Pantheon Report

Generated at 2018-02-17 02:42:55 (UTC).

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

Repeated the test of 17 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

Increased UDP receive buffer to 16 MB (default) and 32 MB (max).
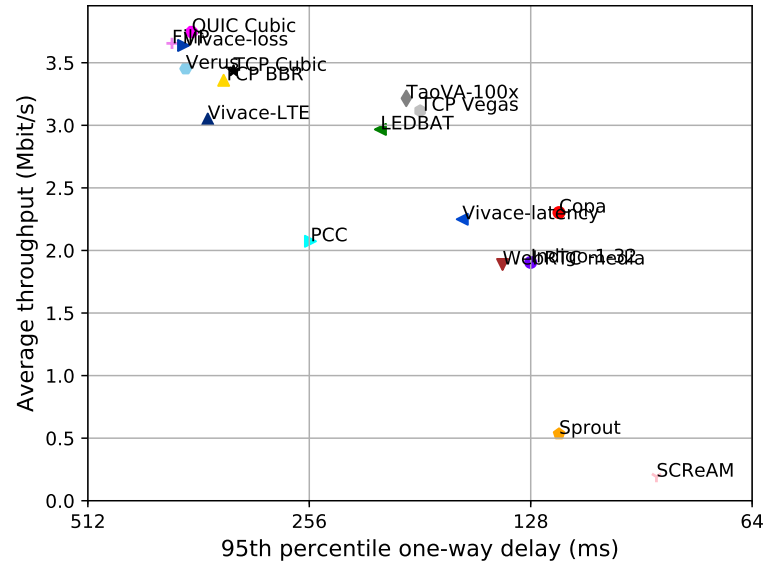
Tested BBR with qdisc of Fair Queuing (`fq`), and other schemes with the default Linux qdisc (`pfifo_fast`).

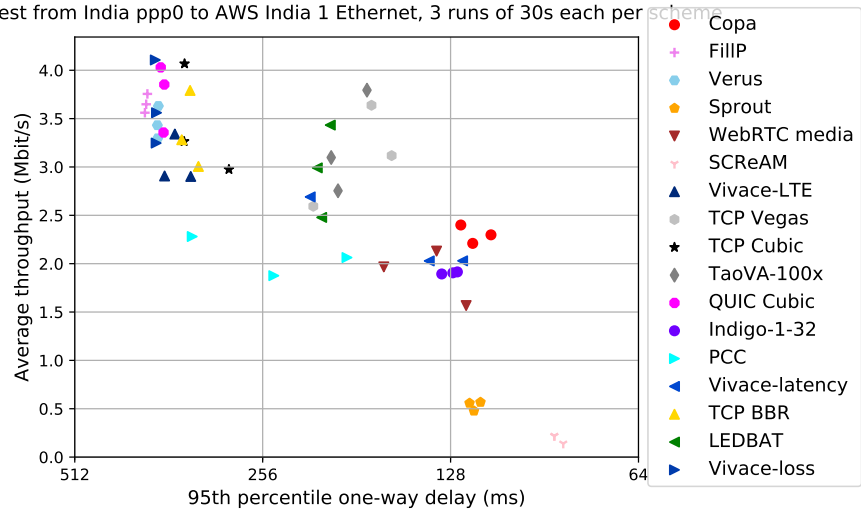NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

```
Git summary:
branch: master @ cccb2d77344969a7bac1df6edf6c0cfb6c77a6f8
third_party/calibrated_koho @ 3cb73c0d1c0322cdfae446ea37a522e53227db50
 M datagrump/sender.cc
third_party/fillp @ 828bbf95fd4941149b5cec90f281d1c69ae1a5c6
third_party/genericCC @ 8400b8926887fc4cf8c795a1d7ce2c8ac041ec72
third_party/indigo @ a9b2060d39e4da2e8987e893e3eca2a6c7cd0ab9
third_party/indigo-1-layer-128-unit @ 3ae9e4ef4230db7484501f82ce8b377695f2f66d
third_party/indigo-1-layer-32-unit @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-1-layer-32-unit-no-calib @ 1f3a7f75b41135ed5b540c0fd3505939528e2a5f
third_party/indigo-no-calib @ 7224f2202e8a044d8306fa0b983ad84360c53d89
third_party/koho_cc @ f0f2e693303aee82ea808e6928eac4f1083a6681
 M datagrump/sender.cc
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/pantheon-tunnel @ fb1053193c2861da659ba9013db26744ccfcf993
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream @ c3370fd7bd17265a79aeb34e4016ad23f5965885
third_party/sourdough @ 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/vivace @ 7a4ba531e75b4a6f66f5c4580192120401784ce3
third_party/webrtc @ a488197ddd041ace68a42849b2540ad834825f42
```

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

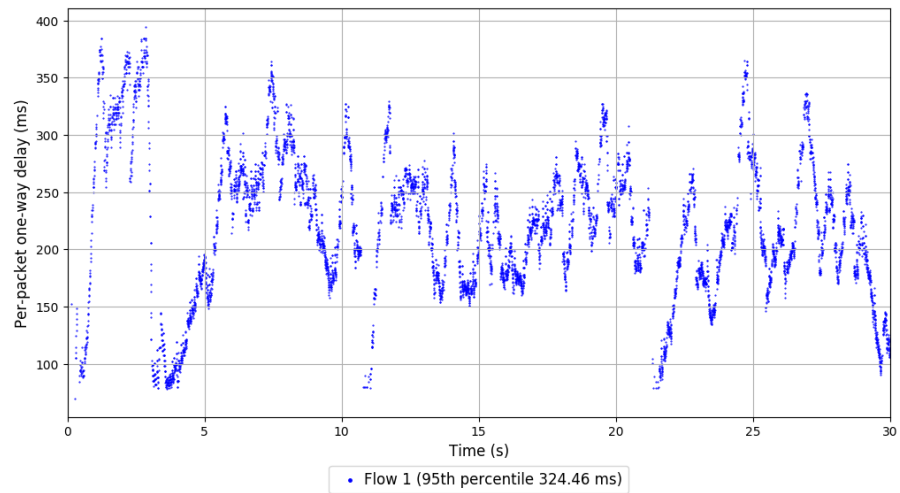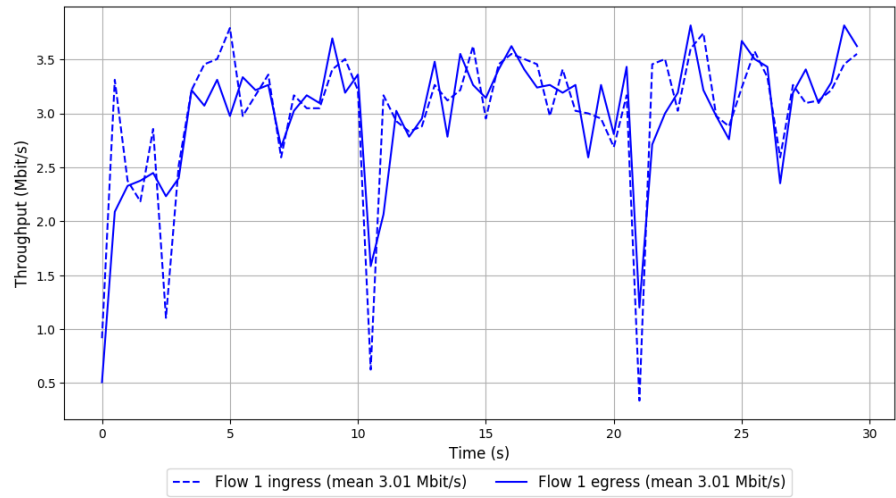test from India ppp0 to AWS India 1 Ethernet, 3 runs of 30s each per scheme

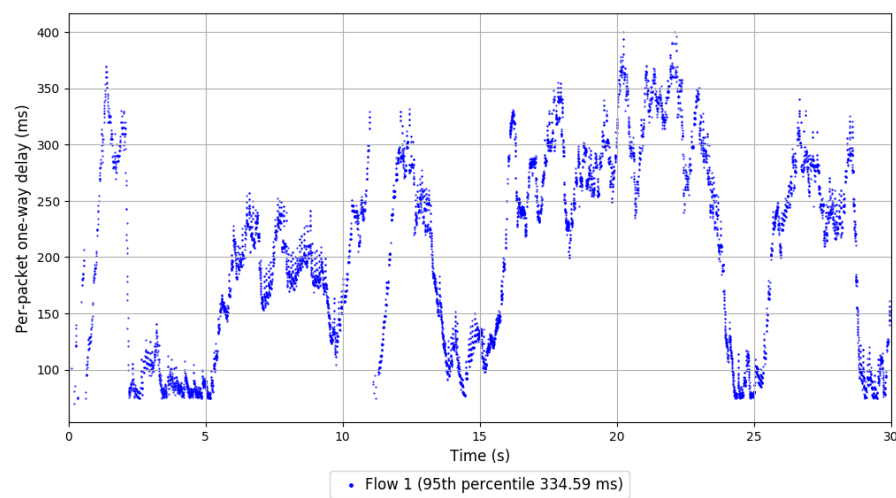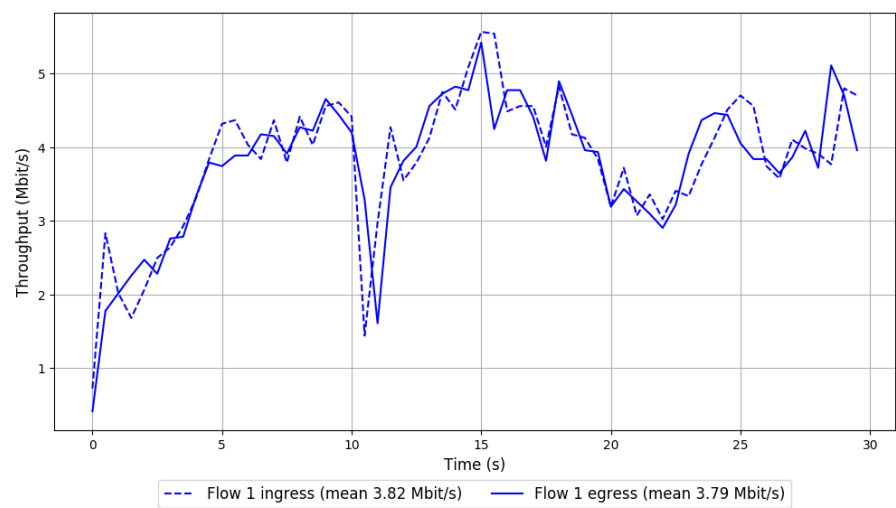| scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	3.36	334.71	1.17
TCP Cubic	3	3.43	324.50	1.24
LEDBAT	3	2.97	204.92	1.31
PCC	3	2.07	255.05	5.05
QUIC Cubic	3	3.75	369.96	4.97
SCReAM	3	0.19	86.36	0.25
WebRTC media	3	1.89	139.80	0.51
Sprout	3	0.54	117.14	0.59
TaoVA-100x	3	3.21	188.97	3.44
TCP Vegas	3	3.12	180.94	0.68
Verus	3	3.45	376.91	22.65
Copa	3	2.30	117.17	0.75
FillP	3	3.66	393.45	89.41
Indigo-1-32	3	1.90	128.01	0.55
Vivace-latency	3	2.25	158.59	0.38
Vivace-loss	3	3.64	379.43	18.89
Vivace-LTE	3	3.05	351.78	1.78

```
Run 1: Statistics of TCP BBR

Start at: 2018-02-17 01:01:42
End at: 2018-02-17 01:02:12
Local clock offset: 0.652 ms
Remote clock offset: -22.874 ms


# Below is generated by plot.py at 2018-02-17 02:42:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.01 Mbit/s
95th percentile per-packet one-way delay: 324.463 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 3.01 Mbit/s
95th percentile per-packet one-way delay: 324.463 ms
Loss rate: 0.61%
```
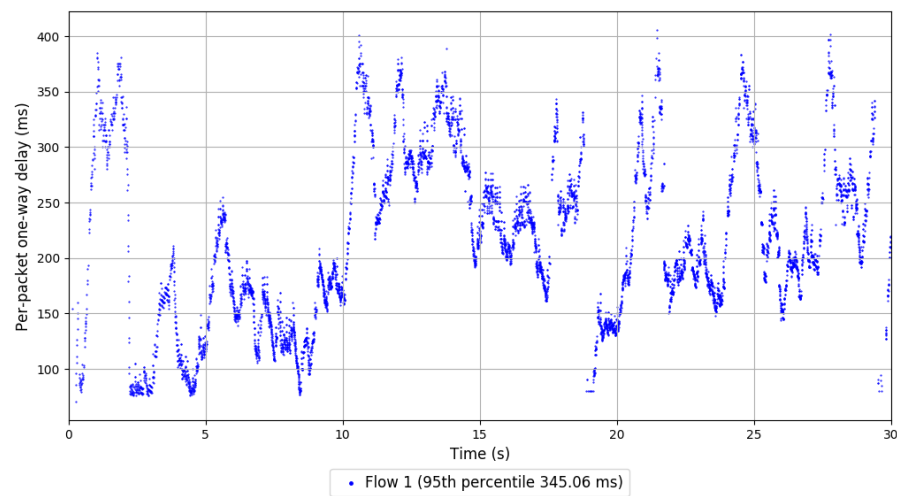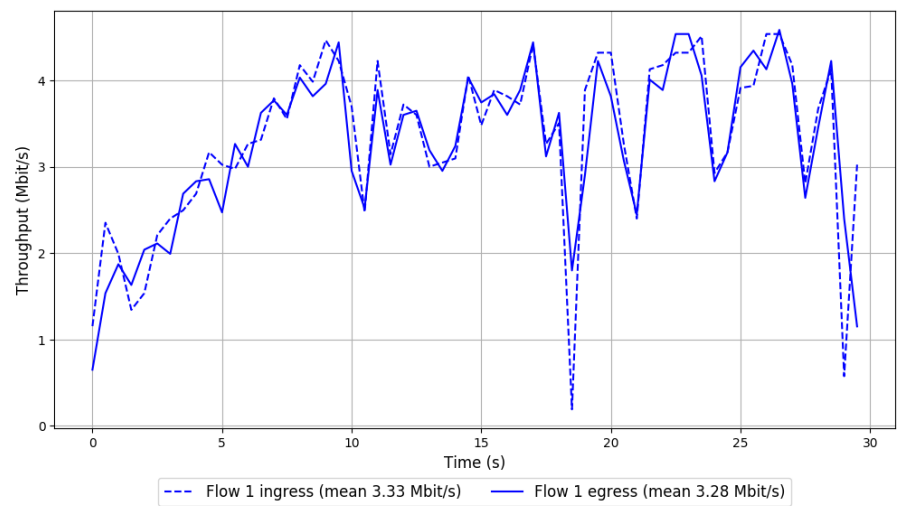
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-02-17 01:21:23
End at: 2018-02-17 01:21:53
Local clock offset: -9.765 ms
Remote clock offset: -22.956 ms


# Below is generated by plot.py at 2018-02-17 02:42:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 334.594 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 334.594 ms
Loss rate: 1.06%
```
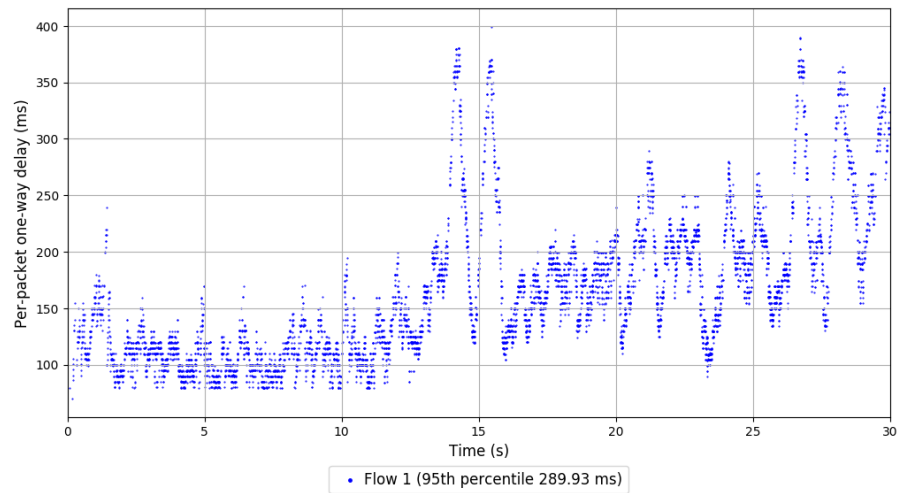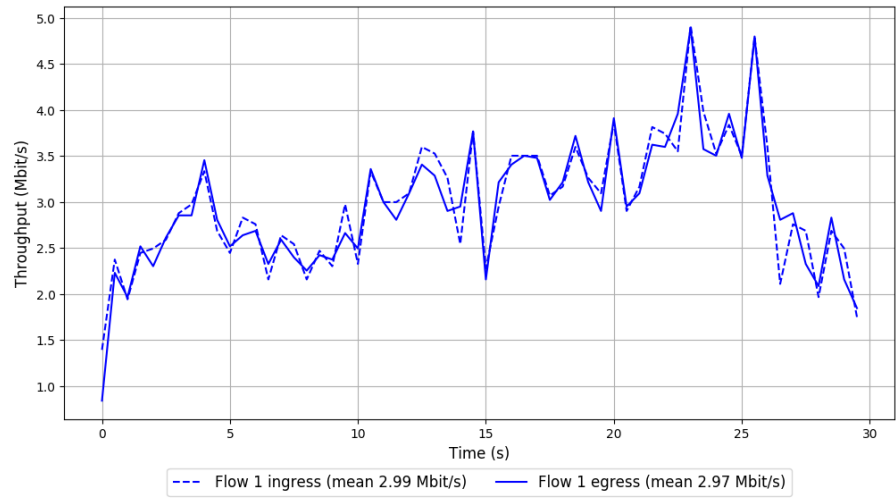
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-02-17 01:41:05
End at: 2018-02-17 01:41:35
Local clock offset: -9.028 ms
Remote clock offset: -7.347 ms


# Below is generated by plot.py at 2018-02-17 02:42:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.28 Mbit/s
95th percentile per-packet one-way delay: 345.064 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 3.28 Mbit/s
95th percentile per-packet one-way delay: 345.064 ms
Loss rate: 1.84%
```

Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 3.33 Mbit/s) — — — Flow 1 egress (mean 3.28 Mbit/s)
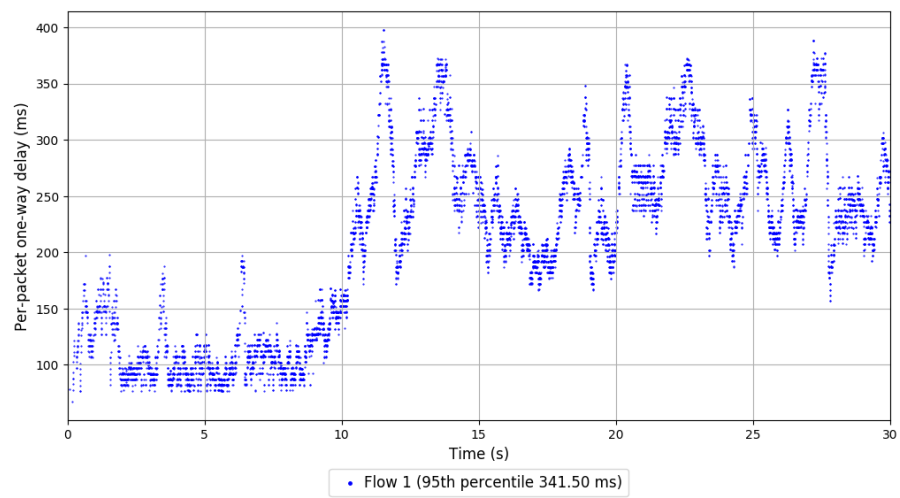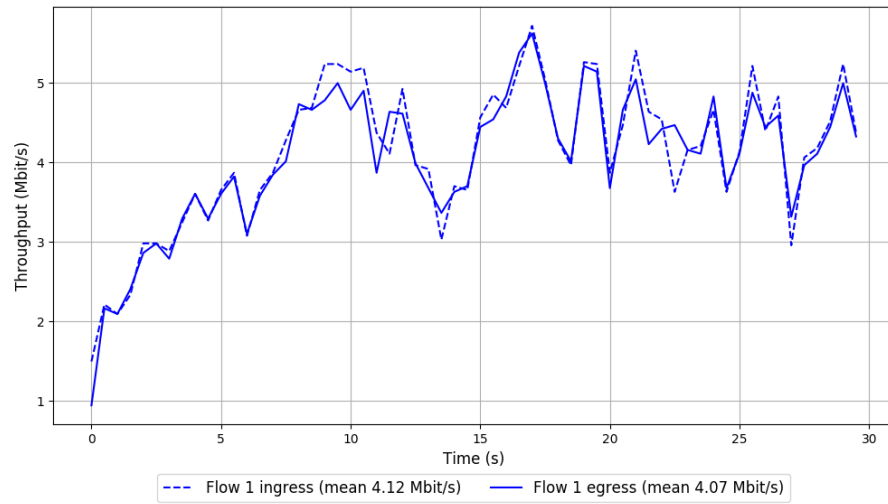

Flow 1 (95th percentile 345.06 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-02-17 00:56:14
End at: 2018-02-17 00:56:44
Local clock offset: 0.682 ms
Remote clock offset: -20.553 ms

# Below is generated by plot.py at 2018-02-17 02:42:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.97 Mbit/s
95th percentile per-packet one-way delay: 289.934 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 2.97 Mbit/s
95th percentile per-packet one-way delay: 289.934 ms
Loss rate: 0.92%
```

Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 2.99 Mbit/s)   Flow 1 egress (mean 2.97 Mbit/s)
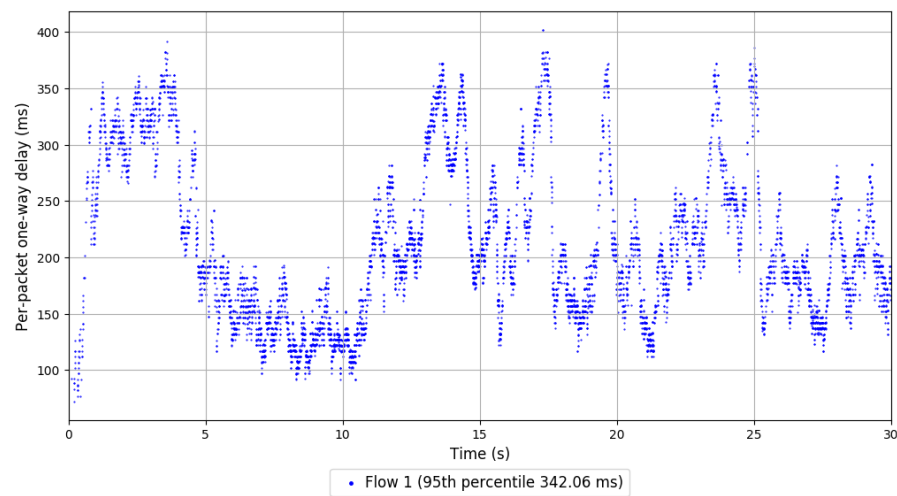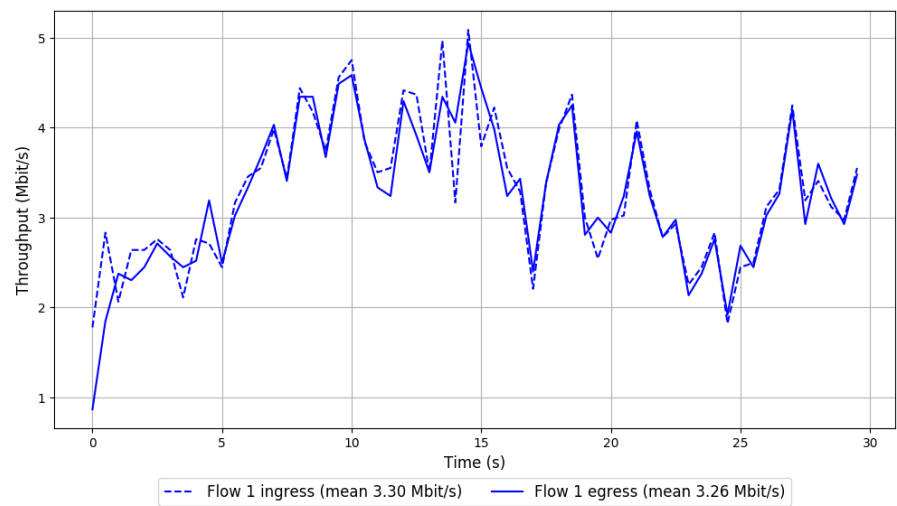

Flow 1 (95th percentile 289.93 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-02-17 01:15:56
End at: 2018-02-17 01:16:26
Local clock offset: -7.885 ms
Remote clock offset: -22.405 ms


# Below is generated by plot.py at 2018-02-17 02:42:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.07 Mbit/s
95th percentile per-packet one-way delay: 341.501 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 4.07 Mbit/s
95th percentile per-packet one-way delay: 341.501 ms
Loss rate: 1.50%
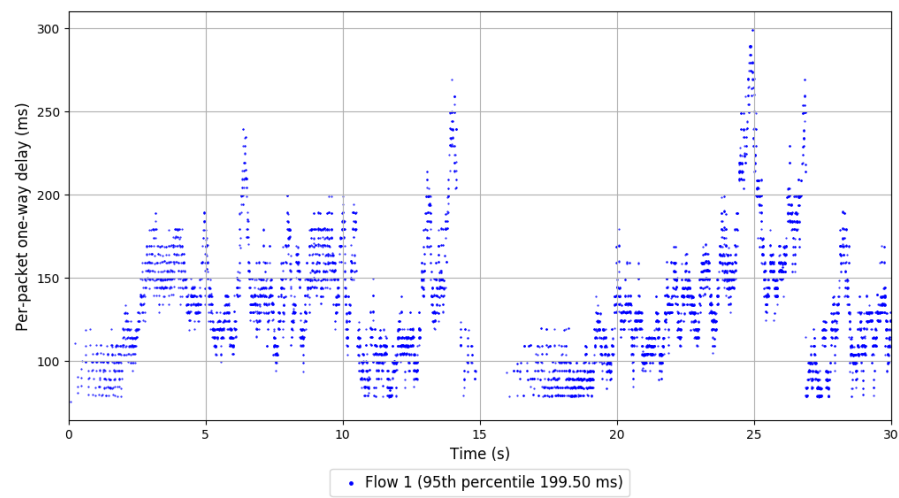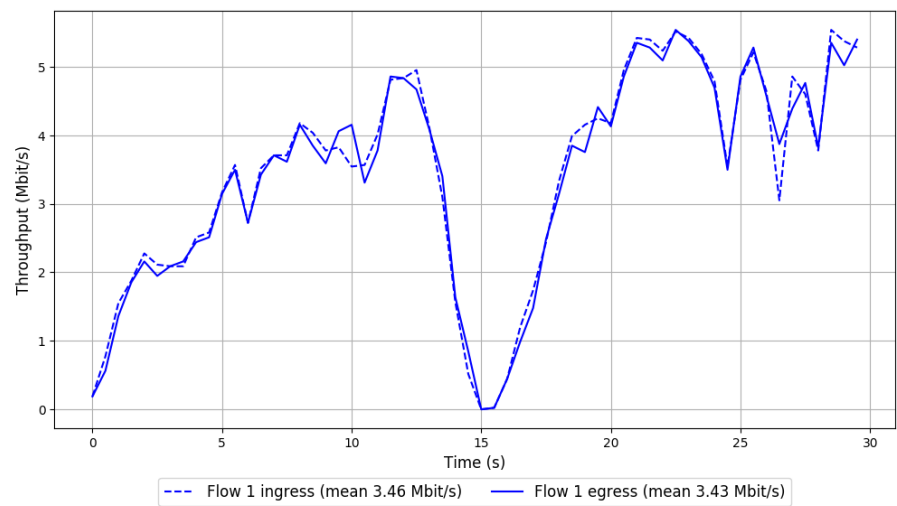```

Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-02-17 01:35:38
End at: 2018-02-17 01:36:08
Local clock offset: -12.942 ms
Remote clock offset: -12.172 ms

Below is generated by plot.py at 2018-02-17 02:42:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 342.060 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 3.26 Mbit/s
95th percentile per-packet one-way delay: 342.060 ms
Loss rate: 1.31%
```
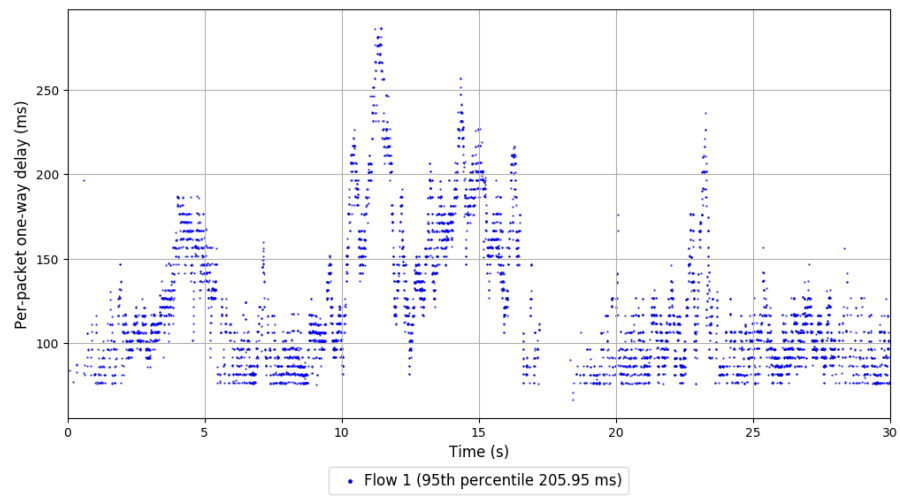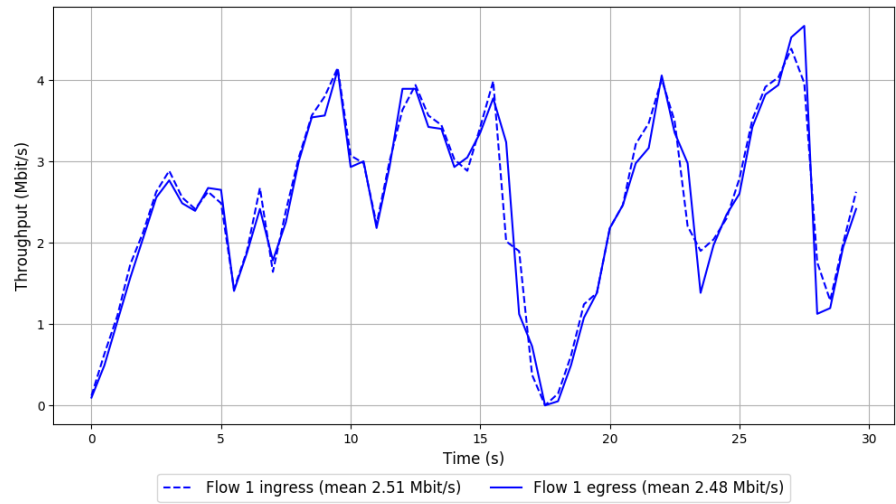
Run 3: Report of TCP Cubic — Data Link



Flow 1 ingress (mean 3.30 Mbit/s) — — —  Flow 1 egress (mean 3.26 Mbit/s) ———



• Flow 1 (95th percentile 342.06 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-02-17 00:51:48
End at: 2018-02-17 00:52:18
Local clock offset: -0.602 ms
Remote clock offset: -19.576 ms

# Below is generated by plot.py at 2018-02-17 02:42:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.43 Mbit/s
95th percentile per-packet one-way delay: 199.501 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 3.43 Mbit/s
95th percentile per-packet one-way delay: 199.501 ms
Loss rate: 1.03%
```

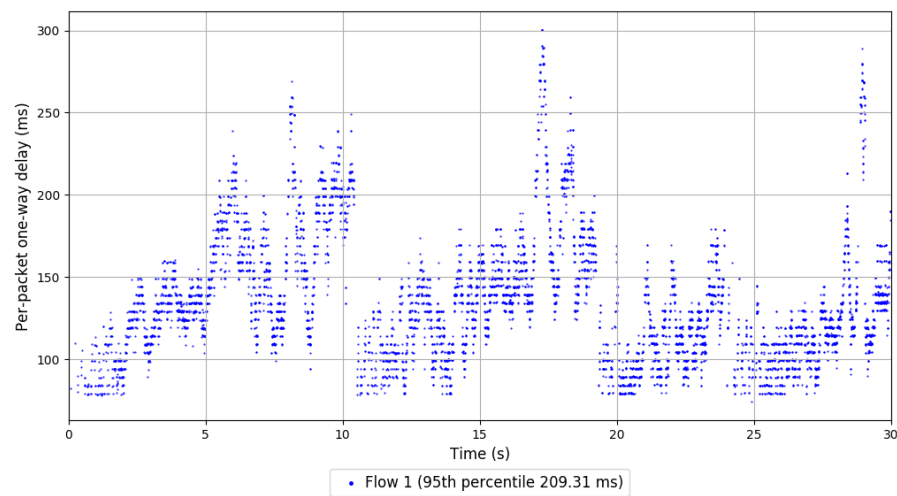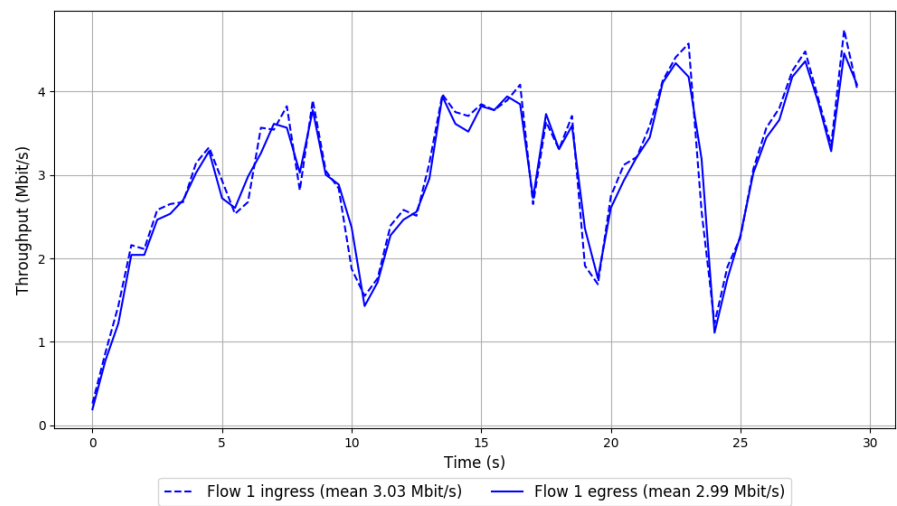Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-02-17 01:11:32
End at: 2018-02-17 01:12:02
Local clock offset: -5.905 ms
Remote clock offset: -20.089 ms

# Below is generated by plot.py at 2018-02-17 02:42:10
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 205.946 ms
Loss rate: 1.45%
-- Flow 1:
Average throughput: 2.48 Mbit/s
95th percentile per-packet one-way delay: 205.946 ms
Loss rate: 1.45%
```

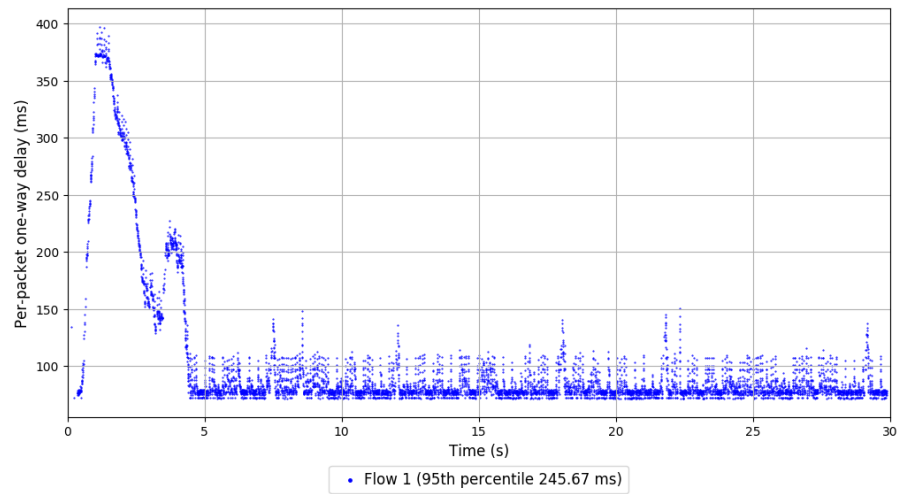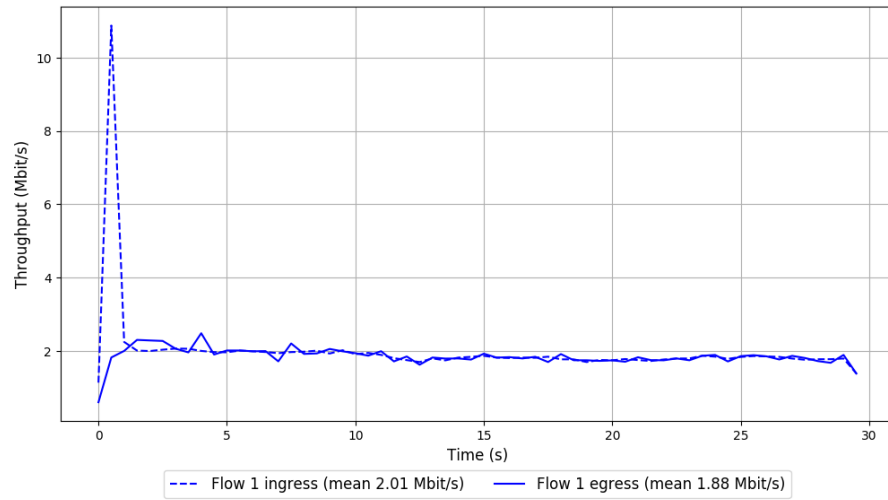Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 2.51 Mbit/s) — — —   Flow 1 egress (mean 2.48 Mbit/s) ———

· Flow 1 (95th percentile 205.95 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2018-02-17 01:31:11
End at: 2018-02-17 01:31:41
Local clock offset: -8.942 ms
Remote clock offset: -13.664 ms

# Below is generated by plot.py at 2018-02-17 02:42:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.99 Mbit/s
95th percentile per-packet one-way delay: 209.308 ms
Loss rate: 1.45%
-- Flow 1:
Average throughput: 2.99 Mbit/s
95th percentile per-packet one-way delay: 209.308 ms
Loss rate: 1.45%
```

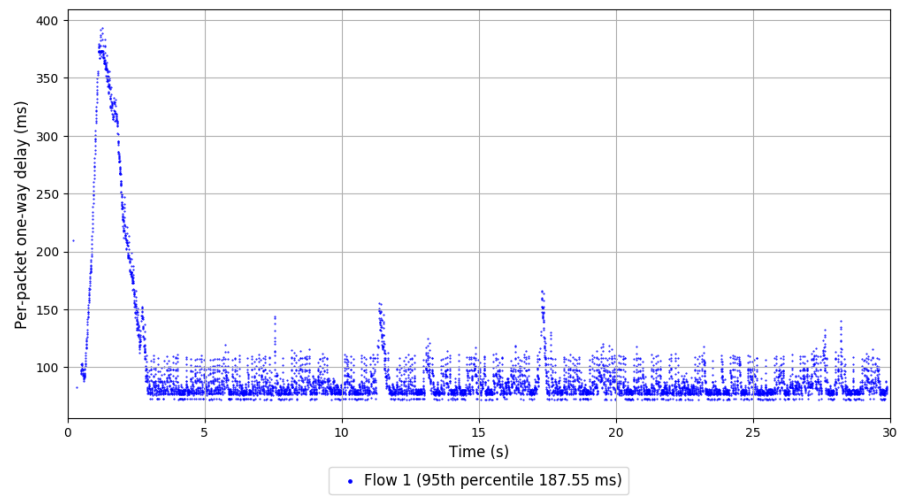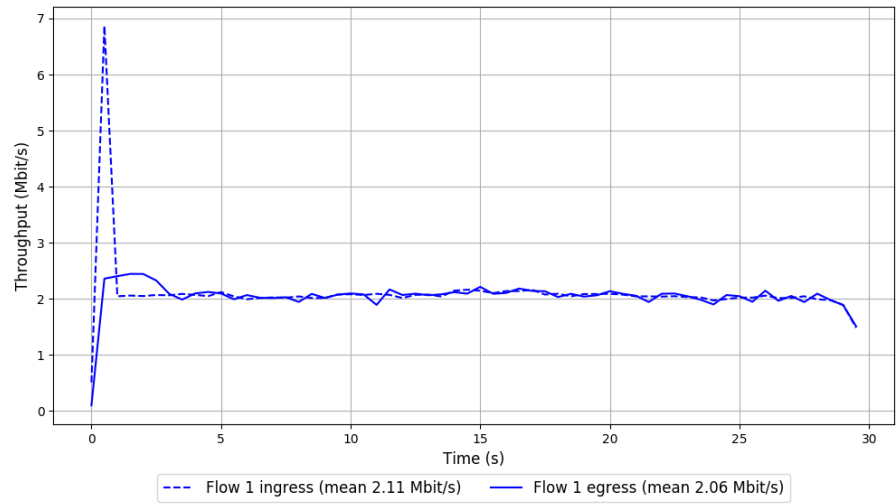Run 3: Report of LEDBAT — Data Link

```
Run 1: Statistics of PCC

Start at: 2018-02-17 00:58:24
End at: 2018-02-17 00:58:55
Local clock offset: -0.578 ms
Remote clock offset: -20.906 ms


# Below is generated by plot.py at 2018-02-17 02:42:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 245.668 ms
Loss rate: 7.16%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 245.668 ms
Loss rate: 7.16%
```

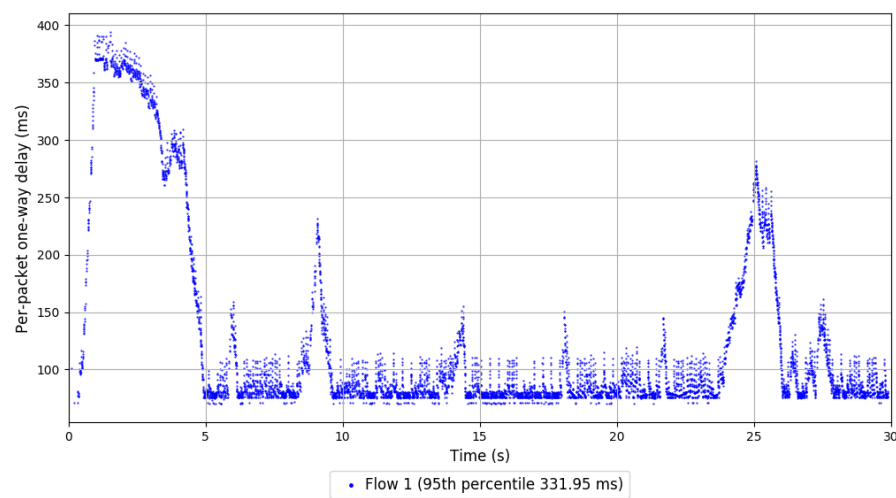Run 1: Report of PCC — Data Link

```
Run 2: Statistics of PCC

Start at: 2018-02-17 01:18:07
End at: 2018-02-17 01:18:37
Local clock offset: -6.332 ms
Remote clock offset: -21.558 ms

# Below is generated by plot.py at 2018-02-17 02:42:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 187.551 ms
Loss rate: 2.75%
-- Flow 1:
Average throughput: 2.06 Mbit/s
95th percentile per-packet one-way delay: 187.551 ms
Loss rate: 2.75%
```

Run 2: Report of PCC — Data Link

Flow 1 ingress (mean 2.11 Mbit/s)   Flow 1 egress (mean 2.06 Mbit/s)
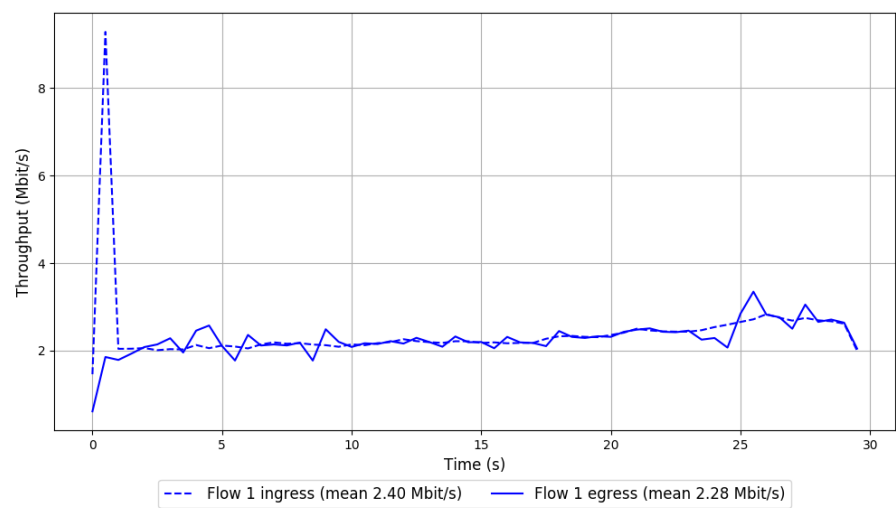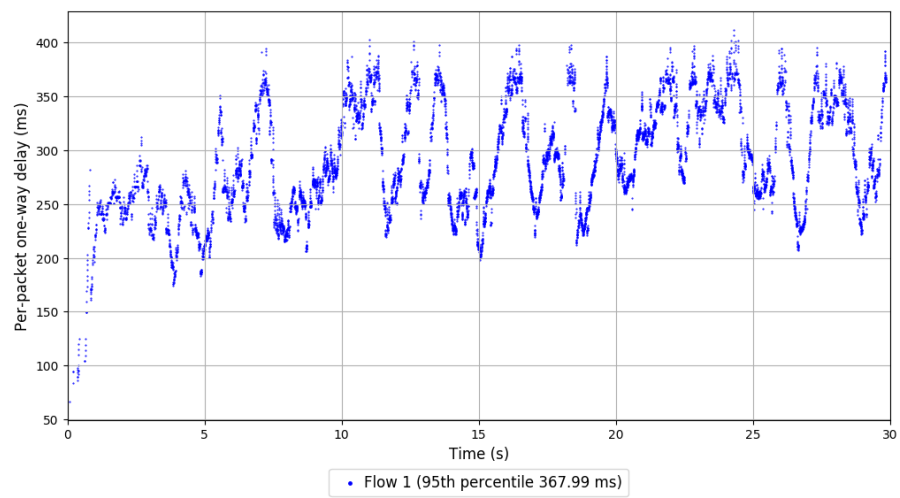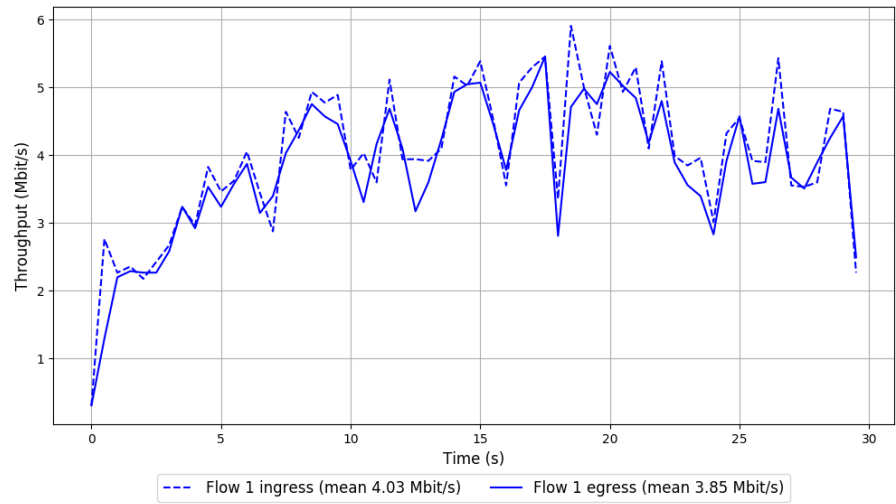

Flow 1 (95th percentile 187.55 ms)

```
Run 3: Statistics of PCC

Start at: 2018-02-17 01:37:48
End at: 2018-02-17 01:38:18
Local clock offset: -13.525 ms
Remote clock offset: -11.656 ms


# Below is generated by plot.py at 2018-02-17 02:42:17
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 331.946 ms
Loss rate: 5.24%
-- Flow 1:
Average throughput: 2.28 Mbit/s
95th percentile per-packet one-way delay: 331.946 ms
Loss rate: 5.24%
```
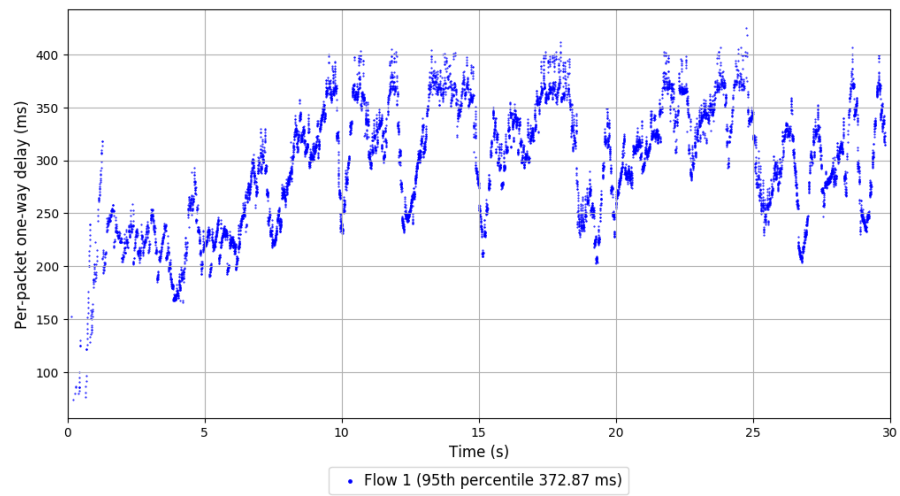
Run 3: Report of PCC — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-02-17 01:00:36
End at: 2018-02-17 01:01:06
Local clock offset: -0.332 ms
Remote clock offset: -20.929 ms


# Below is generated by plot.py at 2018-02-17 02:42:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 367.992 ms
Loss rate: 4.69%
-- Flow 1:
Average throughput: 3.85 Mbit/s
95th percentile per-packet one-way delay: 367.992 ms
Loss rate: 4.69%
```

Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 4.03 Mbit/s)   Flow 1 egress (mean 3.85 Mbit/s)

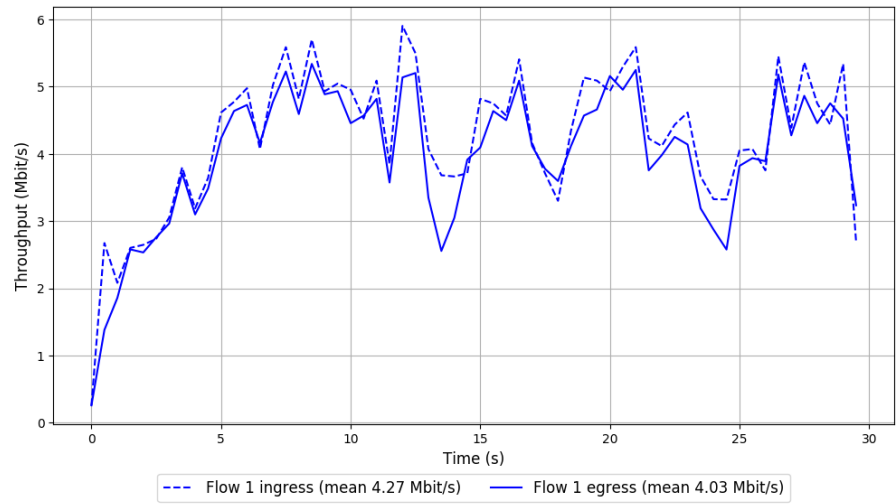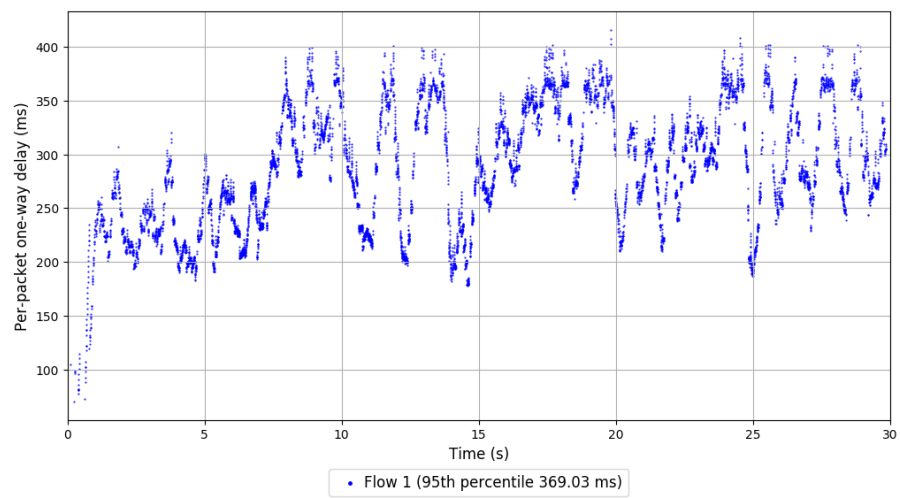
• Flow 1 (95th percentile 367.99 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-02-17 01:20:17
End at: 2018-02-17 01:20:47
Local clock offset: -7.104 ms
Remote clock offset: -23.368 ms


# Below is generated by plot.py at 2018-02-17 02:42:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 372.867 ms
Loss rate: 6.01%
-- Flow 1:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 372.867 ms
Loss rate: 6.01%
```
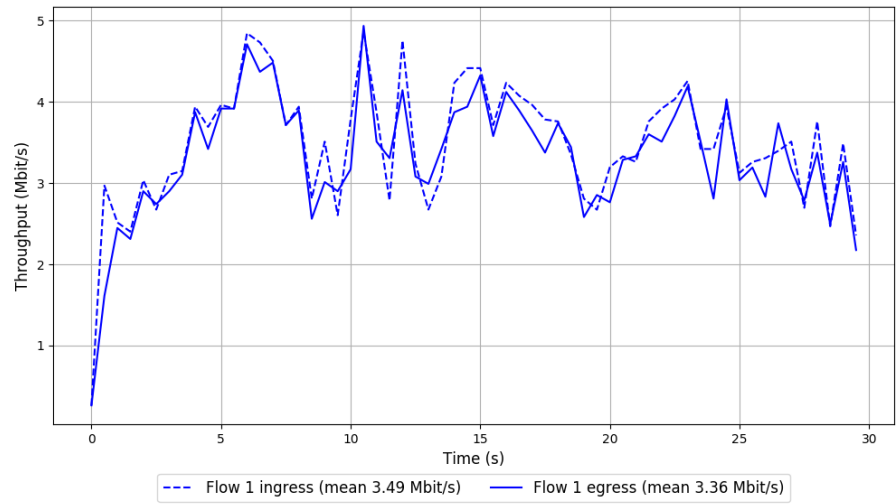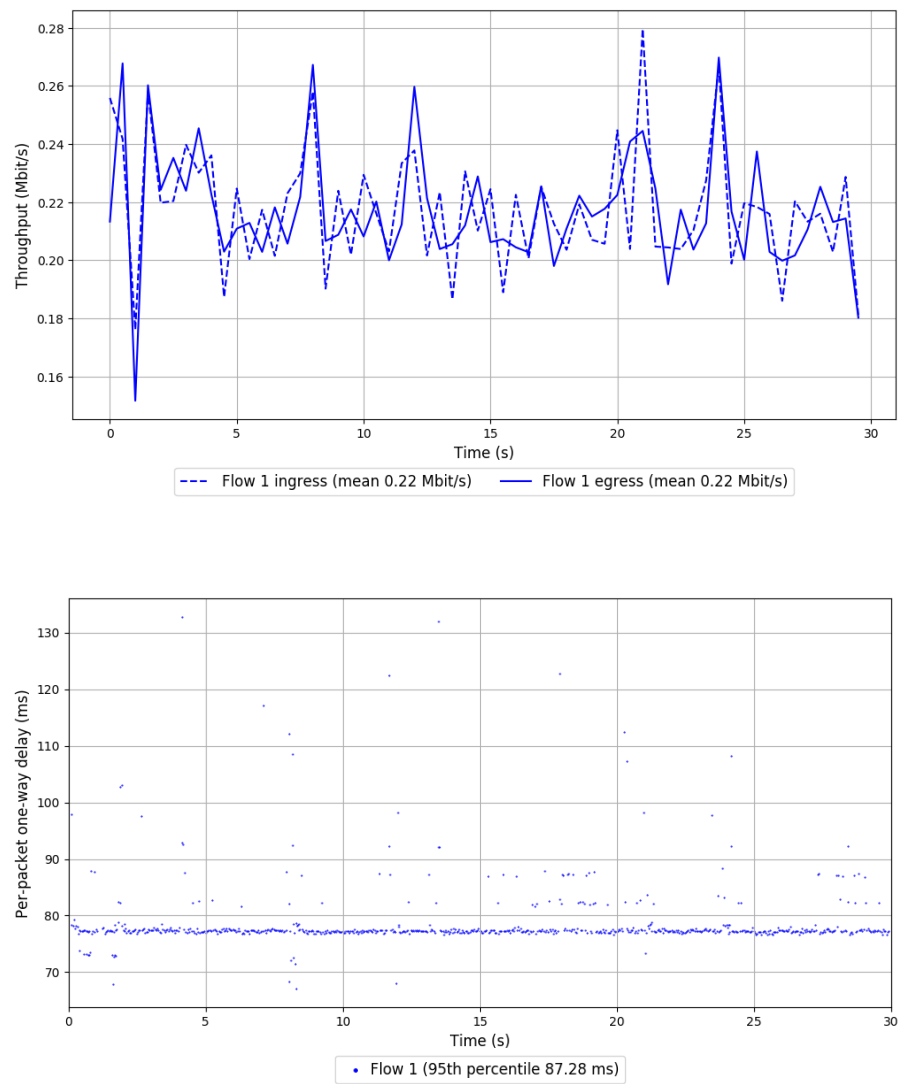
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-02-17 01:40:00
End at: 2018-02-17 01:40:30
Local clock offset: -10.491 ms
Remote clock offset: -8.465 ms

# Below is generated by plot.py at 2018-02-17 02:42:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 369.029 ms
Loss rate: 4.21%
-- Flow 1:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 369.029 ms
Loss rate: 4.21%
```

Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 3.49 Mbit/s) — Flow 1 egress (mean 3.36 Mbit/s)

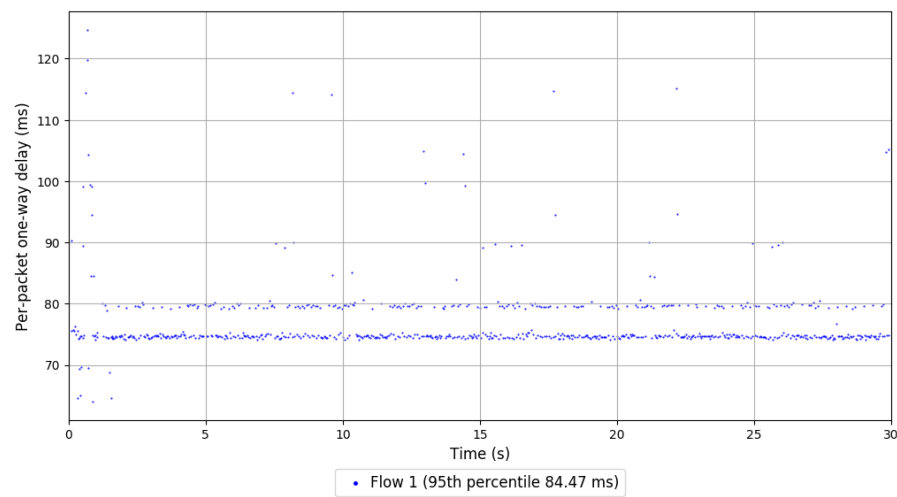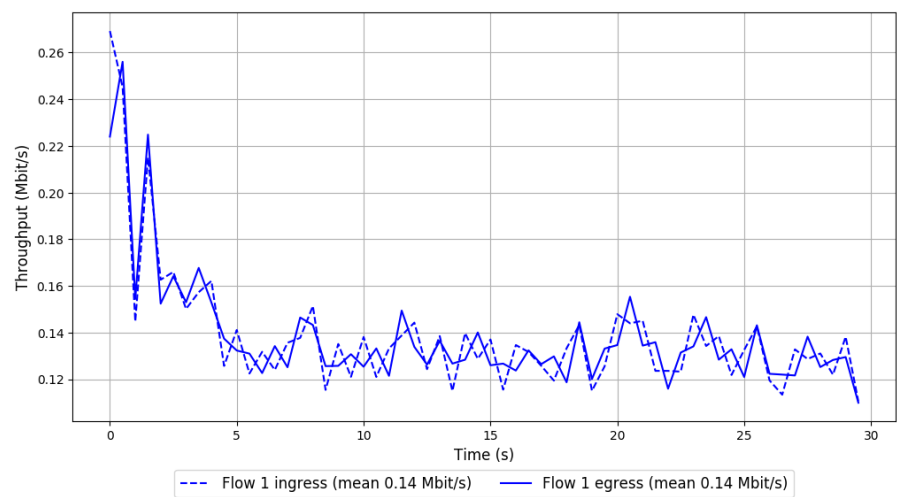• Flow 1 (95th percentile 369.03 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-02-17 00:57:19
End at: 2018-02-17 00:57:49
Local clock offset: 1.079 ms
Remote clock offset: -20.184 ms


# Below is generated by plot.py at 2018-02-17 02:42:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.276 ms
Loss rate: 0.25%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.276 ms
Loss rate: 0.25%
```

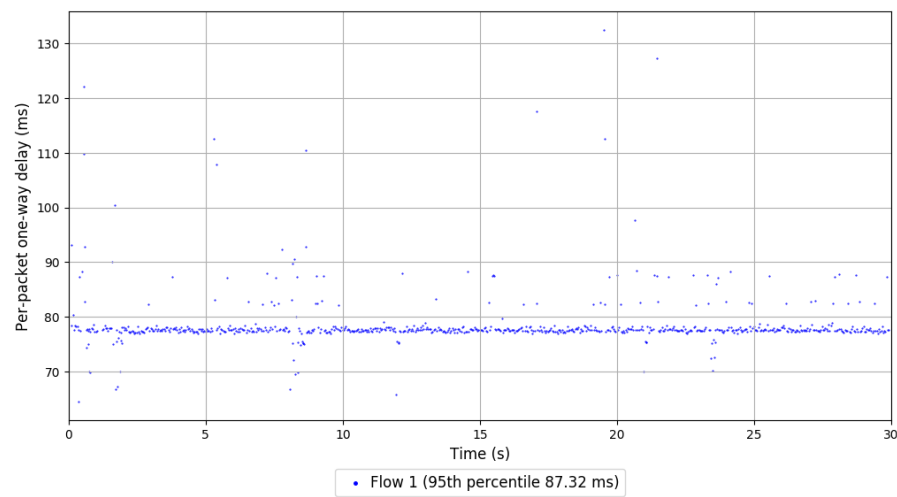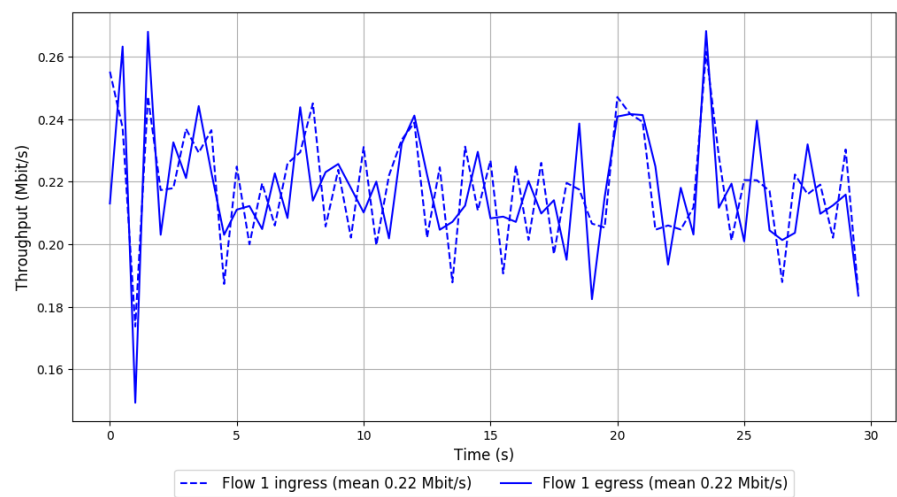Run 1: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.22 Mbit/s) — Flow 1 egress (mean 0.22 Mbit/s)

Flow 1 (95th percentile 87.28 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-02-17 01:17:02
End at: 2018-02-17 01:17:32
Local clock offset: -9.69 ms
Remote clock offset: -22.782 ms


# Below is generated by plot.py at 2018-02-17 02:42:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 84.475 ms
Loss rate: 0.24%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 84.475 ms
Loss rate: 0.24%
```

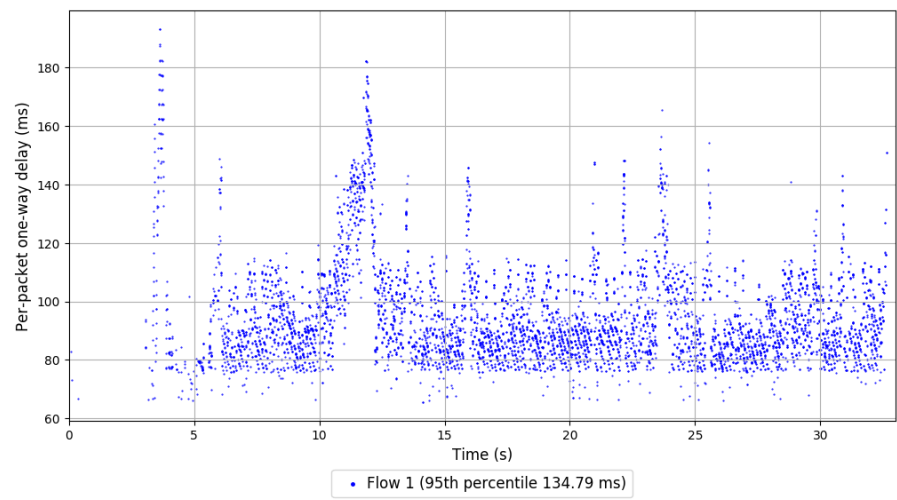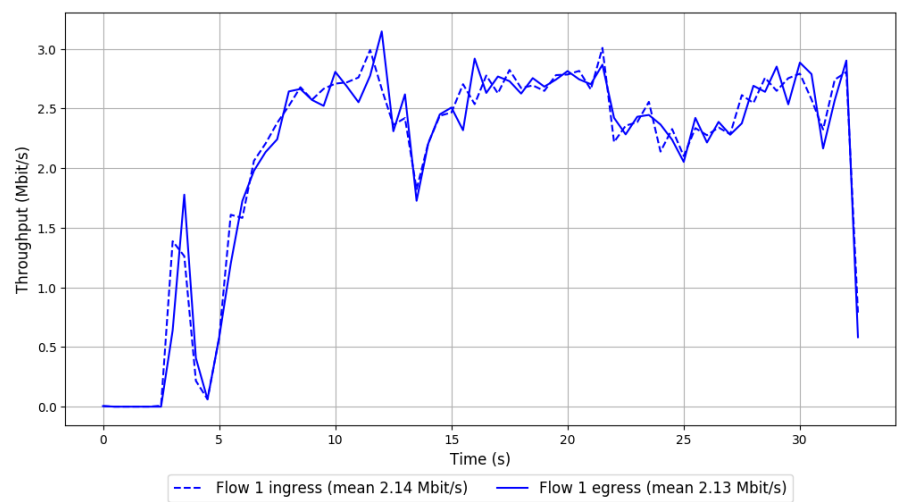Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-02-17 01:36:43
End at: 2018-02-17 01:37:13
Local clock offset: -13.061 ms
Remote clock offset: -10.776 ms


# Below is generated by plot.py at 2018-02-17 02:42:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.317 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.317 ms
Loss rate: 0.26%
```
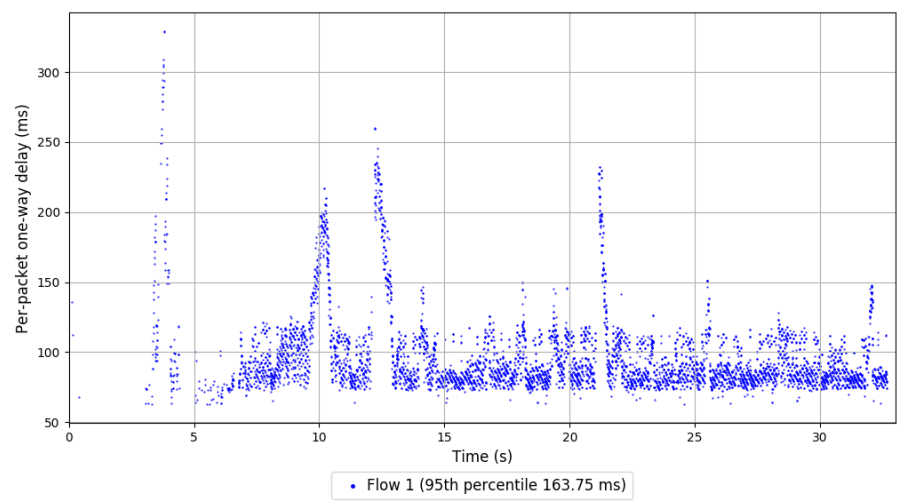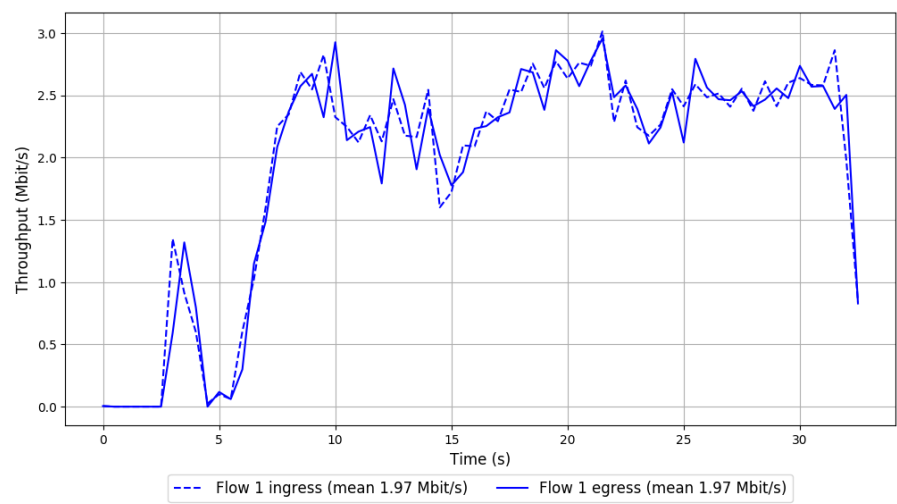
Run 3: Report of SCReAM — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-02-17 00:45:12
End at: 2018-02-17 00:45:42
Local clock offset: 0.041 ms
Remote clock offset: -19.76 ms


# Below is generated by plot.py at 2018-02-17 02:42:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 134.789 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 2.13 Mbit/s
95th percentile per-packet one-way delay: 134.789 ms
Loss rate: 0.57%
```
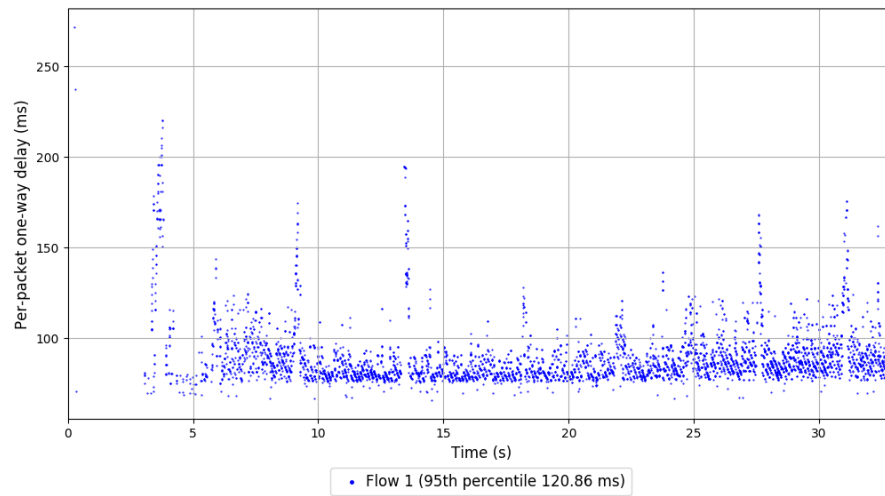
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-02-17 01:04:58
End at: 2018-02-17 01:05:28
Local clock offset: -3.091 ms
Remote clock offset: -21.201 ms


# Below is generated by plot.py at 2018-02-17 02:42:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 163.746 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 1.97 Mbit/s
95th percentile per-packet one-way delay: 163.746 ms
Loss rate: 0.43%
```
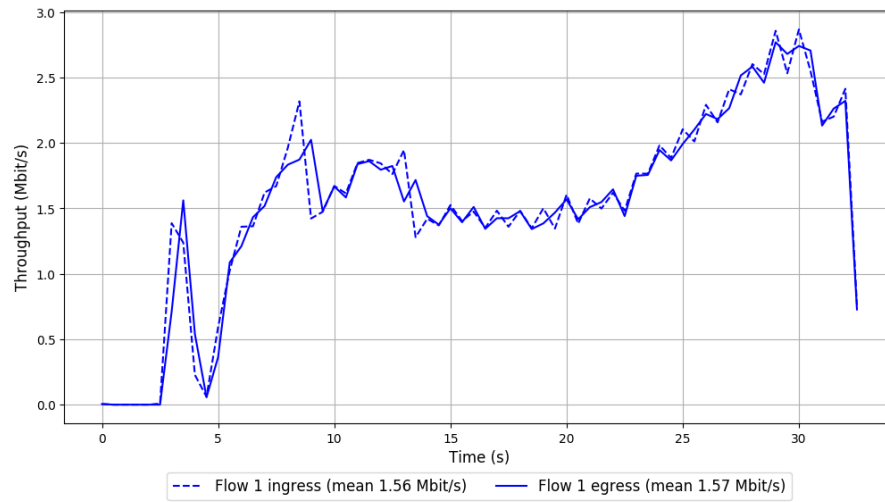
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-02-17 01:24:39
End at: 2018-02-17 01:25:09
Local clock offset: -8.894 ms
Remote clock offset: -22.437 ms


# Below is generated by plot.py at 2018-02-17 02:42:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 120.856 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 120.856 ms
Loss rate: 0.53%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.56 Mbit/s) — — — Flow 1 egress (mean 1.57 Mbit/s)
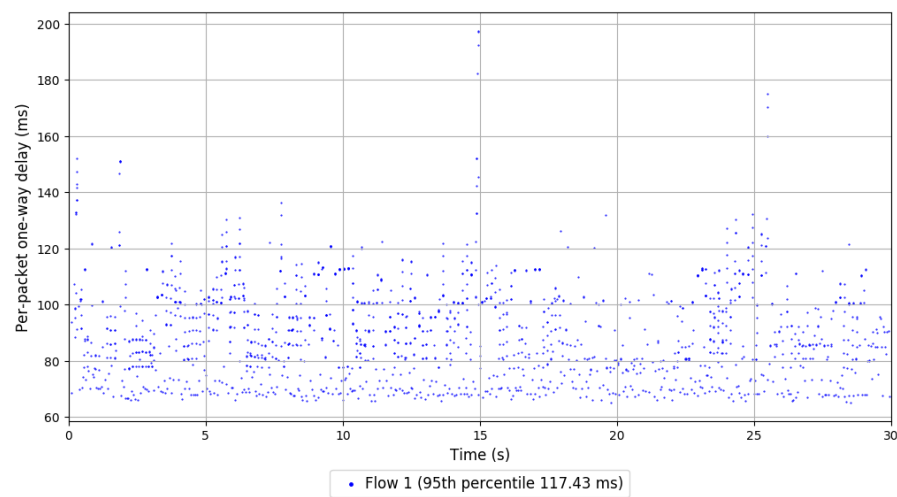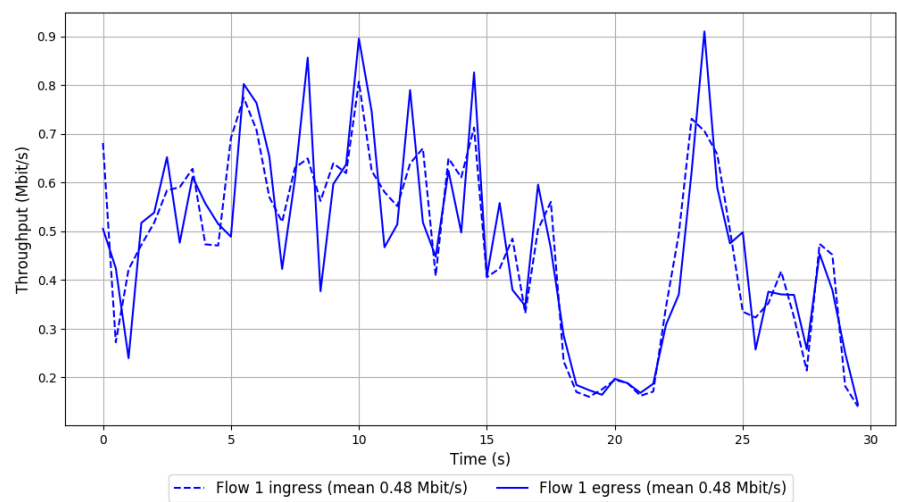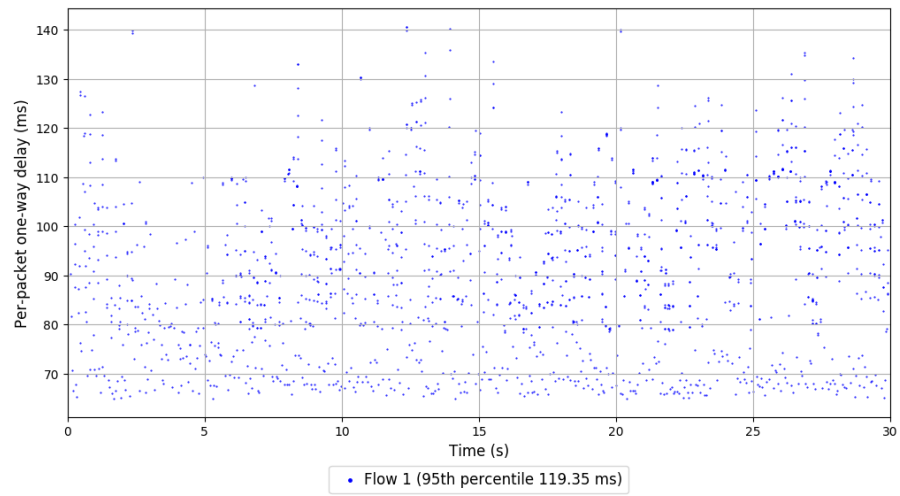

Flow 1 (95th percentile 120.86 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-02-17 00:46:18
End at: 2018-02-17 00:46:48
Local clock offset: 0.669 ms
Remote clock offset: -19.555 ms


# Below is generated by plot.py at 2018-02-17 02:42:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 117.428 ms
Loss rate: 0.15%
-- Flow 1:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 117.428 ms
Loss rate: 0.15%
```
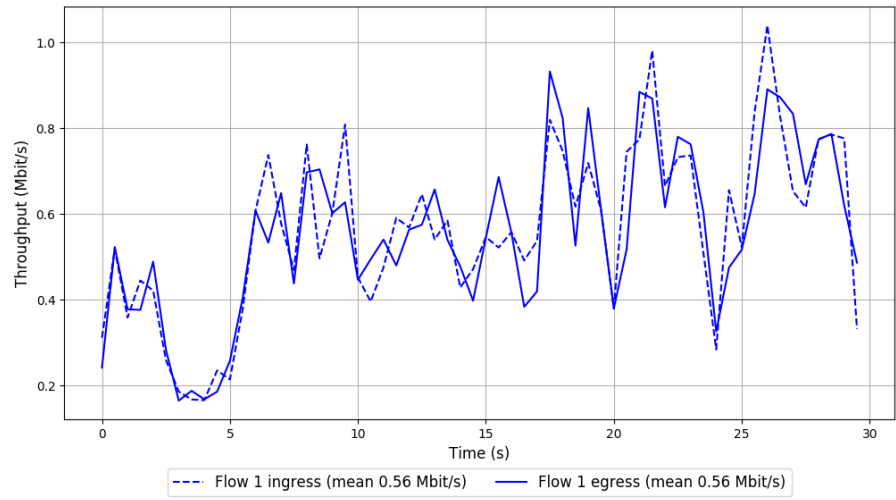
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-02-17 01:06:03
End at: 2018-02-17 01:06:34
Local clock offset: -1.955 ms
Remote clock offset: -21.835 ms


# Below is generated by plot.py at 2018-02-17 02:42:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 119.351 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 0.56 Mbit/s
95th percentile per-packet one-way delay: 119.351 ms
Loss rate: 1.01%
```
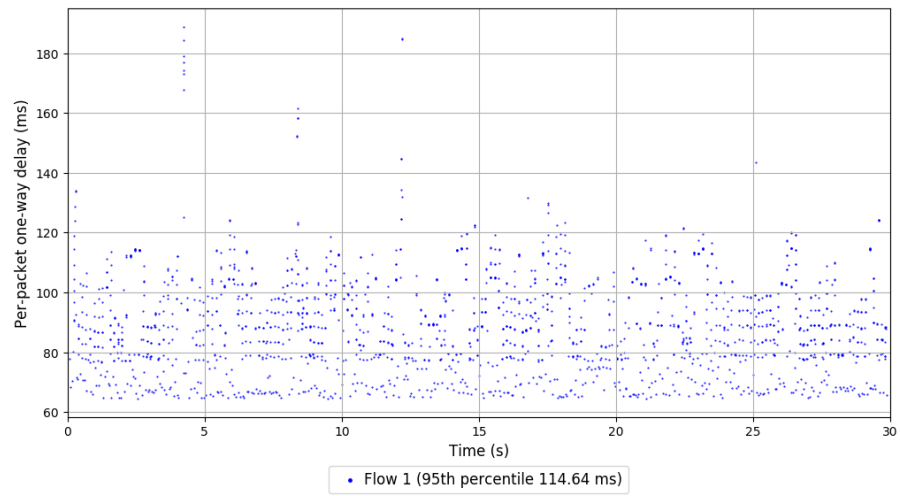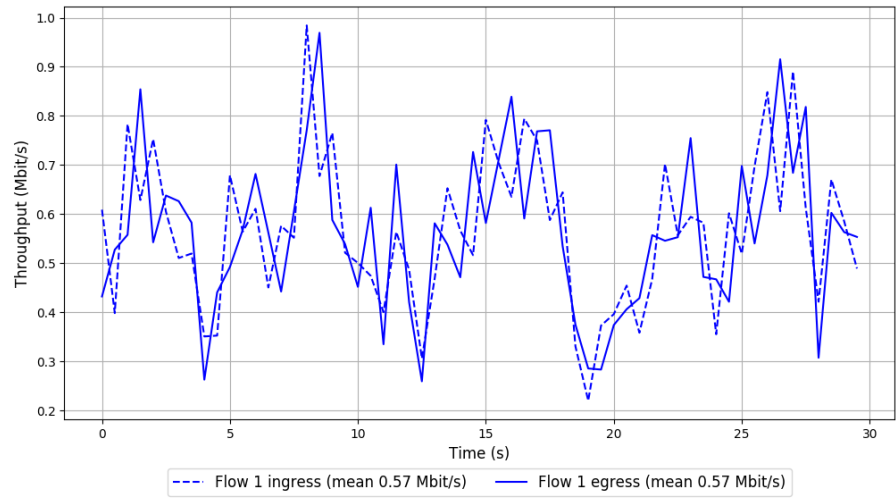
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-02-17 01:25:44
End at: 2018-02-17 01:26:14
Local clock offset: -10.875 ms
Remote clock offset: -21.258 ms


# Below is generated by plot.py at 2018-02-17 02:42:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 114.636 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 0.57 Mbit/s
95th percentile per-packet one-way delay: 114.636 ms
Loss rate: 0.60%
```
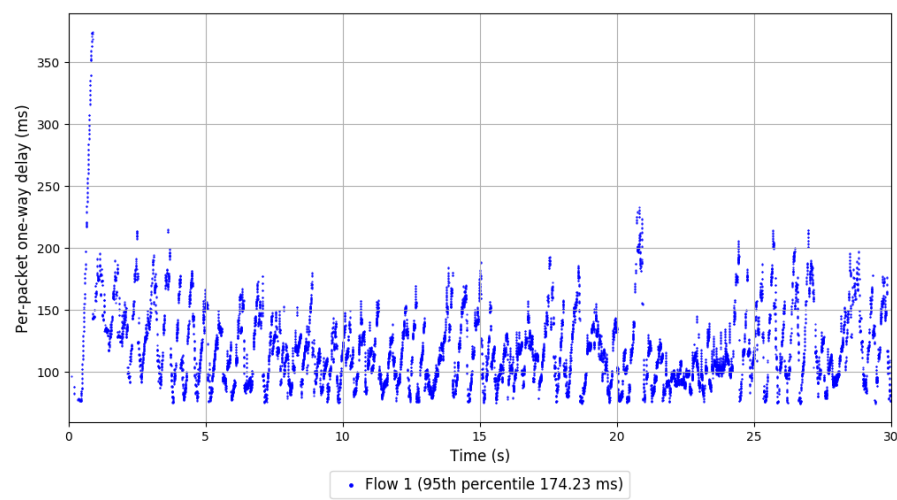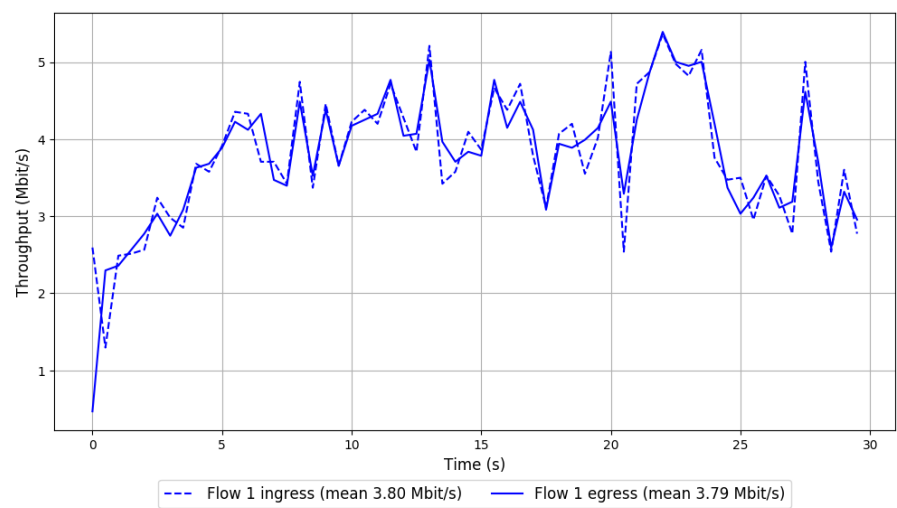
Run 3: Report of Sprout — Data Link

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

Start at: 2018-02-17 00:59:30
End at: 2018-02-17 01:00:00
Local clock offset: -0.347 ms
Remote clock offset: -20.318 ms


# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 174.230 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 3.79 Mbit/s
95th percentile per-packet one-way delay: 174.230 ms
Loss rate: 0.53%
```
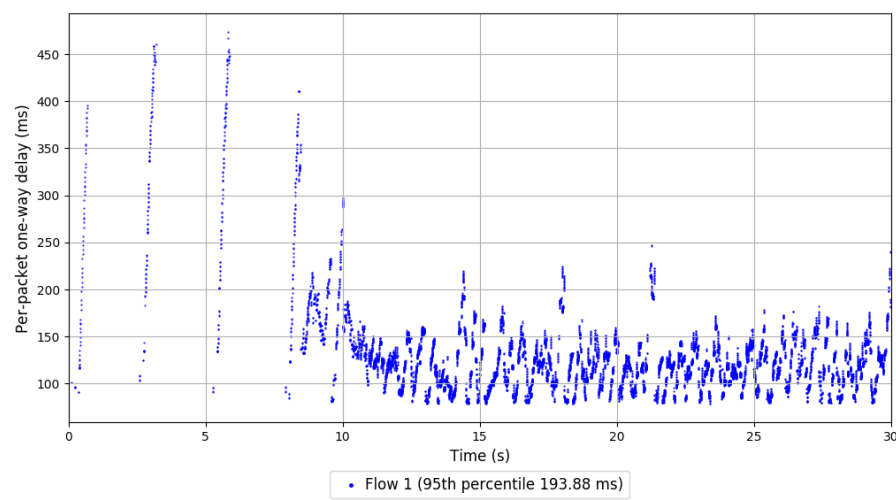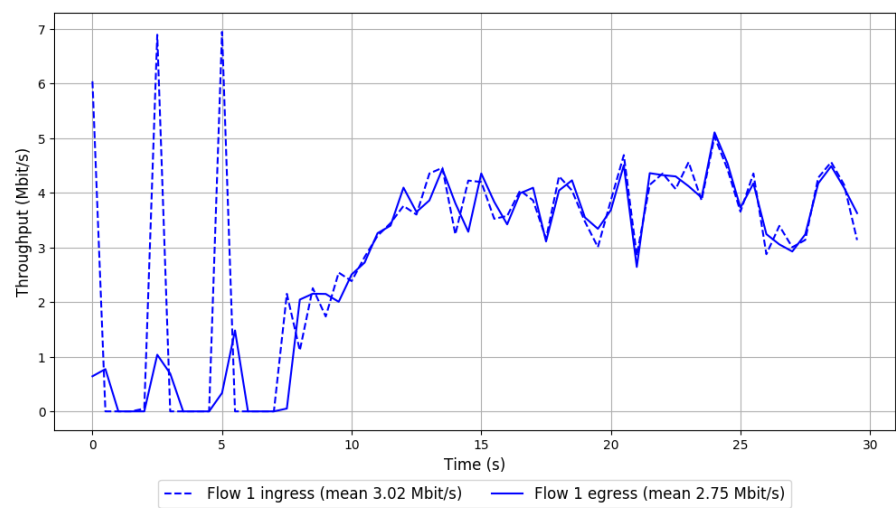
Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-02-17 01:19:12
End at: 2018-02-17 01:19:42
Local clock offset: -7.136 ms
Remote clock offset: -24.396 ms


# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.75 Mbit/s
95th percentile per-packet one-way delay: 193.876 ms
Loss rate: 8.97%
-- Flow 1:
Average throughput: 2.75 Mbit/s
95th percentile per-packet one-way delay: 193.876 ms
Loss rate: 8.97%
```
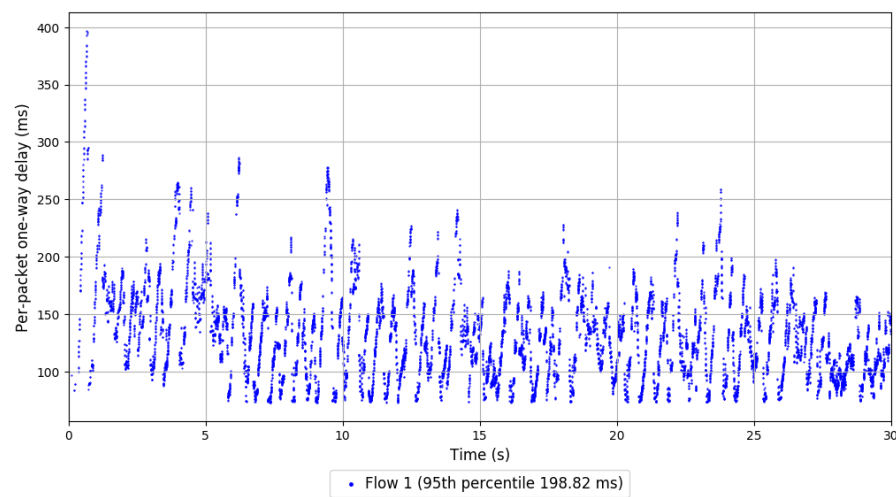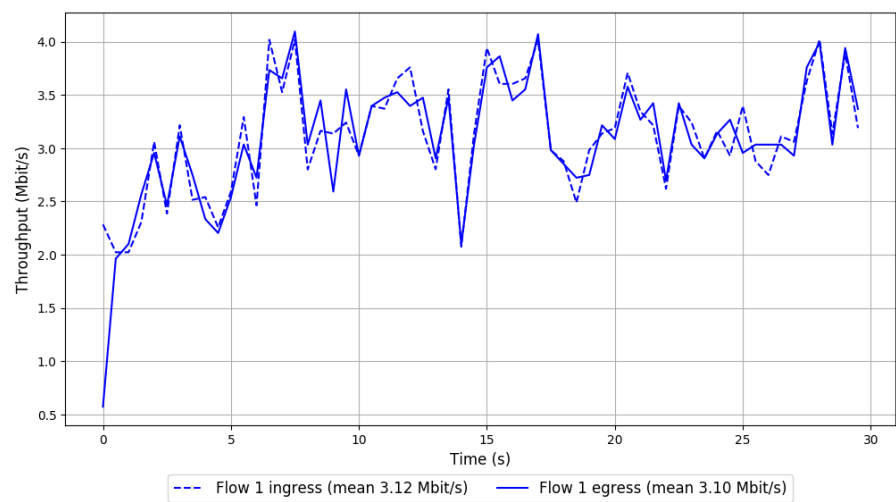
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-02-17 01:38:54
End at: 2018-02-17 01:39:24
Local clock offset: -12.188 ms
Remote clock offset: -7.977 ms


# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 198.818 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 3.10 Mbit/s
95th percentile per-packet one-way delay: 198.818 ms
Loss rate: 0.81%
```

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

Flow 1 ingress (mean 3.12 Mbit/s)   Flow 1 egress (mean 3.10 Mbit/s)

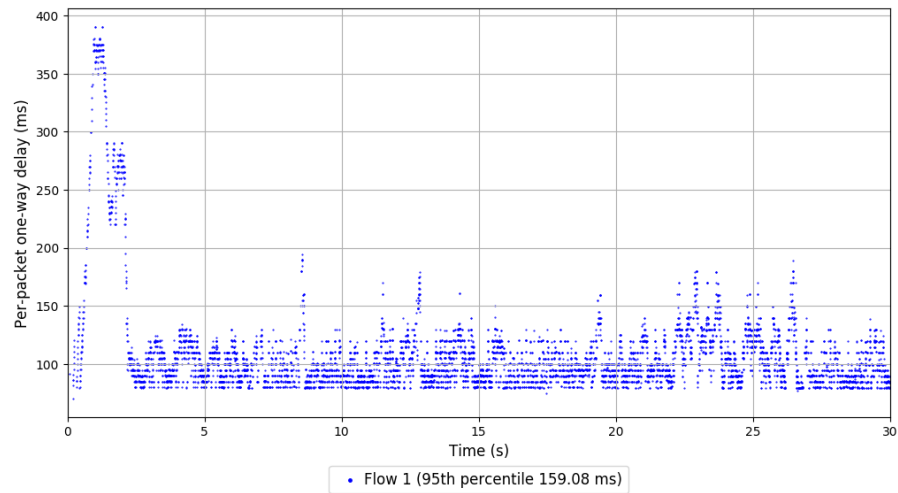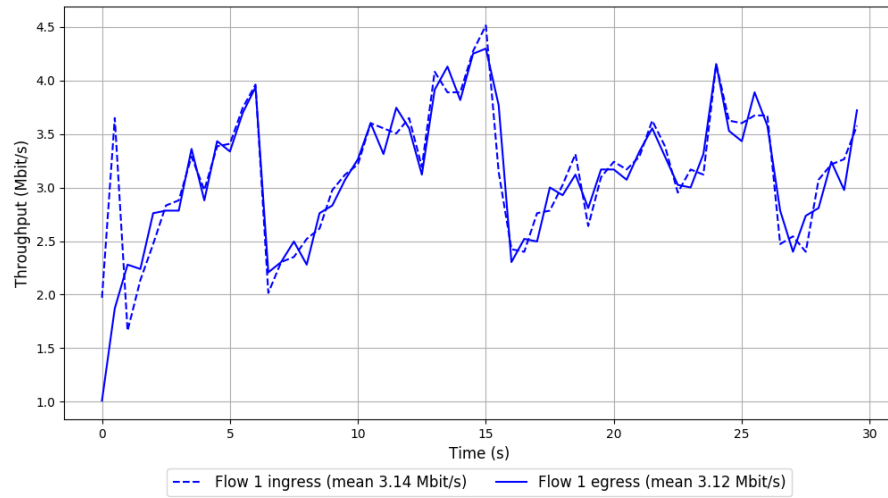
Flow 1 (95th percentile 198.82 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-02-17 00:52:54
End at: 2018-02-17 00:53:24
Local clock offset: 0.047 ms
Remote clock offset: -19.82 ms


# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.12 Mbit/s
95th percentile per-packet one-way delay: 159.078 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 3.12 Mbit/s
95th percentile per-packet one-way delay: 159.078 ms
Loss rate: 1.06%
```
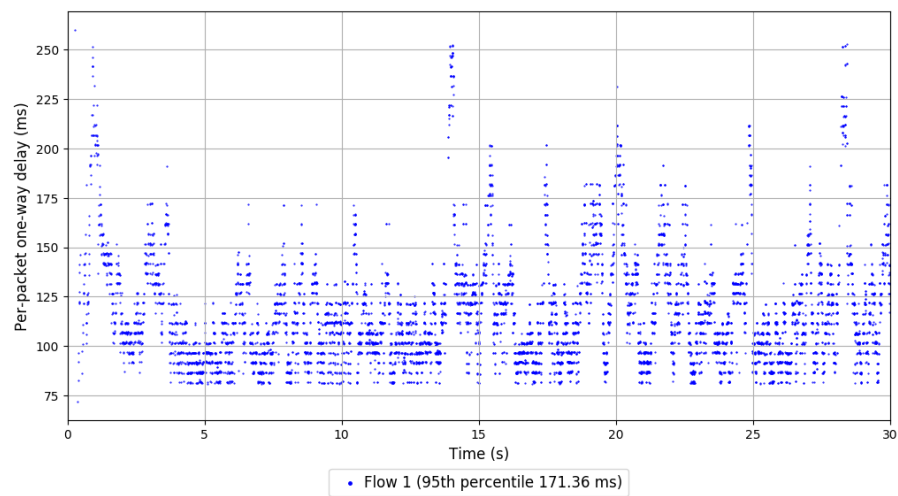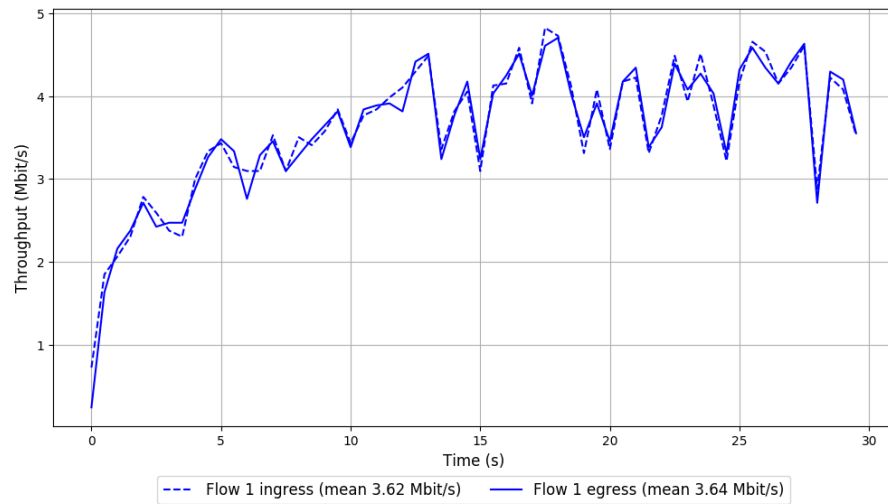
Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-02-17 01:12:38
End at: 2018-02-17 01:13:08
Local clock offset: -4.065 ms
Remote clock offset: -22.857 ms


# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 171.361 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 3.64 Mbit/s
95th percentile per-packet one-way delay: 171.361 ms
Loss rate: 0.41%
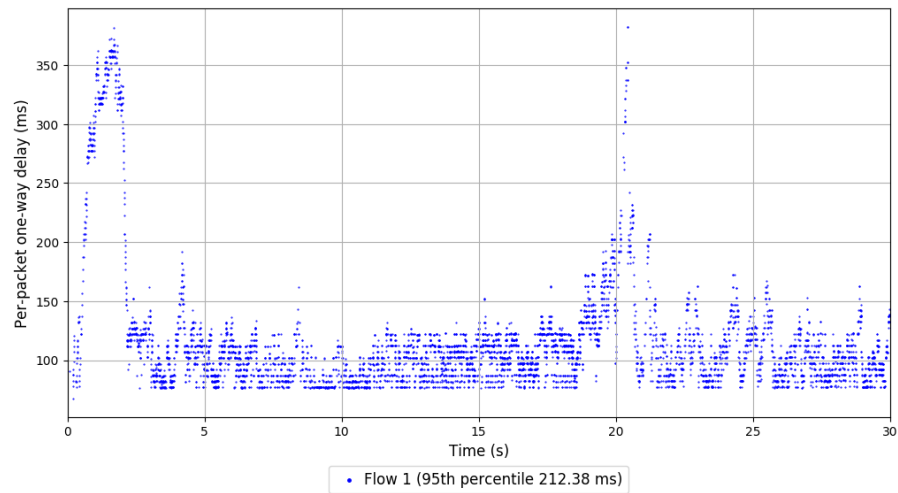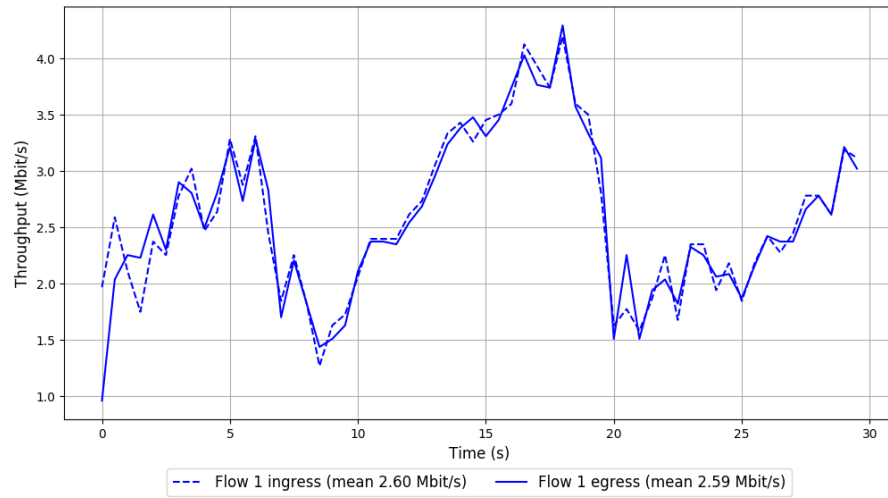```

Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-02-17 01:32:17
End at: 2018-02-17 01:32:47
Local clock offset: -11.182 ms
Remote clock offset: -12.519 ms


# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 212.378 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 212.378 ms
Loss rate: 0.58%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 2.60 Mbit/s)   Flow 1 egress (mean 2.59 Mbit/s)
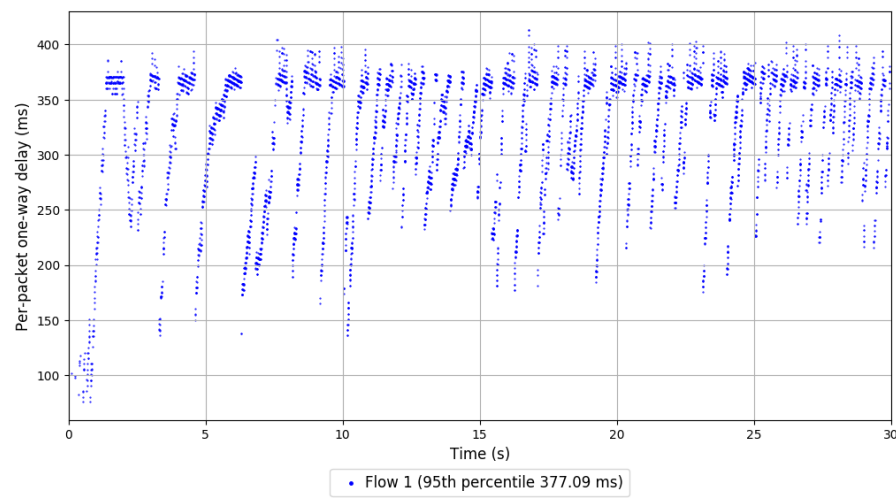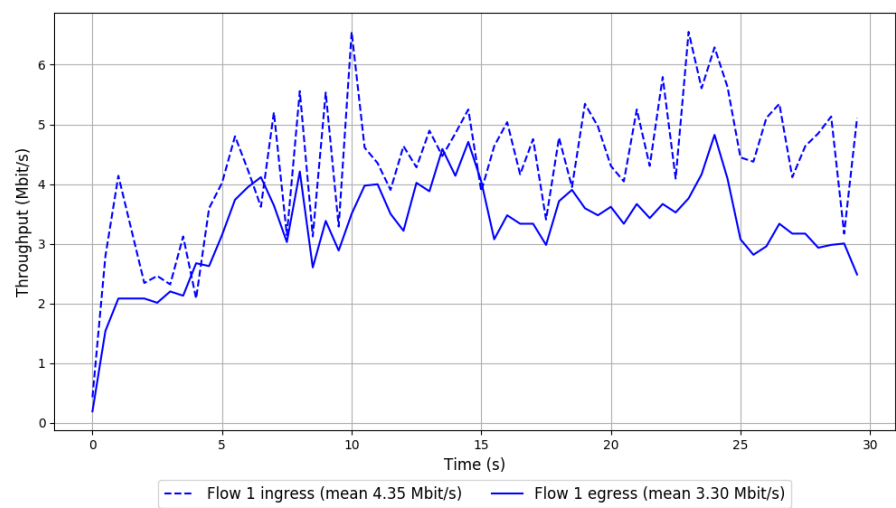

Flow 1 (95th percentile 212.38 ms)

```
Run 1: Statistics of Verus

Start at: 2018-02-17 00:48:30
End at: 2018-02-17 00:49:00
Local clock offset: -0.44 ms
Remote clock offset: -18.353 ms


# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.30 Mbit/s
95th percentile per-packet one-way delay: 377.094 ms
Loss rate: 24.30%
-- Flow 1:
Average throughput: 3.30 Mbit/s
95th percentile per-packet one-way delay: 377.094 ms
Loss rate: 24.30%
```
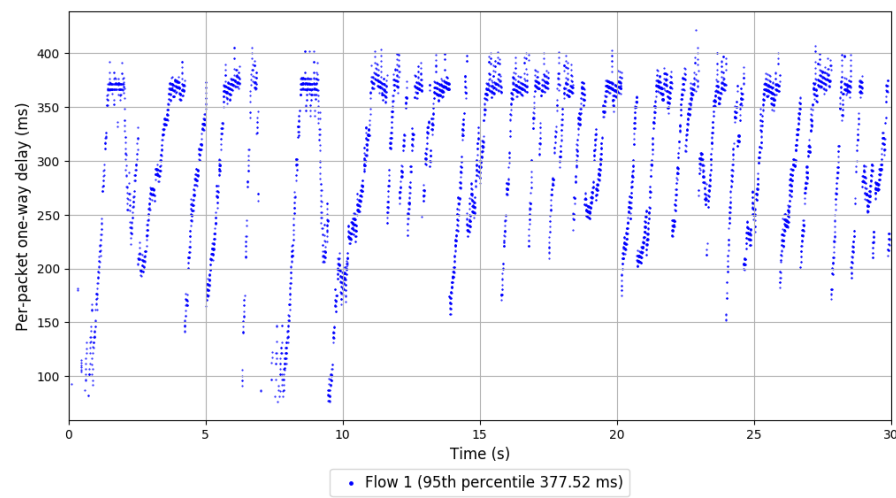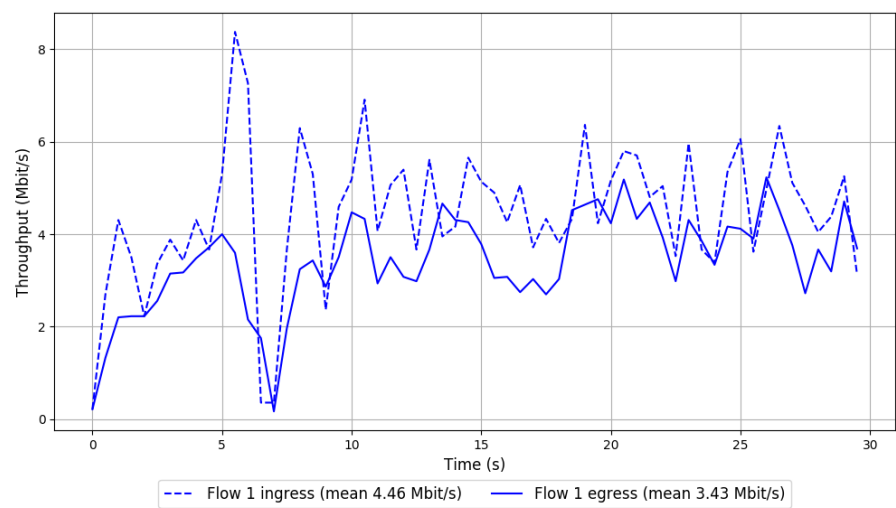
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-02-17 01:08:16
End at: 2018-02-17 01:08:46
Local clock offset: -4.541 ms
Remote clock offset: -23.969 ms

# Below is generated by plot.py at 2018-02-17 02:42:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.43 Mbit/s
95th percentile per-packet one-way delay: 377.516 ms
Loss rate: 23.28%
-- Flow 1:
Average throughput: 3.43 Mbit/s
95th percentile per-packet one-way delay: 377.516 ms
Loss rate: 23.28%
```
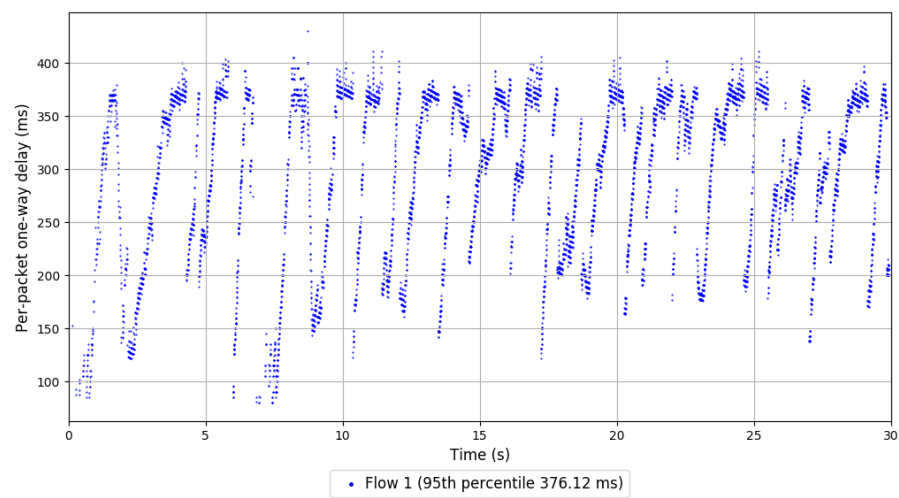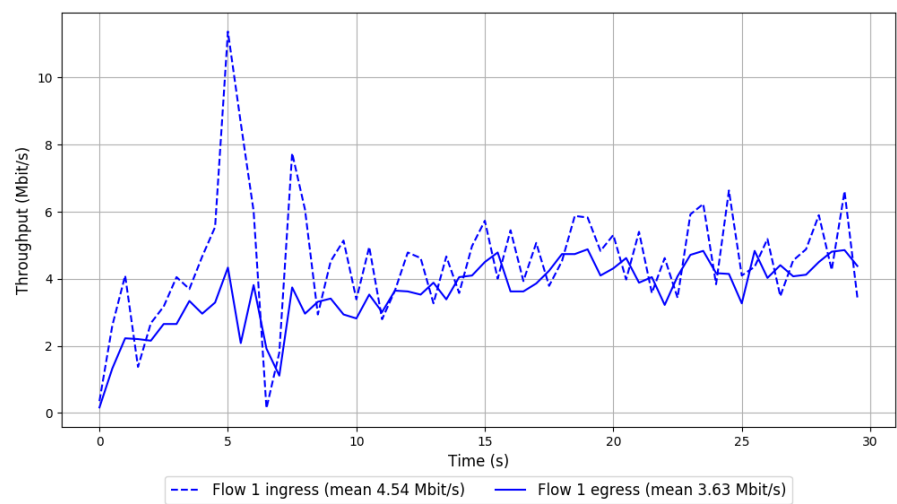
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-02-17 01:27:55
End at: 2018-02-17 01:28:25
Local clock offset: -9.066 ms
Remote clock offset: -17.49 ms


# Below is generated by plot.py at 2018-02-17 02:42:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.63 Mbit/s
95th percentile per-packet one-way delay: 376.119 ms
Loss rate: 20.38%
-- Flow 1:
Average throughput: 3.63 Mbit/s
95th percentile per-packet one-way delay: 376.119 ms
Loss rate: 20.38%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 4.54 Mbit/s)   Flow 1 egress (mean 3.63 Mbit/s)

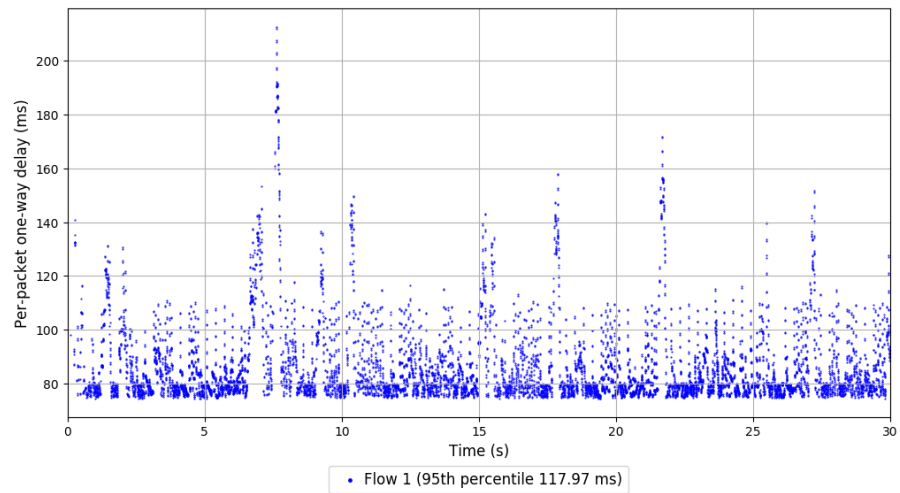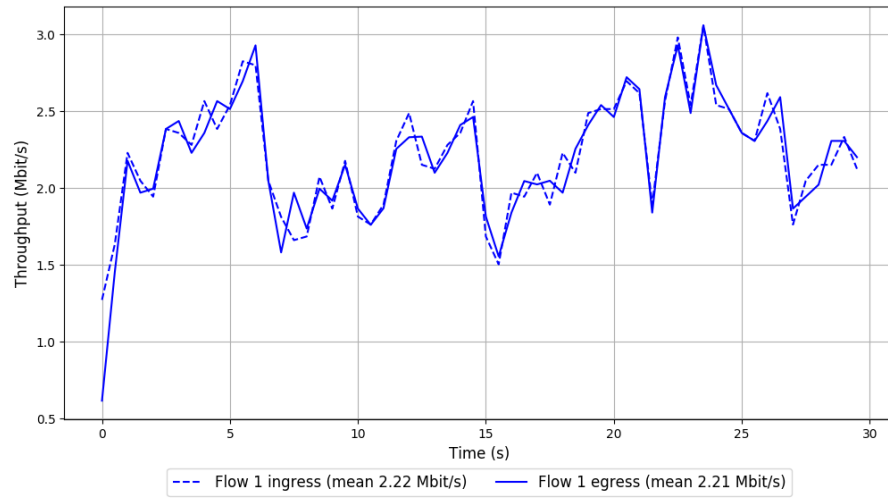Flow 1 (95th percentile 376.12 ms)

```
Run 1: Statistics of Copa

Start at: 2018-02-17 01:02:47
End at: 2018-02-17 01:03:17
Local clock offset: 0.449 ms
Remote clock offset: -20.464 ms


# Below is generated by plot.py at 2018-02-17 02:42:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 117.965 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 117.965 ms
Loss rate: 0.61%
```

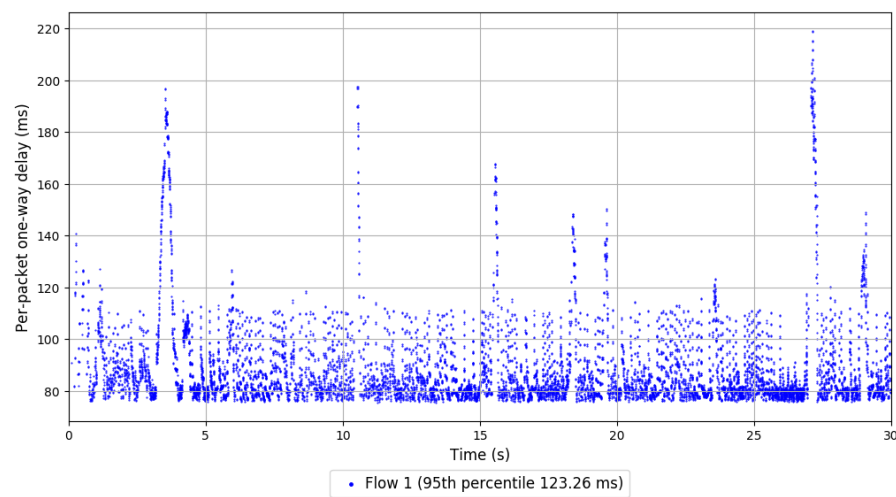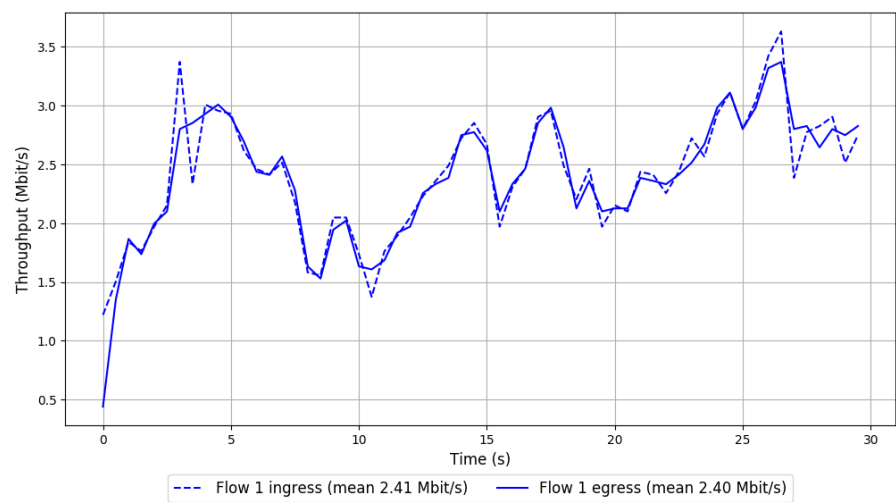Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-02-17 01:22:28
End at: 2018-02-17 01:22:58
Local clock offset: -8.605 ms
Remote clock offset: -23.579 ms


# Below is generated by plot.py at 2018-02-17 02:42:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 123.259 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 2.40 Mbit/s
95th percentile per-packet one-way delay: 123.259 ms
Loss rate: 0.67%
```
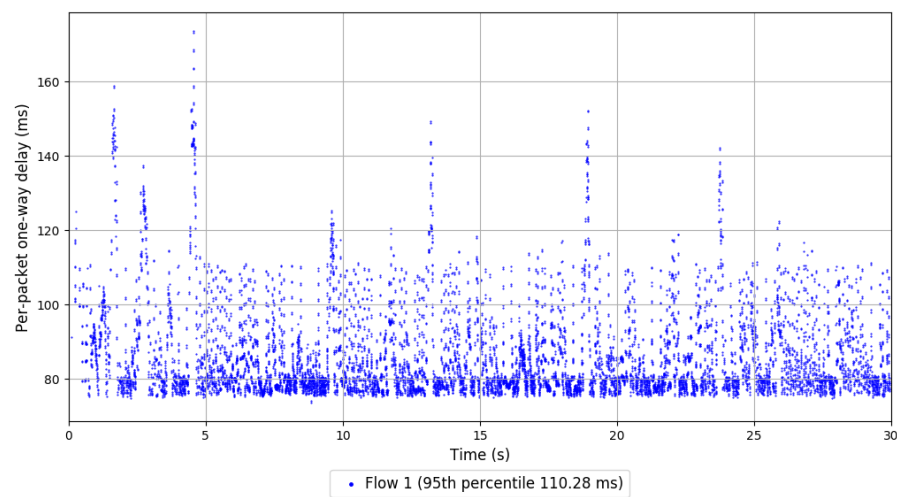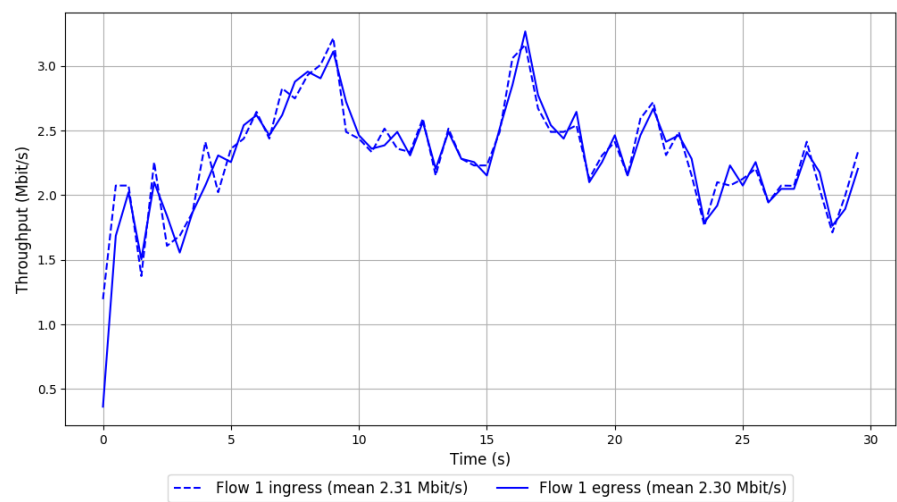
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-02-17 01:42:11
End at: 2018-02-17 01:42:41
Local clock offset: -8.613 ms
Remote clock offset: -6.592 ms


# Below is generated by plot.py at 2018-02-17 02:42:39
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.30 Mbit/s
95th percentile per-packet one-way delay: 110.277 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 2.30 Mbit/s
95th percentile per-packet one-way delay: 110.277 ms
Loss rate: 0.97%
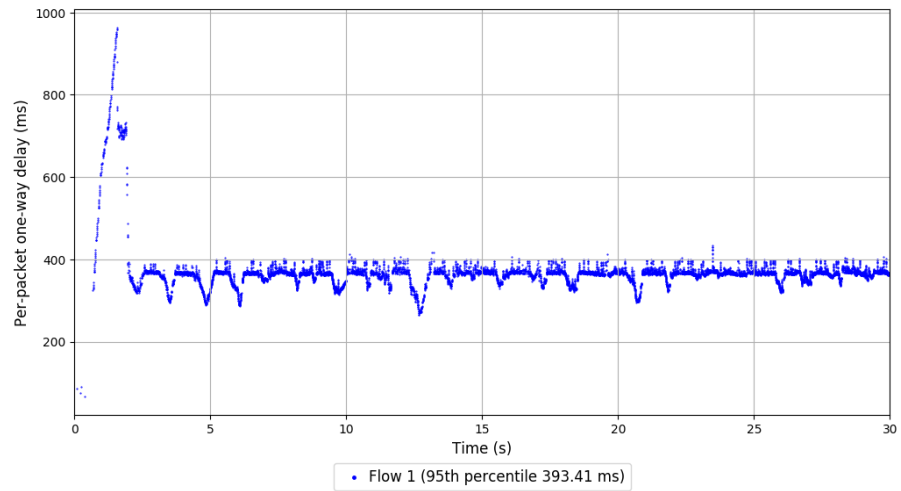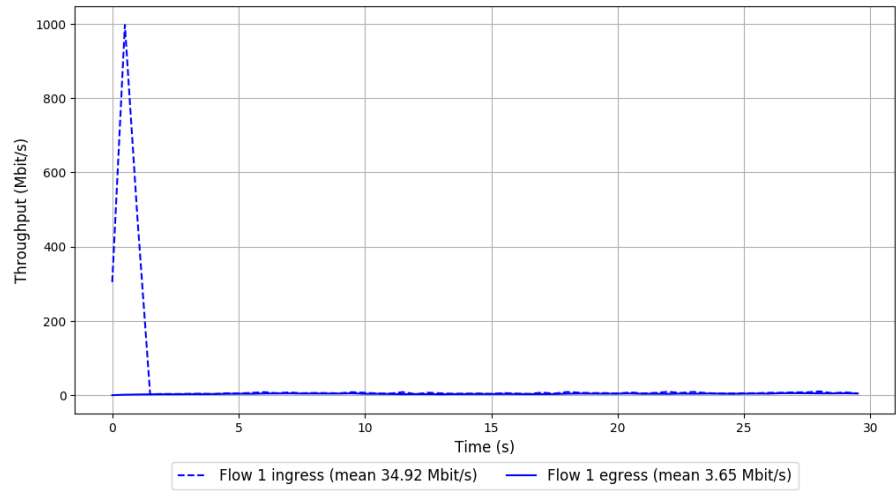```

Run 3: Report of Copa — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-02-17 00:55:07
End at: 2018-02-17 00:55:37
Local clock offset: -1.625 ms
Remote clock offset: -22.405 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.65 Mbit/s
95th percentile per-packet one-way delay: 393.407 ms
Loss rate: 89.58%
-- Flow 1:
Average throughput: 3.65 Mbit/s
95th percentile per-packet one-way delay: 393.407 ms
Loss rate: 89.58%
```

Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 34.92 Mbit/s) ----   Flow 1 egress (mean 3.65 Mbit/s) ——
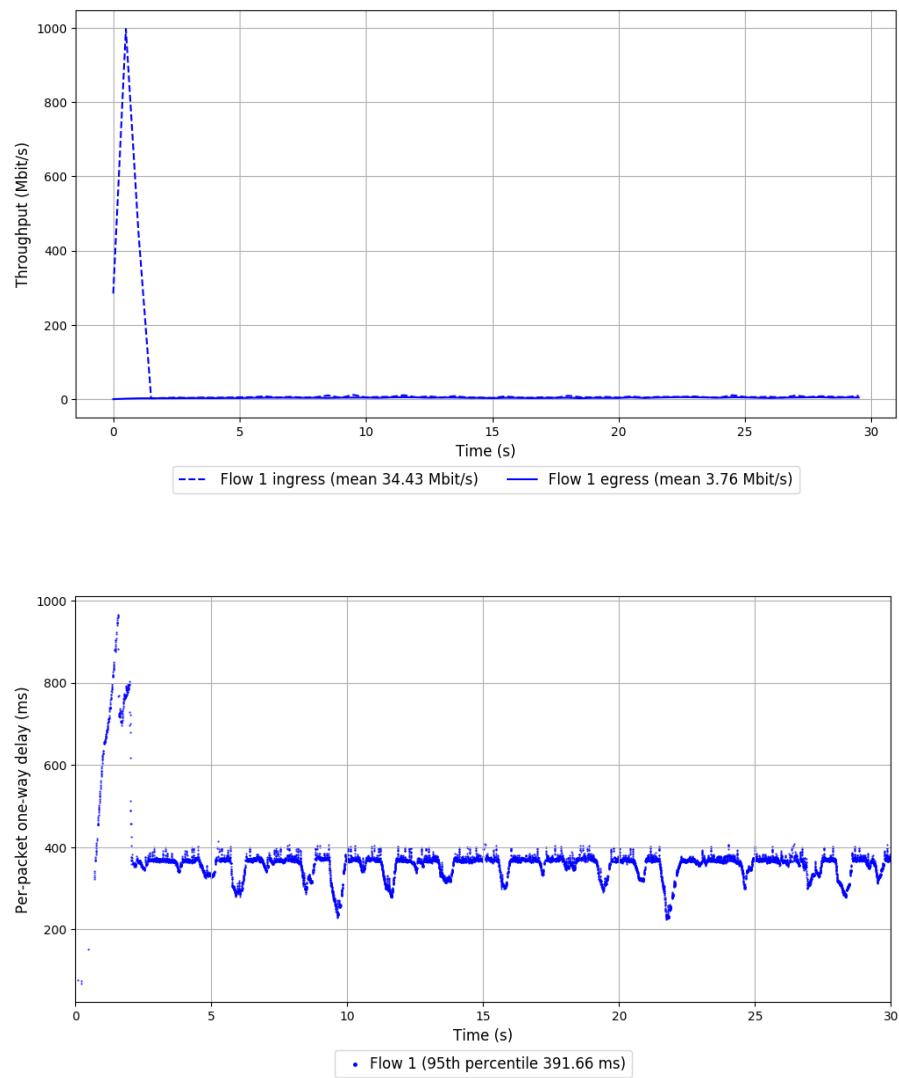

Flow 1 (95th percentile 393.41 ms)

```
Run 2: Statistics of FillP

Start at: 2018-02-17 01:14:48
End at: 2018-02-17 01:15:18
Local clock offset: -6.135 ms
Remote clock offset: -22.18 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.76 Mbit/s
95th percentile per-packet one-way delay: 391.662 ms
Loss rate: 89.12%
-- Flow 1:
Average throughput: 3.76 Mbit/s
95th percentile per-packet one-way delay: 391.662 ms
Loss rate: 89.12%
```
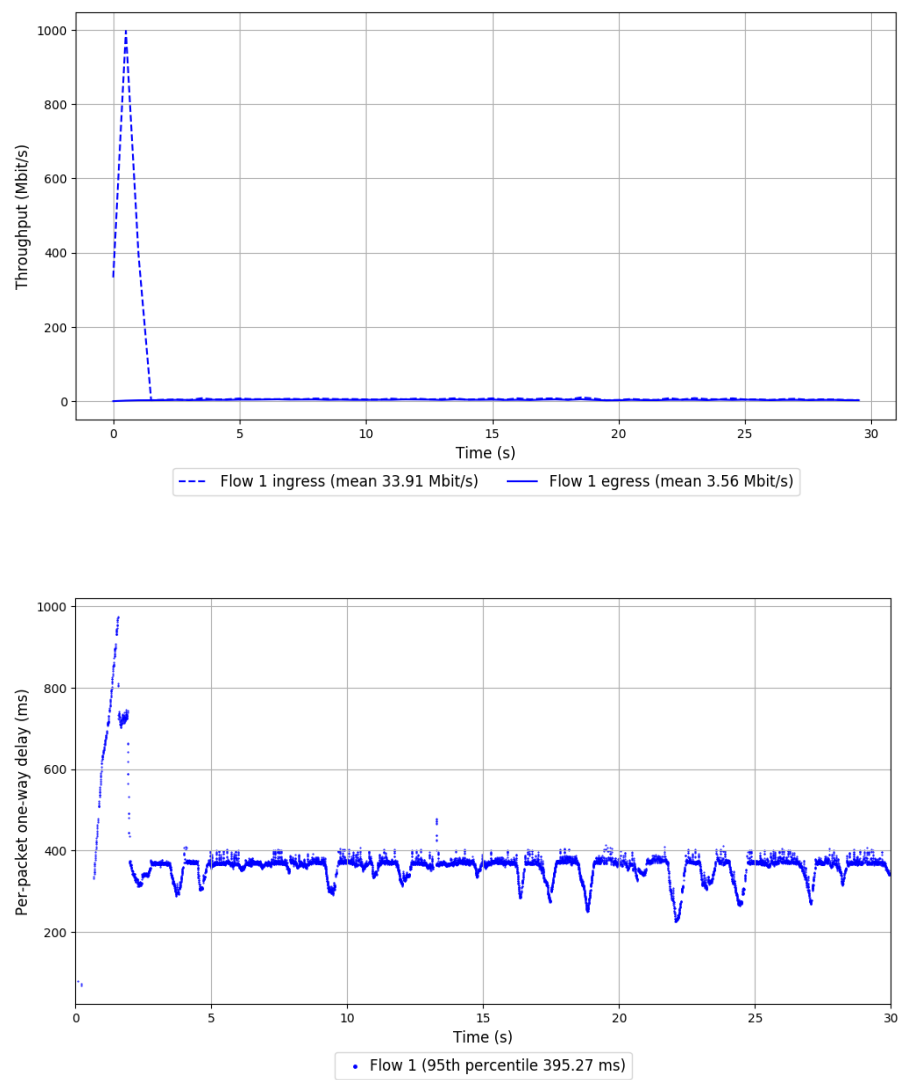
Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-02-17 01:34:29
End at: 2018-02-17 01:34:59
Local clock offset: -10.164 ms
Remote clock offset: -12.48 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.56 Mbit/s
95th percentile per-packet one-way delay: 395.270 ms
Loss rate: 89.53%
-- Flow 1:
Average throughput: 3.56 Mbit/s
95th percentile per-packet one-way delay: 395.270 ms
Loss rate: 89.53%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 33.91 Mbit/s)   Flow 1 egress (mean 3.56 Mbit/s)

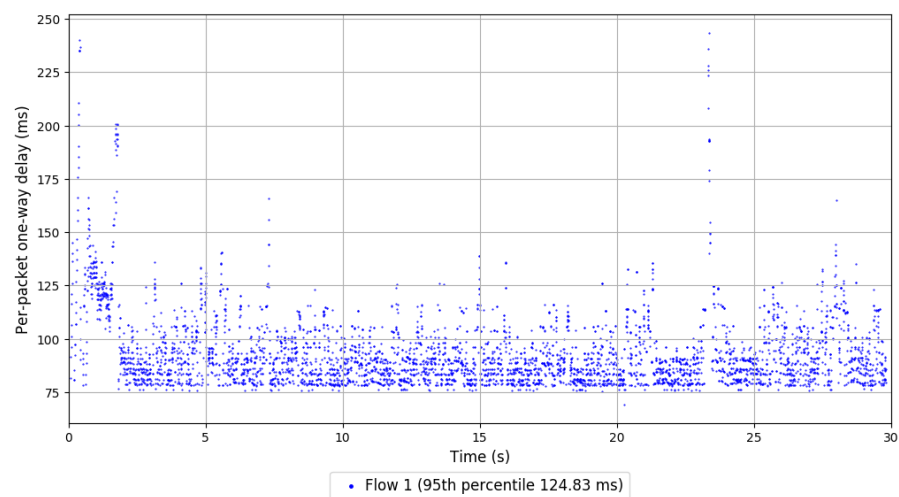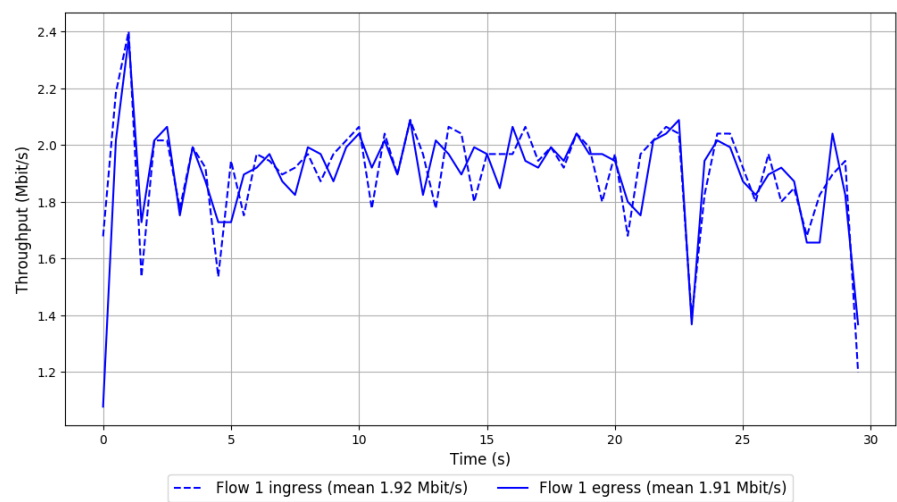Flow 1 (95th percentile 395.27 ms)

```
Run 1: Statistics of Indigo-1-32

Start at: 2018-02-17 00:49:36
End at: 2018-02-17 00:50:06
Local clock offset: 0.008 ms
Remote clock offset: -19.741 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 124.827 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 124.827 ms
Loss rate: 0.46%
```
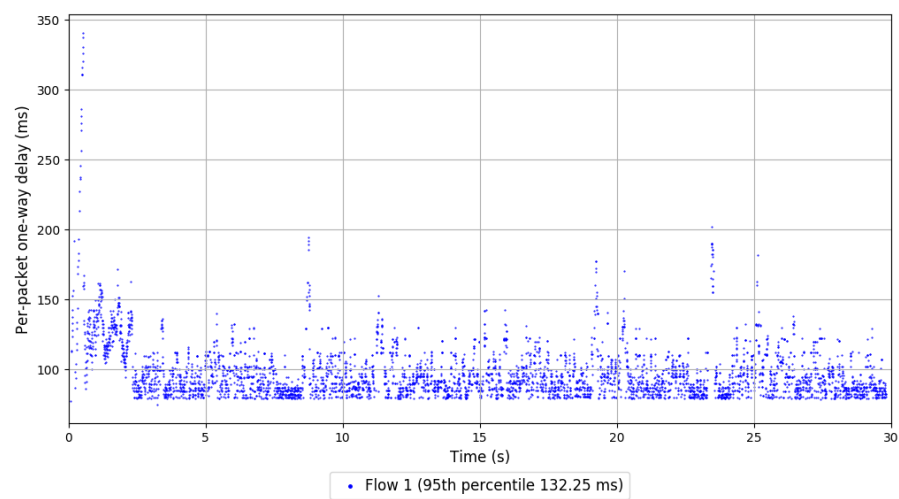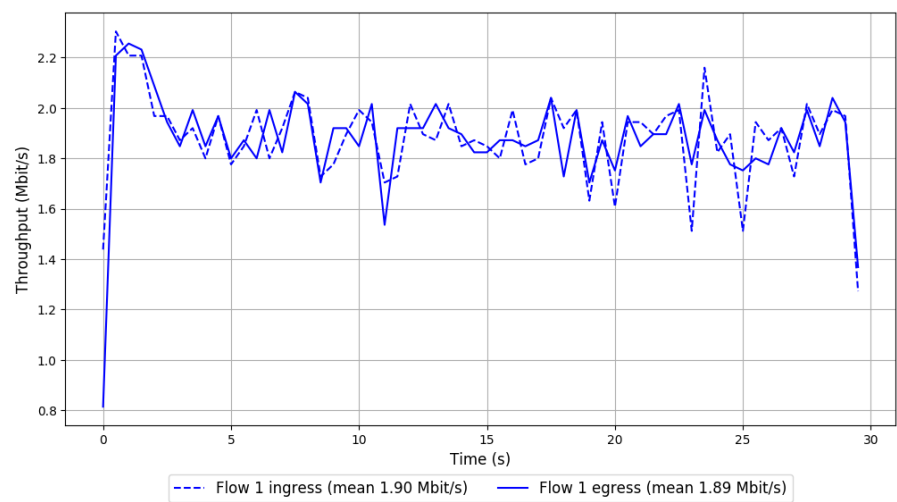
Run 1: Report of Indigo-1-32 — Data Link

```
Run 2: Statistics of Indigo-1-32

Start at: 2018-02-17 01:09:21
End at: 2018-02-17 01:09:51
Local clock offset: -4.079 ms
Remote clock offset: -24.39 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 132.248 ms
Loss rate: 0.34%
-- Flow 1:
Average throughput: 1.89 Mbit/s
95th percentile per-packet one-way delay: 132.248 ms
Loss rate: 0.34%
```
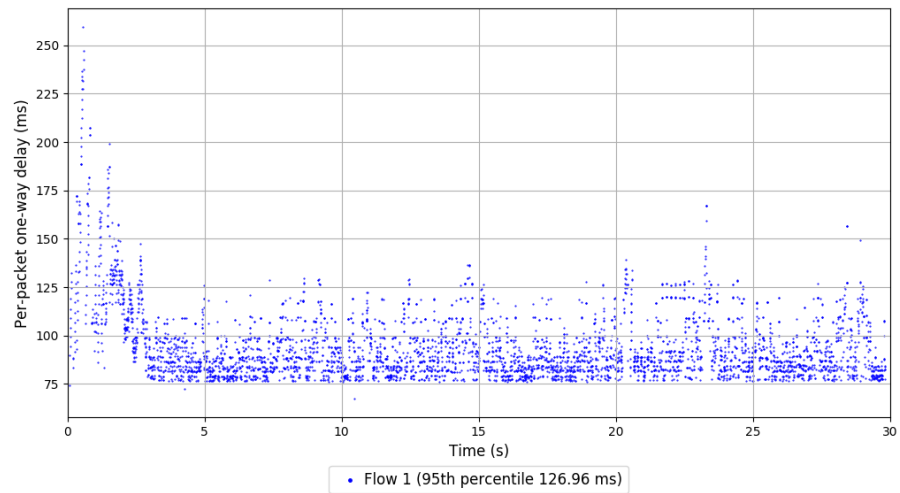
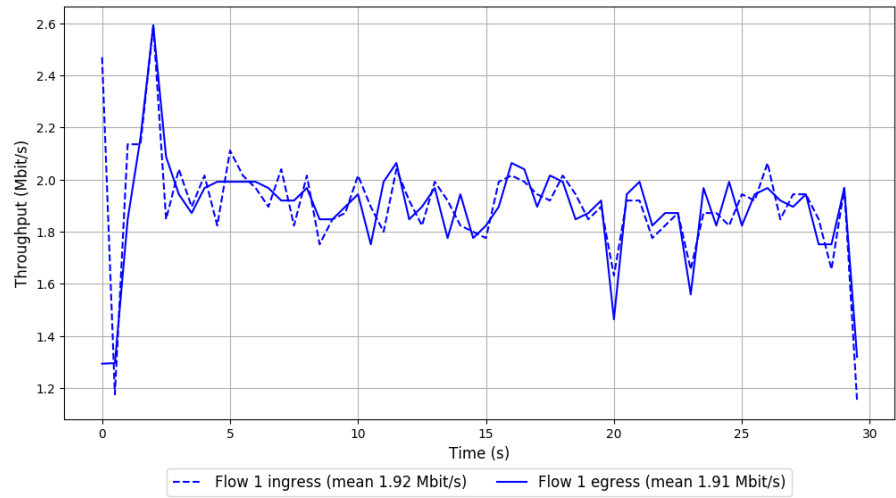Run 2: Report of Indigo-1-32 — Data Link

```
Run 3: Statistics of Indigo-1-32

Start at: 2018-02-17 01:29:00
End at: 2018-02-17 01:29:30
Local clock offset: -9.539 ms
Remote clock offset: -16.086 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 126.956 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 126.956 ms
Loss rate: 0.86%
```
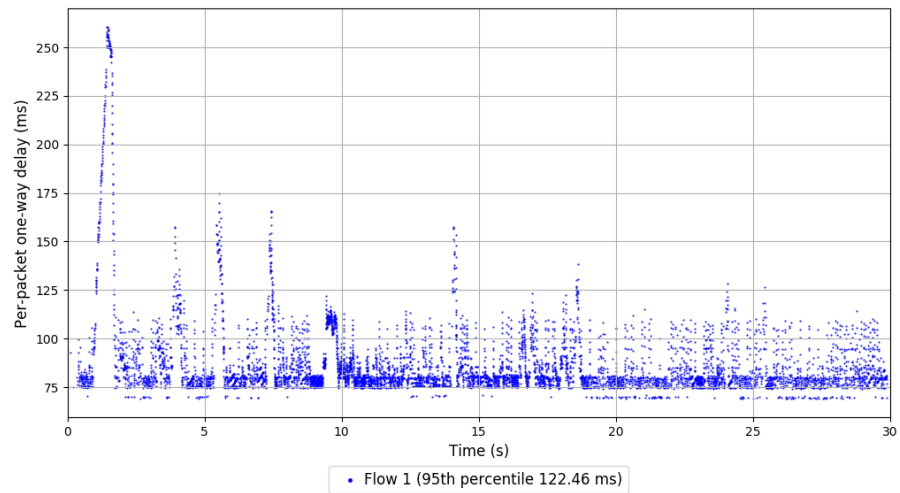
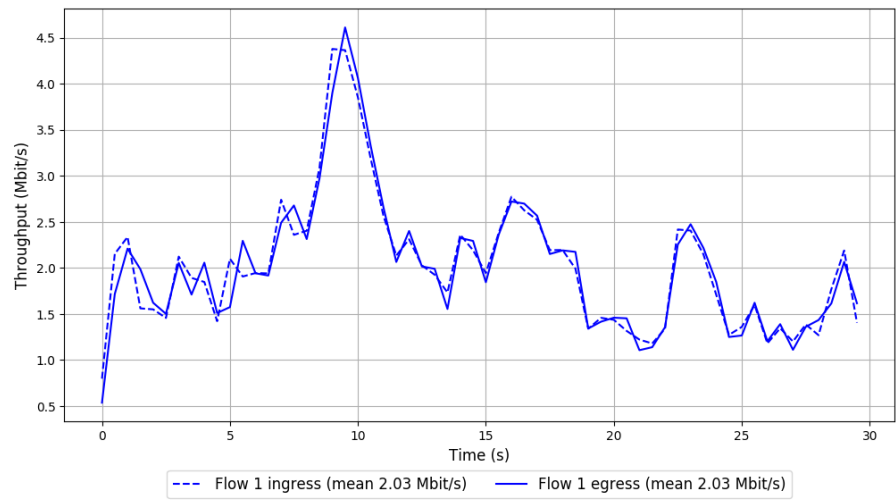Run 3: Report of Indigo-1-32 — Data Link

```
Run 1: Statistics of Vivace-latency

Start at: 2018-02-17 00:54:01
End at: 2018-02-17 00:54:31
Local clock offset: -0.055 ms
Remote clock offset: -20.64 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 122.460 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 122.460 ms
Loss rate: 0.19%
```

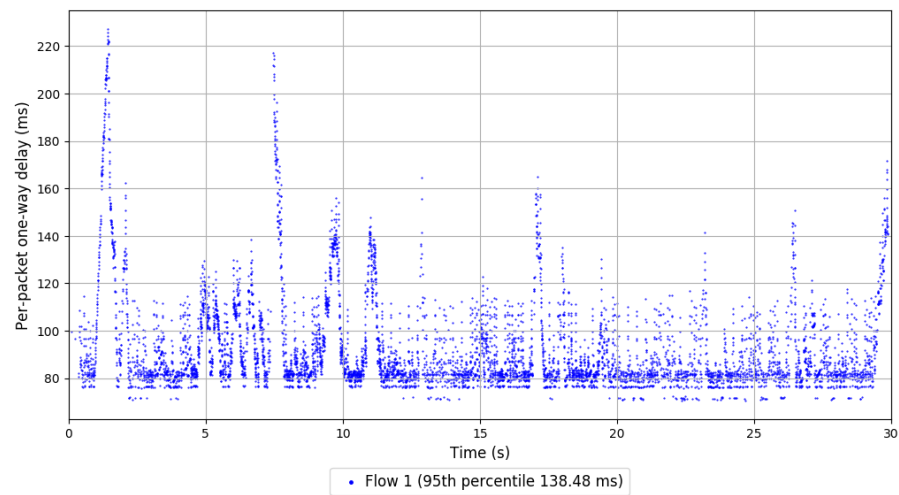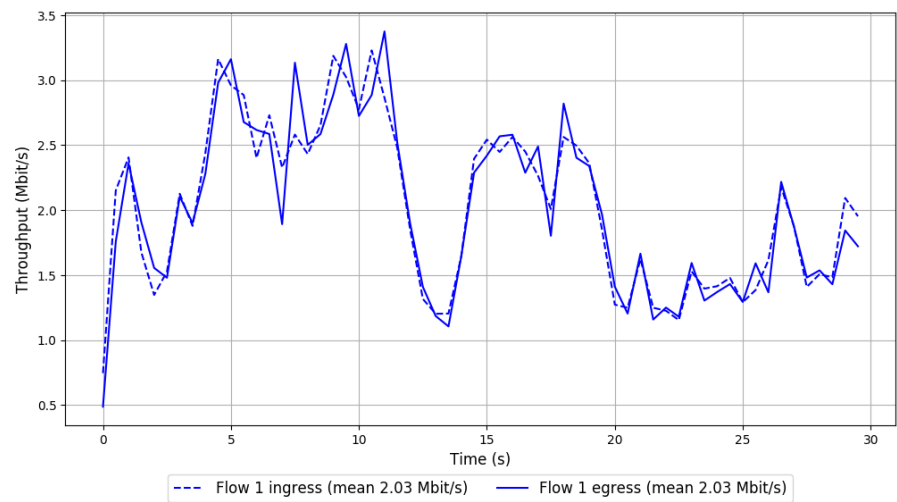Run 1: Report of Vivace-latency — Data Link

```
Run 2: Statistics of Vivace-latency

Start at: 2018-02-17 01:13:43
End at: 2018-02-17 01:14:13
Local clock offset: -4.587 ms
Remote clock offset: -23.706 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 138.484 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 2.03 Mbit/s
95th percentile per-packet one-way delay: 138.484 ms
Loss rate: 0.63%
```

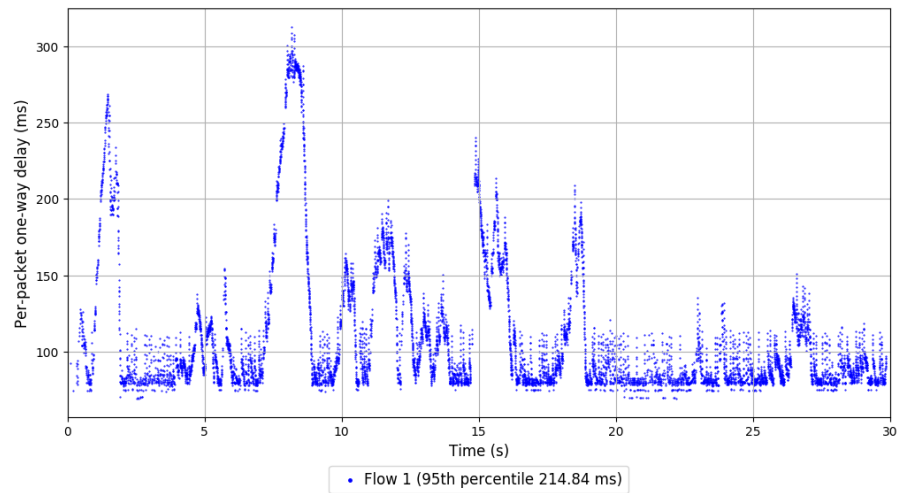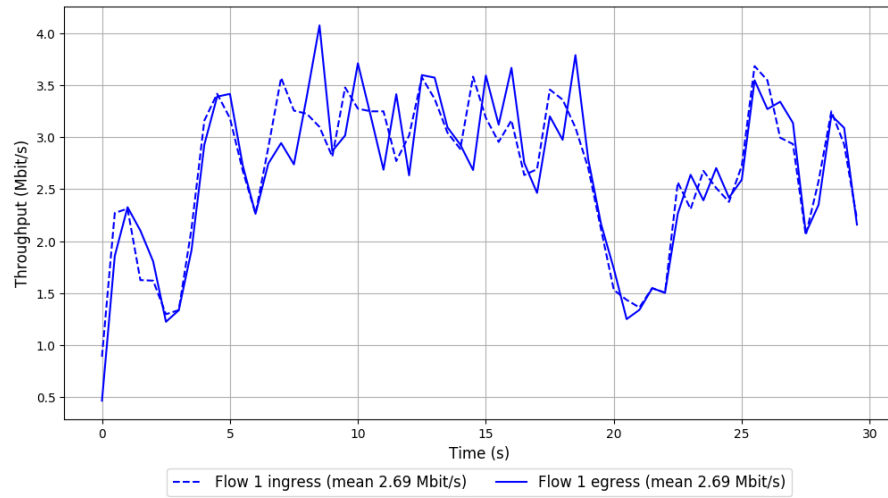Run 2: Report of Vivace-latency — Data Link

```
Run 3: Statistics of Vivace-latency

Start at: 2018-02-17 01:33:23
End at: 2018-02-17 01:33:53
Local clock offset: -9.802 ms
Remote clock offset: -13.317 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.69 Mbit/s
95th percentile per-packet one-way delay: 214.836 ms
Loss rate: 0.31%
-- Flow 1:
Average throughput: 2.69 Mbit/s
95th percentile per-packet one-way delay: 214.836 ms
Loss rate: 0.31%
```

Run 3: Report of Vivace-latency — Data Link

Flow 1 ingress (mean 2.69 Mbit/s)   Flow 1 egress (mean 2.69 Mbit/s)

Flow 1 (95th percentile 214.84 ms)

```
Run 1: Statistics of Vivace-loss

Start at: 2018-02-17 00:50:41
End at: 2018-02-17 00:51:11
Local clock offset: 0.976 ms
Remote clock offset: -20.432 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.11 Mbit/s
95th percentile per-packet one-way delay: 380.398 ms
Loss rate: 17.24%
-- Flow 1:
Average throughput: 4.11 Mbit/s
95th percentile per-packet one-way delay: 380.398 ms
Loss rate: 17.24%
```
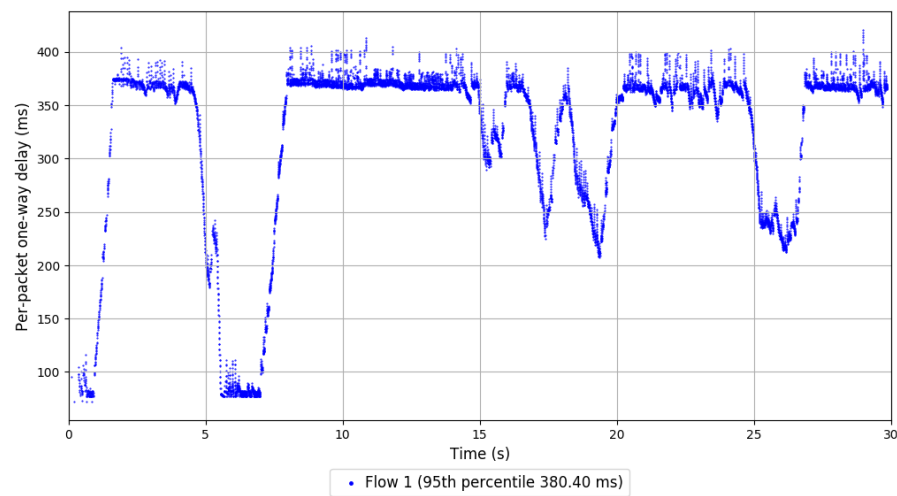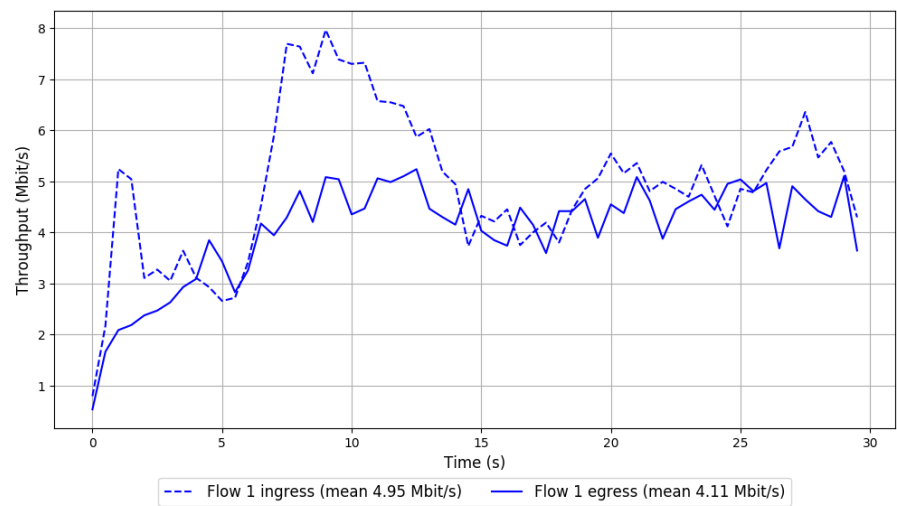
Run 1: Report of Vivace-loss — Data Link

```
Run 2: Statistics of Vivace-loss

Start at: 2018-02-17 01:10:27
End at: 2018-02-17 01:10:57
Local clock offset: -4.94 ms
Remote clock offset: -21.972 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.25 Mbit/s
95th percentile per-packet one-way delay: 379.202 ms
Loss rate: 21.08%
-- Flow 1:
Average throughput: 3.25 Mbit/s
95th percentile per-packet one-way delay: 379.202 ms
Loss rate: 21.08%
```
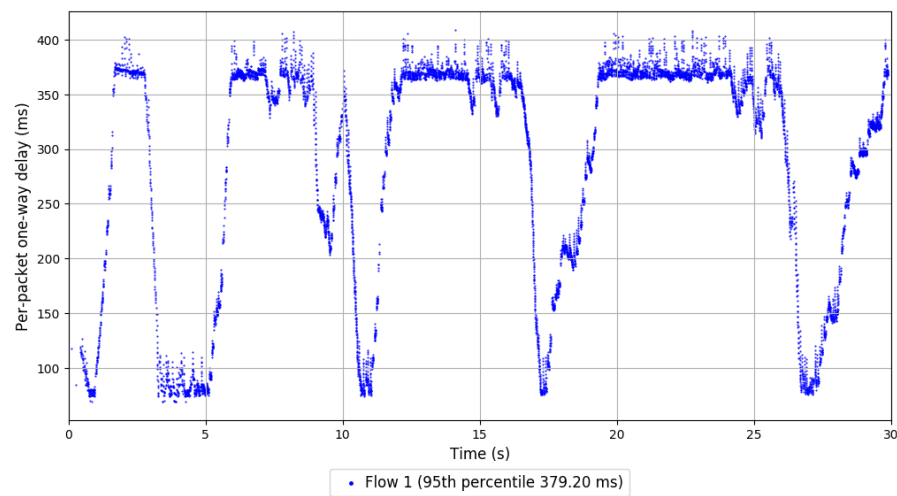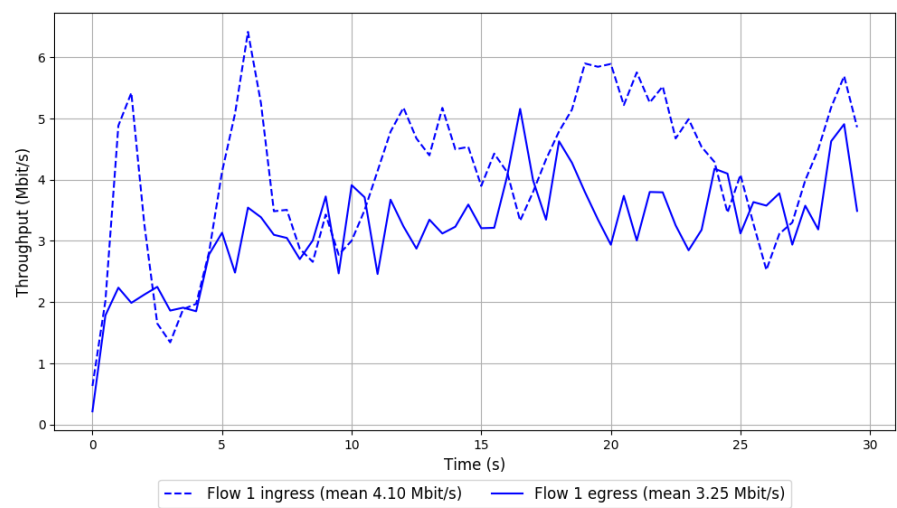
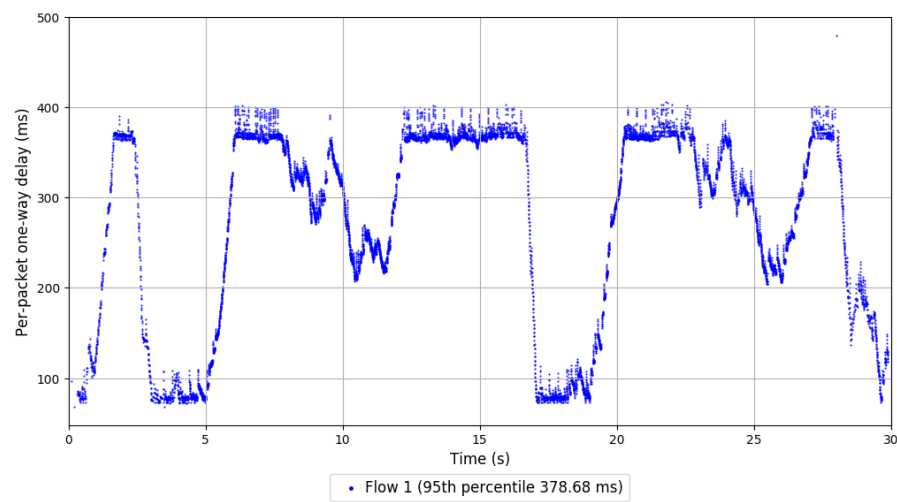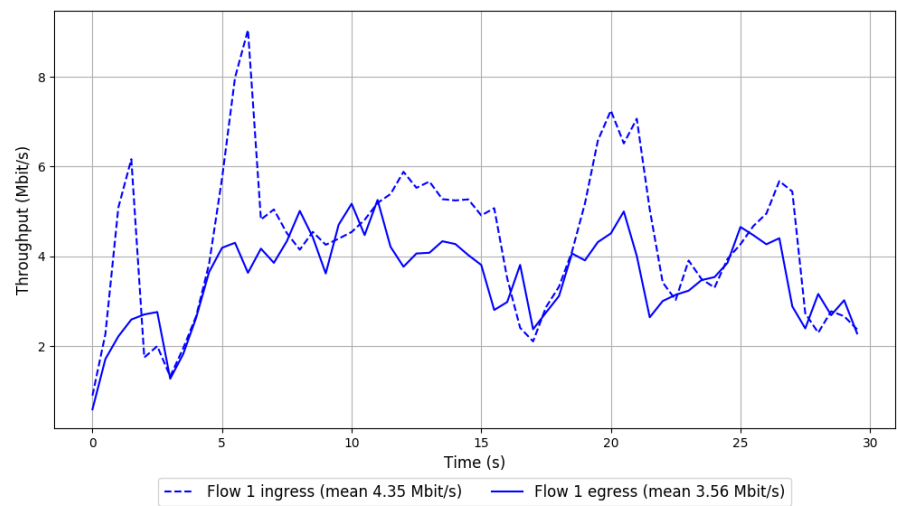Run 2: Report of Vivace-loss — Data Link

```
Run 3: Statistics of Vivace-loss

Start at: 2018-02-17 01:30:06
End at: 2018-02-17 01:30:36
Local clock offset: -13.431 ms
Remote clock offset: -17.684 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.56 Mbit/s
95th percentile per-packet one-way delay: 378.677 ms
Loss rate: 18.35%
-- Flow 1:
Average throughput: 3.56 Mbit/s
95th percentile per-packet one-way delay: 378.677 ms
Loss rate: 18.35%
```

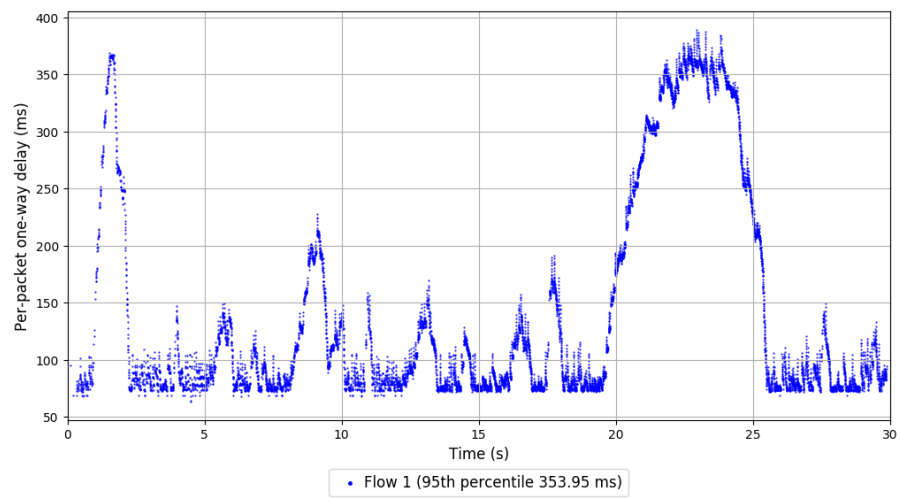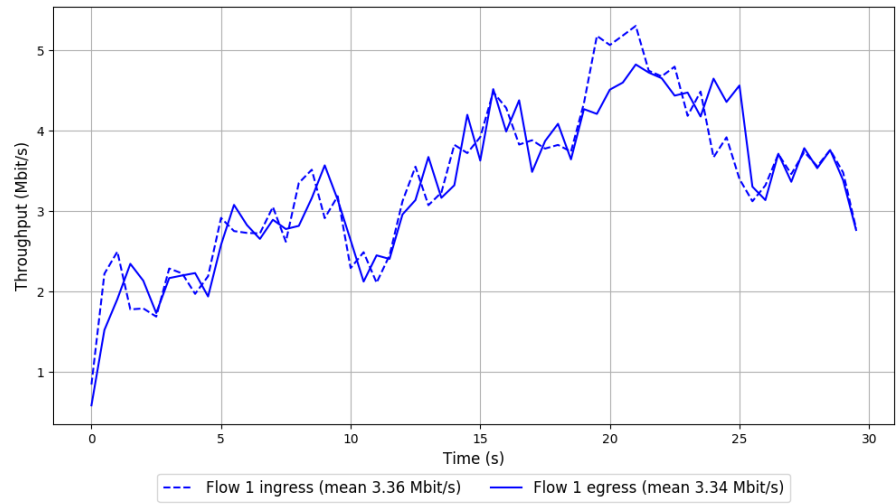Run 3: Report of Vivace-loss — Data Link

```
Run 1: Statistics of Vivace-LTE

Start at: 2018-02-17 00:47:24
End at: 2018-02-17 00:47:54
Local clock offset: -2.371 ms
Remote clock offset: -18.846 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 353.951 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 3.34 Mbit/s
95th percentile per-packet one-way delay: 353.951 ms
Loss rate: 0.80%
```

Run 1: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 3.36 Mbit/s) --- Flow 1 egress (mean 3.34 Mbit/s)

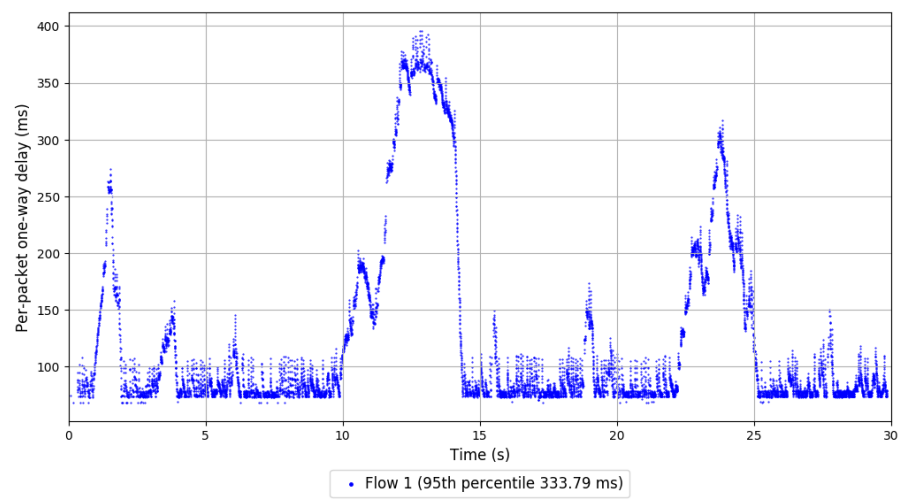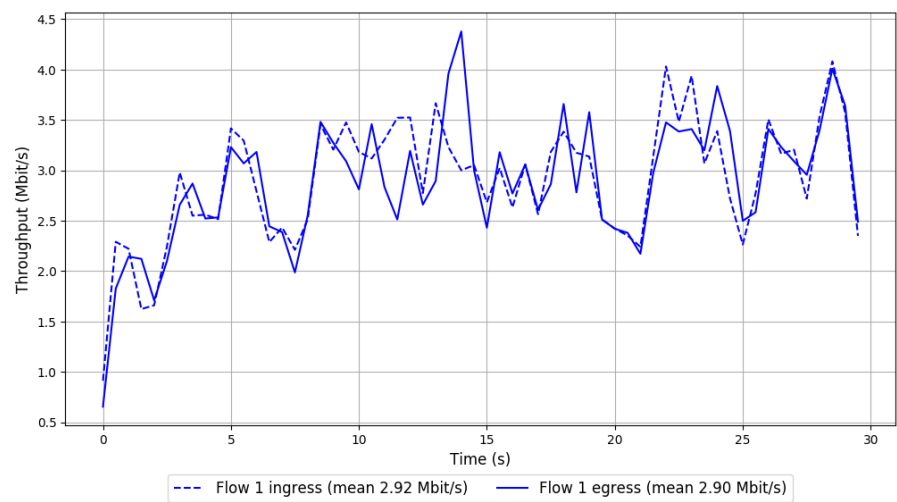
· Flow 1 (95th percentile 353.95 ms)

```
Run 2: Statistics of Vivace-LTE

Start at: 2018-02-17 01:07:09
End at: 2018-02-17 01:07:39
Local clock offset: -5.058 ms
Remote clock offset: -21.786 ms


# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 333.789 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 333.789 ms
Loss rate: 0.80%
```

Run 2: Report of Vivace-LTE — Data Link

```
Run 3: Statistics of Vivace-LTE

Start at: 2018-02-17 01:26:50
End at: 2018-02-17 01:27:20
Local clock offset: -9.964 ms
Remote clock offset: -17.811 ms

# Below is generated by plot.py at 2018-02-17 02:42:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 367.598 ms
Loss rate: 3.73%
-- Flow 1:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 367.598 ms
Loss rate: 3.73%
```

Run 3: Report of Vivace-LTE — Data Link

Flow 1 ingress (mean 3.01 Mbit/s)   Flow 1 egress (mean 2.91 Mbit/s)

Flow 1 (95th percentile 367.60 ms)