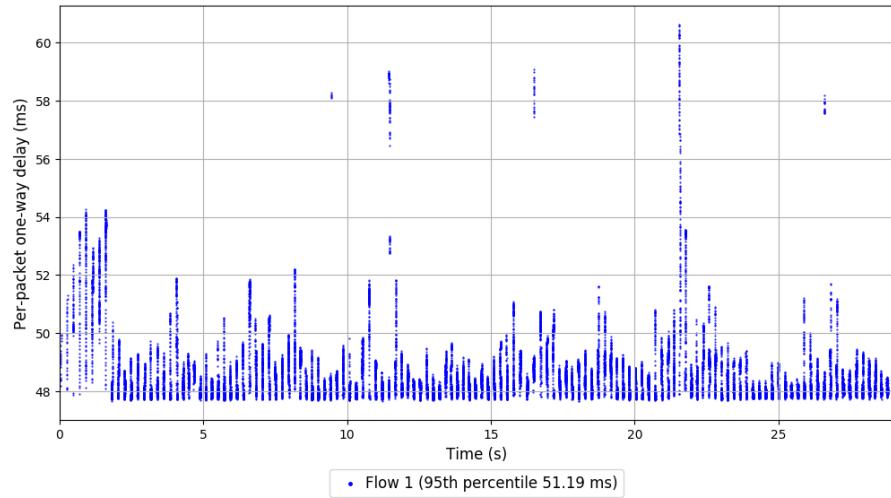
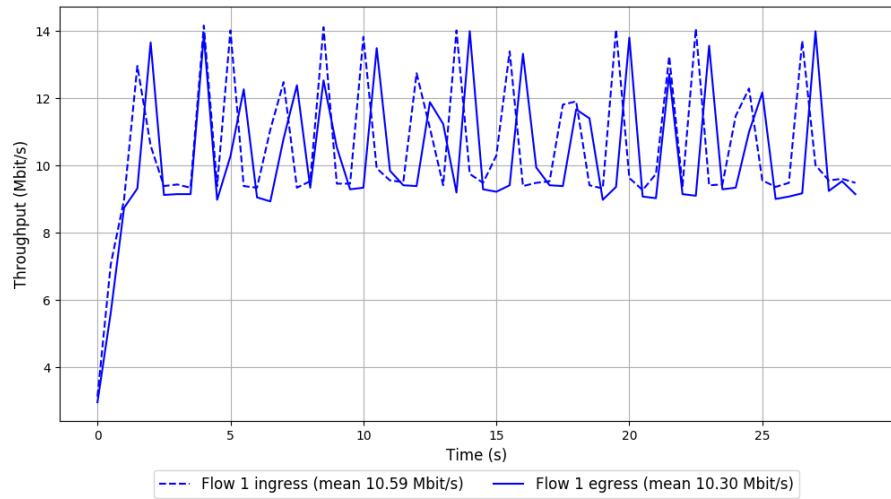
```
-- Flow 1:
```

```
Average throughput: 10.30 Mbit/s
```

```
95th percentile per-packet one-way delay: 51.193 ms
```

```
Loss rate: 2.74%
```

Run 1: Report of Saturator — Data Link

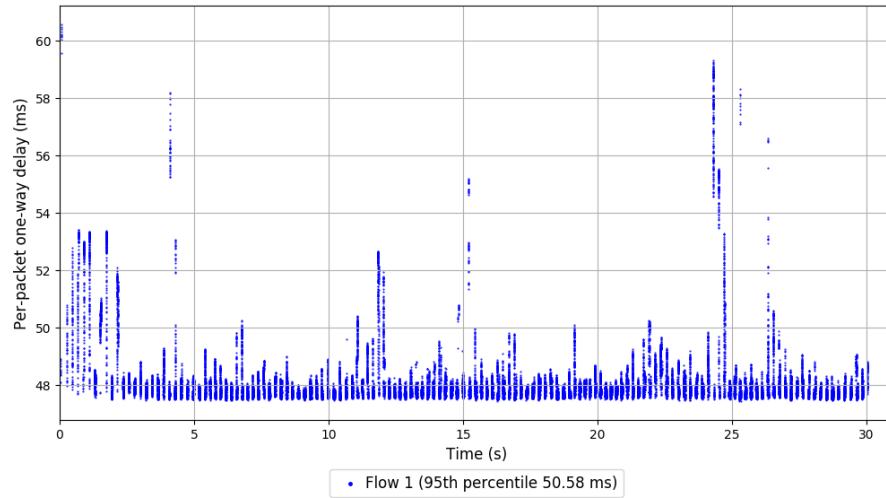
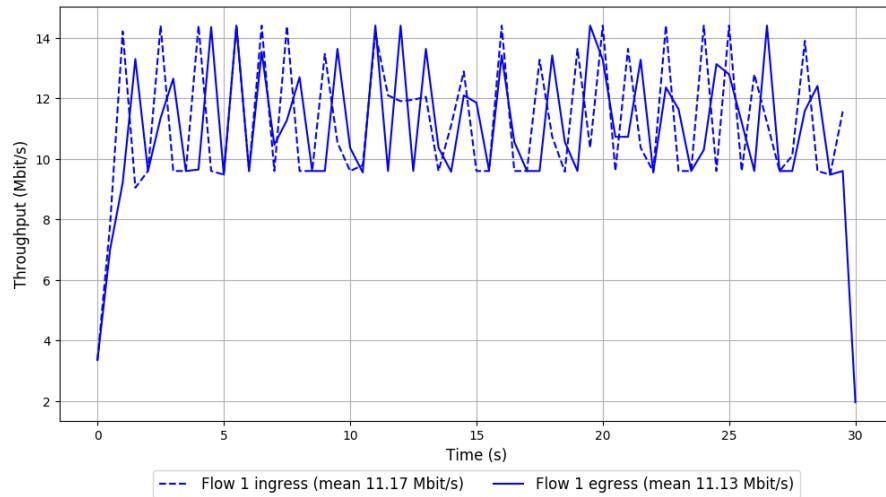


Run 2: Statistics of Saturator

```
Start at: Sun, 06 Aug 2017 08:35:48 +0000
End at: Sun, 06 Aug 2017 08:36:18 +0000
Local clock offset: 1.618 ms
Remote clock offset: 0.931 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:06 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.13 Mbit/s
95th percentile per-packet one-way delay: 50.583 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 11.13 Mbit/s
95th percentile per-packet one-way delay: 50.583 ms
Loss rate: 0.33%
```

Run 2: Report of Saturator — Data Link

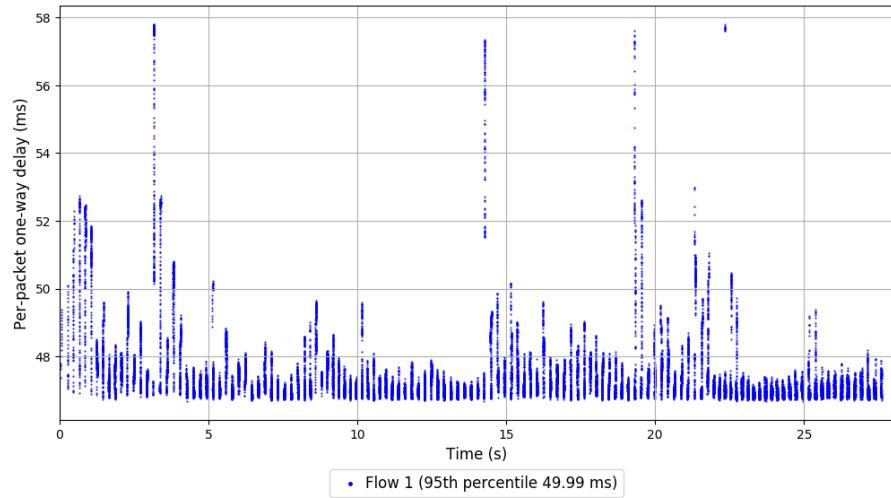
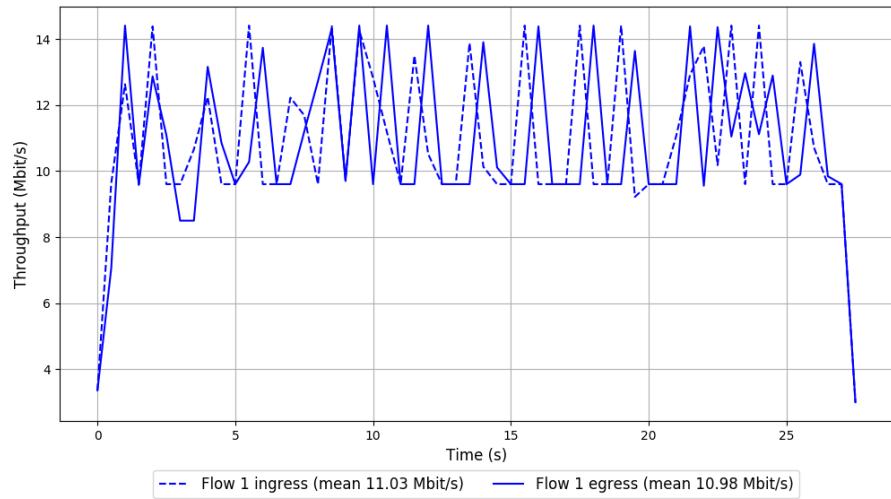


Run 3: Statistics of Saturator

```
Start at: Sun, 06 Aug 2017 08:54:43 +0000
End at: Sun, 06 Aug 2017 08:55:13 +0000
Local clock offset: 2.225 ms
Remote clock offset: 0.933 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:08 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.98 Mbit/s
95th percentile per-packet one-way delay: 49.994 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 10.98 Mbit/s
95th percentile per-packet one-way delay: 49.994 ms
Loss rate: 0.40%
```

Run 3: Report of Saturator — Data Link

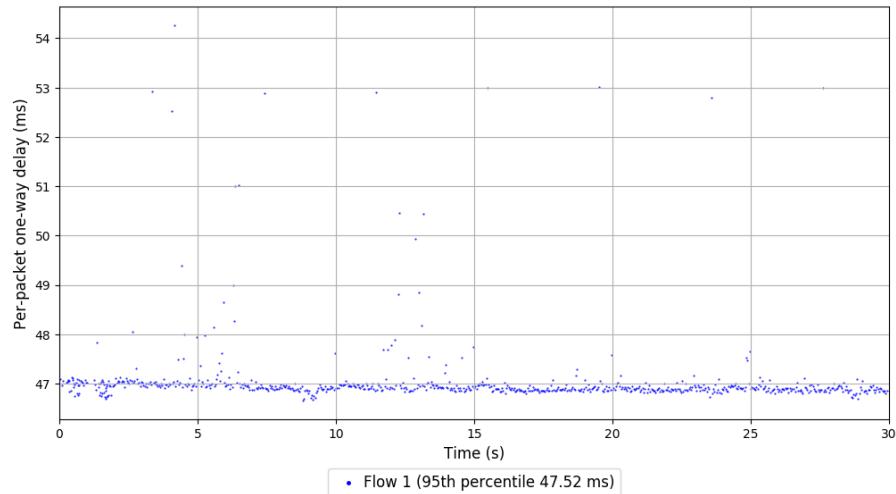
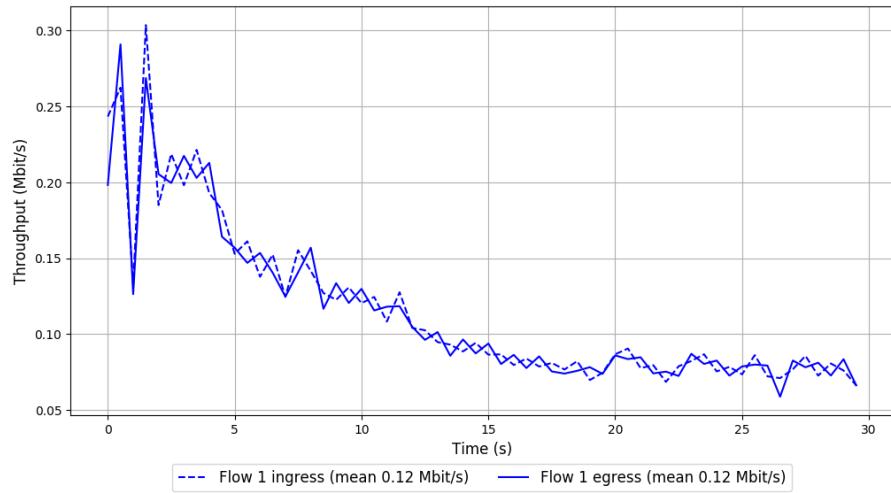


```
Run 1: Statistics of SCReAM
```

```
Start at: Sun, 06 Aug 2017 08:15:04 +0000
End at: Sun, 06 Aug 2017 08:15:34 +0000
Local clock offset: 2.701 ms
Remote clock offset: 1.026 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:08 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 47.522 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 47.522 ms
Loss rate: 1.11%
```

Run 1: Report of SCReAM — Data Link

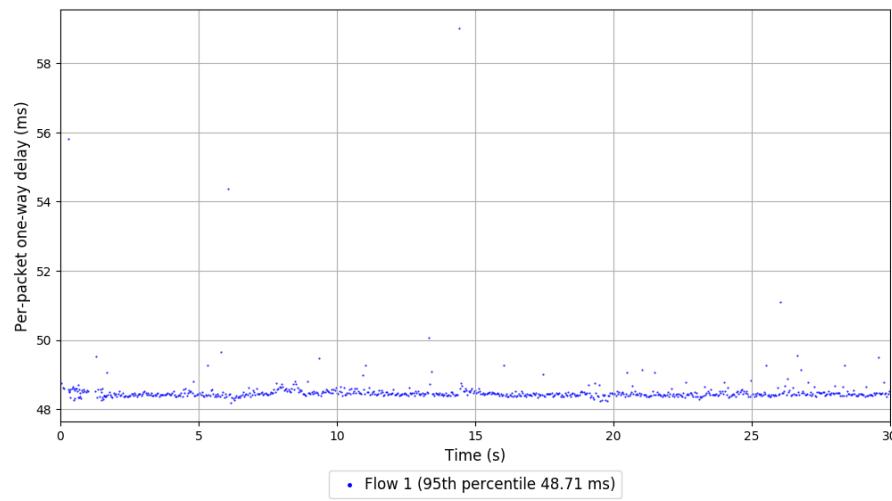
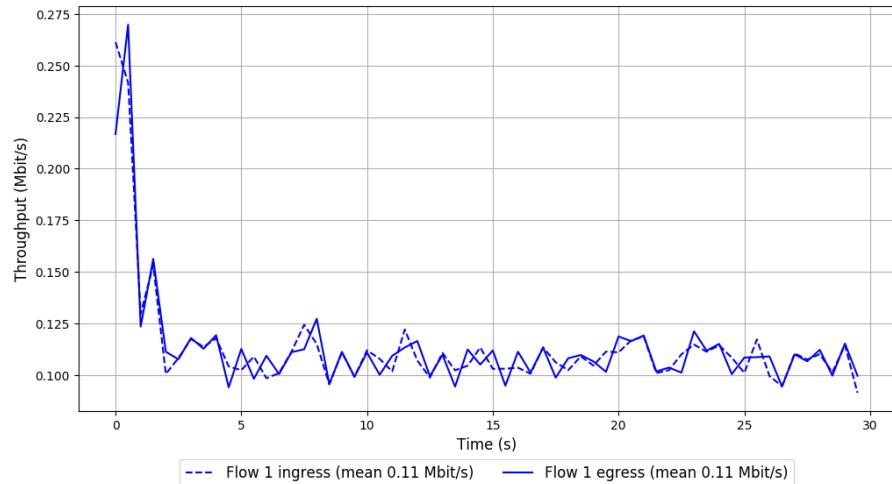


Run 2: Statistics of SCReAM

```
Start at: Sun, 06 Aug 2017 08:34:35 +0000
End at: Sun, 06 Aug 2017 08:35:05 +0000
Local clock offset: 1.22 ms
Remote clock offset: 0.979 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:08 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 48.712 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 48.712 ms
Loss rate: 0.00%
```

Run 2: Report of SCReAM — Data Link

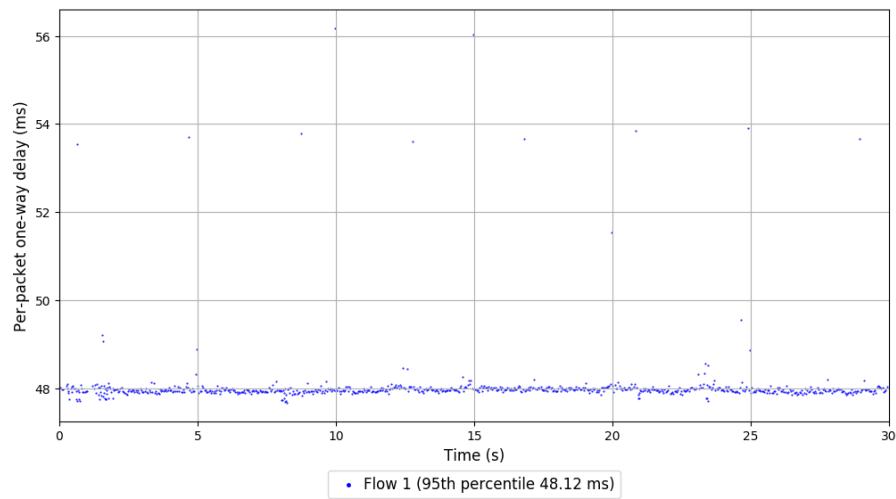
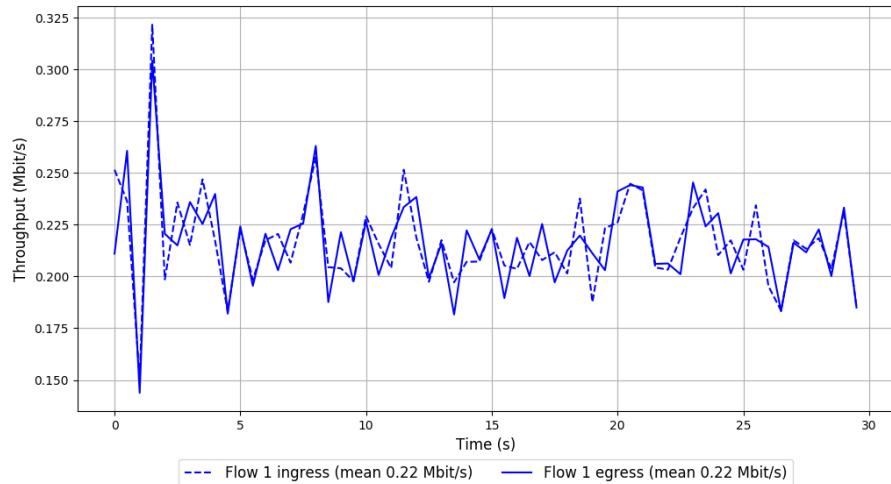


Run 3: Statistics of SCReAM

```
Start at: Sun, 06 Aug 2017 08:53:30 +0000
End at: Sun, 06 Aug 2017 08:54:00 +0000
Local clock offset: 1.641 ms
Remote clock offset: 0.983 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:08 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 48.117 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 48.117 ms
Loss rate: 0.13%
```

Run 3: Report of SCReAM — Data Link

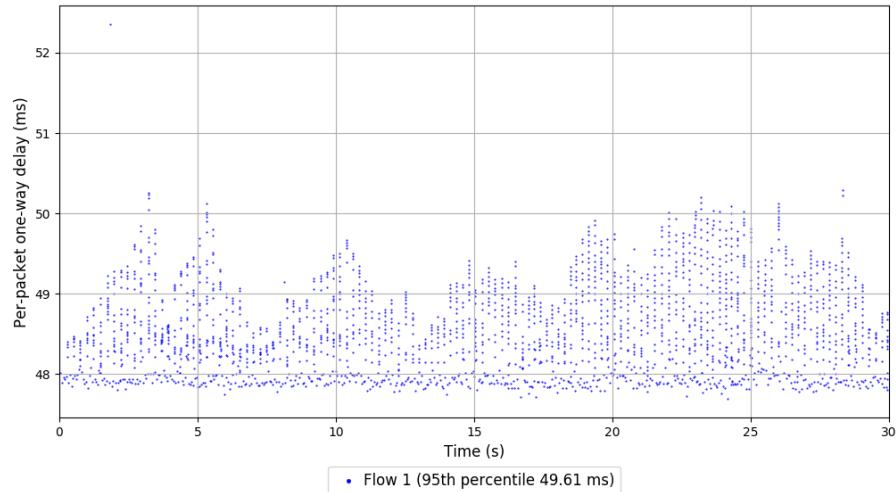
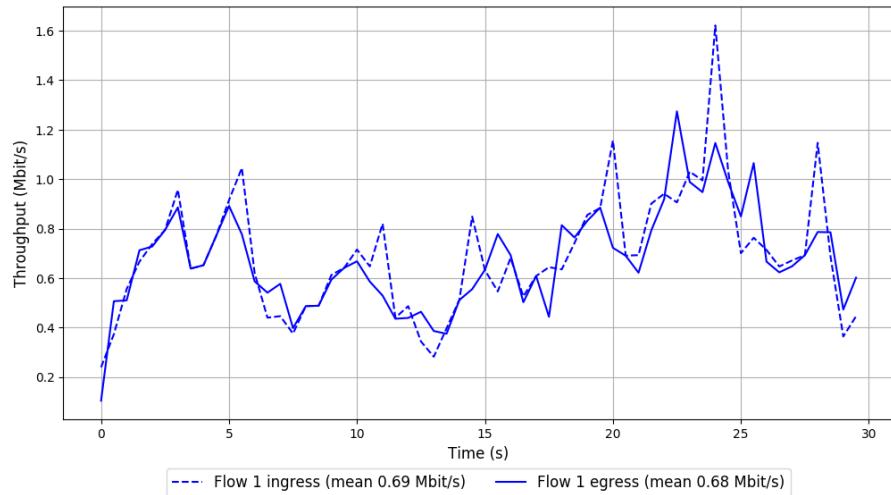


Run 1: Statistics of Sprout

```
Start at: Sun, 06 Aug 2017 08:18:54 +0000
End at: Sun, 06 Aug 2017 08:19:24 +0000
Local clock offset: 1.769 ms
Remote clock offset: 1.026 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:09 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 49.614 ms
Loss rate: 2.51%
-- Flow 1:
Average throughput: 0.68 Mbit/s
95th percentile per-packet one-way delay: 49.614 ms
Loss rate: 2.51%
```

Run 1: Report of Sprout — Data Link

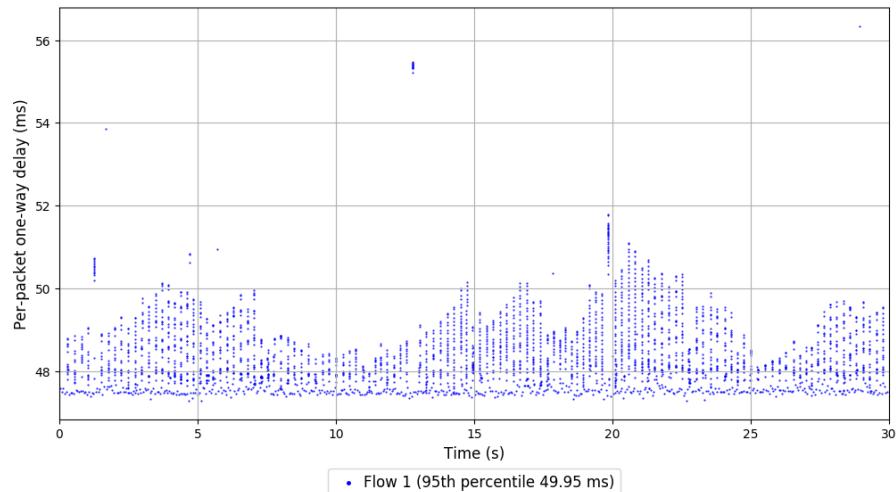
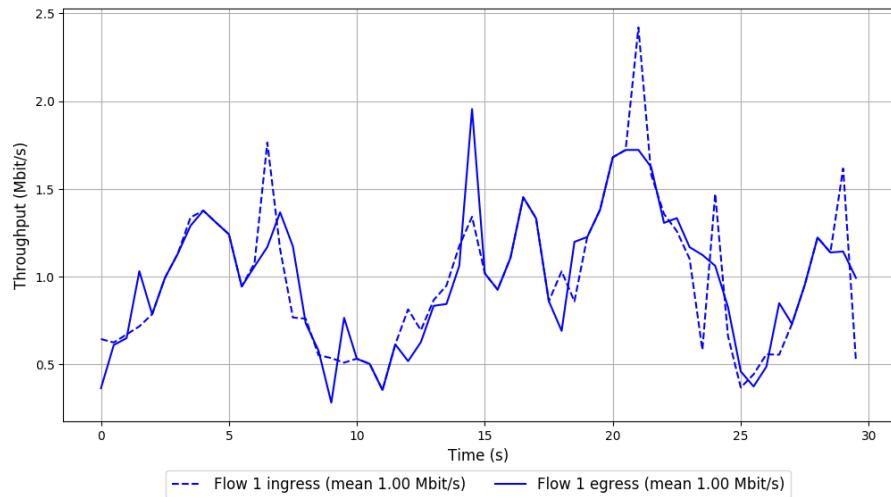


Run 2: Statistics of Sprout

```
Start at: Sun, 06 Aug 2017 08:38:23 +0000
End at: Sun, 06 Aug 2017 08:38:53 +0000
Local clock offset: 1.685 ms
Remote clock offset: 0.915 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:10 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 49.951 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 49.951 ms
Loss rate: 0.12%
```

Run 2: Report of Sprout — Data Link

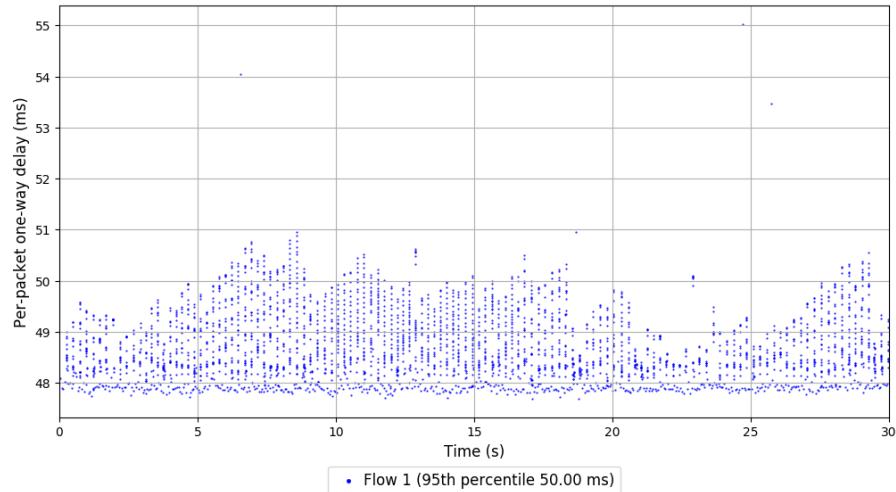
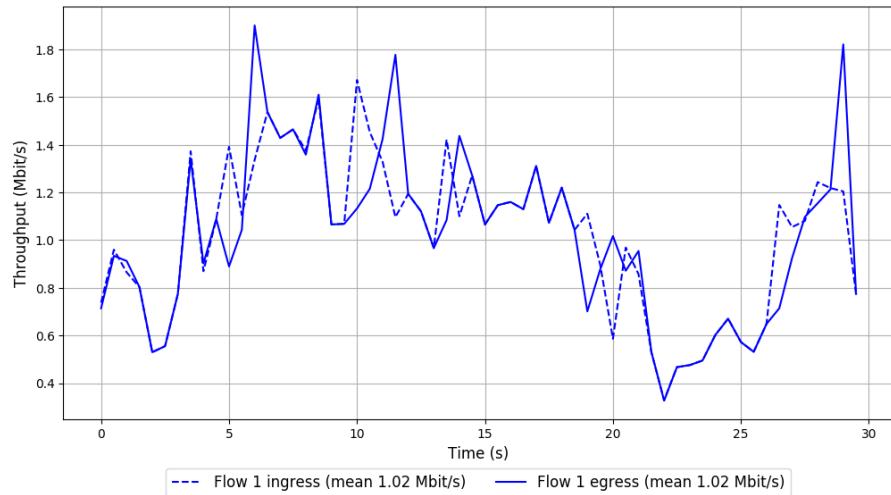


Run 3: Statistics of Sprout

```
Start at: Sun, 06 Aug 2017 08:57:14 +0000
End at: Sun, 06 Aug 2017 08:57:44 +0000
Local clock offset: 1.365 ms
Remote clock offset: 0.902 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:10 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 49.998 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 49.998 ms
Loss rate: 0.04%
```

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: Sun, 06 Aug 2017 08:11:17 +0000

End at: Sun, 06 Aug 2017 08:11:47 +0000

Local clock offset: 0.716 ms

Remote clock offset: 0.921 ms

Below is generated by plot.py at Sun, 06 Aug 2017 09:07:18 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 28.70 Mbit/s

95th percentile per-packet one-way delay: 54.301 ms

Loss rate: 3.93%

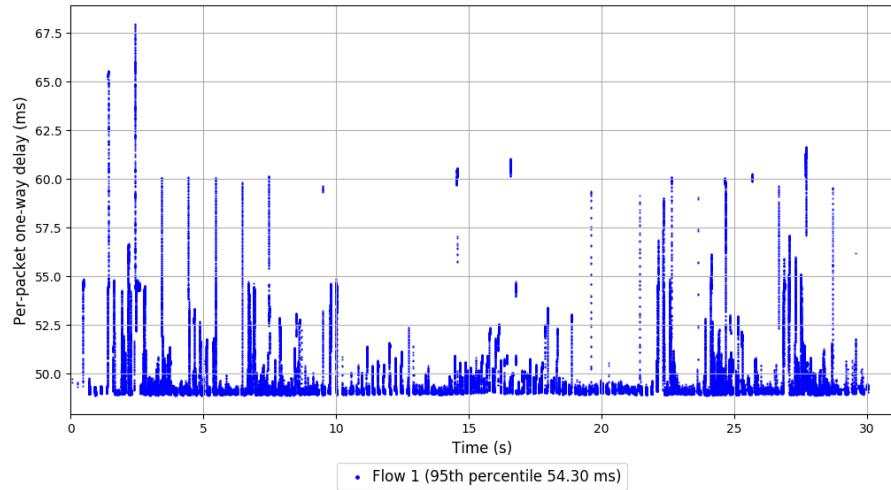
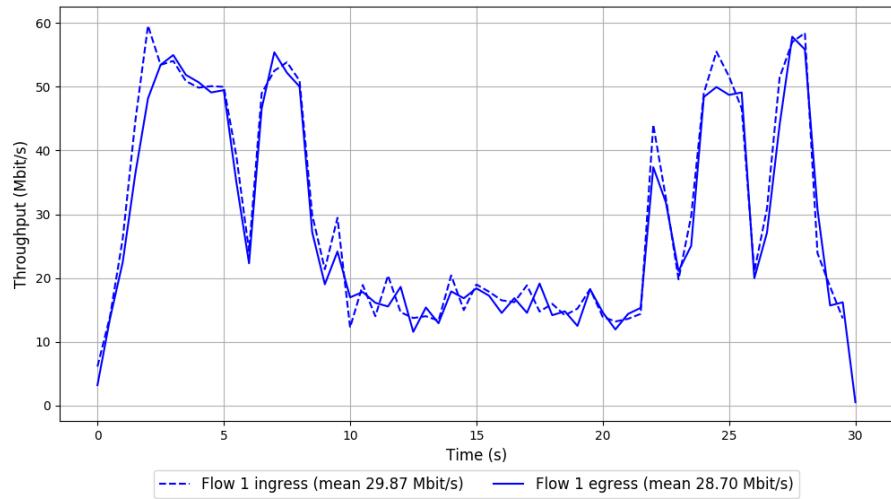
-- Flow 1:

Average throughput: 28.70 Mbit/s

95th percentile per-packet one-way delay: 54.301 ms

Loss rate: 3.93%

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



Run 2: Statistics of TaoVA-100x

Start at: Sun, 06 Aug 2017 08:30:38 +0000

End at: Sun, 06 Aug 2017 08:31:08 +0000

Local clock offset: 1.713 ms

Remote clock offset: 0.966 ms

Below is generated by plot.py at Sun, 06 Aug 2017 09:07:18 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 31.29 Mbit/s

95th percentile per-packet one-way delay: 53.294 ms

Loss rate: 2.35%

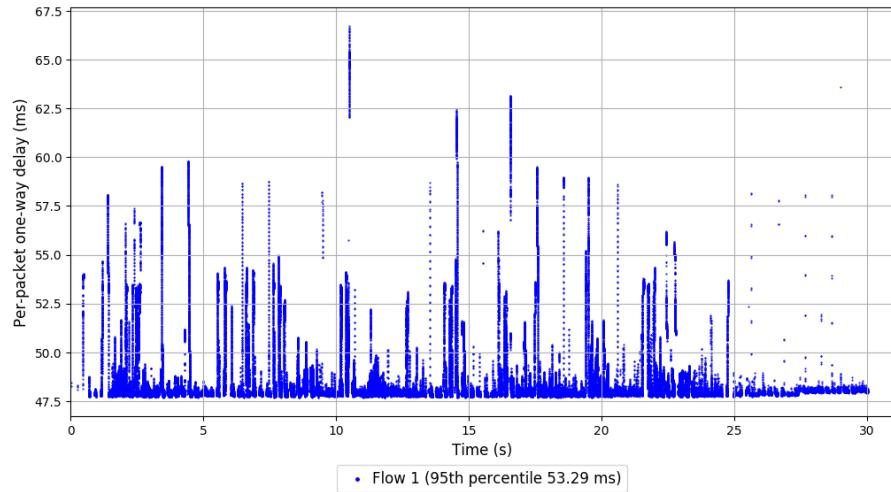
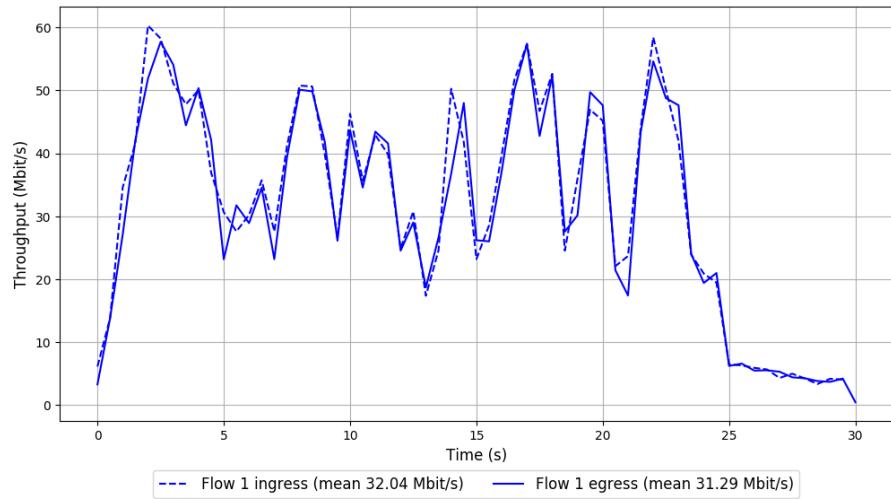
-- Flow 1:

Average throughput: 31.29 Mbit/s

95th percentile per-packet one-way delay: 53.294 ms

Loss rate: 2.35%

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



Run 3: Statistics of TaoVA-100x

Start at: Sun, 06 Aug 2017 08:49:31 +0000

End at: Sun, 06 Aug 2017 08:50:01 +0000

Local clock offset: 1.47 ms

Remote clock offset: 0.915 ms

Below is generated by plot.py at Sun, 06 Aug 2017 09:07:27 +0000

Datalink statistics

-- Total of 1 flow:

Average throughput: 42.35 Mbit/s

95th percentile per-packet one-way delay: 53.034 ms

Loss rate: 2.05%

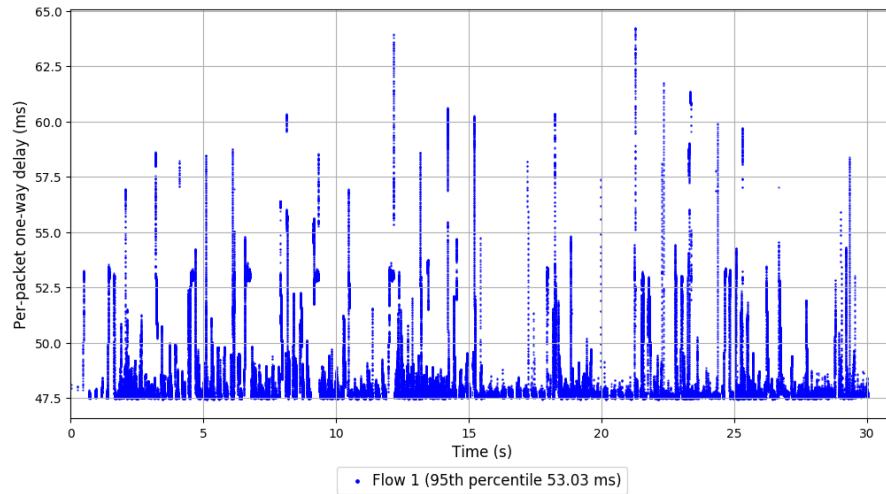
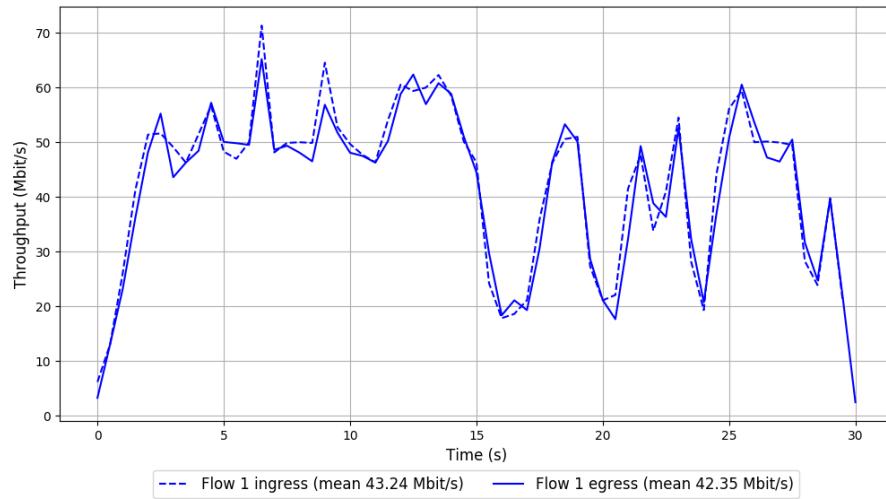
-- Flow 1:

Average throughput: 42.35 Mbit/s

95th percentile per-packet one-way delay: 53.034 ms

Loss rate: 2.05%

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

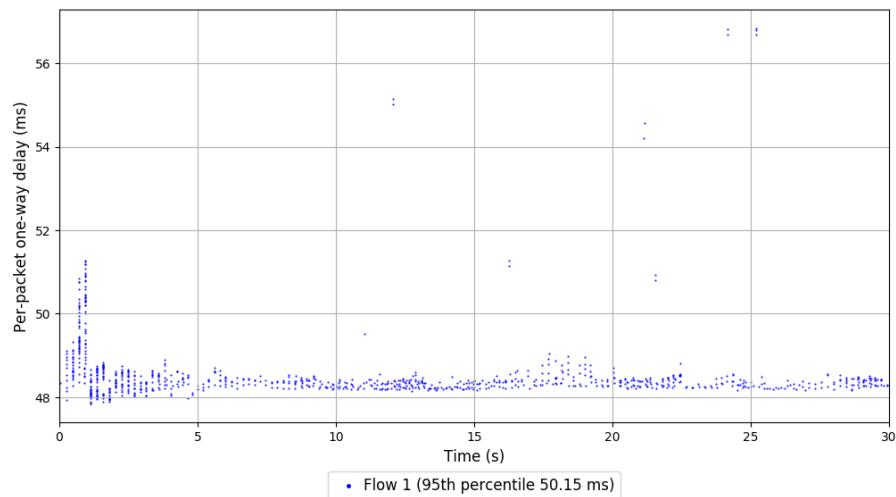
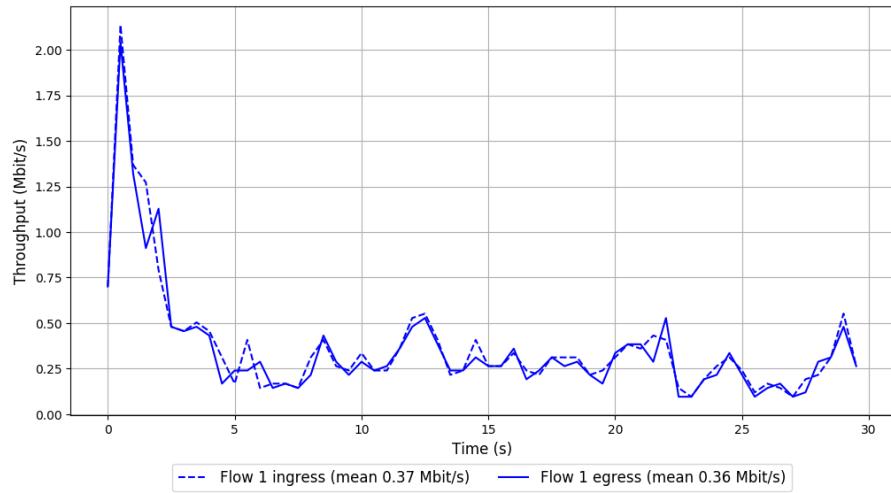


Run 1: Statistics of TCP Vegas

```
Start at: Sun, 06 Aug 2017 08:21:25 +0000
End at: Sun, 06 Aug 2017 08:21:55 +0000
Local clock offset: 1.399 ms
Remote clock offset: 0.972 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:27 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 50.148 ms
Loss rate: 4.08%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 50.148 ms
Loss rate: 4.08%
```

Run 1: Report of TCP Vegas — Data Link

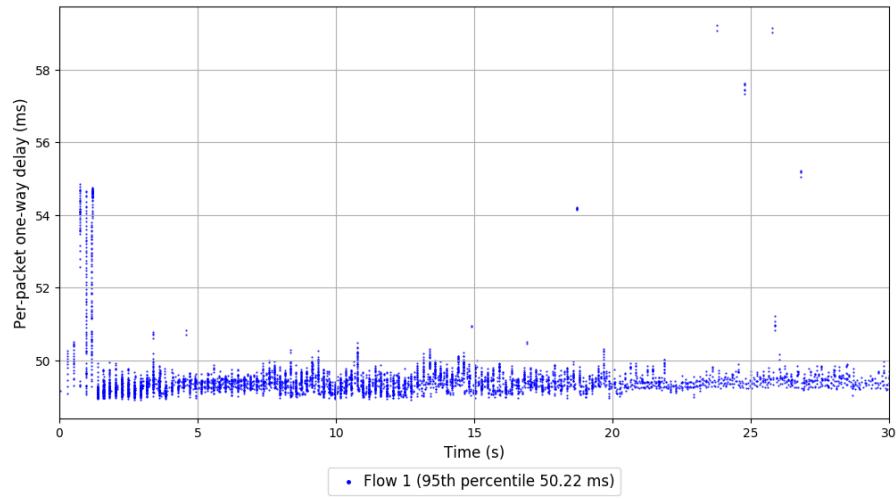
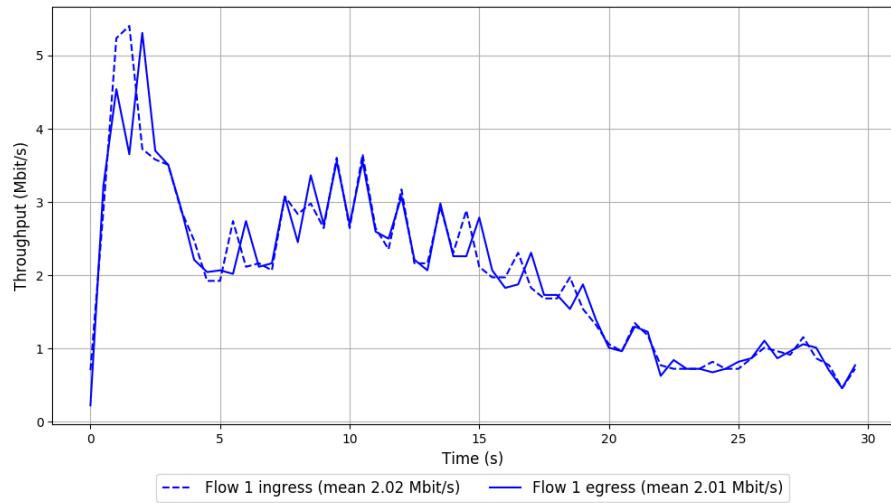


Run 2: Statistics of TCP Vegas

```
Start at: Sun, 06 Aug 2017 08:40:50 +0000
End at: Sun, 06 Aug 2017 08:41:20 +0000
Local clock offset: 0.438 ms
Remote clock offset: 0.948 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:27 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 50.221 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 2.01 Mbit/s
95th percentile per-packet one-way delay: 50.221 ms
Loss rate: 0.77%
```

Run 2: Report of TCP Vegas — Data Link

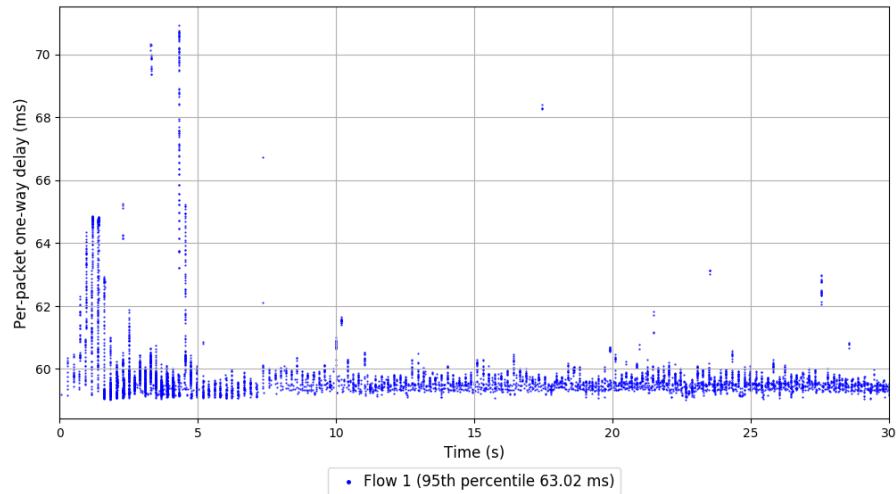
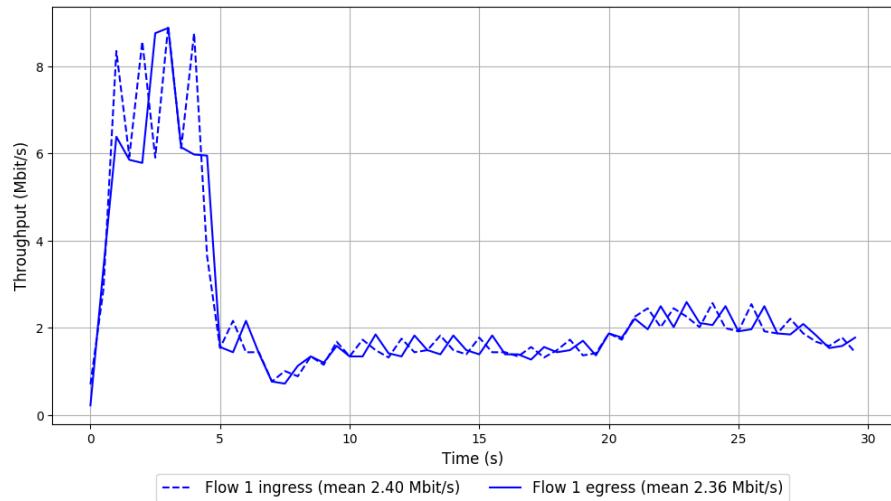


Run 3: Statistics of TCP Vegas

```
Start at: Sun, 06 Aug 2017 08:59:43 +0000
End at: Sun, 06 Aug 2017 09:00:13 +0000
Local clock offset: -9.852 ms
Remote clock offset: 0.926 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:27 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 63.019 ms
Loss rate: 1.72%
-- Flow 1:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 63.019 ms
Loss rate: 1.72%
```

Run 3: Report of TCP Vegas — Data Link

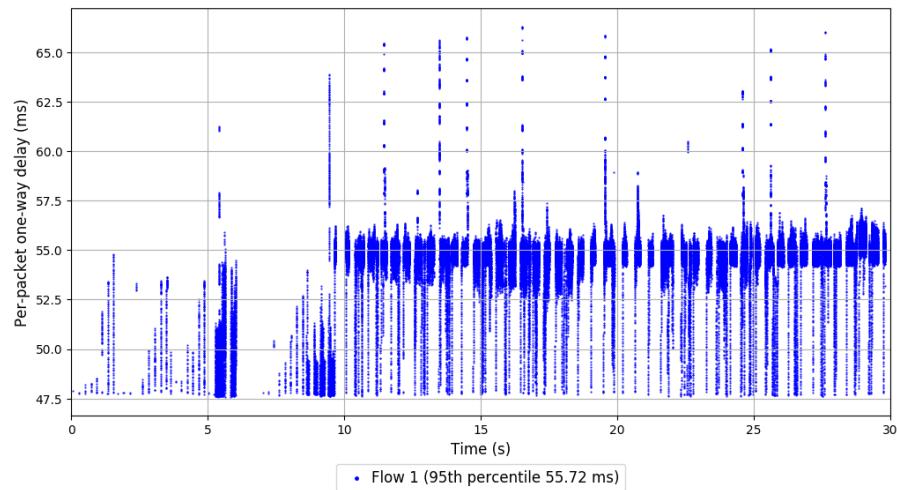
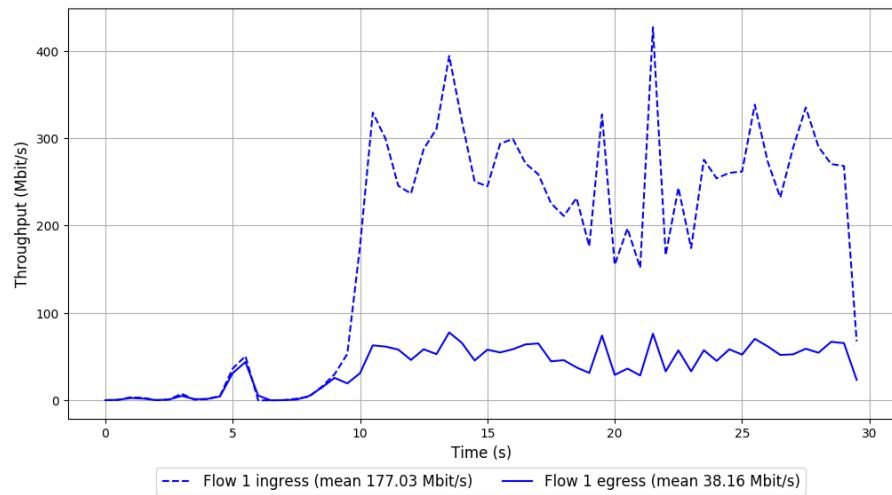


Run 1: Statistics of Verus

```
Start at: Sun, 06 Aug 2017 08:07:30 +0000
End at: Sun, 06 Aug 2017 08:08:01 +0000
Local clock offset: 1.883 ms
Remote clock offset: 0.893 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:31 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 38.16 Mbit/s
95th percentile per-packet one-way delay: 55.720 ms
Loss rate: 78.44%
-- Flow 1:
Average throughput: 38.16 Mbit/s
95th percentile per-packet one-way delay: 55.720 ms
Loss rate: 78.44%
```

Run 1: Report of Verus — Data Link

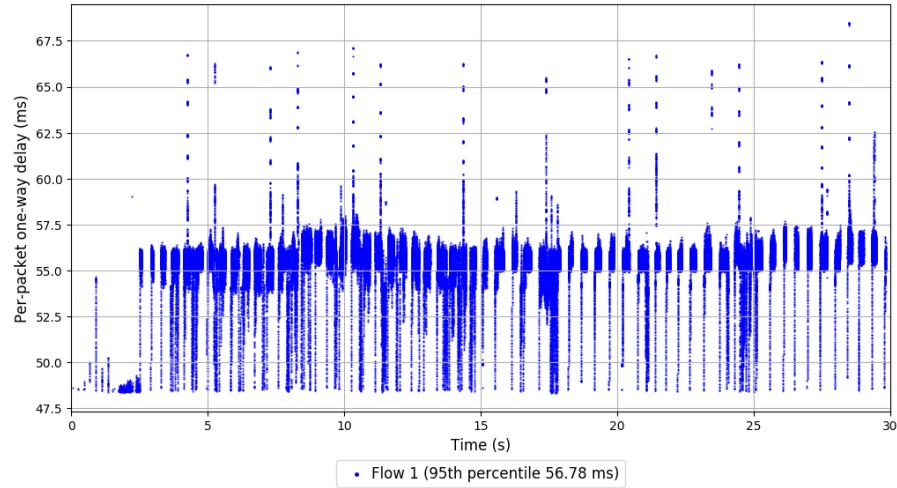
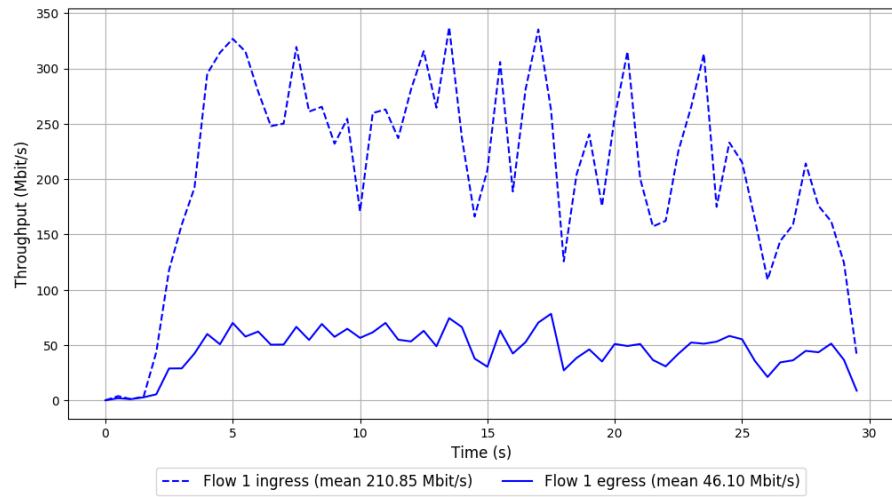


Run 2: Statistics of Verus

```
Start at: Sun, 06 Aug 2017 08:26:35 +0000
End at: Sun, 06 Aug 2017 08:27:05 +0000
Local clock offset: 1.13 ms
Remote clock offset: 0.938 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:41 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 46.10 Mbit/s
95th percentile per-packet one-way delay: 56.785 ms
Loss rate: 78.13%
-- Flow 1:
Average throughput: 46.10 Mbit/s
95th percentile per-packet one-way delay: 56.785 ms
Loss rate: 78.13%
```

Run 2: Report of Verus — Data Link

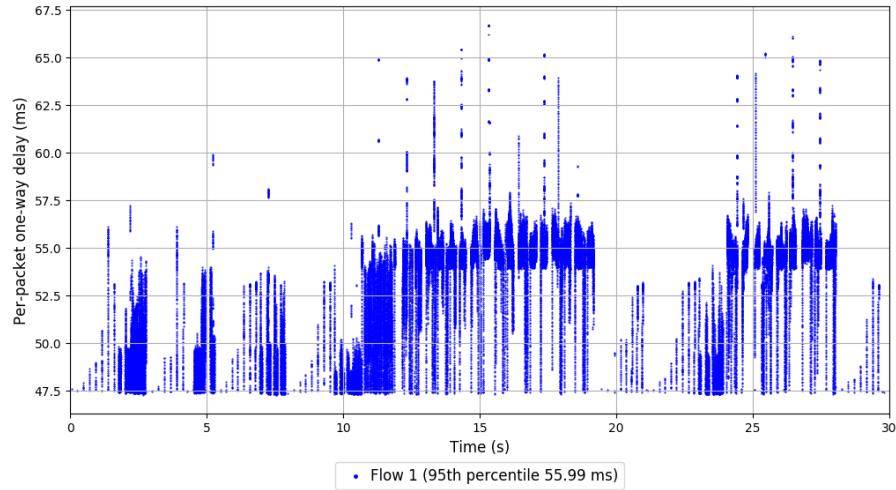
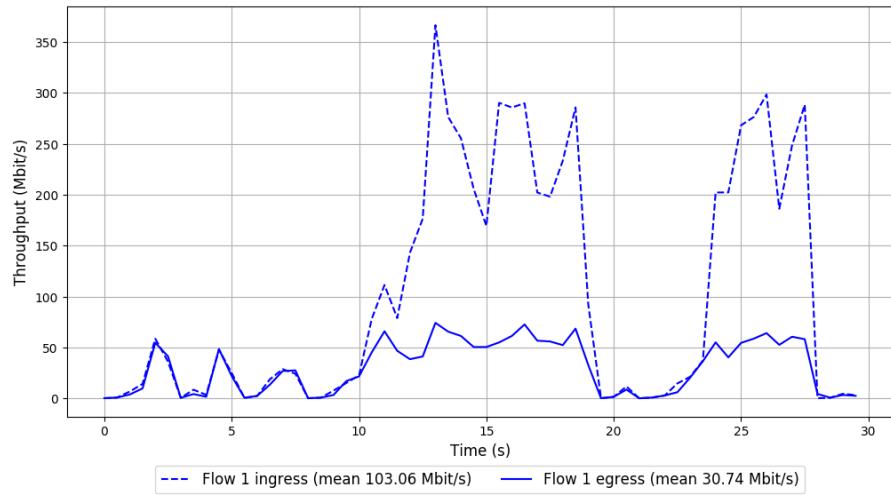


Run 3: Statistics of Verus

```
Start at: Sun, 06 Aug 2017 08:45:43 +0000
End at: Sun, 06 Aug 2017 08:46:13 +0000
Local clock offset: 1.68 ms
Remote clock offset: 0.869 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:41 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 30.74 Mbit/s
95th percentile per-packet one-way delay: 55.995 ms
Loss rate: 70.17%
-- Flow 1:
Average throughput: 30.74 Mbit/s
95th percentile per-packet one-way delay: 55.995 ms
Loss rate: 70.17%
```

Run 3: Report of Verus — Data Link



Run 1: Statistics of WebRTC media

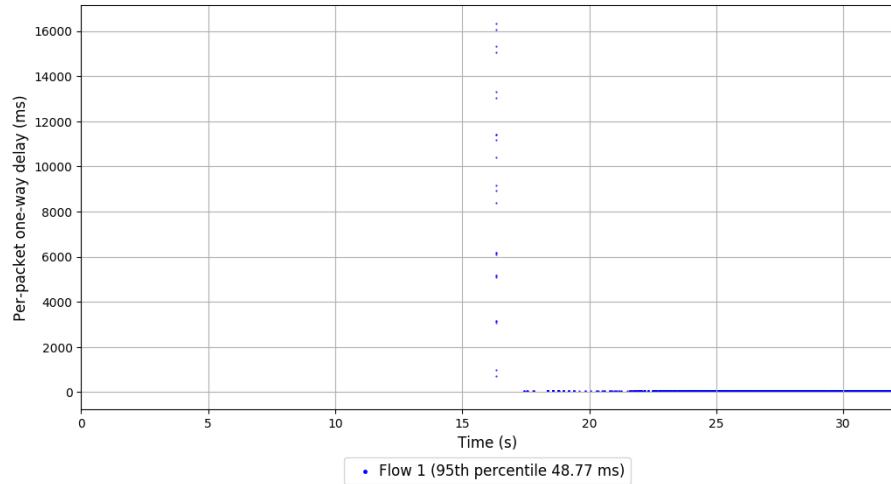
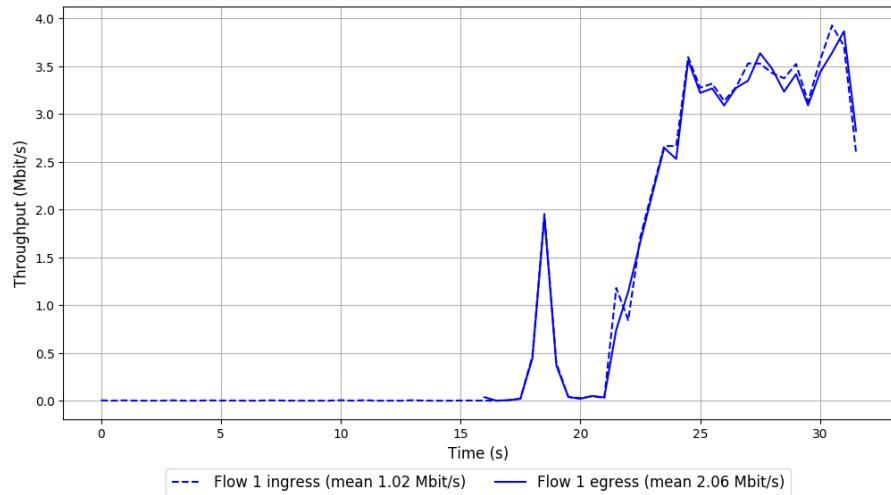
Start at: Sun, 06 Aug 2017 08:08:50 +0000

End at: Sun, 06 Aug 2017 08:09:20 +0000

Local clock offset: 1.868 ms

Remote clock offset: 0.887 ms

Run 1: Report of WebRTC media — Data Link

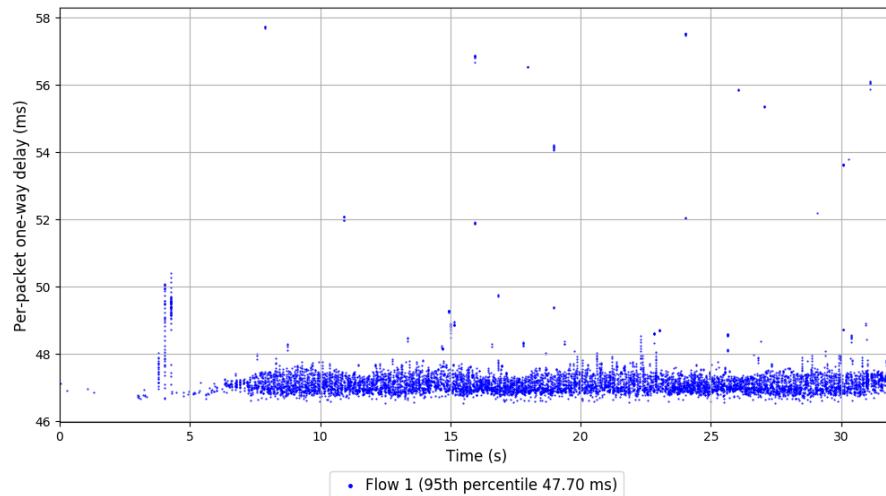
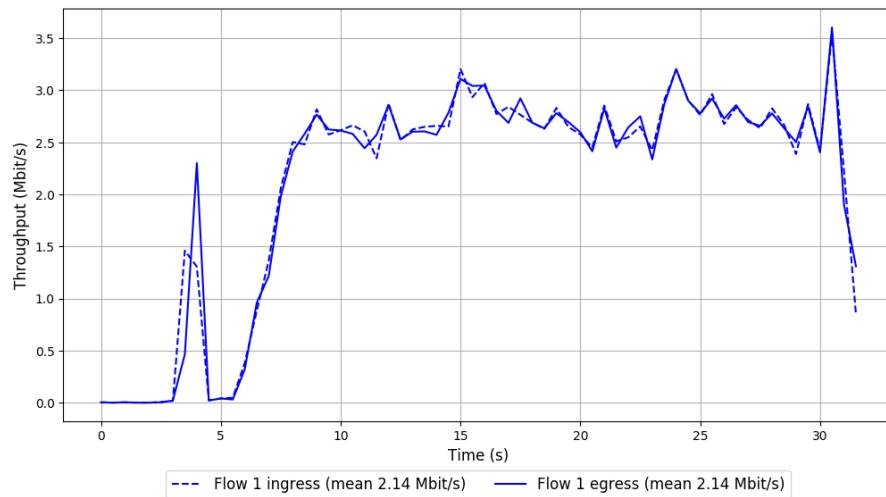


Run 2: Statistics of WebRTC media

```
Start at: Sun, 06 Aug 2017 08:28:10 +0000
End at: Sun, 06 Aug 2017 08:28:40 +0000
Local clock offset: 2.514 ms
Remote clock offset: 1.006 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:41 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 47.704 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 2.14 Mbit/s
95th percentile per-packet one-way delay: 47.704 ms
Loss rate: 0.03%
```

Run 2: Report of WebRTC media — Data Link



```
Run 3: Statistics of WebRTC media

Start at: Sun, 06 Aug 2017 08:47:04 +0000
End at: Sun, 06 Aug 2017 08:47:34 +0000
Local clock offset: -9.738 ms
Remote clock offset: 0.913 ms

# Below is generated by plot.py at Sun, 06 Aug 2017 09:07:41 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 59.707 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 2.15 Mbit/s
95th percentile per-packet one-way delay: 59.707 ms
Loss rate: 0.07%
```

Run 3: Report of WebRTC media — Data Link

