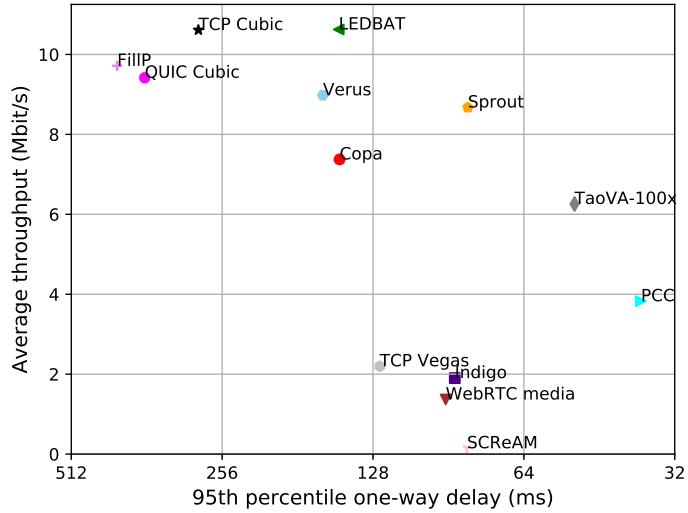


Pantheon Report

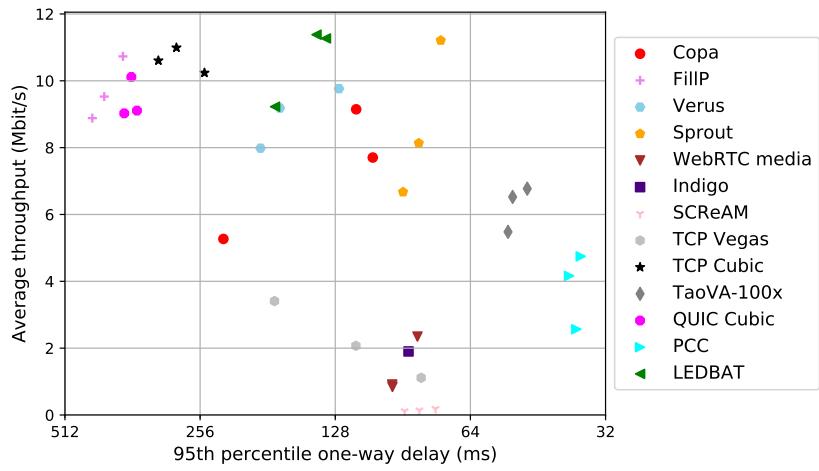
Generated at 2018-01-16 00:20:51 (UTC).
Data path: Stanford ppp0 (*remote*) → AWS California 1 Ethernet (*local*).
Repeated the test of 14 congestion control schemes 3 times.
Each test lasted for 30 seconds running 1 flow.
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).
NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.

Git summary:
branch: master @ af8abdfba95588b0c5f2aeca9e856a1656b0c598
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
M datagrump/sender.cc
third_party/fillp @ ec9585325218d5048c4d4152fa42240af54c6e67
third_party/genericCC @ 80b516c448f795fd6e9675f7177b69c622f07da8
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aeee82ea808e6928eac4f1083a6681
M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
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 @ f1a14bfe749737437f61b1eaeeb30b267cde681
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/vivace @ 423cbca3e8ea1d599e7b5cf725835e8a2b6bfac6
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42

test from Stanford ppp0 to AWS California 1 Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)



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

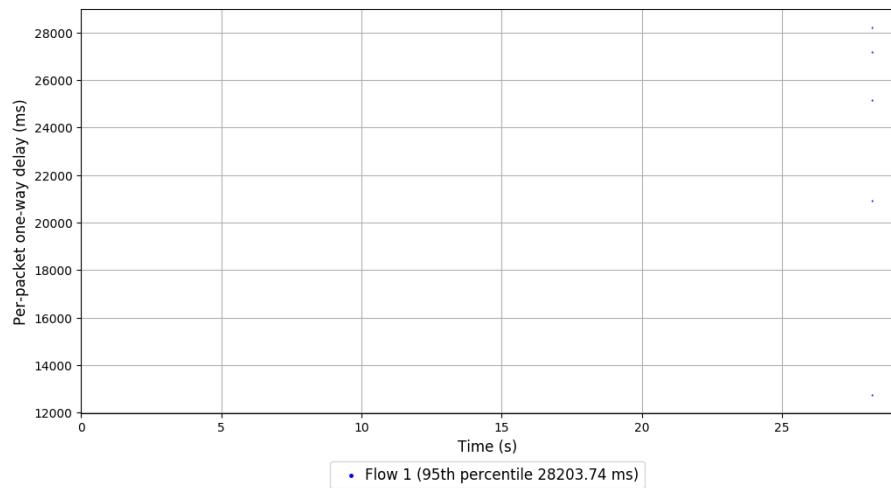
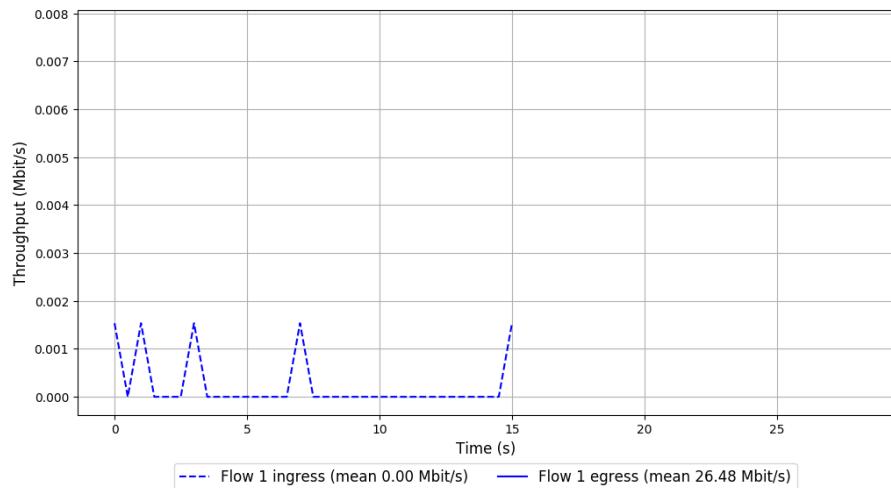


scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	0	N/A	N/A	N/A
TCP Cubic	3	10.61	285.49	1.06
LEDBAT	3	10.63	149.85	0.36
PCC	3	3.83	37.37	0.17
QUIC Cubic	3	9.42	365.31	2.05
SCReAM	3	0.14	83.11	0.21
WebRTC media	3	1.37	91.67	0.67
Sprout	3	8.67	82.78	0.84
TaoVA-100x	3	6.26	50.71	0.34
TCP Vegas	3	2.20	124.12	0.15
Verus	3	8.98	161.12	2.48
Copa	3	7.37	149.25	0.41
FillP	3	9.71	414.63	55.35
Indigo	1	1.90	87.91	0.44

Run 1: Statistics of TCP BBR

Start at: 2018-01-15 22:43:55
End at: 2018-01-15 22:44:25
Local clock offset: 7.684 ms
Remote clock offset: -2.869 ms

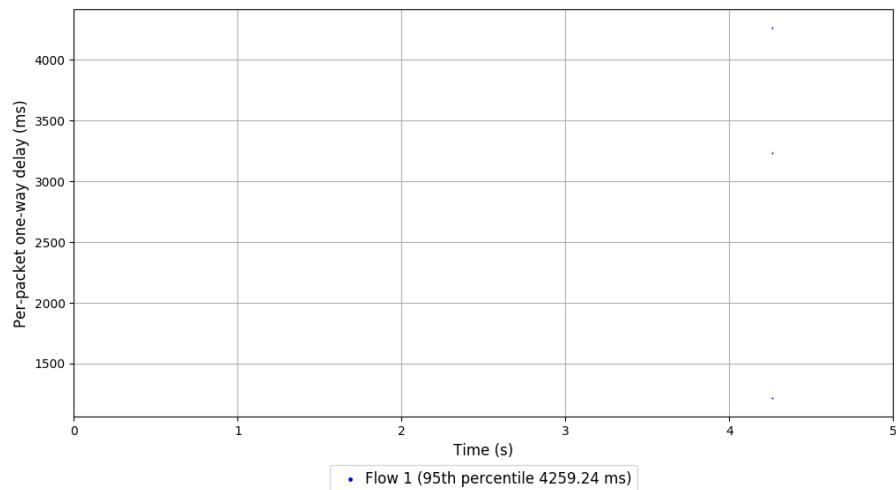
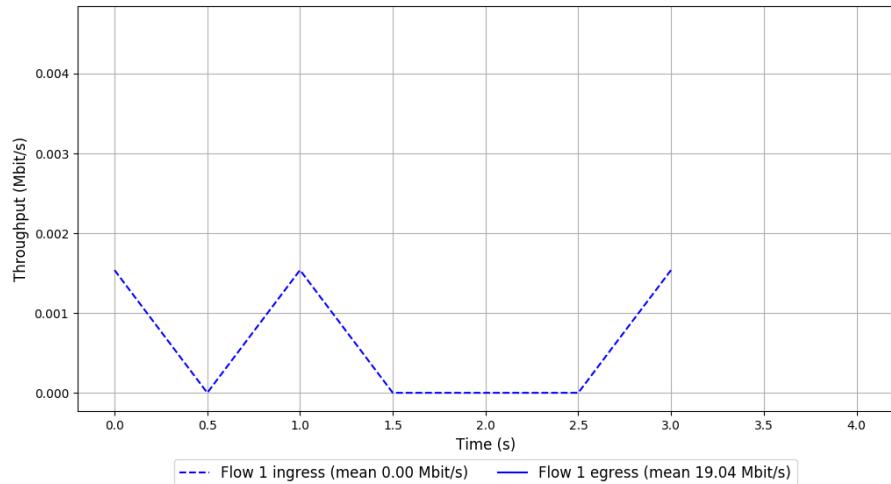
Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-01-15 23:01:31
End at: 2018-01-15 23:02:01
Local clock offset: -0.473 ms
Remote clock offset: -2.492 ms

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

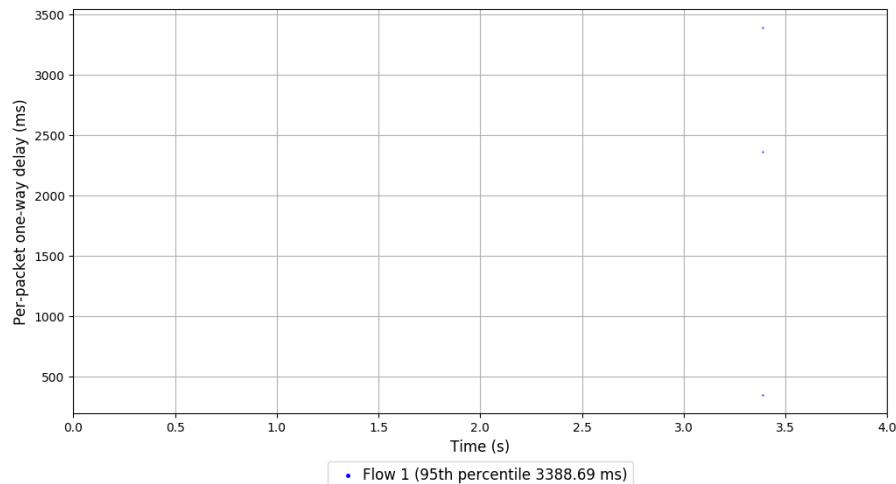
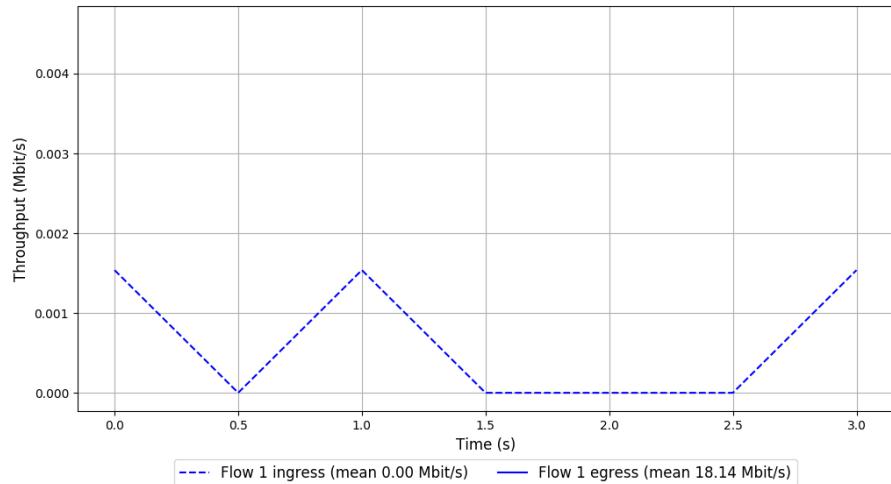
Start at: 2018-01-15 23:19:08

End at: 2018-01-15 23:19:39

Local clock offset: -1.331 ms

Remote clock offset: -2.524 ms

Run 3: Report of TCP BBR — Data Link

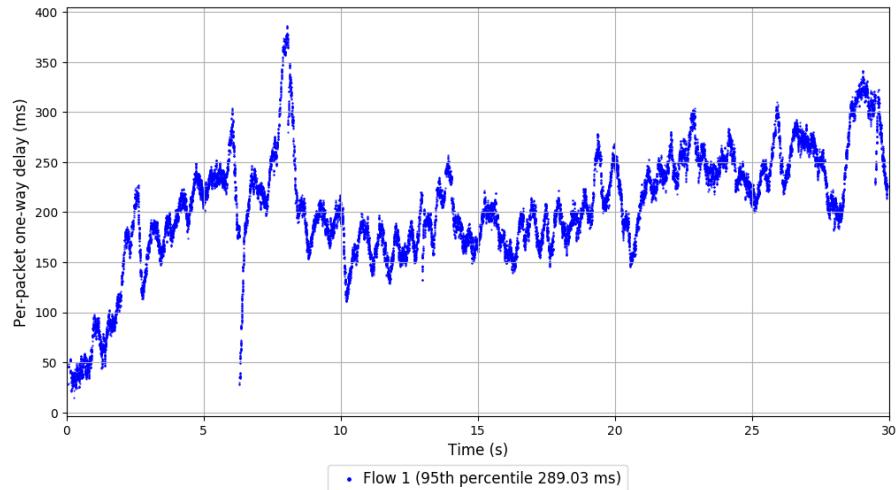
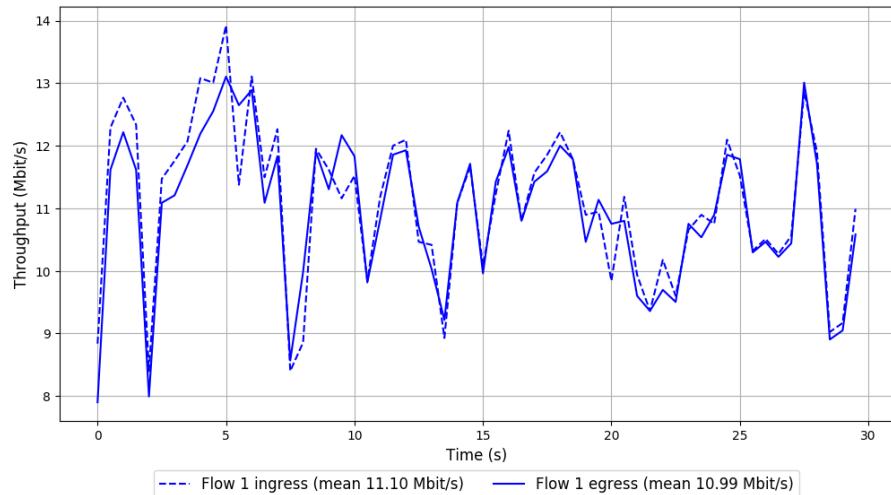


```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2018-01-15 22:39:12
End at: 2018-01-15 22:39:42
Local clock offset: 5.559 ms
Remote clock offset: -2.928 ms

# Below is generated by plot.py at 2018-01-16 00:20:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.99 Mbit/s
95th percentile per-packet one-way delay: 289.034 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 10.99 Mbit/s
95th percentile per-packet one-way delay: 289.034 ms
Loss rate: 1.09%
```

Run 1: Report of TCP Cubic — Data Link

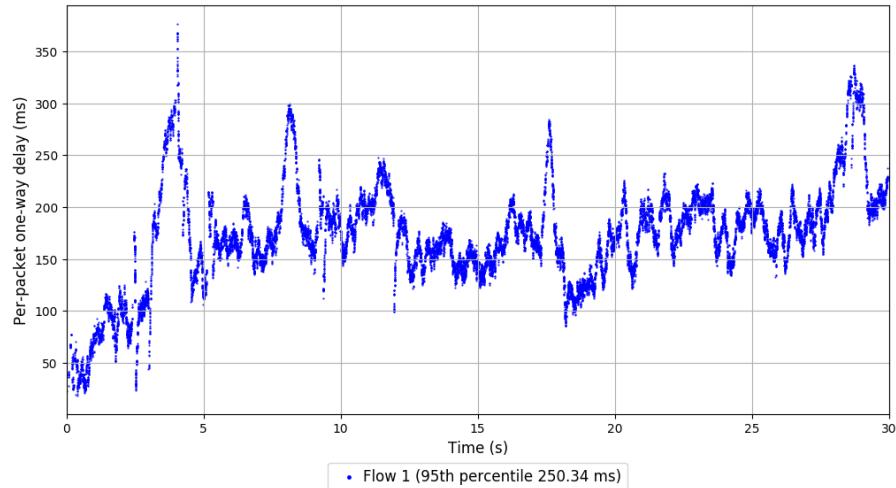
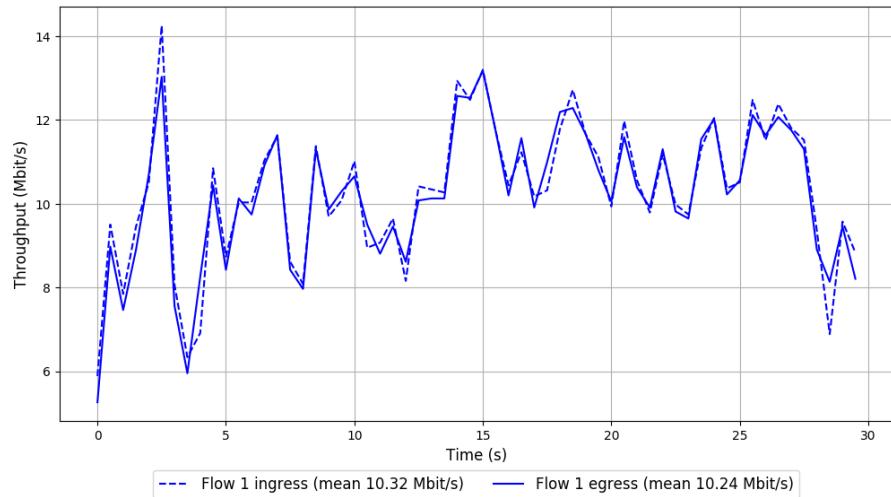


Run 2: Statistics of TCP Cubic

```
Start at: 2018-01-15 22:56:49
End at: 2018-01-15 22:57:19
Local clock offset: 1.124 ms
Remote clock offset: -2.669 ms

# Below is generated by plot.py at 2018-01-16 00:20:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.24 Mbit/s
95th percentile per-packet one-way delay: 250.343 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 10.24 Mbit/s
95th percentile per-packet one-way delay: 250.343 ms
Loss rate: 0.88%
```

Run 2: Report of TCP Cubic — Data Link

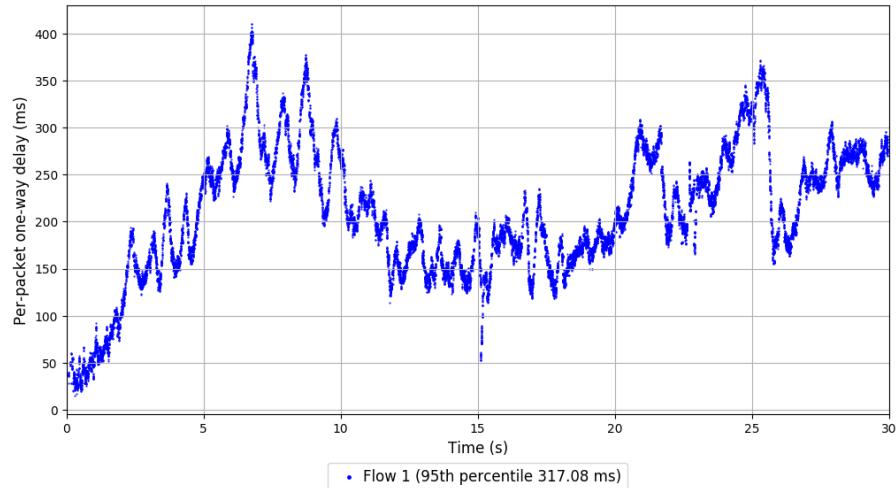
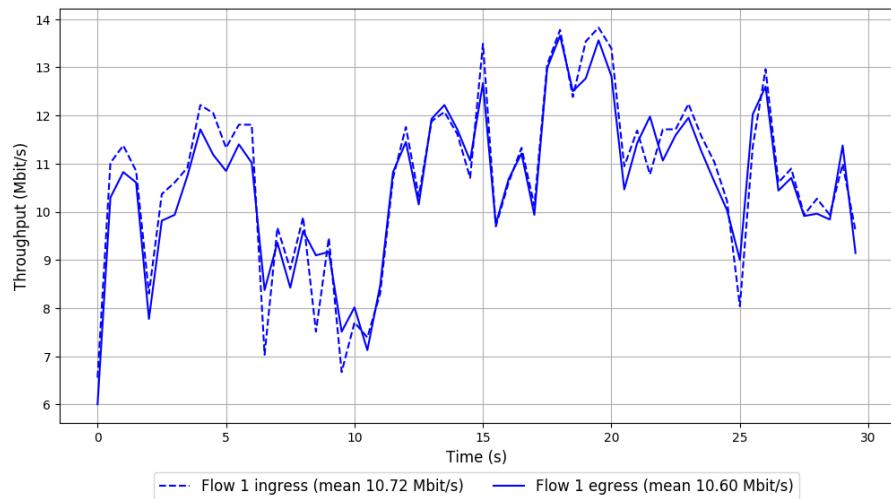


Run 3: Statistics of TCP Cubic

```
Start at: 2018-01-15 23:14:26
End at: 2018-01-15 23:14:56
Local clock offset: -1.819 ms
Remote clock offset: -2.401 ms

# Below is generated by plot.py at 2018-01-16 00:20:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.60 Mbit/s
95th percentile per-packet one-way delay: 317.079 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 10.60 Mbit/s
95th percentile per-packet one-way delay: 317.079 ms
Loss rate: 1.22%
```

Run 3: Report of TCP Cubic — Data Link

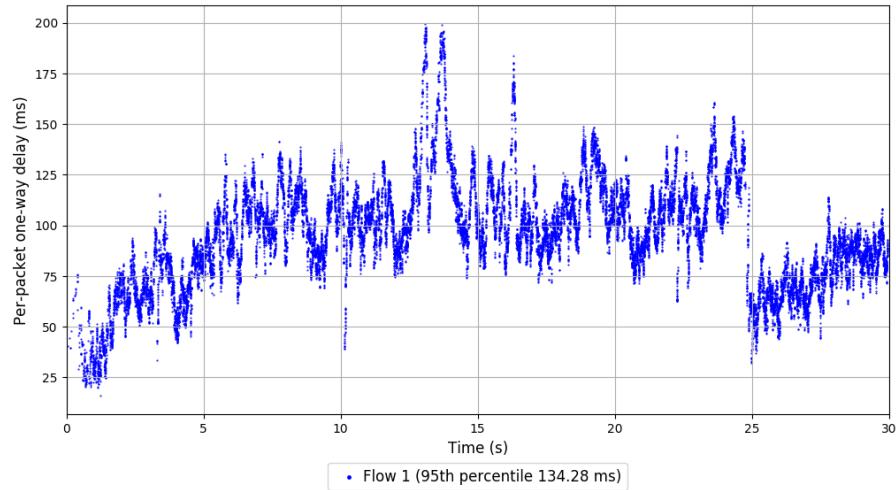
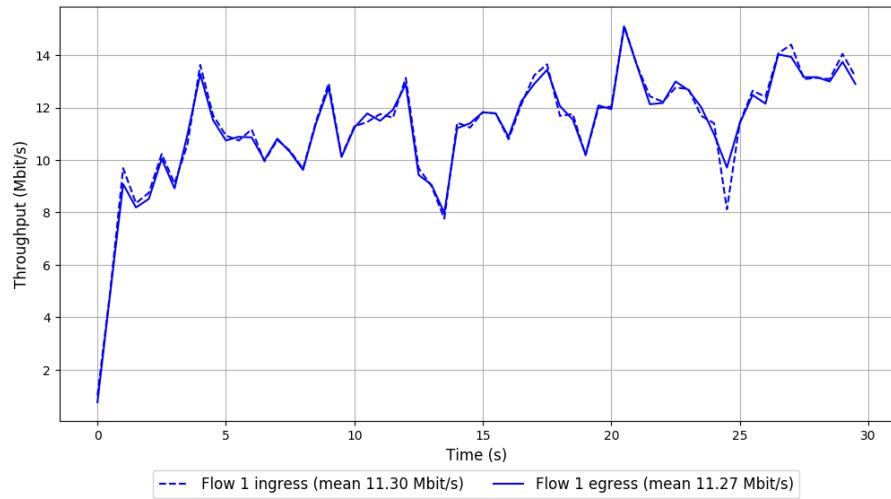


```
Run 1: Statistics of LEDBAT

Start at: 2018-01-15 22:48:36
End at: 2018-01-15 22:49:06
Local clock offset: 3.207 ms
Remote clock offset: -2.701 ms

# Below is generated by plot.py at 2018-01-16 00:20:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.27 Mbit/s
95th percentile per-packet one-way delay: 134.275 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 11.27 Mbit/s
95th percentile per-packet one-way delay: 134.275 ms
Loss rate: 0.42%
```

Run 1: Report of LEDBAT — Data Link

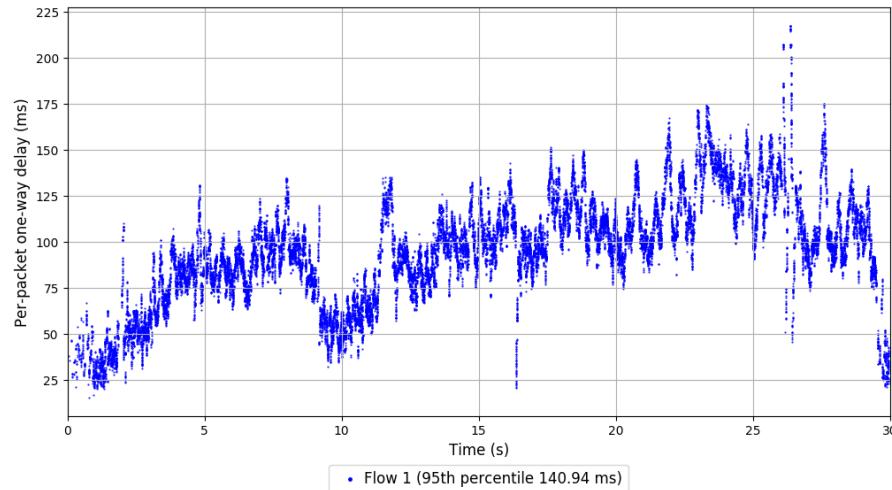
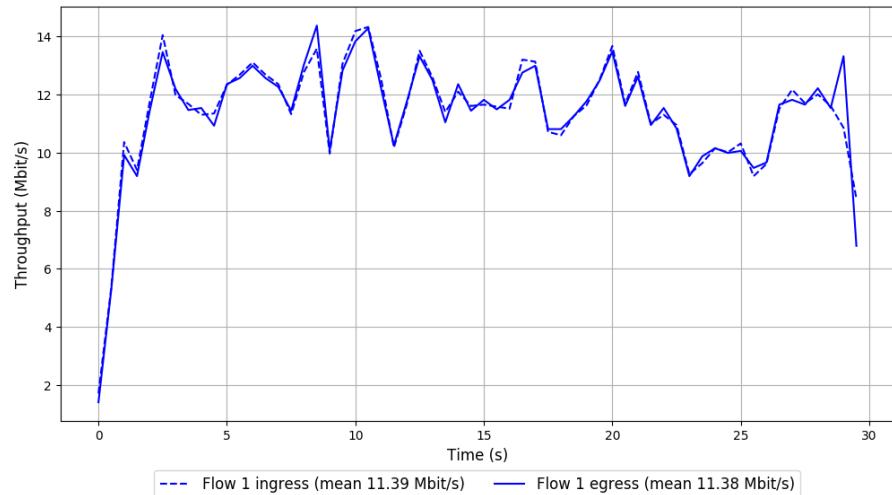


Run 2: Statistics of LEDBAT

```
Start at: 2018-01-15 23:06:12
End at: 2018-01-15 23:06:42
Local clock offset: -0.503 ms
Remote clock offset: -2.485 ms

# Below is generated by plot.py at 2018-01-16 00:20:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.38 Mbit/s
95th percentile per-packet one-way delay: 140.943 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 11.38 Mbit/s
95th percentile per-packet one-way delay: 140.943 ms
Loss rate: 0.26%
```

Run 2: Report of LEDBAT — Data Link

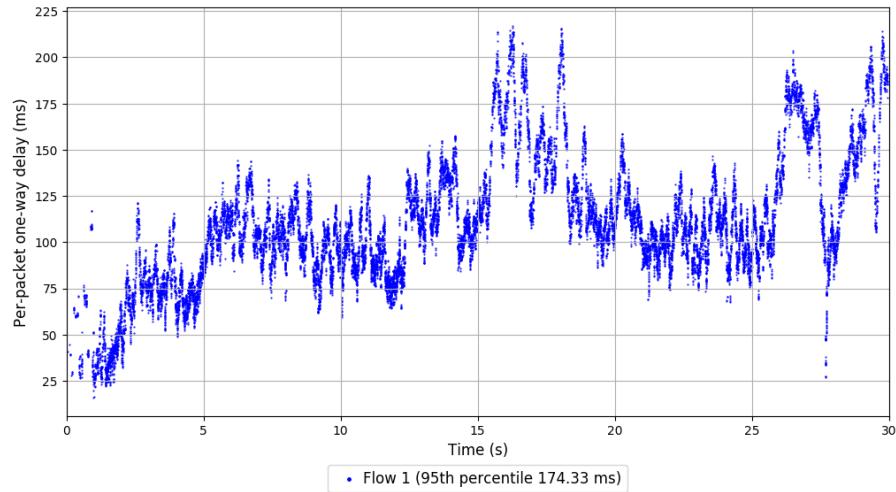
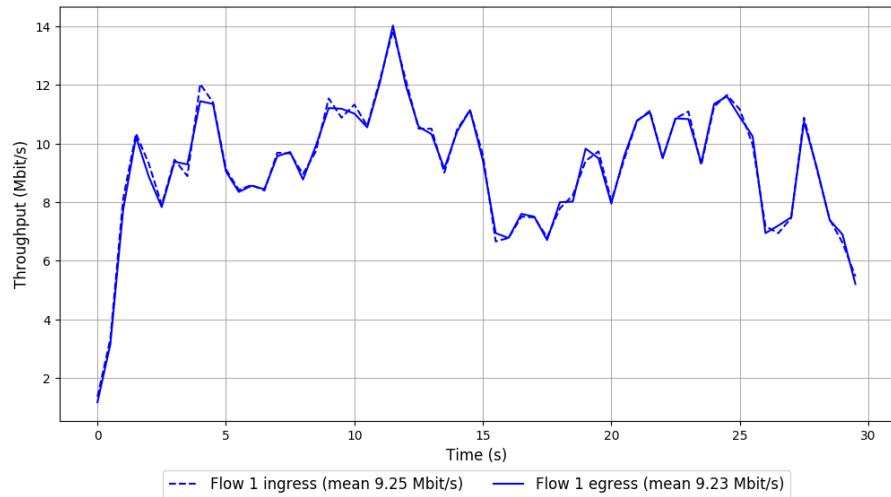


Run 3: Statistics of LEDBAT

```
Start at: 2018-01-15 23:23:50
End at: 2018-01-15 23:24:20
Local clock offset: -1.22 ms
Remote clock offset: -2.486 ms

# Below is generated by plot.py at 2018-01-16 00:20:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.23 Mbit/s
95th percentile per-packet one-way delay: 174.327 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 9.23 Mbit/s
95th percentile per-packet one-way delay: 174.327 ms
Loss rate: 0.41%
```

Run 3: Report of LEDBAT — Data Link

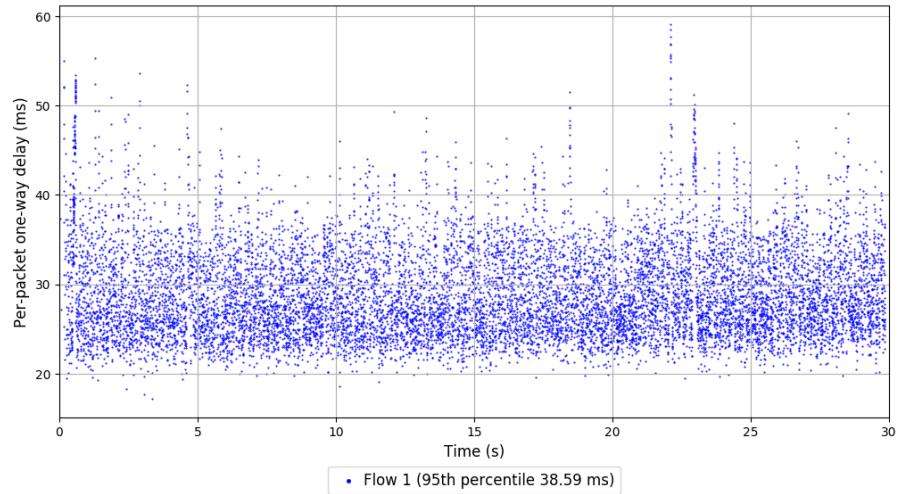
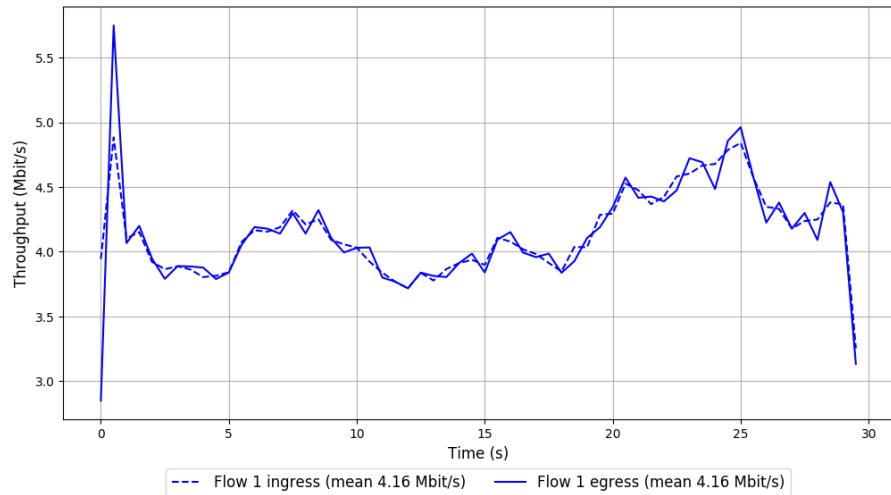


```
Run 1: Statistics of PCC
```

```
Start at: 2018-01-15 22:45:05
End at: 2018-01-15 22:45:35
Local clock offset: 7.109 ms
Remote clock offset: -2.815 ms

# Below is generated by plot.py at 2018-01-16 00:20:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.16 Mbit/s
95th percentile per-packet one-way delay: 38.595 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 4.16 Mbit/s
95th percentile per-packet one-way delay: 38.595 ms
Loss rate: 0.17%
```

Run 1: Report of PCC — Data Link

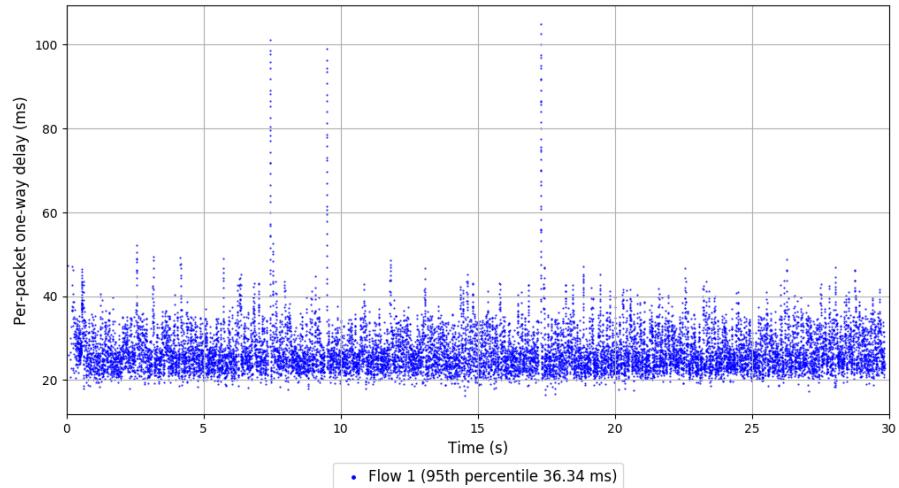
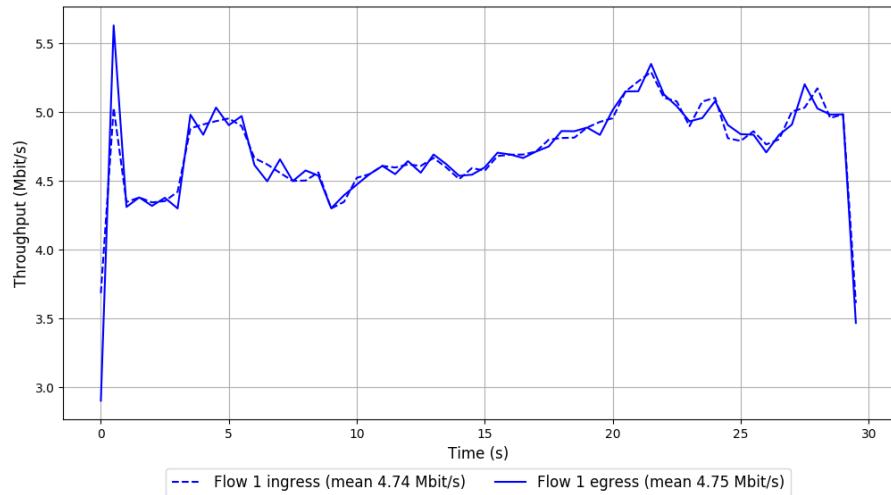


Run 2: Statistics of PCC

```
Start at: 2018-01-15 23:02:41
End at: 2018-01-15 23:03:11
Local clock offset: -0.427 ms
Remote clock offset: -2.478 ms

# Below is generated by plot.py at 2018-01-16 00:20:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.75 Mbit/s
95th percentile per-packet one-way delay: 36.343 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 4.75 Mbit/s
95th percentile per-packet one-way delay: 36.343 ms
Loss rate: 0.16%
```

Run 2: Report of PCC — Data Link

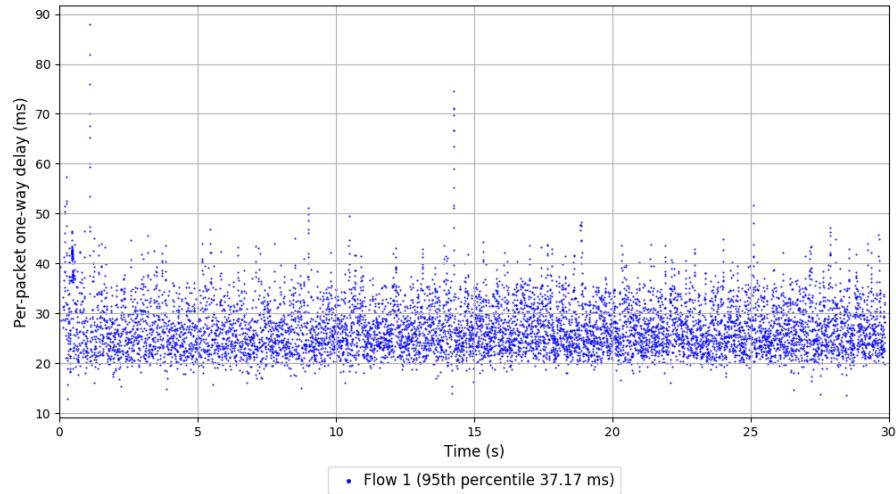
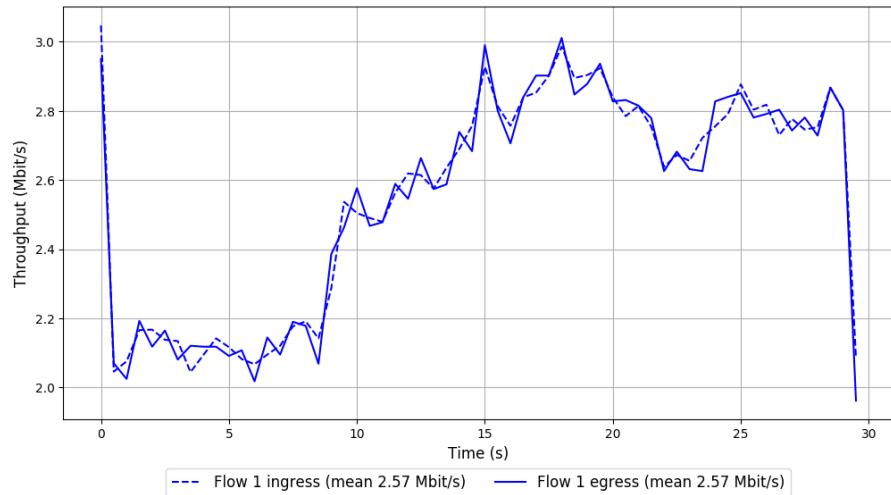


Run 3: Statistics of PCC

```
Start at: 2018-01-15 23:20:18
End at: 2018-01-15 23:20:48
Local clock offset: -1.02 ms
Remote clock offset: -2.539 ms

# Below is generated by plot.py at 2018-01-16 00:20:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.57 Mbit/s
95th percentile per-packet one-way delay: 37.171 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 2.57 Mbit/s
95th percentile per-packet one-way delay: 37.171 ms
Loss rate: 0.17%
```

Run 3: Report of PCC — Data Link

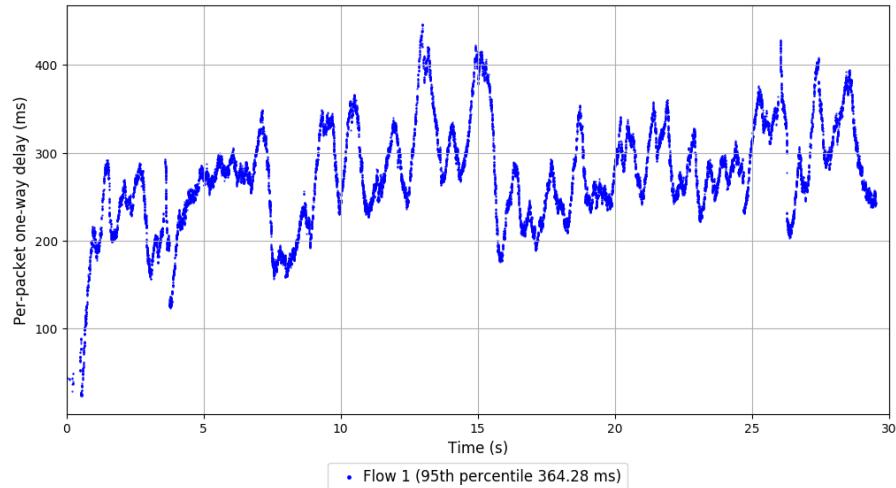
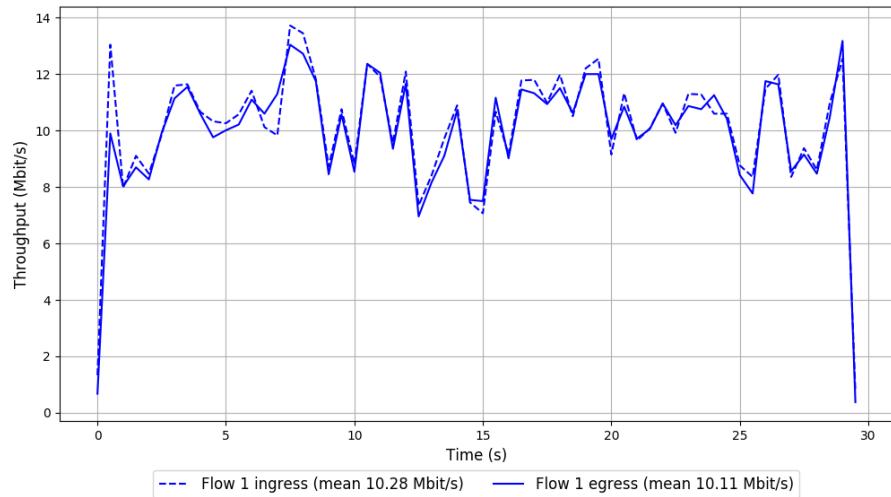


```
Run 1: Statistics of QUIC Cubic

Start at: 2018-01-15 22:35:40
End at: 2018-01-15 22:36:10
Local clock offset: 8.775 ms
Remote clock offset: -2.951 ms

# Below is generated by plot.py at 2018-01-16 00:20:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.11 Mbit/s
95th percentile per-packet one-way delay: 364.279 ms
Loss rate: 1.83%
-- Flow 1:
Average throughput: 10.11 Mbit/s
95th percentile per-packet one-way delay: 364.279 ms
Loss rate: 1.83%
```

Run 1: Report of QUIC Cubic — Data Link

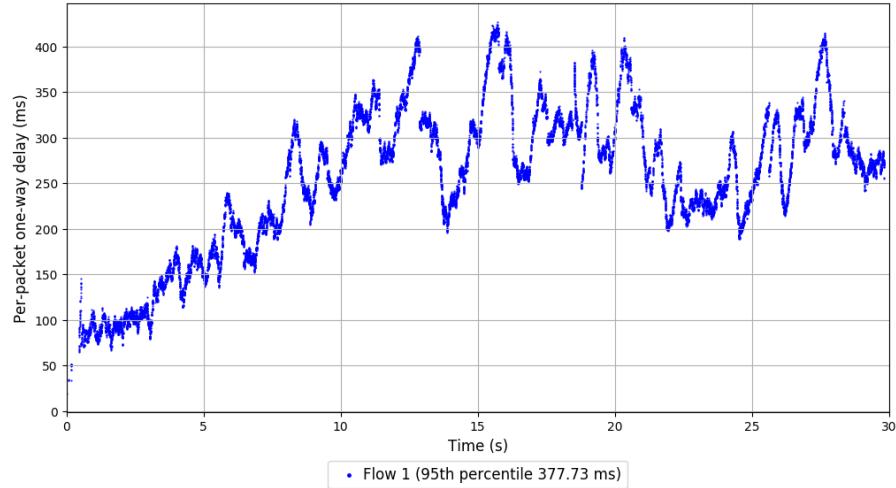
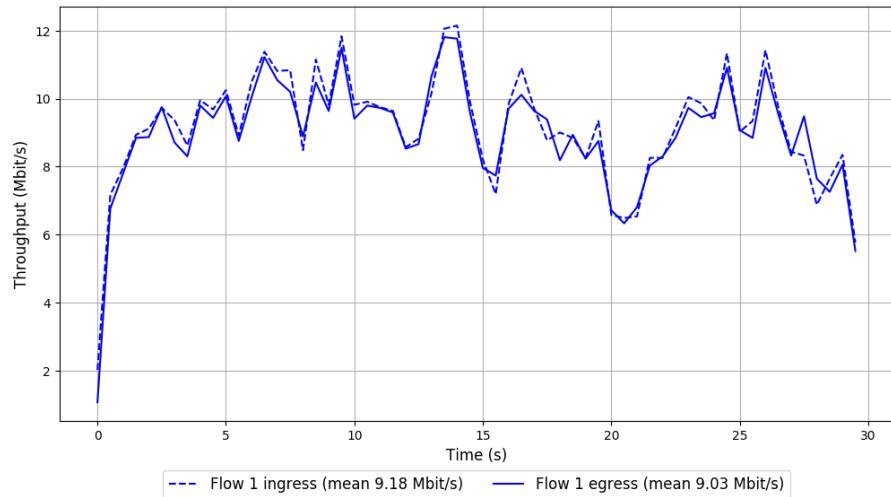


Run 2: Statistics of QUIC Cubic

```
Start at: 2018-01-15 22:53:17
End at: 2018-01-15 22:53:47
Local clock offset: 3.559 ms
Remote clock offset: -2.732 ms

# Below is generated by plot.py at 2018-01-16 00:20:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.03 Mbit/s
95th percentile per-packet one-way delay: 377.730 ms
Loss rate: 1.82%
-- Flow 1:
Average throughput: 9.03 Mbit/s
95th percentile per-packet one-way delay: 377.730 ms
Loss rate: 1.82%
```

Run 2: Report of QUIC Cubic — Data Link

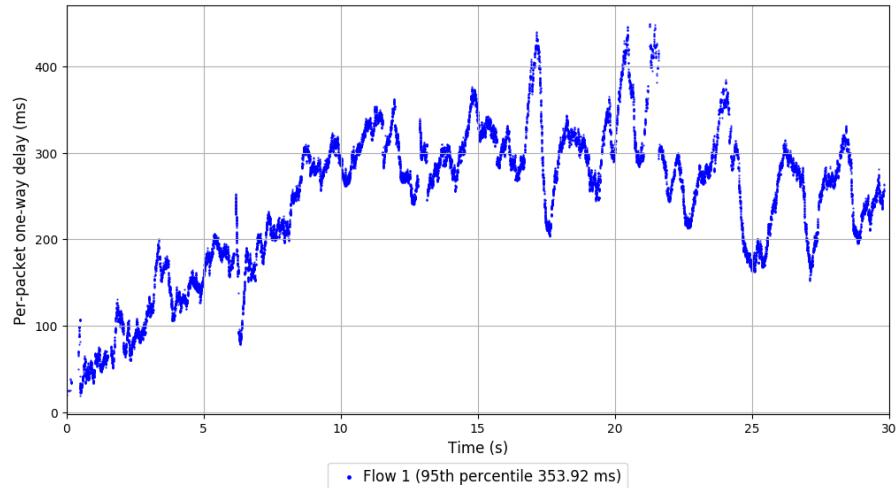
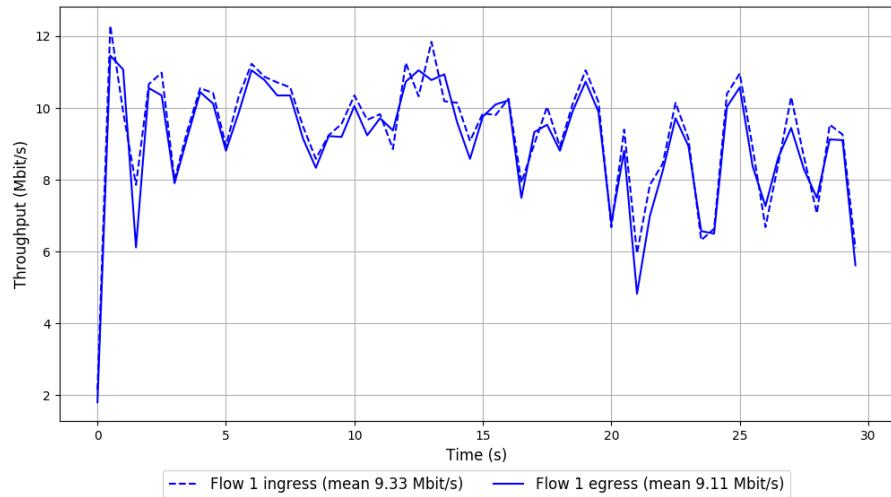


Run 3: Statistics of QUIC Cubic

```
Start at: 2018-01-15 23:10:55
End at: 2018-01-15 23:11:25
Local clock offset: -0.924 ms
Remote clock offset: -2.526 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.11 Mbit/s
95th percentile per-packet one-way delay: 353.920 ms
Loss rate: 2.49%
-- Flow 1:
Average throughput: 9.11 Mbit/s
95th percentile per-packet one-way delay: 353.920 ms
Loss rate: 2.49%
```

Run 3: Report of QUIC Cubic — Data Link

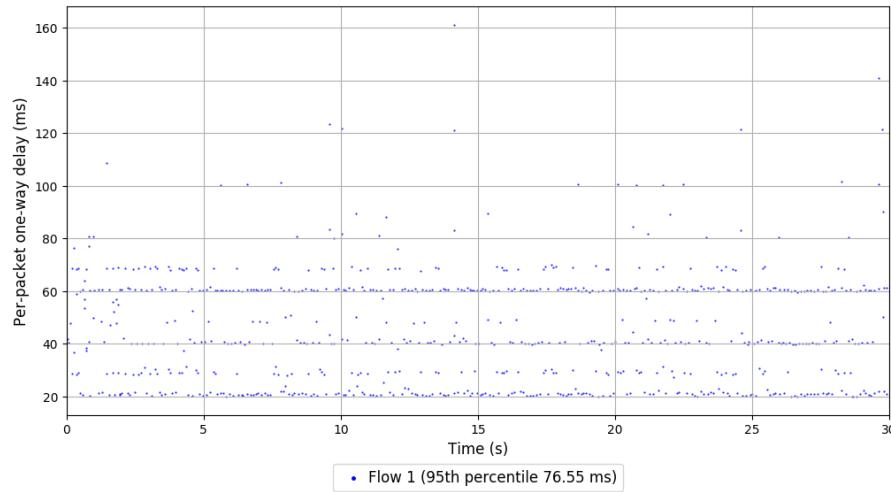
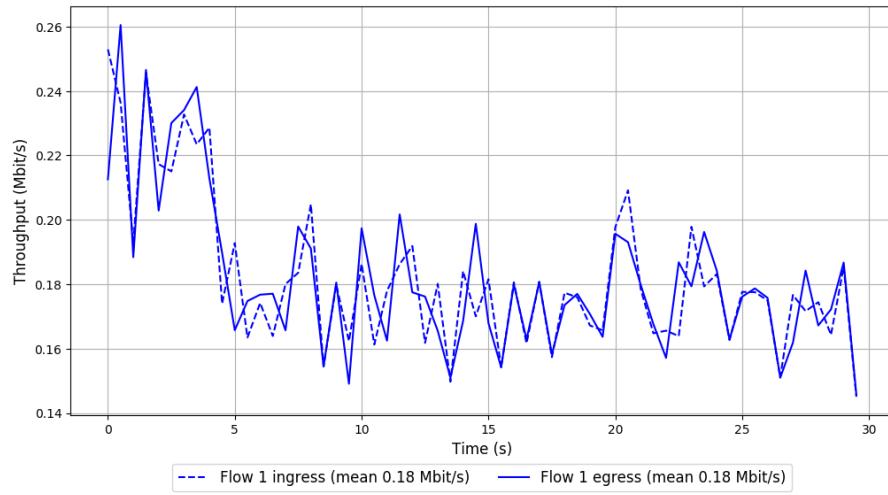


```
Run 1: Statistics of SCReAM
```

```
Start at: 2018-01-15 22:50:57
End at: 2018-01-15 22:51:27
Local clock offset: 2.847 ms
Remote clock offset: -2.768 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 76.545 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 76.545 ms
Loss rate: 0.12%
```

Run 1: Report of SCReAM — Data Link

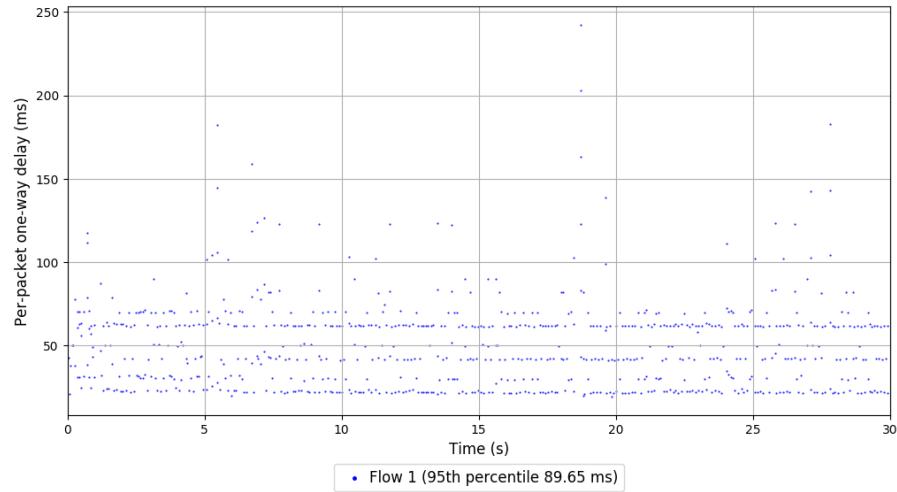
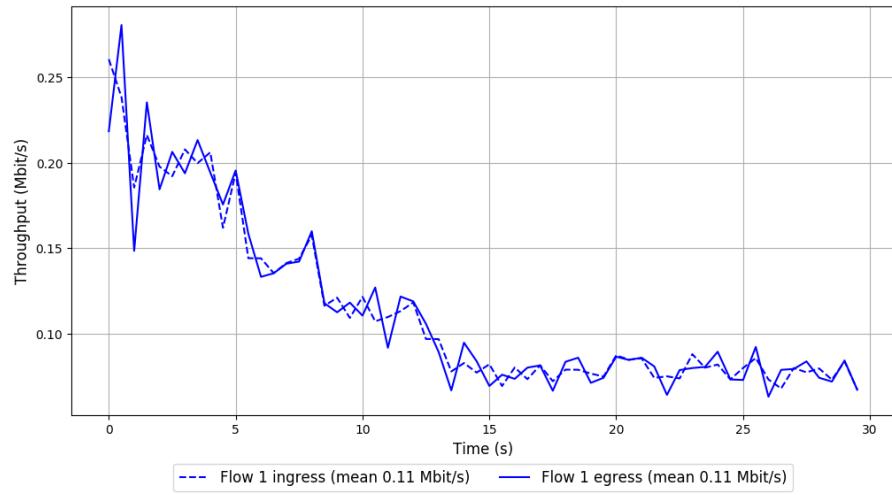


Run 2: Statistics of SCReAM

```
Start at: 2018-01-15 23:08:34
End at: 2018-01-15 23:09:04
Local clock offset: -0.682 ms
Remote clock offset: -2.412 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 89.651 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 89.651 ms
Loss rate: 0.09%
```

Run 2: Report of SCReAM — Data Link

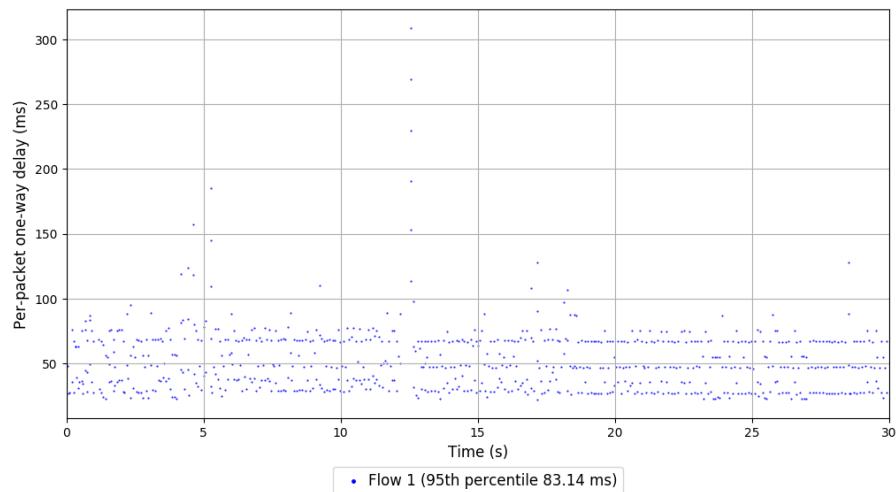
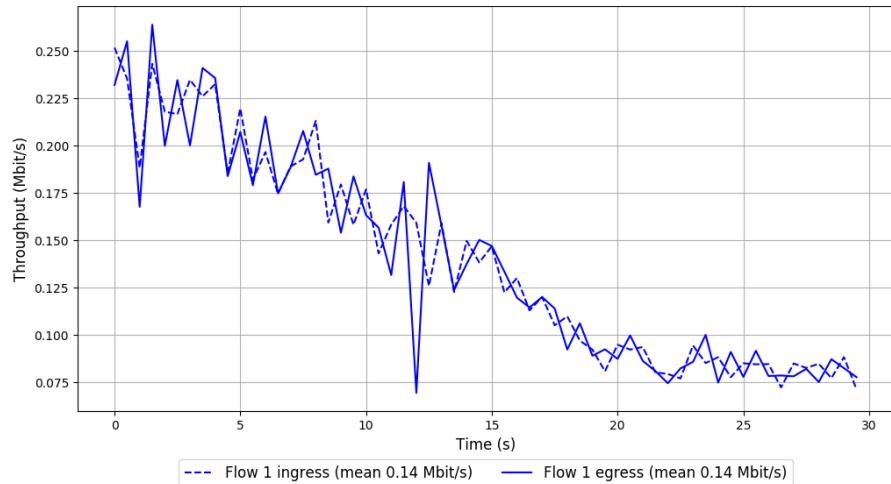


```
Run 3: Statistics of SCReAM
```

```
Start at: 2018-01-15 23:26:11
End at: 2018-01-15 23:26:41
Local clock offset: -1.238 ms
Remote clock offset: -2.426 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 83.137 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 83.137 ms
Loss rate: 0.41%
```

Run 3: Report of SCReAM — Data Link

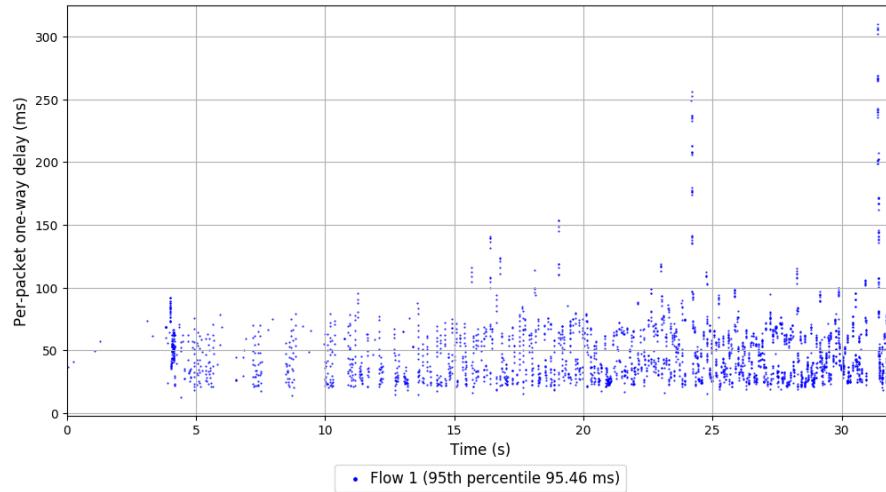
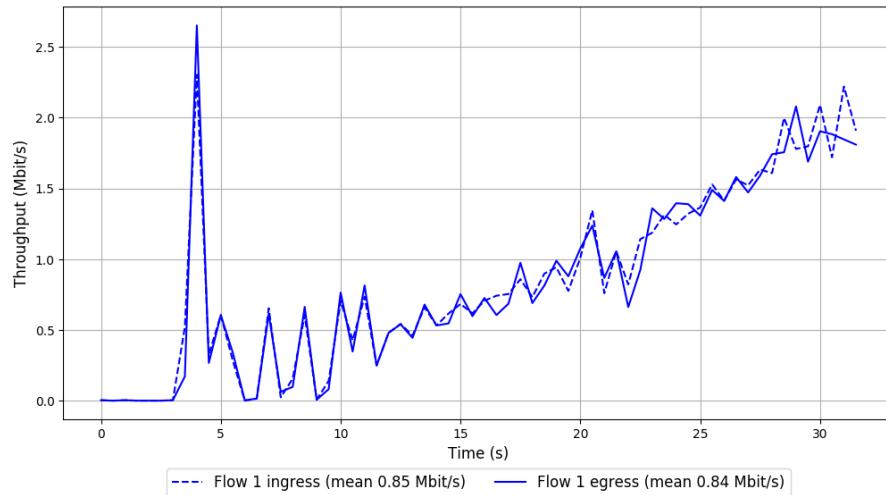


```
Run 1: Statistics of WebRTC media

Start at: 2018-01-15 22:46:15
End at: 2018-01-15 22:46:45
Local clock offset: 5.581 ms
Remote clock offset: -2.776 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 95.463 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 0.84 Mbit/s
95th percentile per-packet one-way delay: 95.463 ms
Loss rate: 1.12%
```

Run 1: Report of WebRTC media — Data Link

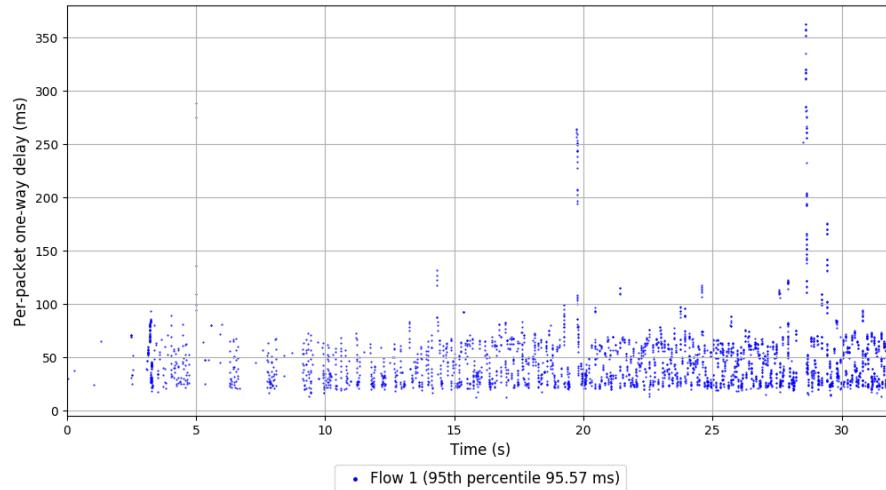
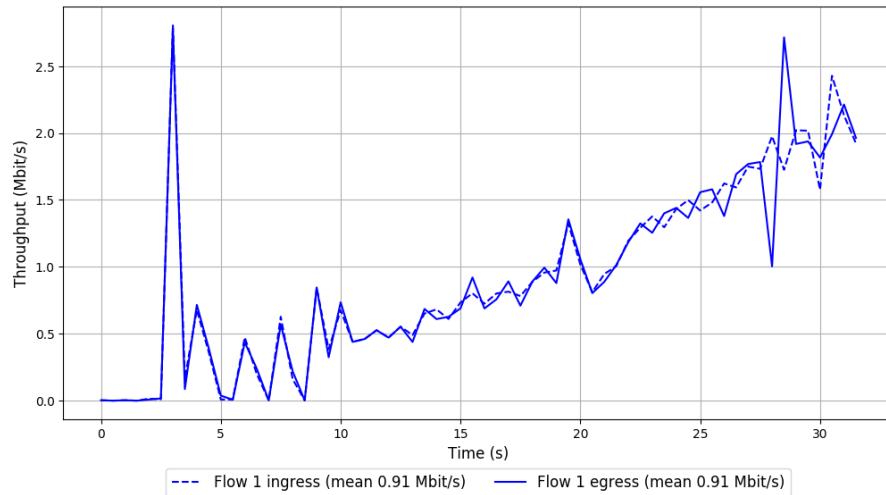


Run 2: Statistics of WebRTC media

```
Start at: 2018-01-15 23:03:51
End at: 2018-01-15 23:04:21
Local clock offset: -0.05 ms
Remote clock offset: -2.515 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 95.573 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 95.573 ms
Loss rate: 0.54%
```

Run 2: Report of WebRTC media — Data Link

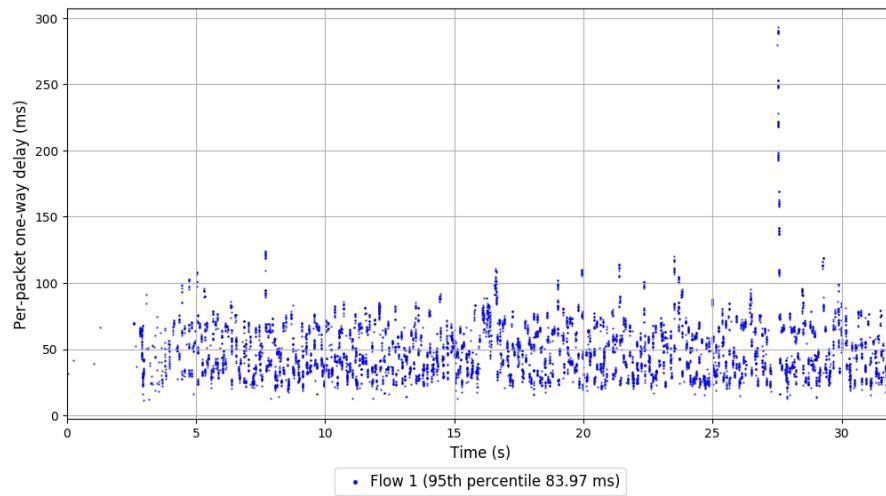
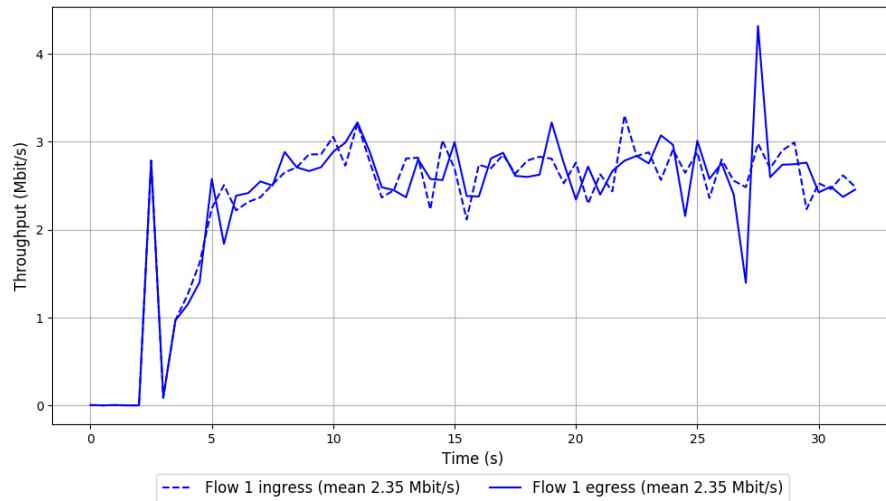


```
Run 3: Statistics of WebRTC media

Start at: 2018-01-15 23:21:29
End at: 2018-01-15 23:21:59
Local clock offset: -1.091 ms
Remote clock offset: -2.527 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.35 Mbit/s
95th percentile per-packet one-way delay: 83.965 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 2.35 Mbit/s
95th percentile per-packet one-way delay: 83.965 ms
Loss rate: 0.34%
```

Run 3: Report of WebRTC media — Data Link

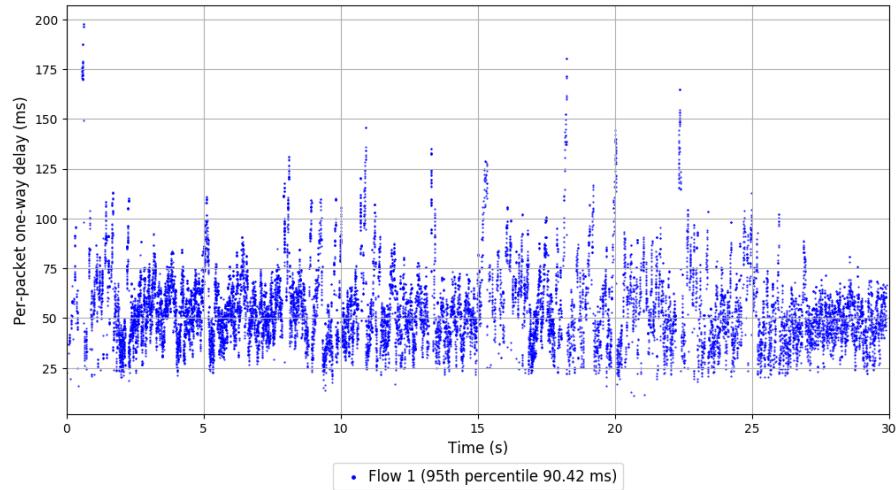
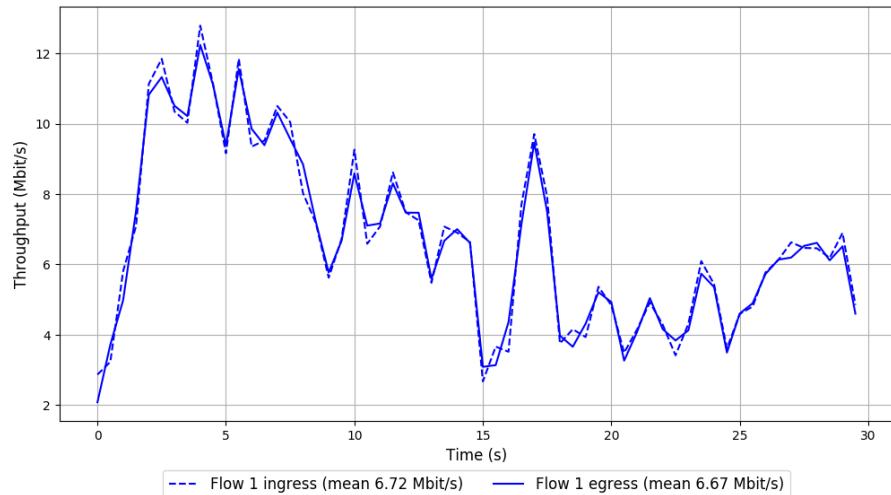


Run 1: Statistics of Sprout

```
Start at: 2018-01-15 22:40:23
End at: 2018-01-15 22:40:53
Local clock offset: 5.7 ms
Remote clock offset: -2.848 ms

# Below is generated by plot.py at 2018-01-16 00:20:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.67 Mbit/s
95th percentile per-packet one-way delay: 90.418 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 6.67 Mbit/s
95th percentile per-packet one-way delay: 90.418 ms
Loss rate: 0.86%
```

Run 1: Report of Sprout — Data Link

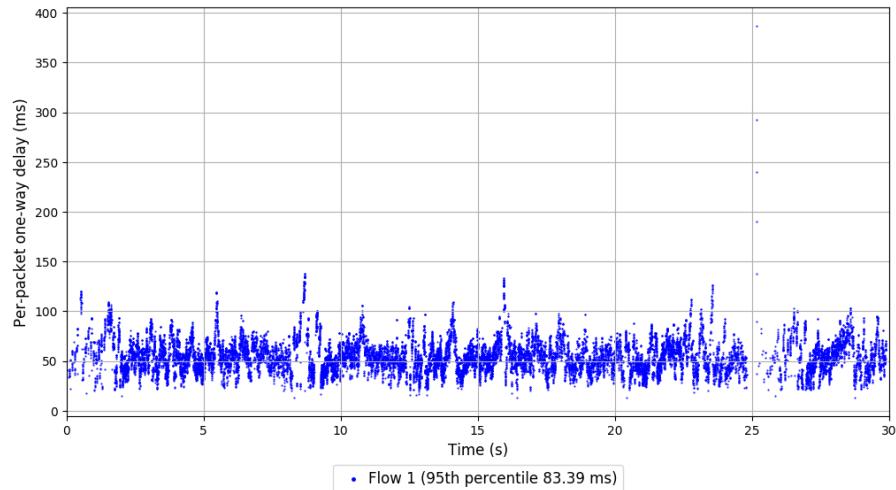
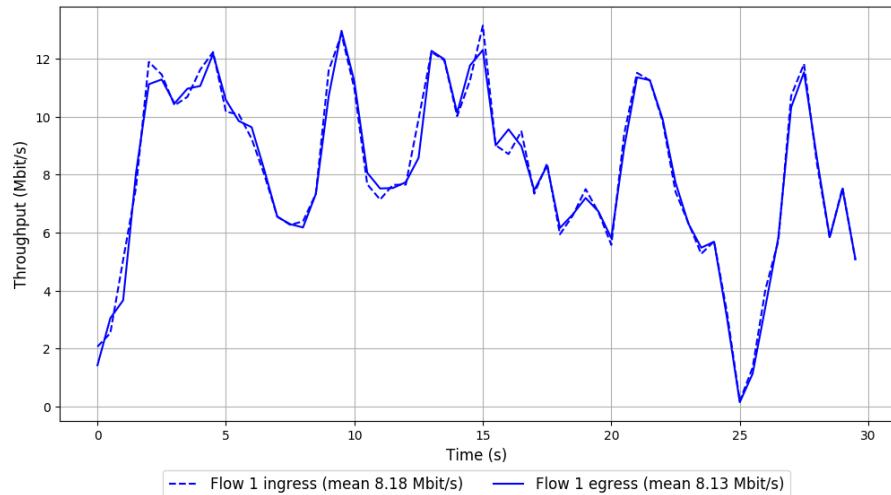


Run 2: Statistics of Sprout

```
Start at: 2018-01-15 22:58:00
End at: 2018-01-15 22:58:30
Local clock offset: 0.343 ms
Remote clock offset: -2.66 ms

# Below is generated by plot.py at 2018-01-16 00:20:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.13 Mbit/s
95th percentile per-packet one-way delay: 83.394 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 8.13 Mbit/s
95th percentile per-packet one-way delay: 83.394 ms
Loss rate: 0.78%
```

Run 2: Report of Sprout — Data Link

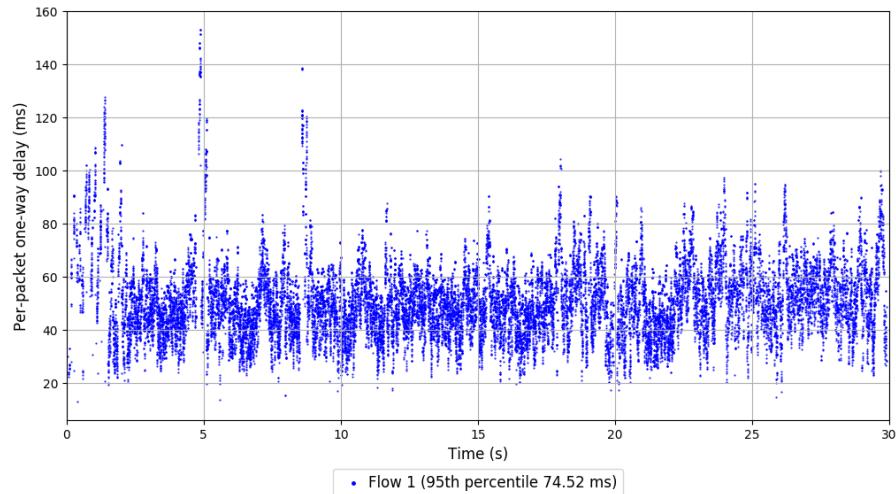
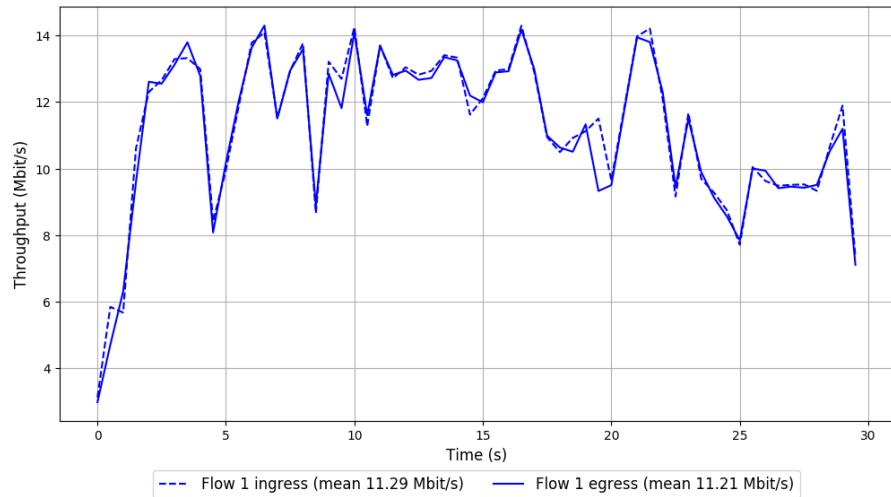


Run 3: Statistics of Sprout

```
Start at: 2018-01-15 23:15:37
End at: 2018-01-15 23:16:07
Local clock offset: -1.766 ms
Remote clock offset: -2.437 ms

# Below is generated by plot.py at 2018-01-16 00:20:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.21 Mbit/s
95th percentile per-packet one-way delay: 74.521 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 11.21 Mbit/s
95th percentile per-packet one-way delay: 74.521 ms
Loss rate: 0.87%
```

Run 3: Report of Sprout — Data Link

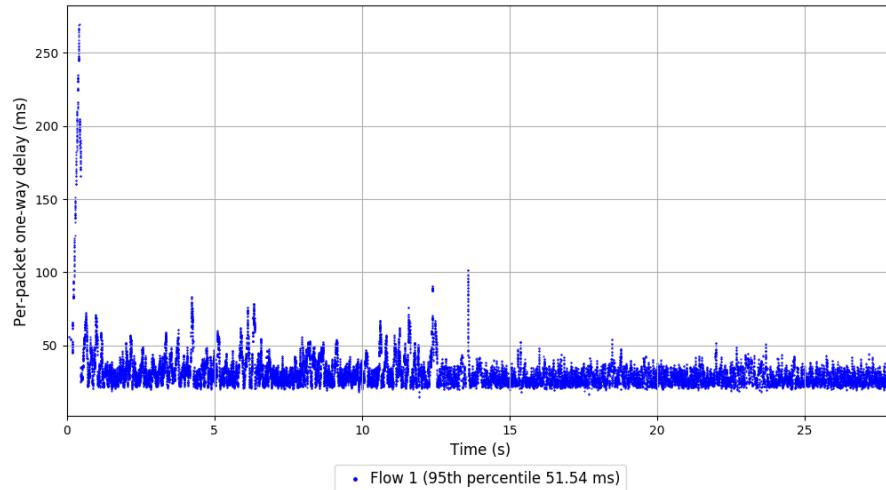
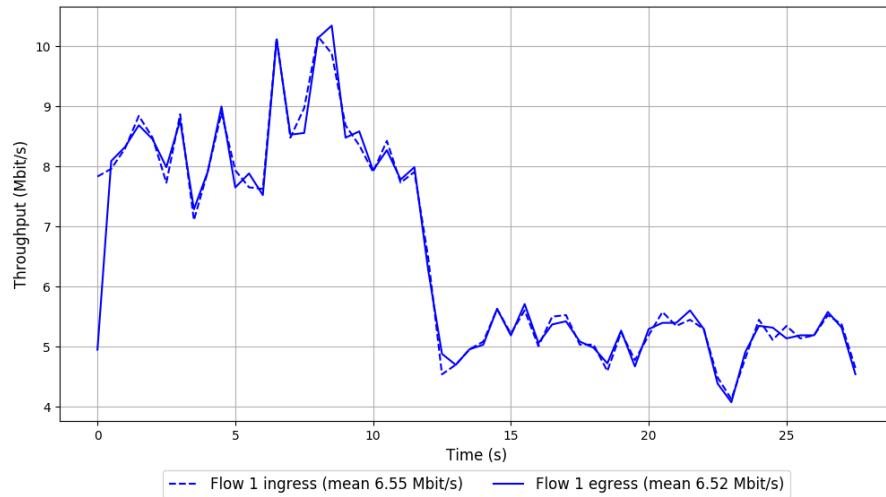


Run 1: Statistics of TaoVA-100x

```
Start at: 2018-01-15 22:49:46
End at: 2018-01-15 22:50:16
Local clock offset: 2.987 ms
Remote clock offset: -2.791 ms

# Below is generated by plot.py at 2018-01-16 00:20:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.52 Mbit/s
95th percentile per-packet one-way delay: 51.537 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 6.52 Mbit/s
95th percentile per-packet one-way delay: 51.537 ms
Loss rate: 0.71%
```

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

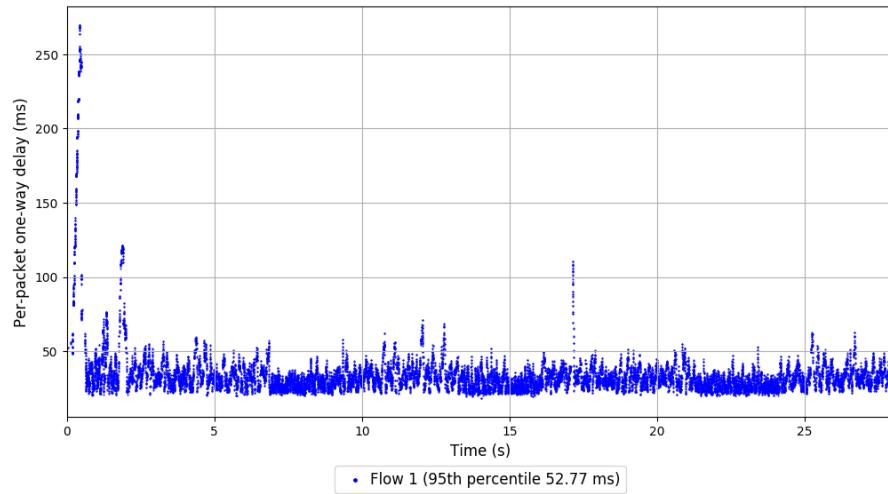
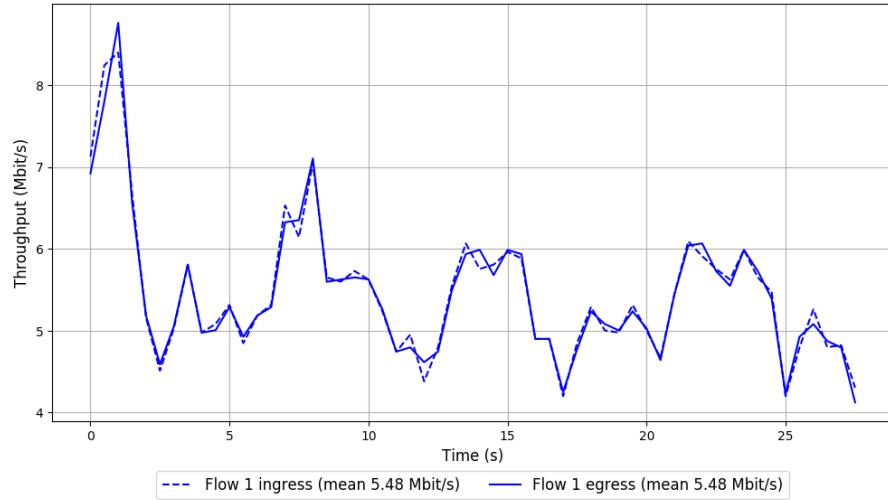


Run 2: Statistics of TaoVA-100x

```
Start at: 2018-01-15 23:07:23
End at: 2018-01-15 23:07:53
Local clock offset: -0.756 ms
Remote clock offset: -2.457 ms

# Below is generated by plot.py at 2018-01-16 00:20:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.48 Mbit/s
95th percentile per-packet one-way delay: 52.768 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 5.48 Mbit/s
95th percentile per-packet one-way delay: 52.768 ms
Loss rate: 0.17%
```

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

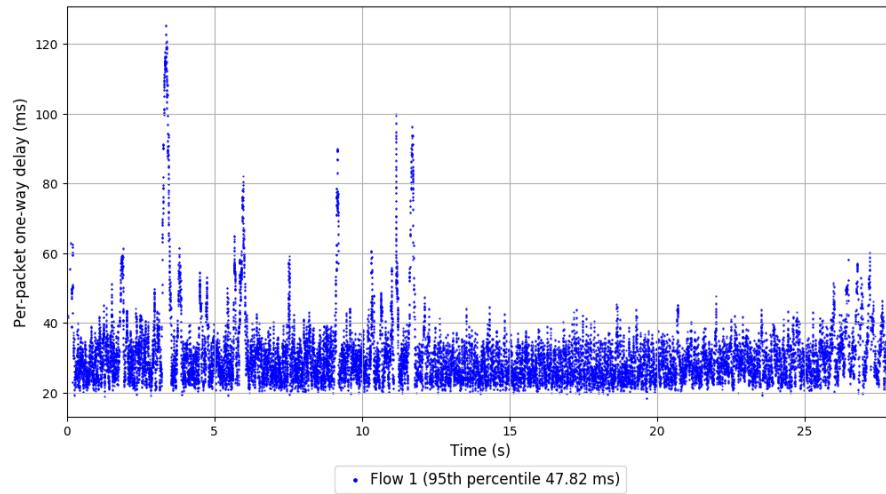
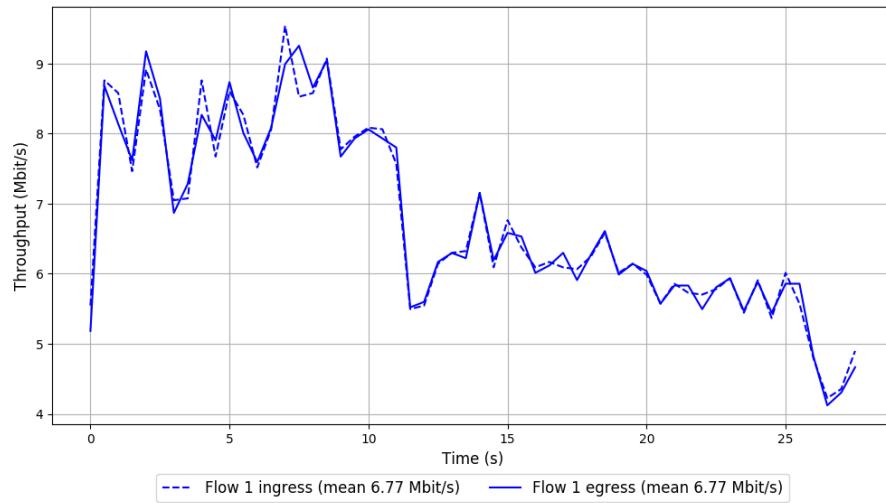


Run 3: Statistics of TaoVA-100x

```
Start at: 2018-01-15 23:25:01
End at: 2018-01-15 23:25:31
Local clock offset: -1.231 ms
Remote clock offset: -2.498 ms

# Below is generated by plot.py at 2018-01-16 00:20:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.77 Mbit/s
95th percentile per-packet one-way delay: 47.816 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 6.77 Mbit/s
95th percentile per-packet one-way delay: 47.816 ms
Loss rate: 0.15%
```

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

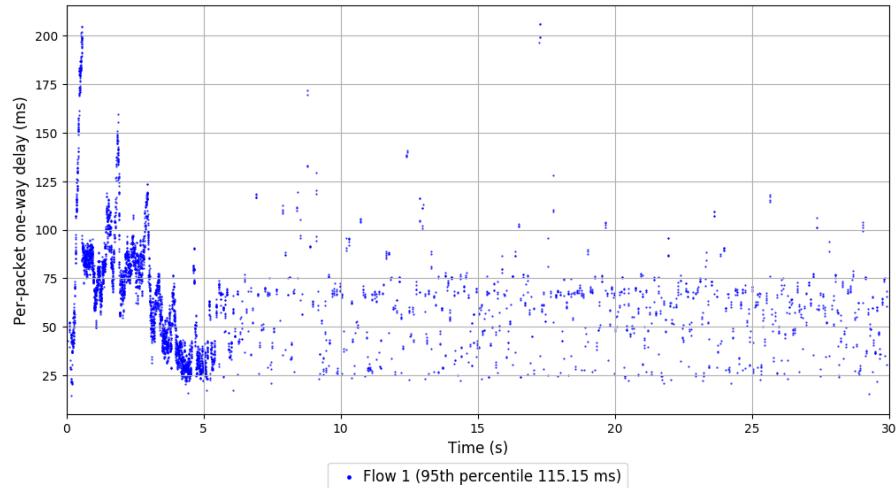
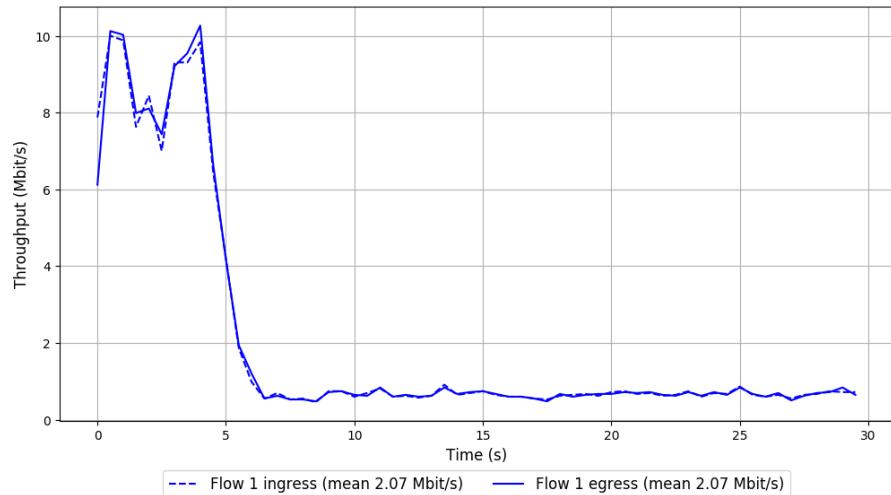


Run 1: Statistics of TCP Vegas

```
Start at: 2018-01-15 22:38:02
End at: 2018-01-15 22:38:32
Local clock offset: 5.956 ms
Remote clock offset: -2.937 ms

# Below is generated by plot.py at 2018-01-16 00:20:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 115.146 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 2.07 Mbit/s
95th percentile per-packet one-way delay: 115.146 ms
Loss rate: 0.06%
```

Run 1: Report of TCP Vegas — Data Link

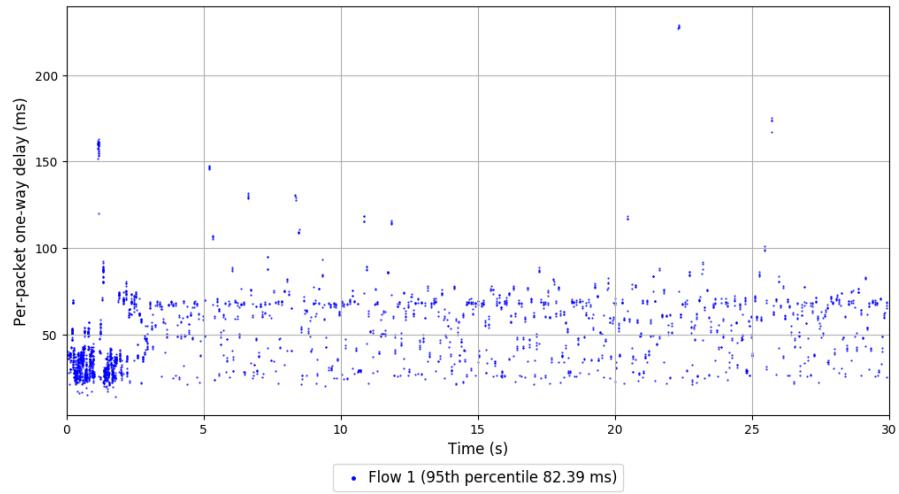
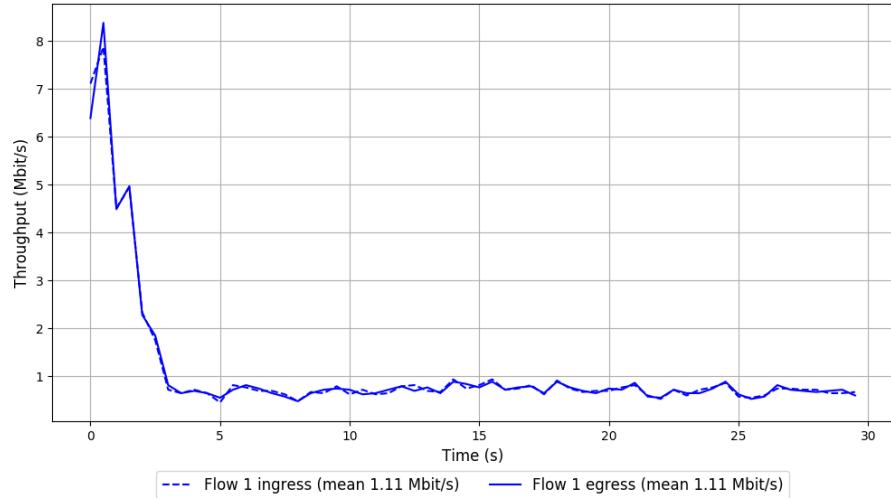


Run 2: Statistics of TCP Vegas

```
Start at: 2018-01-15 22:55:39
End at: 2018-01-15 22:56:09
Local clock offset: 2.461 ms
Remote clock offset: -2.577 ms

# Below is generated by plot.py at 2018-01-16 00:20:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 82.390 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 82.390 ms
Loss rate: 0.11%
```

Run 2: Report of TCP Vegas — Data Link

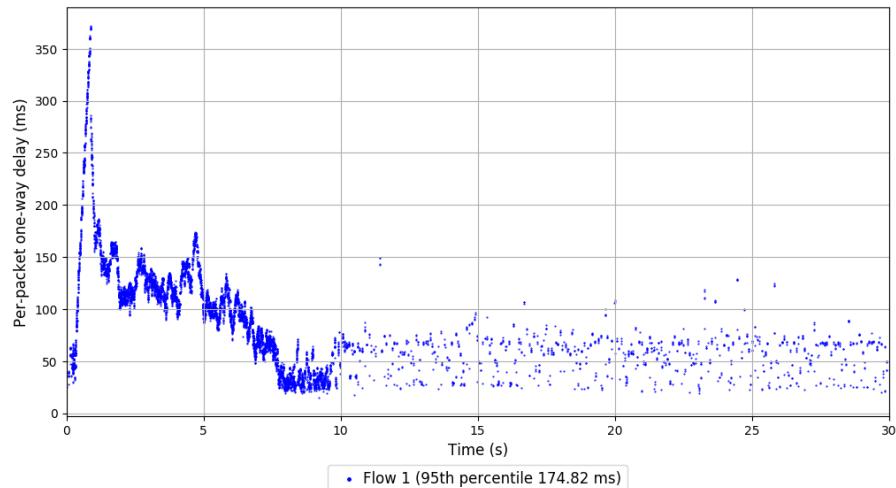
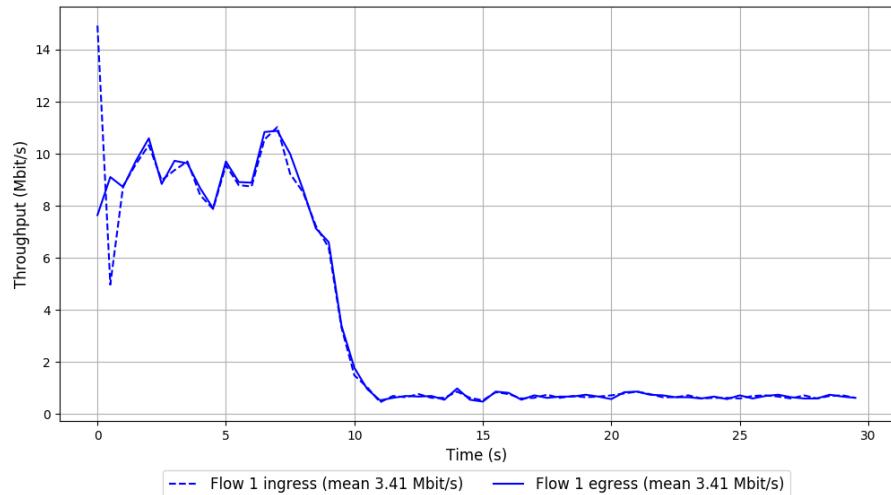


Run 3: Statistics of TCP Vegas

```
Start at: 2018-01-15 23:13:16
End at: 2018-01-15 23:13:46
Local clock offset: -1.796 ms
Remote clock offset: -2.396 ms

# Below is generated by plot.py at 2018-01-16 00:20:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.41 Mbit/s
95th percentile per-packet one-way delay: 174.821 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 3.41 Mbit/s
95th percentile per-packet one-way delay: 174.821 ms
Loss rate: 0.29%
```

Run 3: Report of TCP Vegas — Data Link

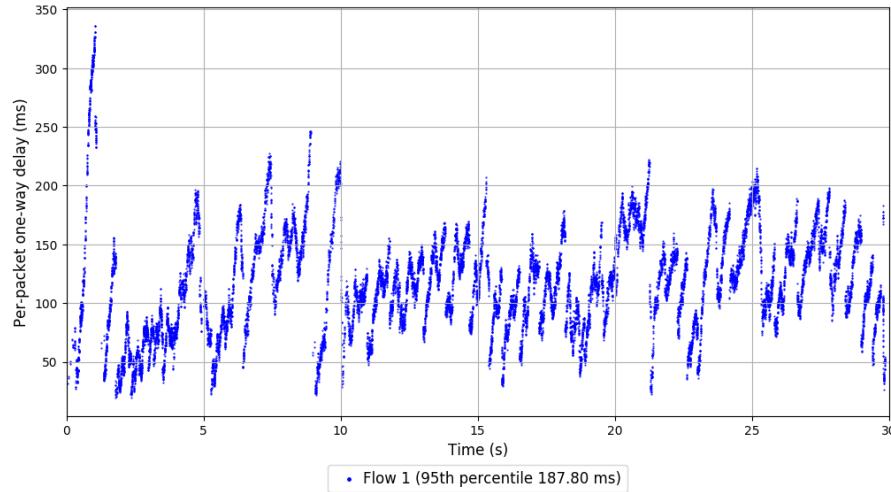
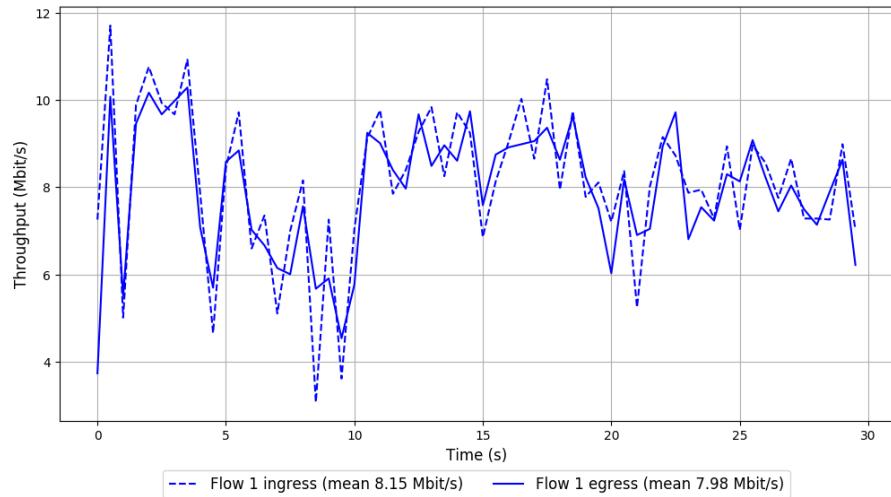


Run 1: Statistics of Verus

```
Start at: 2018-01-15 22:34:30
End at: 2018-01-15 22:35:00
Local clock offset: 9.77 ms
Remote clock offset: -2.861 ms

# Below is generated by plot.py at 2018-01-16 00:20:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.98 Mbit/s
95th percentile per-packet one-way delay: 187.804 ms
Loss rate: 2.19%
-- Flow 1:
Average throughput: 7.98 Mbit/s
95th percentile per-packet one-way delay: 187.804 ms
Loss rate: 2.19%
```

Run 1: Report of Verus — Data Link

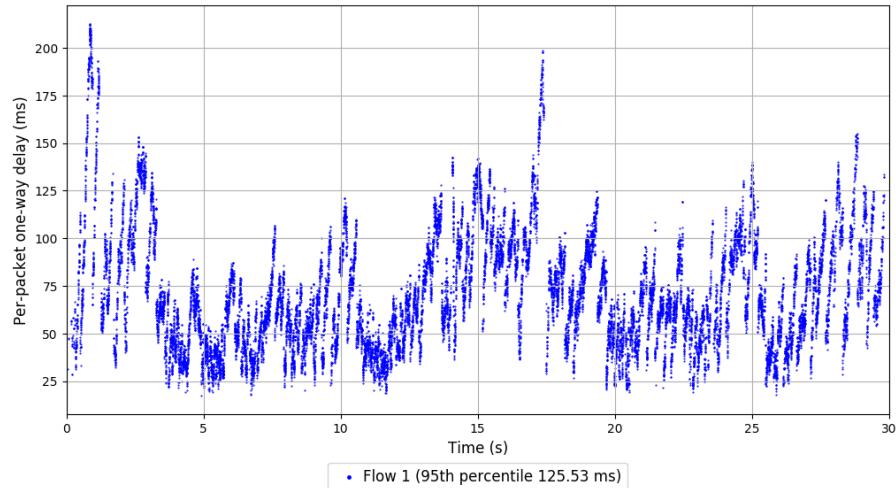
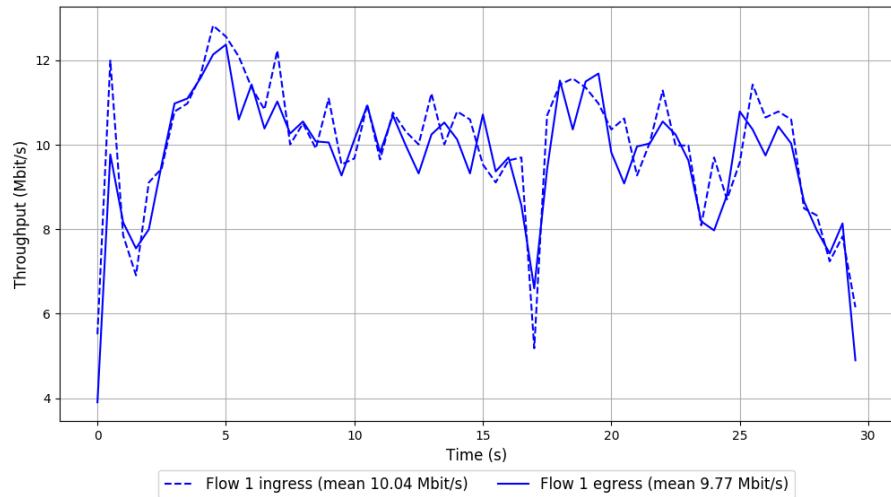


Run 2: Statistics of Verus

```
Start at: 2018-01-15 22:52:07
End at: 2018-01-15 22:52:37
Local clock offset: 3.156 ms
Remote clock offset: -2.729 ms

# Below is generated by plot.py at 2018-01-16 00:20:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.77 Mbit/s
95th percentile per-packet one-way delay: 125.535 ms
Loss rate: 2.91%
-- Flow 1:
Average throughput: 9.77 Mbit/s
95th percentile per-packet one-way delay: 125.535 ms
Loss rate: 2.91%
```

Run 2: Report of Verus — Data Link

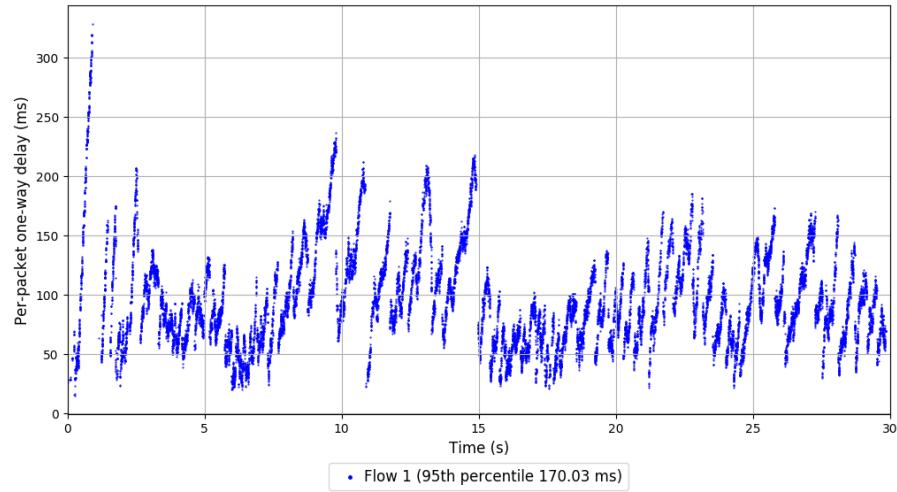
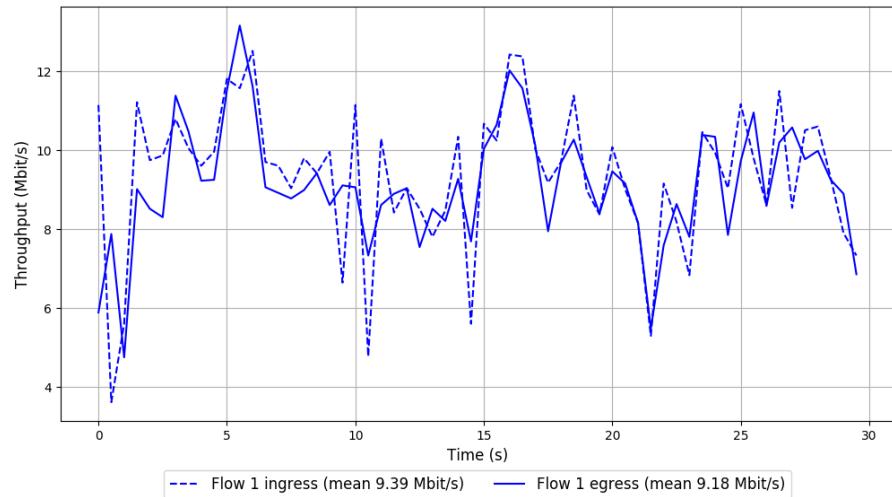


Run 3: Statistics of Verus

```
Start at: 2018-01-15 23:09:44
End at: 2018-01-15 23:10:14
Local clock offset: -0.651 ms
Remote clock offset: -2.517 ms

# Below is generated by plot.py at 2018-01-16 00:20:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.18 Mbit/s
95th percentile per-packet one-way delay: 170.025 ms
Loss rate: 2.34%
-- Flow 1:
Average throughput: 9.18 Mbit/s
95th percentile per-packet one-way delay: 170.025 ms
Loss rate: 2.34%
```

Run 3: Report of Verus — Data Link

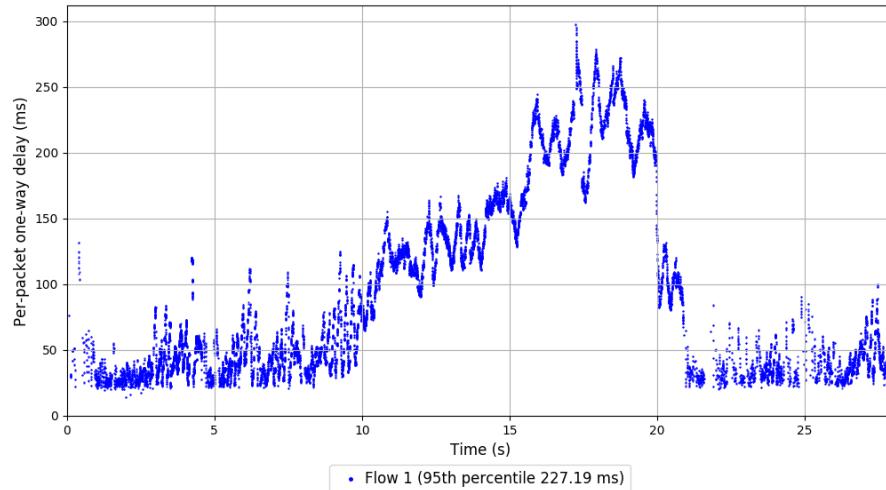
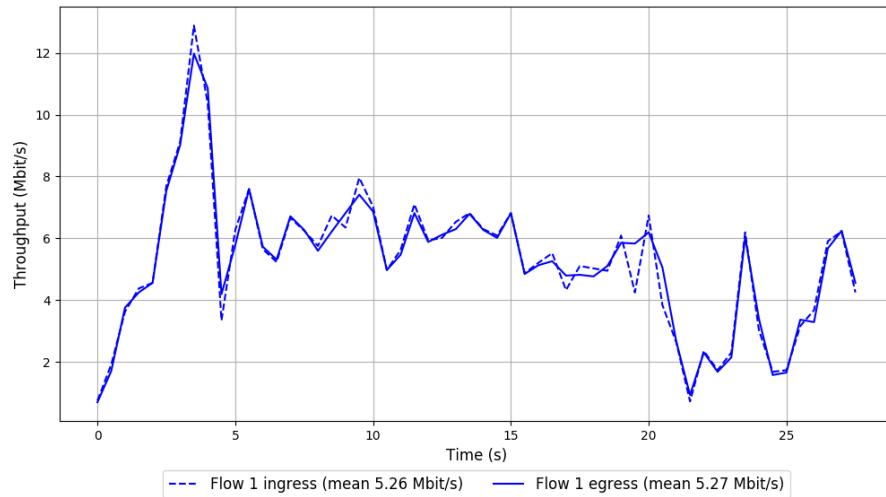


Run 1: Statistics of Copa

```
Start at: 2018-01-15 22:47:25
End at: 2018-01-15 22:47:55
Local clock offset: 3.992 ms
Remote clock offset: -2.81 ms

# Below is generated by plot.py at 2018-01-16 00:20:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.27 Mbit/s
95th percentile per-packet one-way delay: 227.185 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 5.27 Mbit/s
95th percentile per-packet one-way delay: 227.185 ms
Loss rate: 0.11%
```

Run 1: Report of Copa — Data Link

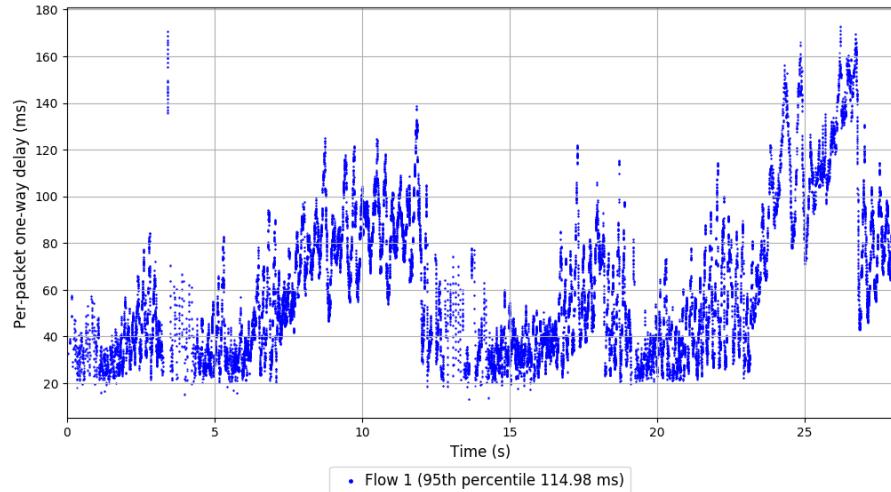
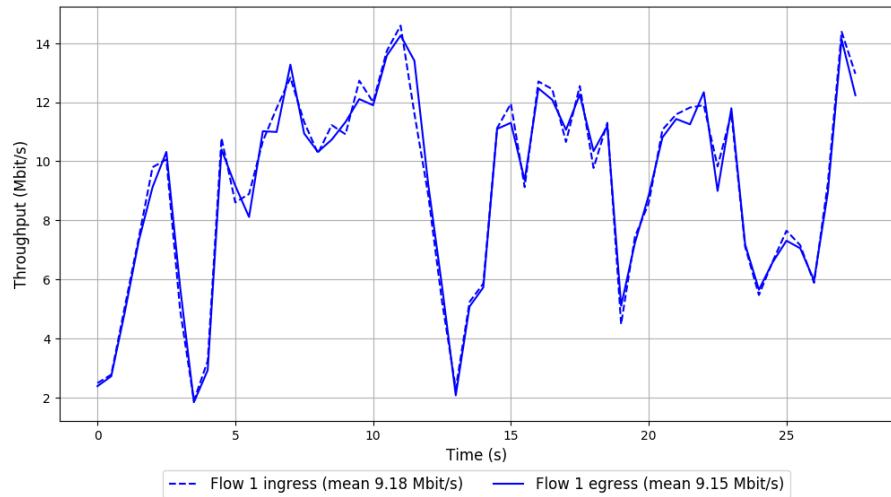


Run 2: Statistics of Copa

```
Start at: 2018-01-15 23:05:01
End at: 2018-01-15 23:05:31
Local clock offset: -0.095 ms
Remote clock offset: -2.425 ms

# Below is generated by plot.py at 2018-01-16 00:20:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.15 Mbit/s
95th percentile per-packet one-way delay: 114.981 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 9.15 Mbit/s
95th percentile per-packet one-way delay: 114.981 ms
Loss rate: 0.57%
```

Run 2: Report of Copa — Data Link

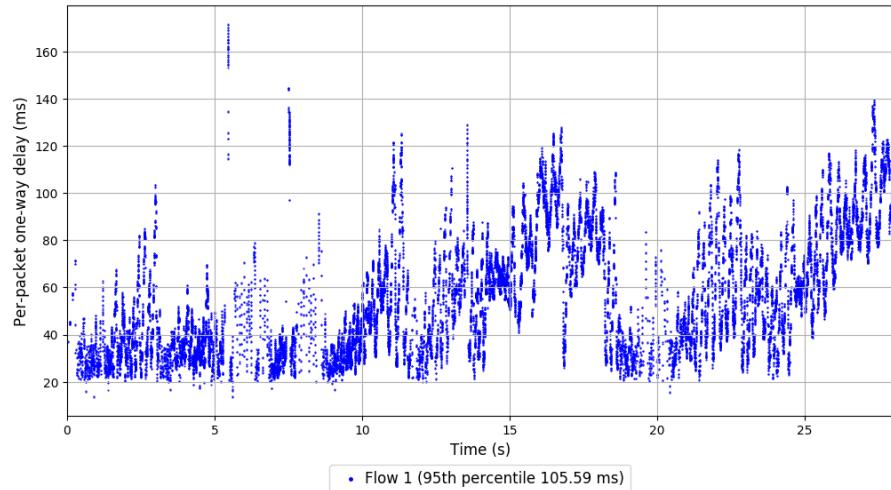
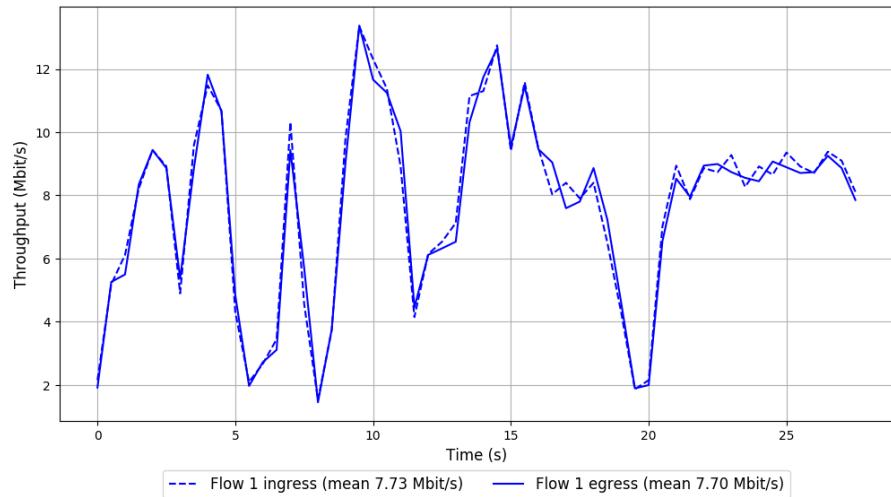


Run 3: Statistics of Copa

```
Start at: 2018-01-15 23:22:39
End at: 2018-01-15 23:23:09
Local clock offset: -1.265 ms
Remote clock offset: -2.534 ms

# Below is generated by plot.py at 2018-01-16 00:20:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.70 Mbit/s
95th percentile per-packet one-way delay: 105.595 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 7.70 Mbit/s
95th percentile per-packet one-way delay: 105.595 ms
Loss rate: 0.54%
```

Run 3: Report of Copa — Data Link

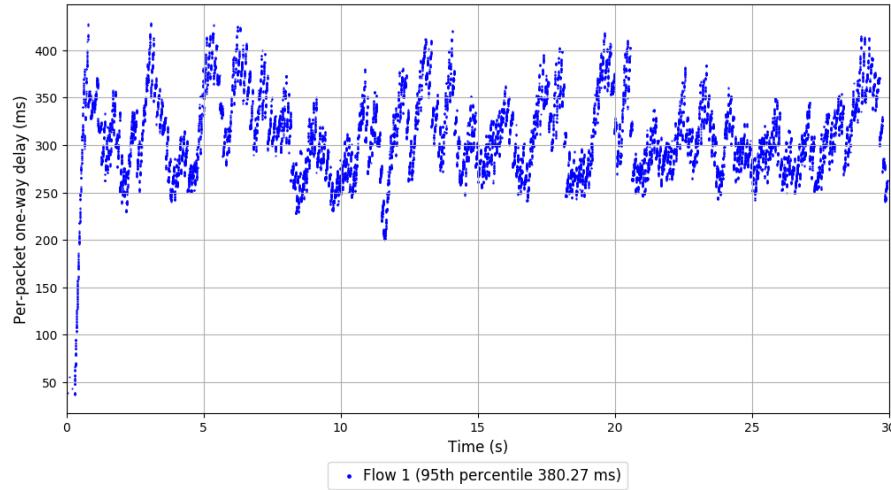
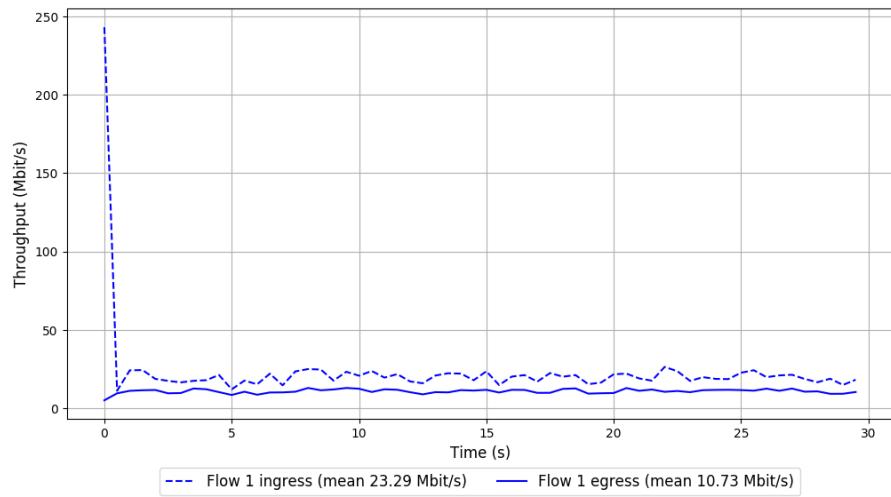


```
Run 1: Statistics of FillP

Start at: 2018-01-15 22:36:51
End at: 2018-01-15 22:37:21
Local clock offset: 6.957 ms
Remote clock offset: -2.938 ms

# Below is generated by plot.py at 2018-01-16 00:20:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.73 Mbit/s
95th percentile per-packet one-way delay: 380.272 ms
Loss rate: 54.02%
-- Flow 1:
Average throughput: 10.73 Mbit/s
95th percentile per-packet one-way delay: 380.272 ms
Loss rate: 54.02%
```

Run 1: Report of FillP — Data Link

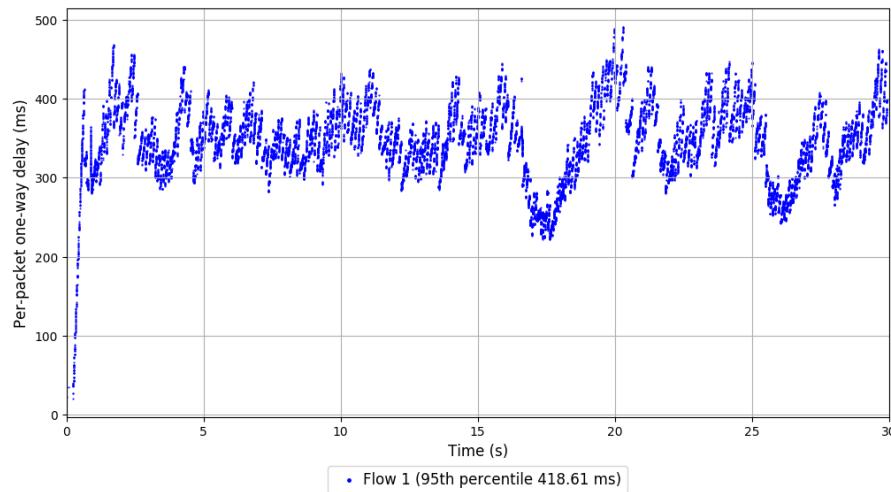
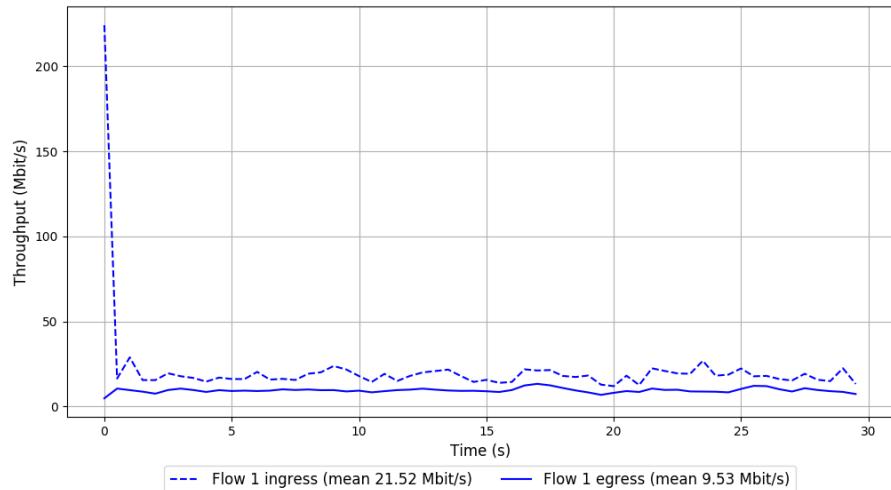


Run 2: Statistics of FillP

```
Start at: 2018-01-15 22:54:28
End at: 2018-01-15 22:54:58
Local clock offset: 4.194 ms
Remote clock offset: -2.702 ms

# Below is generated by plot.py at 2018-01-16 00:20:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.53 Mbit/s
95th percentile per-packet one-way delay: 418.609 ms
Loss rate: 55.80%
-- Flow 1:
Average throughput: 9.53 Mbit/s
95th percentile per-packet one-way delay: 418.609 ms
Loss rate: 55.80%
```

Run 2: Report of FillP — Data Link

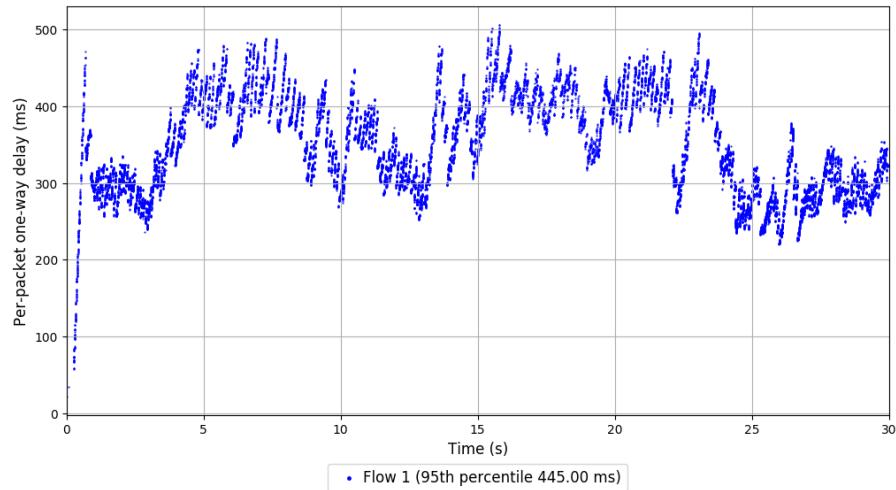
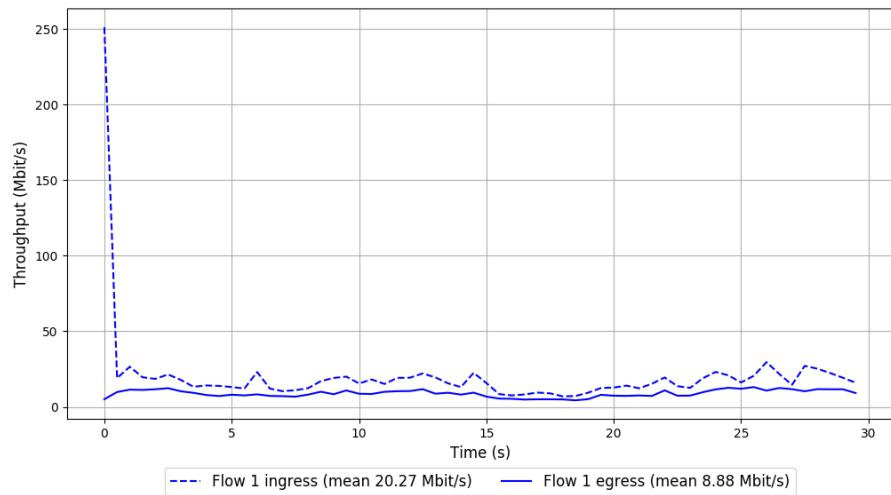


Run 3: Statistics of FillP

```
Start at: 2018-01-15 23:12:05
End at: 2018-01-15 23:12:35
Local clock offset: -1.426 ms
Remote clock offset: -2.412 ms

# Below is generated by plot.py at 2018-01-16 00:20:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.88 Mbit/s
95th percentile per-packet one-way delay: 444.995 ms
Loss rate: 56.24%
-- Flow 1:
Average throughput: 8.88 Mbit/s
95th percentile per-packet one-way delay: 444.995 ms
Loss rate: 56.24%
```

Run 3: Report of FillP — Data Link

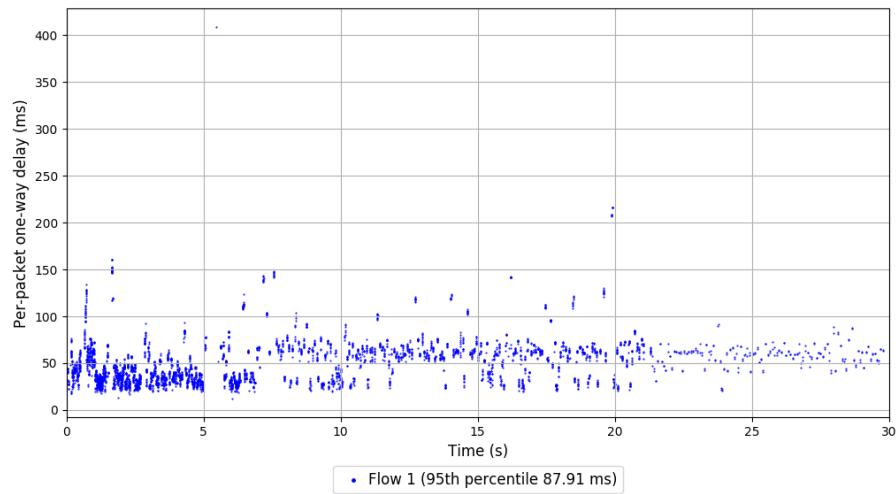
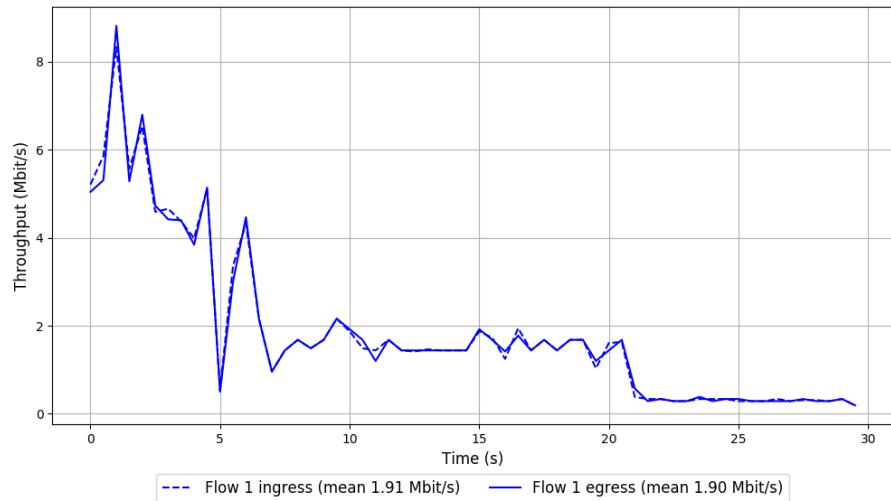


Run 1: Statistics of Indigo

```
Start at: 2018-01-15 22:42:44
End at: 2018-01-15 22:43:14
Local clock offset: 6.711 ms
Remote clock offset: -2.886 ms

# Below is generated by plot.py at 2018-01-16 00:20:49
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 87.910 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 87.910 ms
Loss rate: 0.44%
```

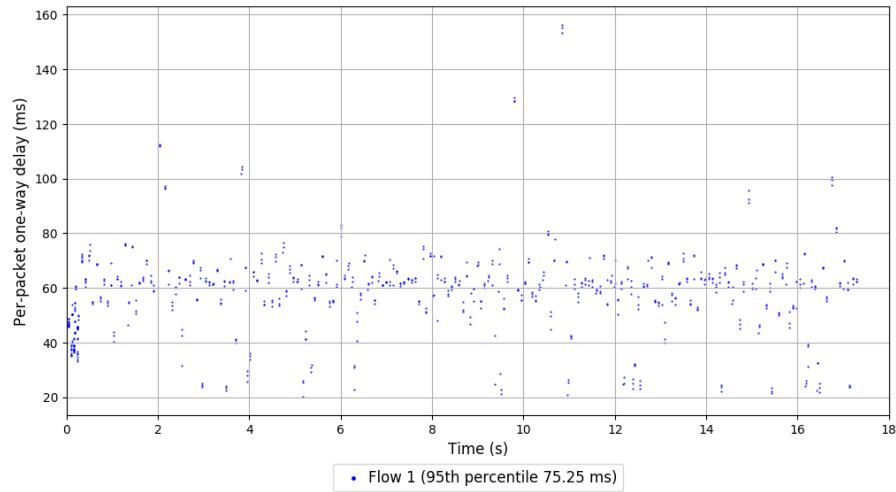
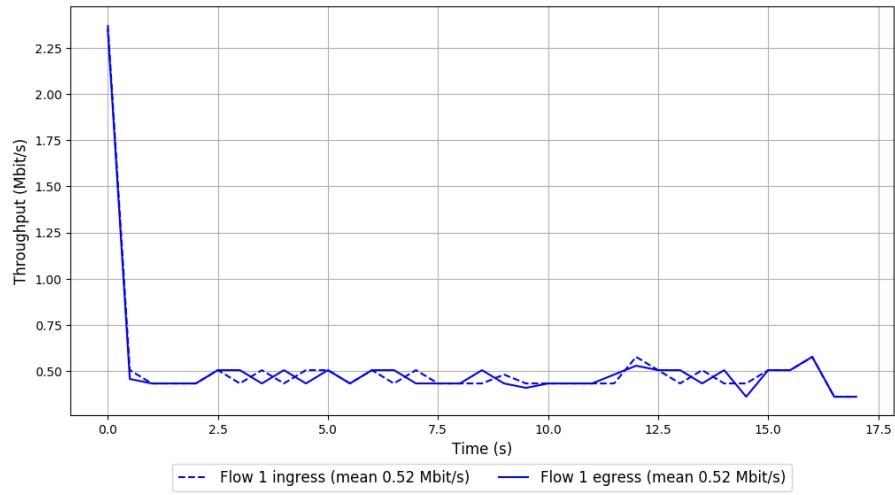
Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-01-15 23:00:21
End at: 2018-01-15 23:00:51
Local clock offset: -0.558 ms
Remote clock offset: -2.613 ms

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-01-15 23:17:58

End at: 2018-01-15 23:18:28

Local clock offset: -1.476 ms

Remote clock offset: -2.522 ms

Run 3: Report of Indigo — Data Link

