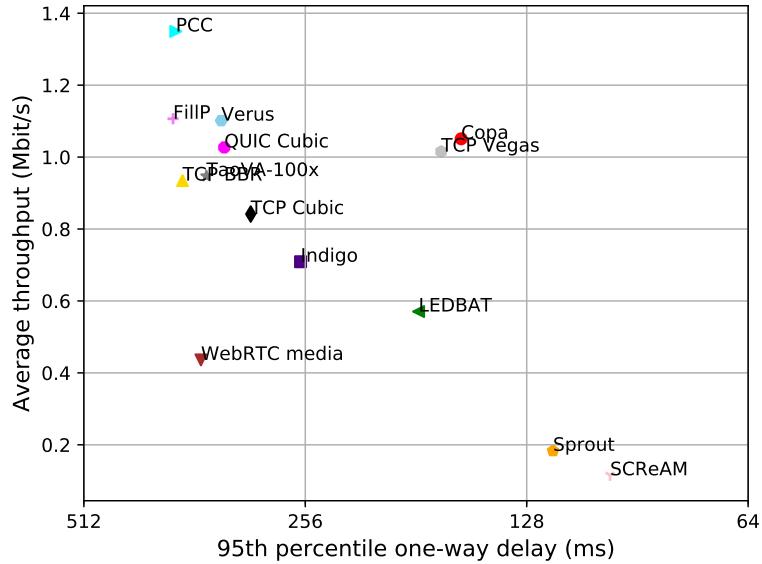


Pantheon Report

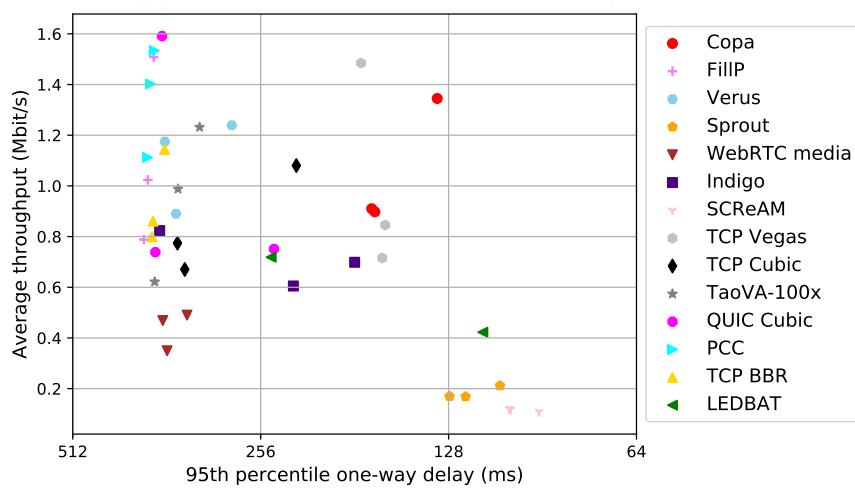
Generated at 2017-12-20 17:44:11 (UTC).
Data path: India ppp0 (*remote*) → AWS India 1 Ethernet (*local*).
Repeated the test of 14 congestion control schemes 3 times.
Each test lasted for 30 seconds running 1 flow.
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo_fast**).
NTP offsets were measured against **nets.org.sg** and have been applied to correct the timestamps in logs.

Git summary:
branch: master @ 904a5750834816b1e46a2c86405d707788d27c16
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
M datagrump/sender.cc
third_party/fillp @ dcaef6b00654e660f73f7ed679d2eab61ce08639
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 @ b3465b942e2826f2b179eab4a906ce6bb7cf3cf
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/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



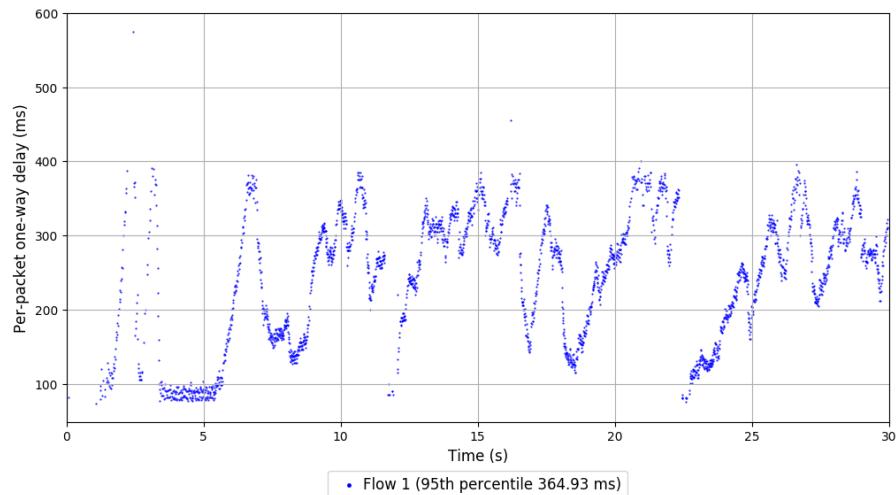
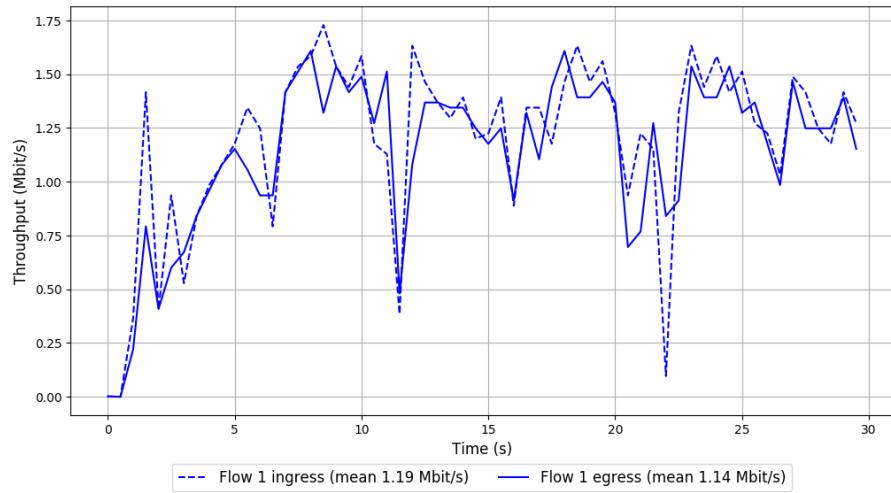
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.93	375.99	9.77
TCP Cubic	3	0.84	303.70	2.62
LEDBAT	2	0.57	179.58	3.79
PCC	3	1.35	383.96	67.89
QUIC Cubic	3	1.03	329.88	6.73
SCReAM	3	0.12	98.60	1.47
WebRTC media	3	0.44	354.92	5.45
Sprout	3	0.18	117.88	1.51
TaoVA-100x	3	0.95	348.83	23.03
TCP Vegas	3	1.02	167.32	1.31
Verus	3	1.10	333.04	8.25
Copa	3	1.05	157.15	1.02
FillP	3	1.11	387.27	96.68
Indigo	3	0.71	259.82	15.68

Run 1: Statistics of TCP BBR

```
Start at: 2017-12-20 16:14:18
End at: 2017-12-20 16:14:48
Local clock offset: 2.188 ms
Remote clock offset: -16.553 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 364.932 ms
Loss rate: 4.62%
-- Flow 1:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 364.932 ms
Loss rate: 4.62%
```

Run 1: Report of TCP BBR — Data Link

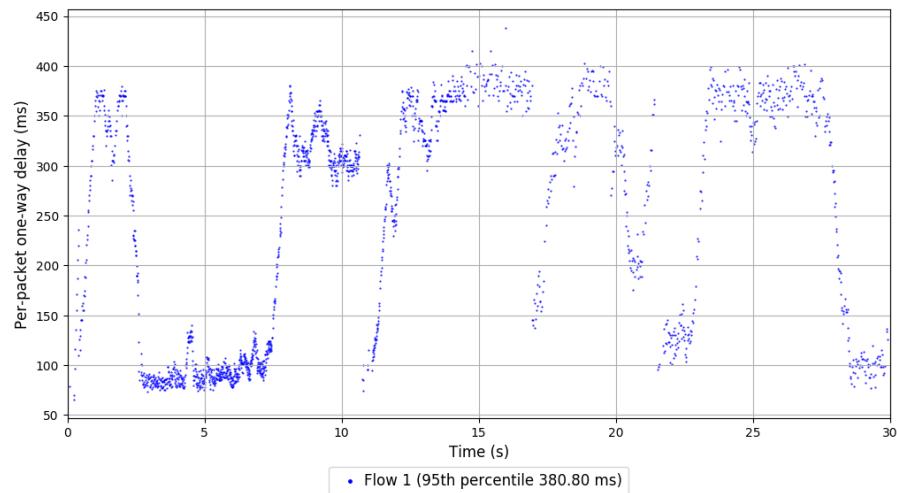
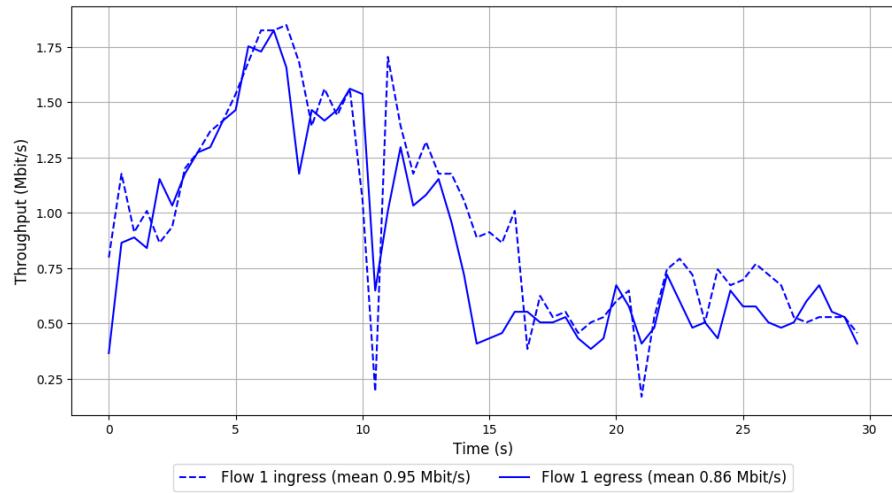


Run 2: Statistics of TCP BBR

```
Start at: 2017-12-20 16:31:07
End at: 2017-12-20 16:31:37
Local clock offset: 2.9 ms
Remote clock offset: -16.019 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 380.800 ms
Loss rate: 9.67%
-- Flow 1:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 380.800 ms
Loss rate: 9.67%
```

Run 2: Report of TCP BBR — Data Link

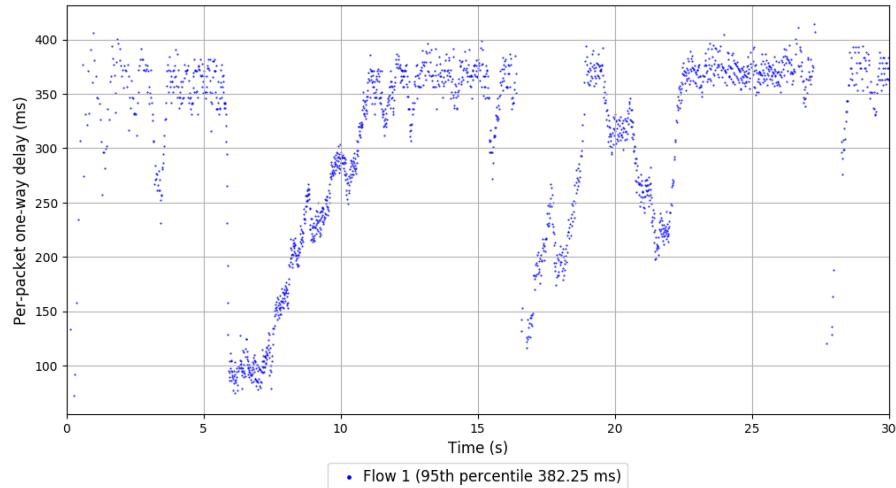
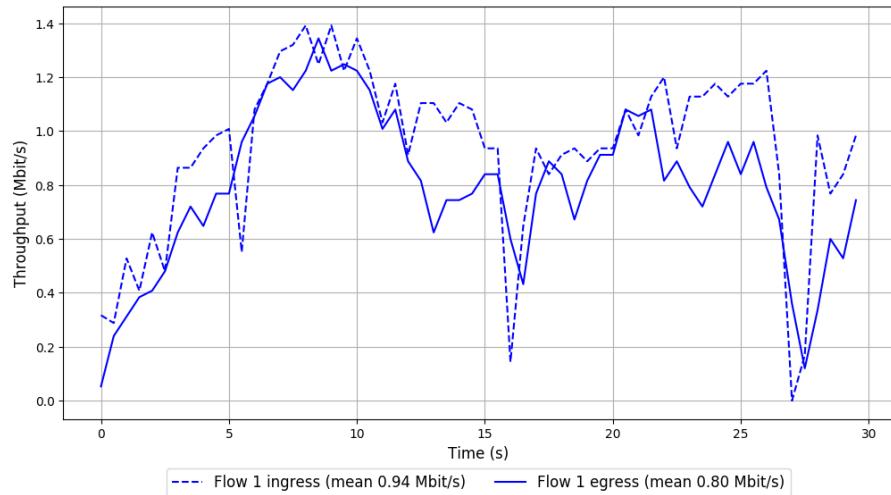


Run 3: Statistics of TCP BBR

```
Start at: 2017-12-20 16:47:56
End at: 2017-12-20 16:48:26
Local clock offset: 4.135 ms
Remote clock offset: -17.691 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 382.247 ms
Loss rate: 15.03%
-- Flow 1:
Average throughput: 0.80 Mbit/s
95th percentile per-packet one-way delay: 382.247 ms
Loss rate: 15.03%
```

Run 3: Report of TCP BBR — Data Link

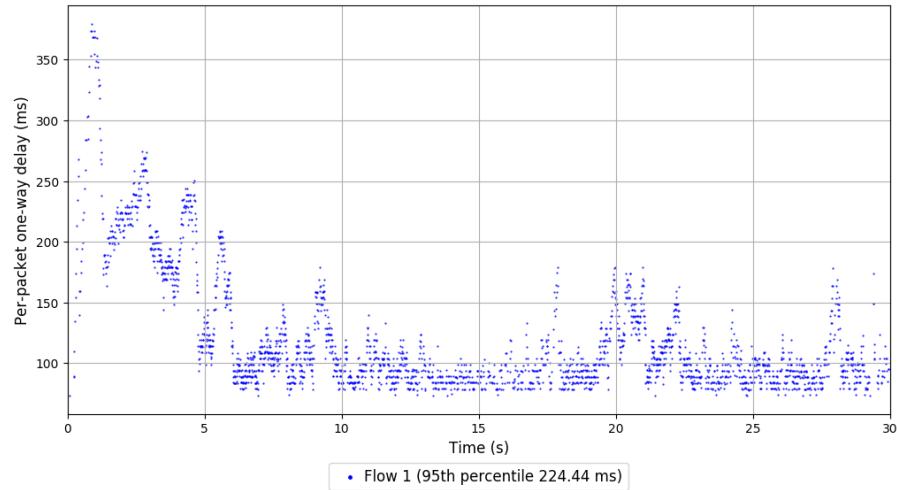
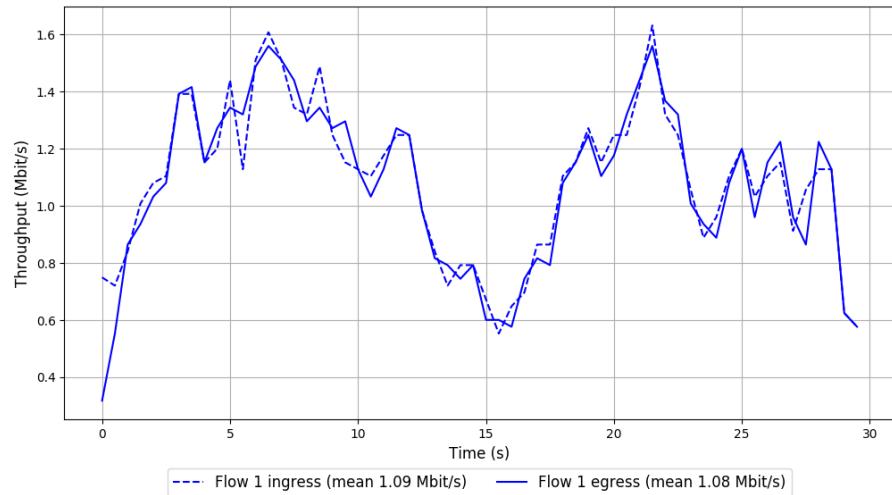


Run 1: Statistics of TCP Cubic

```
Start at: 2017-12-20 16:15:26
End at: 2017-12-20 16:15:56
Local clock offset: 2.488 ms
Remote clock offset: -15.192 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 224.436 ms
Loss rate: 1.36%
-- Flow 1:
Average throughput: 1.08 Mbit/s
95th percentile per-packet one-way delay: 224.436 ms
Loss rate: 1.36%
```

Run 1: Report of TCP Cubic — Data Link

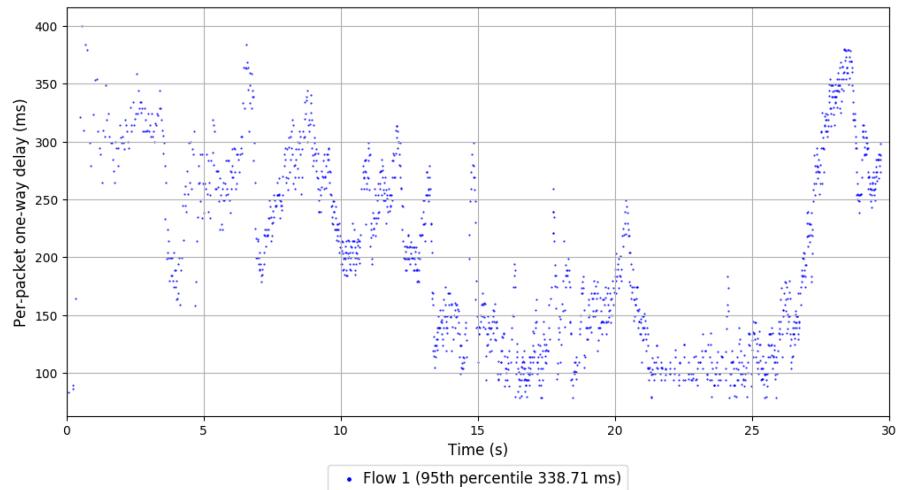
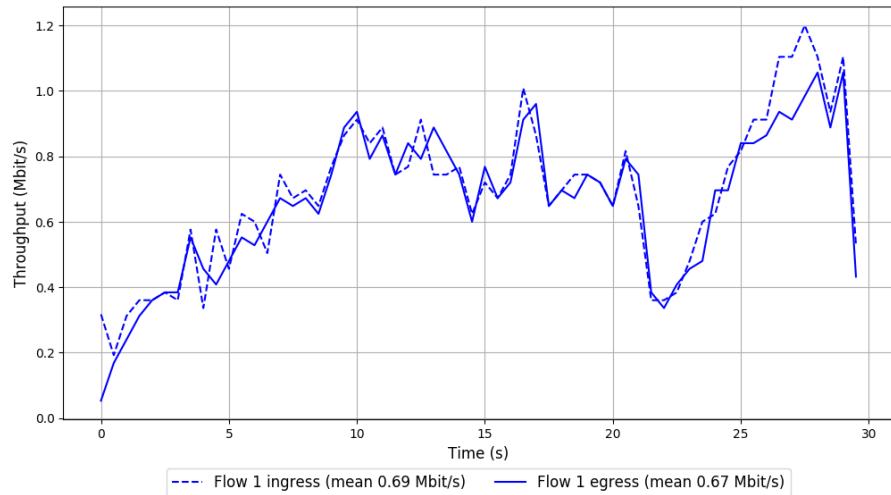


Run 2: Statistics of TCP Cubic

```
Start at: 2017-12-20 16:32:14
End at: 2017-12-20 16:32:44
Local clock offset: 2.533 ms
Remote clock offset: -15.438 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 338.707 ms
Loss rate: 3.78%
-- Flow 1:
Average throughput: 0.67 Mbit/s
95th percentile per-packet one-way delay: 338.707 ms
Loss rate: 3.78%
```

Run 2: Report of TCP Cubic — Data Link

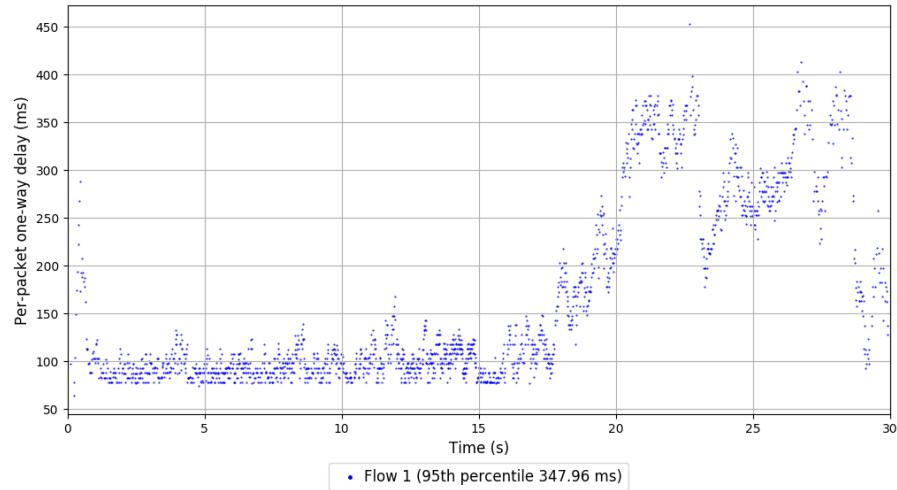
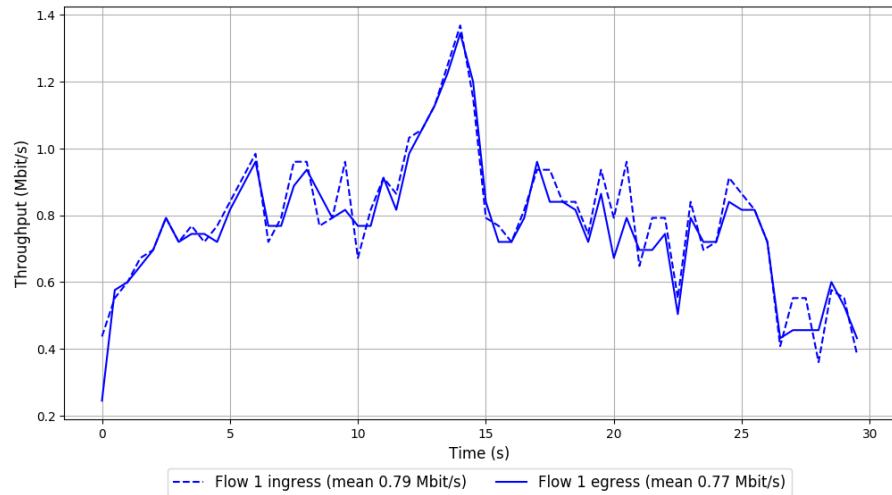


Run 3: Statistics of TCP Cubic

```
Start at: 2017-12-20 16:49:02
End at: 2017-12-20 16:49:32
Local clock offset: 2.9 ms
Remote clock offset: -15.24 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 347.962 ms
Loss rate: 2.73%
-- Flow 1:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 347.962 ms
Loss rate: 2.73%
```

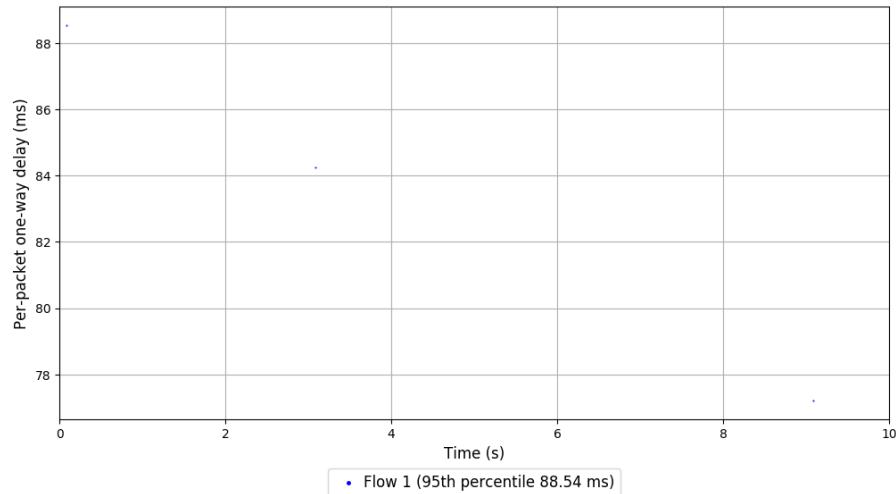
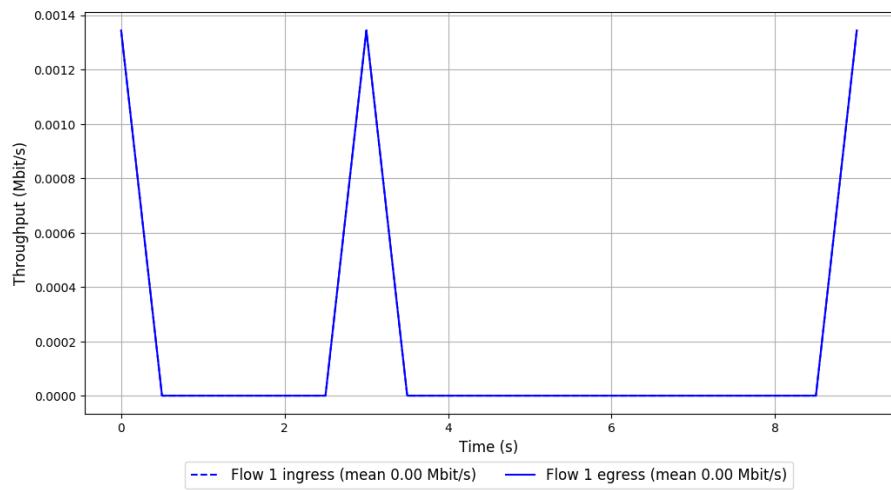
Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of LEDBAT

Start at: 2017-12-20 16:11:00
End at: 2017-12-20 16:11:30
Local clock offset: 2.3 ms
Remote clock offset: -16.015 ms

Run 1: Report of LEDBAT — Data Link

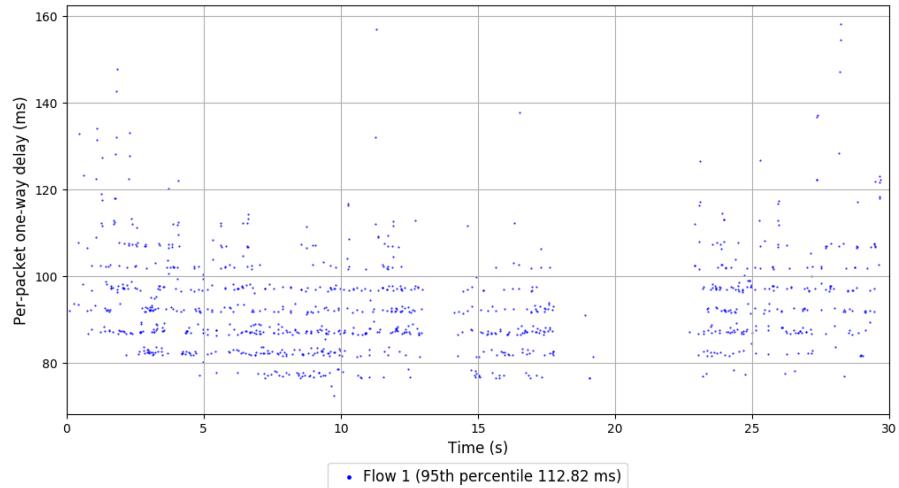
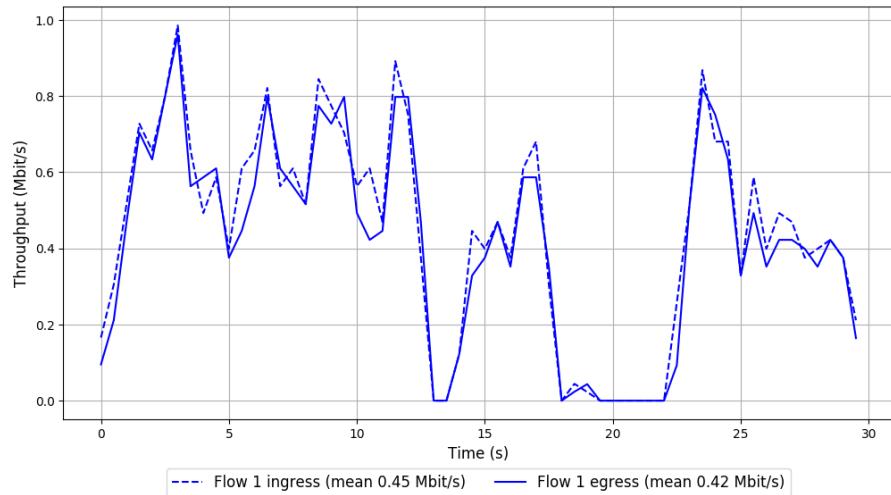


Run 2: Statistics of LEDBAT

```
Start at: 2017-12-20 16:27:47
End at: 2017-12-20 16:28:17
Local clock offset: 4.454 ms
Remote clock offset: -14.844 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 112.818 ms
Loss rate: 5.91%
-- Flow 1:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 112.818 ms
Loss rate: 5.91%
```

Run 2: Report of LEDBAT — Data Link

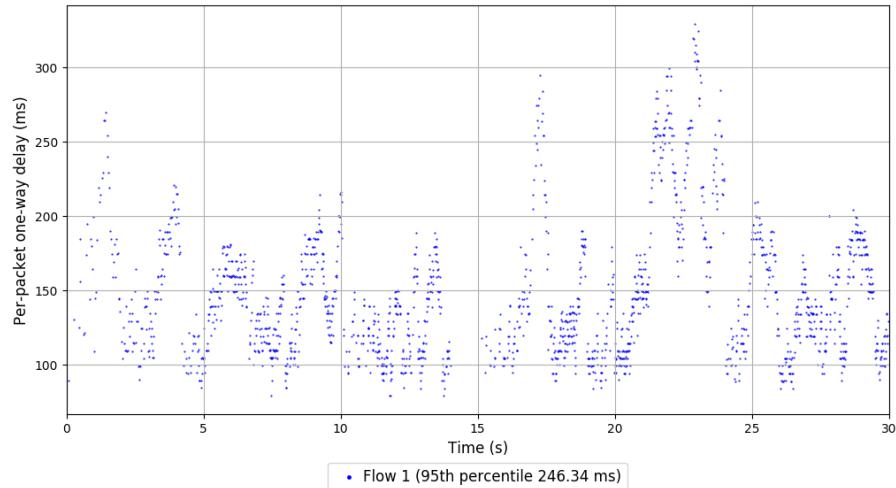
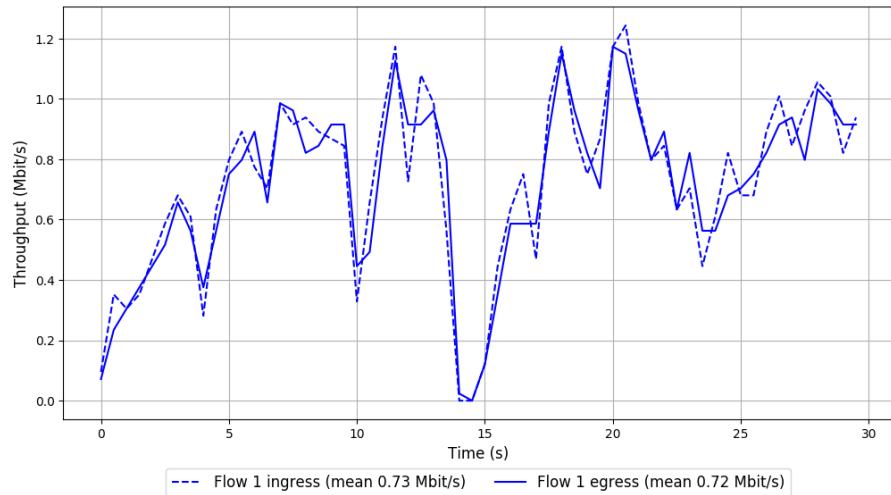


Run 3: Statistics of LEDBAT

```
Start at: 2017-12-20 16:44:39
End at: 2017-12-20 16:45:09
Local clock offset: 5.567 ms
Remote clock offset: -17.809 ms

# Below is generated by plot.py at 2017-12-20 17:43:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 246.335 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 246.335 ms
Loss rate: 1.67%
```

Run 3: Report of LEDBAT — Data Link

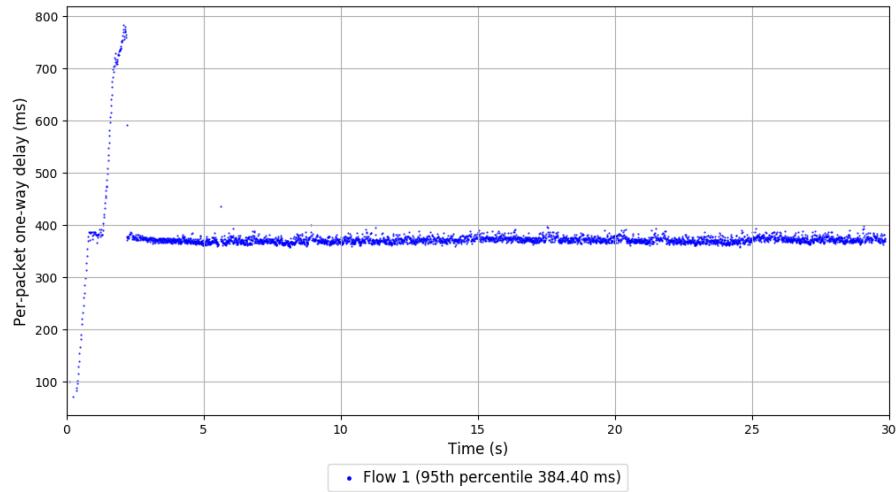
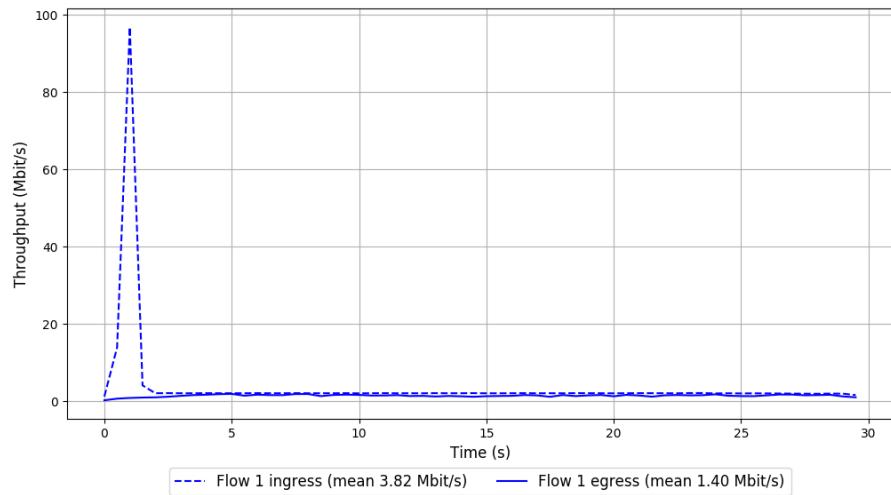


Run 1: Statistics of PCC

```
Start at: 2017-12-20 16:03:07
End at: 2017-12-20 16:03:37
Local clock offset: 3.47 ms
Remote clock offset: -17.233 ms

# Below is generated by plot.py at 2017-12-20 17:43:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 384.400 ms
Loss rate: 63.47%
-- Flow 1:
Average throughput: 1.40 Mbit/s
95th percentile per-packet one-way delay: 384.400 ms
Loss rate: 63.47%
```

Run 1: Report of PCC — Data Link

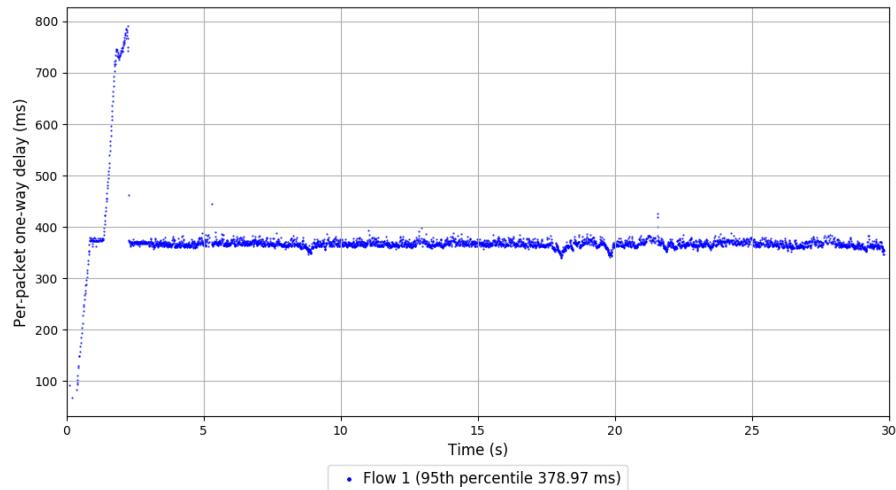
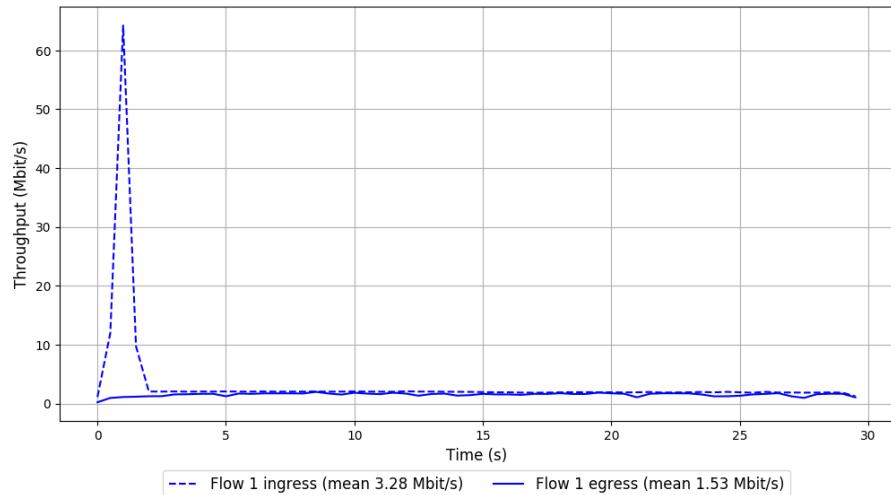


Run 2: Statistics of PCC

```
Start at: 2017-12-20 16:19:59
End at: 2017-12-20 16:20:29
Local clock offset: 2.187 ms
Remote clock offset: -15.234 ms

# Below is generated by plot.py at 2017-12-20 17:43:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 378.966 ms
Loss rate: 53.49%
-- Flow 1:
Average throughput: 1.53 Mbit/s
95th percentile per-packet one-way delay: 378.966 ms
Loss rate: 53.49%
```

Run 2: Report of PCC — Data Link

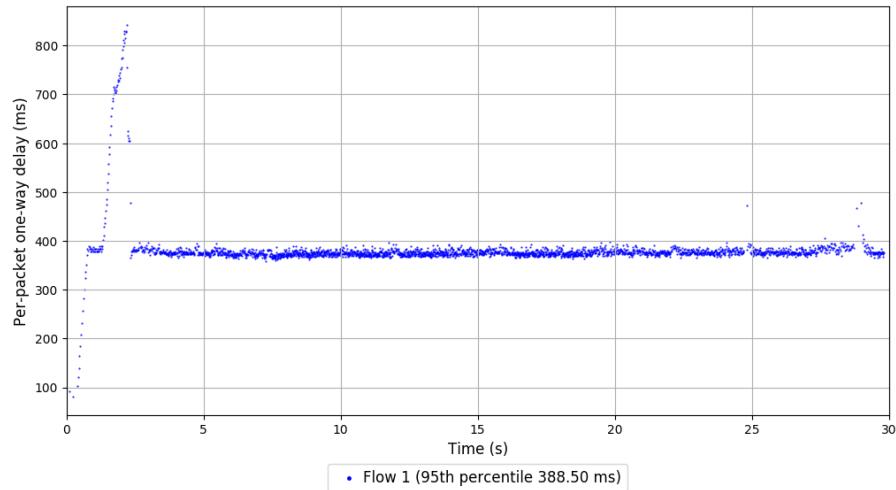
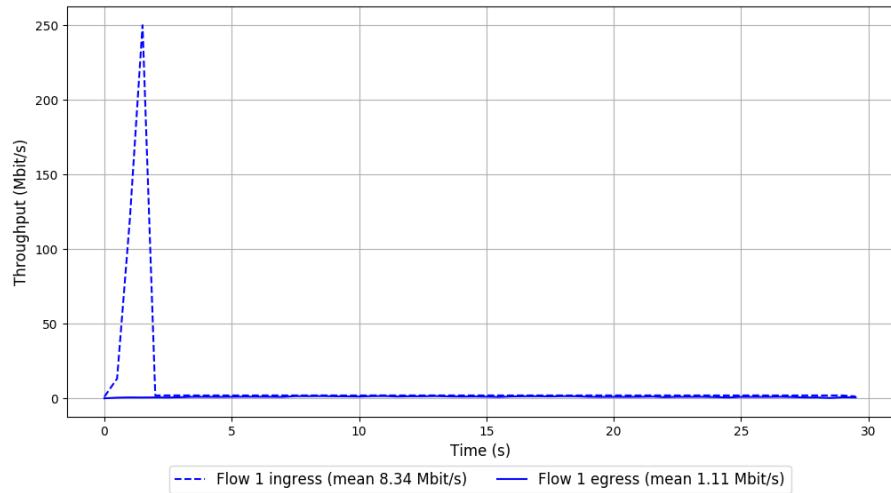


Run 3: Statistics of PCC

```
Start at: 2017-12-20 16:36:51
End at: 2017-12-20 16:37:21
Local clock offset: 4.01 ms
Remote clock offset: -16.882 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 388.502 ms
Loss rate: 86.71%
-- Flow 1:
Average throughput: 1.11 Mbit/s
95th percentile per-packet one-way delay: 388.502 ms
Loss rate: 86.71%
```

Run 3: Report of PCC — Data Link

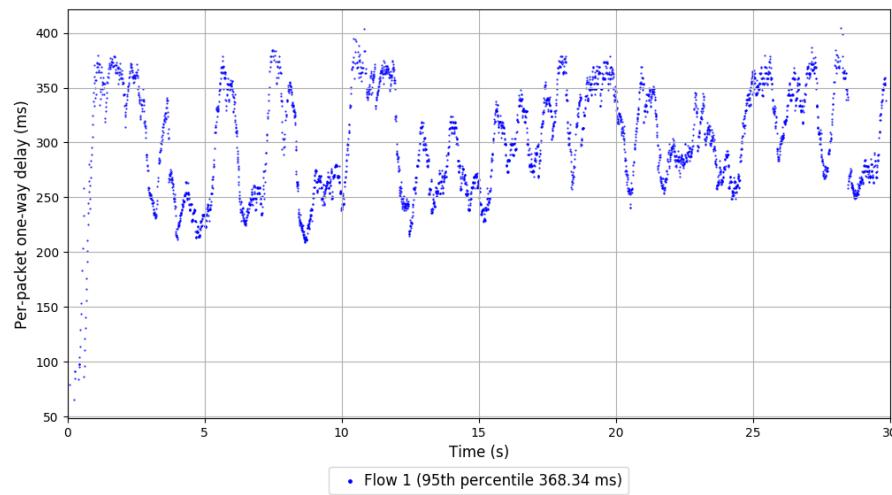
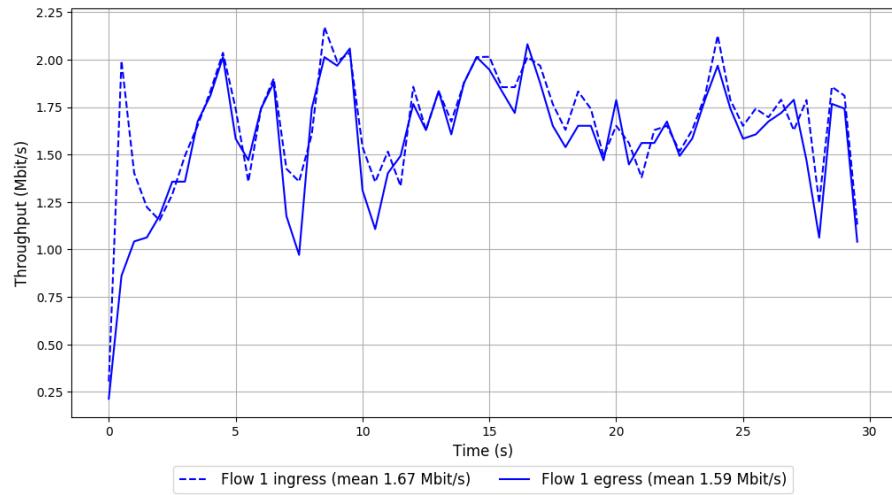


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: 2017-12-20 16:17:46
End at: 2017-12-20 16:18:16
Local clock offset: 3.425 ms
Remote clock offset: -14.915 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 368.344 ms
Loss rate: 4.91%
-- Flow 1:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 368.344 ms
Loss rate: 4.91%
```

Run 1: Report of QUIC Cubic — Data Link

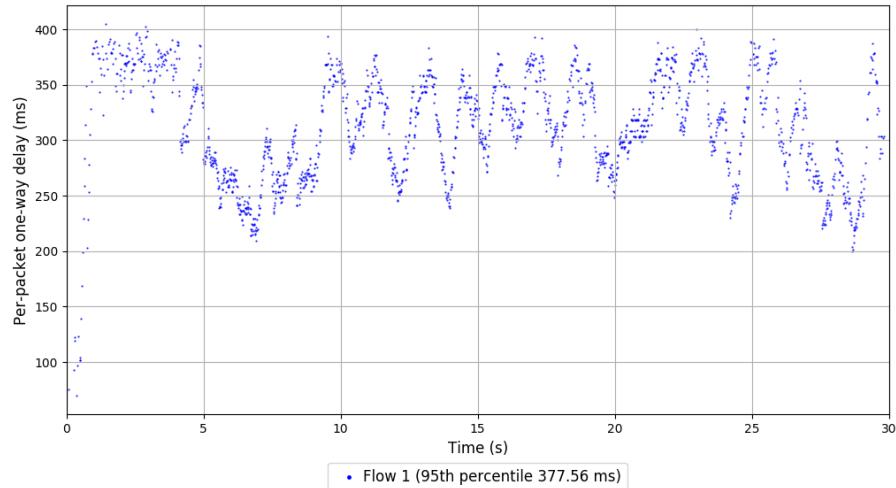
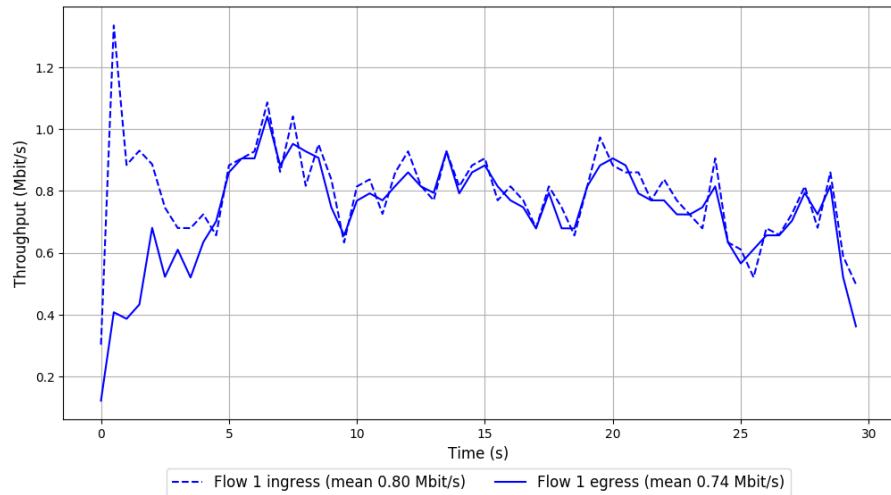


Run 2: Statistics of QUIC Cubic

```
Start at: 2017-12-20 16:34:34
End at: 2017-12-20 16:35:04
Local clock offset: 2.81 ms
Remote clock offset: -15.811 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 377.562 ms
Loss rate: 7.84%
-- Flow 1:
Average throughput: 0.74 Mbit/s
95th percentile per-packet one-way delay: 377.562 ms
Loss rate: 7.84%
```

Run 2: Report of QUIC Cubic — Data Link

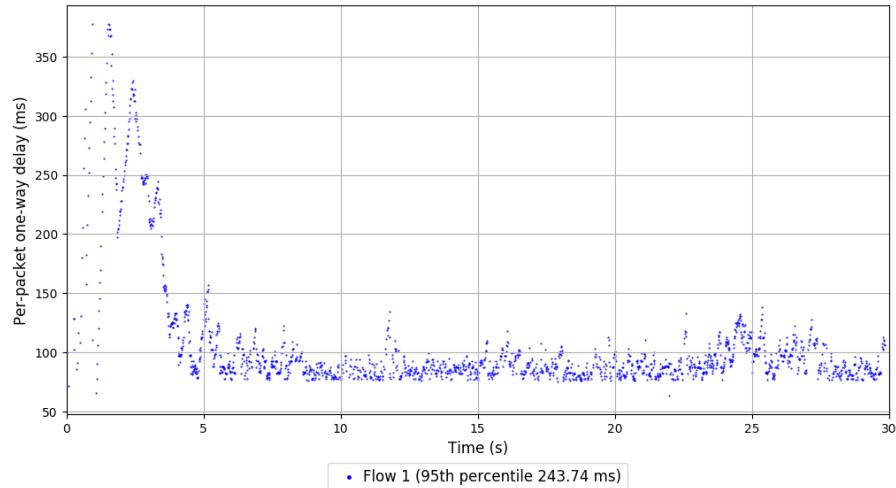
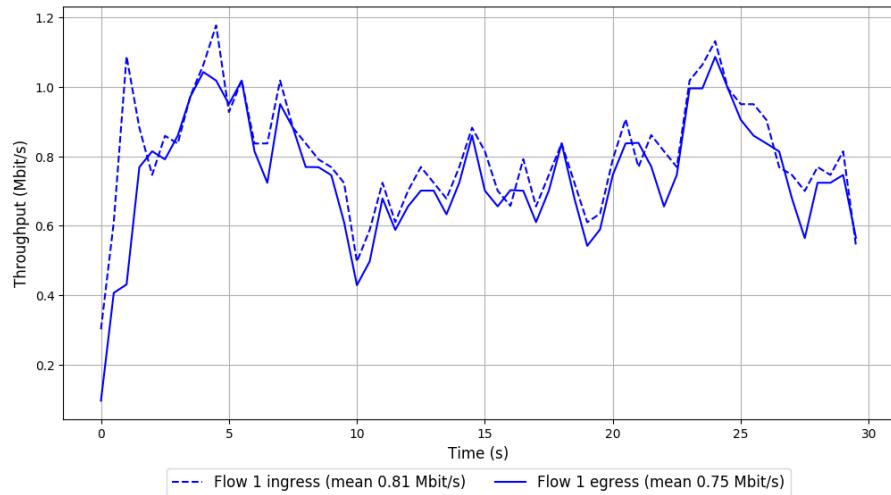


Run 3: Statistics of QUIC Cubic

```
Start at: 2017-12-20 16:51:14
End at: 2017-12-20 16:51:45
Local clock offset: 2.561 ms
Remote clock offset: -16.992 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 243.742 ms
Loss rate: 7.45%
-- Flow 1:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 243.742 ms
Loss rate: 7.45%
```

Run 3: Report of QUIC Cubic — Data Link

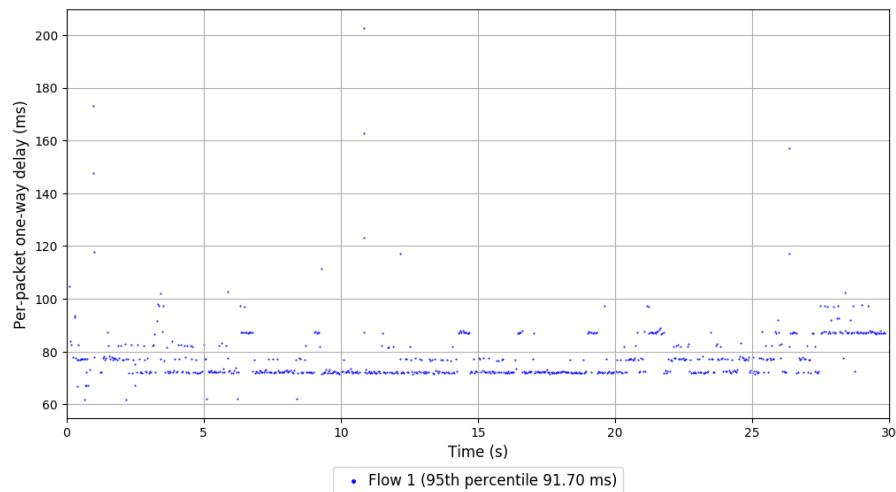
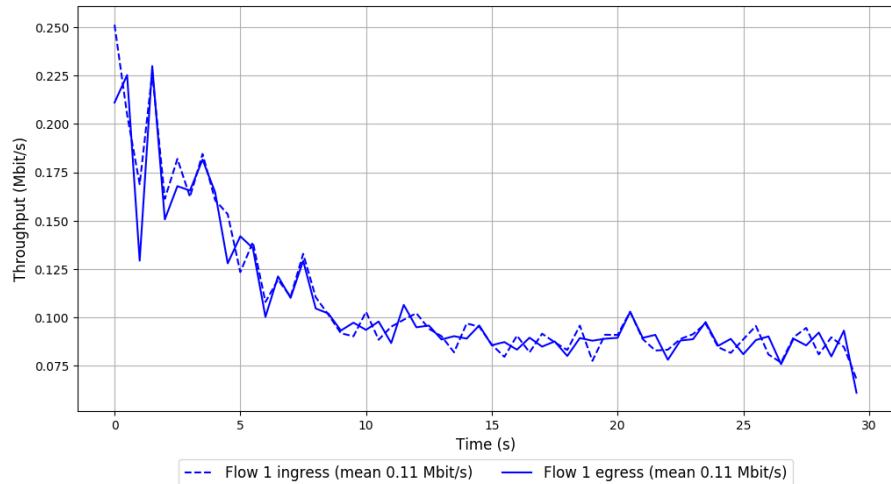


```
Run 1: Statistics of SCReAM
```

```
Start at: 2017-12-20 16:05:21
End at: 2017-12-20 16:05:51
Local clock offset: 3.416 ms
Remote clock offset: -15.202 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 91.697 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 91.697 ms
Loss rate: 1.62%
```

Run 1: Report of SCReAM — Data Link

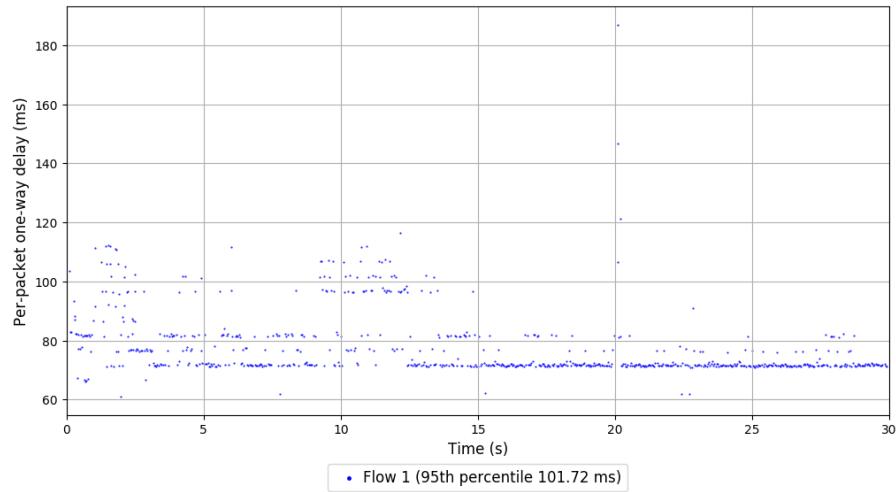
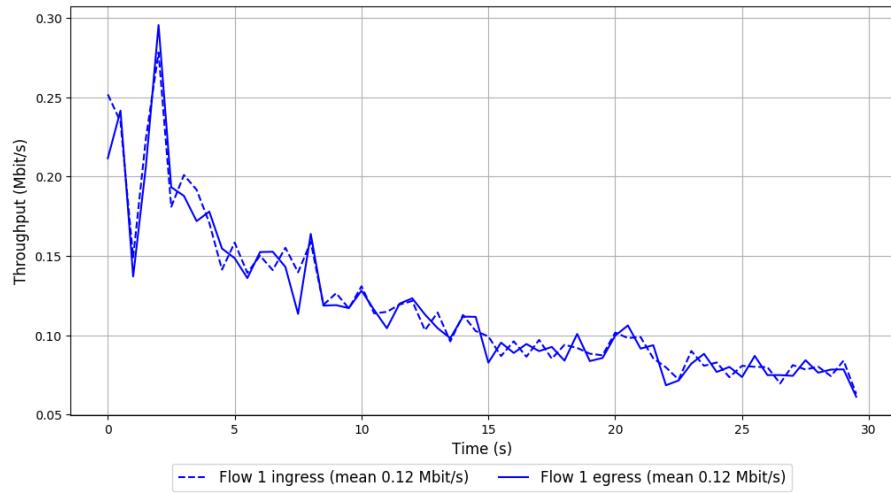


Run 2: Statistics of SCReAM

```
Start at: 2017-12-20 16:22:13
End at: 2017-12-20 16:22:43
Local clock offset: 2.284 ms
Remote clock offset: -14.9 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 101.724 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 101.724 ms
Loss rate: 1.58%
```

Run 2: Report of SCReAM — Data Link

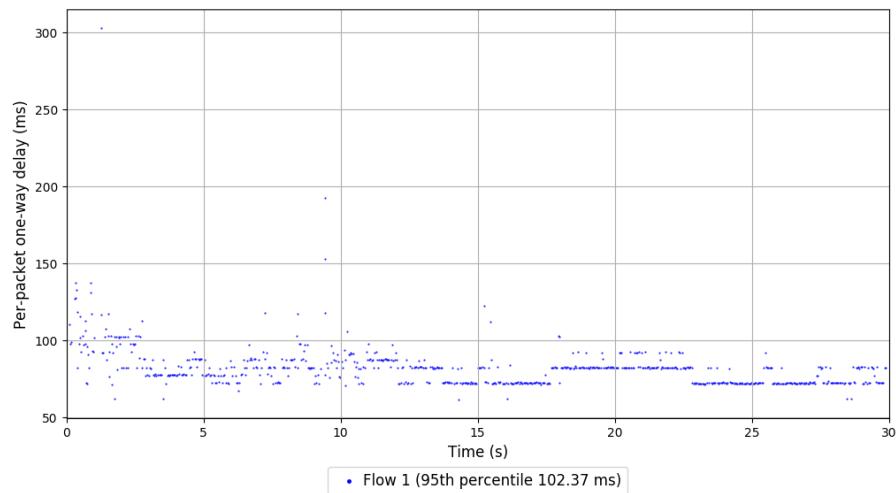
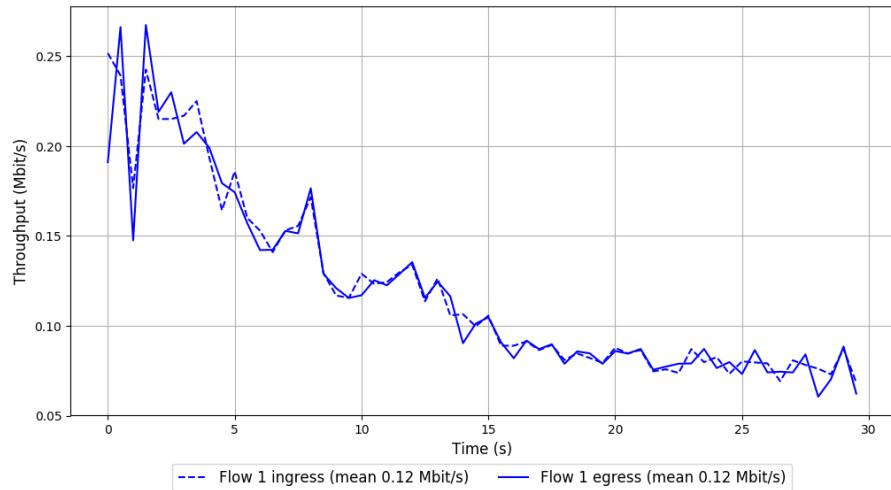


Run 3: Statistics of SCReAM

```
Start at: 2017-12-20 16:39:05
End at: 2017-12-20 16:39:35
Local clock offset: 2.682 ms
Remote clock offset: -15.463 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 102.369 ms
Loss rate: 1.21%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 102.369 ms
Loss rate: 1.21%
```

Run 3: Report of SCReAM — Data Link

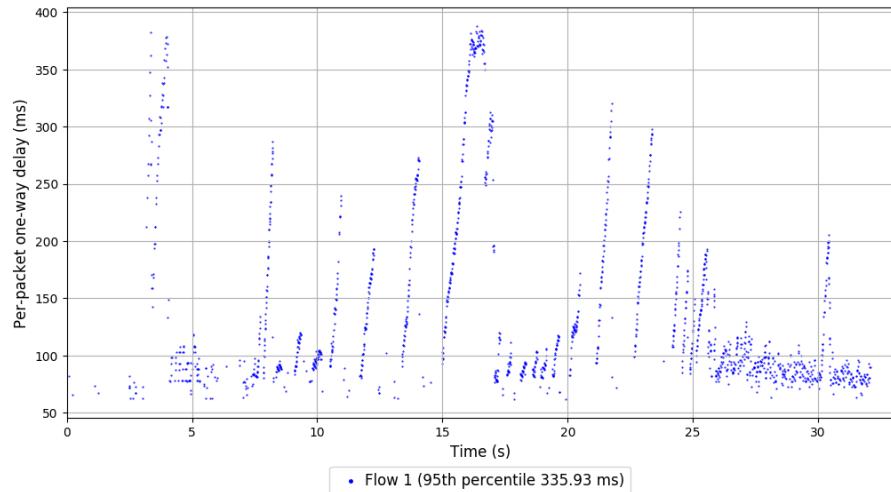
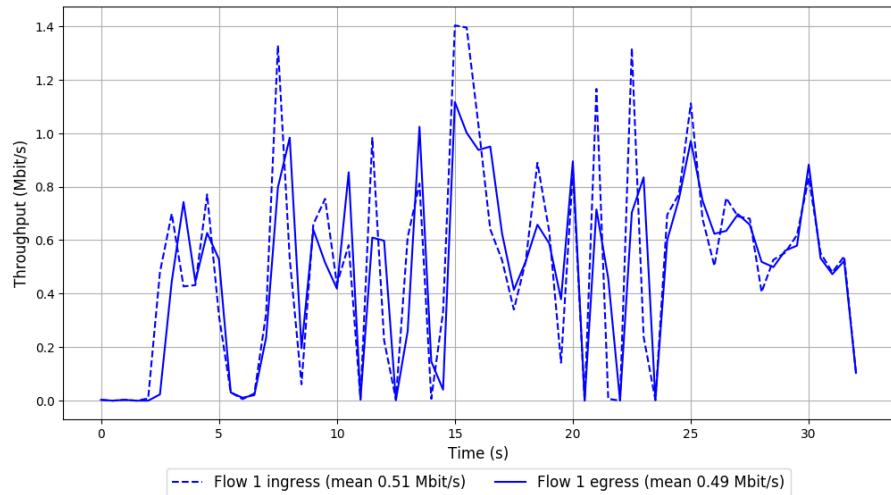


```
Run 1: Statistics of WebRTC media
```

```
Start at: 2017-12-20 16:06:27
End at: 2017-12-20 16:06:57
Local clock offset: 3.99 ms
Remote clock offset: -14.624 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 335.933 ms
Loss rate: 3.39%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 335.933 ms
Loss rate: 3.39%
```

Run 1: Report of WebRTC media — Data Link

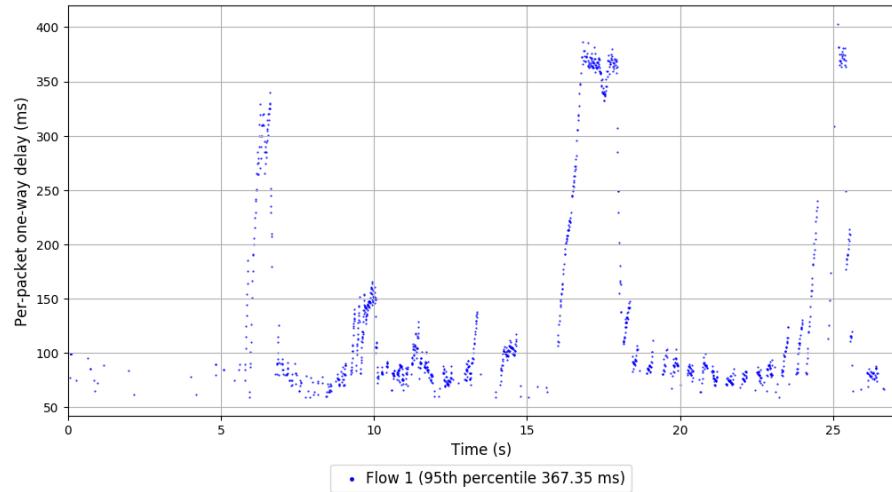
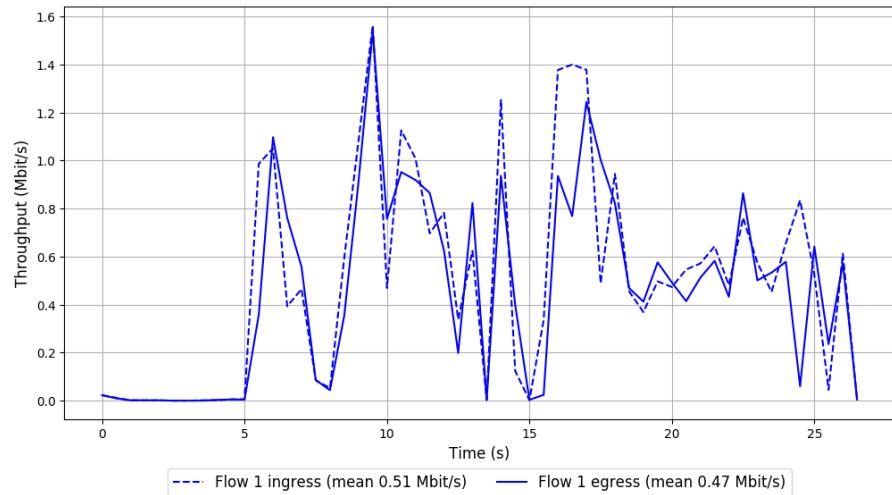


Run 2: Statistics of WebRTC media

```
Start at: 2017-12-20 16:23:20
End at: 2017-12-20 16:23:50
Local clock offset: 2.457 ms
Remote clock offset: -13.551 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 367.351 ms
Loss rate: 8.31%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 367.351 ms
Loss rate: 8.31%
```

Run 2: Report of WebRTC media — Data Link

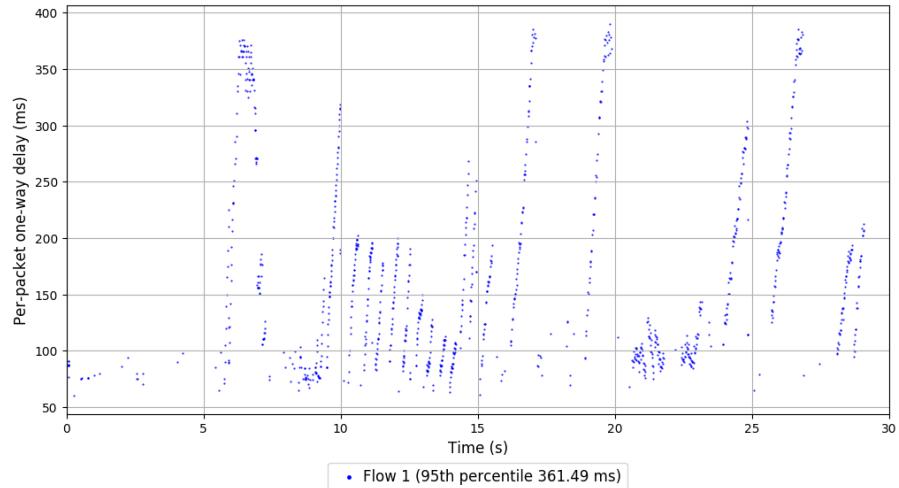
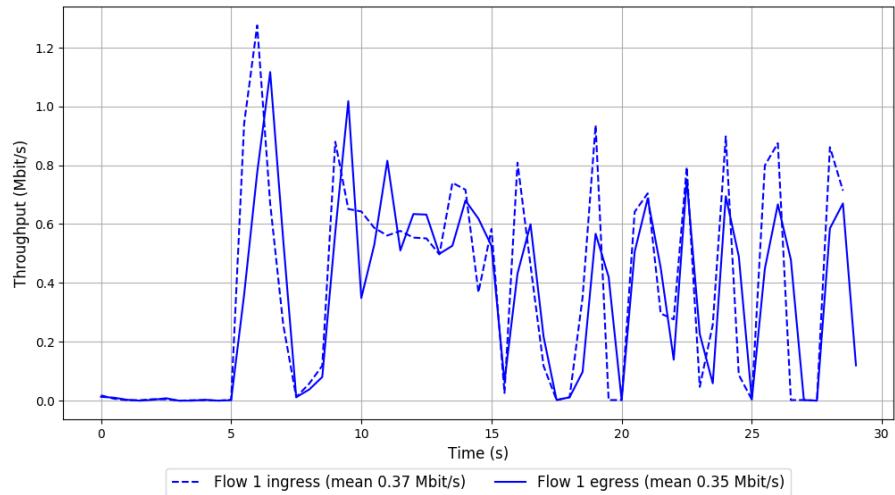


Run 3: Statistics of WebRTC media

```
Start at: 2017-12-20 16:40:12
End at: 2017-12-20 16:40:42
Local clock offset: 2.317 ms
Remote clock offset: -15.67 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 361.485 ms
Loss rate: 4.65%
-- Flow 1:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 361.485 ms
Loss rate: 4.65%
```

Run 3: Report of WebRTC media — Data Link

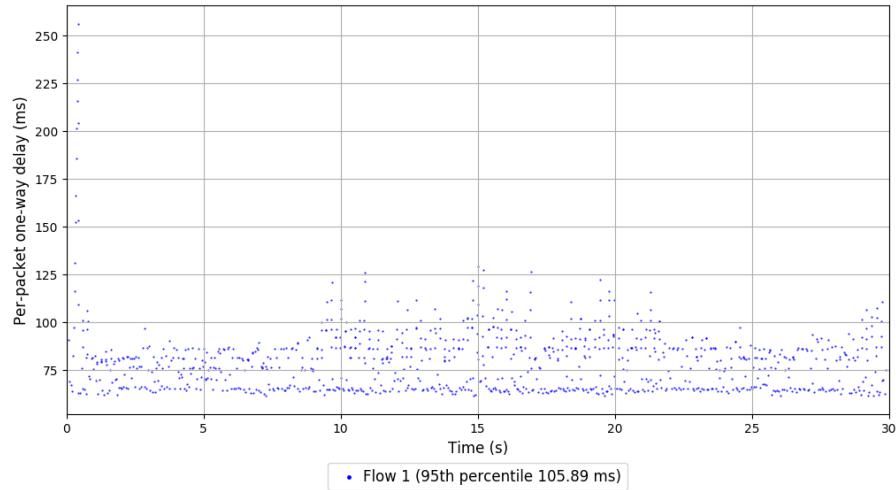
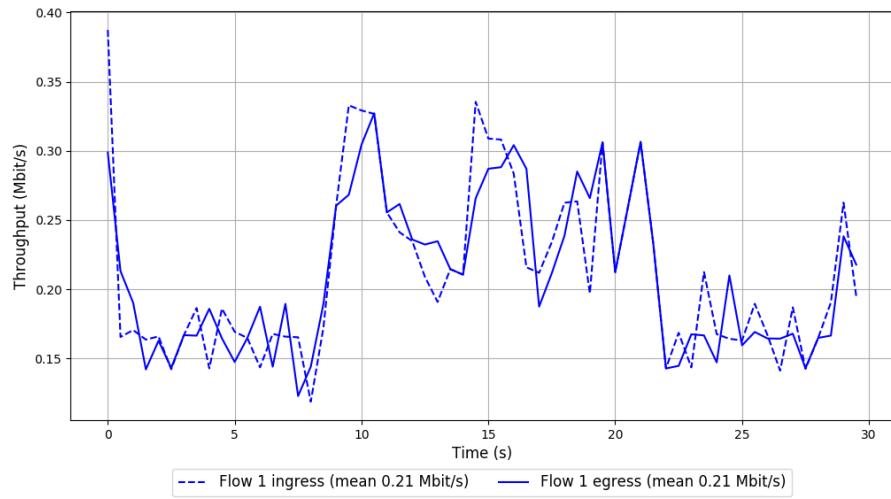


Run 1: Statistics of Sprout

```
Start at: 2017-12-20 16:09:54
End at: 2017-12-20 16:10:24
Local clock offset: 1.652 ms
Remote clock offset: -16.983 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 105.890 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 105.890 ms
Loss rate: 0.70%
```

Run 1: Report of Sprout — Data Link

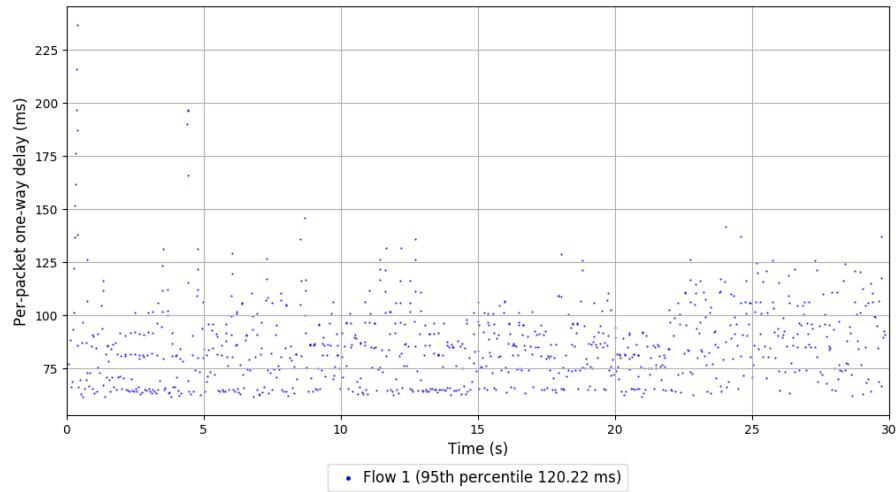
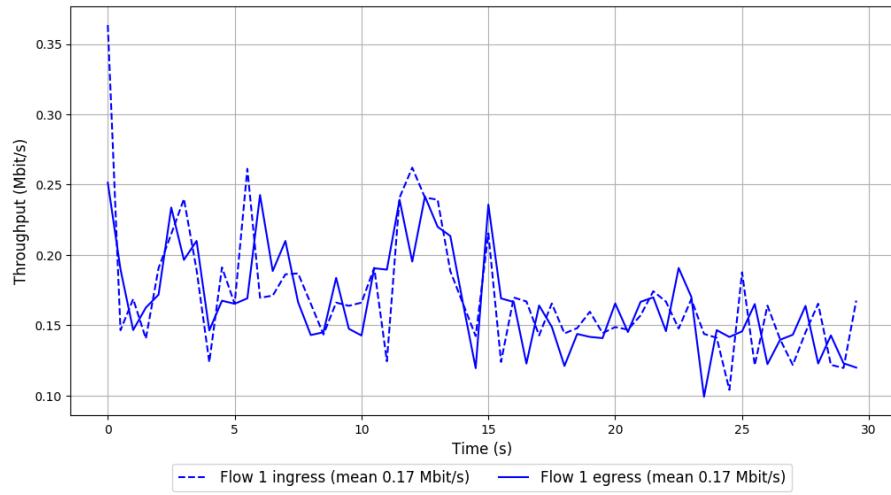


Run 2: Statistics of Sprout

```
Start at: 2017-12-20 16:26:40
End at: 2017-12-20 16:27:10
Local clock offset: 3.219 ms
Remote clock offset: -15.818 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 120.216 ms
Loss rate: 1.98%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 120.216 ms
Loss rate: 1.98%
```

Run 2: Report of Sprout — Data Link

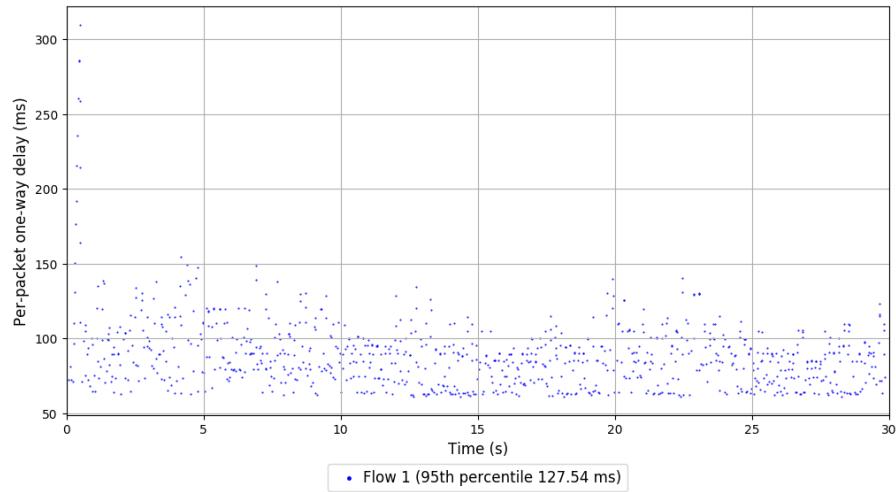
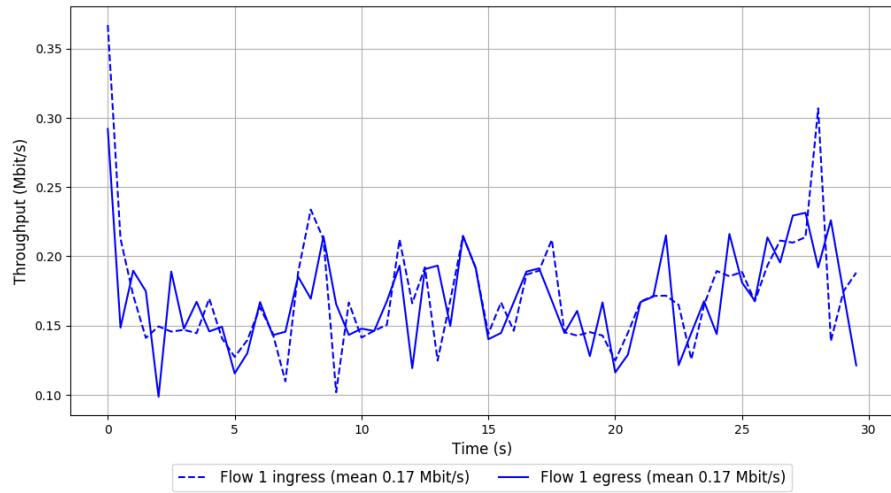


Run 3: Statistics of Sprout

```
Start at: 2017-12-20 16:43:32
End at: 2017-12-20 16:44:02
Local clock offset: 4.002 ms
Remote clock offset: -15.44 ms

# Below is generated by plot.py at 2017-12-20 17:43:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 127.543 ms
Loss rate: 1.85%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 127.543 ms
Loss rate: 1.85%
```

Run 3: Report of Sprout — Data Link

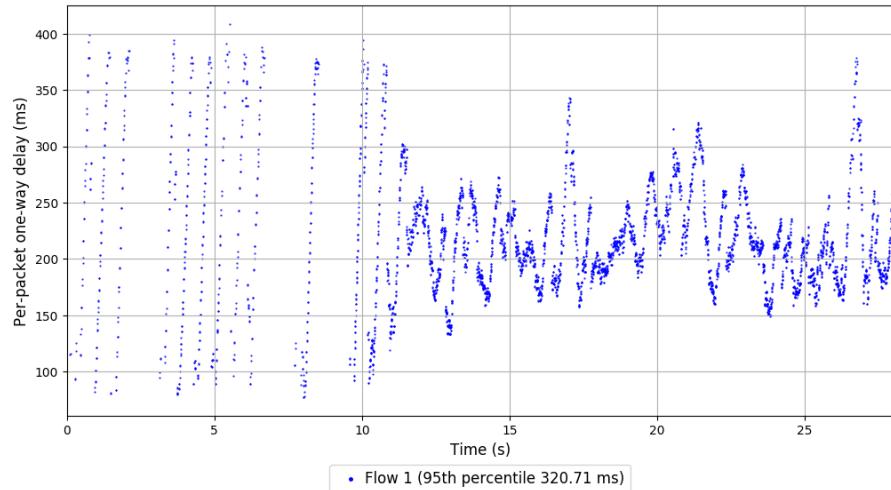
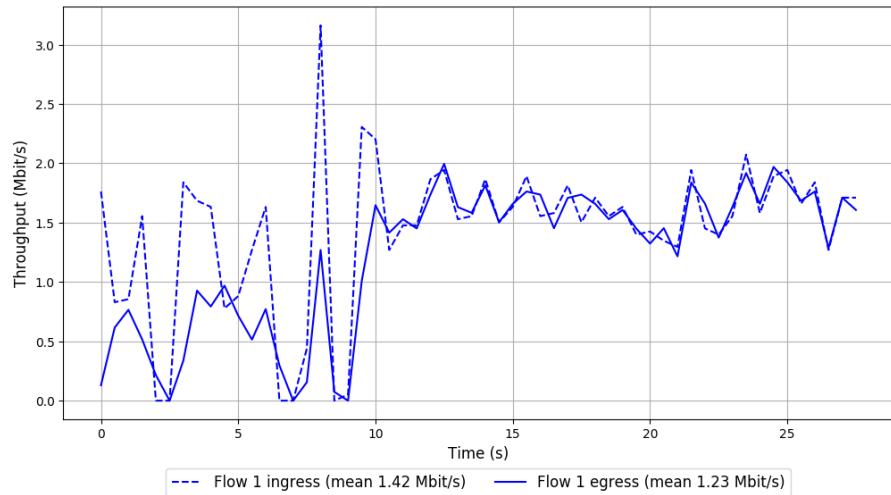


Run 1: Statistics of TaoVA-100x

```
Start at: 2017-12-20 16:08:45
End at: 2017-12-20 16:09:15
Local clock offset: 3.804 ms
Remote clock offset: -15.654 ms

# Below is generated by plot.py at 2017-12-20 17:43:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 320.710 ms
Loss rate: 13.95%
-- Flow 1:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 320.710 ms
Loss rate: 13.95%
```

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

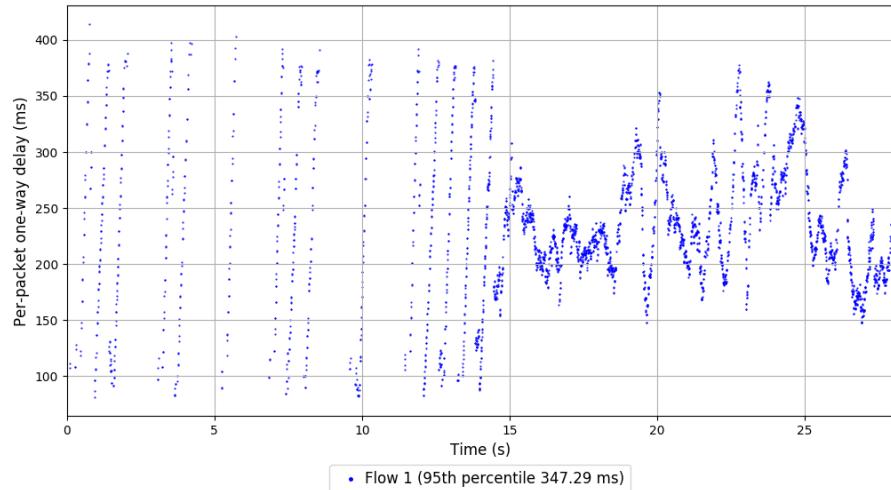
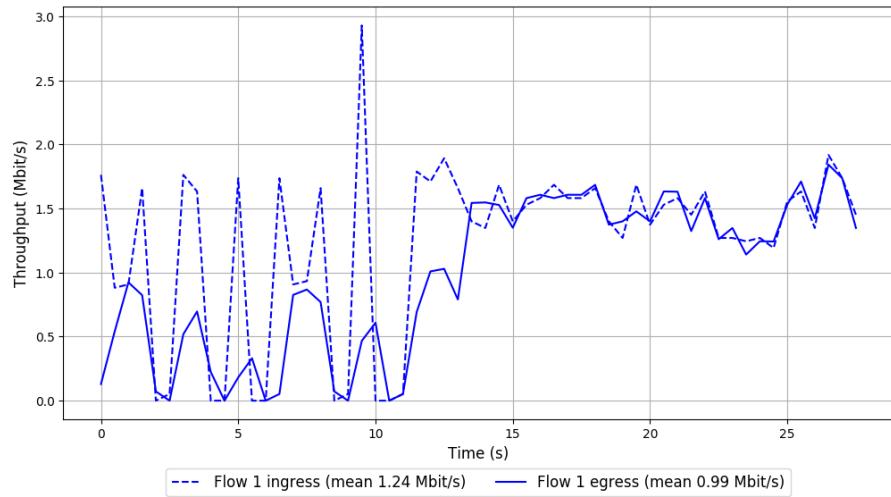


Run 2: Statistics of TaoVA-100x

```
Start at: 2017-12-20 16:25:32
End at: 2017-12-20 16:26:02
Local clock offset: 2.464 ms
Remote clock offset: -16.53 ms

# Below is generated by plot.py at 2017-12-20 17:44:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 347.294 ms
Loss rate: 20.33%
-- Flow 1:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 347.294 ms
Loss rate: 20.33%
```

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

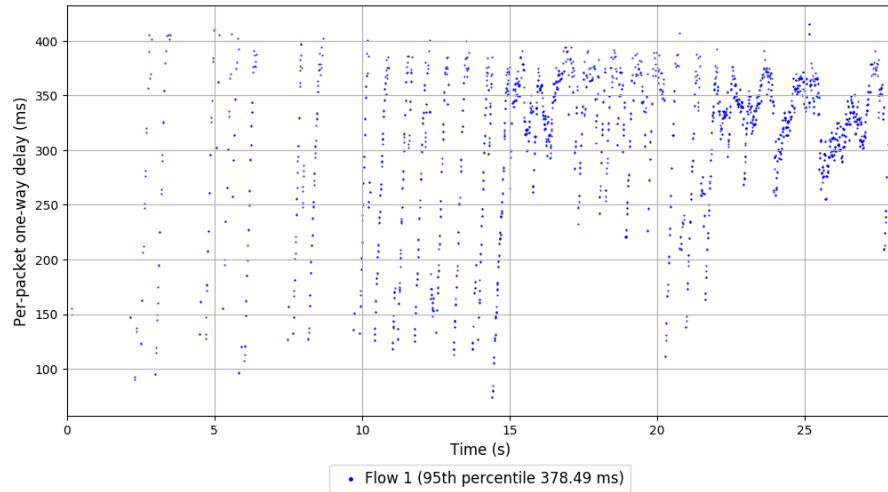
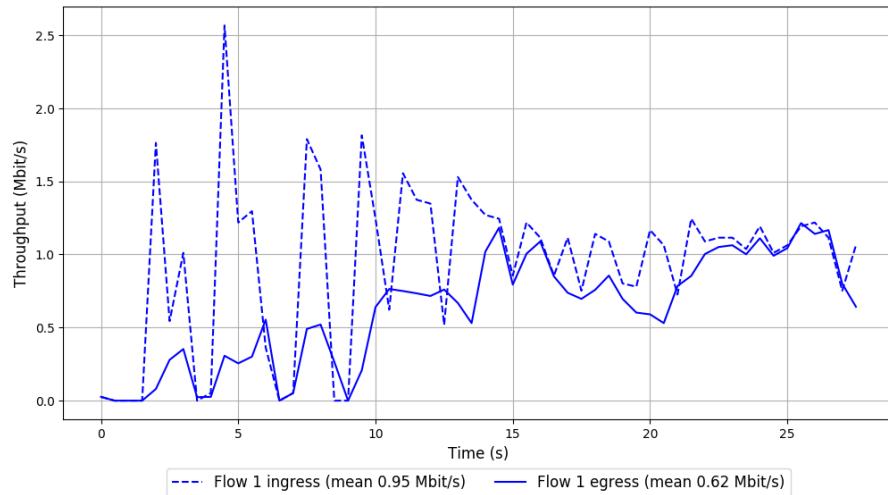


Run 3: Statistics of TaoVA-100x

```
Start at: 2017-12-20 16:42:26
End at: 2017-12-20 16:42:56
Local clock offset: 3.946 ms
Remote clock offset: -16.254 ms

# Below is generated by plot.py at 2017-12-20 17:44:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 378.494 ms
Loss rate: 34.82%
-- Flow 1:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 378.494 ms
Loss rate: 34.82%
```

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

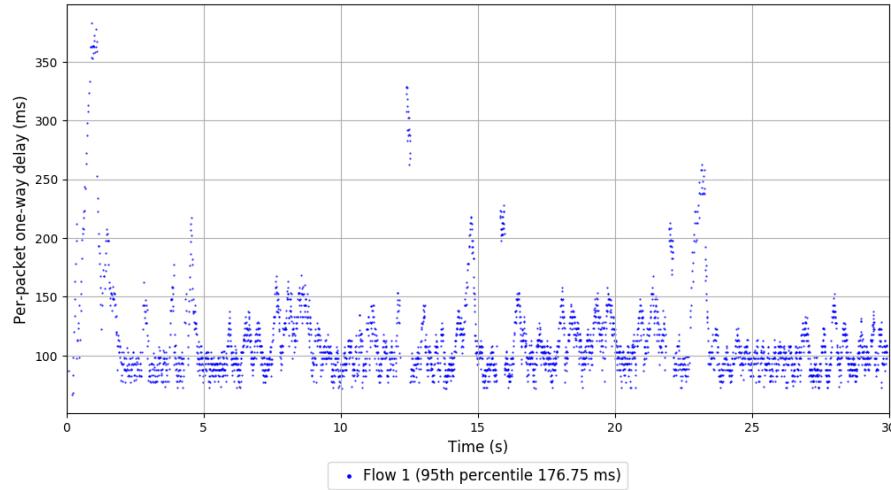
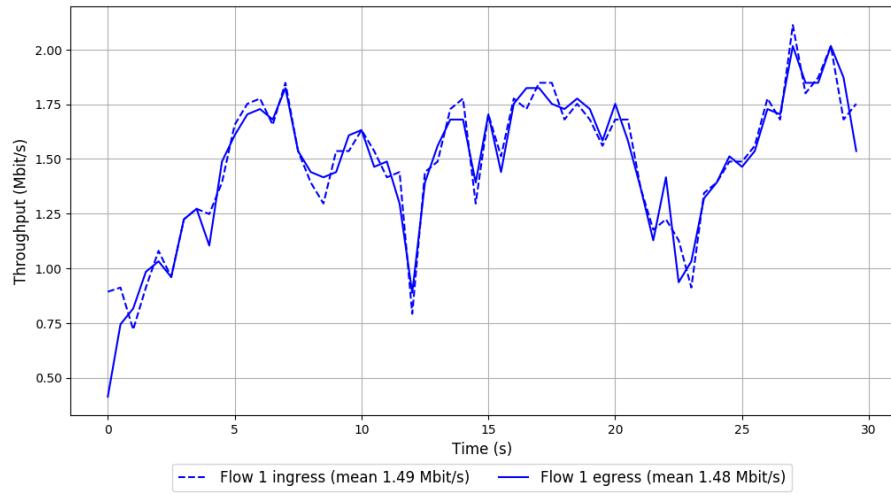


Run 1: Statistics of TCP Vegas

```
Start at: 2017-12-20 16:18:53
End at: 2017-12-20 16:19:23
Local clock offset: 2.211 ms
Remote clock offset: -14.845 ms

# Below is generated by plot.py at 2017-12-20 17:44:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 176.750 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 176.750 ms
Loss rate: 0.83%
```

Run 1: Report of TCP Vegas — Data Link

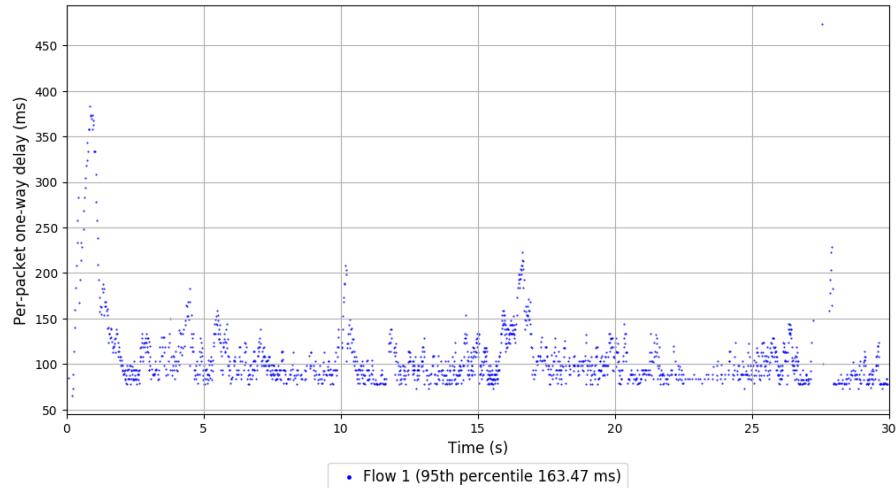
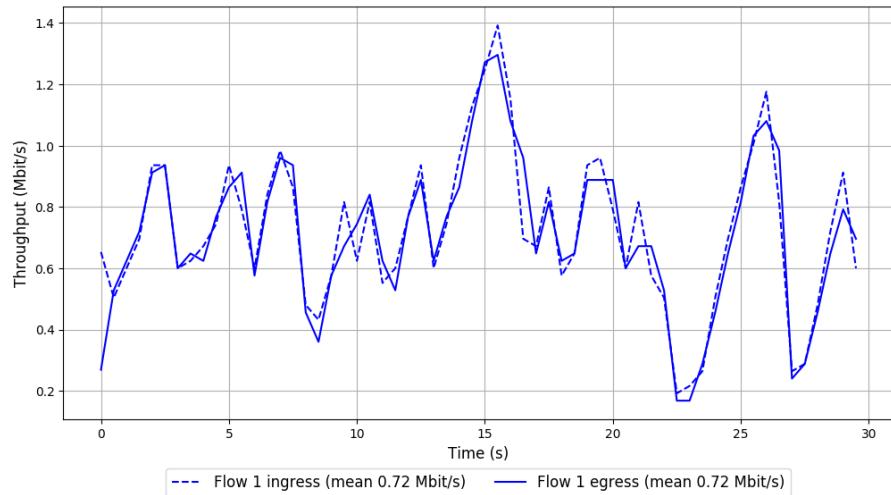


Run 2: Statistics of TCP Vegas

```
Start at: 2017-12-20 16:35:42
End at: 2017-12-20 16:36:12
Local clock offset: 4.914 ms
Remote clock offset: -13.891 ms

# Below is generated by plot.py at 2017-12-20 17:44:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 163.469 ms
Loss rate: 1.66%
-- Flow 1:
Average throughput: 0.72 Mbit/s
95th percentile per-packet one-way delay: 163.469 ms
Loss rate: 1.66%
```

Run 2: Report of TCP Vegas — Data Link

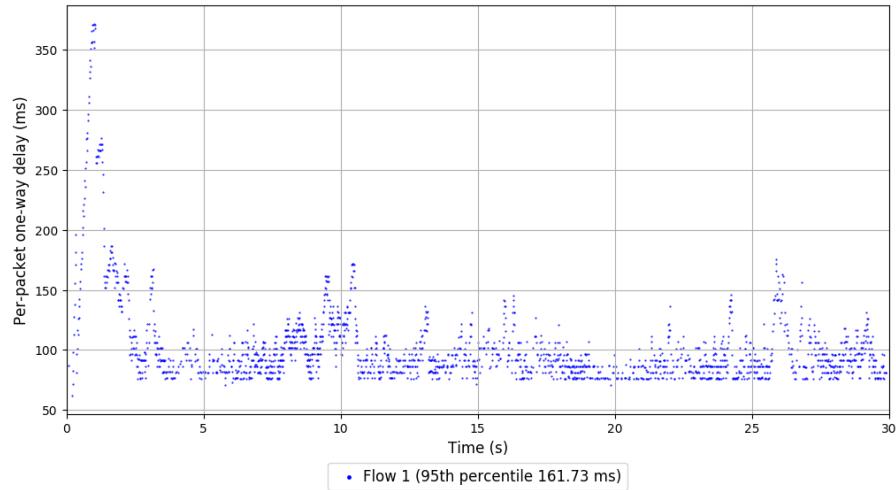
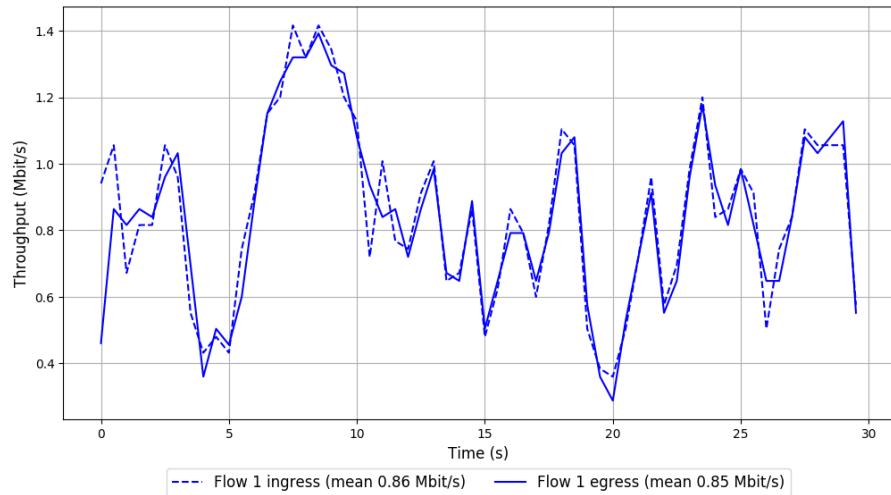


Run 3: Statistics of TCP Vegas

```
Start at: 2017-12-20 16:52:20
End at: 2017-12-20 16:52:50
Local clock offset: 2.18 ms
Remote clock offset: -16.323 ms

# Below is generated by plot.py at 2017-12-20 17:44:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 161.733 ms
Loss rate: 1.45%
-- Flow 1:
Average throughput: 0.85 Mbit/s
95th percentile per-packet one-way delay: 161.733 ms
Loss rate: 1.45%
```

Run 3: Report of TCP Vegas — Data Link

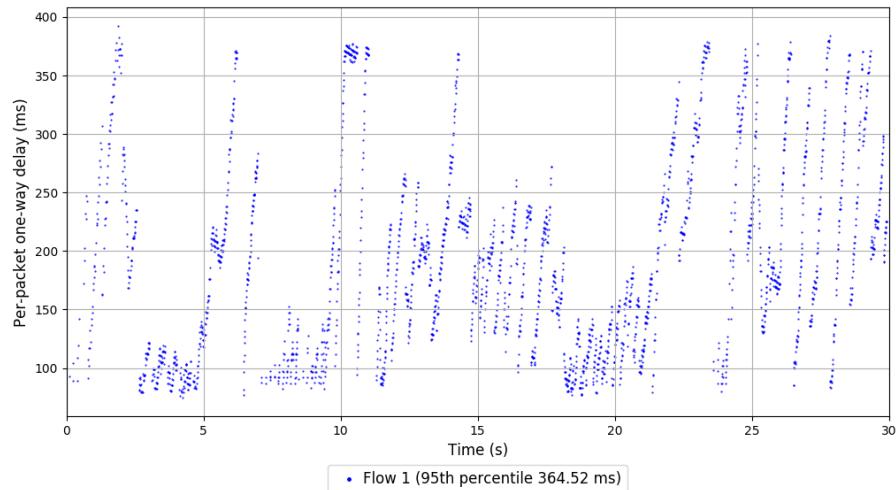
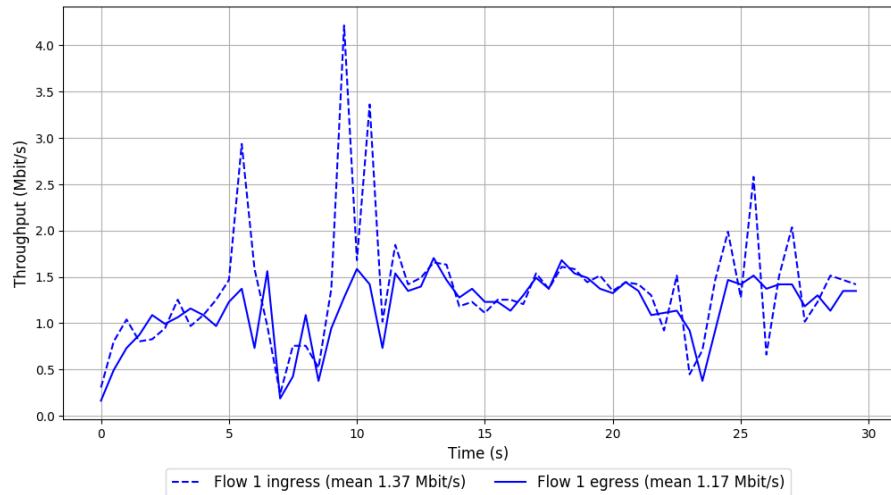


Run 1: Statistics of Verus

```
Start at: 2017-12-20 16:12:06
End at: 2017-12-20 16:12:36
Local clock offset: 3.547 ms
Remote clock offset: -15.769 ms

# Below is generated by plot.py at 2017-12-20 17:44:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 364.519 ms
Loss rate: 14.26%
-- Flow 1:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 364.519 ms
Loss rate: 14.26%
```

Run 1: Report of Verus — Data Link

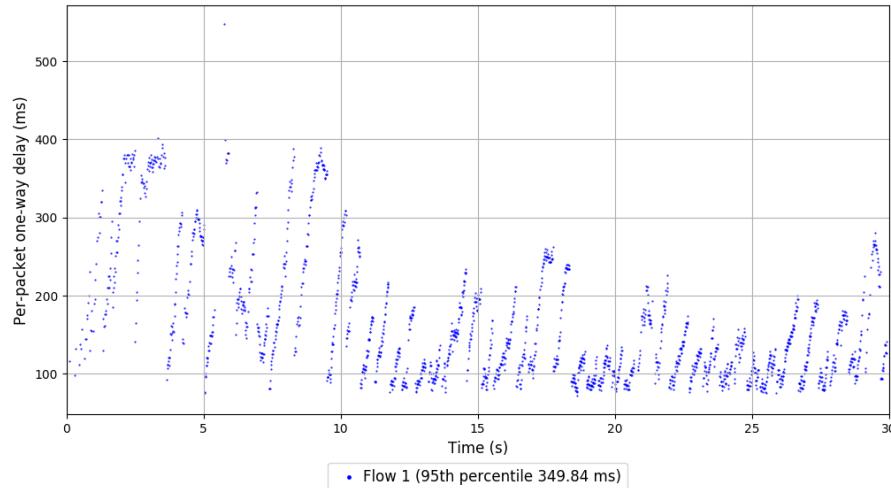
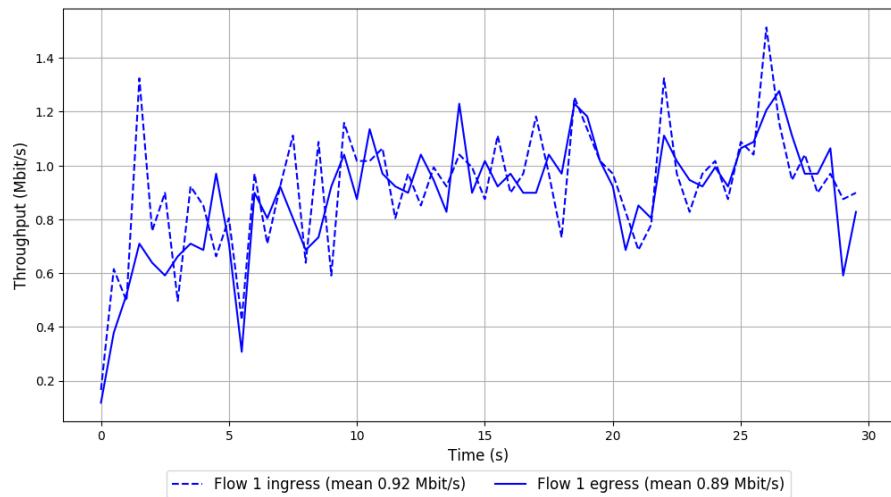


Run 2: Statistics of Verus

```
Start at: 2017-12-20 16:28:54
End at: 2017-12-20 16:29:24
Local clock offset: 2.075 ms
Remote clock offset: -15.37 ms

# Below is generated by plot.py at 2017-12-20 17:44:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 349.837 ms
Loss rate: 3.73%
-- Flow 1:
Average throughput: 0.89 Mbit/s
95th percentile per-packet one-way delay: 349.837 ms
Loss rate: 3.73%
```

Run 2: Report of Verus — Data Link

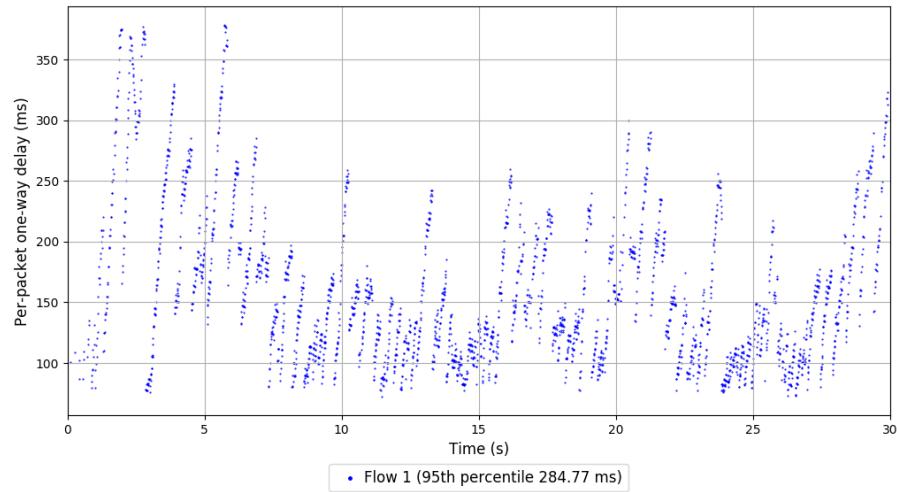
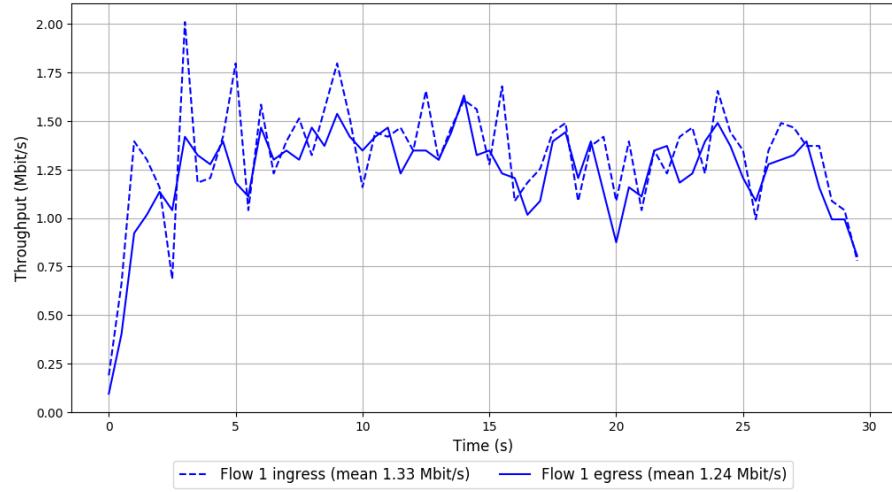


Run 3: Statistics of Verus

```
Start at: 2017-12-20 16:45:45
End at: 2017-12-20 16:46:15
Local clock offset: 2.626 ms
Remote clock offset: -16.346 ms

# Below is generated by plot.py at 2017-12-20 17:44:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.24 Mbit/s
95th percentile per-packet one-way delay: 284.771 ms
Loss rate: 6.77%
-- Flow 1:
Average throughput: 1.24 Mbit/s
95th percentile per-packet one-way delay: 284.771 ms
Loss rate: 6.77%
```

Run 3: Report of Verus — Data Link

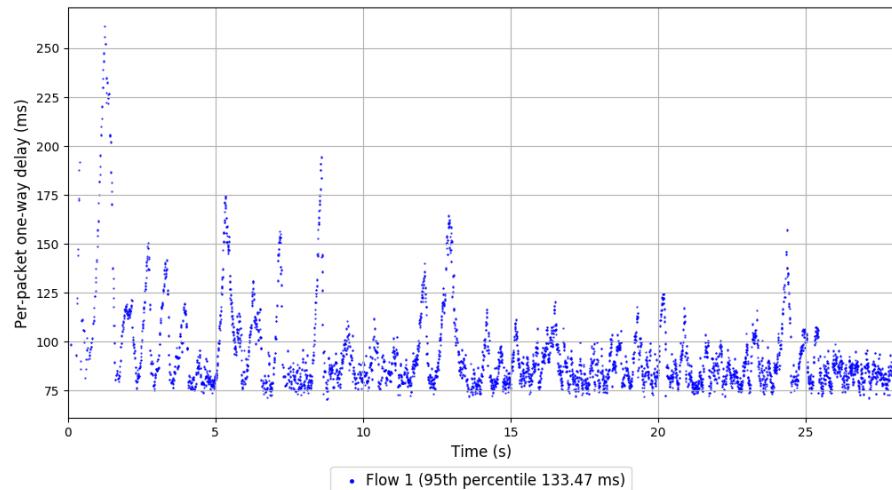
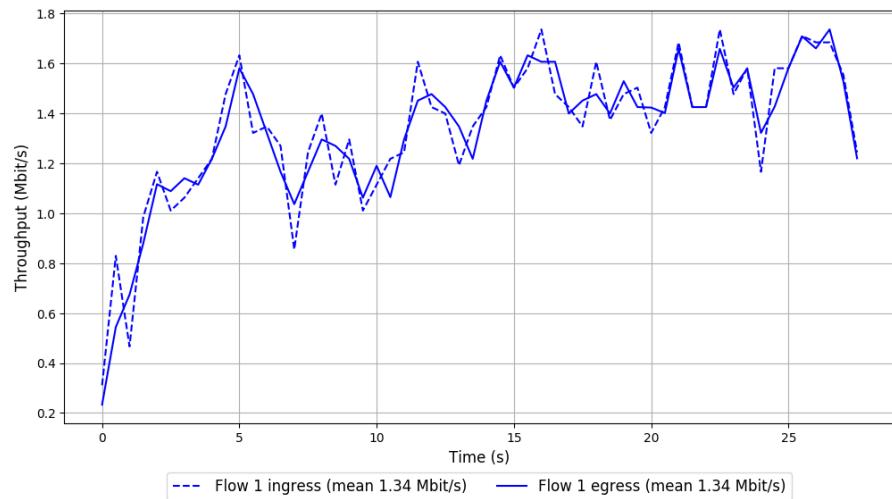


Run 1: Statistics of Copa

```
Start at: 2017-12-20 16:07:35
End at: 2017-12-20 16:08:05
Local clock offset: 1.854 ms
Remote clock offset: -14.875 ms

# Below is generated by plot.py at 2017-12-20 17:44:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 133.475 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 1.34 Mbit/s
95th percentile per-packet one-way delay: 133.475 ms
Loss rate: 0.41%
```

Run 1: Report of Copa — Data Link

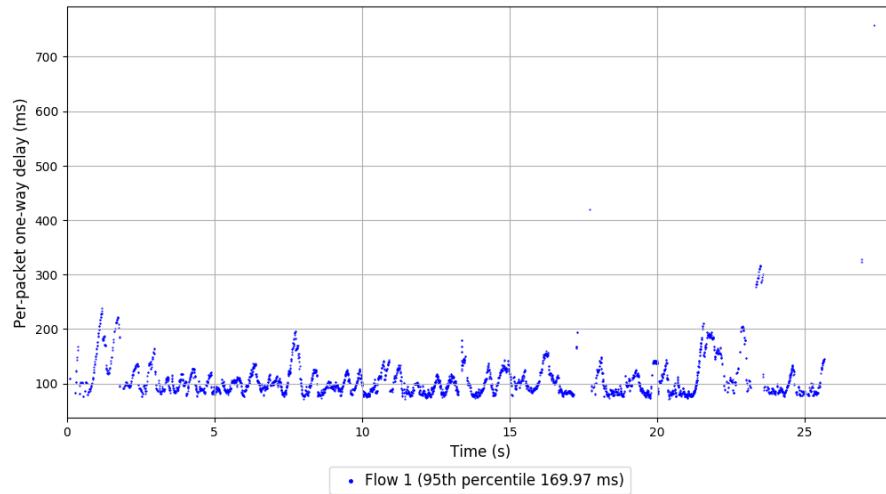
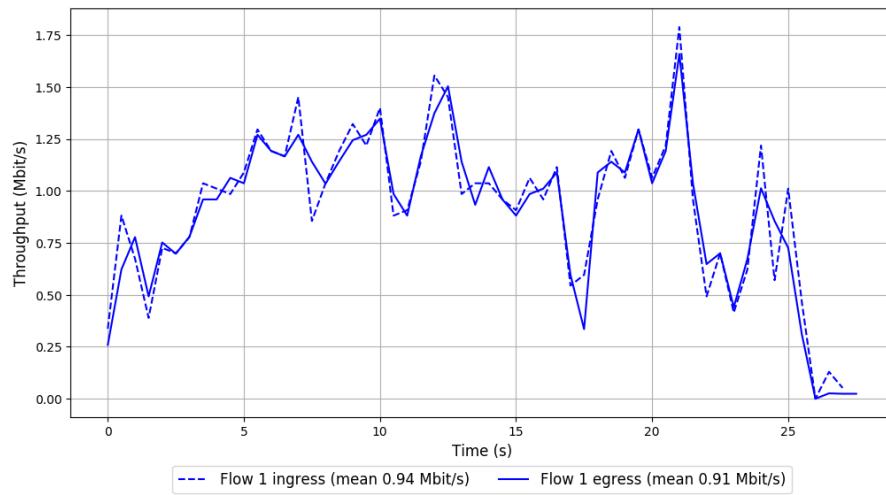


Run 2: Statistics of Copa

```
Start at: 2017-12-20 16:24:26
End at: 2017-12-20 16:24:56
Local clock offset: 2.005 ms
Remote clock offset: -15.993 ms

# Below is generated by plot.py at 2017-12-20 17:44:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 169.973 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 0.91 Mbit/s
95th percentile per-packet one-way delay: 169.973 ms
Loss rate: 1.33%
```

Run 2: Report of Copa — Data Link

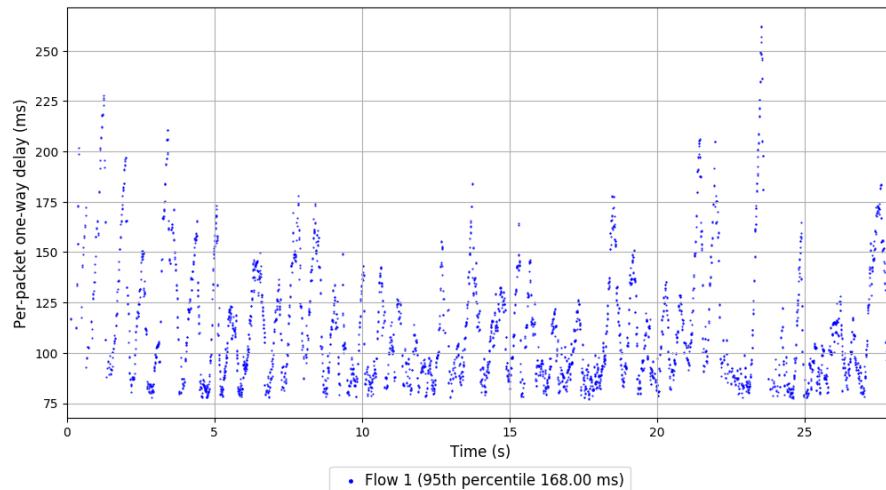
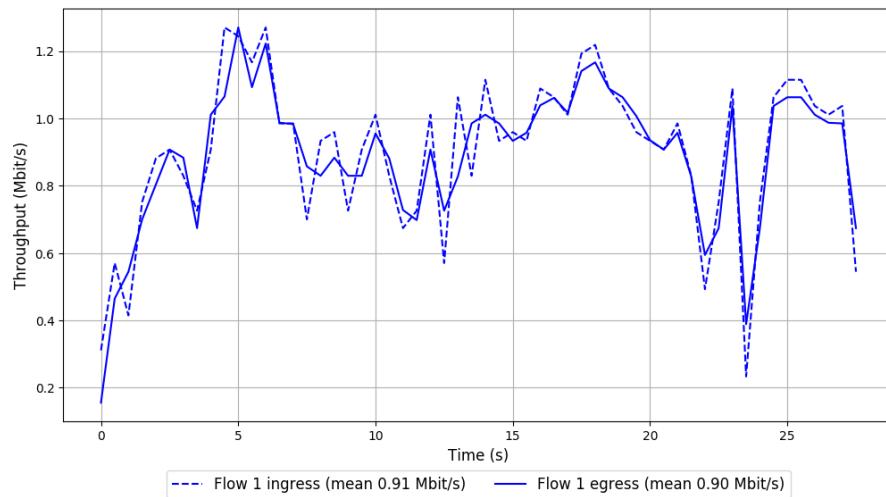


Run 3: Statistics of Copa

```
Start at: 2017-12-20 16:41:19
End at: 2017-12-20 16:41:49
Local clock offset: 3.436 ms
Remote clock offset: -16.354 ms

# Below is generated by plot.py at 2017-12-20 17:44:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 167.999 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 0.90 Mbit/s
95th percentile per-packet one-way delay: 167.999 ms
Loss rate: 1.32%
```

Run 3: Report of Copa — Data Link

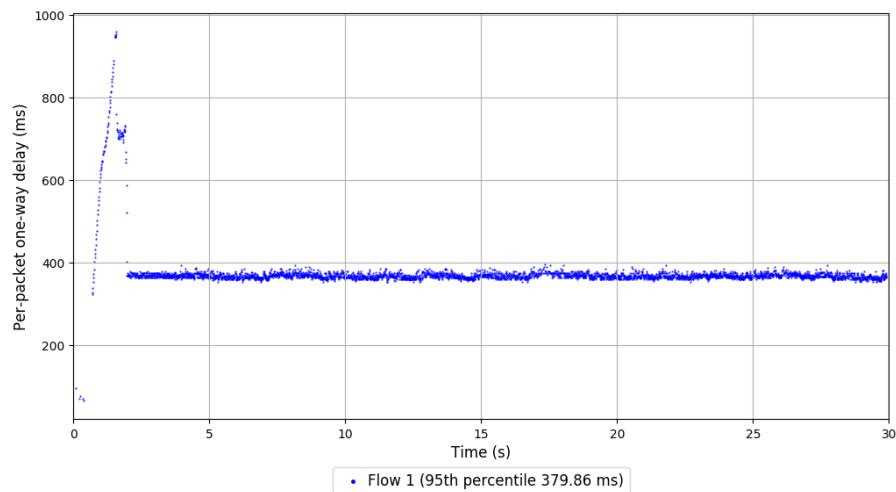
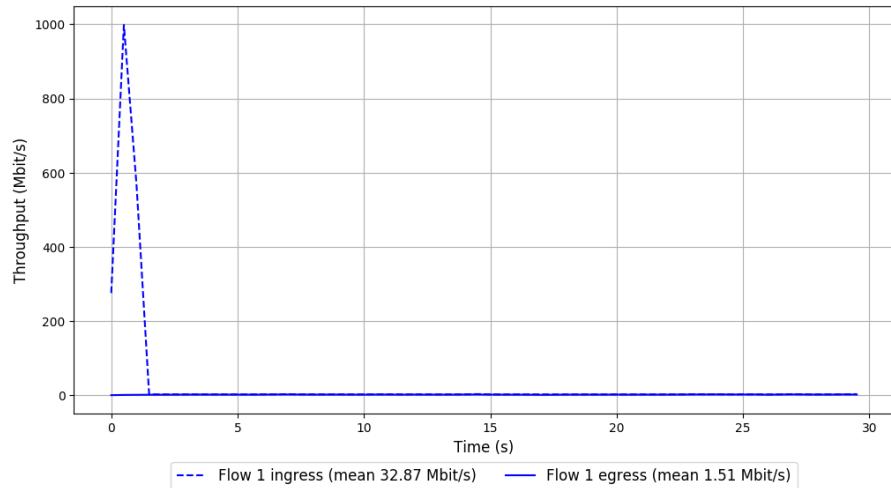


```
Run 1: Statistics of FillP
```

```
Start at: 2017-12-20 16:16:32
End at: 2017-12-20 16:17:02
Local clock offset: 1.745 ms
Remote clock offset: -16.929 ms

# Below is generated by plot.py at 2017-12-20 17:44:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.51 Mbit/s
95th percentile per-packet one-way delay: 379.858 ms
Loss rate: 95.43%
-- Flow 1:
Average throughput: 1.51 Mbit/s
95th percentile per-packet one-way delay: 379.858 ms
Loss rate: 95.43%
```

Run 1: Report of FillP — Data Link

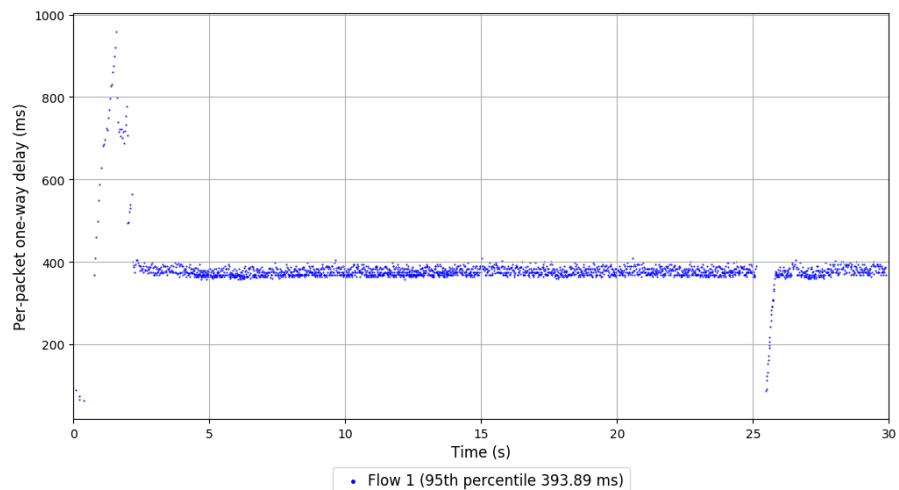
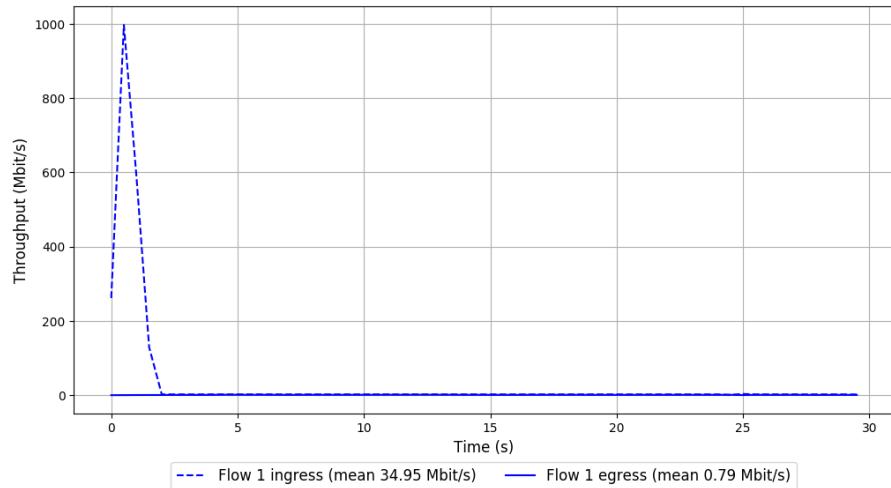


Run 2: Statistics of FillP

```
Start at: 2017-12-20 16:33:21
End at: 2017-12-20 16:33:51
Local clock offset: 4.012 ms
Remote clock offset: -15.08 ms

# Below is generated by plot.py at 2017-12-20 17:44:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 393.891 ms
Loss rate: 97.75%
-- Flow 1:
Average throughput: 0.79 Mbit/s
95th percentile per-packet one-way delay: 393.891 ms
Loss rate: 97.75%
```

Run 2: Report of FillP — Data Link

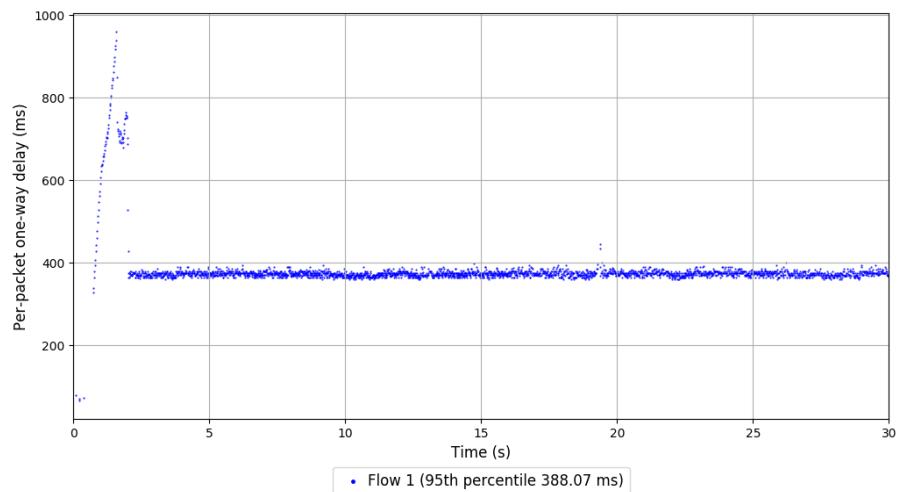
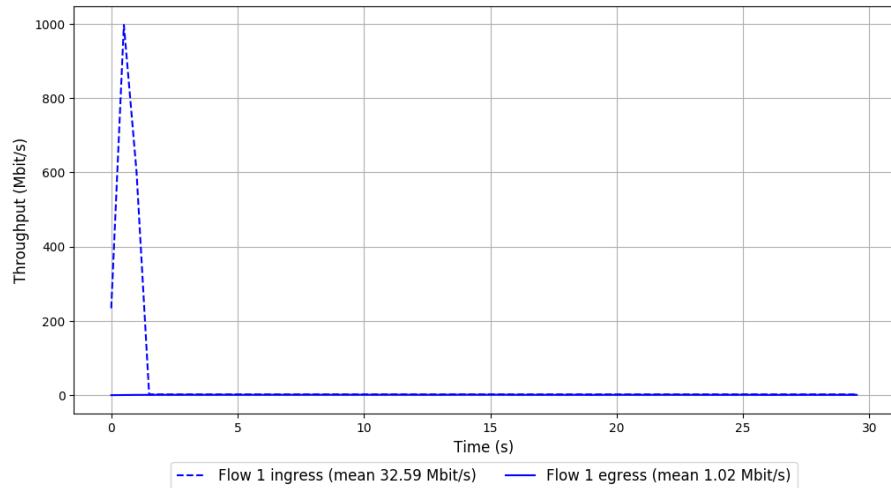


Run 3: Statistics of FillP

```
Start at: 2017-12-20 16:50:07
End at: 2017-12-20 16:50:37
Local clock offset: 3.471 ms
Remote clock offset: -16.928 ms

# Below is generated by plot.py at 2017-12-20 17:44:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 388.071 ms
Loss rate: 96.87%
-- Flow 1:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 388.071 ms
Loss rate: 96.87%
```

Run 3: Report of FillP — Data Link

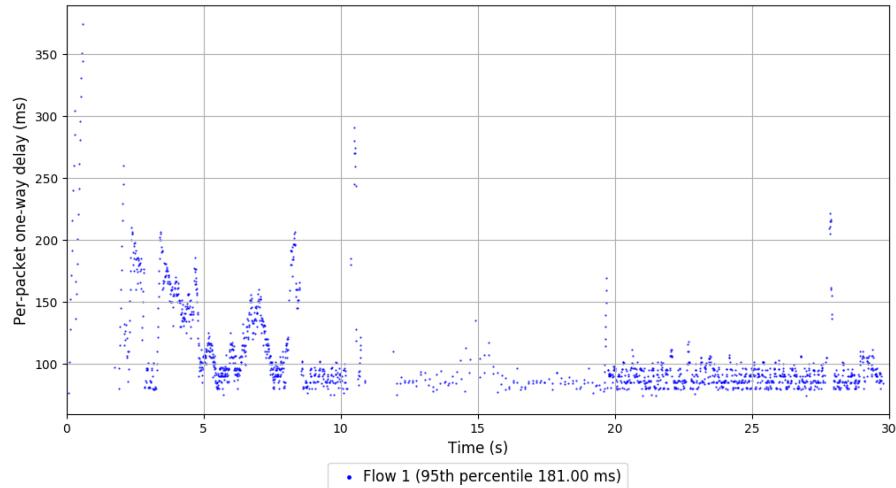
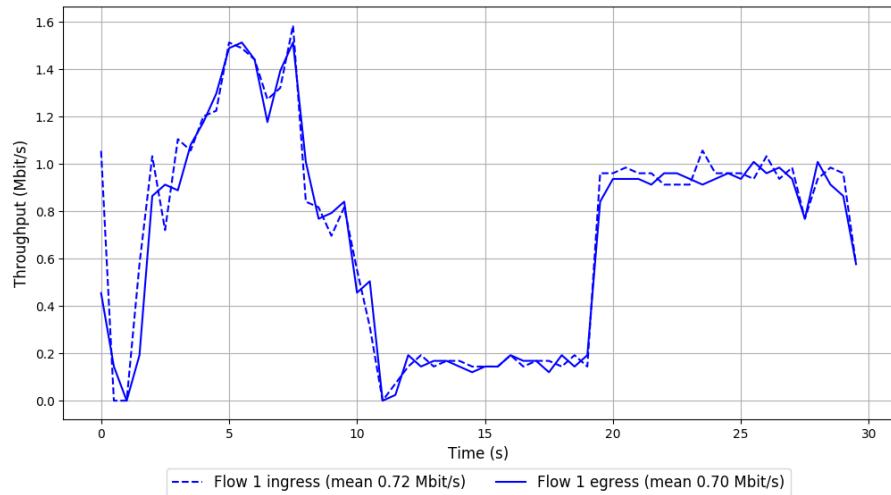


Run 1: Statistics of Indigo

```
Start at: 2017-12-20 16:13:12
End at: 2017-12-20 16:13:42
Local clock offset: 2.751 ms
Remote clock offset: -16.457 ms

# Below is generated by plot.py at 2017-12-20 17:44:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 180.999 ms
Loss rate: 2.81%
-- Flow 1:
Average throughput: 0.70 Mbit/s
95th percentile per-packet one-way delay: 180.999 ms
Loss rate: 2.81%
```

Run 1: Report of Indigo — Data Link

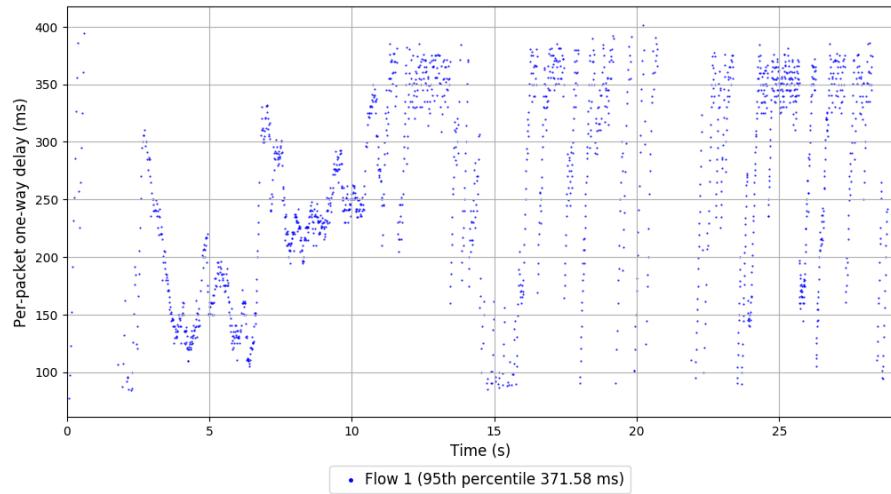
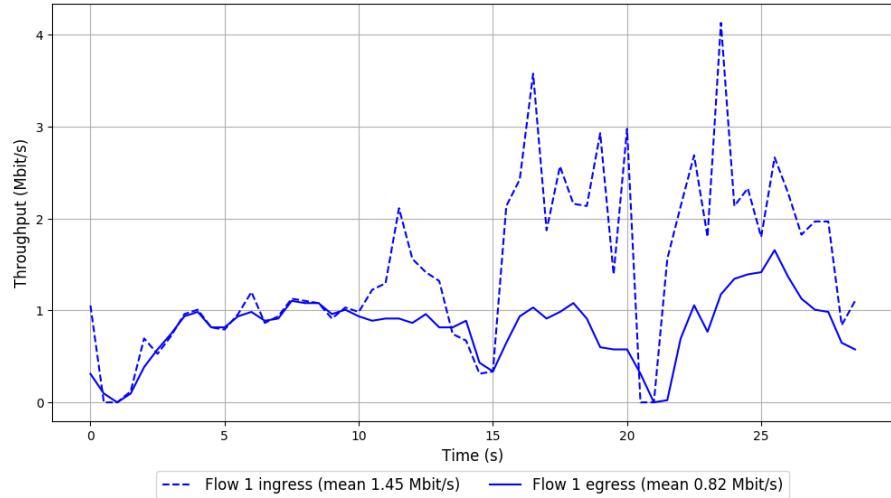


Run 2: Statistics of Indigo

```
Start at: 2017-12-20 16:30:00
End at: 2017-12-20 16:30:30
Local clock offset: 2.358 ms
Remote clock offset: -16.951 ms

# Below is generated by plot.py at 2017-12-20 17:44:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 371.576 ms
Loss rate: 43.23%
-- Flow 1:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 371.576 ms
Loss rate: 43.23%
```

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

```
Start at: 2017-12-20 16:46:51
End at: 2017-12-20 16:47:21
Local clock offset: 2.975 ms
Remote clock offset: -15.036 ms

# Below is generated by plot.py at 2017-12-20 17:44:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 226.889 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 226.889 ms
Loss rate: 0.99%
```

Run 3: Report of Indigo — Data Link

