Pantheon Report

Generated at 2018-12-02 11:39:26 (UTC).

Data path: Colombia on p4p1 (*remote*) →AWS Brazil 2 on ens5 (*local*).

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against gps.ntp.br and have been applied to correct the timestamps in logs.
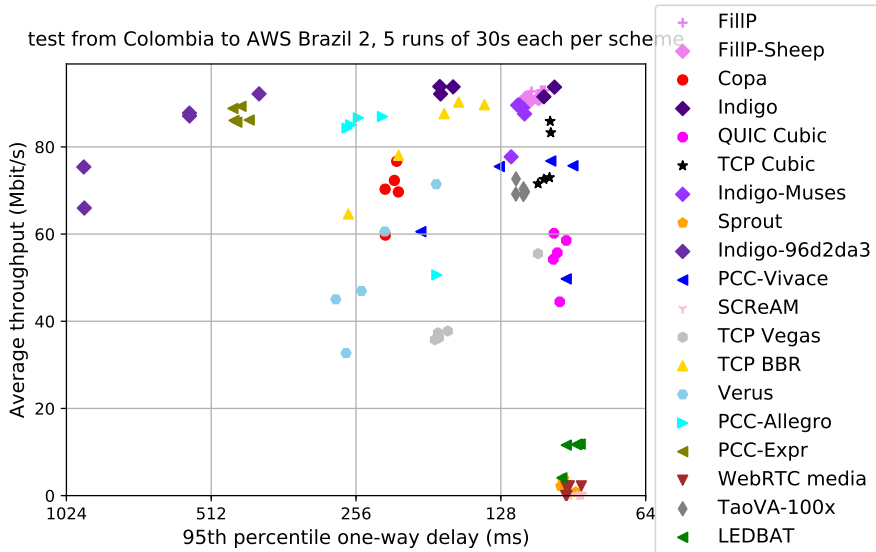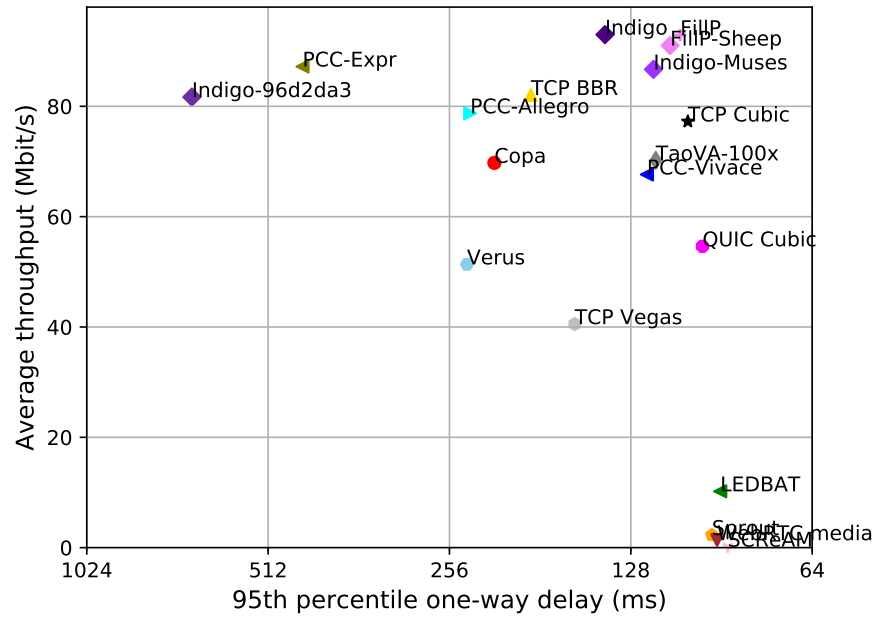
```
System info:
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 7b6dad87cde3ab65f7c4052140eb54098aa58e9d
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
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 Colombia to AWS Brazil 2, 5 runs of 30s each per scheme
(mean of all runs by scheme)

test from Colombia to AWS Brazil 2, 5 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	5	82.05	187.50	0.93
Copa	5	69.75	215.62	0.76
TCP Cubic	5	77.25	102.93	0.69
FillP	5	92.91	105.99	0.49
FillP-Sheep	5	91.02	110.14	0.63
Indigo	5	93.00	141.27	1.37
Indigo-96d2da3	5	81.68	685.12	6.43
LEDBAT	5	10.21	90.94	1.07
Indigo-Muses	5	86.69	117.39	0.95
PCC-Allegro	5	78.72	236.49	0.82
PCC-Expr	5	87.21	448.92	1.26
QUIC Cubic	5	54.62	97.34	0.93
SCReAM	5	0.18	88.38	0.51
Sprout	5	2.30	93.91	0.61
TaoVA-100x	5	70.20	116.37	0.67
TCP Vegas	5	40.52	158.60	0.67
Verus	5	51.35	239.49	0.47
PCC-Vivace	5	67.65	120.36	0.83
WebRTC media	5	1.36	92.04	0.29

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-02 09:54:06
End at: 2018-12-02 09:54:37
Local clock offset: -3.856 ms
Remote clock offset: 7.637 ms


# Below is generated by plot.py at 2018-12-02 11:29:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.27 Mbit/s
95th percentile per-packet one-way delay: 156.662 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 90.27 Mbit/s
95th percentile per-packet one-way delay: 156.662 ms
Loss rate: 0.88%
```
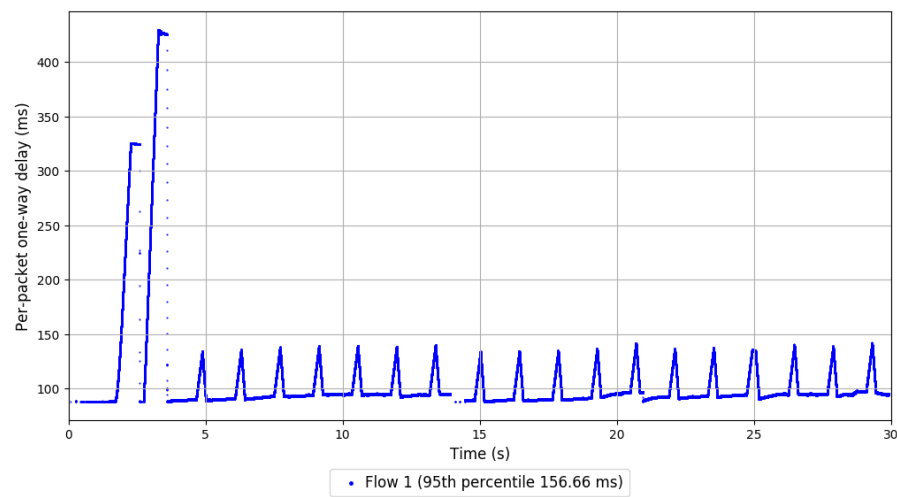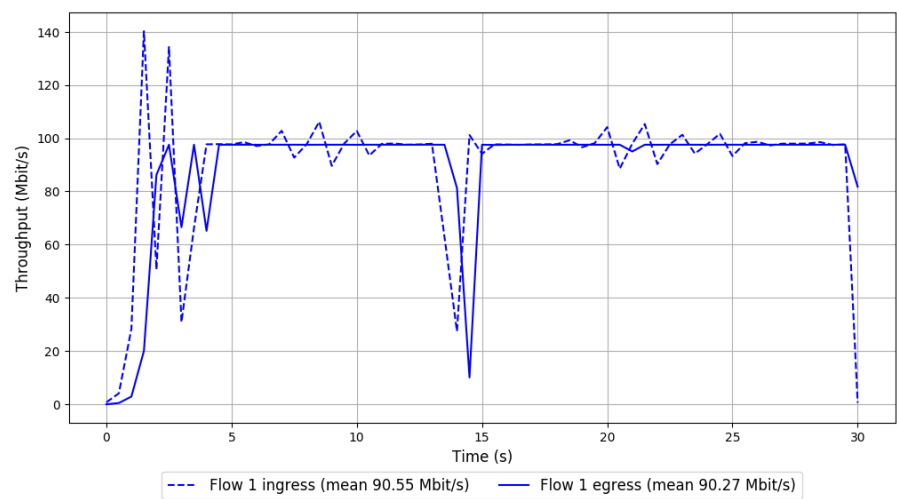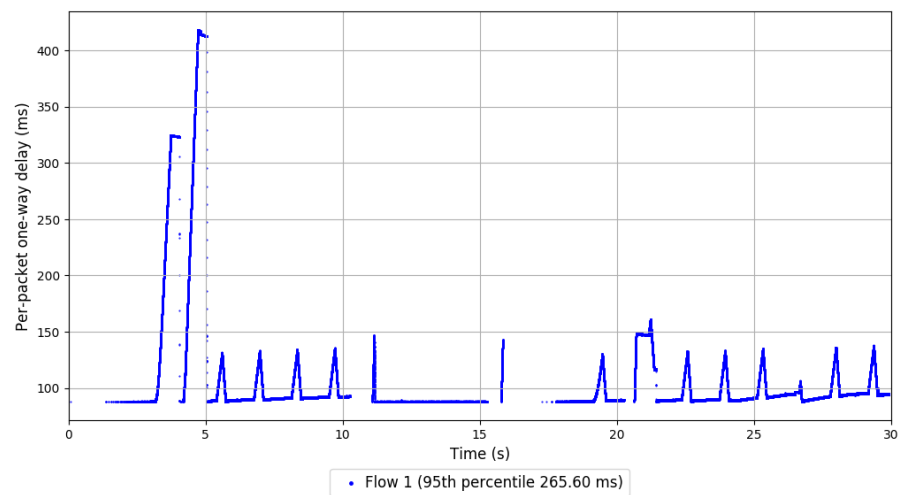
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-12-02 10:16:55
End at: 2018-12-02 10:17:25
Local clock offset: -6.64 ms
Remote clock offset: 8.57 ms


# Below is generated by plot.py at 2018-12-02 11:29:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 64.61 Mbit/s
95th percentile per-packet one-way delay: 265.597 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 64.61 Mbit/s
95th percentile per-packet one-way delay: 265.597 ms
Loss rate: 1.04%
```
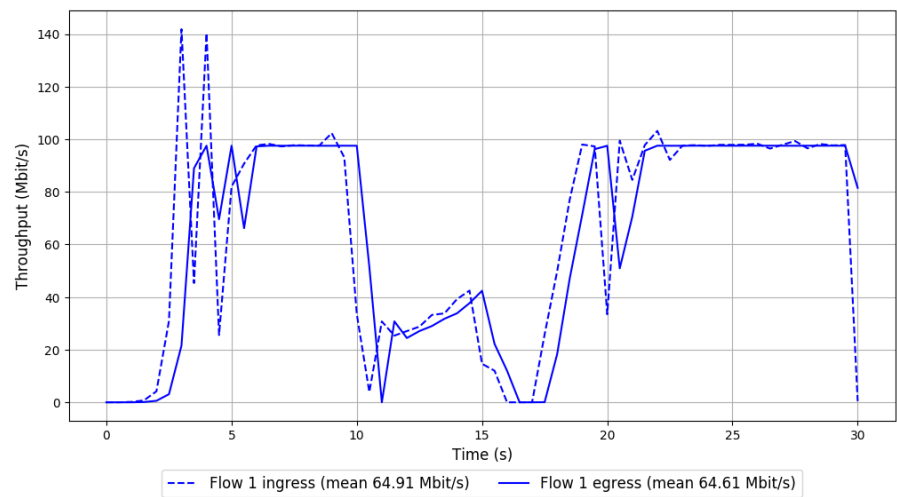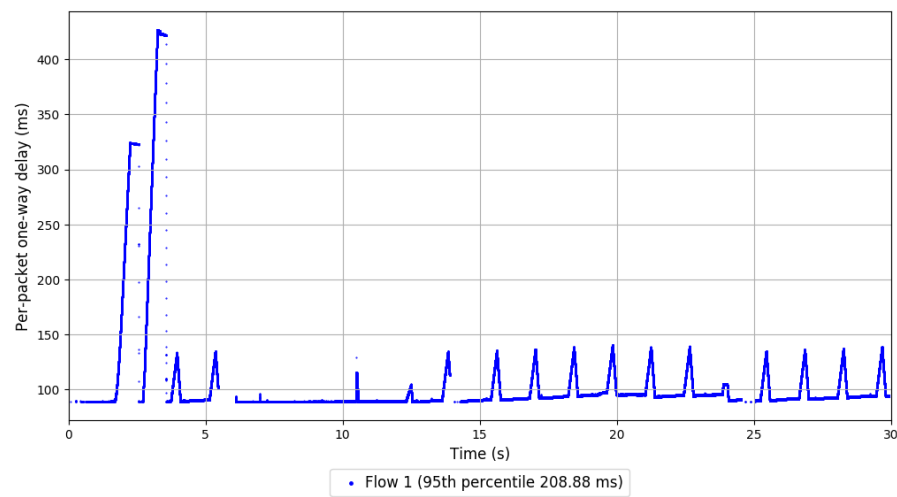
Run 2: Report of TCP BBR — Data Link

```
Run 3: Statistics of TCP BBR

Start at: 2018-12-02 10:39:46
End at: 2018-12-02 10:40:16
Local clock offset: -1.596 ms
Remote clock offset: 8.322 ms


# Below is generated by plot.py at 2018-12-02 11:29:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 78.06 Mbit/s
95th percentile per-packet one-way delay: 208.883 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 78.06 Mbit/s
95th percentile per-packet one-way delay: 208.883 ms
Loss rate: 0.85%
```
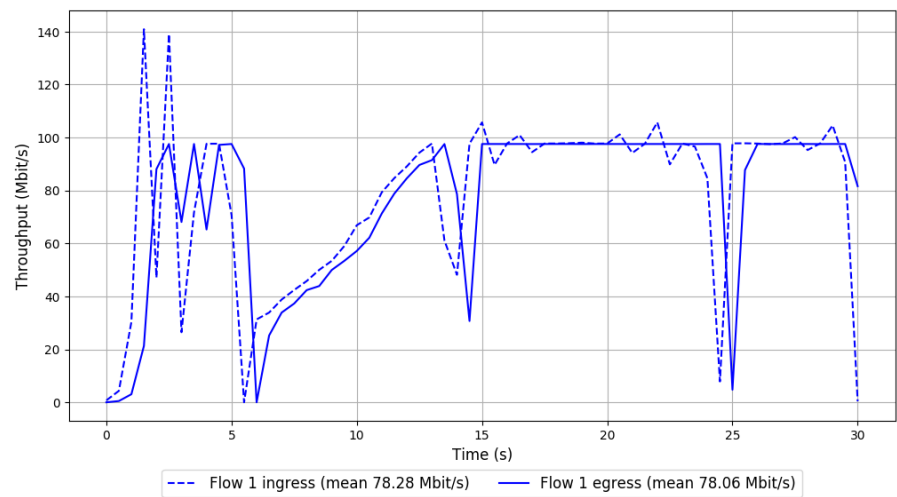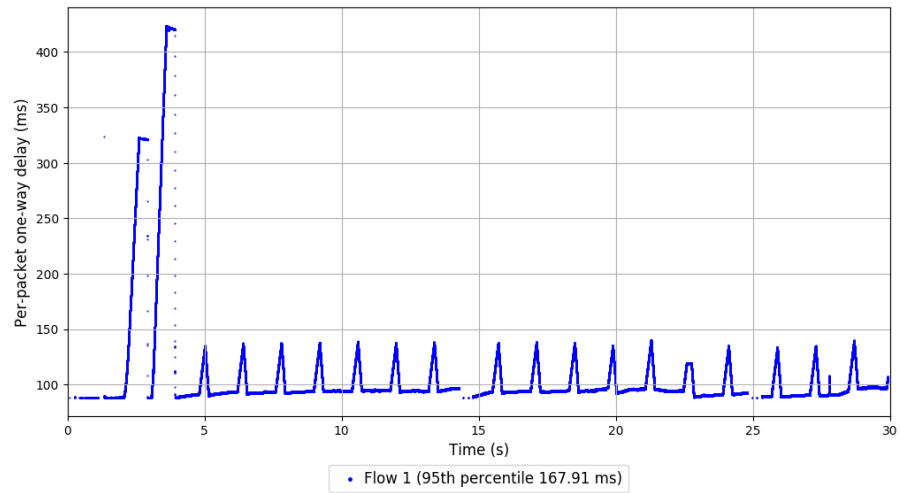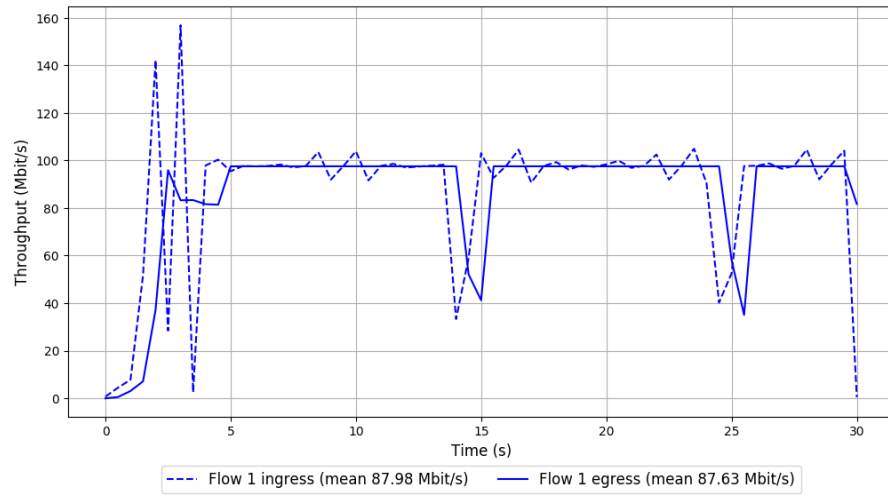
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 78.28 Mbit/s) --- Flow 1 egress (mean 78.06 Mbit/s)

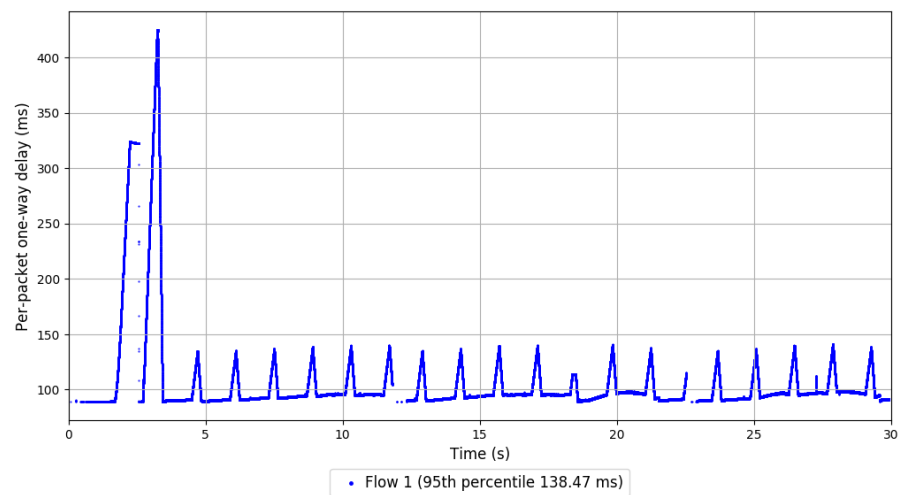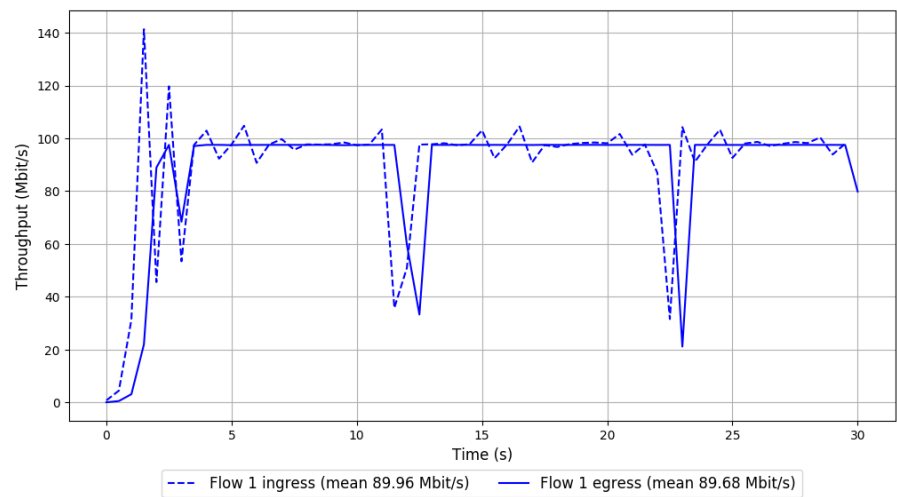• Flow 1 (95th percentile 208.88 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-12-02 11:02:26
End at: 2018-12-02 11:02:56
Local clock offset: -5.02 ms
Remote clock offset: 10.258 ms


# Below is generated by plot.py at 2018-12-02 11:29:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.63 Mbit/s
95th percentile per-packet one-way delay: 167.911 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 87.63 Mbit/s
95th percentile per-packet one-way delay: 167.911 ms
Loss rate: 0.98%
```

Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-02 11:25:15
End at: 2018-12-02 11:25:45
Local clock offset: -6.192 ms
Remote clock offset: 10.755 ms


# Below is generated by plot.py at 2018-12-02 11:29:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.68 Mbit/s
95th percentile per-packet one-way delay: 138.470 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 89.68 Mbit/s
95th percentile per-packet one-way delay: 138.470 ms
Loss rate: 0.89%
```
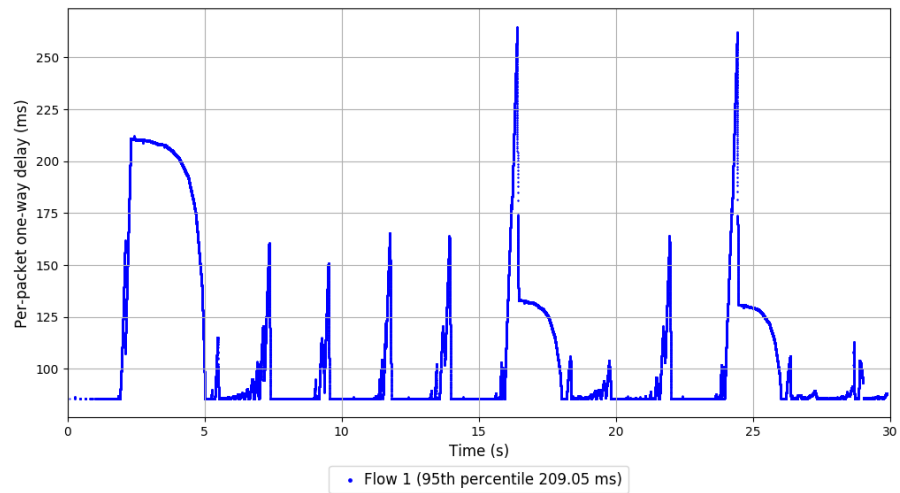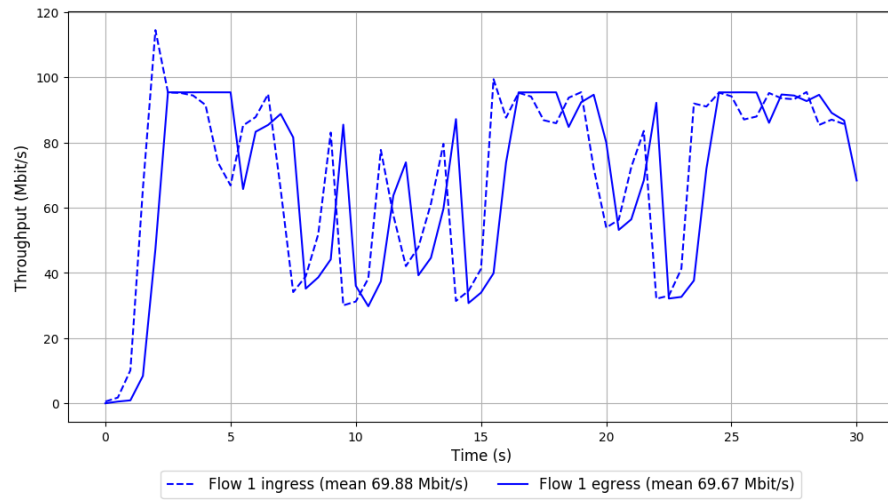
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 89.96 Mbit/s) — Flow 1 egress (mean 89.68 Mbit/s)

Flow 1 (95th percentile 138.47 ms)

```
Run 1: Statistics of Copa

Start at: 2018-12-02 09:46:57
End at: 2018-12-02 09:47:27
Local clock offset: -2.294 ms
Remote clock offset: 8.818 ms


# Below is generated by plot.py at 2018-12-02 11:29:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.67 Mbit/s
95th percentile per-packet one-way delay: 209.047 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 69.67 Mbit/s
95th percentile per-packet one-way delay: 209.047 ms
Loss rate: 0.87%
```

Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-12-02 10:09:57
End at: 2018-12-02 10:10:27
Local clock offset: -6.248 ms
Remote clock offset: 4.509 ms


# Below is generated by plot.py at 2018-12-02 11:29:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.77 Mbit/s
95th percentile per-packet one-way delay: 222.487 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 59.77 Mbit/s
95th percentile per-packet one-way delay: 222.487 ms
Loss rate: 1.19%
```
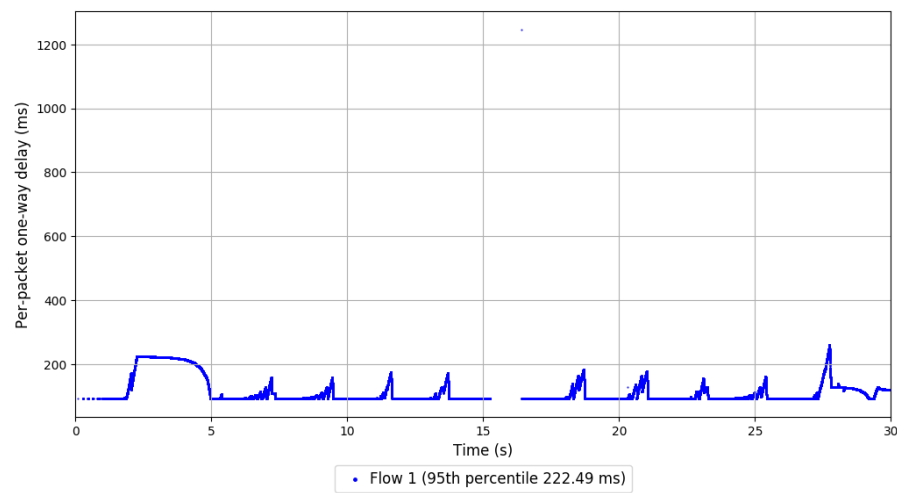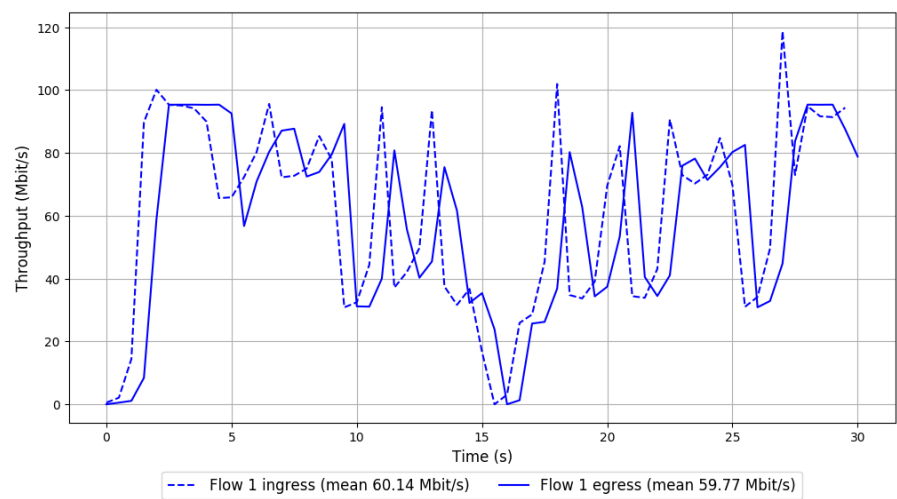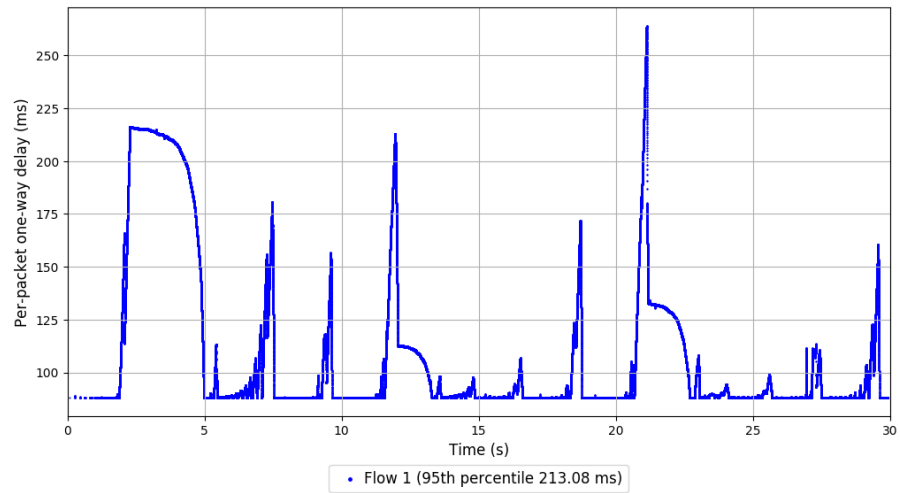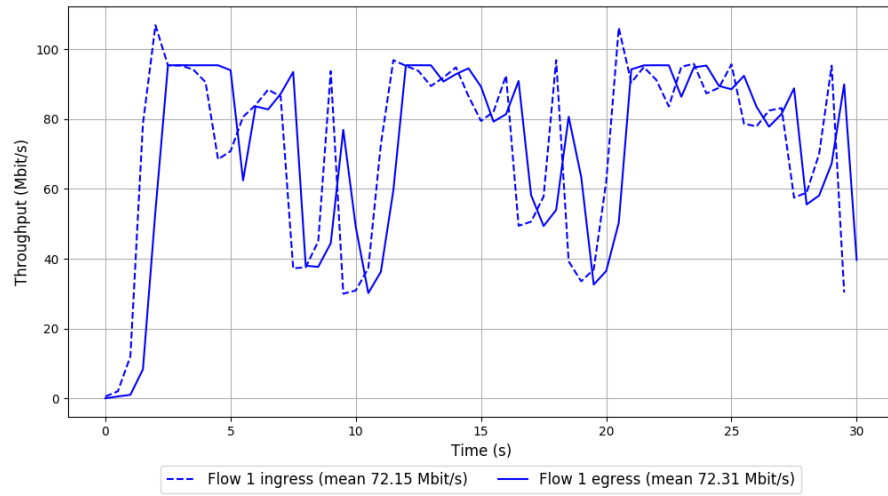
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-12-02 10:32:40
End at: 2018-12-02 10:33:10
Local clock offset: -3.144 ms
Remote clock offset: 8.271 ms


# Below is generated by plot.py at 2018-12-02 11:30:02
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.31 Mbit/s
95th percentile per-packet one-way delay: 213.084 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 72.31 Mbit/s
95th percentile per-packet one-way delay: 213.084 ms
Loss rate: 0.36%
```
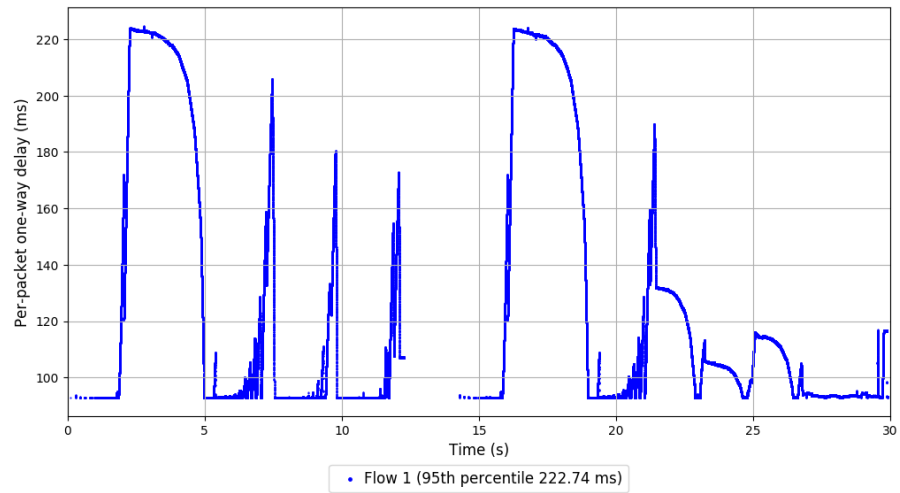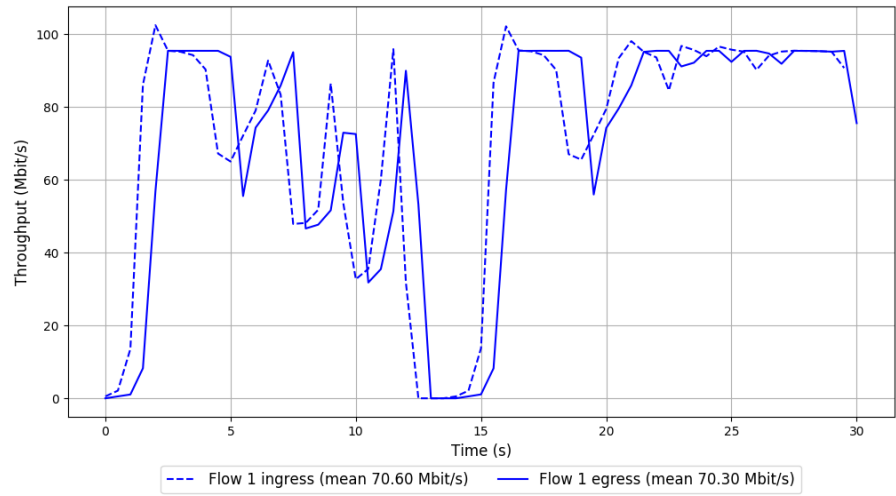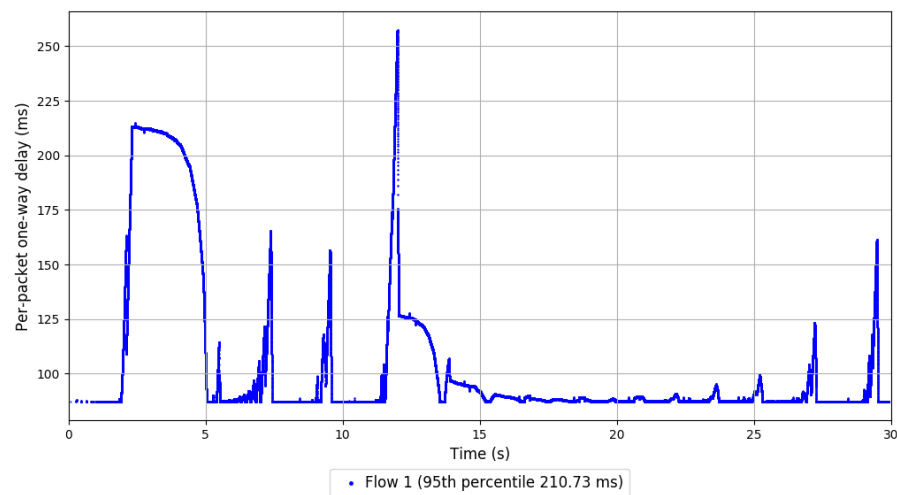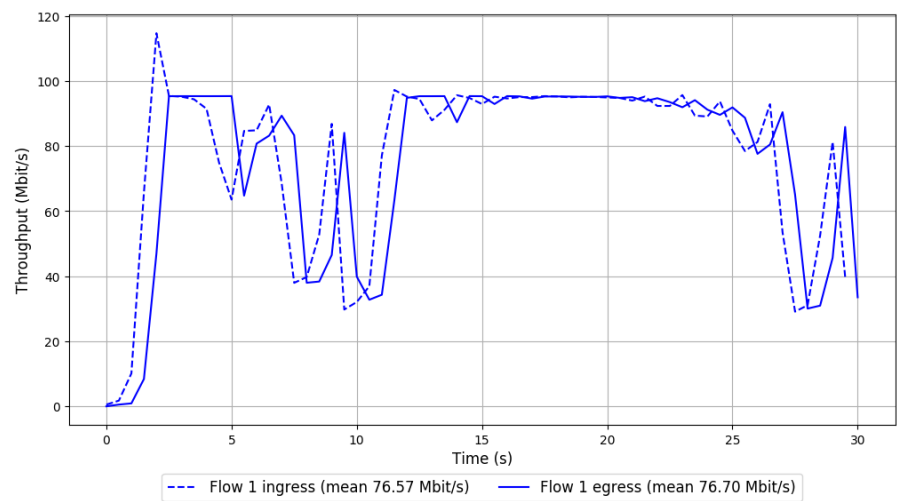
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 72.15 Mbit/s)   Flow 1 egress (mean 72.31 Mbit/s)

Flow 1 (95th percentile 213.08 ms)

```
Run 4: Statistics of Copa

Start at: 2018-12-02 10:55:24
End at: 2018-12-02 10:55:54
Local clock offset: -3.831 ms
Remote clock offset: 5.105 ms


# Below is generated by plot.py at 2018-12-02 11:30:51
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.30 Mbit/s
95th percentile per-packet one-way delay: 222.742 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 70.30 Mbit/s
95th percentile per-packet one-way delay: 222.742 ms
Loss rate: 0.99%
```

Run 4: Report of Copa — Data Link

```
Run 5: Statistics of Copa

Start at: 2018-12-02 11:18:13
End at: 2018-12-02 11:18:43
Local clock offset: -6.981 ms
Remote clock offset: 10.785 ms


# Below is generated by plot.py at 2018-12-02 11:31:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.70 Mbit/s
95th percentile per-packet one-way delay: 210.728 ms
Loss rate: 0.40%
-- Flow 1:
Average throughput: 76.70 Mbit/s
95th percentile per-packet one-way delay: 210.728 ms
Loss rate: 0.40%
```

Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-02 09:43:13
End at: 2018-12-02 09:43:43
Local clock offset: -2.297 ms
Remote clock offset: 8.102 ms


# Below is generated by plot.py at 2018-12-02 11:31:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.87 Mbit/s
95th percentile per-packet one-way delay: 101.082 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 85.87 Mbit/s
95th percentile per-packet one-way delay: 101.082 ms
Loss rate: 0.58%
```
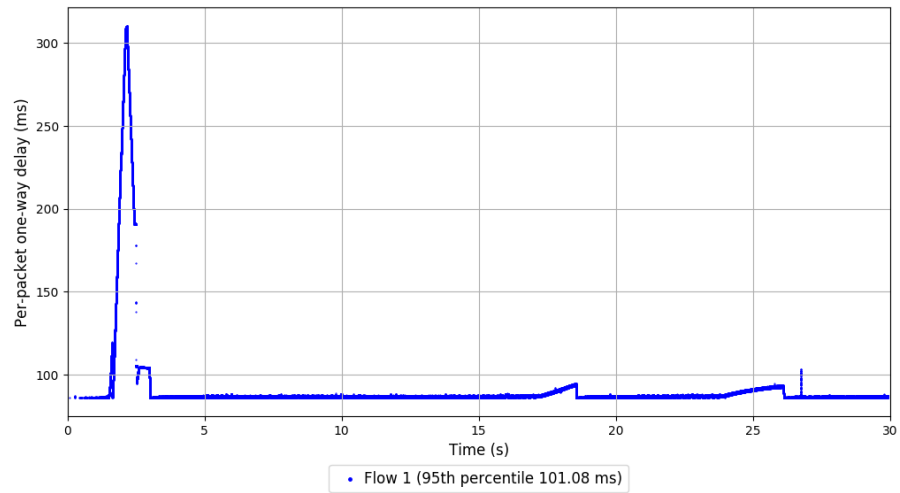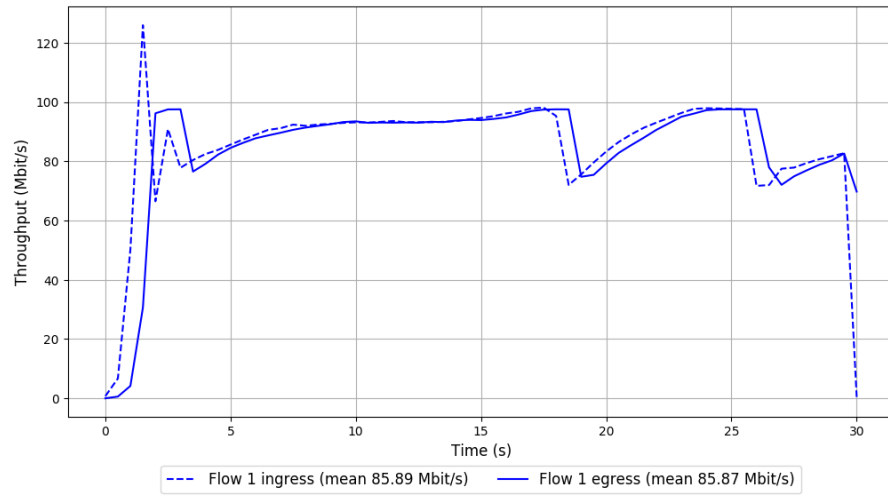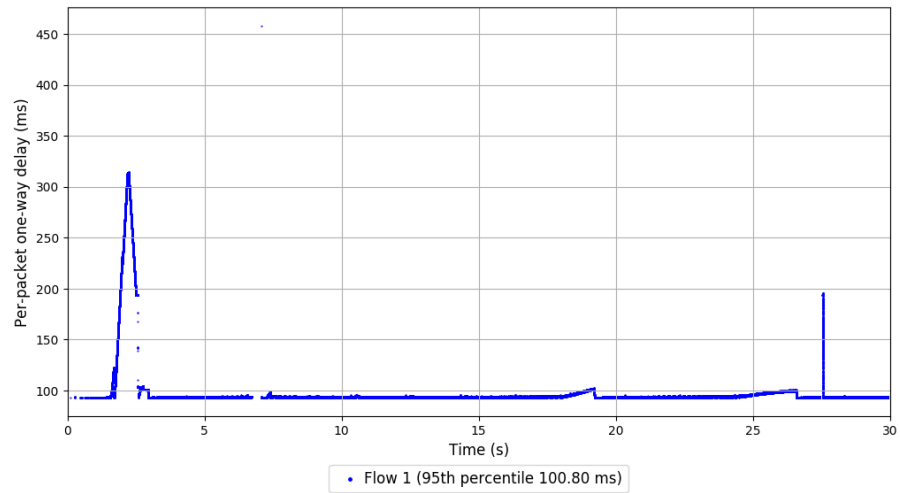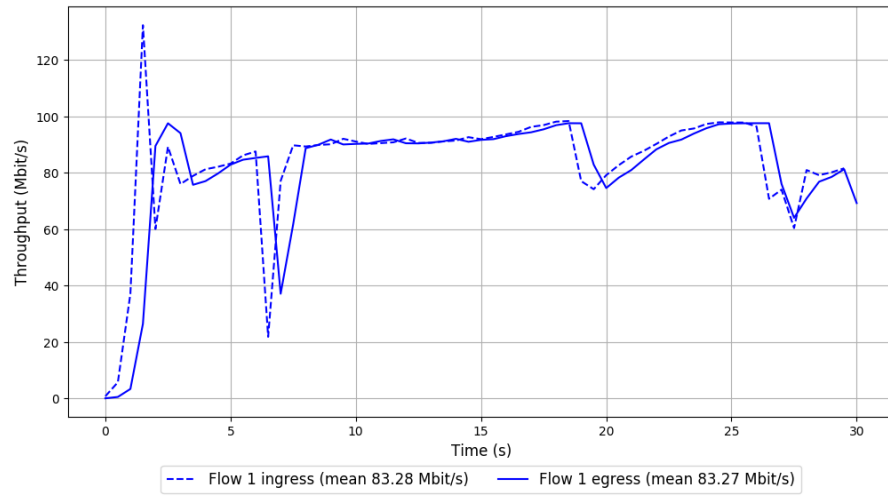
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-02 10:06:17
End at: 2018-12-02 10:06:47
Local clock offset: -5.928 ms
Remote clock offset: 3.086 ms


# Below is generated by plot.py at 2018-12-02 11:31:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 83.27 Mbit/s
95th percentile per-packet one-way delay: 100.799 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 83.27 Mbit/s
95th percentile per-packet one-way delay: 100.799 ms
Loss rate: 0.59%
```

Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 83.28 Mbit/s)   Flow 1 egress (mean 83.27 Mbit/s)

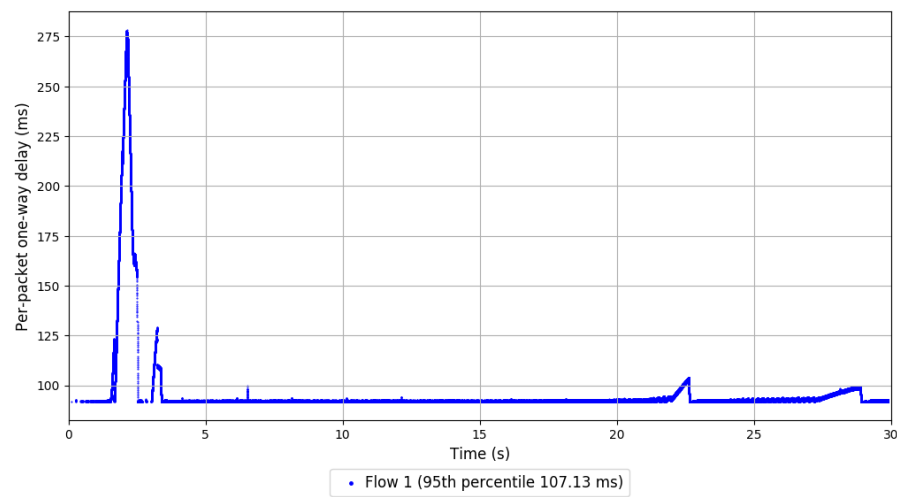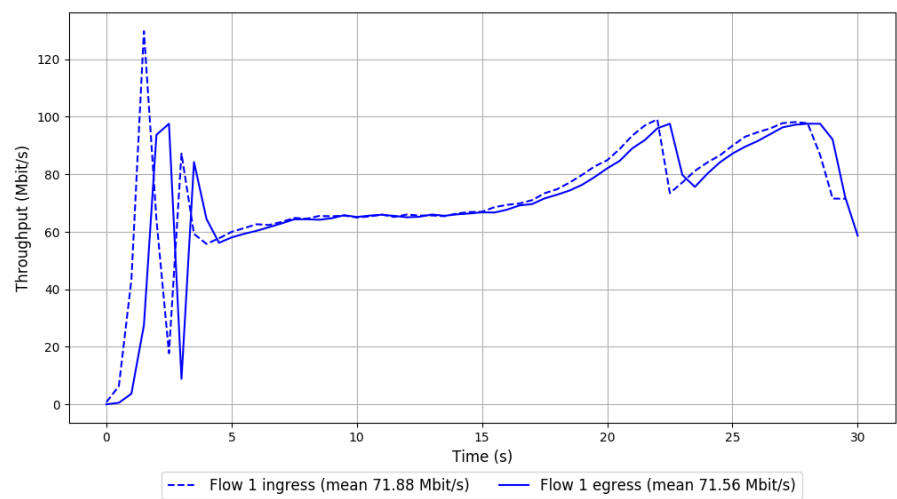
Flow 1 (95th percentile 100.80 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-02 10:28:51
End at: 2018-12-02 10:29:21
Local clock offset: -2.984 ms
Remote clock offset: 4.963 ms


# Below is generated by plot.py at 2018-12-02 11:31:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.56 Mbit/s
95th percentile per-packet one-way delay: 107.128 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 71.56 Mbit/s
95th percentile per-packet one-way delay: 107.128 ms
Loss rate: 1.01%
```
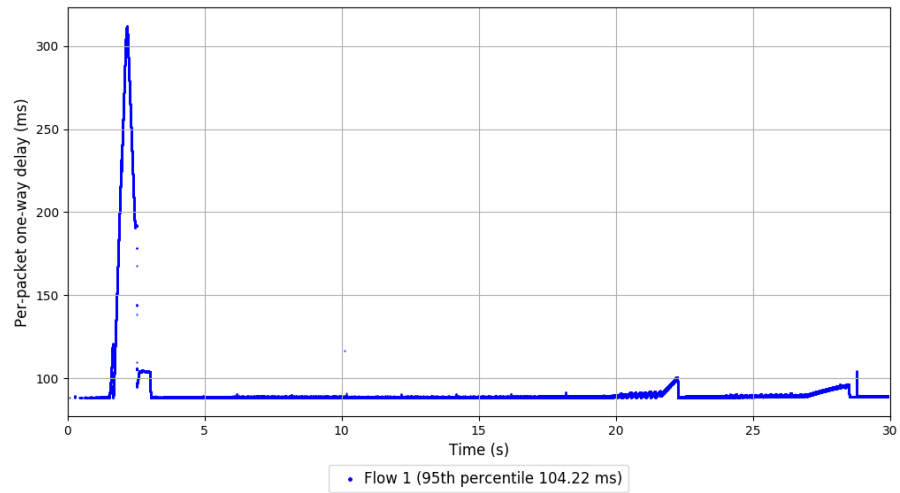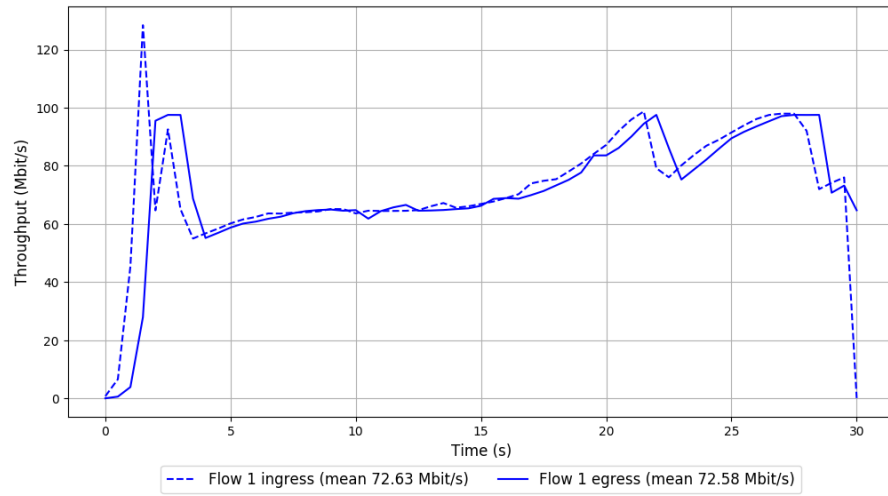
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 71.88 Mbit/s)   Flow 1 egress (mean 71.56 Mbit/s)

Flow 1 (95th percentile 107.13 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-02 10:51:45
End at: 2018-12-02 10:52:15
Local clock offset: -3.527 ms
Remote clock offset: 8.804 ms


# Below is generated by plot.py at 2018-12-02 11:31:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.58 Mbit/s
95th percentile per-packet one-way delay: 104.220 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 72.58 Mbit/s
95th percentile per-packet one-way delay: 104.220 ms
Loss rate: 0.64%
```

Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 72.63 Mbit/s) --- Flow 1 egress (mean 72.58 Mbit/s)
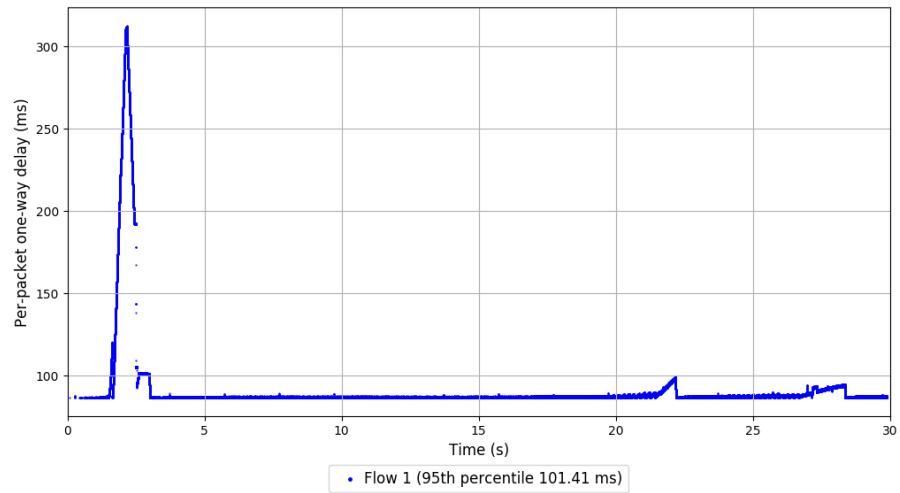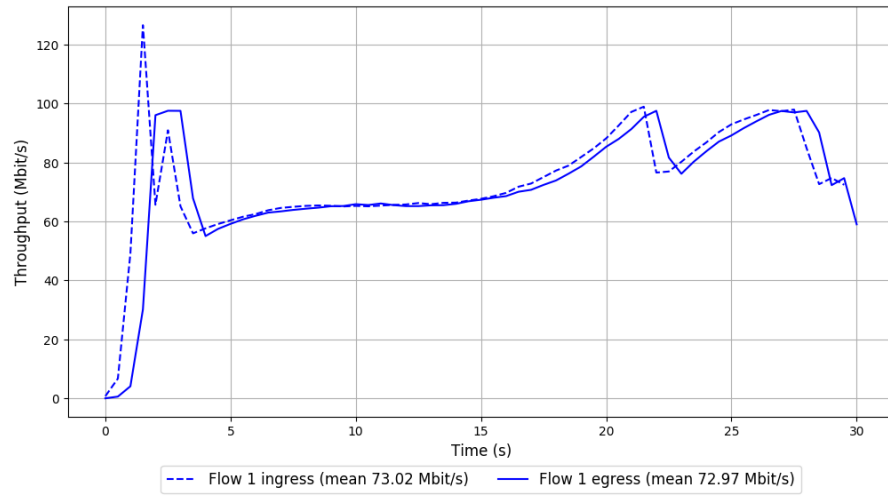

• Flow 1 (95th percentile 104.22 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-02 11:14:30
End at: 2018-12-02 11:15:00
Local clock offset: -6.76 ms
Remote clock offset: 10.978 ms


# Below is generated by plot.py at 2018-12-02 11:31:08
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.97 Mbit/s
95th percentile per-packet one-way delay: 101.414 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 72.97 Mbit/s
95th percentile per-packet one-way delay: 101.414 ms
Loss rate: 0.64%
```
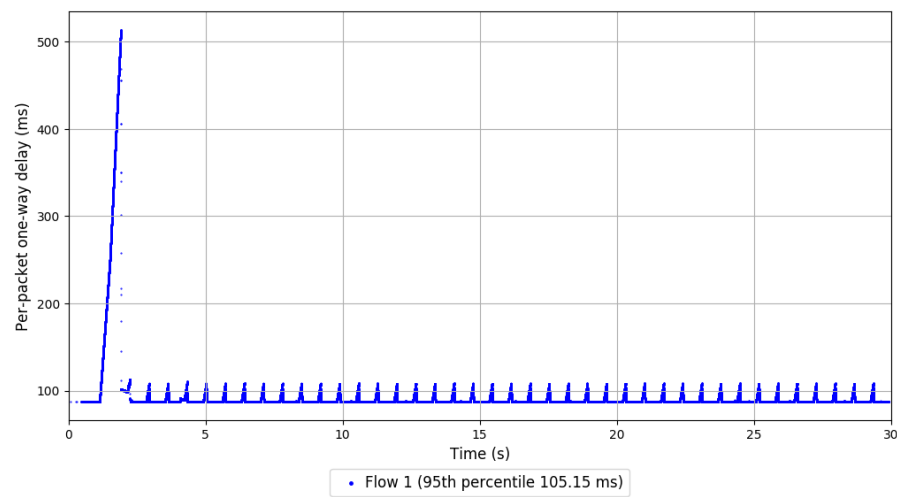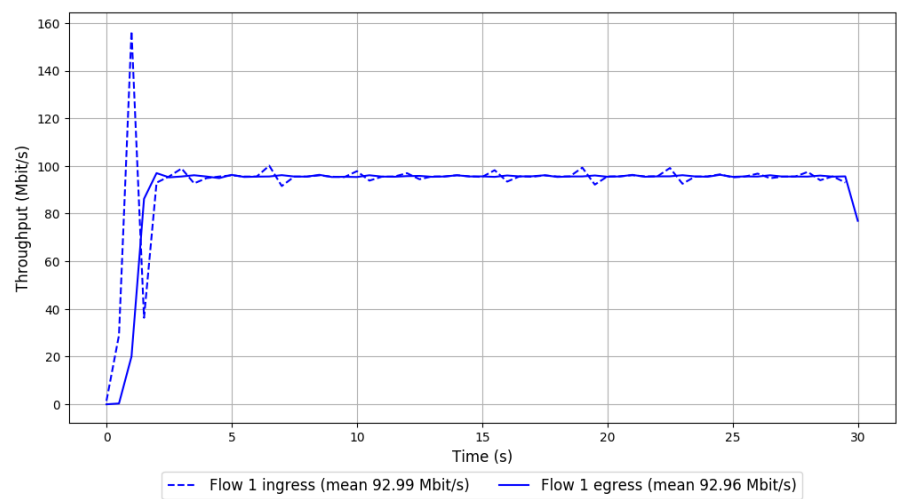
Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 73.02 Mbit/s)   Flow 1 egress (mean 72.97 Mbit/s)

Flow 1 (95th percentile 101.41 ms)

```
Run 1: Statistics of FillP

Start at: 2018-12-02 09:33:31
End at: 2018-12-02 09:34:01
Local clock offset: -1.361 ms
Remote clock offset: 7.034 ms


# Below is generated by plot.py at 2018-12-02 11:31:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.96 Mbit/s
95th percentile per-packet one-way delay: 105.153 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 92.96 Mbit/s
95th percentile per-packet one-way delay: 105.153 ms
Loss rate: 0.60%
```

Run 1: Report of FillP — Data Link

```
Run 2: Statistics of FillP

Start at: 2018-12-02 09:56:28
End at: 2018-12-02 09:56:58
Local clock offset: -4.426 ms
Remote clock offset: 3.899 ms


# Below is generated by plot.py at 2018-12-02 11:31:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.71 Mbit/s
95th percentile per-packet one-way delay: 110.546 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 92.71 Mbit/s
95th percentile per-packet one-way delay: 110.546 ms
Loss rate: 0.01%
```
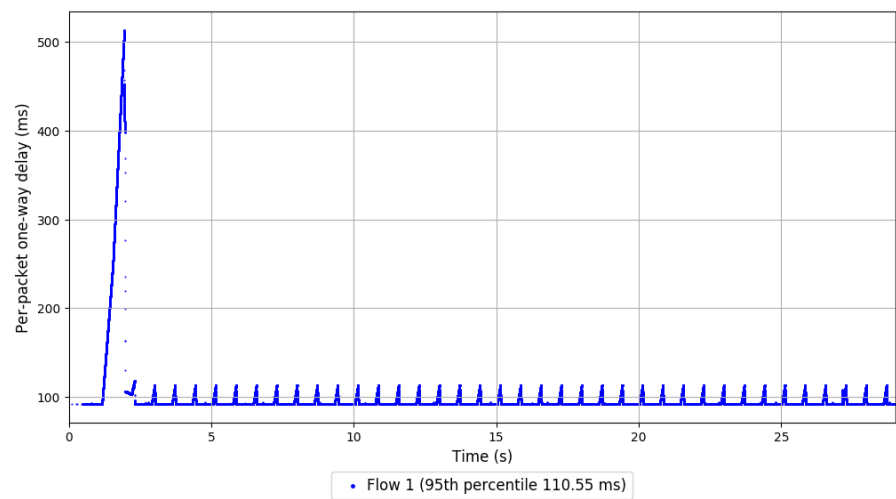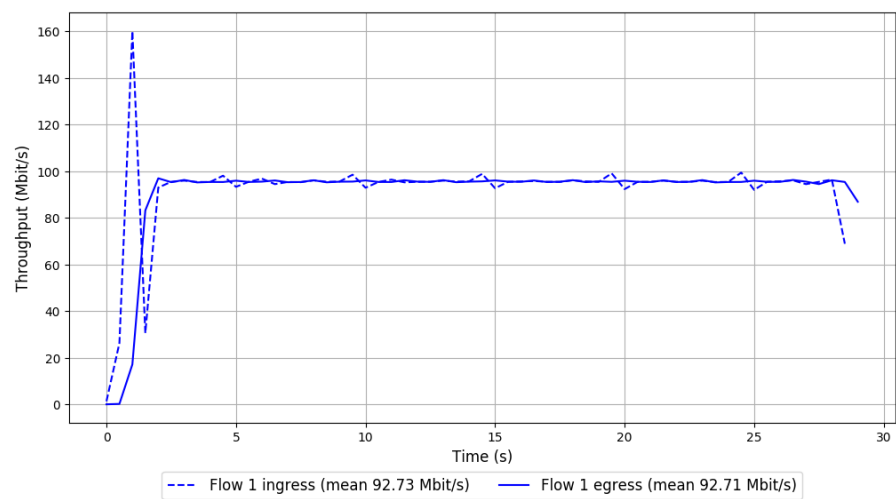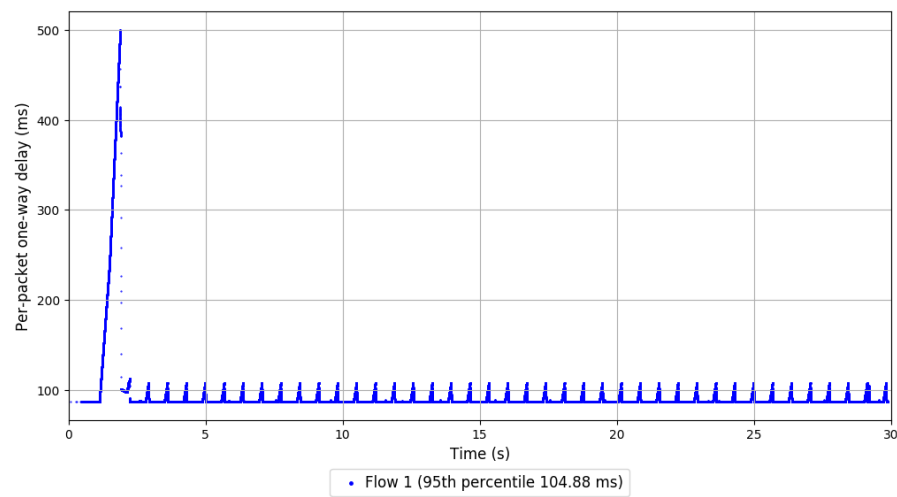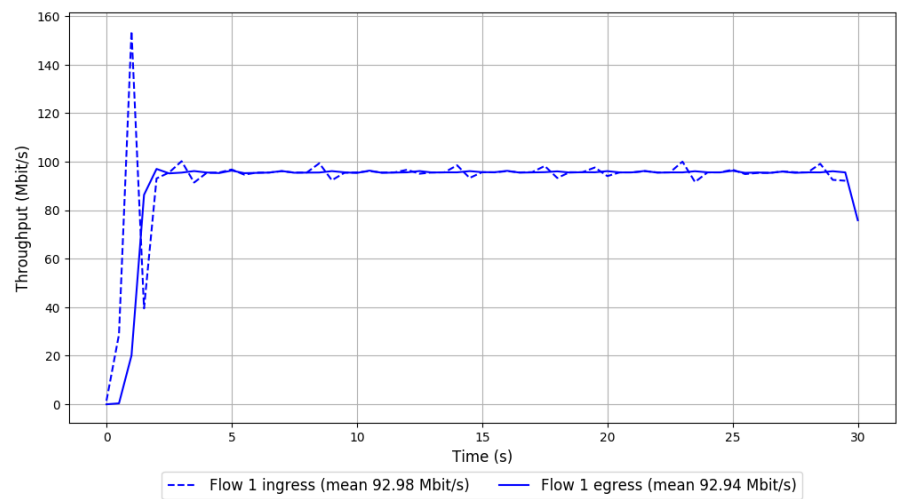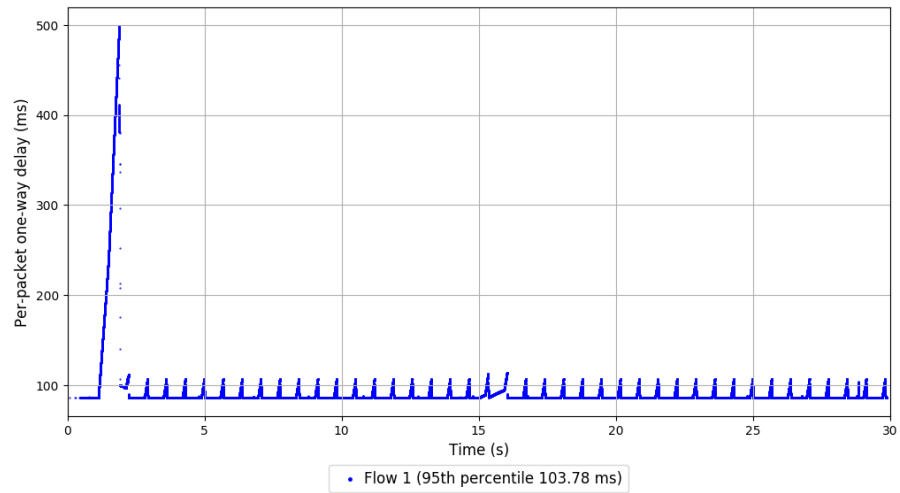
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 92.73 Mbit/s)   Flow 1 egress (mean 92.71 Mbit/s)

Flow 1 (95th percentile 110.55 ms)

```
Run 3: Statistics of FillP

Start at: 2018-12-02 10:19:14
End at: 2018-12-02 10:19:44
Local clock offset: -6.081 ms
Remote clock offset: 8.897 ms


# Below is generated by plot.py at 2018-12-02 11:31:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 104.883 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 104.883 ms
Loss rate: 0.61%
```

Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 92.98 Mbit/s)   Flow 1 egress (mean 92.94 Mbit/s)

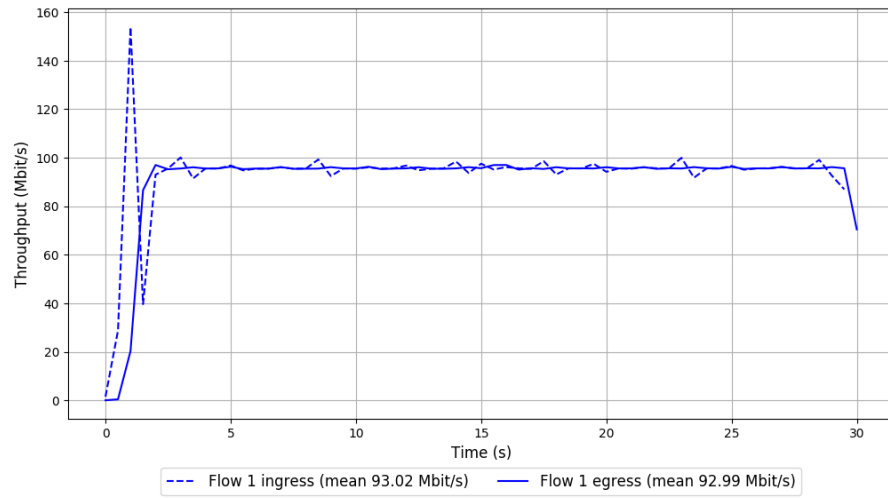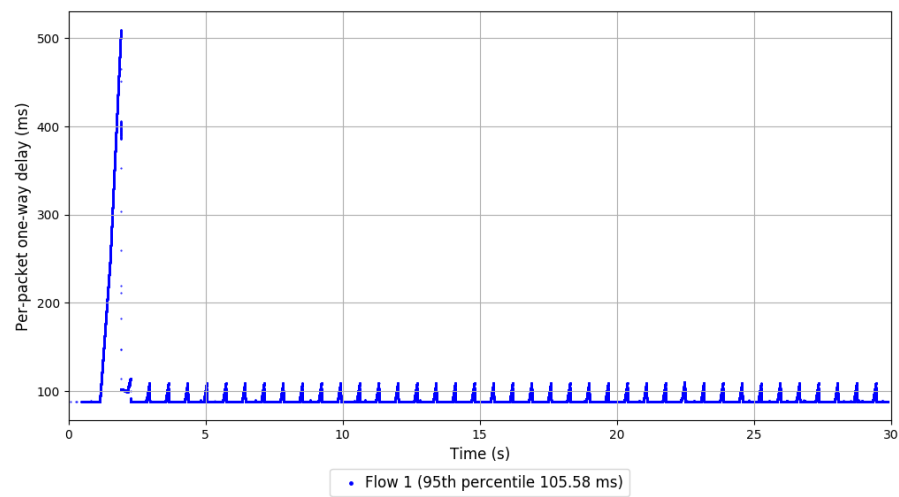Flow 1 (95th percentile 104.88 ms)

```
Run 4: Statistics of FillP

Start at: 2018-12-02 10:42:06
End at: 2018-12-02 10:42:36
Local clock offset: -2.276 ms
Remote clock offset: 10.603 ms


# Below is generated by plot.py at 2018-12-02 11:31:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.99 Mbit/s
95th percentile per-packet one-way delay: 103.780 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 92.99 Mbit/s
95th percentile per-packet one-way delay: 103.780 ms
Loss rate: 0.61%
```

Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 93.02 Mbit/s) — Flow 1 egress (mean 92.99 Mbit/s)

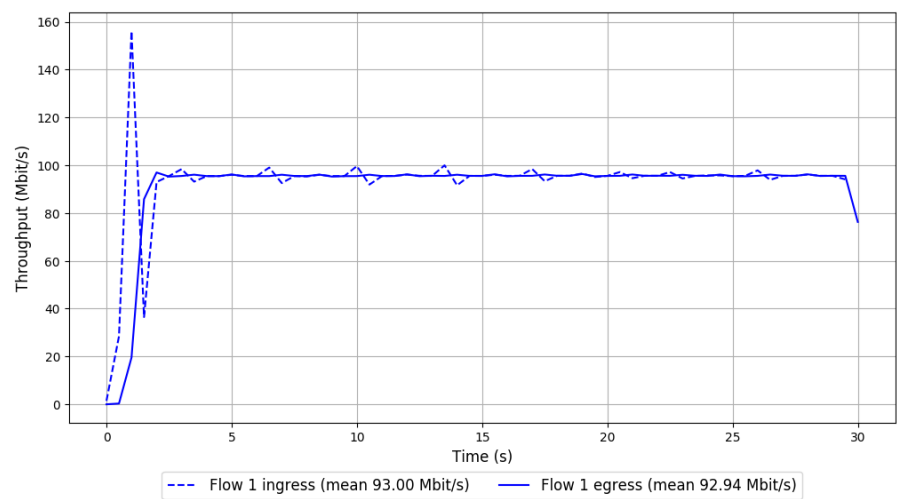· Flow 1 (95th percentile 103.78 ms)

```
Run 5: Statistics of FillP

Start at: 2018-12-02 11:04:46
End at: 2018-12-02 11:05:16
Local clock offset: -6.052 ms
Remote clock offset: 10.164 ms


# Below is generated by plot.py at 2018-12-02 11:32:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 105.579 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 92.94 Mbit/s
95th percentile per-packet one-way delay: 105.579 ms
Loss rate: 0.63%
```
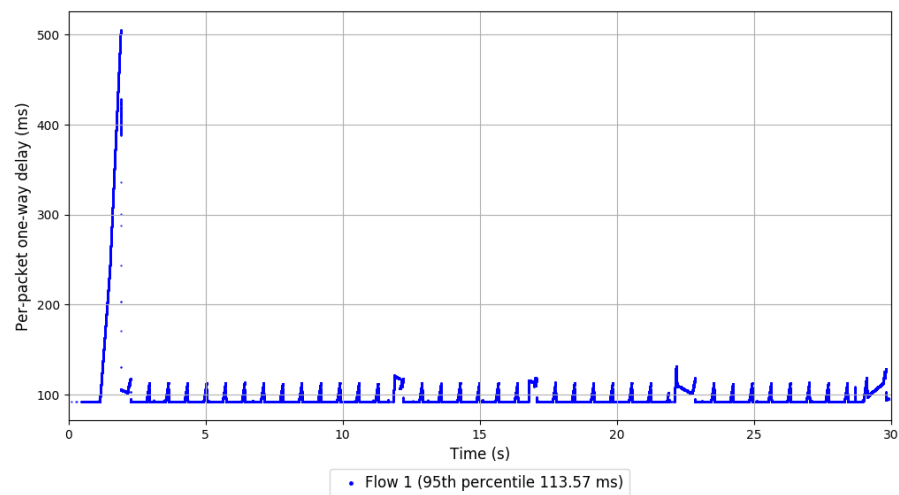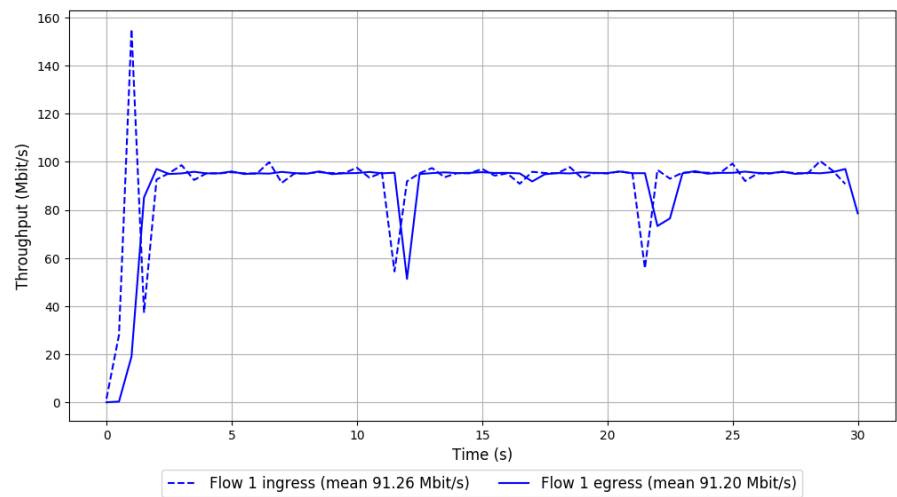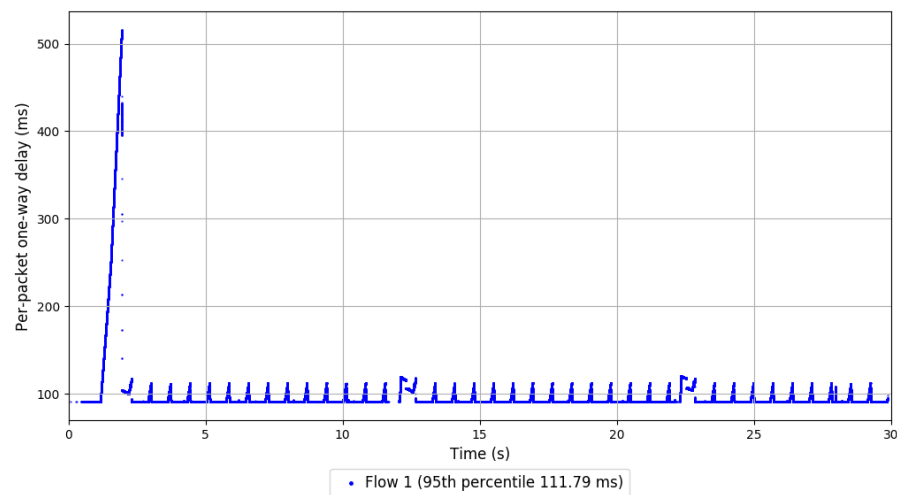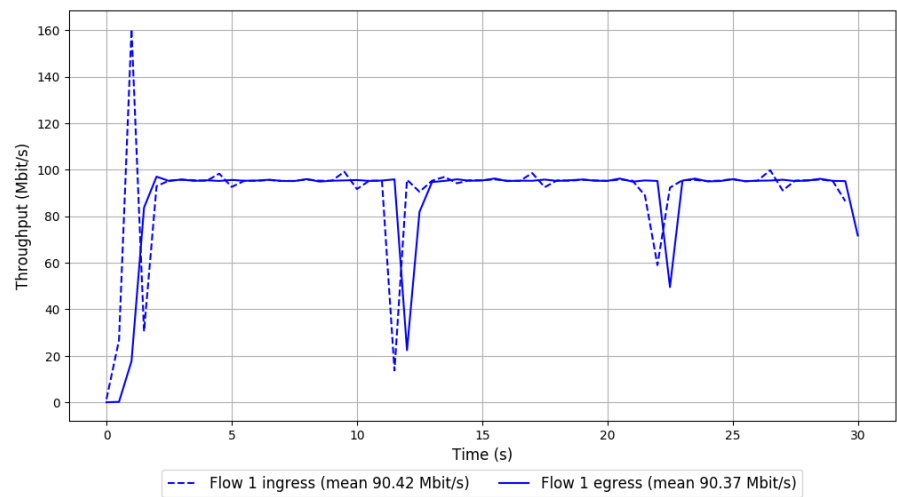
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 93.00 Mbit/s) --- Flow 1 egress (mean 92.94 Mbit/s)

Flow 1 (95th percentile 105.58 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-02 09:40:48
End at: 2018-12-02 09:41:18
Local clock offset: -2.288 ms
Remote clock offset: 1.86 ms


# Below is generated by plot.py at 2018-12-02 11:32:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.20 Mbit/s
95th percentile per-packet one-way delay: 113.572 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 91.20 Mbit/s
95th percentile per-packet one-way delay: 113.572 ms
Loss rate: 0.64%
```
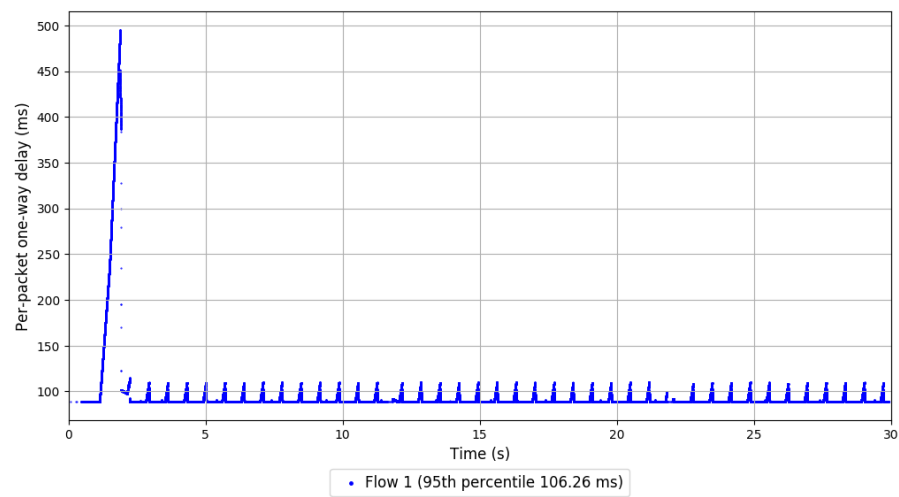
Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-02 10:03:53
End at: 2018-12-02 10:04:23
Local clock offset: -6.365 ms
Remote clock offset: 4.251 ms


# Below is generated by plot.py at 2018-12-02 11:32:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.37 Mbit/s
95th percentile per-packet one-way delay: 111.792 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 90.37 Mbit/s
95th percentile per-packet one-way delay: 111.792 ms
Loss rate: 0.62%
```

Run 2: Report of FillP-Sheep — Data Link

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-02 10:26:28
End at: 2018-12-02 10:26:58
Local clock offset: -3.48 ms
Remote clock offset: 7.808 ms


# Below is generated by plot.py at 2018-12-02 11:32:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.25 Mbit/s
95th percentile per-packet one-way delay: 106.259 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 91.25 Mbit/s
95th percentile per-packet one-way delay: 106.259 ms
Loss rate: 0.61%
```
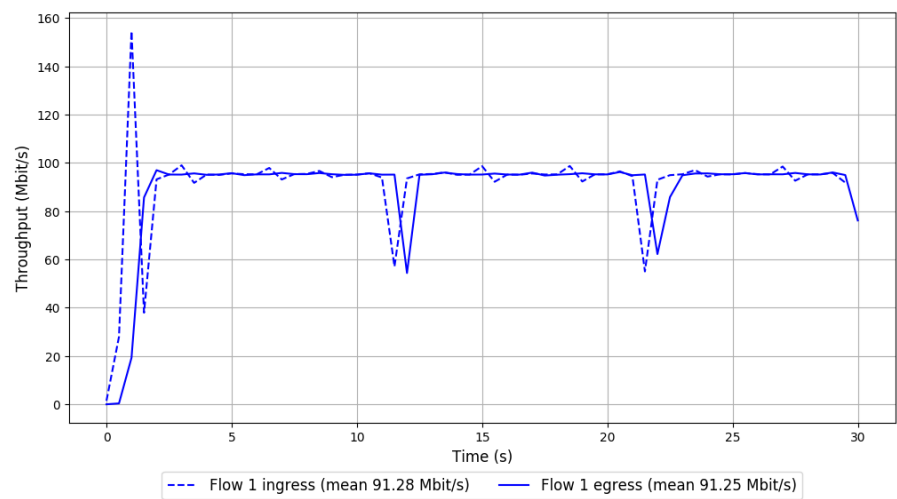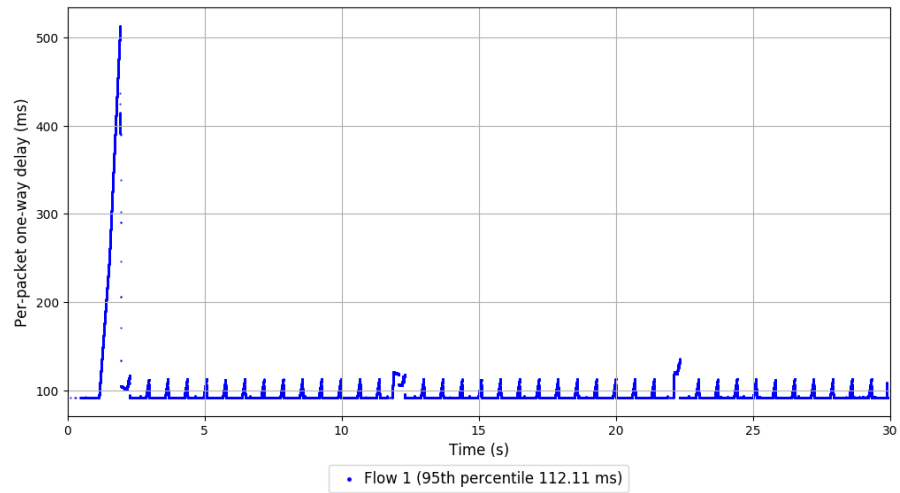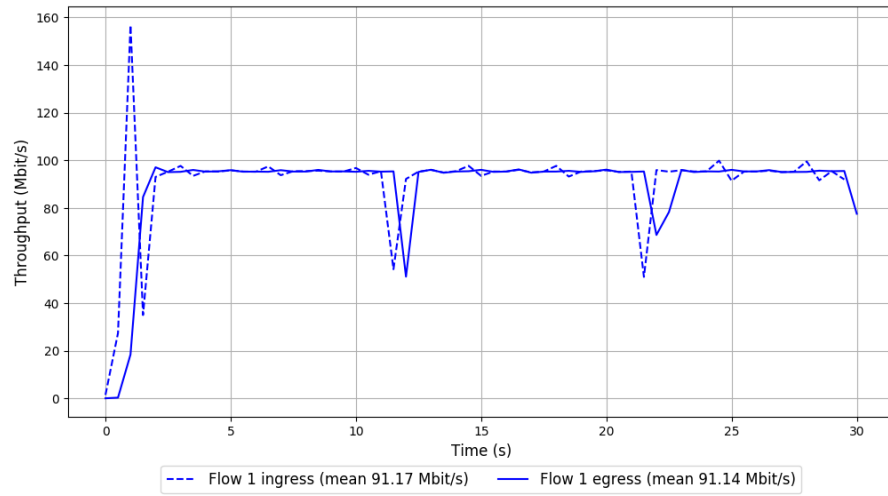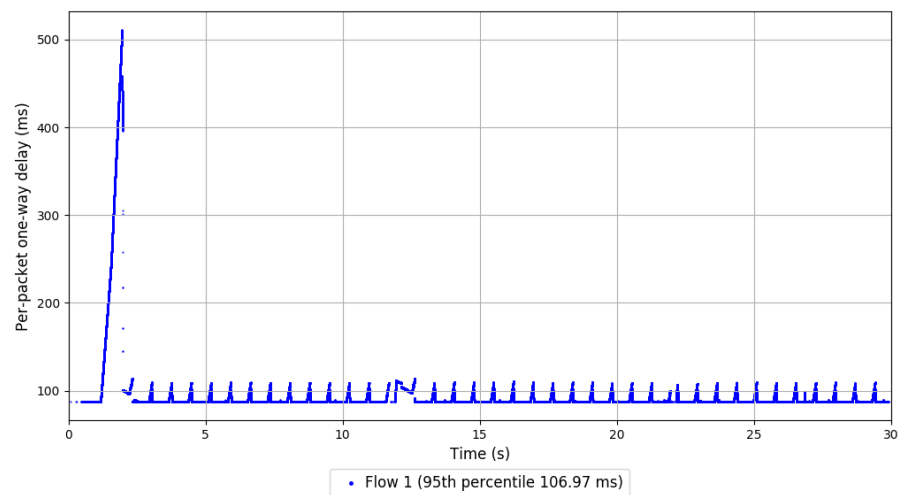
Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 91.28 Mbit/s) --- Flow 1 egress (mean 91.25 Mbit/s)

• Flow 1 (95th percentile 106.26 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-02 10:49:21
End at: 2018-12-02 10:49:51
Local clock offset: -1.832 ms
Remote clock offset: 5.996 ms


# Below is generated by plot.py at 2018-12-02 11:32:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.14 Mbit/s
95th percentile per-packet one-way delay: 112.115 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 91.14 Mbit/s
95th percentile per-packet one-way delay: 112.115 ms
Loss rate: 0.60%
```

Run 4: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 91.17 Mbit/s) ----   Flow 1 egress (mean 91.14 Mbit/s) ——
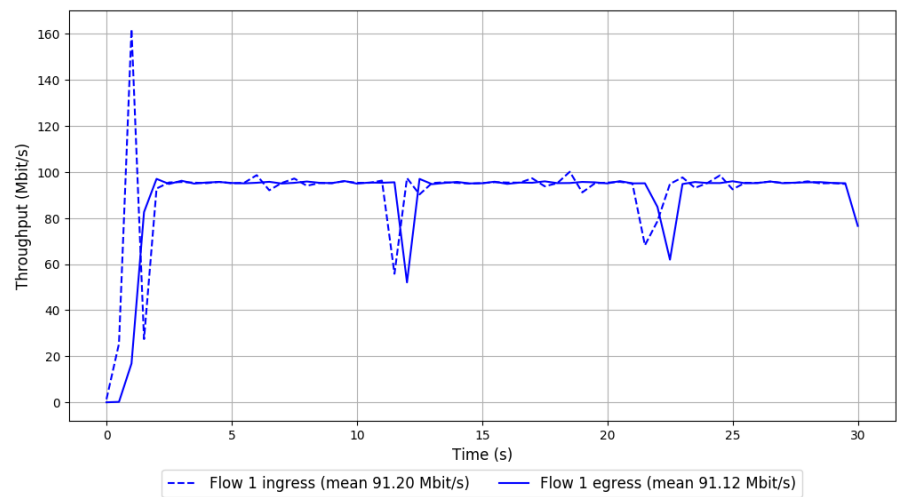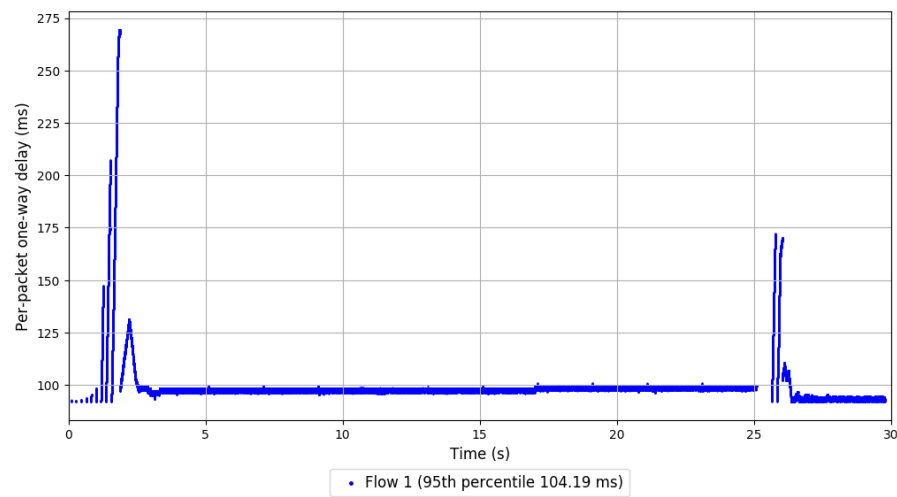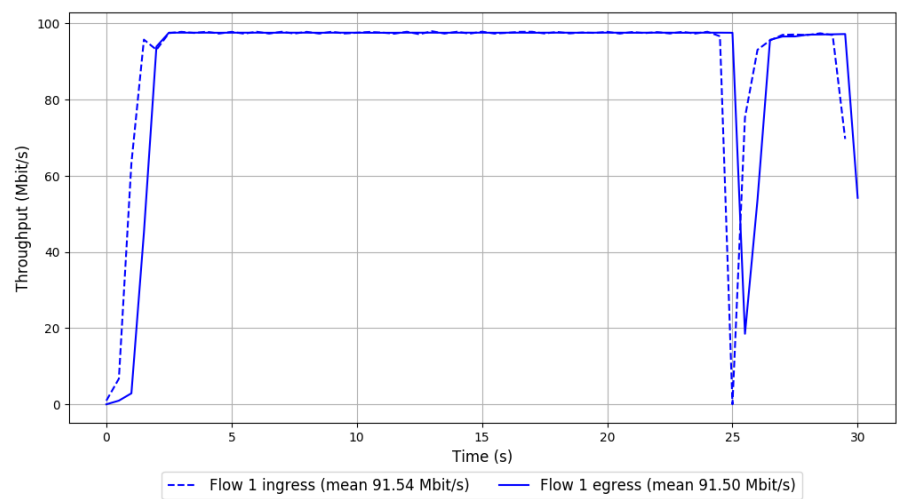

Flow 1 (95th percentile 112.11 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-02 11:12:06
End at: 2018-12-02 11:12:36
Local clock offset: -6.624 ms
Remote clock offset: 10.666 ms


# Below is generated by plot.py at 2018-12-02 11:33:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.12 Mbit/s
95th percentile per-packet one-way delay: 106.966 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 91.12 Mbit/s
95th percentile per-packet one-way delay: 106.966 ms
Loss rate: 0.66%
```

Run 5: Report of FillP-Sheep — Data Link

```
Run 1: Statistics of Indigo

Start at: 2018-12-02 09:44:26
End at: 2018-12-02 09:44:56
Local clock offset: -2.294 ms
Remote clock offset: 2.22 ms


# Below is generated by plot.py at 2018-12-02 11:33:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.50 Mbit/s
95th percentile per-packet one-way delay: 104.191 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 91.50 Mbit/s
95th percentile per-packet one-way delay: 104.191 ms
Loss rate: 0.63%
```

Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-02 10:07:29
End at: 2018-12-02 10:07:59
Local clock offset: -6.734 ms
Remote clock offset: 4.406 ms


# Below is generated by plot.py at 2018-12-02 11:33:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.85 Mbit/s
95th percentile per-packet one-way delay: 171.467 ms
Loss rate: 3.13%
-- Flow 1:
Average throughput: 93.85 Mbit/s
95th percentile per-packet one-way delay: 171.467 ms
Loss rate: 3.13%
```
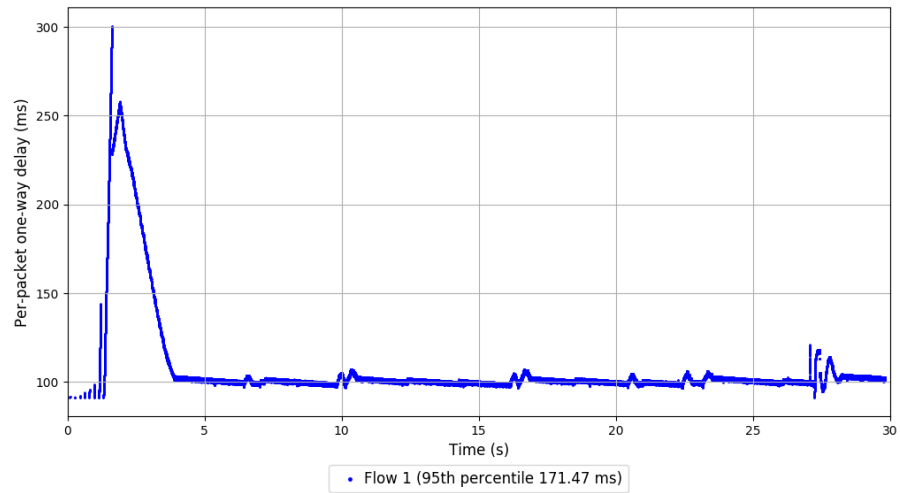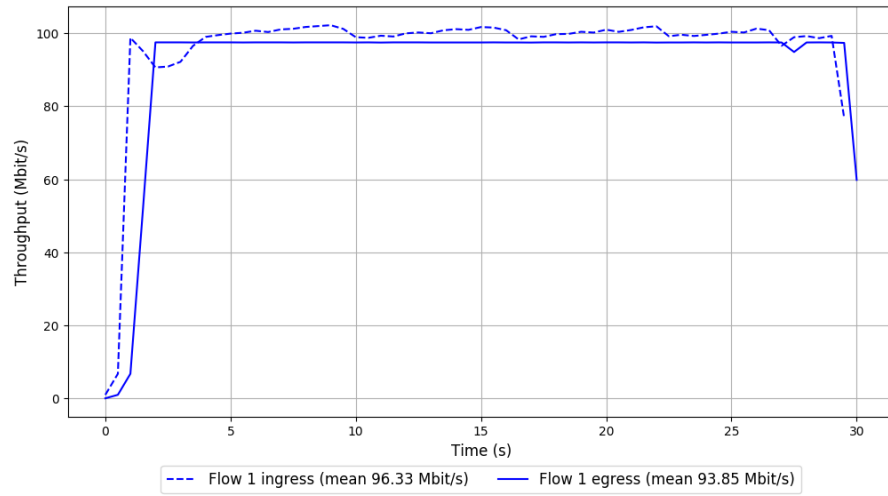
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-12-02 10:30:02
End at: 2018-12-02 10:30:32
Local clock offset: -2.736 ms
Remote clock offset: 4.082 ms


# Below is generated by plot.py at 2018-12-02 11:33:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.72 Mbit/s
95th percentile per-packet one-way delay: 99.028 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 93.72 Mbit/s
95th percentile per-packet one-way delay: 99.028 ms
Loss rate: 0.63%
```
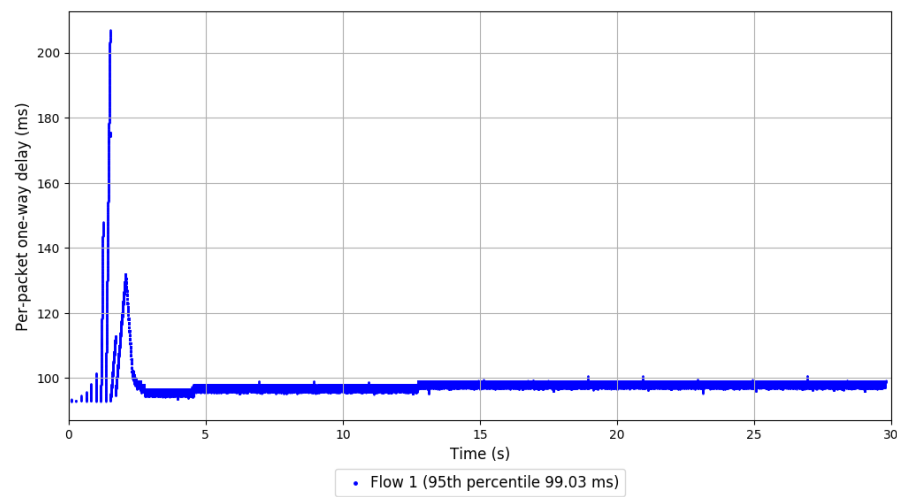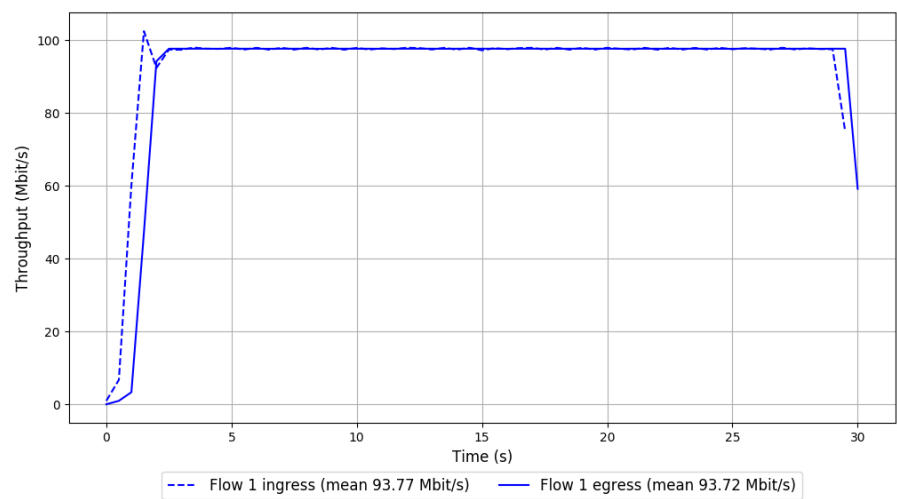
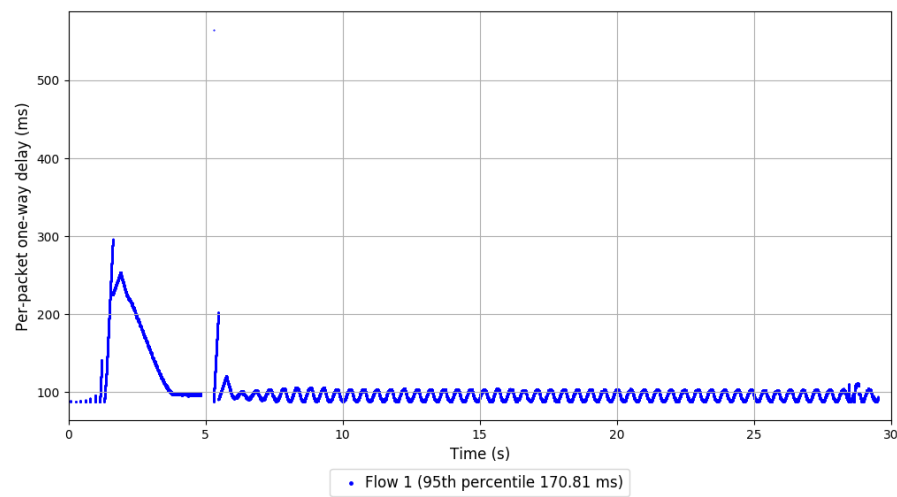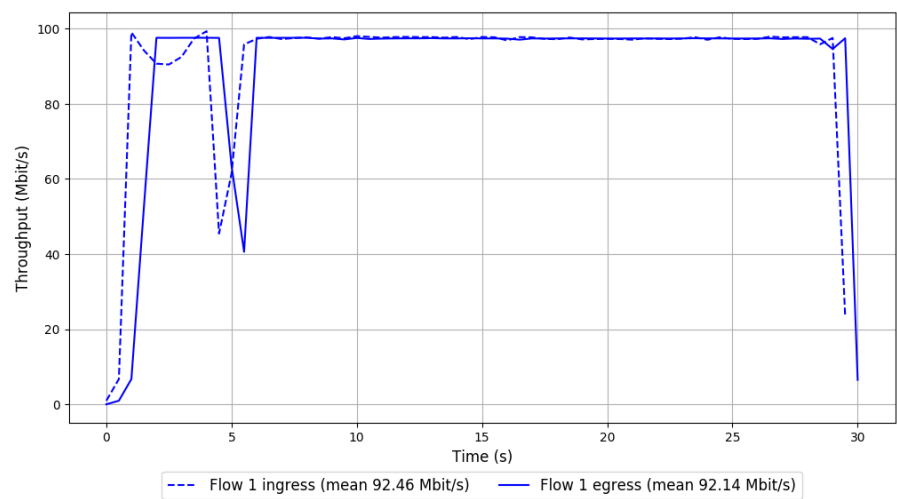## Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-02 10:52:57
End at: 2018-12-02 10:53:27
Local clock offset: -3.209 ms
Remote clock offset: 10.076 ms


# Below is generated by plot.py at 2018-12-02 11:33:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.14 Mbit/s
95th percentile per-packet one-way delay: 170.812 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 92.14 Mbit/s
95th percentile per-packet one-way delay: 170.812 ms
Loss rate: 0.91%
```

Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-12-02 11:15:41
End at: 2018-12-02 11:16:11
Local clock offset: -6.051 ms
Remote clock offset: 6.61 ms


# Below is generated by plot.py at 2018-12-02 11:33:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 160.850 ms
Loss rate: 1.55%
-- Flow 1:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 160.850 ms
Loss rate: 1.55%
```
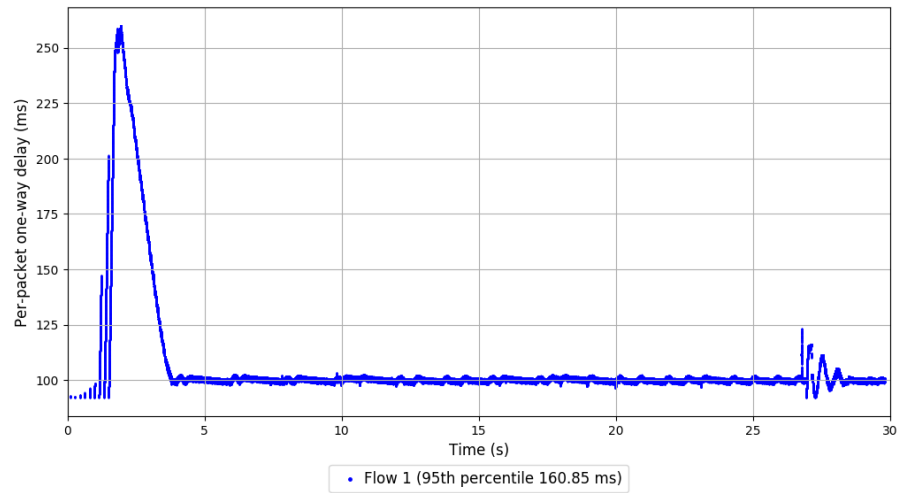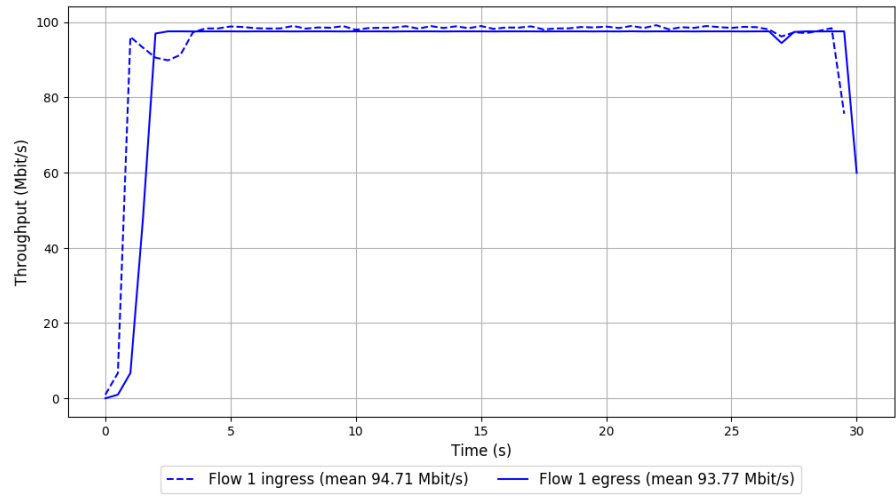
Run 5: Report of Indigo — Data Link

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

Start at: 2018-12-02 09:42:00
End at: 2018-12-02 09:42:30
Local clock offset: -1.529 ms
Remote clock offset: 2.954 ms


# Below is generated by plot.py at 2018-12-02 11:33:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.75 Mbit/s
95th percentile per-packet one-way delay: 568.235 ms
Loss rate: 8.81%
-- Flow 1:
Average throughput: 87.75 Mbit/s
95th percentile per-packet one-way delay: 568.235 ms
Loss rate: 8.81%
```
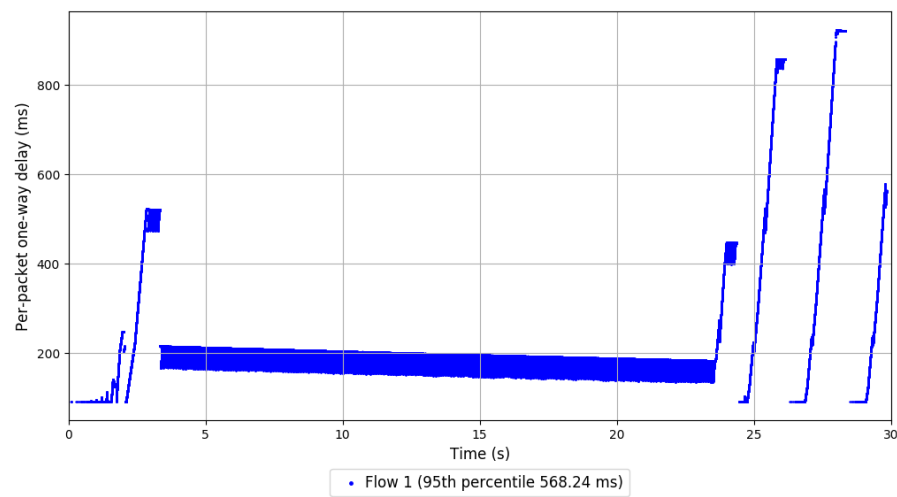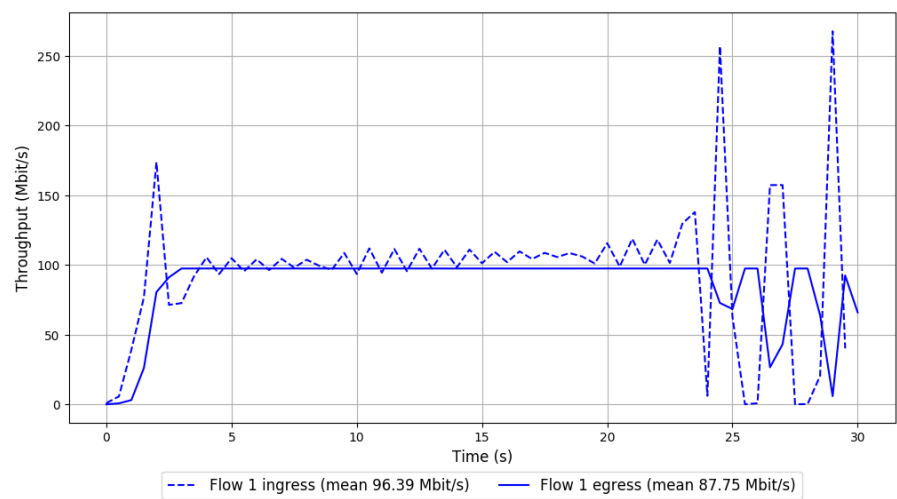
Run 1: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 10:05:05
End at: 2018-12-02 10:05:35
Local clock offset: -5.755 ms
Remote clock offset: 3.162 ms


# Below is generated by plot.py at 2018-12-02 11:33:58
# Datalink statistics
-- Total of 1 flow:
Average throughput: 75.39 Mbit/s
95th percentile per-packet one-way delay: 942.170 ms
Loss rate: 2.42%
-- Flow 1:
Average throughput: 75.39 Mbit/s
95th percentile per-packet one-way delay: 942.170 ms
Loss rate: 2.42%
```
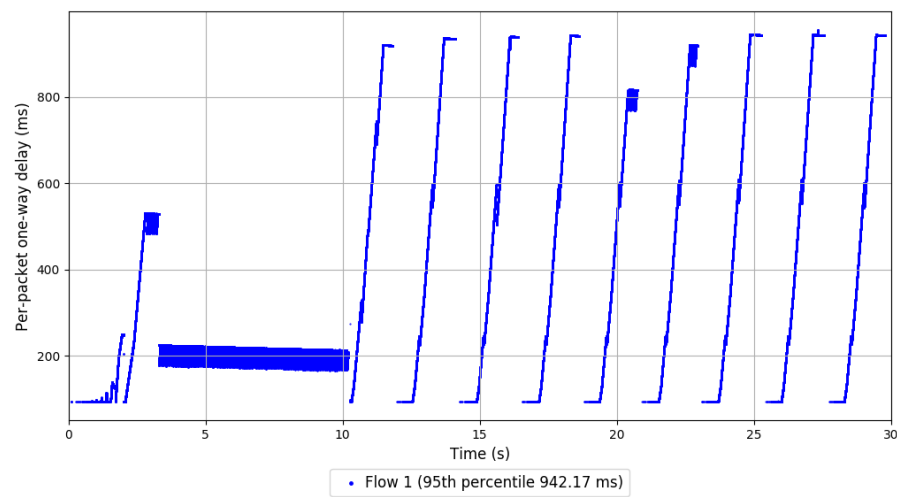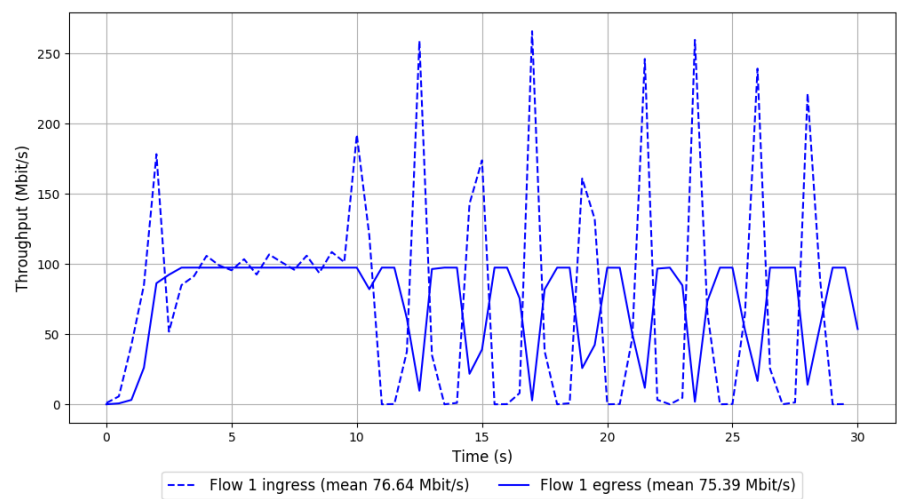
Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 10:27:39
End at: 2018-12-02 10:28:09
Local clock offset: -3.213 ms
Remote clock offset: 5.12 ms


# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.17 Mbit/s
95th percentile per-packet one-way delay: 407.244 ms
Loss rate: 10.26%
-- Flow 1:
Average throughput: 92.17 Mbit/s
95th percentile per-packet one-way delay: 407.244 ms
Loss rate: 10.26%
```
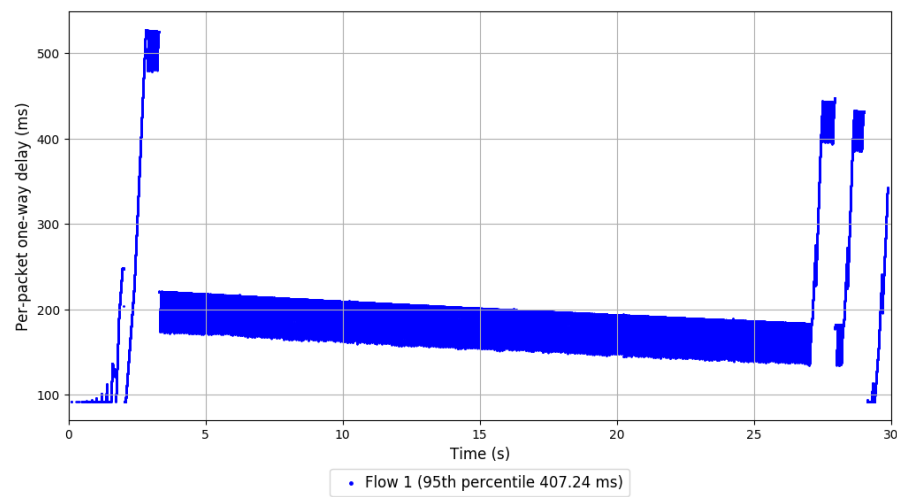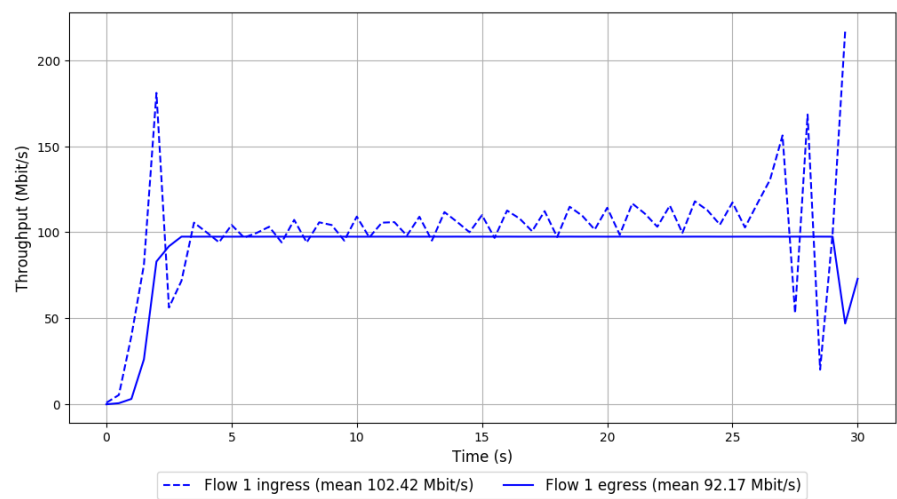
Run 3: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 102.42 Mbit/s)   Flow 1 egress (mean 92.17 Mbit/s)

• Flow 1 (95th percentile 407.24 ms)

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

Start at: 2018-12-02 10:50:33
End at: 2018-12-02 10:51:03
Local clock offset: -2.398 ms
Remote clock offset: 9.789 ms


# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.11 Mbit/s
95th percentile per-packet one-way delay: 568.112 ms
Loss rate: 8.84%
-- Flow 1:
Average throughput: 87.11 Mbit/s
95th percentile per-packet one-way delay: 568.112 ms
Loss rate: 8.84%
```
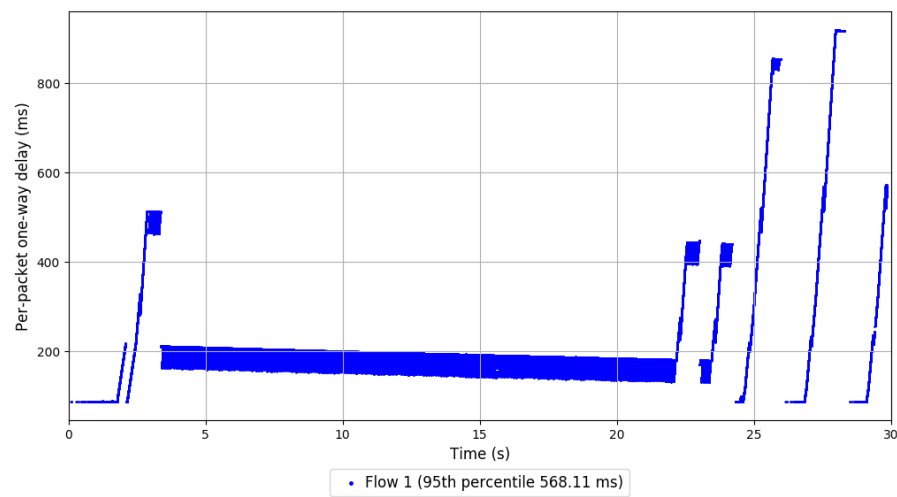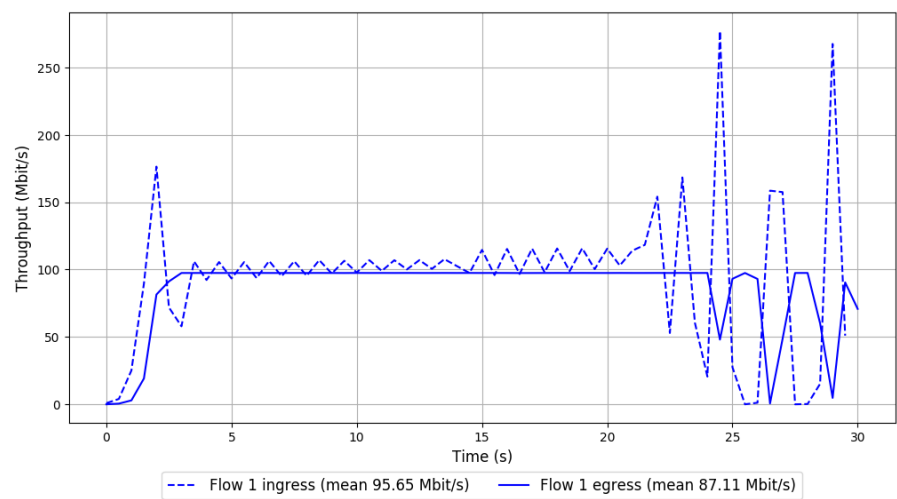
Run 4: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 11:13:18
End at: 2018-12-02 11:13:48
Local clock offset: -6.695 ms
Remote clock offset: 9.241 ms

# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 65.97 Mbit/s
95th percentile per-packet one-way delay: 939.855 ms
Loss rate: 1.82%
-- Flow 1:
Average throughput: 65.97 Mbit/s
95th percentile per-packet one-way delay: 939.855 ms
Loss rate: 1.82%
```
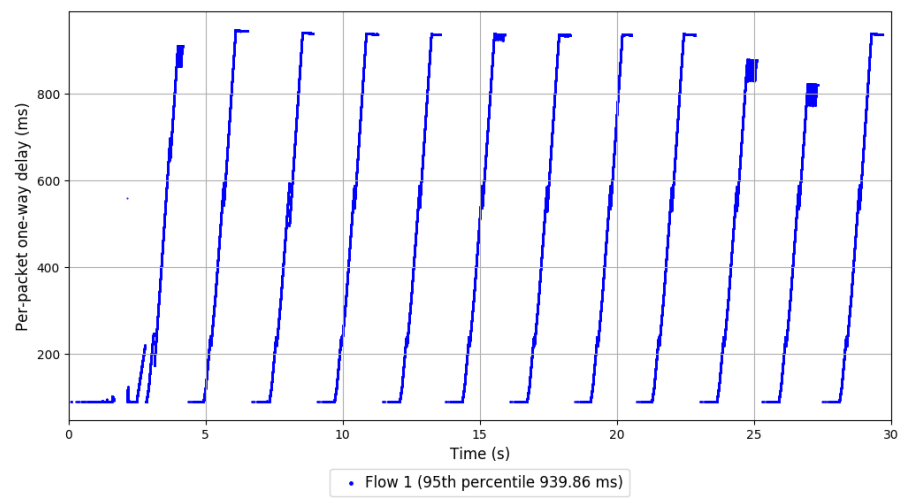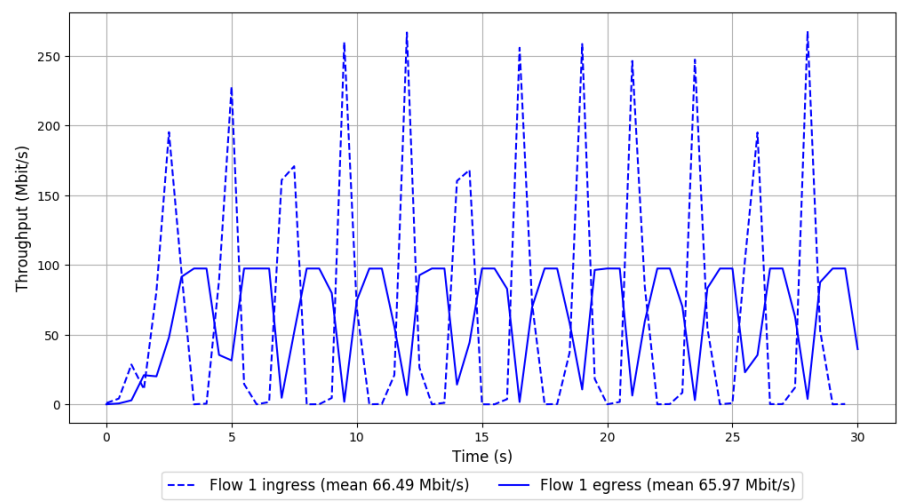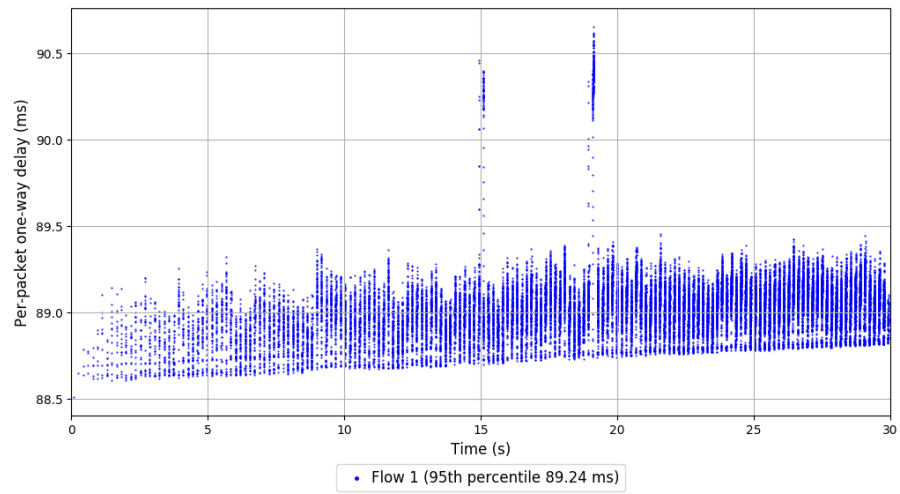
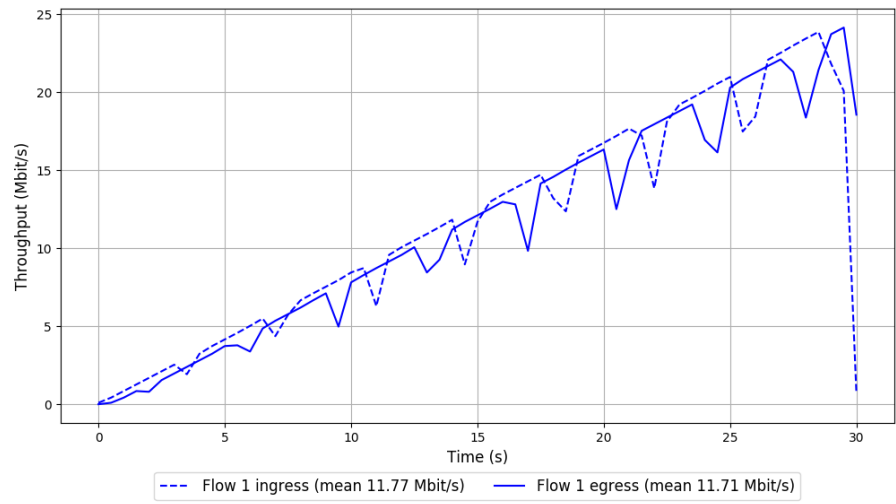Run 5: Report of Indigo-96d2da3 — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-02 09:49:24
End at: 2018-12-02 09:49:54
Local clock offset: -2.281 ms
Remote clock offset: 7.302 ms

# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.71 Mbit/s
95th percentile per-packet one-way delay: 89.243 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 11.71 Mbit/s
95th percentile per-packet one-way delay: 89.243 ms
Loss rate: 1.12%
```

Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-02 10:12:18
End at: 2018-12-02 10:12:48
Local clock offset: -6.351 ms
Remote clock offset: 3.521 ms

# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.59 Mbit/s
95th percentile per-packet one-way delay: 93.592 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 11.59 Mbit/s
95th percentile per-packet one-way delay: 93.592 ms
Loss rate: 1.17%
```
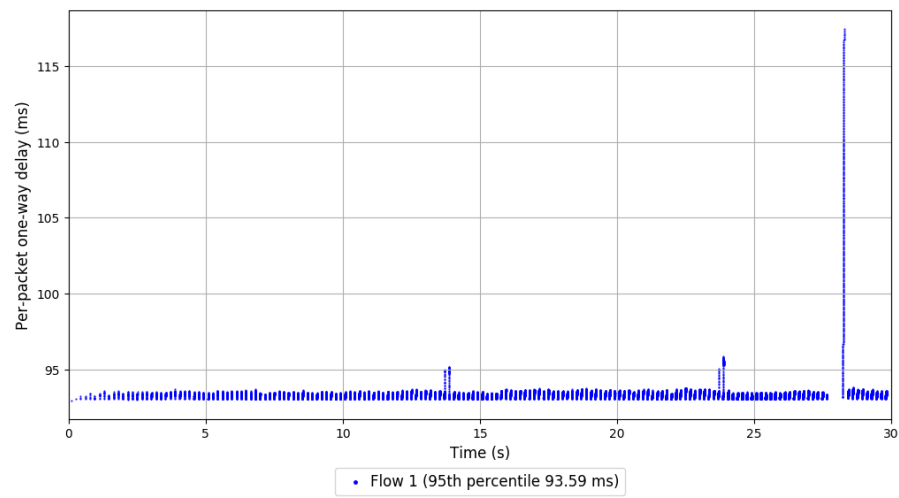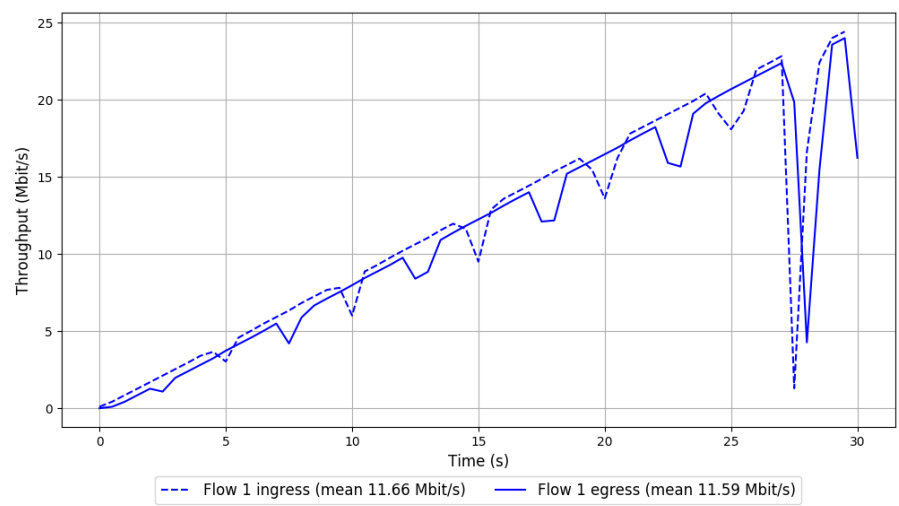
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-02 10:35:03
End at: 2018-12-02 10:35:33
Local clock offset: -2.02 ms
Remote clock offset: 9.318 ms


# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 88.711 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 88.711 ms
Loss rate: 1.16%
```
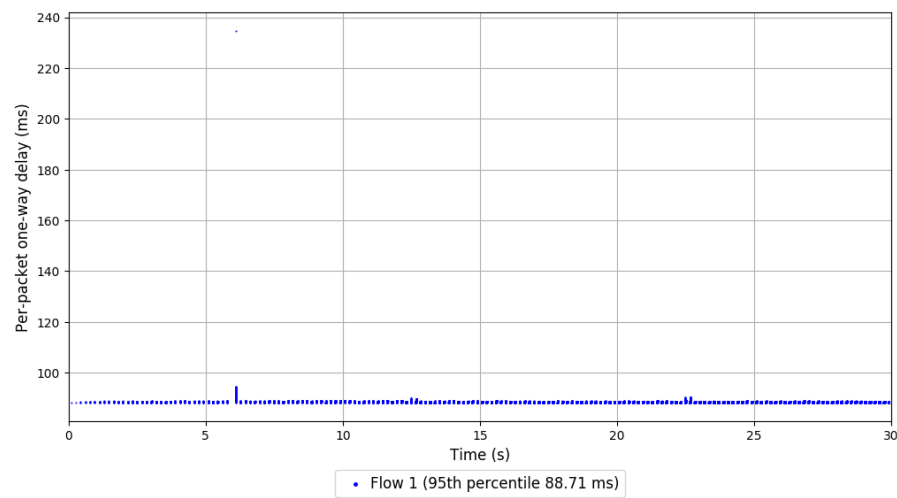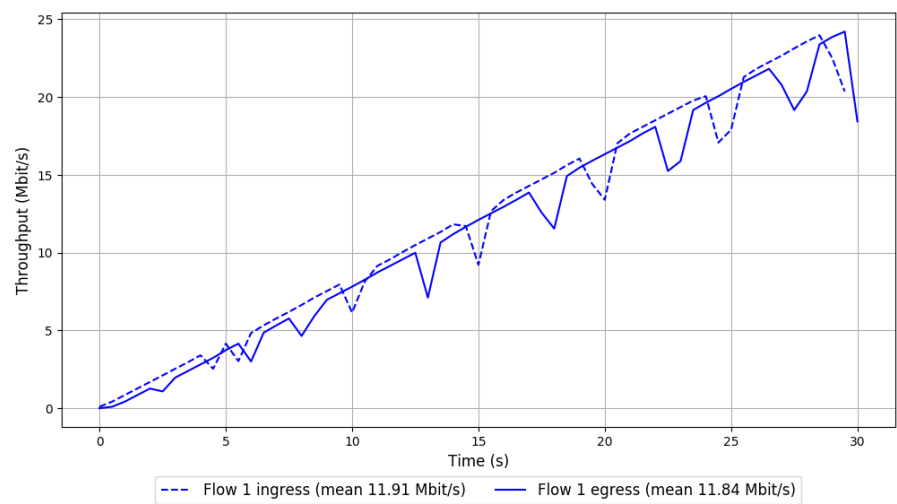
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 11.91 Mbit/s) --- Flow 1 egress (mean 11.84 Mbit/s)
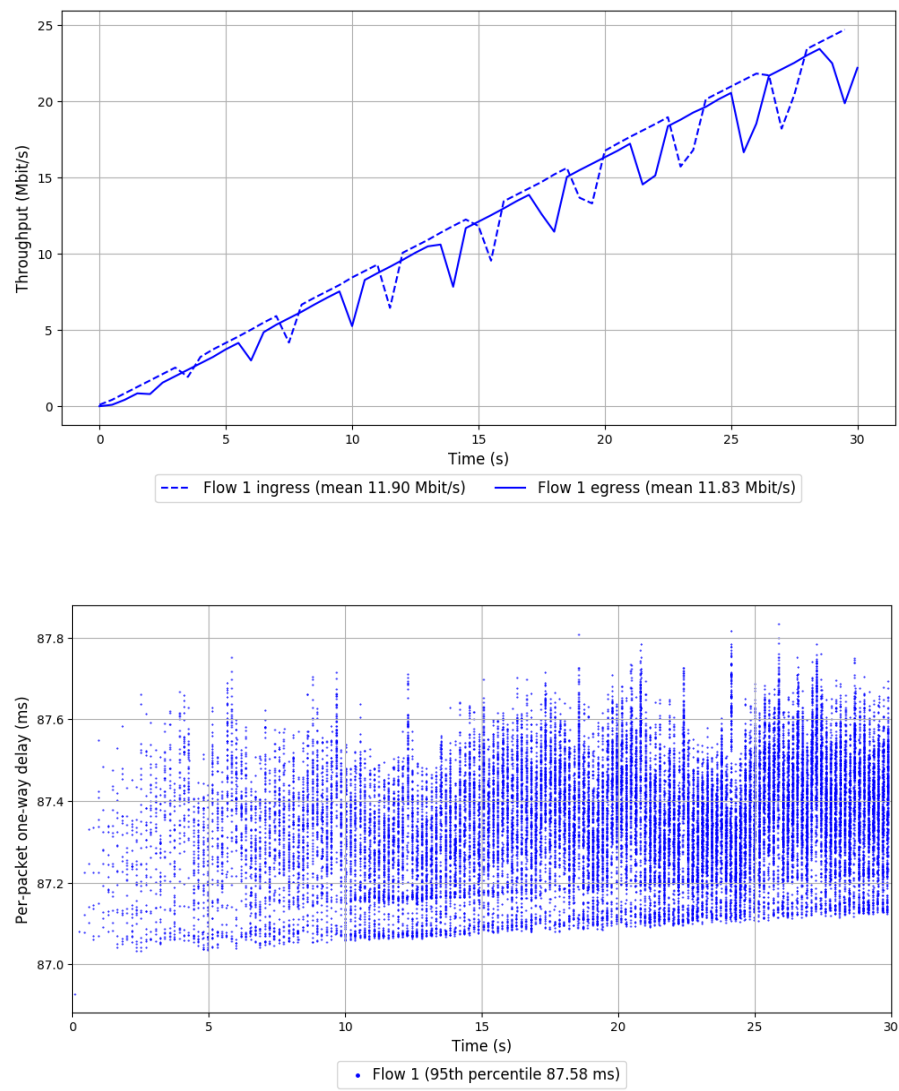

Flow 1 (95th percentile 88.71 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-02 10:57:46
End at: 2018-12-02 10:58:16
Local clock offset: -4.334 ms
Remote clock offset: 11.221 ms


# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.83 Mbit/s
95th percentile per-packet one-way delay: 87.579 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 11.83 Mbit/s
95th percentile per-packet one-way delay: 87.579 ms
Loss rate: 1.16%
```

Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-02 11:20:36
End at: 2018-12-02 11:21:06
Local clock offset: -6.24 ms
Remote clock offset: 7.169 ms


# Below is generated by plot.py at 2018-12-02 11:34:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.09 Mbit/s
95th percentile per-packet one-way delay: 95.596 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 4.09 Mbit/s
95th percentile per-packet one-way delay: 95.596 ms
Loss rate: 0.74%
```
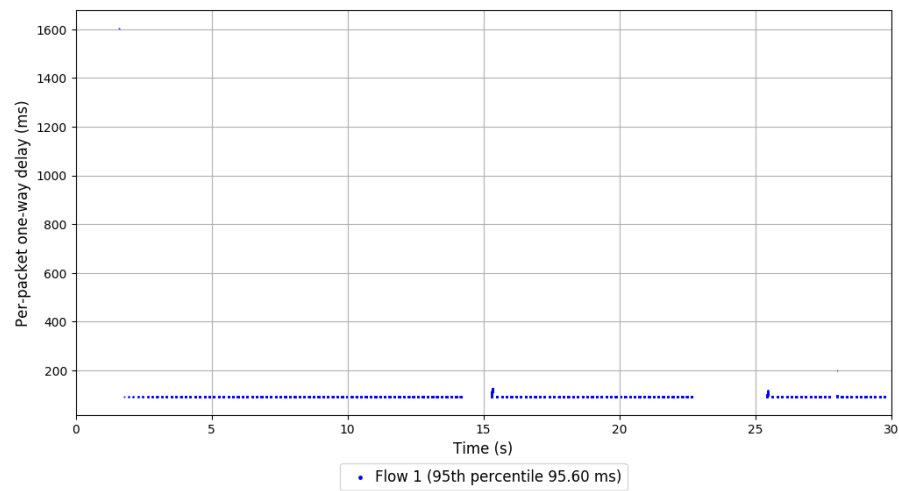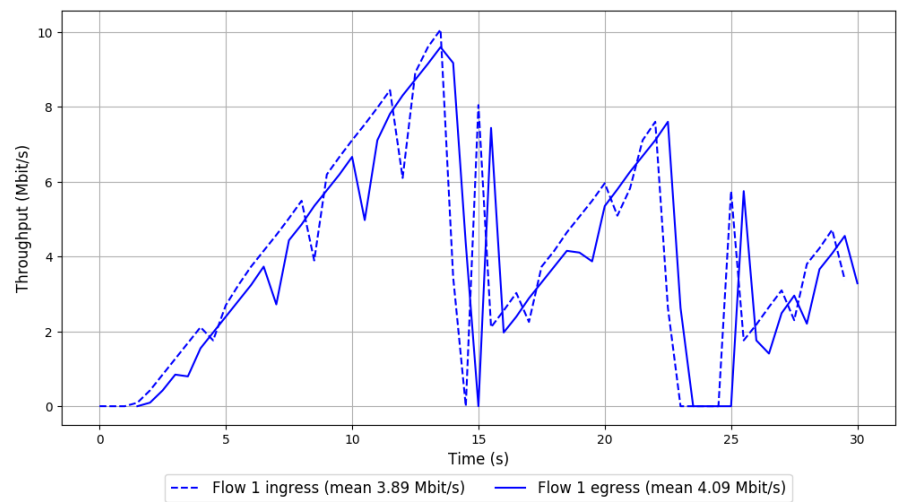
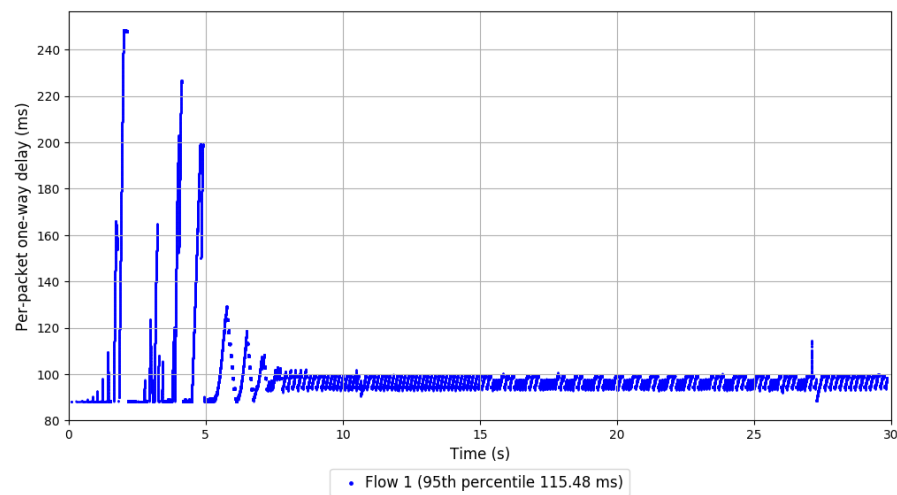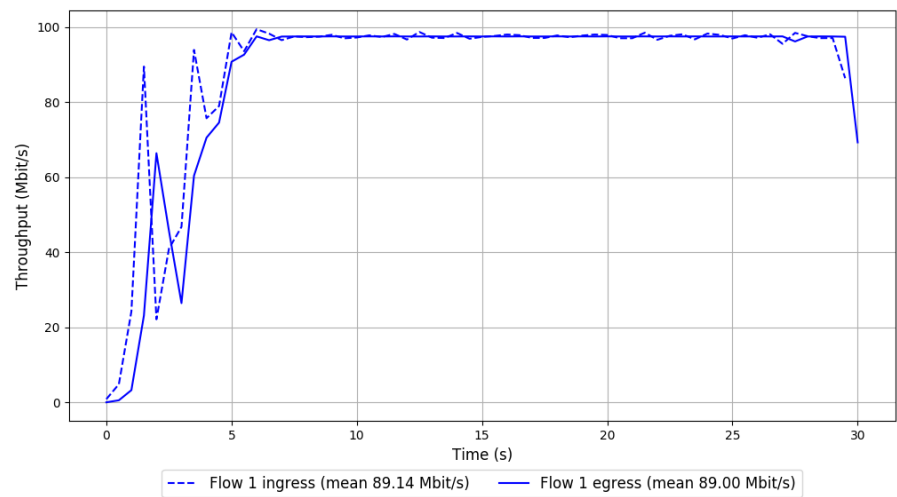# Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-12-02 09:50:33
End at: 2018-12-02 09:51:03
Local clock offset: -2.744 ms
Remote clock offset: 7.571 ms


# Below is generated by plot.py at 2018-12-02 11:34:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.00 Mbit/s
95th percentile per-packet one-way delay: 115.480 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 89.00 Mbit/s
95th percentile per-packet one-way delay: 115.480 ms
Loss rate: 0.73%
```

Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-12-02 10:13:26
End at: 2018-12-02 10:13:56
Local clock offset: -7.189 ms
Remote clock offset: 7.193 ms


# Below is generated by plot.py at 2018-12-02 11:34:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.72 Mbit/s
95th percentile per-packet one-way delay: 121.829 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 77.72 Mbit/s
95th percentile per-packet one-way delay: 121.829 ms
Loss rate: 0.97%
```
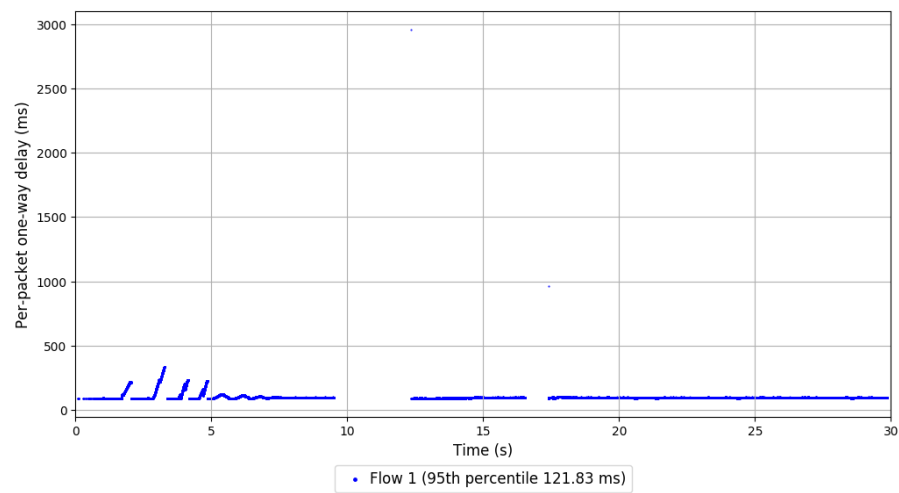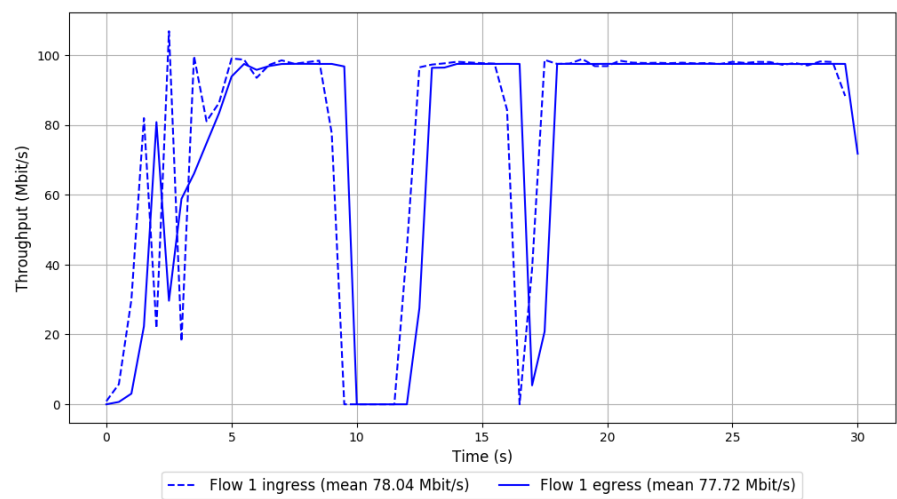
Run 2: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 78.04 Mbit/s)   Flow 1 egress (mean 77.72 Mbit/s)

Flow 1 (95th percentile 121.83 ms)

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-12-02 10:36:11
End at: 2018-12-02 10:36:42
Local clock offset: -2.676 ms
Remote clock offset: 8.299 ms


# Below is generated by plot.py at 2018-12-02 11:34:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.57 Mbit/s
95th percentile per-packet one-way delay: 114.282 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 87.57 Mbit/s
95th percentile per-packet one-way delay: 114.282 ms
Loss rate: 0.79%
```
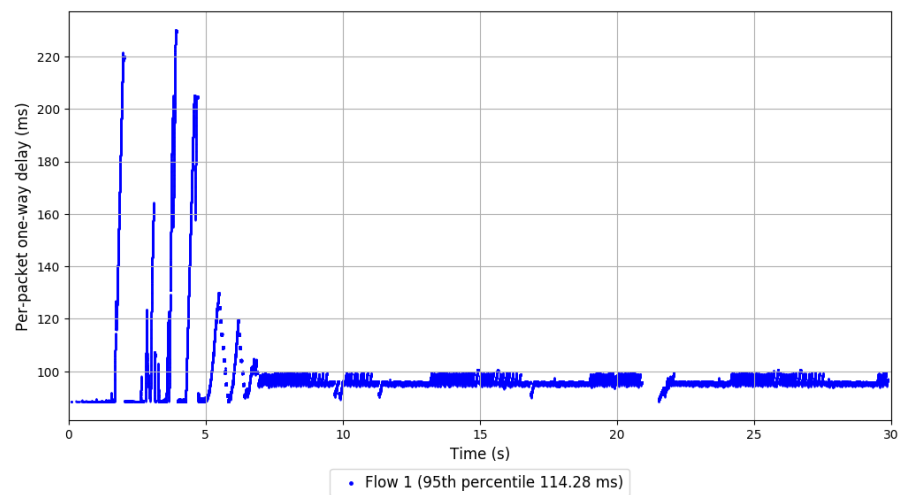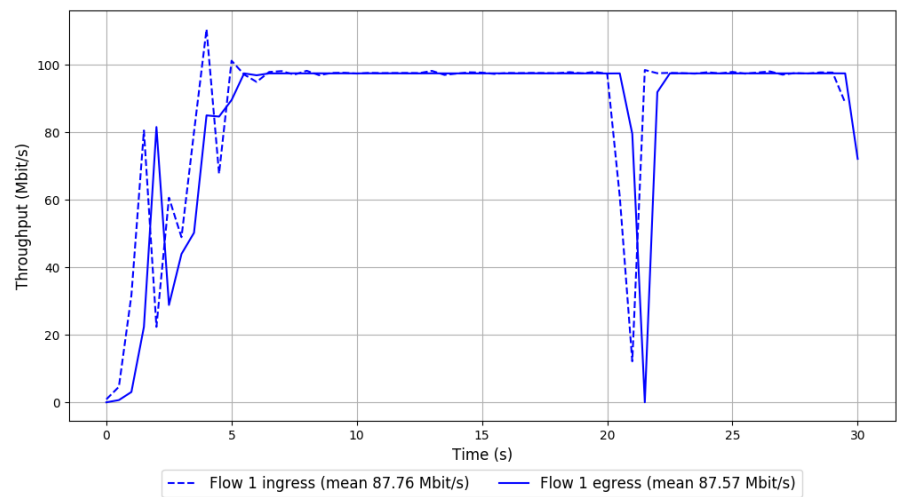
Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-12-02 10:58:55
End at: 2018-12-02 10:59:25
Local clock offset: -5.295 ms
Remote clock offset: 5.936 ms


# Below is generated by plot.py at 2018-12-02 11:34:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.60 Mbit/s
95th percentile per-packet one-way delay: 117.210 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 89.60 Mbit/s
95th percentile per-packet one-way delay: 117.210 ms
Loss rate: 1.04%
```
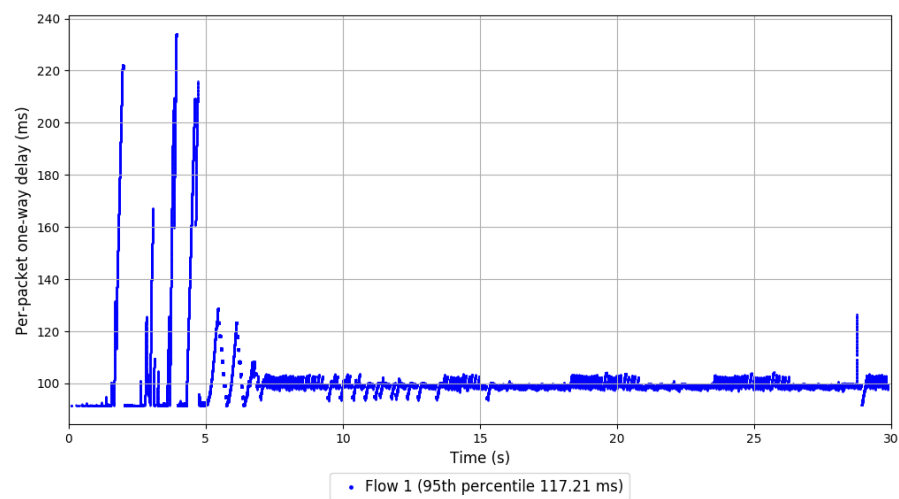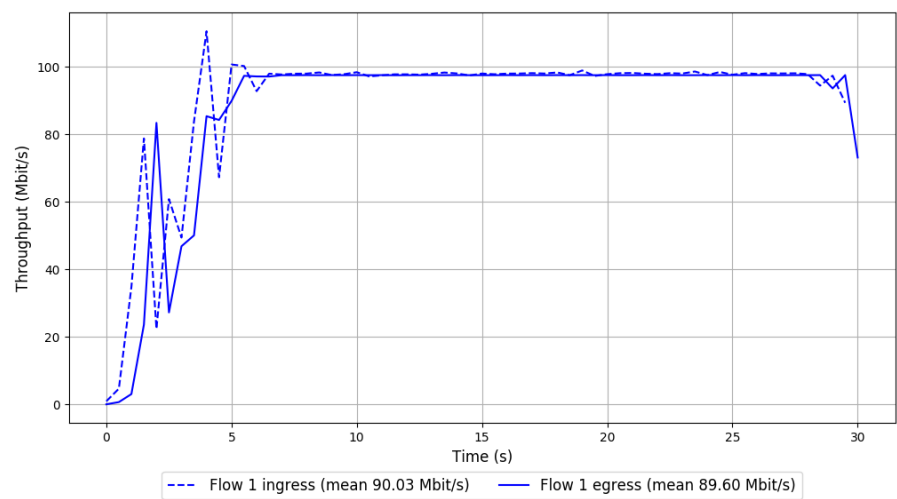
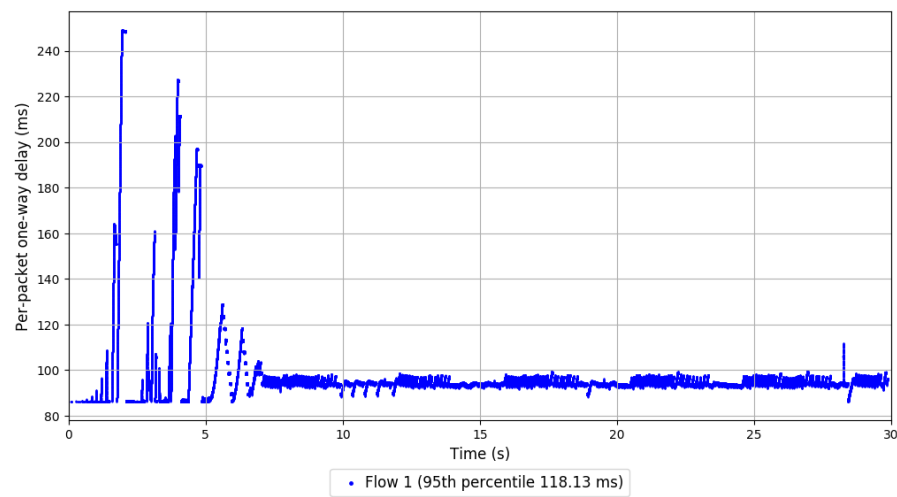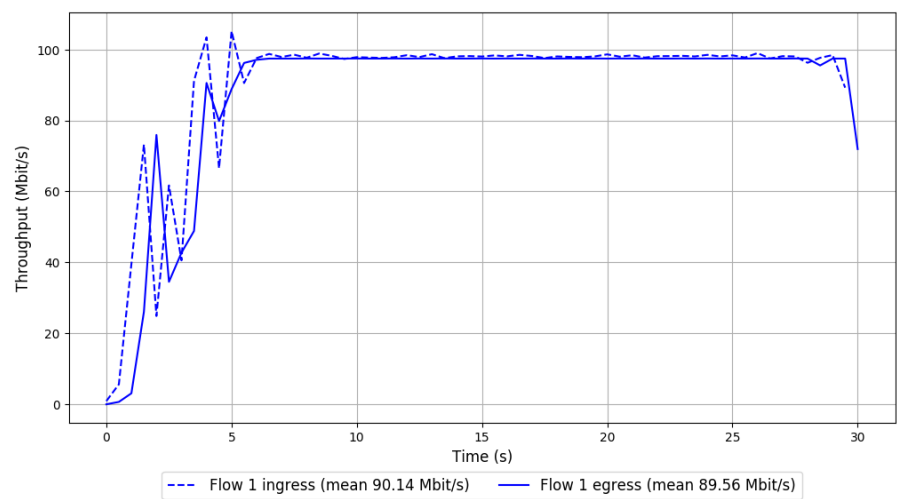Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-12-02 11:21:44
End at: 2018-12-02 11:22:14
Local clock offset: -6.943 ms
Remote clock offset: 12.267 ms


# Below is generated by plot.py at 2018-12-02 11:35:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.56 Mbit/s
95th percentile per-packet one-way delay: 118.126 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 89.56 Mbit/s
95th percentile per-packet one-way delay: 118.126 ms
Loss rate: 1.22%
```

Run 5: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 90.14 Mbit/s) --- Flow 1 egress (mean 89.56 Mbit/s)

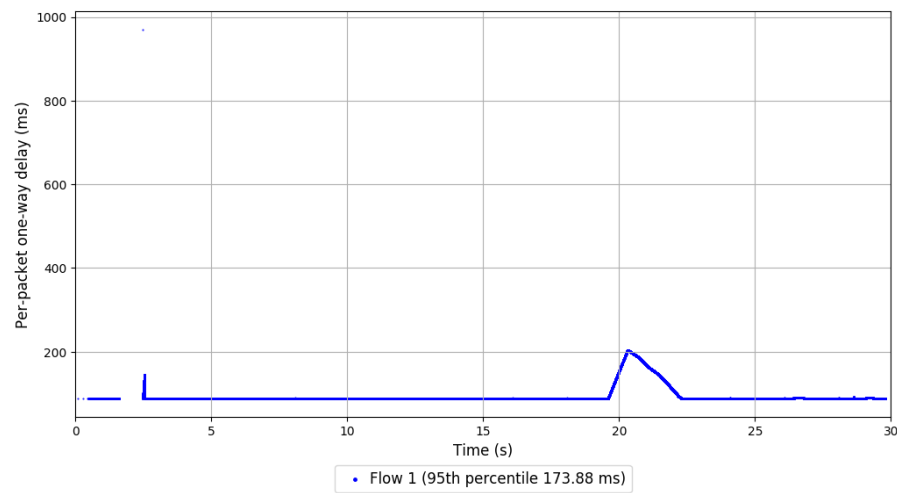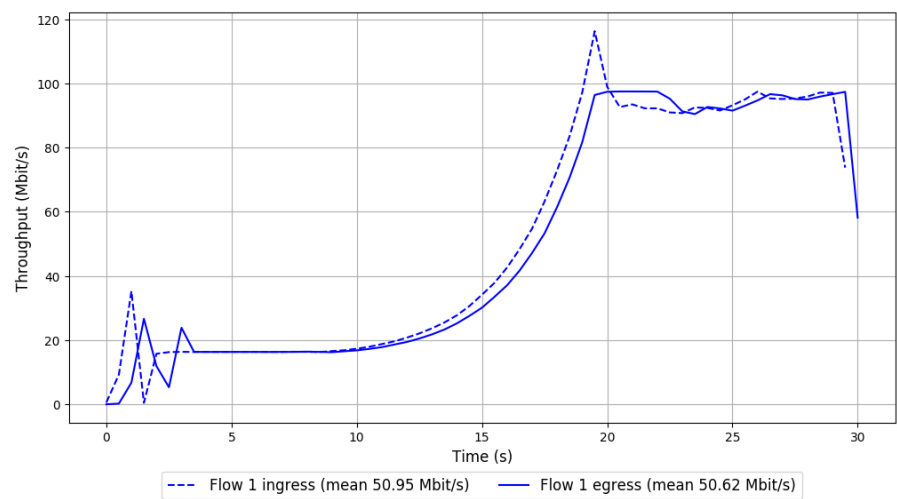
• Flow 1 (95th percentile 118.13 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-02 09:37:13
End at: 2018-12-02 09:37:43
Local clock offset: -1.467 ms
Remote clock offset: 6.715 ms


# Below is generated by plot.py at 2018-12-02 11:35:05
# Datalink statistics
-- Total of 1 flow:
Average throughput: 50.62 Mbit/s
95th percentile per-packet one-way delay: 173.877 ms
Loss rate: 1.21%
-- Flow 1:
Average throughput: 50.62 Mbit/s
95th percentile per-packet one-way delay: 173.877 ms
Loss rate: 1.21%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-02 10:00:13
End at: 2018-12-02 10:00:43
Local clock offset: -5.112 ms
Remote clock offset: 8.008 ms

# Below is generated by plot.py at 2018-12-02 11:35:14
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.67 Mbit/s
95th percentile per-packet one-way delay: 253.144 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 86.67 Mbit/s
95th percentile per-packet one-way delay: 253.144 ms
Loss rate: 0.71%
```
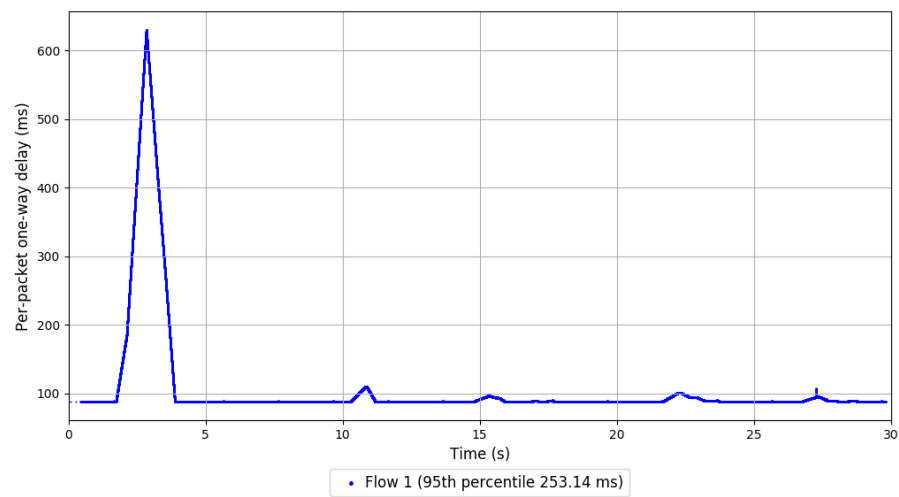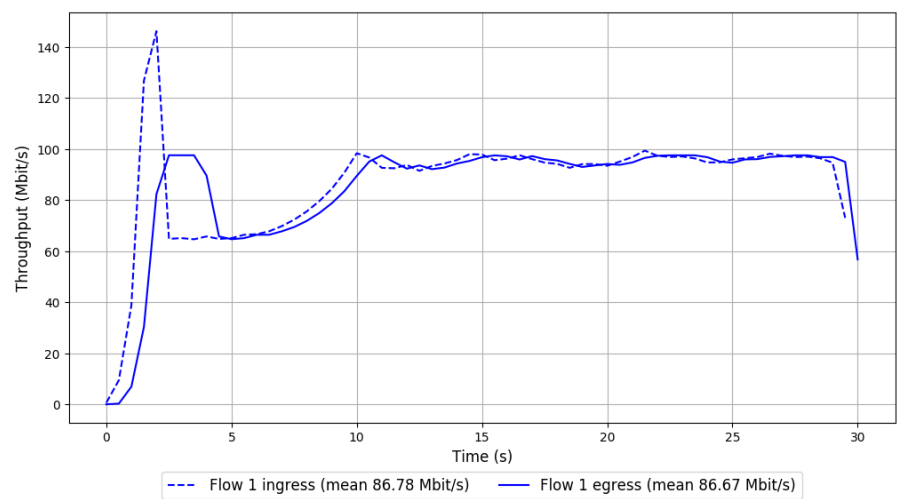
Run 2: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 86.78 Mbit/s)   ——— Flow 1 egress (mean 86.67 Mbit/s)

• Flow 1 (95th percentile 253.14 ms)

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-02 10:22:50
End at: 2018-12-02 10:23:20
Local clock offset: -5.286 ms
Remote clock offset: 3.627 ms


# Below is generated by plot.py at 2018-12-02 11:35:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.06 Mbit/s
95th percentile per-packet one-way delay: 262.662 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 85.06 Mbit/s
95th percentile per-packet one-way delay: 262.662 ms
Loss rate: 0.73%
```
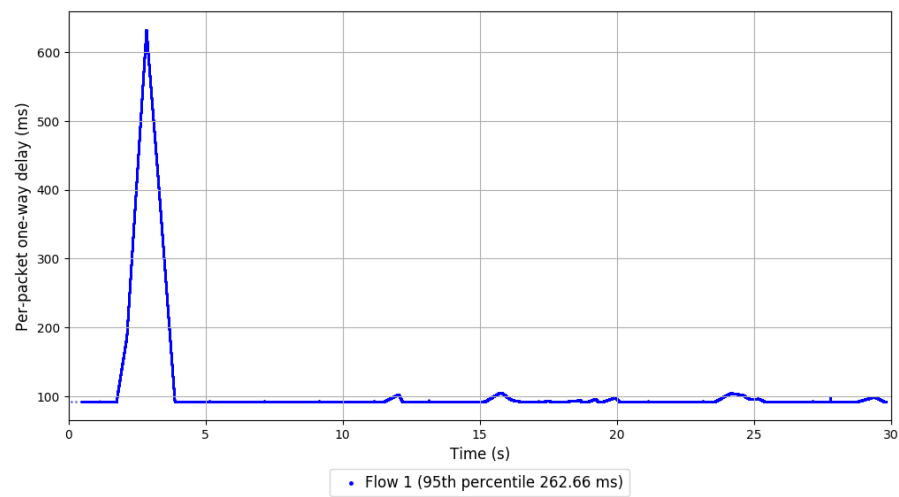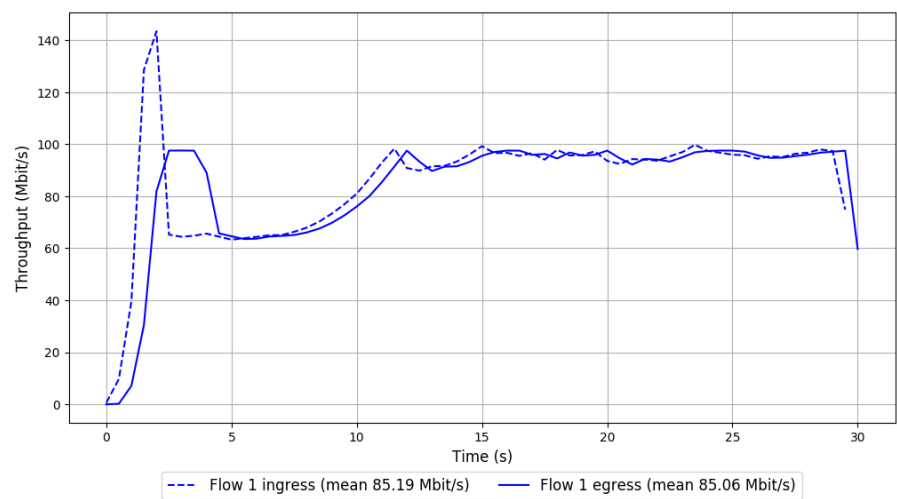
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 85.19 Mbit/s)   Flow 1 egress (mean 85.06 Mbit/s)

Flow 1 (95th percentile 262.66 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-02 10:45:46
End at: 2018-12-02 10:46:16
Local clock offset: -1.251 ms
Remote clock offset: 5.471 ms

# Below is generated by plot.py at 2018-12-02 11:35:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.30 Mbit/s
95th percentile per-packet one-way delay: 267.210 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 84.30 Mbit/s
95th percentile per-packet one-way delay: 267.210 ms
Loss rate: 0.73%
```
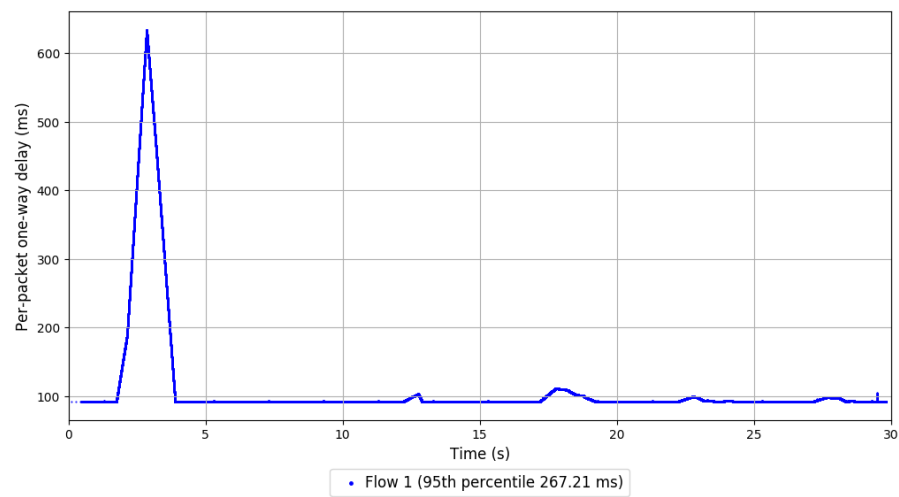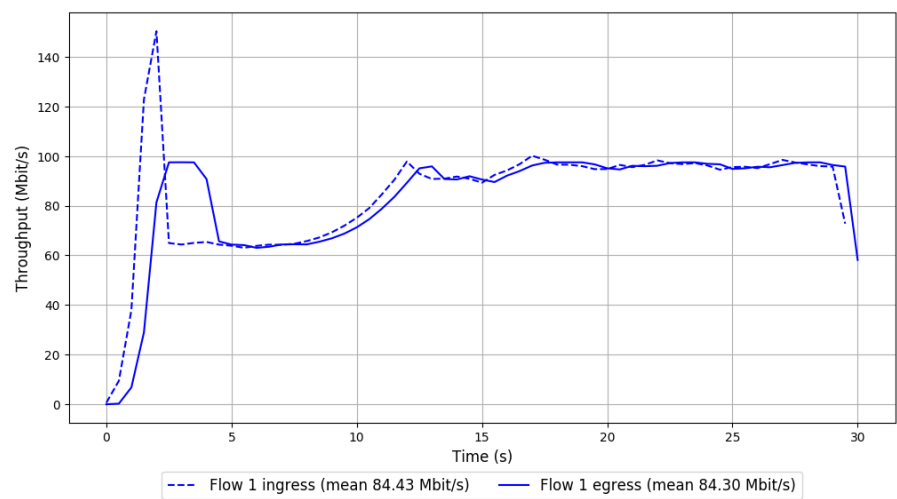
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 84.43 Mbit/s) ----- Flow 1 egress (mean 84.30 Mbit/s)

• Flow 1 (95th percentile 267.21 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-02 11:08:25
End at: 2018-12-02 11:08:55
Local clock offset: -6.371 ms
Remote clock offset: 6.401 ms


# Below is generated by plot.py at 2018-12-02 11:35:38
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.95 Mbit/s
95th percentile per-packet one-way delay: 225.573 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 86.95 Mbit/s
95th percentile per-packet one-way delay: 225.573 ms
Loss rate: 0.70%
```
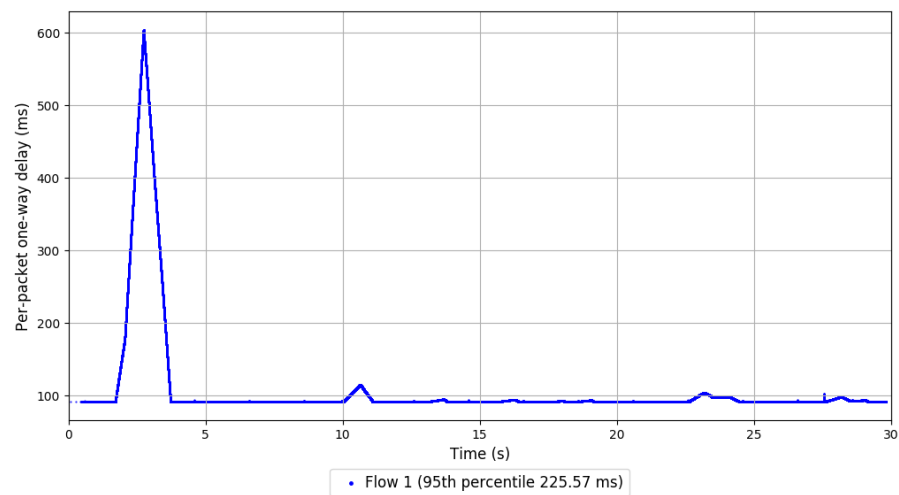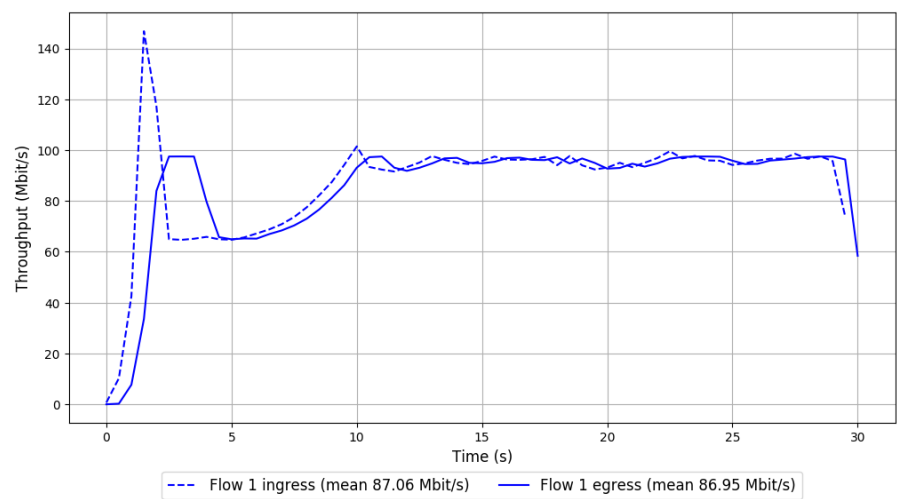
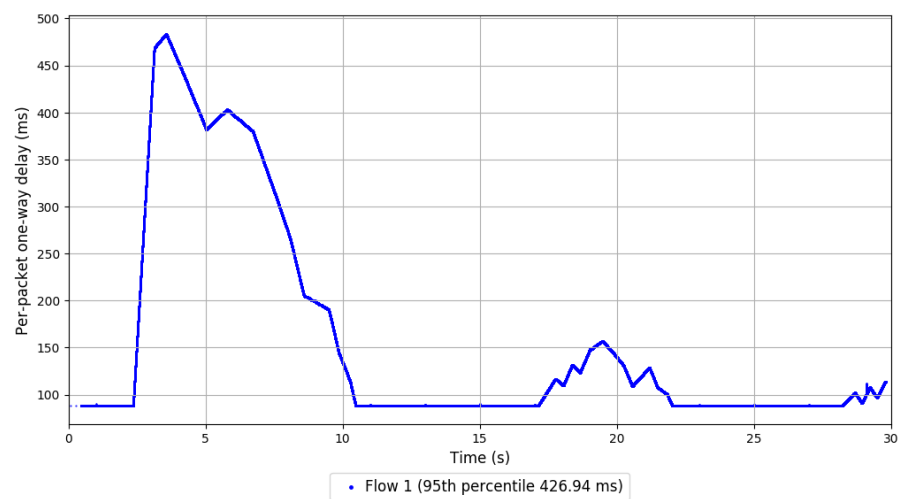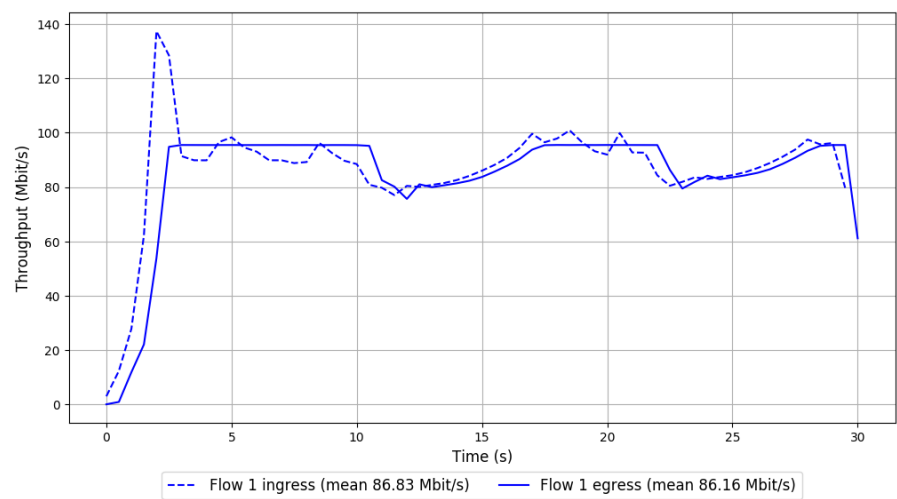Run 5: Report of PCC-Allegro — Data Link

```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-02 09:34:44
End at: 2018-12-02 09:35:14
Local clock offset: -2.168 ms
Remote clock offset: 5.445 ms

# Below is generated by plot.py at 2018-12-02 11:36:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.16 Mbit/s
95th percentile per-packet one-way delay: 426.941 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 86.16 Mbit/s
95th percentile per-packet one-way delay: 426.941 ms
Loss rate: 1.34%
```

Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 86.83 Mbit/s) --- Flow 1 egress (mean 86.16 Mbit/s)

Flow 1 (95th percentile 426.94 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-02 09:57:42
End at: 2018-12-02 09:58:12
Local clock offset: -4.713 ms
Remote clock offset: 8.955 ms


# Below is generated by plot.py at 2018-12-02 11:36:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.31 Mbit/s
95th percentile per-packet one-way delay: 443.978 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 89.31 Mbit/s
95th percentile per-packet one-way delay: 443.978 ms
Loss rate: 1.13%
```
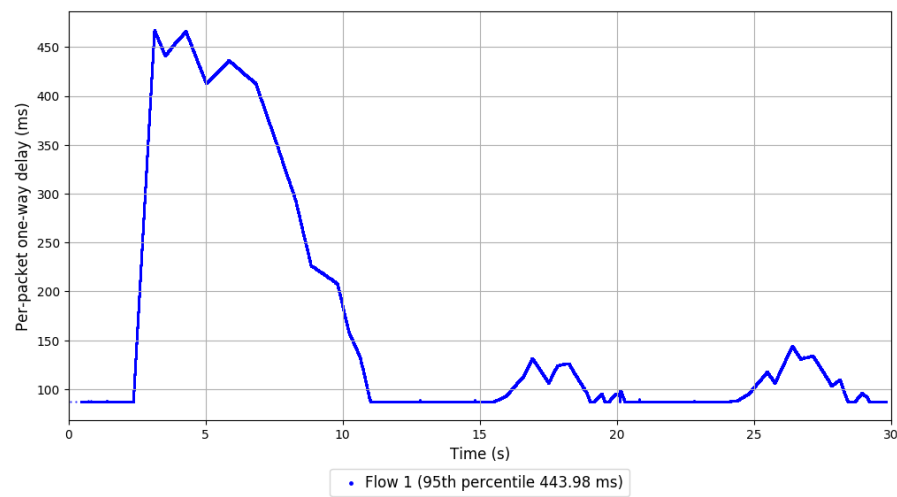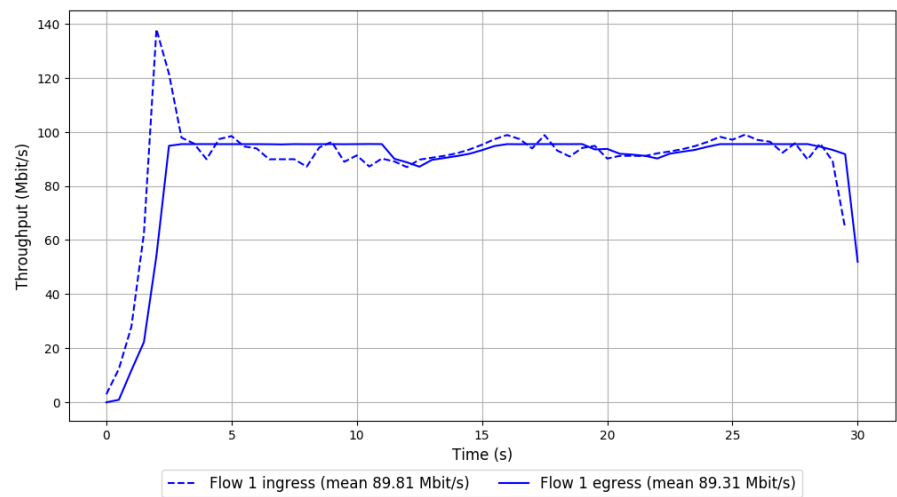
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 89.81 Mbit/s)   Flow 1 egress (mean 89.31 Mbit/s)

• Flow 1 (95th percentile 443.98 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-02 10:20:26
End at: 2018-12-02 10:20:56
Local clock offset: -6.212 ms
Remote clock offset: 9.101 ms


# Below is generated by plot.py at 2018-12-02 11:36:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.07 Mbit/s
95th percentile per-packet one-way delay: 459.139 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 86.07 Mbit/s
95th percentile per-packet one-way delay: 459.139 ms
Loss rate: 1.31%
```
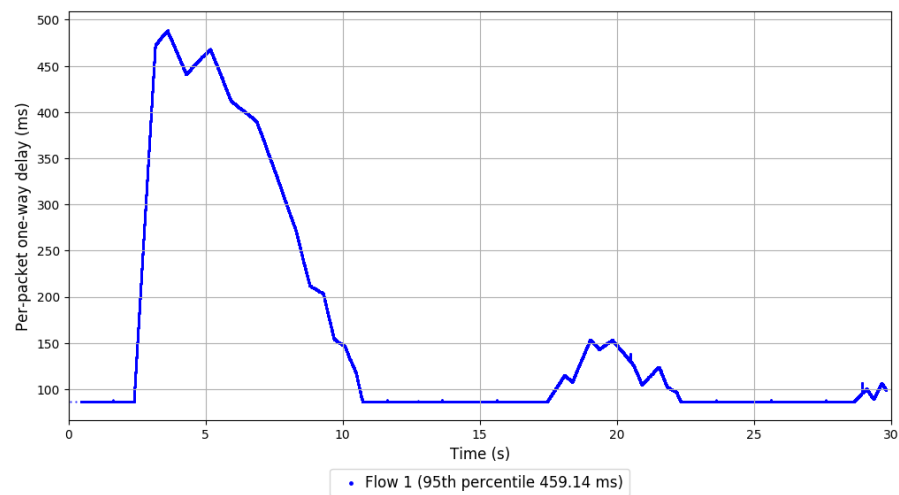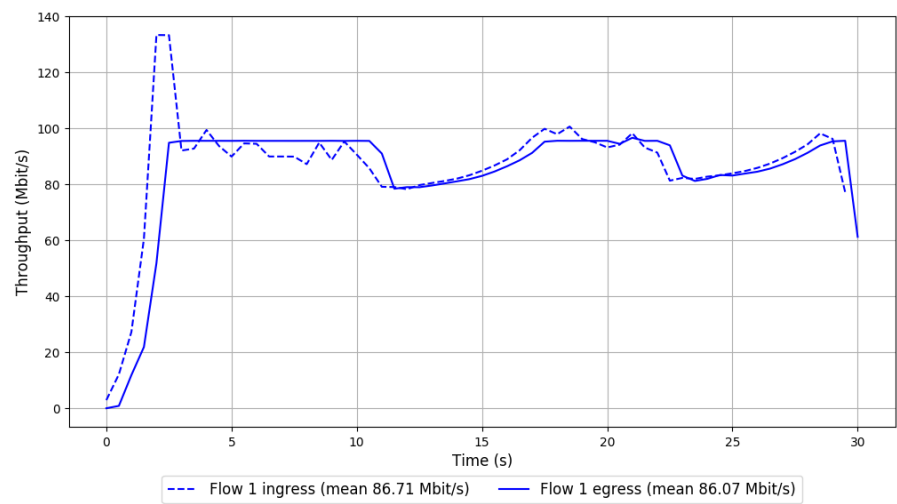
Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 86.71 Mbit/s) — — — Flow 1 egress (mean 86.07 Mbit/s)

• Flow 1 (95th percentile 459.14 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-02 10:43:19
End at: 2018-12-02 10:43:49
Local clock offset: -2.133 ms
Remote clock offset: 4.637 ms


# Below is generated by plot.py at 2018-12-02 11:37:11
# Datalink statistics
-- Total of 1 flow:
Average throughput: 88.82 Mbit/s
95th percentile per-packet one-way delay: 461.572 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 88.82 Mbit/s
95th percentile per-packet one-way delay: 461.572 ms
Loss rate: 1.12%
```
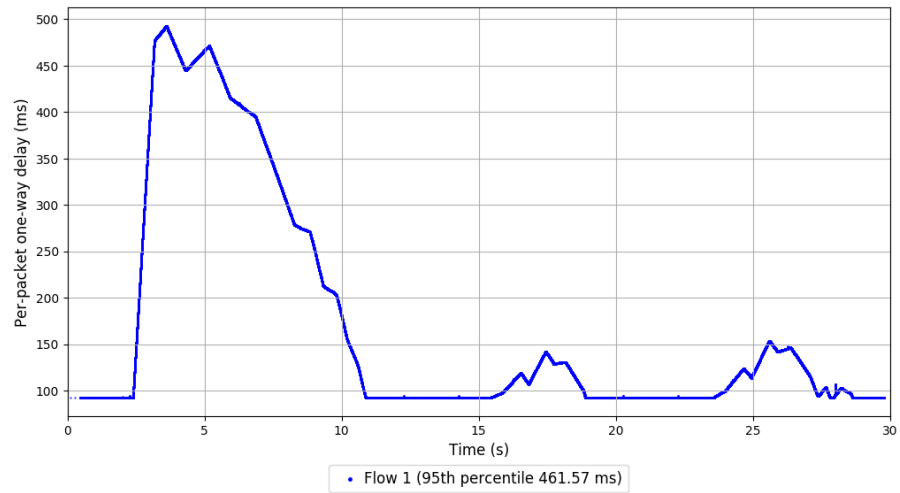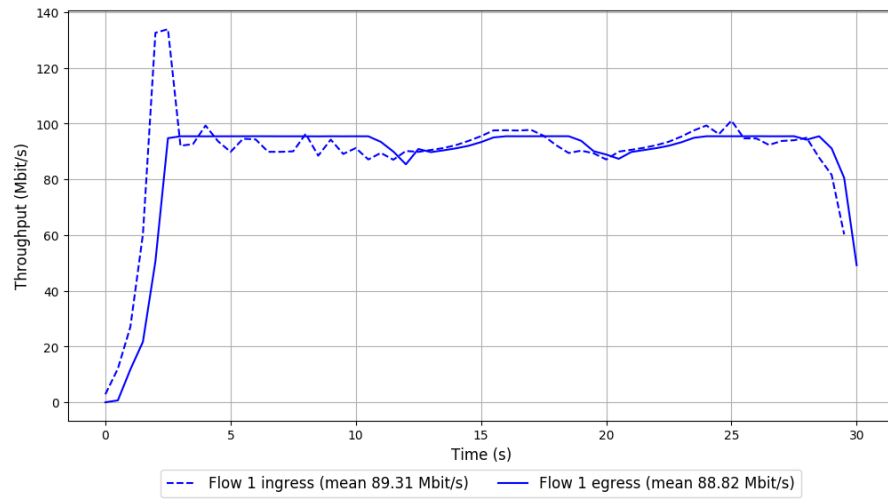
Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 89.31 Mbit/s) — Flow 1 egress (mean 88.82 Mbit/s)
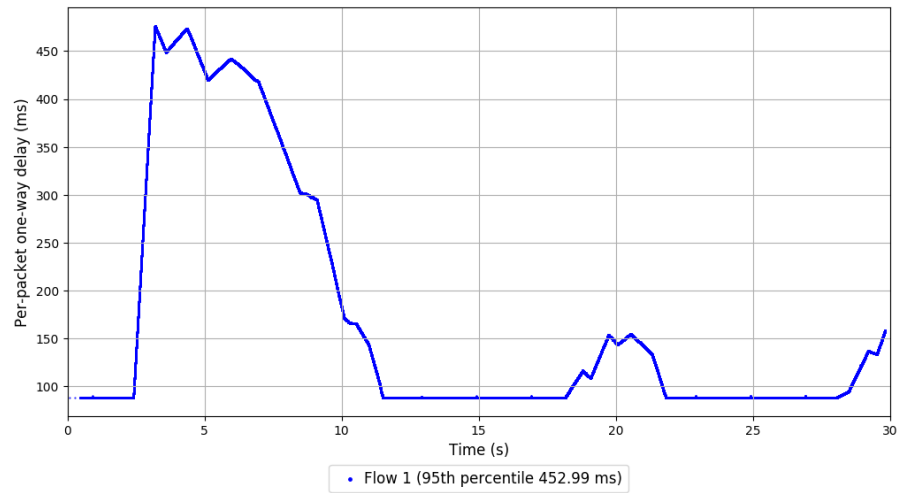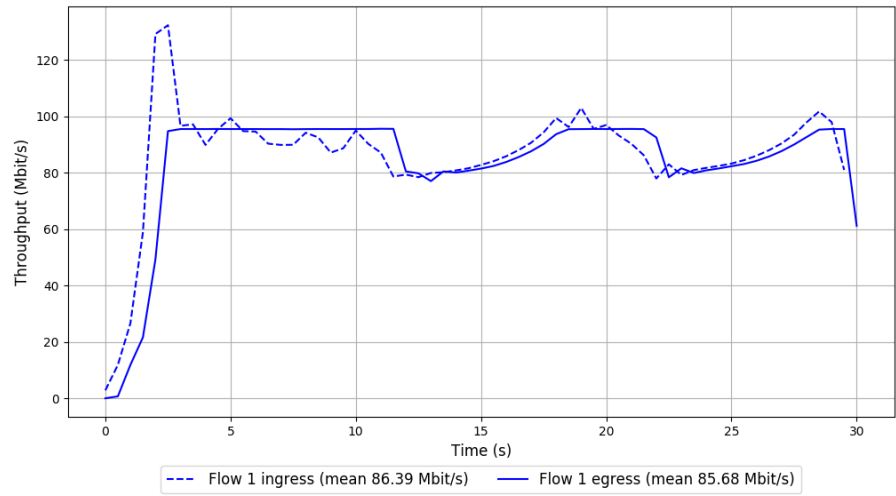

Flow 1 (95th percentile 461.57 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-02 11:05:58
End at: 2018-12-02 11:06:28
Local clock offset: -5.461 ms
Remote clock offset: 10.117 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 85.68 Mbit/s
95th percentile per-packet one-way delay: 452.994 ms
Loss rate: 1.40%
-- Flow 1:
Average throughput: 85.68 Mbit/s
95th percentile per-packet one-way delay: 452.994 ms
Loss rate: 1.40%
```

Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 86.39 Mbit/s)   Flow 1 egress (mean 85.68 Mbit/s)

• Flow 1 (95th percentile 452.99 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-02 09:51:47
End at: 2018-12-02 09:52:17
Local clock offset: -3.95 ms
Remote clock offset: 3.616 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.73 Mbit/s
95th percentile per-packet one-way delay: 97.687 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 55.73 Mbit/s
95th percentile per-packet one-way delay: 97.687 ms
Loss rate: 0.88%
```
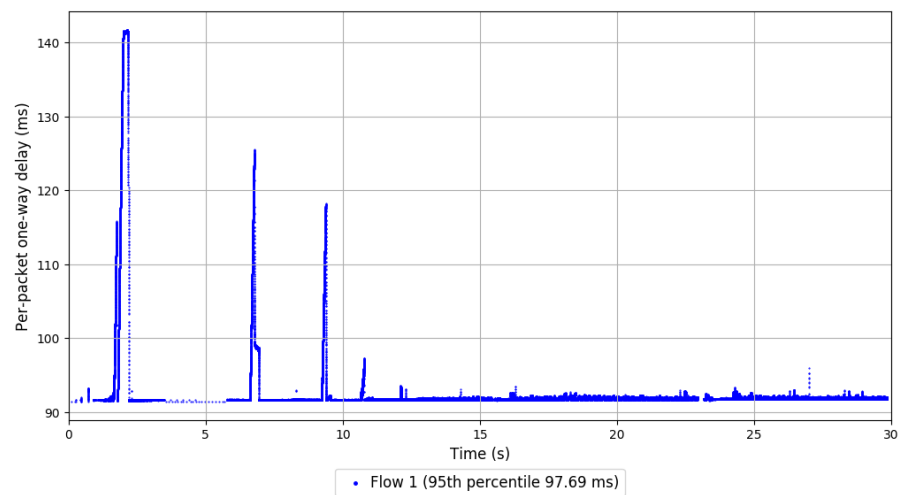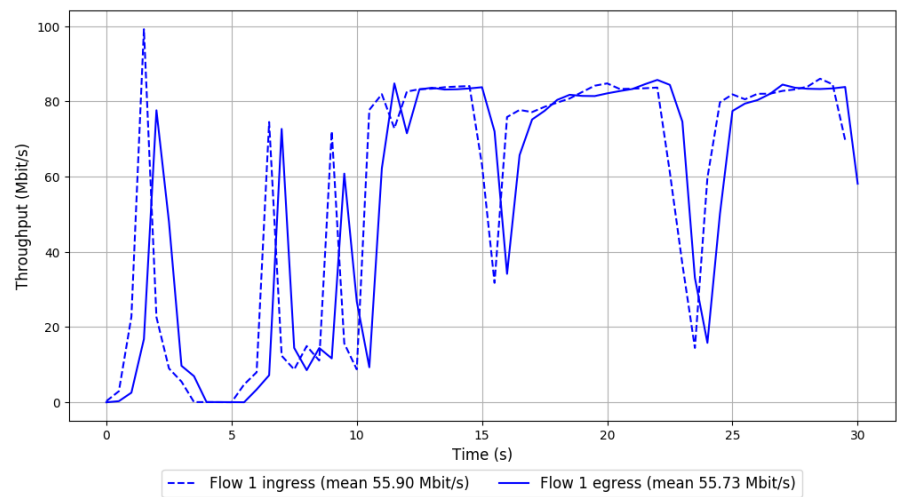
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-02 10:14:38
End at: 2018-12-02 10:15:08
Local clock offset: -6.51 ms
Remote clock offset: 8.642 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 44.46 Mbit/s
95th percentile per-packet one-way delay: 96.569 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 44.46 Mbit/s
95th percentile per-packet one-way delay: 96.569 ms
Loss rate: 1.09%
```
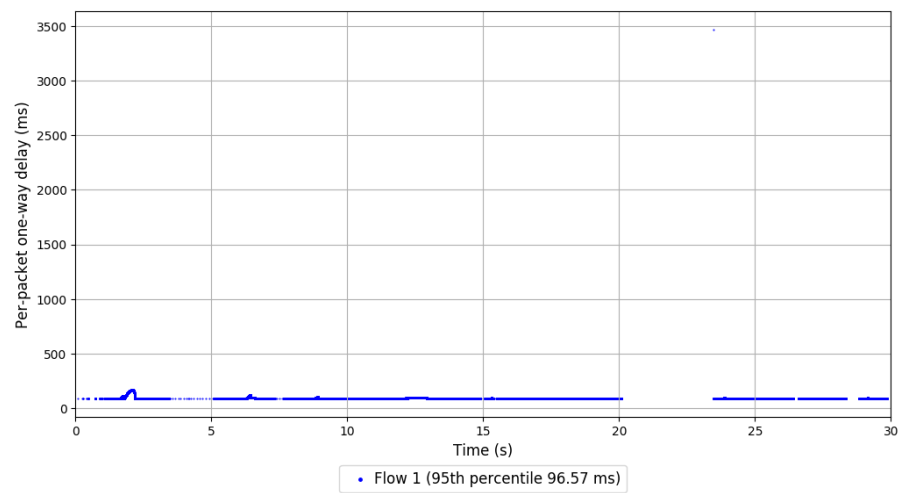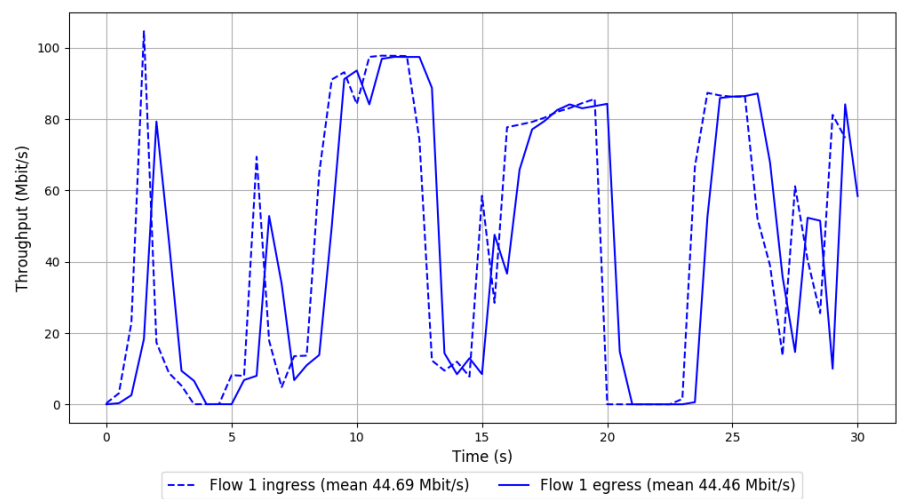
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-02 10:37:27
End at: 2018-12-02 10:37:57
Local clock offset: -2.568 ms
Remote clock offset: 9.596 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 58.54 Mbit/s
95th percentile per-packet one-way delay: 93.590 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 58.54 Mbit/s
95th percentile per-packet one-way delay: 93.590 ms
Loss rate: 0.84%
```
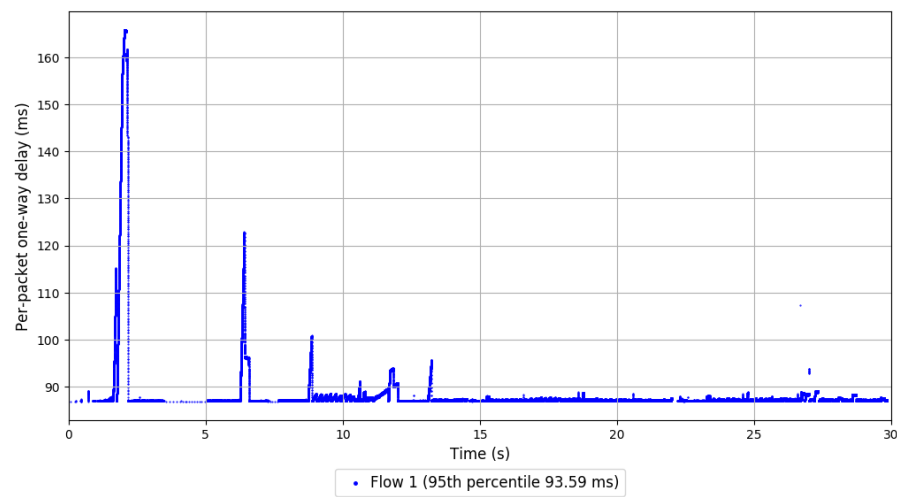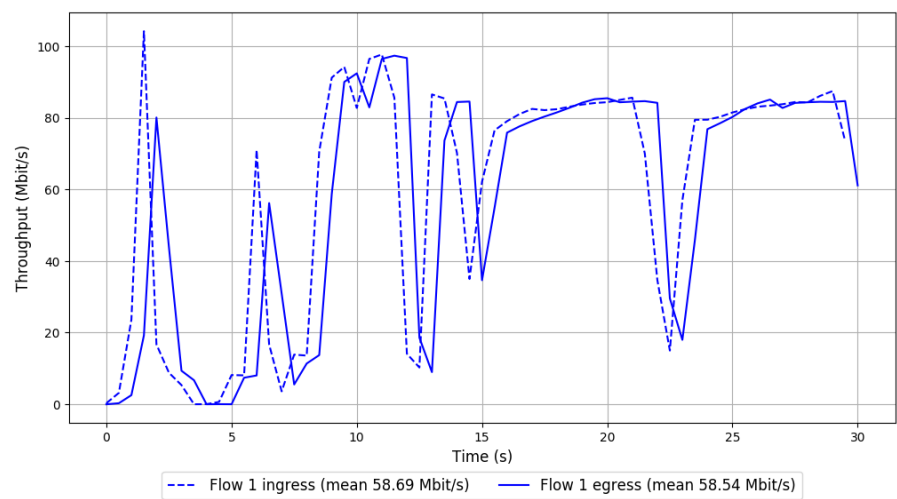
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 58.69 Mbit/s) --- Flow 1 egress (mean 58.54 Mbit/s)

Flow 1 (95th percentile 93.59 ms)

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-02 11:00:08
End at: 2018-12-02 11:00:38
Local clock offset: -4.728 ms
Remote clock offset: 5.28 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.18 Mbit/s
95th percentile per-packet one-way delay: 99.263 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 60.18 Mbit/s
95th percentile per-packet one-way delay: 99.263 ms
Loss rate: 0.92%
```
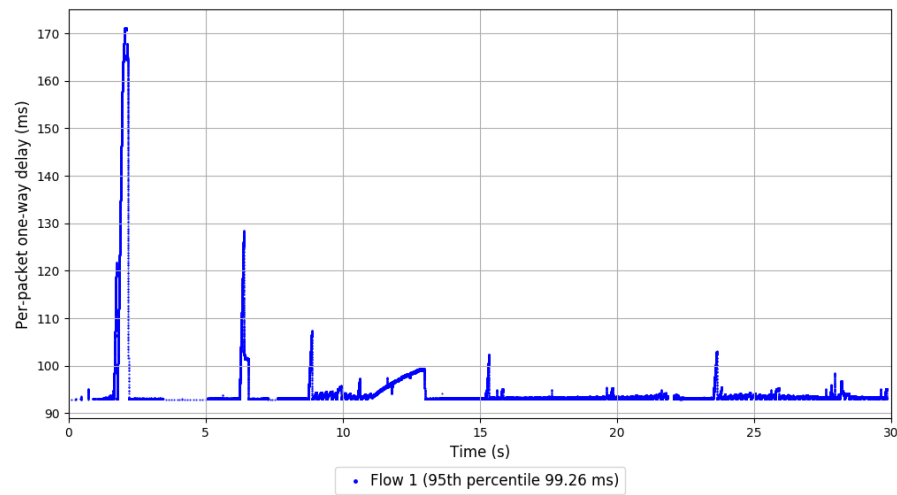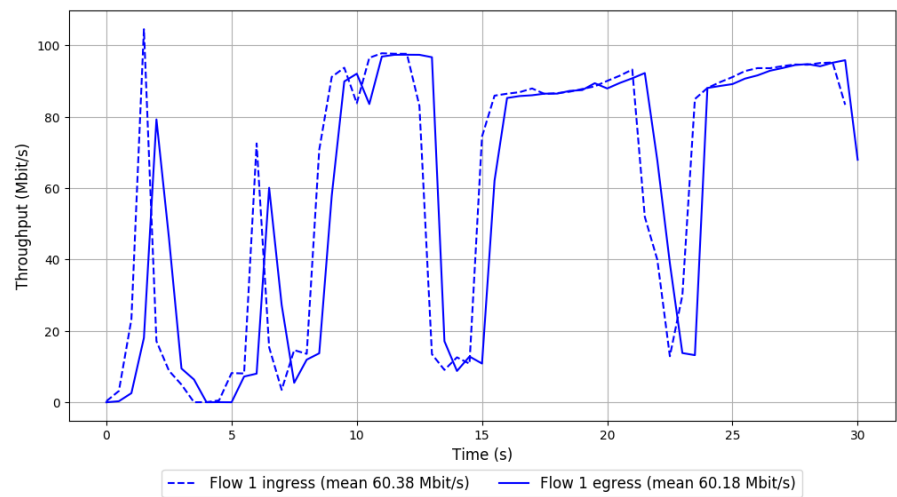
Run 4: Report of QUIC Cubic — Data Link

122

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-02 11:22:56
End at: 2018-12-02 11:23:26
Local clock offset: -6.93 ms
Remote clock offset: 5.892 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 54.21 Mbit/s
95th percentile per-packet one-way delay: 99.589 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 54.21 Mbit/s
95th percentile per-packet one-way delay: 99.589 ms
Loss rate: 0.90%
```
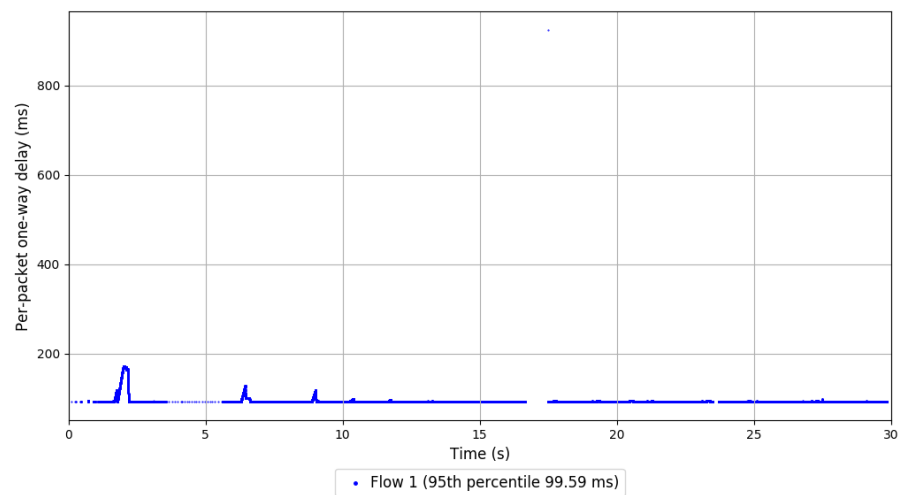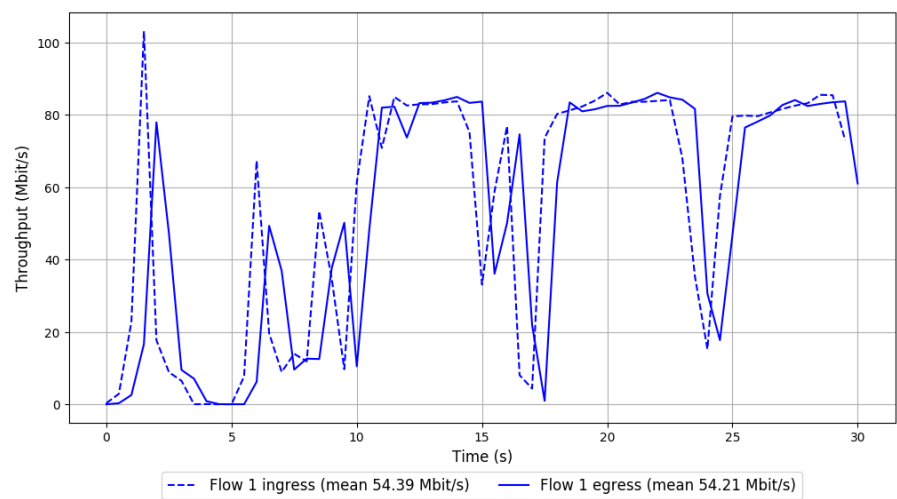
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 54.39 Mbit/s) ---- Flow 1 egress (mean 54.21 Mbit/s)
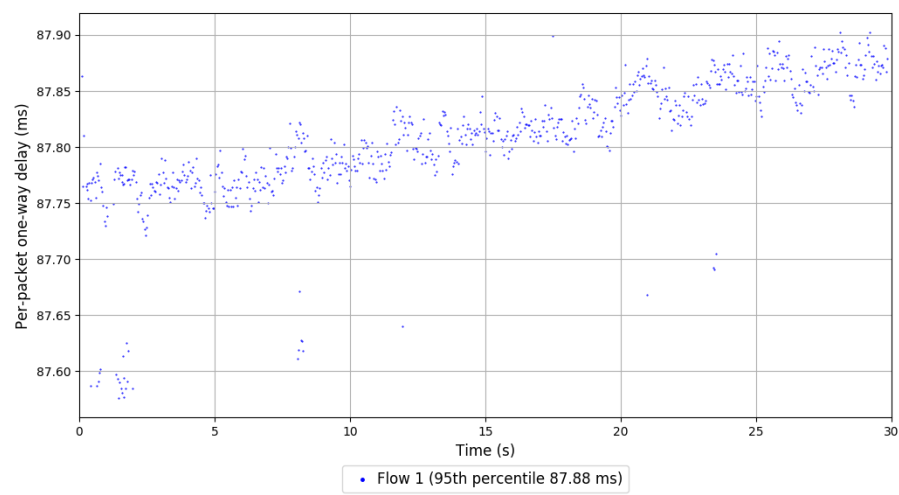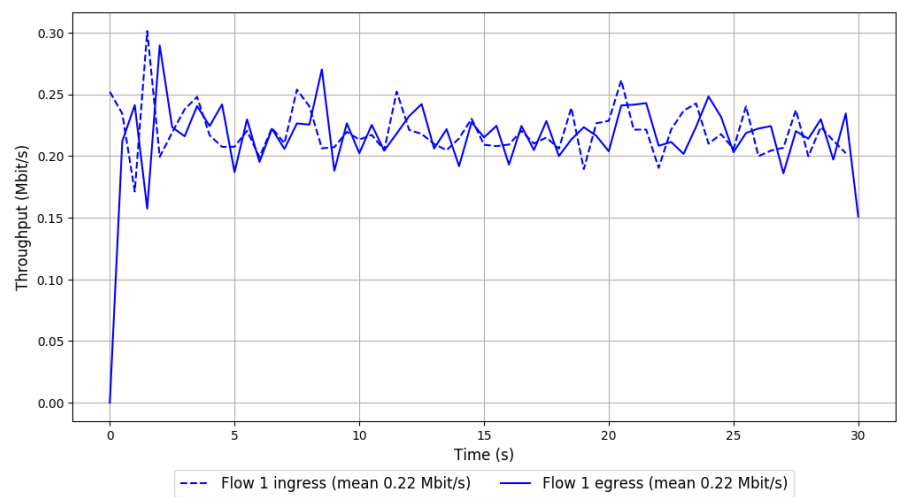

Flow 1 (95th percentile 99.59 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-12-02 09:55:21
End at: 2018-12-02 09:55:51
Local clock offset: -4.166 ms
Remote clock offset: 8.022 ms

# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.879 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.879 ms
Loss rate: 0.64%
```

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 87.88 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-12-02 10:18:06
End at: 2018-12-02 10:18:36
Local clock offset: -6.697 ms
Remote clock offset: 9.904 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.447 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.447 ms
Loss rate: 0.51%
```
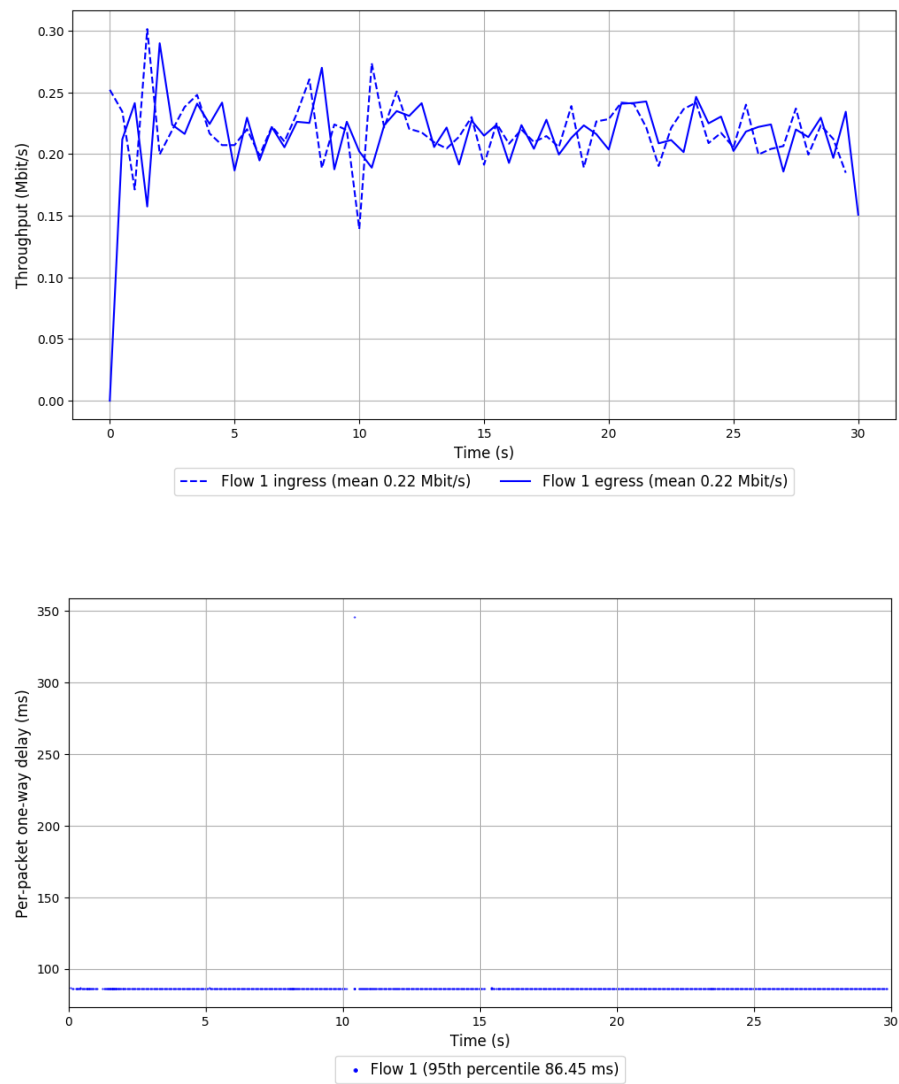
Run 2: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 86.45 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-12-02 10:40:59
End at: 2018-12-02 10:41:29
Local clock offset: -1.511 ms
Remote clock offset: 9.216 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 88.610 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 88.610 ms
Loss rate: 0.48%
```
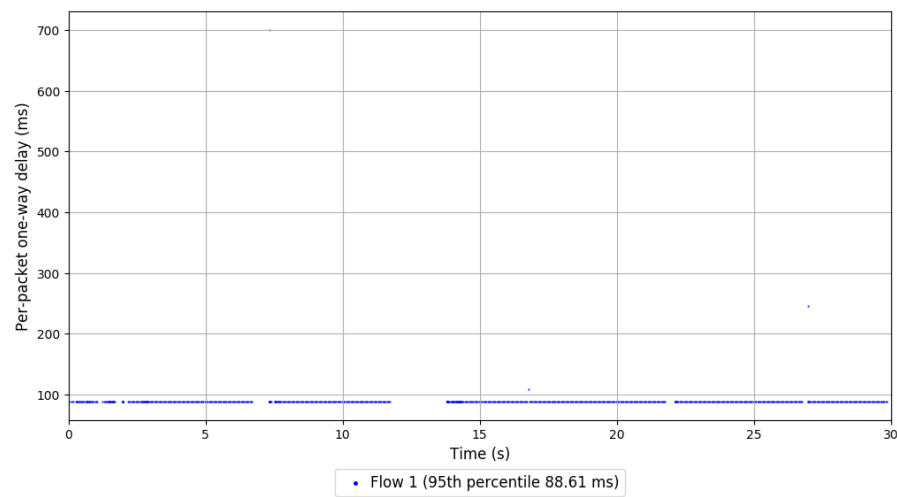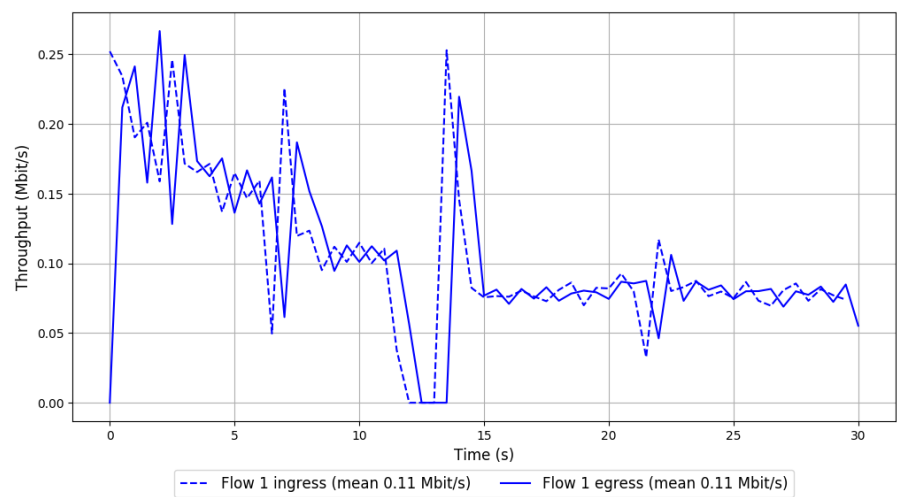
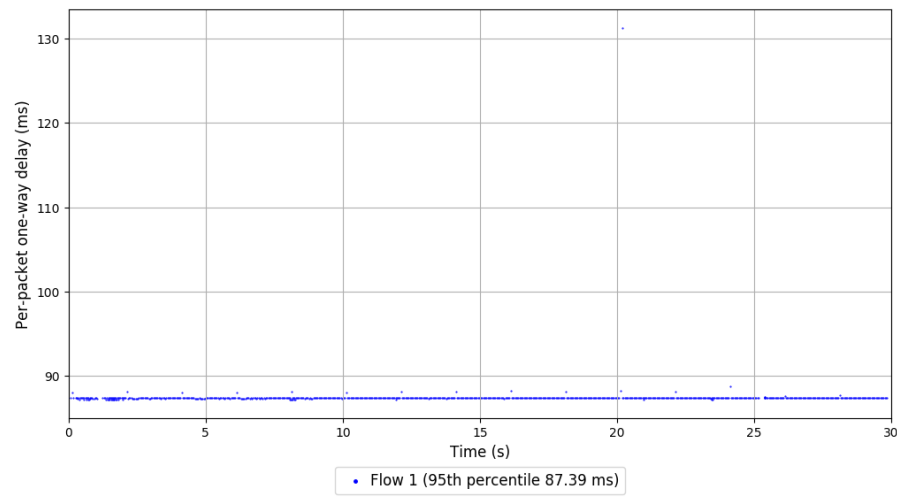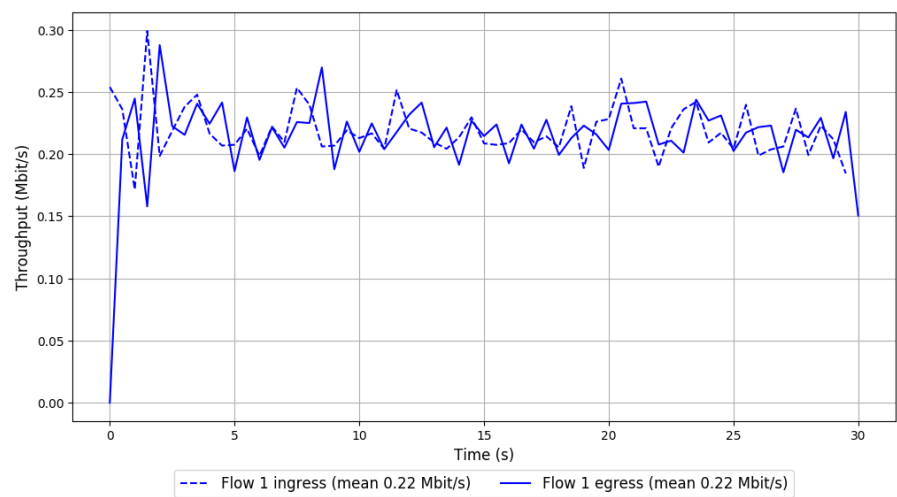## Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-12-02 11:03:39
End at: 2018-12-02 11:04:09
Local clock offset: -5.933 ms
Remote clock offset: 10.588 ms

# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.395 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.395 ms
Loss rate: 0.51%
```

Run 4: 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 87.39 ms)

```
Run 5: Statistics of SCReAM

Start at: 2018-12-02 11:26:27
End at: 2018-12-02 11:26:57
Local clock offset: -7.049 ms
Remote clock offset: 7.948 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 91.568 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 91.568 ms
Loss rate: 0.39%
```
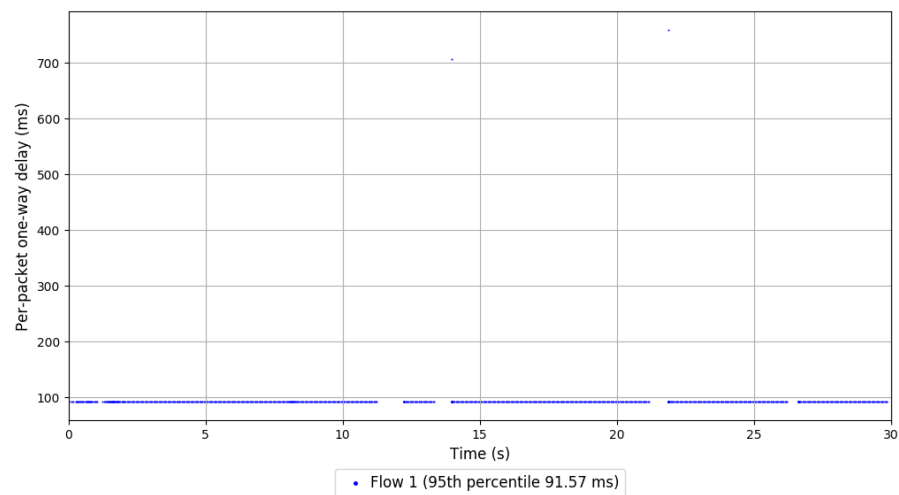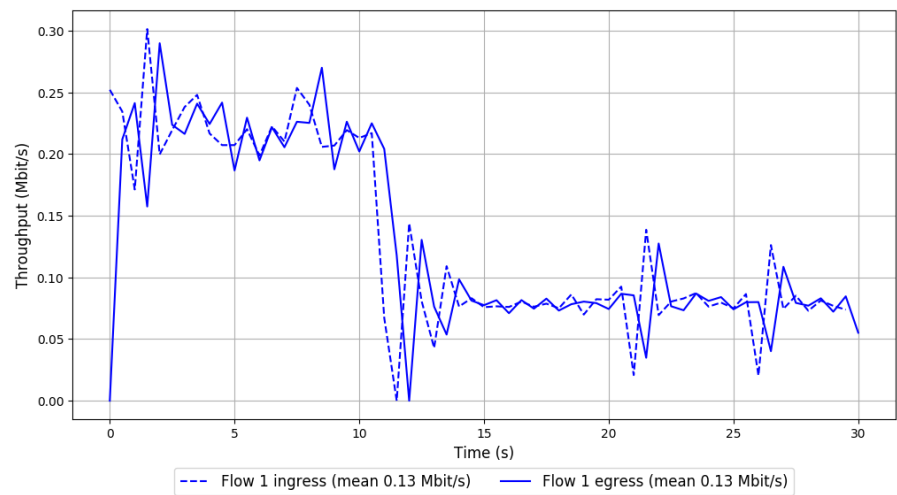
Run 5: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 91.57 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-12-02 09:48:17
End at: 2018-12-02 09:48:47
Local clock offset: -2.525 ms
Remote clock offset: 3.355 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 94.105 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 94.105 ms
Loss rate: 0.27%
```
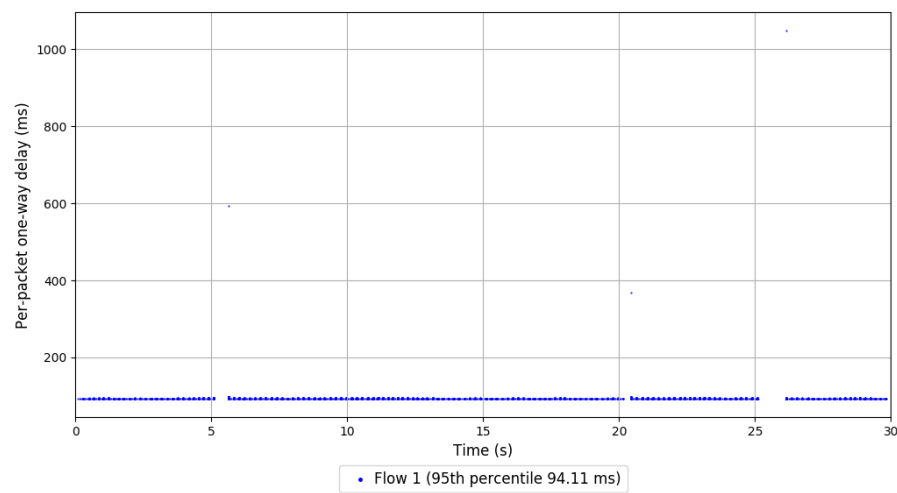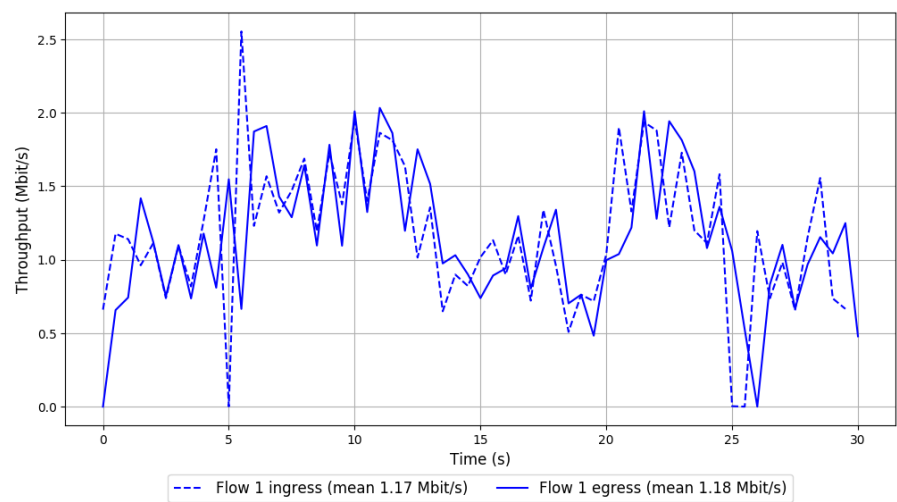
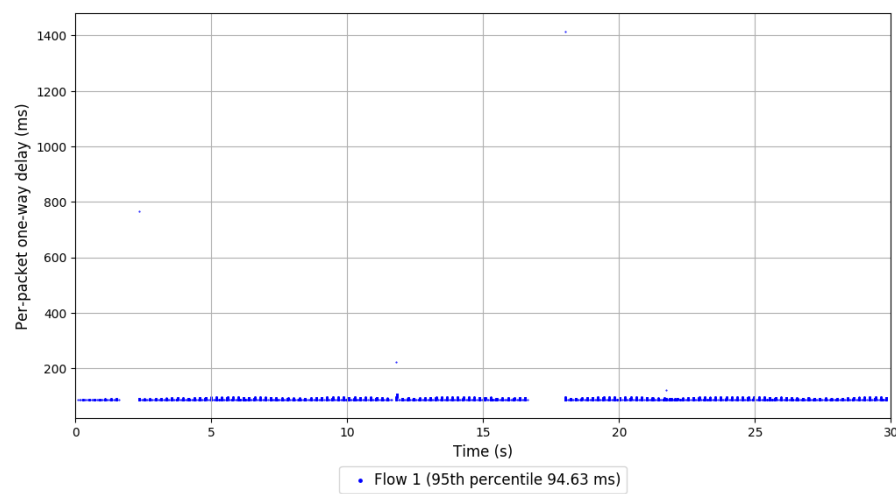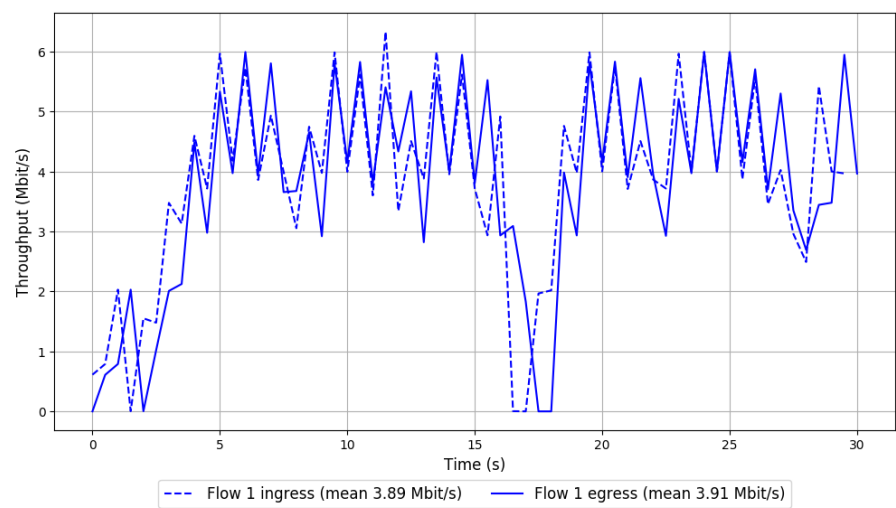Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-02 10:11:10
End at: 2018-12-02 10:11:40
Local clock offset: -6.275 ms
Remote clock offset: 9.913 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.91 Mbit/s
95th percentile per-packet one-way delay: 94.634 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.91 Mbit/s
95th percentile per-packet one-way delay: 94.634 ms
Loss rate: 0.00%
```
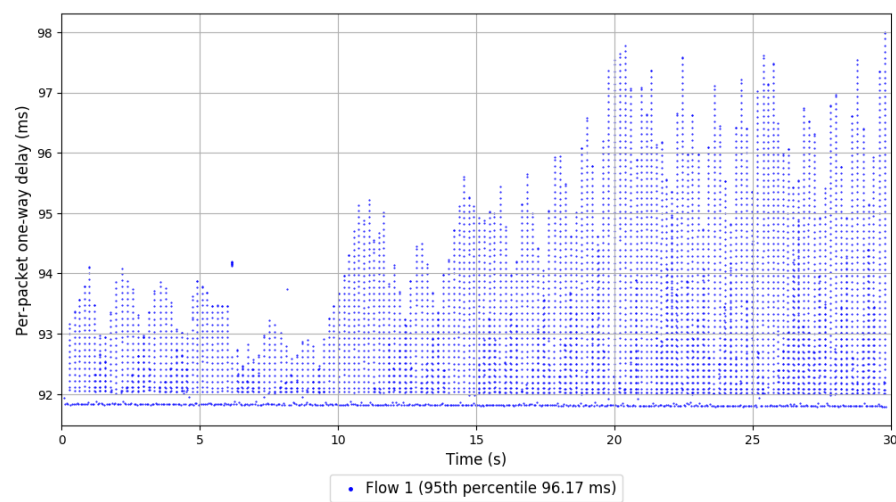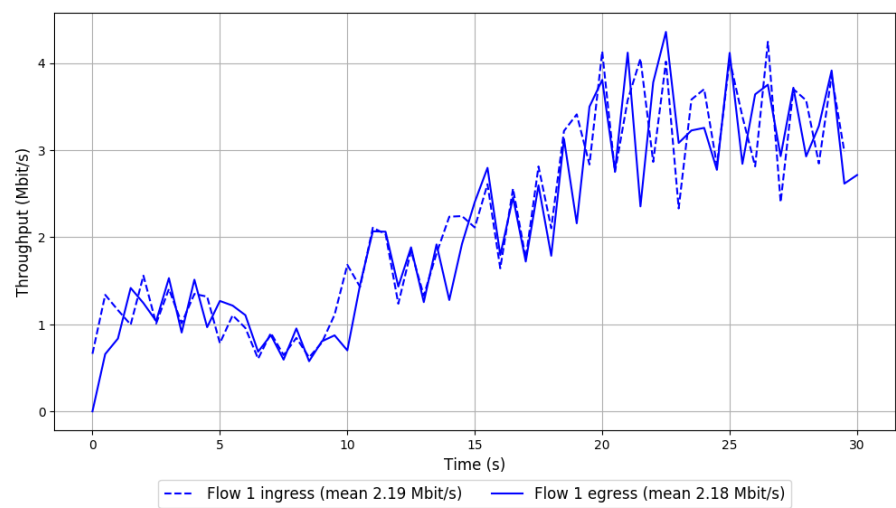
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-02 10:33:55
End at: 2018-12-02 10:34:25
Local clock offset: -2.145 ms
Remote clock offset: 5.423 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 96.174 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 2.18 Mbit/s
95th percentile per-packet one-way delay: 96.174 ms
Loss rate: 1.16%
```

Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-12-02 10:56:39
End at: 2018-12-02 10:57:09
Local clock offset: -4.171 ms
Remote clock offset: 10.32 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 89.496 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 0.86 Mbit/s
95th percentile per-packet one-way delay: 89.496 ms
Loss rate: 0.54%
```
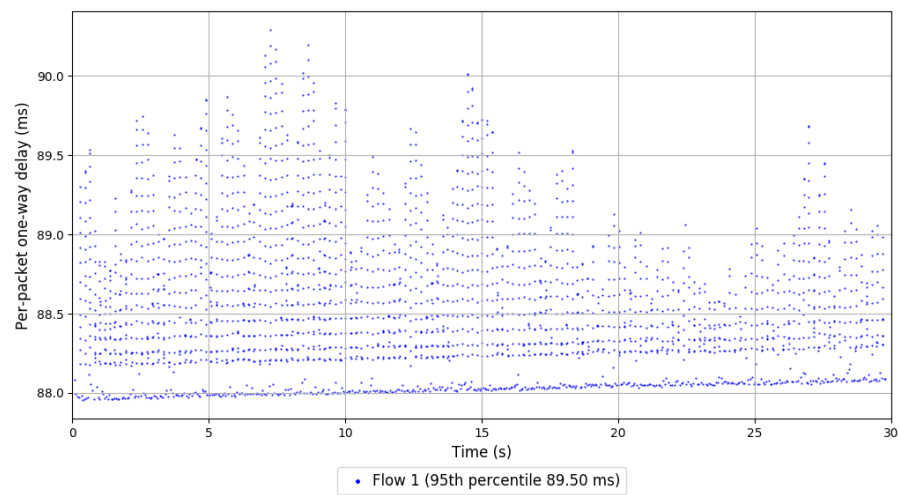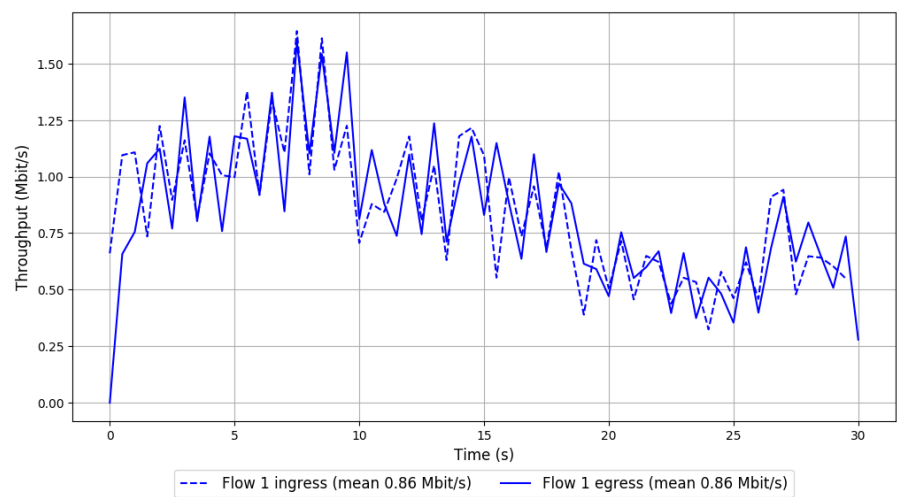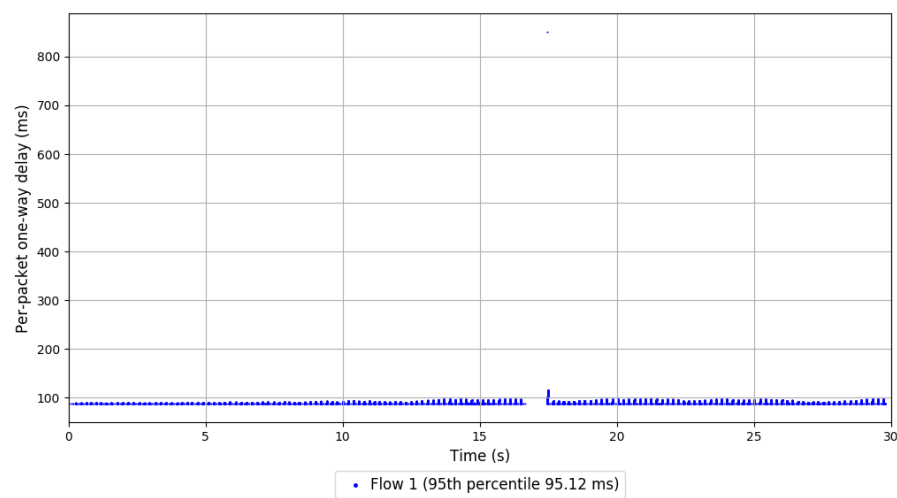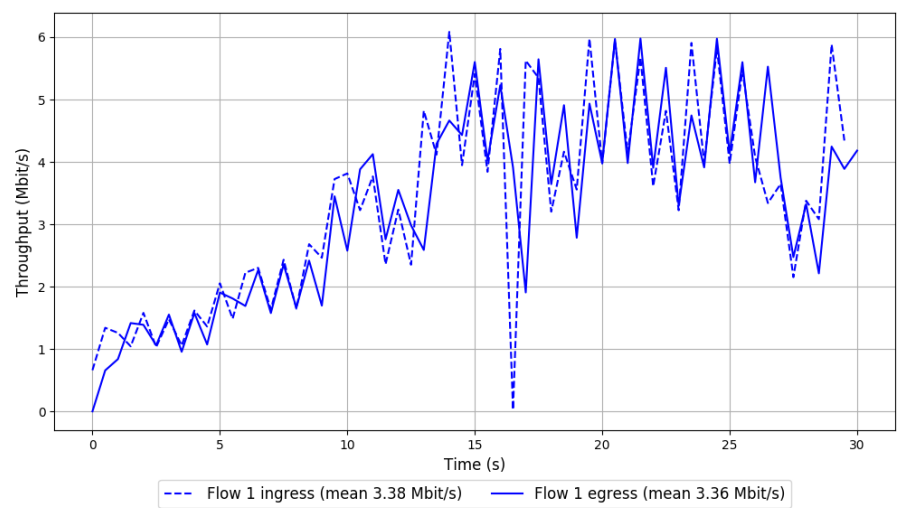
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-02 11:19:28
End at: 2018-12-02 11:19:58
Local clock offset: -6.925 ms
Remote clock offset: 10.883 ms


# Below is generated by plot.py at 2018-12-02 11:37:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 95.117 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 95.117 ms
Loss rate: 1.07%
```

Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 3.38 Mbit/s) --- Flow 1 egress (mean 3.36 Mbit/s)
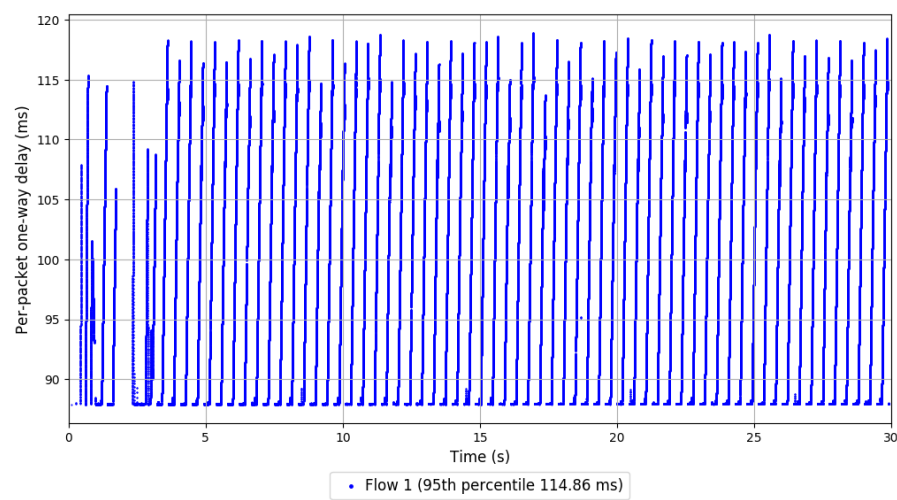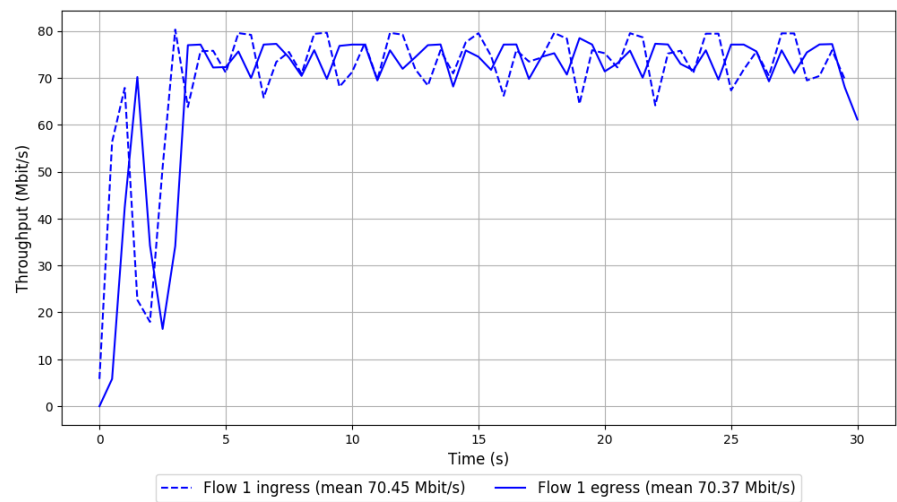

Flow 1 (95th percentile 95.12 ms)

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

Start at: 2018-12-02 09:45:41
End at: 2018-12-02 09:46:11
Local clock offset: -1.529 ms
Remote clock offset: 7.342 ms

# Below is generated by plot.py at 2018-12-02 11:38:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.37 Mbit/s
95th percentile per-packet one-way delay: 114.857 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 70.37 Mbit/s
95th percentile per-packet one-way delay: 114.857 ms
Loss rate: 0.59%
```

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

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

Start at: 2018-12-02 10:08:43
End at: 2018-12-02 10:09:13
Local clock offset: -6.094 ms
Remote clock offset: 4.408 ms


# Below is generated by plot.py at 2018-12-02 11:38:26
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.18 Mbit/s
95th percentile per-packet one-way delay: 119.135 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 69.18 Mbit/s
95th percentile per-packet one-way delay: 119.135 ms
Loss rate: 0.65%
```
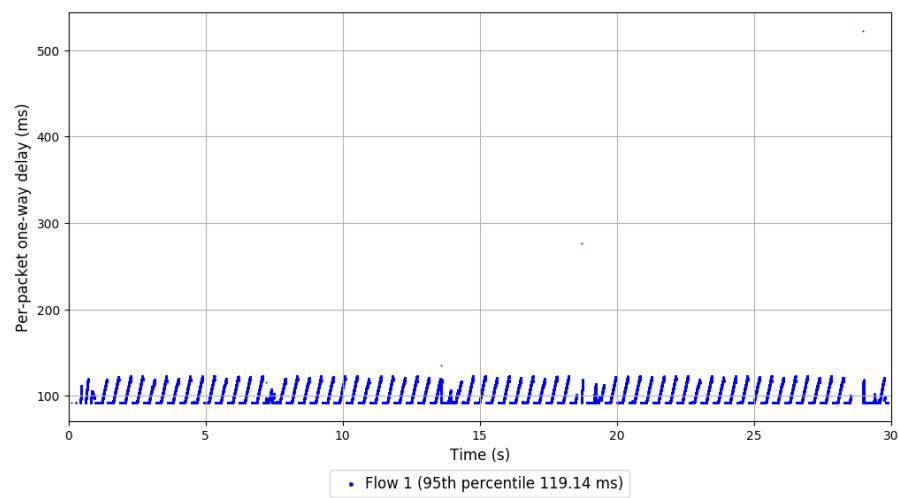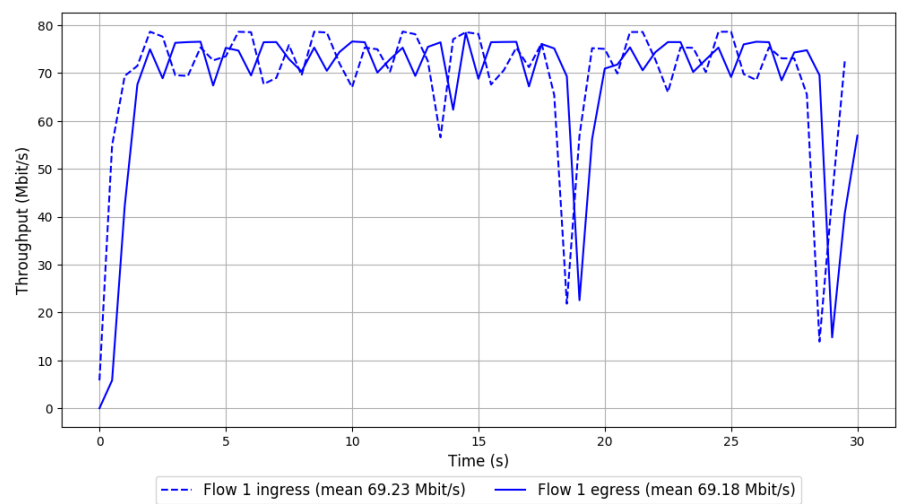
Run 2: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-02 10:31:22
End at: 2018-12-02 10:31:52
Local clock offset: -2.492 ms
Remote clock offset: 5.163 ms


# Below is generated by plot.py at 2018-12-02 11:38:32
# Datalink statistics
-- Total of 1 flow:
Average throughput: 72.66 Mbit/s
95th percentile per-packet one-way delay: 119.035 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 72.66 Mbit/s
95th percentile per-packet one-way delay: 119.035 ms
Loss rate: 0.59%
```
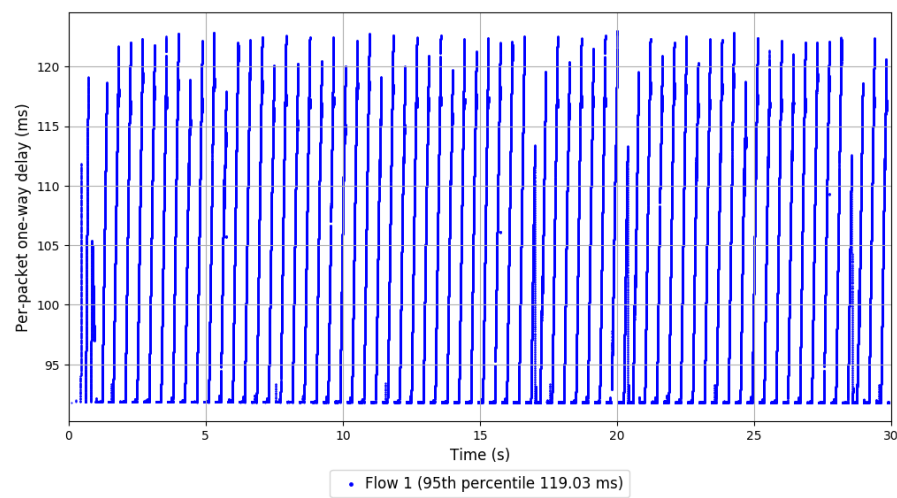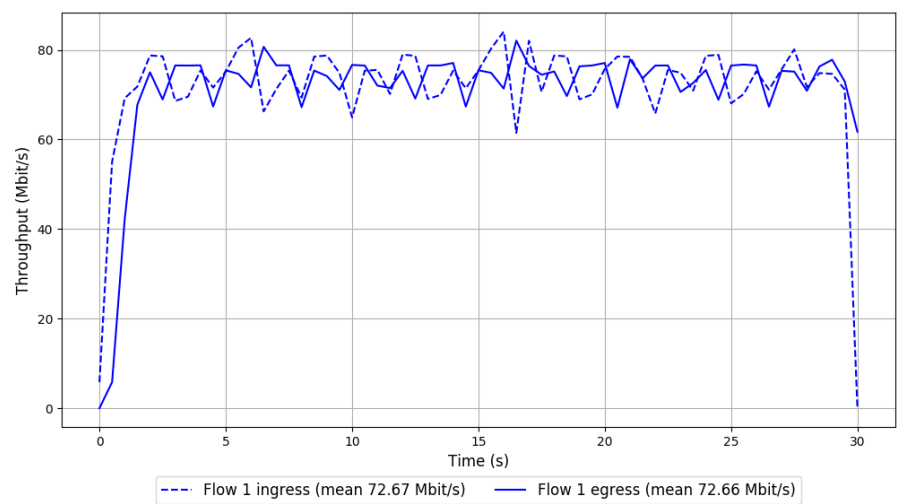
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 72.67 Mbit/s)   Flow 1 egress (mean 72.66 Mbit/s)

• Flow 1 (95th percentile 119.03 ms)

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

Start at: 2018-12-02 10:54:10
End at: 2018-12-02 10:54:40
Local clock offset: -4.231 ms
Remote clock offset: 9.967 ms


# Below is generated by plot.py at 2018-12-02 11:38:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.10 Mbit/s
95th percentile per-packet one-way delay: 114.905 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 69.10 Mbit/s
95th percentile per-packet one-way delay: 114.905 ms
Loss rate: 0.93%
```
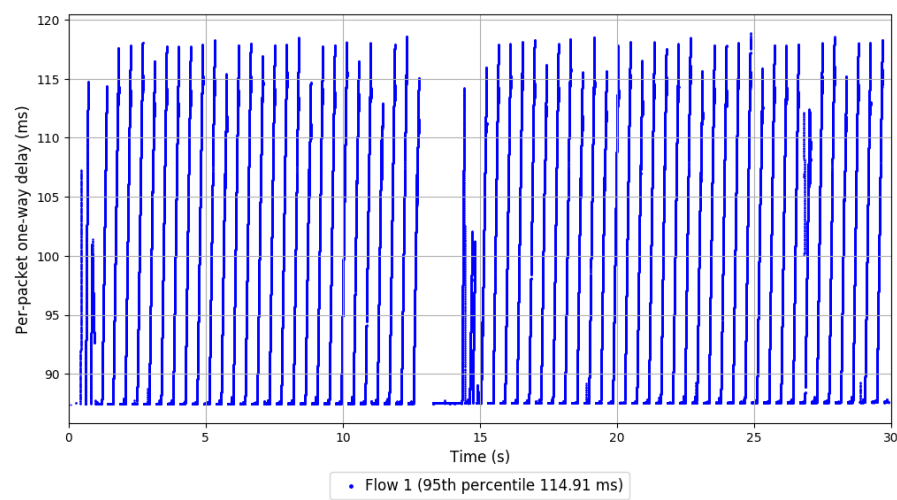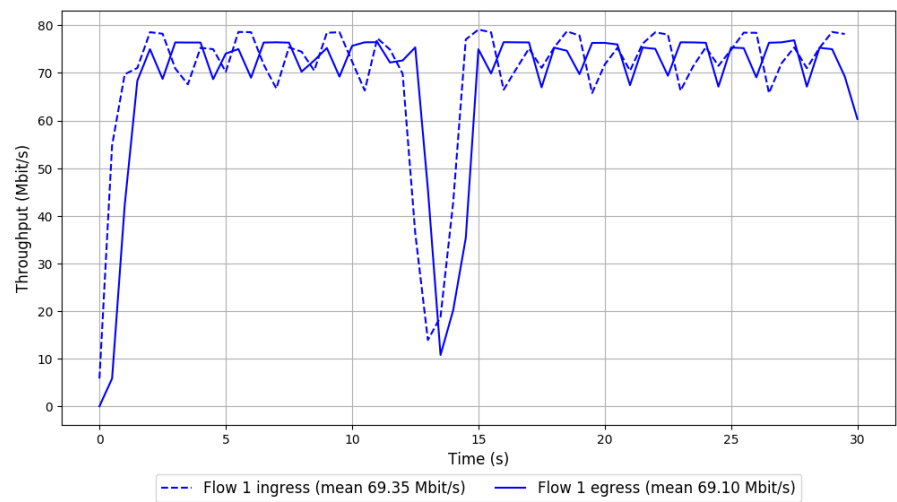
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 69.35 Mbit/s) — — — Flow 1 egress (mean 69.10 Mbit/s)

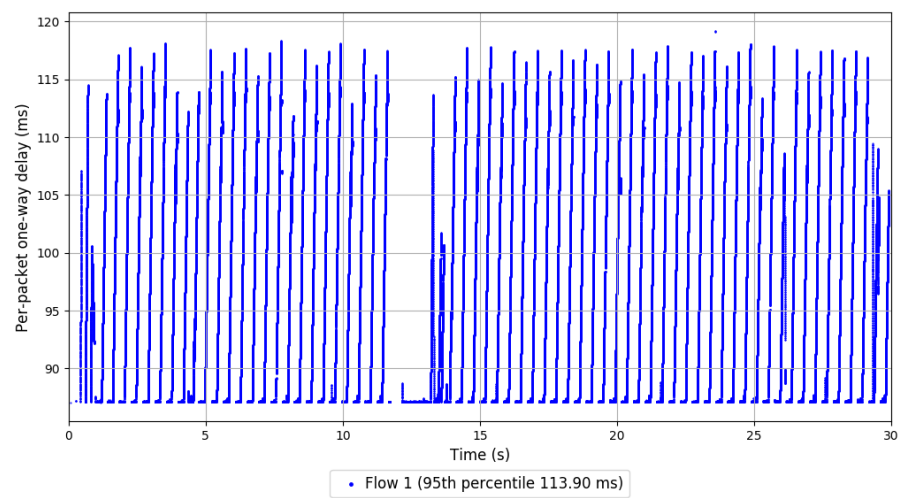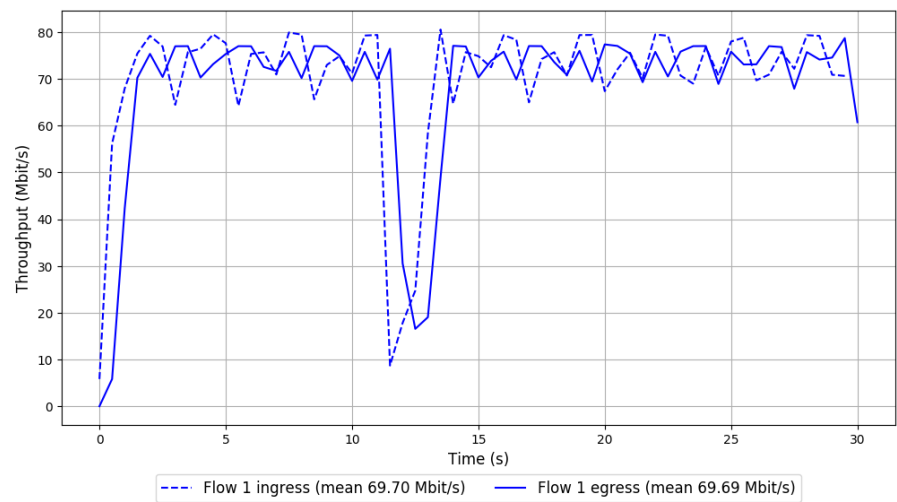
• Flow 1 (95th percentile 114.91 ms)

```
Run 5: Statistics of TaoVA-100x

Start at: 2018-12-02 11:16:56
End at: 2018-12-02 11:17:26
Local clock offset: -6.893 ms
Remote clock offset: 10.848 ms


# Below is generated by plot.py at 2018-12-02 11:38:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.69 Mbit/s
95th percentile per-packet one-way delay: 113.897 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 69.69 Mbit/s
95th percentile per-packet one-way delay: 113.897 ms
Loss rate: 0.59%
```

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

Flow 1 ingress (mean 69.70 Mbit/s)   Flow 1 egress (mean 69.69 Mbit/s)

• Flow 1 (95th percentile 113.90 ms)

```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-02 09:36:02
End at: 2018-12-02 09:36:32
Local clock offset: -1.45 ms
Remote clock offset: 1.466 ms


# Below is generated by plot.py at 2018-12-02 11:38:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.34 Mbit/s
95th percentile per-packet one-way delay: 173.029 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 37.34 Mbit/s
95th percentile per-packet one-way delay: 173.029 ms
Loss rate: 0.66%
```
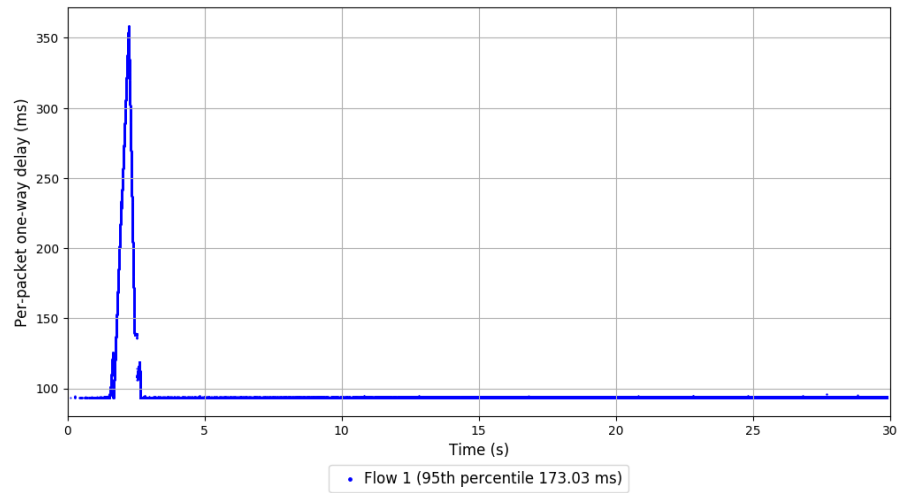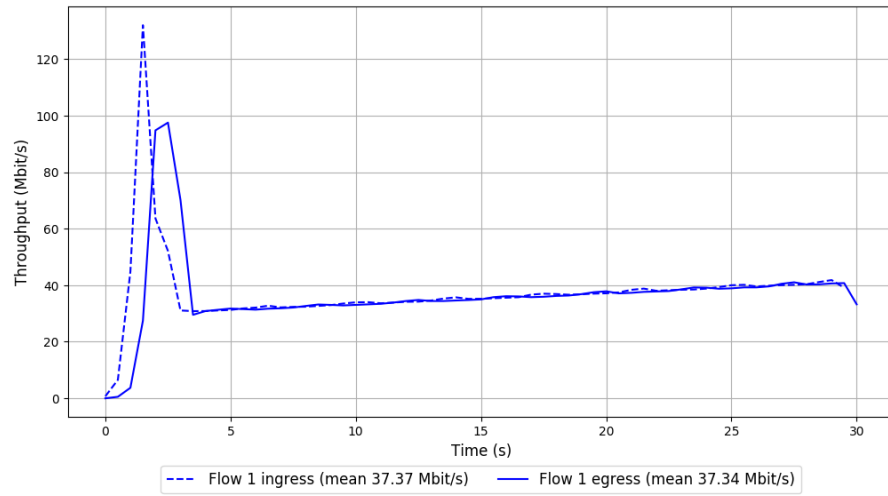
Run 1: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 37.37 Mbit/s) —— Flow 1 egress (mean 37.34 Mbit/s)

• Flow 1 (95th percentile 173.03 ms)

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-02 09:59:00
End at: 2018-12-02 09:59:30
Local clock offset: -4.924 ms
Remote clock offset: 7.953 ms


# Below is generated by plot.py at 2018-12-02 11:38:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 35.77 Mbit/s
95th percentile per-packet one-way delay: 175.554 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 35.77 Mbit/s
95th percentile per-packet one-way delay: 175.554 ms
Loss rate: 0.67%
```
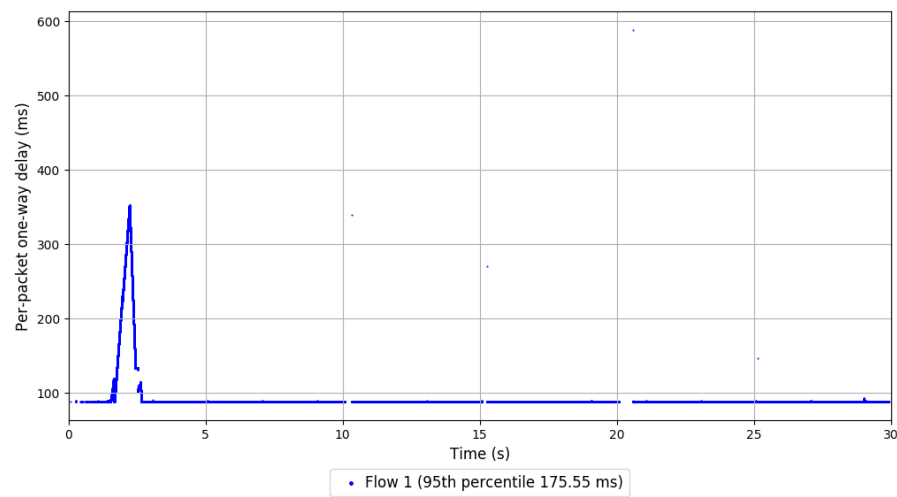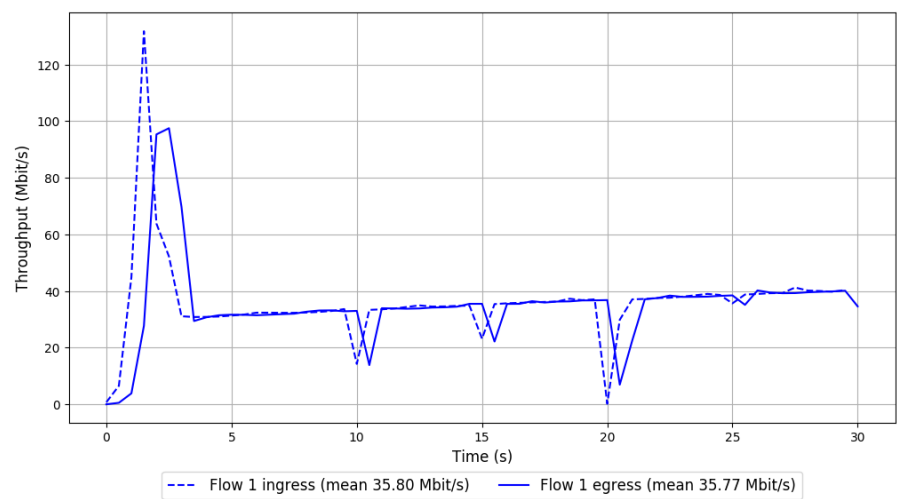
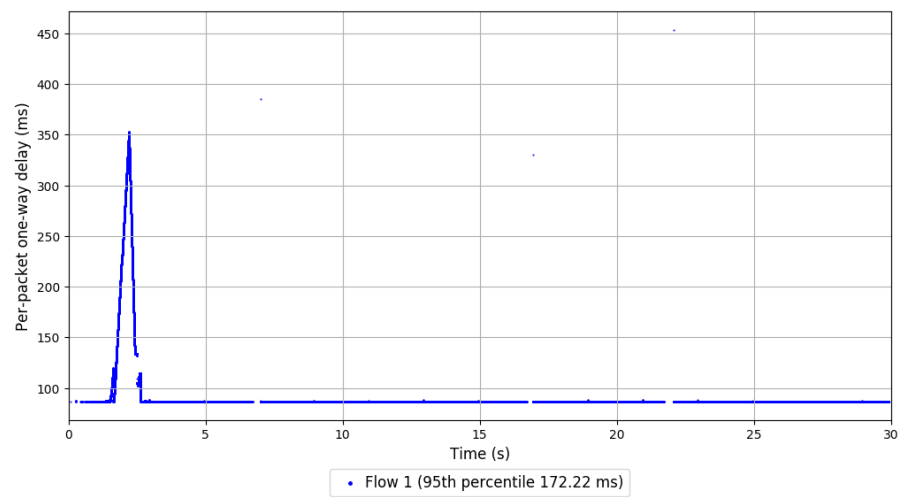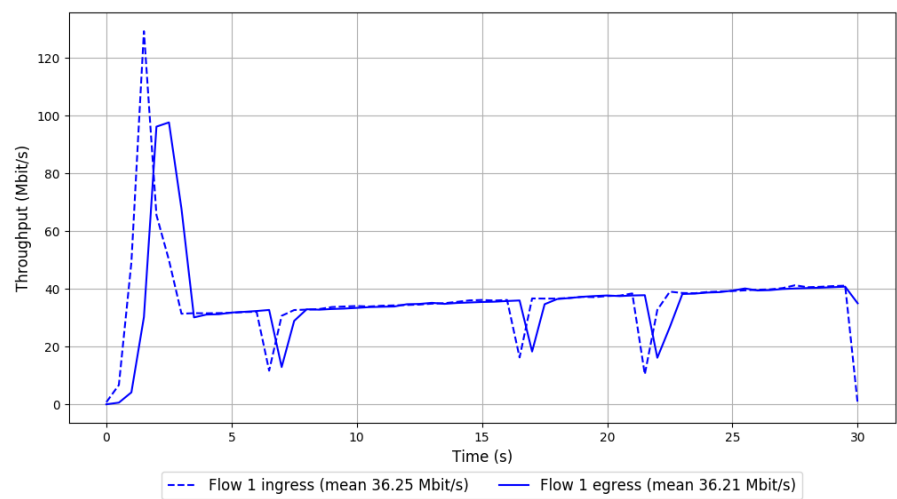Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-02 10:21:40
End at: 2018-12-02 10:22:10
Local clock offset: -5.028 ms
Remote clock offset: 10.097 ms


# Below is generated by plot.py at 2018-12-02 11:38:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.21 Mbit/s
95th percentile per-packet one-way delay: 172.217 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 36.21 Mbit/s
95th percentile per-packet one-way delay: 172.217 ms
Loss rate: 0.68%
```

Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 36.25 Mbit/s)   Flow 1 egress (mean 36.21 Mbit/s)

• Flow 1 (95th percentile 172.22 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-02 10:44:36
End at: 2018-12-02 10:45:06
Local clock offset: -2.069 ms
Remote clock offset: 9.691 ms


# Below is generated by plot.py at 2018-12-02 11:38:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 37.76 Mbit/s
95th percentile per-packet one-way delay: 165.001 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 37.76 Mbit/s
95th percentile per-packet one-way delay: 165.001 ms
Loss rate: 0.66%
```
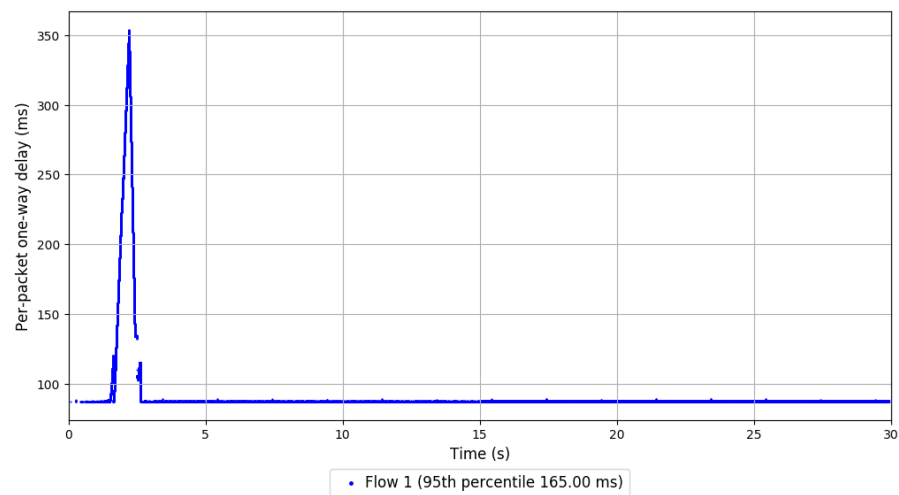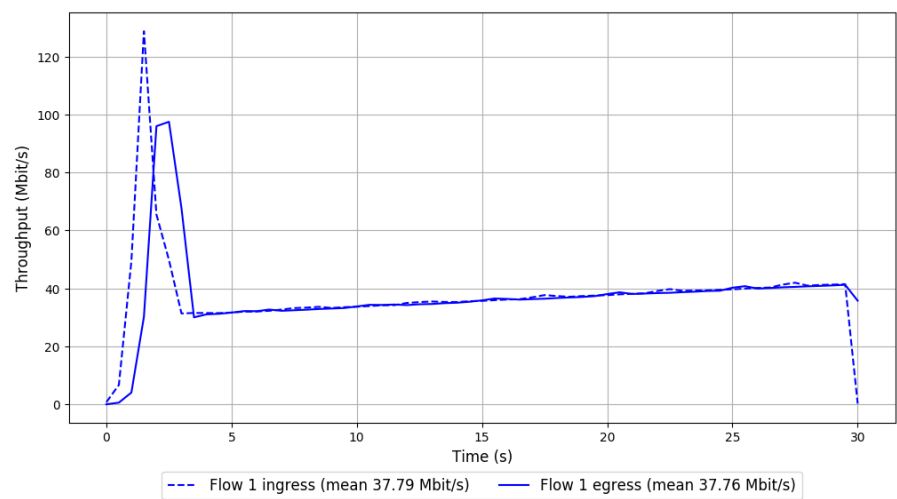
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 37.79 Mbit/s)   Flow 1 egress (mean 37.76 Mbit/s)

• Flow 1 (95th percentile 165.00 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-02 11:07:14
End at: 2018-12-02 11:07:44
Local clock offset: -6.287 ms
Remote clock offset: 5.446 ms


# Below is generated by plot.py at 2018-12-02 11:38:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 55.52 Mbit/s
95th percentile per-packet one-way delay: 107.177 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 55.52 Mbit/s
95th percentile per-packet one-way delay: 107.177 ms
Loss rate: 0.66%
```
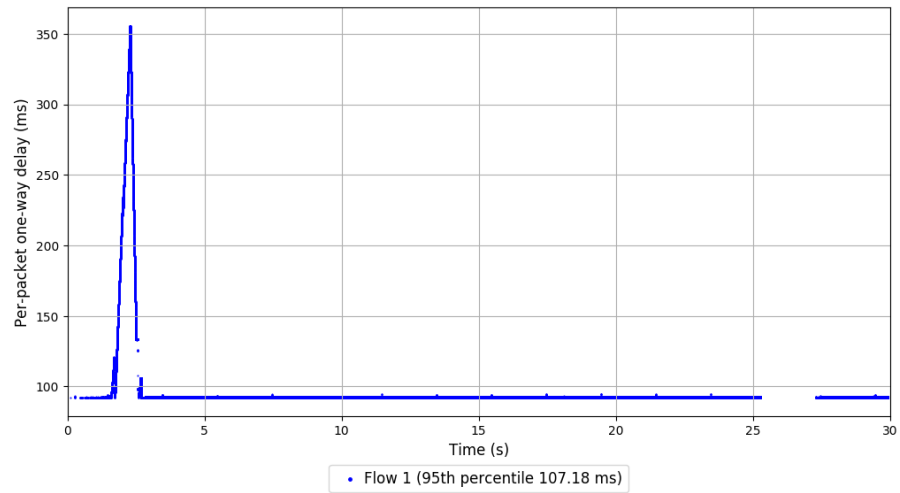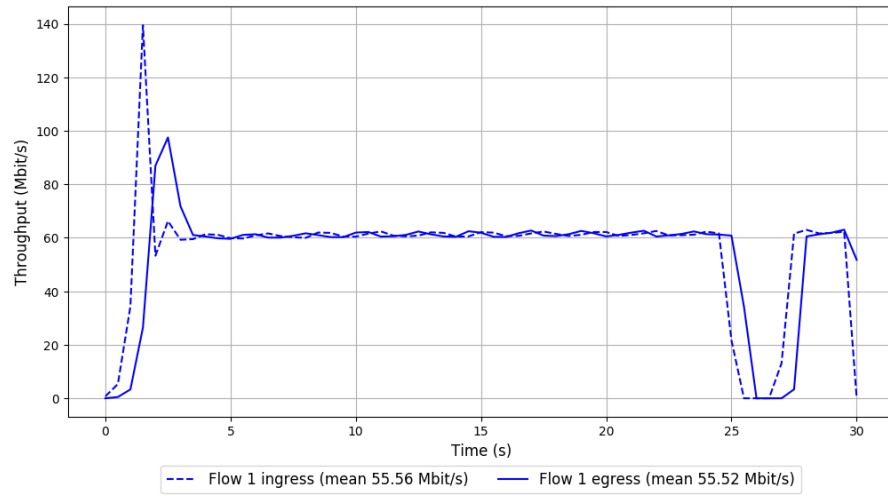
Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 55.56 Mbit/s)   Flow 1 egress (mean 55.52 Mbit/s)

Flow 1 (95th percentile 107.18 ms)

```
Run 1: Statistics of Verus

Start at: 2018-12-02 09:39:36
End at: 2018-12-02 09:40:06
Local clock offset: -1.51 ms
Remote clock offset: 8.027 ms


# Below is generated by plot.py at 2018-12-02 11:38:35
# Datalink statistics
-- Total of 1 flow:
Average throughput: 46.95 Mbit/s
95th percentile per-packet one-way delay: 249.454 ms
Loss rate: 0.36%
-- Flow 1:
Average throughput: 46.95 Mbit/s
95th percentile per-packet one-way delay: 249.454 ms
Loss rate: 0.36%
```
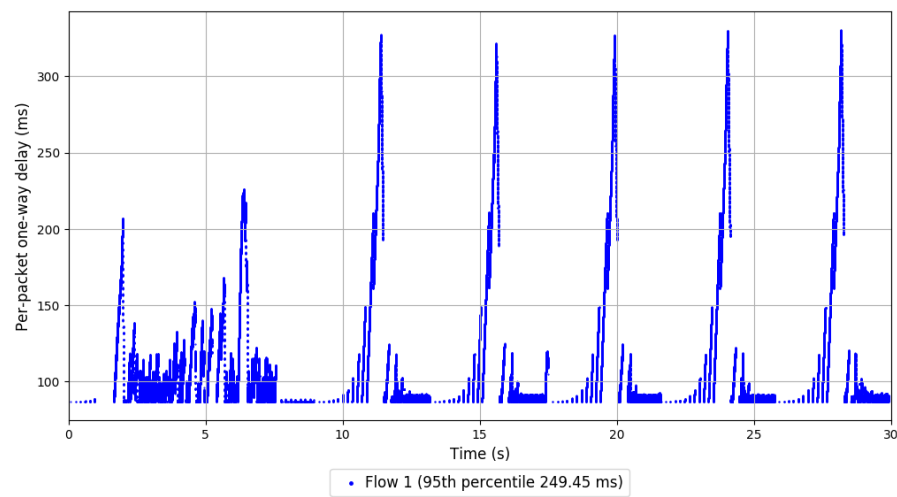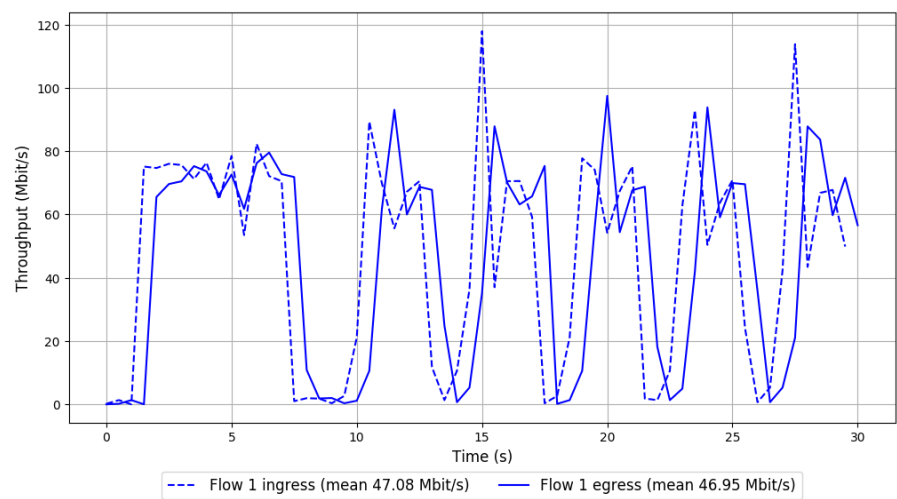
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-12-02 10:02:39
End at: 2018-12-02 10:03:09
Local clock offset: -6.221 ms
Remote clock offset: 3.973 ms


# Below is generated by plot.py at 2018-12-02 11:38:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 45.03 Mbit/s
95th percentile per-packet one-way delay: 282.046 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 45.03 Mbit/s
95th percentile per-packet one-way delay: 282.046 ms
Loss rate: 0.08%
```
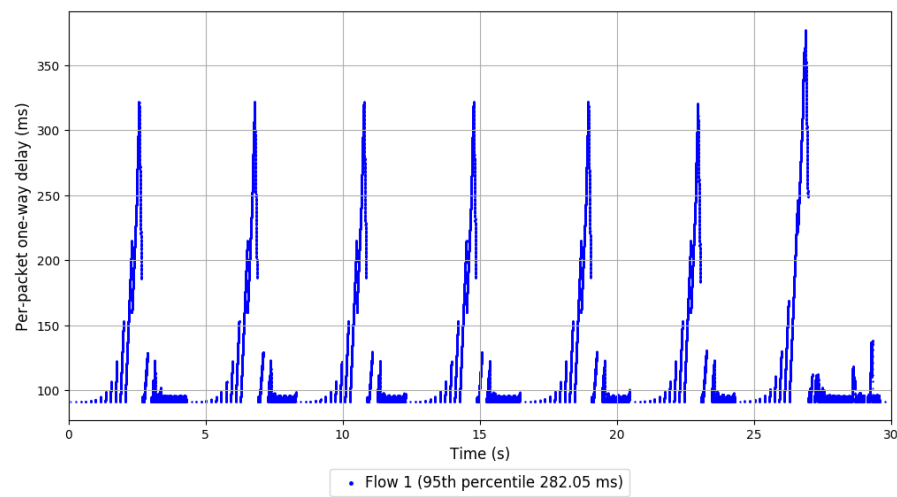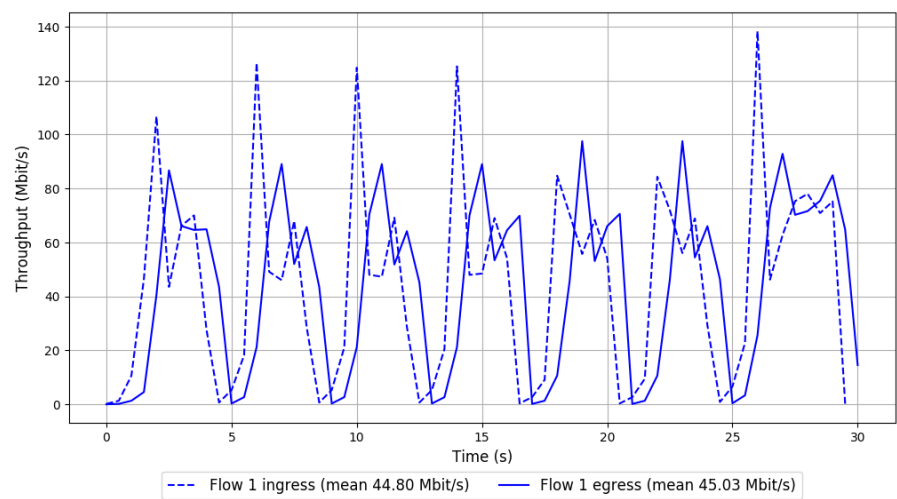
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-02 10:25:16
End at: 2018-12-02 10:25:46
Local clock offset: -3.724 ms
Remote clock offset: 4.849 ms


# Below is generated by plot.py at 2018-12-02 11:39:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.60 Mbit/s
95th percentile per-packet one-way delay: 223.069 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 60.60 Mbit/s
95th percentile per-packet one-way delay: 223.069 ms
Loss rate: 0.59%
```
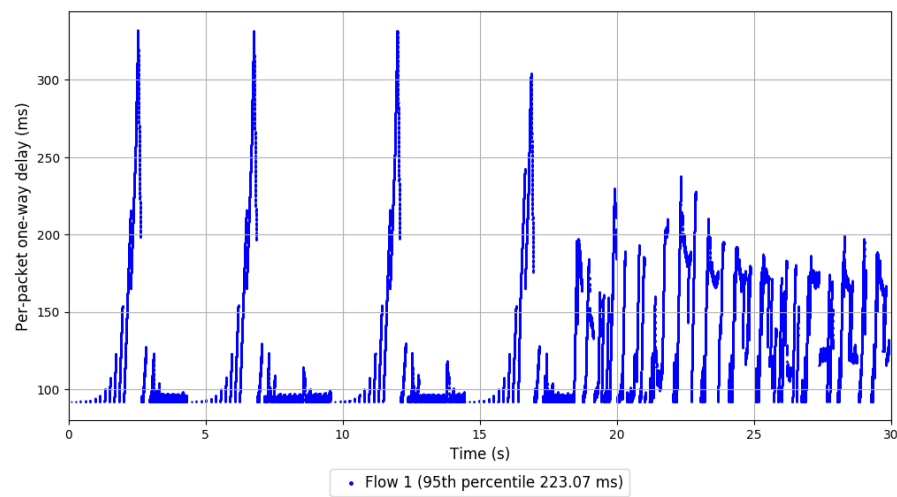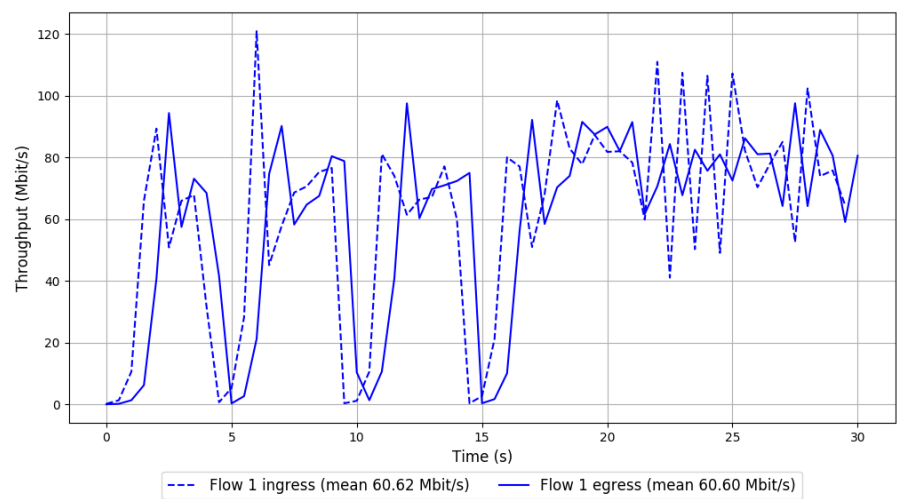
Run 3: Report of Verus — Data Link

Flow 1 ingress (mean 60.62 Mbit/s)   Flow 1 egress (mean 60.60 Mbit/s)
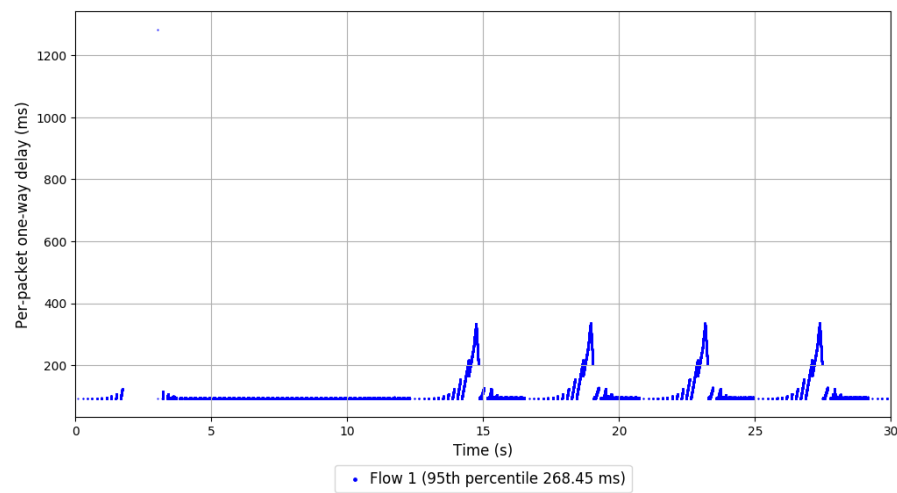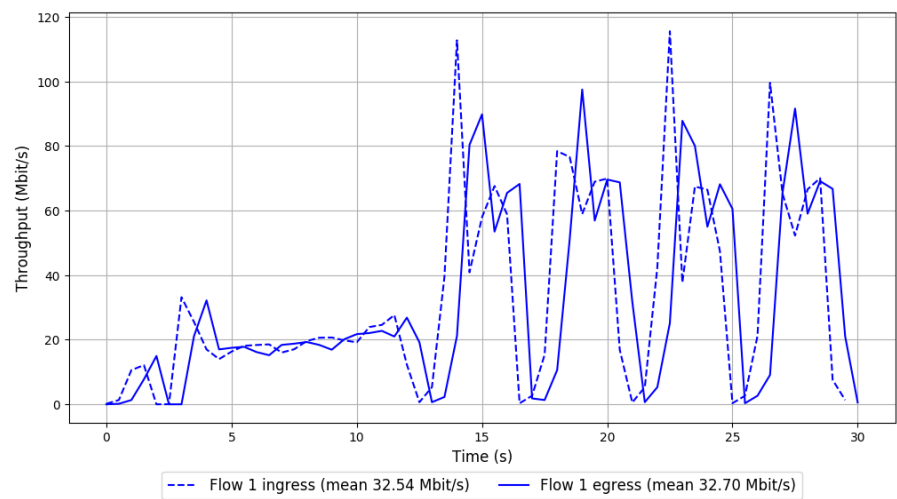

Flow 1 (95th percentile 223.07 ms)

```
Run 4: Statistics of Verus

Start at: 2018-12-02 10:48:10
End at: 2018-12-02 10:48:40
Local clock offset: -1.984 ms
Remote clock offset: 4.566 ms


# Below is generated by plot.py at 2018-12-02 11:39:07
# Datalink statistics
-- Total of 1 flow:
Average throughput: 32.70 Mbit/s
95th percentile per-packet one-way delay: 268.455 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 32.70 Mbit/s
95th percentile per-packet one-way delay: 268.455 ms
Loss rate: 0.10%
```

Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-12-02 11:10:51
End at: 2018-12-02 11:11:21
Local clock offset: -5.854 ms
Remote clock offset: 9.681 ms


# Below is generated by plot.py at 2018-12-02 11:39:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.46 Mbit/s
95th percentile per-packet one-way delay: 174.447 ms
Loss rate: 1.23%
-- Flow 1:
Average throughput: 71.46 Mbit/s
95th percentile per-packet one-way delay: 174.447 ms
Loss rate: 1.23%
```
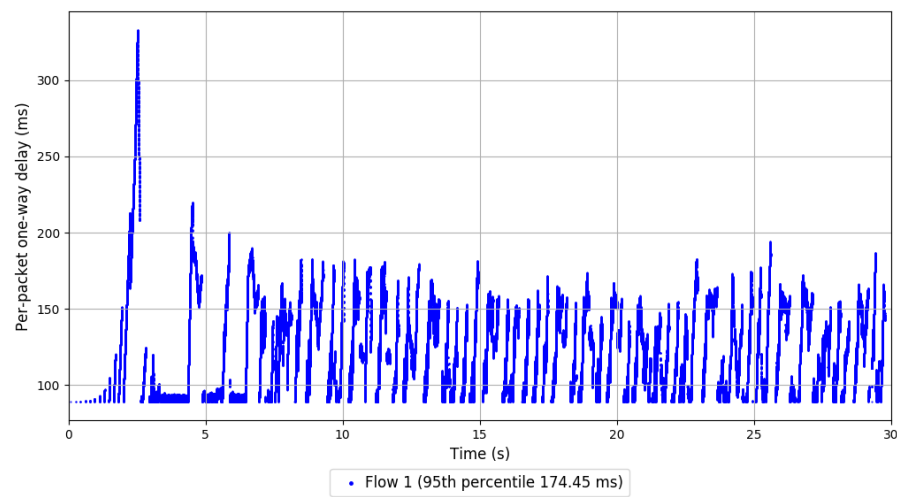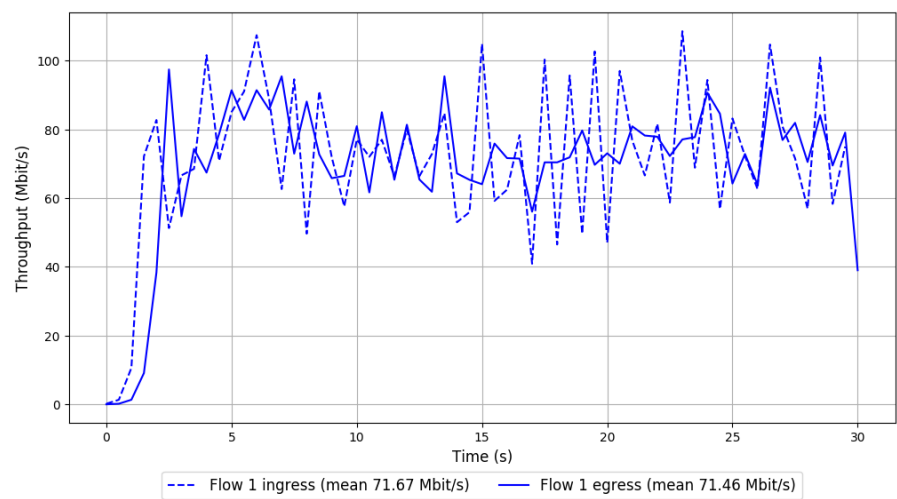
Run 5: Report of Verus — Data Link

Flow 1 ingress (mean 71.67 Mbit/s) —— Flow 1 egress (mean 71.46 Mbit/s)

• Flow 1 (95th percentile 174.45 ms)

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-02 09:38:23
End at: 2018-12-02 09:38:53
Local clock offset: -1.552 ms
Remote clock offset: 8.179 ms


# Below is generated by plot.py at 2018-12-02 11:39:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 49.73 Mbit/s
95th percentile per-packet one-way delay: 93.626 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 49.73 Mbit/s
95th percentile per-packet one-way delay: 93.626 ms
Loss rate: 1.10%
```
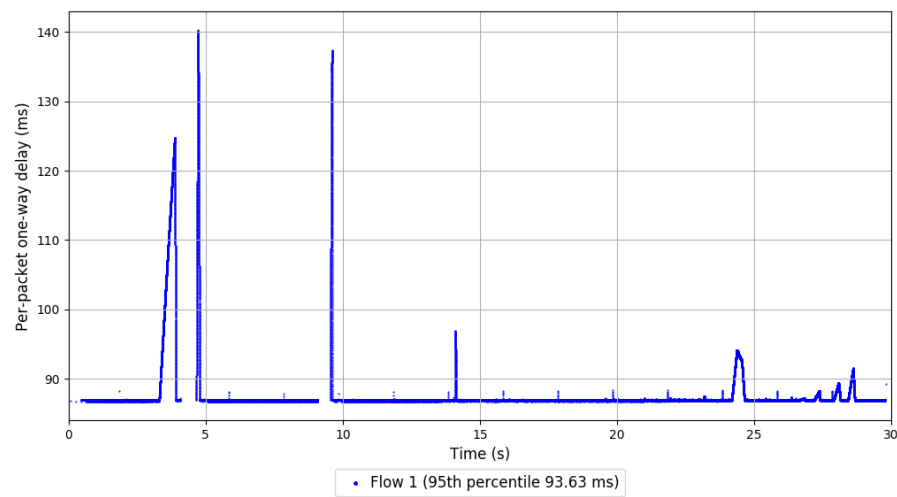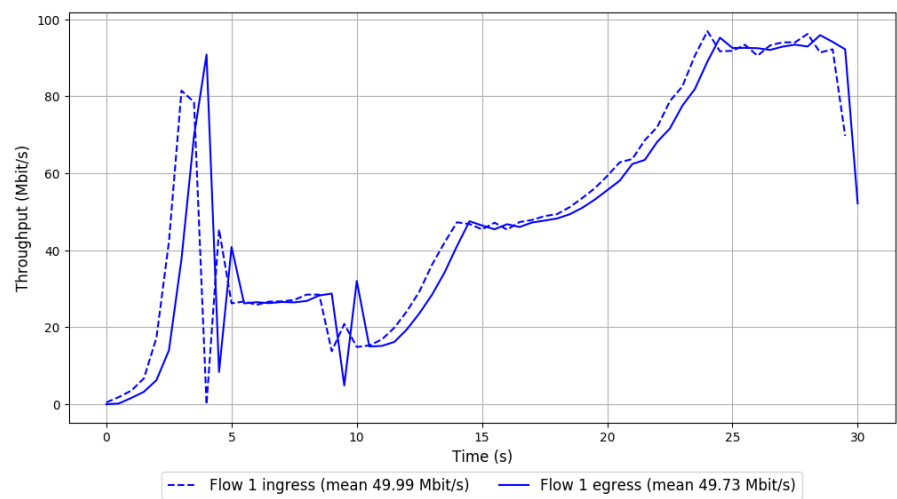
Run 1: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 49.99 Mbit/s)   Flow 1 egress (mean 49.73 Mbit/s)

Flow 1 (95th percentile 93.63 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-02 10:01:25
End at: 2018-12-02 10:01:55
Local clock offset: -5.299 ms
Remote clock offset: 4.203 ms


# Below is generated by plot.py at 2018-12-02 11:39:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 76.77 Mbit/s
95th percentile per-packet one-way delay: 100.795 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 76.77 Mbit/s
95th percentile per-packet one-way delay: 100.795 ms
Loss rate: 0.72%
```
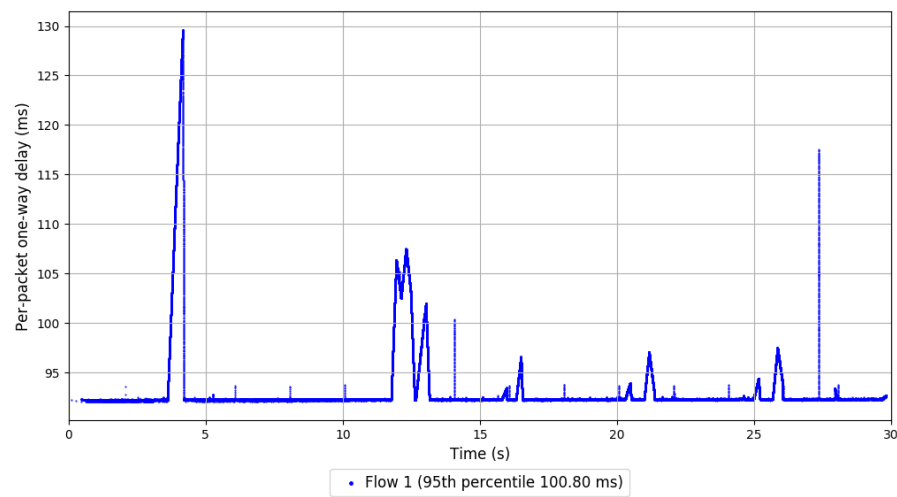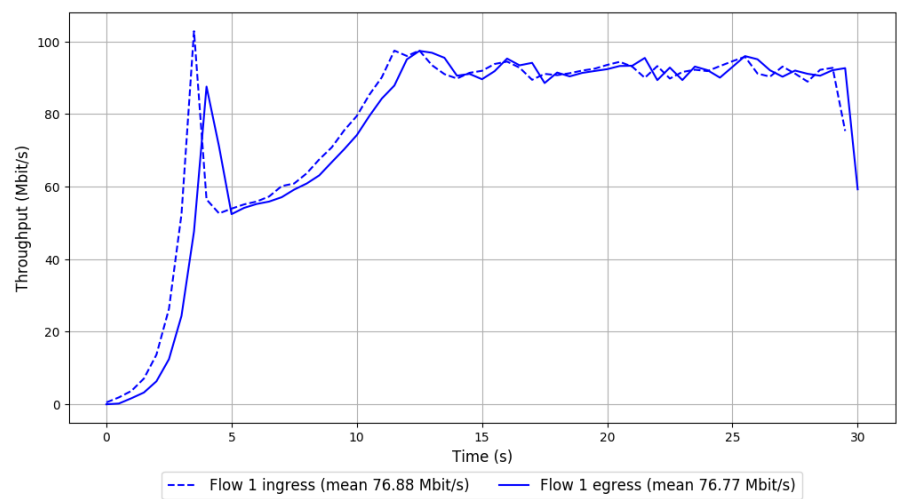
Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 76.88 Mbit/s)   Flow 1 egress (mean 76.77 Mbit/s)

Flow 1 (95th percentile 100.80 ms)

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-02 10:24:01
End at: 2018-12-02 10:24:31
Local clock offset: -4.039 ms
Remote clock offset: 4.023 ms


# Below is generated by plot.py at 2018-12-02 11:39:23
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.56 Mbit/s
95th percentile per-packet one-way delay: 187.750 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 60.56 Mbit/s
95th percentile per-packet one-way delay: 187.750 ms
Loss rate: 0.90%
```
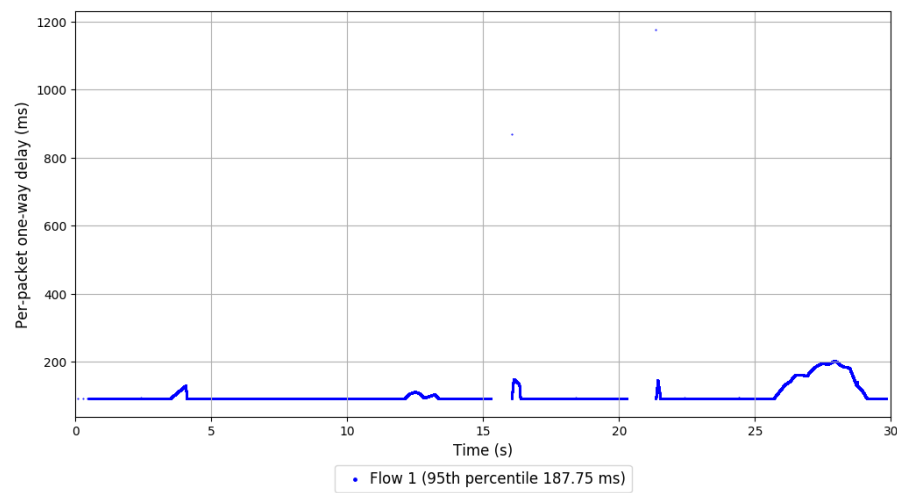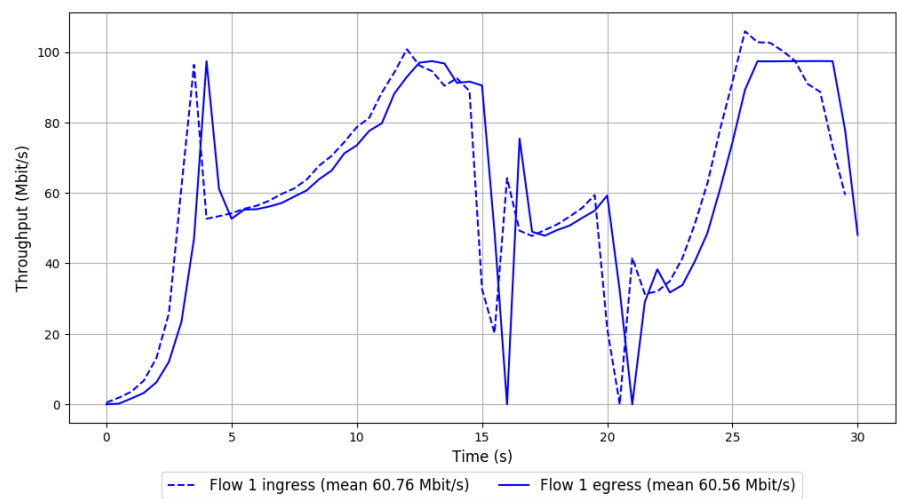
Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 60.76 Mbit/s)　　Flow 1 egress (mean 60.56 Mbit/s)

Flow 1 (95th percentile 187.75 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-02 10:46:57
End at: 2018-12-02 10:47:27
Local clock offset: -1.934 ms
Remote clock offset: 4.688 ms


# Below is generated by plot.py at 2018-12-02 11:39:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 75.50 Mbit/s
95th percentile per-packet one-way delay: 128.967 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 75.50 Mbit/s
95th percentile per-packet one-way delay: 128.967 ms
Loss rate: 0.77%
```
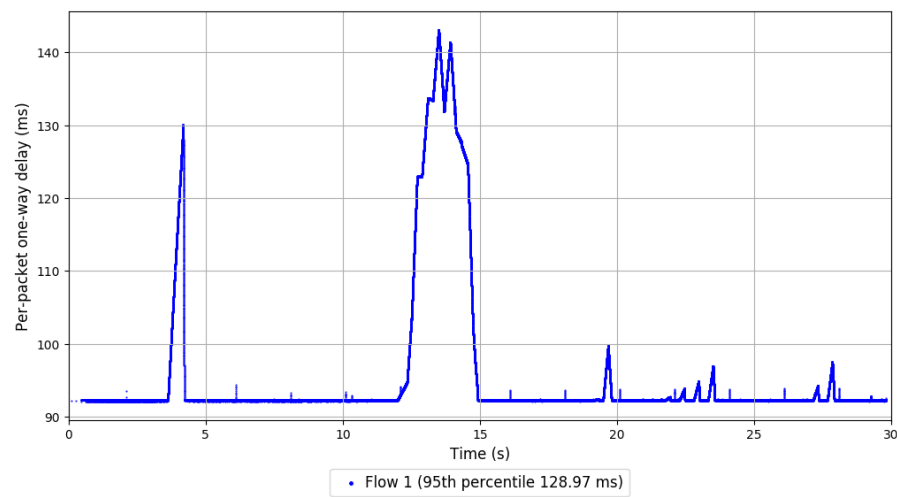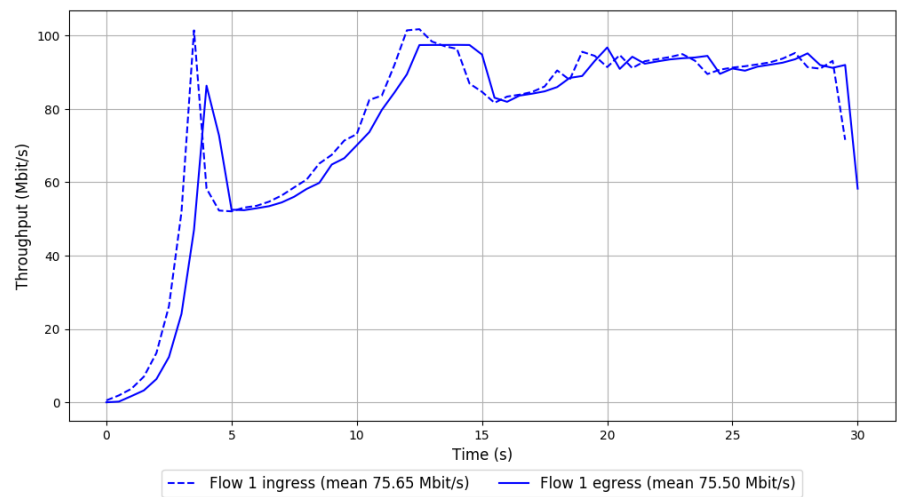
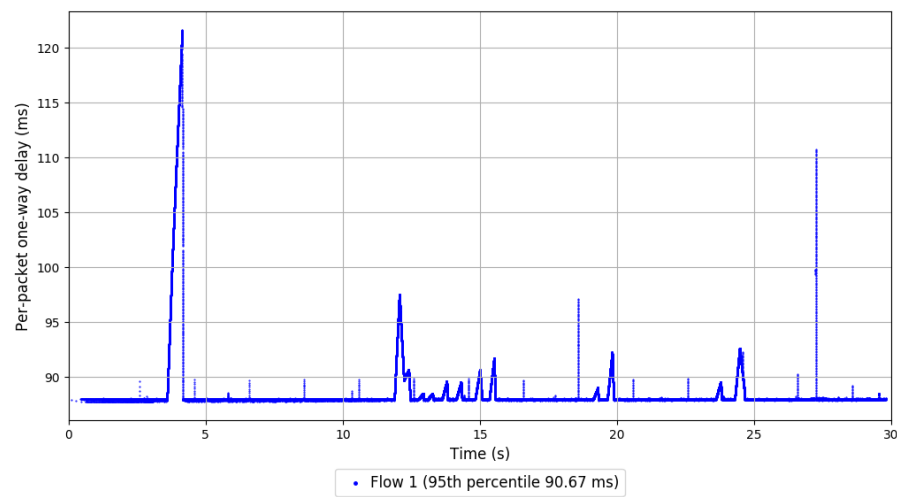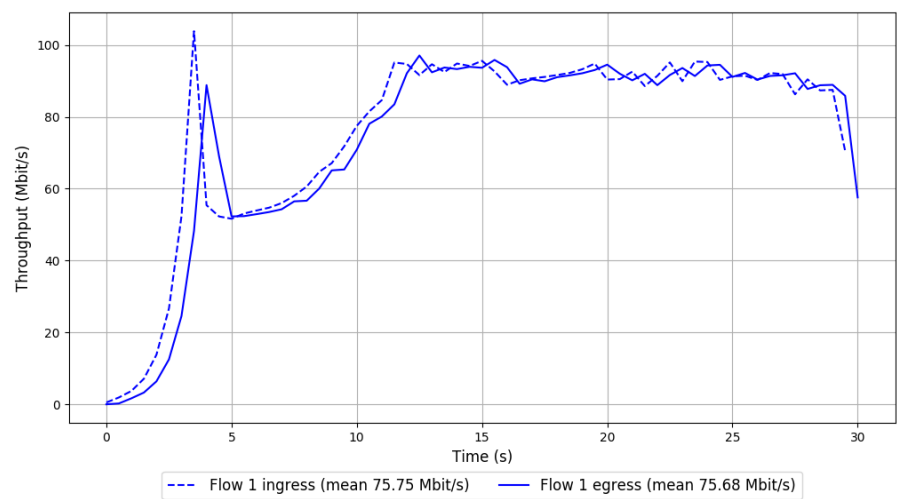# Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-02 11:09:37
End at: 2018-12-02 11:10:07
Local clock offset: -5.687 ms
Remote clock offset: 10.565 ms


# Below is generated by plot.py at 2018-12-02 11:39:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 75.68 Mbit/s
95th percentile per-packet one-way delay: 90.671 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 75.68 Mbit/s
95th percentile per-packet one-way delay: 90.671 ms
Loss rate: 0.67%
```

Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 75.75 Mbit/s)   Flow 1 egress (mean 75.68 Mbit/s)

Flow 1 (95th percentile 90.67 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-02 09:52:59
End at: 2018-12-02 09:53:29
Local clock offset: -3.546 ms
Remote clock offset: 2.75 ms


# Below is generated by plot.py at 2018-12-02 11:39:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 93.789 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 93.789 ms
Loss rate: 0.68%
```
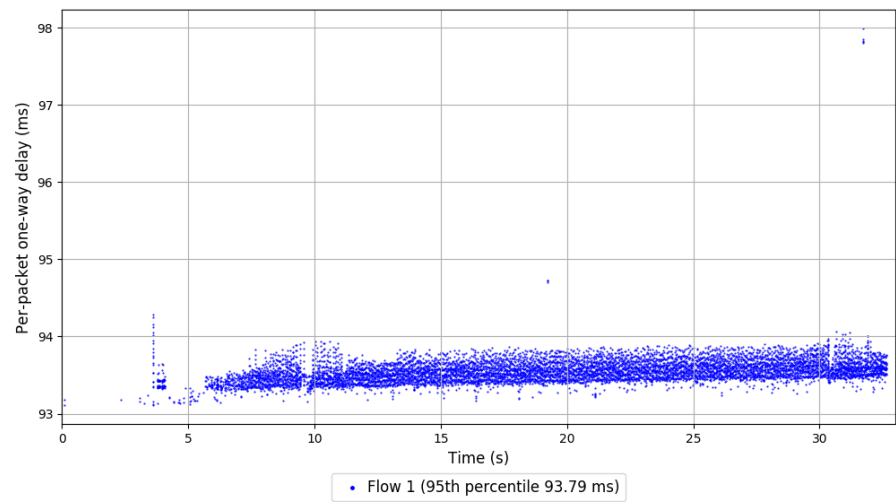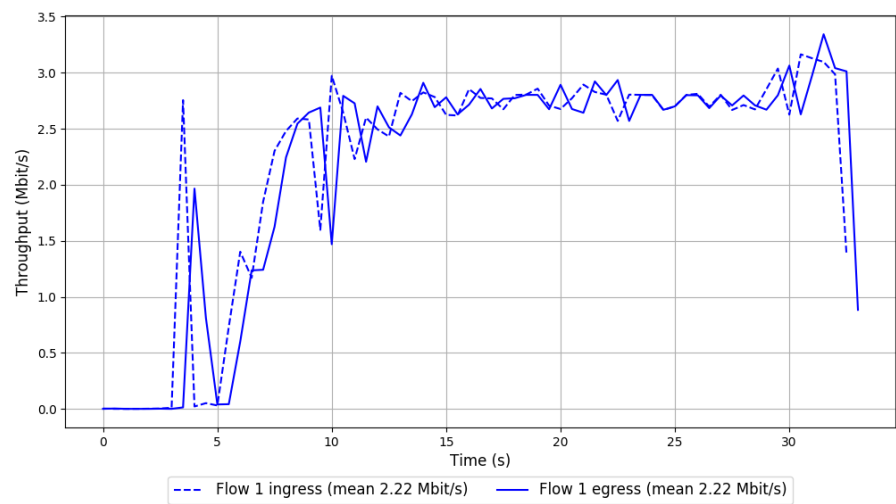
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-02 10:15:48
End at: 2018-12-02 10:16:18
Local clock offset: -6.576 ms
Remote clock offset: 3.586 ms


# Below is generated by plot.py at 2018-12-02 11:39:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 93.821 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 93.821 ms
Loss rate: 0.00%
```
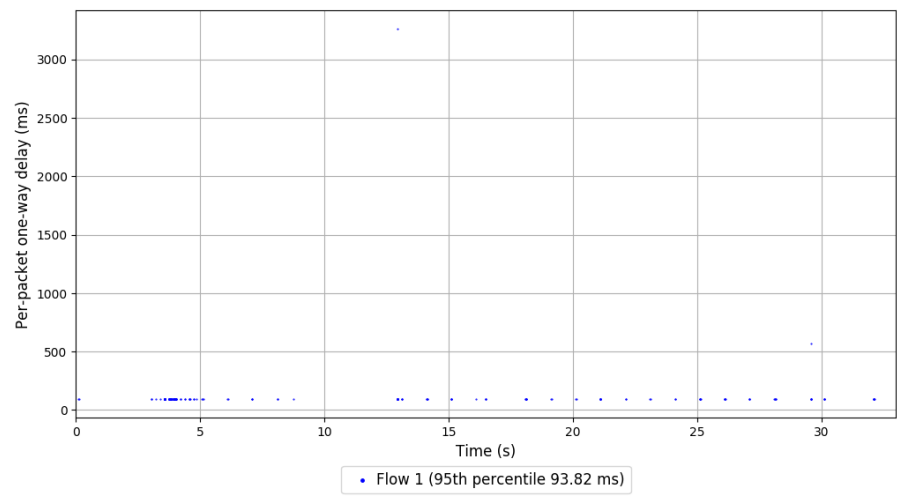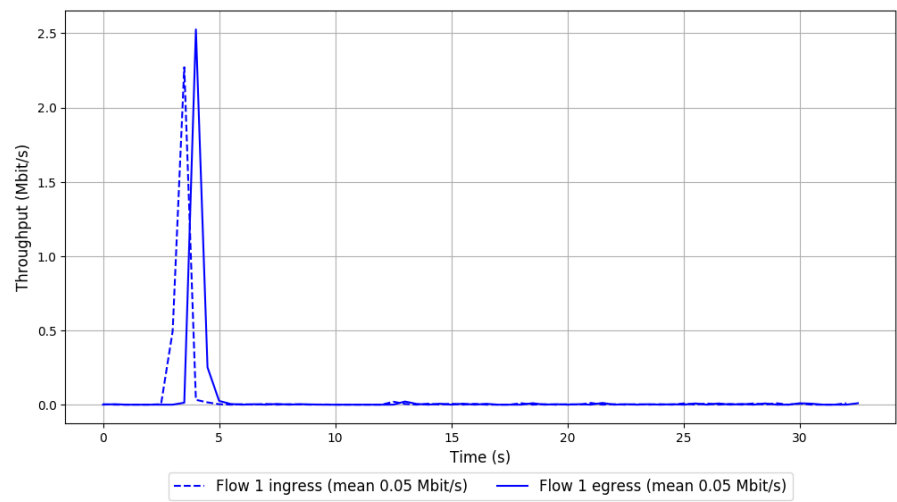
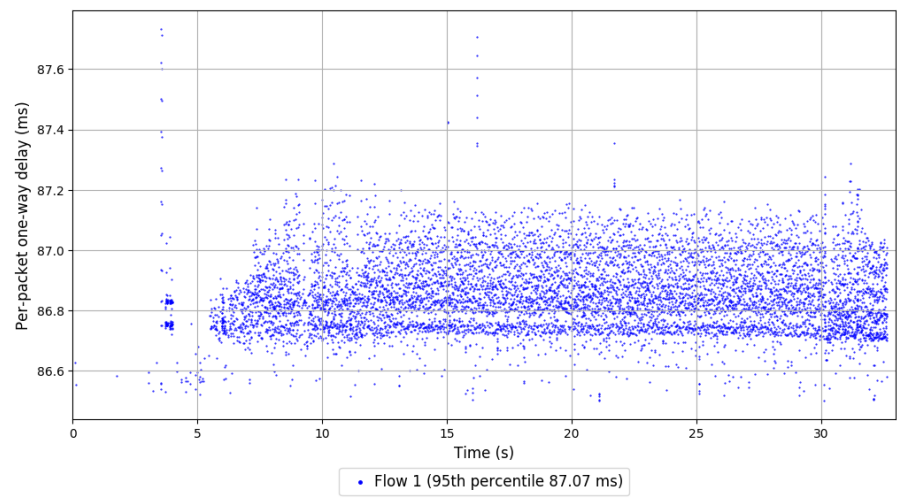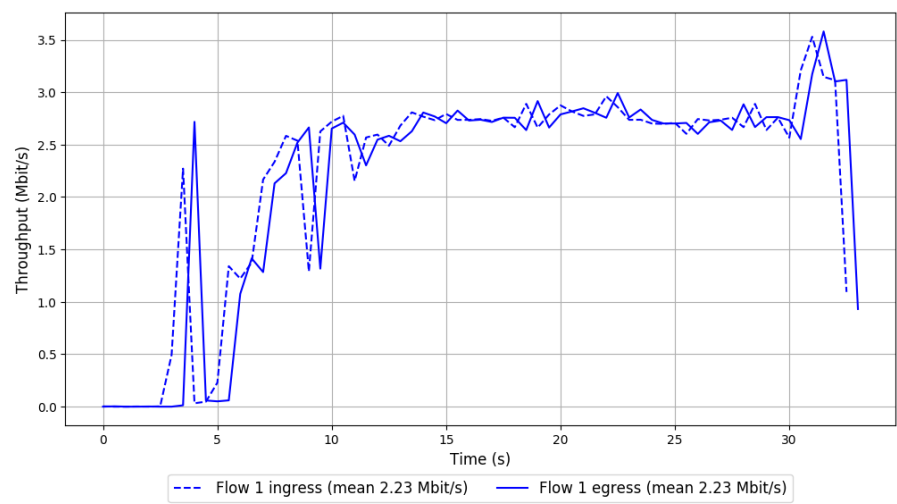Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-02 10:38:38
End at: 2018-12-02 10:39:08
Local clock offset: -1.712 ms
Remote clock offset: 10.687 ms


# Below is generated by plot.py at 2018-12-02 11:39:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.23 Mbit/s
95th percentile per-packet one-way delay: 87.074 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 2.23 Mbit/s
95th percentile per-packet one-way delay: 87.074 ms
Loss rate: 0.47%
```

Run 3: Report of WebRTC media — Data Link

190

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-02 11:01:19
End at: 2018-12-02 11:01:49
Local clock offset: -4.956 ms
Remote clock offset: 5.319 ms


# Below is generated by plot.py at 2018-12-02 11:39:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 93.293 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 93.293 ms
Loss rate: 0.00%
```
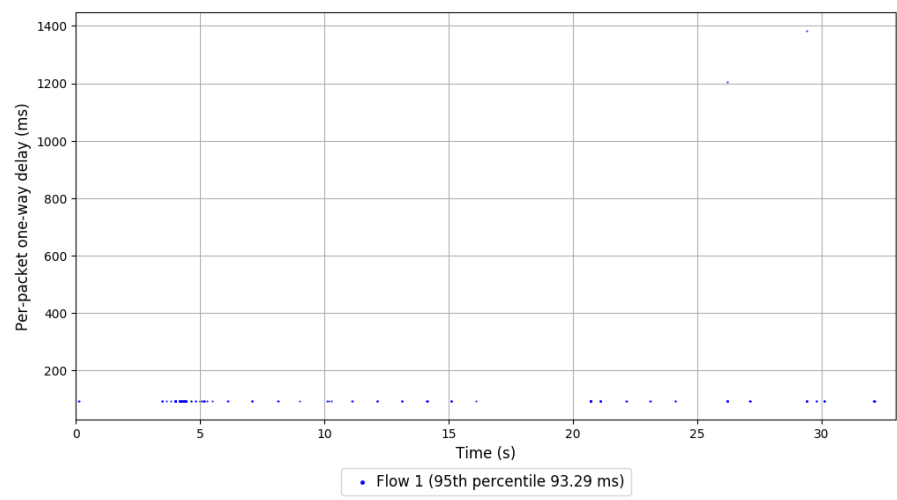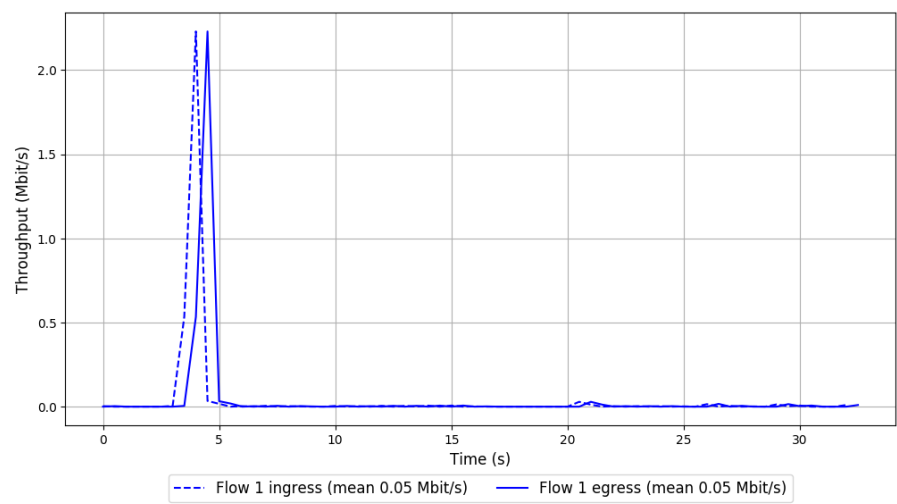
Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-02 11:24:07
End at: 2018-12-02 11:24:37
Local clock offset: -6.189 ms
Remote clock offset: 7.16 ms


# Below is generated by plot.py at 2018-12-02 11:39:24
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 92.247 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 2.24 Mbit/s
95th percentile per-packet one-way delay: 92.247 ms
Loss rate: 0.29%
```

Run 5: Report of WebRTC media — Data Link

Flow 1 ingress (mean 2.23 Mbit/s)   Flow 1 egress (mean 2.24 Mbit/s)

Flow 1 (95th percentile 92.25 ms)