Pantheon Report

Generated at 2017-11-20 23:20:01 (UTC).

Data path: Colombia ppp0 (*remote*) →AWS Brazil 2 Ethernet (*local*).

Repeated the test of 14 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

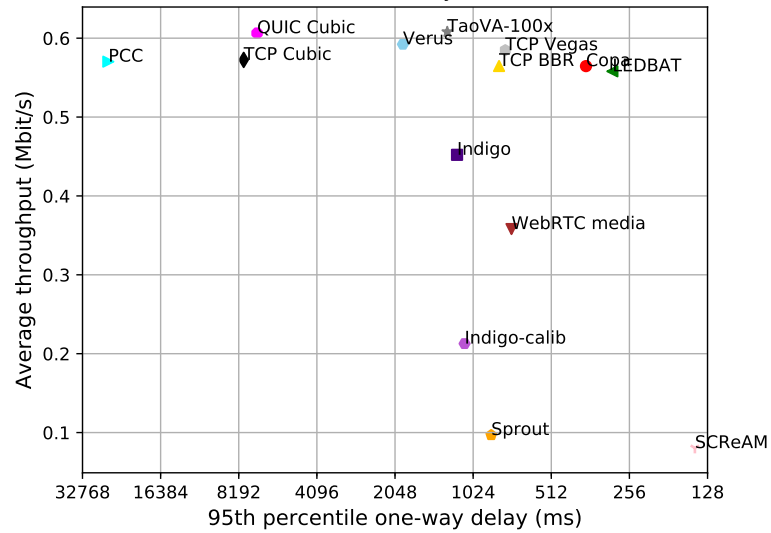Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

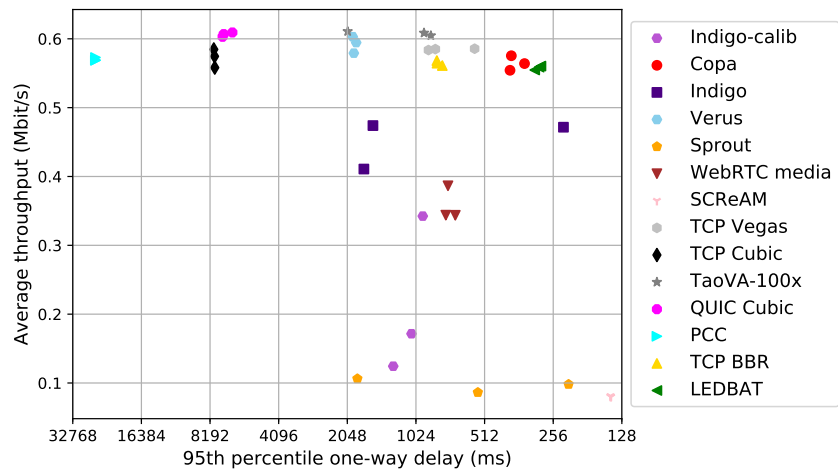NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: indigos @ e3a57ad5ac5cfcaca0e3f983c8dd4cc3509e0262
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/genericCC @ b5b7c38e8391001927dc41c6cfa2627d03dde737
third_party/indigo @ b19f3730105f9aa95452552af924e3719b03cc55
third_party/indigo-cellular @ aee99e8eb842cb053f8c9a80e28cd256a930bbc2
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/indigo-no-cwnd @ 3e58442c04028a11d7b02456e137604633ba2d6c
third_party/indigo-no-delivery-rate @ 57caa40858b964906edff4876d5a7e5bfff666c5
third_party/indigo-no-queuing-delay @ 03455460fd1a8ffbdad86fabb936fdca204b80db
third_party/indigo-no-send-rate @ b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
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 Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme
(mean of all runs by scheme)

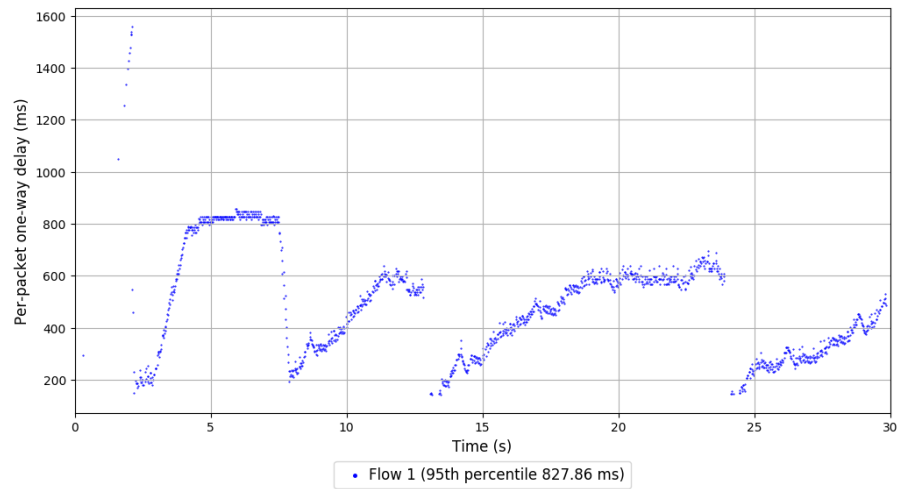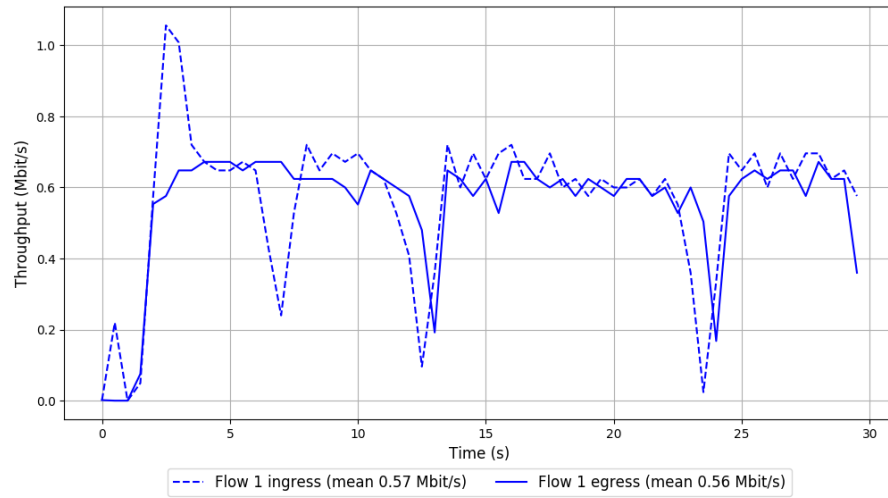test from Colombia ppp0 to AWS Brazil 2 Ethernet, 3 runs of 30s each per scheme

scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	0.56	813.83	2.29
TCP Cubic	3	0.57	7840.90	30.93
LEDBAT	3	0.56	297.83	1.19
PCC	3	0.57	26050.00	98.46
QUIC Cubic	3	0.61	6963.50	28.55
SCReAM	3	0.08	143.22	0.70
WebRTC media	3	0.36	728.80	1.05
Sprout	3	0.10	872.41	1.65
TaoVA-100x	3	0.61	1288.25	2.76
TCP Vegas	3	0.59	770.10	1.15
Verus	3	0.59	1909.43	5.39
Copa	3	0.56	376.31	0.99
Indigo	3	0.45	1181.34	14.51
Indigo-calib	3	0.21	1104.87	3.54

```
Run 1: Statistics of TCP BBR

Start at: 2017-11-20 21:52:55
End at: 2017-11-20 21:53:25
Local clock offset: -0.531 ms
Remote clock offset: 11.922 ms

# Below is generated by plot.py at 2017-11-20 23:19:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 827.855 ms
Loss rate: 2.25%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 827.855 ms
Loss rate: 2.25%
```
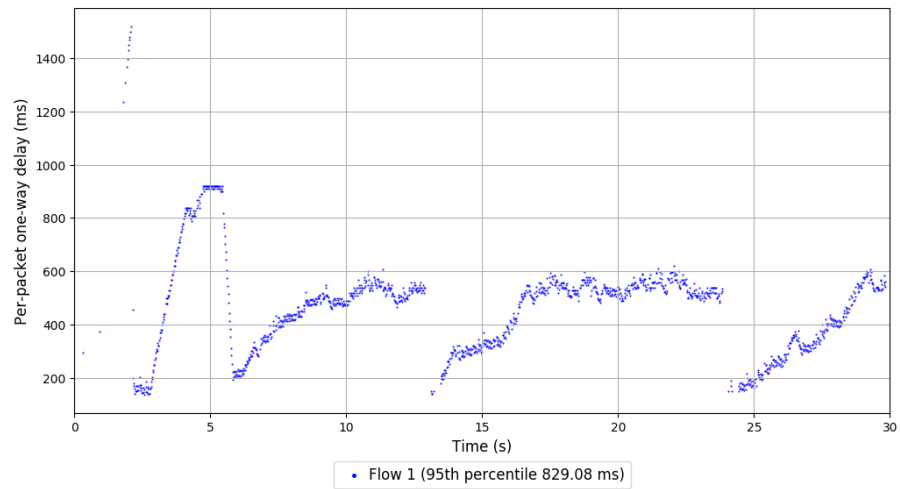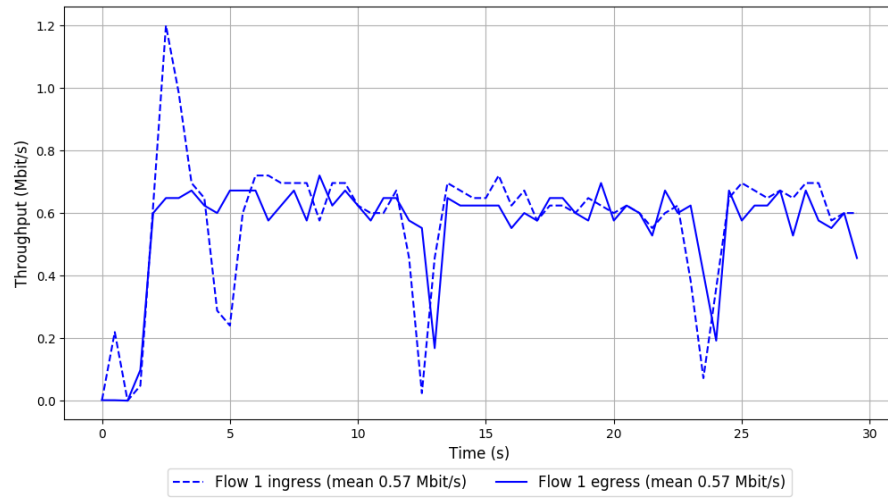
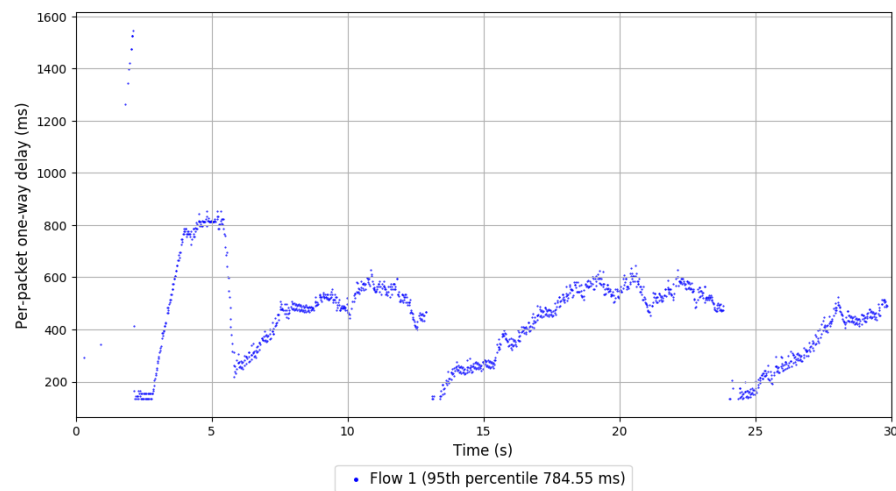Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2017-11-20 22:09:21
End at: 2017-11-20 22:09:51
Local clock offset: -0.185 ms
Remote clock offset: 11.6 ms


# Below is generated by plot.py at 2017-11-20 23:19:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 829.076 ms
Loss rate: 2.44%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 829.076 ms
Loss rate: 2.44%
```

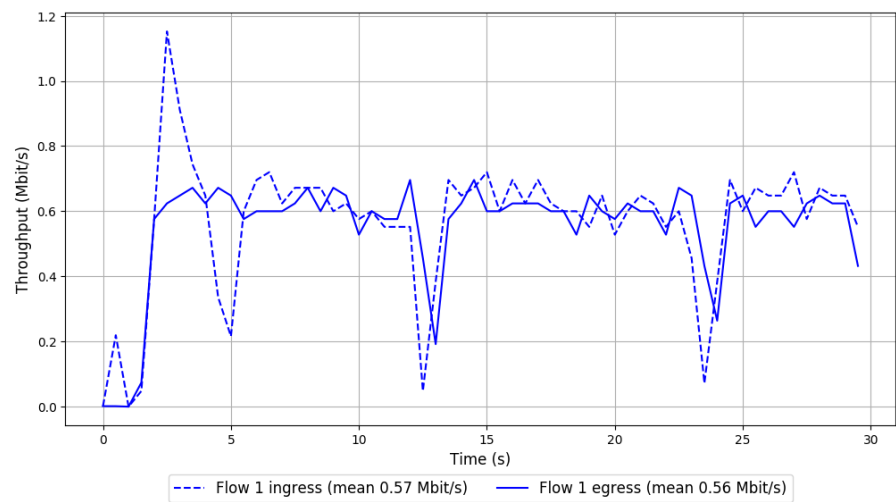# Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2017-11-20 22:25:46
End at: 2017-11-20 22:26:17
Local clock offset: -0.3 ms
Remote clock offset: 17.155 ms


# Below is generated by plot.py at 2017-11-20 23:19:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 784.547 ms
Loss rate: 2.19%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 784.547 ms
Loss rate: 2.19%
```

Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 0.57 Mbit/s)   Flow 1 egress (mean 0.56 Mbit/s)

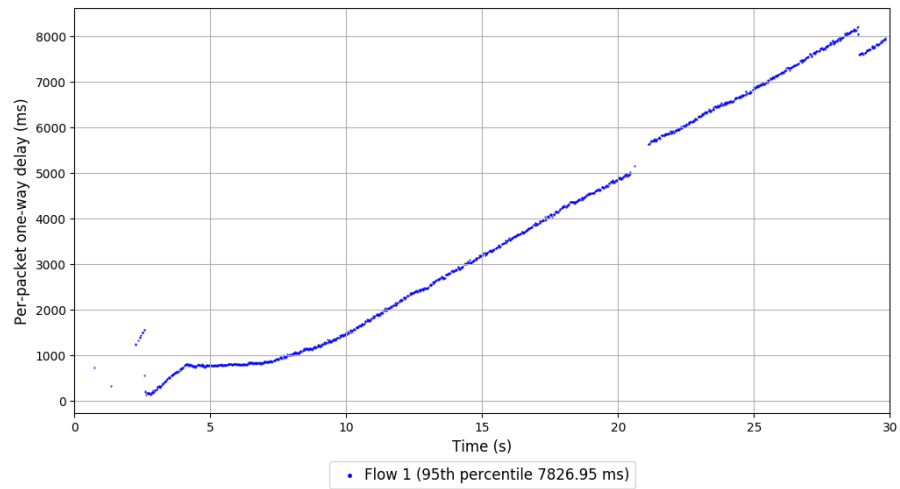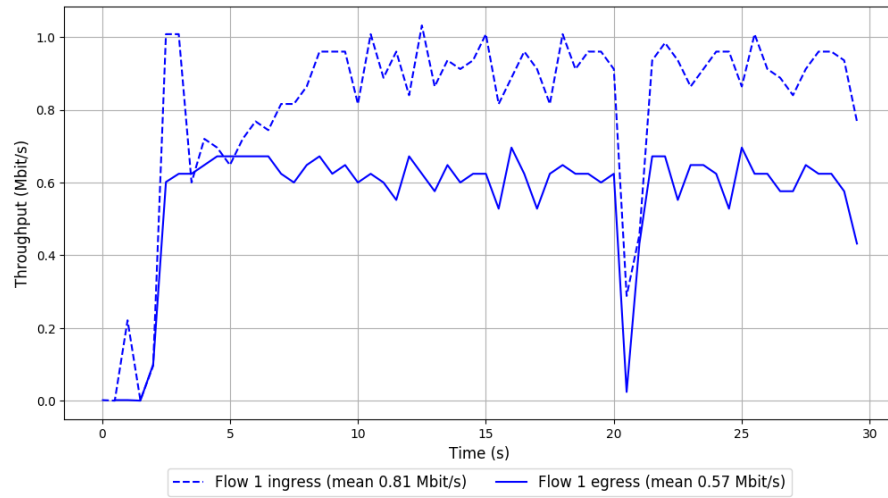Flow 1 (95th percentile 784.55 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2017-11-20 21:56:27
End at: 2017-11-20 21:56:57
Local clock offset: -0.76 ms
Remote clock offset: 15.482 ms

# Below is generated by plot.py at 2017-11-20 23:19:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7826.947 ms
Loss rate: 30.76%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 7826.947 ms
Loss rate: 30.76%
```
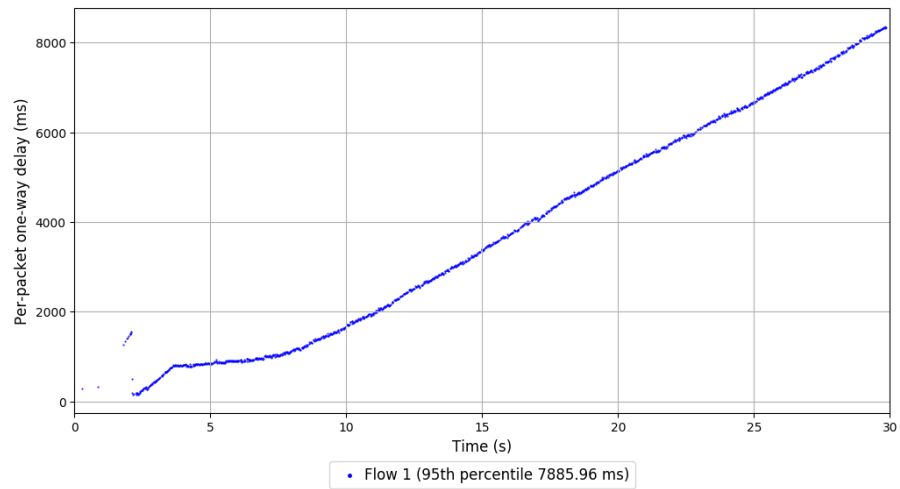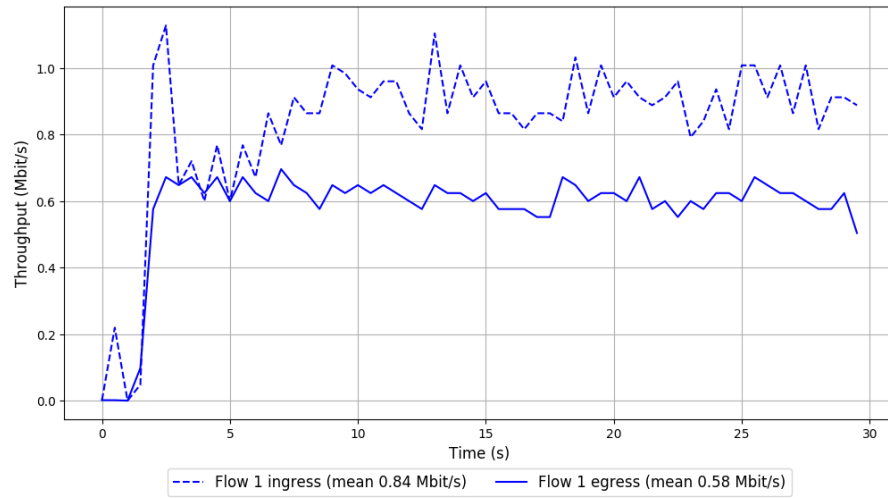
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2017-11-20 22:12:53
End at: 2017-11-20 22:13:23
Local clock offset: -0.152 ms
Remote clock offset: 7.064 ms


# Below is generated by plot.py at 2017-11-20 23:19:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7885.959 ms
Loss rate: 30.85%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 7885.959 ms
Loss rate: 30.85%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.84 Mbit/s)   Flow 1 egress (mean 0.58 Mbit/s)

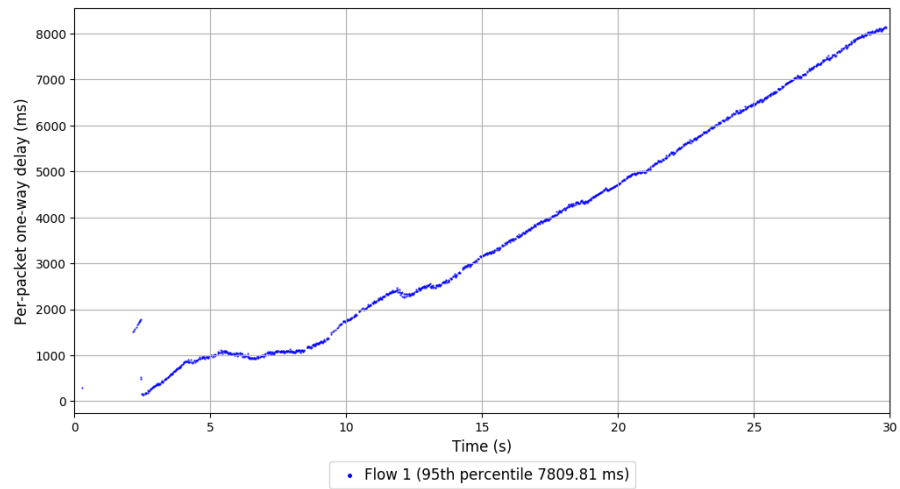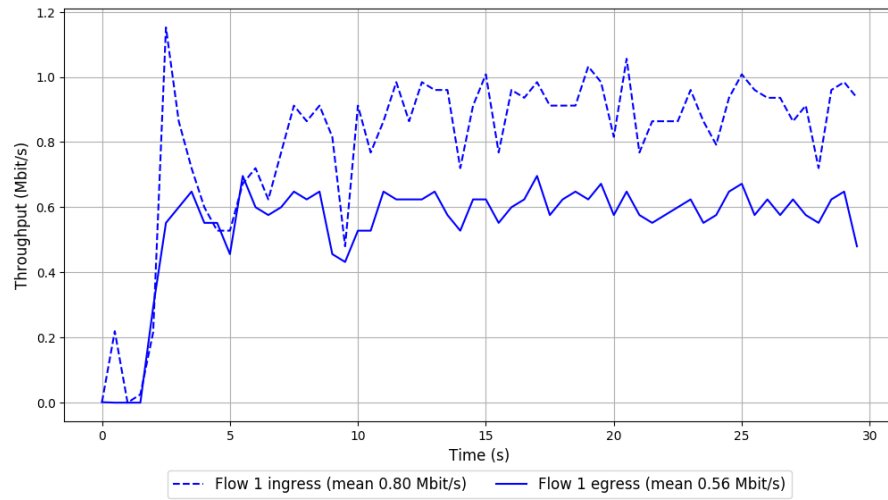
• Flow 1 (95th percentile 7885.96 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2017-11-20 22:29:18
End at: 2017-11-20 22:29:48
Local clock offset: -0.216 ms
Remote clock offset: 11.816 ms


# Below is generated by plot.py at 2017-11-20 23:19:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7809.805 ms
Loss rate: 31.18%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 7809.805 ms
Loss rate: 31.18%
```

Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 0.80 Mbit/s)   Flow 1 egress (mean 0.56 Mbit/s)

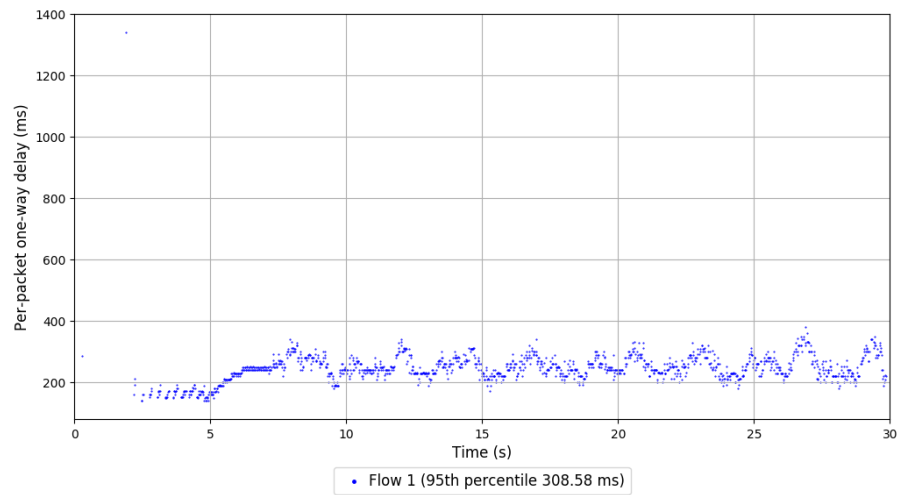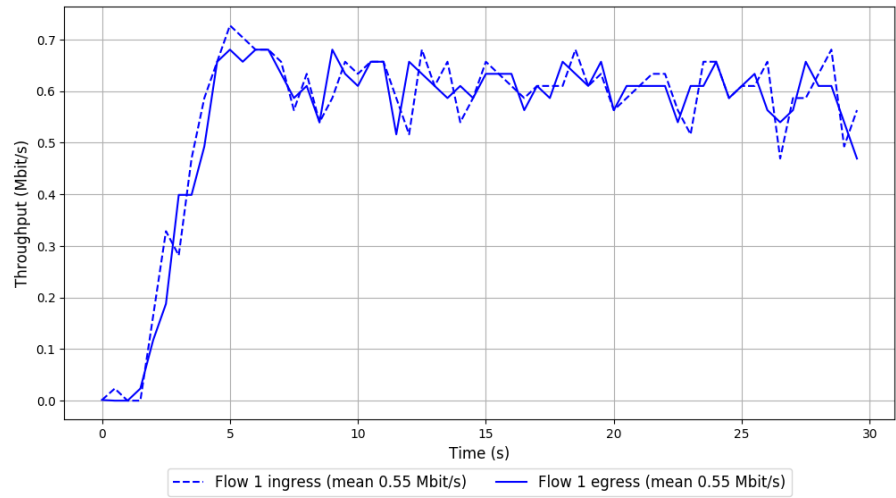

Flow 1 (95th percentile 7809.81 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2017-11-20 21:49:24
End at: 2017-11-20 21:49:54
Local clock offset: -0.282 ms
Remote clock offset: 13.598 ms

# Below is generated by plot.py at 2017-11-20 23:19:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 308.581 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 308.581 ms
Loss rate: 1.20%
```
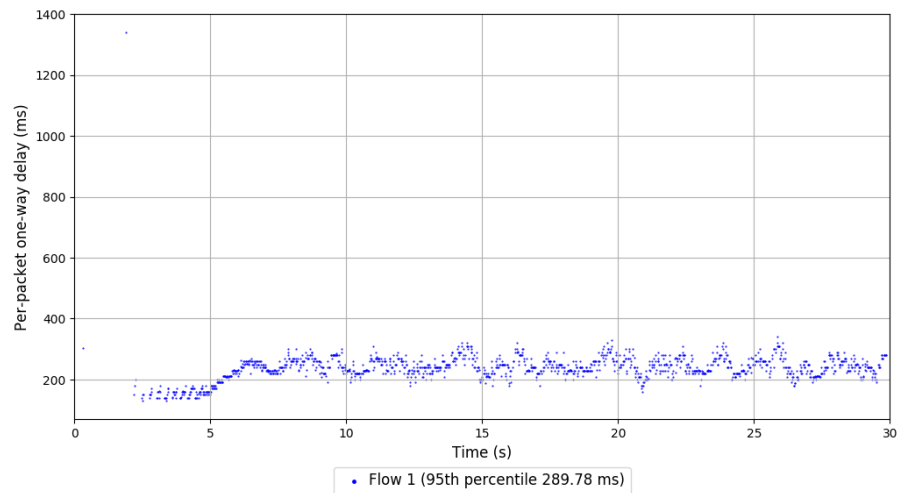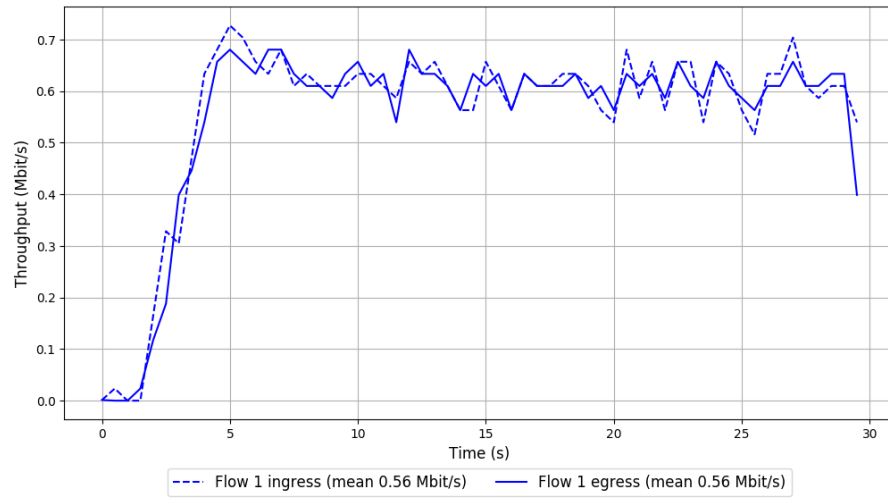
Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.55 Mbit/s)   Flow 1 egress (mean 0.55 Mbit/s)

Flow 1 (95th percentile 308.58 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2017-11-20 22:05:49
End at: 2017-11-20 22:06:19
Local clock offset: -0.426 ms
Remote clock offset: 16.5 ms


# Below is generated by plot.py at 2017-11-20 23:19:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 289.779 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 289.779 ms
Loss rate: 1.19%
```
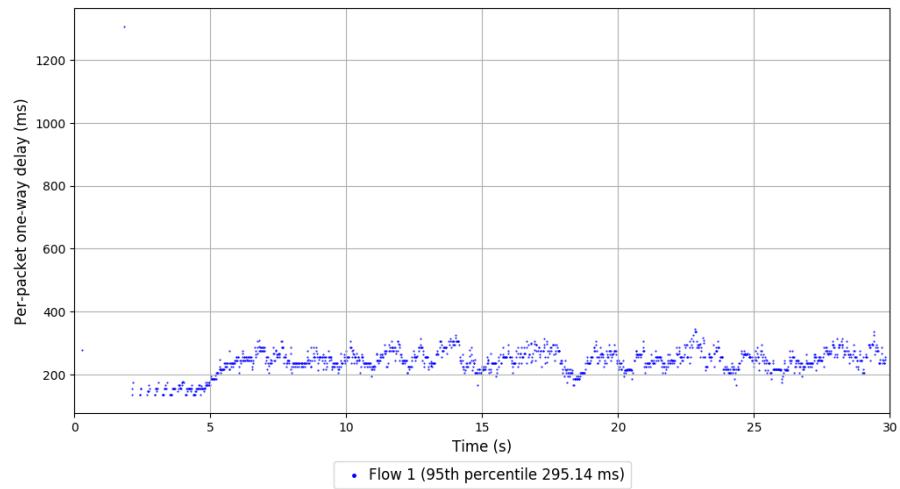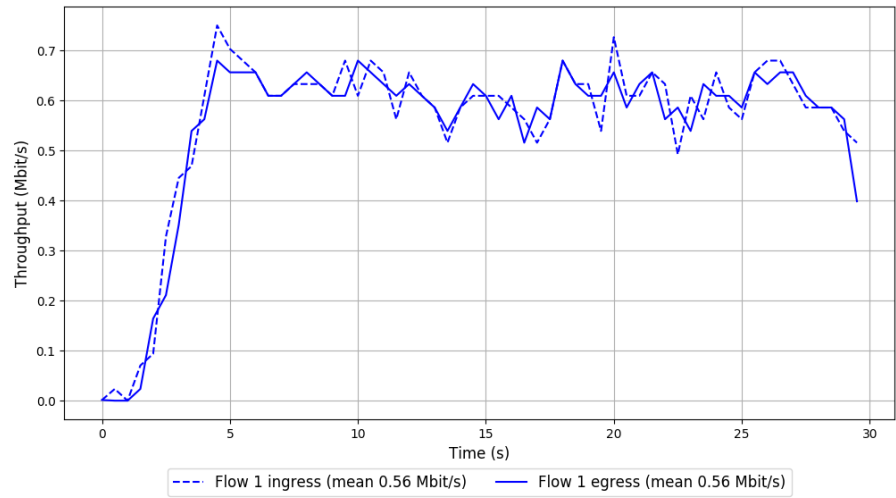
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.56 Mbit/s) ----- Flow 1 egress (mean 0.56 Mbit/s)

Flow 1 (95th percentile 289.78 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2017-11-20 22:22:15
End at: 2017-11-20 22:22:45
Local clock offset: -0.26 ms
Remote clock offset: 16.51 ms

# Below is generated by plot.py at 2017-11-20 23:19:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 295.138 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 295.138 ms
Loss rate: 1.19%
```
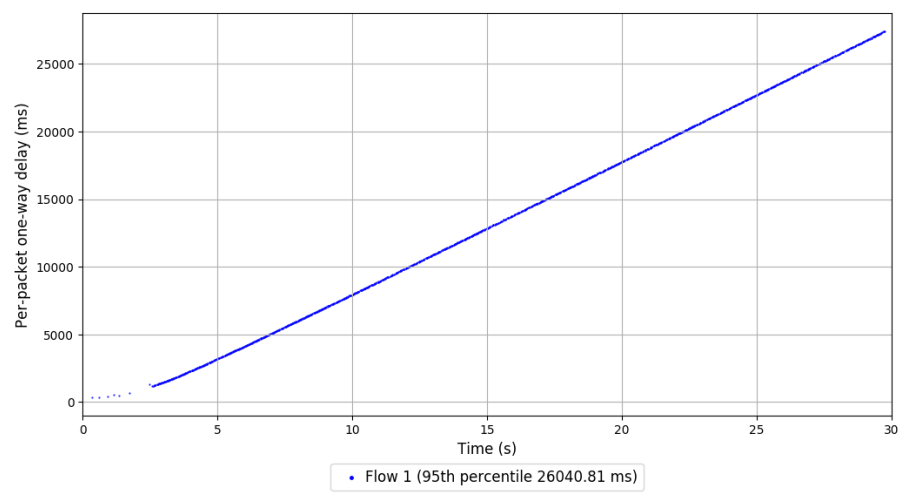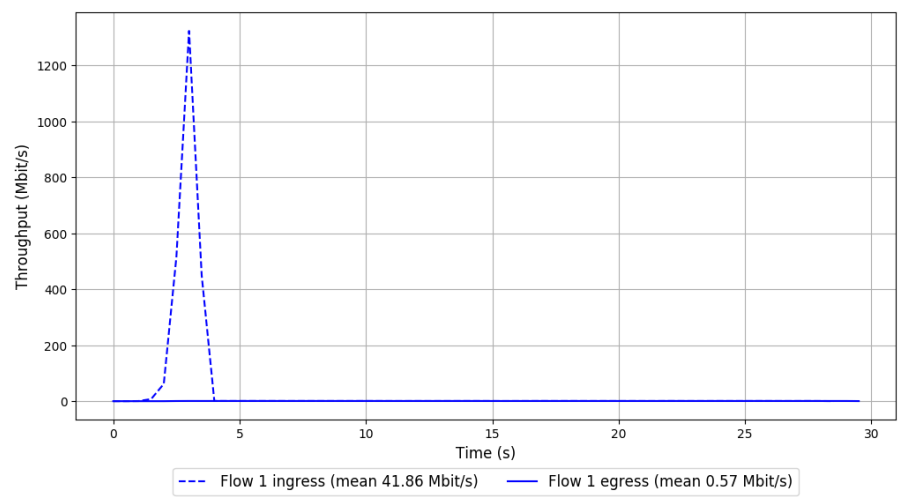
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 0.56 Mbit/s)   Flow 1 egress (mean 0.56 Mbit/s)
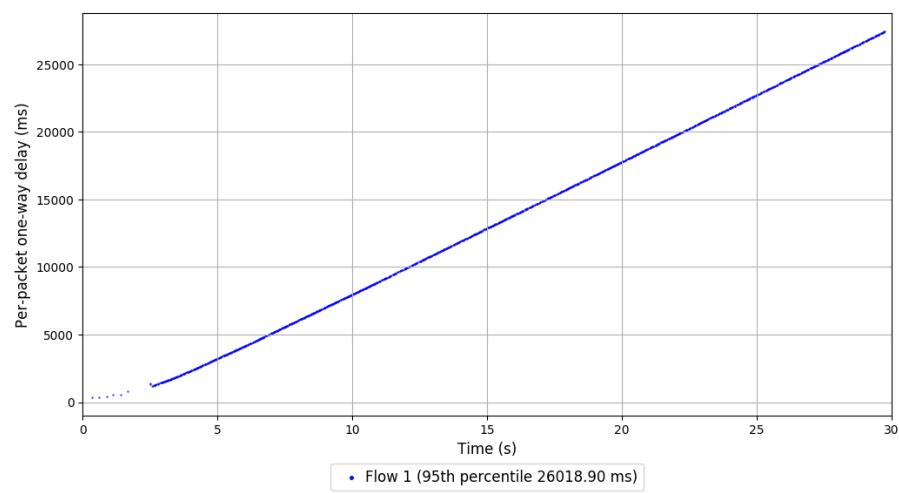

Flow 1 (95th percentile 295.14 ms)

```
Run 1: Statistics of PCC

Start at: 2017-11-20 21:55:16
End at: 2017-11-20 21:55:46
Local clock offset: -0.674 ms
Remote clock offset: 6.444 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26040.809 ms
Loss rate: 98.59%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26040.809 ms
Loss rate: 98.59%
```

Run 1: Report of PCC — Data Link

Flow 1 ingress (mean 41.86 Mbit/s)   Flow 1 egress (mean 0.57 Mbit/s)

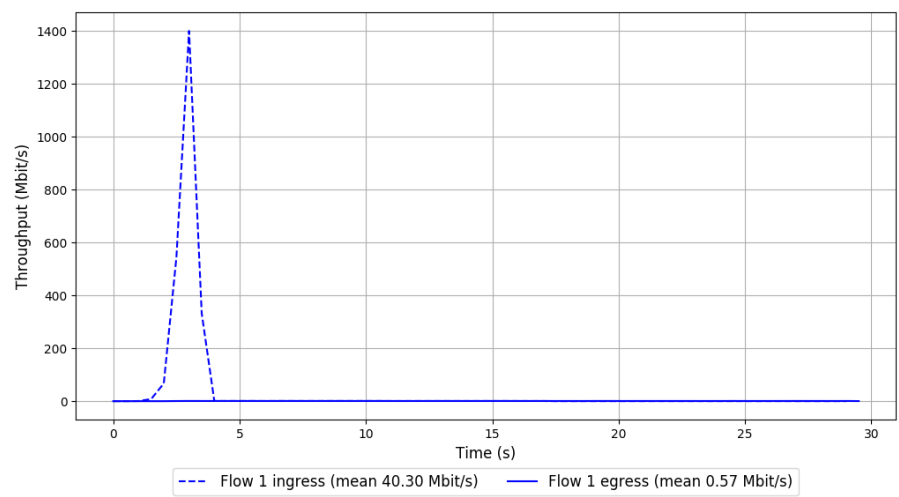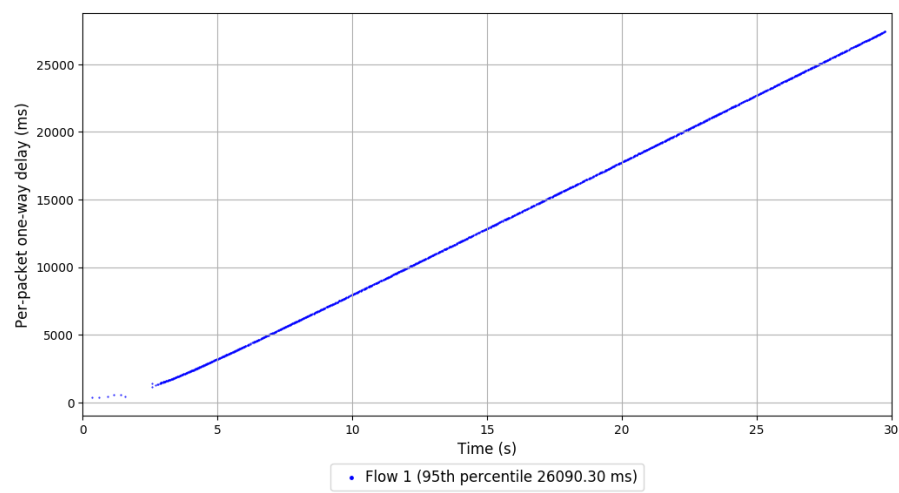Flow 1 (95th percentile 26040.81 ms)

```
Run 2: Statistics of PCC

Start at: 2017-11-20 22:11:41
End at: 2017-11-20 22:12:11
Local clock offset: -0.189 ms
Remote clock offset: 11.072 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26018.902 ms
Loss rate: 98.59%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26018.902 ms
Loss rate: 98.59%
```

Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 40.30 Mbit/s)   Flow 1 egress (mean 0.57 Mbit/s)

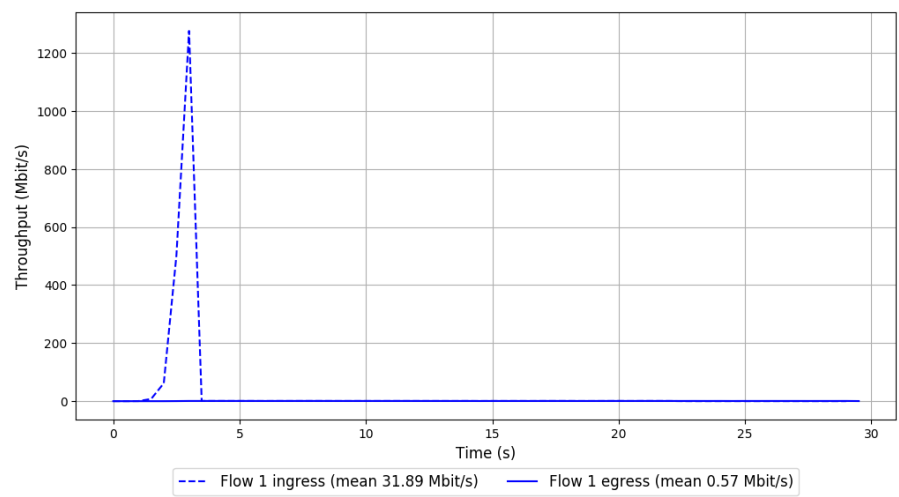Flow 1 (95th percentile 26018.90 ms)

```
Run 3: Statistics of PCC

Start at: 2017-11-20 22:28:07
End at: 2017-11-20 22:28:37
Local clock offset: -0.237 ms
Remote clock offset: 10.245 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26090.296 ms
Loss rate: 98.21%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 26090.296 ms
Loss rate: 98.21%
```
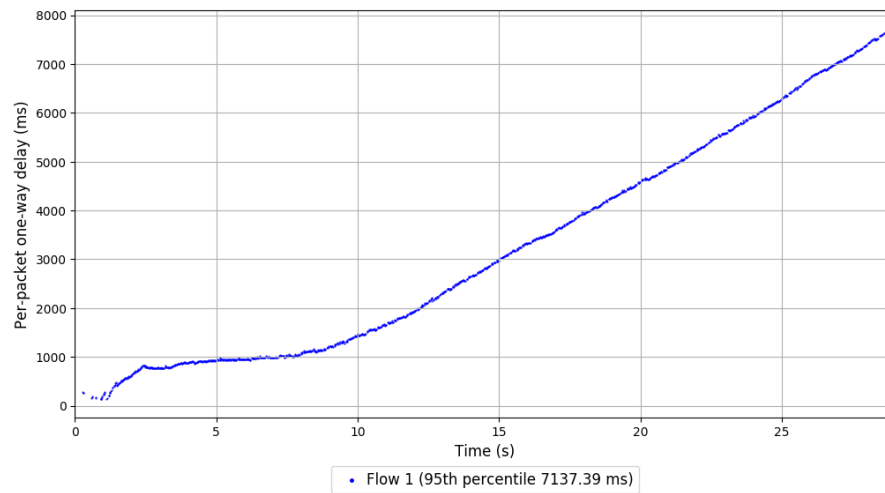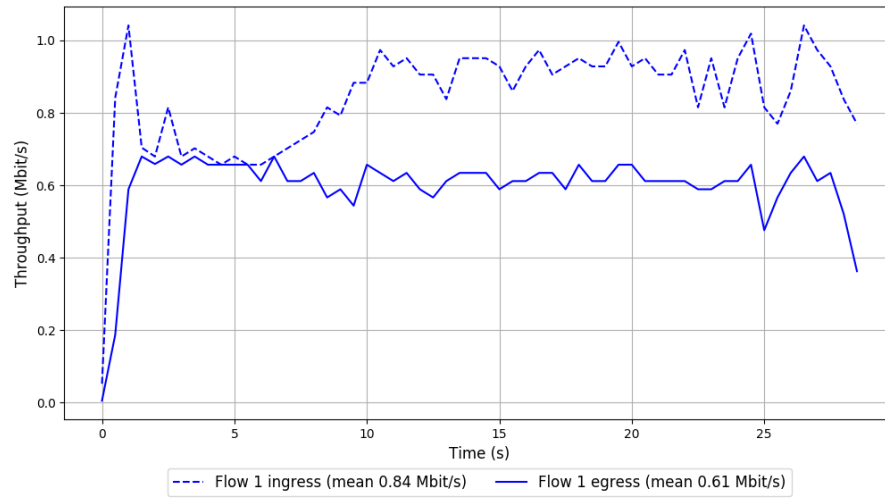
Run 3: Report of PCC — Data Link

Flow 1 ingress (mean 31.89 Mbit/s) --- Flow 1 egress (mean 0.57 Mbit/s)

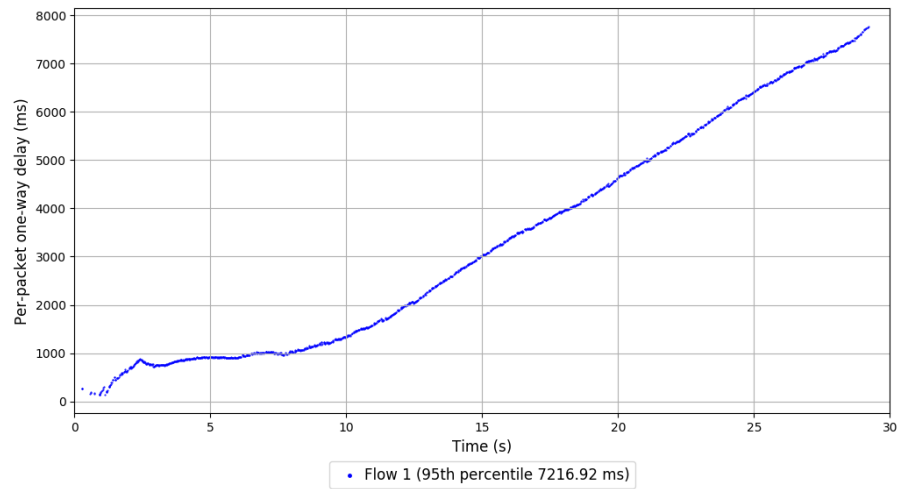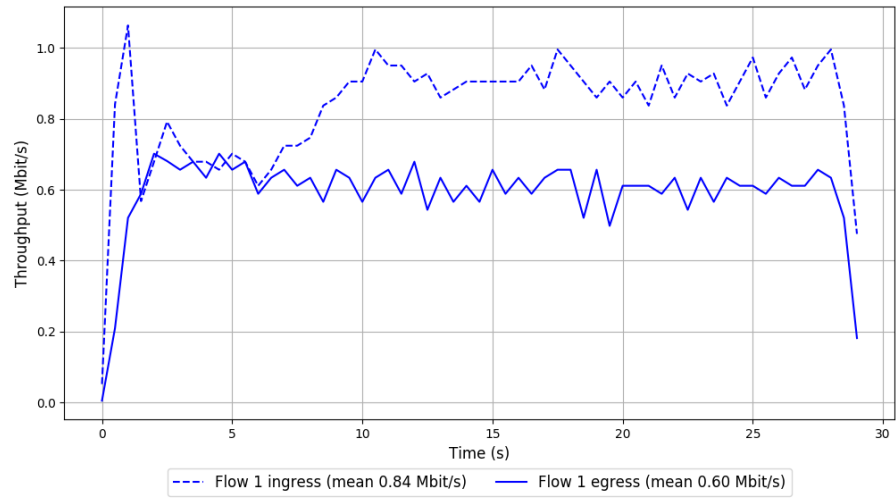

• Flow 1 (95th percentile 26090.30 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2017-11-20 21:48:14
End at: 2017-11-20 21:48:44
Local clock offset: -0.169 ms
Remote clock offset: 13.901 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 7137.386 ms
Loss rate: 29.23%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 7137.386 ms
Loss rate: 29.23%
```
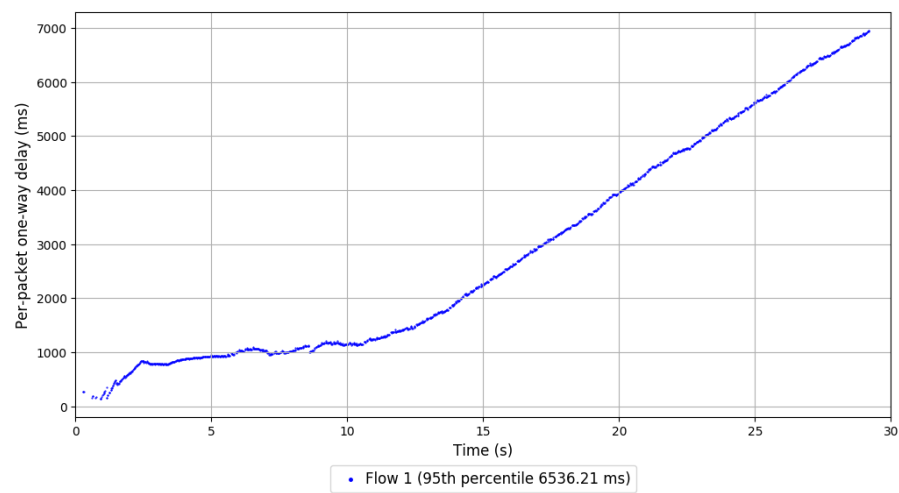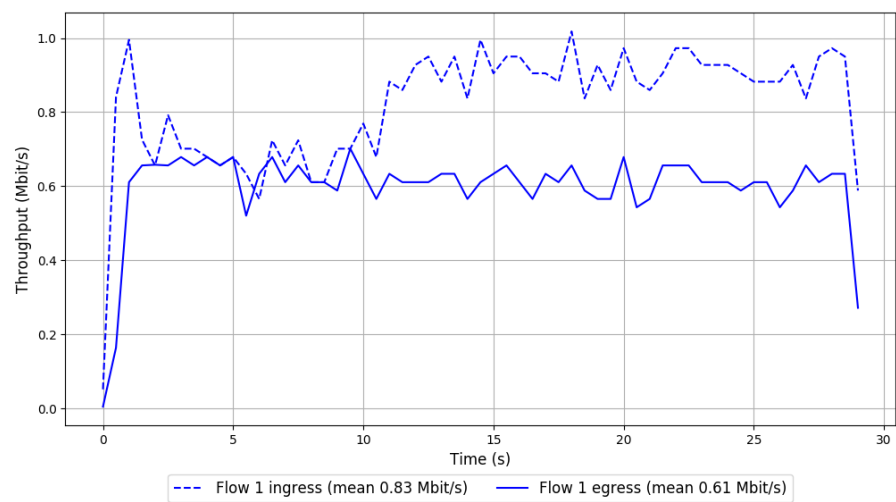
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.84 Mbit/s)   Flow 1 egress (mean 0.61 Mbit/s)

Flow 1 (95th percentile 7137.39 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2017-11-20 22:04:39
End at: 2017-11-20 22:05:09
Local clock offset: -0.491 ms
Remote clock offset: 15.389 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7216.916 ms
Loss rate: 29.23%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 7216.916 ms
Loss rate: 29.23%
```
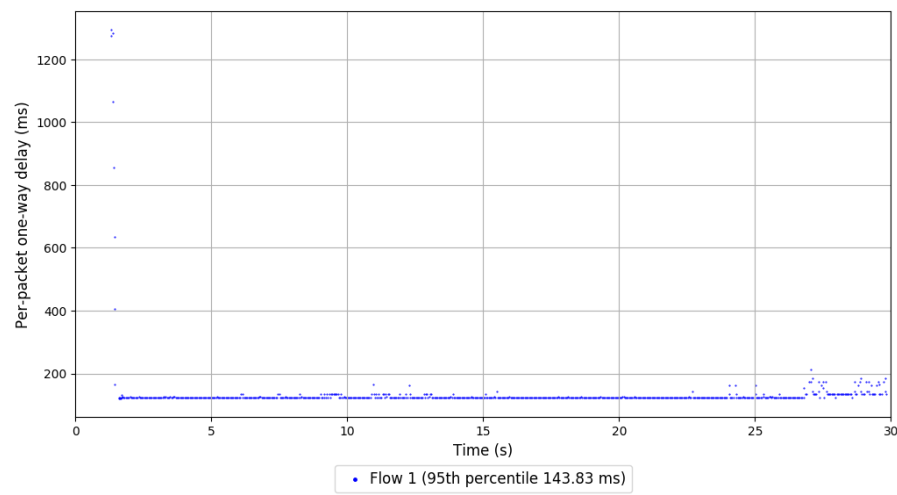
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2017-11-20 22:21:05
End at: 2017-11-20 22:21:35
Local clock offset: -0.167 ms
Remote clock offset: 14.087 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 6536.207 ms
Loss rate: 27.20%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 6536.207 ms
Loss rate: 27.20%
```
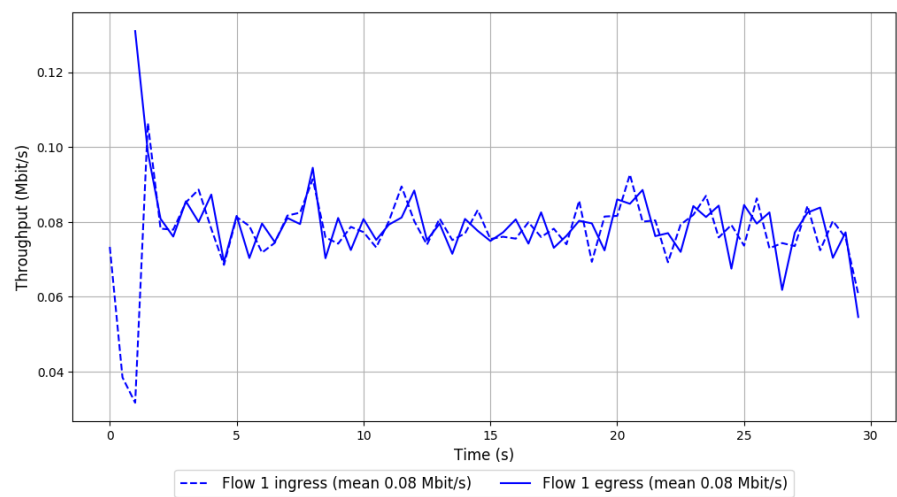
Run 3: Report of QUIC Cubic — Data Link
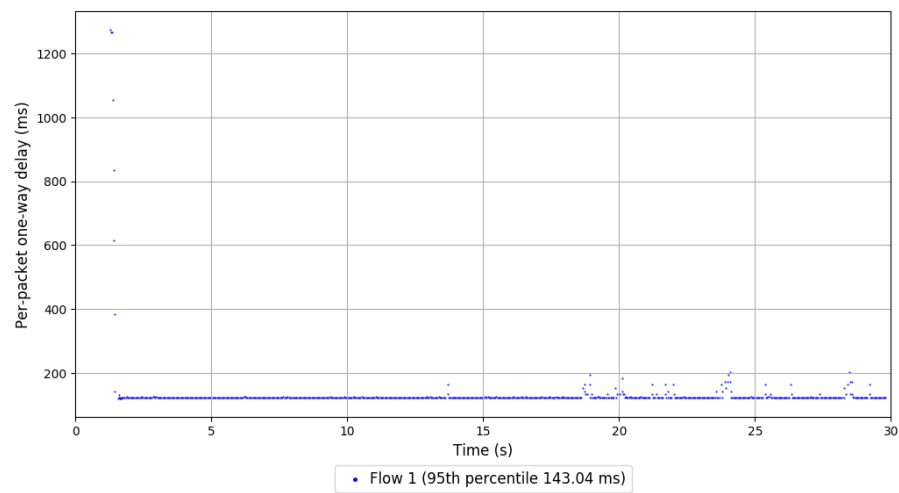
33

```
Run 1: Statistics of SCReAM

Start at: 2017-11-20 21:44:43
End at: 2017-11-20 21:45:13
Local clock offset: 0.314 ms
Remote clock offset: 13.851 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.831 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.831 ms
Loss rate: 0.66%
```

Run 1: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.08 Mbit/s)   Flow 1 egress (mean 0.08 Mbit/s)

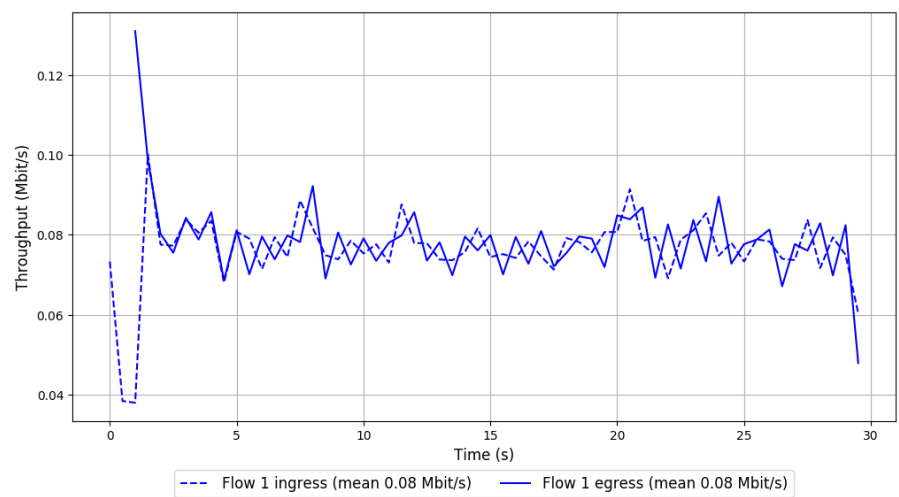Flow 1 (95th percentile 143.83 ms)

```
Run 2: Statistics of SCReAM

Start at: 2017-11-20 22:01:08
End at: 2017-11-20 22:01:38
Local clock offset: -0.533 ms
Remote clock offset: 14.903 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.043 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 143.043 ms
Loss rate: 0.66%
```
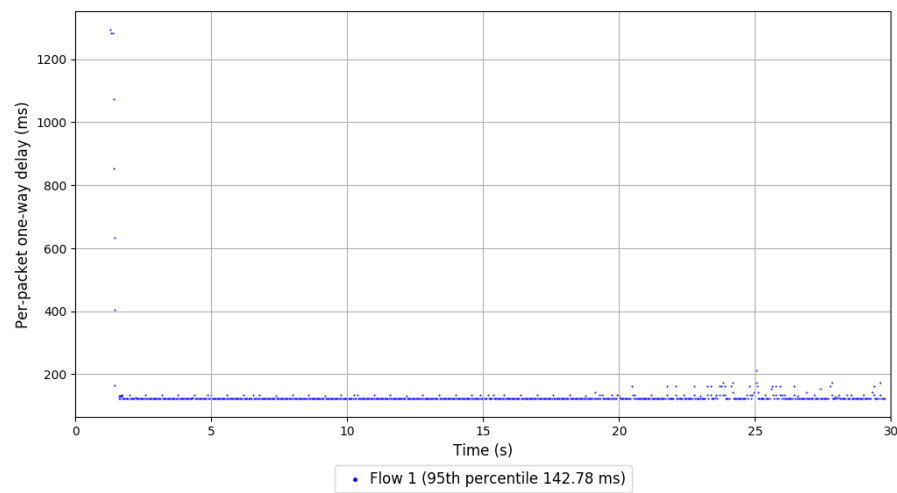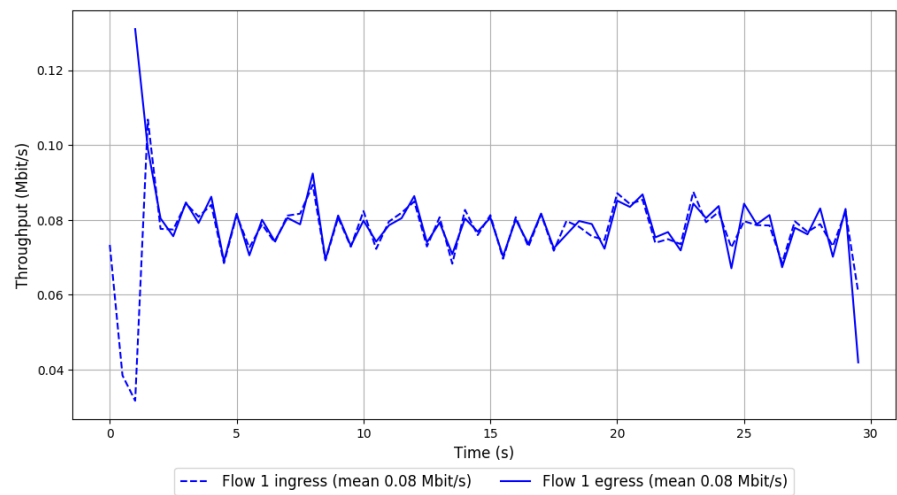
Run 2: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.08 Mbit/s)   Flow 1 egress (mean 0.08 Mbit/s)

Flow 1 (95th percentile 143.04 ms)

```
Run 3: Statistics of SCReAM

Start at: 2017-11-20 22:17:34
End at: 2017-11-20 22:18:04
Local clock offset: -0.195 ms
Remote clock offset: 8.86 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 142.779 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 142.779 ms
Loss rate: 0.79%
```
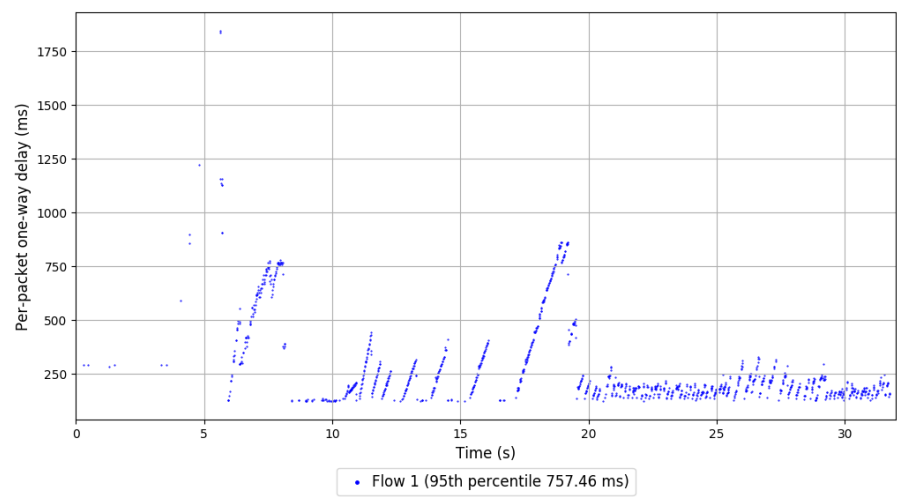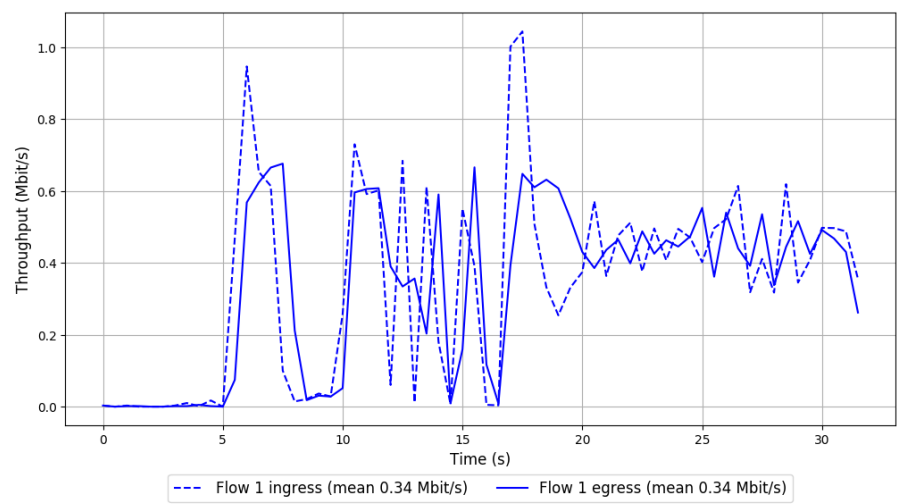
Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.08 Mbit/s) --- Flow 1 egress (mean 0.08 Mbit/s)
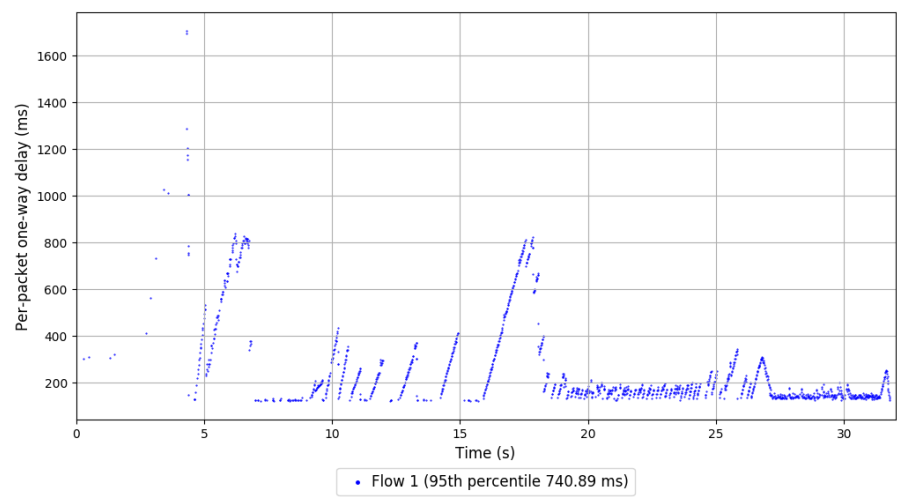

Flow 1 (95th percentile 142.78 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2017-11-20 21:51:45
End at: 2017-11-20 21:52:15
Local clock offset: -0.471 ms
Remote clock offset: 8.43 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 757.456 ms
Loss rate: 1.30%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 757.456 ms
Loss rate: 1.30%
```

Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.34 Mbit/s)   Flow 1 egress (mean 0.34 Mbit/s)

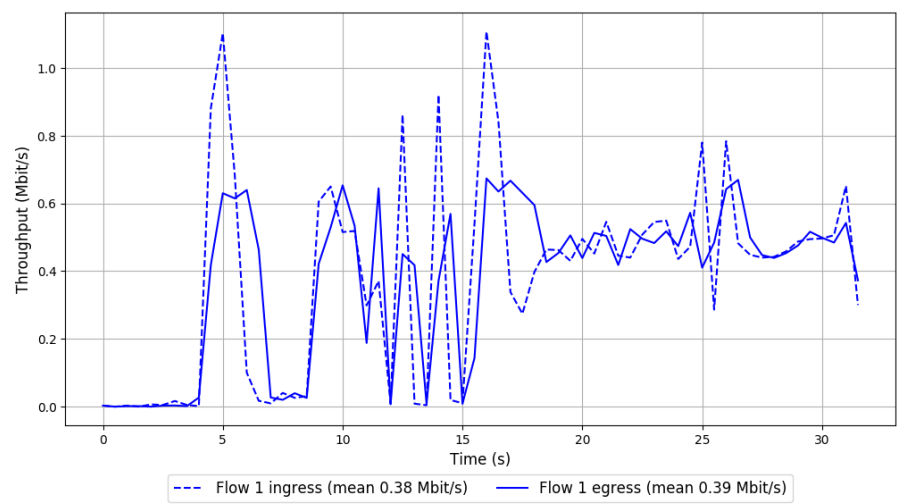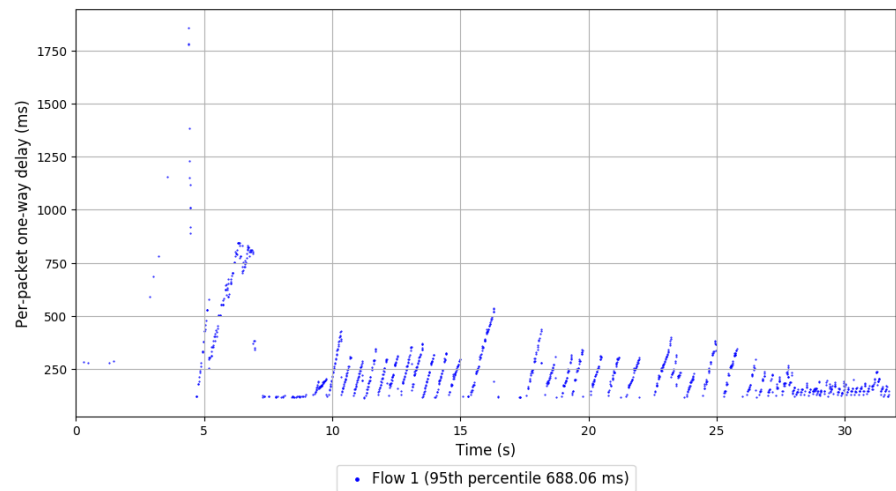

• Flow 1 (95th percentile 757.46 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2017-11-20 22:08:10
End at: 2017-11-20 22:08:40
Local clock offset: -0.262 ms
Remote clock offset: 10.691 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 740.895 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 740.895 ms
Loss rate: 0.80%
```

Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 0.38 Mbit/s)　　　Flow 1 egress (mean 0.39 Mbit/s)
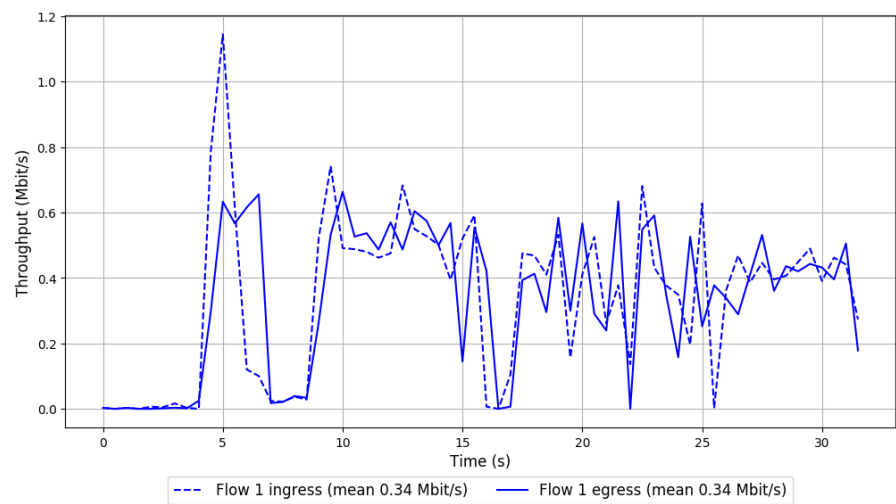

Flow 1 (95th percentile 740.89 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2017-11-20 22:24:36
End at: 2017-11-20 22:25:06
Local clock offset: -0.226 ms
Remote clock offset: 15.833 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 688.059 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 688.059 ms
Loss rate: 1.06%
```

Run 3: Report of WebRTC media — Data Link

```
Run 1: Statistics of Sprout

Start at: 2017-11-20 21:41:12
End at: 2017-11-20 21:41:42
Local clock offset: 0.649 ms
Remote clock offset: 7.454 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 548.071 ms
Loss rate: 2.14%
-- Flow 1:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 548.071 ms
Loss rate: 2.14%
```
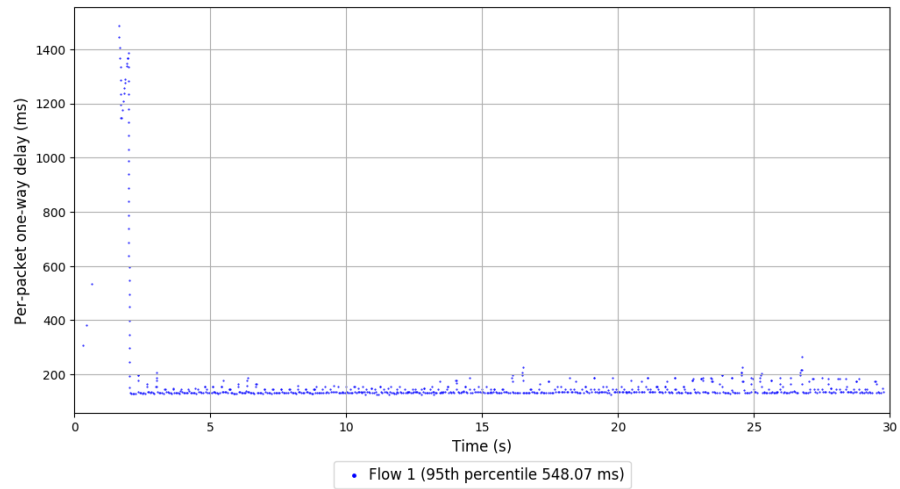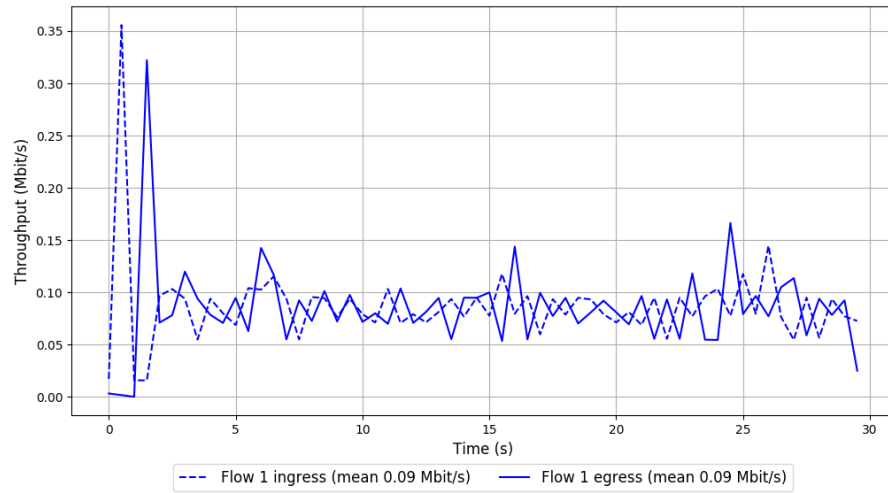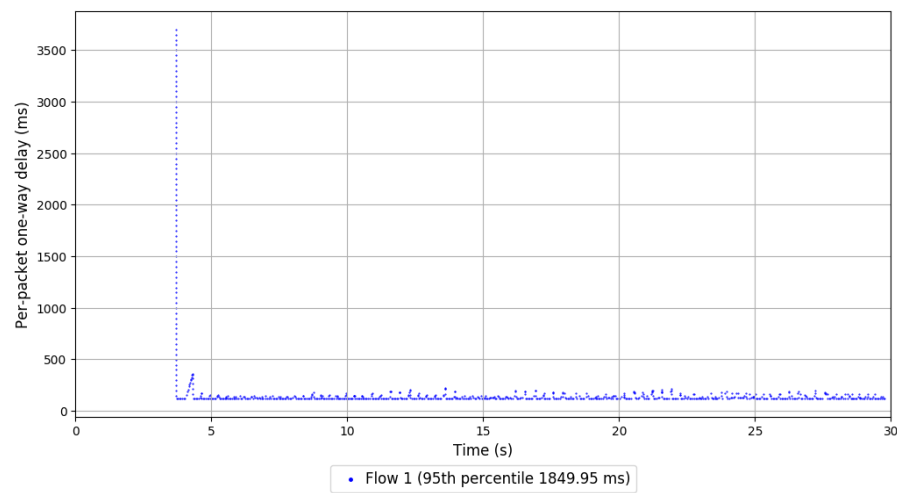
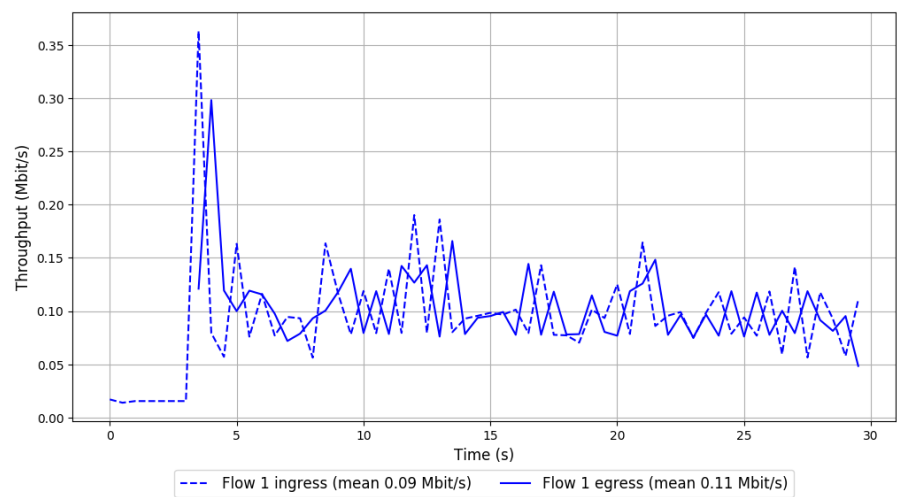Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2017-11-20 21:57:38
End at: 2017-11-20 21:58:08
Local clock offset: -0.772 ms
Remote clock offset: 11.654 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 1849.947 ms
Loss rate: 2.30%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 1849.947 ms
Loss rate: 2.30%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 0.09 Mbit/s)   Flow 1 egress (mean 0.11 Mbit/s)

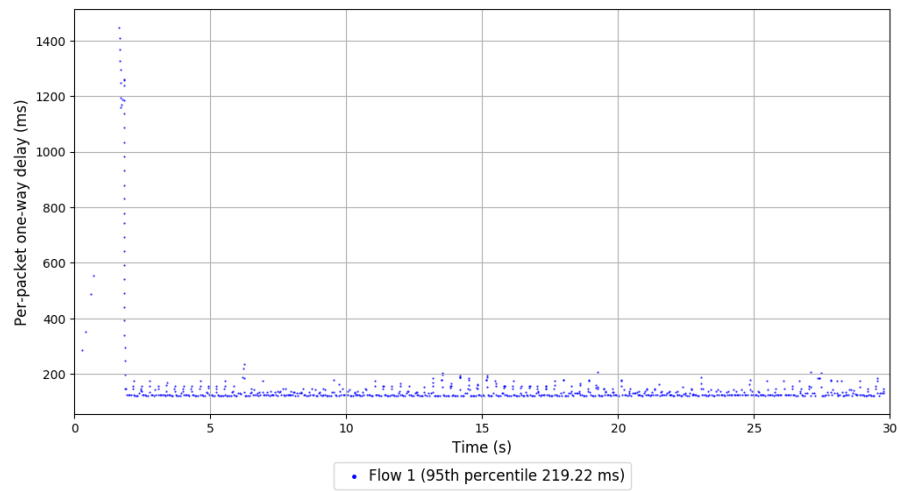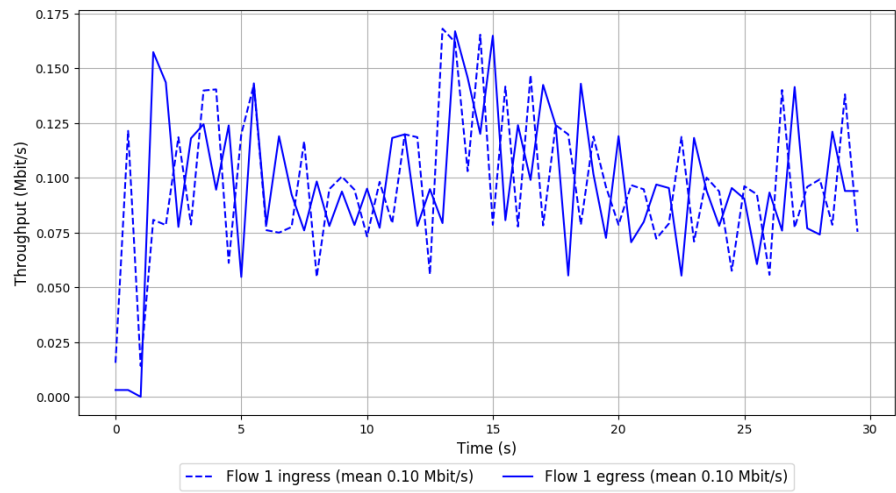Flow 1 (95th percentile 1849.95 ms)

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```
Run 3: Statistics of Sprout

Start at: 2017-11-20 22:14:04
End at: 2017-11-20 22:14:34
Local clock offset: -0.168 ms
Remote clock offset: 8.443 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 219.224 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 219.224 ms
Loss rate: 0.52%
```

Run 3: Report of Sprout — Data Link

```
Run 1: Statistics of TaoVA-100x

Start at: 2017-11-20 21:45:53
End at: 2017-11-20 21:46:23
Local clock offset: 0.111 ms
Remote clock offset: 8.775 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 943.927 ms
Loss rate: 2.61%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 943.927 ms
Loss rate: 2.61%
```
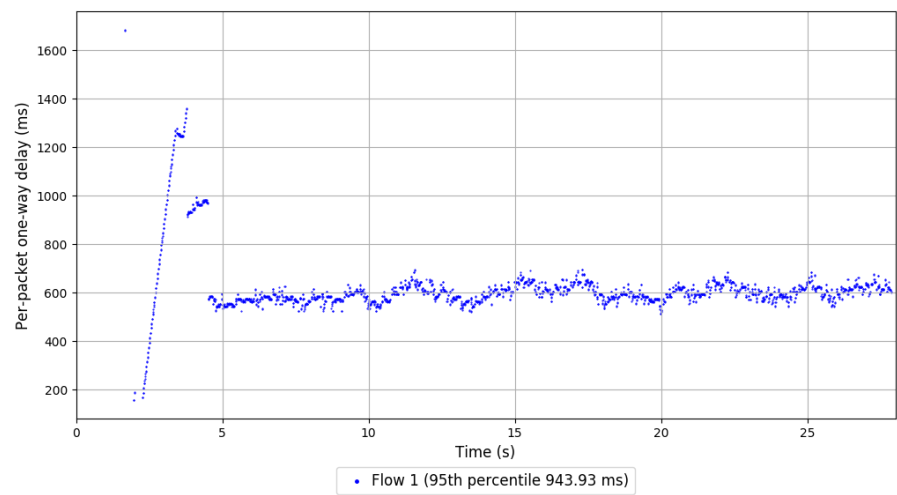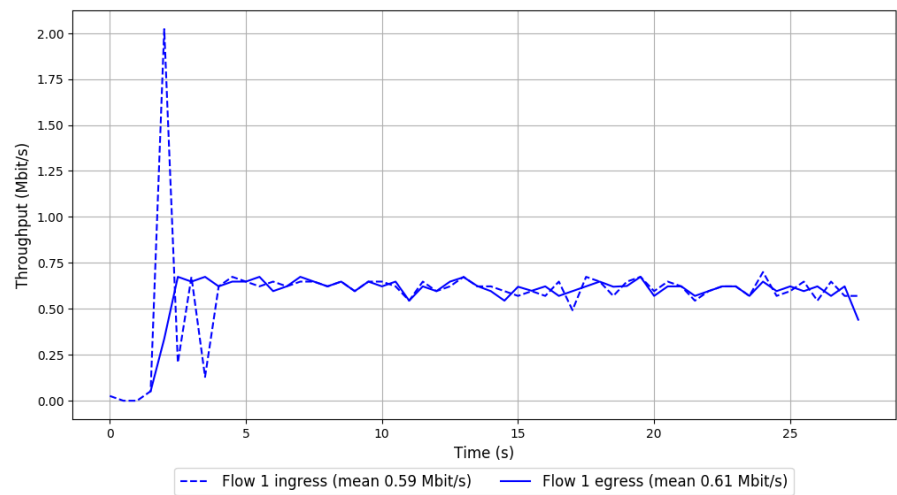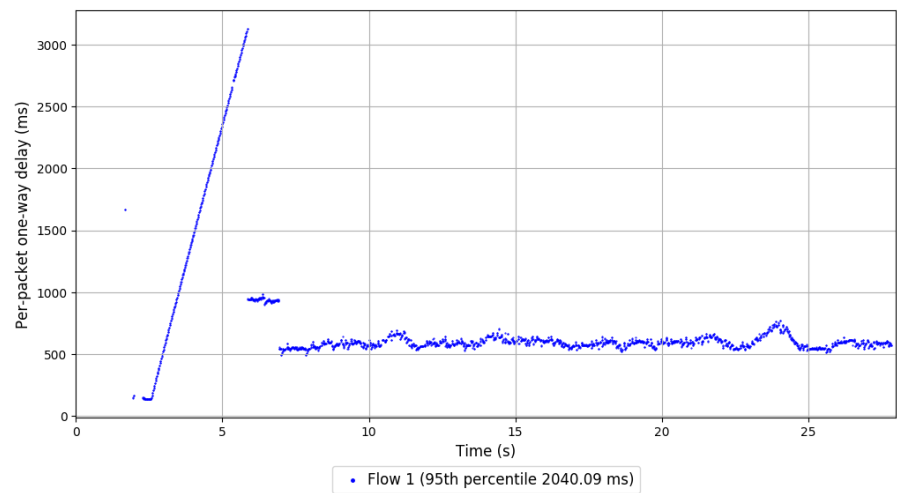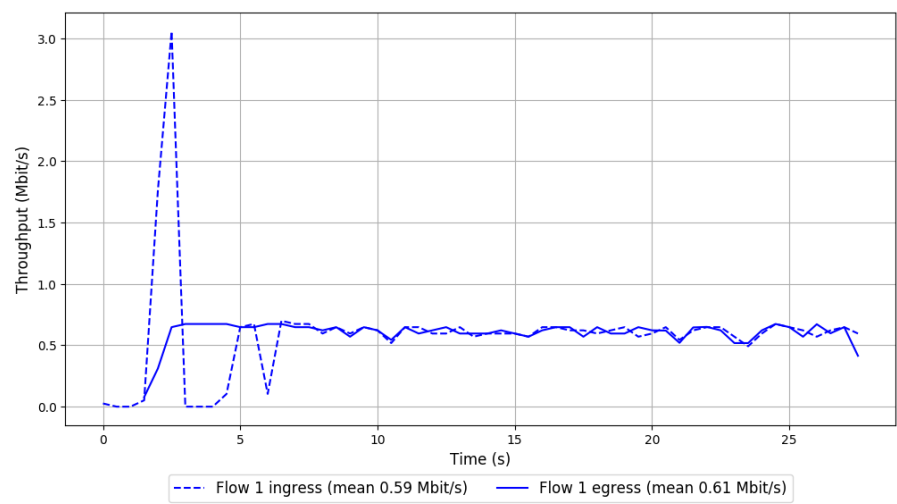
Run 1: Report of TaoVA-100x — Data Link

```
Run 2: Statistics of TaoVA-100x

Start at: 2017-11-20 22:02:18
End at: 2017-11-20 22:02:48
Local clock offset: -0.483 ms
Remote clock offset: 10.343 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 2040.094 ms
Loss rate: 2.84%
-- Flow 1:
Average throughput: 0.61 Mbit/s
95th percentile per-packet one-way delay: 2040.094 ms
Loss rate: 2.84%
```

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

Flow 1 ingress (mean 0.59 Mbit/s) ----   Flow 1 egress (mean 0.61 Mbit/s) ——
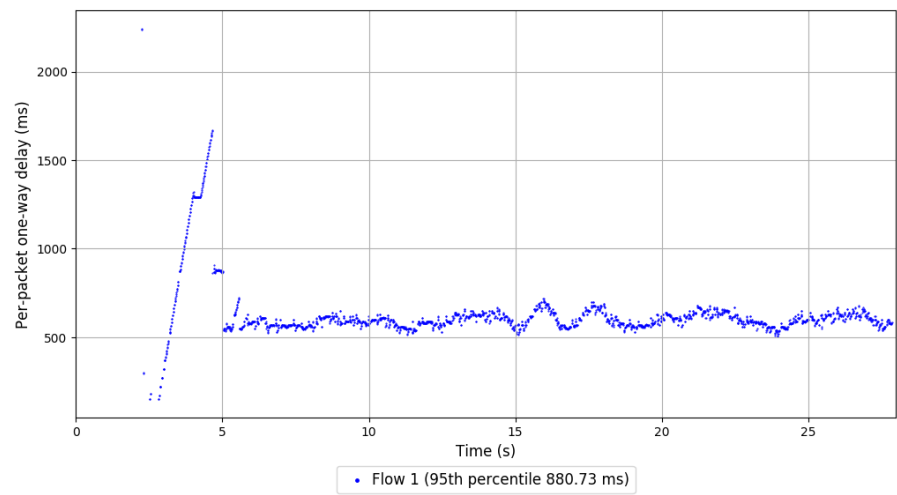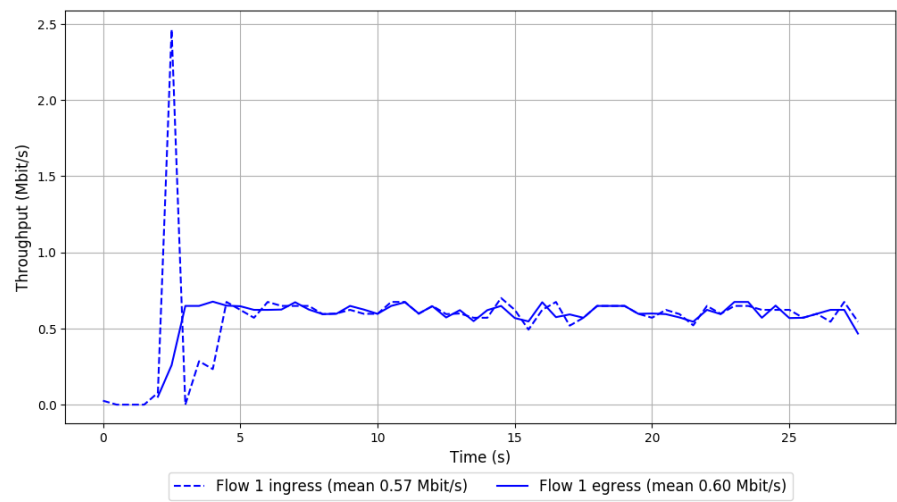

Flow 1 (95th percentile 2040.09 ms) •

```
Run 3: Statistics of TaoVA-100x

Start at: 2017-11-20 22:18:44
End at: 2017-11-20 22:19:14
Local clock offset: -0.193 ms
Remote clock offset: 10.902 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 880.731 ms
Loss rate: 2.84%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 880.731 ms
Loss rate: 2.84%
```
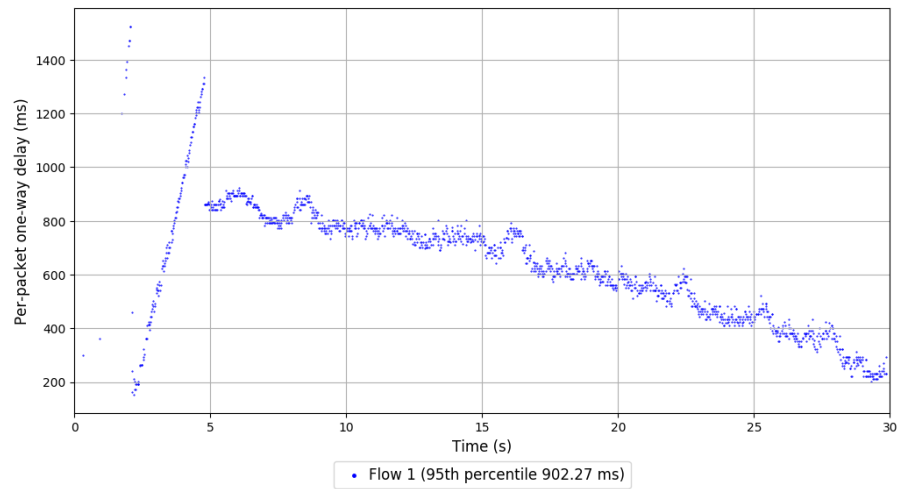
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 0.57 Mbit/s) ——— Flow 1 egress (mean 0.60 Mbit/s)

• Flow 1 (95th percentile 880.73 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2017-11-20 21:43:33
End at: 2017-11-20 21:44:03
Local clock offset: 0.406 ms
Remote clock offset: 8.104 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 902.267 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 902.267 ms
Loss rate: 1.17%
```
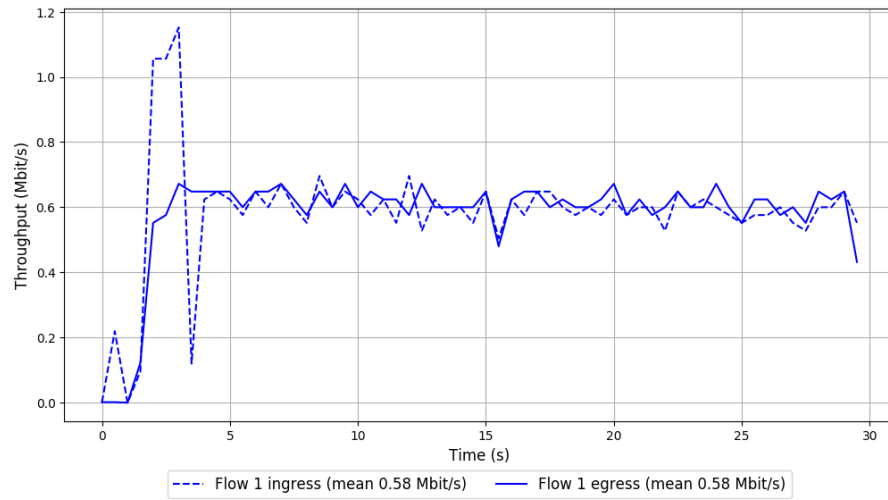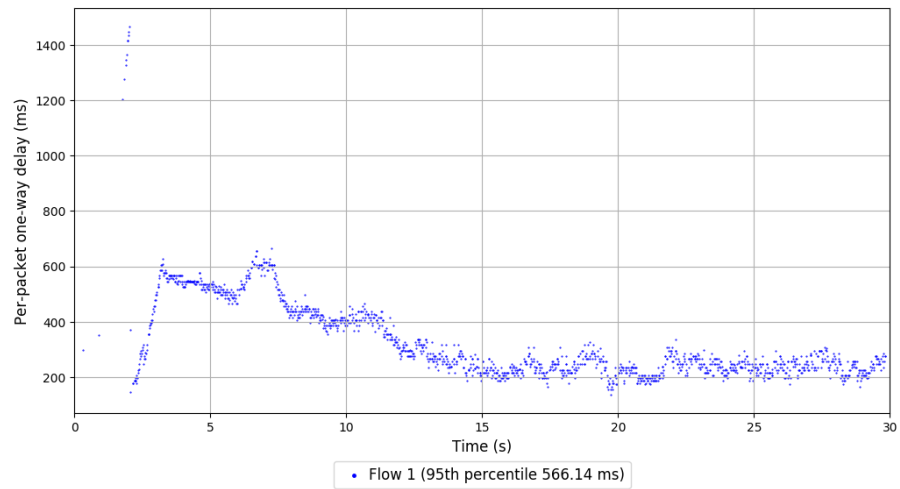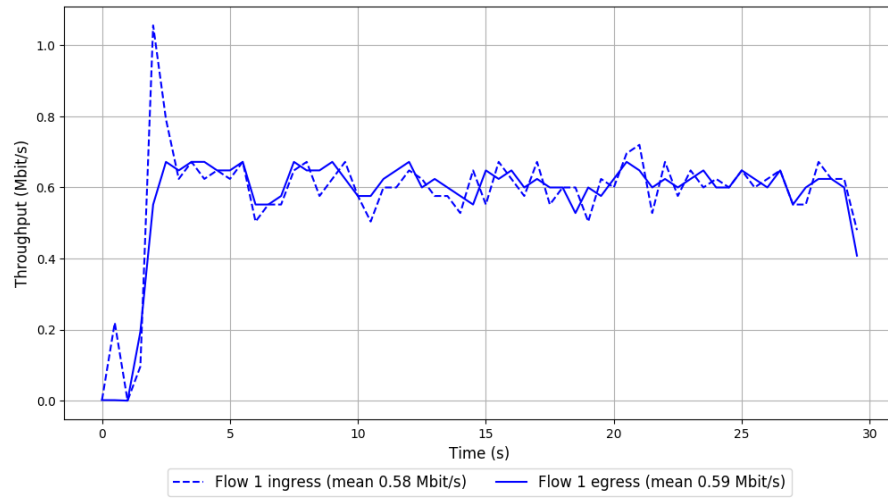
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2017-11-20 21:59:58
End at: 2017-11-20 22:00:28
Local clock offset: -0.609 ms
Remote clock offset: 14.607 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 566.139 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 566.139 ms
Loss rate: 1.10%
```

Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2017-11-20 22:16:24
End at: 2017-11-20 22:16:54
Local clock offset: -0.231 ms
Remote clock offset: 9.267 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 841.899 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 841.899 ms
Loss rate: 1.17%
```
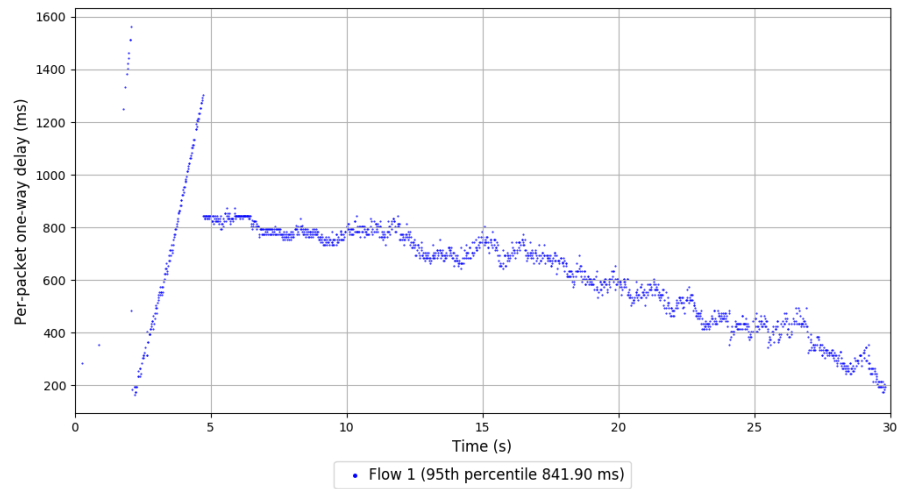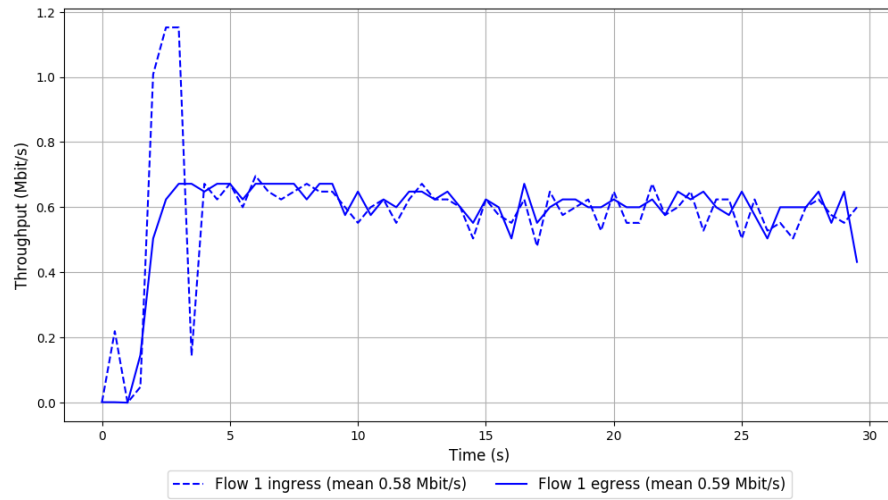
Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.58 Mbit/s)   Flow 1 egress (mean 0.59 Mbit/s)

Flow 1 (95th percentile 841.90 ms)

```
Run 1: Statistics of Verus

Start at: 2017-11-20 21:47:03
End at: 2017-11-20 21:47:34
Local clock offset: -0.103 ms
Remote clock offset: 8.02 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1872.226 ms
Loss rate: 4.62%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 1872.226 ms
Loss rate: 4.62%
```
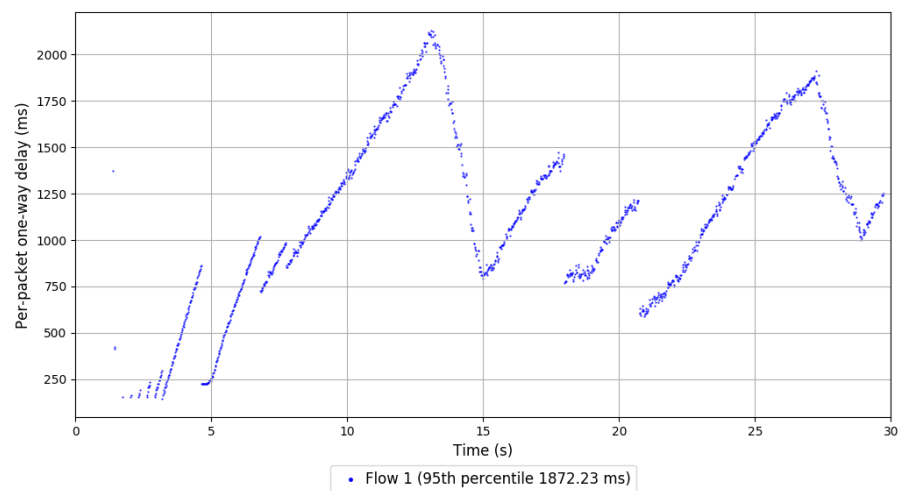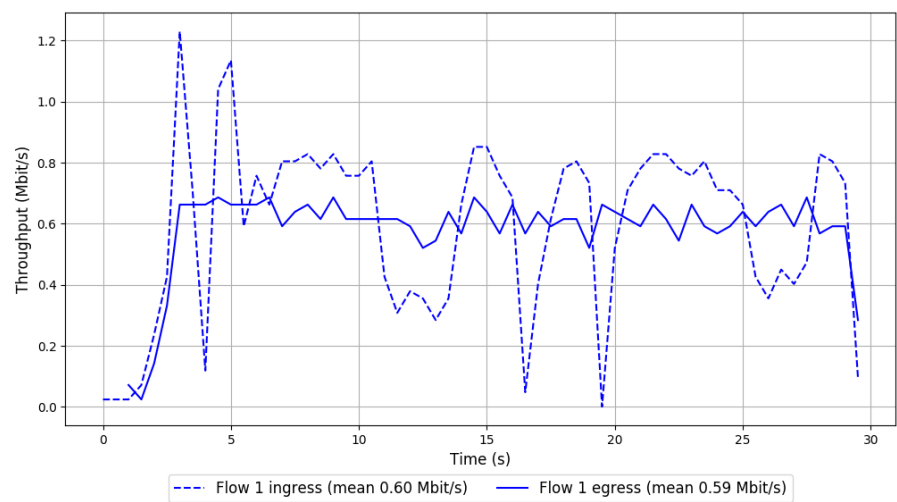
Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 0.60 Mbit/s)   Flow 1 egress (mean 0.59 Mbit/s)

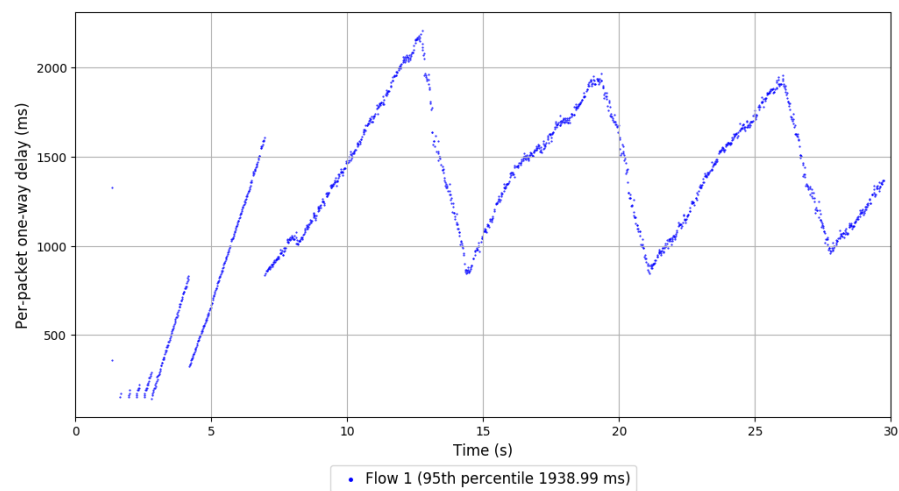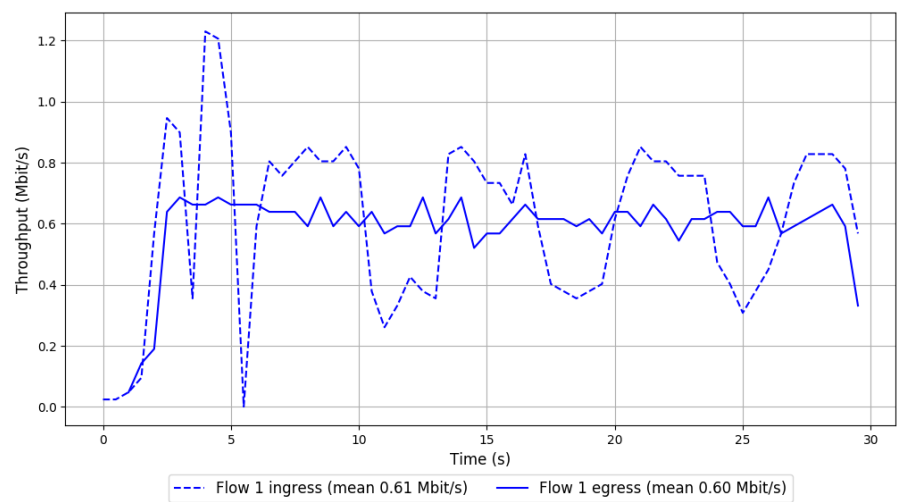Flow 1 (95th percentile 1872.23 ms)

```
Run 2: Statistics of Verus

Start at: 2017-11-20 22:03:29
End at: 2017-11-20 22:03:59
Local clock offset: -0.444 ms
Remote clock offset: 10.885 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1938.986 ms
Loss rate: 6.52%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 1938.986 ms
Loss rate: 6.52%
```

Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 0.61 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)

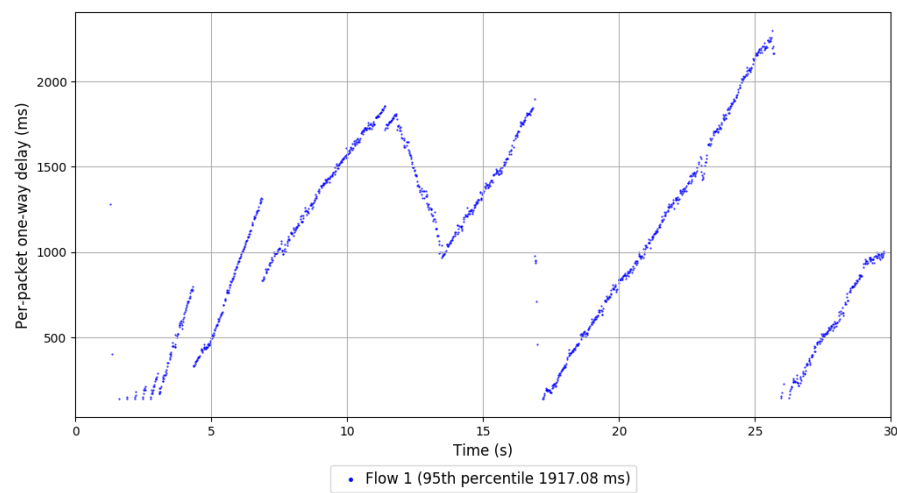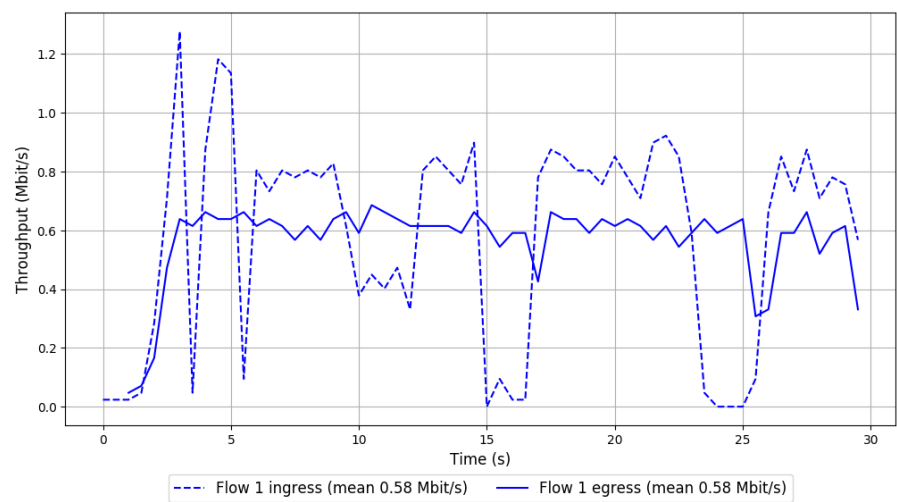Flow 1 (95th percentile 1938.99 ms)

```
Run 3: Statistics of Verus

Start at: 2017-11-20 22:19:55
End at: 2017-11-20 22:20:25
Local clock offset: -0.167 ms
Remote clock offset: 14.51 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1917.084 ms
Loss rate: 5.04%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 1917.084 ms
Loss rate: 5.04%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 0.58 Mbit/s)   Flow 1 egress (mean 0.58 Mbit/s)

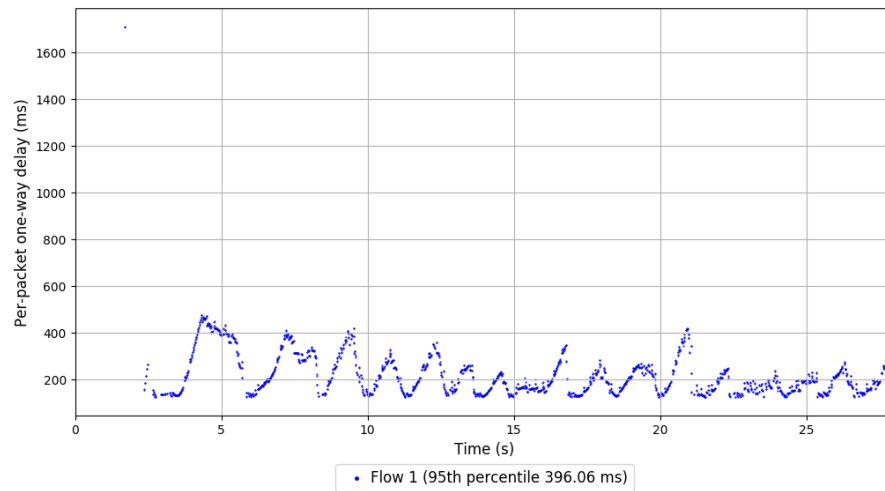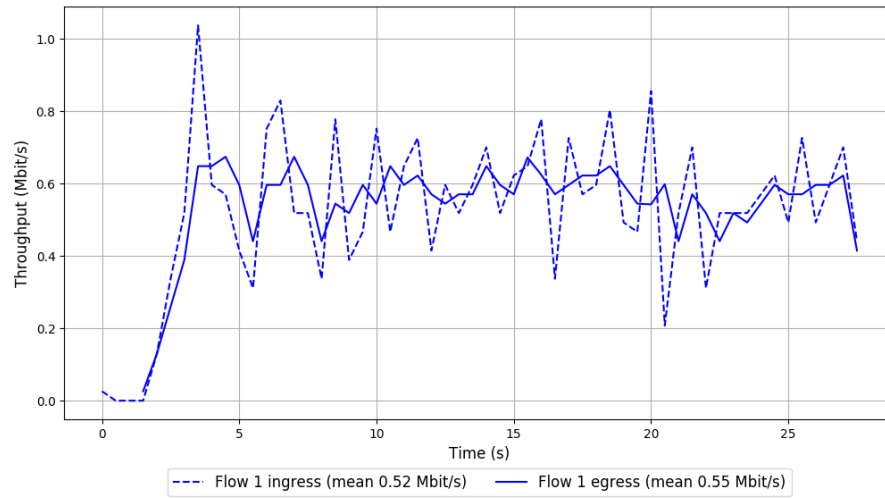Flow 1 (95th percentile 1917.08 ms)

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```
Run 1: Statistics of Copa

Start at: 2017-11-20 21:50:34
End at: 2017-11-20 21:51:04
Local clock offset: -0.365 ms
Remote clock offset: 13.456 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 396.057 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 396.057 ms
Loss rate: 1.06%
```

Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2017-11-20 22:07:00
End at: 2017-11-20 22:07:30
Local clock offset: -0.359 ms
Remote clock offset: 9.969 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 390.803 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 390.803 ms
Loss rate: 0.77%
```
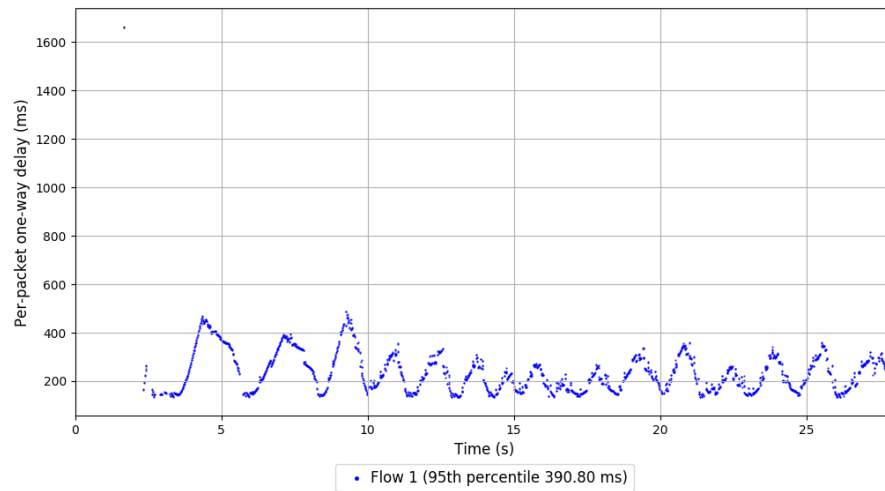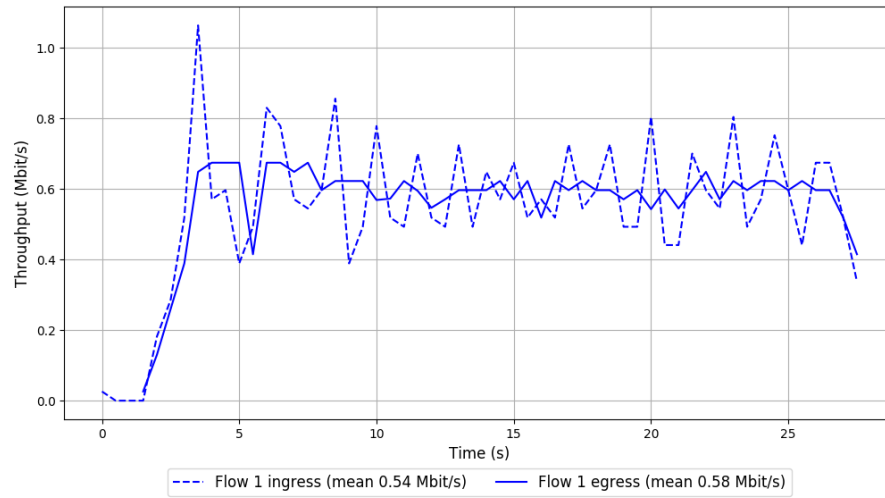
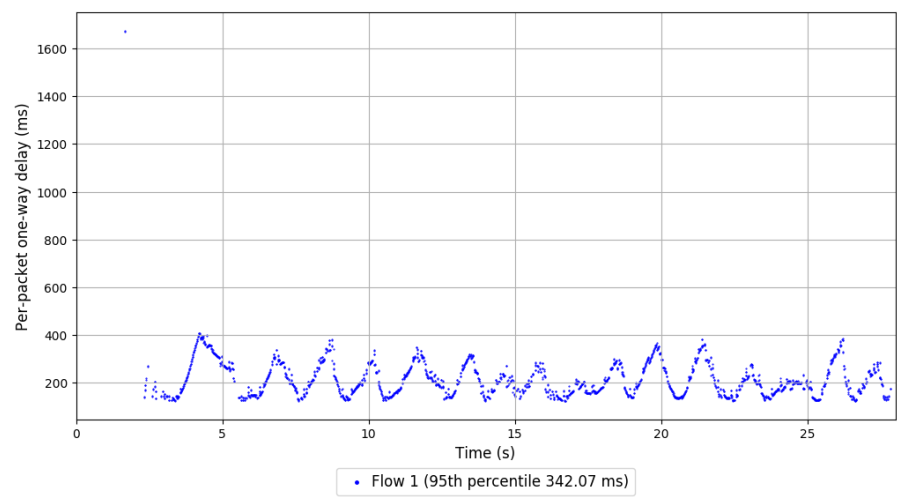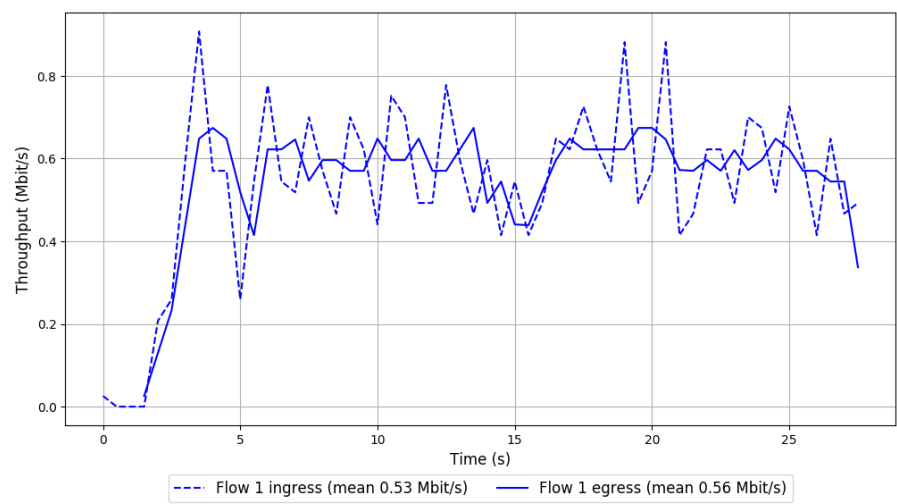Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2017-11-20 22:23:26
End at: 2017-11-20 22:23:56
Local clock offset: -0.219 ms
Remote clock offset: 16.497 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 342.070 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 342.070 ms
Loss rate: 1.13%
```

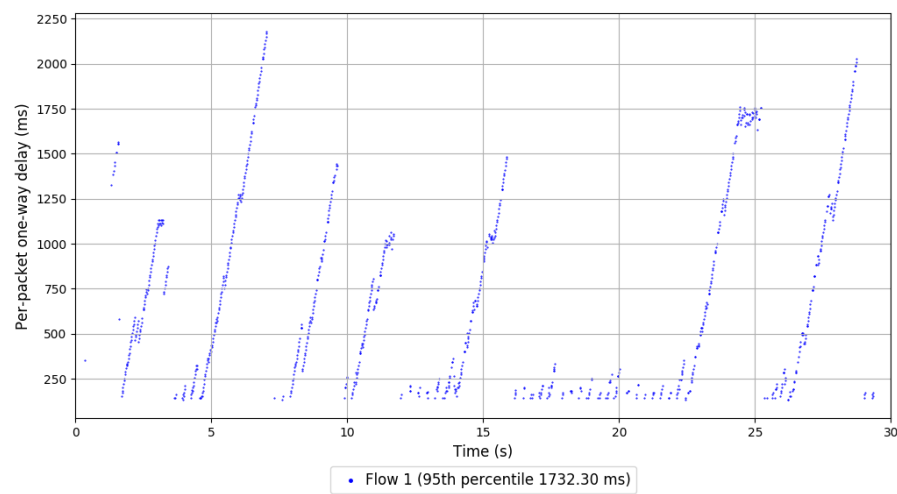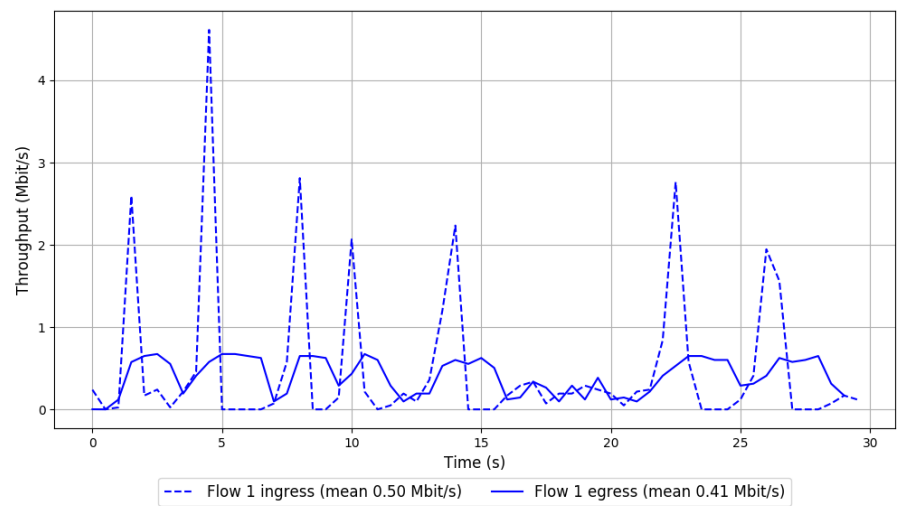# Run 3: Report of Copa — Data Link

```
Run 1: Statistics of Indigo

Start at: 2017-11-20 21:54:05
End at: 2017-11-20 21:54:35
Local clock offset: -0.6 ms
Remote clock offset: 11.1 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 1732.295 ms
Loss rate: 19.53%
-- Flow 1:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 1732.295 ms
Loss rate: 19.53%
```

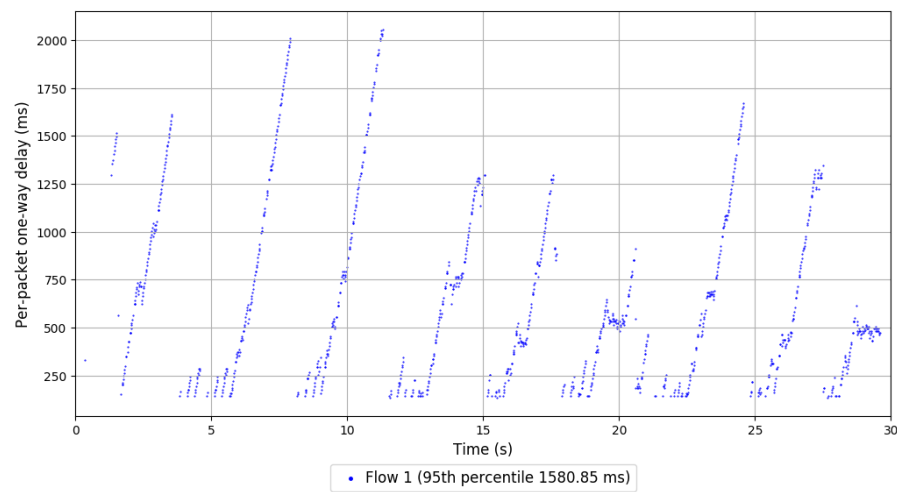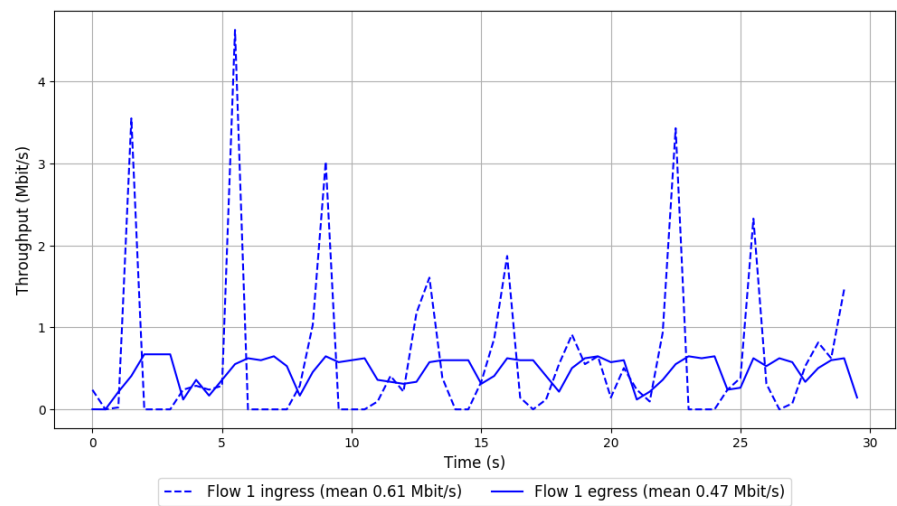Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2017-11-20 22:10:31
End at: 2017-11-20 22:11:01
Local clock offset: -0.192 ms
Remote clock offset: 10.366 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 1580.848 ms
Loss rate: 22.63%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 1580.848 ms
Loss rate: 22.63%
```

Run 2: Report of Indigo — Data Link

Flow 1 ingress (mean 0.61 Mbit/s)   Flow 1 egress (mean 0.47 Mbit/s)

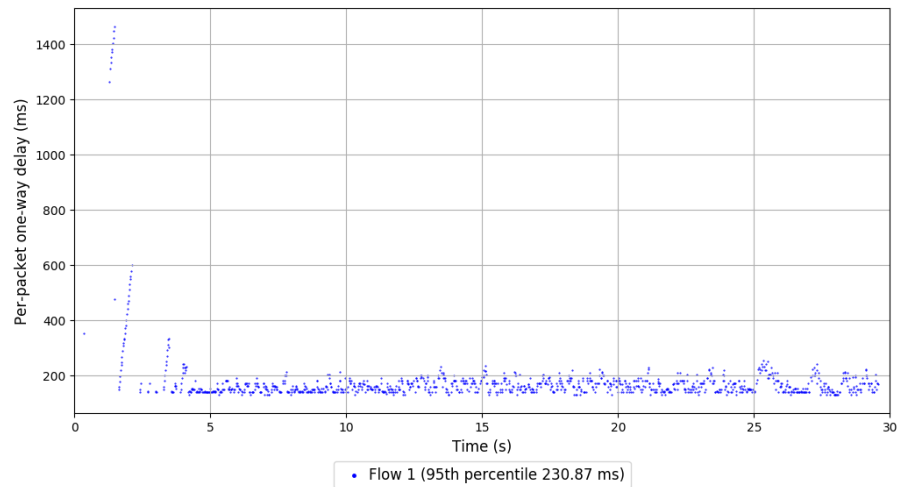
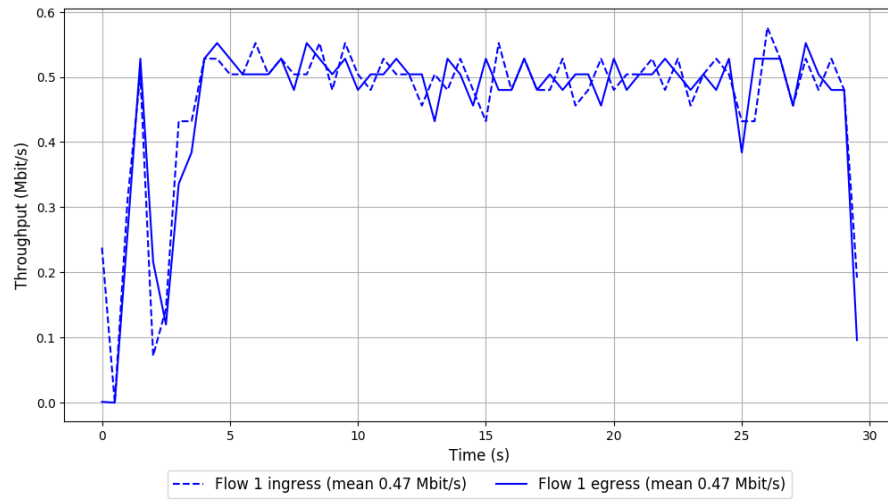• Flow 1 (95th percentile 1580.85 ms)

```
Run 3: Statistics of Indigo

Start at: 2017-11-20 22:26:57
End at: 2017-11-20 22:27:27
Local clock offset: -0.249 ms
Remote clock offset: 11.695 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 230.869 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 230.869 ms
Loss rate: 1.37%
```
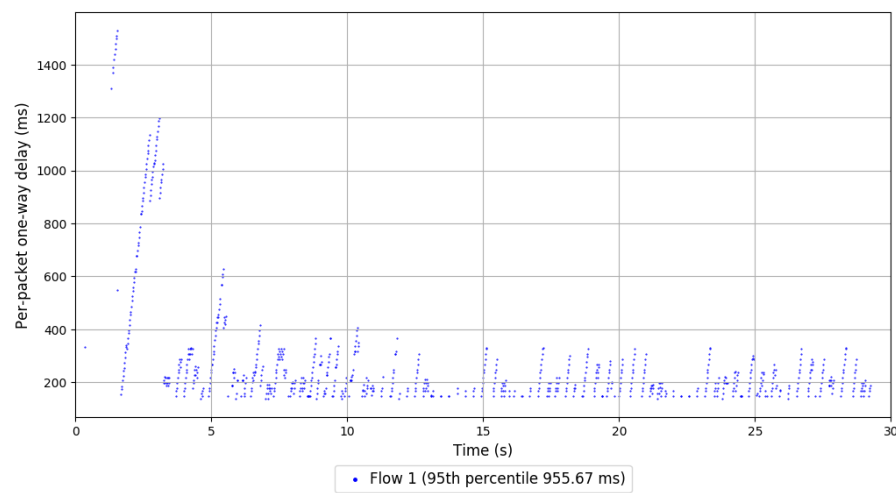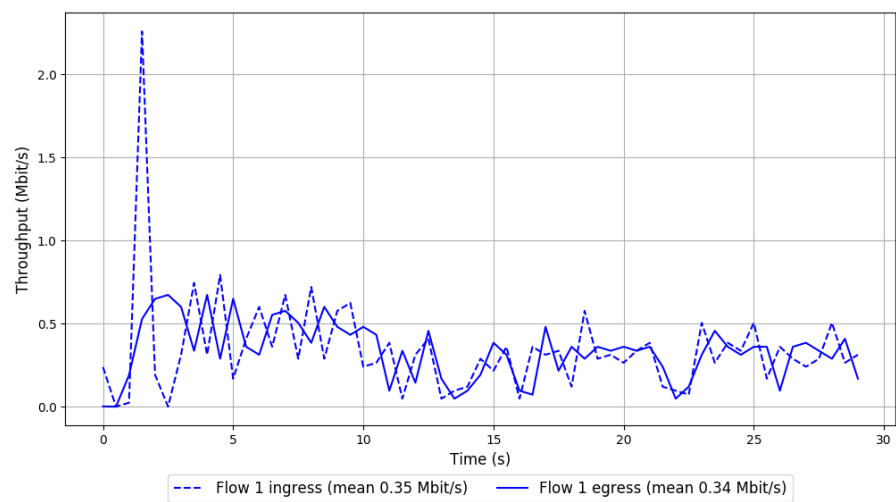
Run 3: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-calib

Start at: 2017-11-20 21:42:22
End at: 2017-11-20 21:42:52
Local clock offset: 0.702 ms
Remote clock offset: 8.105 ms

# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 955.668 ms
Loss rate: 2.94%
-- Flow 1:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 955.668 ms
Loss rate: 2.94%
```

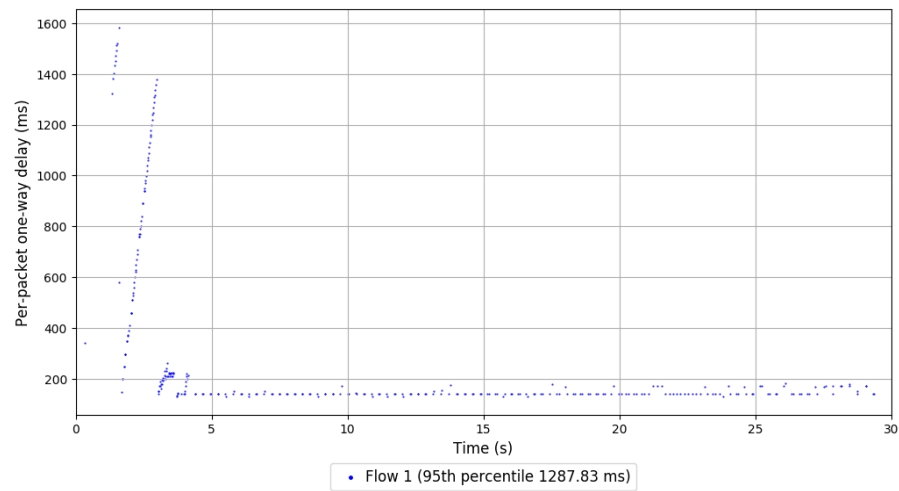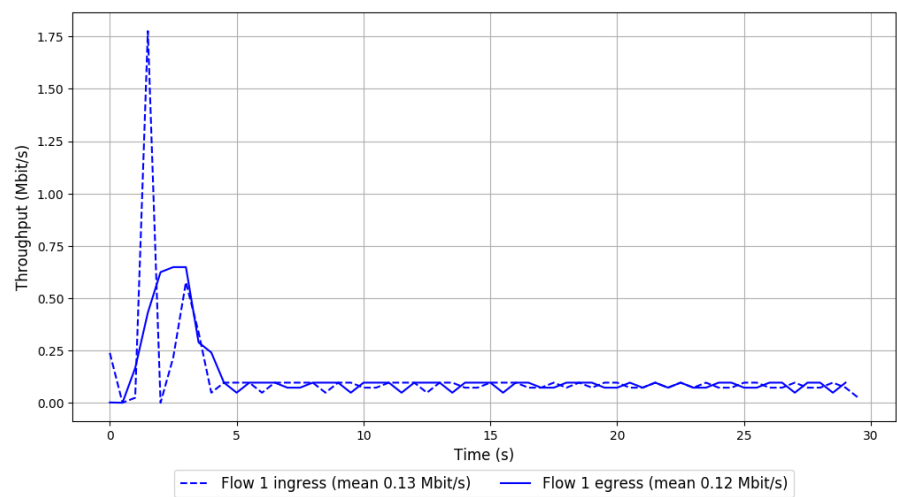Run 1: Report of Indigo-calib — Data Link

```
Run 2: Statistics of Indigo-calib

Start at: 2017-11-20 21:58:48
End at: 2017-11-20 21:59:18
Local clock offset: -0.63 ms
Remote clock offset: 15.955 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1287.828 ms
Loss rate: 2.90%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1287.828 ms
Loss rate: 2.90%
```

Run 2: Report of Indigo-calib — Data Link

```
Run 3: Statistics of Indigo-calib

Start at: 2017-11-20 22:15:14
End at: 2017-11-20 22:15:44
Local clock offset: -0.212 ms
Remote clock offset: 13.438 ms


# Below is generated by plot.py at 2017-11-20 23:19:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1071.119 ms
Loss rate: 4.78%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 1071.119 ms
Loss rate: 4.78%
```

Run 3: Report of Indigo-calib — Data Link