

Pantheon Summary (Generated at Tue, 25 Jul 2017 08:22:14 +0000 with pantheon version 266b116f0817a07d000b4d181ce187fd27d3e654)

Repeated the test of 15 congestion control schemes 3 times.

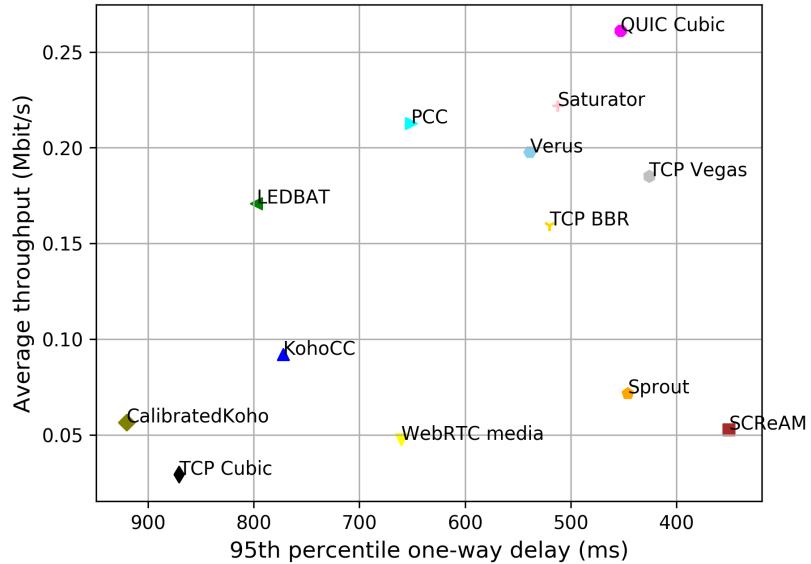
Each test lasted for 30 seconds running 1 flow.

Data path: India ppp0 (*remote*) → AWS India 1 Ethernet (*local*).

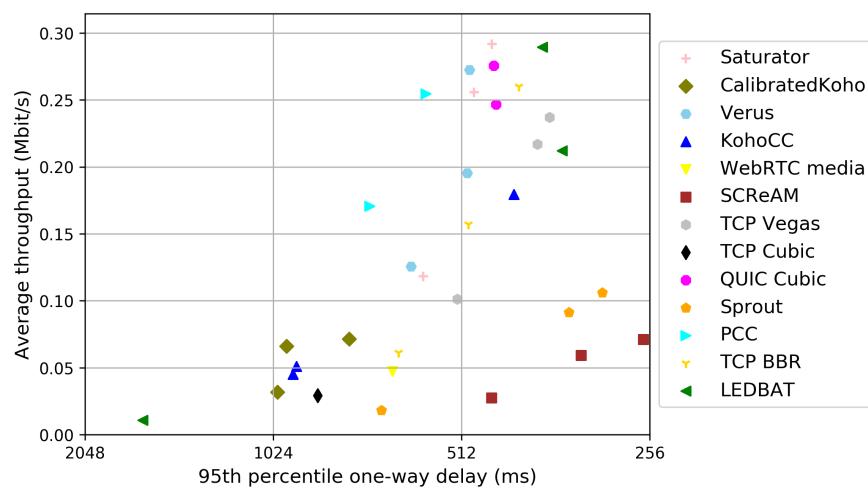
NTP offset measured against nets.org.sg and has been applied to correct the timestamps in logs.

```
git branch: master @ 266b116f0817a07d000b4d181ce187fd27d3e654
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 India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per scheme



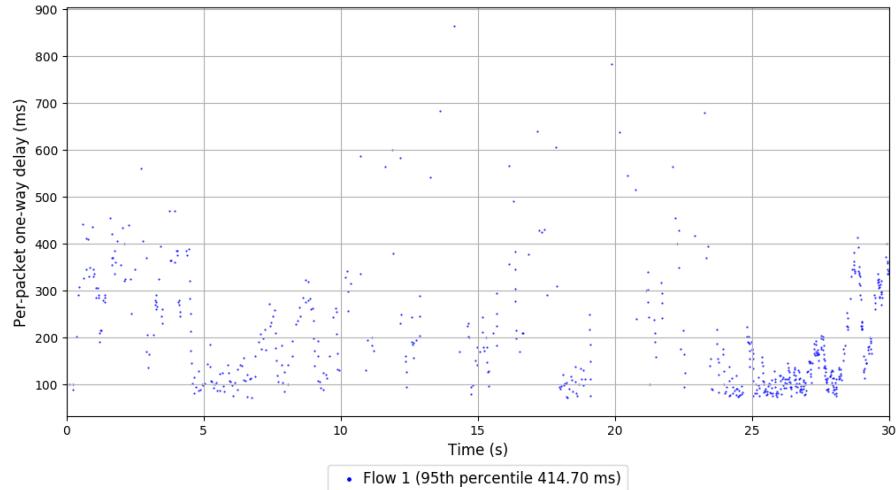
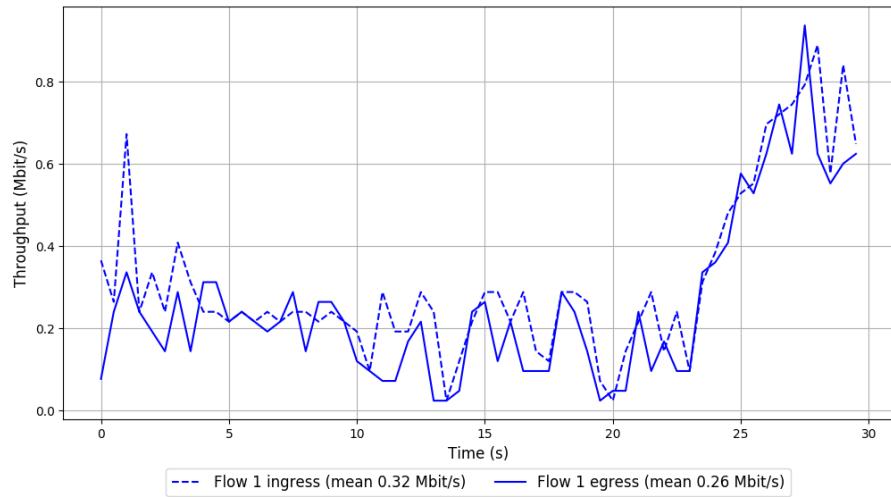
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.16	520.18	28.32
CalibratedKoho	3	0.06	920.18	75.19
Copa	3	nan	nan	nan
TCP Cubic	3	0.03	870.69	36.54
KohoCC	3	0.09	772.18	59.21
LEDBAT	3	0.17	797.33	11.10
PCC	3	0.21	650.98	99.19
QUIC Cubic	3	0.27	452.95	30.60
Saturator	3	0.22	512.47	66.55
SCReAM	3	0.05	350.48	6.48
Sprout	3	0.07	446.25	22.10
TaoVA-100x	3	nan	nan	nan
TCP Vegas	3	0.19	426.16	10.75
Verus	3	0.20	538.85	79.12
WebRTC media	3	0.05	660.38	43.83

Run 1: Statistics of TCP BBR

```
Start at: Tue, 25 Jul 2017 07:45:38 +0000
End at: Tue, 25 Jul 2017 07:46:08 +0000
Local clock offset: 1.884 ms
Remote clock offset: -23.674 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:49 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 414.702 ms
Loss rate: 18.30%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 414.702 ms
Loss rate: 18.30%
```

Run 1: Report of TCP BBR — Data Link

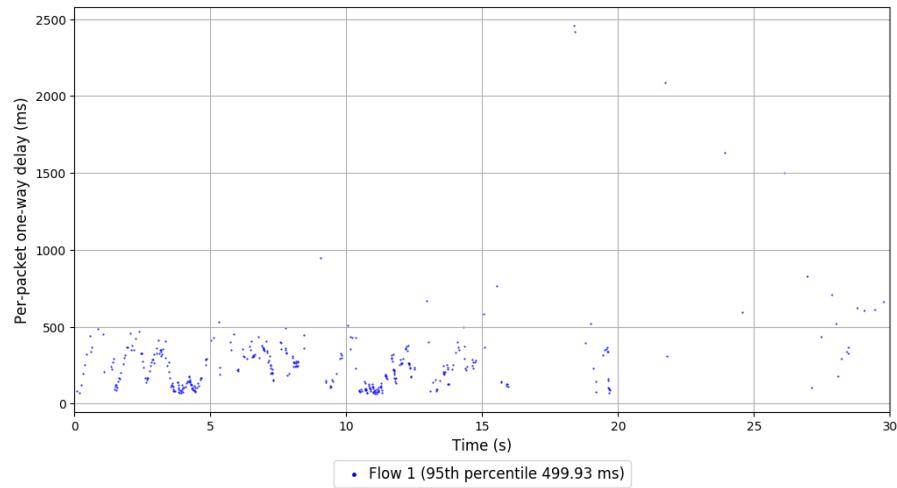
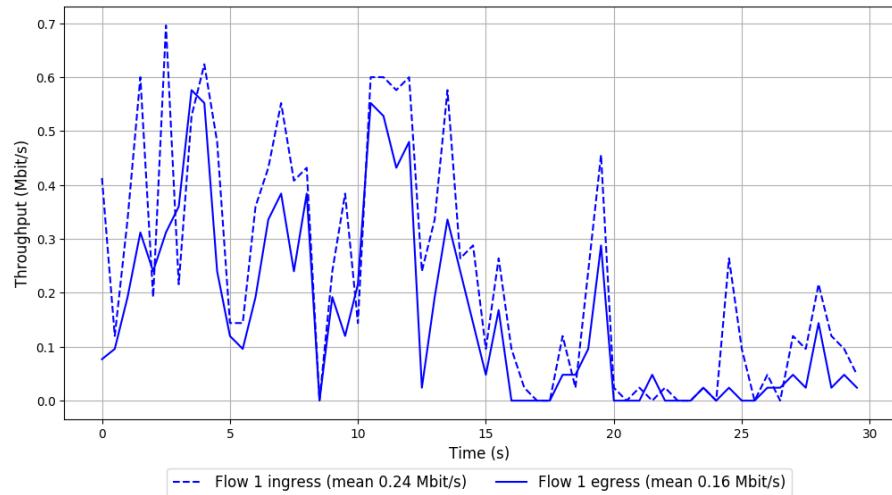


Run 2: Statistics of TCP BBR

```
Start at: Tue, 25 Jul 2017 08:01:56 +0000
End at: Tue, 25 Jul 2017 08:02:26 +0000
Local clock offset: -0.321 ms
Remote clock offset: -17.269 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:49 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 499.926 ms
Loss rate: 33.66%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 499.926 ms
Loss rate: 33.66%
```

Run 2: Report of TCP BBR — Data Link

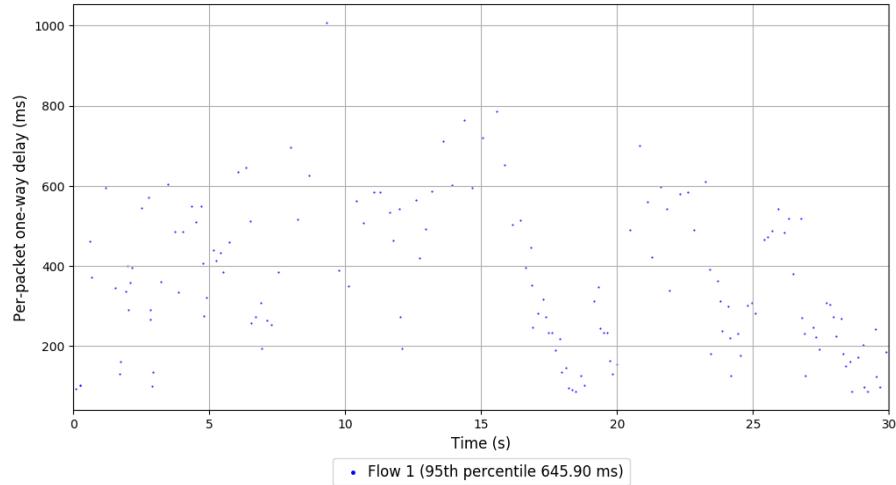
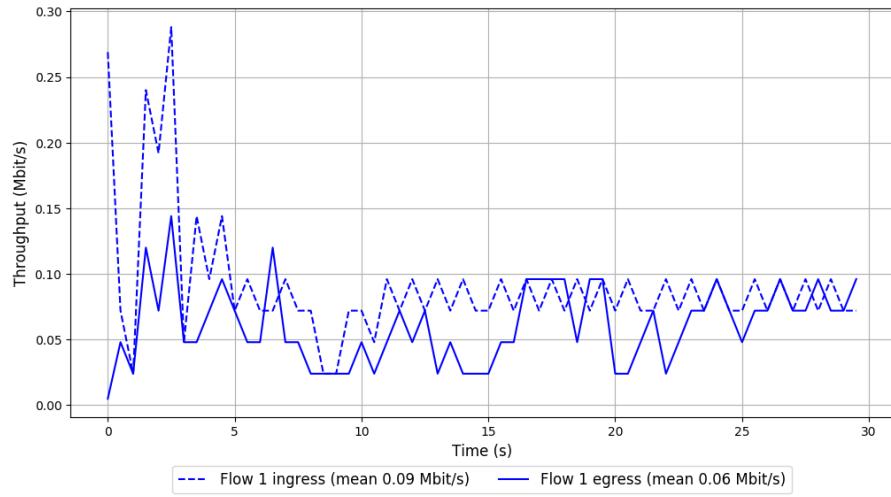


Run 3: Statistics of TCP BBR

```
Start at: Tue, 25 Jul 2017 08:18:14 +0000
End at: Tue, 25 Jul 2017 08:18:44 +0000
Local clock offset: -0.376 ms
Remote clock offset: -18.718 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:50 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 645.902 ms
Loss rate: 33.01%
-- Flow 1:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 645.902 ms
Loss rate: 33.01%
```

Run 3: Report of TCP BBR — Data Link



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

```
Start at: Tue, 25 Jul 2017 07:41:13 +0000
```

```
End at: Tue, 25 Jul 2017 07:41:43 +0000
```

```
Local clock offset: 0.277 ms
```

```
Remote clock offset: -19.443 ms
```

```
# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:50 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 0.07 Mbit/s
```

```
95th percentile per-packet one-way delay: 975.963 ms
```

```
Loss rate: 71.13%
```

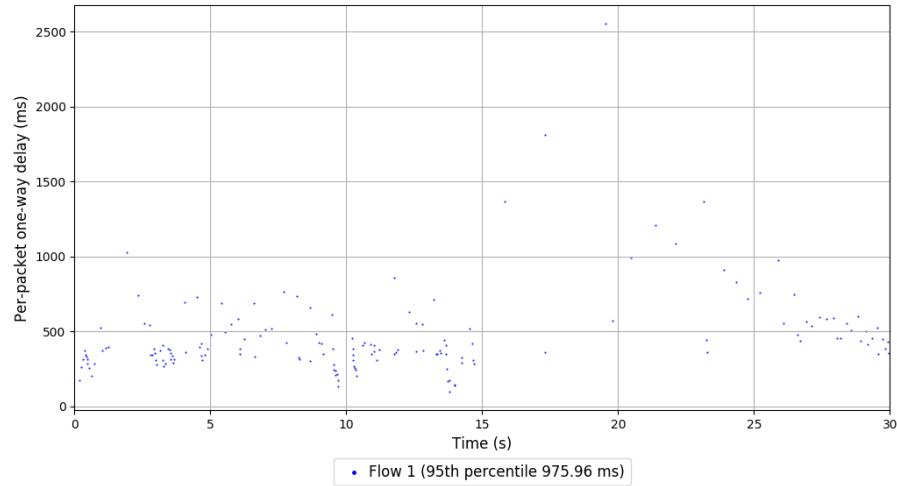
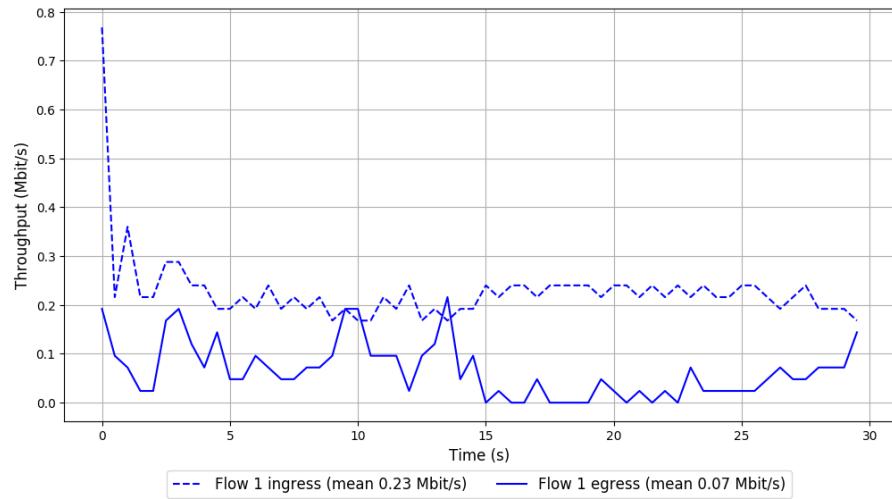
```
-- Flow 1:
```

```
Average throughput: 0.07 Mbit/s
```

```
95th percentile per-packet one-way delay: 975.963 ms
```

```
Loss rate: 71.13%
```

Run 1: Report of CalibratedKoho — Data Link

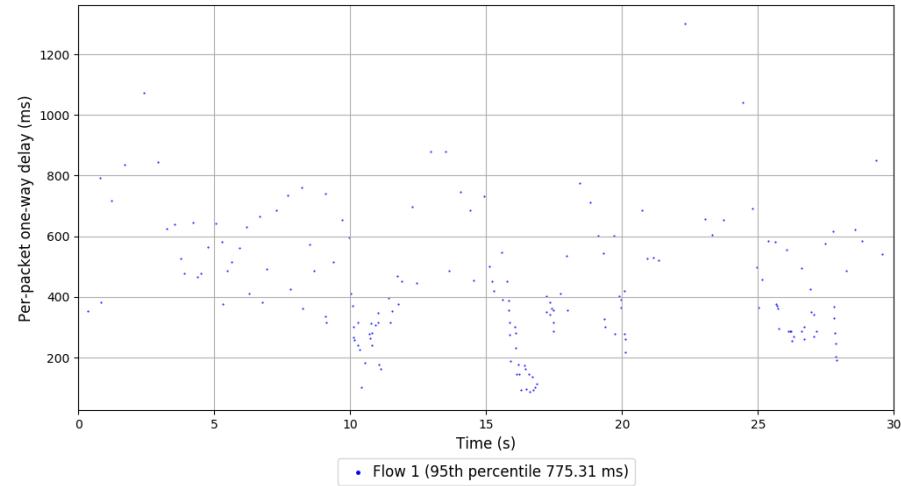
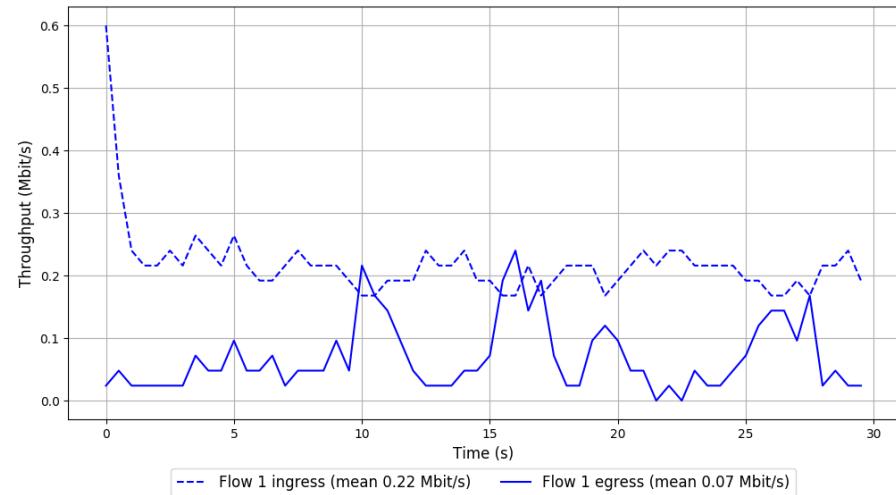


Run 2: Statistics of CalibratedKoho

```
Start at: Tue, 25 Jul 2017 07:57:34 +0000
End at: Tue, 25 Jul 2017 07:58:04 +0000
Local clock offset: 0.308 ms
Remote clock offset: -19.43 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 775.306 ms
Loss rate: 68.01%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 775.306 ms
Loss rate: 68.01%
```

Run 2: Report of CalibratedKoho — Data Link

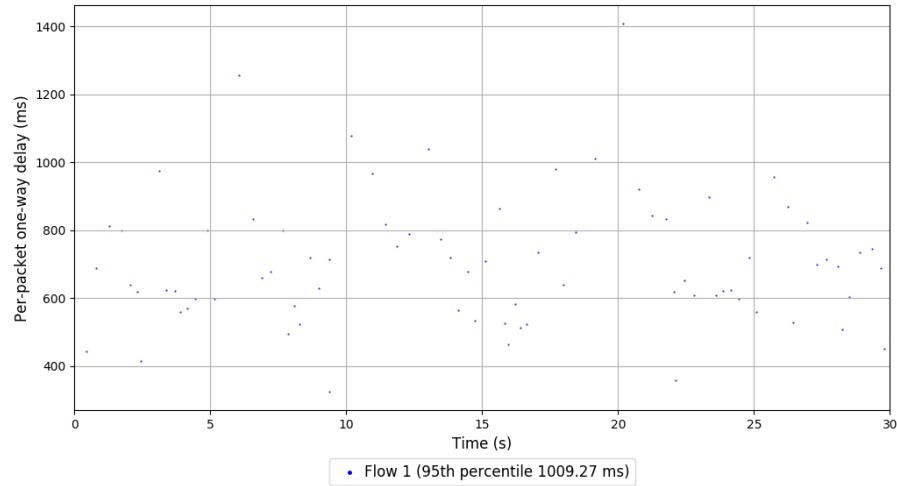
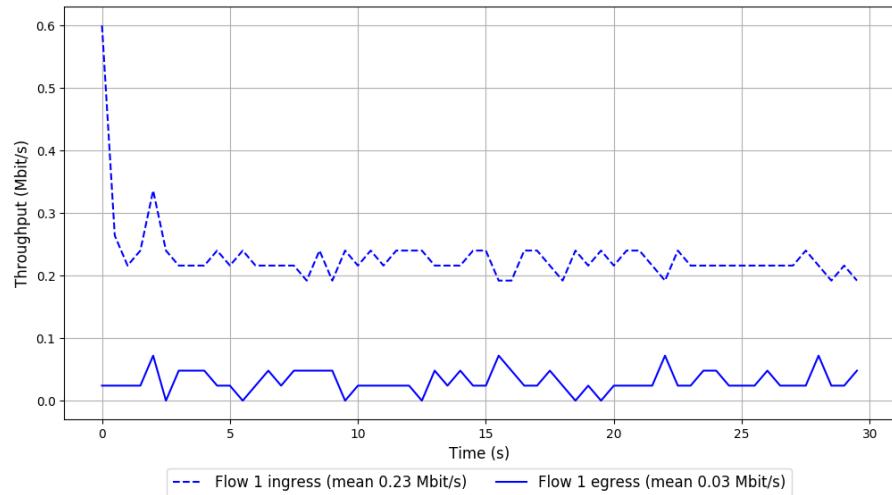


```
Run 3: Statistics of CalibratedKoho
```

```
Start at: Tue, 25 Jul 2017 08:13:52 +0000
End at: Tue, 25 Jul 2017 08:14:22 +0000
Local clock offset: 1.096 ms
Remote clock offset: -20.212 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:51 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 1009.270 ms
Loss rate: 86.43%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 1009.270 ms
Loss rate: 86.43%
```

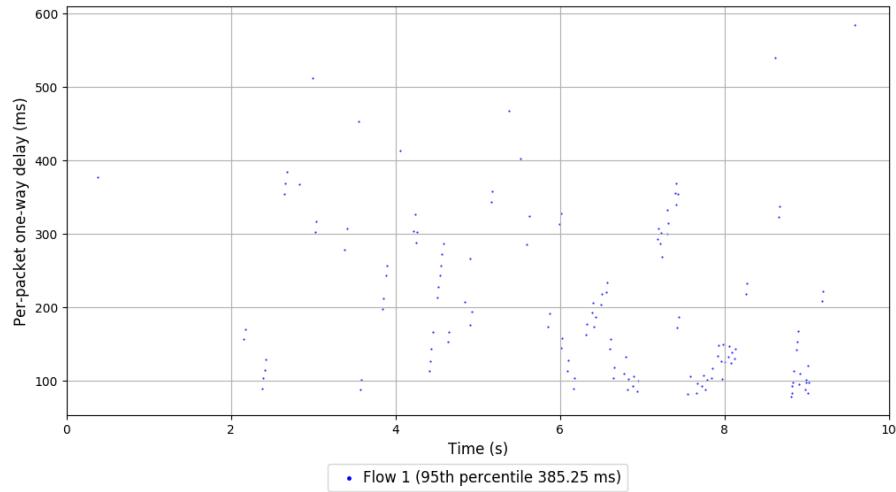
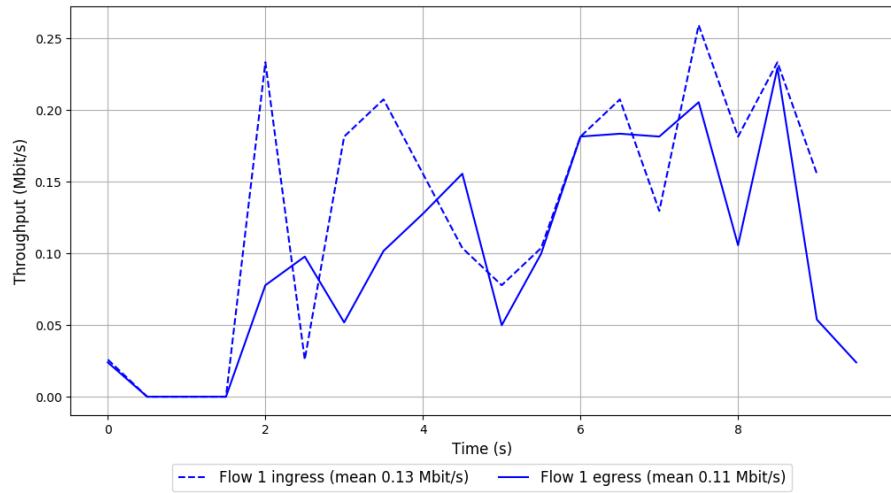
Run 3: Report of CalibratedKoho — Data Link



Run 1: Statistics of Copa

Start at: Tue, 25 Jul 2017 07:42:18 +0000
End at: Tue, 25 Jul 2017 07:42:48 +0000
Local clock offset: -1.888 ms
Remote clock offset: -18.967 ms

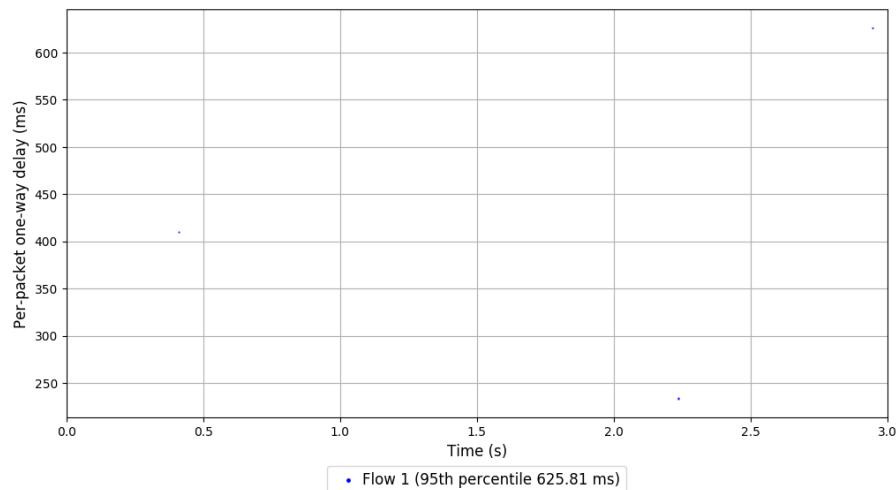
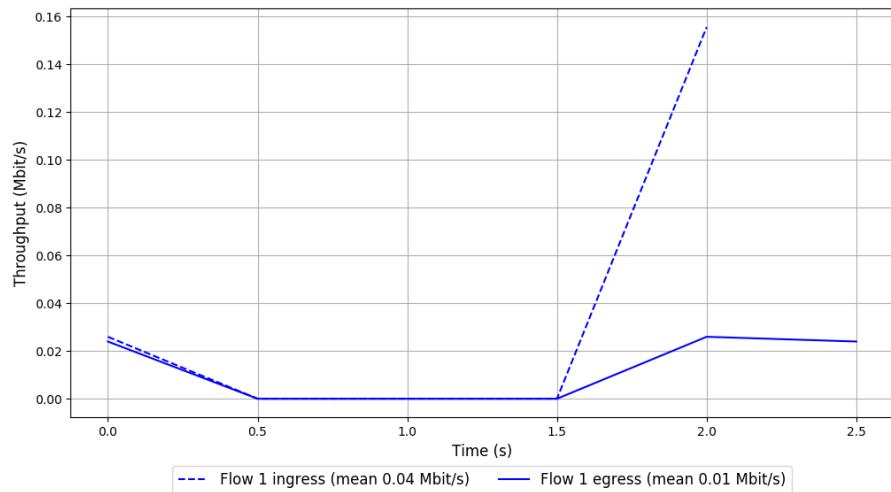
Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

```
Start at: Tue, 25 Jul 2017 07:58:39 +0000
End at: Tue, 25 Jul 2017 07:59:09 +0000
Local clock offset: 18.066 ms
Remote clock offset: -18.542 ms
```

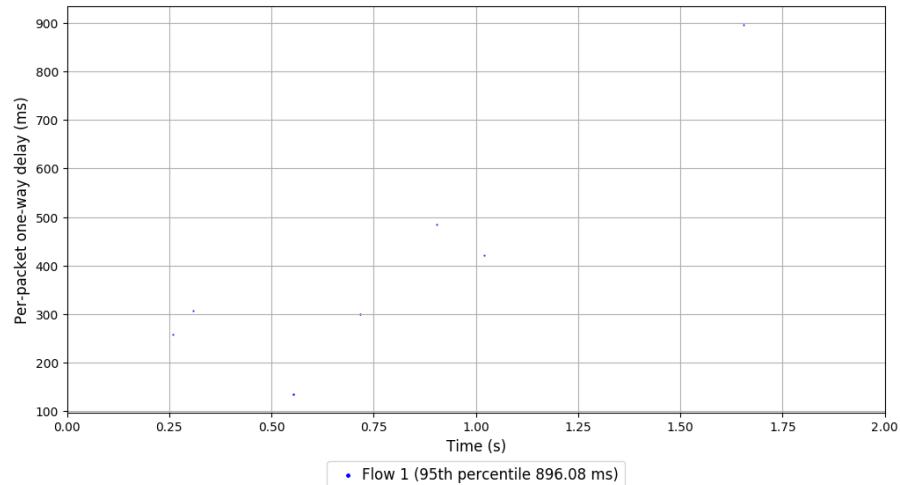
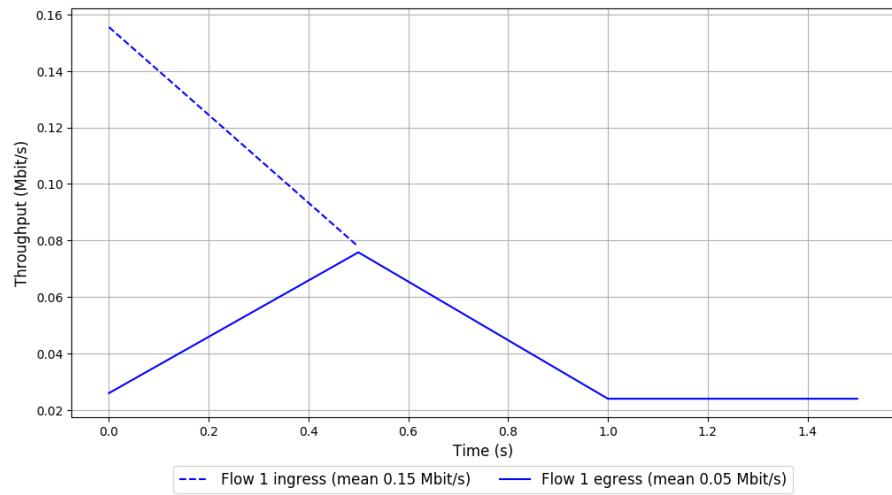
Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

```
Start at: Tue, 25 Jul 2017 08:14:57 +0000
End at: Tue, 25 Jul 2017 08:15:27 +0000
Local clock offset: -0.486 ms
Remote clock offset: -17.406 ms
```

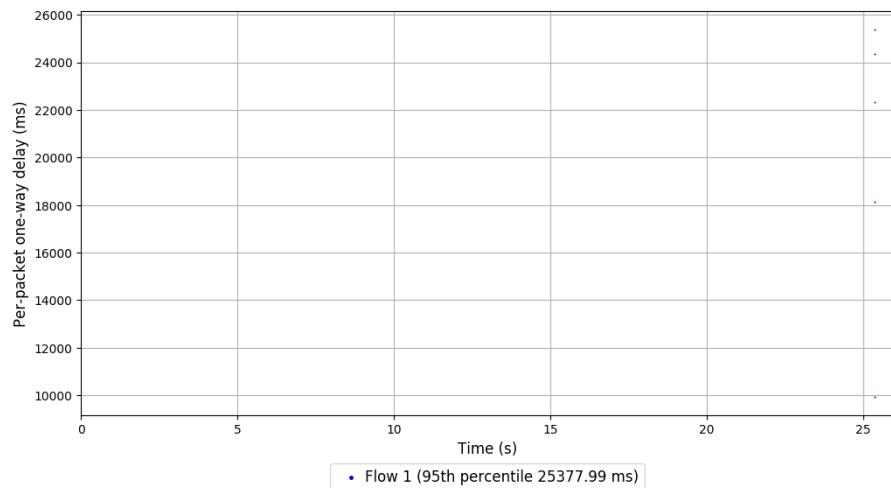
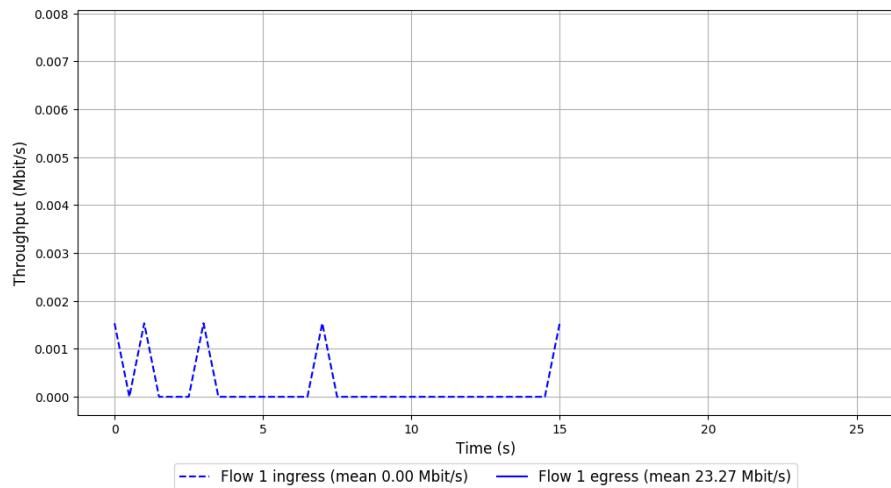
Run 3: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: Tue, 25 Jul 2017 07:33:38 +0000
End at: Tue, 25 Jul 2017 07:34:08 +0000
Local clock offset: 2.368 ms
Remote clock offset: -16.856 ms

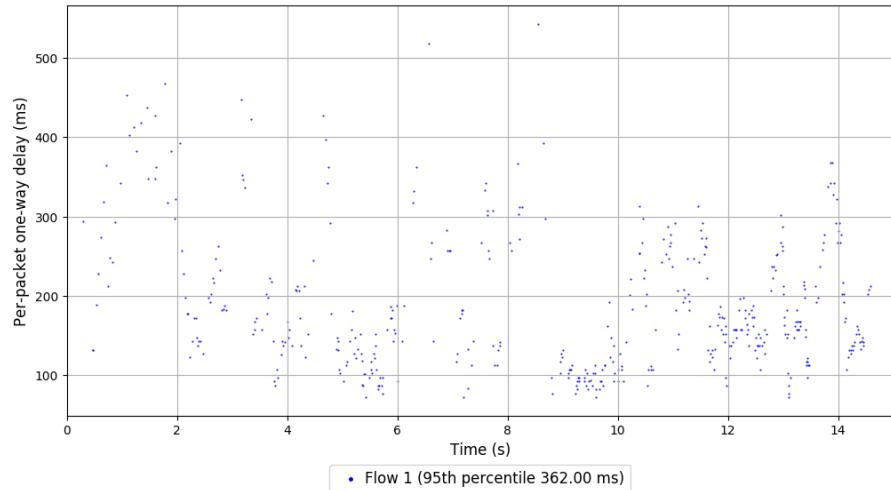
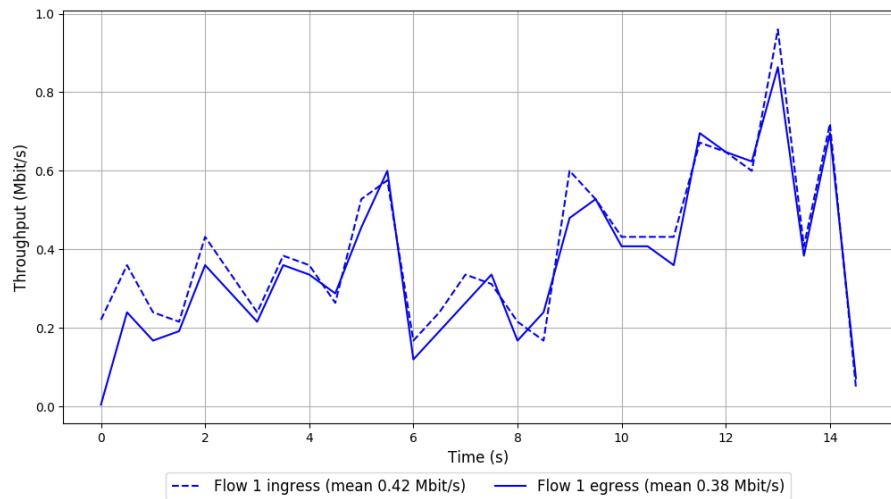
Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: Tue, 25 Jul 2017 07:49:58 +0000
End at: Tue, 25 Jul 2017 07:50:28 +0000
Local clock offset: 0.345 ms
Remote clock offset: -18.299 ms

Run 2: Report of TCP Cubic — Data Link

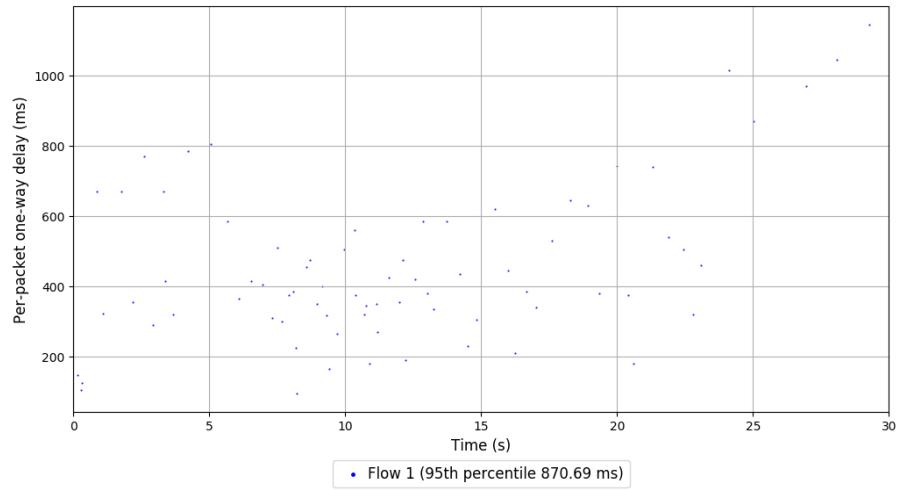
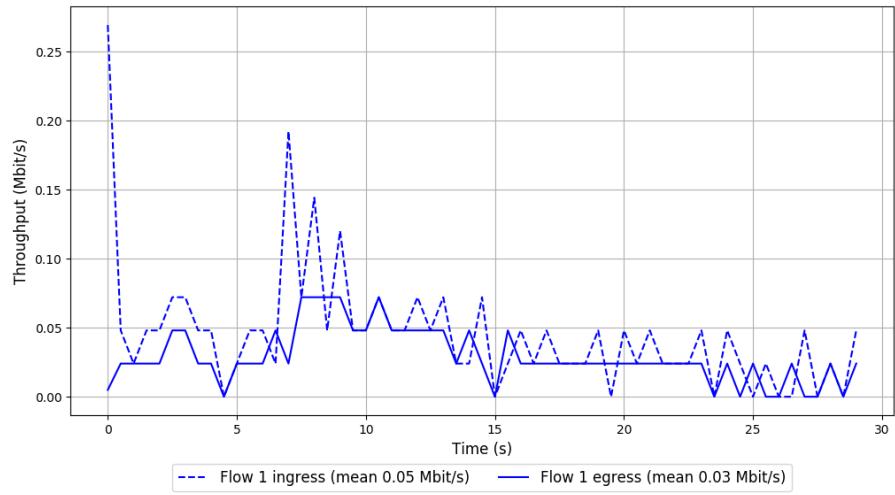


Run 3: Statistics of TCP Cubic

```
Start at: Tue, 25 Jul 2017 08:06:16 +0000
End at: Tue, 25 Jul 2017 08:06:46 +0000
Local clock offset: 0.136 ms
Remote clock offset: -19.777 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:54 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 870.692 ms
Loss rate: 36.54%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 870.692 ms
Loss rate: 36.54%
```

Run 3: Report of TCP Cubic — Data Link

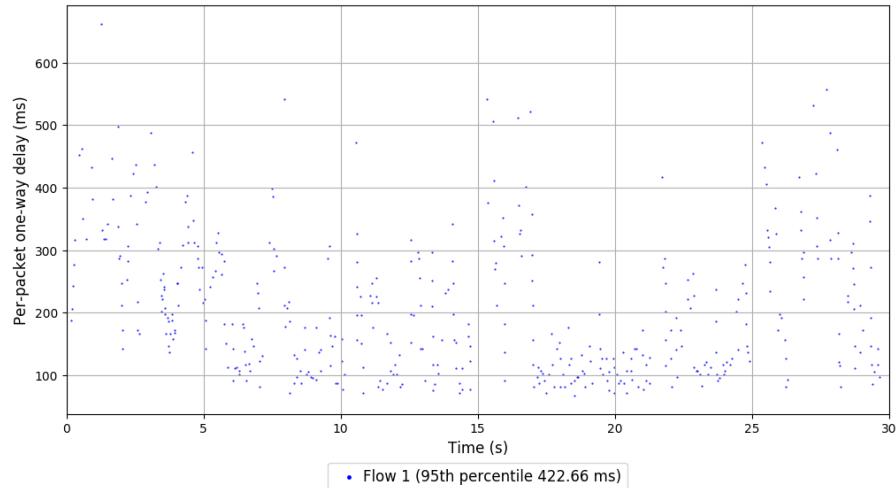
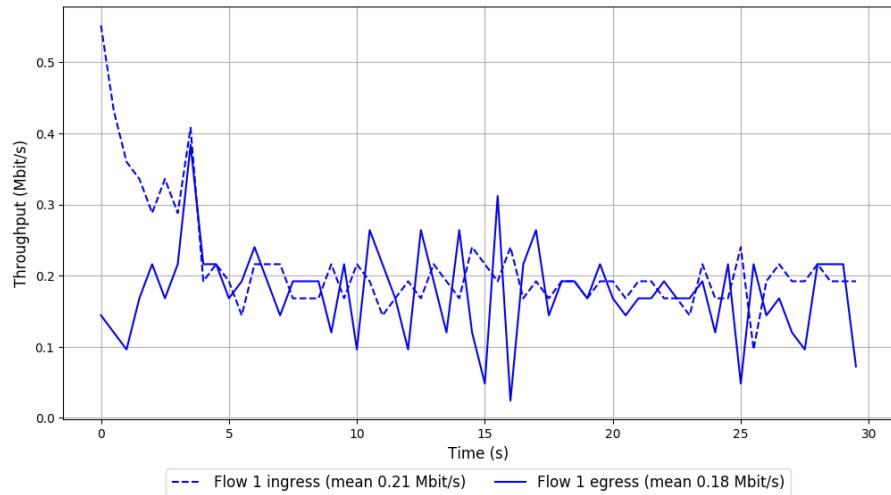


```
Run 1: Statistics of KohoCC
```

```
Start at: Tue, 25 Jul 2017 07:40:08 +0000
End at: Tue, 25 Jul 2017 07:40:38 +0000
Local clock offset: 1.283 ms
Remote clock offset: -19.249 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:55 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 422.661 ms
Loss rate: 17.26%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 422.661 ms
Loss rate: 17.26%
```

Run 1: Report of KohoCC — Data Link

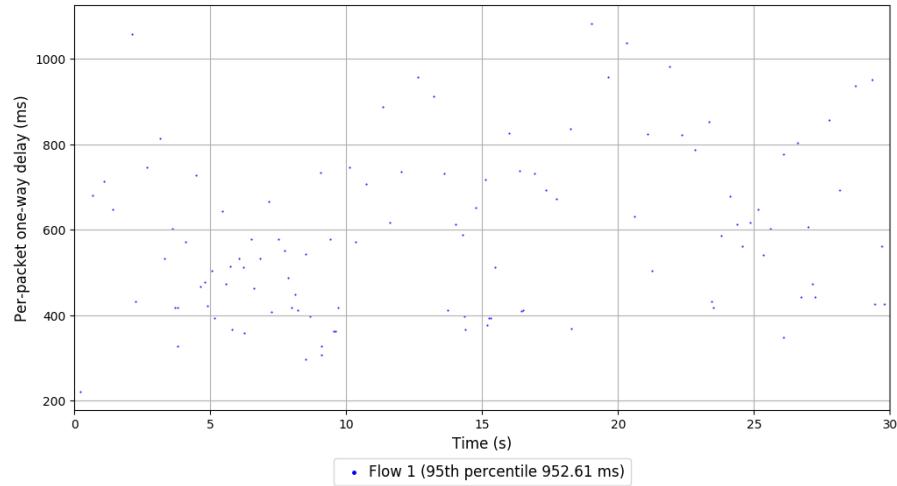
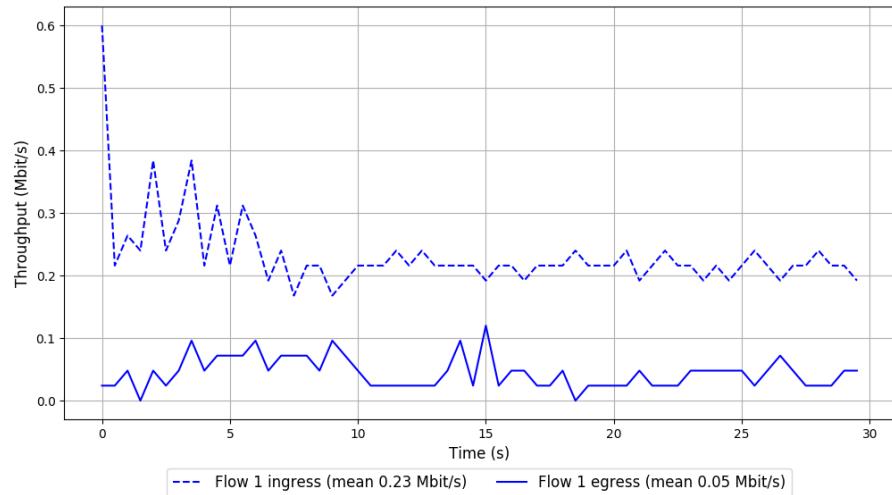


Run 2: Statistics of KohoCC

```
Start at: Tue, 25 Jul 2017 07:56:29 +0000
End at: Tue, 25 Jul 2017 07:56:59 +0000
Local clock offset: 2.822 ms
Remote clock offset: -18.683 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:55 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 952.610 ms
Loss rate: 80.93%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 952.610 ms
Loss rate: 80.93%
```

Run 2: Report of KohoCC — Data Link

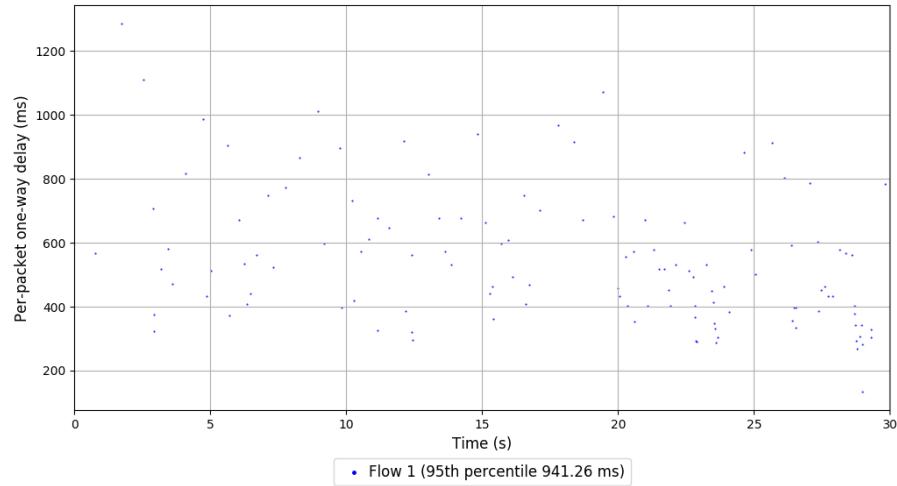
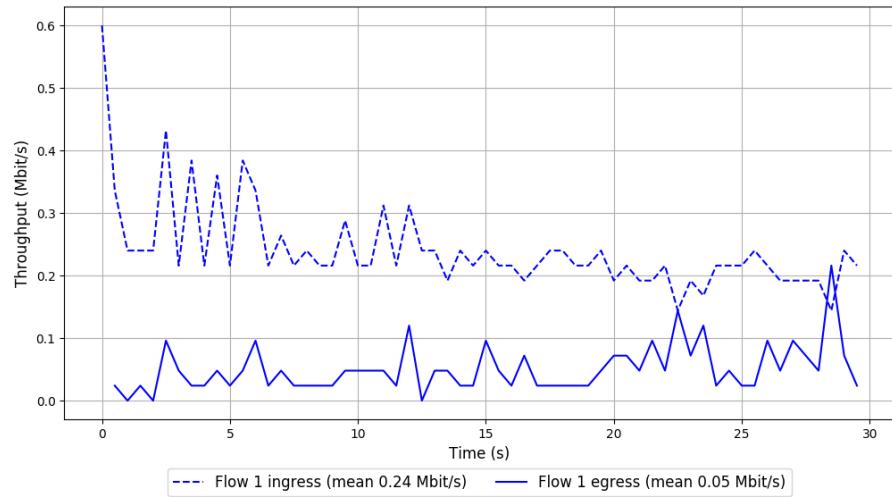


Run 3: Statistics of KohoCC

```
Start at: Tue, 25 Jul 2017 08:12:47 +0000
End at: Tue, 25 Jul 2017 08:13:17 +0000
Local clock offset: -0.514 ms
Remote clock offset: -20.357 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:56 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 941.258 ms
Loss rate: 79.44%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 941.258 ms
Loss rate: 79.44%
```

Run 3: Report of KohoCC — Data Link

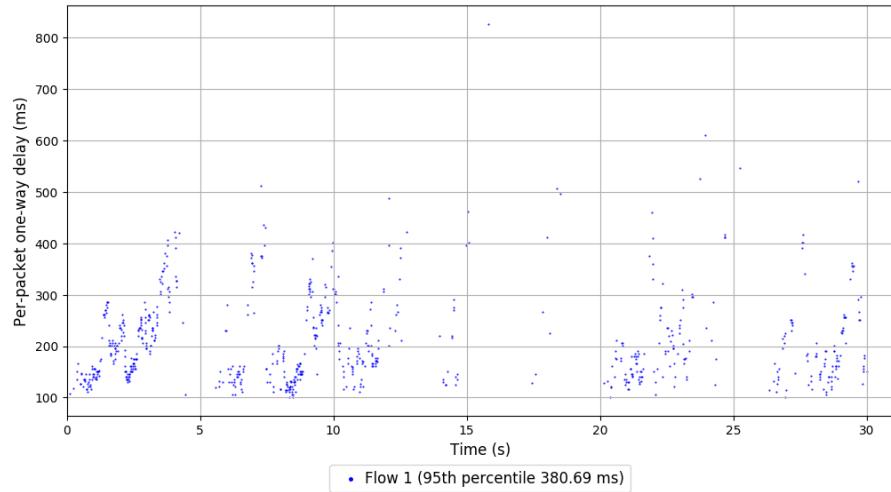
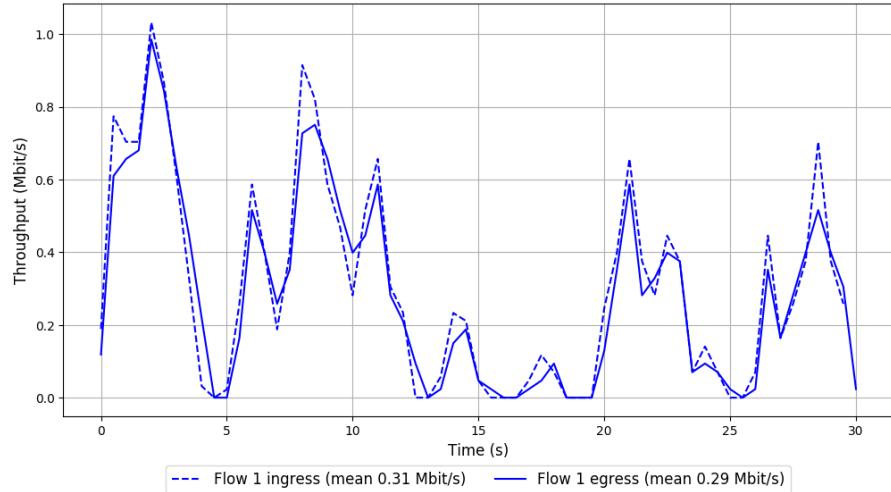


```
Run 1: Statistics of LEDBAT
```

```
Start at: Tue, 25 Jul 2017 07:34:43 +0000
End at: Tue, 25 Jul 2017 07:35:13 +0000
Local clock offset: 13.791 ms
Remote clock offset: -38.361 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:56 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 380.694 ms
Loss rate: 5.75%
-- Flow 1:
Average throughput: 0.29 Mbit/s
95th percentile per-packet one-way delay: 380.694 ms
Loss rate: 5.75%
```

Run 1: Report of LEDBAT — Data Link

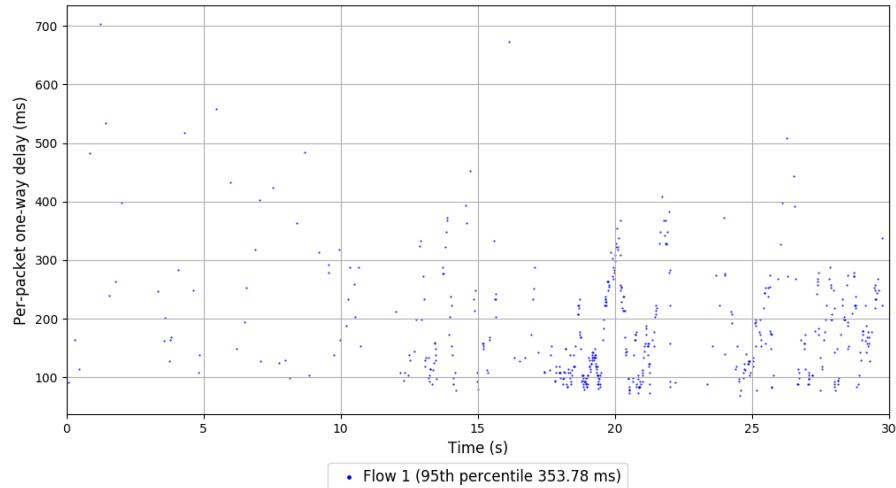
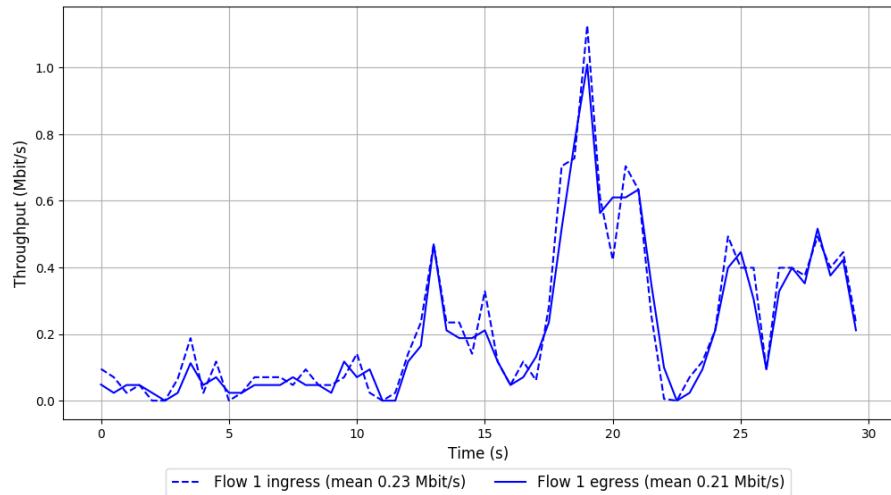


Run 2: Statistics of LEDBAT

```
Start at: Tue, 25 Jul 2017 07:51:03 +0000
End at: Tue, 25 Jul 2017 07:51:33 +0000
Local clock offset: 1.308 ms
Remote clock offset: -18.019 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:57 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 353.784 ms
Loss rate: 6.61%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 353.784 ms
Loss rate: 6.61%
```

Run 2: Report of LEDBAT — Data Link

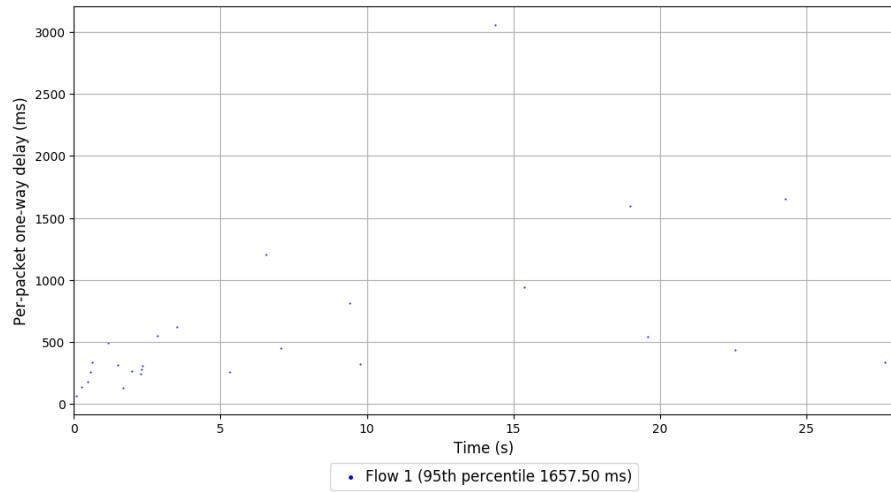
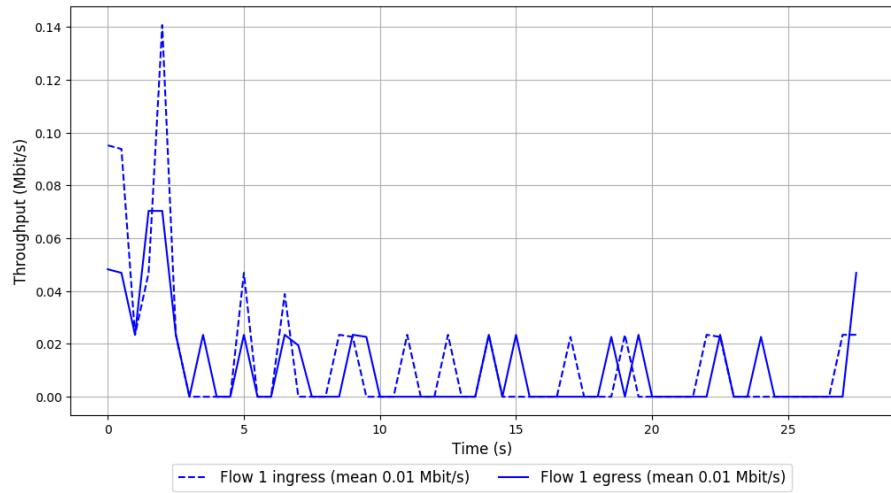


Run 3: Statistics of LEDBAT

```
Start at: Tue, 25 Jul 2017 08:07:21 +0000
End at: Tue, 25 Jul 2017 08:07:51 +0000
Local clock offset: 1.362 ms
Remote clock offset: -17.504 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:21:57 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1657.497 ms
Loss rate: 20.94%
-- Flow 1:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 1657.497 ms
Loss rate: 20.94%
```

Run 3: Report of LEDBAT — Data Link



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

```
Start at: Tue, 25 Jul 2017 07:44:29 +0000
```

```
End at: Tue, 25 Jul 2017 07:44:59 +0000
```

```
Local clock offset: 21.286 ms
```

```
Remote clock offset: -19.573 ms
```

```
# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:00 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 0.17 Mbit/s
```

```
95th percentile per-packet one-way delay: 718.076 ms
```

```
Loss rate: 99.59%
```

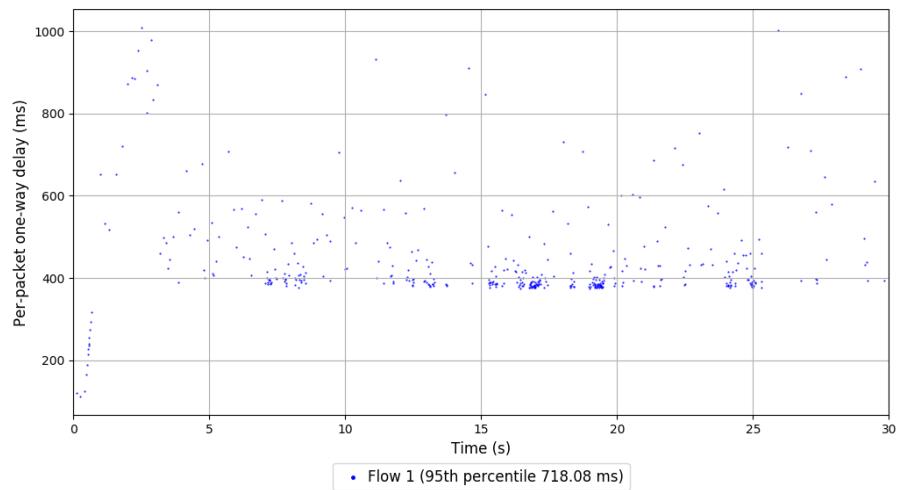
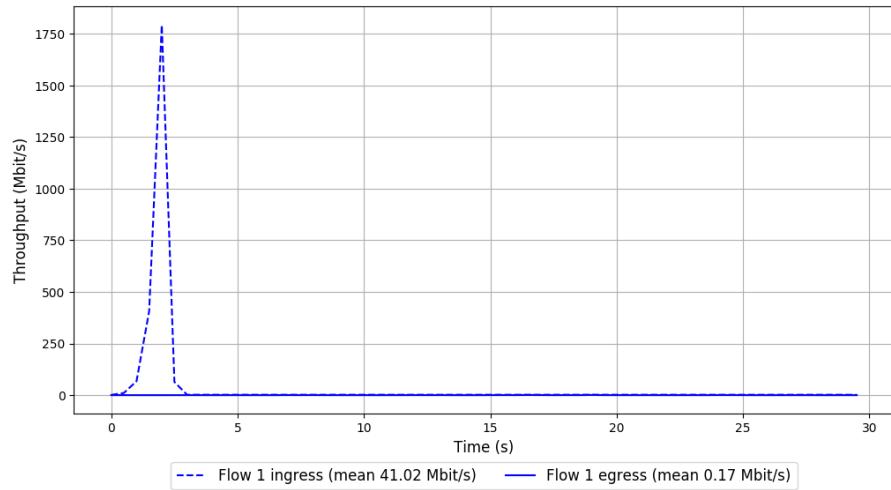
```
-- Flow 1:
```

```
Average throughput: 0.17 Mbit/s
```

```
95th percentile per-packet one-way delay: 718.076 ms
```

```
Loss rate: 99.59%
```

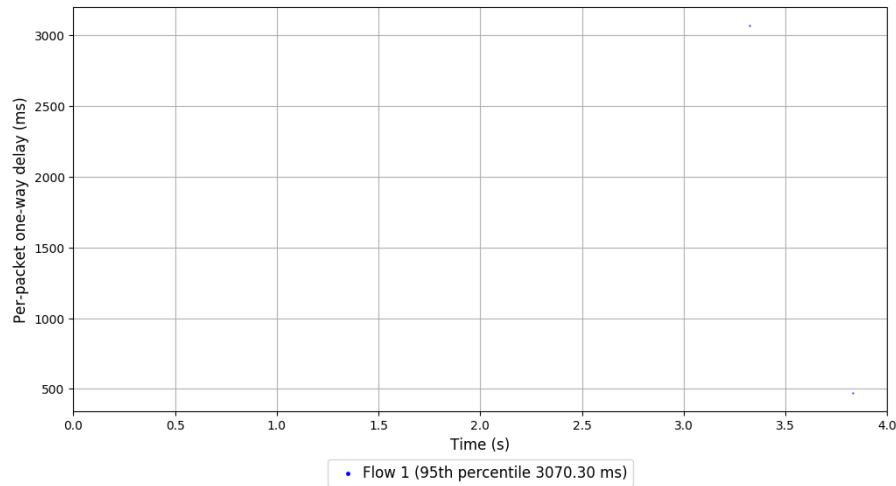
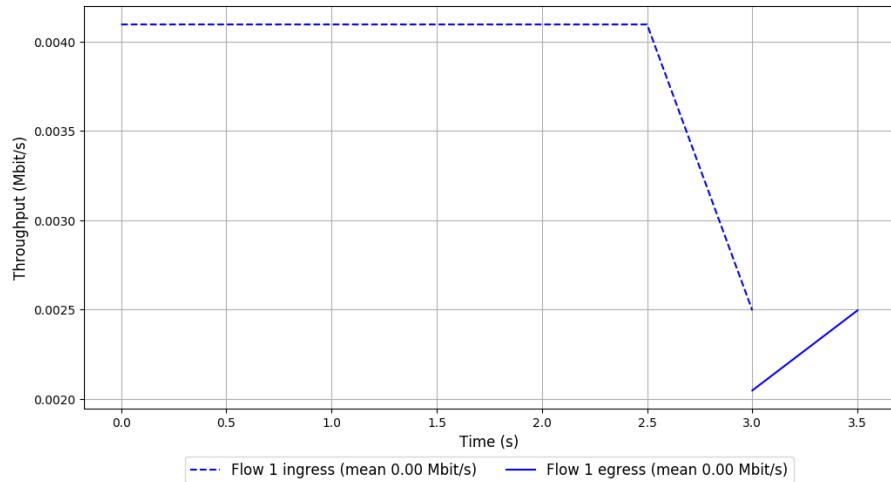
Run 1: Report of PCC — Data Link



Run 2: Statistics of PCC

Start at: Tue, 25 Jul 2017 08:00:51 +0000
End at: Tue, 25 Jul 2017 08:01:21 +0000
Local clock offset: 2.995 ms
Remote clock offset: -21.891 ms

Run 2: Report of PCC — Data Link

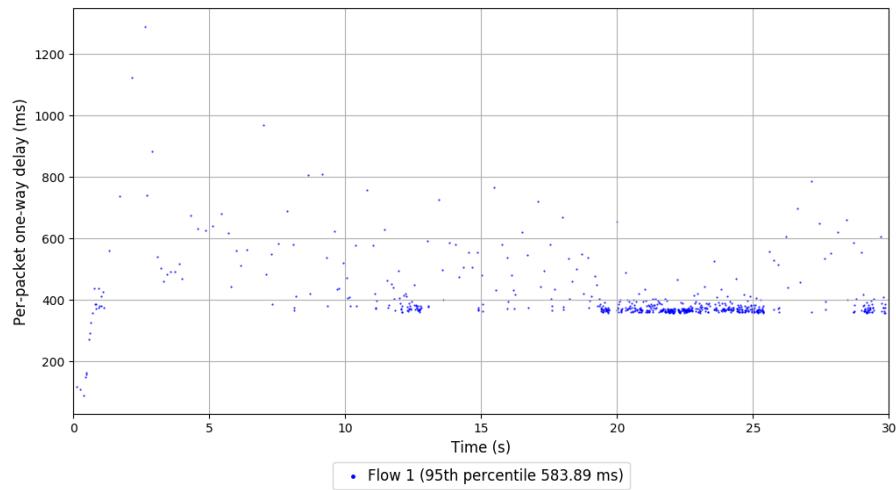
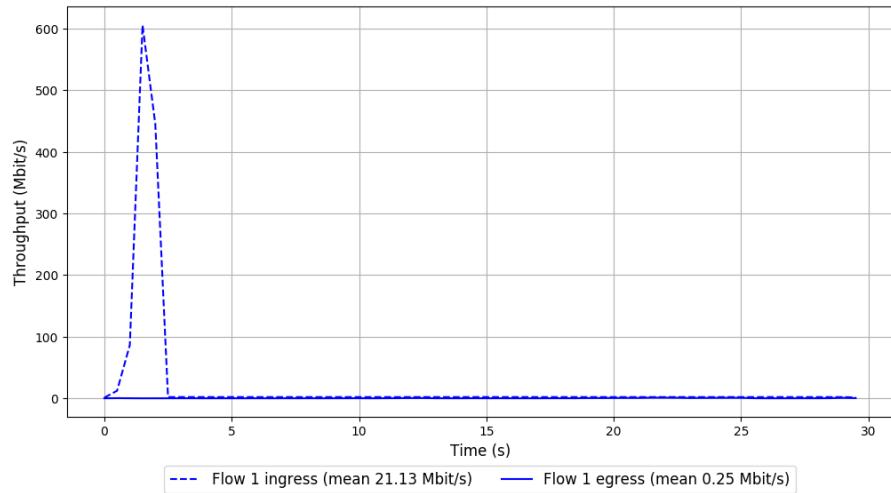


Run 3: Statistics of PCC

```
Start at: Tue, 25 Jul 2017 08:17:07 +0000
End at: Tue, 25 Jul 2017 08:17:37 +0000
Local clock offset: 1.442 ms
Remote clock offset: -18.041 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:00 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 583.890 ms
Loss rate: 98.80%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 583.890 ms
Loss rate: 98.80%
```

Run 3: Report of PCC — Data Link



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

```
Start at: Tue, 25 Jul 2017 07:36:53 +0000
```

```
End at: Tue, 25 Jul 2017 07:37:23 +0000
```

```
Local clock offset: 22.198 ms
```

```
Remote clock offset: -20.044 ms
```

```
# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:00 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 0.28 Mbit/s
```

```
95th percentile per-packet one-way delay: 454.990 ms
```

```
Loss rate: 27.41%
```

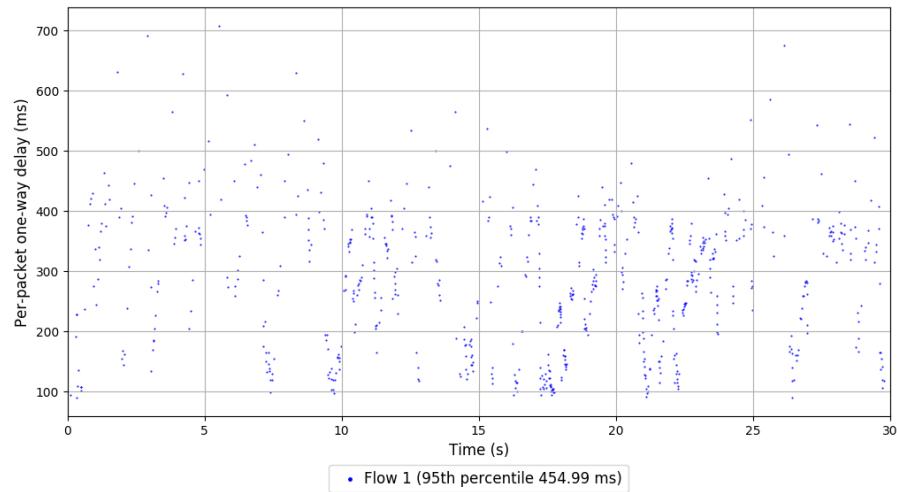
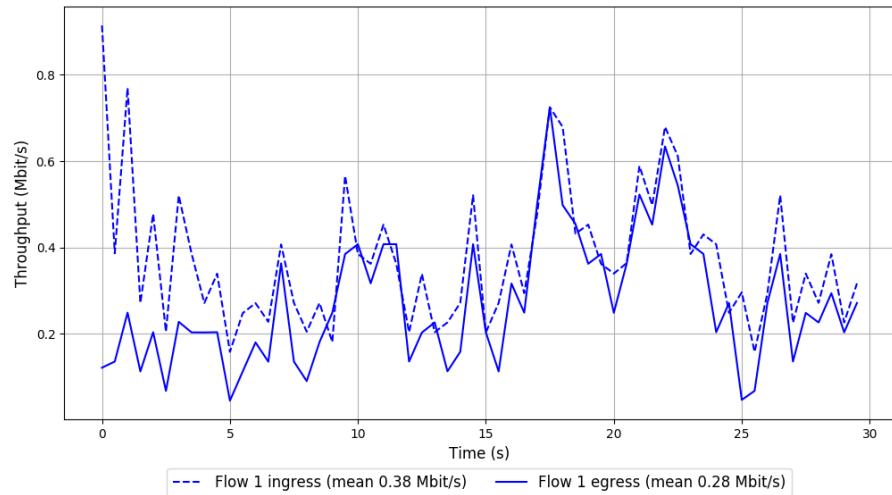
```
-- Flow 1:
```

```
Average throughput: 0.28 Mbit/s
```

```
95th percentile per-packet one-way delay: 454.990 ms
```

```
Loss rate: 27.41%
```

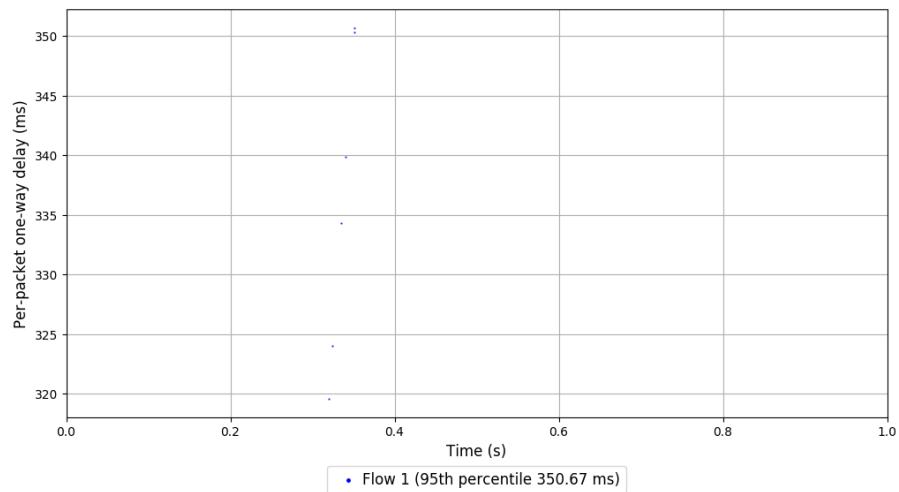
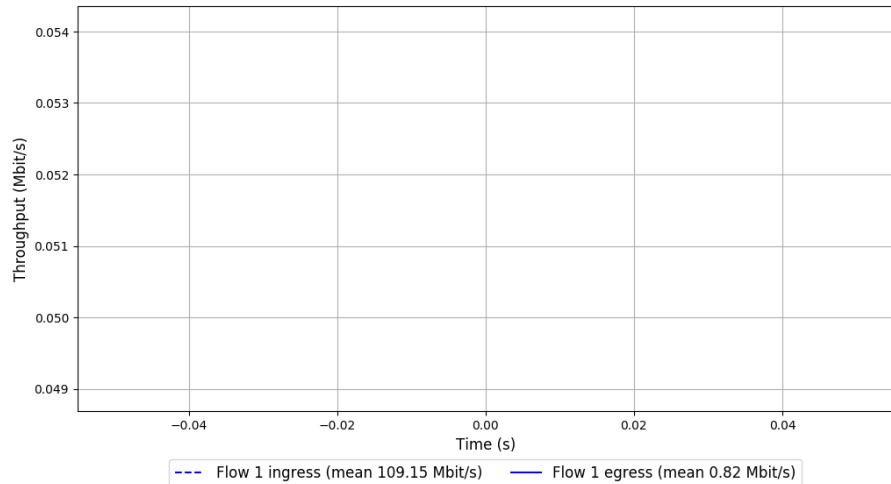
Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: Tue, 25 Jul 2017 07:53:14 +0000
End at: Tue, 25 Jul 2017 07:53:44 +0000
Local clock offset: -0.271 ms
Remote clock offset: -19.119 ms

Run 2: Report of QUIC Cubic — Data Link

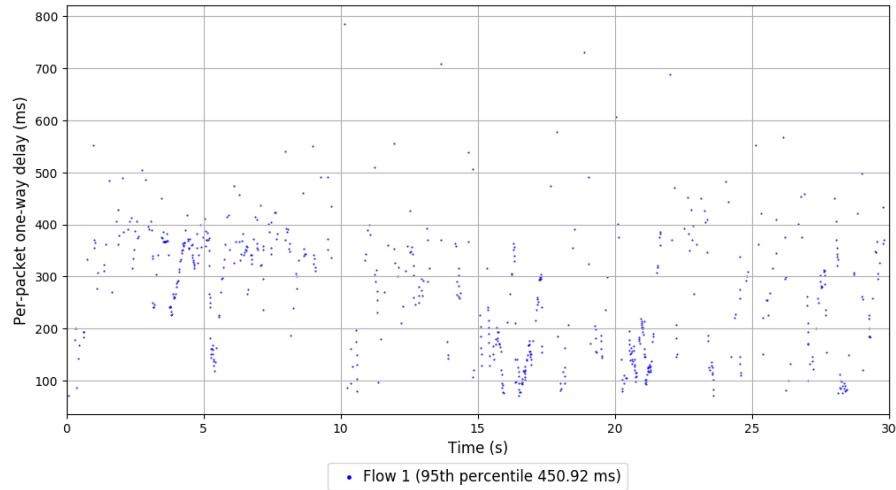
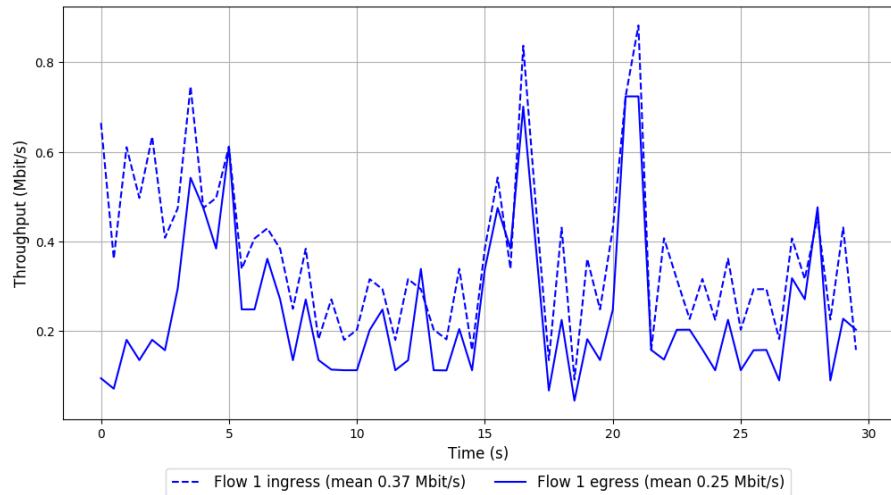


Run 3: Statistics of QUIC Cubic

```
Start at: Tue, 25 Jul 2017 08:09:31 +0000
End at: Tue, 25 Jul 2017 08:10:01 +0000
Local clock offset: 3.513 ms
Remote clock offset: -19.371 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:01 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 450.918 ms
Loss rate: 33.79%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 450.918 ms
Loss rate: 33.79%
```

Run 3: Report of QUIC Cubic — Data Link



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

```
Start at: Tue, 25 Jul 2017 07:37:58 +0000
```

```
End at: Tue, 25 Jul 2017 07:38:28 +0000
```

```
Local clock offset: 1.489 ms
```

```
Remote clock offset: -18.959 ms
```

```
# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:02 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 0.29 Mbit/s
```

```
95th percentile per-packet one-way delay: 458.121 ms
```

```
Loss rate: 62.11%
```

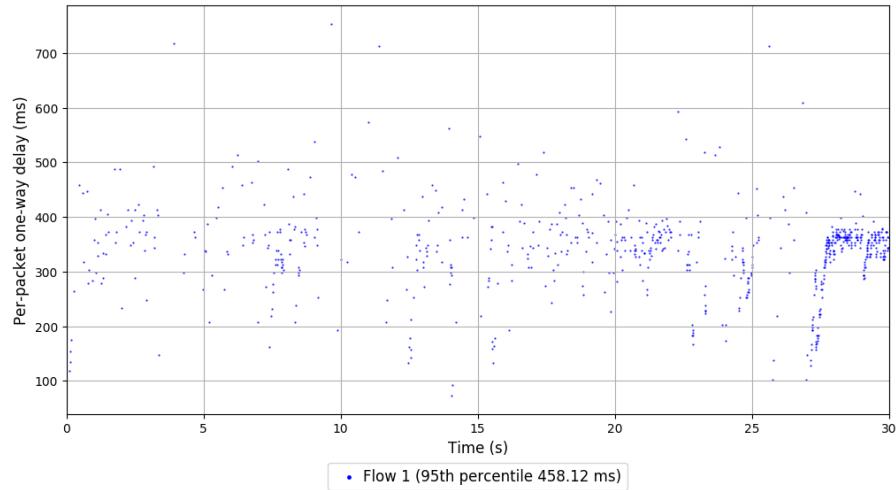
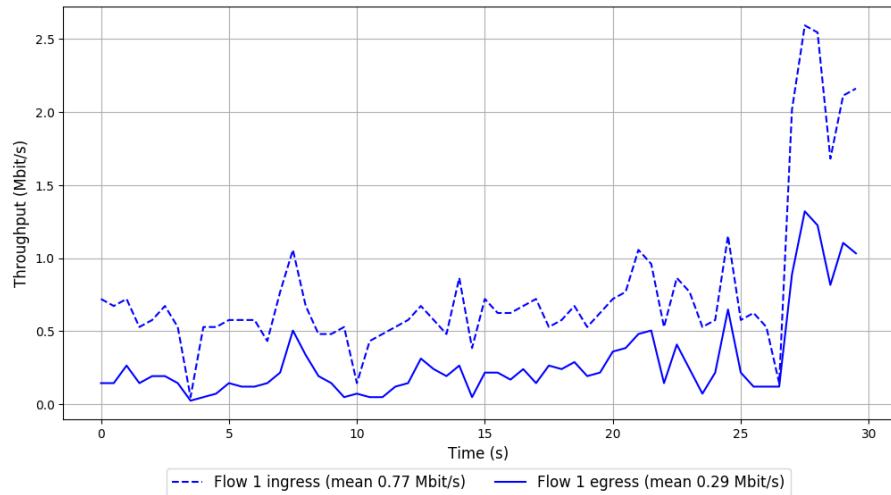
```
-- Flow 1:
```

```
Average throughput: 0.29 Mbit/s
```

```
95th percentile per-packet one-way delay: 458.121 ms
```

```
Loss rate: 62.11%
```

Run 1: Report of Saturator — Data Link

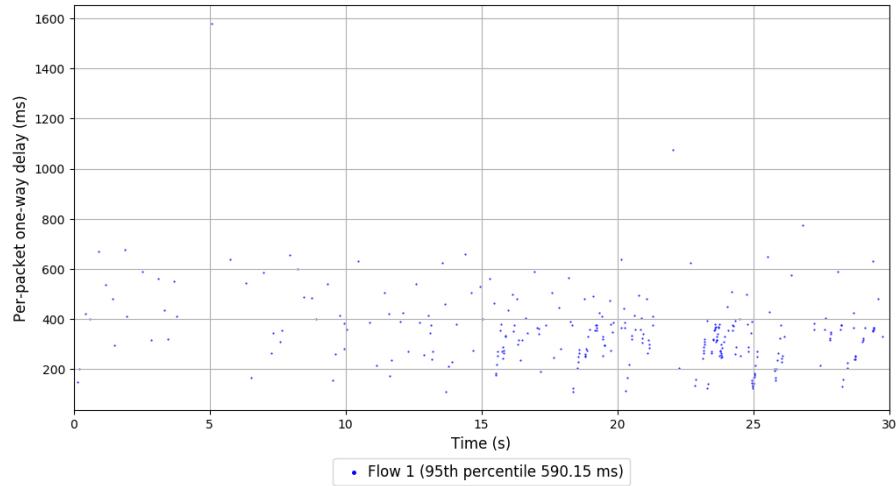
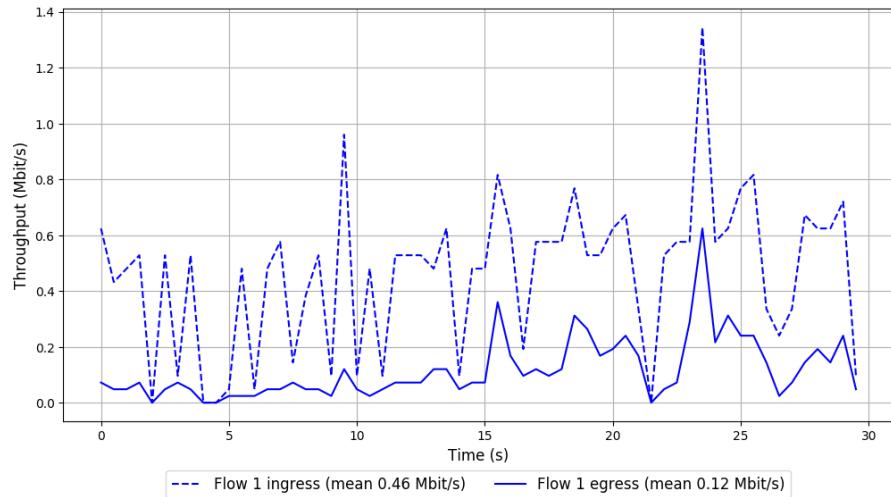


Run 2: Statistics of Saturator

```
Start at: Tue, 25 Jul 2017 07:54:19 +0000
End at: Tue, 25 Jul 2017 07:54:49 +0000
Local clock offset: 3.34 ms
Remote clock offset: -18.728 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:02 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 590.153 ms
Loss rate: 74.65%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 590.153 ms
Loss rate: 74.65%
```

Run 2: Report of Saturator — Data Link

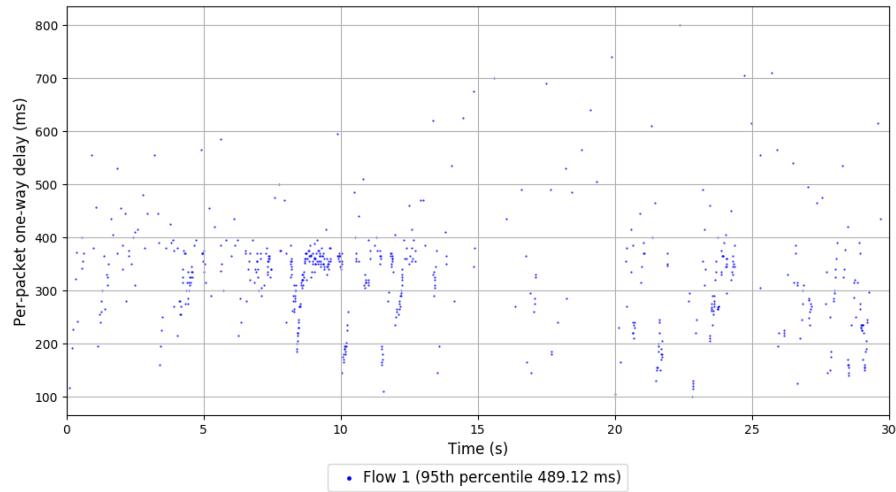
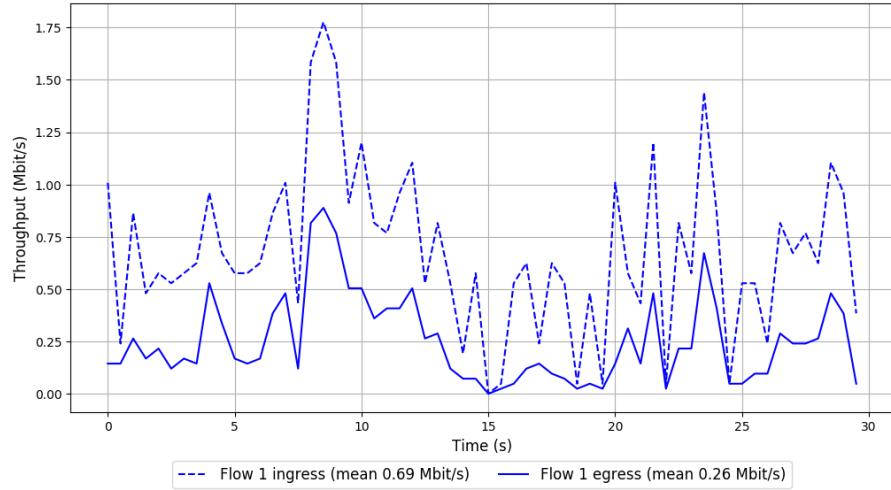


Run 3: Statistics of Saturator

```
Start at: Tue, 25 Jul 2017 08:10:36 +0000
End at: Tue, 25 Jul 2017 08:11:06 +0000
Local clock offset: 2.46 ms
Remote clock offset: -18.578 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:03 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 489.123 ms
Loss rate: 62.90%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 489.123 ms
Loss rate: 62.90%
```

Run 3: Report of Saturator — Data Link



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

```
Start at: Tue, 25 Jul 2017 07:46:43 +0000
```

```
End at: Tue, 25 Jul 2017 07:47:13 +0000
```

```
Local clock offset: 1.97 ms
```

```
Remote clock offset: -19.654 ms
```

```
# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:04 +0000
```

```
# Datalink statistics
```

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

```
Average throughput: 0.06 Mbit/s
```

```
95th percentile per-packet one-way delay: 329.913 ms
```

```
Loss rate: 2.95%
```

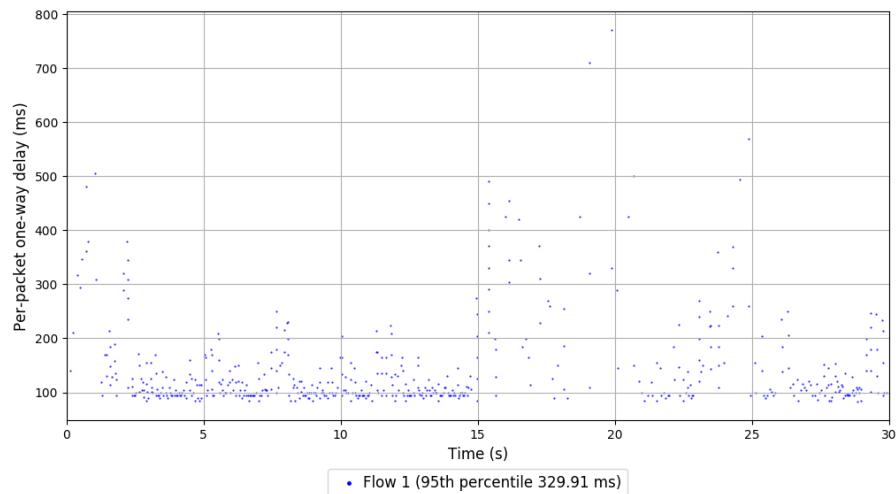
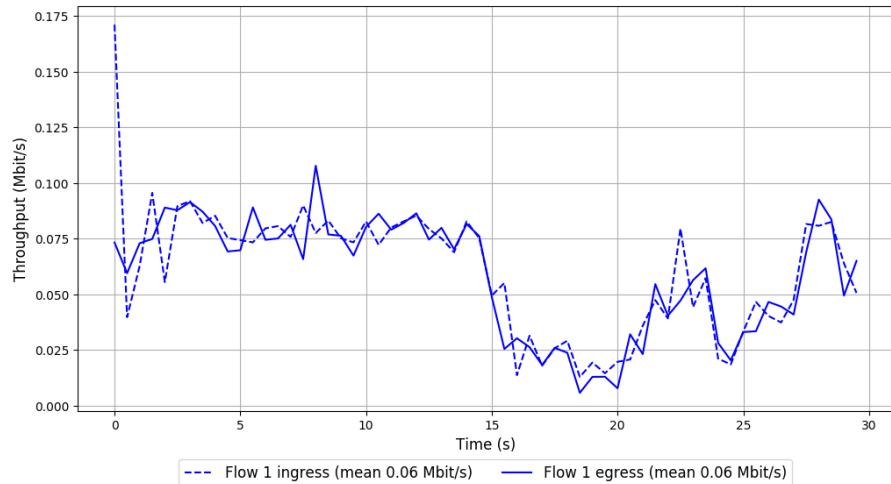
```
-- Flow 1:
```

```
Average throughput: 0.06 Mbit/s
```

```
95th percentile per-packet one-way delay: 329.913 ms
```

```
Loss rate: 2.95%
```

Run 1: Report of SCReAM — Data Link

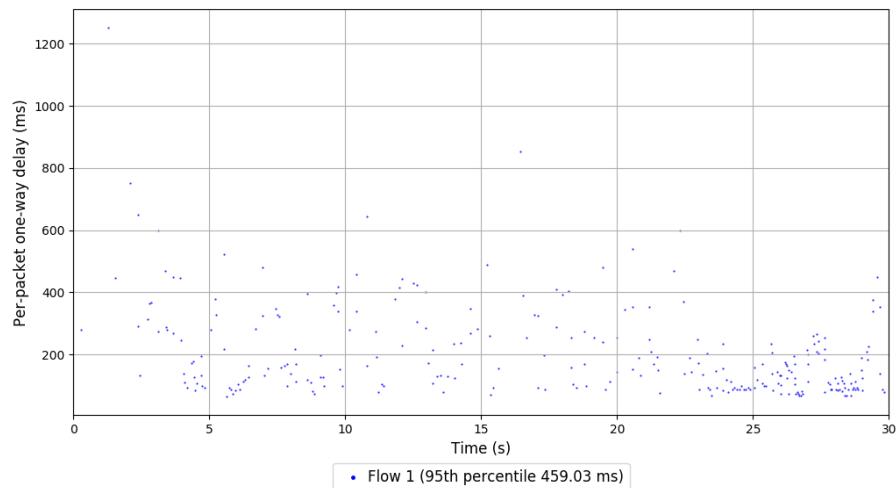
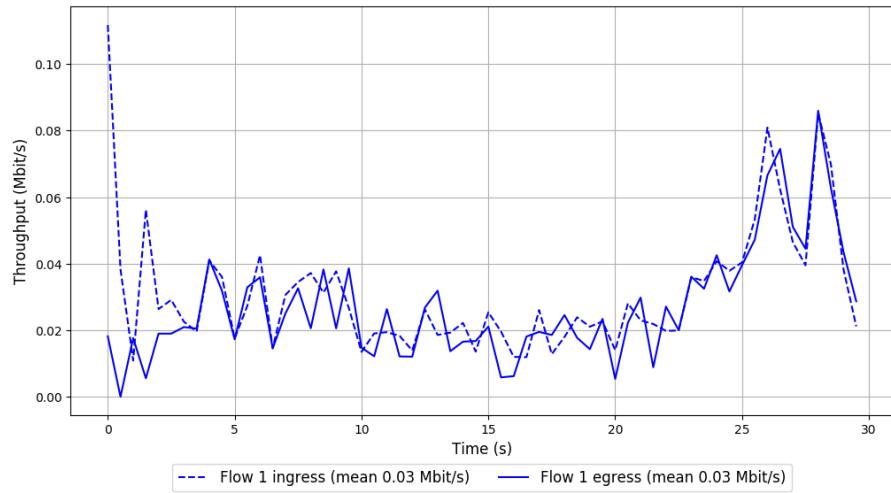


Run 2: Statistics of SCReAM

```
Start at: Tue, 25 Jul 2017 08:03:00 +0000
End at: Tue, 25 Jul 2017 08:03:30 +0000
Local clock offset: 0.452 ms
Remote clock offset: -19.707 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:04 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 459.032 ms
Loss rate: 13.79%
-- Flow 1:
Average throughput: 0.03 Mbit/s
95th percentile per-packet one-way delay: 459.032 ms
Loss rate: 13.79%
```

Run 2: Report of SCReAM — Data Link

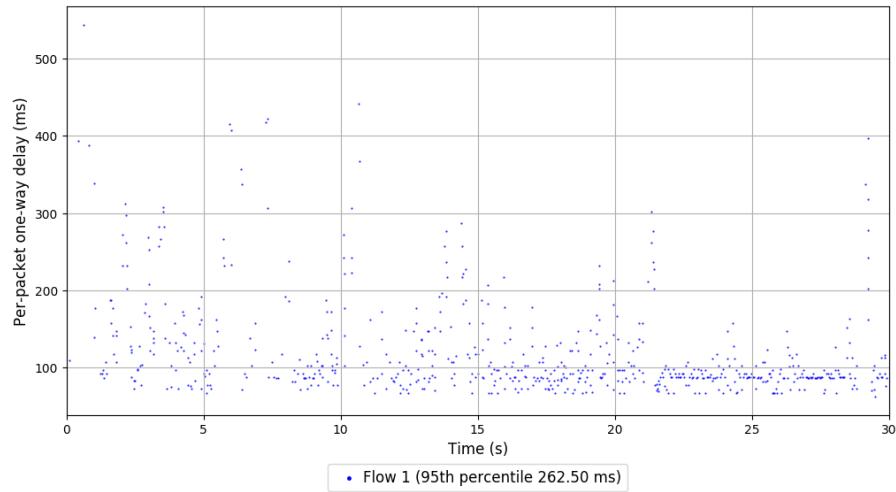
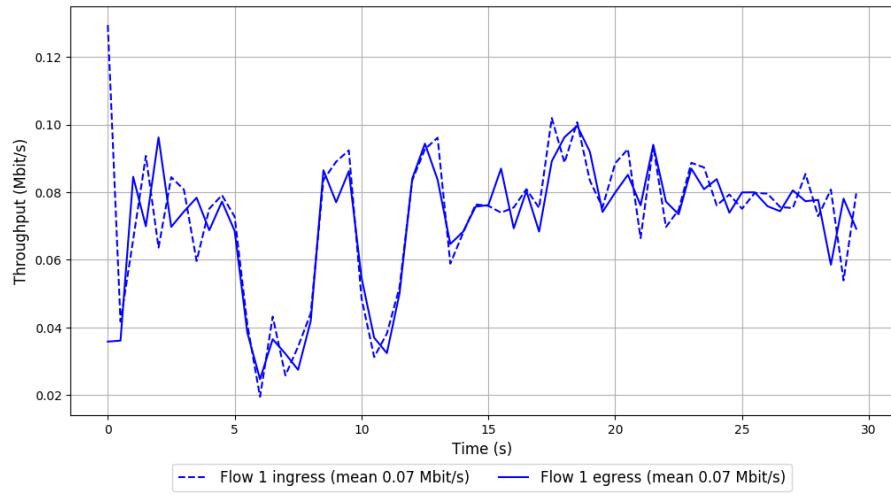


Run 3: Statistics of SCReAM

```
Start at: Tue, 25 Jul 2017 08:19:19 +0000
End at: Tue, 25 Jul 2017 08:19:49 +0000
Local clock offset: 0.595 ms
Remote clock offset: -16.755 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:05 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 262.496 ms
Loss rate: 2.71%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 262.496 ms
Loss rate: 2.71%
```

Run 3: Report of SCReAM — Data Link

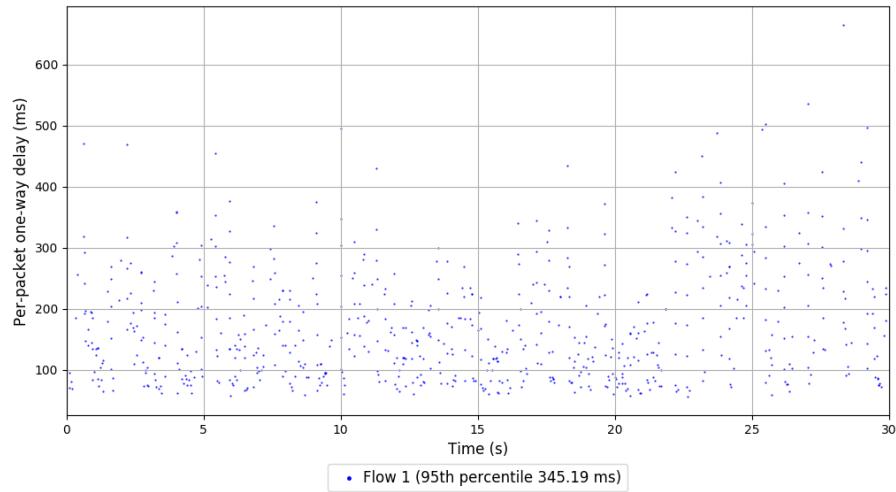
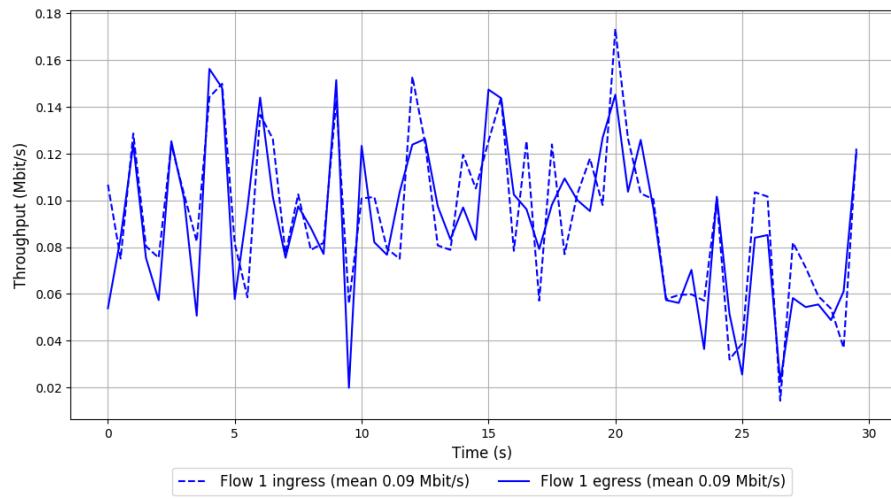


Run 1: Statistics of Sprout

```
Start at: Tue, 25 Jul 2017 07:32:32 +0000
End at: Tue, 25 Jul 2017 07:33:02 +0000
Local clock offset: 1.714 ms
Remote clock offset: -19.174 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:05 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 345.189 ms
Loss rate: 3.40%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 345.189 ms
Loss rate: 3.40%
```

Run 1: Report of Sprout — Data Link

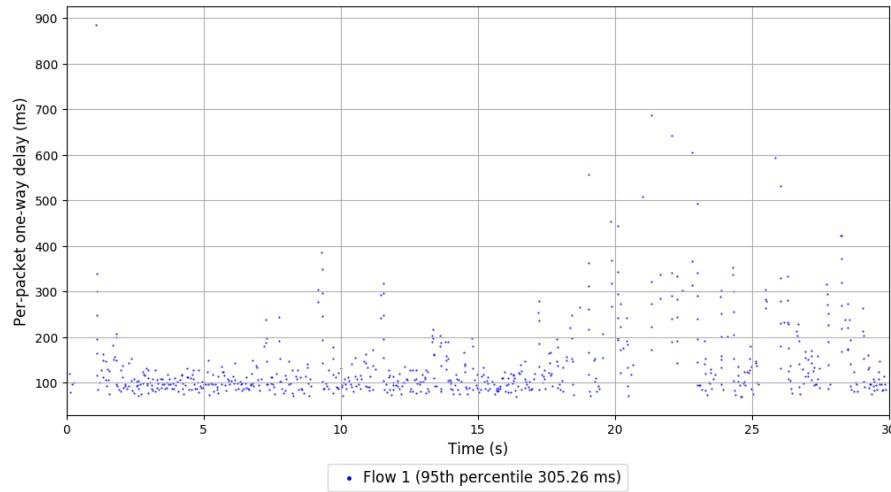
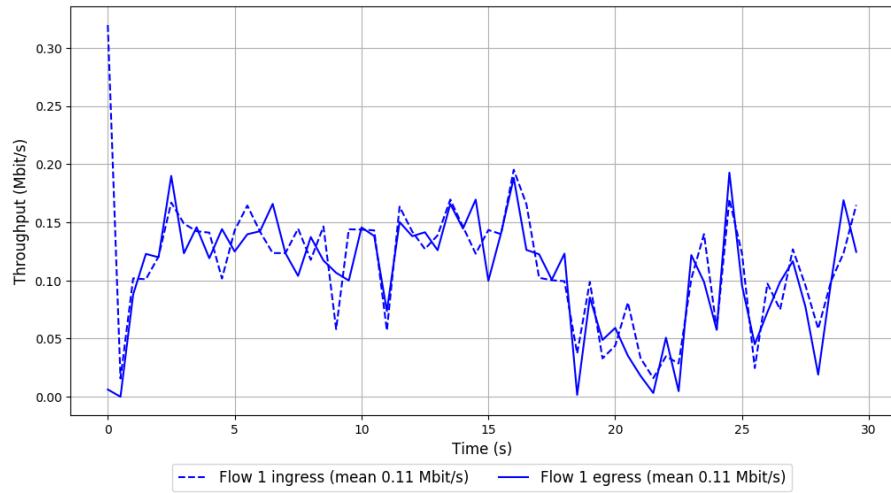


Run 2: Statistics of Sprout

```
Start at: Tue, 25 Jul 2017 07:48:53 +0000
End at: Tue, 25 Jul 2017 07:49:23 +0000
Local clock offset: 0.843 ms
Remote clock offset: -19.787 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:06 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 305.261 ms
Loss rate: 7.64%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 305.261 ms
Loss rate: 7.64%
```

Run 2: Report of Sprout — Data Link

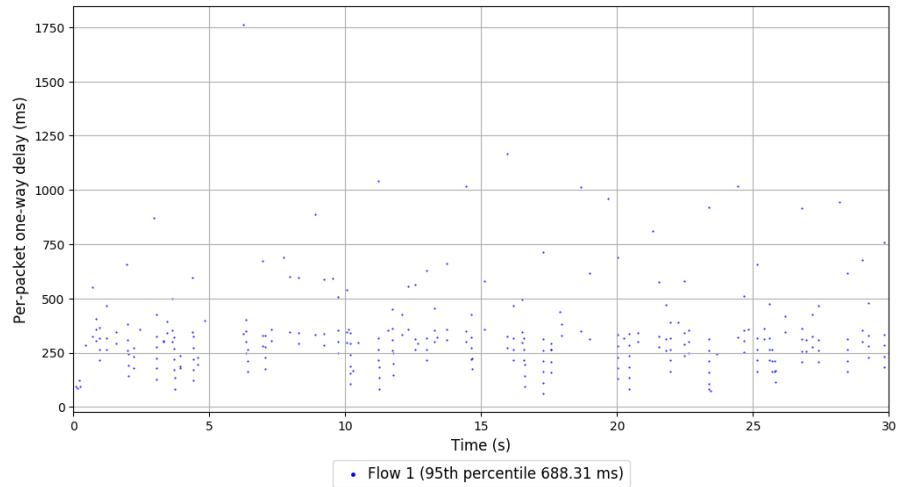
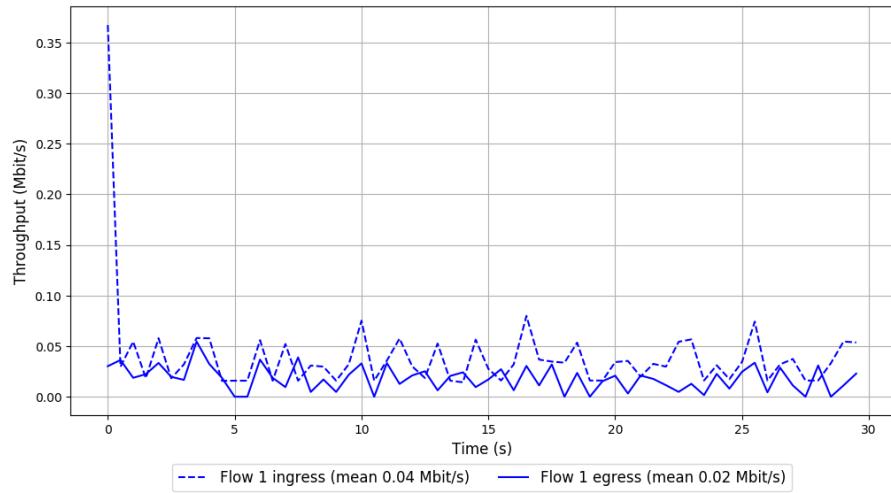


Run 3: Statistics of Sprout

```
Start at: Tue, 25 Jul 2017 08:05:10 +0000
End at: Tue, 25 Jul 2017 08:05:40 +0000
Local clock offset: 4.717 ms
Remote clock offset: -18.084 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:06 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 688.311 ms
Loss rate: 55.26%
-- Flow 1:
Average throughput: 0.02 Mbit/s
95th percentile per-packet one-way delay: 688.311 ms
Loss rate: 55.26%
```

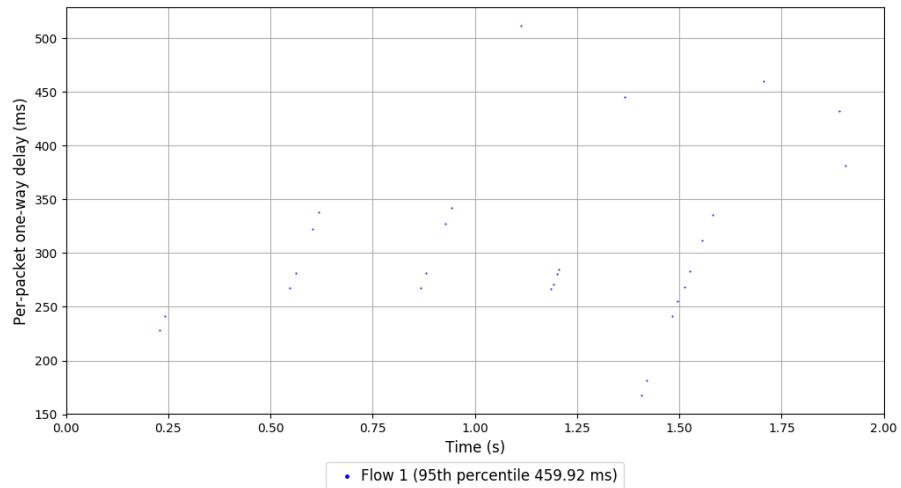
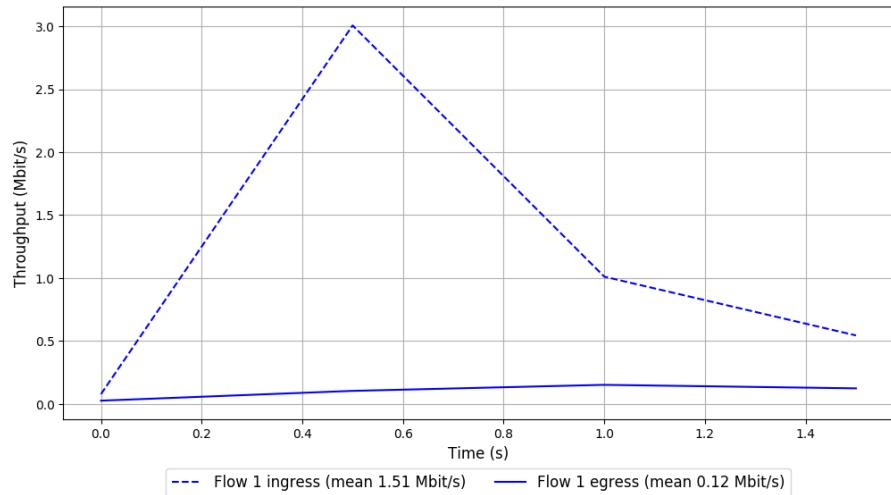
Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: Tue, 25 Jul 2017 07:47:48 +0000
End at: Tue, 25 Jul 2017 07:48:18 +0000
Local clock offset: 9.342 ms
Remote clock offset: -18.601 ms

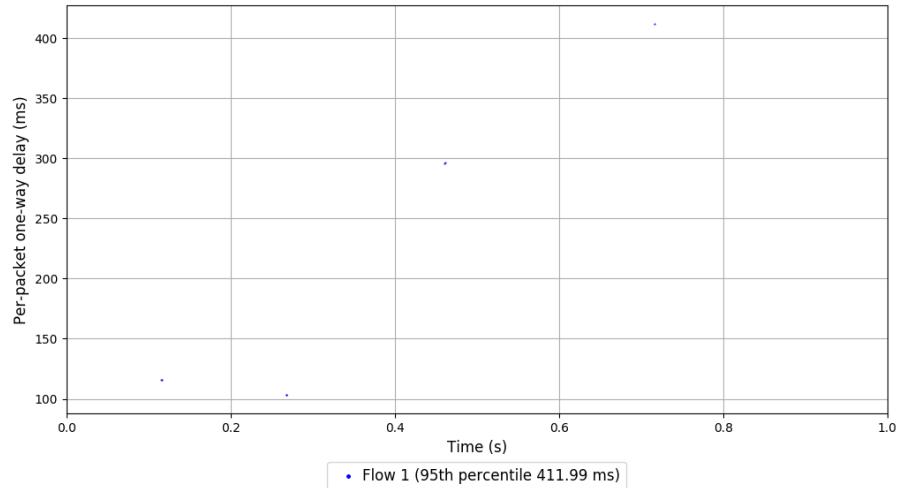
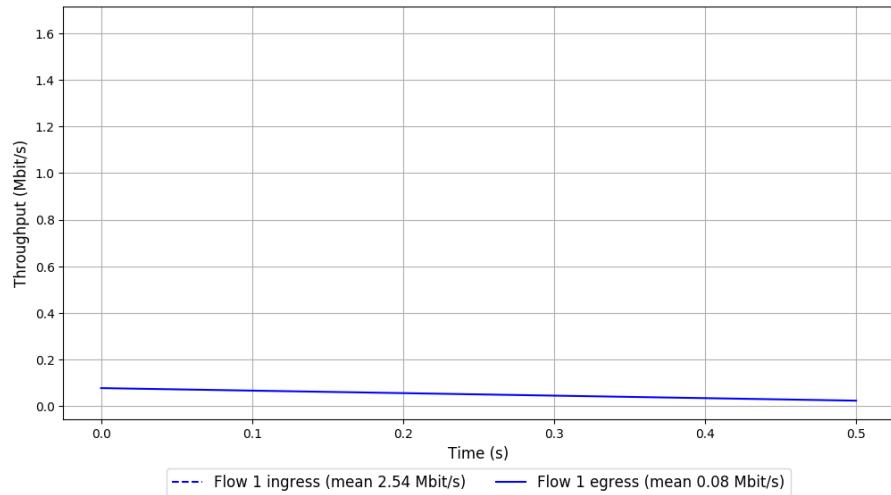
Run 1: Report of TaoVA-100x — Data Link



Run 2: Statistics of TaoVA-100x

Start at: Tue, 25 Jul 2017 08:04:05 +0000
End at: Tue, 25 Jul 2017 08:04:35 +0000
Local clock offset: 1.98 ms
Remote clock offset: -17.983 ms

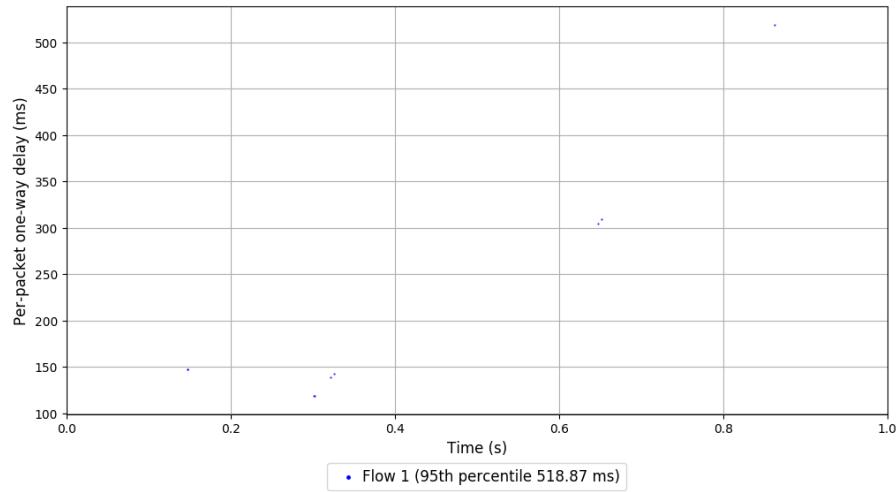
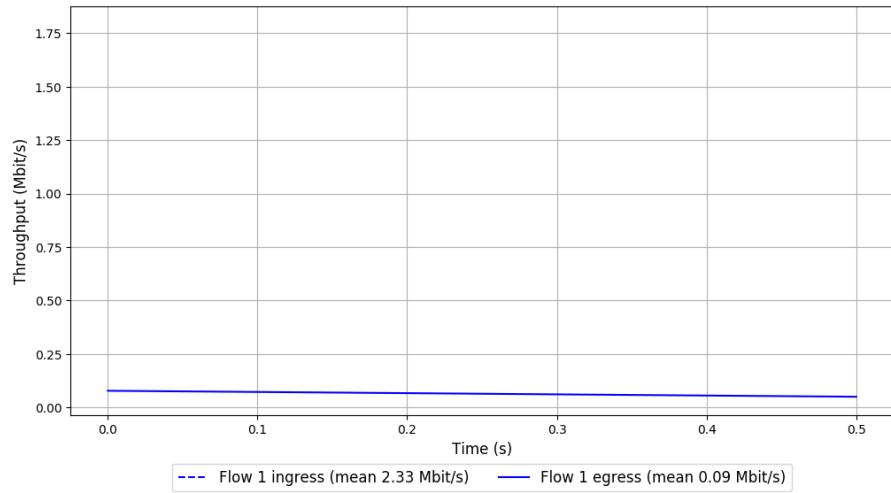
Run 2: Report of TaoVA-100x — Data Link



Run 3: Statistics of TaoVA-100x

Start at: Tue, 25 Jul 2017 08:20:24 +0000
End at: Tue, 25 Jul 2017 08:20:54 +0000
Local clock offset: 0.236 ms
Remote clock offset: -17.227 ms

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

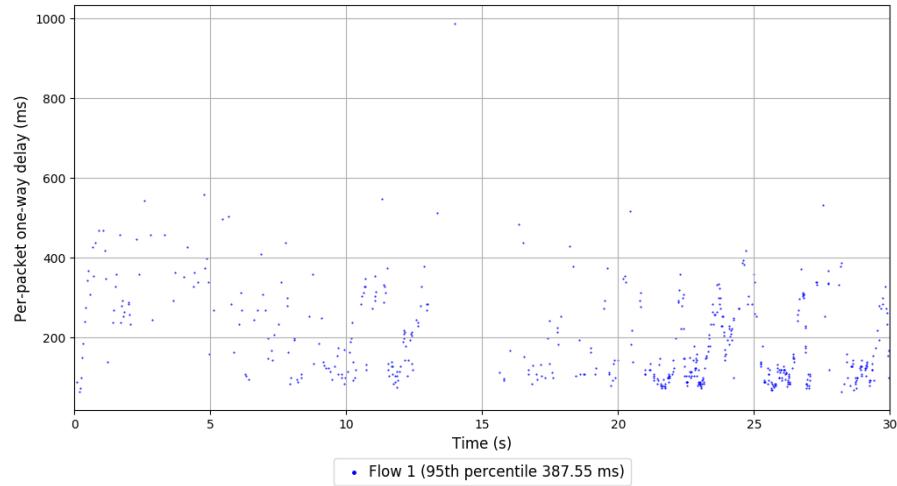
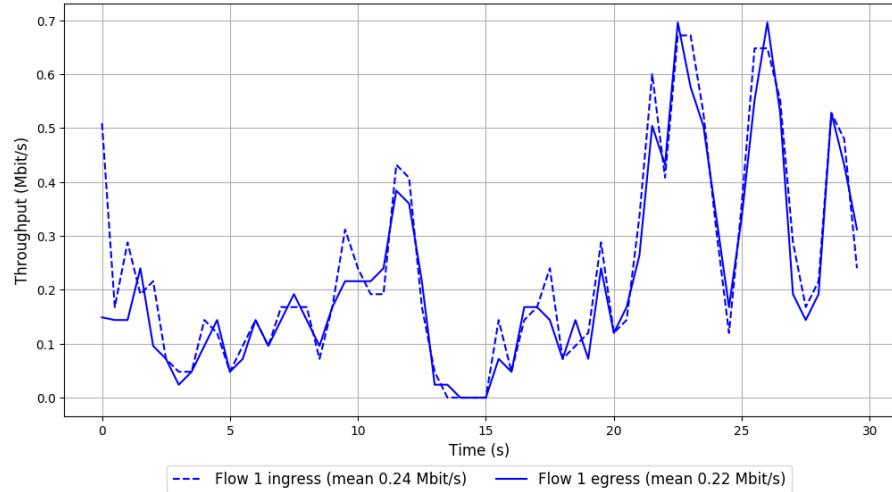


Run 1: Statistics of TCP Vegas

```
Start at: Tue, 25 Jul 2017 07:39:03 +0000
End at: Tue, 25 Jul 2017 07:39:33 +0000
Local clock offset: 1.817 ms
Remote clock offset: -18.435 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:08 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 387.549 ms
Loss rate: 9.24%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 387.549 ms
Loss rate: 9.24%
```

Run 1: Report of TCP Vegas — Data Link

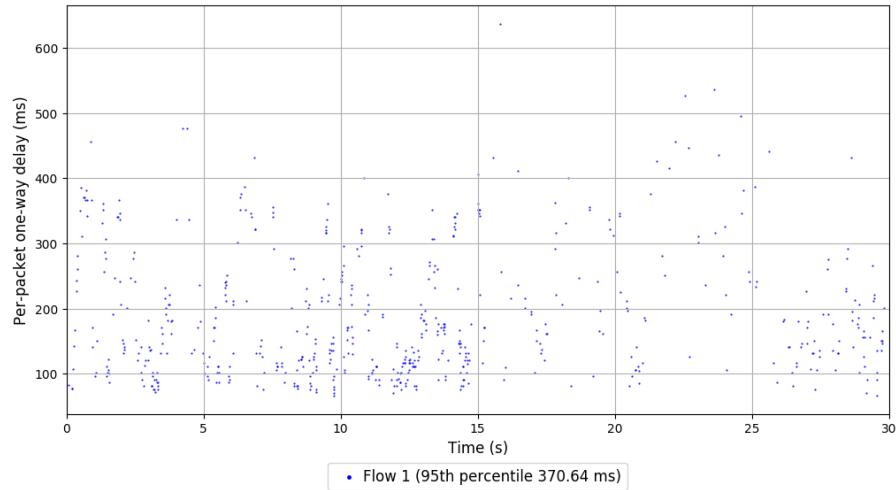
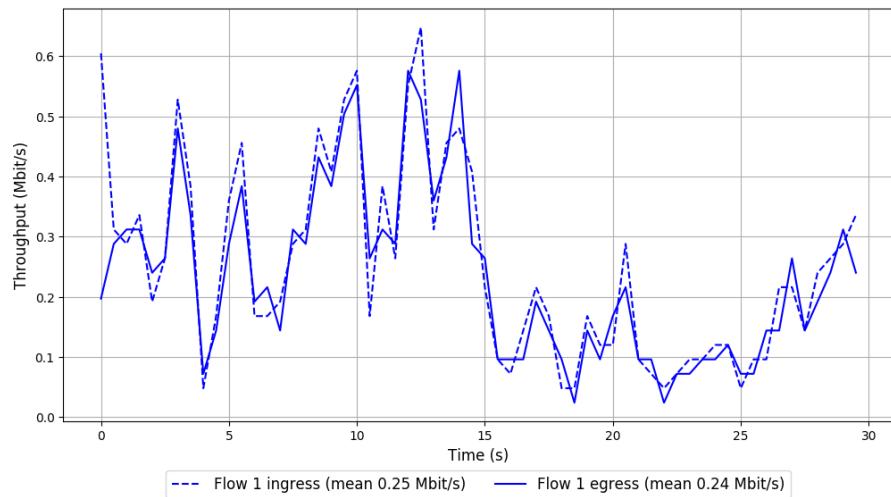


Run 2: Statistics of TCP Vegas

```
Start at: Tue, 25 Jul 2017 07:55:24 +0000
End at: Tue, 25 Jul 2017 07:55:54 +0000
Local clock offset: 0.268 ms
Remote clock offset: -18.736 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:09 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 370.641 ms
Loss rate: 6.68%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 370.641 ms
Loss rate: 6.68%
```

Run 2: Report of TCP Vegas — Data Link

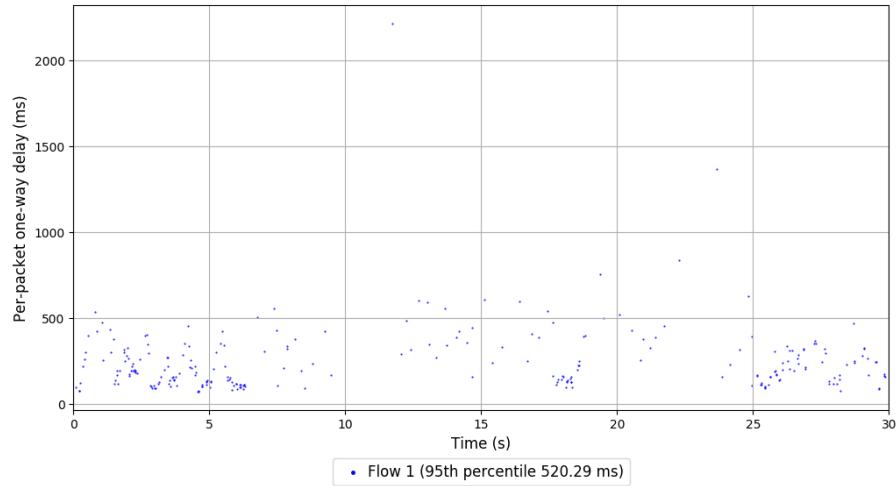
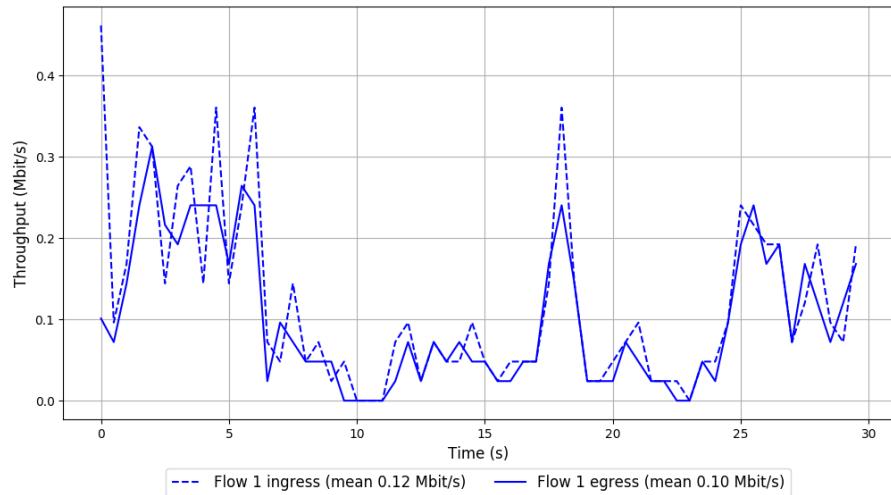


Run 3: Statistics of TCP Vegas

```
Start at: Tue, 25 Jul 2017 08:11:42 +0000
End at: Tue, 25 Jul 2017 08:12:12 +0000
Local clock offset: -0.218 ms
Remote clock offset: -17.733 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:09 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 520.287 ms
Loss rate: 16.32%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 520.287 ms
Loss rate: 16.32%
```

Run 3: Report of TCP Vegas — Data Link

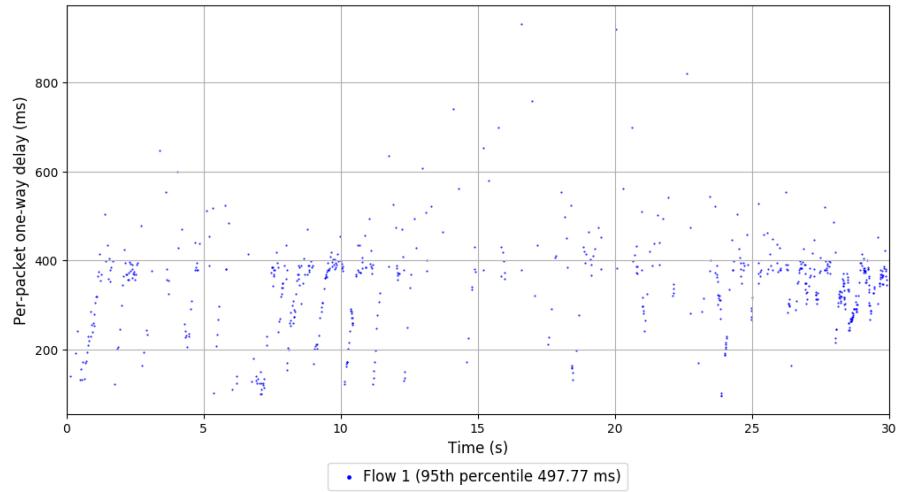
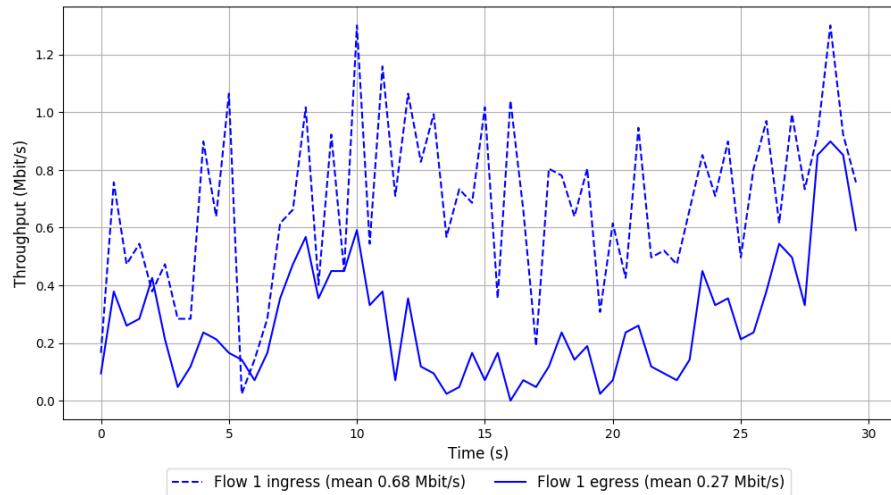


Run 1: Statistics of Verus

```
Start at: Tue, 25 Jul 2017 07:35:48 +0000
End at: Tue, 25 Jul 2017 07:36:18 +0000
Local clock offset: 0.101 ms
Remote clock offset: -40.413 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:10 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 497.773 ms
Loss rate: 60.21%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 497.773 ms
Loss rate: 60.21%
```

Run 1: Report of Verus — Data Link

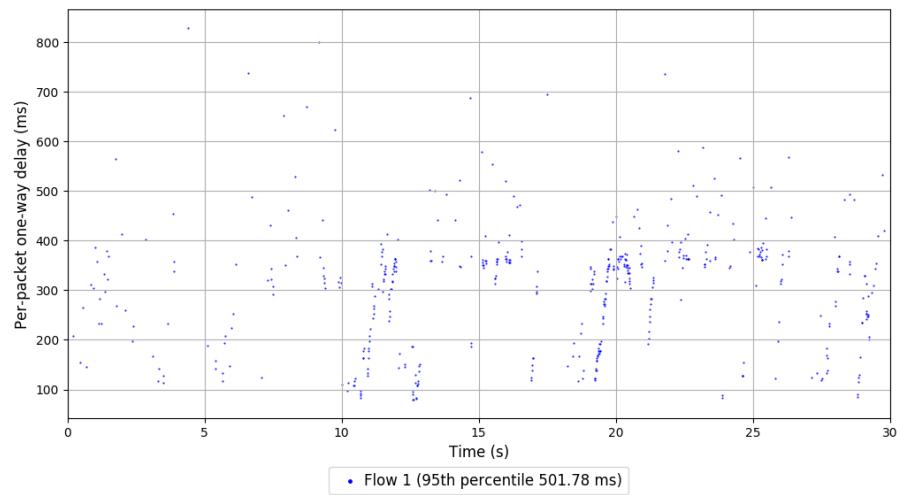
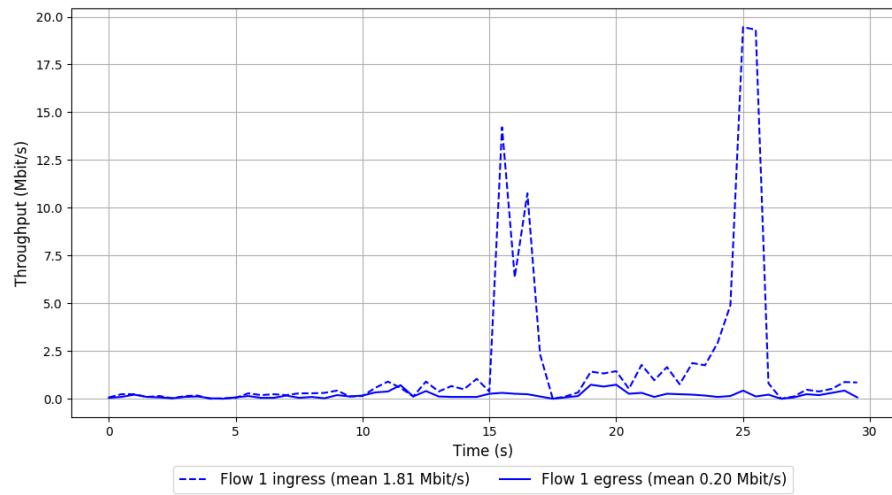


Run 2: Statistics of Verus

```
Start at: Tue, 25 Jul 2017 07:52:08 +0000
End at: Tue, 25 Jul 2017 07:52:38 +0000
Local clock offset: 0.528 ms
Remote clock offset: -19.027 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:10 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 501.777 ms
Loss rate: 89.28%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 501.777 ms
Loss rate: 89.28%
```

Run 2: Report of Verus — Data Link

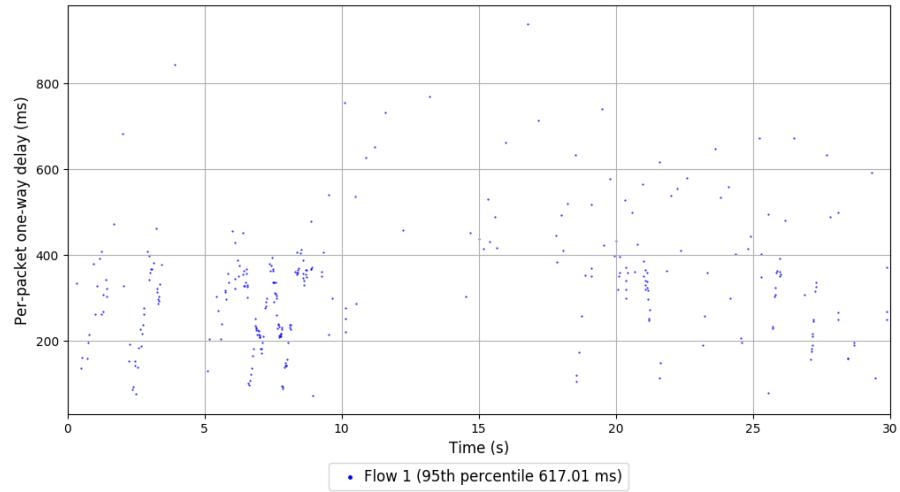
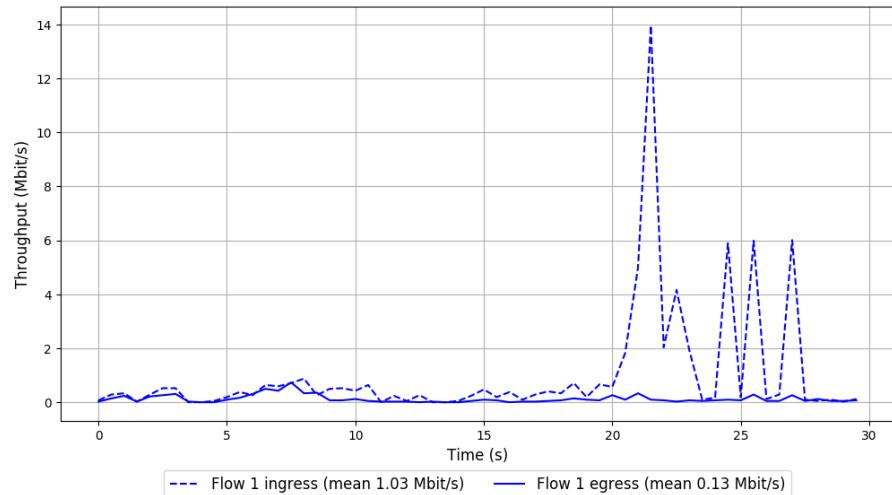


Run 3: Statistics of Verus

```
Start at: Tue, 25 Jul 2017 08:08:26 +0000
End at: Tue, 25 Jul 2017 08:08:56 +0000
Local clock offset: 1.452 ms
Remote clock offset: -17.107 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:11 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 617.007 ms
Loss rate: 87.86%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 617.007 ms
Loss rate: 87.86%
```

Run 3: Report of Verus — Data Link



Run 1: Statistics of WebRTC media

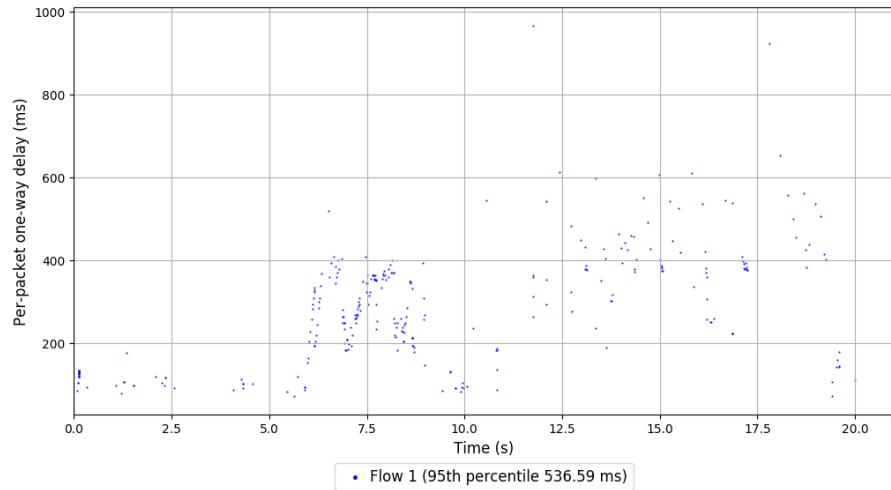
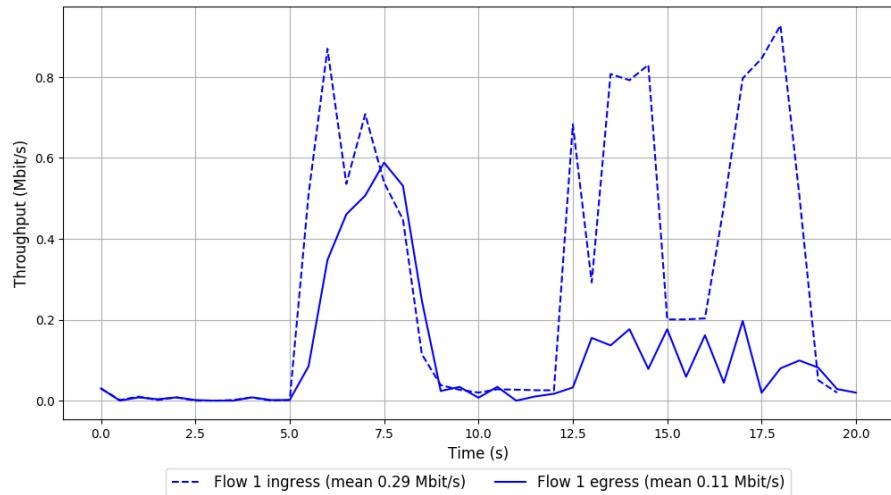
Start at: Tue, 25 Jul 2017 07:43:24 +0000

End at: Tue, 25 Jul 2017 07:43:54 +0000

Local clock offset: 3.138 ms

Remote clock offset: -20.641 ms

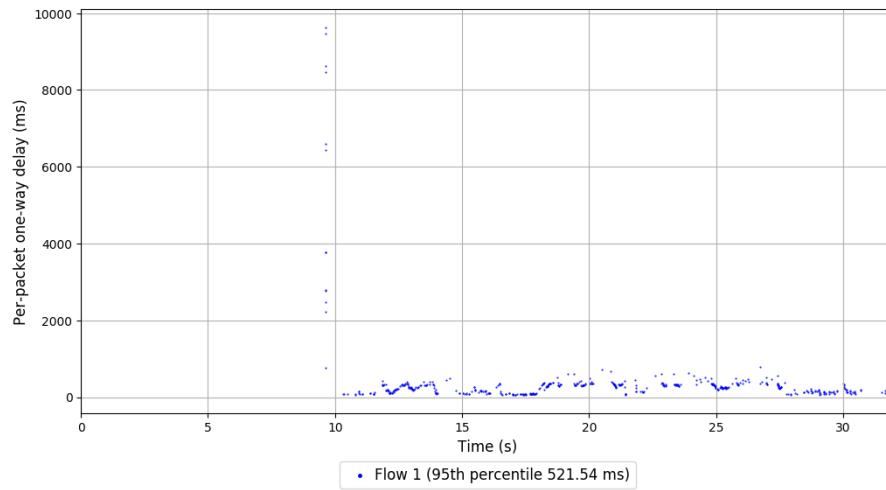
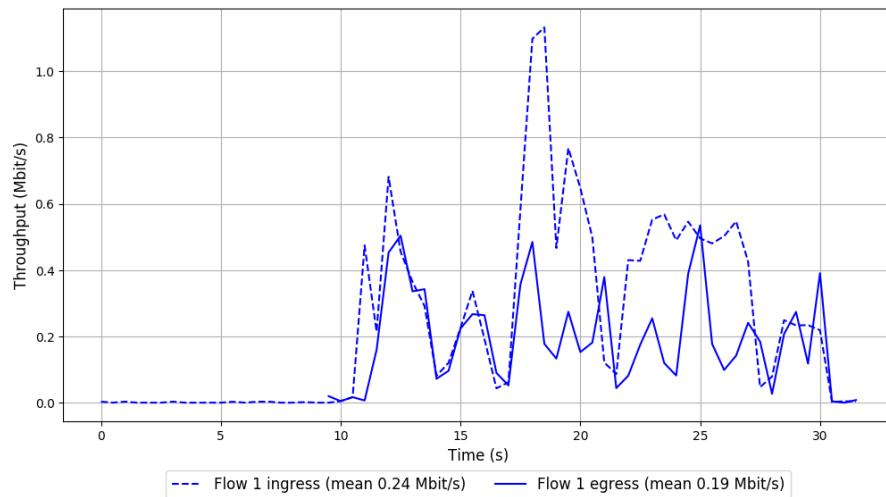
Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: Tue, 25 Jul 2017 07:59:44 +0000
End at: Tue, 25 Jul 2017 08:00:14 +0000
Local clock offset: 1.307 ms
Remote clock offset: -16.826 ms

Run 2: Report of WebRTC media — Data Link



```
Run 3: Statistics of WebRTC media

Start at: Tue, 25 Jul 2017 08:16:02 +0000
End at: Tue, 25 Jul 2017 08:16:32 +0000
Local clock offset: 0.057 ms
Remote clock offset: -18.21 ms

# Below is generated by plot.py at Tue, 25 Jul 2017 08:22:12 +0000
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 660.381 ms
Loss rate: 43.83%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 660.381 ms
Loss rate: 43.83%
```

Run 3: Report of WebRTC media — Data Link

