Pantheon Report

Generated at 2018-11-15 03:45:34 (UTC).

Data path: AWS India 1 on `ens5` (*local*) →India on `em1` (*remote*).

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.
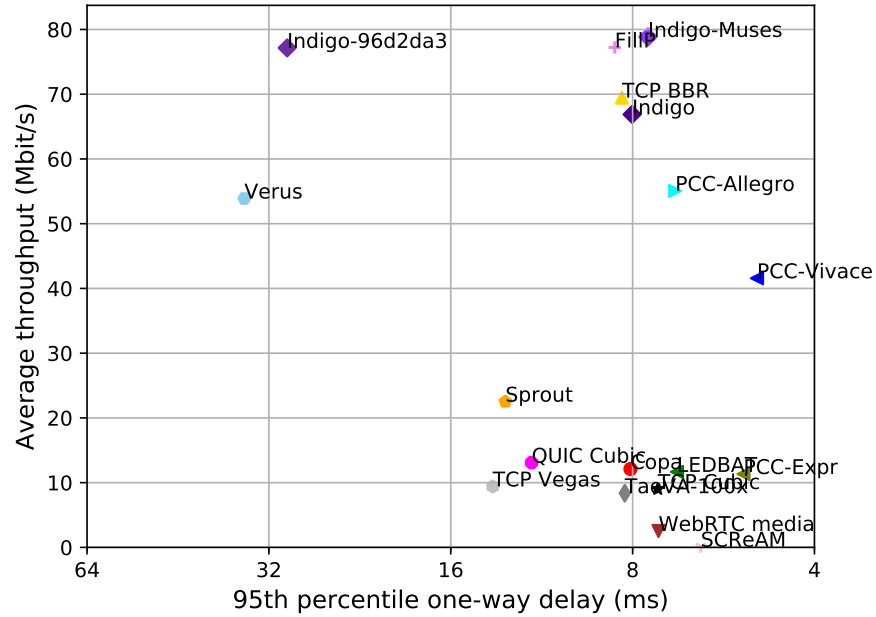
```
System info:
Linux 4.15.0-1023-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
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/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 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 @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
```
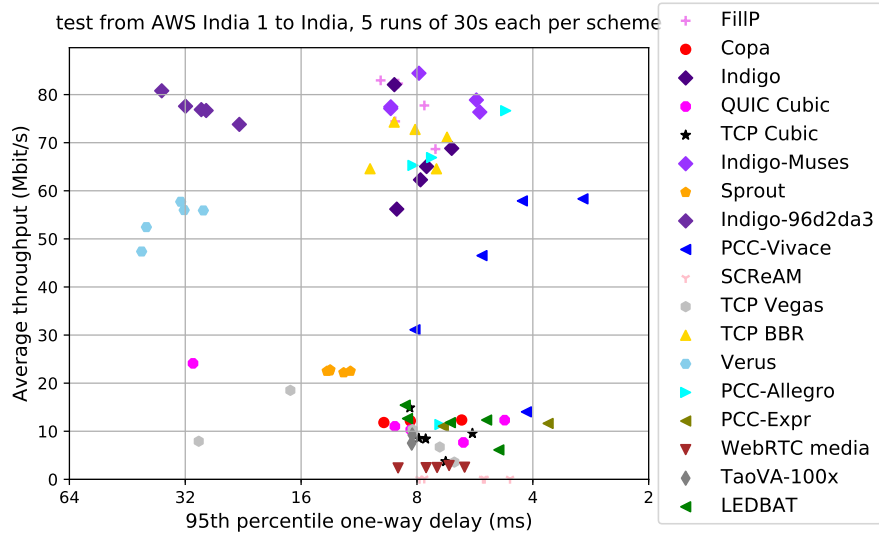
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

test from AWS India 1 to India, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from AWS India 1 to India, 5 runs of 30s each per scheme

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scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	69.47	8.33	11.66
Copa	3	12.11	8.07	70.87
TCP Cubic	5	9.02	7.27	1.02
FillP	5	77.22	8.56	13.01
Indigo	5	66.88	8.01	12.61
Indigo-96d2da3	5	77.15	29.85	46.66
LEDBAT	5	11.66	6.76	1.16
Indigo-Muses	5	78.85	7.54	12.97
PCC-Allegro	4	55.06	6.80	8.43
PCC-Expr	2	11.33	5.24	32.12
QUIC Cubic	5	13.08	11.76	3.32
SCReAM	5	0.12	6.17	0.87
Sprout	5	22.51	12.99	3.82
TaoVA-100x	2	8.37	8.24	78.25
TCP Vegas	5	9.41	13.64	2.42
Verus	5	53.89	35.14	30.52
PCC-Vivace	5	41.57	4.98	8.58
WebRTC media	5	2.53	7.25	1.72

```
Run 1: Statistics of TCP BBR

Start at: 2018-11-15 01:59:40
End at: 2018-11-15 02:00:10
Local clock offset: 2.368 ms
Remote clock offset: -2.566 ms

# Below is generated by plot.py at 2018-11-15 03:41:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.76 Mbit/s
95th percentile per-packet one-way delay: 8.090 ms
Loss rate: 11.27%
-- Flow 1:
Average throughput: 72.76 Mbit/s
95th percentile per-packet one-way delay: 8.090 ms
Loss rate: 11.27%
```
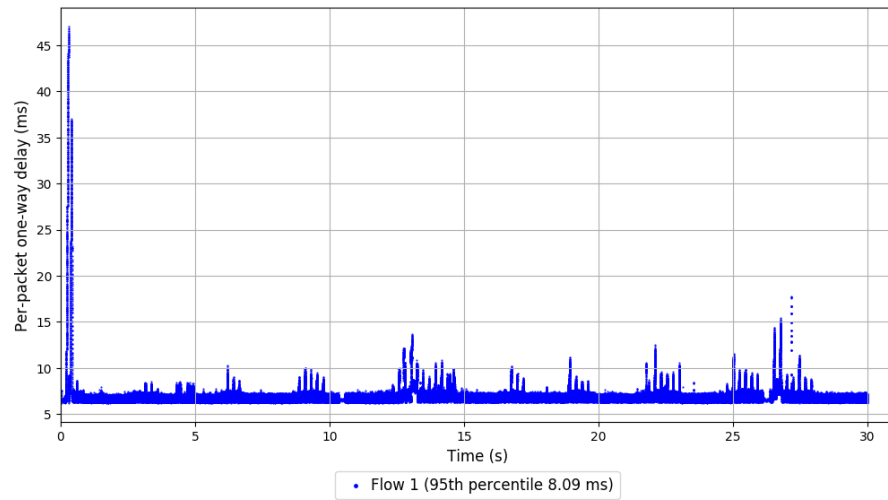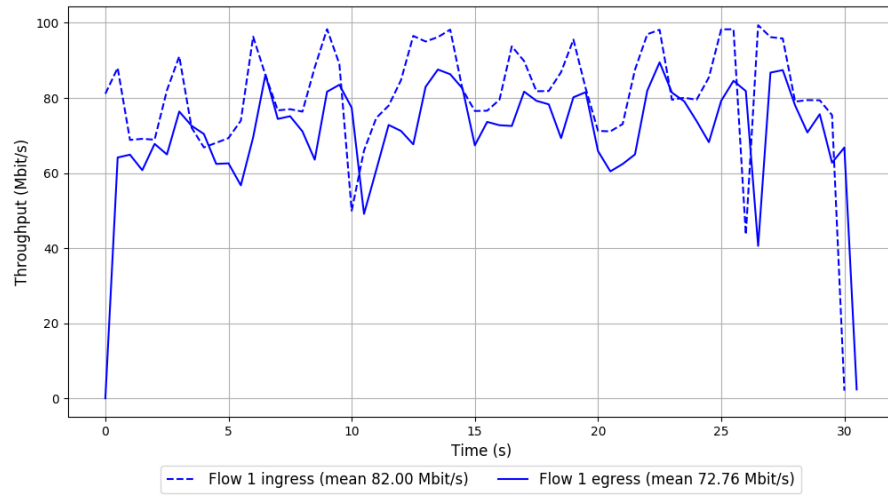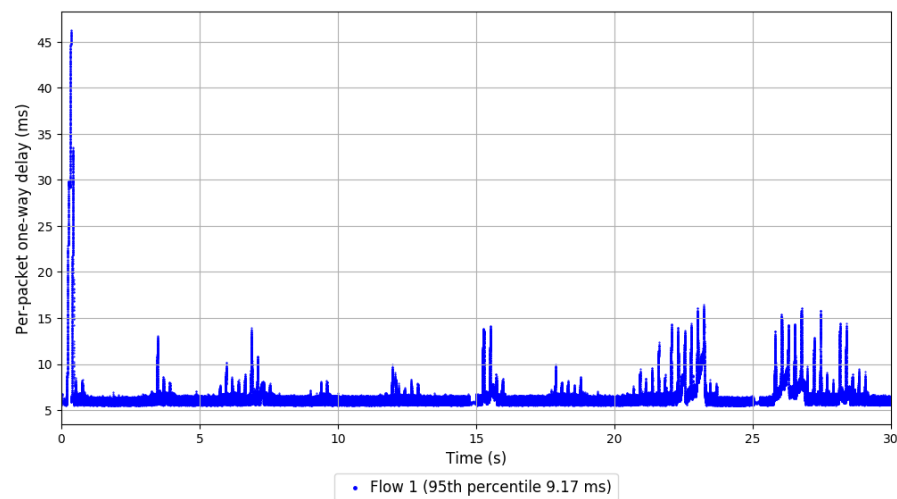
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-11-15 02:20:16
End at: 2018-11-15 02:20:46
Local clock offset: 2.543 ms
Remote clock offset: -3.947 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 74.28 Mbit/s
95th percentile per-packet one-way delay: 9.168 ms
Loss rate: 10.24%
-- Flow 1:
Average throughput: 74.28 Mbit/s
95th percentile per-packet one-way delay: 9.168 ms
Loss rate: 10.24%
```
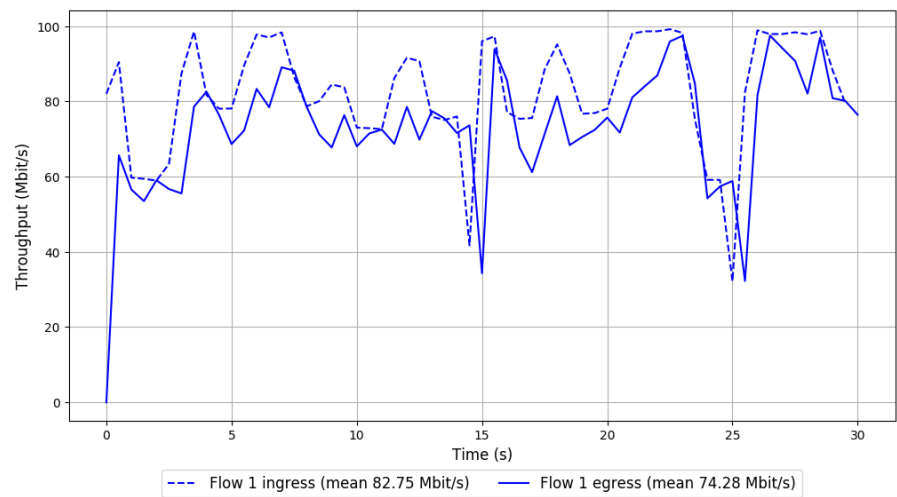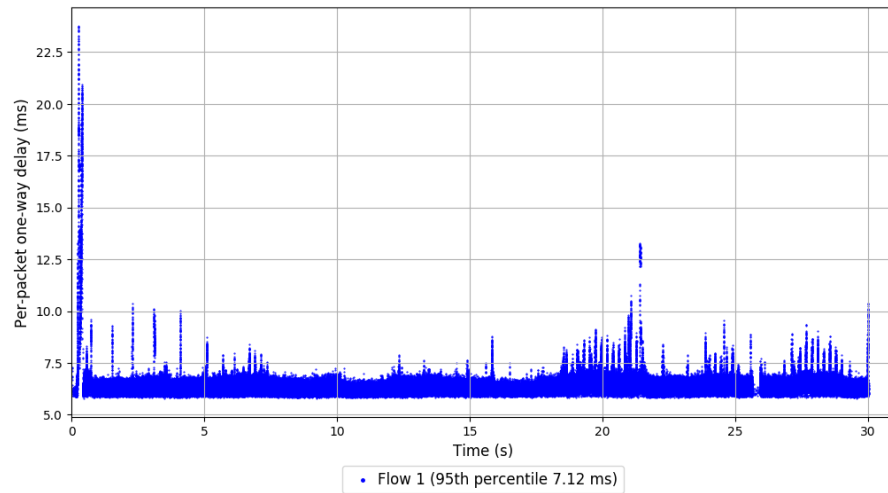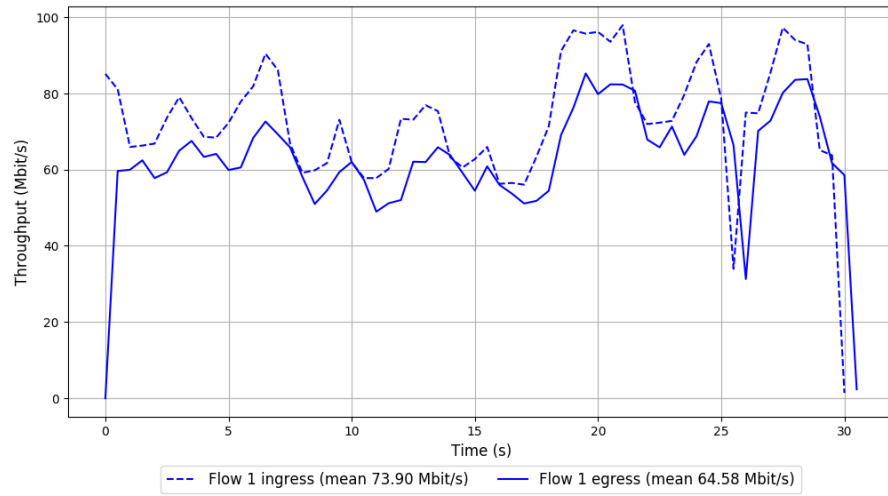
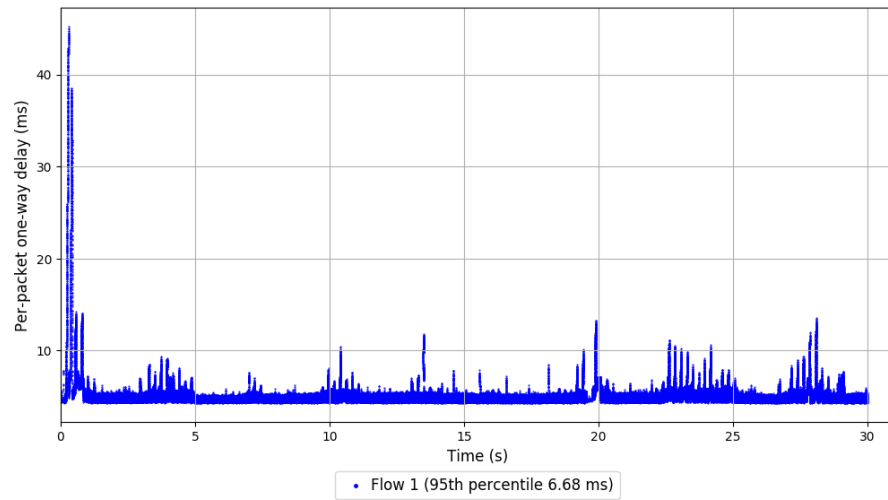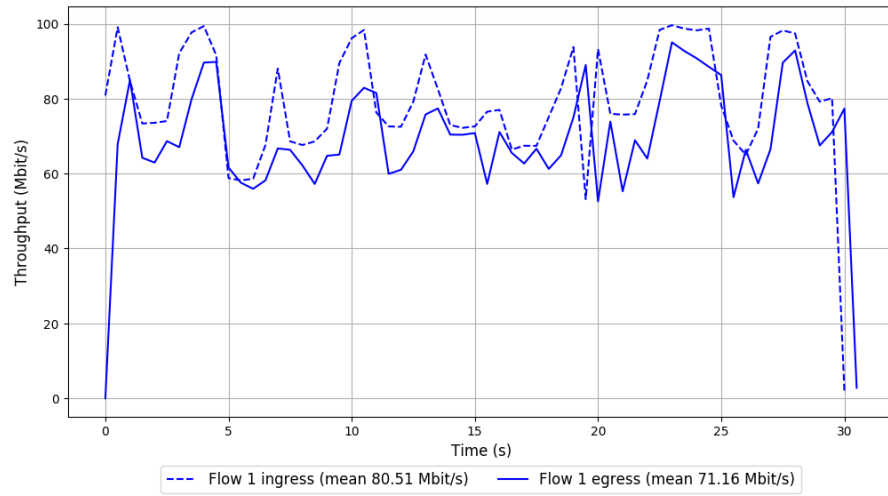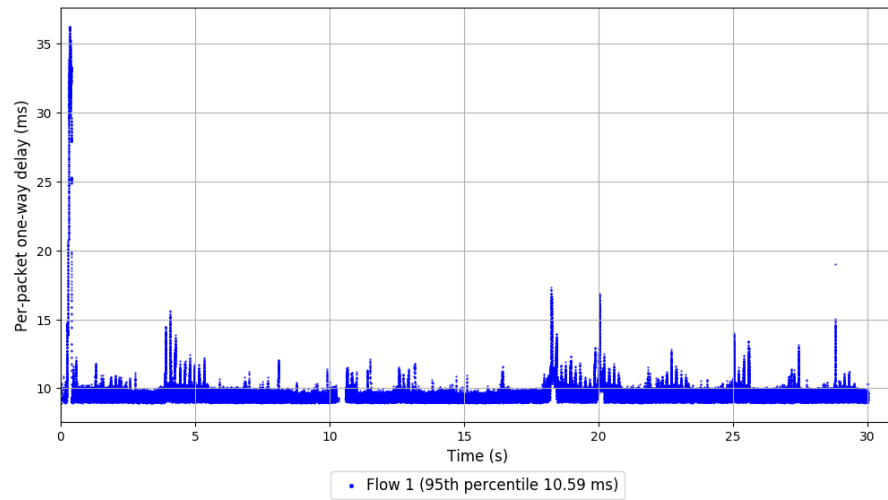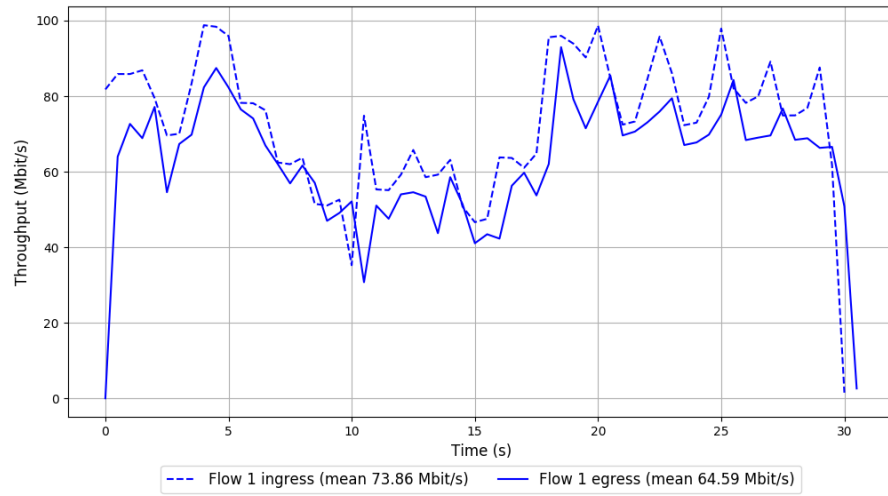Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 82.75 Mbit/s) — Flow 1 egress (mean 74.28 Mbit/s)

Flow 1 (95th percentile 9.17 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-11-15 02:40:46
End at: 2018-11-15 02:41:16
Local clock offset: 2.423 ms
Remote clock offset: -3.197 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.58 Mbit/s
95th percentile per-packet one-way delay: 7.119 ms
Loss rate: 12.61%
-- Flow 1:
Average throughput: 64.58 Mbit/s
95th percentile per-packet one-way delay: 7.119 ms
Loss rate: 12.61%
```

Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 73.90 Mbit/s)   Flow 1 egress (mean 64.58 Mbit/s)

Flow 1 (95th percentile 7.12 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-11-15 03:01:01
End at: 2018-11-15 03:01:31
Local clock offset: 4.451 ms
Remote clock offset: -2.647 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.16 Mbit/s
95th percentile per-packet one-way delay: 6.684 ms
Loss rate: 11.62%
-- Flow 1:
Average throughput: 71.16 Mbit/s
95th percentile per-packet one-way delay: 6.684 ms
Loss rate: 11.62%
```

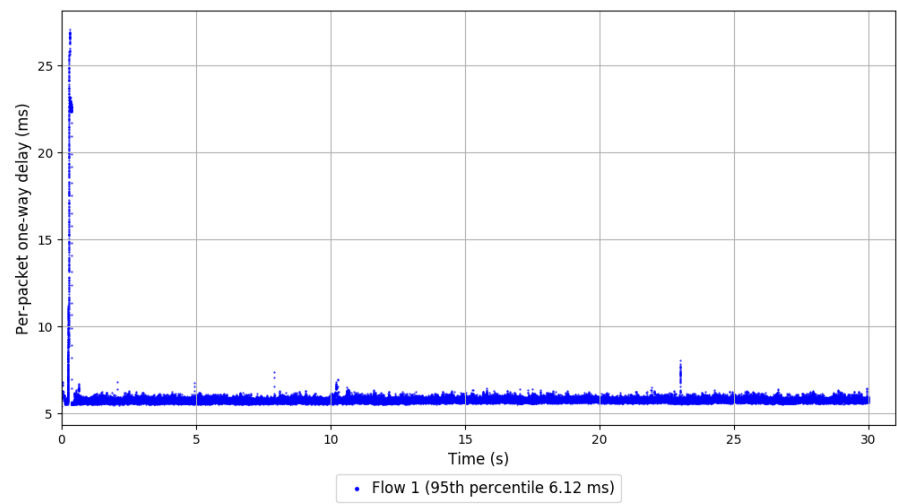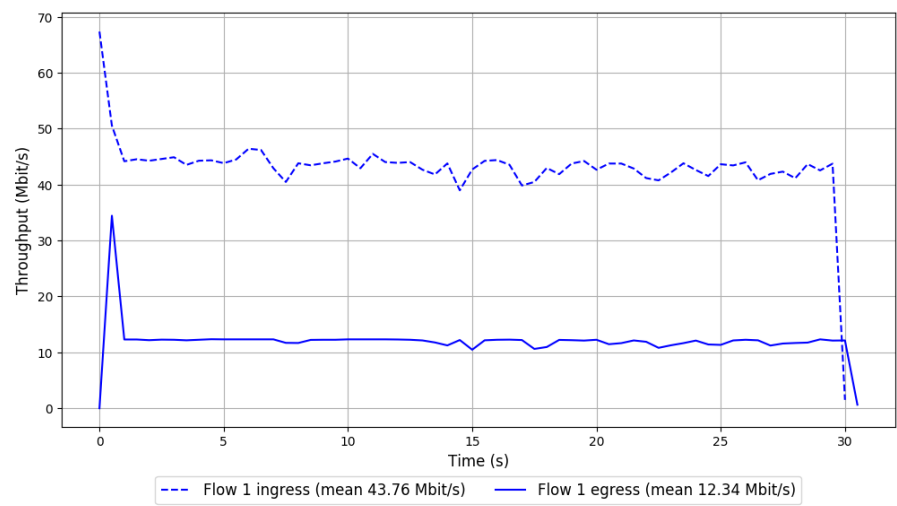Run 4: Report of TCP BBR — Data Link

Flow 1 ingress (mean 80.51 Mbit/s)   Flow 1 egress (mean 71.16 Mbit/s)

Flow 1 (95th percentile 6.68 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-11-15 03:21:18
End at: 2018-11-15 03:21:48
Local clock offset: 0.184 ms
Remote clock offset: -1.693 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.59 Mbit/s
95th percentile per-packet one-way delay: 10.592 ms
Loss rate: 12.55%
-- Flow 1:
Average throughput: 64.59 Mbit/s
95th percentile per-packet one-way delay: 10.592 ms
Loss rate: 12.55%
```

Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 73.86 Mbit/s)　　Flow 1 egress (mean 64.59 Mbit/s)

Flow 1 (95th percentile 10.59 ms)

```
Run 1: Statistics of Copa

Start at: 2018-11-15 02:09:50
End at: 2018-11-15 02:10:20
Local clock offset: 3.148 ms
Remote clock offset: -3.628 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.34 Mbit/s
95th percentile per-packet one-way delay: 6.122 ms
Loss rate: 71.80%
-- Flow 1:
Average throughput: 12.34 Mbit/s
95th percentile per-packet one-way delay: 6.122 ms
Loss rate: 71.80%
```
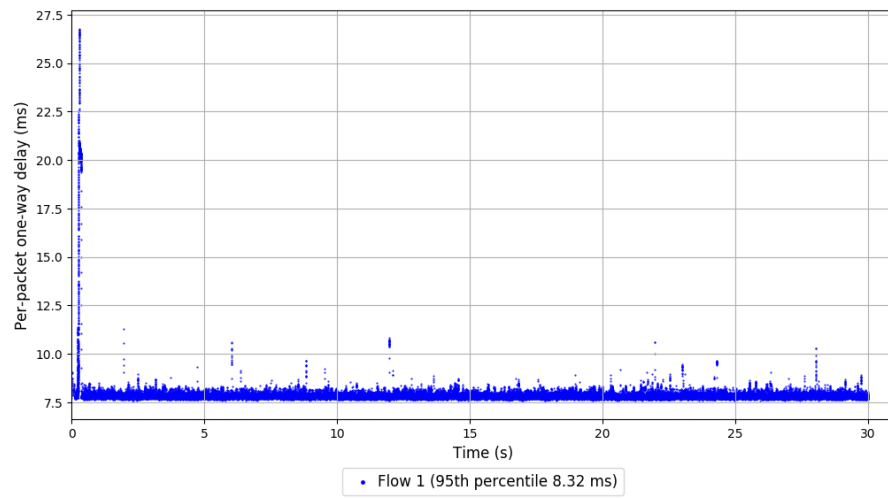
Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-11-15 02:30:39
End at: 2018-11-15 02:31:09
Local clock offset: 0.736 ms
Remote clock offset: -2.714 ms
```
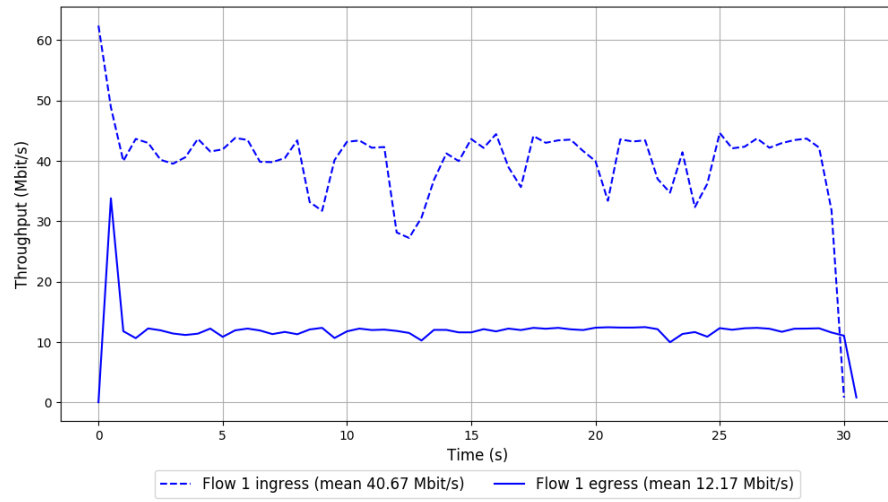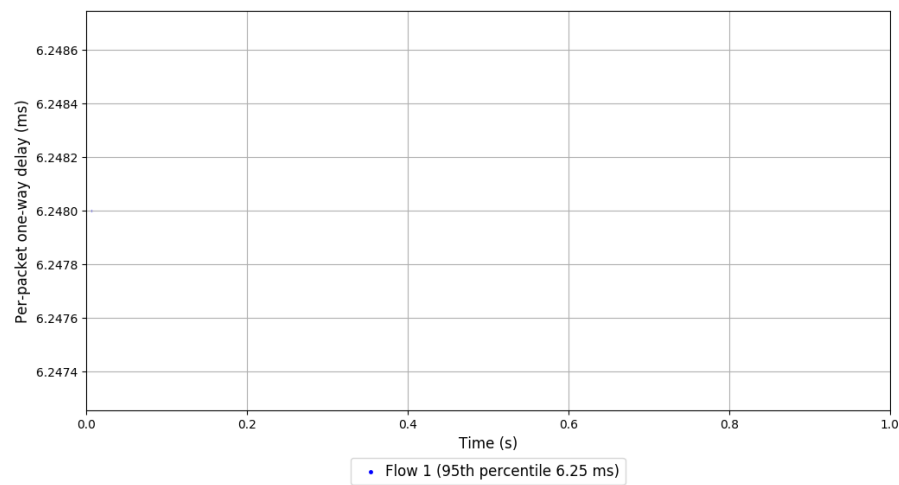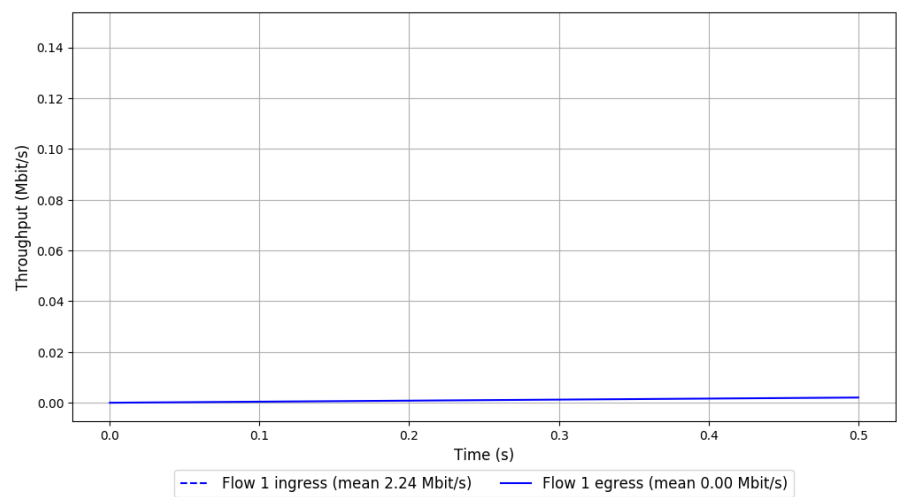
Run 2: Report of Copa — Data Link

Throughput (Mbit/s) vs Time (s)

--- Flow 1 ingress (mean 2.19 Mbit/s) —— Flow 1 egress (mean 0.00 Mbit/s)

Per-packet one-way delay (ms) vs Time (s)

• Flow 1 (95th percentile 9.09 ms)

```
Run 3: Statistics of Copa

Start at: 2018-11-15 02:50:51
End at: 2018-11-15 02:51:21
Local clock offset: 0.391 ms
Remote clock offset: -3.948 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.17 Mbit/s
95th percentile per-packet one-way delay: 8.323 ms
Loss rate: 70.08%
-- Flow 1:
Average throughput: 12.17 Mbit/s
95th percentile per-packet one-way delay: 8.323 ms
Loss rate: 70.08%
```

Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-11-15 03:11:23
End at: 2018-11-15 03:11:53
Local clock offset: 2.908 ms
Remote clock offset: -2.311 ms
```
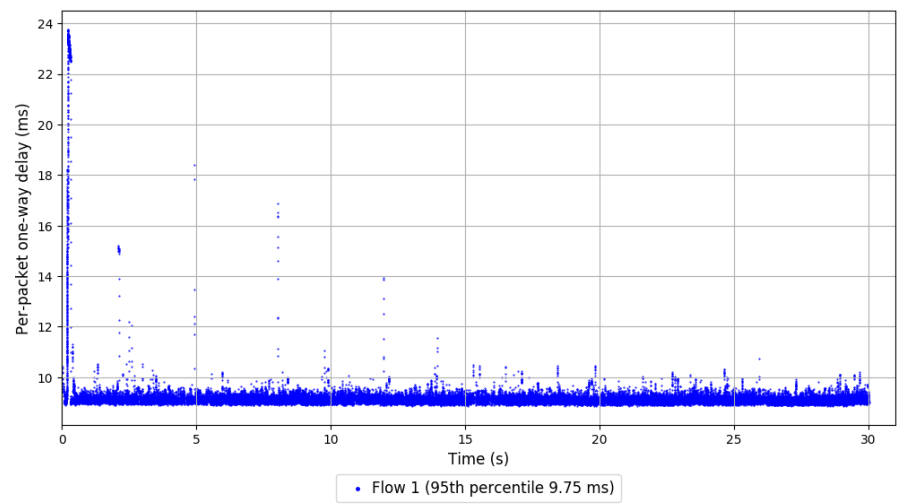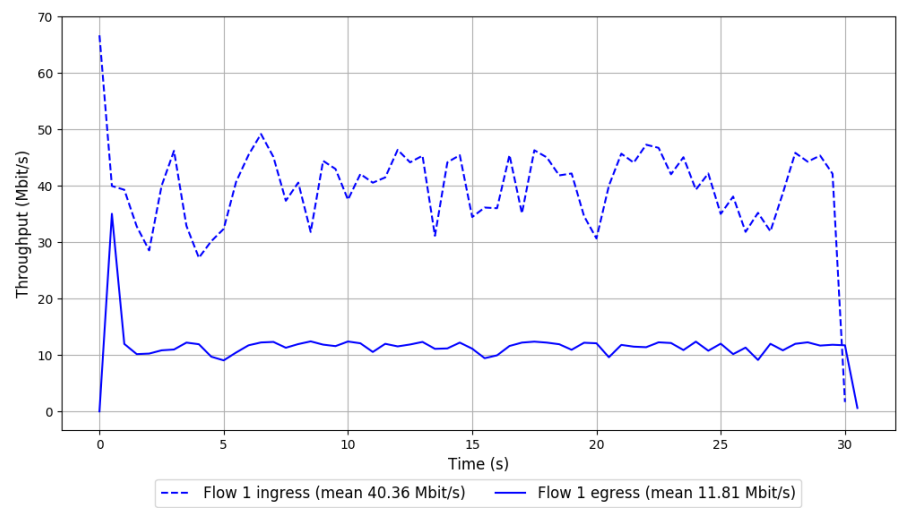
Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 2.24 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 6.25 ms)

```
Run 5: Statistics of Copa

Start at: 2018-11-15 03:31:50
End at: 2018-11-15 03:32:20
Local clock offset: 0.115 ms
Remote clock offset: -1.791 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.81 Mbit/s
95th percentile per-packet one-way delay: 9.752 ms
Loss rate: 70.73%
-- Flow 1:
Average throughput: 11.81 Mbit/s
95th percentile per-packet one-way delay: 9.752 ms
Loss rate: 70.73%
```
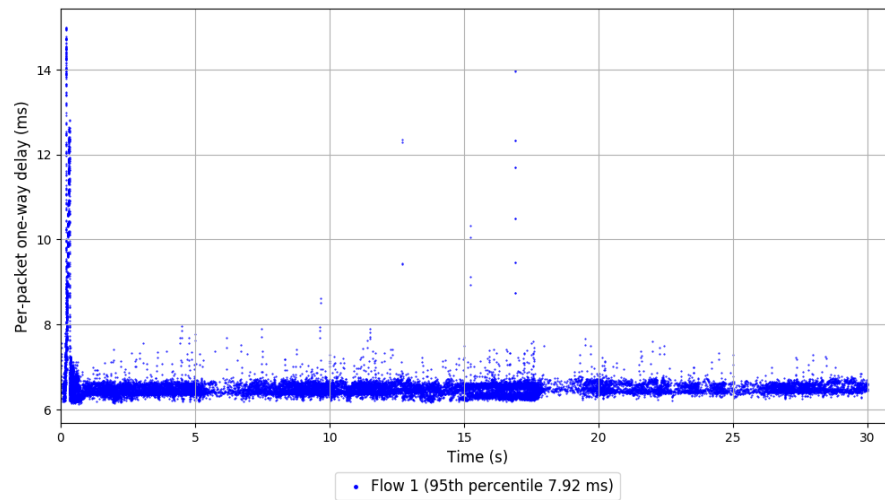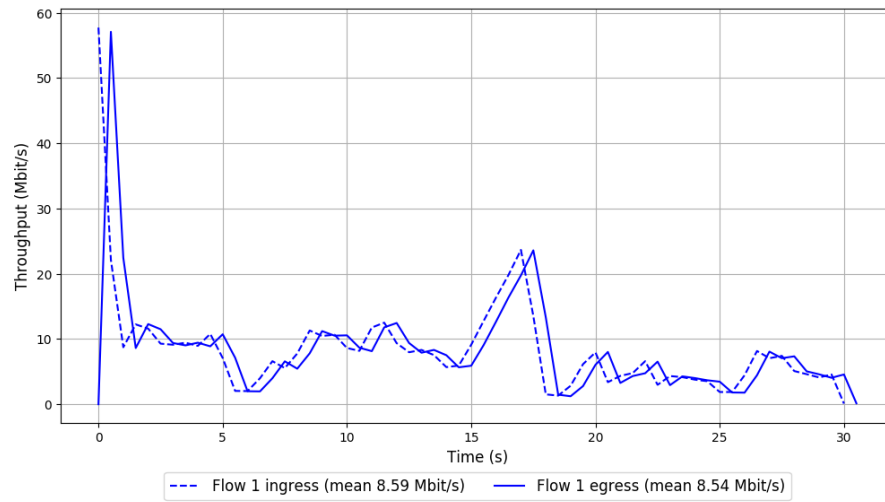
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 40.36 Mbit/s) --- Flow 1 egress (mean 11.81 Mbit/s)

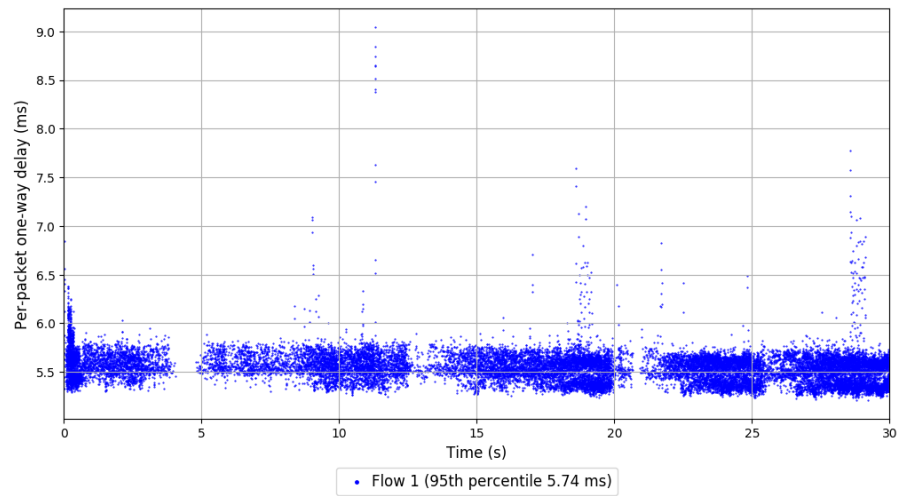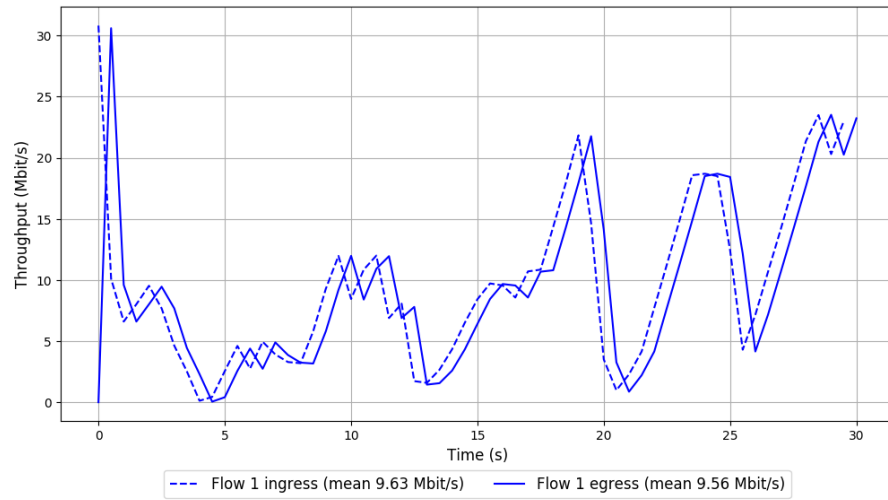Flow 1 (95th percentile 9.75 ms)

24

```
Run 1: Statistics of TCP Cubic

Start at: 2018-11-15 02:07:33
End at: 2018-11-15 02:08:03
Local clock offset: 3.097 ms
Remote clock offset: -2.531 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.54 Mbit/s
95th percentile per-packet one-way delay: 7.918 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 8.54 Mbit/s
95th percentile per-packet one-way delay: 7.918 ms
Loss rate: 0.54%
```

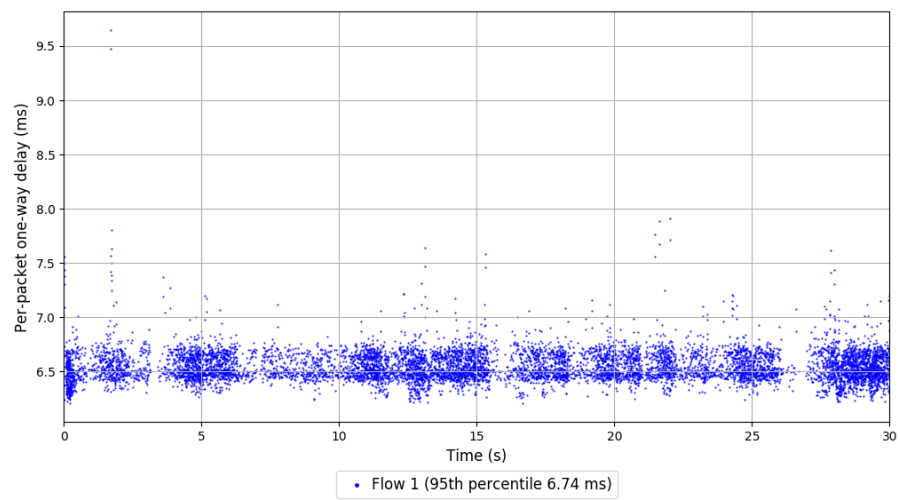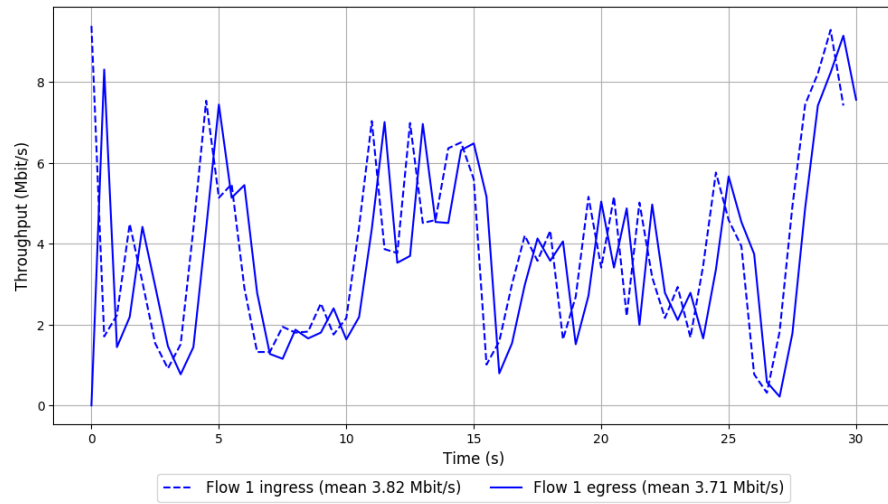Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 8.59 Mbit/s) --- Flow 1 egress (mean 8.54 Mbit/s)

Flow 1 (95th percentile 7.92 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-11-15 02:28:18
End at: 2018-11-15 02:28:48
Local clock offset: 3.278 ms
Remote clock offset: -3.714 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.56 Mbit/s
95th percentile per-packet one-way delay: 5.741 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 9.56 Mbit/s
95th percentile per-packet one-way delay: 5.741 ms
Loss rate: 0.74%
```

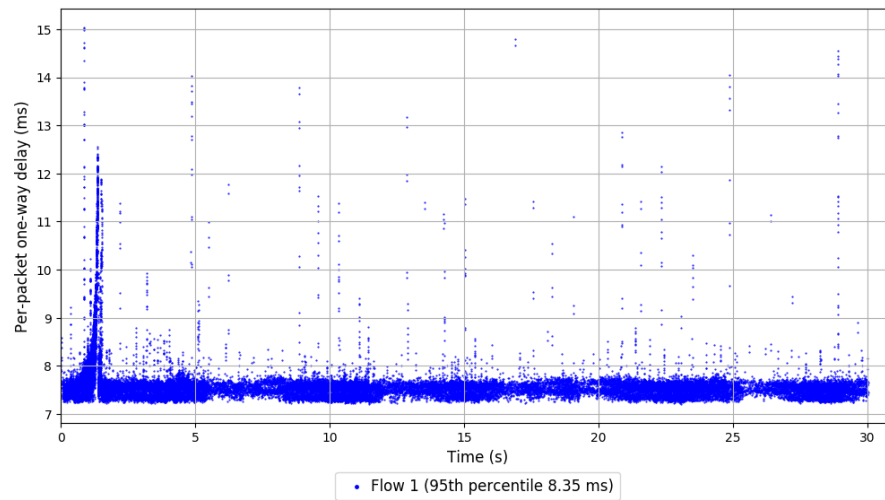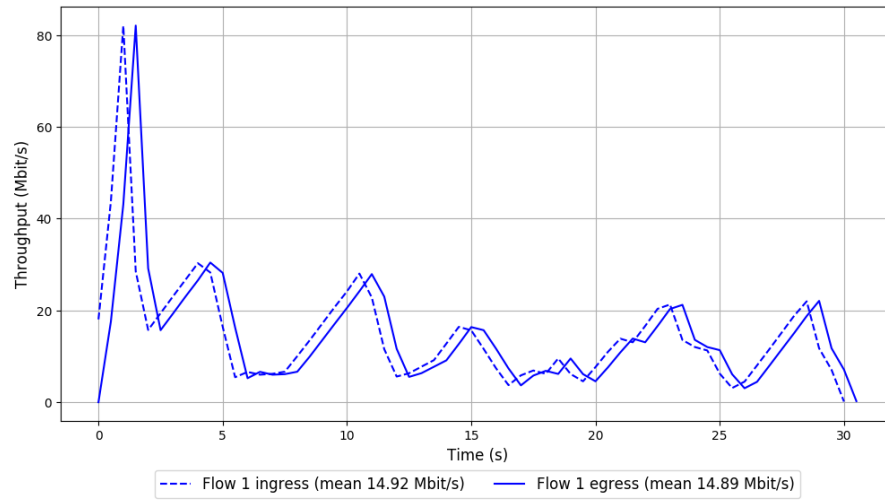Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-11-15 02:48:38
End at: 2018-11-15 02:49:08
Local clock offset: 2.531 ms
Remote clock offset: -2.976 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.71 Mbit/s
95th percentile per-packet one-way delay: 6.739 ms
Loss rate: 2.89%
-- Flow 1:
Average throughput: 3.71 Mbit/s
95th percentile per-packet one-way delay: 6.739 ms
Loss rate: 2.89%
```

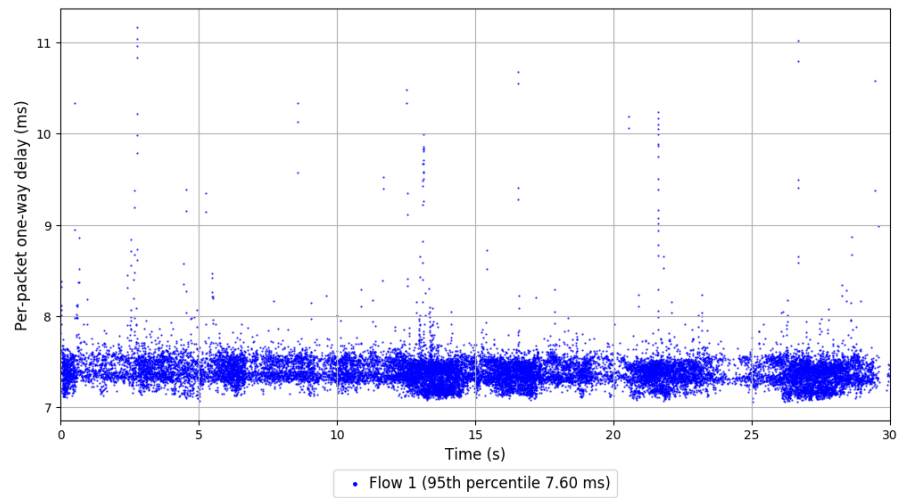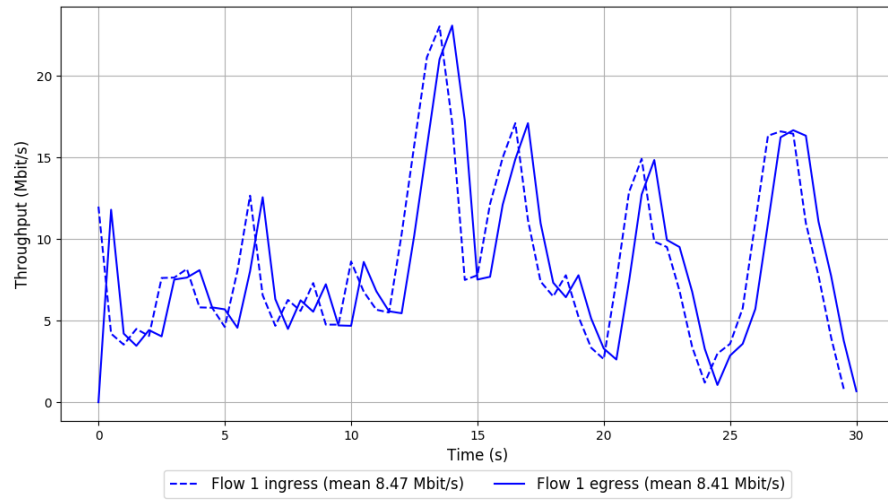Run 3: Report of TCP Cubic — Data Link

```
Run 4: Statistics of TCP Cubic

Start at: 2018-11-15 03:09:08
End at: 2018-11-15 03:09:38
Local clock offset: 0.371 ms
Remote clock offset: -3.581 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.89 Mbit/s
95th percentile per-packet one-way delay: 8.349 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 14.89 Mbit/s
95th percentile per-packet one-way delay: 8.349 ms
Loss rate: 0.23%
```

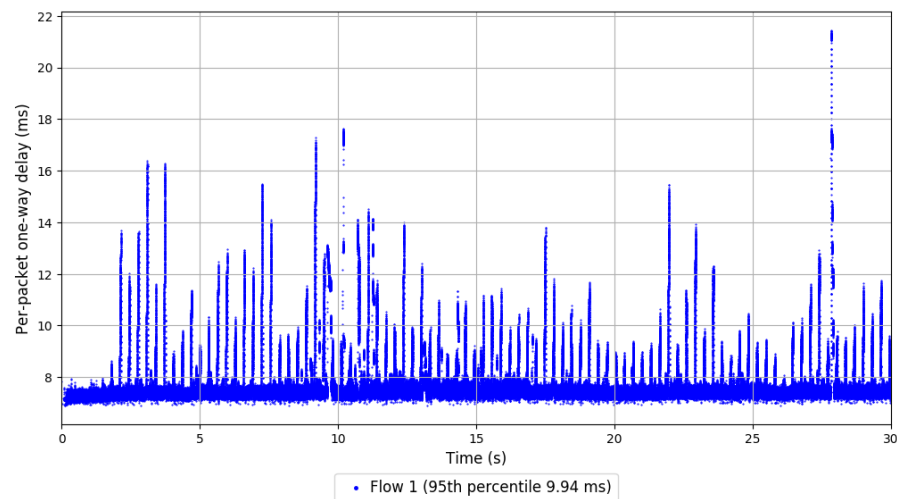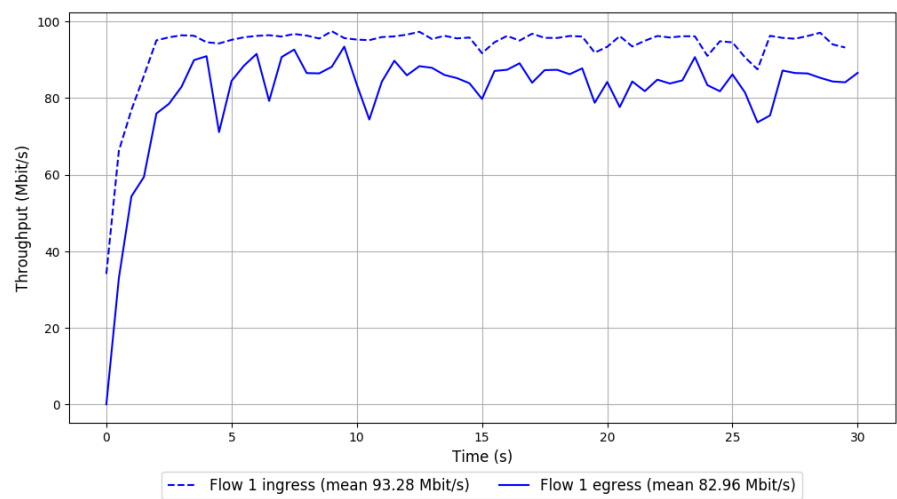# Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 14.92 Mbit/s) — — — — Flow 1 egress (mean 14.89 Mbit/s)

Flow 1 (95th percentile 8.35 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-11-15 03:29:32
End at: 2018-11-15 03:30:02
Local clock offset: 1.041 ms
Remote clock offset: -2.704 ms


# Below is generated by plot.py at 2018-11-15 03:41:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.41 Mbit/s
95th percentile per-packet one-way delay: 7.596 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 8.41 Mbit/s
95th percentile per-packet one-way delay: 7.596 ms
Loss rate: 0.71%
```

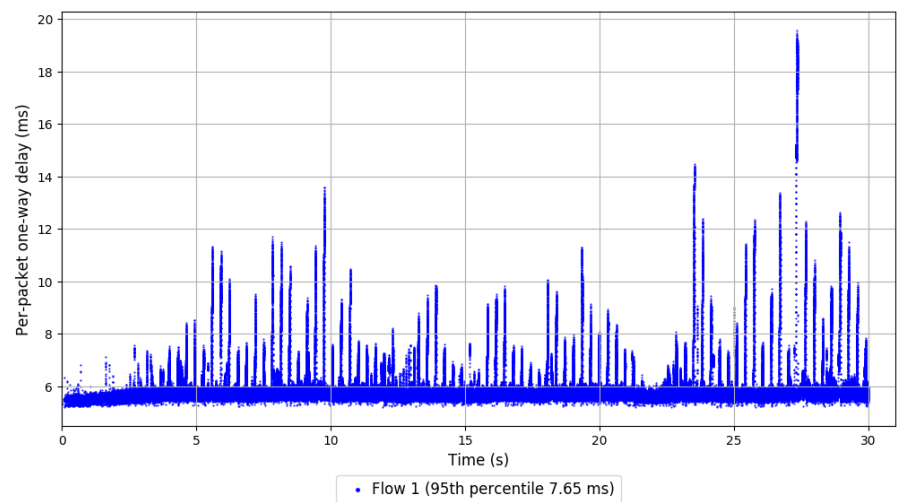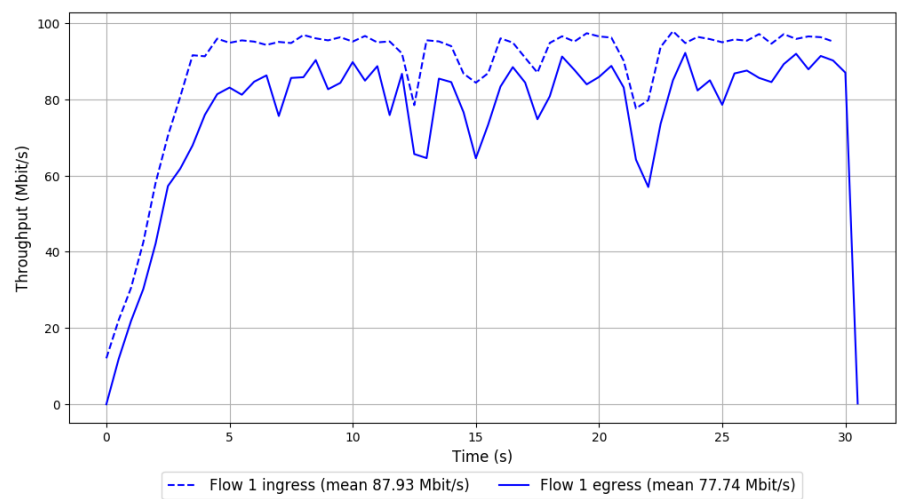Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-11-15 02:08:39
End at: 2018-11-15 02:09:09
Local clock offset: 2.124 ms
Remote clock offset: -2.508 ms


# Below is generated by plot.py at 2018-11-15 03:41:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.96 Mbit/s
95th percentile per-packet one-way delay: 9.941 ms
Loss rate: 11.07%
-- Flow 1:
Average throughput: 82.96 Mbit/s
95th percentile per-packet one-way delay: 9.941 ms
Loss rate: 11.07%
```

Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 93.28 Mbit/s)   Flow 1 egress (mean 82.96 Mbit/s)

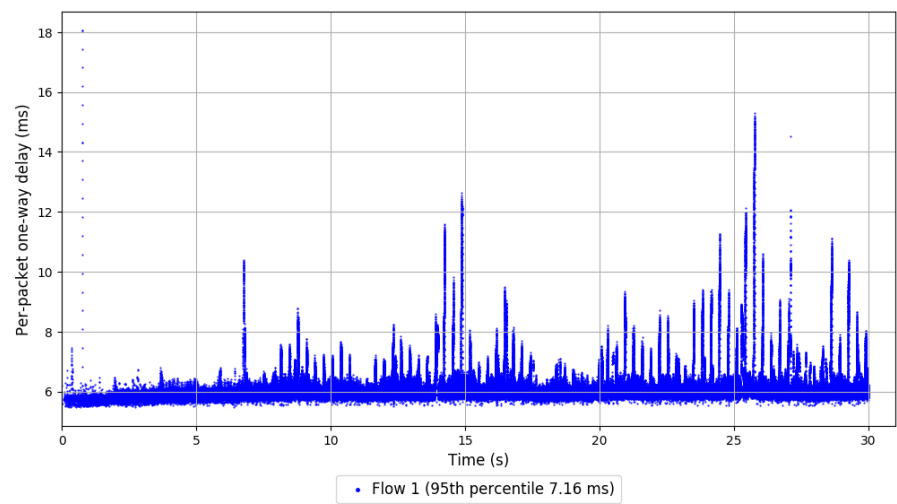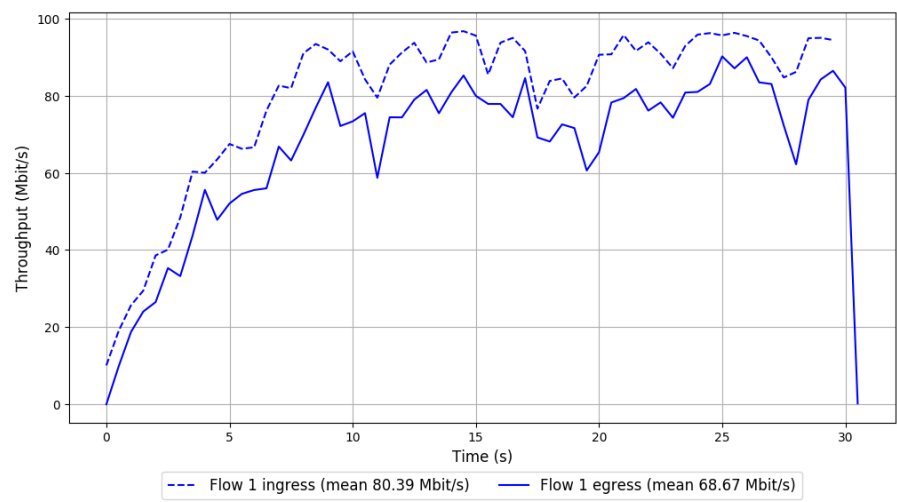• Flow 1 (95th percentile 9.94 ms)

```
Run 2: Statistics of FillP

Start at: 2018-11-15 02:29:24
End at: 2018-11-15 02:29:54
Local clock offset: 3.346 ms
Remote clock offset: -3.059 ms


# Below is generated by plot.py at 2018-11-15 03:41:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.74 Mbit/s
95th percentile per-packet one-way delay: 7.654 ms
Loss rate: 11.59%
-- Flow 1:
Average throughput: 77.74 Mbit/s
95th percentile per-packet one-way delay: 7.654 ms
Loss rate: 11.59%
```

Run 2: Report of FillP — Data Link

```
Run 3: Statistics of FillP

Start at: 2018-11-15 02:49:43
End at: 2018-11-15 02:50:13
Local clock offset: 2.426 ms
Remote clock offset: -3.588 ms


# Below is generated by plot.py at 2018-11-15 03:41:47
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.67 Mbit/s
95th percentile per-packet one-way delay: 7.162 ms
Loss rate: 14.58%
-- Flow 1:
Average throughput: 68.67 Mbit/s
95th percentile per-packet one-way delay: 7.162 ms
Loss rate: 14.58%
```
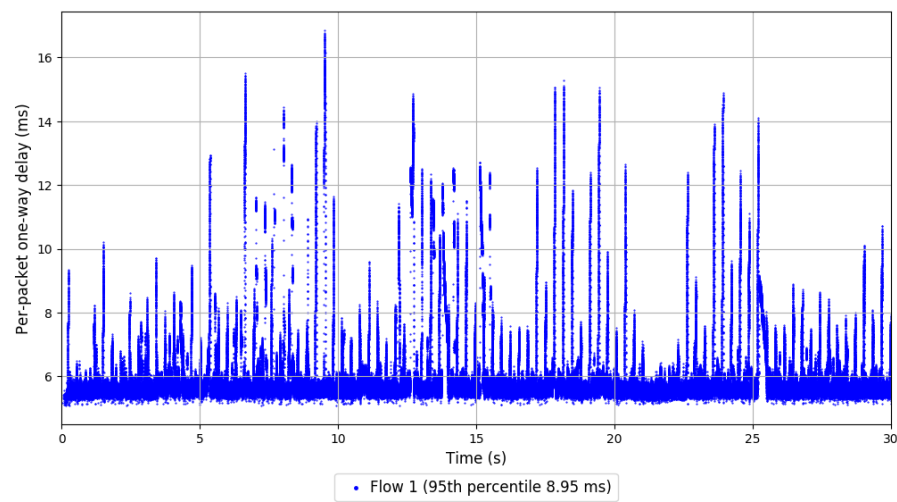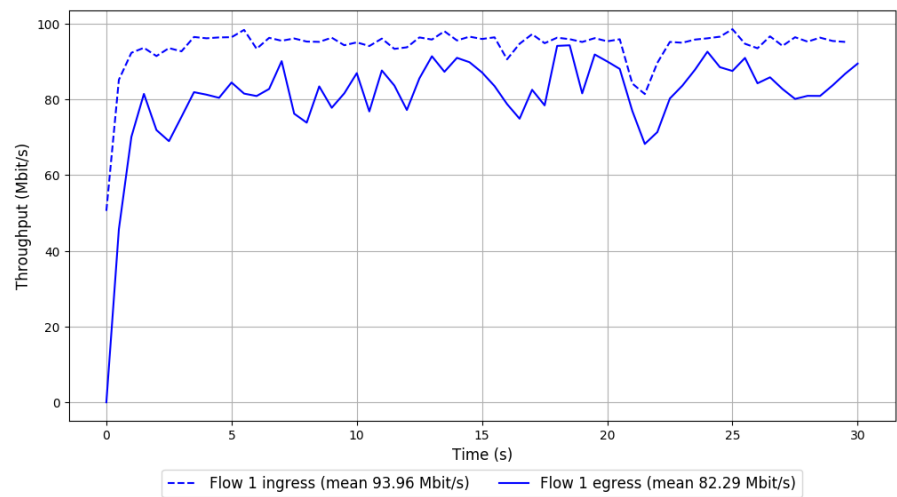
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 80.39 Mbit/s)   Flow 1 egress (mean 68.67 Mbit/s)

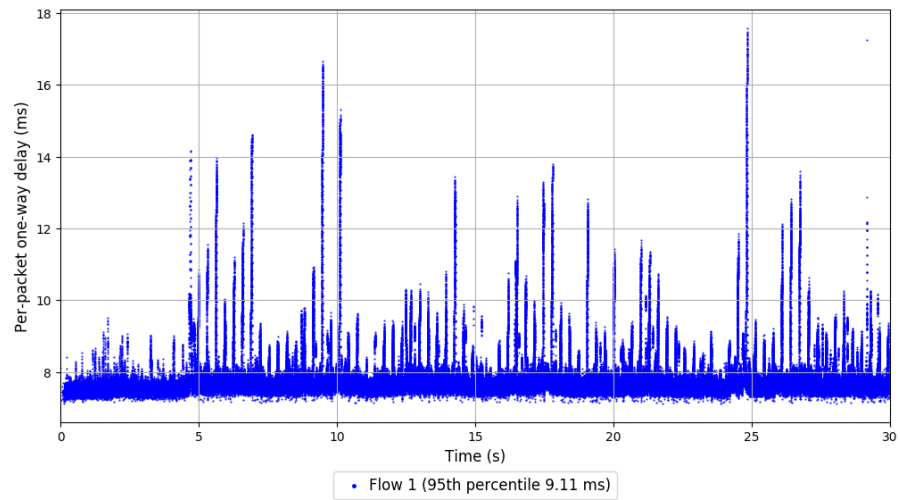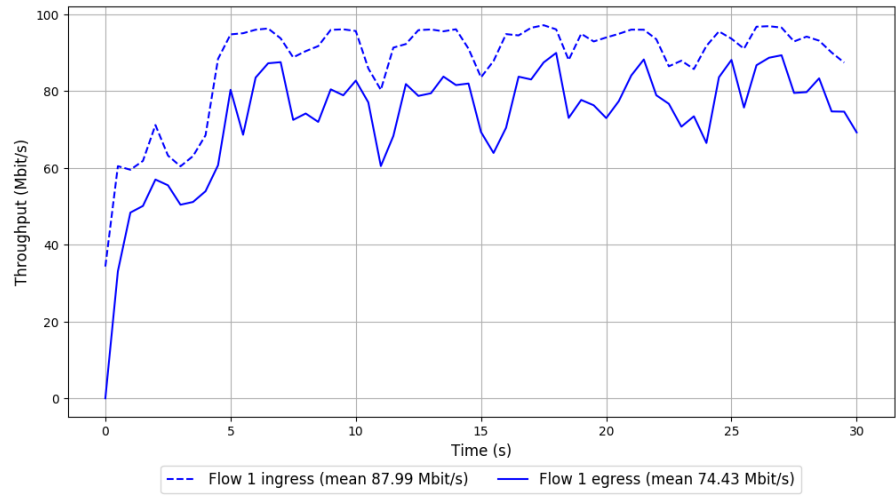Flow 1 (95th percentile 7.16 ms)

```
Run 4: Statistics of FillP

Start at: 2018-11-15 03:10:14
End at: 2018-11-15 03:10:44
Local clock offset: 2.343 ms
Remote clock offset: -3.31 ms


# Below is generated by plot.py at 2018-11-15 03:42:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.29 Mbit/s
95th percentile per-packet one-way delay: 8.950 ms
Loss rate: 12.42%
-- Flow 1:
Average throughput: 82.29 Mbit/s
95th percentile per-packet one-way delay: 8.950 ms
Loss rate: 12.42%
```
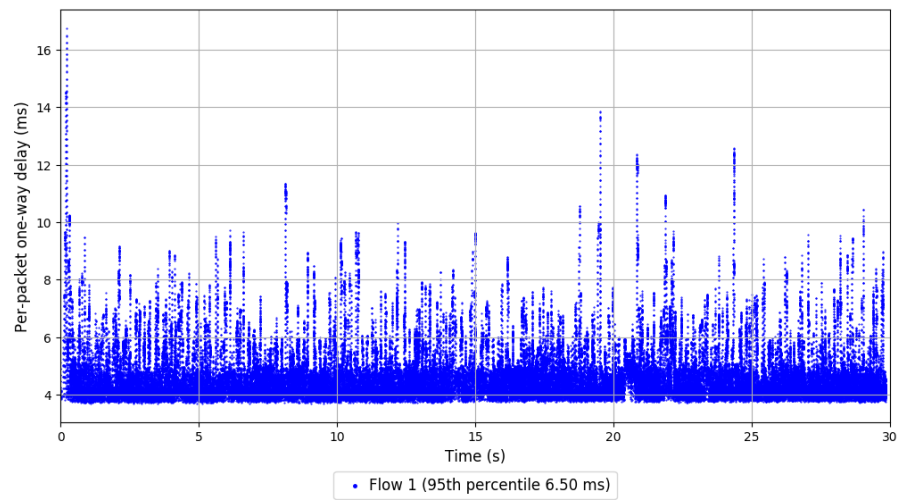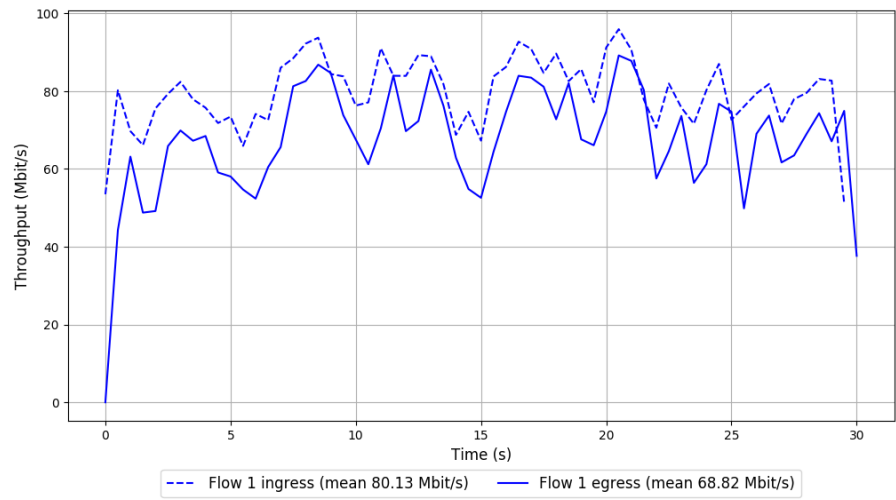
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 93.96 Mbit/s) —— Flow 1 egress (mean 82.29 Mbit/s)

• Flow 1 (95th percentile 8.95 ms)

42

```
Run 5: Statistics of FillP

Start at: 2018-11-15 03:30:38
End at: 2018-11-15 03:31:08
Local clock offset: 0.955 ms
Remote clock offset: -2.415 ms


# Below is generated by plot.py at 2018-11-15 03:42:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 74.43 Mbit/s
95th percentile per-packet one-way delay: 9.111 ms
Loss rate: 15.41%
-- Flow 1:
Average throughput: 74.43 Mbit/s
95th percentile per-packet one-way delay: 9.111 ms
Loss rate: 15.41%
```

Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 87.99 Mbit/s)   Flow 1 egress (mean 74.43 Mbit/s)

Flow 1 (95th percentile 9.11 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-11-15 02:05:18
End at: 2018-11-15 02:05:48
Local clock offset: 5.286 ms
Remote clock offset: -2.839 ms


# Below is generated by plot.py at 2018-11-15 03:42:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.82 Mbit/s
95th percentile per-packet one-way delay: 6.499 ms
Loss rate: 14.11%
-- Flow 1:
Average throughput: 68.82 Mbit/s
95th percentile per-packet one-way delay: 6.499 ms
Loss rate: 14.11%
```
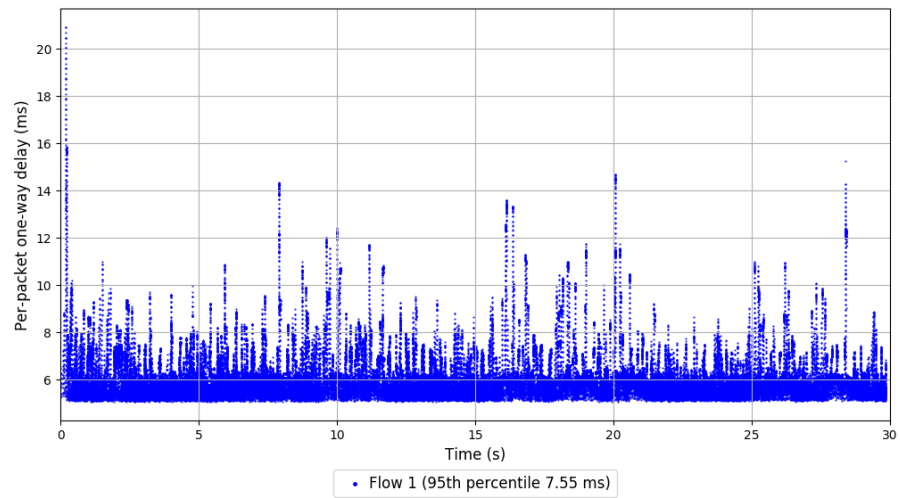
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-11-15 02:25:58
End at: 2018-11-15 02:26:28
Local clock offset: 3.437 ms
Remote clock offset: -3.642 ms


# Below is generated by plot.py at 2018-11-15 03:42:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.04 Mbit/s
95th percentile per-packet one-way delay: 7.553 ms
Loss rate: 12.44%
-- Flow 1:
Average throughput: 65.04 Mbit/s
95th percentile per-packet one-way delay: 7.553 ms
Loss rate: 12.44%
```
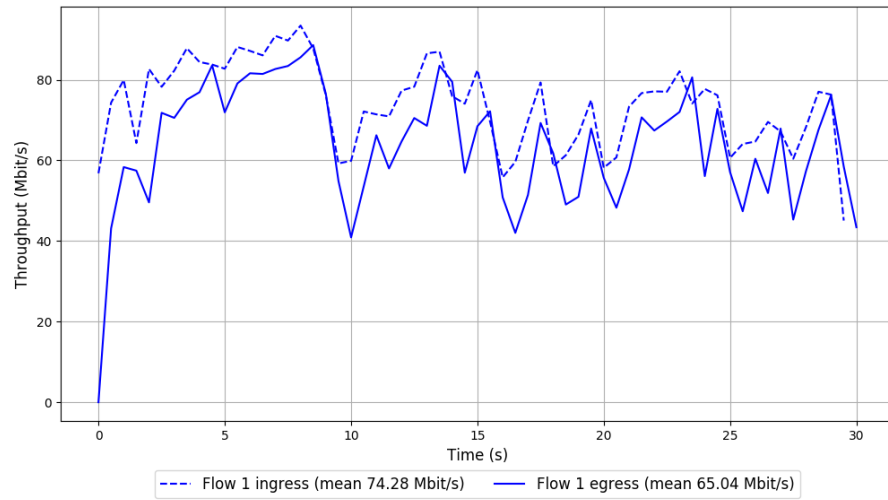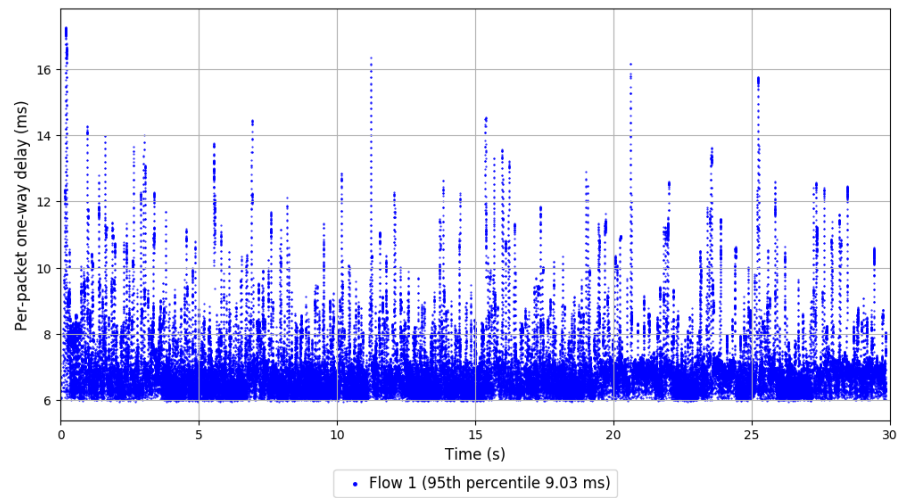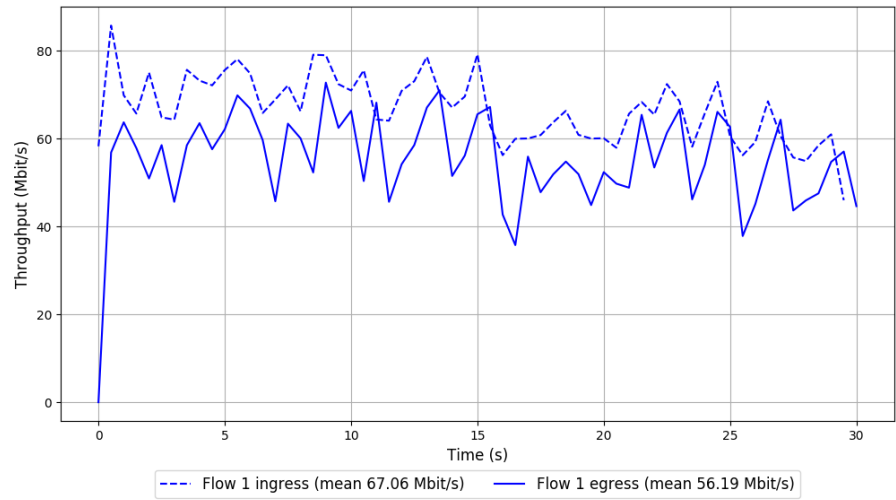
Run 2: Report of Indigo — Data Link

Flow 1 ingress (mean 74.28 Mbit/s)   Flow 1 egress (mean 65.04 Mbit/s)

• Flow 1 (95th percentile 7.55 ms)

```
Run 3: Statistics of Indigo

Start at: 2018-11-15 02:46:25
End at: 2018-11-15 02:46:55
Local clock offset: 2.575 ms
Remote clock offset: -2.977 ms


# Below is generated by plot.py at 2018-11-15 03:42:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 56.19 Mbit/s
95th percentile per-packet one-way delay: 9.029 ms
Loss rate: 16.21%
-- Flow 1:
Average throughput: 56.19 Mbit/s
95th percentile per-packet one-way delay: 9.029 ms
Loss rate: 16.21%
```
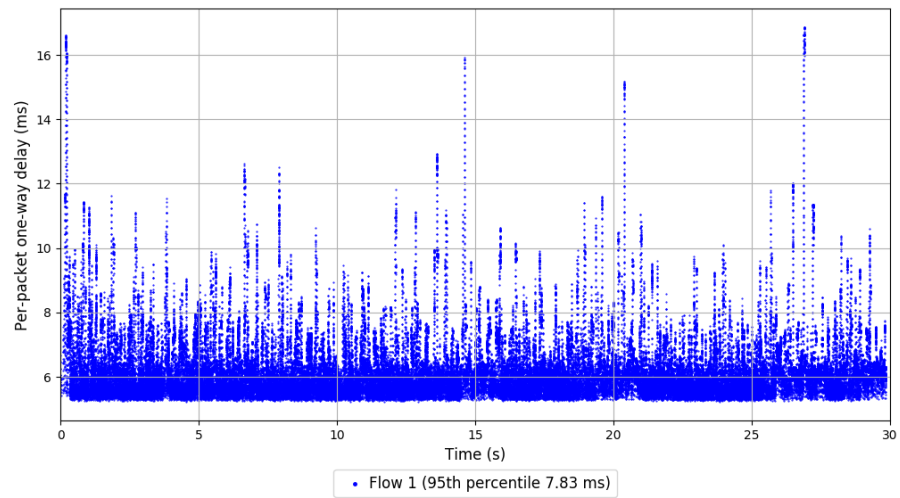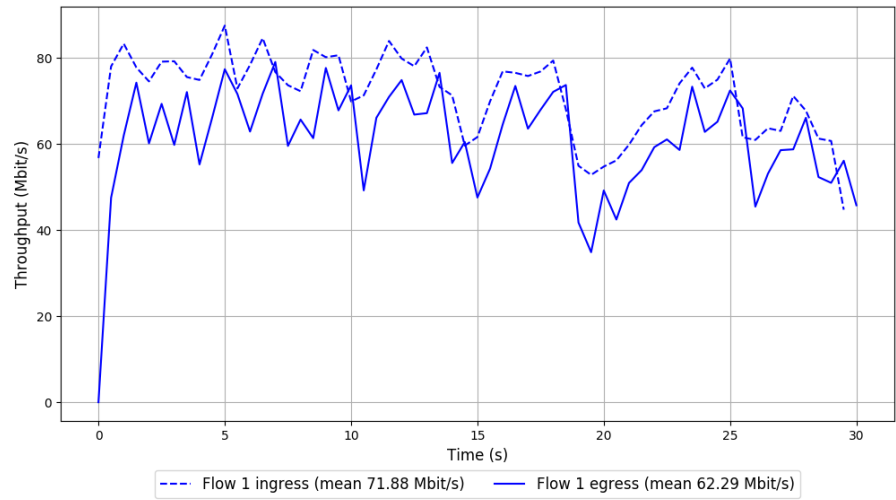
Run 3: Report of Indigo — Data Link

Flow 1 ingress (mean 67.06 Mbit/s) ---- Flow 1 egress (mean 56.19 Mbit/s) ——

Flow 1 (95th percentile 9.03 ms)

```
Run 4: Statistics of Indigo

Start at: 2018-11-15 03:06:53
End at: 2018-11-15 03:07:23
Local clock offset: 2.952 ms
Remote clock offset: -2.934 ms


# Below is generated by plot.py at 2018-11-15 03:42:21
# Datalink statistics
-- Total of 1 flow:
Average throughput: 62.29 Mbit/s
95th percentile per-packet one-way delay: 7.834 ms
Loss rate: 13.35%
-- Flow 1:
Average throughput: 62.29 Mbit/s
95th percentile per-packet one-way delay: 7.834 ms
Loss rate: 13.35%
```
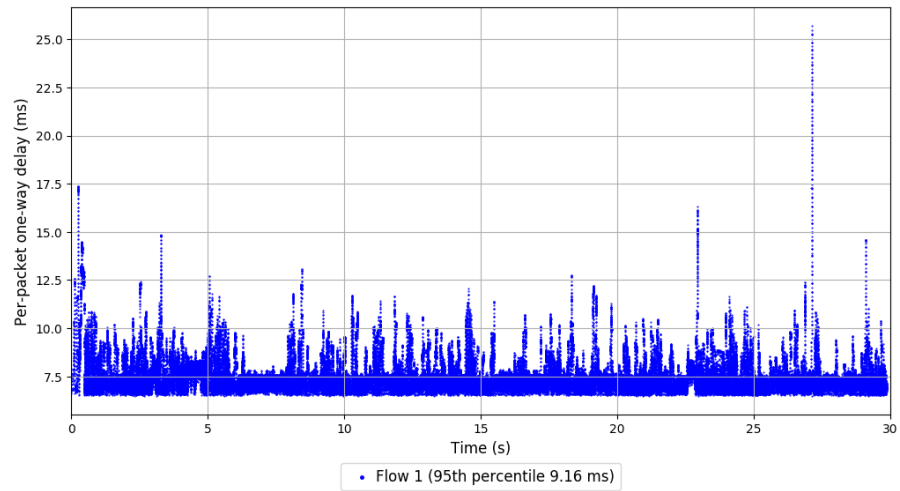
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-11-15 03:27:13
End at: 2018-11-15 03:27:43
Local clock offset: 2.305 ms
Remote clock offset: -1.945 ms


# Below is generated by plot.py at 2018-11-15 03:42:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.07 Mbit/s
95th percentile per-packet one-way delay: 9.159 ms
Loss rate: 6.95%
-- Flow 1:
Average throughput: 82.07 Mbit/s
95th percentile per-packet one-way delay: 9.159 ms
Loss rate: 6.95%
```
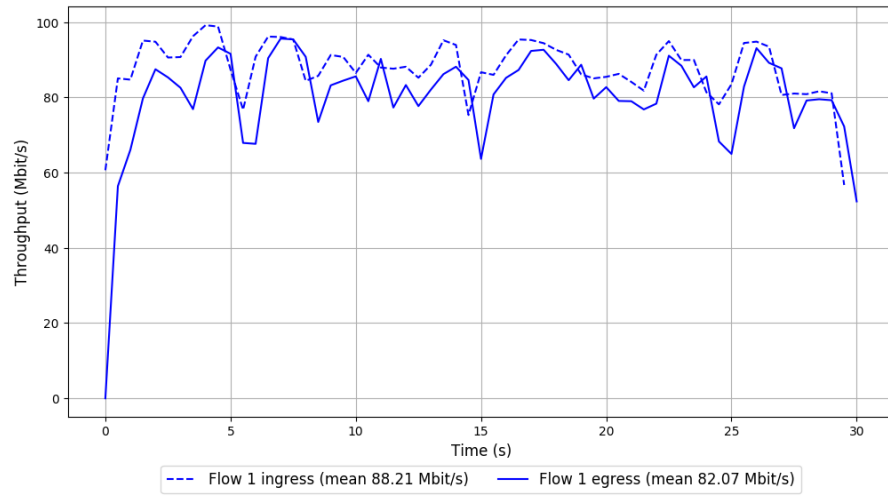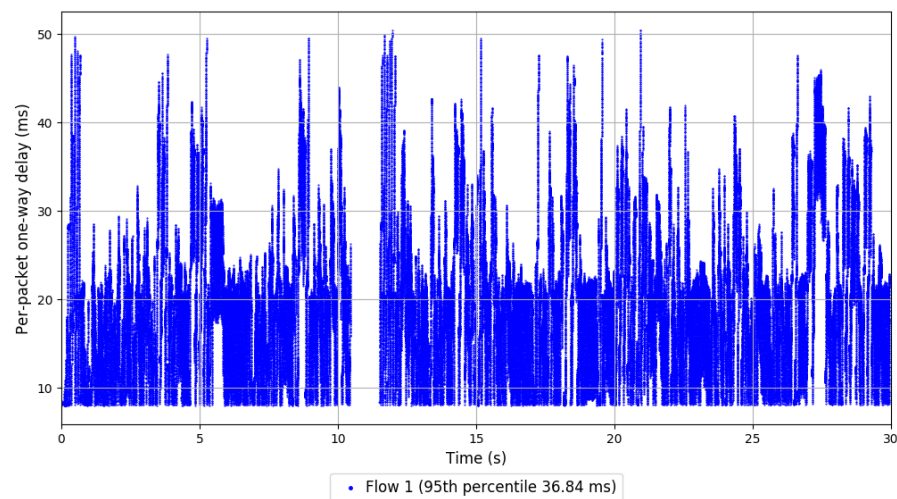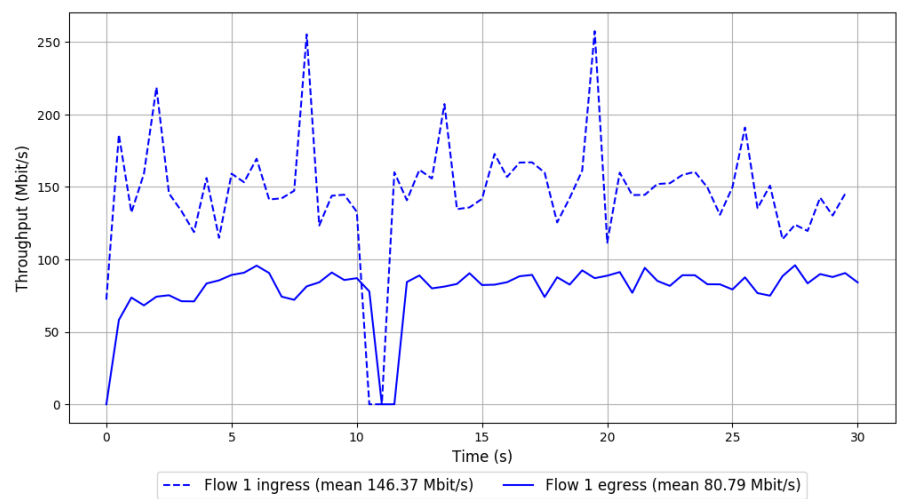
Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-15 02:04:09
End at: 2018-11-15 02:04:39
Local clock offset: 0.886 ms
Remote clock offset: -2.615 ms


# Below is generated by plot.py at 2018-11-15 03:42:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.79 Mbit/s
95th percentile per-packet one-way delay: 36.840 ms
Loss rate: 44.78%
-- Flow 1:
Average throughput: 80.79 Mbit/s
95th percentile per-packet one-way delay: 36.840 ms
Loss rate: 44.78%
```
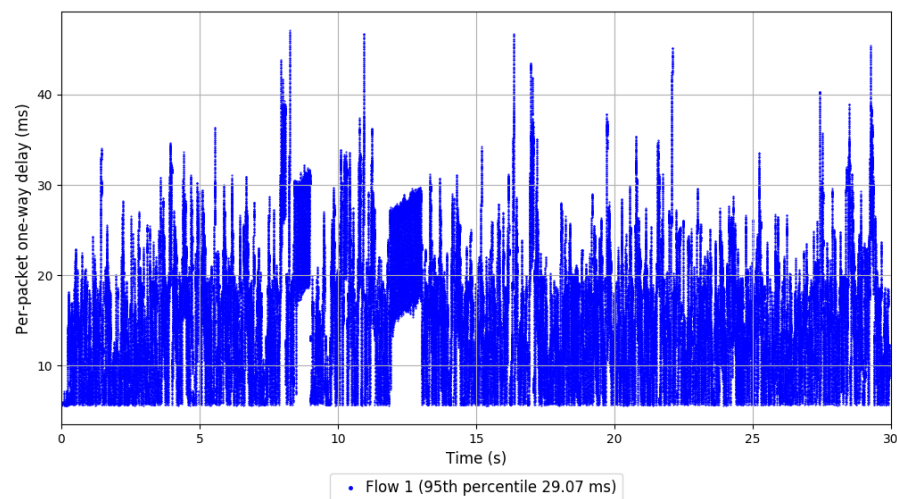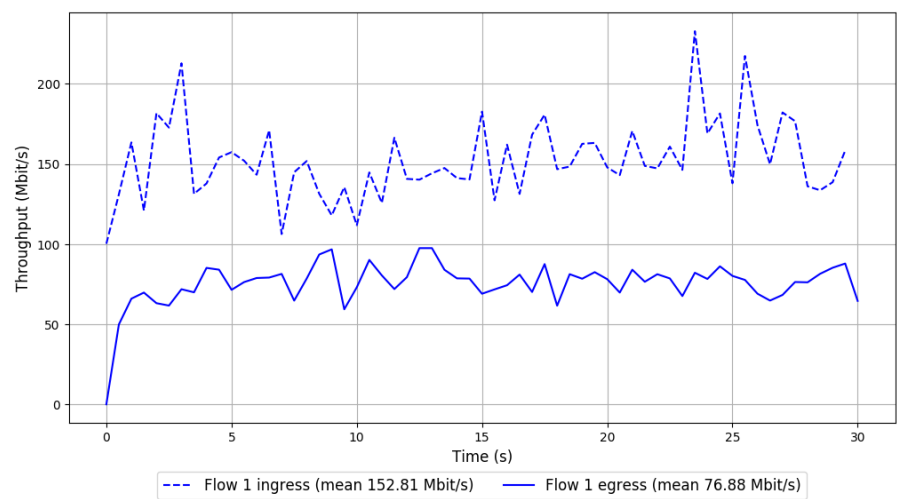
Run 1: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 146.37 Mbit/s)   Flow 1 egress (mean 80.79 Mbit/s)
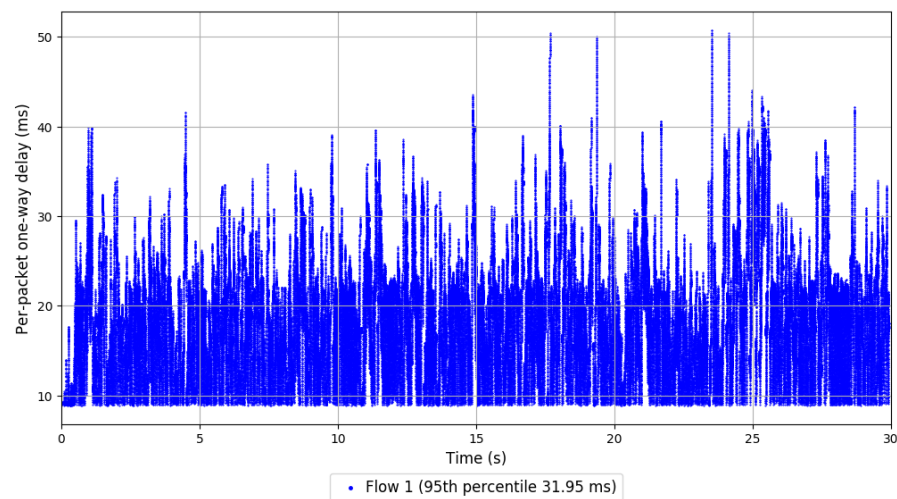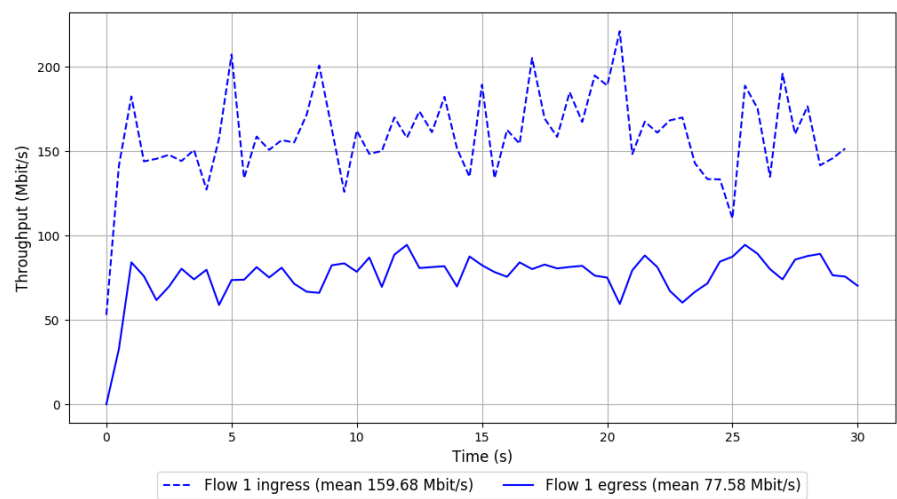

• Flow 1 (95th percentile 36.84 ms)

```
Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-15 02:24:46
End at: 2018-11-15 02:25:16
Local clock offset: 3.049 ms
Remote clock offset: -3.214 ms


# Below is generated by plot.py at 2018-11-15 03:43:00
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.88 Mbit/s
95th percentile per-packet one-way delay: 29.071 ms
Loss rate: 49.68%
-- Flow 1:
Average throughput: 76.88 Mbit/s
95th percentile per-packet one-way delay: 29.071 ms
Loss rate: 49.68%
```

Run 2: Report of Indigo-96d2da3 — Data Link

```
Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-15 02:45:15
End at: 2018-11-15 02:45:45
Local clock offset: -0.261 ms
Remote clock offset: -3.063 ms


# Below is generated by plot.py at 2018-11-15 03:43:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.58 Mbit/s
95th percentile per-packet one-way delay: 31.948 ms
Loss rate: 51.40%
-- Flow 1:
Average throughput: 77.58 Mbit/s
95th percentile per-packet one-way delay: 31.948 ms
Loss rate: 51.40%
```
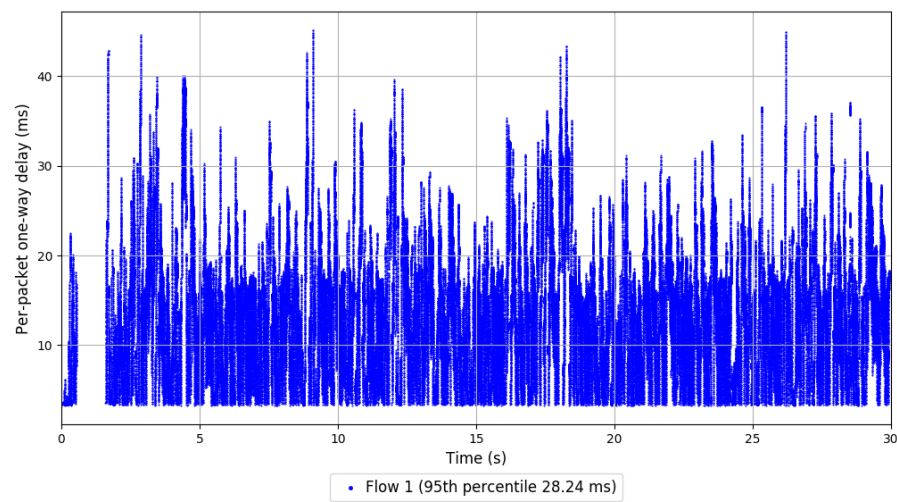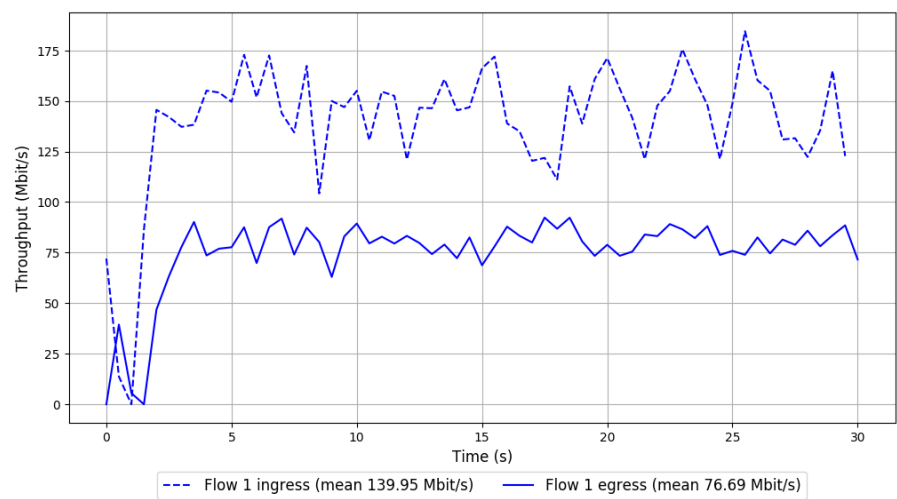
Run 3: Report of Indigo-96d2da3 — Data Link

```
Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-15 03:05:42
End at: 2018-11-15 03:06:12
Local clock offset: 4.607 ms
Remote clock offset: -3.139 ms


# Below is generated by plot.py at 2018-11-15 03:43:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.69 Mbit/s
95th percentile per-packet one-way delay: 28.238 ms
Loss rate: 45.18%
-- Flow 1:
Average throughput: 76.69 Mbit/s
95th percentile per-packet one-way delay: 28.238 ms
Loss rate: 45.18%
```
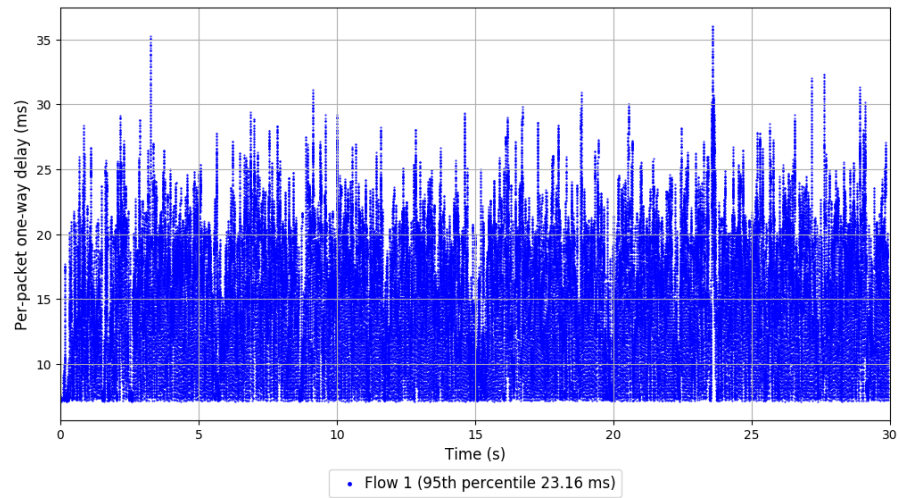
Run 4: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 139.95 Mbit/s)   Flow 1 egress (mean 76.69 Mbit/s)
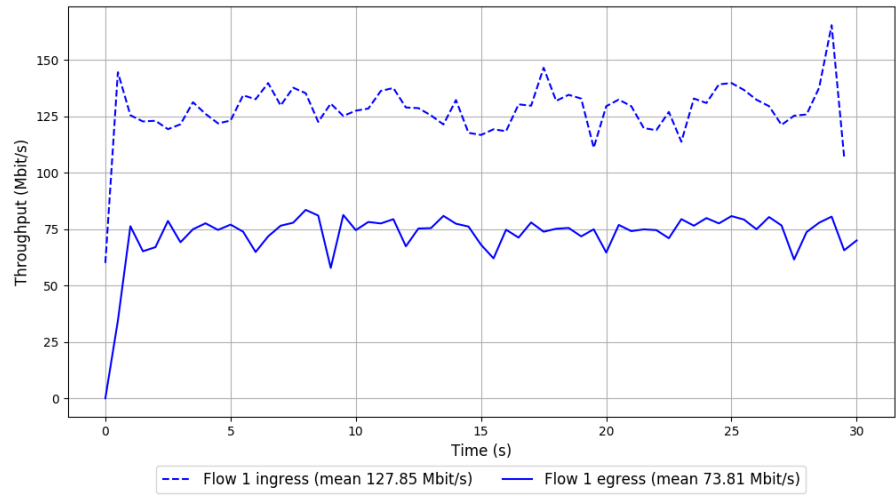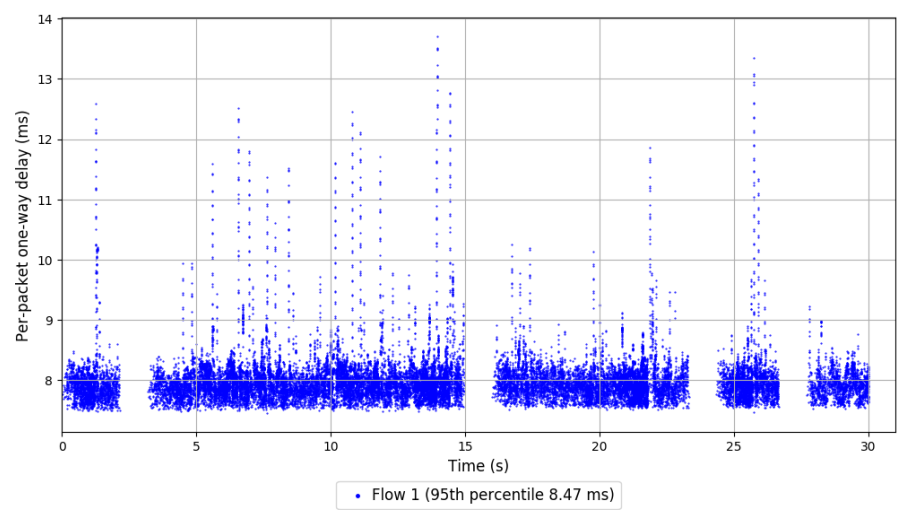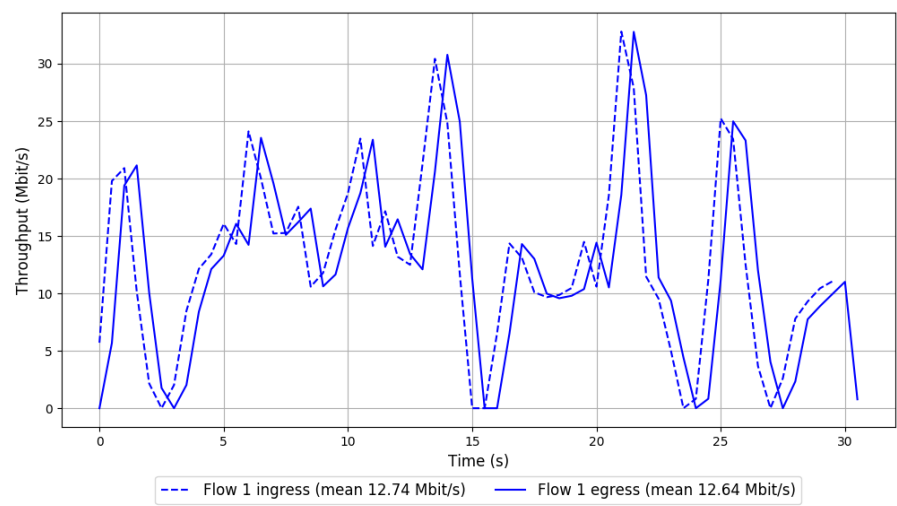

Flow 1 (95th percentile 28.24 ms)

```
Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-15 03:26:00
End at: 2018-11-15 03:26:30
Local clock offset: 2.278 ms
Remote clock offset: -1.614 ms


# Below is generated by plot.py at 2018-11-15 03:43:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 73.81 Mbit/s
95th percentile per-packet one-way delay: 23.156 ms
Loss rate: 42.25%
-- Flow 1:
Average throughput: 73.81 Mbit/s
95th percentile per-packet one-way delay: 23.156 ms
Loss rate: 42.25%
```

Run 5: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 127.85 Mbit/s)   Flow 1 egress (mean 73.81 Mbit/s)

Flow 1 (95th percentile 23.16 ms)

```
Run 1: Statistics of LEDBAT

Start at: 2018-11-15 02:01:58
End at: 2018-11-15 02:02:28
Local clock offset: 0.609 ms
Remote clock offset: -3.231 ms


# Below is generated by plot.py at 2018-11-15 03:43:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.64 Mbit/s
95th percentile per-packet one-way delay: 8.468 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 12.64 Mbit/s
95th percentile per-packet one-way delay: 8.468 ms
Loss rate: 0.79%
```
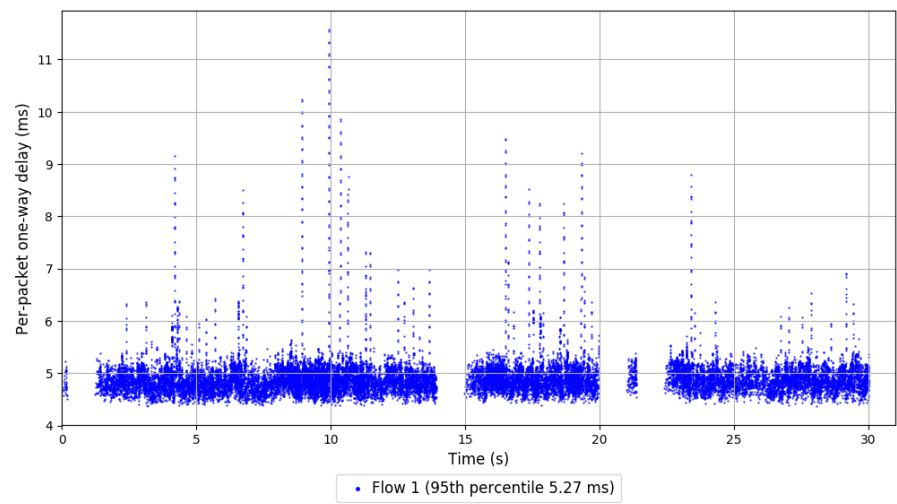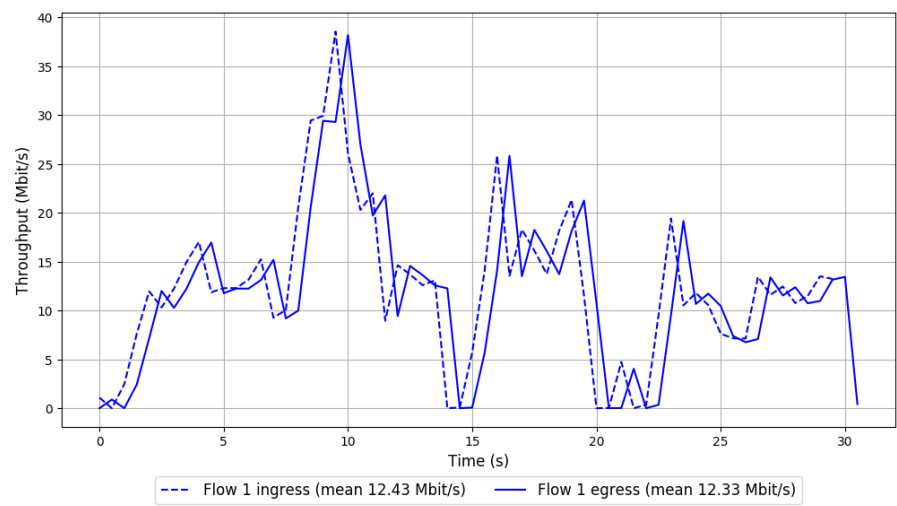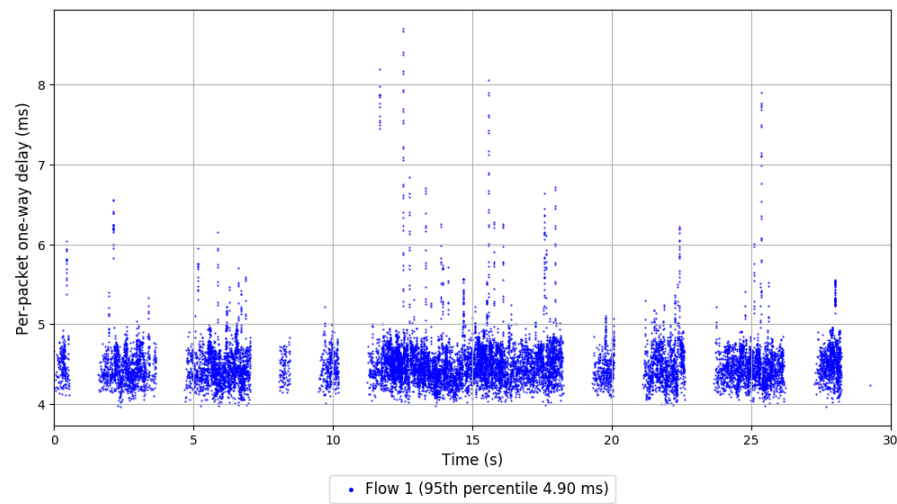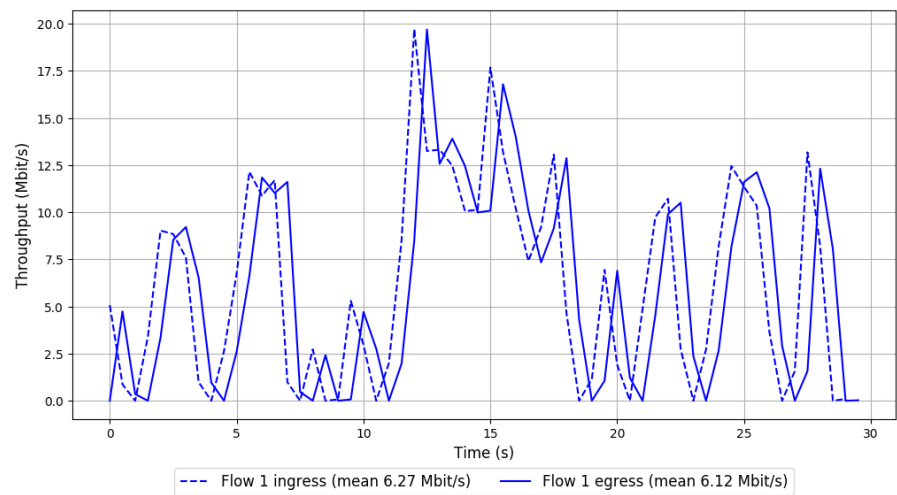
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-11-15 02:22:34
End at: 2018-11-15 02:23:04
Local clock offset: 4.611 ms
Remote clock offset: -2.85 ms


# Below is generated by plot.py at 2018-11-15 03:43:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 5.274 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 12.33 Mbit/s
95th percentile per-packet one-way delay: 5.274 ms
Loss rate: 0.77%
```

Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-11-15 02:43:05
End at: 2018-11-15 02:43:35
Local clock offset: 4.29 ms
Remote clock offset: -3.647 ms


# Below is generated by plot.py at 2018-11-15 03:43:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.12 Mbit/s
95th percentile per-packet one-way delay: 4.902 ms
Loss rate: 2.45%
-- Flow 1:
Average throughput: 6.12 Mbit/s
95th percentile per-packet one-way delay: 4.902 ms
Loss rate: 2.45%
```
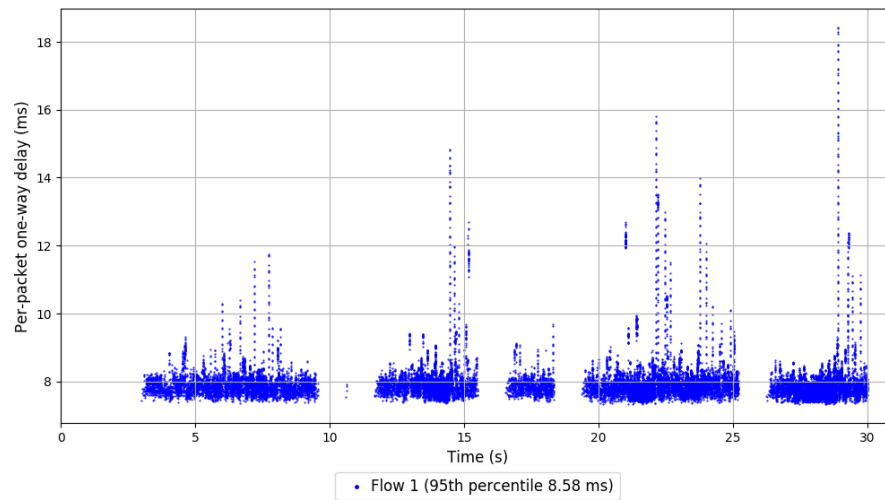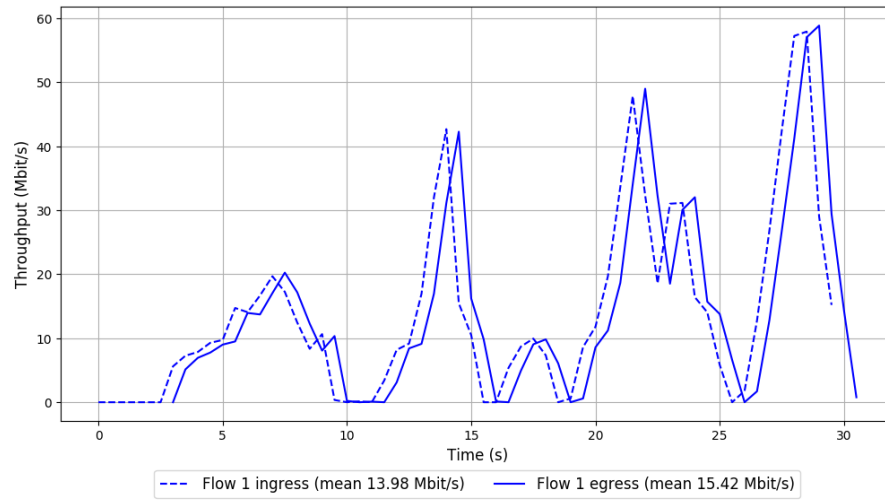
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 6.27 Mbit/s) Flow 1 egress (mean 6.12 Mbit/s)

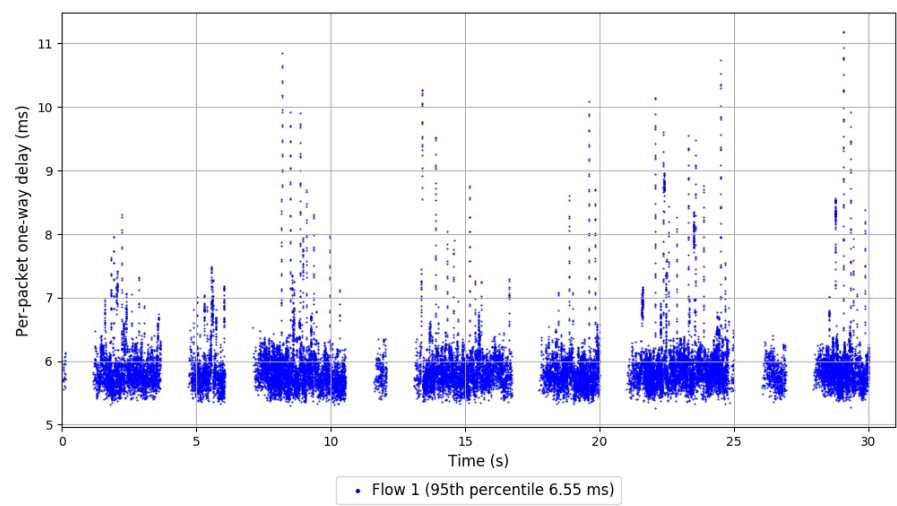
Flow 1 (95th percentile 4.90 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-11-15 03:03:24
End at: 2018-11-15 03:03:54
Local clock offset: 0.196 ms
Remote clock offset: -3.308 ms


# Below is generated by plot.py at 2018-11-15 03:43:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 15.42 Mbit/s
95th percentile per-packet one-way delay: 8.584 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 15.42 Mbit/s
95th percentile per-packet one-way delay: 8.584 ms
Loss rate: 0.71%
```

Run 4: Report of LEDBAT — Data Link

Flow 1 ingress (mean 13.98 Mbit/s) — — —   Flow 1 egress (mean 15.42 Mbit/s) ———
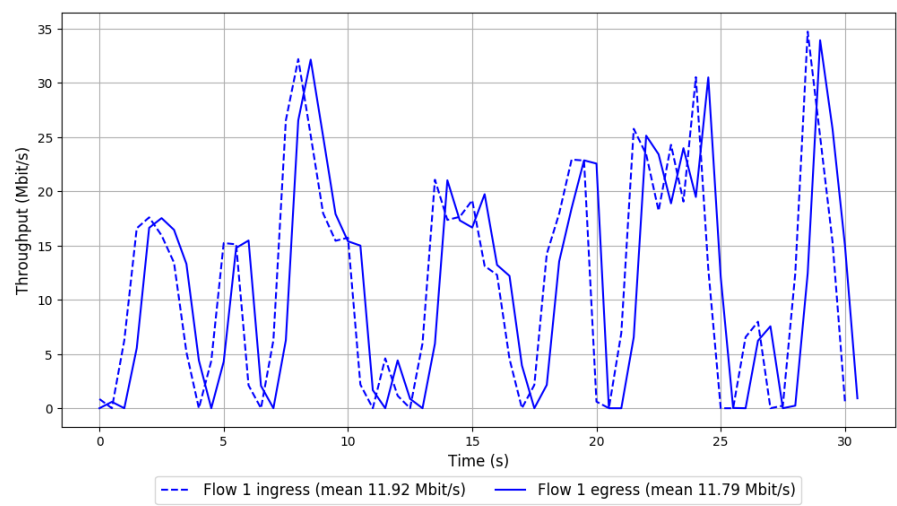

Flow 1 (95th percentile 8.58 ms)

```
Run 5: Statistics of LEDBAT

Start at: 2018-11-15 03:23:35
End at: 2018-11-15 03:24:05
Local clock offset: 2.597 ms
Remote clock offset: -2.881 ms


# Below is generated by plot.py at 2018-11-15 03:43:09
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 6.551 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 11.79 Mbit/s
95th percentile per-packet one-way delay: 6.551 ms
Loss rate: 1.08%
```
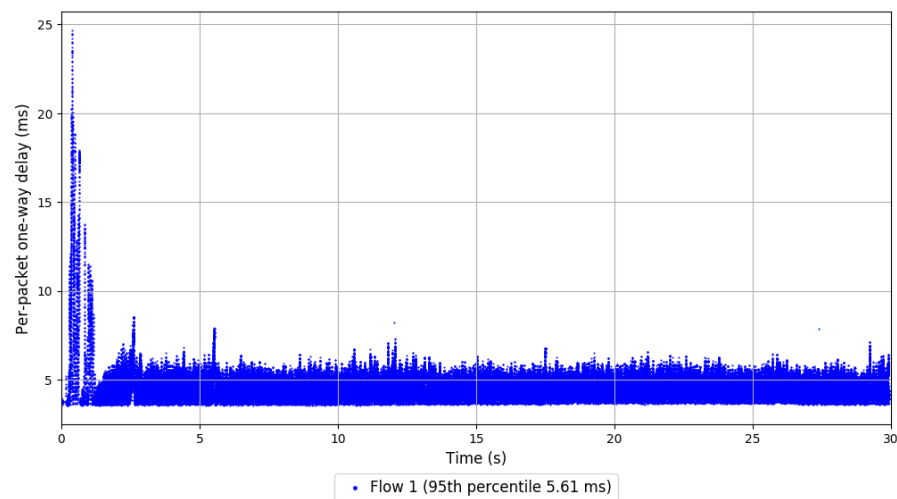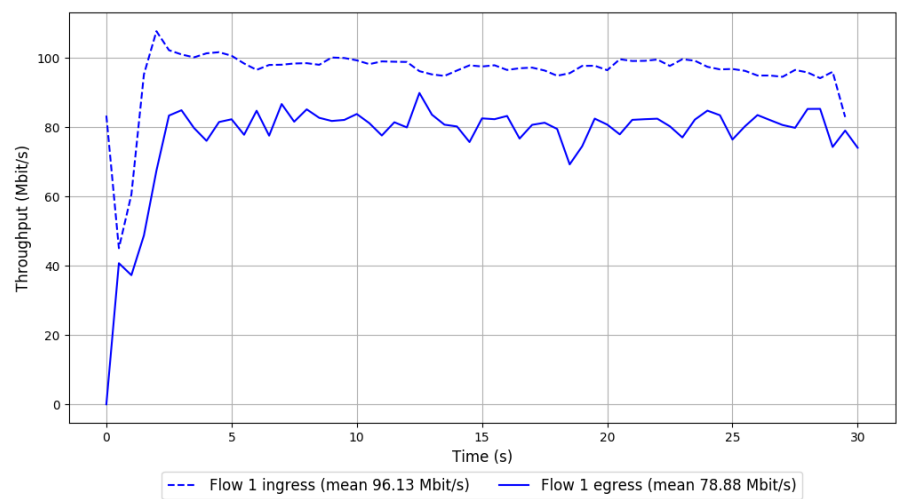
Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 11.92 Mbit/s)   Flow 1 egress (mean 11.79 Mbit/s)

Flow 1 (95th percentile 6.55 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-11-15 02:00:50
End at: 2018-11-15 02:01:20
Local clock offset: 4.291 ms
Remote clock offset: -3.53 ms


# Below is generated by plot.py at 2018-11-15 03:43:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 78.88 Mbit/s
95th percentile per-packet one-way delay: 5.607 ms
Loss rate: 17.94%
-- Flow 1:
Average throughput: 78.88 Mbit/s
95th percentile per-packet one-way delay: 5.607 ms
Loss rate: 17.94%
```
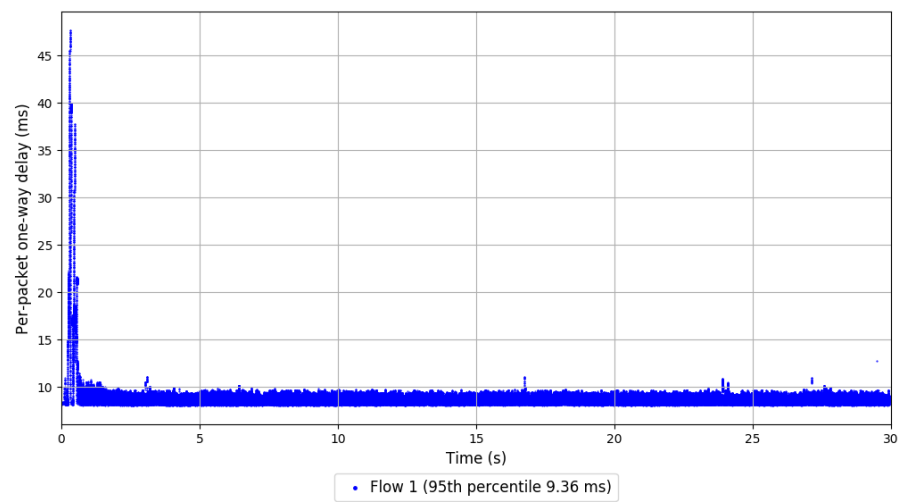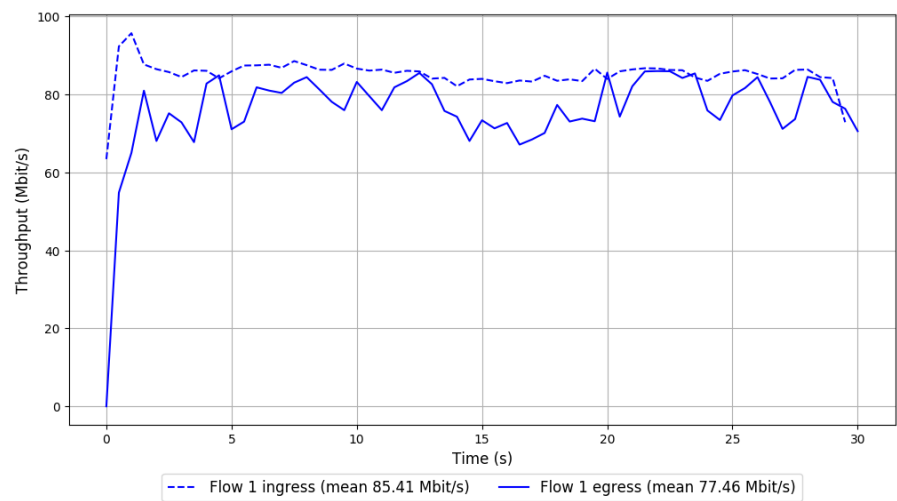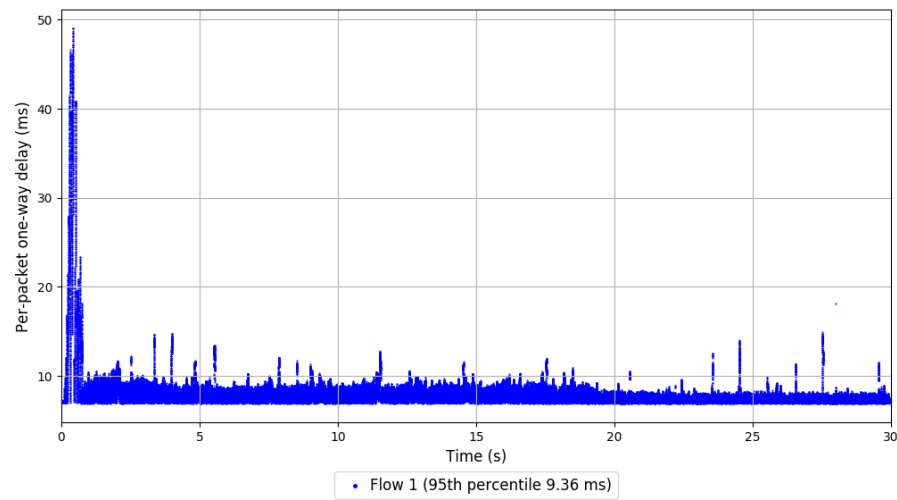
Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-11-15 02:21:26
End at: 2018-11-15 02:21:56
Local clock offset: -3.921 ms
Remote clock offset: -7.575 ms


# Below is generated by plot.py at 2018-11-15 03:43:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.46 Mbit/s
95th percentile per-packet one-way delay: 9.356 ms
Loss rate: 9.31%
-- Flow 1:
Average throughput: 77.46 Mbit/s
95th percentile per-packet one-way delay: 9.356 ms
Loss rate: 9.31%
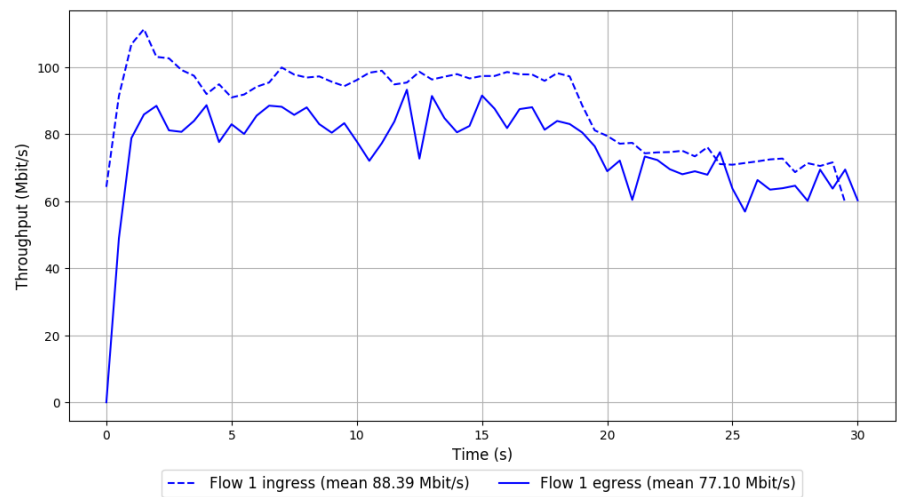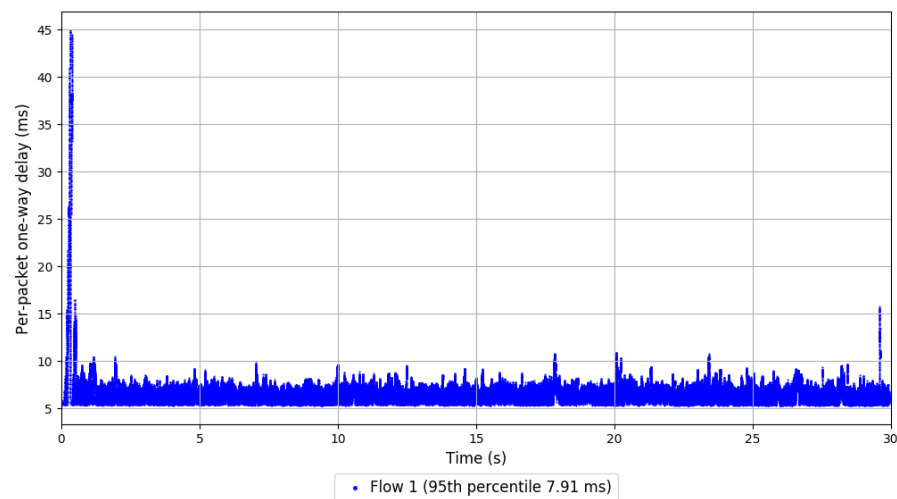```

Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-11-15 02:41:56
End at: 2018-11-15 02:42:26
Local clock offset: 1.069 ms
Remote clock offset: -3.681 ms

Below is generated by plot.py at 2018-11-15 03:43:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 77.10 Mbit/s
95th percentile per-packet one-way delay: 9.360 ms
Loss rate: 12.77%
-- Flow 1:
Average throughput: 77.10 Mbit/s
95th percentile per-packet one-way delay: 9.360 ms
Loss rate: 12.77%
```
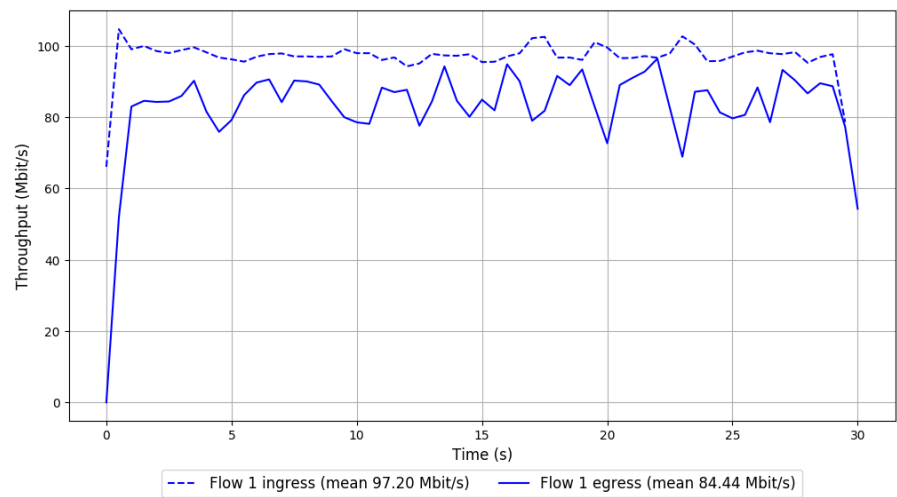
Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-11-15 03:02:13
End at: 2018-11-15 03:02:43
Local clock offset: 2.75 ms
Remote clock offset: -3.384 ms

Below is generated by plot.py at 2018-11-15 03:44:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 84.44 Mbit/s
95th percentile per-packet one-way delay: 7.906 ms
Loss rate: 13.12%
-- Flow 1:
Average throughput: 84.44 Mbit/s
95th percentile per-packet one-way delay: 7.906 ms
Loss rate: 13.12%
```
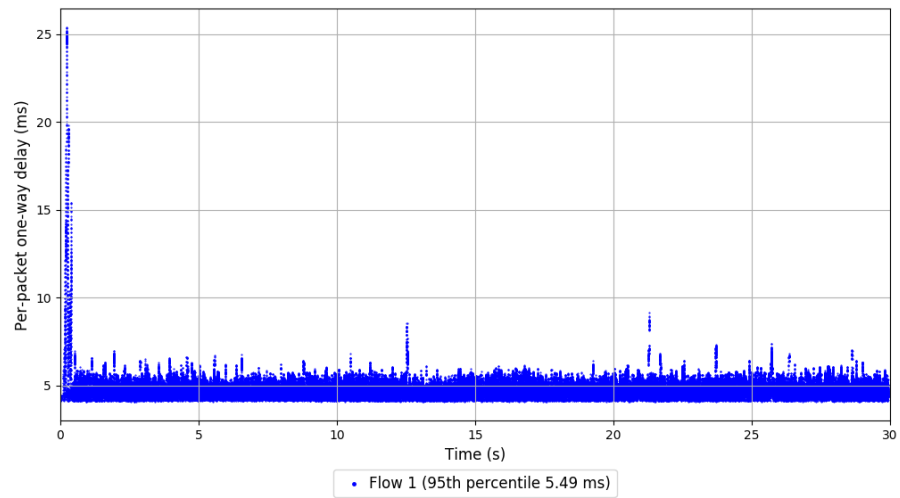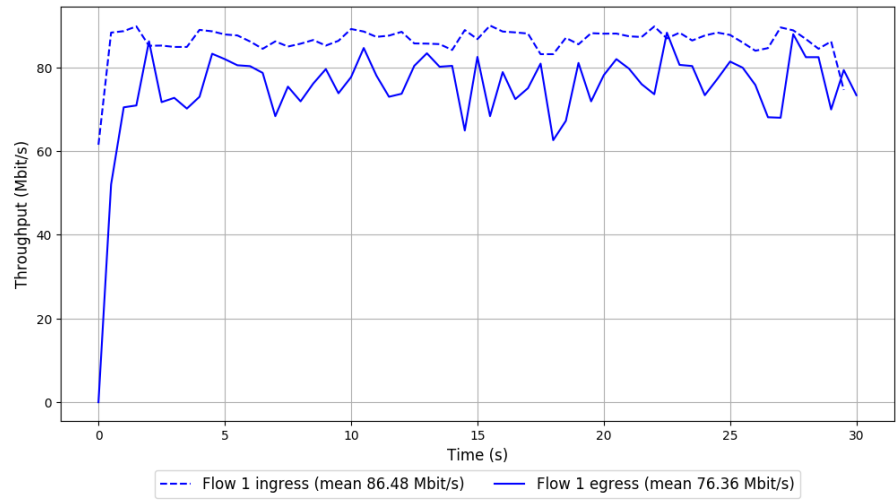
# Run 4: Report of Indigo-Muses — Data Link



Flow 1 ingress (mean 97.20 Mbit/s)　　Flow 1 egress (mean 84.44 Mbit/s)



Flow 1 (95th percentile 7.91 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-11-15 03:22:26
End at: 2018-11-15 03:22:56
Local clock offset: 4.913 ms
Remote clock offset: -2.253 ms


# Below is generated by plot.py at 2018-11-15 03:44:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.36 Mbit/s
95th percentile per-packet one-way delay: 5.494 ms
Loss rate: 11.70%
-- Flow 1:
Average throughput: 76.36 Mbit/s
95th percentile per-packet one-way delay: 5.494 ms
Loss rate: 11.70%
```

Run 5: Report of Indigo-Muses — Data Link
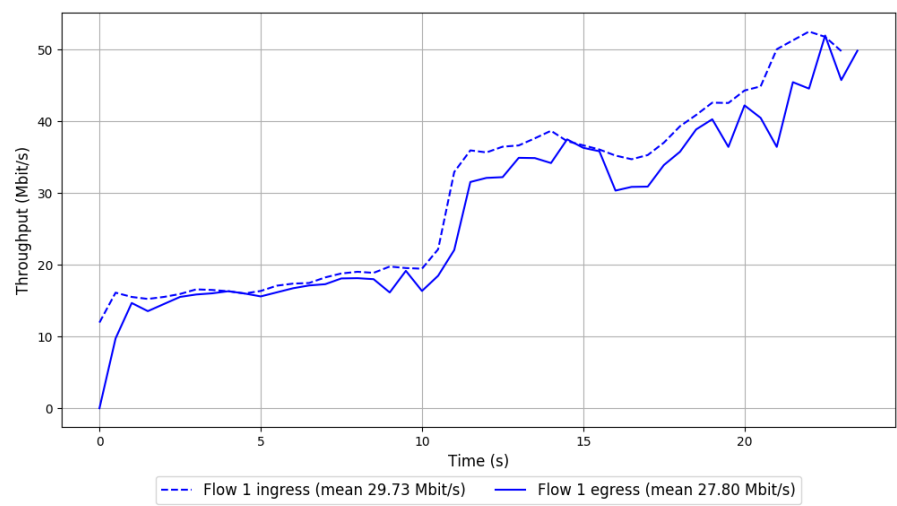
```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-15 01:57:29
End at: 2018-11-15 01:57:59
Local clock offset: 3.579 ms
Remote clock offset: -2.118 ms
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-11-15 02:18:02
End at: 2018-11-15 02:18:32
Local clock offset: 4.134 ms
Remote clock offset: -4.433 ms


# Below is generated by plot.py at 2018-11-15 03:44:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.65 Mbit/s
95th percentile per-packet one-way delay: 4.705 ms
Loss rate: 10.48%
-- Flow 1:
Average throughput: 76.65 Mbit/s
95th percentile per-packet one-way delay: 4.705 ms
Loss rate: 10.48%
```
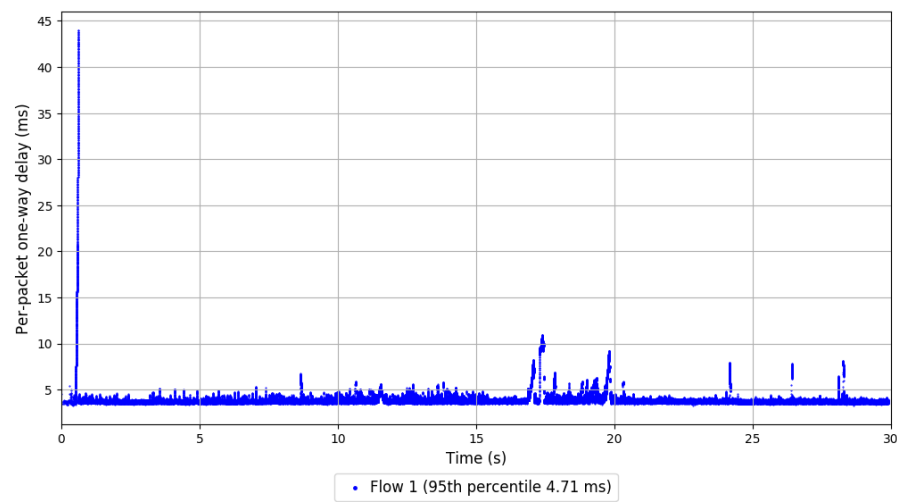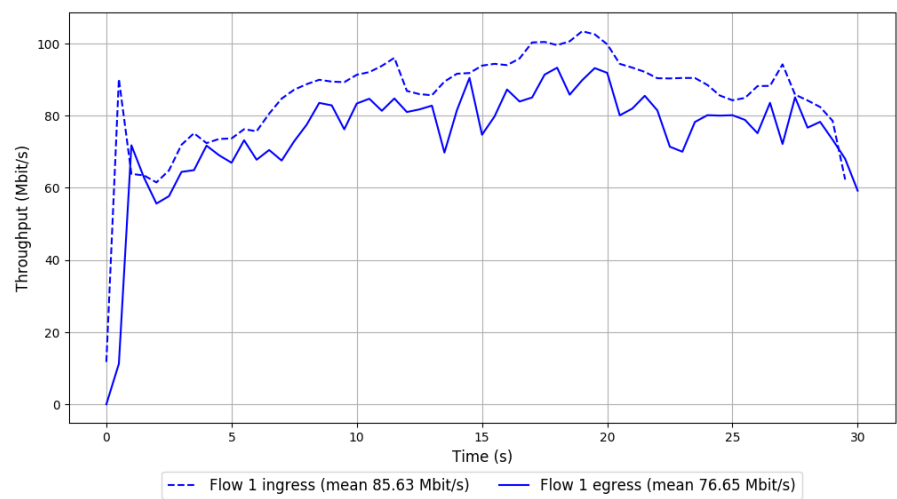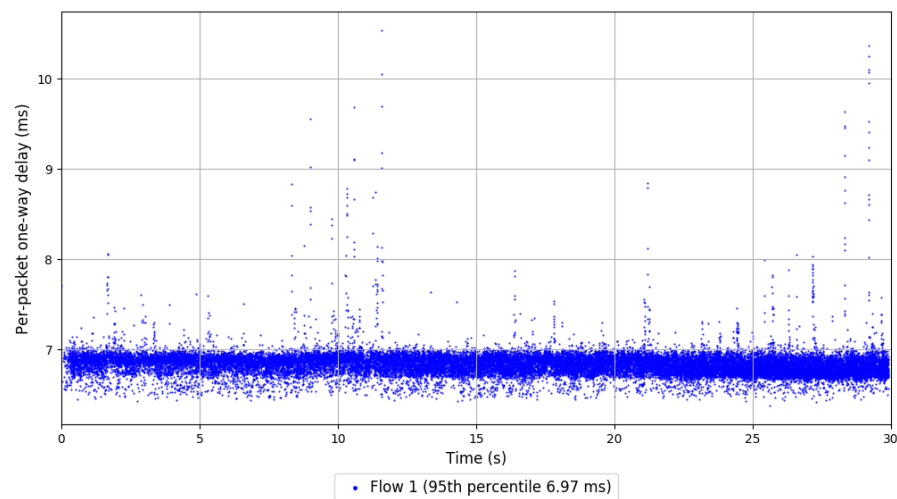
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 85.63 Mbit/s) --- Flow 1 egress (mean 76.65 Mbit/s)

Flow 1 (95th percentile 4.71 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-11-15 02:38:34
End at: 2018-11-15 02:39:04
Local clock offset: 1.483 ms
Remote clock offset: -3.832 ms


# Below is generated by plot.py at 2018-11-15 03:44:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.40 Mbit/s
95th percentile per-packet one-way delay: 6.973 ms
Loss rate: 3.93%
-- Flow 1:
Average throughput: 11.40 Mbit/s
95th percentile per-packet one-way delay: 6.973 ms
Loss rate: 3.93%
```
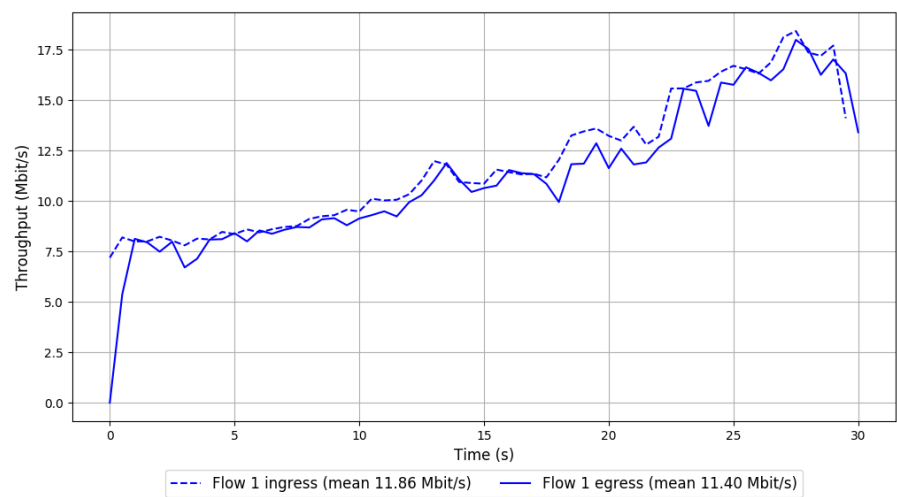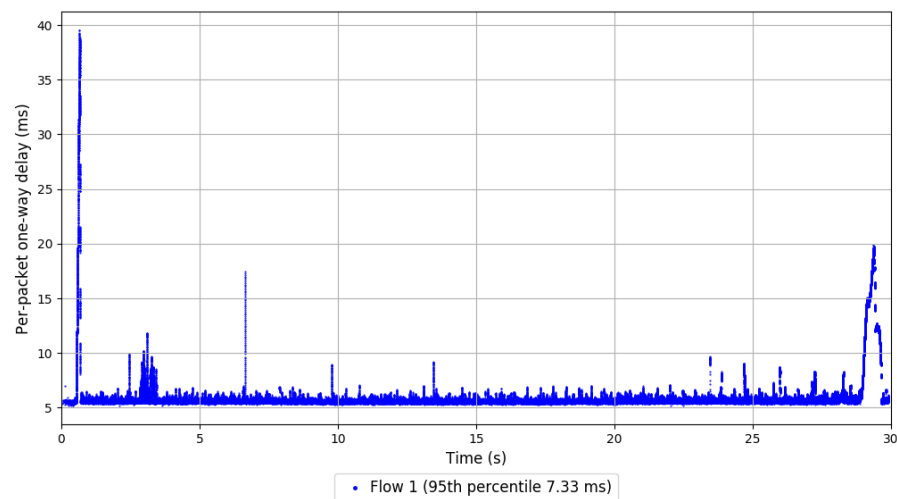
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 11.86 Mbit/s)   Flow 1 egress (mean 11.40 Mbit/s)

Flow 1 (95th percentile 6.97 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-11-15 02:58:47
End at: 2018-11-15 02:59:17
Local clock offset: 3.376 ms
Remote clock offset: -3.199 ms


# Below is generated by plot.py at 2018-11-15 03:44:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 66.91 Mbit/s
95th percentile per-packet one-way delay: 7.331 ms
Loss rate: 8.81%
-- Flow 1:
Average throughput: 66.91 Mbit/s
95th percentile per-packet one-way delay: 7.331 ms
Loss rate: 8.81%
```
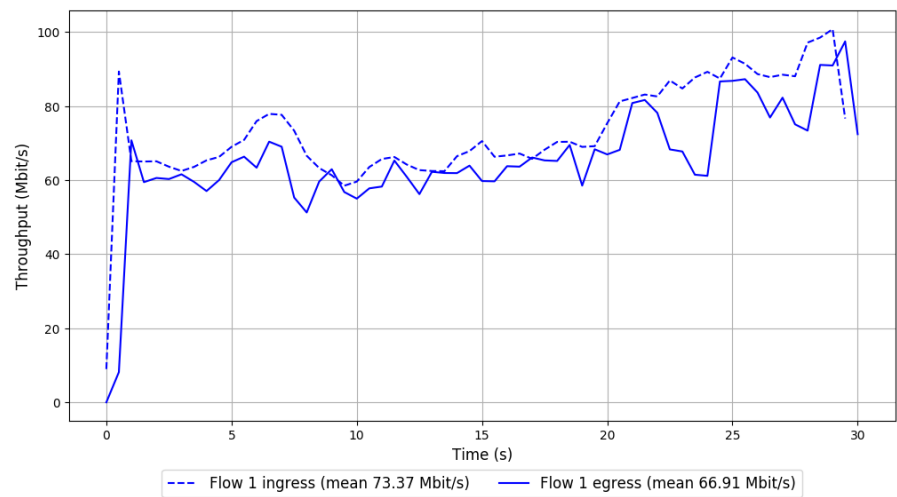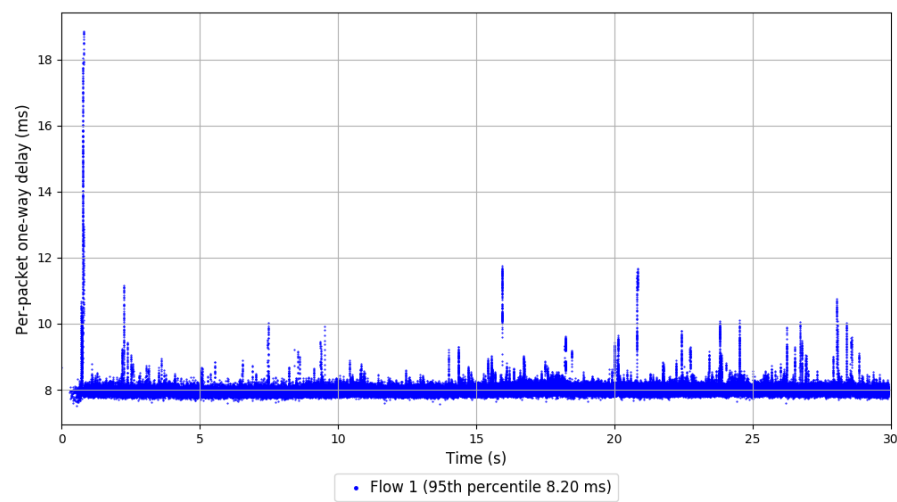
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 73.37 Mbit/s) —— Flow 1 egress (mean 66.91 Mbit/s)

· Flow 1 (95th percentile 7.33 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-11-15 03:19:06
End at: 2018-11-15 03:19:36
Local clock offset: -0.072 ms
Remote clock offset: -2.936 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.28 Mbit/s
95th percentile per-packet one-way delay: 8.195 ms
Loss rate: 10.49%
-- Flow 1:
Average throughput: 65.28 Mbit/s
95th percentile per-packet one-way delay: 8.195 ms
Loss rate: 10.49%
```
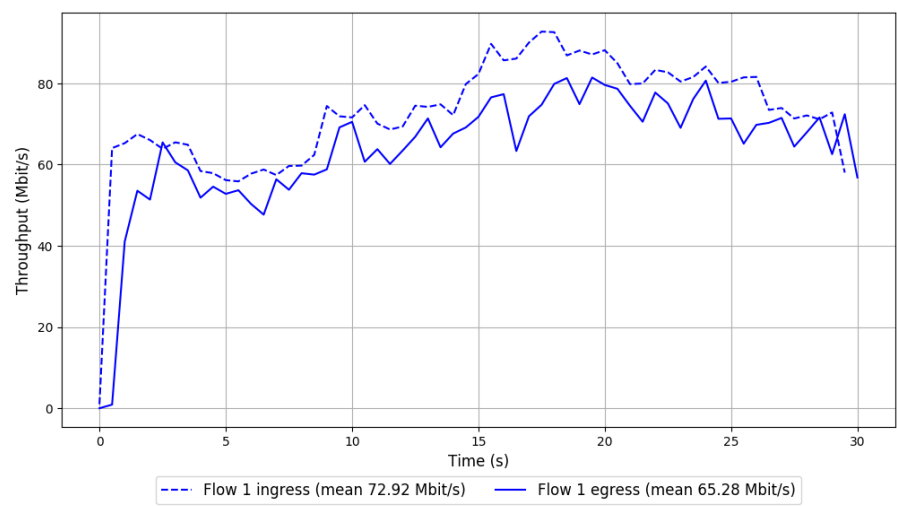
Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 72.92 Mbit/s) --- Flow 1 egress (mean 65.28 Mbit/s)

Flow 1 (95th percentile 8.20 ms)
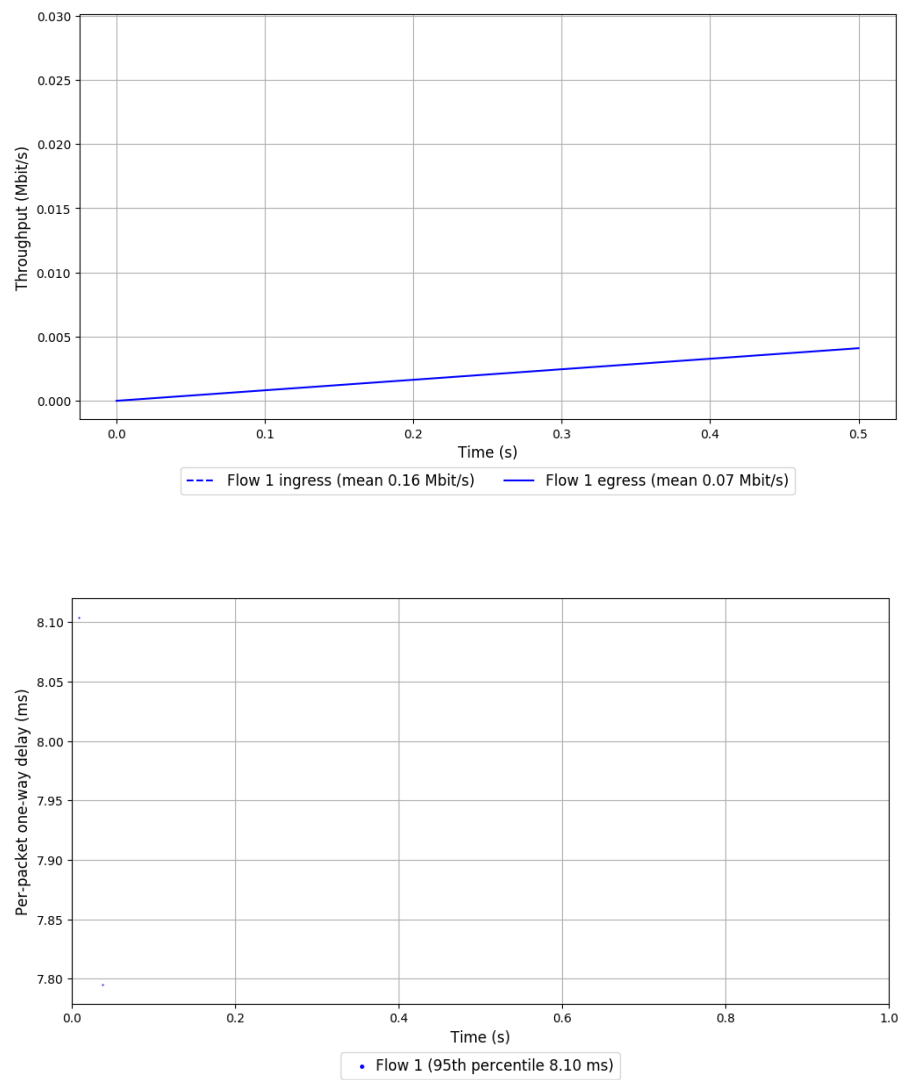
```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-15 02:15:45
End at: 2018-11-15 02:16:15
Local clock offset: 1.278 ms
Remote clock offset: -3.172 ms
```
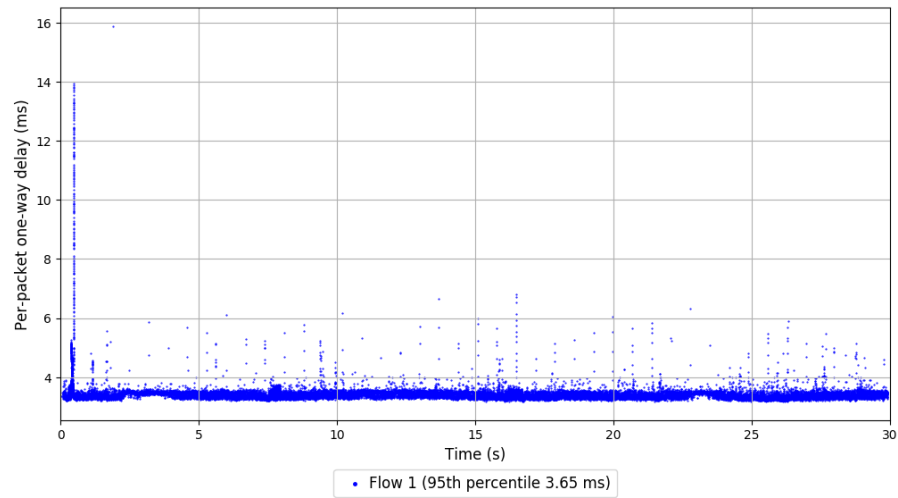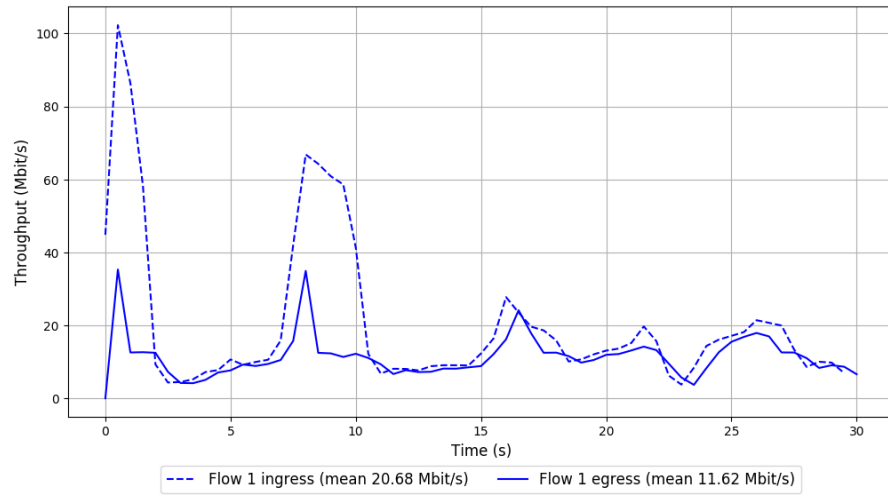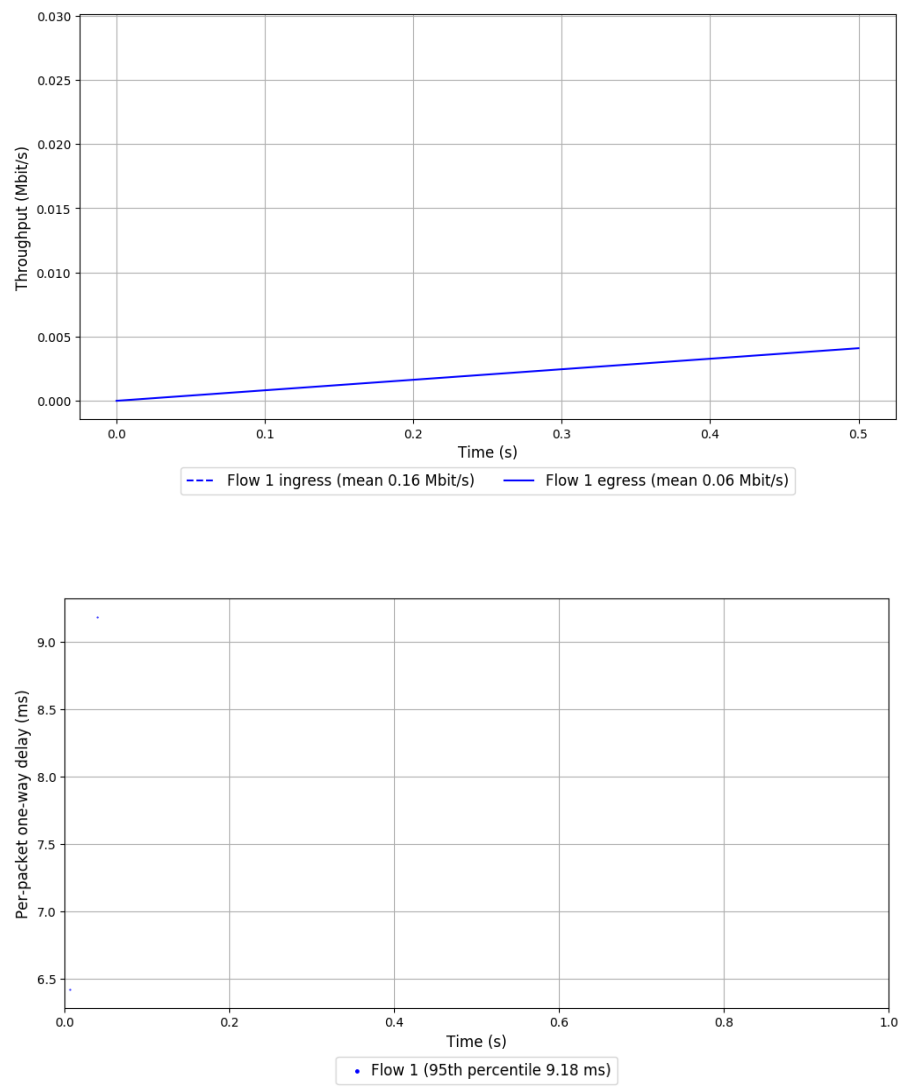
Run 1: Report of PCC-Expr — Data Link

Throughput (Mbit/s) vs Time (s)

--- Flow 1 ingress (mean 0.16 Mbit/s)   —— Flow 1 egress (mean 0.07 Mbit/s)

Per-packet one-way delay (ms) vs Time (s)

• Flow 1 (95th percentile 8.10 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-11-15 02:36:18
End at: 2018-11-15 02:36:48
Local clock offset: 4.636 ms
Remote clock offset: -4.053 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.62 Mbit/s
95th percentile per-packet one-way delay: 3.651 ms
Loss rate: 43.79%
-- Flow 1:
Average throughput: 11.62 Mbit/s
95th percentile per-packet one-way delay: 3.651 ms
Loss rate: 43.79%
```
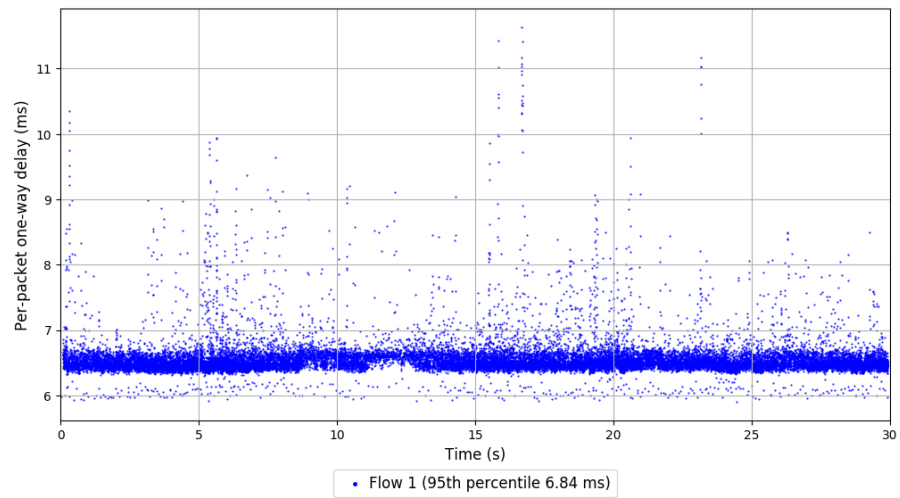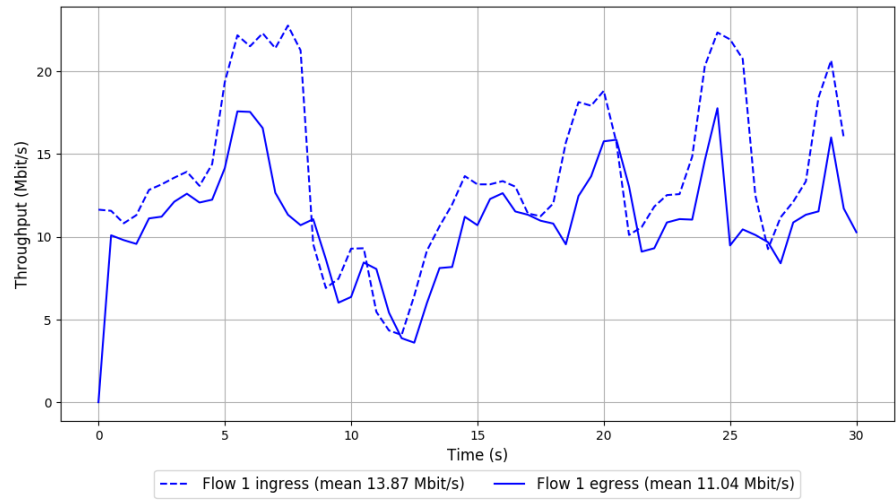
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 20.68 Mbit/s) --- Flow 1 egress (mean 11.62 Mbit/s)

Flow 1 (95th percentile 3.65 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-11-15 02:56:31
End at: 2018-11-15 02:57:01
Local clock offset: 2.251 ms
Remote clock offset: -3.493 ms
```

Run 3: Report of PCC-Expr — Data Link

```
Run 4: Statistics of PCC-Expr

Start at: 2018-11-15 03:16:54
End at: 2018-11-15 03:17:24
Local clock offset: 2.049 ms
Remote clock offset: -2.621 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.04 Mbit/s
95th percentile per-packet one-way delay: 6.836 ms
Loss rate: 20.44%
-- Flow 1:
Average throughput: 11.04 Mbit/s
95th percentile per-packet one-way delay: 6.836 ms
Loss rate: 20.44%
```
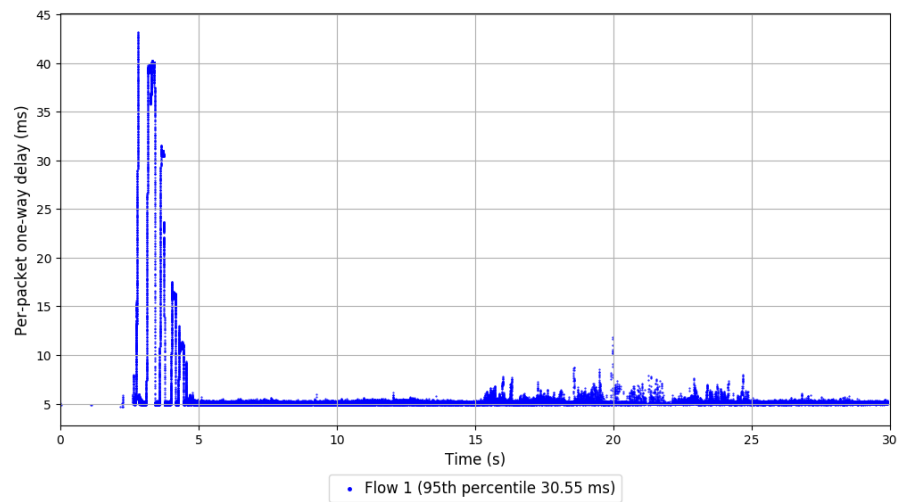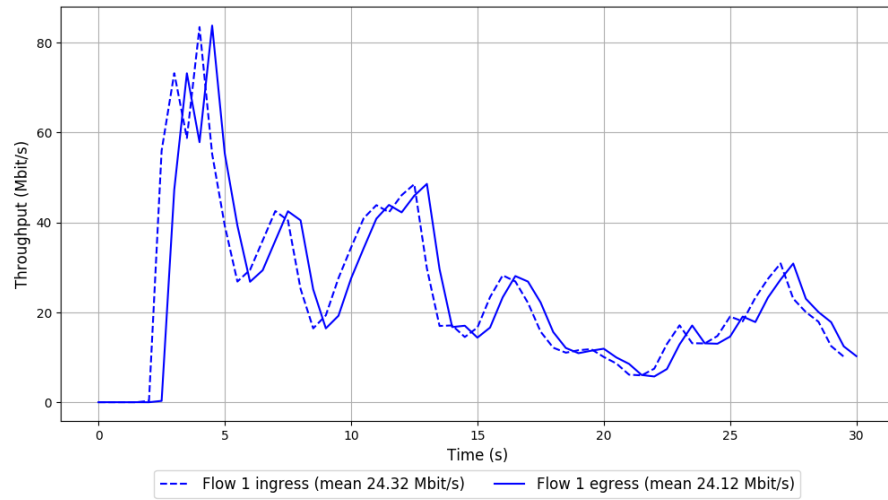
Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 13.87 Mbit/s) --- Flow 1 egress (mean 11.04 Mbit/s)

Flow 1 (95th percentile 6.84 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-11-15 03:37:38
End at: 2018-11-15 03:38:08
Local clock offset: 4.018 ms
Remote clock offset: -1.868 ms
```

Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-11-15 02:10:56
End at: 2018-11-15 02:11:26
Local clock offset: 3.77 ms
Remote clock offset: -3.737 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 24.12 Mbit/s
95th percentile per-packet one-way delay: 30.548 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 24.12 Mbit/s
95th percentile per-packet one-way delay: 30.548 ms
Loss rate: 0.85%
```

Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-11-15 02:31:49
End at: 2018-11-15 02:32:19
Local clock offset: 0.402 ms
Remote clock offset: -3.82 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.29 Mbit/s
95th percentile per-packet one-way delay: 8.305 ms
Loss rate: 2.81%
-- Flow 1:
Average throughput: 10.29 Mbit/s
95th percentile per-packet one-way delay: 8.305 ms
Loss rate: 2.81%
```
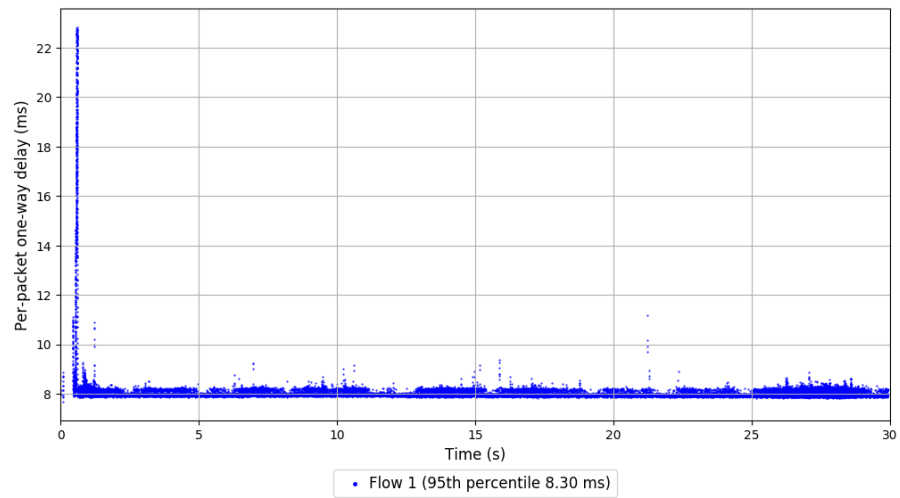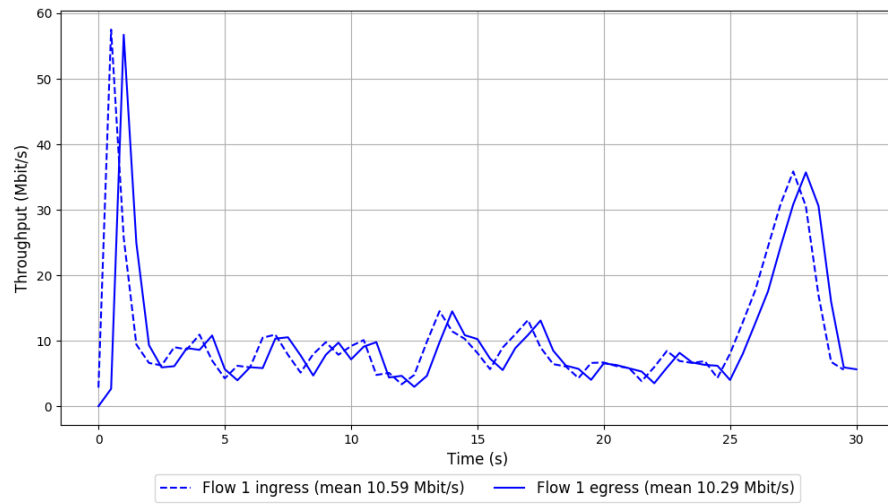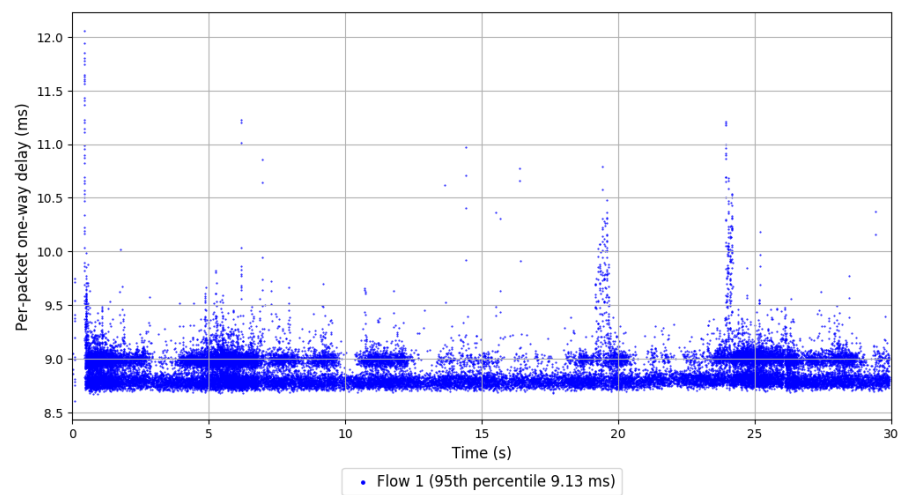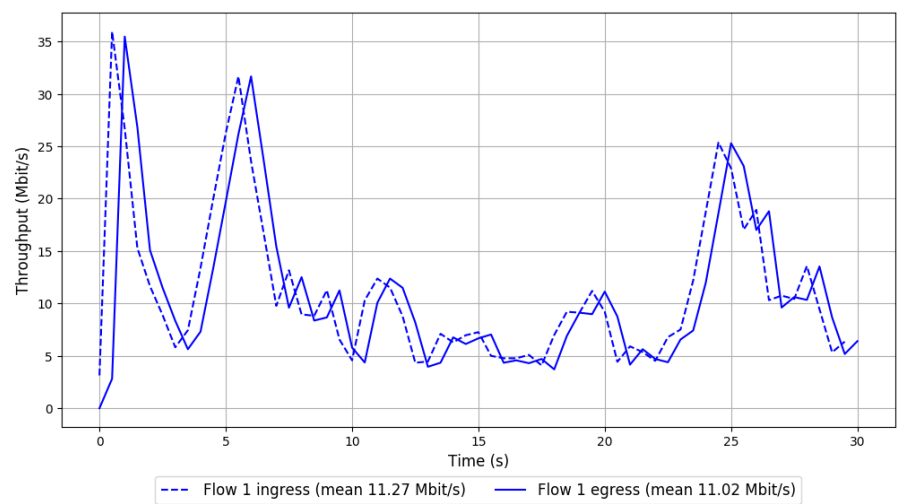
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-11-15 02:51:57
End at: 2018-11-15 02:52:27
Local clock offset: 0.565 ms
Remote clock offset: -2.733 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.02 Mbit/s
95th percentile per-packet one-way delay: 9.132 ms
Loss rate: 2.26%
-- Flow 1:
Average throughput: 11.02 Mbit/s
95th percentile per-packet one-way delay: 9.132 ms
Loss rate: 2.26%
```
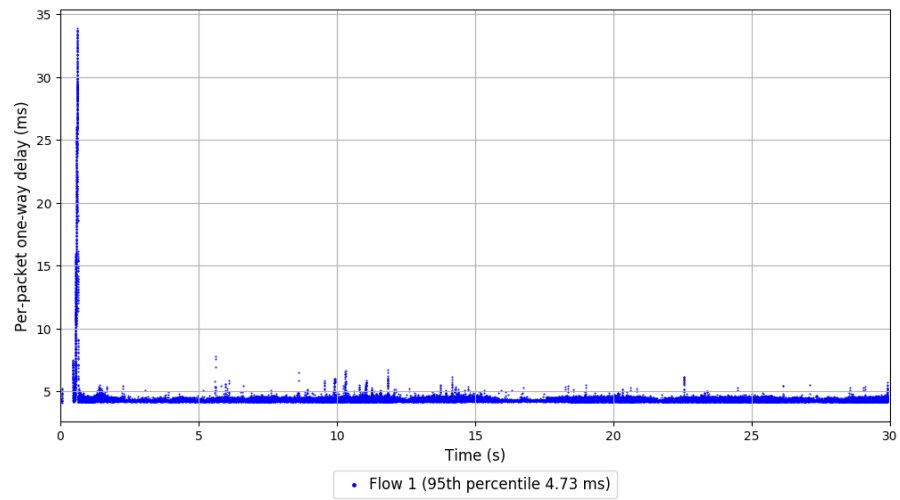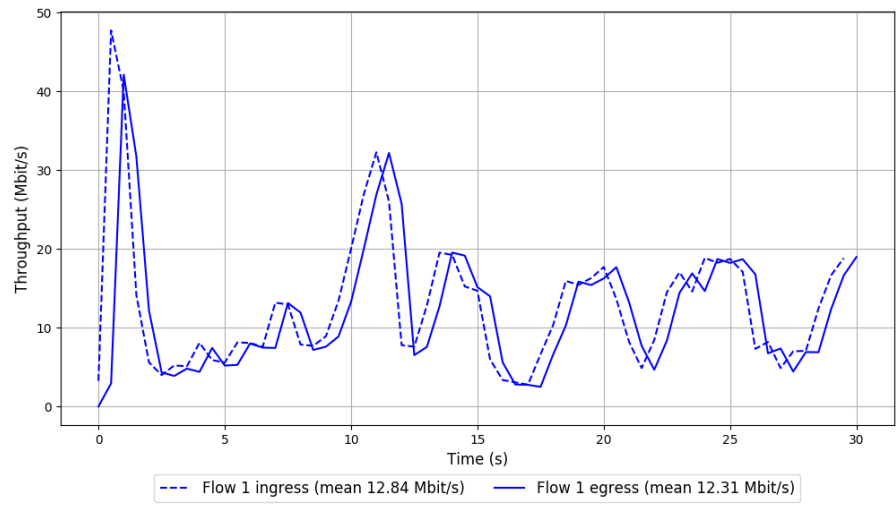
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 11.27 Mbit/s) — — — Flow 1 egress (mean 11.02 Mbit/s)

• Flow 1 (95th percentile 9.13 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-11-15 03:12:28
End at: 2018-11-15 03:12:58
Local clock offset: 4.656 ms
Remote clock offset: -2.2 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.31 Mbit/s
95th percentile per-packet one-way delay: 4.734 ms
Loss rate: 4.12%
-- Flow 1:
Average throughput: 12.31 Mbit/s
95th percentile per-packet one-way delay: 4.734 ms
Loss rate: 4.12%
```
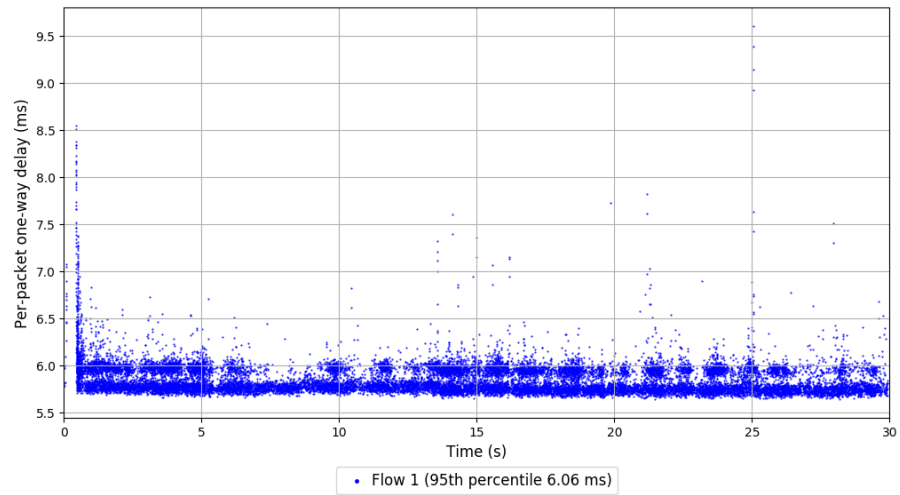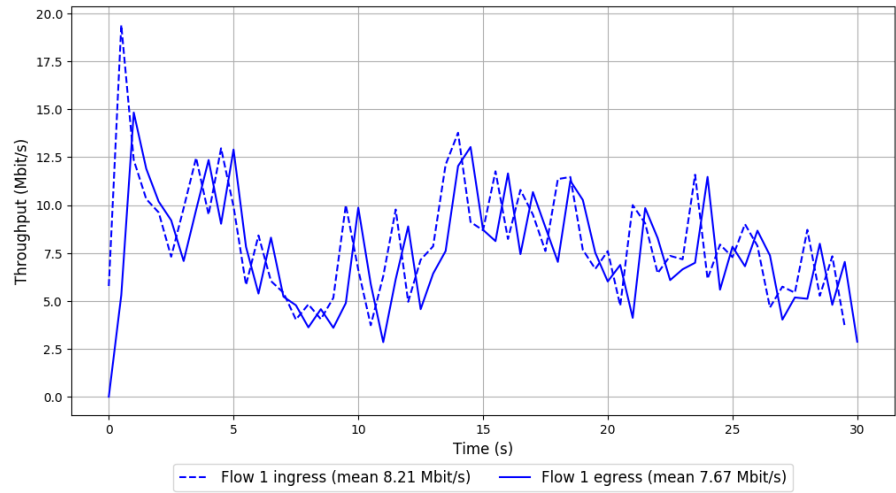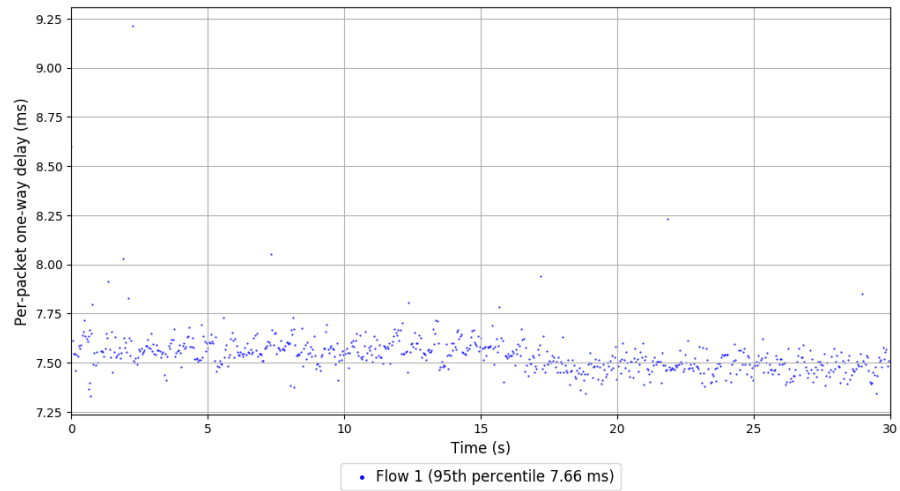
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 12.84 Mbit/s) Flow 1 egress (mean 12.31 Mbit/s)

Flow 1 (95th percentile 4.73 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-11-15 03:32:56
End at: 2018-11-15 03:33:26
Local clock offset: 2.402 ms
Remote clock offset: -2.632 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.67 Mbit/s
95th percentile per-packet one-way delay: 6.059 ms
Loss rate: 6.56%
-- Flow 1:
Average throughput: 7.67 Mbit/s
95th percentile per-packet one-way delay: 6.059 ms
Loss rate: 6.56%
```

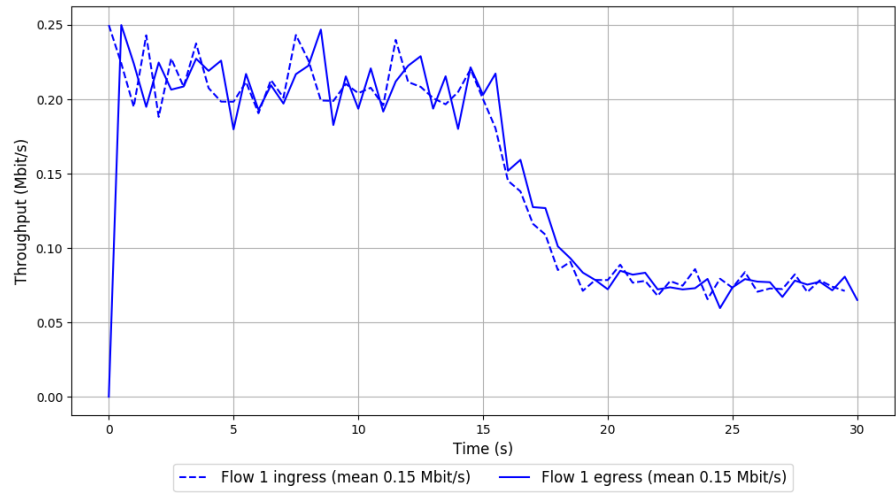Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-11-15 02:06:28
End at: 2018-11-15 02:06:58
Local clock offset: 1.16 ms
Remote clock offset: -3.122 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 7.659 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 7.659 ms
Loss rate: 0.44%
```

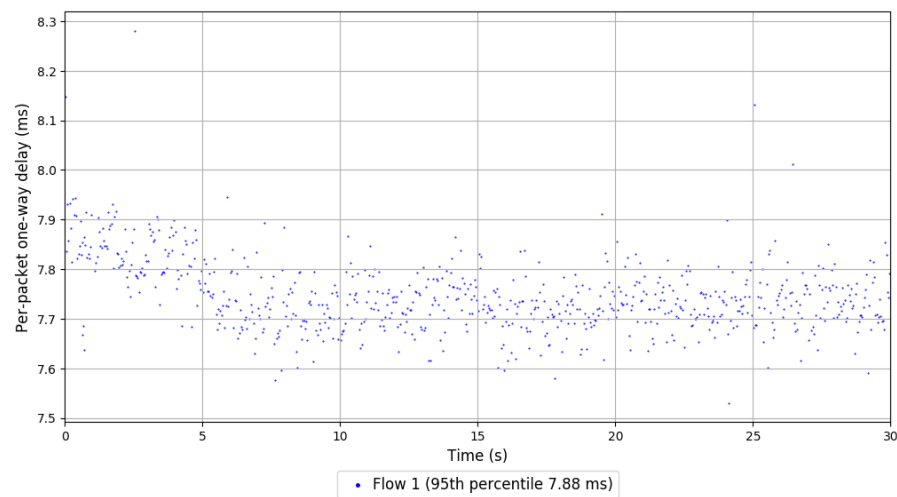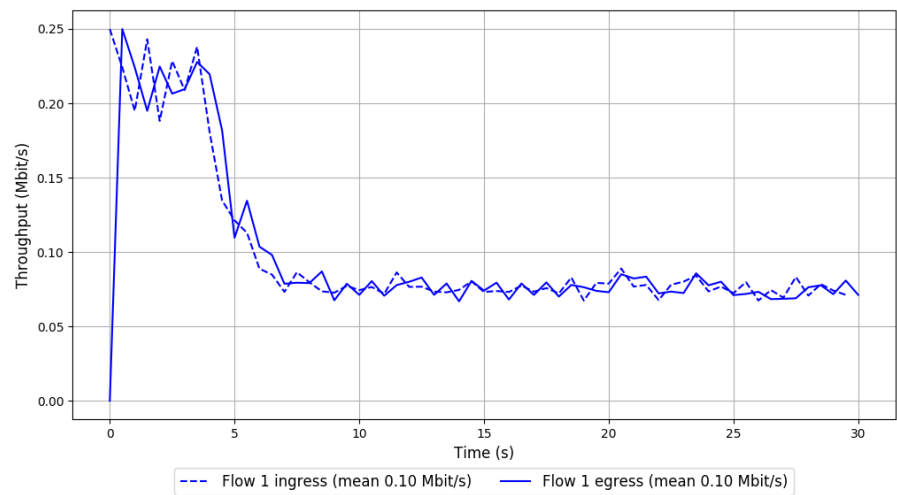# Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-11-15 02:27:14
End at: 2018-11-15 02:27:44
Local clock offset: 1.108 ms
Remote clock offset: -3.463 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 7.878 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 7.878 ms
Loss rate: 0.79%
```

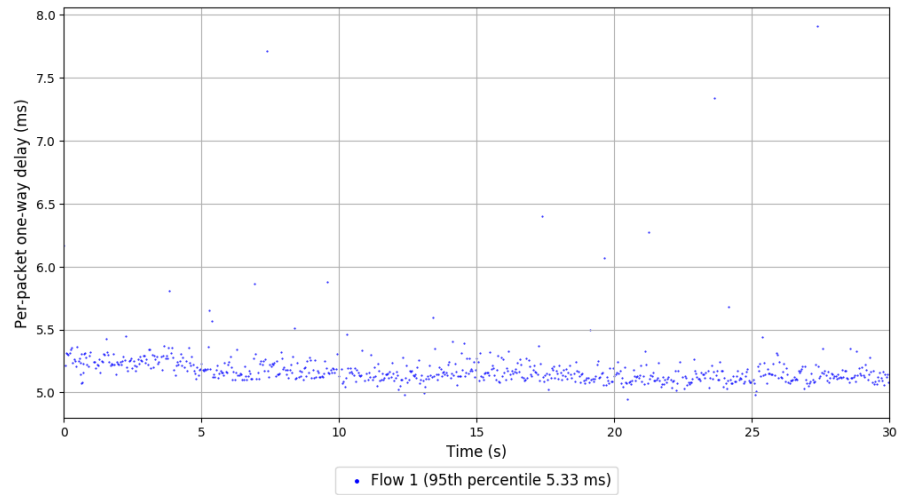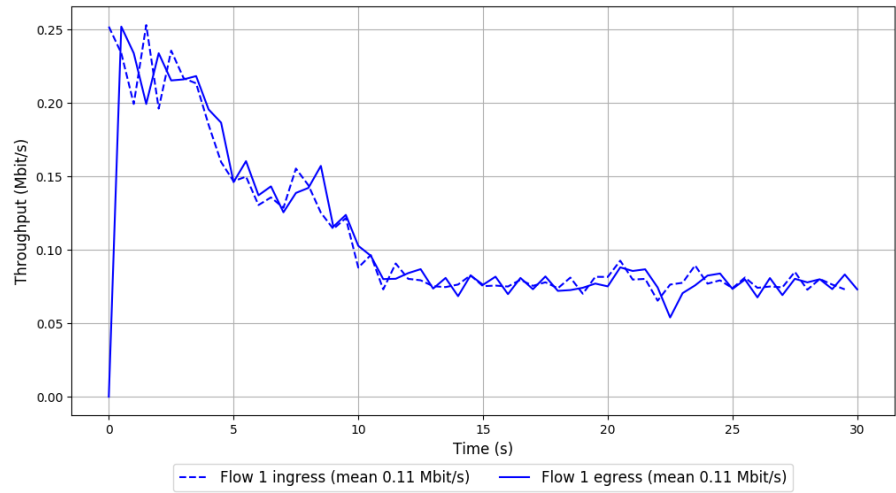## Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-11-15 02:47:33
End at: 2018-11-15 02:48:03
Local clock offset: 2.87 ms
Remote clock offset: -3.862 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 5.335 ms
Loss rate: 1.40%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 5.335 ms
Loss rate: 1.40%
```

Run 3: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.11 Mbit/s)   Flow 1 egress (mean 0.11 Mbit/s)
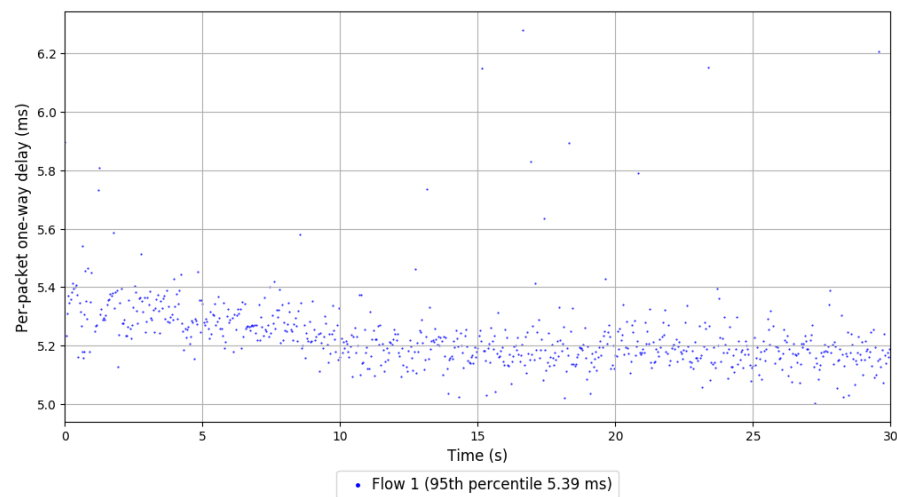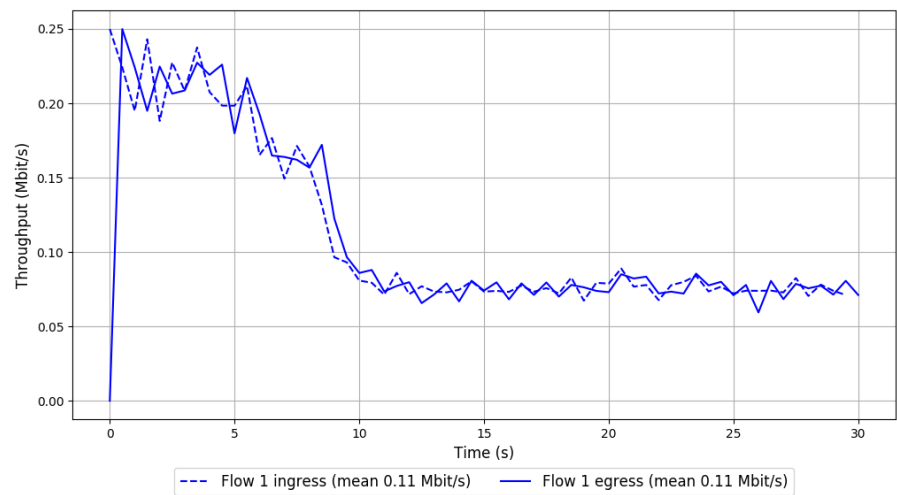
Flow 1 (95th percentile 5.33 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-11-15 03:08:03
End at: 2018-11-15 03:08:33
Local clock offset: 2.721 ms
Remote clock offset: -2.914 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 5.389 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 5.389 ms
Loss rate: 0.72%
```

Run 4: Report of SCReAM — Data Link

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

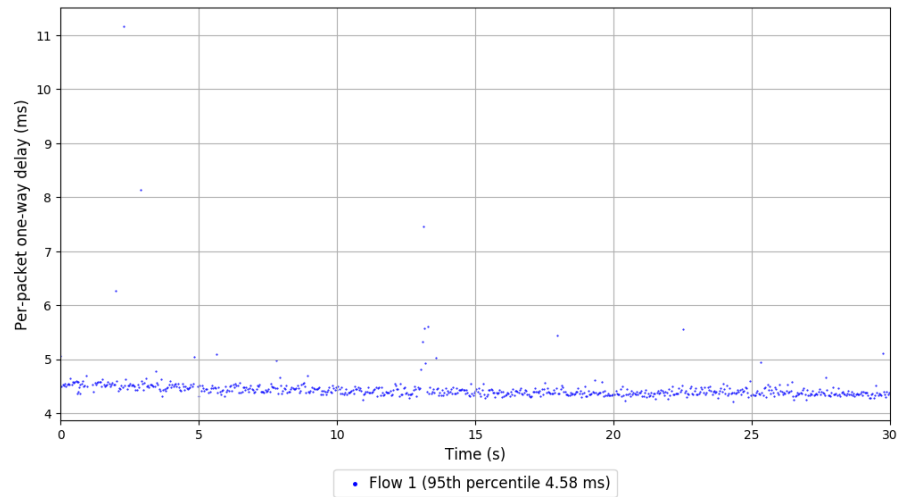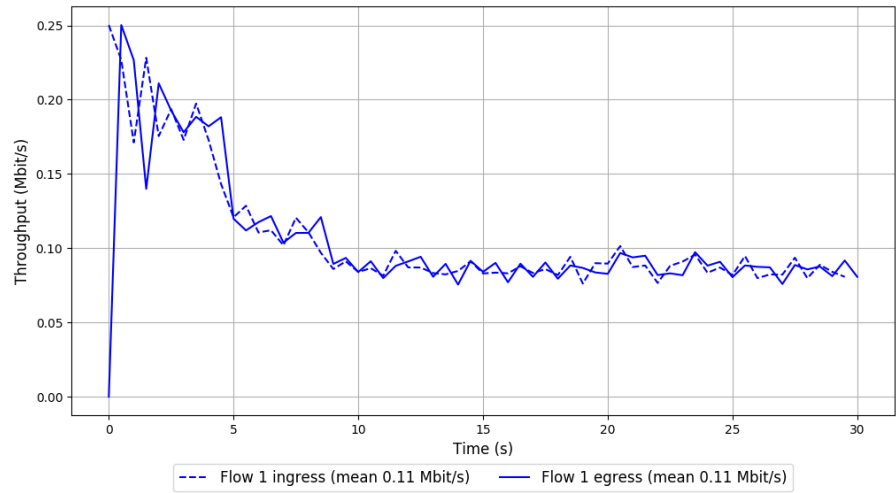Flow 1 (95th percentile 5.39 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-11-15 03:28:27
End at: 2018-11-15 03:28:57
Local clock offset: 4.012 ms
Remote clock offset: -2.574 ms


# Below is generated by plot.py at 2018-11-15 03:44:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 4.585 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 4.585 ms
Loss rate: 0.98%
```

Run 5: Report of SCReAM — Data Link

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

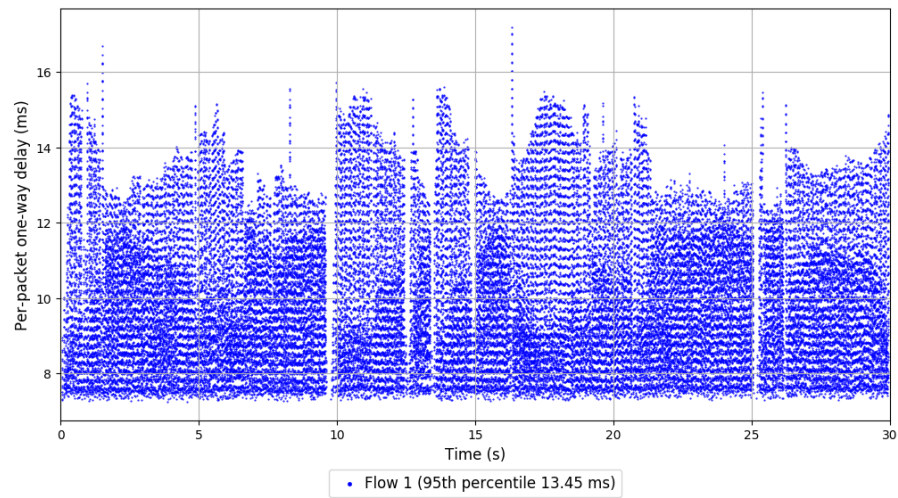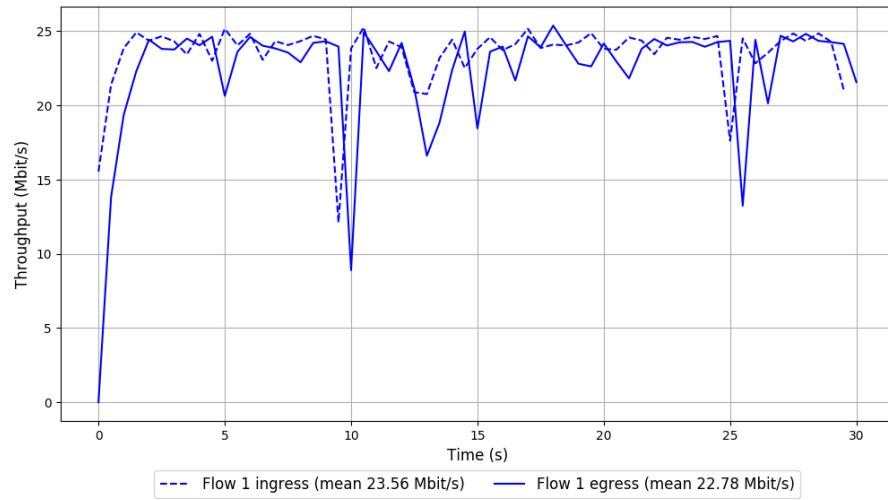Flow 1 (95th percentile 4.58 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-11-15 02:13:19
End at: 2018-11-15 02:13:49
Local clock offset: 1.664 ms
Remote clock offset: -3.767 ms


# Below is generated by plot.py at 2018-11-15 03:44:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.78 Mbit/s
95th percentile per-packet one-way delay: 13.447 ms
Loss rate: 3.31%
-- Flow 1:
Average throughput: 22.78 Mbit/s
95th percentile per-packet one-way delay: 13.447 ms
Loss rate: 3.31%
```

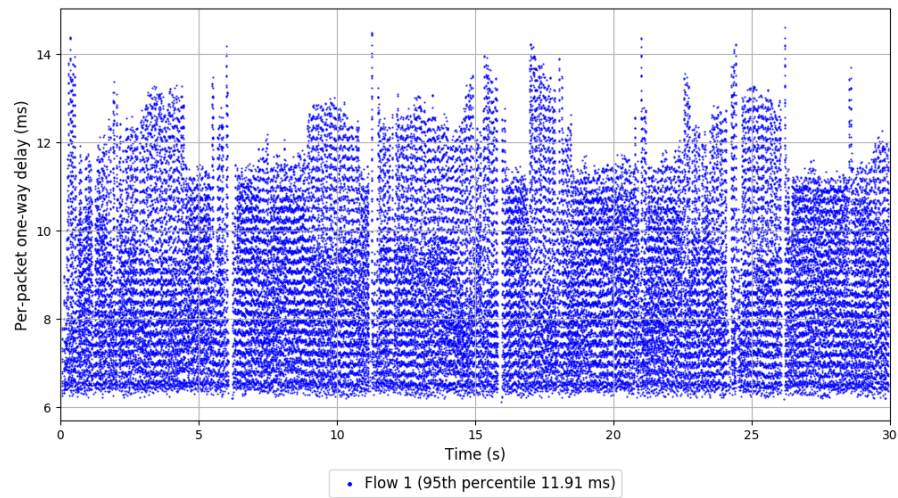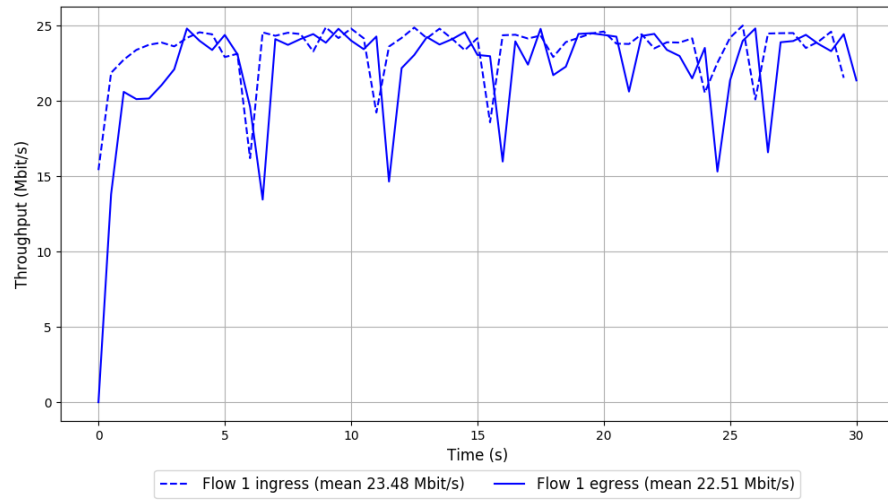# Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-11-15 02:34:07
End at: 2018-11-15 02:34:37
Local clock offset: 2.295 ms
Remote clock offset: -3.597 ms


# Below is generated by plot.py at 2018-11-15 03:44:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.51 Mbit/s
95th percentile per-packet one-way delay: 11.913 ms
Loss rate: 4.12%
-- Flow 1:
Average throughput: 22.51 Mbit/s
95th percentile per-packet one-way delay: 11.913 ms
Loss rate: 4.12%
```

Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 23.48 Mbit/s) --- Flow 1 egress (mean 22.51 Mbit/s)

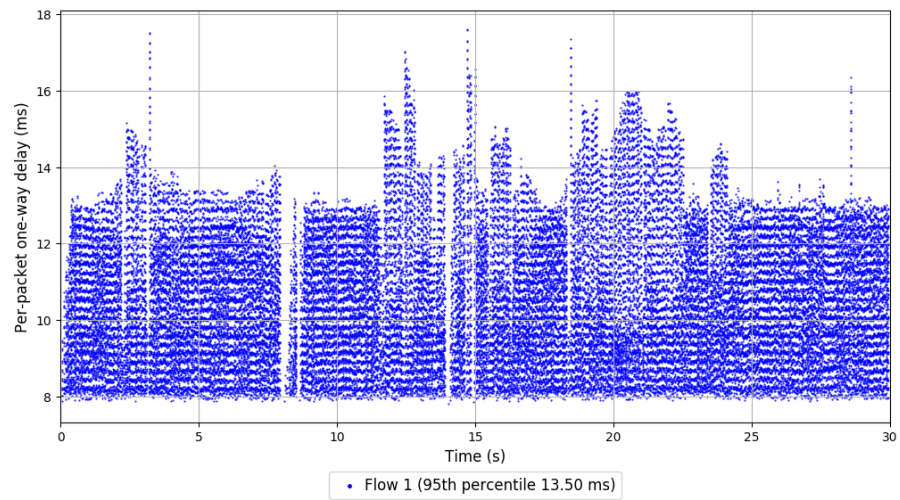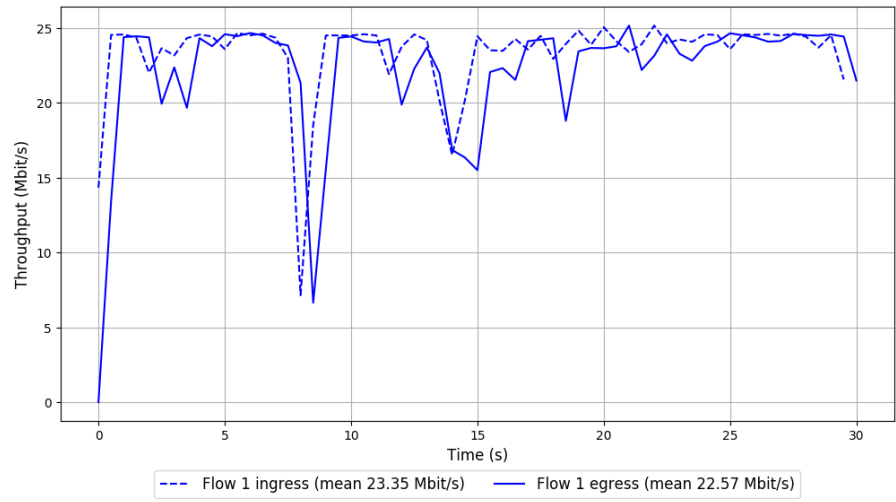Flow 1 (95th percentile 11.91 ms)

```
Run 3: Statistics of Sprout

Start at: 2018-11-15 02:54:16
End at: 2018-11-15 02:54:46
Local clock offset: 1.183 ms
Remote clock offset: -2.968 ms


# Below is generated by plot.py at 2018-11-15 03:44:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.57 Mbit/s
95th percentile per-packet one-way delay: 13.497 ms
Loss rate: 3.31%
-- Flow 1:
Average throughput: 22.57 Mbit/s
95th percentile per-packet one-way delay: 13.497 ms
Loss rate: 3.31%
```

Run 3: Report of Sprout — Data Link

Flow 1 ingress (mean 23.35 Mbit/s)   Flow 1 egress (mean 22.57 Mbit/s)

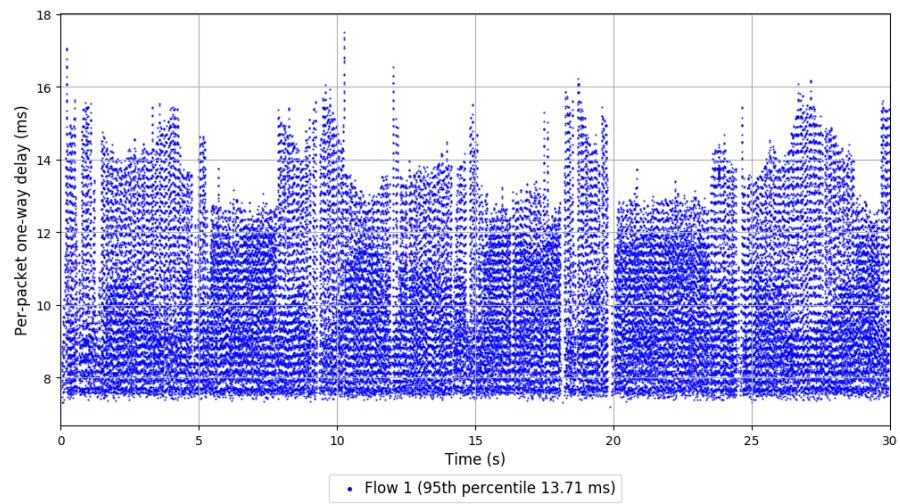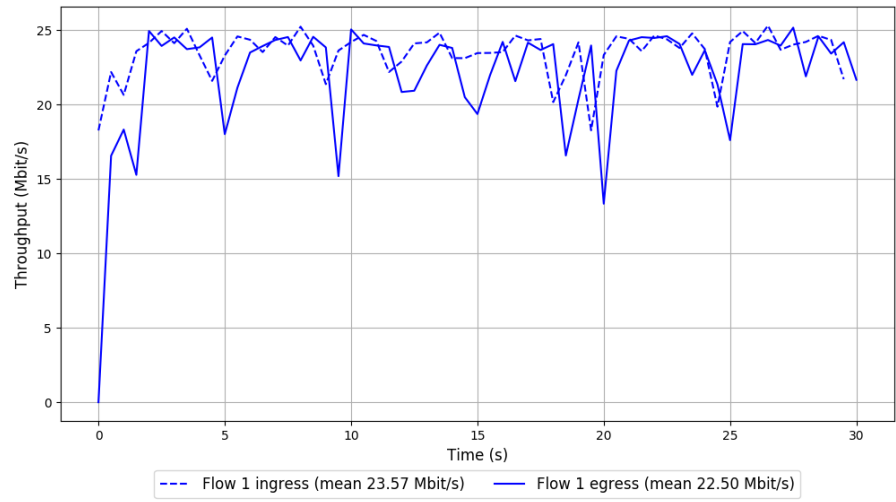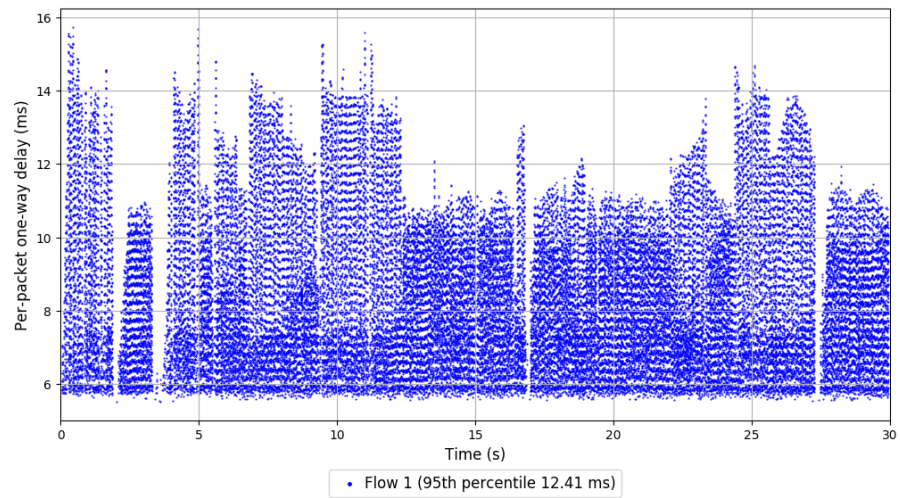· Flow 1 (95th percentile 13.50 ms)

```
Run 4: Statistics of Sprout

Start at: 2018-11-15 03:14:43
End at: 2018-11-15 03:15:13
Local clock offset: 0.786 ms
Remote clock offset: -2.726 ms


# Below is generated by plot.py at 2018-11-15 03:44:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.50 Mbit/s
95th percentile per-packet one-way delay: 13.706 ms
Loss rate: 4.53%
-- Flow 1:
Average throughput: 22.50 Mbit/s
95th percentile per-packet one-way delay: 13.706 ms
Loss rate: 4.53%
```

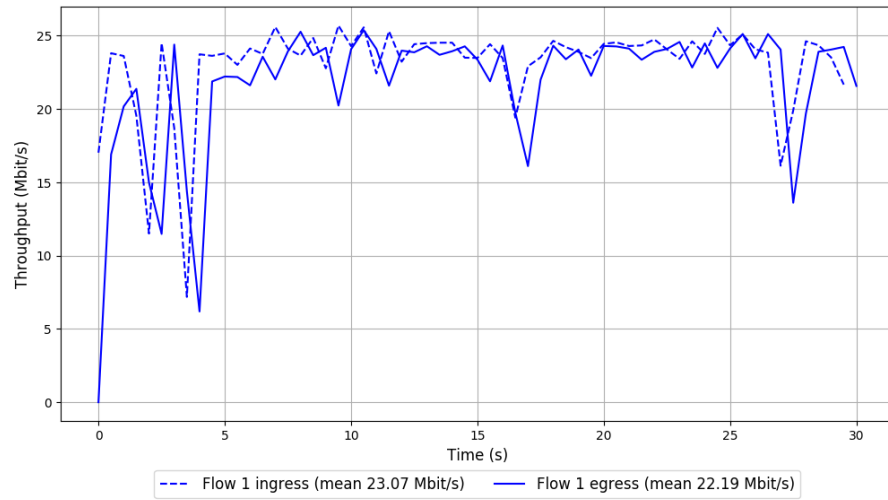# Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-11-15 03:35:27
End at: 2018-11-15 03:35:57
Local clock offset: -3.964 ms
Remote clock offset: -8.952 ms


# Below is generated by plot.py at 2018-11-15 03:44:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 22.19 Mbit/s
95th percentile per-packet one-way delay: 12.406 ms
Loss rate: 3.81%
-- Flow 1:
Average throughput: 22.19 Mbit/s
95th percentile per-packet one-way delay: 12.406 ms
Loss rate: 3.81%
```

Run 5: Report of Sprout — Data Link
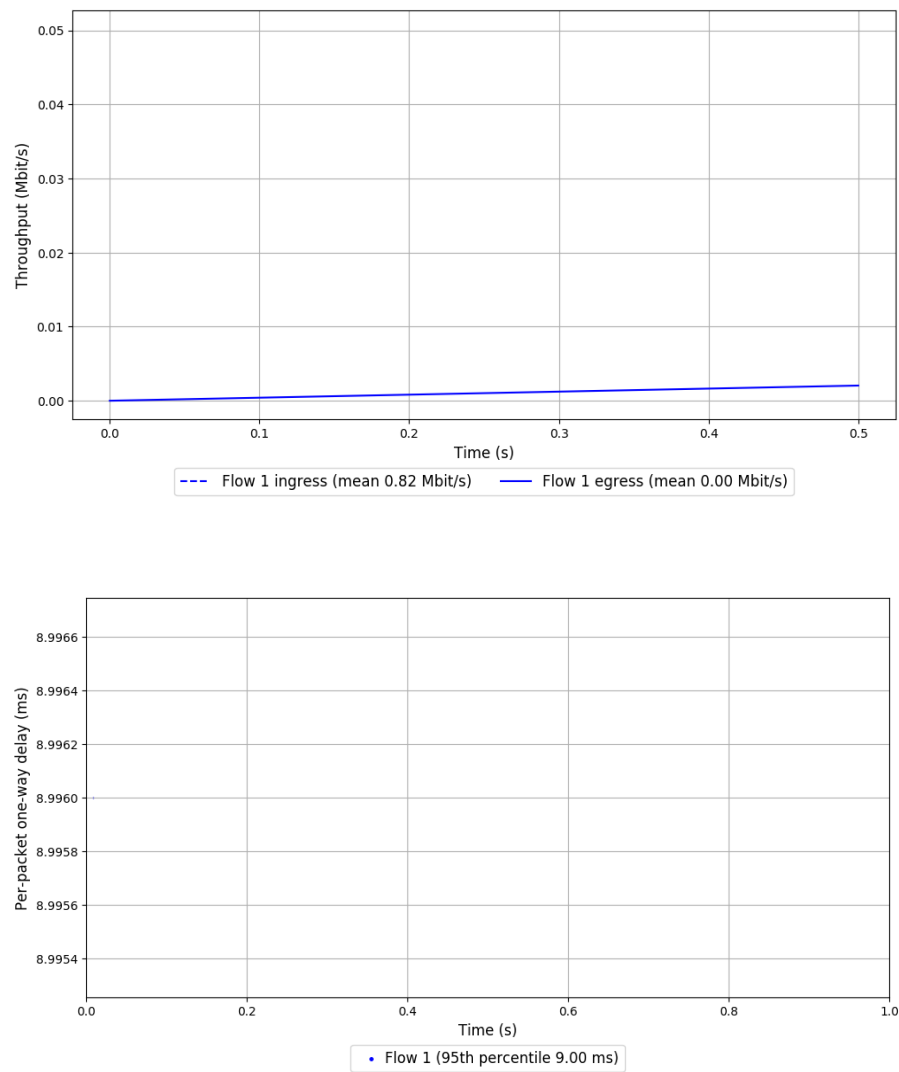
```
Run 1: Statistics of TaoVA-100x

Start at: 2018-11-15 02:03:04
End at: 2018-11-15 02:03:34
Local clock offset: 0.723 ms
Remote clock offset: -2.661 ms
```

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

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

Start at: 2018-11-15 02:23:40
End at: 2018-11-15 02:24:10
Local clock offset: 1.055 ms
Remote clock offset: -3.383 ms


# Below is generated by plot.py at 2018-11-15 03:44:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.21 Mbit/s
95th percentile per-packet one-way delay: 8.227 ms
Loss rate: 82.49%
-- Flow 1:
Average throughput: 9.21 Mbit/s
95th percentile per-packet one-way delay: 8.227 ms
Loss rate: 82.49%
```
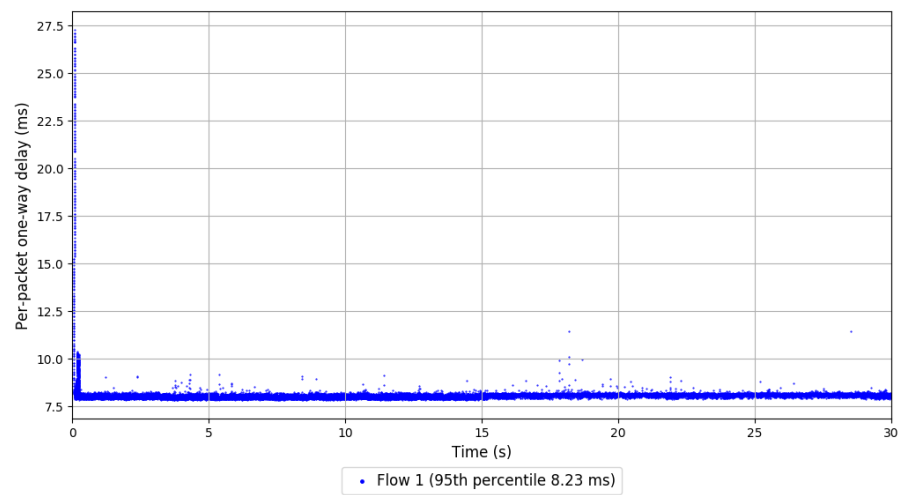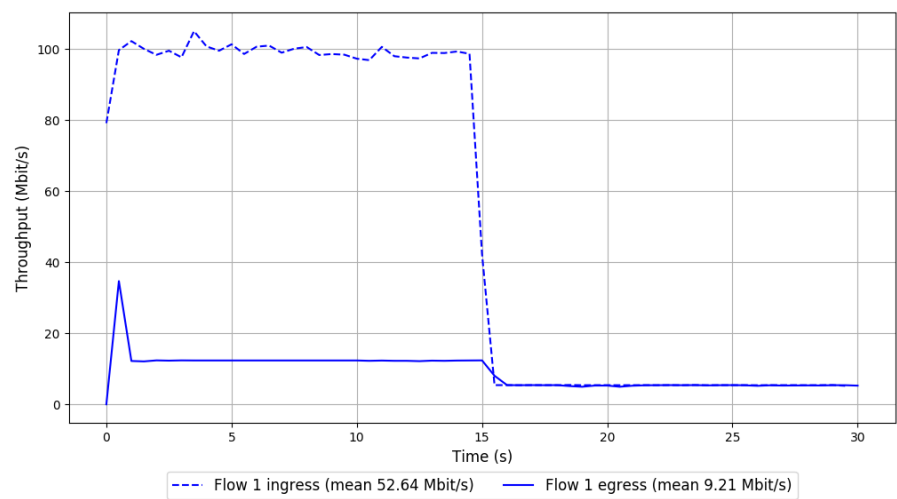
Run 2: Report of TaoVA-100x — Data Link
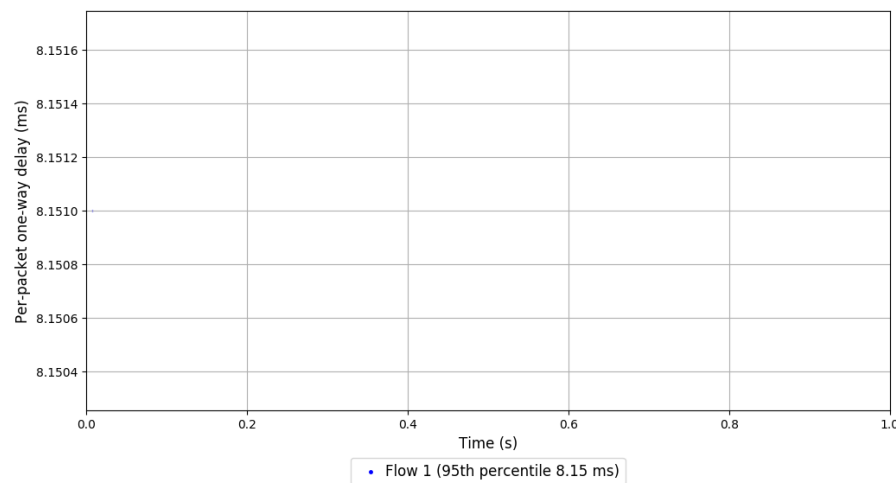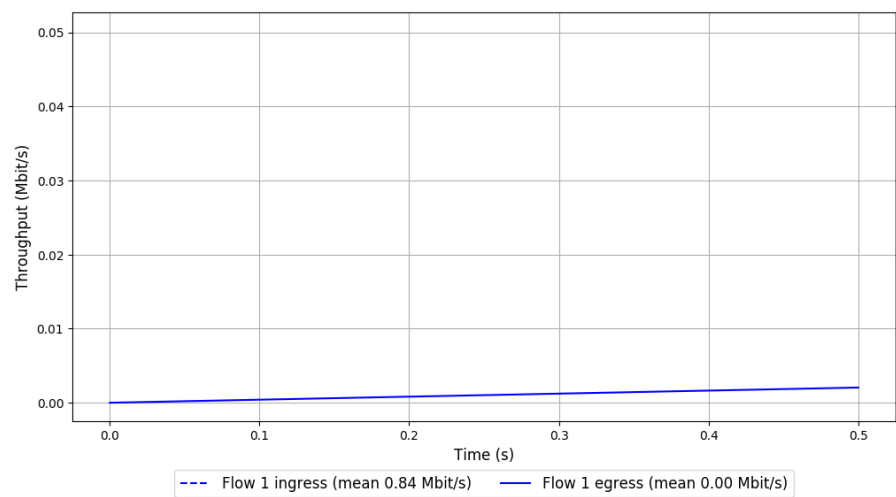
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-11-15 02:44:10
End at: 2018-11-15 02:44:40
Local clock offset: 0.628 ms
Remote clock offset: -3.345 ms
```

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

```
Run 4: Statistics of TaoVA-100x

Start at: 2018-11-15 03:04:31
End at: 2018-11-15 03:05:01
Local clock offset: 0.794 ms
Remote clock offset: -2.79 ms


# Below is generated by plot.py at 2018-11-15 03:44:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.53 Mbit/s
95th percentile per-packet one-way delay: 8.257 ms
Loss rate: 74.00%
-- Flow 1:
Average throughput: 7.53 Mbit/s
95th percentile per-packet one-way delay: 8.257 ms
Loss rate: 74.00%
```
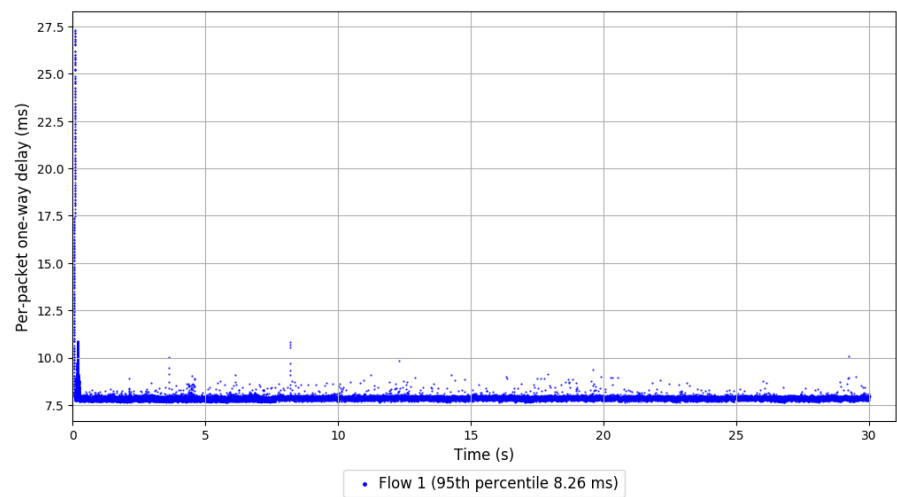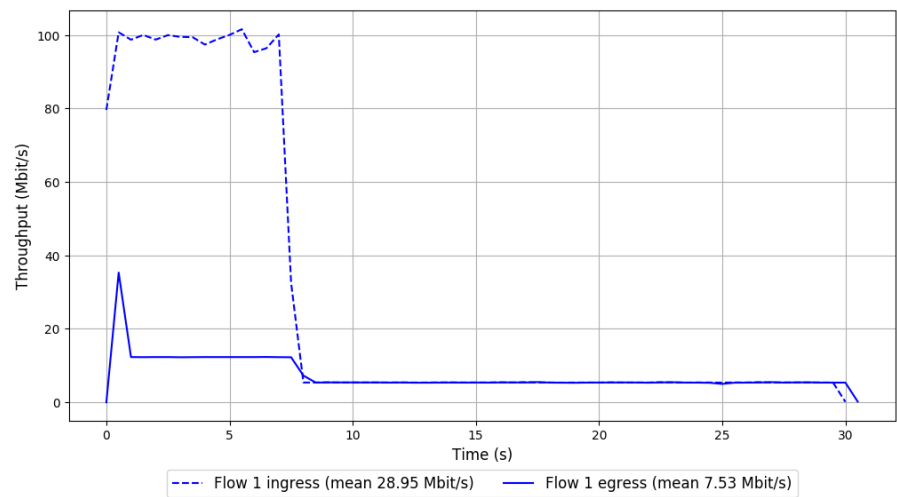
Run 4: Report of TaoVA-100x — Data Link
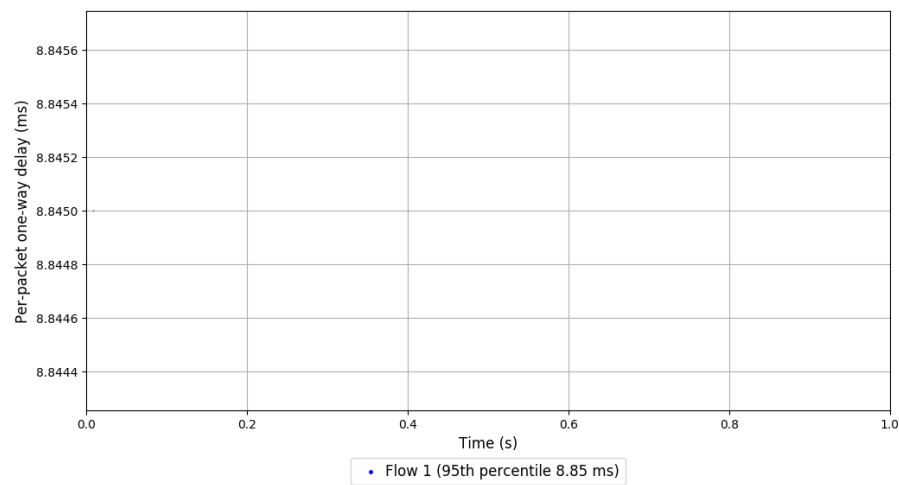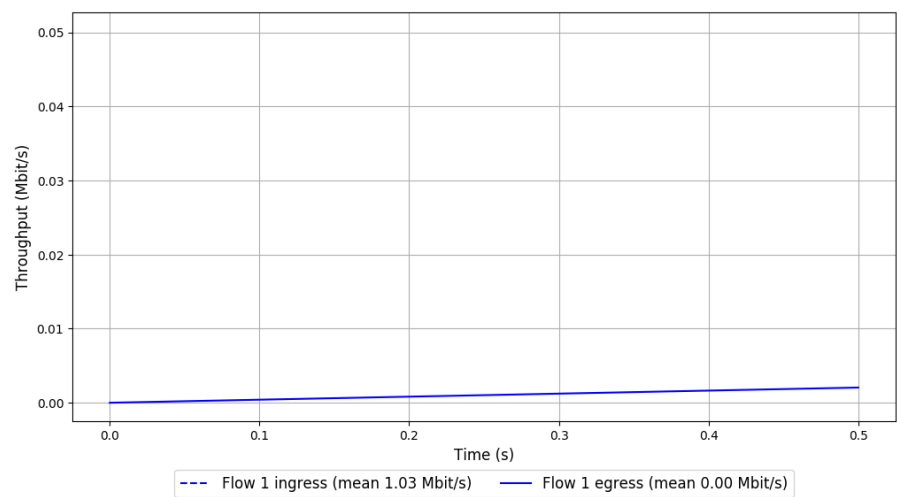
```
Run 5: Statistics of TaoVA-100x

Start at: 2018-11-15 03:24:55
End at: 2018-11-15 03:25:25
Local clock offset: 0.832 ms
Remote clock offset: -2.246 ms
```

Run 5: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 1.03 Mbit/s)   Flow 1 egress (mean 0.00 Mbit/s)
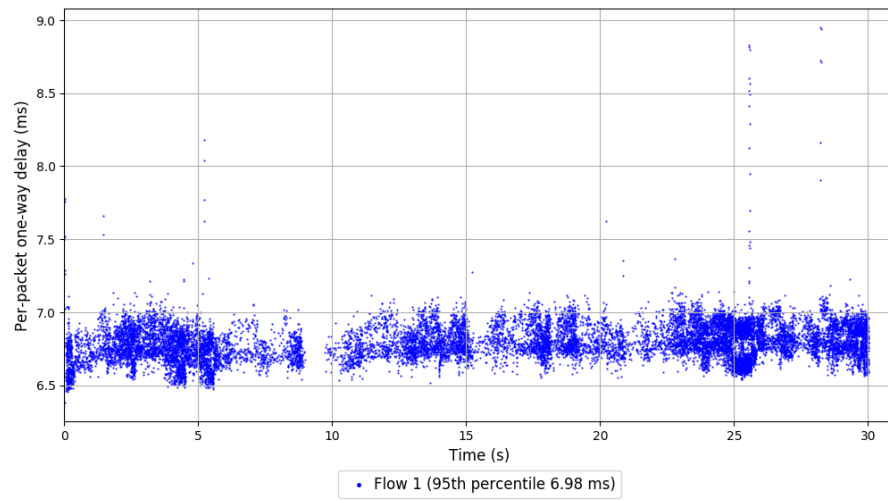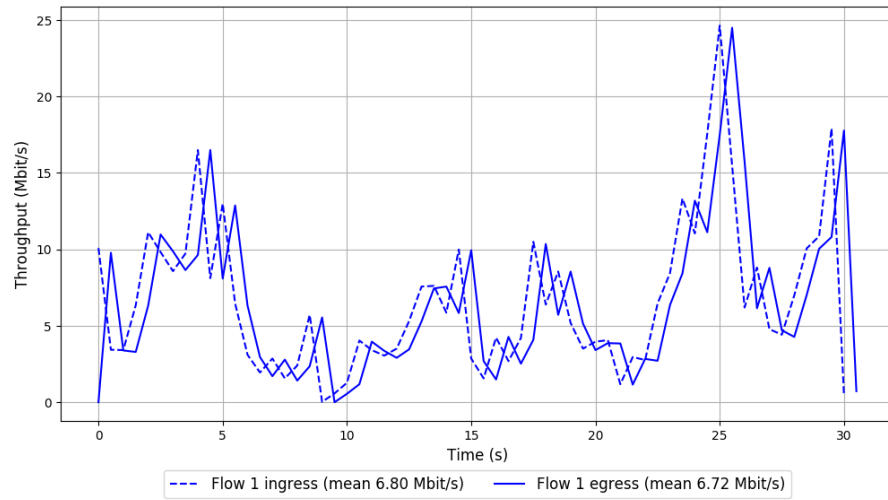

Flow 1 (95th percentile 8.85 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-11-15 01:58:35
End at: 2018-11-15 01:59:05
Local clock offset: 1.969 ms
Remote clock offset: -2.935 ms


# Below is generated by plot.py at 2018-11-15 03:44:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 6.981 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 6.72 Mbit/s
95th percentile per-packet one-way delay: 6.981 ms
Loss rate: 1.16%
```
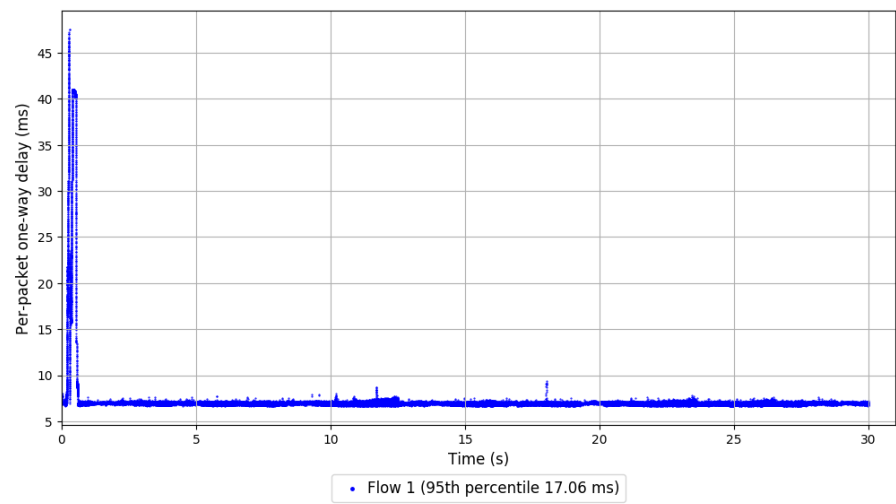
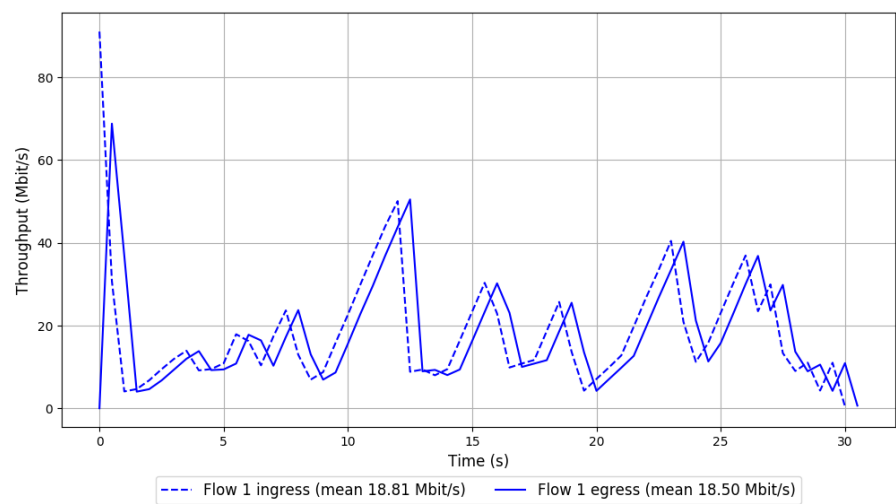Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-11-15 02:19:10
End at: 2018-11-15 02:19:40
Local clock offset: 2.042 ms
Remote clock offset: -3.258 ms


# Below is generated by plot.py at 2018-11-15 03:44:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 18.50 Mbit/s
95th percentile per-packet one-way delay: 17.064 ms
Loss rate: 1.61%
-- Flow 1:
Average throughput: 18.50 Mbit/s
95th percentile per-packet one-way delay: 17.064 ms
Loss rate: 1.61%
```

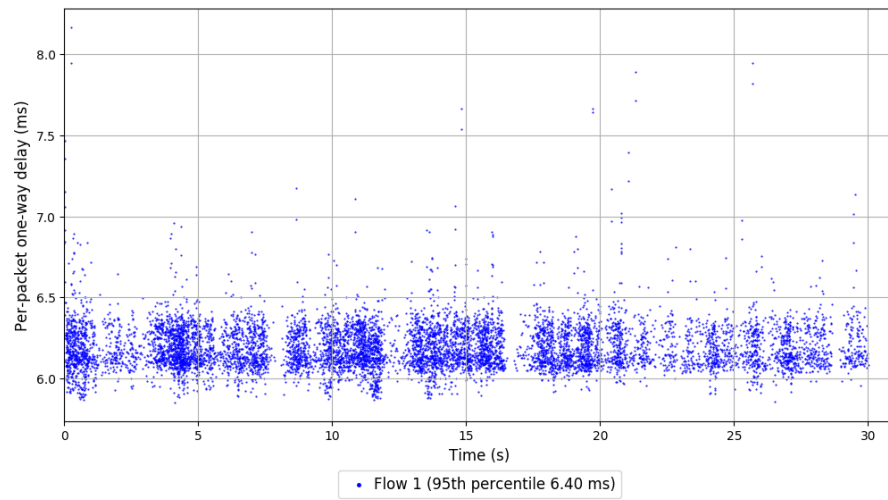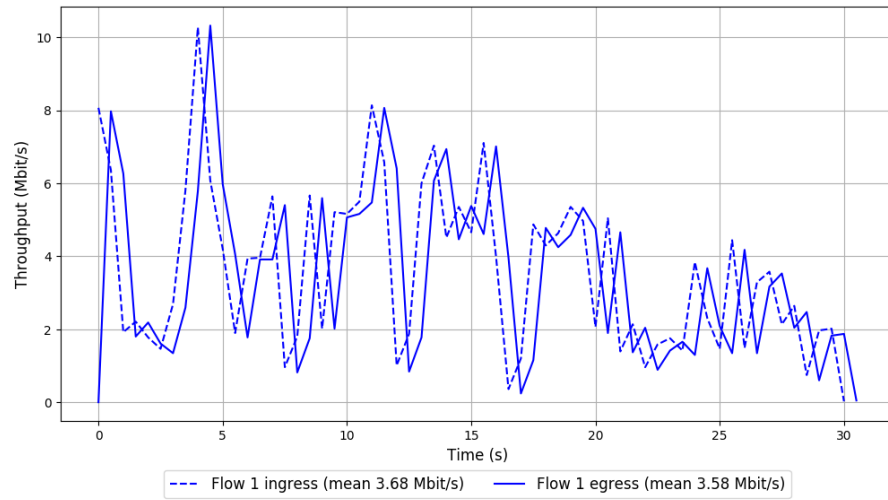## Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-11-15 02:39:40
End at: 2018-11-15 02:40:10
Local clock offset: 2.798 ms
Remote clock offset: -3.241 ms


# Below is generated by plot.py at 2018-11-15 03:44:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 6.398 ms
Loss rate: 2.72%
-- Flow 1:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 6.398 ms
Loss rate: 2.72%
```

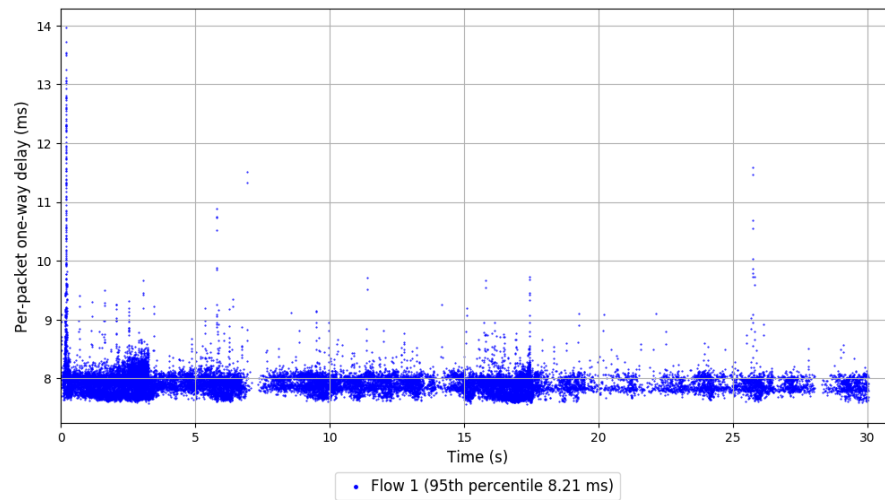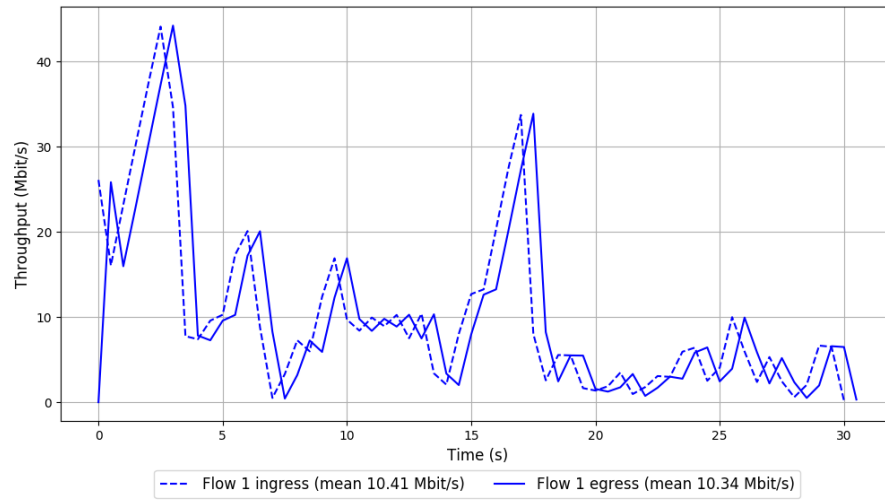Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-11-15 02:59:55
End at: 2018-11-15 03:00:25
Local clock offset: 0.391 ms
Remote clock offset: -3.388 ms


# Below is generated by plot.py at 2018-11-15 03:44:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.34 Mbit/s
95th percentile per-packet one-way delay: 8.214 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 10.34 Mbit/s
95th percentile per-packet one-way delay: 8.214 ms
Loss rate: 0.66%
```

Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 10.41 Mbit/s) — Flow 1 egress (mean 10.34 Mbit/s)
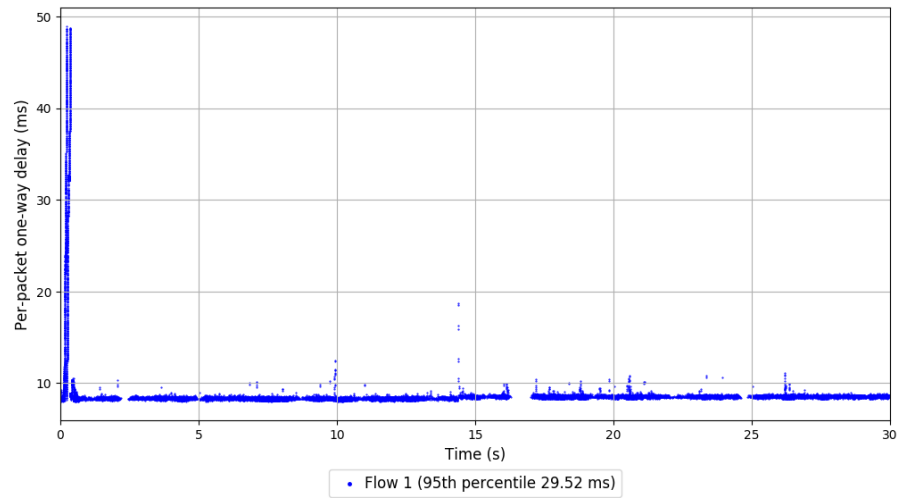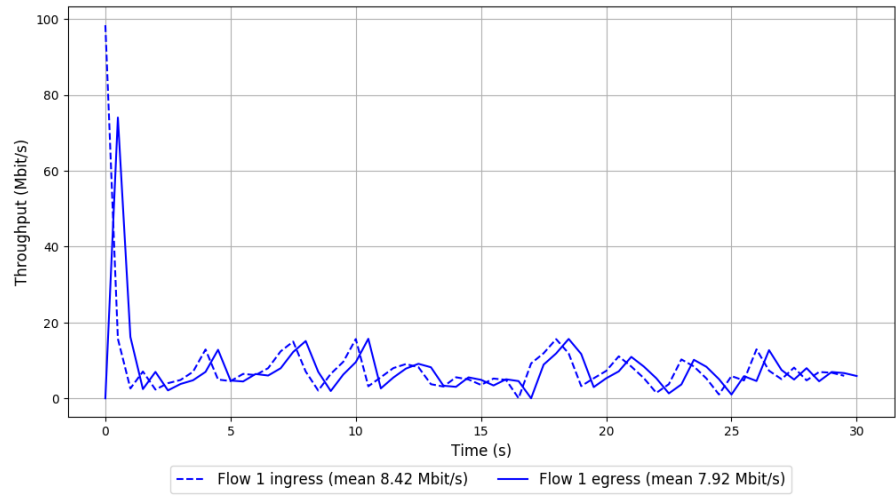

• Flow 1 (95th percentile 8.21 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-11-15 03:20:13
End at: 2018-11-15 03:20:43
Local clock offset: 0.354 ms
Remote clock offset: -2.204 ms


# Below is generated by plot.py at 2018-11-15 03:44:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.92 Mbit/s
95th percentile per-packet one-way delay: 29.521 ms
Loss rate: 5.96%
-- Flow 1:
Average throughput: 7.92 Mbit/s
95th percentile per-packet one-way delay: 29.521 ms
Loss rate: 5.96%
```

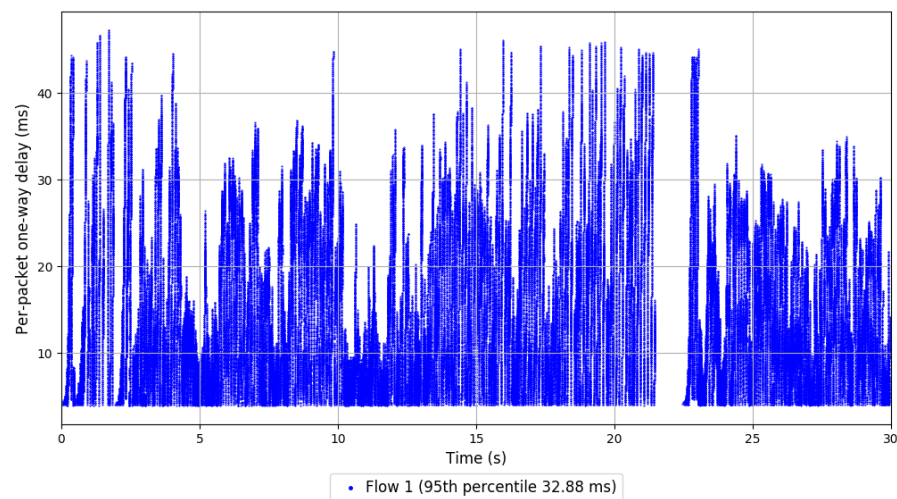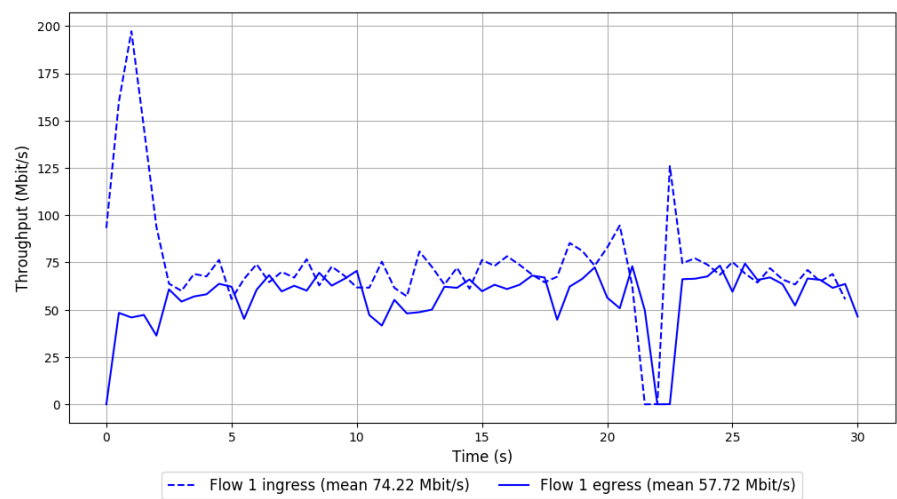Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-11-15 02:12:07
End at: 2018-11-15 02:12:37
Local clock offset: 5.346 ms
Remote clock offset: -3.025 ms


# Below is generated by plot.py at 2018-11-15 03:45:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.72 Mbit/s
95th percentile per-packet one-way delay: 32.884 ms
Loss rate: 22.21%
-- Flow 1:
Average throughput: 57.72 Mbit/s
95th percentile per-packet one-way delay: 32.884 ms
Loss rate: 22.21%
```

Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 74.22 Mbit/s)   Flow 1 egress (mean 57.72 Mbit/s)

Flow 1 (95th percentile 32.88 ms)

```
Run 2: Statistics of Verus

Start at: 2018-11-15 02:32:56
End at: 2018-11-15 02:33:26
Local clock offset: 2.366 ms
Remote clock offset: -3.11 ms


# Below is generated by plot.py at 2018-11-15 03:45:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 52.45 Mbit/s
95th percentile per-packet one-way delay: 40.376 ms
Loss rate: 39.08%
-- Flow 1:
Average throughput: 52.45 Mbit/s
95th percentile per-packet one-way delay: 40.376 ms
Loss rate: 39.08%
```
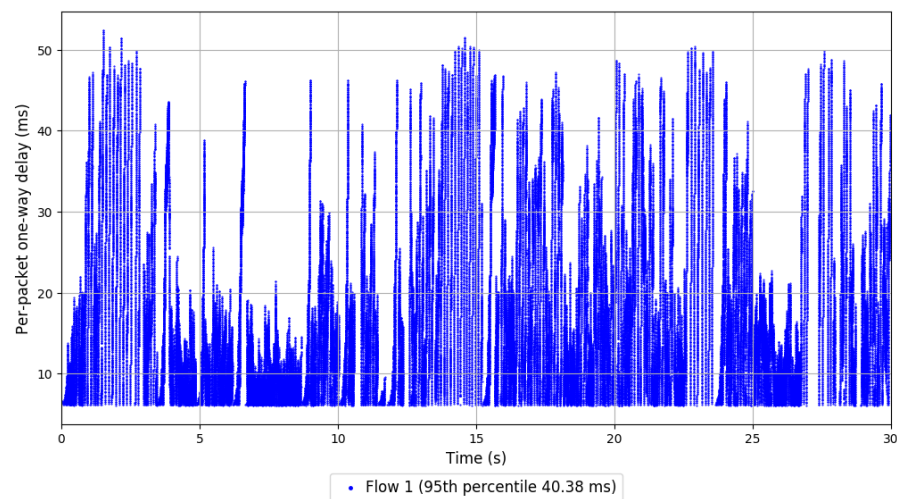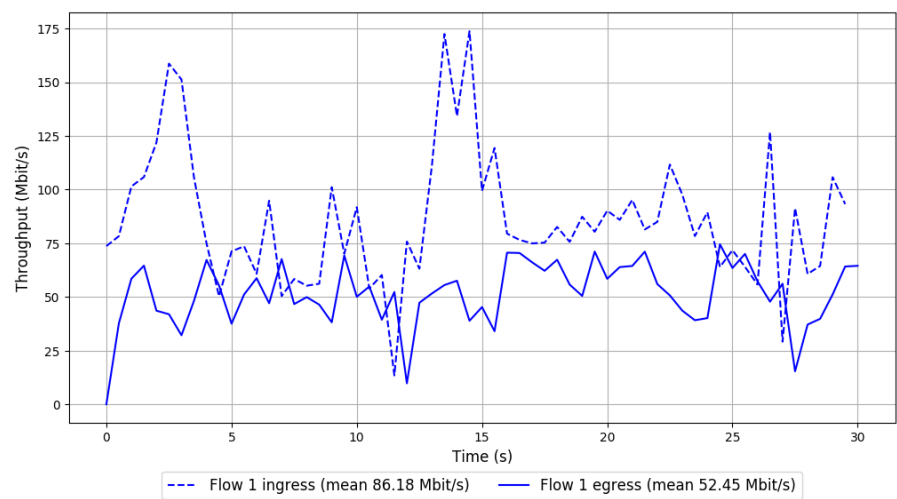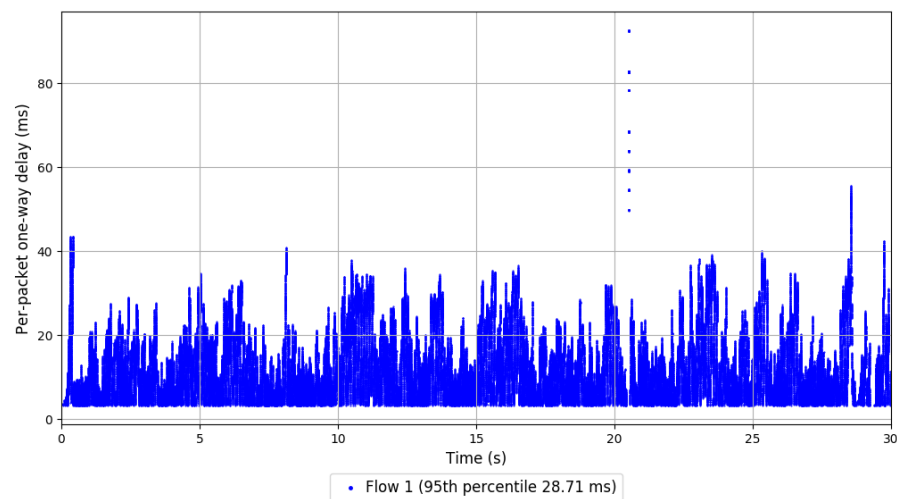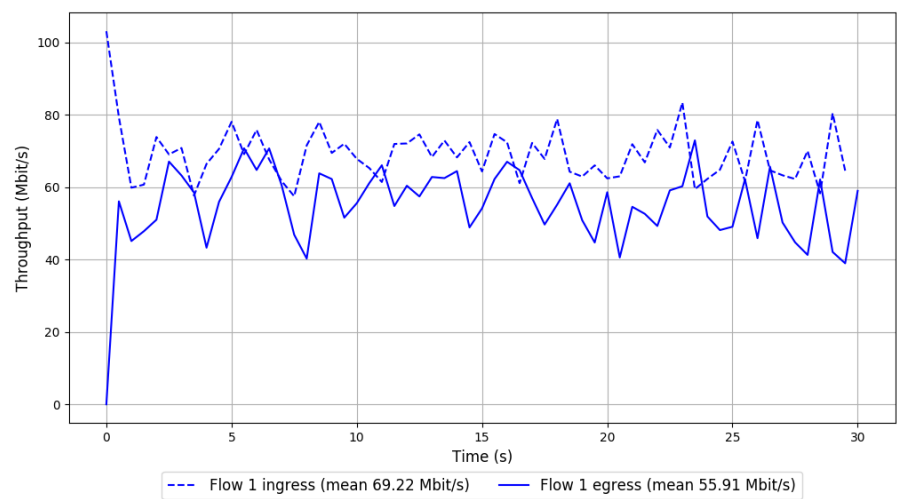
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-11-15 02:53:04
End at: 2018-11-15 02:53:34
Local clock offset: 4.422 ms
Remote clock offset: -3.816 ms


# Below is generated by plot.py at 2018-11-15 03:45:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.91 Mbit/s
95th percentile per-packet one-way delay: 28.713 ms
Loss rate: 19.21%
-- Flow 1:
Average throughput: 55.91 Mbit/s
95th percentile per-packet one-way delay: 28.713 ms
Loss rate: 19.21%
```

Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 69.22 Mbit/s)   — Flow 1 egress (mean 55.91 Mbit/s)

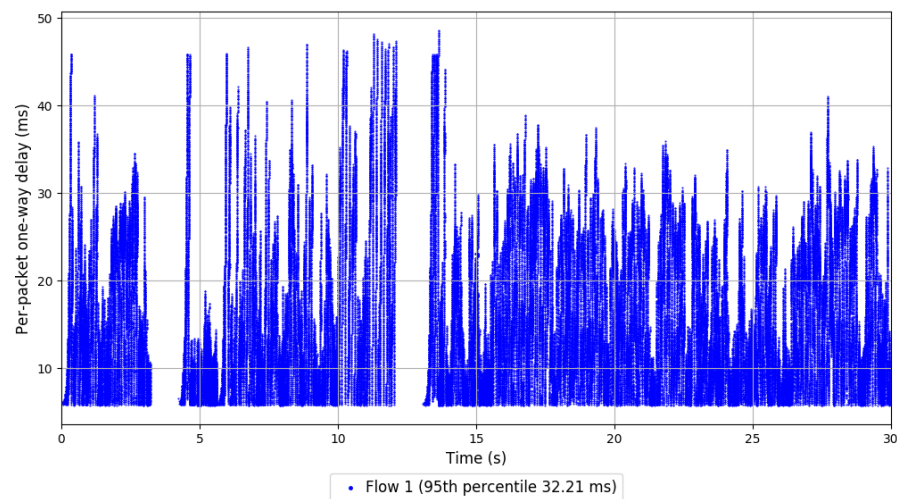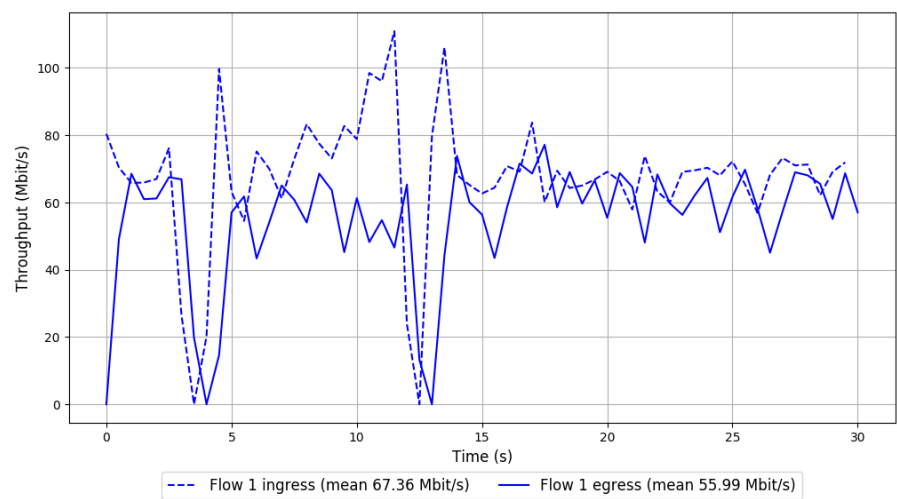

· Flow 1 (95th percentile 28.71 ms)

```
Run 4: Statistics of Verus

Start at: 2018-11-15 03:13:34
End at: 2018-11-15 03:14:04
Local clock offset: 1.926 ms
Remote clock offset: -3.147 ms


# Below is generated by plot.py at 2018-11-15 03:45:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.99 Mbit/s
95th percentile per-packet one-way delay: 32.209 ms
Loss rate: 16.88%
-- Flow 1:
Average throughput: 55.99 Mbit/s
95th percentile per-packet one-way delay: 32.209 ms
Loss rate: 16.88%
```

Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-11-15 03:34:02
End at: 2018-11-15 03:34:32
Local clock offset: 2.722 ms
Remote clock offset: -2.6 ms


# Below is generated by plot.py at 2018-11-15 03:45:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 47.38 Mbit/s
95th percentile per-packet one-way delay: 41.542 ms
Loss rate: 55.21%
-- Flow 1:
Average throughput: 47.38 Mbit/s
95th percentile per-packet one-way delay: 41.542 ms
Loss rate: 55.21%
```
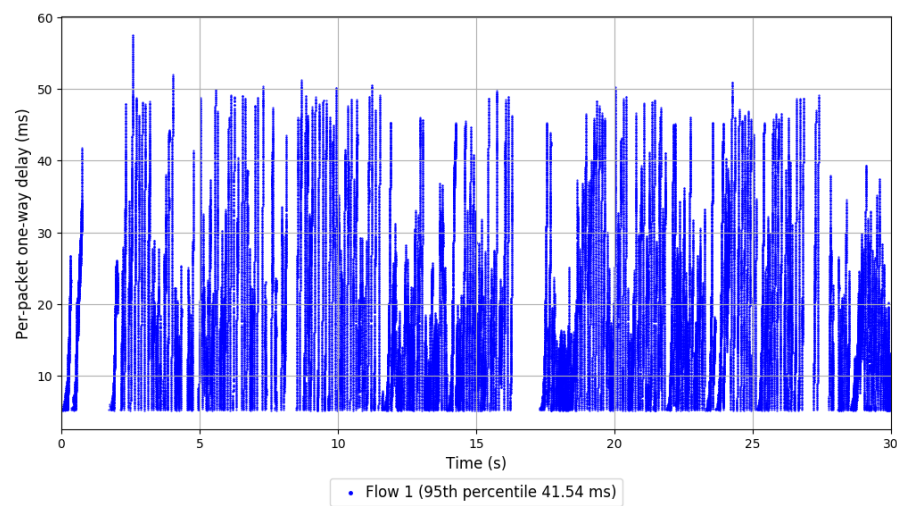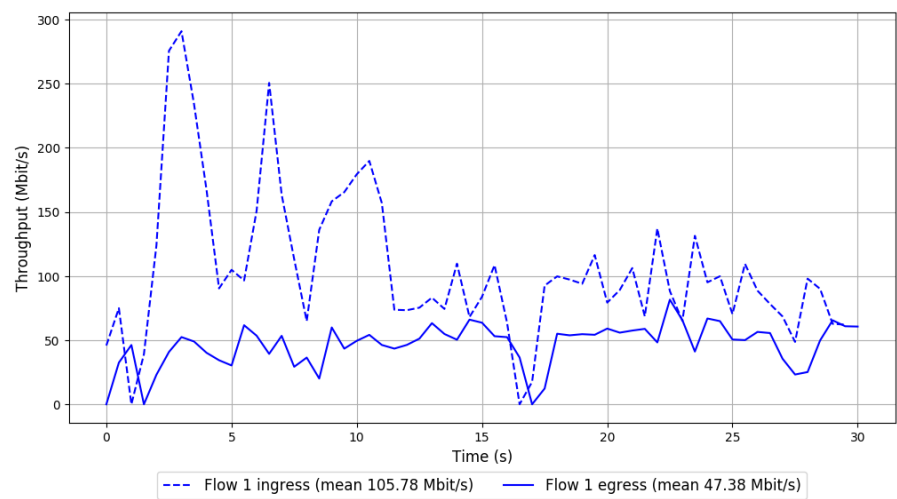
Run 5: Report of Verus — Data Link

Flow 1 ingress (mean 105.78 Mbit/s)   Flow 1 egress (mean 47.38 Mbit/s)

Flow 1 (95th percentile 41.54 ms)

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-11-15 02:16:50
End at: 2018-11-15 02:17:20
Local clock offset: 3.984 ms
Remote clock offset: -5.426 ms

# Below is generated by plot.py at 2018-11-15 03:45:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 58.32 Mbit/s
95th percentile per-packet one-way delay: 2.964 ms
Loss rate: 6.91%
-- Flow 1:
Average throughput: 58.32 Mbit/s
95th percentile per-packet one-way delay: 2.964 ms
Loss rate: 6.91%
```
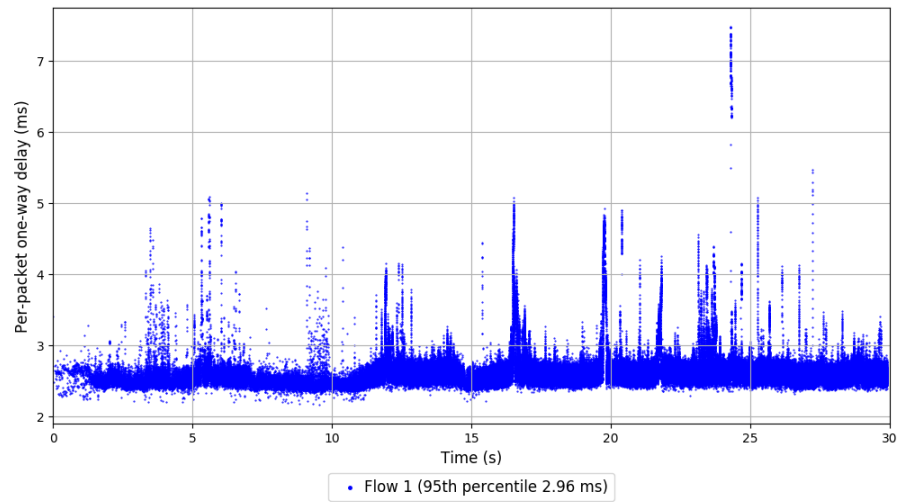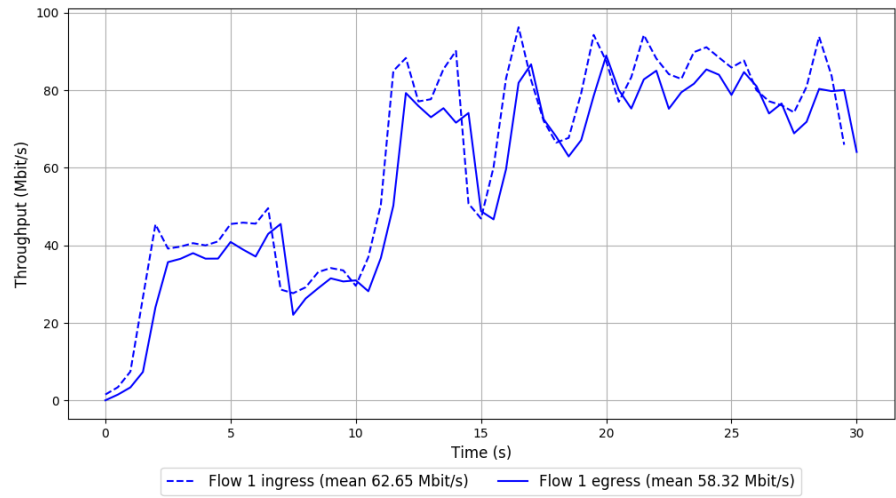
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 62.65 Mbit/s) ---- Flow 1 egress (mean 58.32 Mbit/s)

• Flow 1 (95th percentile 2.96 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-11-15 02:37:24
End at: 2018-11-15 02:37:54
Local clock offset: 0.656 ms
Remote clock offset: -3.273 ms


# Below is generated by plot.py at 2018-11-15 03:45:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 31.10 Mbit/s
95th percentile per-packet one-way delay: 8.098 ms
Loss rate: 8.95%
-- Flow 1:
Average throughput: 31.10 Mbit/s
95th percentile per-packet one-way delay: 8.098 ms
Loss rate: 8.95%
```
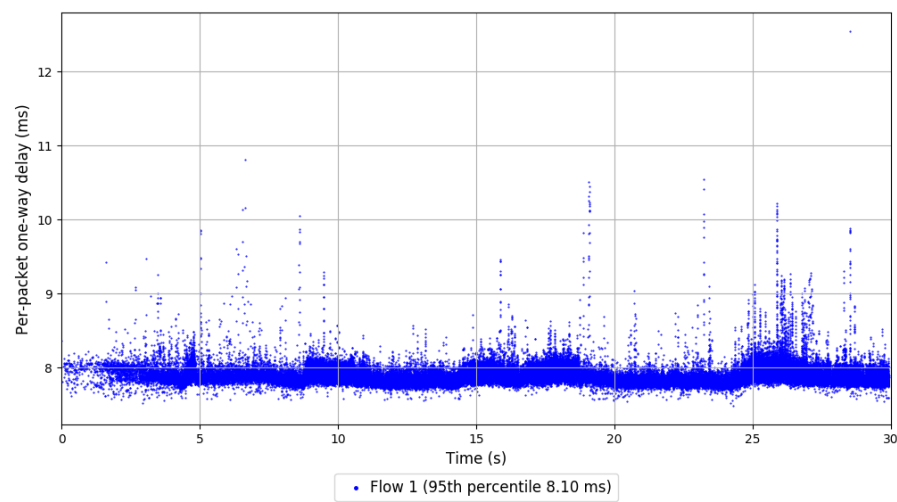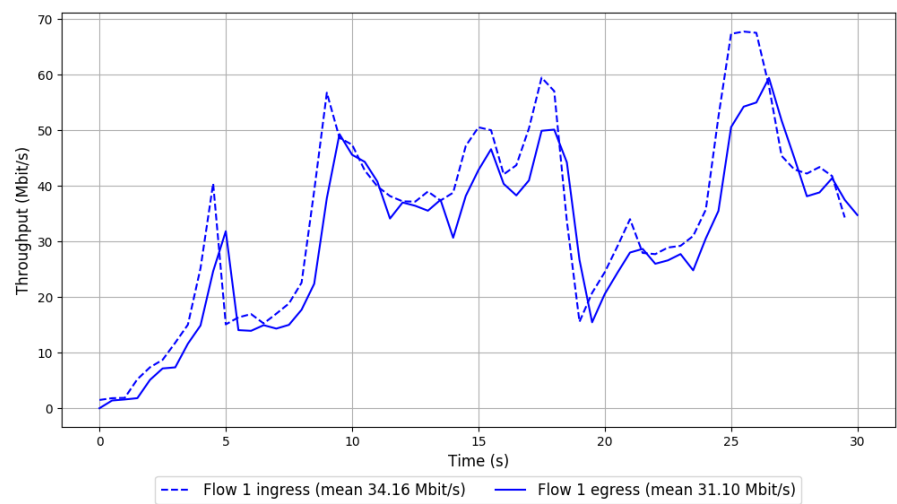
Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-11-15 02:57:36
End at: 2018-11-15 02:58:07
Local clock offset: 3.553 ms
Remote clock offset: -3.24 ms


# Below is generated by plot.py at 2018-11-15 03:45:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 46.52 Mbit/s
95th percentile per-packet one-way delay: 5.423 ms
Loss rate: 9.08%
-- Flow 1:
Average throughput: 46.52 Mbit/s
95th percentile per-packet one-way delay: 5.423 ms
Loss rate: 9.08%
```
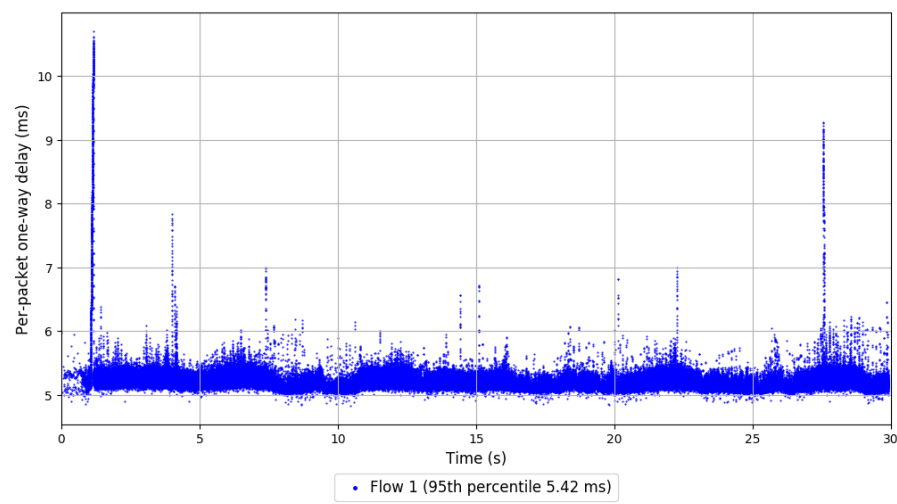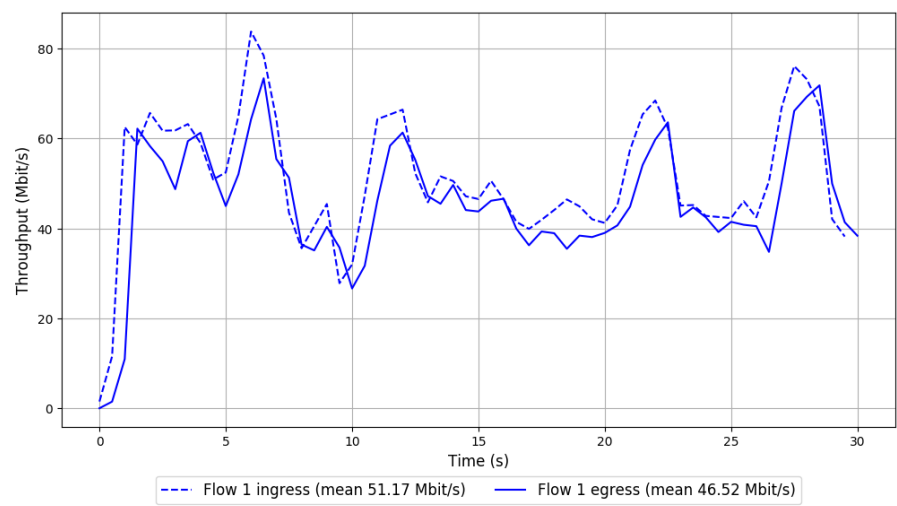
Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 51.17 Mbit/s)   Flow 1 egress (mean 46.52 Mbit/s)
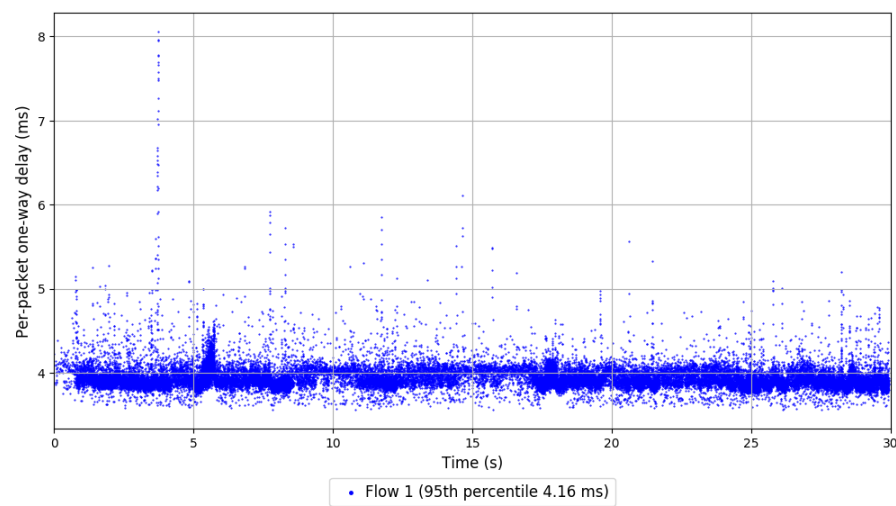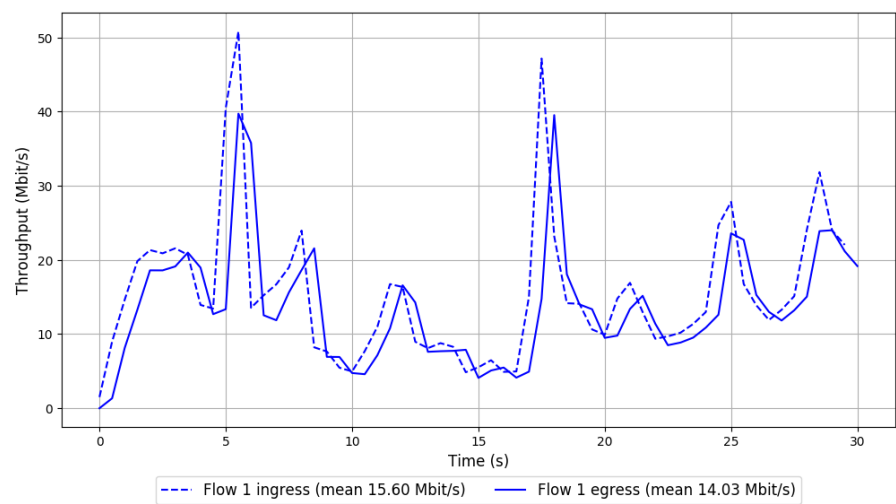

Flow 1 (95th percentile 5.42 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-11-15 03:18:00
End at: 2018-11-15 03:18:30
Local clock offset: 3.91 ms
Remote clock offset: -3.108 ms


# Below is generated by plot.py at 2018-11-15 03:45:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.03 Mbit/s
95th percentile per-packet one-way delay: 4.157 ms
Loss rate: 10.04%
-- Flow 1:
Average throughput: 14.03 Mbit/s
95th percentile per-packet one-way delay: 4.157 ms
Loss rate: 10.04%
```

Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 15.60 Mbit/s)   Flow 1 egress (mean 14.03 Mbit/s)

• Flow 1 (95th percentile 4.16 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-11-15 03:38:42
End at: 2018-11-15 03:39:12
Local clock offset: 3.904 ms
Remote clock offset: -2.339 ms


# Below is generated by plot.py at 2018-11-15 03:45:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.90 Mbit/s
95th percentile per-packet one-way delay: 4.259 ms
Loss rate: 7.90%
-- Flow 1:
Average throughput: 57.90 Mbit/s
95th percentile per-packet one-way delay: 4.259 ms
Loss rate: 7.90%
```
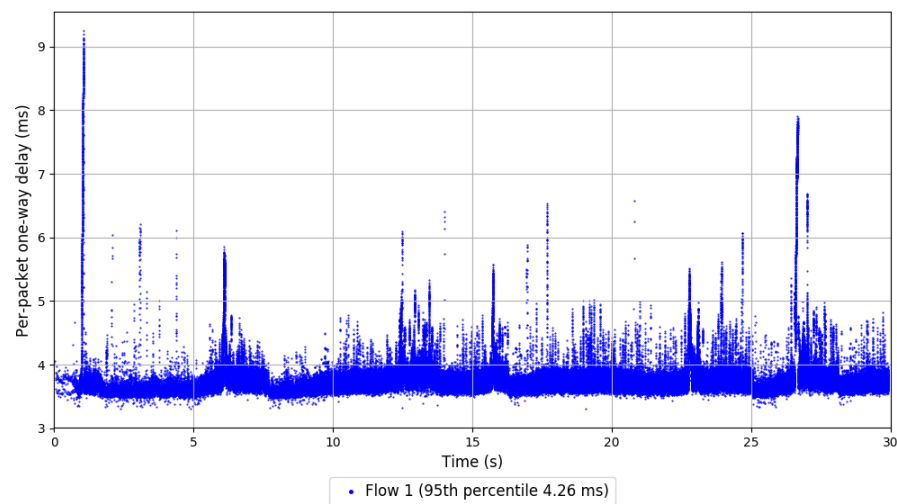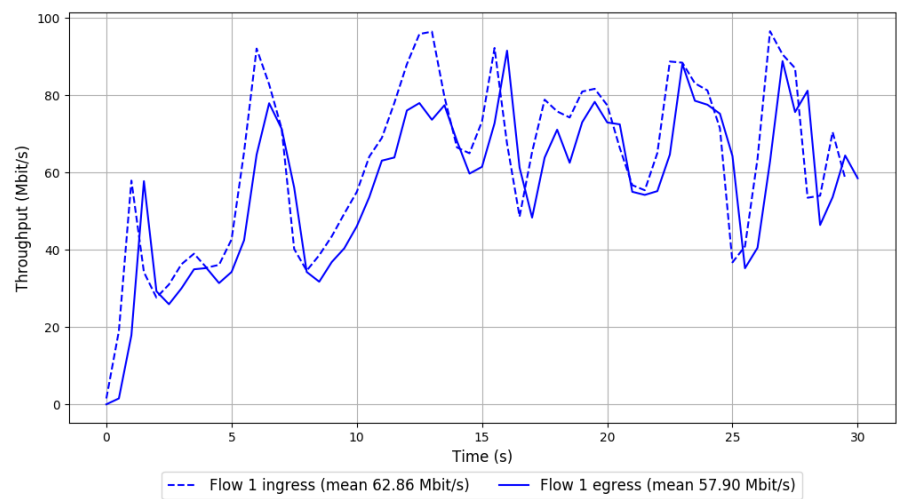
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 62.86 Mbit/s) Flow 1 egress (mean 57.90 Mbit/s)
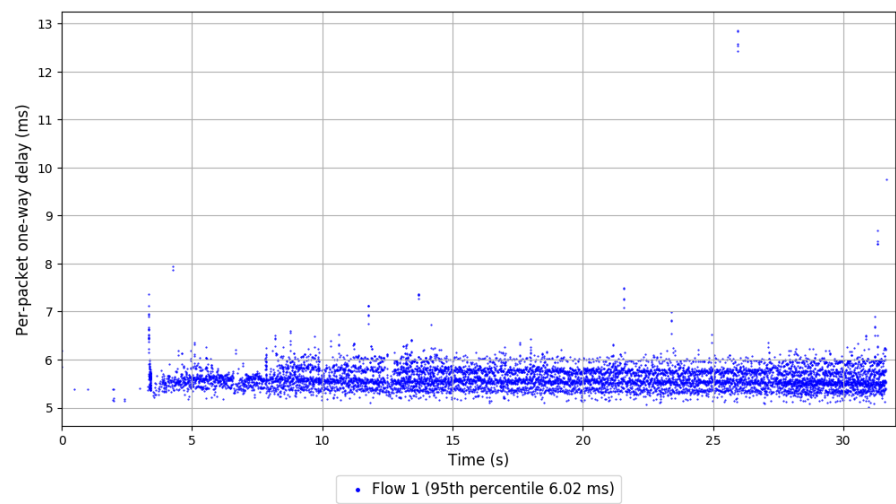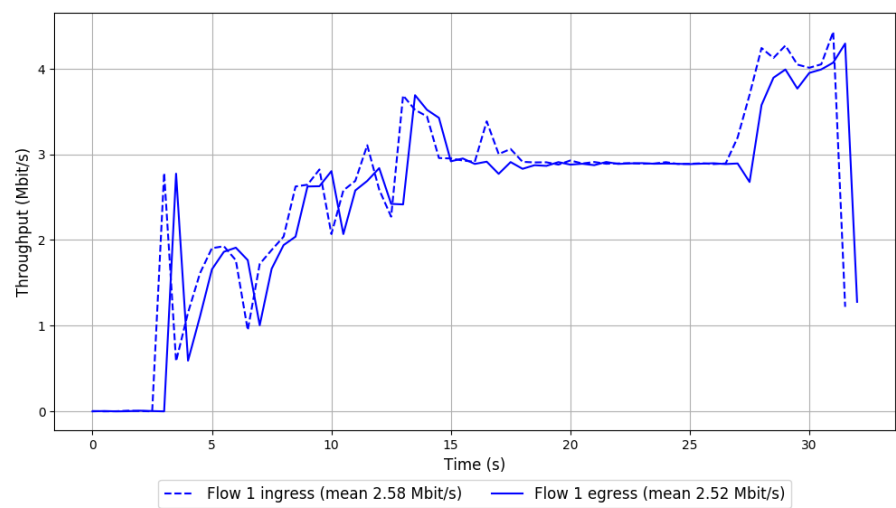

• Flow 1 (95th percentile 4.26 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-11-15 02:14:35
End at: 2018-11-15 02:15:05
Local clock offset: 3.95 ms
Remote clock offset: -3.372 ms


# Below is generated by plot.py at 2018-11-15 03:45:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.52 Mbit/s
95th percentile per-packet one-way delay: 6.017 ms
Loss rate: 2.03%
-- Flow 1:
Average throughput: 2.52 Mbit/s
95th percentile per-packet one-way delay: 6.017 ms
Loss rate: 2.03%
```

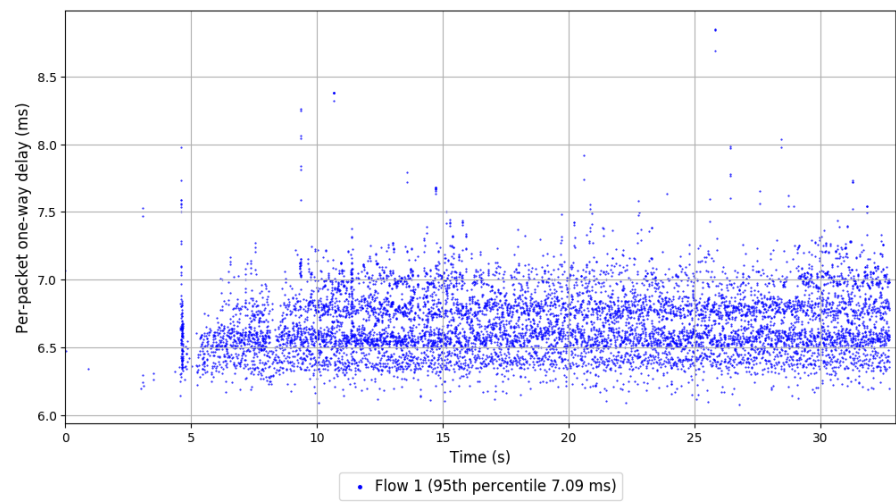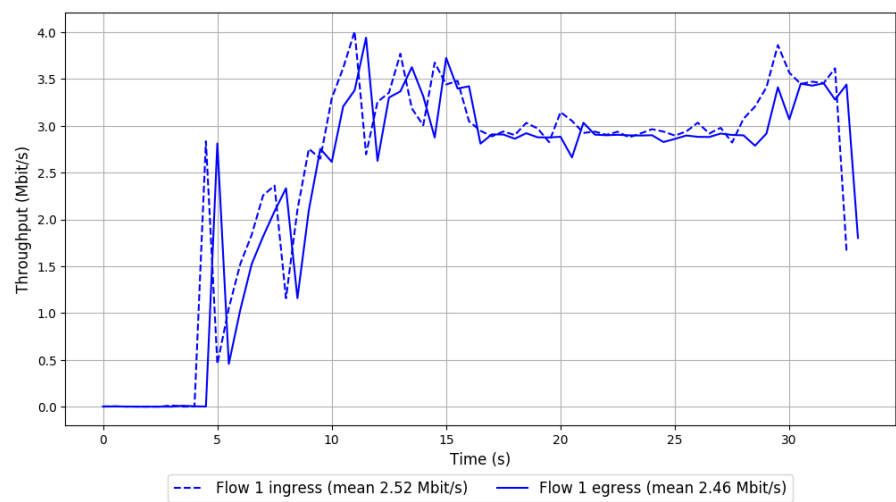Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-11-15 02:35:13
End at: 2018-11-15 02:35:43
Local clock offset: 2.165 ms
Remote clock offset: -3.024 ms


# Below is generated by plot.py at 2018-11-15 03:45:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.46 Mbit/s
95th percentile per-packet one-way delay: 7.092 ms
Loss rate: 2.52%
-- Flow 1:
Average throughput: 2.46 Mbit/s
95th percentile per-packet one-way delay: 7.092 ms
Loss rate: 2.52%
```

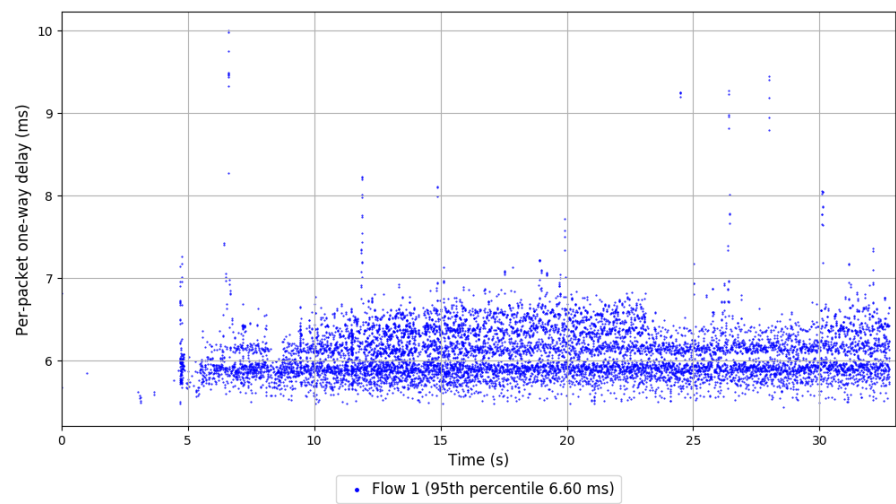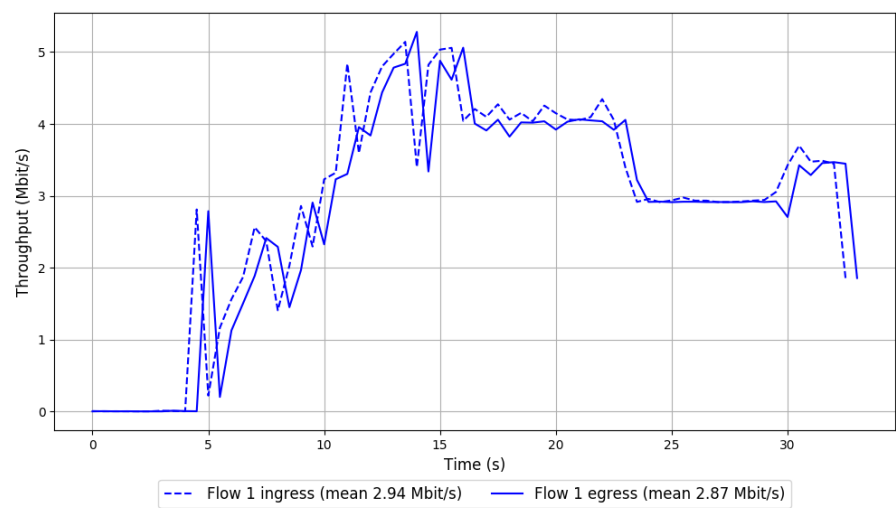Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-11-15 02:55:21
End at: 2018-11-15 02:55:51
Local clock offset: 3.372 ms
Remote clock offset: -2.784 ms


# Below is generated by plot.py at 2018-11-15 03:45:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.87 Mbit/s
95th percentile per-packet one-way delay: 6.601 ms
Loss rate: 2.33%
-- Flow 1:
Average throughput: 2.87 Mbit/s
95th percentile per-packet one-way delay: 6.601 ms
Loss rate: 2.33%
```

Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 2.94 Mbit/s)   Flow 1 egress (mean 2.87 Mbit/s)
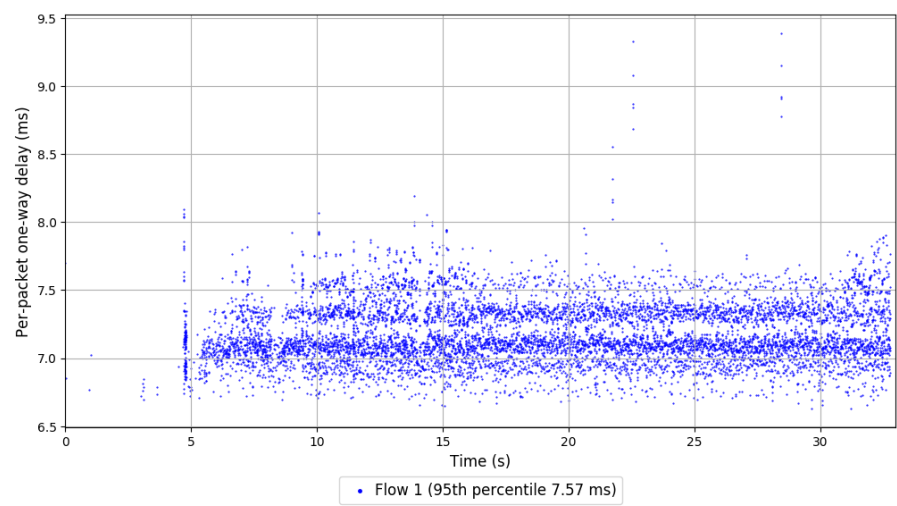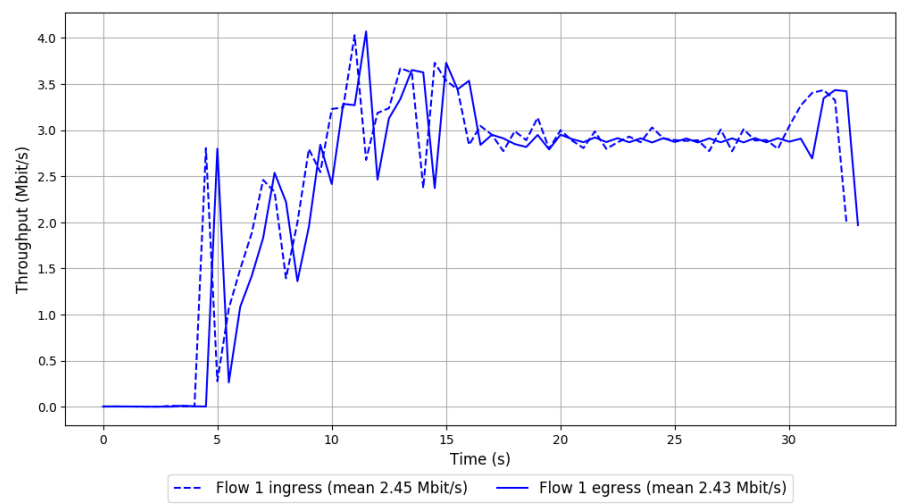

Flow 1 (95th percentile 6.60 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-11-15 03:15:49
End at: 2018-11-15 03:16:19
Local clock offset: 0.632 ms
Remote clock offset: -3.371 ms


# Below is generated by plot.py at 2018-11-15 03:45:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 7.574 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 7.574 ms
Loss rate: 0.95%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-11-15 03:36:33
End at: 2018-11-15 03:37:03
Local clock offset: -0.244 ms
Remote clock offset: -2.126 ms


# Below is generated by plot.py at 2018-11-15 03:45:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 8.956 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 2.38 Mbit/s
95th percentile per-packet one-way delay: 8.956 ms
Loss rate: 0.77%
```

Run 5: Report of WebRTC media — Data Link