Pantheon Report

Generated at 2017-08-21 06:14:35 (UTC).

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

Repeated the test of 15 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

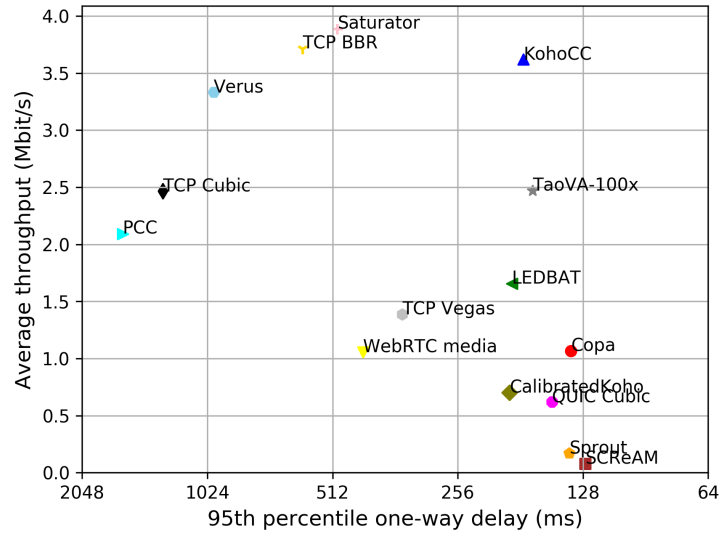Increased UDP receive buffer to 16 MB (default) and 32 MB (max).

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

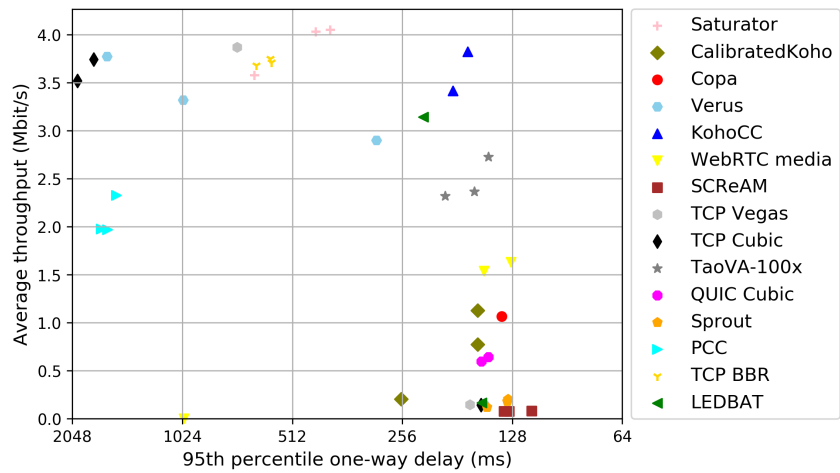NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ e43be7582298d552838afcf6382342bf187fbbd6
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/genericCC @ dae96123232f1bcb37725348fa2378691ce26725
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-stimuli @ fc73a85ca16c34366d1888dc8a0d0d88d4ebf2a7
third_party/pantheon-tunnel @ baf443516dea3eeddeccaf9b916cc313273ca4f4
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ f1a14bffe749737437f61b1eaeeb30b267cde681
third_party/sprout @ 6f2efe6e088d91066a9f023df375eee2665089ce
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

test from AWS Brazil 2 Ethernet to Colombia ppp0, 3 runs of 30s each per scheme
(mean of all runs by scheme)

test from AWS Brazil 2 Ethernet to Colombia ppp0, 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	3.71	604.79	3.81
CalibratedKoho	3	0.70	192.15	5.57
Copa	1	1.07	136.72	7.15
TCP Cubic	3	2.47	1309.64	8.87
KohoCC	2	3.62	177.90	4.09
LEDBAT	2	1.66	189.66	4.85
PCC	3	2.09	1634.36	44.19
QUIC Cubic	2	0.62	152.10	6.92
Saturator	3	3.89	498.46	6.28
SCReAM	3	0.08	126.33	1.61
Sprout	3	0.17	138.07	2.20
TaoVA-100x	3	2.47	169.02	5.07
TCP Vegas	3	1.39	348.32	6.54
Verus	3	3.33	988.89	6.74
WebRTC media	3	1.06	432.52	4.23

```
Run 1: Statistics of TCP BBR

Start at: 2017-08-21 05:21:32
End at: 2017-08-21 05:22:02
Local clock offset: 0.356 ms
Remote clock offset: -2.892 ms

# Below is generated by plot.py at 2017-08-21 06:14:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.68 Mbit/s
95th percentile per-packet one-way delay: 642.131 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 3.68 Mbit/s
95th percentile per-packet one-way delay: 642.131 ms
Loss rate: 1.28%
```
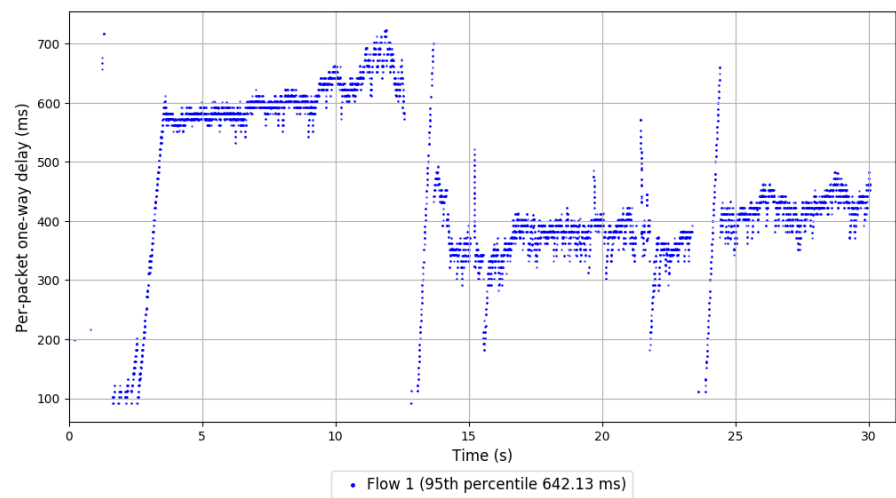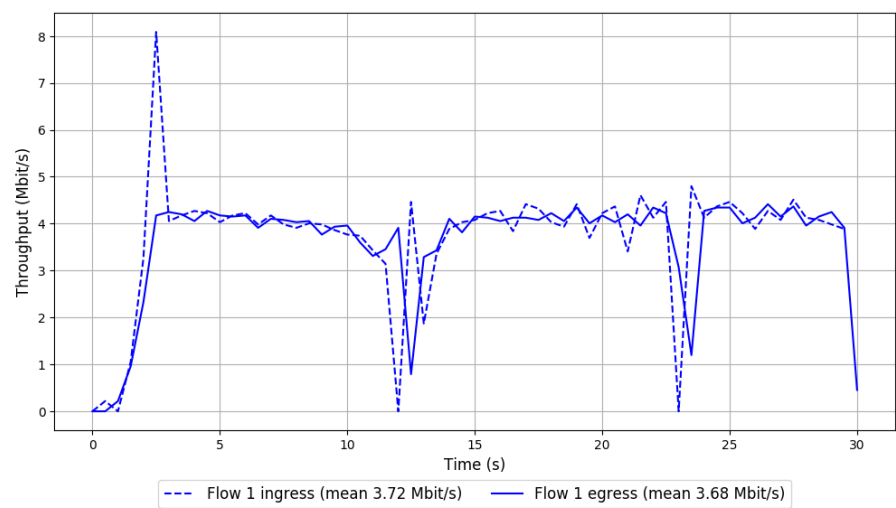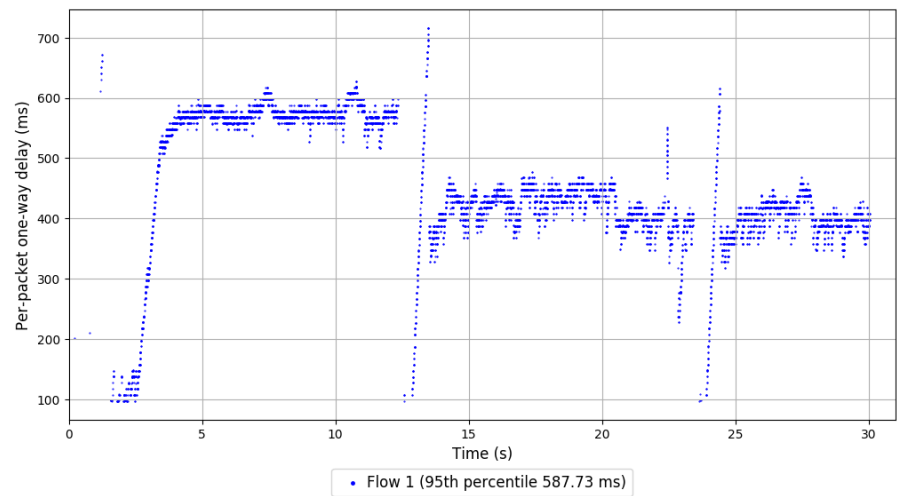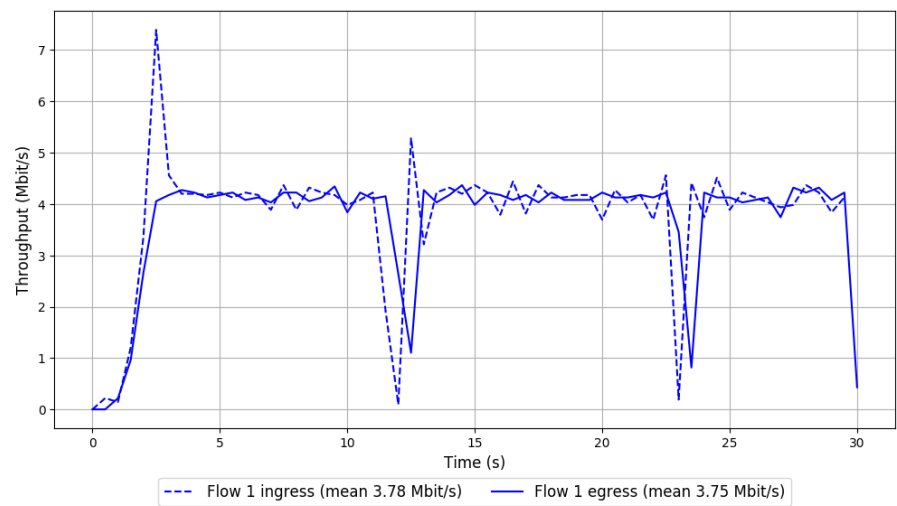
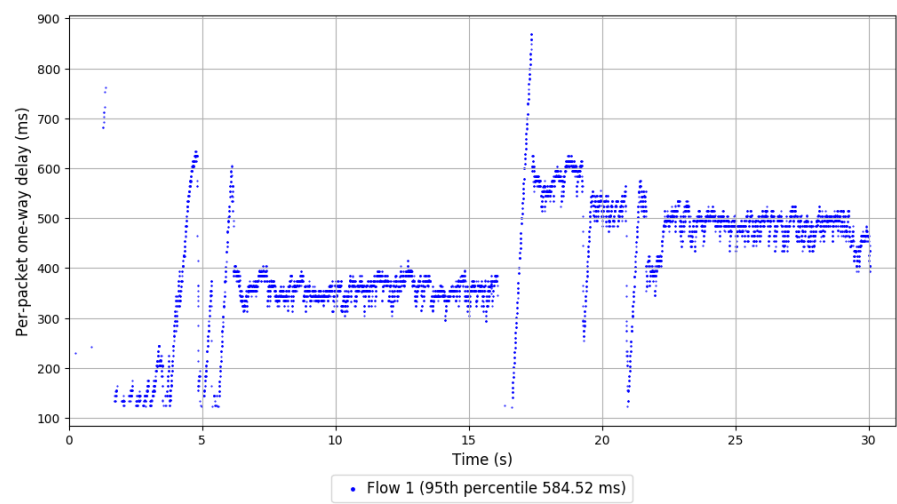Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2017-08-21 05:39:12
End at: 2017-08-21 05:39:43
Local clock offset: 0.097 ms
Remote clock offset: -3.069 ms


# Below is generated by plot.py at 2017-08-21 06:14:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 587.726 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 3.75 Mbit/s
95th percentile per-packet one-way delay: 587.726 ms
Loss rate: 1.13%
```
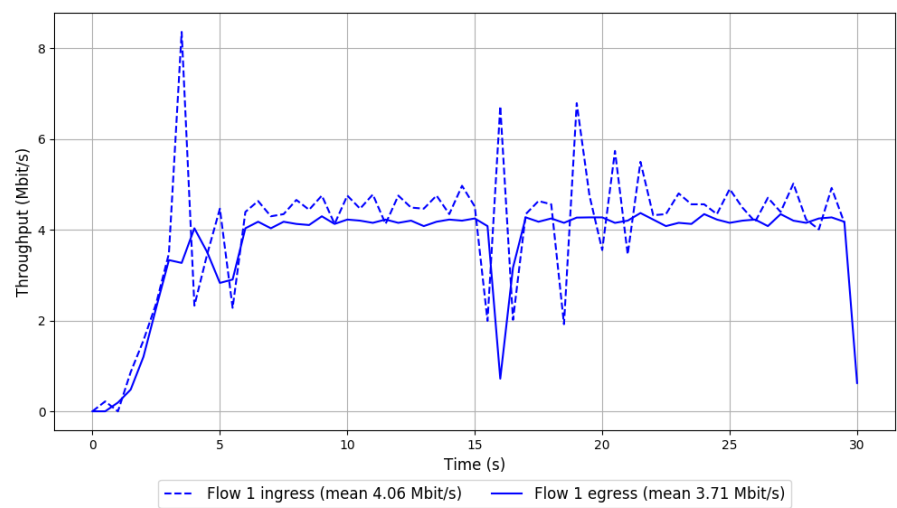
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2017-08-21 05:57:11
End at: 2017-08-21 05:57:41
Local clock offset: -0.087 ms
Remote clock offset: -3.104 ms


# Below is generated by plot.py at 2017-08-21 06:14:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.71 Mbit/s
95th percentile per-packet one-way delay: 584.522 ms
Loss rate: 9.02%
-- Flow 1:
Average throughput: 3.71 Mbit/s
95th percentile per-packet one-way delay: 584.522 ms
Loss rate: 9.02%
```
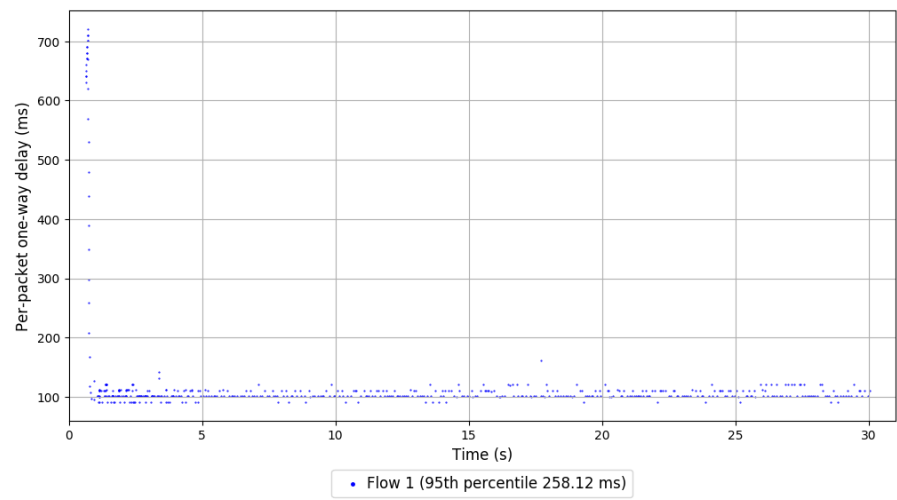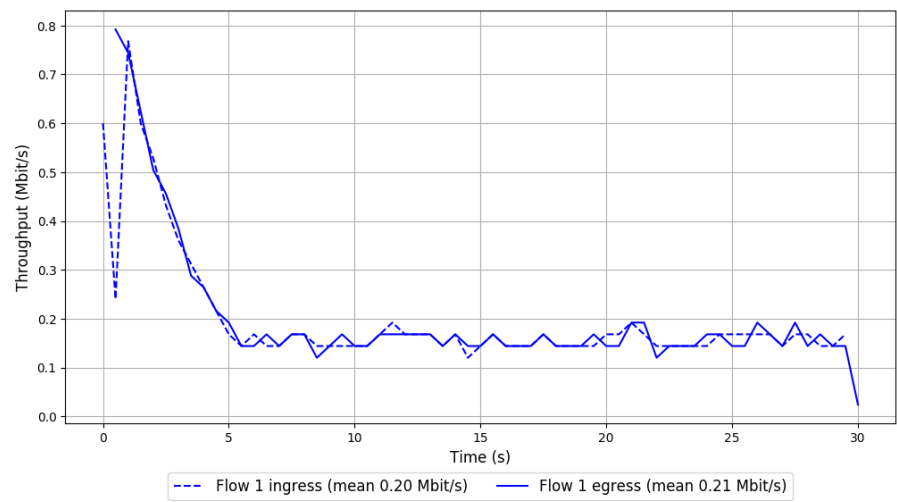
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 4.06 Mbit/s) — Flow 1 egress (mean 3.71 Mbit/s)

Flow 1 (95th percentile 584.52 ms)

```
Run 1: Statistics of CalibratedKoho

Start at: 2017-08-21 05:29:45
End at: 2017-08-21 05:30:15
Local clock offset: 0.204 ms
Remote clock offset: -3.04 ms

# Below is generated by plot.py at 2017-08-21 06:14:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 258.119 ms
Loss rate: 0.20%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 258.119 ms
Loss rate: 0.20%
```

Run 1: Report of CalibratedKoho — Data Link

```
Run 2: Statistics of CalibratedKoho

Start at: 2017-08-21 05:47:46
End at: 2017-08-21 05:48:16
Local clock offset: -0.029 ms
Remote clock offset: -4.03 ms


# Below is generated by plot.py at 2017-08-21 06:14:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 159.150 ms
Loss rate: 8.62%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 159.150 ms
Loss rate: 8.62%
```
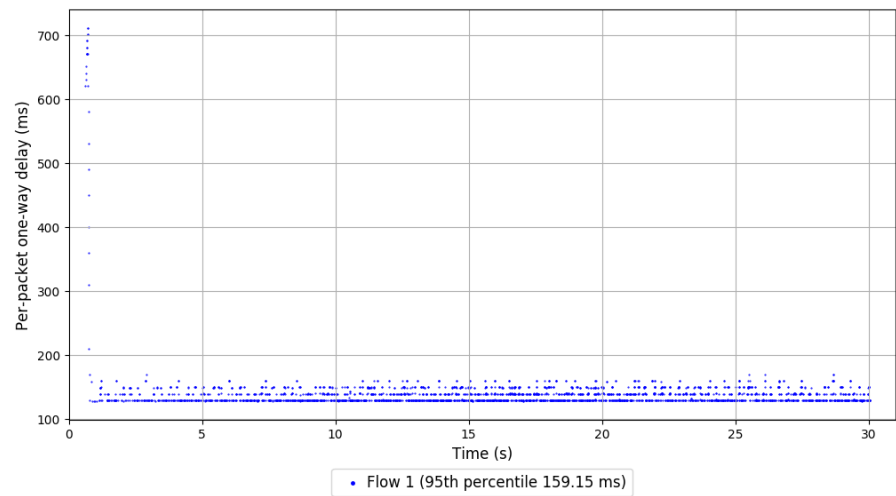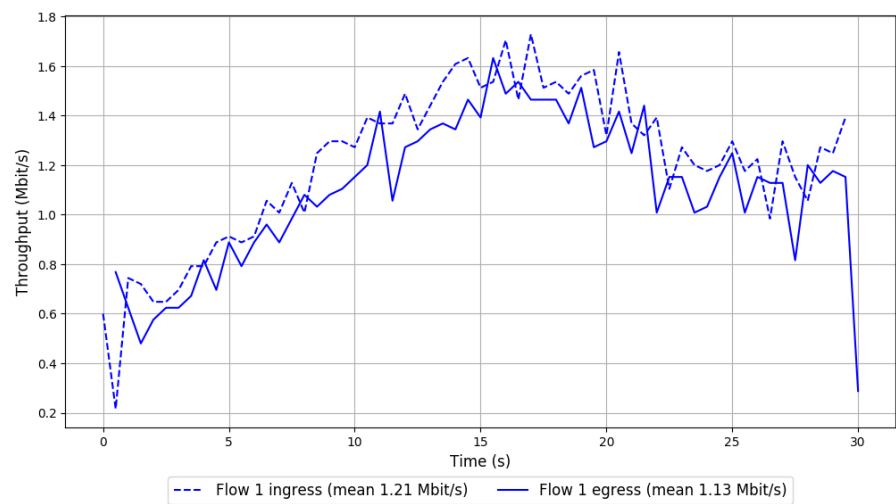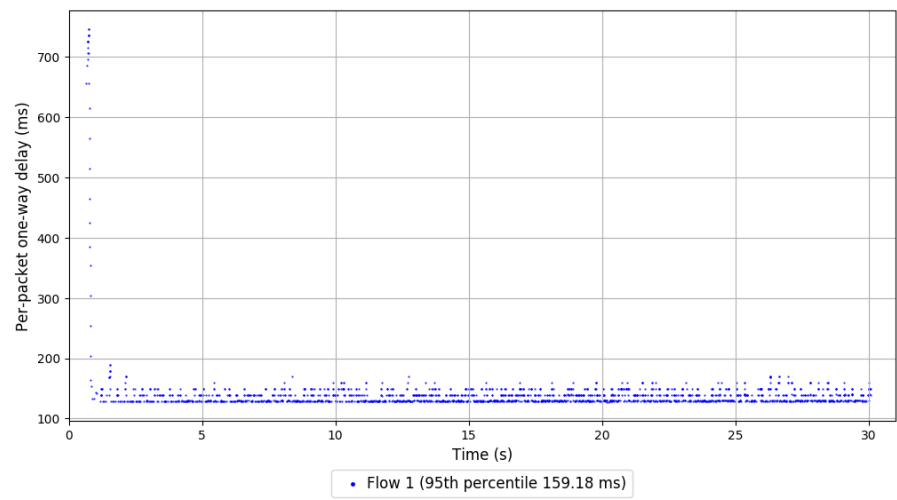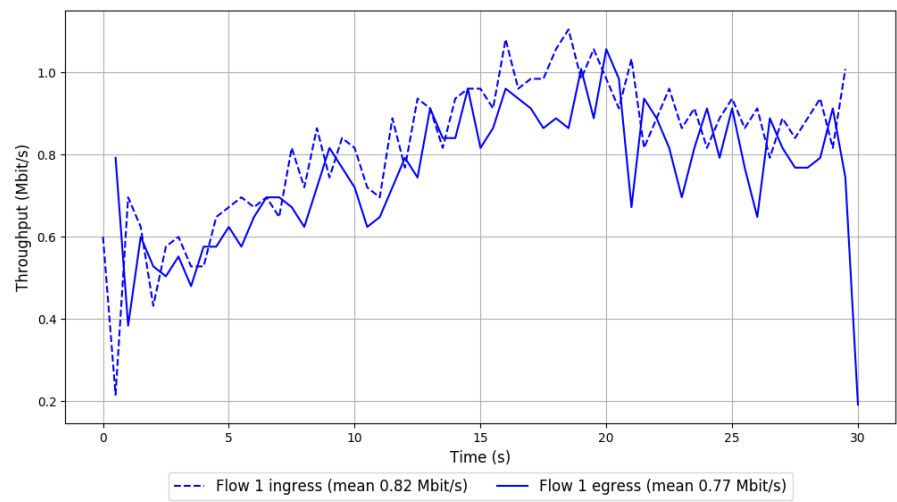
Run 2: Report of CalibratedKoho — Data Link

Flow 1 ingress (mean 1.21 Mbit/s)   Flow 1 egress (mean 1.13 Mbit/s)

Flow 1 (95th percentile 159.15 ms)

```
Run 3: Statistics of CalibratedKoho

Start at: 2017-08-21 06:05:24
End at: 2017-08-21 06:05:54
Local clock offset: -0.054 ms
Remote clock offset: 0.881 ms


# Below is generated by plot.py at 2017-08-21 06:14:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 159.181 ms
Loss rate: 7.89%
-- Flow 1:
Average throughput: 0.77 Mbit/s
95th percentile per-packet one-way delay: 159.181 ms
Loss rate: 7.89%
```

Run 3: Report of CalibratedKoho — Data Link

Flow 1 ingress (mean 0.82 Mbit/s) ----   Flow 1 egress (mean 0.77 Mbit/s) ——

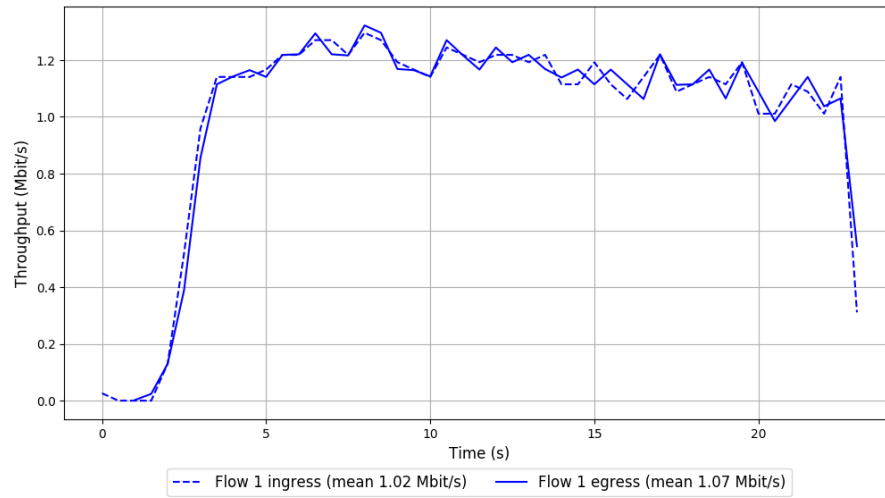Flow 1 (95th percentile 159.18 ms)

15

```
Run 1: Statistics of Copa

Start at: 2017-08-21 05:23:53
End at: 2017-08-21 05:24:23
Local clock offset: 0.241 ms
Remote clock offset: 1.004 ms
```
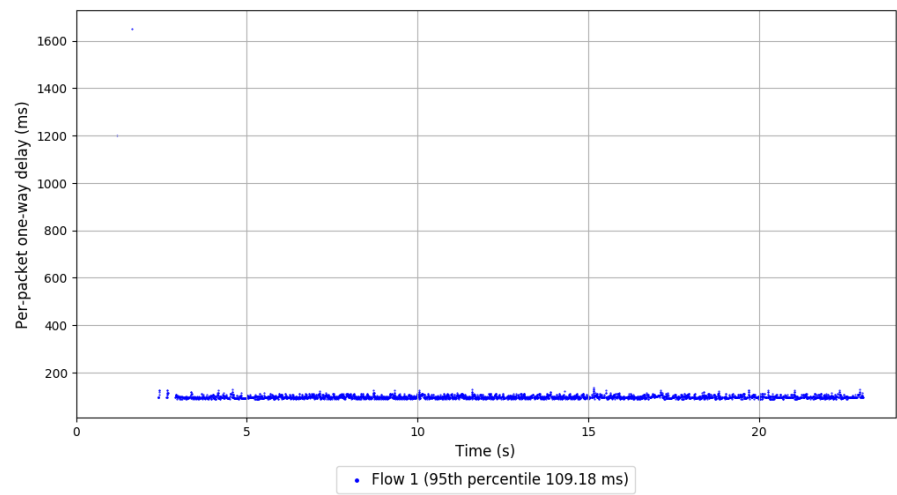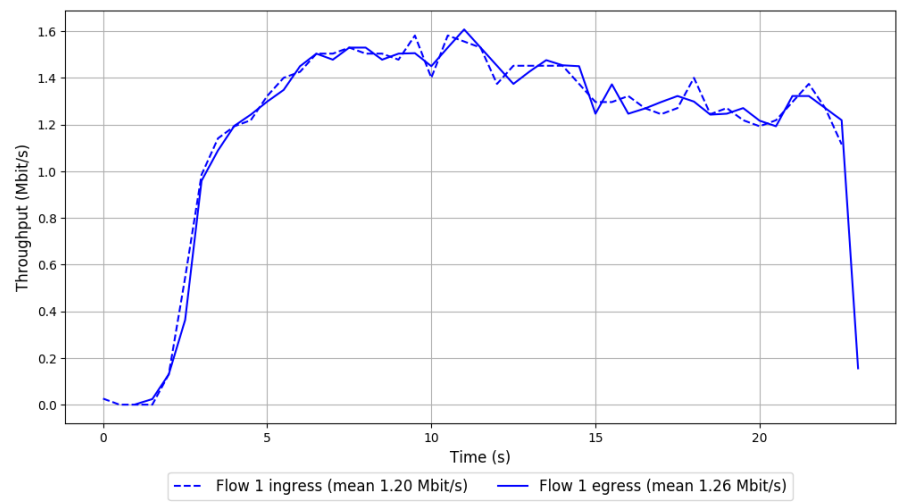
Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 1.02 Mbit/s)   Flow 1 egress (mean 1.07 Mbit/s)

Flow 1 (95th percentile 112.26 ms)

```
Run 2: Statistics of Copa

Start at: 2017-08-21 05:41:33
End at: 2017-08-21 05:42:03
Local clock offset: 0.087 ms
Remote clock offset: -3.108 ms
```
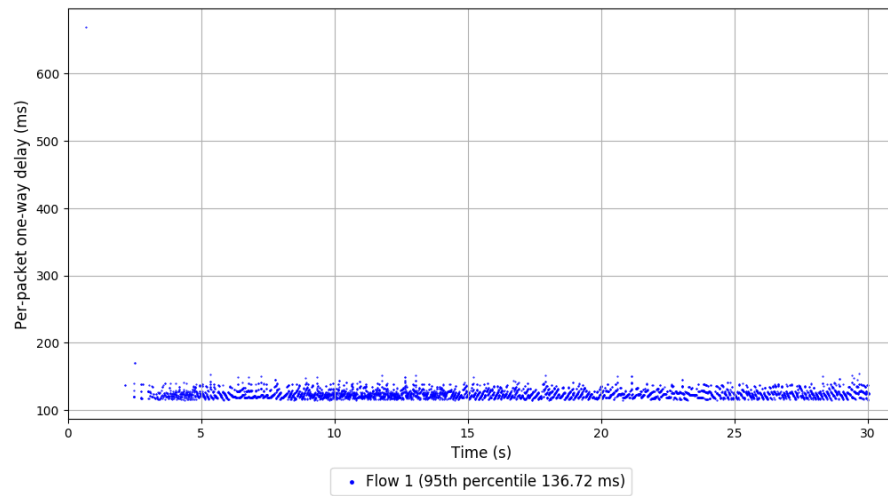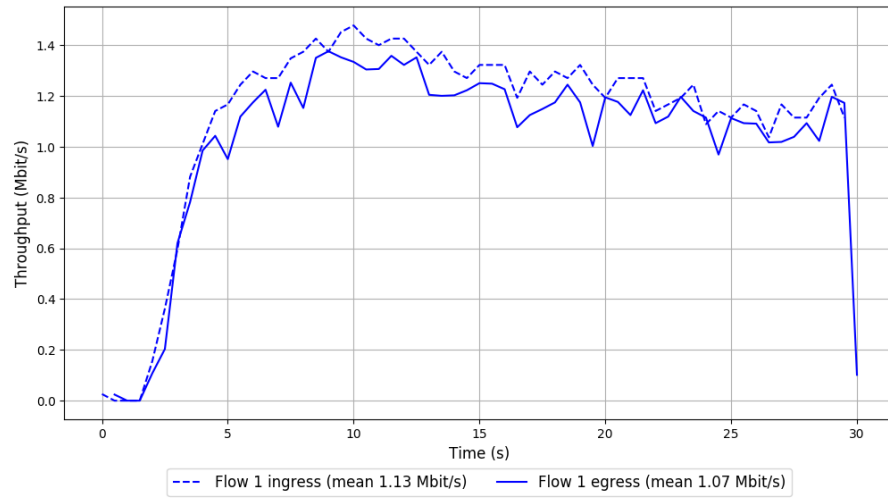
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2017-08-21 05:59:32
End at: 2017-08-21 06:00:02
Local clock offset: 0.008 ms
Remote clock offset: -3.974 ms


# Below is generated by plot.py at 2017-08-21 06:14:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 136.721 ms
Loss rate: 7.15%
-- Flow 1:
Average throughput: 1.07 Mbit/s
95th percentile per-packet one-way delay: 136.721 ms
Loss rate: 7.15%
```

Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 1.13 Mbit/s)   Flow 1 egress (mean 1.07 Mbit/s)

Flow 1 (95th percentile 136.72 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2017-08-21 05:25:03
End at: 2017-08-21 05:25:33
Local clock offset: 0.217 ms
Remote clock offset: -2.872 ms


# Below is generated by plot.py at 2017-08-21 06:14:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 1984.029 ms
Loss rate: 9.05%
-- Flow 1:
Average throughput: 3.52 Mbit/s
95th percentile per-packet one-way delay: 1984.029 ms
Loss rate: 9.05%
```
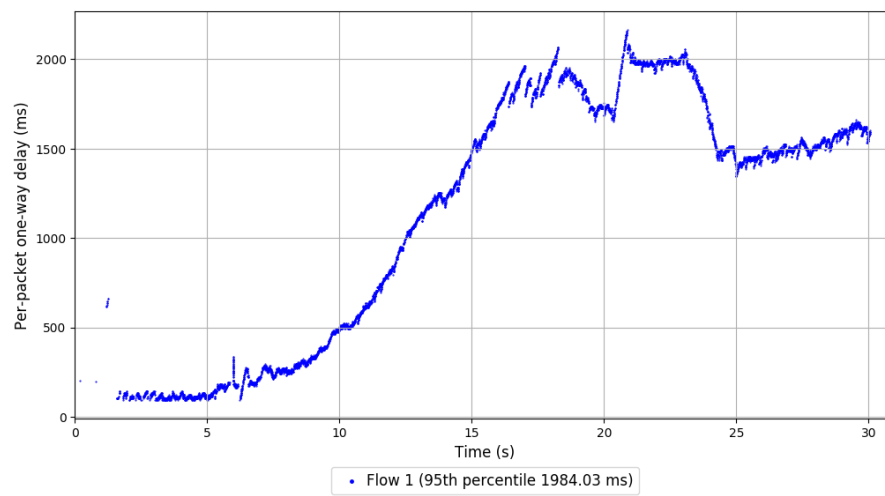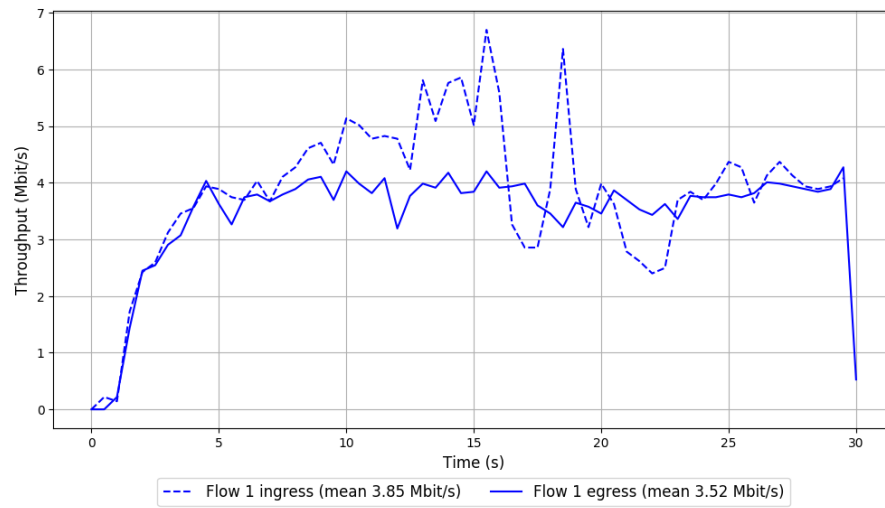
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 3.85 Mbit/s) ----   Flow 1 egress (mean 3.52 Mbit/s) ——
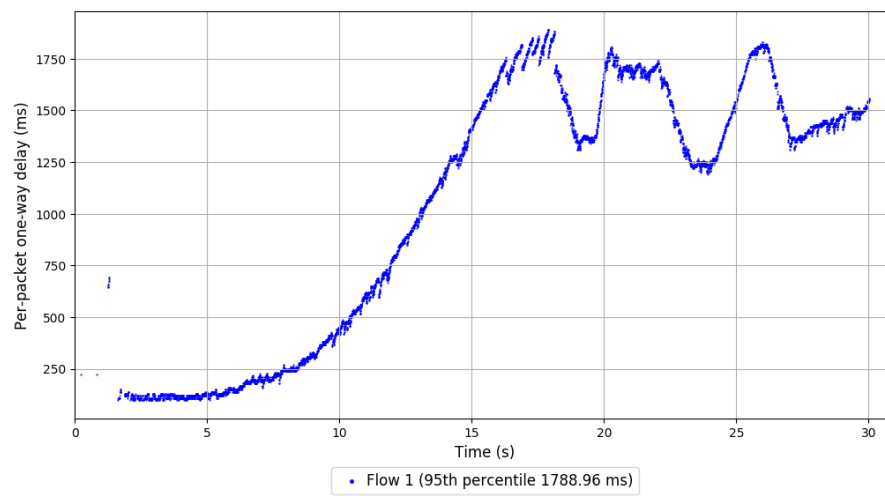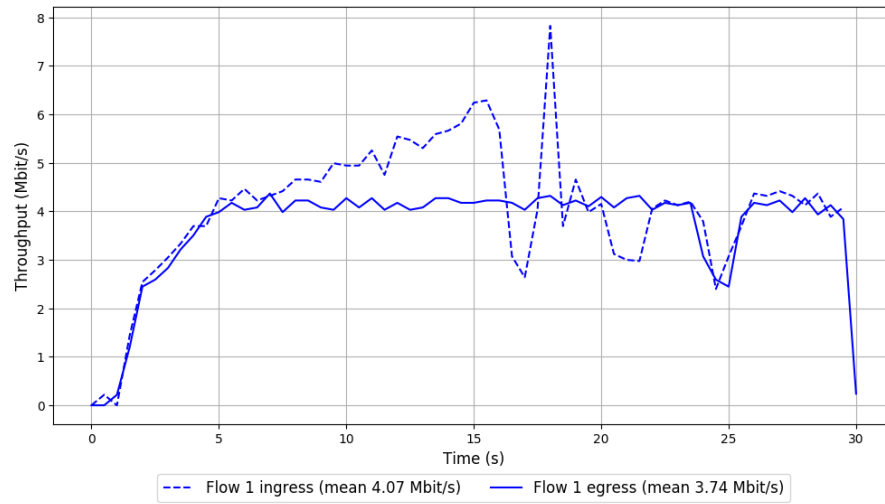

• Flow 1 (95th percentile 1984.03 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2017-08-21 05:42:44
End at: 2017-08-21 05:43:14
Local clock offset: 0.082 ms
Remote clock offset: -3.136 ms


# Below is generated by plot.py at 2017-08-21 06:14:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.74 Mbit/s
95th percentile per-packet one-way delay: 1788.956 ms
Loss rate: 8.48%
-- Flow 1:
Average throughput: 3.74 Mbit/s
95th percentile per-packet one-way delay: 1788.956 ms
Loss rate: 8.48%
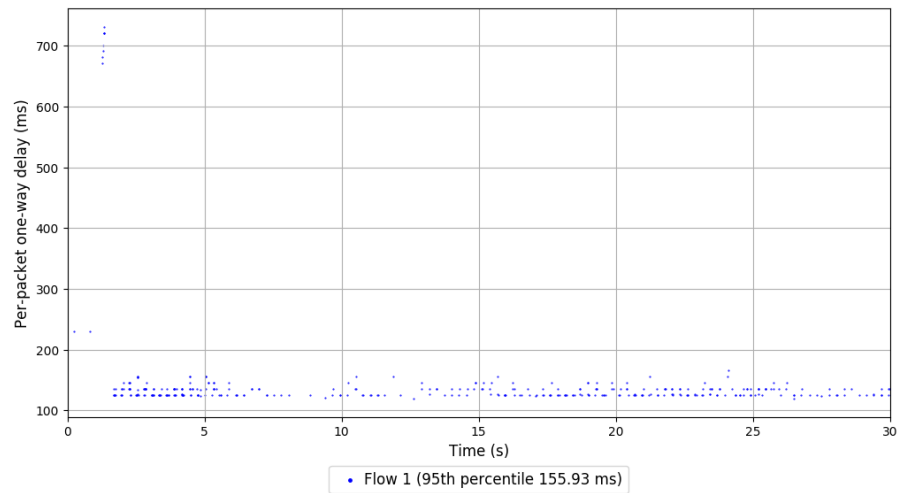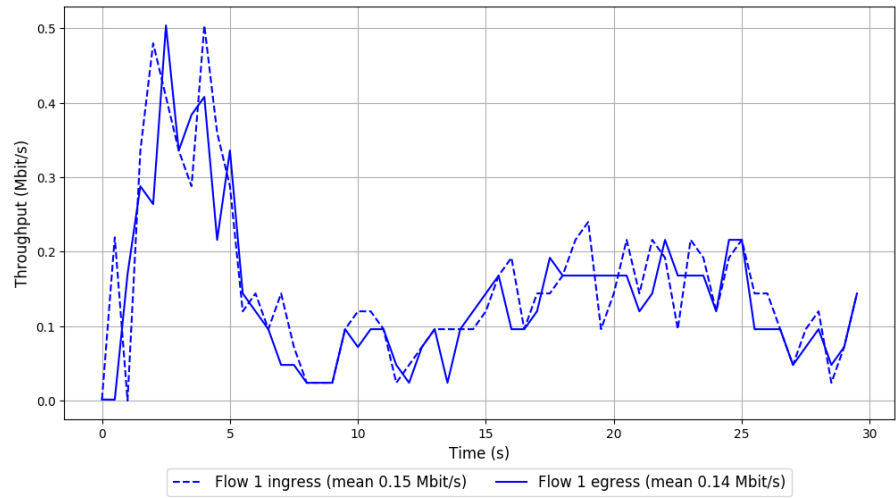```

Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2017-08-21 06:00:43
End at: 2017-08-21 06:01:13
Local clock offset: -0.037 ms
Remote clock offset: -3.941 ms

Below is generated by plot.py at 2017-08-21 06:14:12
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 155.928 ms
Loss rate: 9.09%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 155.928 ms
Loss rate: 9.09%
```
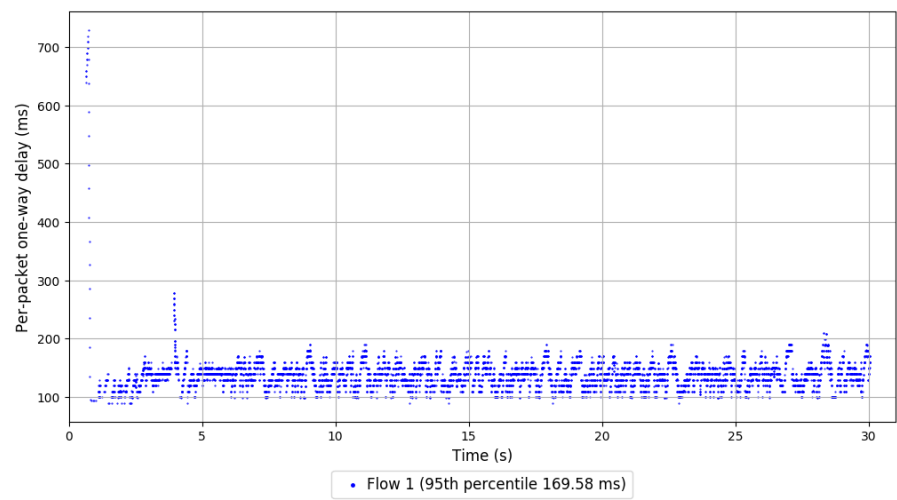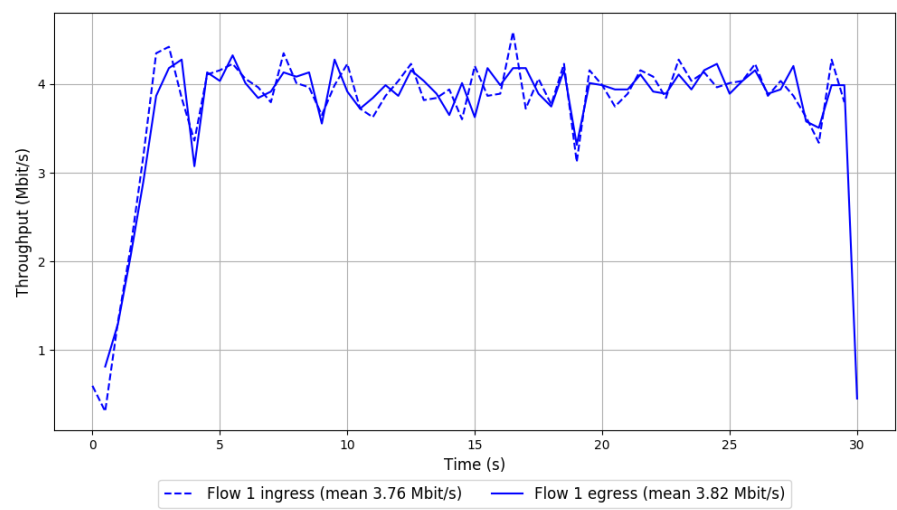
Run 3: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 0.15 Mbit/s) --- Flow 1 egress (mean 0.14 Mbit/s)



Flow 1 (95th percentile 155.93 ms)

```
Run 1: Statistics of KohoCC

Start at: 2017-08-21 05:27:24
End at: 2017-08-21 05:27:54
Local clock offset: 0.27 ms
Remote clock offset: -3.877 ms


# Below is generated by plot.py at 2017-08-21 06:14:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.82 Mbit/s
95th percentile per-packet one-way delay: 169.578 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 3.82 Mbit/s
95th percentile per-packet one-way delay: 169.578 ms
Loss rate: 0.19%
```

Run 1: Report of KohoCC — Data Link
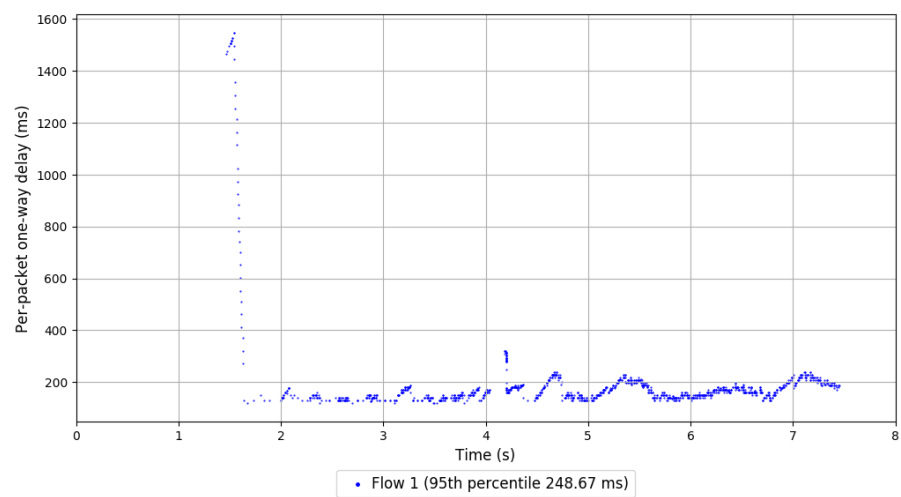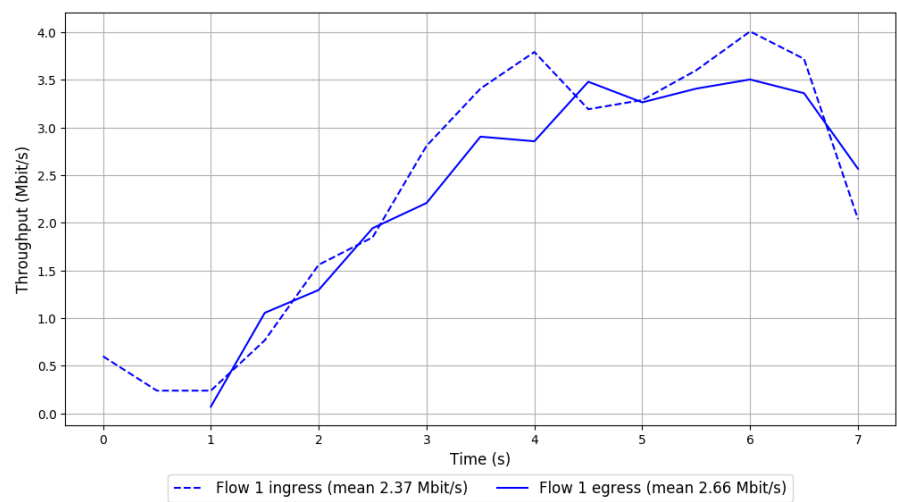
```
Run 2: Statistics of KohoCC

Start at: 2017-08-21 05:45:26
End at: 2017-08-21 05:45:56
Local clock offset: -0.024 ms
Remote clock offset: -3.951 ms
```
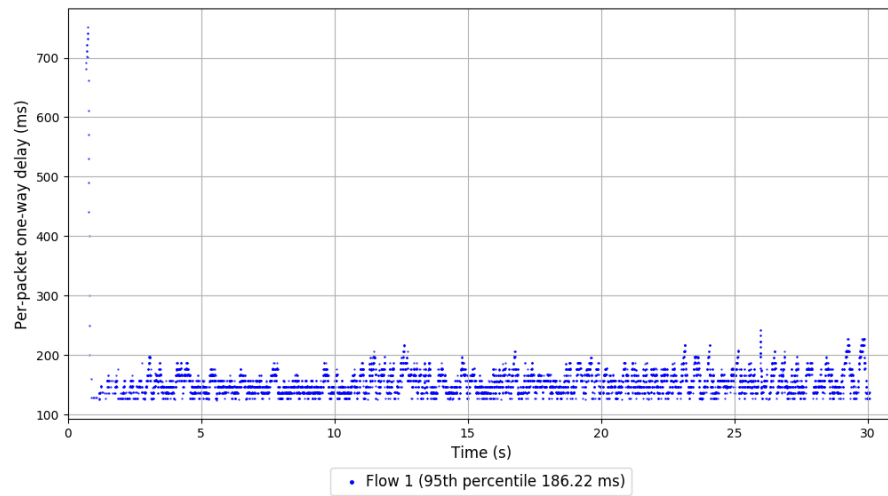
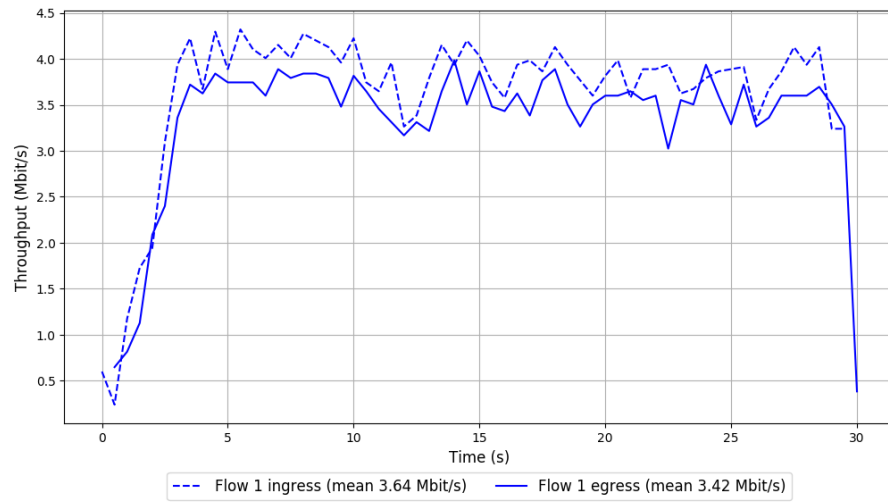Run 2: Report of KohoCC — Data Link

```
Run 3: Statistics of KohoCC

Start at: 2017-08-21 06:03:03
End at: 2017-08-21 06:03:33
Local clock offset: -0.034 ms
Remote clock offset: -3.017 ms


# Below is generated by plot.py at 2017-08-21 06:14:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.42 Mbit/s
95th percentile per-packet one-way delay: 186.222 ms
Loss rate: 8.00%
-- Flow 1:
Average throughput: 3.42 Mbit/s
95th percentile per-packet one-way delay: 186.222 ms
Loss rate: 8.00%
```

Run 3: Report of KohoCC — Data Link

Flow 1 ingress (mean 3.64 Mbit/s)   Flow 1 egress (mean 3.42 Mbit/s)

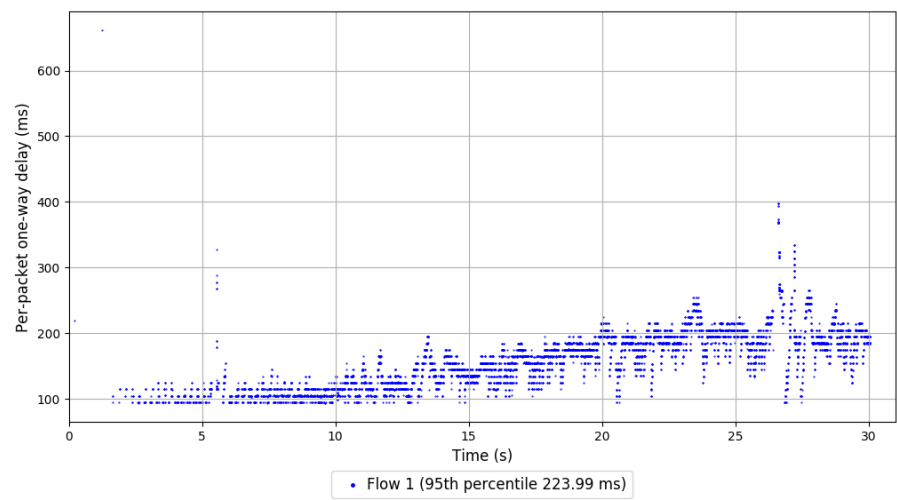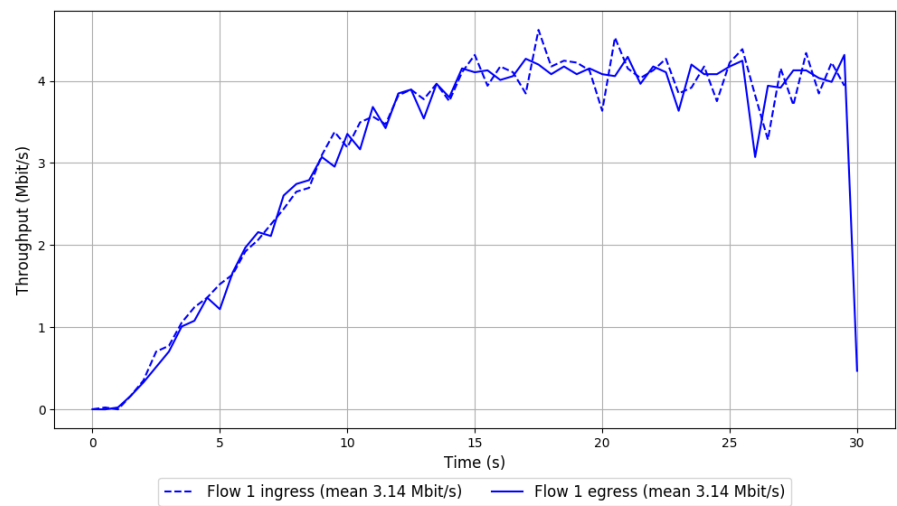Flow 1 (95th percentile 186.22 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2017-08-21 05:36:51
End at: 2017-08-21 05:37:21
Local clock offset: 0.148 ms
Remote clock offset: -3.967 ms

# Below is generated by plot.py at 2017-08-21 06:14:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.14 Mbit/s
95th percentile per-packet one-way delay: 223.992 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 3.14 Mbit/s
95th percentile per-packet one-way delay: 223.992 ms
Loss rate: 0.46%
```
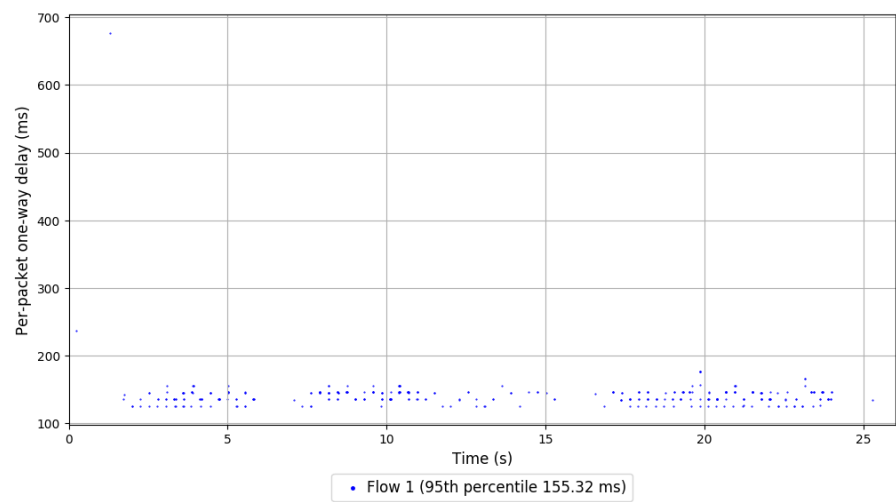
Run 1: Report of LEDBAT — Data Link

Flow 1 ingress (mean 3.14 Mbit/s) --- Flow 1 egress (mean 3.14 Mbit/s)

• Flow 1 (95th percentile 223.99 ms)

```
Run 2: Statistics of LEDBAT

Start at: 2017-08-21 05:54:50
End at: 2017-08-21 05:55:20
Local clock offset: 0.007 ms
Remote clock offset: 0.818 ms

# Below is generated by plot.py at 2017-08-21 06:14:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 155.323 ms
Loss rate: 9.24%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 155.323 ms
Loss rate: 9.24%
```
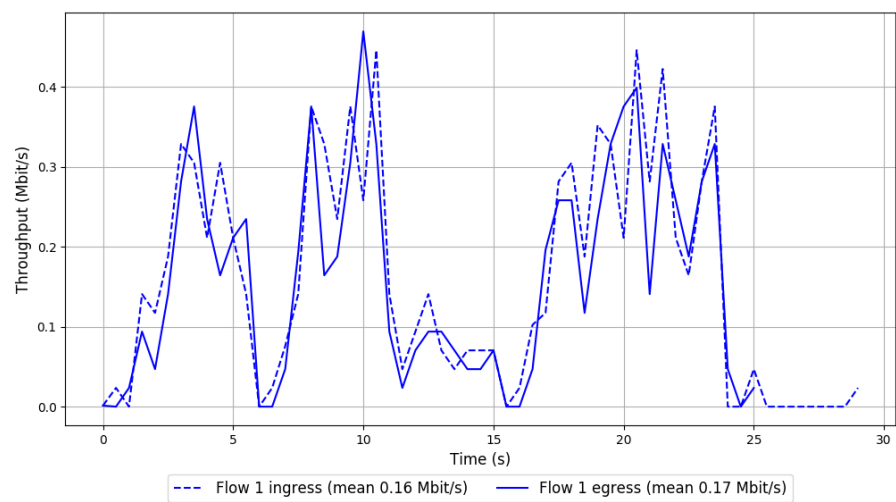
Run 2: Report of LEDBAT — Data Link
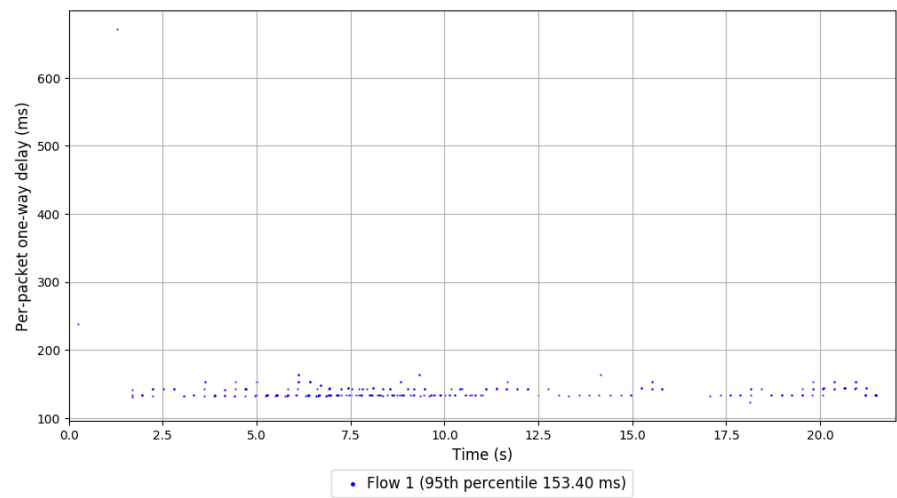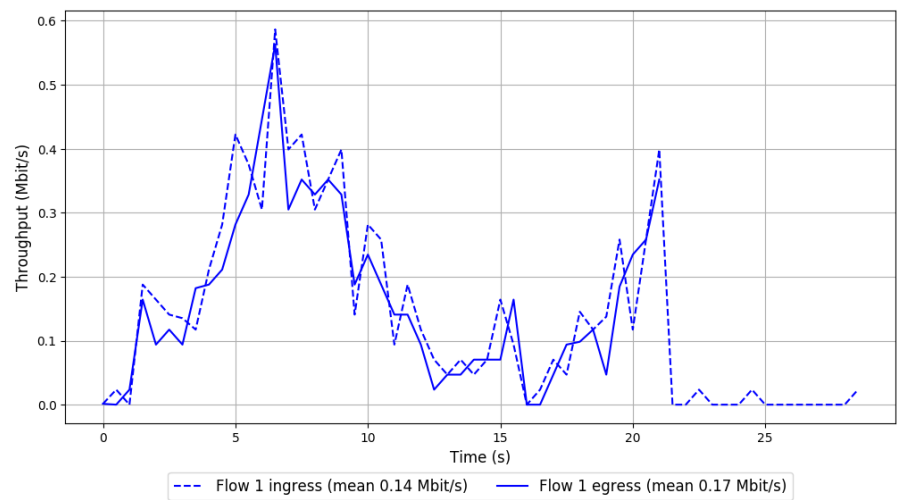
```
Run 3: Statistics of LEDBAT

Start at: 2017-08-21 06:12:27
End at: 2017-08-21 06:12:57
Local clock offset: -0.054 ms
Remote clock offset: 1.813 ms
```
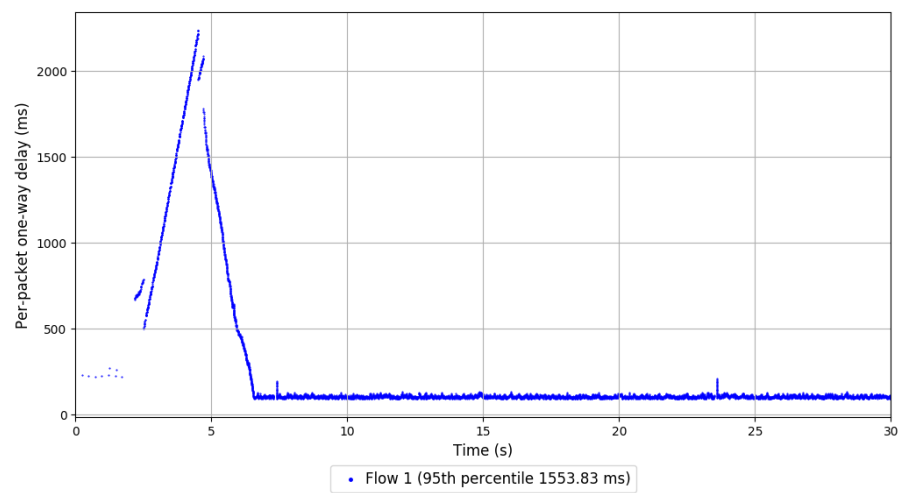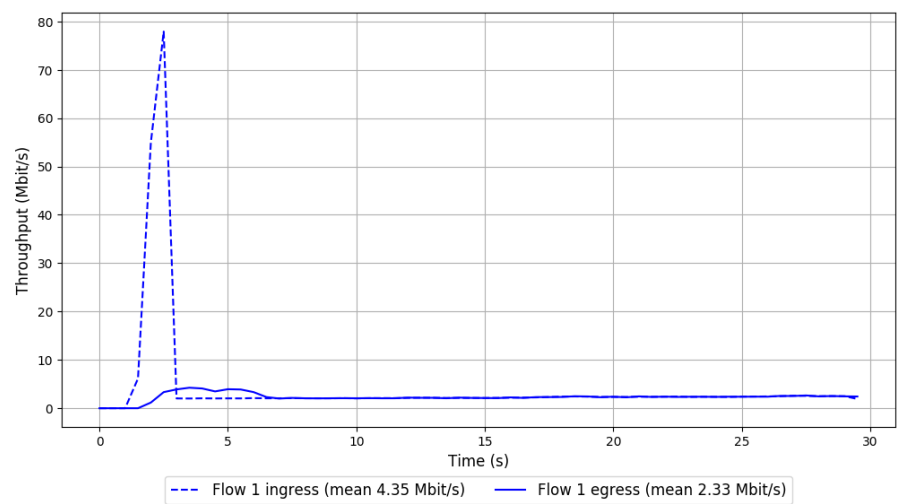
Run 3: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC

Start at: 2017-08-21 05:32:08
End at: 2017-08-21 05:32:38
Local clock offset: 0.182 ms
Remote clock offset: 1.83 ms


# Below is generated by plot.py at 2017-08-21 06:14:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 1553.828 ms
Loss rate: 46.69%
-- Flow 1:
Average throughput: 2.33 Mbit/s
95th percentile per-packet one-way delay: 1553.828 ms
Loss rate: 46.69%
```

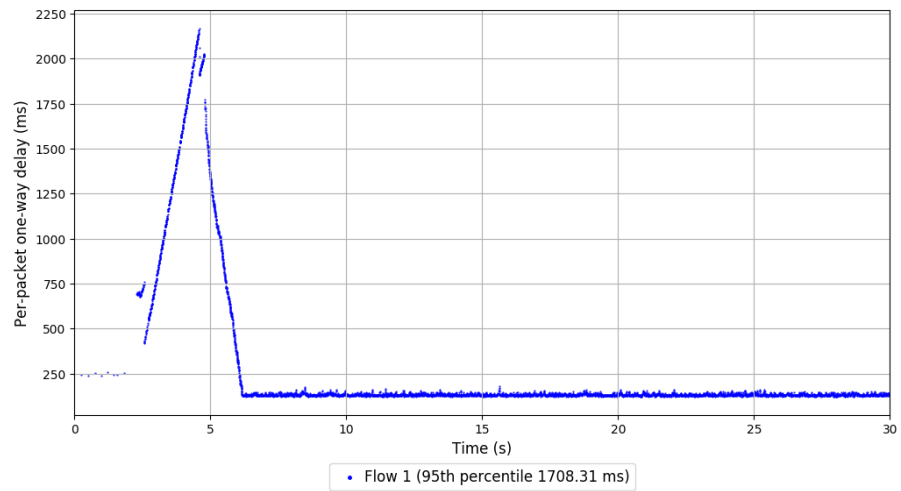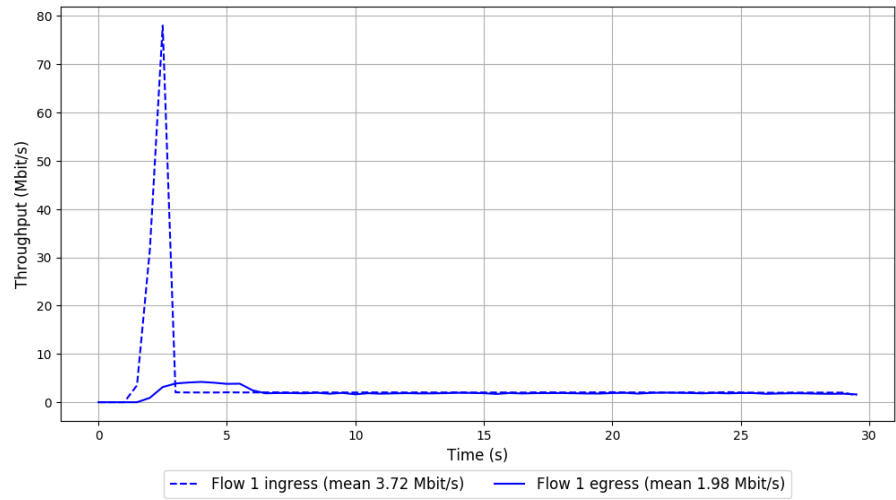Run 1: Report of PCC — Data Link

Flow 1 ingress (mean 4.35 Mbit/s)   Flow 1 egress (mean 2.33 Mbit/s)

Flow 1 (95th percentile 1553.83 ms)

```
Run 2: Statistics of PCC

Start at: 2017-08-21 05:50:08
End at: 2017-08-21 05:50:38
Local clock offset: 0.043 ms
Remote clock offset: -0.065 ms


# Below is generated by plot.py at 2017-08-21 06:14:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 1708.307 ms
Loss rate: 47.08%
-- Flow 1:
Average throughput: 1.98 Mbit/s
95th percentile per-packet one-way delay: 1708.307 ms
Loss rate: 47.08%
```

Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 3.72 Mbit/s)   Flow 1 egress (mean 1.98 Mbit/s)

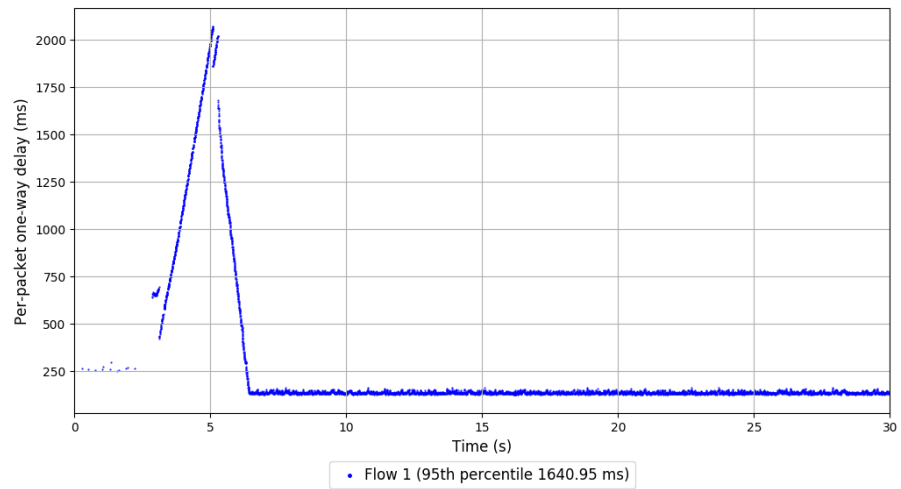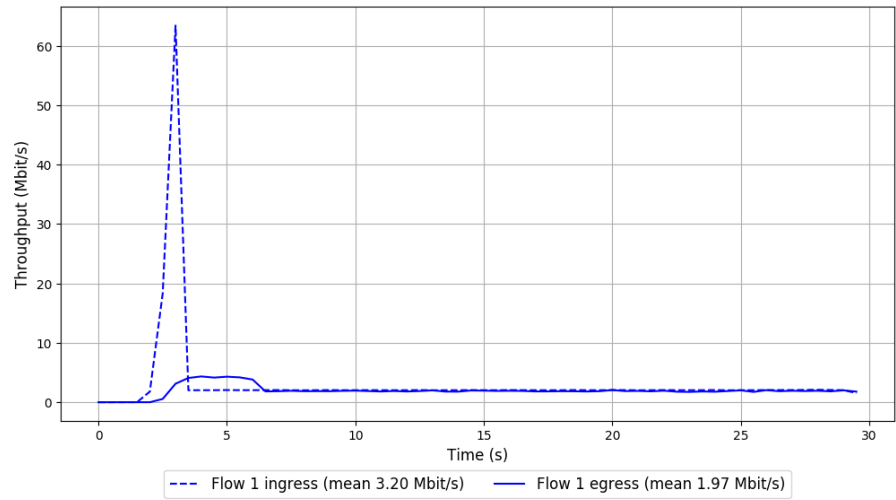Flow 1 (95th percentile 1708.31 ms)

```
Run 3: Statistics of PCC

Start at: 2017-08-21 06:07:45
End at: 2017-08-21 06:08:15
Local clock offset: -0.04 ms
Remote clock offset: -0.049 ms


# Below is generated by plot.py at 2017-08-21 06:14:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 1640.953 ms
Loss rate: 38.80%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 1640.953 ms
Loss rate: 38.80%
```

Run 3: Report of PCC — Data Link
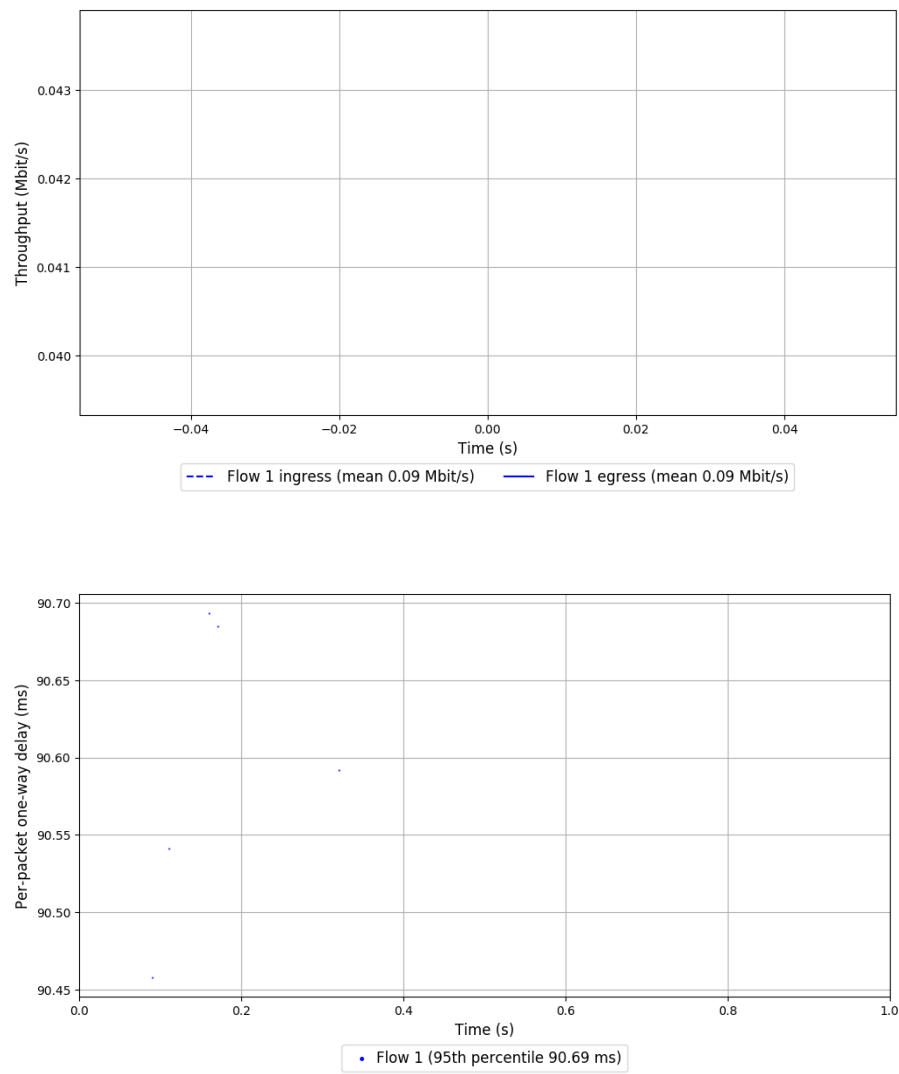
```
Run 1: Statistics of QUIC Cubic

Start at: 2017-08-21 05:26:14
End at: 2017-08-21 05:26:44
Local clock offset: 0.293 ms
Remote clock offset: -3.811 ms
```

Run 1: Report of QUIC Cubic — Data Link

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

Flow 1 (95th percentile 90.69 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2017-08-21 05:44:15
End at: 2017-08-21 05:44:45
Local clock offset: 0.074 ms
Remote clock offset: 1.785 ms


# Below is generated by plot.py at 2017-08-21 06:14:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 148.723 ms
Loss rate: 6.70%
-- Flow 1:
Average throughput: 0.64 Mbit/s
95th percentile per-packet one-way delay: 148.723 ms
Loss rate: 6.70%
```
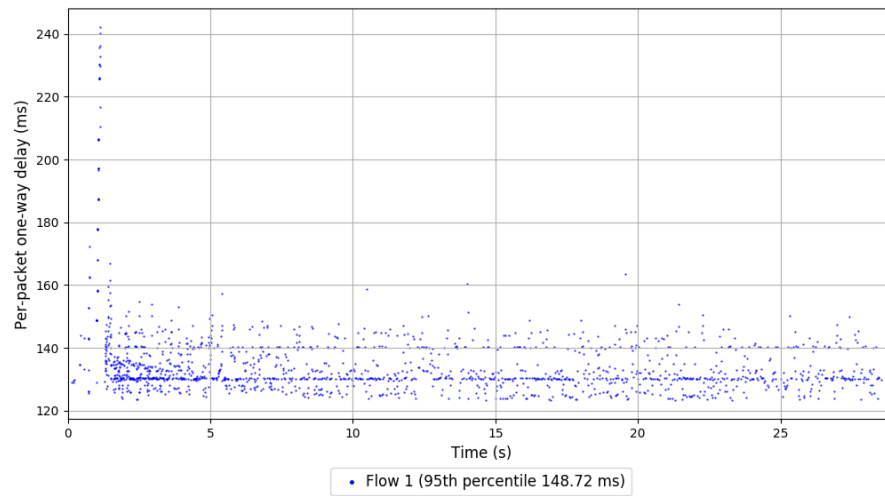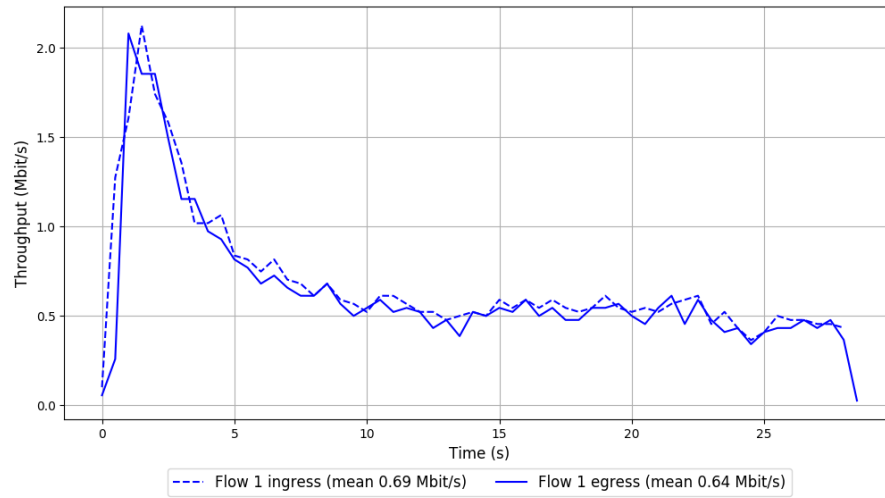
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2017-08-21 06:01:53
End at: 2017-08-21 06:02:23
Local clock offset: -0.04 ms
Remote clock offset: 0.009 ms


# Below is generated by plot.py at 2017-08-21 06:14:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 155.467 ms
Loss rate: 7.13%
-- Flow 1:
Average throughput: 0.60 Mbit/s
95th percentile per-packet one-way delay: 155.467 ms
Loss rate: 7.13%
```
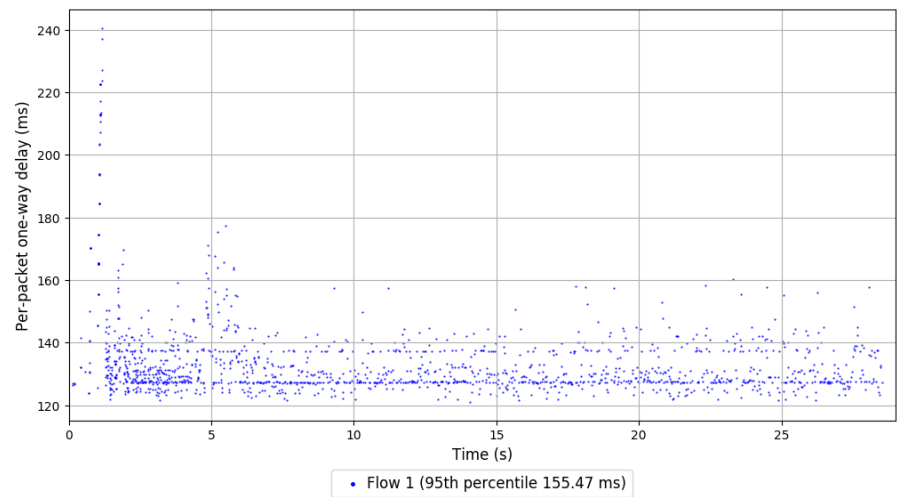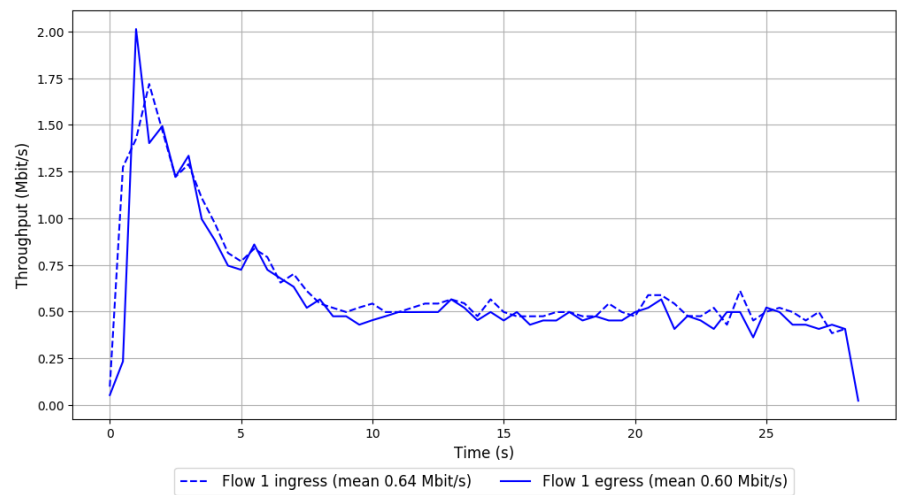
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 0.64 Mbit/s)   Flow 1 egress (mean 0.60 Mbit/s)

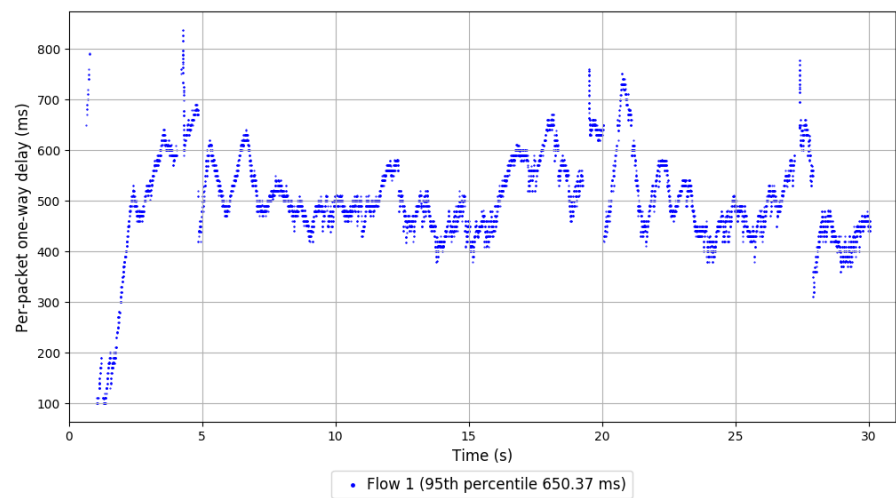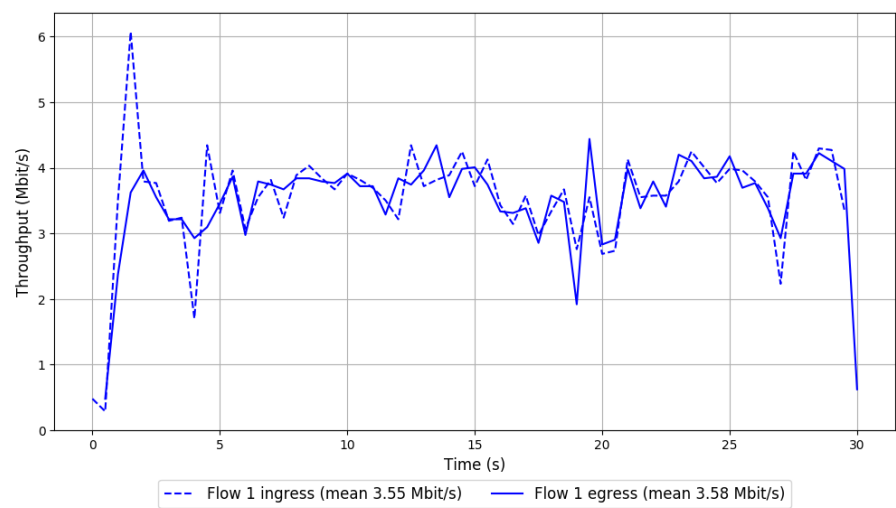
Flow 1 (95th percentile 155.47 ms)

```
Run 1: Statistics of Saturator

Start at: 2017-08-21 05:30:55
End at: 2017-08-21 05:31:25
Local clock offset: 0.208 ms
Remote clock offset: -3.895 ms


# Below is generated by plot.py at 2017-08-21 06:14:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 650.366 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 650.366 ms
Loss rate: 1.16%
```

Run 1: Report of Saturator — Data Link

Flow 1 ingress (mean 3.55 Mbit/s)   Flow 1 egress (mean 3.58 Mbit/s)

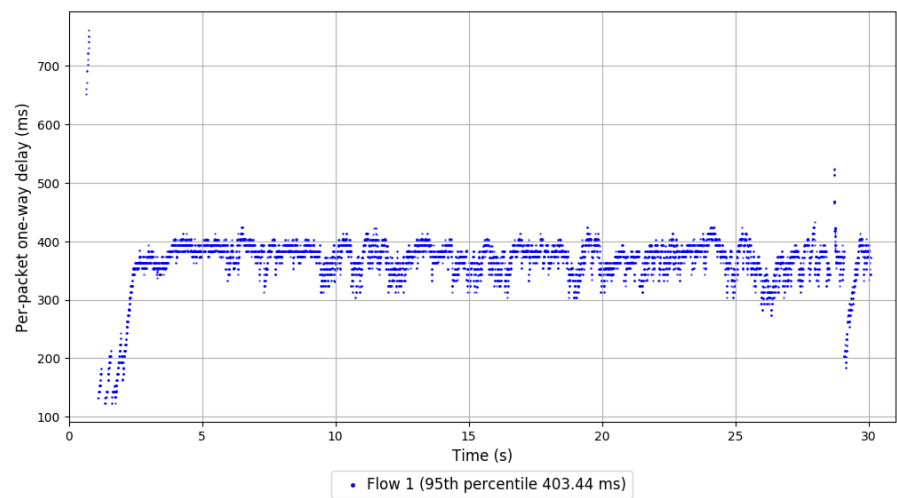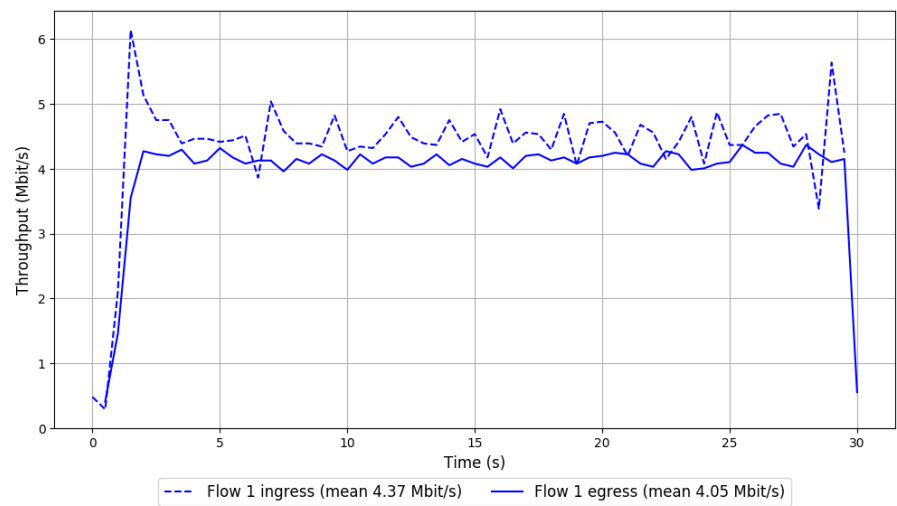Flow 1 (95th percentile 650.37 ms)

```
Run 2: Statistics of Saturator

Start at: 2017-08-21 05:48:57
End at: 2017-08-21 05:49:27
Local clock offset: -0.033 ms
Remote clock offset: -3.075 ms


# Below is generated by plot.py at 2017-08-21 06:14:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.05 Mbit/s
95th percentile per-packet one-way delay: 403.441 ms
Loss rate: 8.97%
-- Flow 1:
Average throughput: 4.05 Mbit/s
95th percentile per-packet one-way delay: 403.441 ms
Loss rate: 8.97%
```

Run 2: Report of Saturator — Data Link

```
Run 3: Statistics of Saturator

Start at: 2017-08-21 06:06:34
End at: 2017-08-21 06:07:04
Local clock offset: -0.059 ms
Remote clock offset: 1.81 ms


# Below is generated by plot.py at 2017-08-21 06:14:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 441.577 ms
Loss rate: 8.72%
-- Flow 1:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 441.577 ms
Loss rate: 8.72%
```
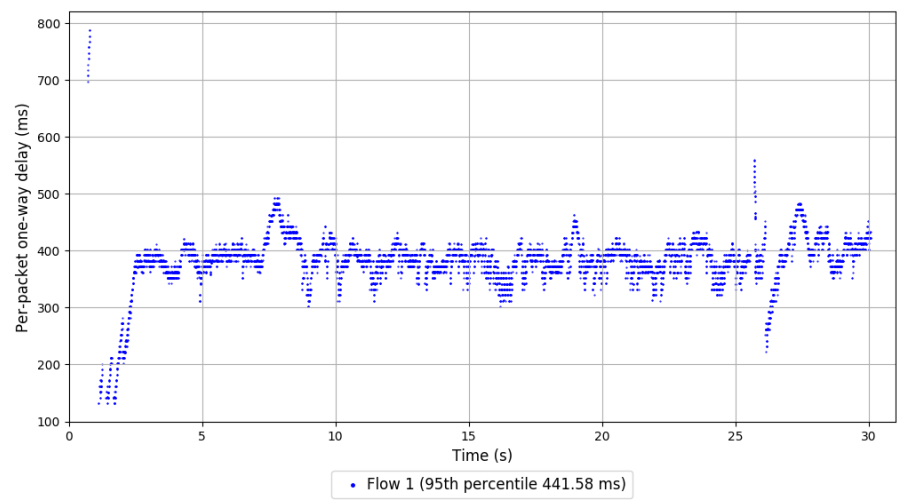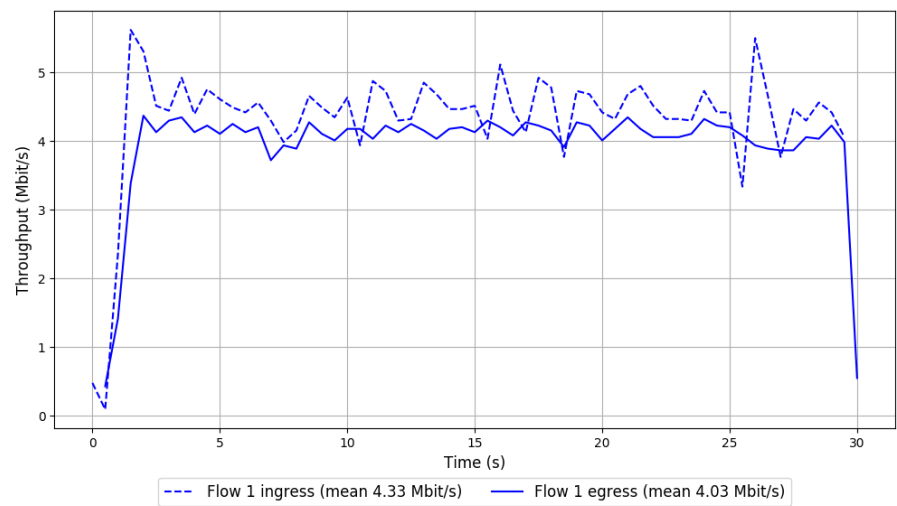
Run 3: Report of Saturator — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2017-08-21 05:28:35
End at: 2017-08-21 05:29:05
Local clock offset: 0.176 ms
Remote clock offset: 1.032 ms


# Below is generated by plot.py at 2017-08-21 06:14:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 113.416 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 113.416 ms
Loss rate: 0.00%
```
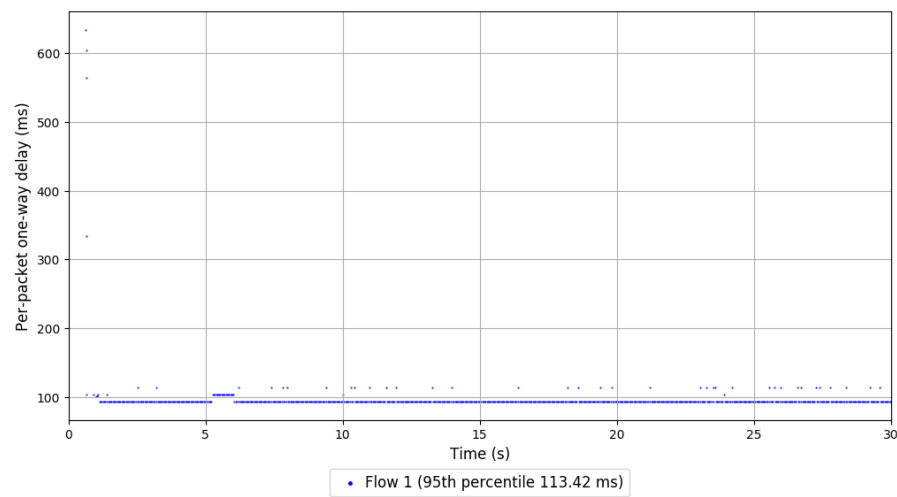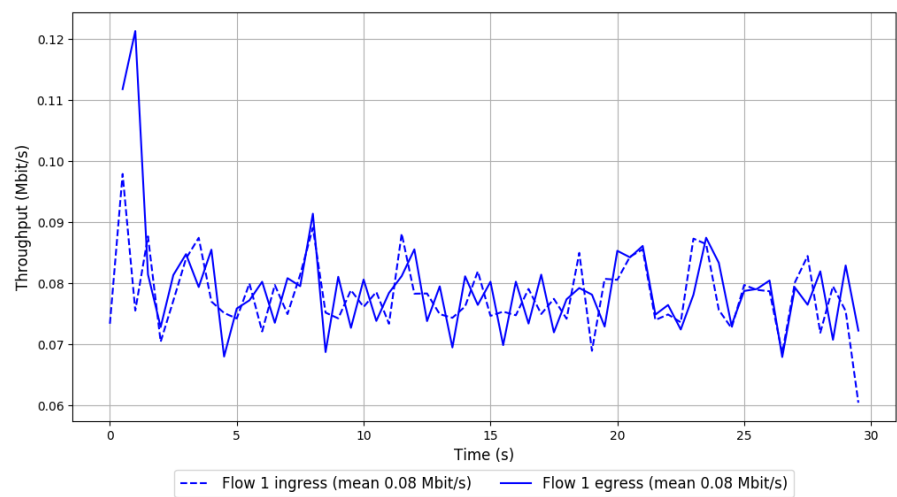
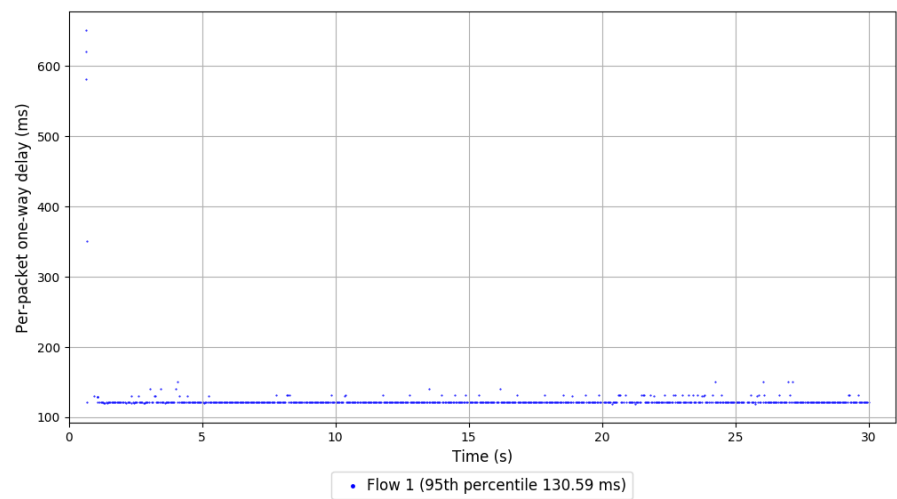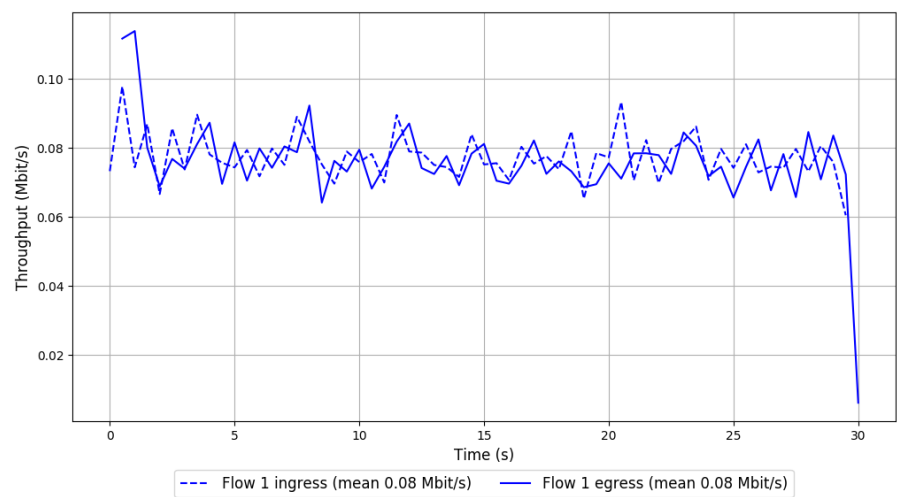Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2017-08-21 05:46:36
End at: 2017-08-21 05:47:06
Local clock offset: 0.063 ms
Remote clock offset: -3.954 ms

# Below is generated by plot.py at 2017-08-21 06:14:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 130.585 ms
Loss rate: 2.07%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 130.585 ms
Loss rate: 2.07%
```

Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2017-08-21 06:04:14
End at: 2017-08-21 06:04:44
Local clock offset: -0.119 ms
Remote clock offset: 0.927 ms


# Below is generated by plot.py at 2017-08-21 06:14:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 134.988 ms
Loss rate: 2.75%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 134.988 ms
Loss rate: 2.75%
```
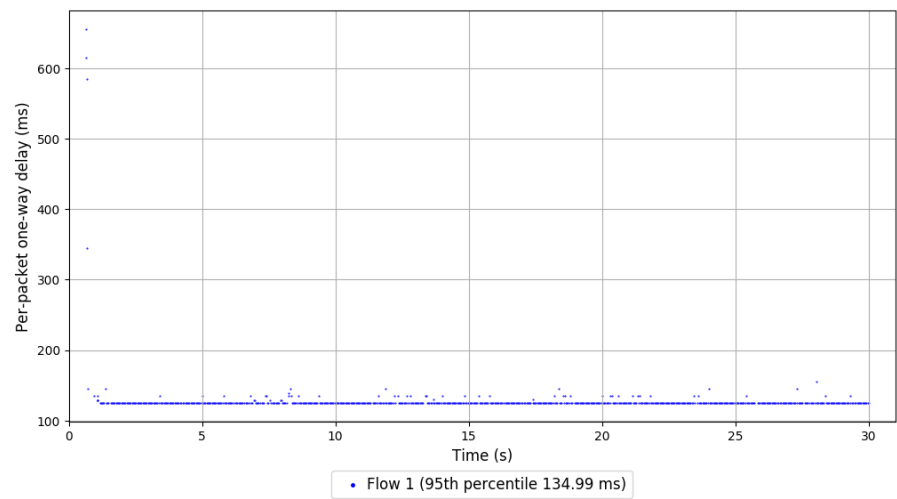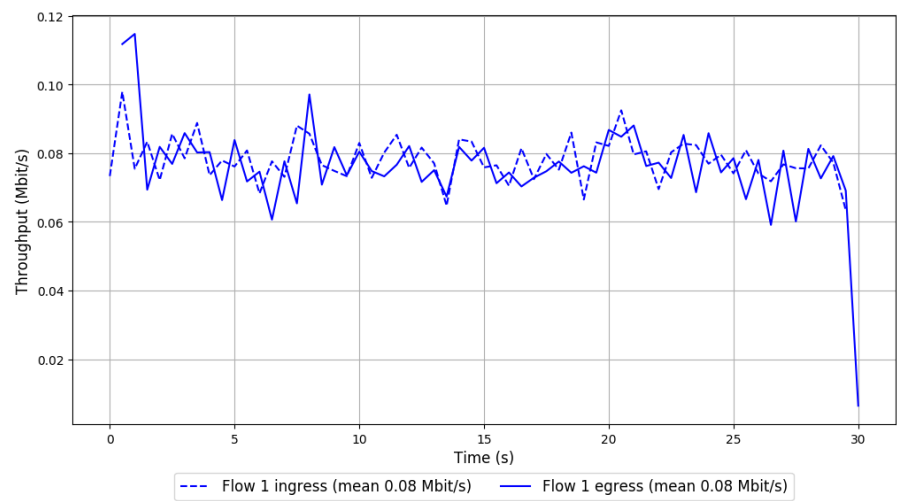
Run 3: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 134.99 ms)

```
Run 1: Statistics of Sprout

Start at: 2017-08-21 05:22:43
End at: 2017-08-21 05:23:13
Local clock offset: 0.237 ms
Remote clock offset: 0.169 ms


# Below is generated by plot.py at 2017-08-21 06:14:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 132.261 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 132.261 ms
Loss rate: 0.59%
```
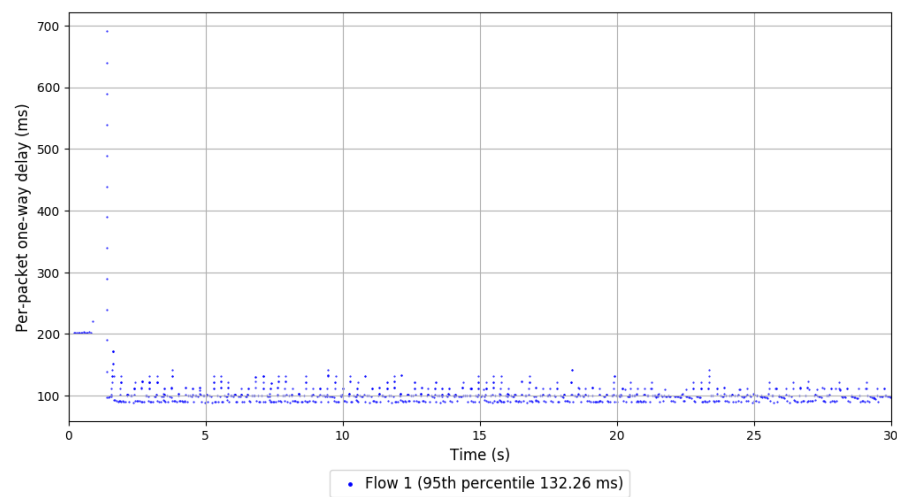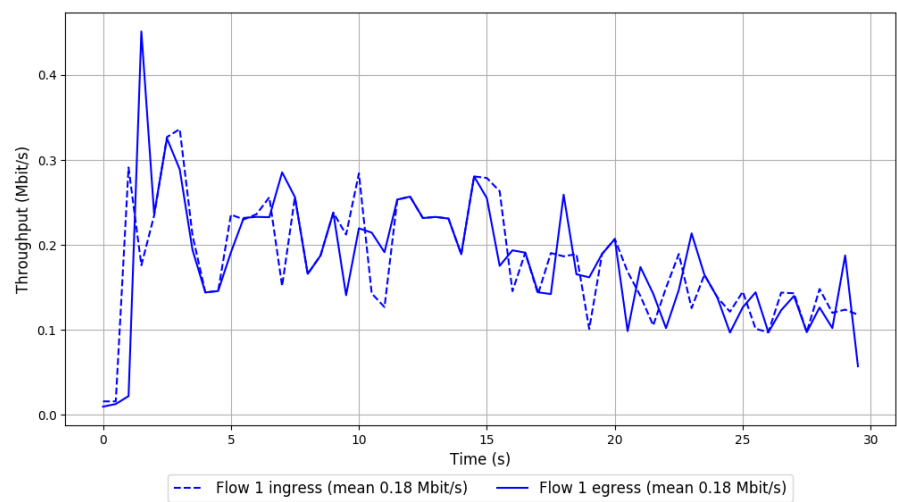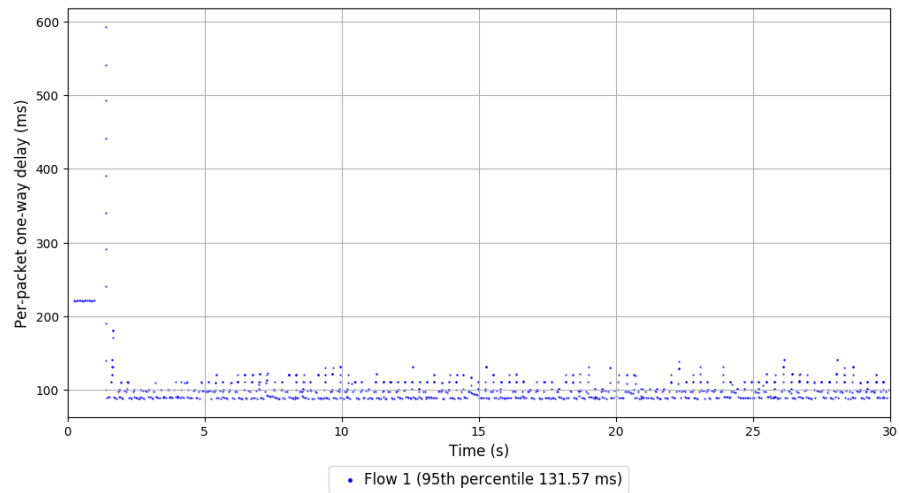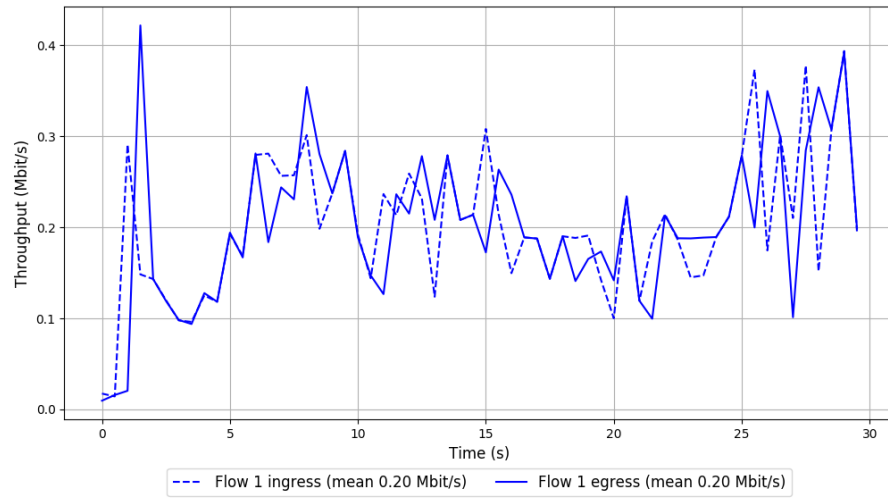
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2017-08-21 05:40:23
End at: 2017-08-21 05:40:53
Local clock offset: 0.086 ms
Remote clock offset: -0.057 ms


# Below is generated by plot.py at 2017-08-21 06:14:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 131.569 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 131.569 ms
Loss rate: 0.00%
```

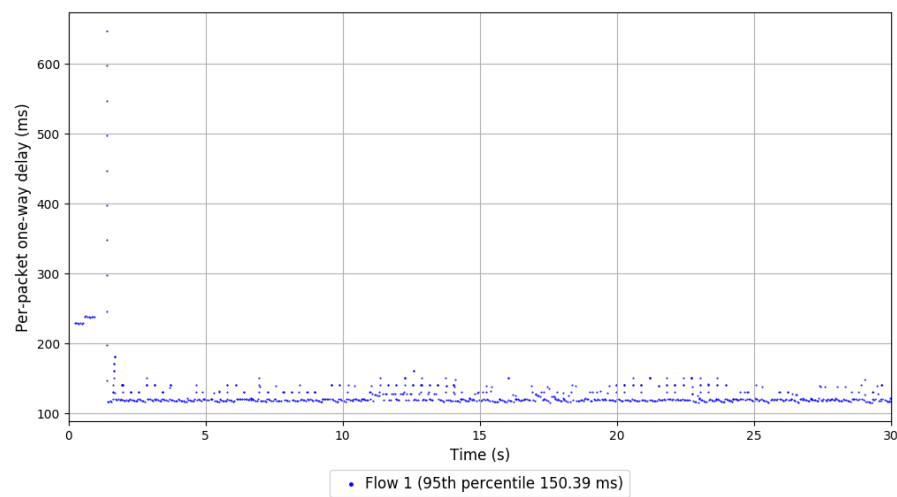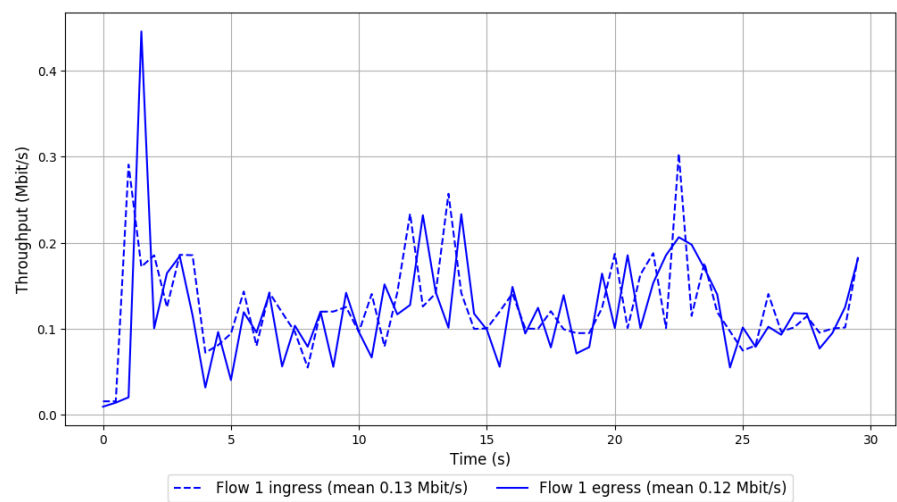## Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2017-08-21 05:58:22
End at: 2017-08-21 05:58:52
Local clock offset: -0.015 ms
Remote clock offset: -3.942 ms


# Below is generated by plot.py at 2017-08-21 06:14:25
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 150.386 ms
Loss rate: 6.01%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 150.386 ms
Loss rate: 6.01%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 0.13 Mbit/s)   Flow 1 egress (mean 0.12 Mbit/s)

Flow 1 (95th percentile 150.39 ms)

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

Start at: 2017-08-21 05:35:40
End at: 2017-08-21 05:36:10
Local clock offset: 0.136 ms
Remote clock offset: -3.942 ms


# Below is generated by plot.py at 2017-08-21 06:14:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 148.897 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 148.897 ms
Loss rate: 0.08%
```
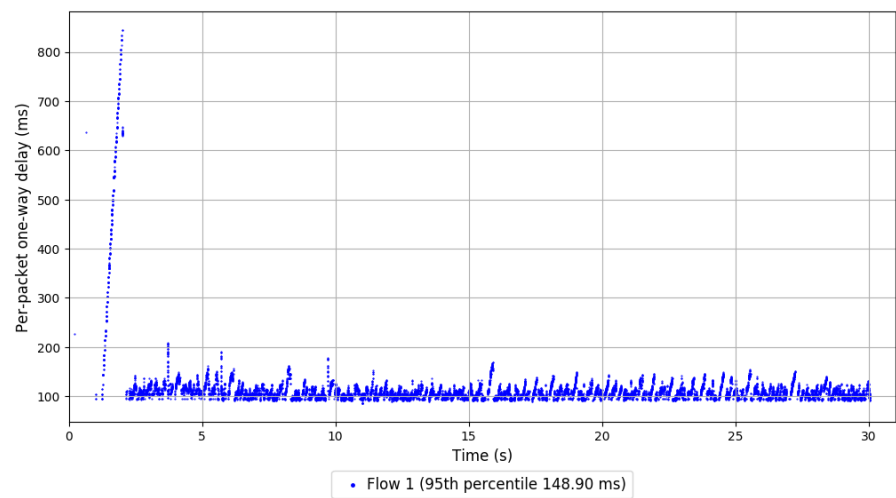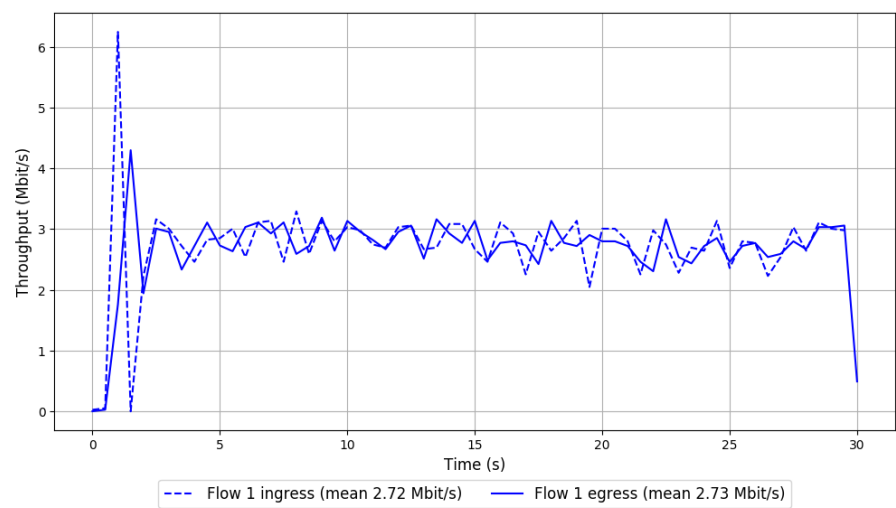
Run 1: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 2.72 Mbit/s) ---- Flow 1 egress (mean 2.73 Mbit/s) ——

• Flow 1 (95th percentile 148.90 ms)

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

Start at: 2017-08-21 05:53:39
End at: 2017-08-21 05:54:09
Local clock offset: 0.036 ms
Remote clock offset: -3.954 ms


# Below is generated by plot.py at 2017-08-21 06:14:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 195.574 ms
Loss rate: 7.33%
-- Flow 1:
Average throughput: 2.32 Mbit/s
95th percentile per-packet one-way delay: 195.574 ms
Loss rate: 7.33%
```
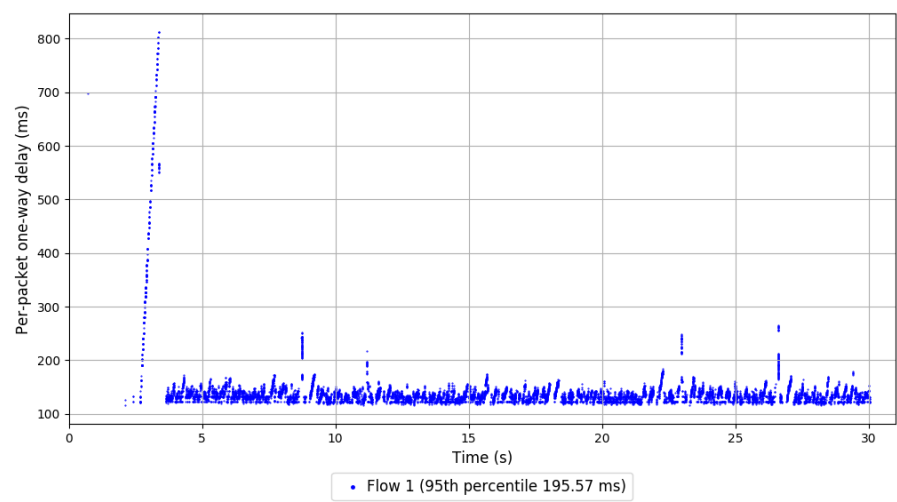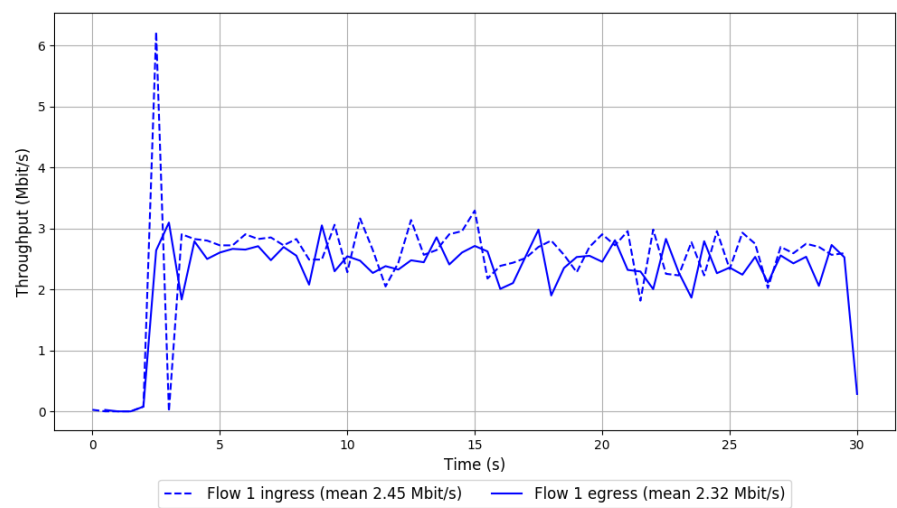
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 2.45 Mbit/s)   Flow 1 egress (mean 2.32 Mbit/s)

• Flow 1 (95th percentile 195.57 ms)

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

Start at: 2017-08-21 06:11:16
End at: 2017-08-21 06:11:46
Local clock offset: -0.046 ms
Remote clock offset: 1.813 ms


# Below is generated by plot.py at 2017-08-21 06:14:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 162.585 ms
Loss rate: 7.80%
-- Flow 1:
Average throughput: 2.36 Mbit/s
95th percentile per-packet one-way delay: 162.585 ms
Loss rate: 7.80%
```
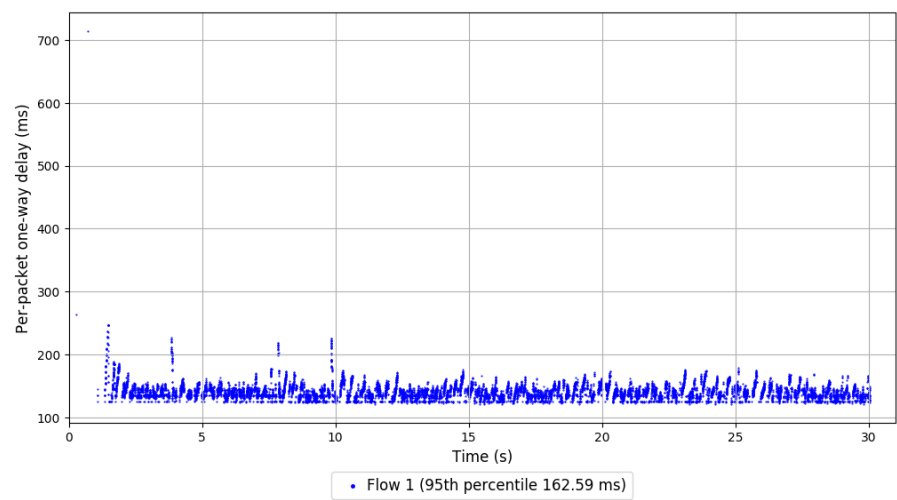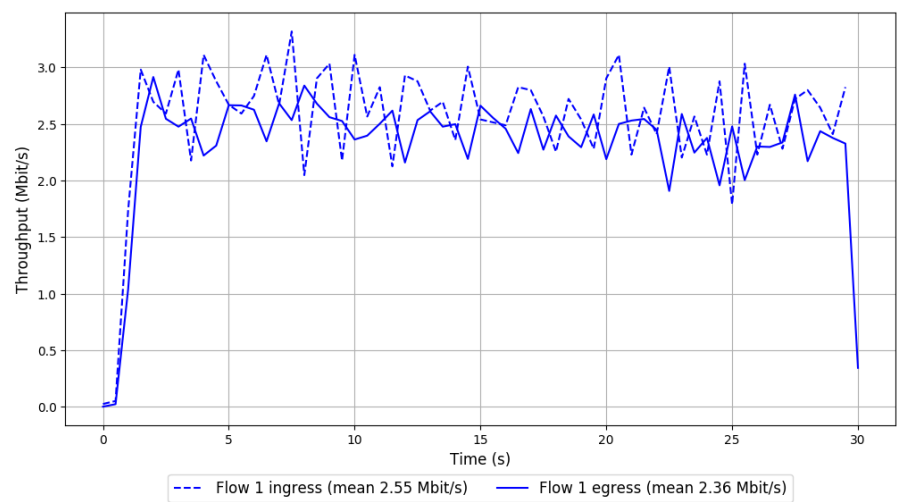
Run 3: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2017-08-21 05:34:29
End at: 2017-08-21 05:34:59
Local clock offset: 0.15 ms
Remote clock offset: 0.937 ms


# Below is generated by plot.py at 2017-08-21 06:14:28
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 725.066 ms
Loss rate: 1.88%
-- Flow 1:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 725.066 ms
Loss rate: 1.88%
```
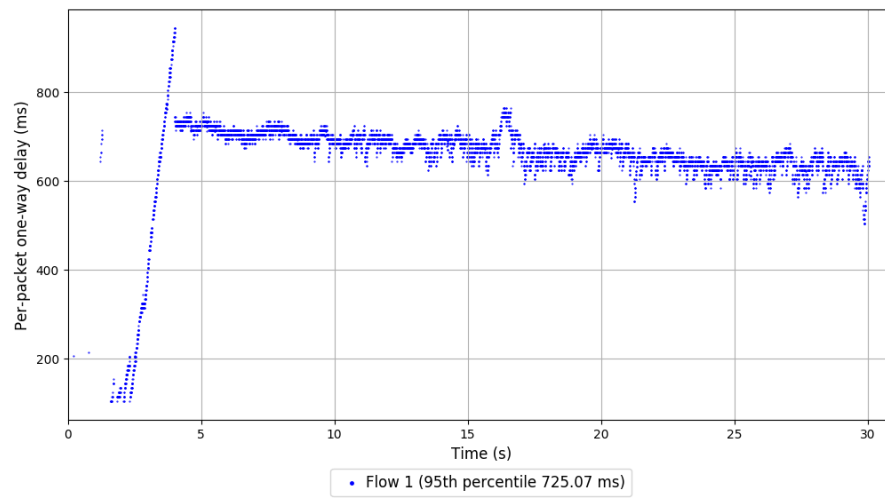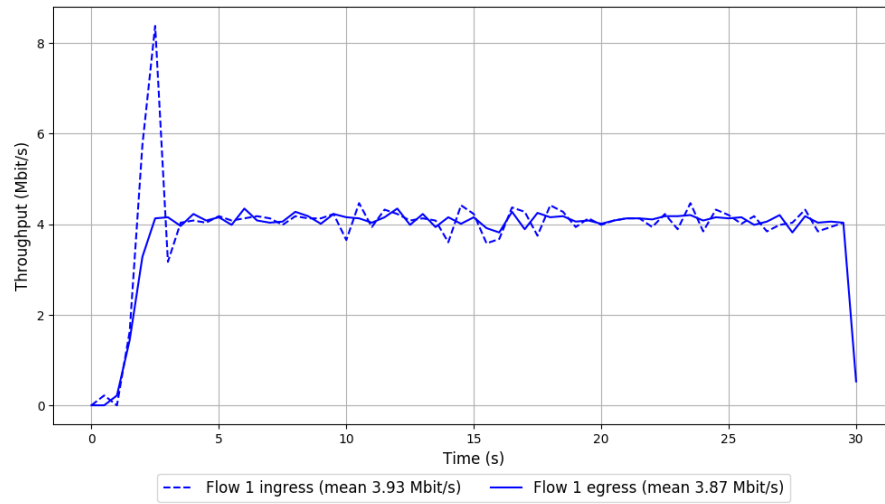
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2017-08-21 05:52:29
End at: 2017-08-21 05:52:59
Local clock offset: 0.04 ms
Remote clock offset: 0.852 ms


# Below is generated by plot.py at 2017-08-21 06:14:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 152.792 ms
Loss rate: 8.39%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 152.792 ms
Loss rate: 8.39%
```
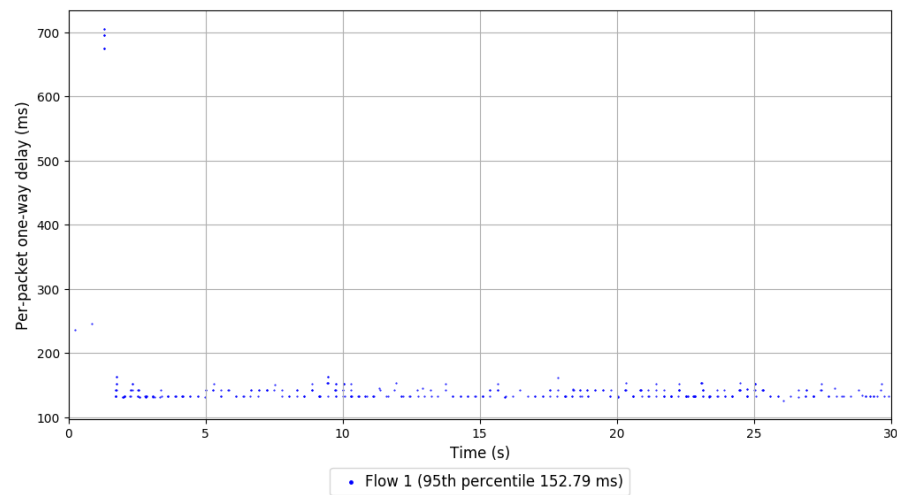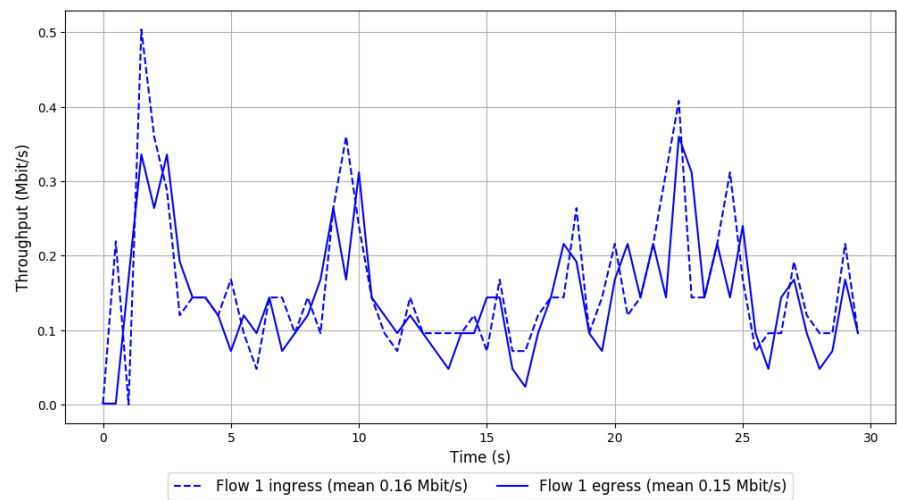
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2017-08-21 06:10:06
End at: 2017-08-21 06:10:36
Local clock offset: -0.034 ms
Remote clock offset: 1.866 ms


# Below is generated by plot.py at 2017-08-21 06:14:29
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 167.114 ms
Loss rate: 9.36%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 167.114 ms
Loss rate: 9.36%
```
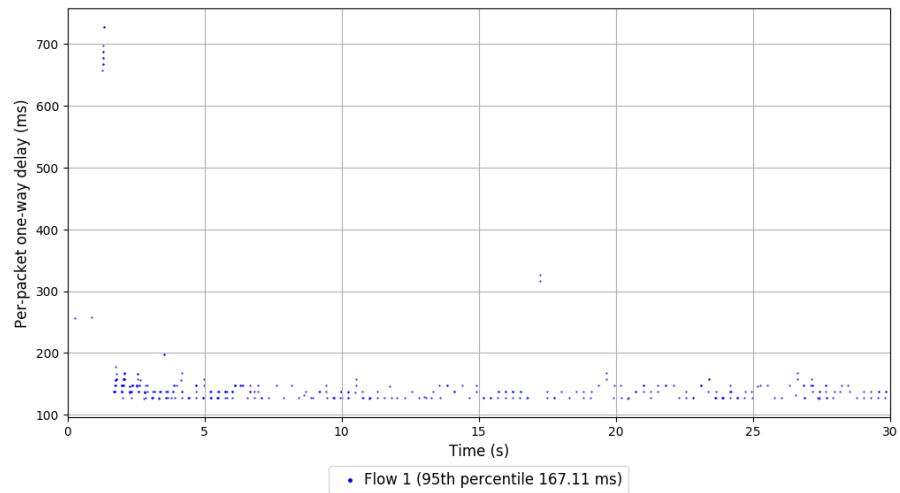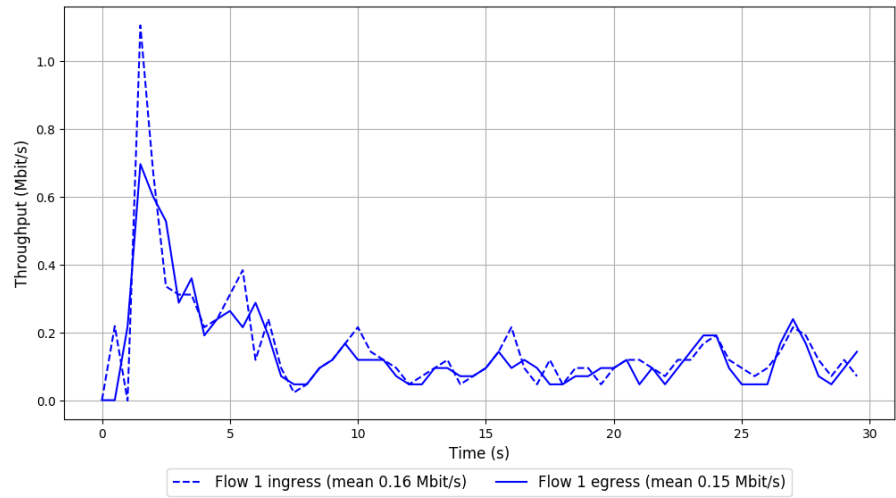
Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 0.16 Mbit/s) --- Flow 1 egress (mean 0.15 Mbit/s) ——
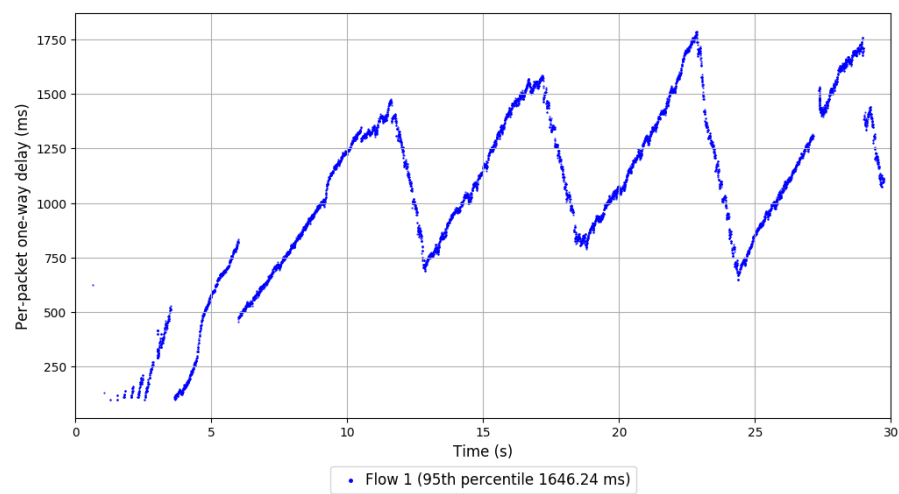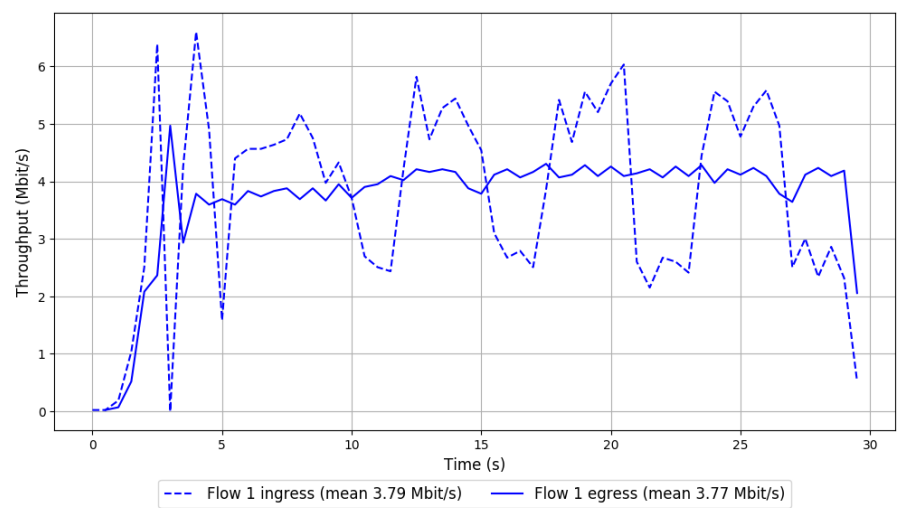

Flow 1 (95th percentile 167.11 ms)

```
Run 1: Statistics of Verus

Start at: 2017-08-21 05:33:18
End at: 2017-08-21 05:33:48
Local clock offset: 0.169 ms
Remote clock offset: -2.978 ms


# Below is generated by plot.py at 2017-08-21 06:14:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.77 Mbit/s
95th percentile per-packet one-way delay: 1646.237 ms
Loss rate: 2.13%
-- Flow 1:
Average throughput: 3.77 Mbit/s
95th percentile per-packet one-way delay: 1646.237 ms
Loss rate: 2.13%
```
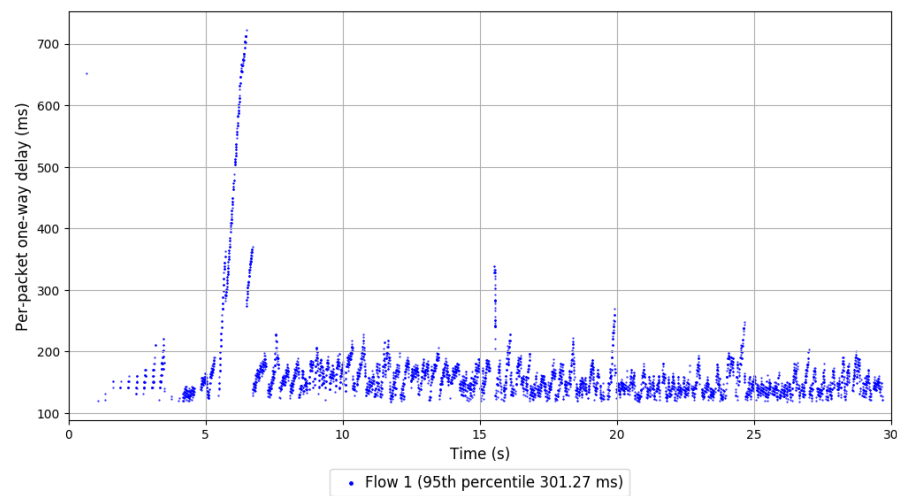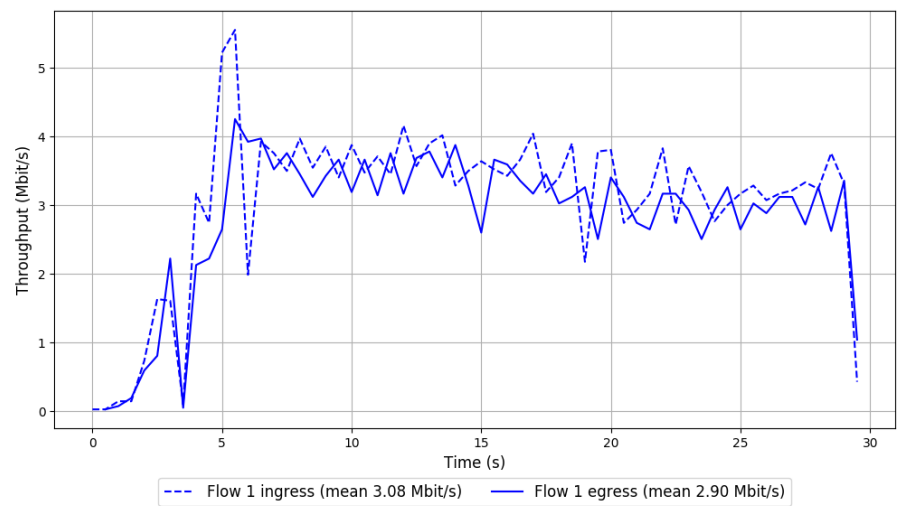
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2017-08-21 05:51:18
End at: 2017-08-21 05:51:48
Local clock offset: -0.048 ms
Remote clock offset: -3.975 ms


# Below is generated by plot.py at 2017-08-21 06:14:31
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 301.270 ms
Loss rate: 7.67%
-- Flow 1:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 301.270 ms
Loss rate: 7.67%
```

Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2017-08-21 06:08:56
End at: 2017-08-21 06:09:26
Local clock offset: -0.046 ms
Remote clock offset: 0.056 ms


# Below is generated by plot.py at 2017-08-21 06:14:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.32 Mbit/s
95th percentile per-packet one-way delay: 1019.170 ms
Loss rate: 10.43%
-- Flow 1:
Average throughput: 3.32 Mbit/s
95th percentile per-packet one-way delay: 1019.170 ms
Loss rate: 10.43%
```
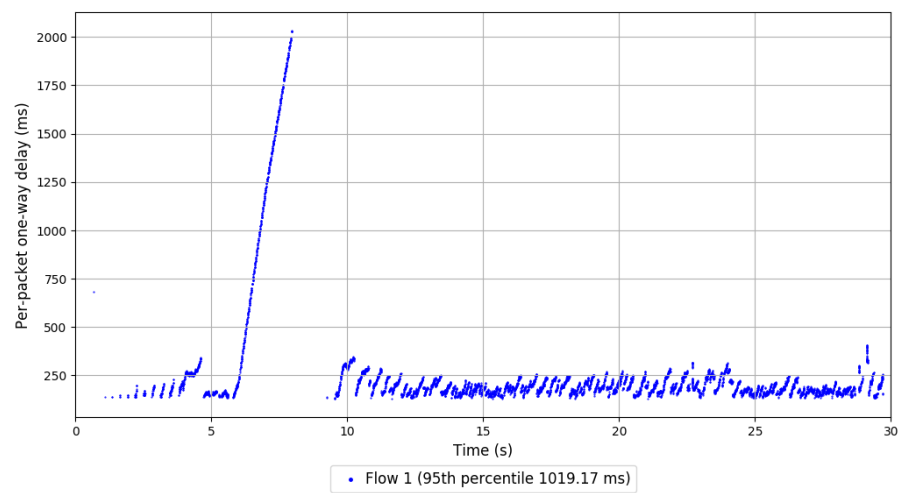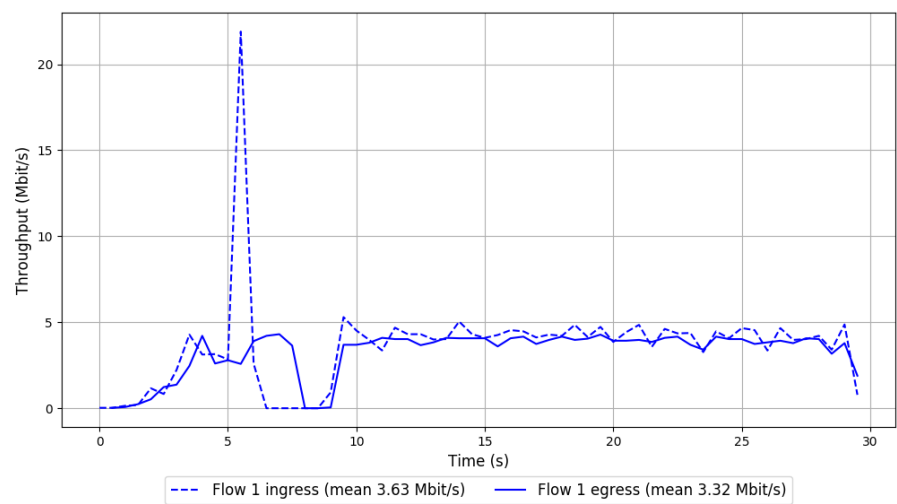
Run 3: Report of Verus — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2017-08-21 05:20:22
End at: 2017-08-21 05:20:52
Local clock offset: 0.366 ms
Remote clock offset: -2.825 ms


# Below is generated by plot.py at 2017-08-21 06:14:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1015.328 ms
Loss rate: 6.31%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1015.328 ms
Loss rate: 6.31%
```
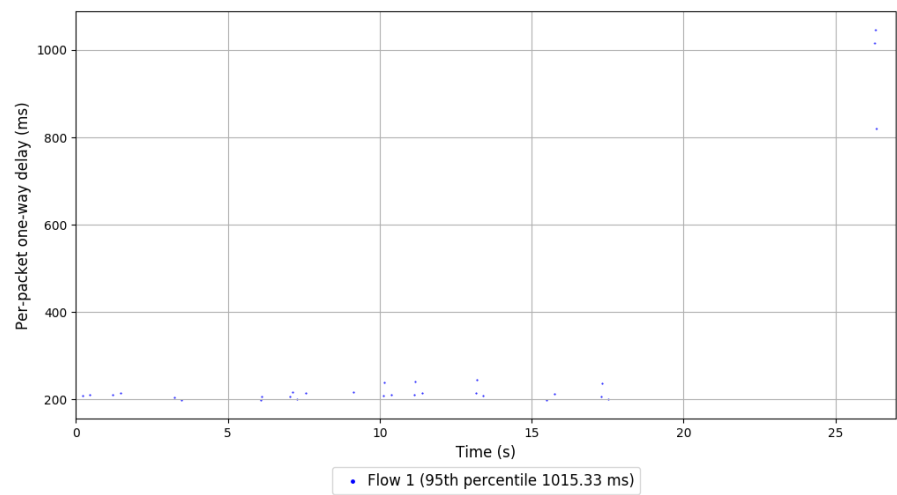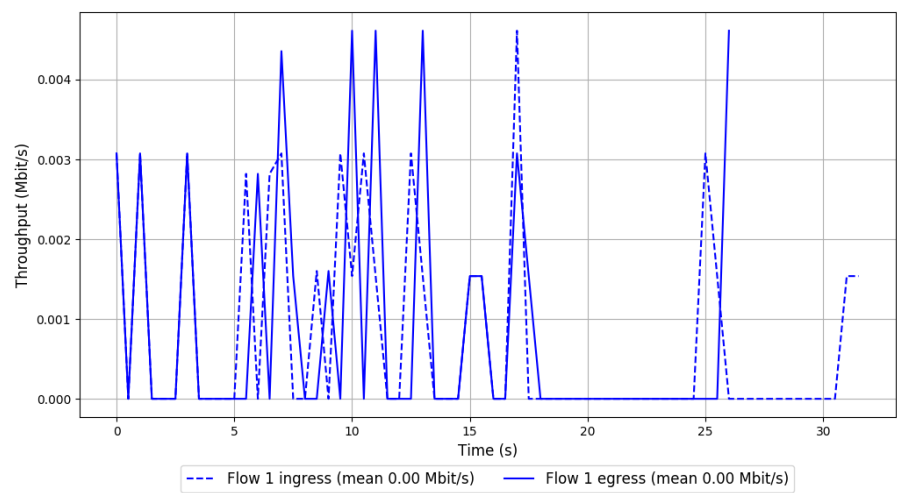
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2017-08-21 05:38:02
End at: 2017-08-21 05:38:32
Local clock offset: 0.063 ms
Remote clock offset: 0.932 ms


# Below is generated by plot.py at 2017-08-21 06:14:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 129.049 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 1.63 Mbit/s
95th percentile per-packet one-way delay: 129.049 ms
Loss rate: 0.02%
```
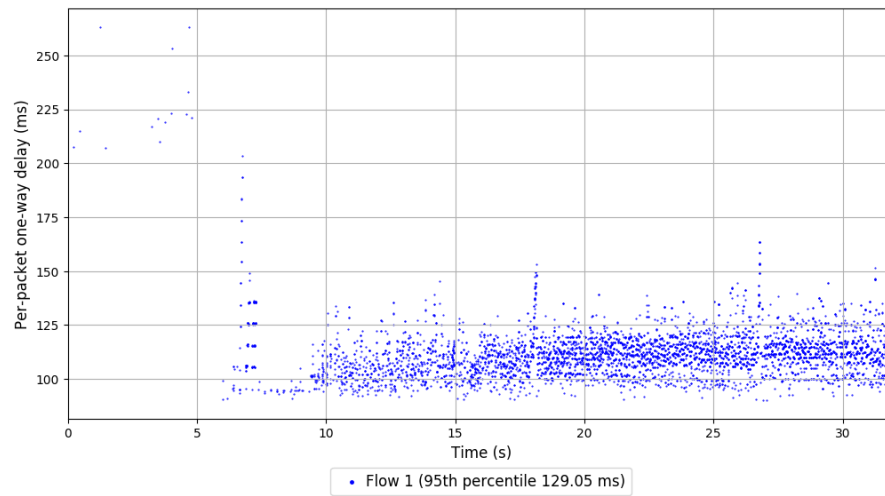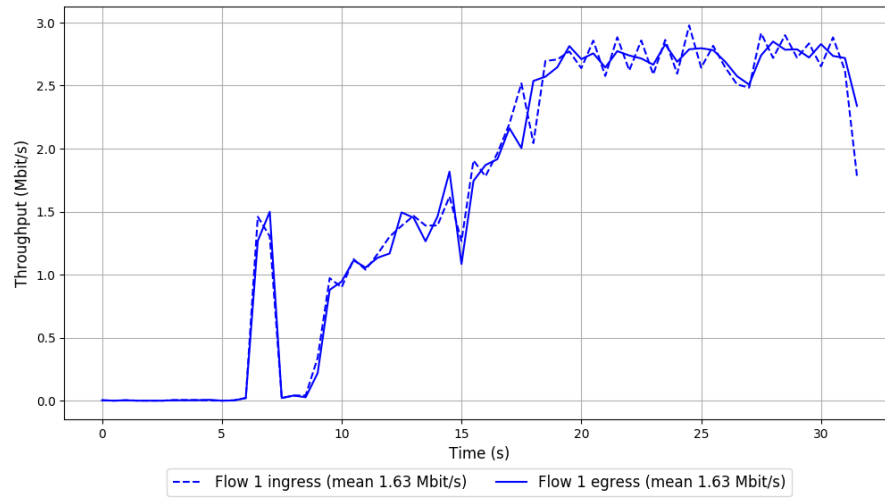
Run 2: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.63 Mbit/s)   Flow 1 egress (mean 1.63 Mbit/s)

Flow 1 (95th percentile 129.05 ms)

```
Run 3: Statistics of WebRTC media

Start at: 2017-08-21 05:56:00
End at: 2017-08-21 05:56:30
Local clock offset: 0.014 ms
Remote clock offset: -3.928 ms


# Below is generated by plot.py at 2017-08-21 06:14:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 153.197 ms
Loss rate: 6.37%
-- Flow 1:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 153.197 ms
Loss rate: 6.37%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.63 Mbit/s)　　Flow 1 egress (mean 1.54 Mbit/s)

Flow 1 (95th percentile 153.20 ms)