Pantheon Report

Generated at 2018-09-06 06:33:20 (UTC).

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

Repeated the test of 18 congestion control schemes 5 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against `gps.ntp.br` and have been applied to correct the timestamps in logs.
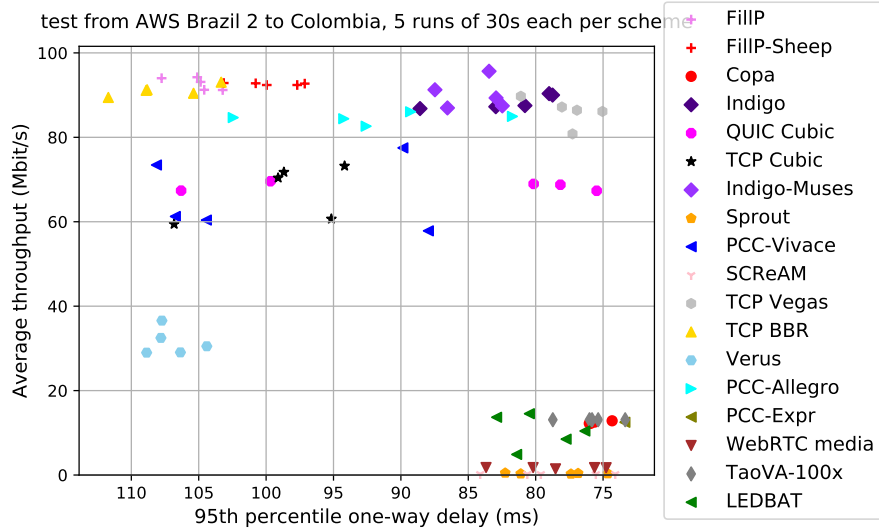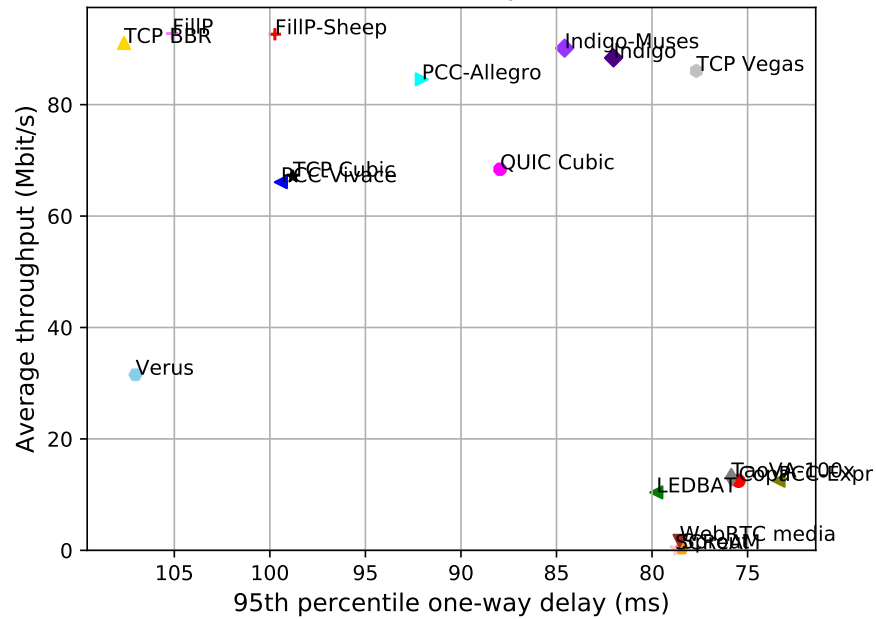
```
System info:
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

```
Git summary:
branch: muses @ f392ce15d580343f4432c3d7e068b3290f03eb4a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ a28d20fb82a95a965a3da65fd1eb71b8994e9b84
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
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
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS Brazil 2 to Colombia, 5 runs of 30s each per scheme (mean of all runs by scheme)

test from AWS Brazil 2 to Colombia, 5 runs of 30s each per scheme

2

scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	5	91.07	107.63	2.97
Copa	4	12.46	75.47	69.77
TCP Cubic	5	67.09	98.79	1.08
FillP	5	92.76	105.11	7.62
FillP-Sheep	5	92.63	99.74	2.07
Indigo	5	88.39	82.02	3.68
LEDBAT	5	10.40	79.78	0.12
Indigo-Muses	5	90.13	84.58	2.51
PCC-Allegro	5	84.54	92.05	3.85
PCC-Expr	1	12.50	73.38	48.61
QUIC Cubic	5	68.41	87.95	0.64
SCReAM	5	0.22	78.80	0.25
Sprout	5	0.35	78.45	1.80
TaoVA-100x	5	13.10	75.85	12.91
TCP Vegas	5	86.05	77.68	0.39
Verus	5	31.52	107.03	15.65
PCC-Vivace	5	66.09	99.43	1.77
WebRTC media	5	1.70	78.56	0.59

```
Run 1: Statistics of TCP BBR

Start at: 2018-09-06 04:53:04
End at: 2018-09-06 04:53:34
Local clock offset: 3.963 ms
Remote clock offset: -0.198 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.07 Mbit/s
95th percentile per-packet one-way delay: 103.332 ms
Loss rate: 1.97%
-- Flow 1:
Average throughput: 93.07 Mbit/s
95th percentile per-packet one-way delay: 103.332 ms
Loss rate: 1.97%
```
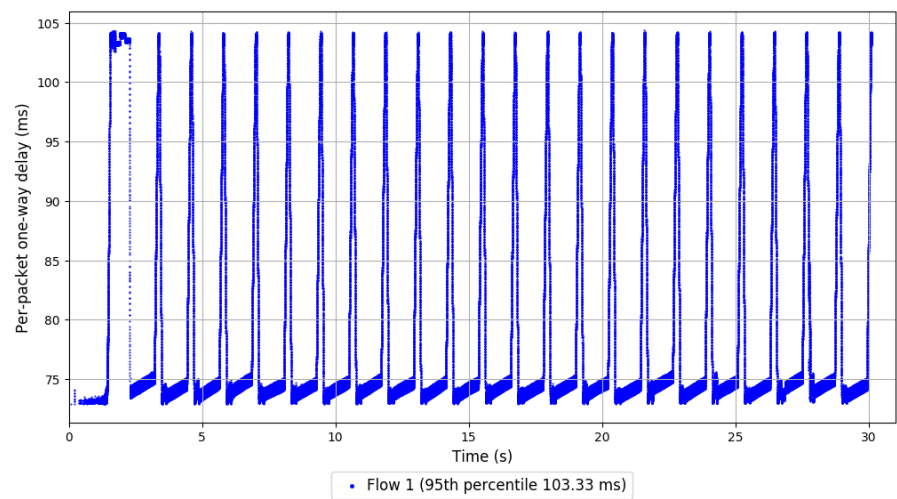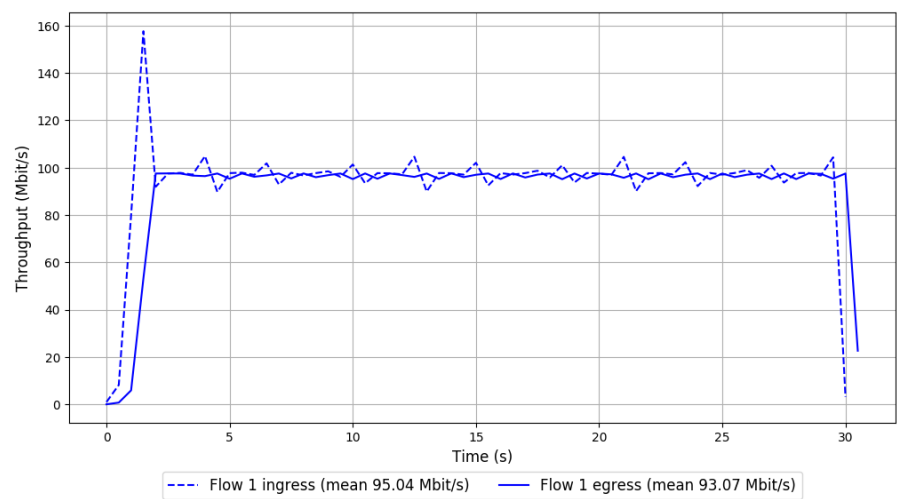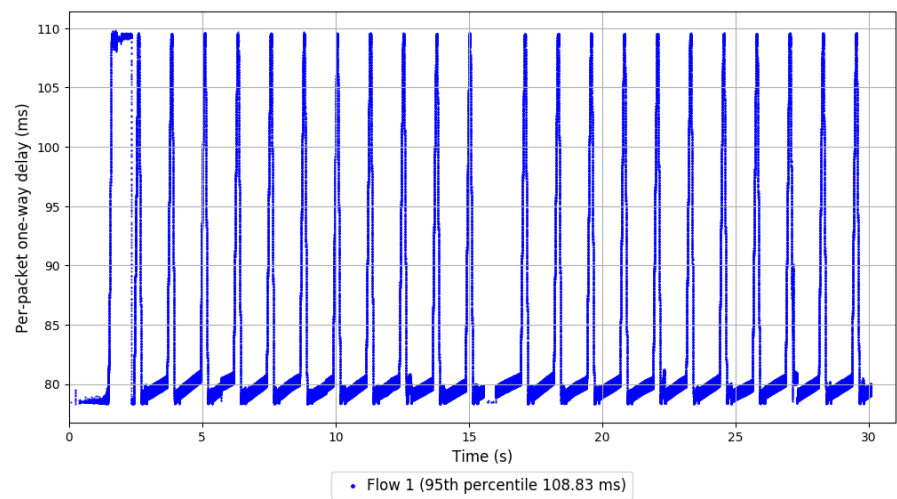
Run 1: Report of TCP BBR — Data Link

```
Run 2: Statistics of TCP BBR

Start at: 2018-09-06 05:14:05
End at: 2018-09-06 05:14:35
Local clock offset: 5.049 ms
Remote clock offset: 1.165 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.27 Mbit/s
95th percentile per-packet one-way delay: 108.828 ms
Loss rate: 2.72%
-- Flow 1:
Average throughput: 91.27 Mbit/s
95th percentile per-packet one-way delay: 108.828 ms
Loss rate: 2.72%
```
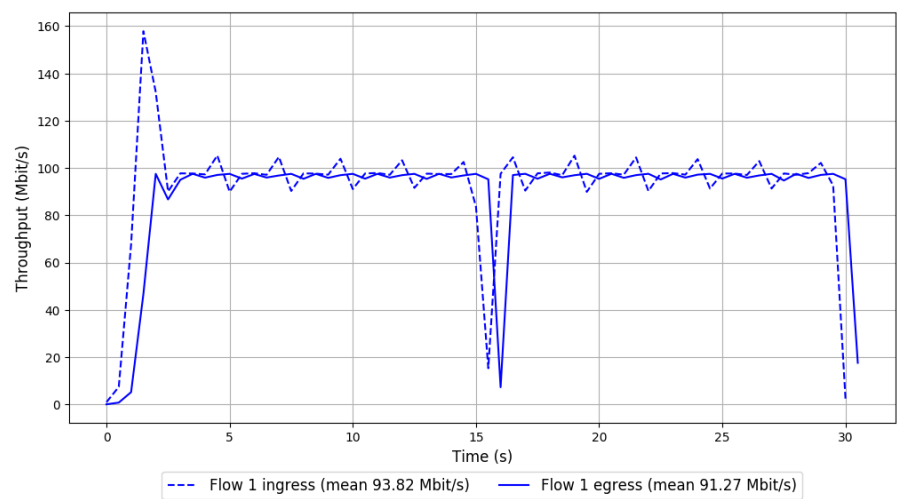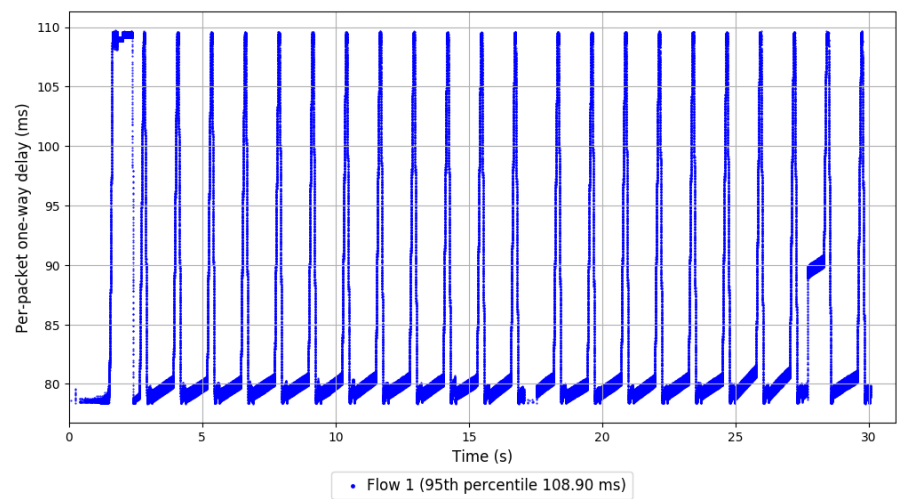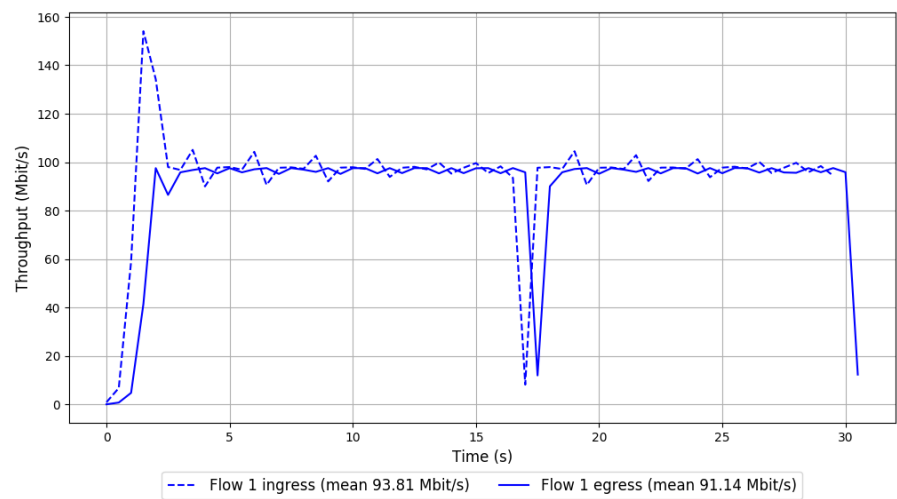
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 93.82 Mbit/s)   Flow 1 egress (mean 91.27 Mbit/s)

Flow 1 (95th percentile 108.83 ms)

```
Run 3: Statistics of TCP BBR

Start at: 2018-09-06 05:35:00
End at: 2018-09-06 05:35:30
Local clock offset: 5.028 ms
Remote clock offset: 1.481 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.14 Mbit/s
95th percentile per-packet one-way delay: 108.898 ms
Loss rate: 2.85%
-- Flow 1:
Average throughput: 91.14 Mbit/s
95th percentile per-packet one-way delay: 108.898 ms
Loss rate: 2.85%
```
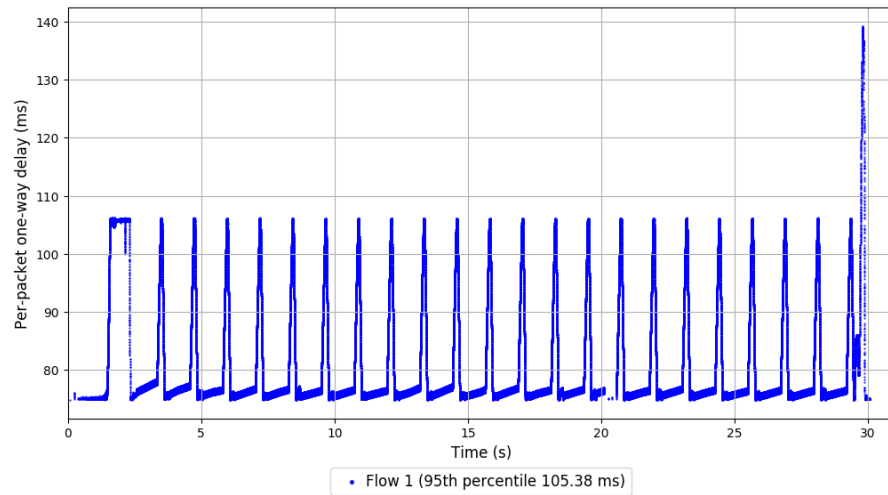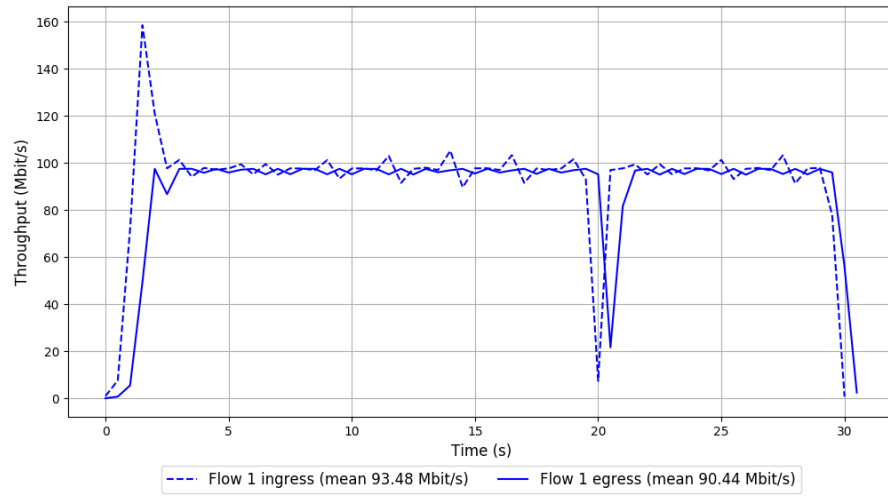
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 93.81 Mbit/s) Flow 1 egress (mean 91.14 Mbit/s)

Flow 1 (95th percentile 108.90 ms)

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```
Run 4: Statistics of TCP BBR

Start at: 2018-09-06 05:56:09
End at: 2018-09-06 05:56:39
Local clock offset: 4.639 ms
Remote clock offset: 0.302 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.44 Mbit/s
95th percentile per-packet one-way delay: 105.384 ms
Loss rate: 3.29%
-- Flow 1:
Average throughput: 90.44 Mbit/s
95th percentile per-packet one-way delay: 105.384 ms
Loss rate: 3.29%
```
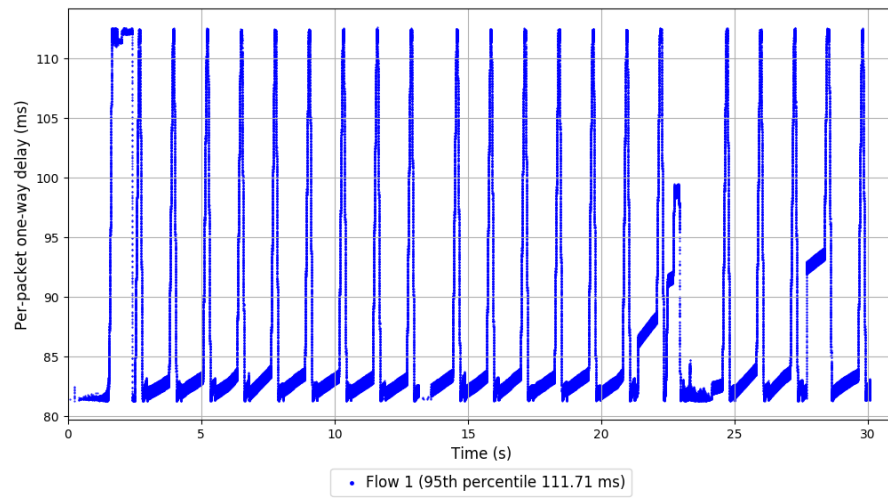
Run 4: Report of TCP BBR — Data Link

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```
Run 5: Statistics of TCP BBR

Start at: 2018-09-06 06:17:16
End at: 2018-09-06 06:17:46
Local clock offset: 3.429 ms
Remote clock offset: 2.269 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.45 Mbit/s
95th percentile per-packet one-way delay: 111.706 ms
Loss rate: 4.01%
-- Flow 1:
Average throughput: 89.45 Mbit/s
95th percentile per-packet one-way delay: 111.706 ms
Loss rate: 4.01%
```
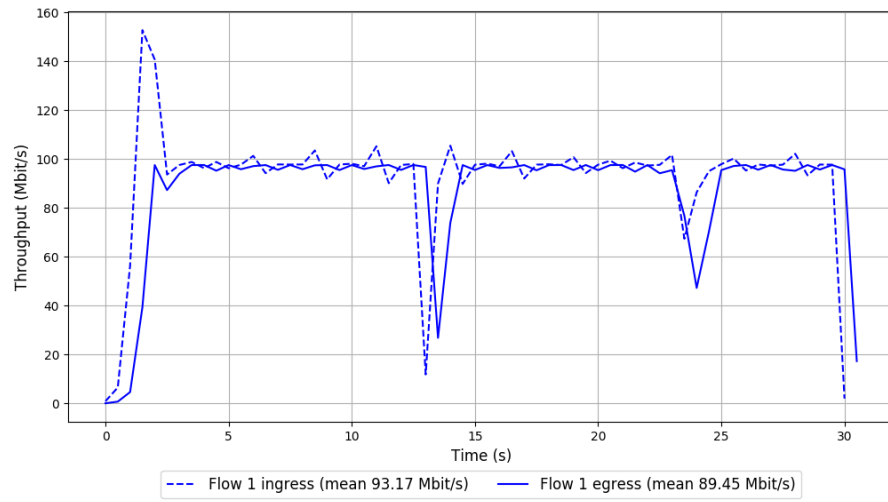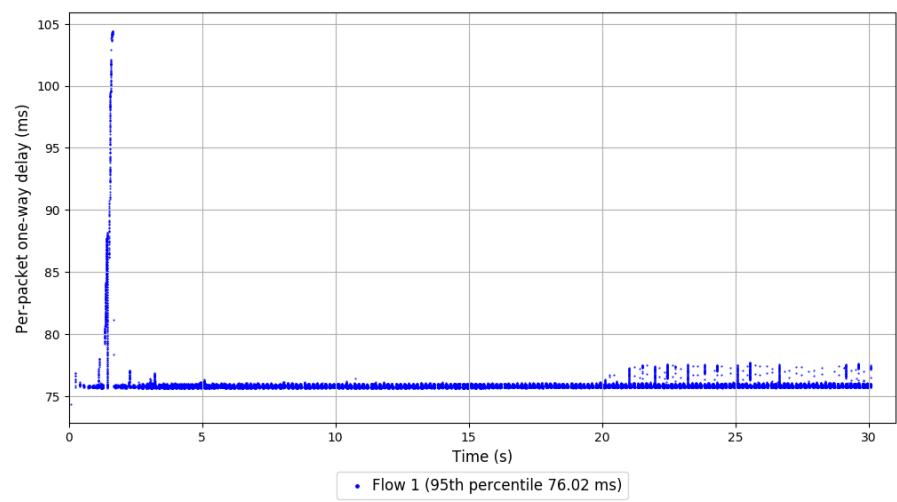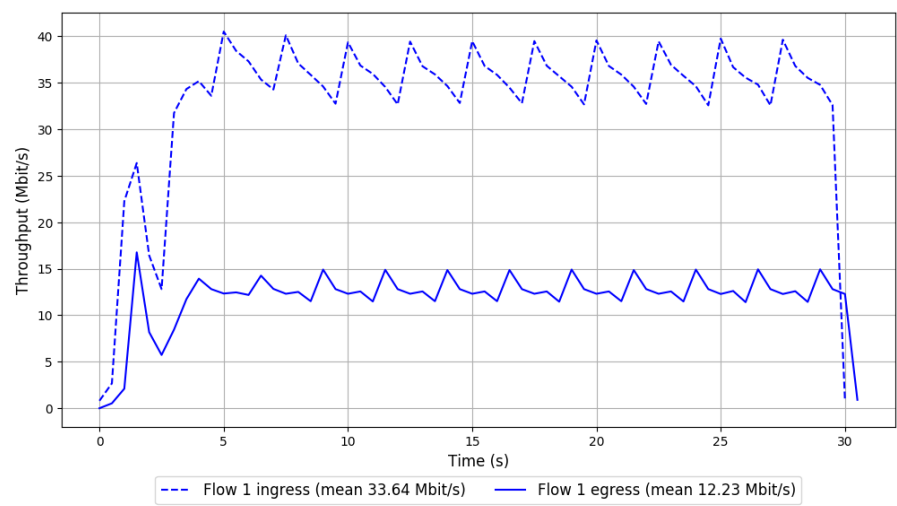
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 93.17 Mbit/s)   Flow 1 egress (mean 89.45 Mbit/s)

Flow 1 (95th percentile 111.71 ms)

```
Run 1: Statistics of Copa

Start at: 2018-09-06 04:56:38
End at: 2018-09-06 04:57:08
Local clock offset: 3.779 ms
Remote clock offset: 0.913 ms

# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.23 Mbit/s
95th percentile per-packet one-way delay: 76.022 ms
Loss rate: 63.64%
-- Flow 1:
Average throughput: 12.23 Mbit/s
95th percentile per-packet one-way delay: 76.022 ms
Loss rate: 63.64%
```
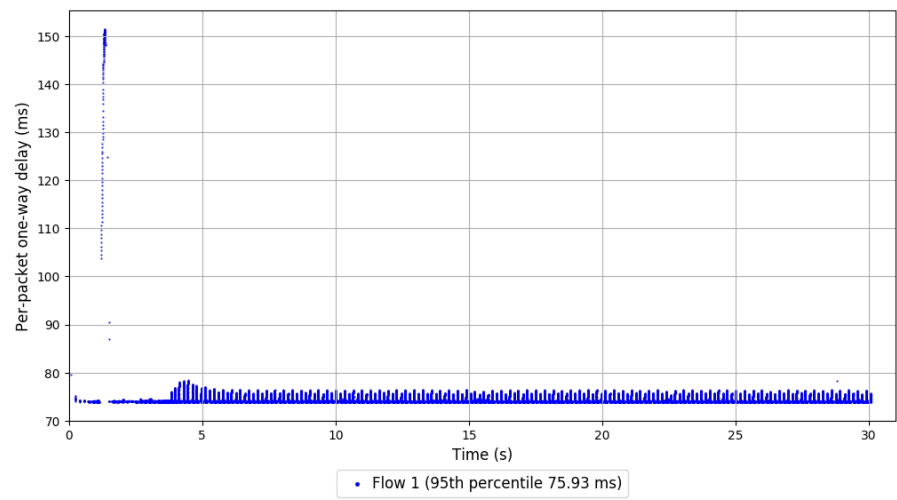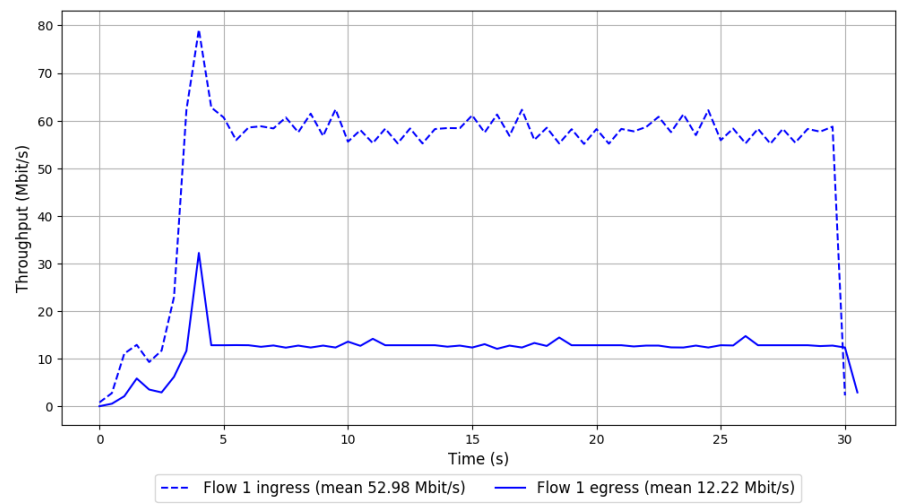
Run 1: Report of Copa — Data Link

Flow 1 ingress (mean 33.64 Mbit/s) ──── Flow 1 egress (mean 12.23 Mbit/s)

Flow 1 (95th percentile 76.02 ms)

```
Run 2: Statistics of Copa

Start at: 2018-09-06 05:17:38
End at: 2018-09-06 05:18:09
Local clock offset: 5.094 ms
Remote clock offset: 1.034 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.22 Mbit/s
95th percentile per-packet one-way delay: 75.934 ms
Loss rate: 76.94%
-- Flow 1:
Average throughput: 12.22 Mbit/s
95th percentile per-packet one-way delay: 75.934 ms
Loss rate: 76.94%
```
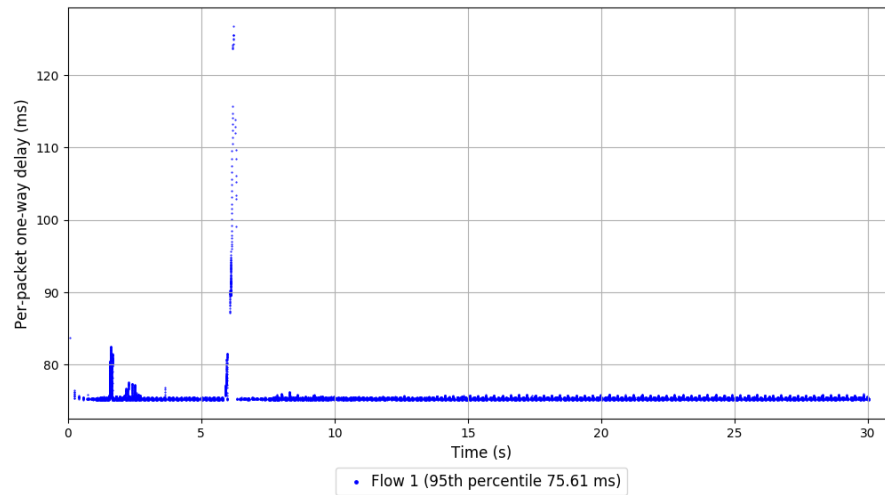
Run 2: Report of Copa — Data Link

```
Run 3: Statistics of Copa

Start at: 2018-09-06 05:38:33
End at: 2018-09-06 05:39:03
Local clock offset: 5.082 ms
Remote clock offset: 2.661 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.55 Mbit/s
95th percentile per-packet one-way delay: 75.613 ms
Loss rate: 69.18%
-- Flow 1:
Average throughput: 12.55 Mbit/s
95th percentile per-packet one-way delay: 75.613 ms
Loss rate: 69.18%
```
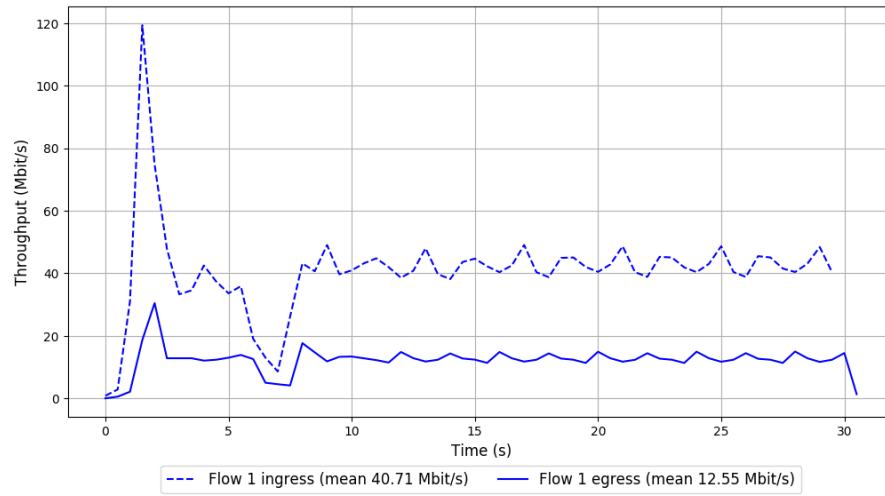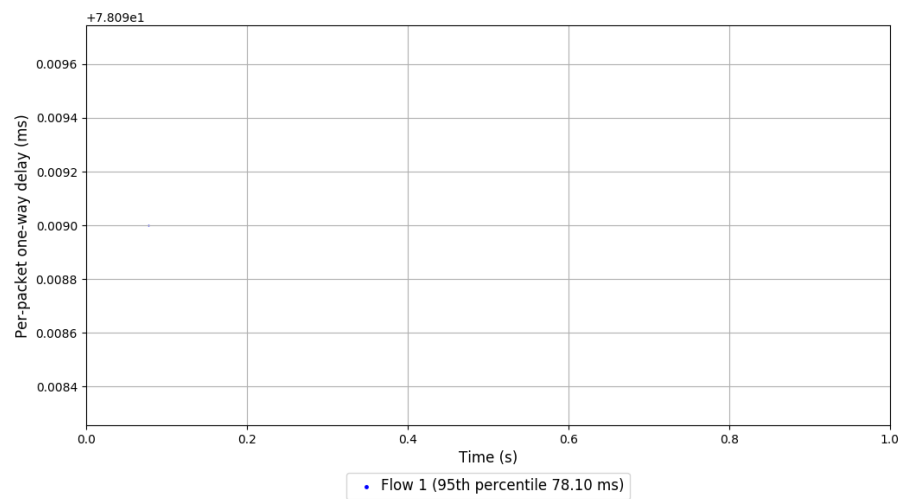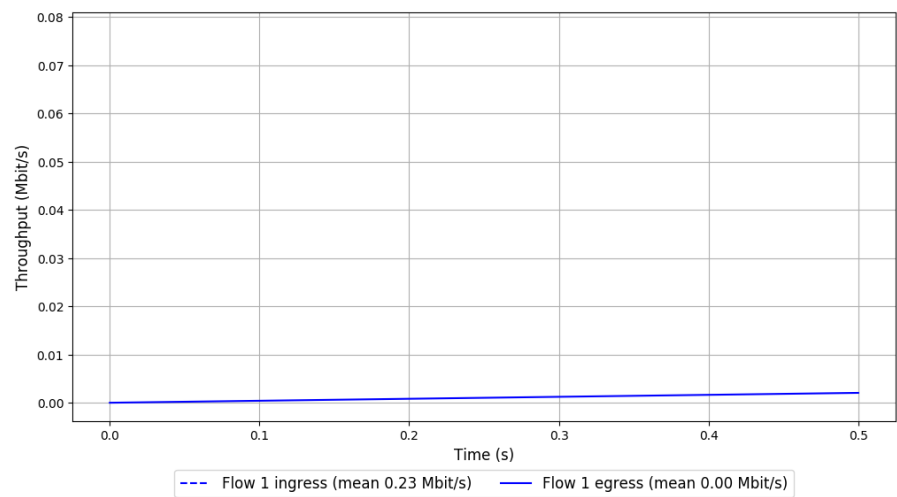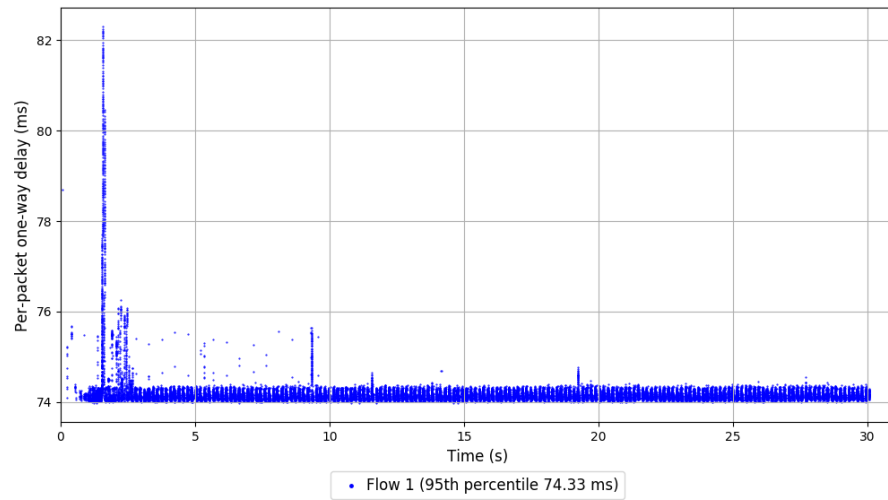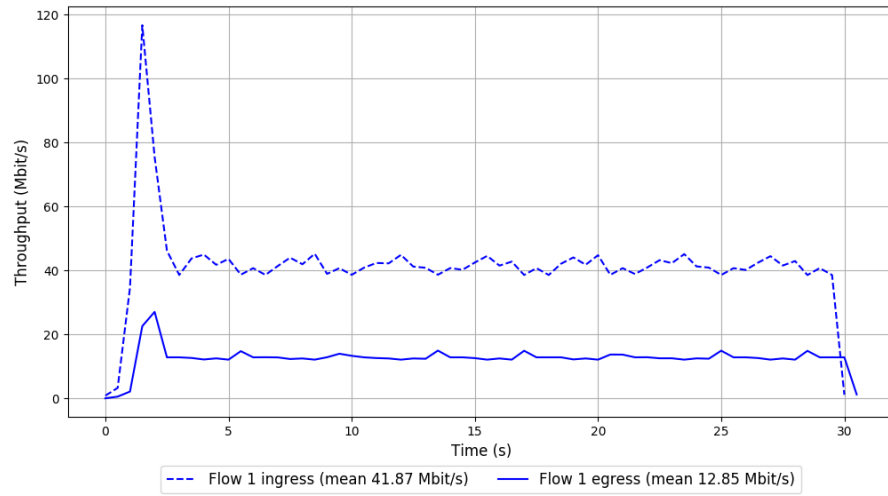
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 40.71 Mbit/s) ---- Flow 1 egress (mean 12.55 Mbit/s) ——

• Flow 1 (95th percentile 75.61 ms)

```
Run 4: Statistics of Copa

Start at: 2018-09-06 05:59:44
End at: 2018-09-06 06:00:14
Local clock offset: 3.696 ms
Remote clock offset: 1.508 ms
```

Run 4: Report of Copa — Data Link

Flow 1 ingress (mean 0.23 Mbit/s) Flow 1 egress (mean 0.00 Mbit/s)

Flow 1 (95th percentile 78.10 ms)

```
Run 5: Statistics of Copa

Start at: 2018-09-06 06:20:53
End at: 2018-09-06 06:21:23
Local clock offset: 3.525 ms
Remote clock offset: 1.237 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.85 Mbit/s
95th percentile per-packet one-way delay: 74.328 ms
Loss rate: 69.32%
-- Flow 1:
Average throughput: 12.85 Mbit/s
95th percentile per-packet one-way delay: 74.328 ms
Loss rate: 69.32%
```
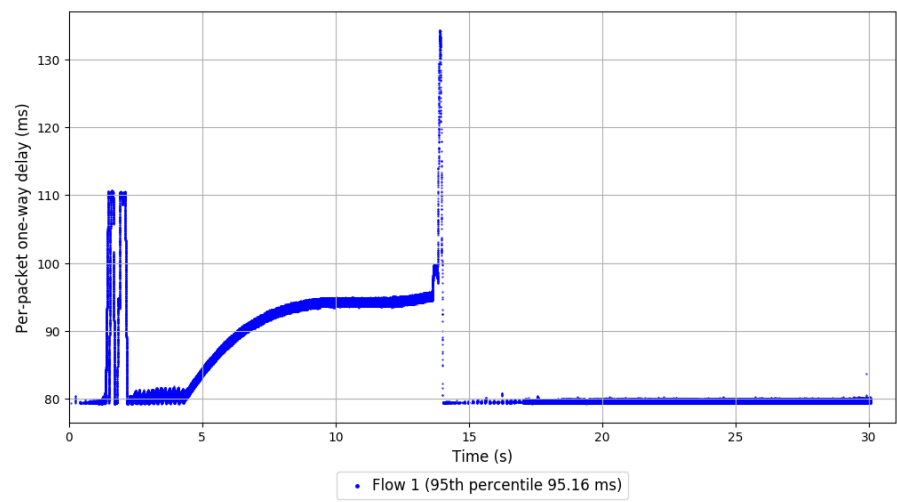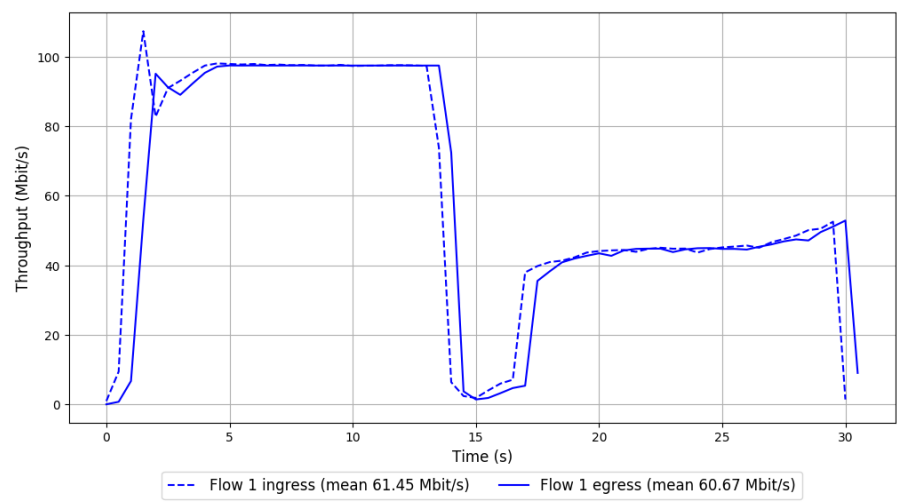
Run 5: Report of Copa — Data Link

Flow 1 ingress (mean 41.87 Mbit/s)   Flow 1 egress (mean 12.85 Mbit/s)

• Flow 1 (95th percentile 74.33 ms)

```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-06 04:48:25
End at: 2018-09-06 04:48:55
Local clock offset: 2.071 ms
Remote clock offset: 0.523 ms


# Below is generated by plot.py at 2018-09-06 06:27:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.67 Mbit/s
95th percentile per-packet one-way delay: 95.158 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 60.67 Mbit/s
95th percentile per-packet one-way delay: 95.158 ms
Loss rate: 1.28%
```
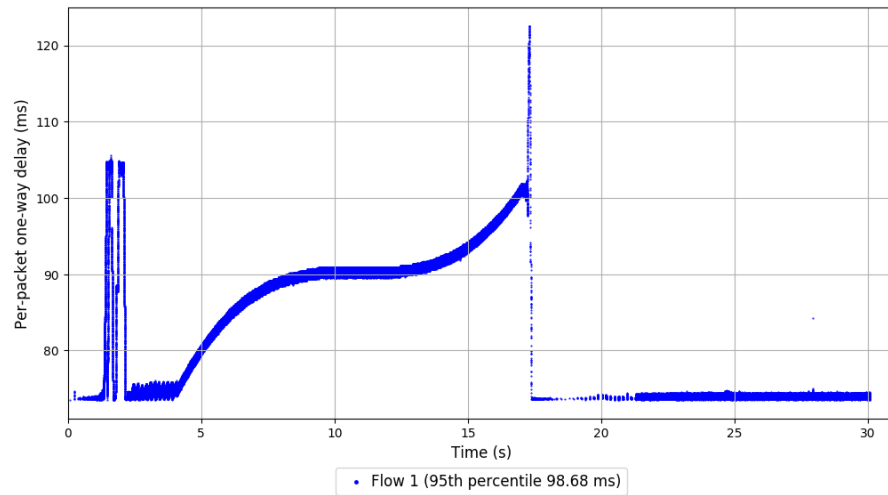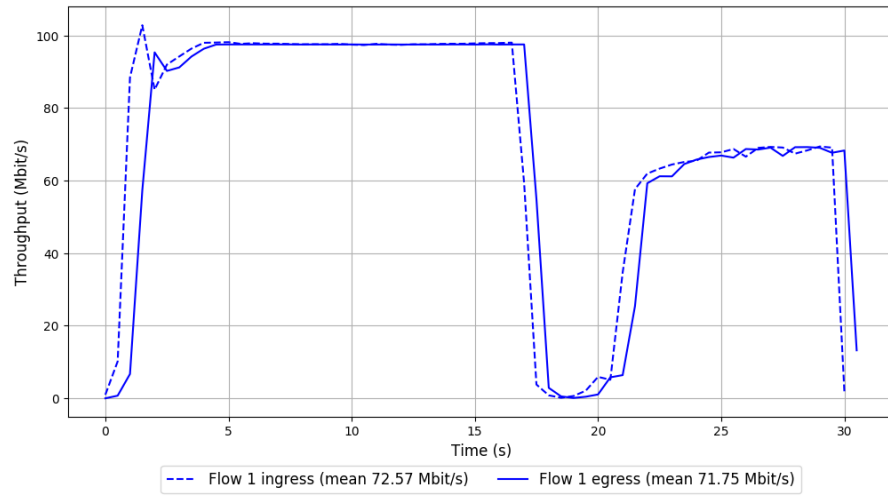
Run 1: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 61.45 Mbit/s) —— Flow 1 egress (mean 60.67 Mbit/s)

· Flow 1 (95th percentile 95.16 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-06 05:09:22
End at: 2018-09-06 05:09:52
Local clock offset: 5.562 ms
Remote clock offset: 0.894 ms


# Below is generated by plot.py at 2018-09-06 06:27:04
# Datalink statistics
-- Total of 1 flow:
Average throughput: 71.75 Mbit/s
95th percentile per-packet one-way delay: 98.682 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 71.75 Mbit/s
95th percentile per-packet one-way delay: 98.682 ms
Loss rate: 1.12%
```
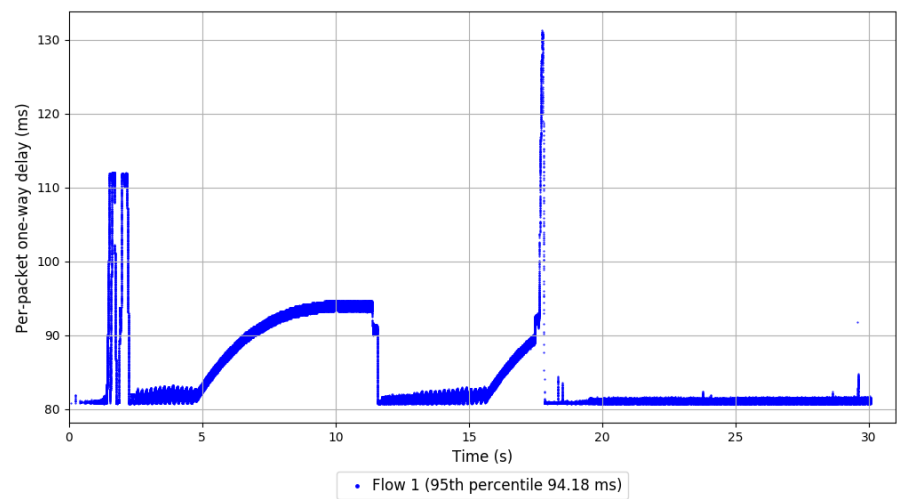
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-06 05:30:21
End at: 2018-09-06 05:30:51
Local clock offset: 5.712 ms
Remote clock offset: 1.413 ms


# Below is generated by plot.py at 2018-09-06 06:27:12
# Datalink statistics
-- Total of 1 flow:
Average throughput: 73.21 Mbit/s
95th percentile per-packet one-way delay: 94.178 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 73.21 Mbit/s
95th percentile per-packet one-way delay: 94.178 ms
Loss rate: 1.26%
```
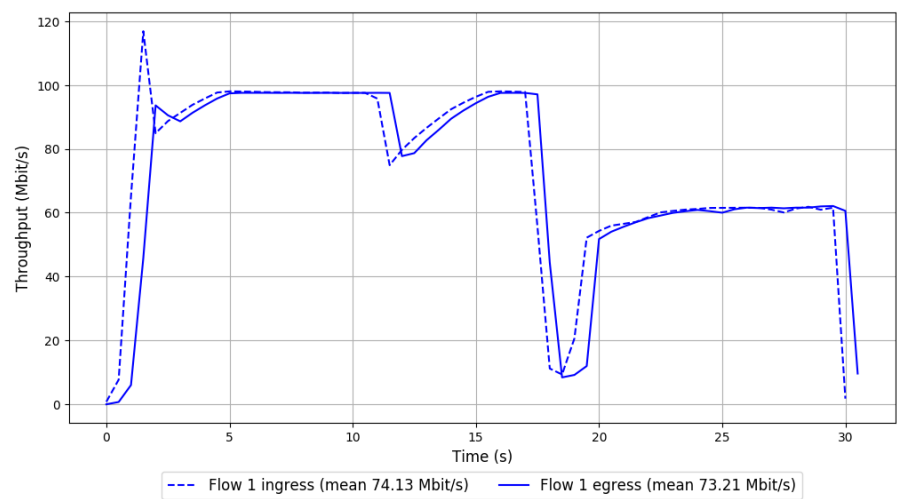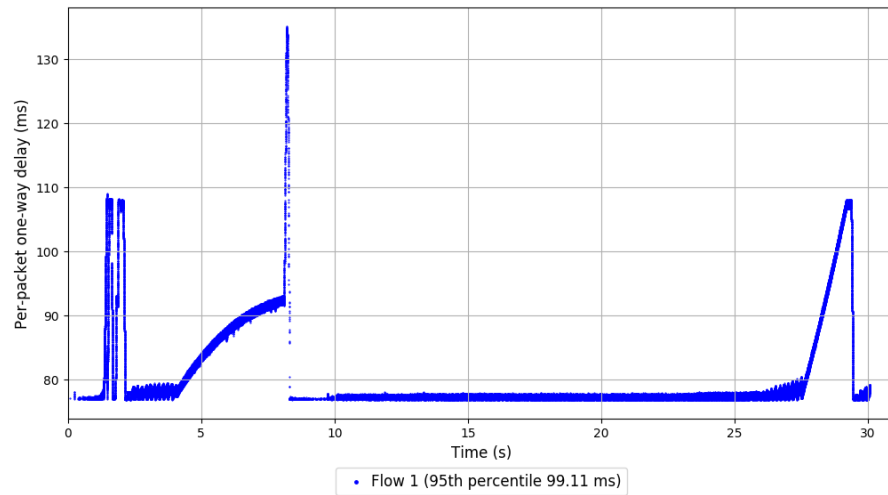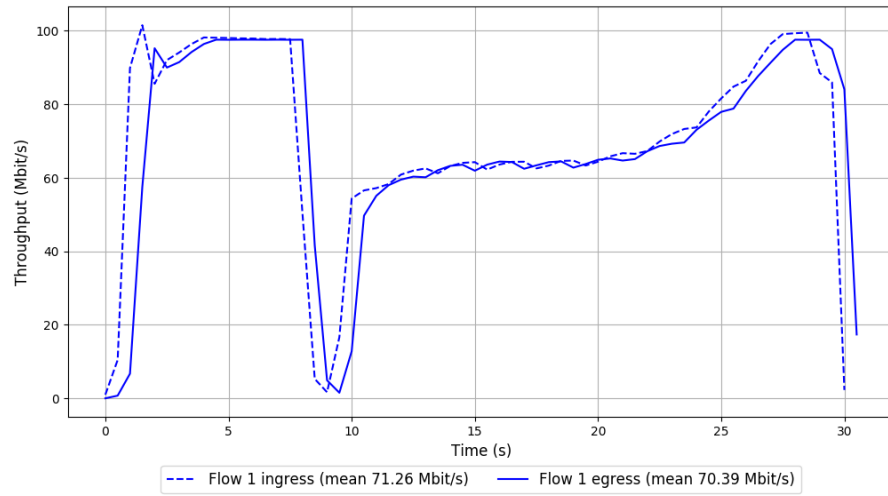
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 74.13 Mbit/s) ---- Flow 1 egress (mean 73.21 Mbit/s)

Flow 1 (95th percentile 94.18 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-09-06 05:51:31
End at: 2018-09-06 05:52:01
Local clock offset: 4.993 ms
Remote clock offset: 2.612 ms


# Below is generated by plot.py at 2018-09-06 06:27:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 70.39 Mbit/s
95th percentile per-packet one-way delay: 99.109 ms
Loss rate: 1.21%
-- Flow 1:
Average throughput: 70.39 Mbit/s
95th percentile per-packet one-way delay: 99.109 ms
Loss rate: 1.21%
```
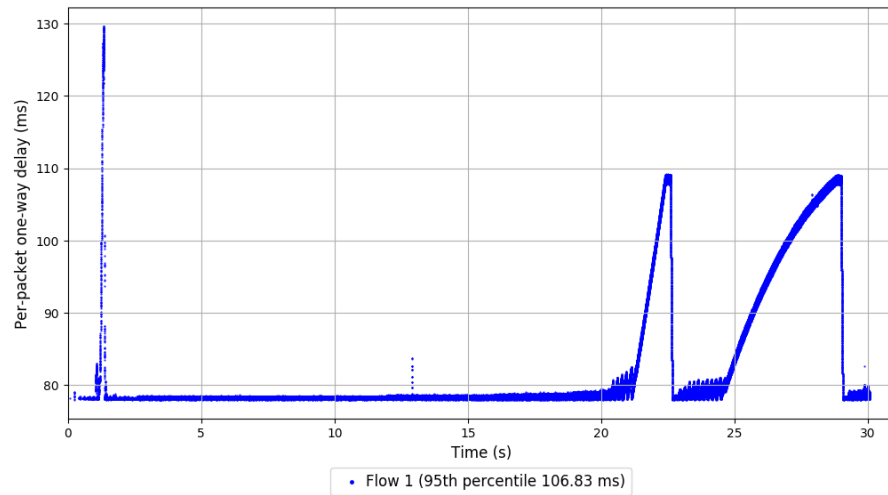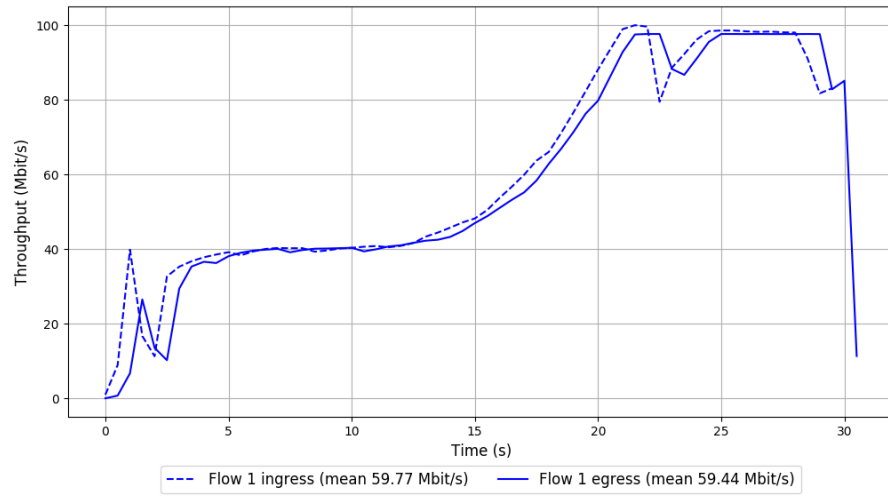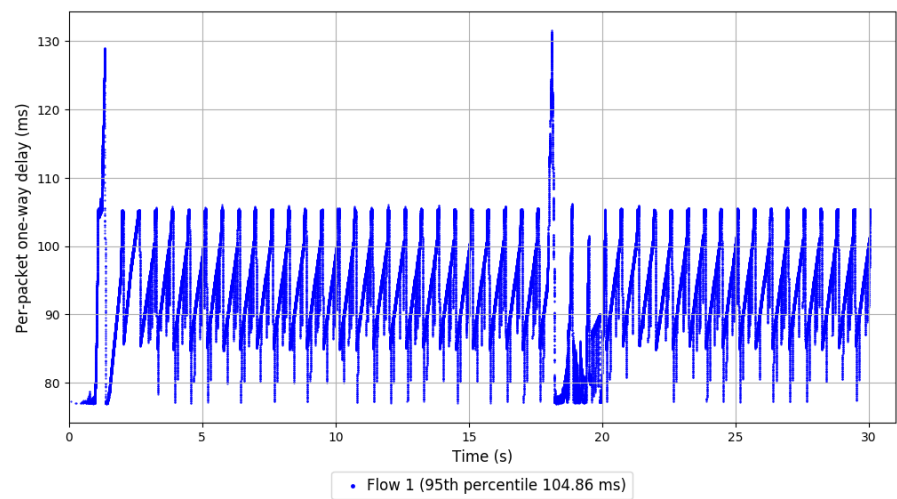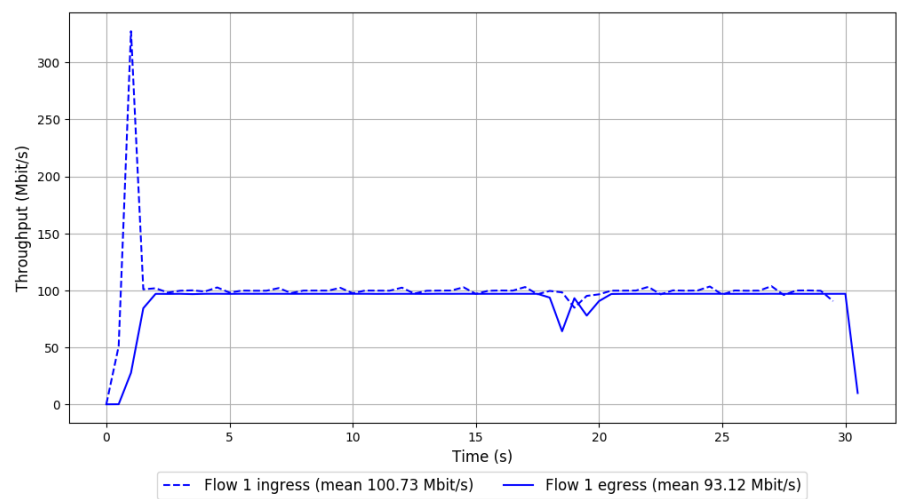
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 71.26 Mbit/s) —— Flow 1 egress (mean 70.39 Mbit/s)

· Flow 1 (95th percentile 99.11 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-09-06 06:12:38
End at: 2018-09-06 06:13:08
Local clock offset: 3.375 ms
Remote clock offset: 1.229 ms


# Below is generated by plot.py at 2018-09-06 06:27:36
# Datalink statistics
-- Total of 1 flow:
Average throughput: 59.44 Mbit/s
95th percentile per-packet one-way delay: 106.825 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 59.44 Mbit/s
95th percentile per-packet one-way delay: 106.825 ms
Loss rate: 0.55%
```
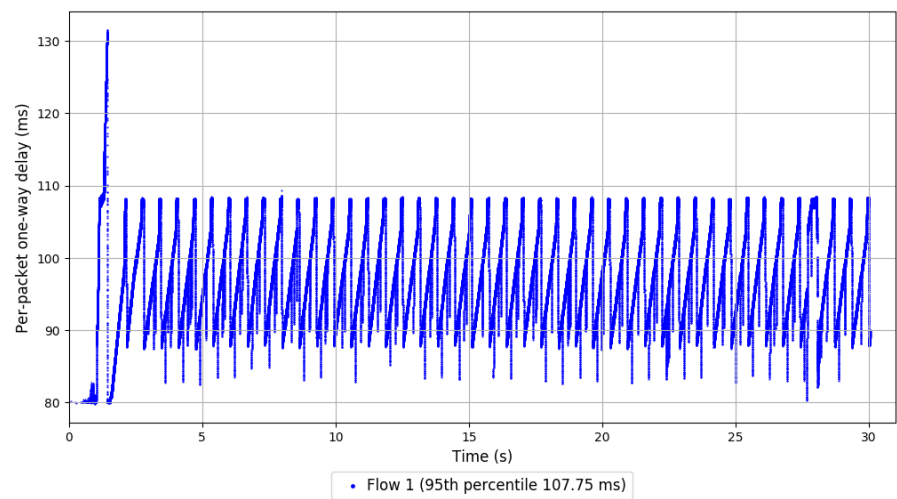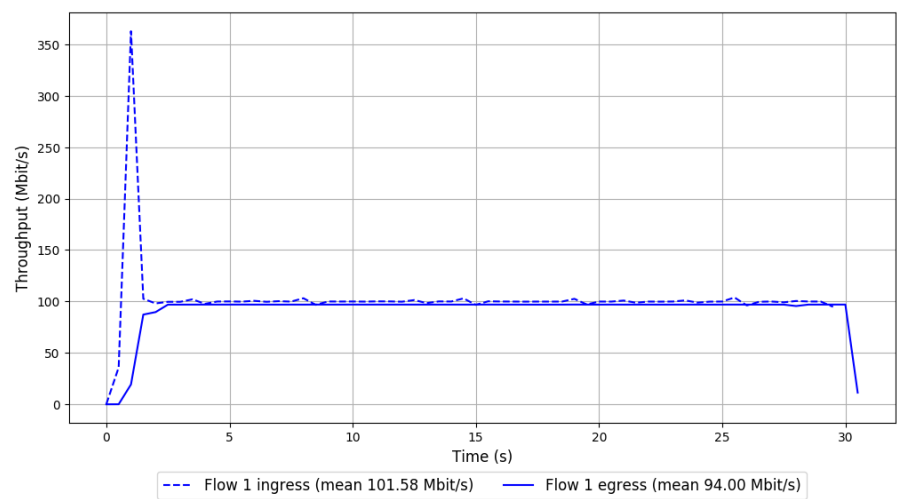
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-09-06 04:46:06
End at: 2018-09-06 04:46:36
Local clock offset: 1.299 ms
Remote clock offset: -0.583 ms


# Below is generated by plot.py at 2018-09-06 06:28:18
# Datalink statistics
-- Total of 1 flow:
Average throughput: 93.12 Mbit/s
95th percentile per-packet one-way delay: 104.859 ms
Loss rate: 7.47%
-- Flow 1:
Average throughput: 93.12 Mbit/s
95th percentile per-packet one-way delay: 104.859 ms
Loss rate: 7.47%
```

Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 100.73 Mbit/s) --- Flow 1 egress (mean 93.12 Mbit/s)

Flow 1 (95th percentile 104.86 ms)

```
Run 2: Statistics of FillP

Start at: 2018-09-06 05:07:04
End at: 2018-09-06 05:07:34
Local clock offset: 5.478 ms
Remote clock offset: -0.028 ms


# Below is generated by plot.py at 2018-09-06 06:28:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.00 Mbit/s
95th percentile per-packet one-way delay: 107.753 ms
Loss rate: 7.45%
-- Flow 1:
Average throughput: 94.00 Mbit/s
95th percentile per-packet one-way delay: 107.753 ms
Loss rate: 7.45%
```
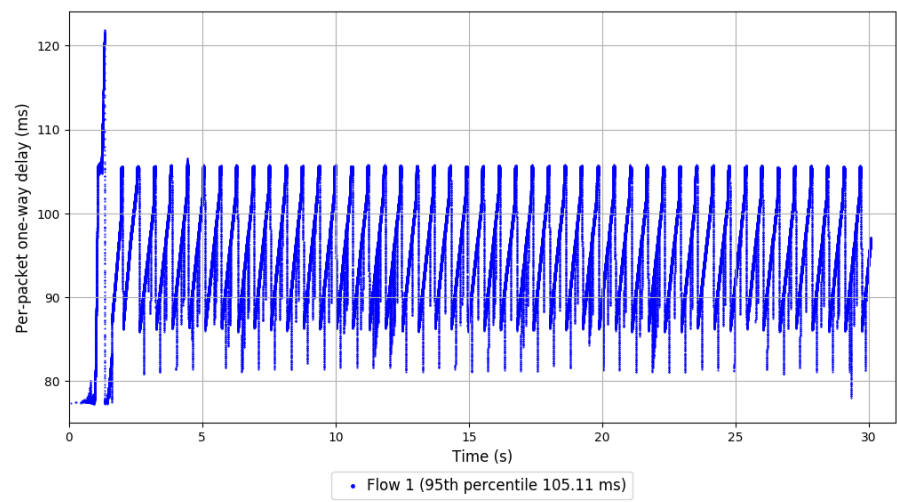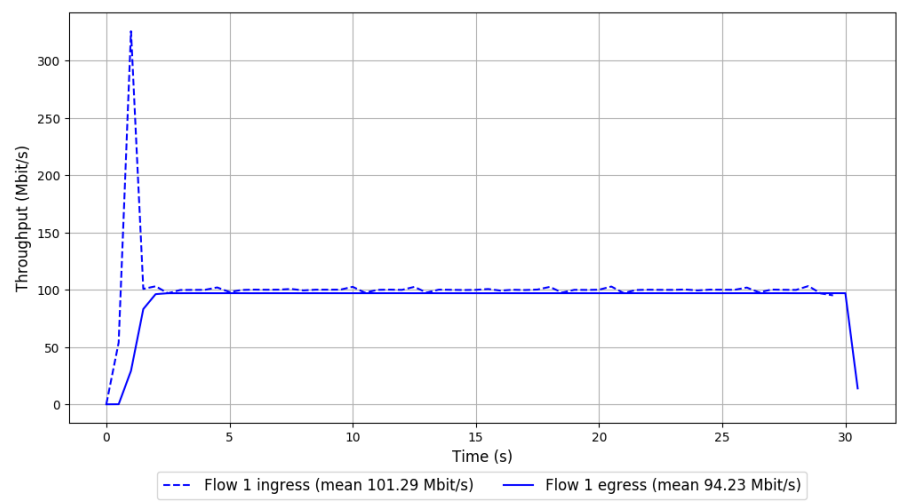
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 101.58 Mbit/s) ----   Flow 1 egress (mean 94.00 Mbit/s) ——

Flow 1 (95th percentile 107.75 ms)

```
Run 3: Statistics of FillP

Start at: 2018-09-06 05:28:03
End at: 2018-09-06 05:28:33
Local clock offset: 4.95 ms
Remote clock offset: 2.24 ms


# Below is generated by plot.py at 2018-09-06 06:28:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 94.23 Mbit/s
95th percentile per-packet one-way delay: 105.108 ms
Loss rate: 6.90%
-- Flow 1:
Average throughput: 94.23 Mbit/s
95th percentile per-packet one-way delay: 105.108 ms
Loss rate: 6.90%
```
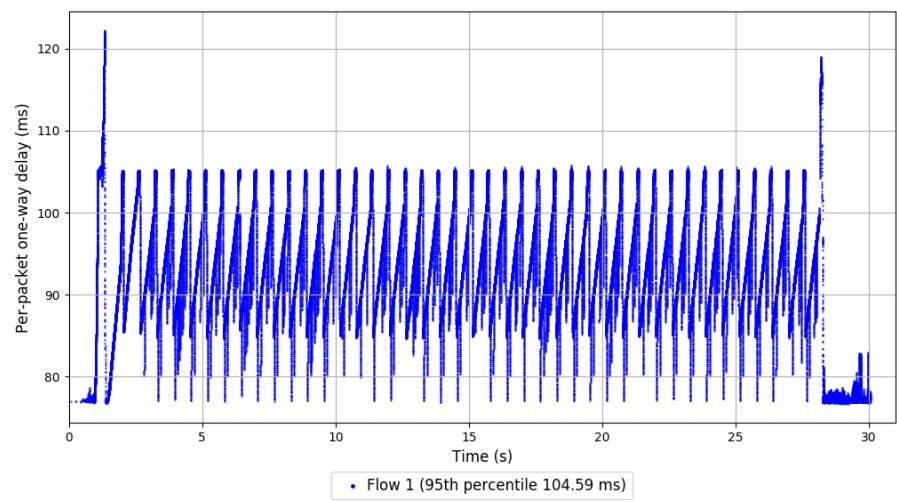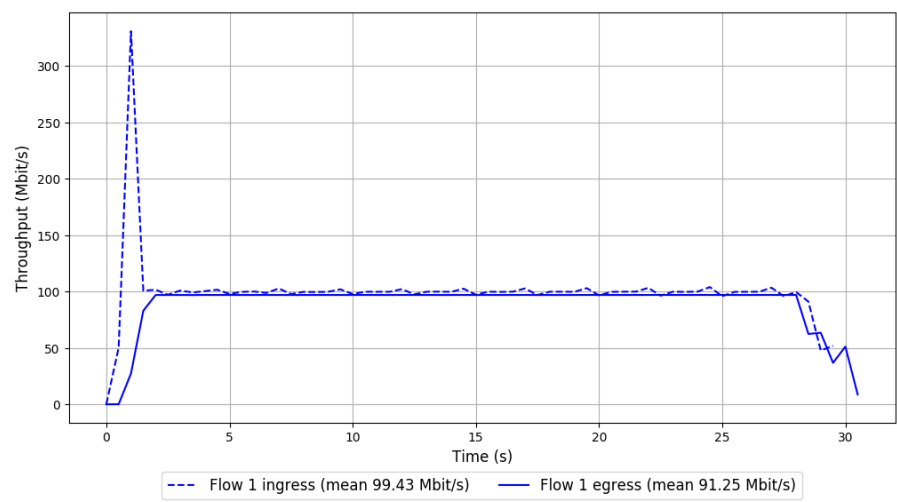
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 101.29 Mbit/s)   Flow 1 egress (mean 94.23 Mbit/s)

Flow 1 (95th percentile 105.11 ms)

39

```
Run 4: Statistics of FillP

Start at: 2018-09-06 05:49:11
End at: 2018-09-06 05:49:41
Local clock offset: 4.558 ms
Remote clock offset: 0.27 ms


# Below is generated by plot.py at 2018-09-06 06:28:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.25 Mbit/s
95th percentile per-packet one-way delay: 104.591 ms
Loss rate: 8.23%
-- Flow 1:
Average throughput: 91.25 Mbit/s
95th percentile per-packet one-way delay: 104.591 ms
Loss rate: 8.23%
```
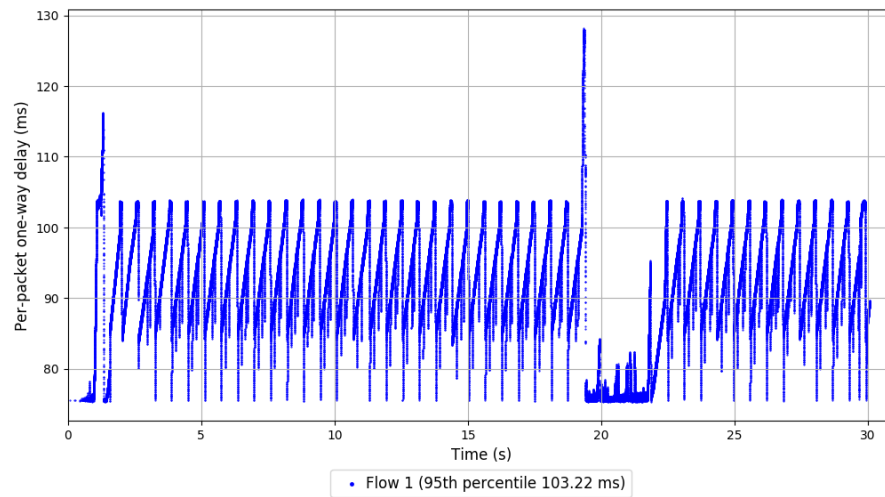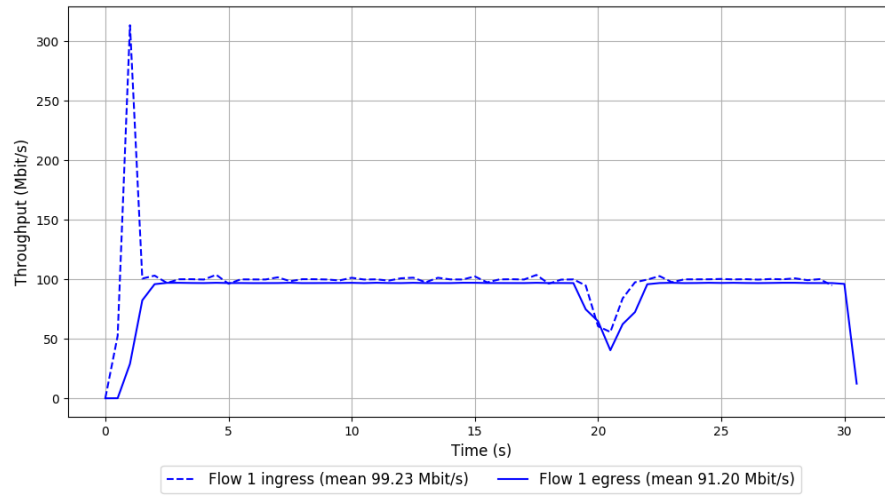
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 99.43 Mbit/s) — Flow 1 egress (mean 91.25 Mbit/s)

Flow 1 (95th percentile 104.59 ms)

```
Run 5: Statistics of FillP

Start at: 2018-09-06 06:10:20
End at: 2018-09-06 06:10:50
Local clock offset: 3.409 ms
Remote clock offset: 0.215 ms


# Below is generated by plot.py at 2018-09-06 06:28:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.20 Mbit/s
95th percentile per-packet one-way delay: 103.221 ms
Loss rate: 8.04%
-- Flow 1:
Average throughput: 91.20 Mbit/s
95th percentile per-packet one-way delay: 103.221 ms
Loss rate: 8.04%
```
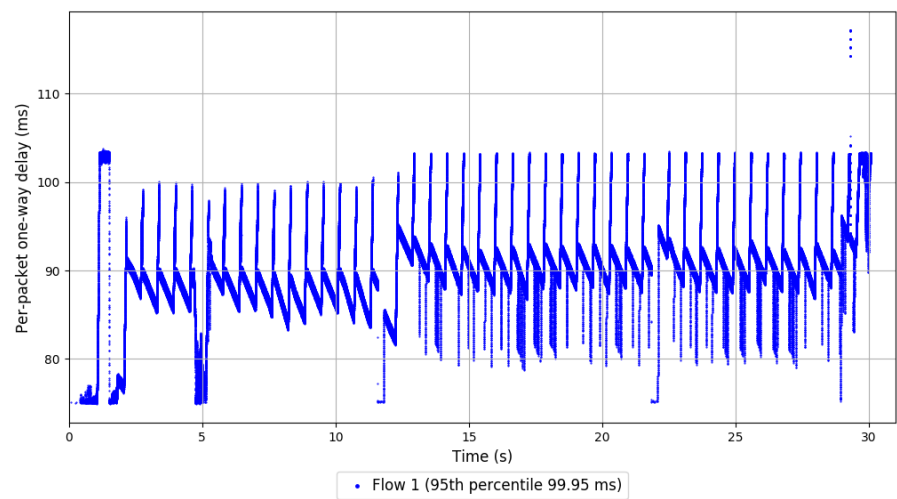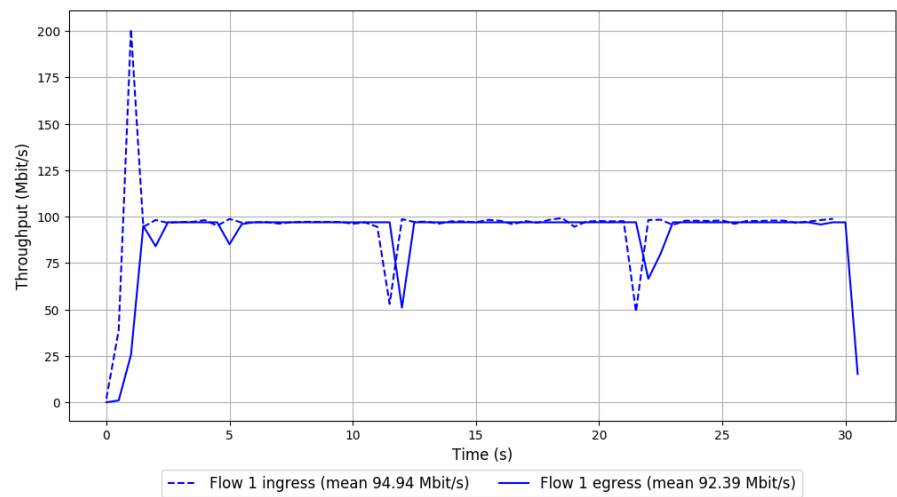
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 99.23 Mbit/s)   Flow 1 egress (mean 91.20 Mbit/s)

• Flow 1 (95th percentile 103.22 ms)

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-06 04:50:44
End at: 2018-09-06 04:51:15
Local clock offset: 3.508 ms
Remote clock offset: 0.642 ms


# Below is generated by plot.py at 2018-09-06 06:28:30
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.39 Mbit/s
95th percentile per-packet one-way delay: 99.952 ms
Loss rate: 2.60%
-- Flow 1:
Average throughput: 92.39 Mbit/s
95th percentile per-packet one-way delay: 99.952 ms
Loss rate: 2.60%
```
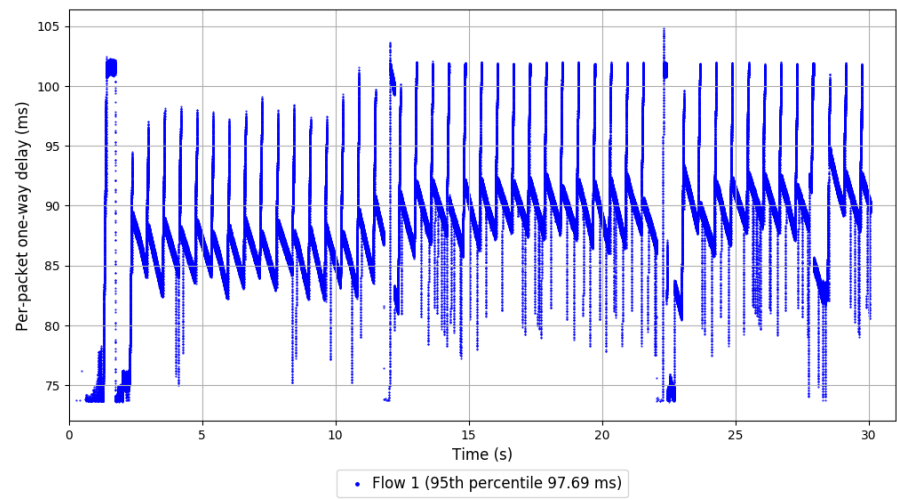
Run 1: Report of FillP-Sheep — Data Link

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-06 05:11:41
End at: 2018-09-06 05:12:11
Local clock offset: 5.74 ms
Remote clock offset: 1.159 ms


# Below is generated by plot.py at 2018-09-06 06:28:54
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.40 Mbit/s
95th percentile per-packet one-way delay: 97.692 ms
Loss rate: 2.23%
-- Flow 1:
Average throughput: 92.40 Mbit/s
95th percentile per-packet one-way delay: 97.692 ms
Loss rate: 2.23%
```
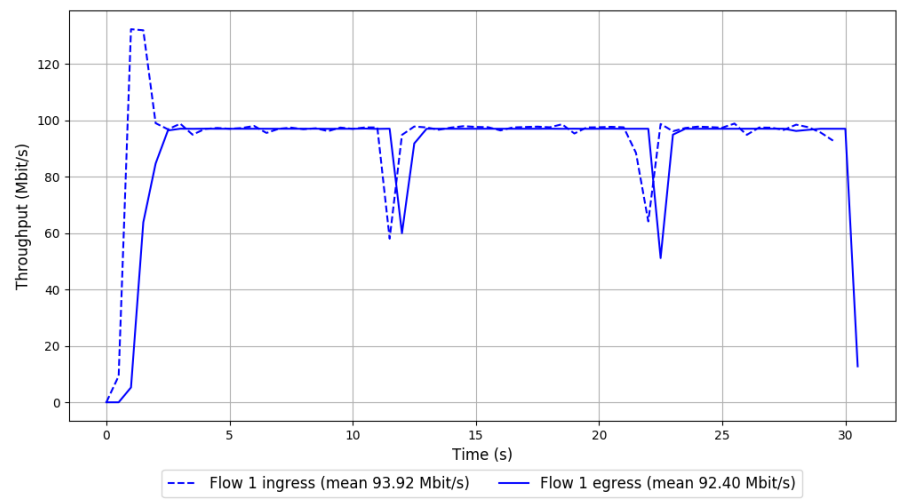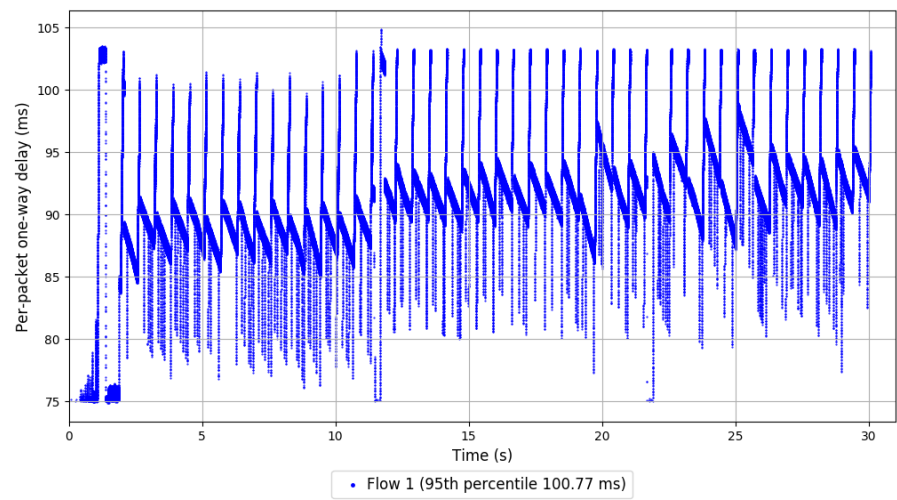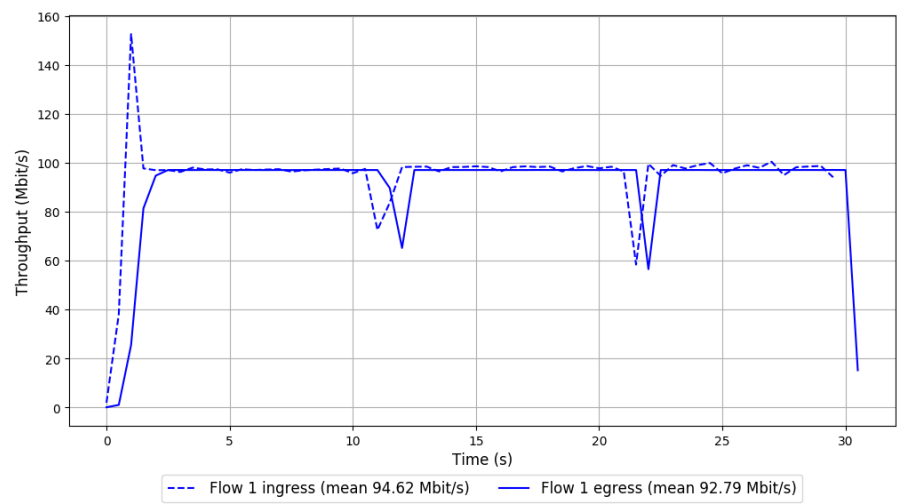
Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 93.92 Mbit/s) ---- Flow 1 egress (mean 92.40 Mbit/s)

· Flow 1 (95th percentile 97.69 ms)

```
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-06 05:32:40
End at: 2018-09-06 05:33:10
Local clock offset: 5.687 ms
Remote clock offset: 1.605 ms


# Below is generated by plot.py at 2018-09-06 06:28:59
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.79 Mbit/s
95th percentile per-packet one-way delay: 100.772 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 92.79 Mbit/s
95th percentile per-packet one-way delay: 100.772 ms
Loss rate: 1.84%
```
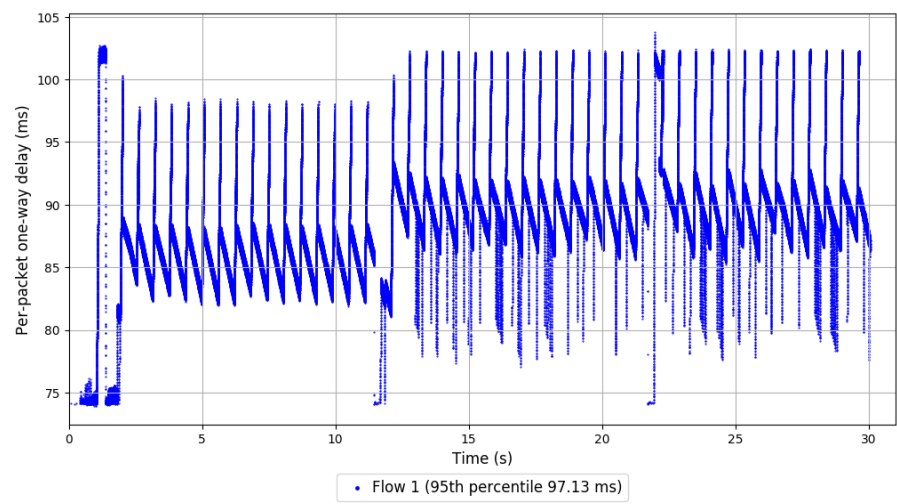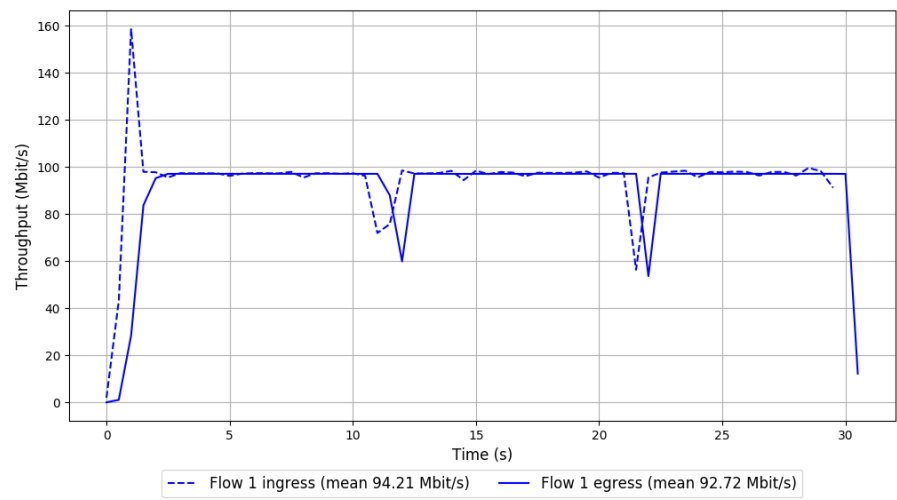
Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 94.62 Mbit/s)   Flow 1 egress (mean 92.79 Mbit/s)

Flow 1 (95th percentile 100.77 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-06 05:53:50
End at: 2018-09-06 05:54:20
Local clock offset: 4.073 ms
Remote clock offset: 1.398 ms


# Below is generated by plot.py at 2018-09-06 06:29:41
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.72 Mbit/s
95th percentile per-packet one-way delay: 97.133 ms
Loss rate: 1.54%
-- Flow 1:
Average throughput: 92.72 Mbit/s
95th percentile per-packet one-way delay: 97.133 ms
Loss rate: 1.54%
```
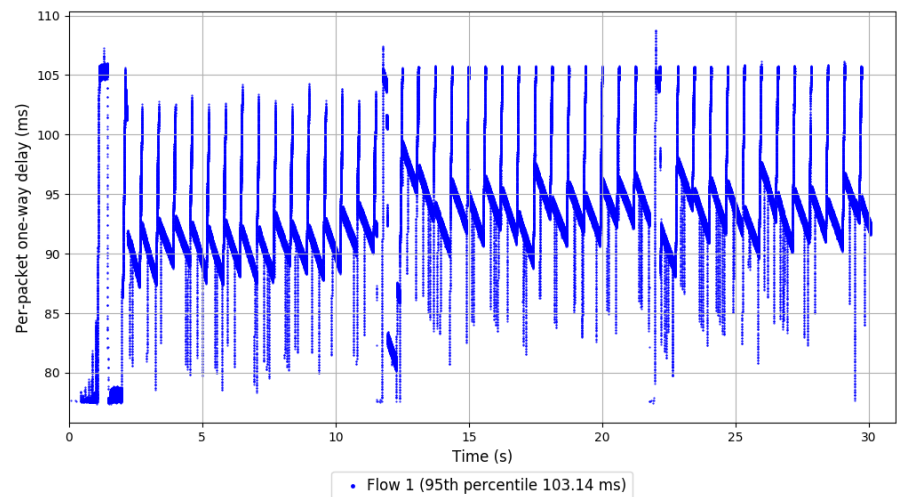
Run 4: Report of FillP-Sheep — Data Link

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-09-06 06:14:56
End at: 2018-09-06 06:15:26
Local clock offset: 3.342 ms
Remote clock offset: 1.333 ms


# Below is generated by plot.py at 2018-09-06 06:29:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 92.86 Mbit/s
95th percentile per-packet one-way delay: 103.142 ms
Loss rate: 2.15%
-- Flow 1:
Average throughput: 92.86 Mbit/s
95th percentile per-packet one-way delay: 103.142 ms
Loss rate: 2.15%
```
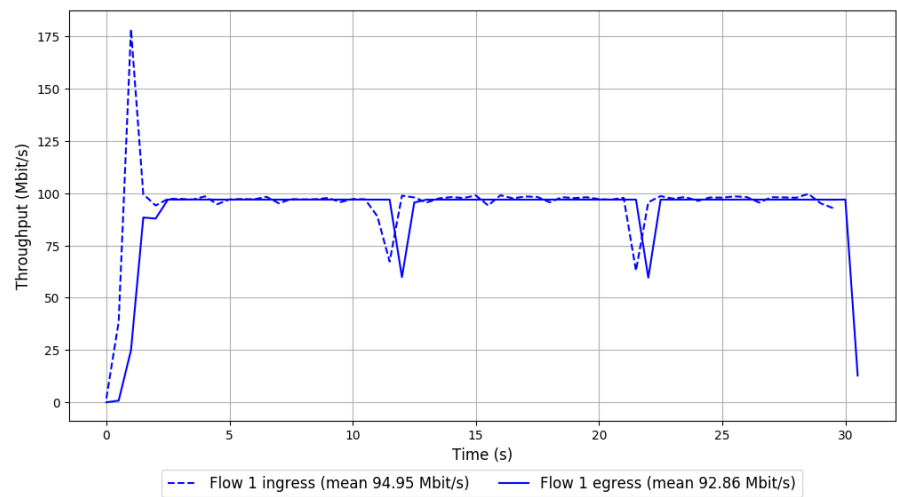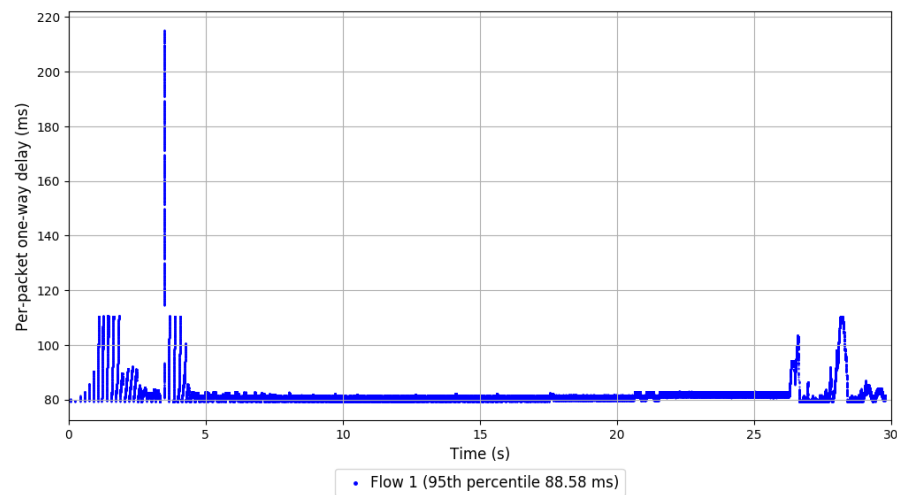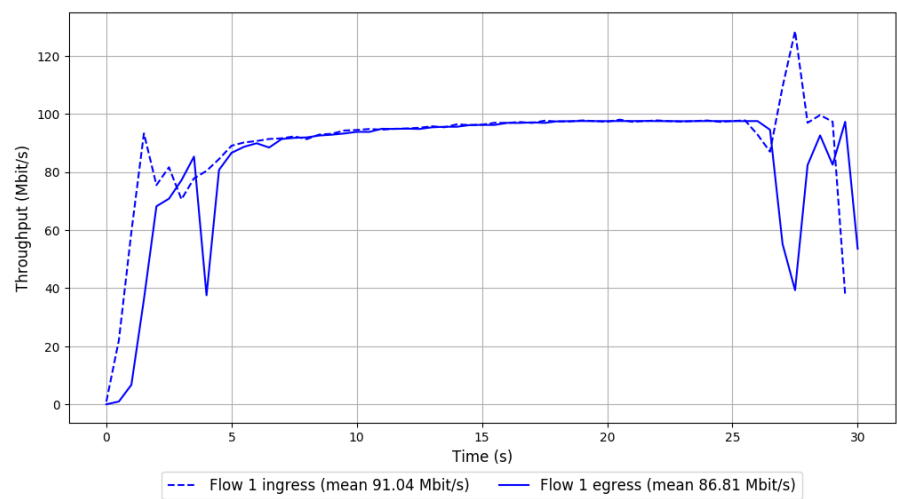
Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 94.95 Mbit/s) ----- Flow 1 egress (mean 92.86 Mbit/s) ——

• Flow 1 (95th percentile 103.14 ms)

```
Run 1: Statistics of Indigo

Start at: 2018-09-06 04:40:13
End at: 2018-09-06 04:40:43
Local clock offset: 1.02 ms
Remote clock offset: 1.34 ms


# Below is generated by plot.py at 2018-09-06 06:29:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.81 Mbit/s
95th percentile per-packet one-way delay: 88.580 ms
Loss rate: 4.64%
-- Flow 1:
Average throughput: 86.81 Mbit/s
95th percentile per-packet one-way delay: 88.580 ms
Loss rate: 4.64%
```
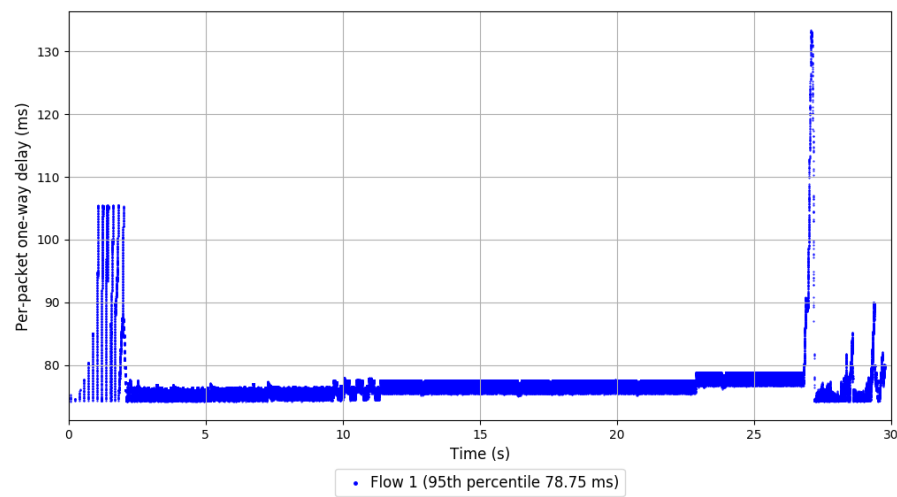
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-09-06 05:01:12
End at: 2018-09-06 05:01:42
Local clock offset: 4.194 ms
Remote clock offset: 1.016 ms


# Below is generated by plot.py at 2018-09-06 06:29:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.01 Mbit/s
95th percentile per-packet one-way delay: 78.747 ms
Loss rate: 4.62%
-- Flow 1:
Average throughput: 90.01 Mbit/s
95th percentile per-packet one-way delay: 78.747 ms
Loss rate: 4.62%
```
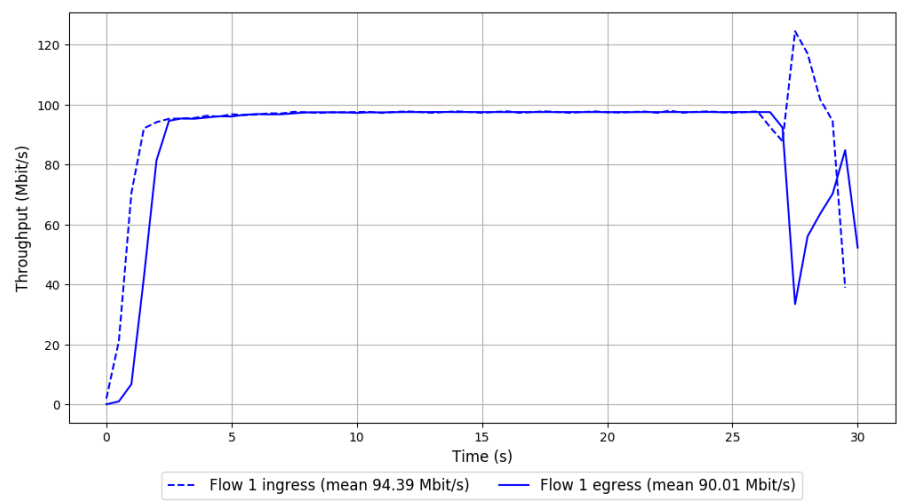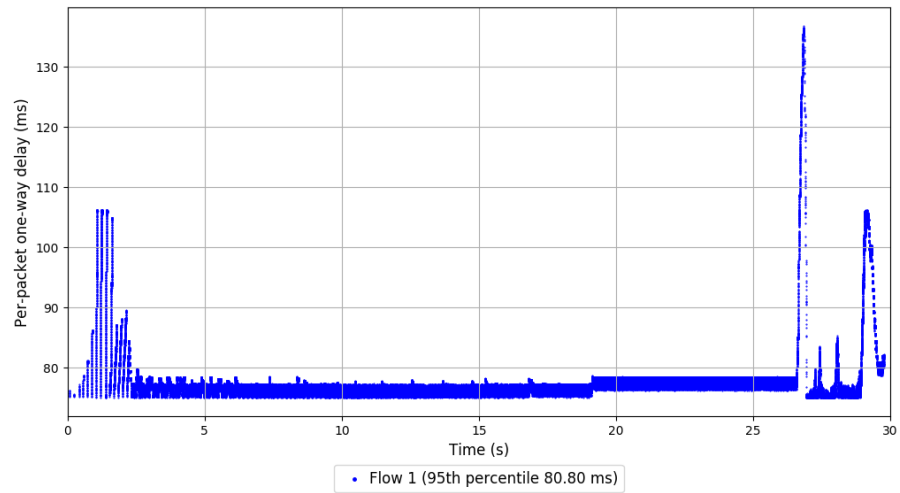
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-09-06 05:22:13
End at: 2018-09-06 05:22:43
Local clock offset: 4.961 ms
Remote clock offset: 0.101 ms


# Below is generated by plot.py at 2018-09-06 06:29:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.52 Mbit/s
95th percentile per-packet one-way delay: 80.797 ms
Loss rate: 4.71%
-- Flow 1:
Average throughput: 87.52 Mbit/s
95th percentile per-packet one-way delay: 80.797 ms
Loss rate: 4.71%
```
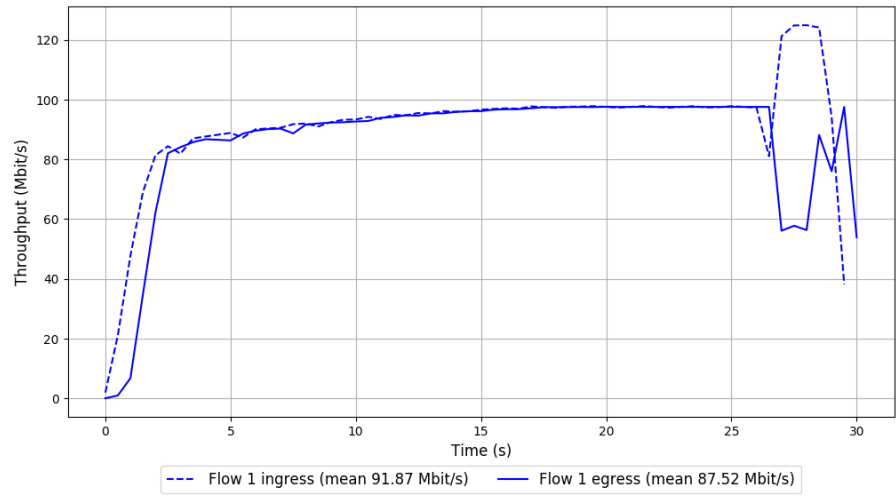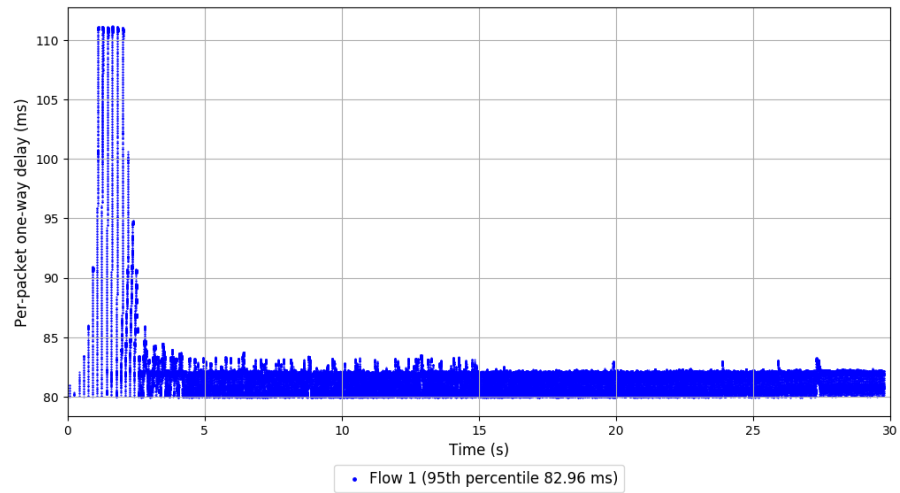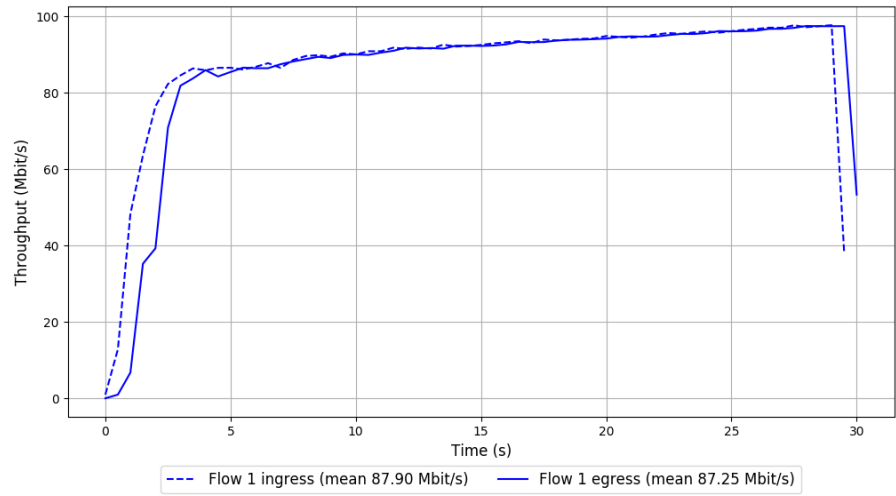
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-09-06 05:43:08
End at: 2018-09-06 05:43:38
Local clock offset: 5.169 ms
Remote clock offset: 1.516 ms


# Below is generated by plot.py at 2018-09-06 06:29:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.25 Mbit/s
95th percentile per-packet one-way delay: 82.960 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 87.25 Mbit/s
95th percentile per-packet one-way delay: 82.960 ms
Loss rate: 0.75%
```
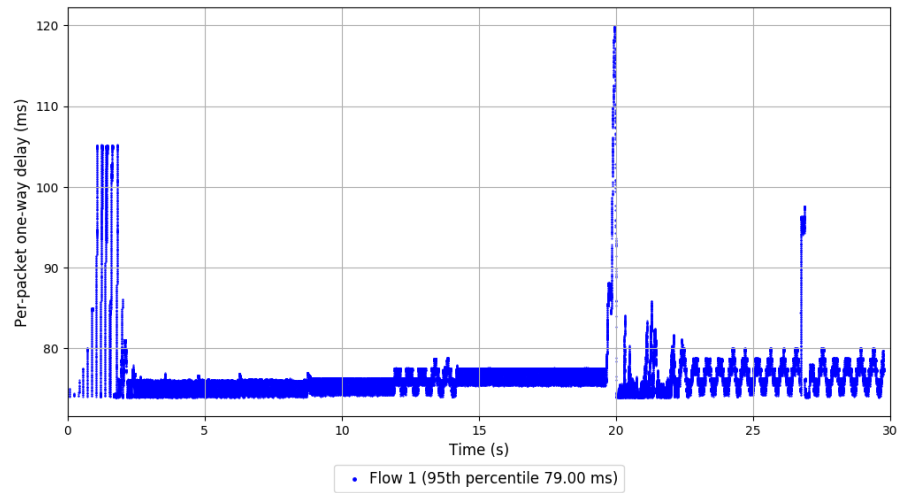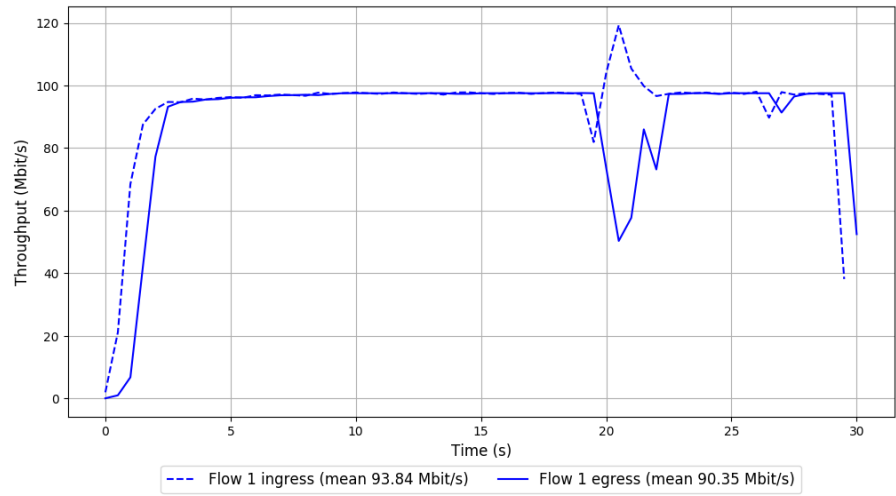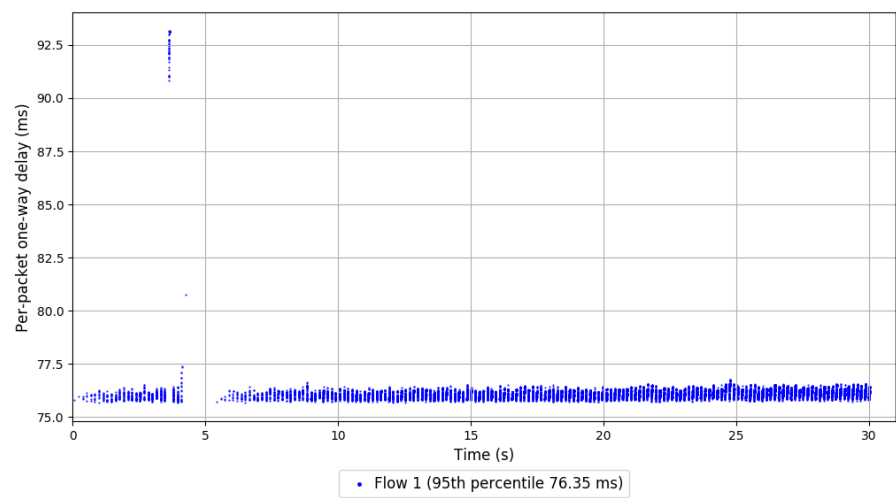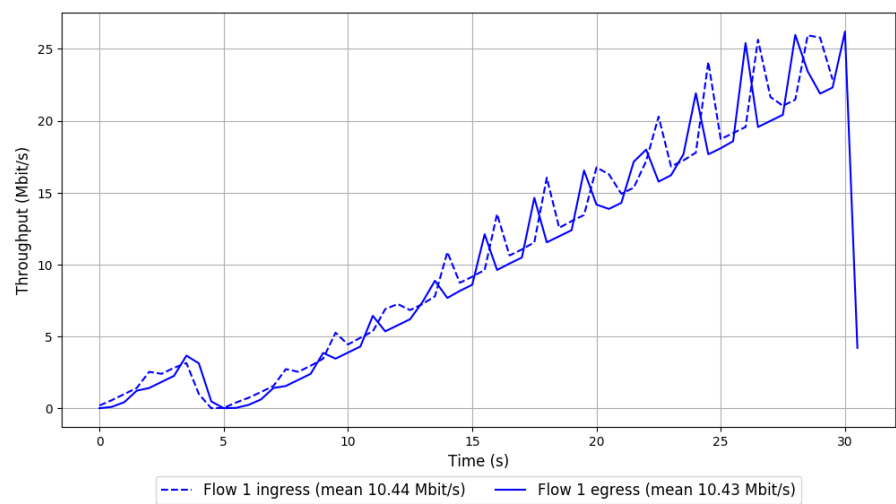
Run 4: Report of Indigo — Data Link

Flow 1 ingress (mean 87.90 Mbit/s)   Flow 1 egress (mean 87.25 Mbit/s)

Flow 1 (95th percentile 82.96 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-09-06 06:04:19
End at: 2018-09-06 06:04:49
Local clock offset: 4.279 ms
Remote clock offset: 0.406 ms


# Below is generated by plot.py at 2018-09-06 06:30:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 90.35 Mbit/s
95th percentile per-packet one-way delay: 79.004 ms
Loss rate: 3.70%
-- Flow 1:
Average throughput: 90.35 Mbit/s
95th percentile per-packet one-way delay: 79.004 ms
Loss rate: 3.70%
```

Run 5: Report of Indigo — Data Link

```
Run 1: Statistics of LEDBAT

Start at: 2018-09-06 04:49:36
End at: 2018-09-06 04:50:06
Local clock offset: 2.43 ms
Remote clock offset: -0.587 ms


# Below is generated by plot.py at 2018-09-06 06:30:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 10.43 Mbit/s
95th percentile per-packet one-way delay: 76.352 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 10.43 Mbit/s
95th percentile per-packet one-way delay: 76.352 ms
Loss rate: 0.09%
```

Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-09-06 05:10:33
End at: 2018-09-06 05:11:03
Local clock offset: 5.674 ms
Remote clock offset: 1.025 ms


# Below is generated by plot.py at 2018-09-06 06:30:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.87 Mbit/s
95th percentile per-packet one-way delay: 81.413 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 4.87 Mbit/s
95th percentile per-packet one-way delay: 81.413 ms
Loss rate: 0.33%
```
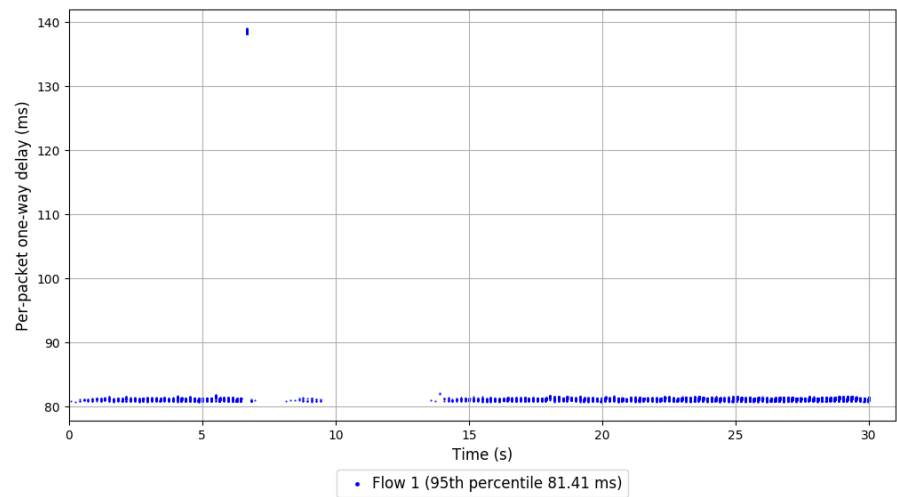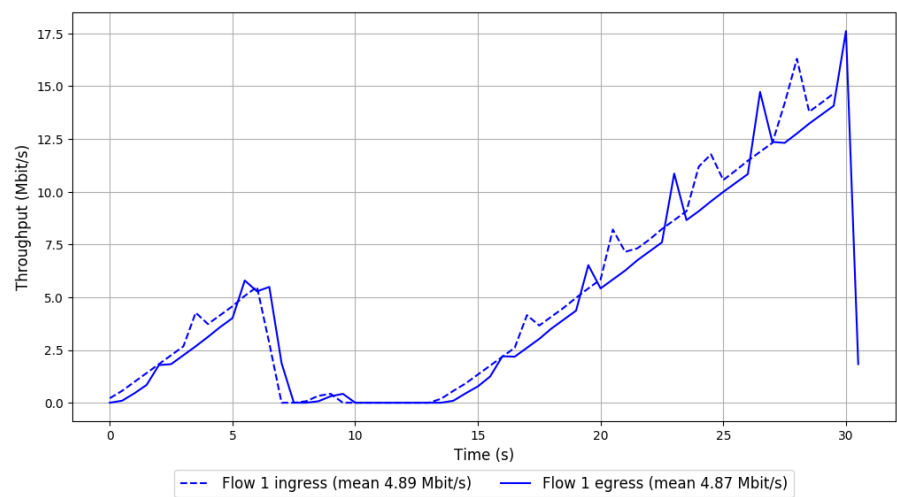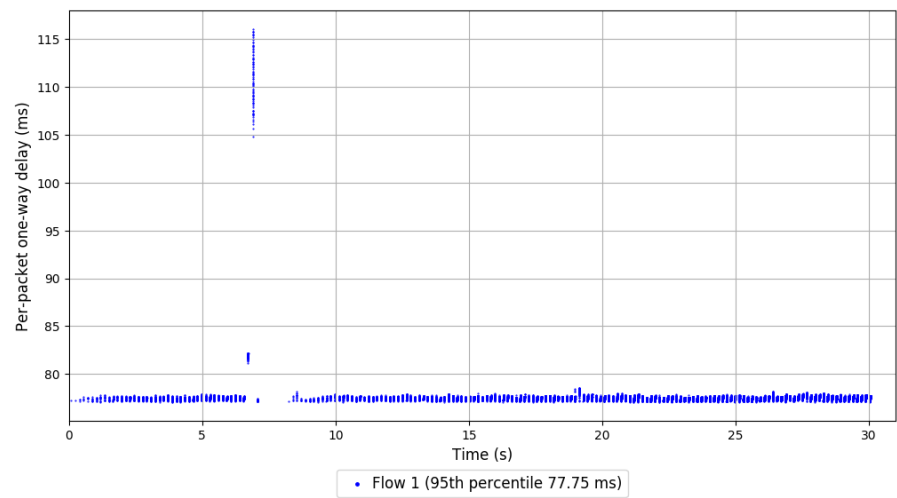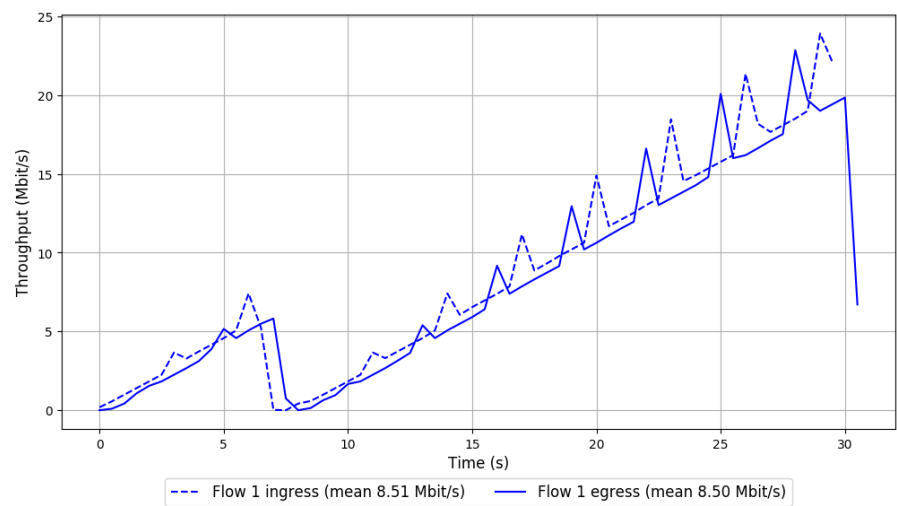
Run 2: Report of LEDBAT — Data Link

Flow 1 ingress (mean 4.89 Mbit/s)   Flow 1 egress (mean 4.87 Mbit/s)

Flow 1 (95th percentile 81.41 ms)

```
Run 3: Statistics of LEDBAT

Start at: 2018-09-06 05:31:32
End at: 2018-09-06 05:32:02
Local clock offset: 5.726 ms
Remote clock offset: 1.557 ms

# Below is generated by plot.py at 2018-09-06 06:30:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.50 Mbit/s
95th percentile per-packet one-way delay: 77.745 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 8.50 Mbit/s
95th percentile per-packet one-way delay: 77.745 ms
Loss rate: 0.12%
```
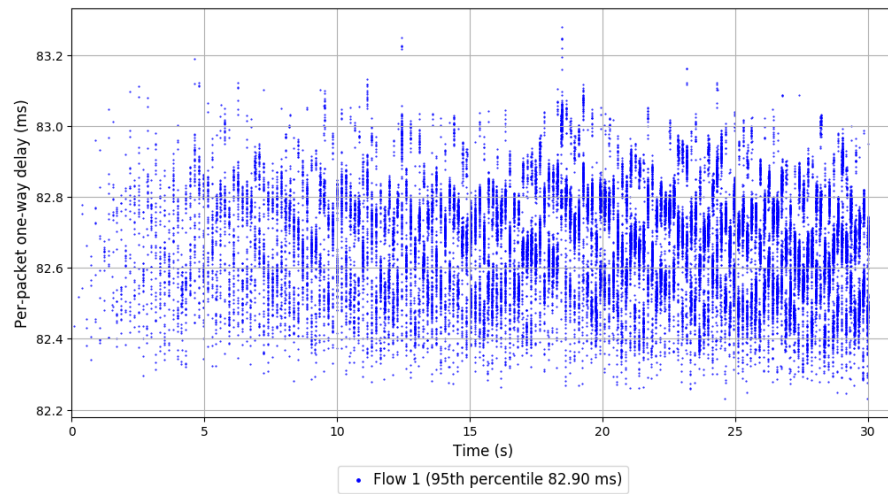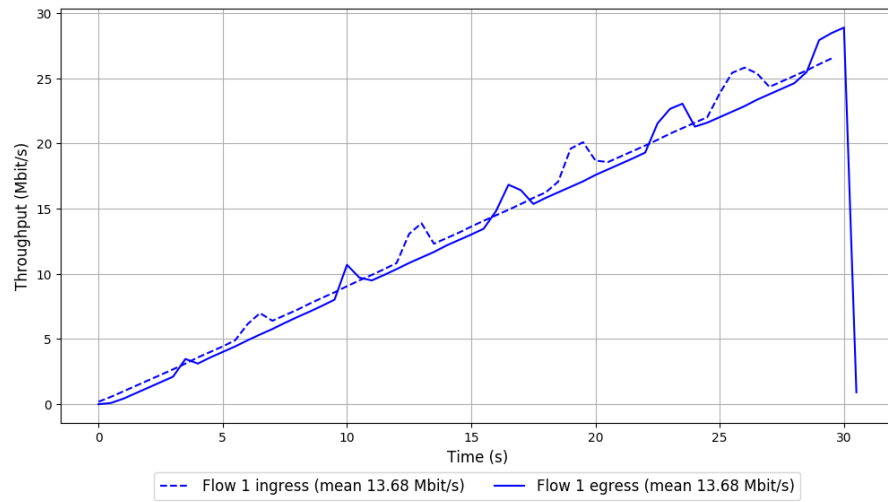
Run 3: Report of LEDBAT — Data Link

Flow 1 ingress (mean 8.51 Mbit/s) --- Flow 1 egress (mean 8.50 Mbit/s)

Flow 1 (95th percentile 77.75 ms)

```
Run 4: Statistics of LEDBAT

Start at: 2018-09-06 05:52:42
End at: 2018-09-06 05:53:12
Local clock offset: 4.193 ms
Remote clock offset: 1.482 ms


# Below is generated by plot.py at 2018-09-06 06:30:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.68 Mbit/s
95th percentile per-packet one-way delay: 82.900 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 13.68 Mbit/s
95th percentile per-packet one-way delay: 82.900 ms
Loss rate: 0.00%
```

Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-09-06 06:13:48
End at: 2018-09-06 06:14:18
Local clock offset: 3.281 ms
Remote clock offset: 1.217 ms


# Below is generated by plot.py at 2018-09-06 06:30:01
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.53 Mbit/s
95th percentile per-packet one-way delay: 80.471 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 14.53 Mbit/s
95th percentile per-packet one-way delay: 80.471 ms
Loss rate: 0.08%
```
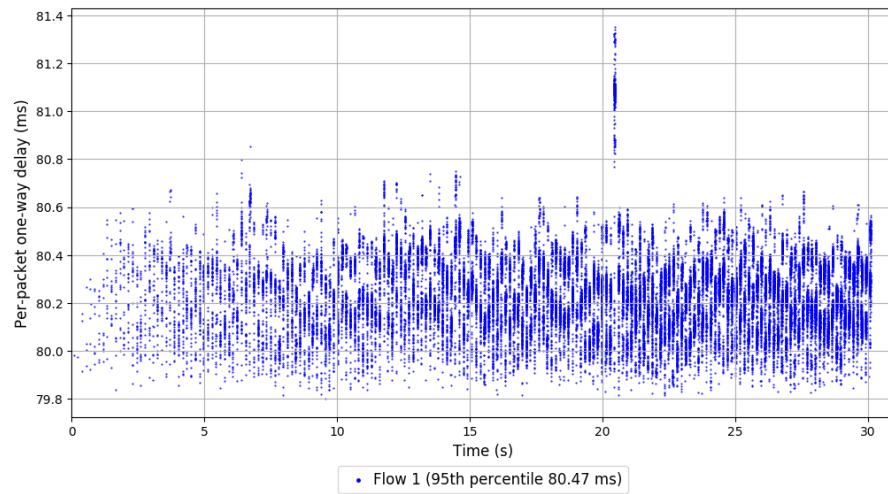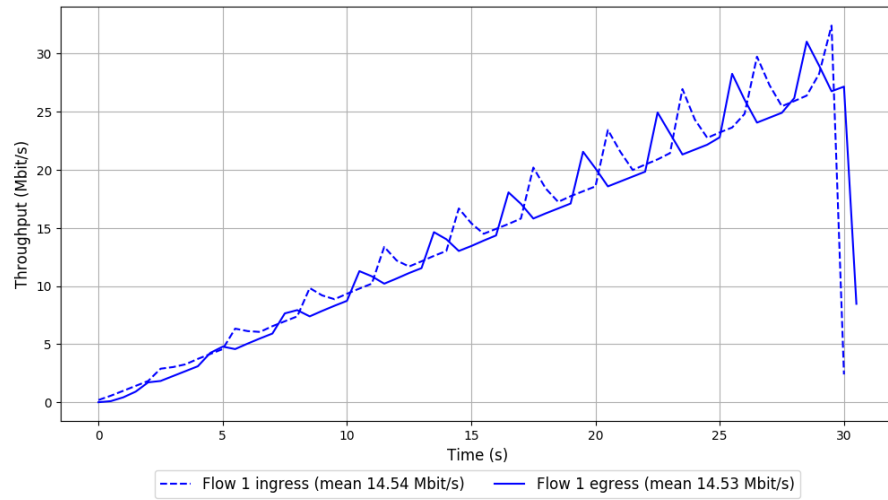
Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 14.54 Mbit/s) ----- Flow 1 egress (mean 14.53 Mbit/s) ———

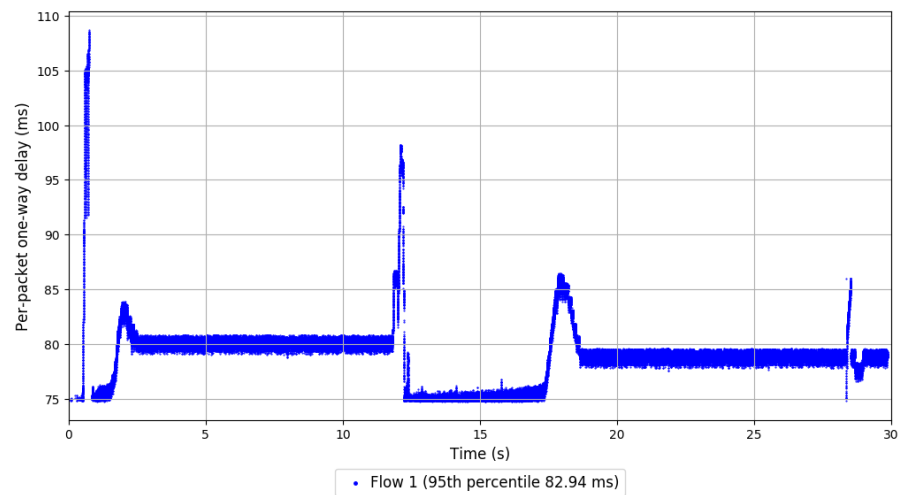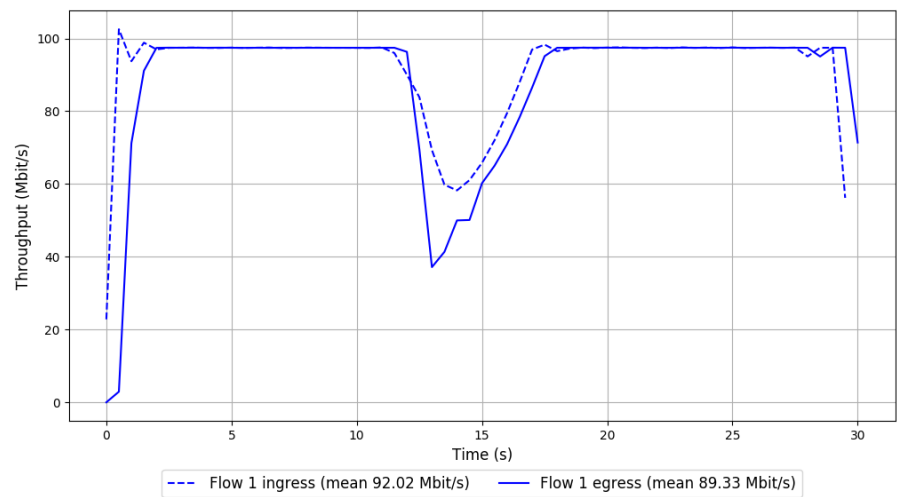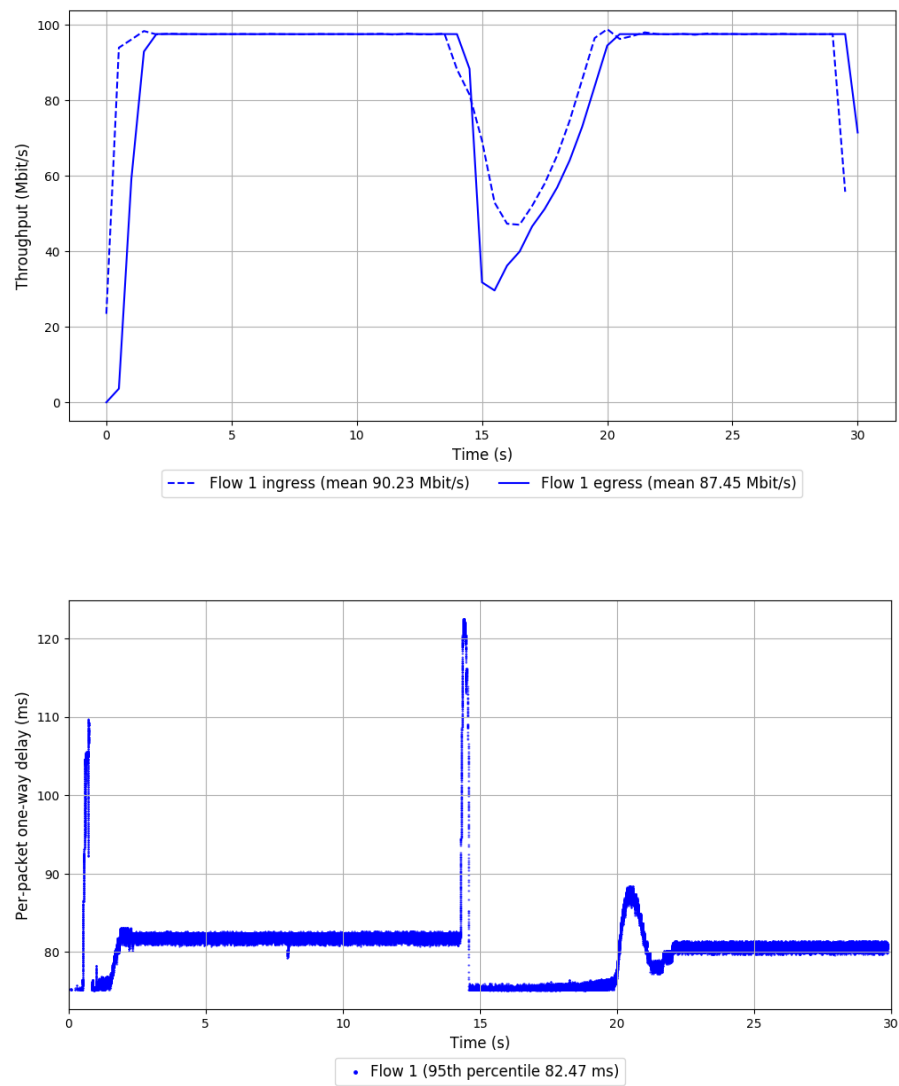
• Flow 1 (95th percentile 80.47 ms)

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-06 04:41:27
End at: 2018-09-06 04:41:57
Local clock offset: 1.727 ms
Remote clock offset: -0.853 ms


# Below is generated by plot.py at 2018-09-06 06:30:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.33 Mbit/s
95th percentile per-packet one-way delay: 82.939 ms
Loss rate: 2.91%
-- Flow 1:
Average throughput: 89.33 Mbit/s
95th percentile per-packet one-way delay: 82.939 ms
Loss rate: 2.91%
```

Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-06 05:02:25
End at: 2018-09-06 05:02:55
Local clock offset: 4.322 ms
Remote clock offset: -0.174 ms


# Below is generated by plot.py at 2018-09-06 06:30:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.45 Mbit/s
95th percentile per-packet one-way delay: 82.475 ms
Loss rate: 3.07%
-- Flow 1:
Average throughput: 87.45 Mbit/s
95th percentile per-packet one-way delay: 82.475 ms
Loss rate: 3.07%
```
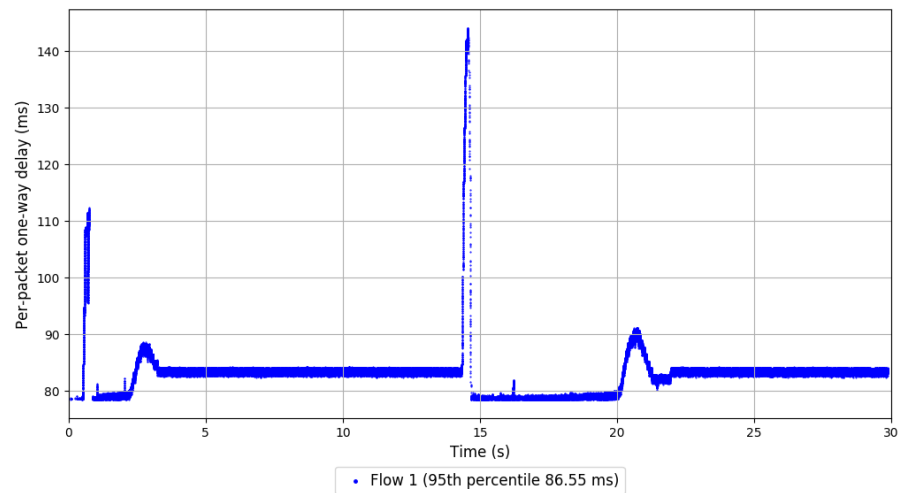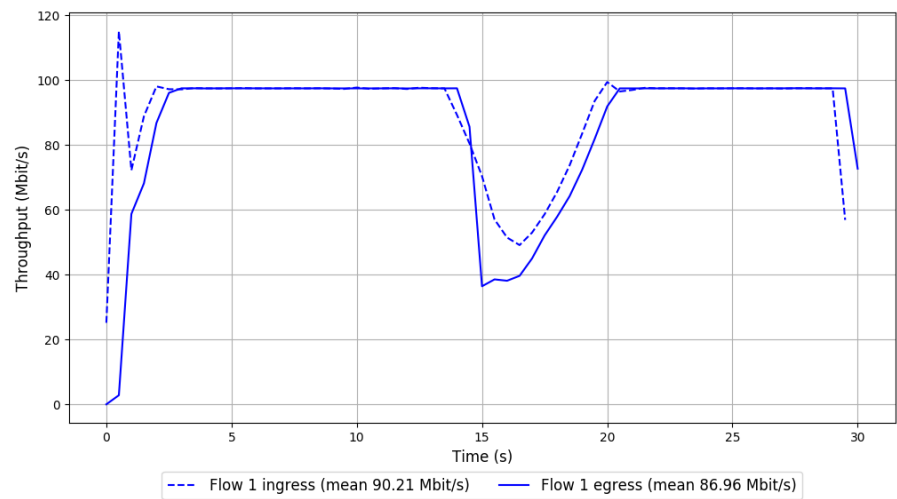
Run 2: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 90.23 Mbit/s) ---- Flow 1 egress (mean 87.45 Mbit/s) ——

• Flow 1 (95th percentile 82.47 ms)

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-06 05:23:25
End at: 2018-09-06 05:23:55
Local clock offset: 4.961 ms
Remote clock offset: 1.029 ms


# Below is generated by plot.py at 2018-09-06 06:30:37
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.96 Mbit/s
95th percentile per-packet one-way delay: 86.546 ms
Loss rate: 3.59%
-- Flow 1:
Average throughput: 86.96 Mbit/s
95th percentile per-packet one-way delay: 86.546 ms
Loss rate: 3.59%
```

Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-06 05:44:29
End at: 2018-09-06 05:44:59
Local clock offset: 5.937 ms
Remote clock offset: 2.585 ms


# Below is generated by plot.py at 2018-09-06 06:30:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.27 Mbit/s
95th percentile per-packet one-way delay: 87.474 ms
Loss rate: 2.43%
-- Flow 1:
Average throughput: 91.27 Mbit/s
95th percentile per-packet one-way delay: 87.474 ms
Loss rate: 2.43%
```
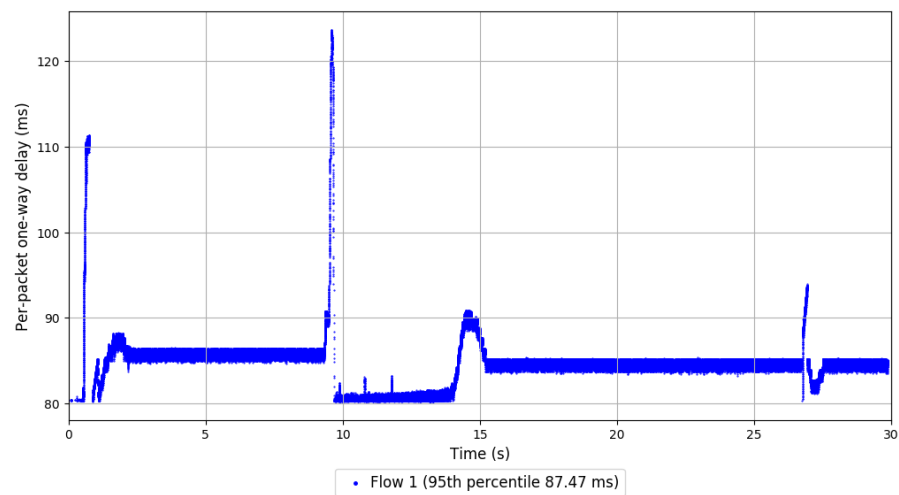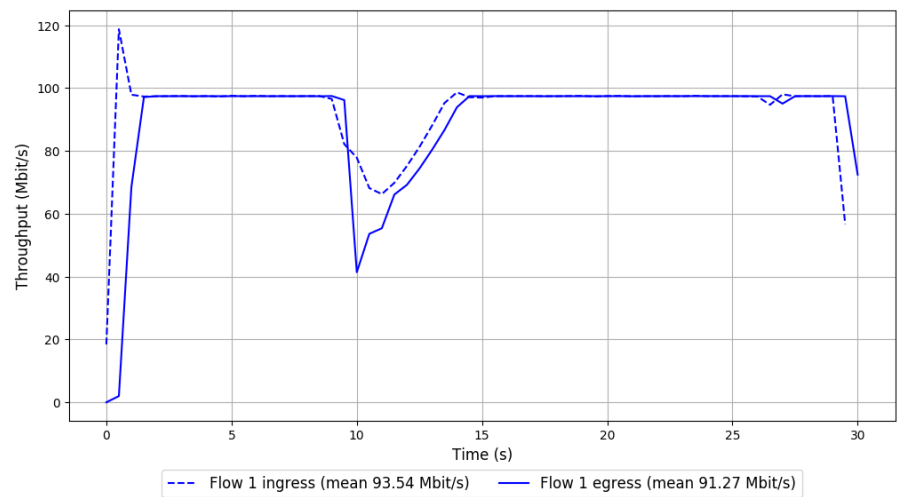
Run 4: Report of Indigo-Muses — Data Link

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-06 06:05:39
End at: 2018-09-06 06:06:09
Local clock offset: 4.259 ms
Remote clock offset: 2.479 ms


# Below is generated by plot.py at 2018-09-06 06:30:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 95.65 Mbit/s
95th percentile per-packet one-way delay: 83.458 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 95.65 Mbit/s
95th percentile per-packet one-way delay: 83.458 ms
Loss rate: 0.54%
```
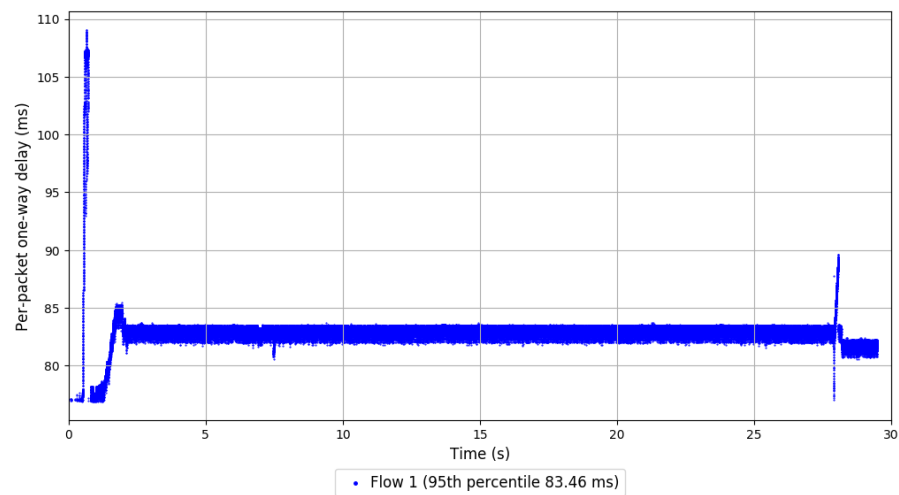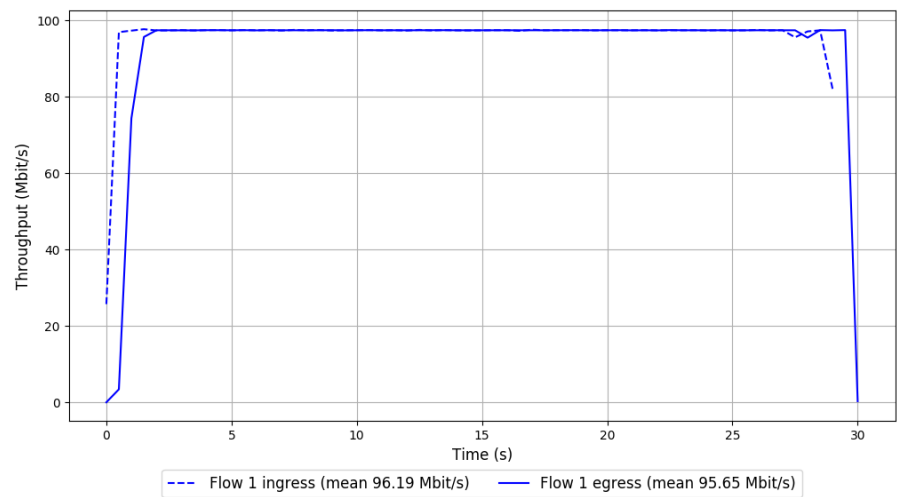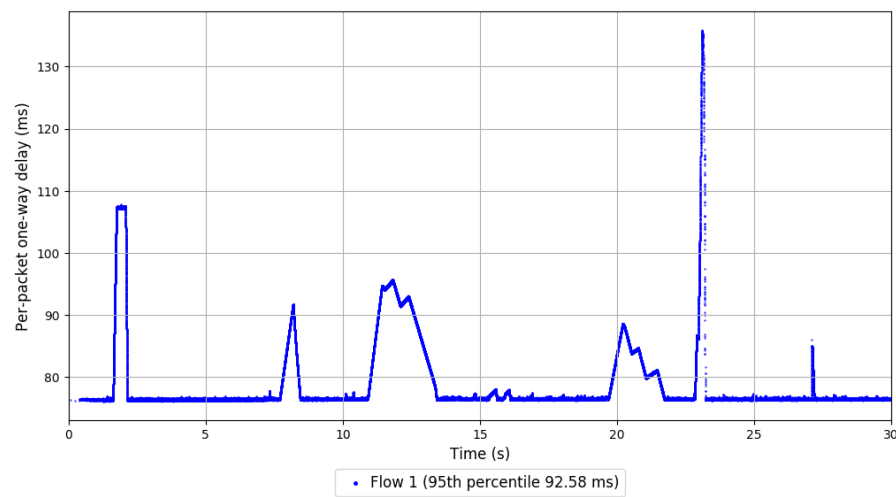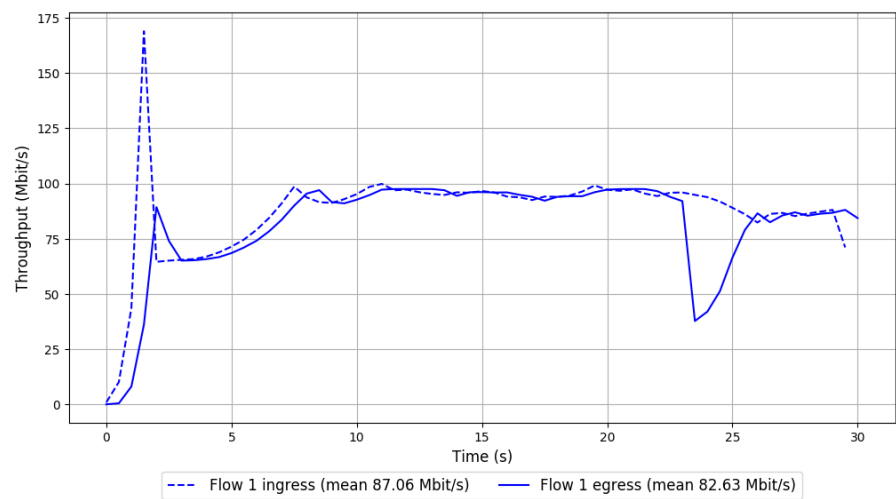
Run 5: Report of Indigo-Muses — Data Link

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-06 04:54:16
End at: 2018-09-06 04:54:46
Local clock offset: 4.161 ms
Remote clock offset: 0.704 ms


# Below is generated by plot.py at 2018-09-06 06:30:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 82.63 Mbit/s
95th percentile per-packet one-way delay: 92.577 ms
Loss rate: 5.09%
-- Flow 1:
Average throughput: 82.63 Mbit/s
95th percentile per-packet one-way delay: 92.577 ms
Loss rate: 5.09%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-06 05:15:17
End at: 2018-09-06 05:15:47
Local clock offset: 5.162 ms
Remote clock offset: -0.178 ms


# Below is generated by plot.py at 2018-09-06 06:30:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.40 Mbit/s
95th percentile per-packet one-way delay: 94.237 ms
Loss rate: 5.30%
-- Flow 1:
Average throughput: 84.40 Mbit/s
95th percentile per-packet one-way delay: 94.237 ms
Loss rate: 5.30%
```
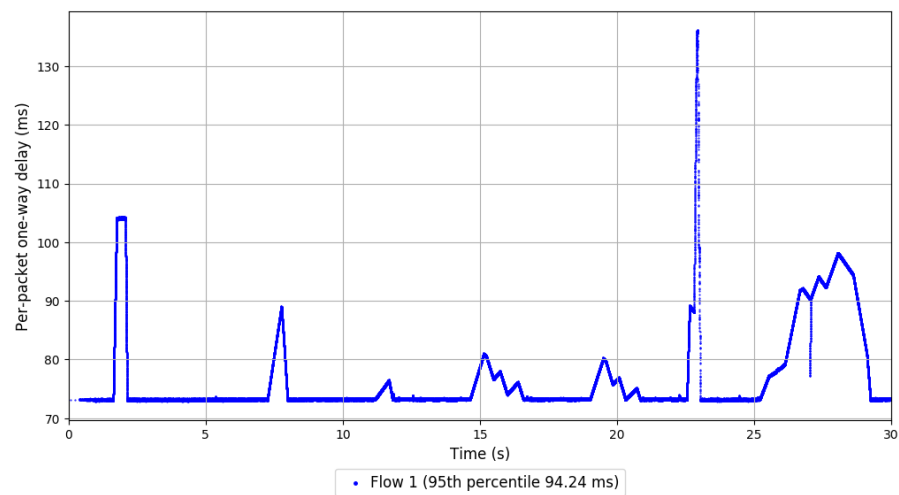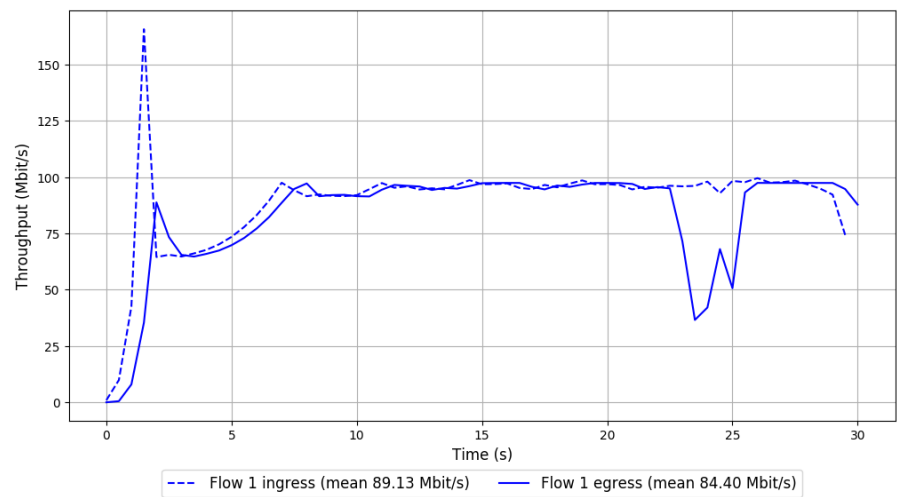
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-09-06 05:36:11
End at: 2018-09-06 05:36:41
Local clock offset: 5.785 ms
Remote clock offset: 0.494 ms


# Below is generated by plot.py at 2018-09-06 06:31:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.95 Mbit/s
95th percentile per-packet one-way delay: 81.723 ms
Loss rate: 4.15%
-- Flow 1:
Average throughput: 84.95 Mbit/s
95th percentile per-packet one-way delay: 81.723 ms
Loss rate: 4.15%
```
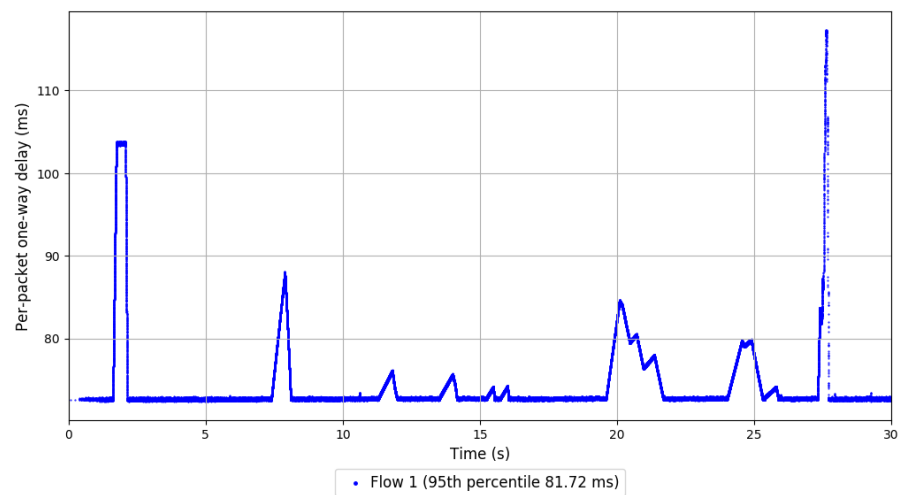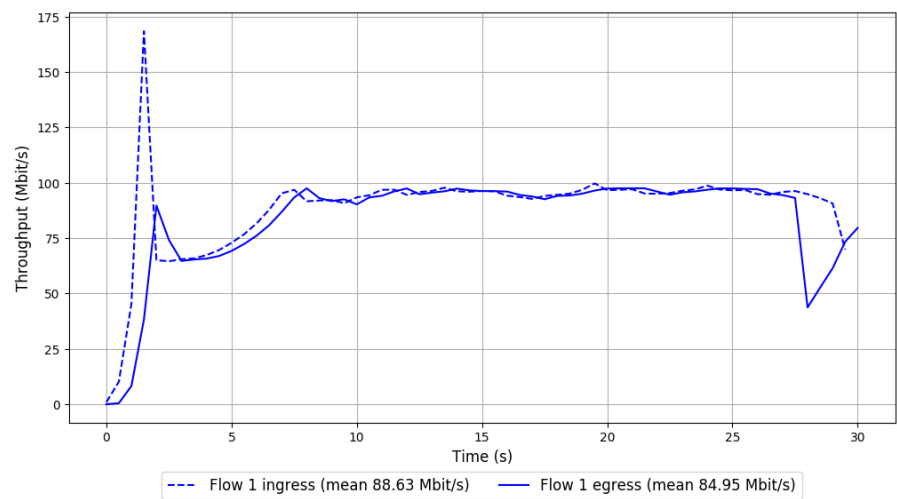
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 88.63 Mbit/s)   Flow 1 egress (mean 84.95 Mbit/s)

Flow 1 (95th percentile 81.72 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-06 05:57:22
End at: 2018-09-06 05:57:52
Local clock offset: 4.495 ms
Remote clock offset: 0.328 ms


# Below is generated by plot.py at 2018-09-06 06:31:42
# Datalink statistics
-- Total of 1 flow:
Average throughput: 84.68 Mbit/s
95th percentile per-packet one-way delay: 102.438 ms
Loss rate: 3.33%
-- Flow 1:
Average throughput: 84.68 Mbit/s
95th percentile per-packet one-way delay: 102.438 ms
Loss rate: 3.33%
```
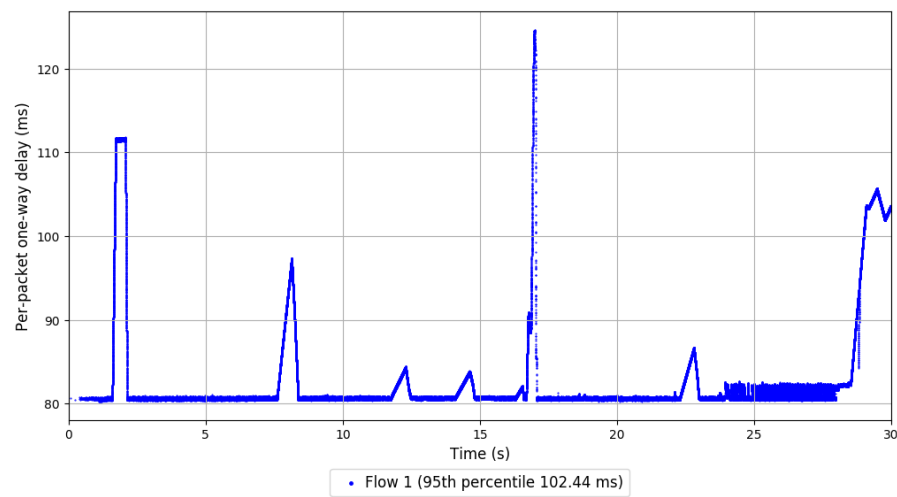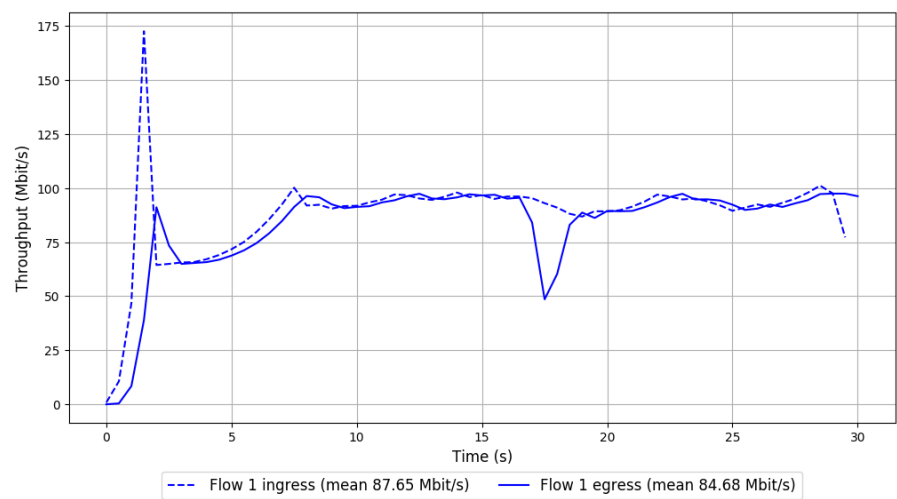
Run 4: Report of PCC-Allegro — Data Link

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```
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-06 06:18:29
End at: 2018-09-06 06:18:59
Local clock offset: 4.192 ms
Remote clock offset: 2.386 ms


# Below is generated by plot.py at 2018-09-06 06:31:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.05 Mbit/s
95th percentile per-packet one-way delay: 89.279 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 86.05 Mbit/s
95th percentile per-packet one-way delay: 89.279 ms
Loss rate: 1.37%
```
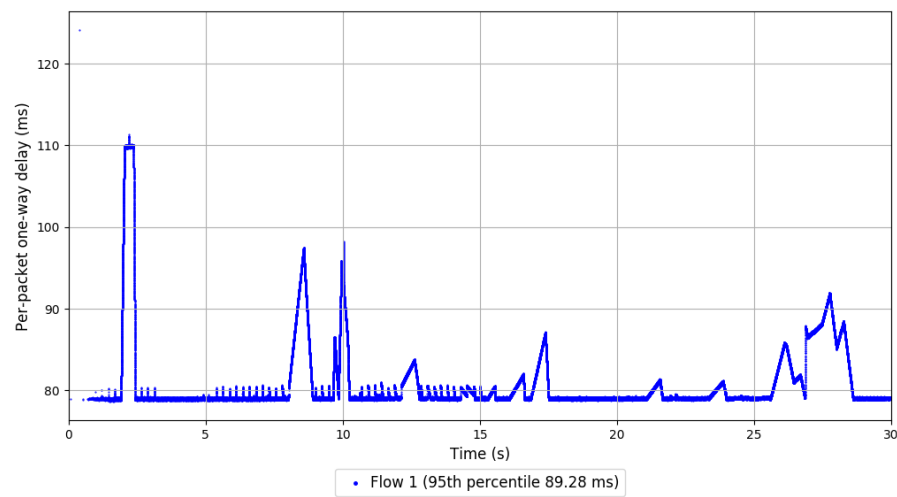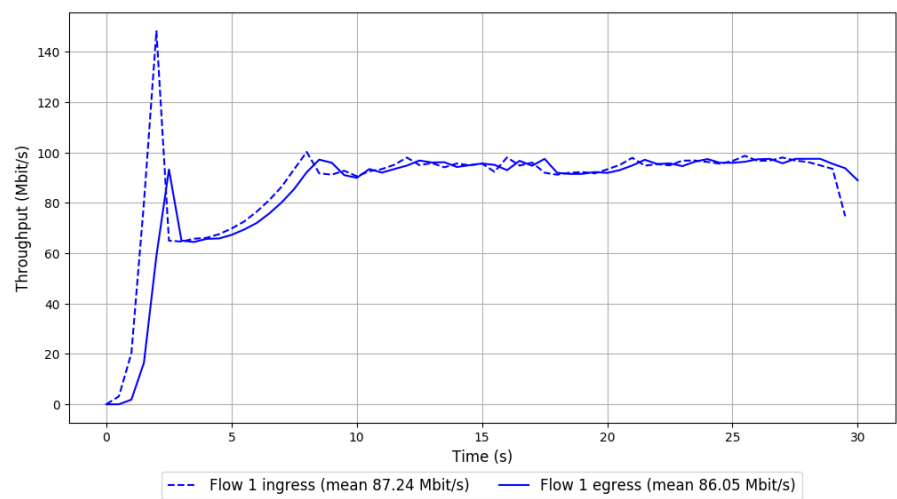
Run 5: Report of PCC-Allegro — Data Link
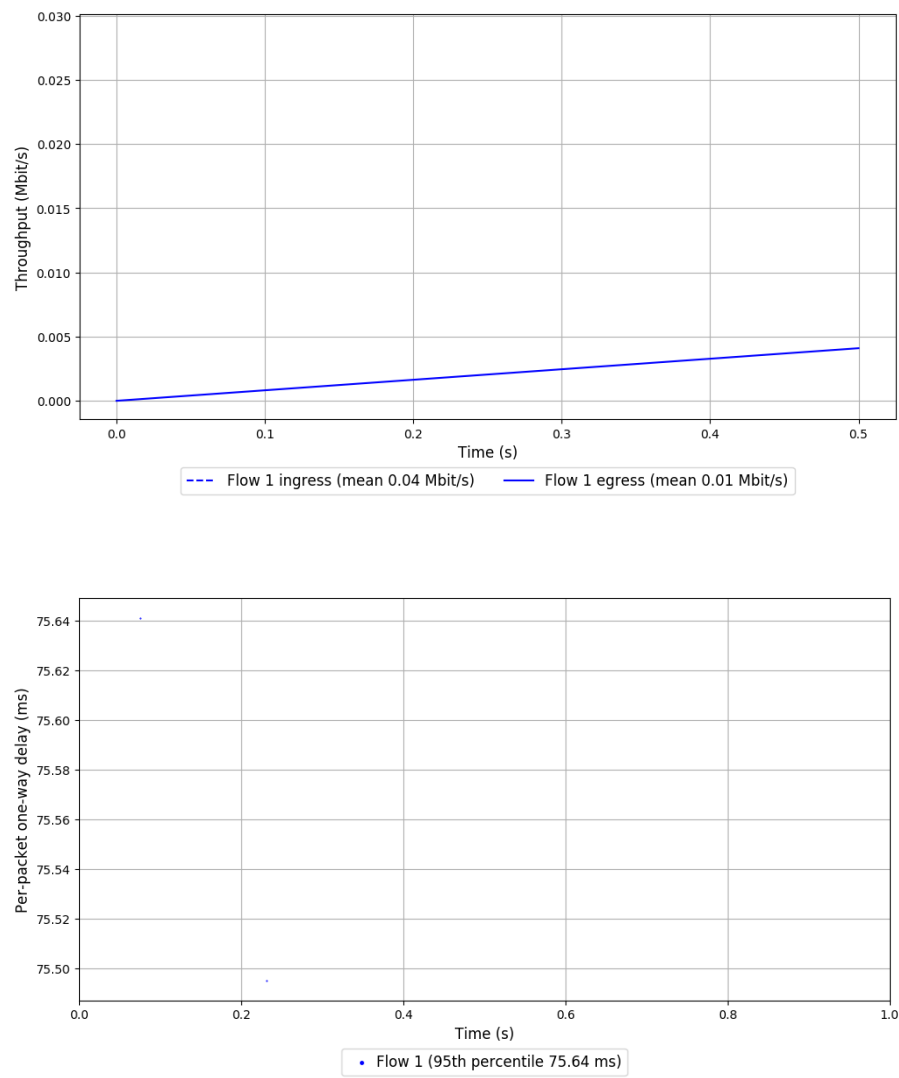
Run 1: Statistics of PCC-Expr

Start at: 2018-09-06 04:47:18
End at: 2018-09-06 04:47:49
Local clock offset: 2.445 ms
Remote clock offset: 0.372 ms

Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.04 Mbit/s) --- Flow 1 egress (mean 0.01 Mbit/s)

Flow 1 (95th percentile 75.64 ms)
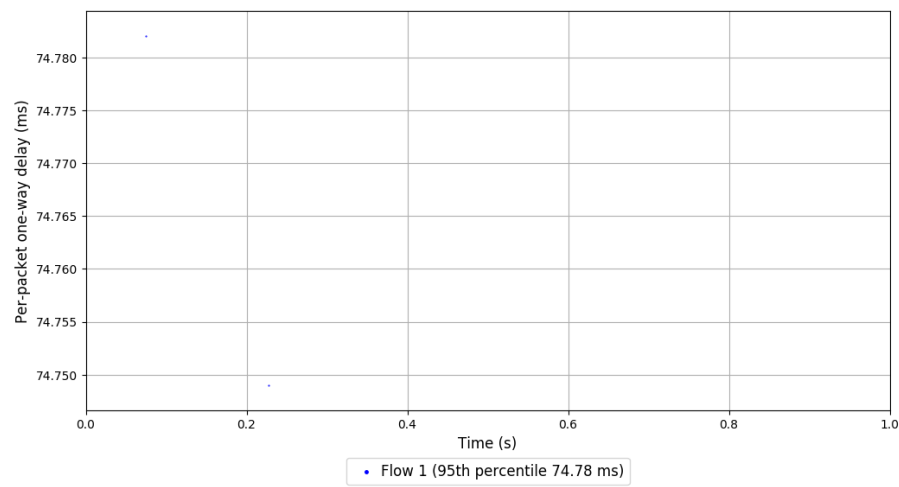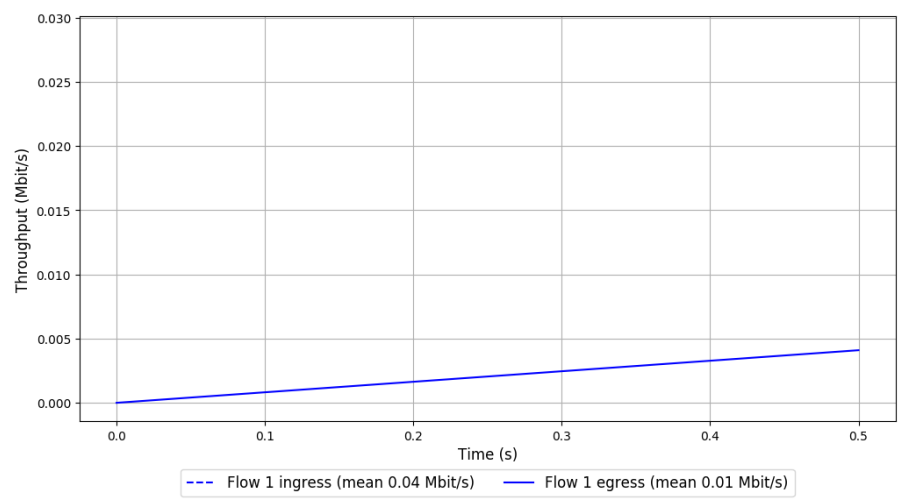
```
Run 2: Statistics of PCC-Expr

Start at: 2018-09-06 05:08:16
End at: 2018-09-06 05:08:46
Local clock offset: 4.805 ms
Remote clock offset: 1.118 ms
```

Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.04 Mbit/s) --- Flow 1 egress (mean 0.01 Mbit/s)

Flow 1 (95th percentile 74.78 ms)
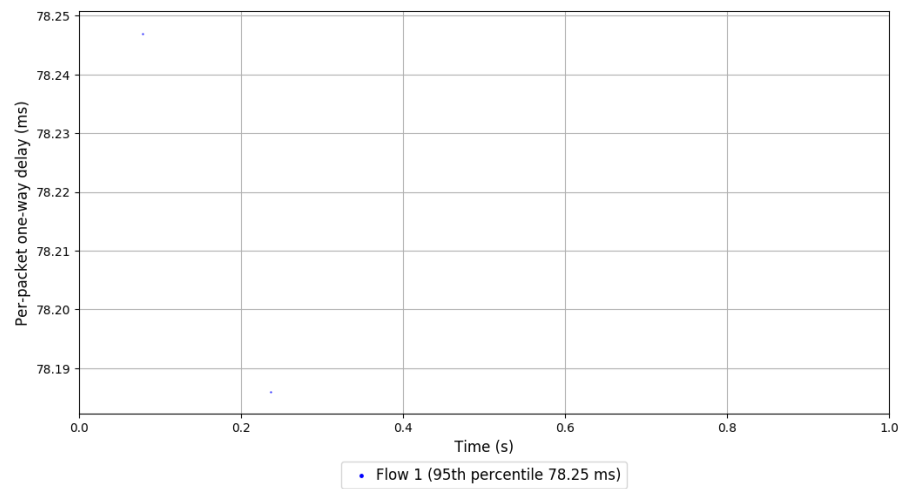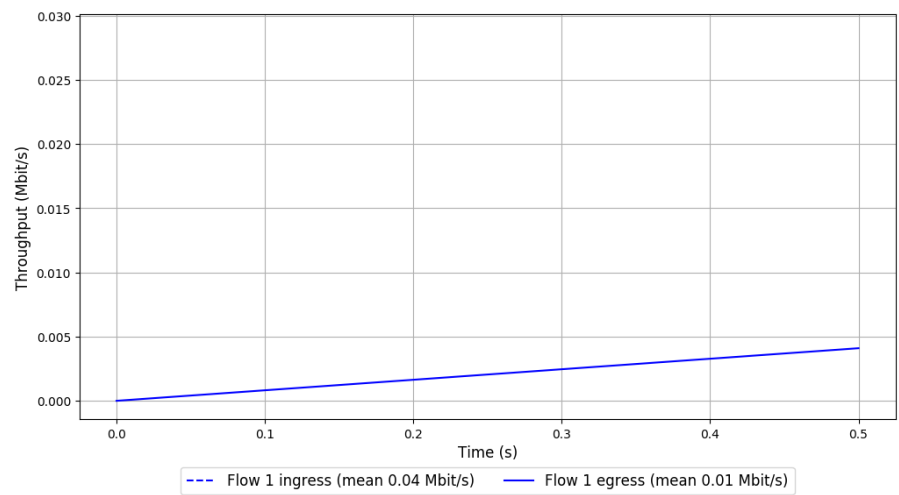
Run 3: Statistics of PCC-Expr

Start at: 2018-09-06 05:29:15
End at: 2018-09-06 05:29:45
Local clock offset: 4.898 ms
Remote clock offset: 1.396 ms

Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.04 Mbit/s) --- Flow 1 egress (mean 0.01 Mbit/s)

Flow 1 (95th percentile 78.25 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-09-06 05:50:22
End at: 2018-09-06 05:50:52
Local clock offset: 5.167 ms
Remote clock offset: 1.457 ms


# Below is generated by plot.py at 2018-09-06 06:31:43
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.50 Mbit/s
95th percentile per-packet one-way delay: 73.383 ms
Loss rate: 48.61%
-- Flow 1:
Average throughput: 12.50 Mbit/s
95th percentile per-packet one-way delay: 73.383 ms
Loss rate: 48.61%
```
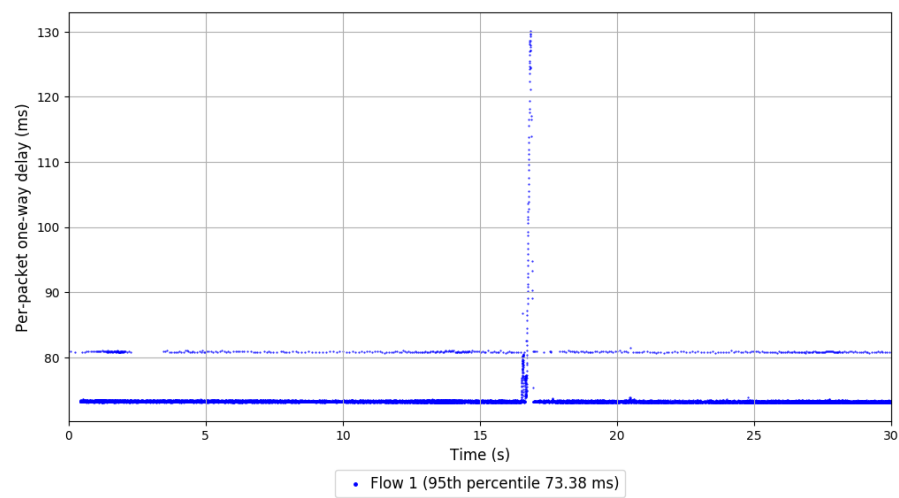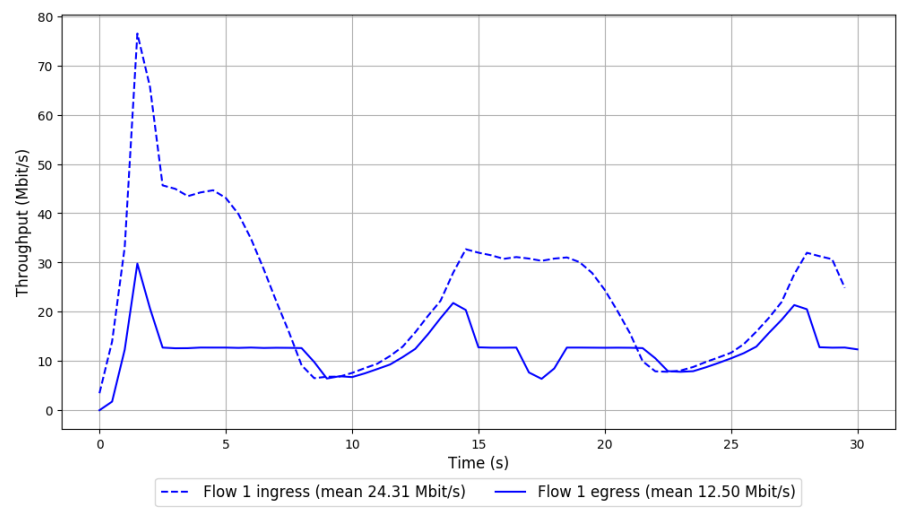
Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 24.31 Mbit/s)   Flow 1 egress (mean 12.50 Mbit/s)

Flow 1 (95th percentile 73.38 ms)
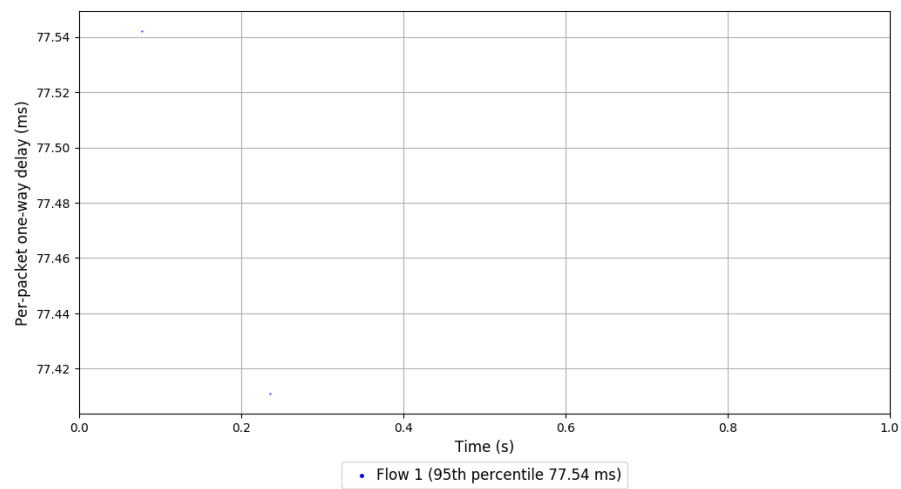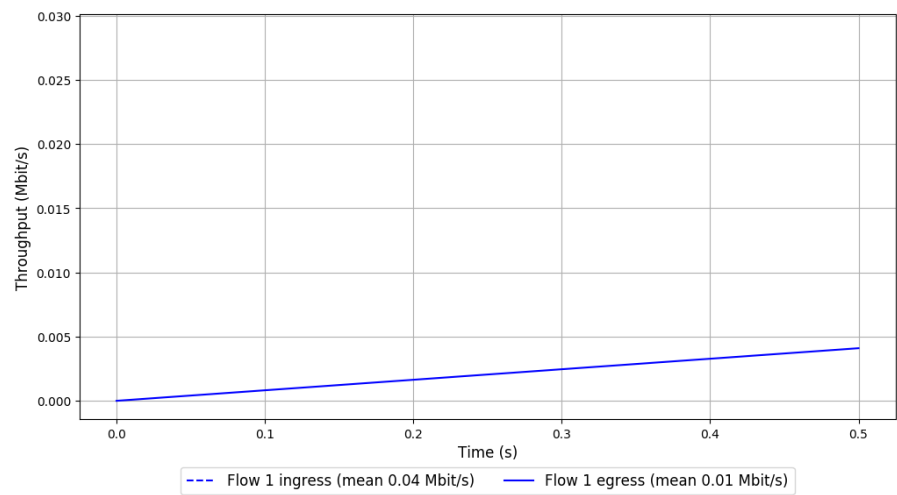
```
Run 5: Statistics of PCC-Expr

Start at: 2018-09-06 06:11:31
End at: 2018-09-06 06:12:01
Local clock offset: 4.039 ms
Remote clock offset: 1.153 ms
```

Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 0.04 Mbit/s) --- Flow 1 egress (mean 0.01 Mbit/s)

Flow 1 (95th percentile 77.54 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-06 04:43:46
End at: 2018-09-06 04:44:16
Local clock offset: 1.846 ms
Remote clock offset: 0.19 ms


# Below is generated by plot.py at 2018-09-06 06:31:44
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.96 Mbit/s
95th percentile per-packet one-way delay: 80.150 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 68.96 Mbit/s
95th percentile per-packet one-way delay: 80.150 ms
Loss rate: 0.50%
```
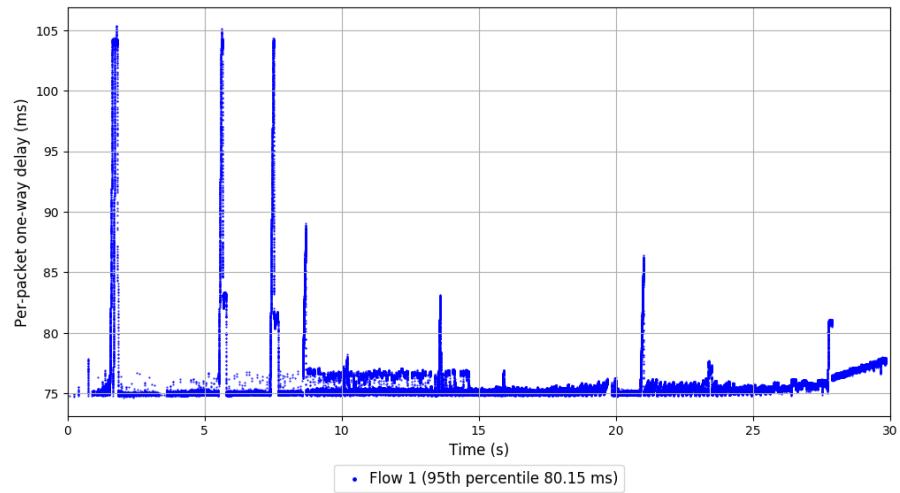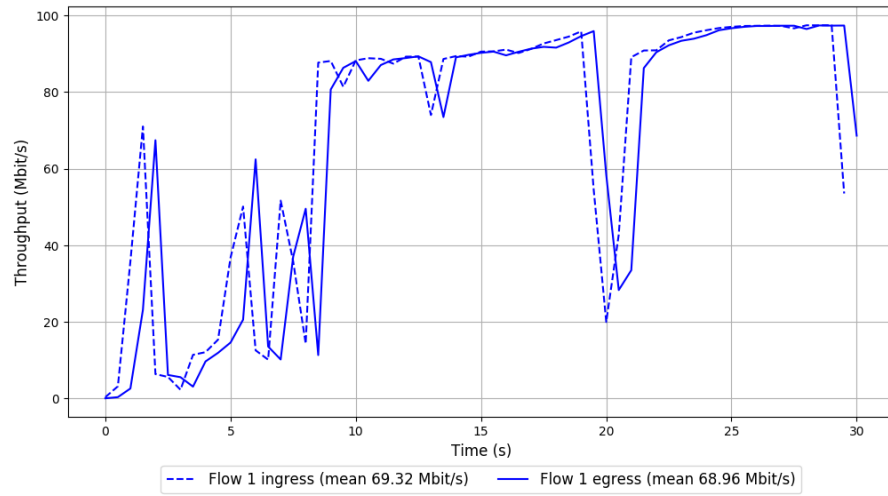
Run 1: Report of QUIC Cubic — Data Link

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-06 05:04:44
End at: 2018-09-06 05:05:14
Local clock offset: 5.319 ms
Remote clock offset: -0.073 ms


# Below is generated by plot.py at 2018-09-06 06:31:45
# Datalink statistics
-- Total of 1 flow:
Average throughput: 69.60 Mbit/s
95th percentile per-packet one-way delay: 99.677 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 69.60 Mbit/s
95th percentile per-packet one-way delay: 99.677 ms
Loss rate: 0.48%
```
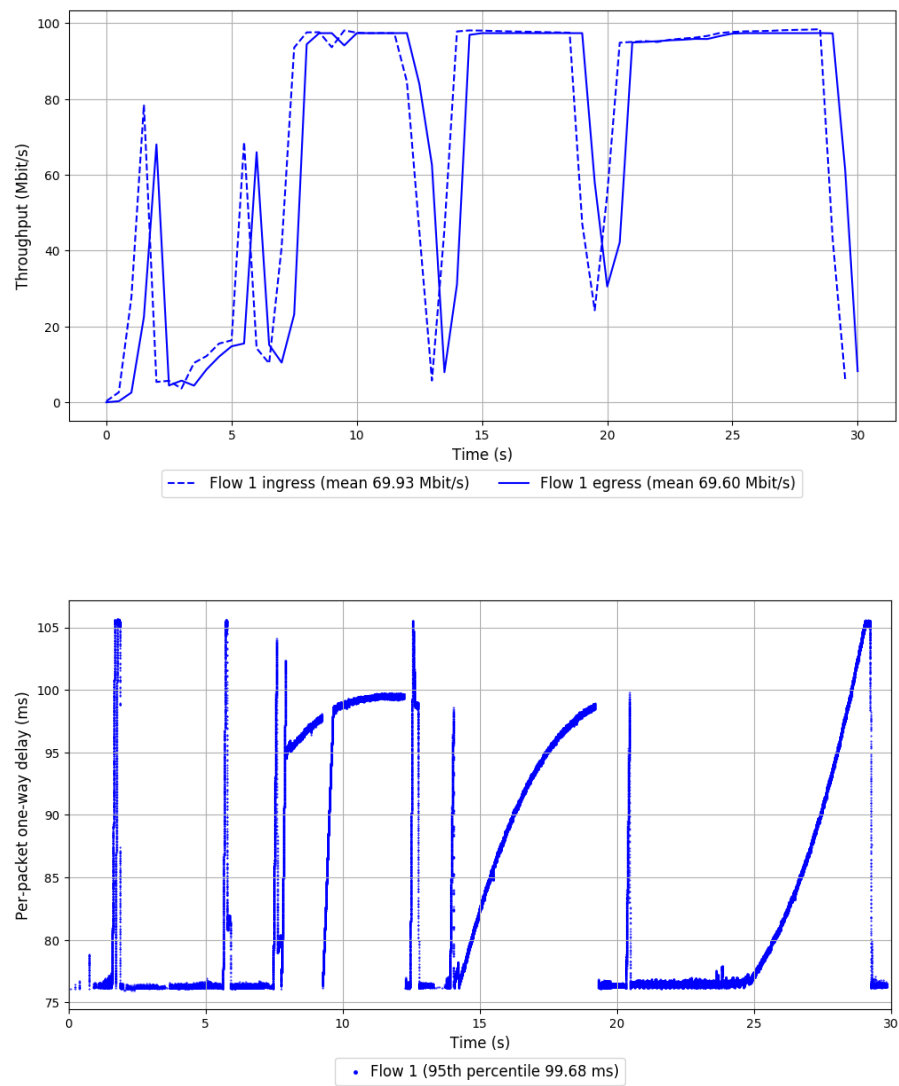
Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-06 05:25:43
End at: 2018-09-06 05:26:13
Local clock offset: 5.7 ms
Remote clock offset: 1.175 ms


# Below is generated by plot.py at 2018-09-06 06:31:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 68.77 Mbit/s
95th percentile per-packet one-way delay: 78.166 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 68.77 Mbit/s
95th percentile per-packet one-way delay: 78.166 ms
Loss rate: 0.49%
```
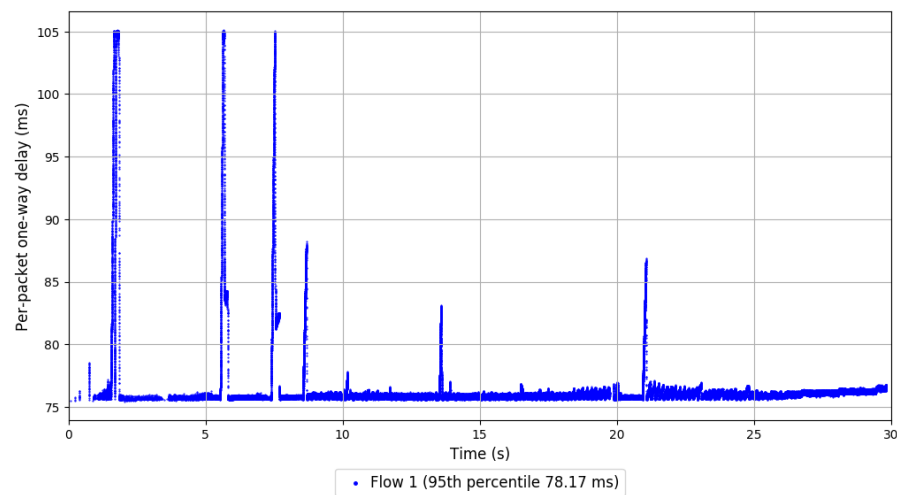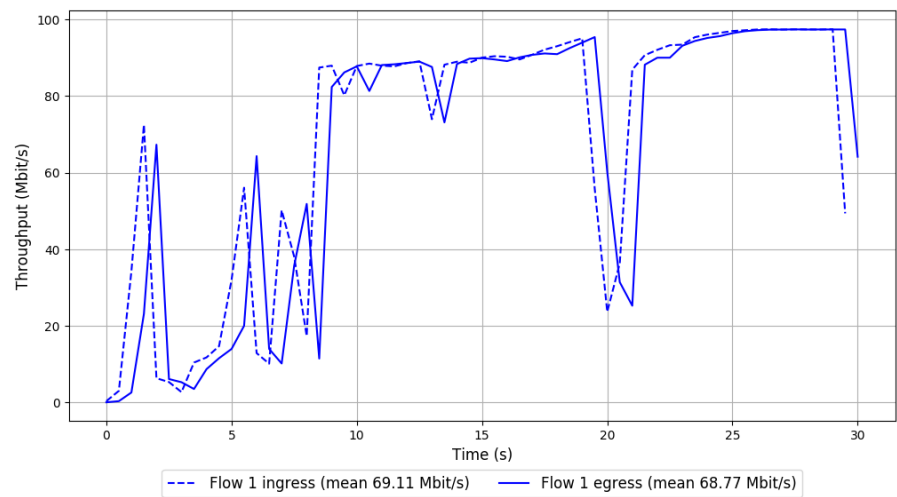
Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-06 05:46:50
End at: 2018-09-06 05:47:20
Local clock offset: 4.899 ms
Remote clock offset: 0.38 ms


# Below is generated by plot.py at 2018-09-06 06:31:46
# Datalink statistics
-- Total of 1 flow:
Average throughput: 67.37 Mbit/s
95th percentile per-packet one-way delay: 106.307 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 67.37 Mbit/s
95th percentile per-packet one-way delay: 106.307 ms
Loss rate: 0.49%
```
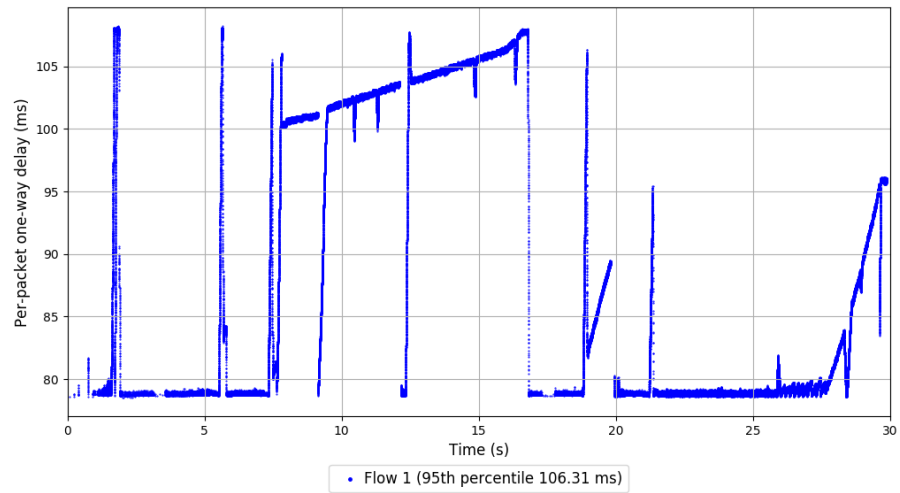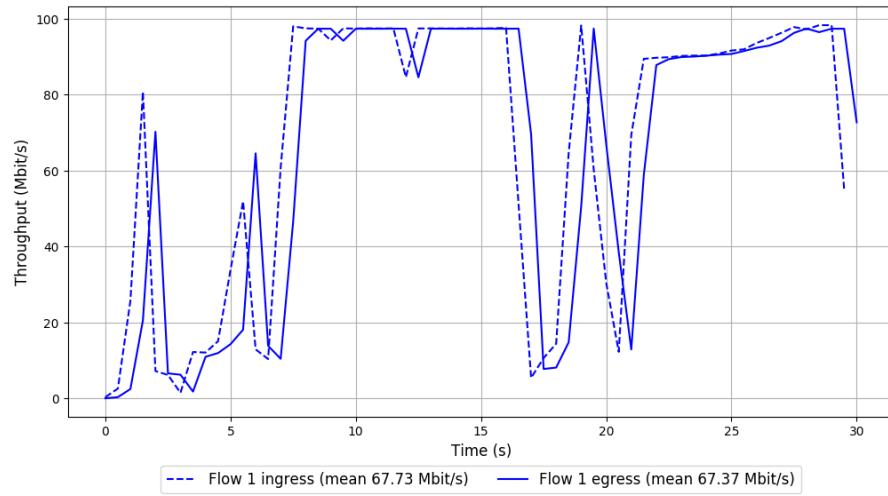
Run 4: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 67.73 Mbit/s) ---- Flow 1 egress (mean 67.37 Mbit/s) ——

Flow 1 (95th percentile 106.31 ms)

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-06 06:07:59
End at: 2018-09-06 06:08:29
Local clock offset: 3.452 ms
Remote clock offset: 1.237 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 67.34 Mbit/s
95th percentile per-packet one-way delay: 75.474 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 67.34 Mbit/s
95th percentile per-packet one-way delay: 75.474 ms
Loss rate: 1.26%
```
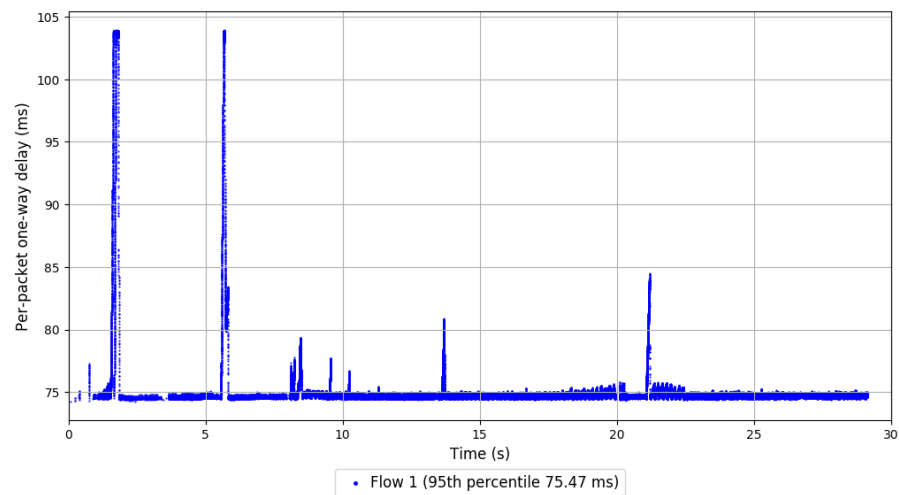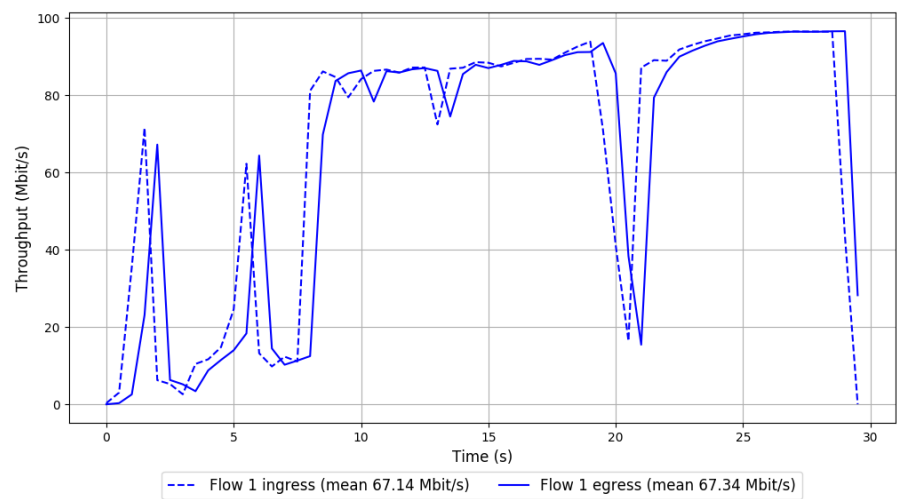
Run 5: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 67.14 Mbit/s) —— Flow 1 egress (mean 67.34 Mbit/s)
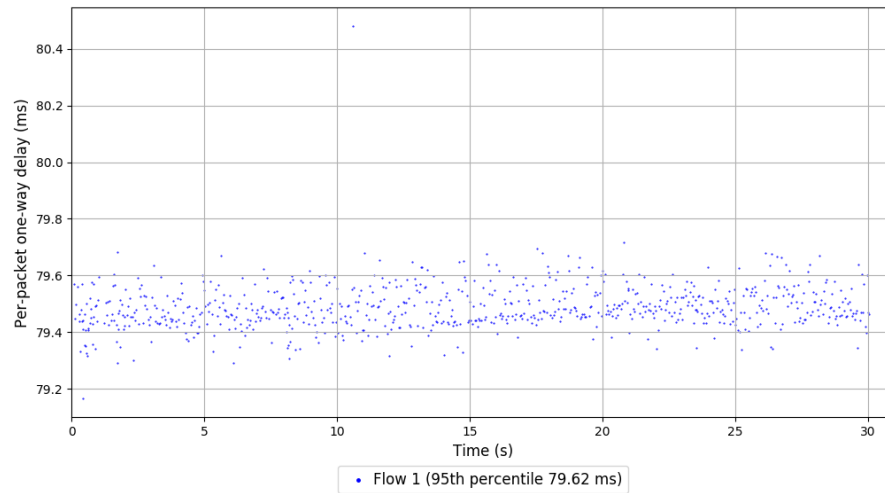
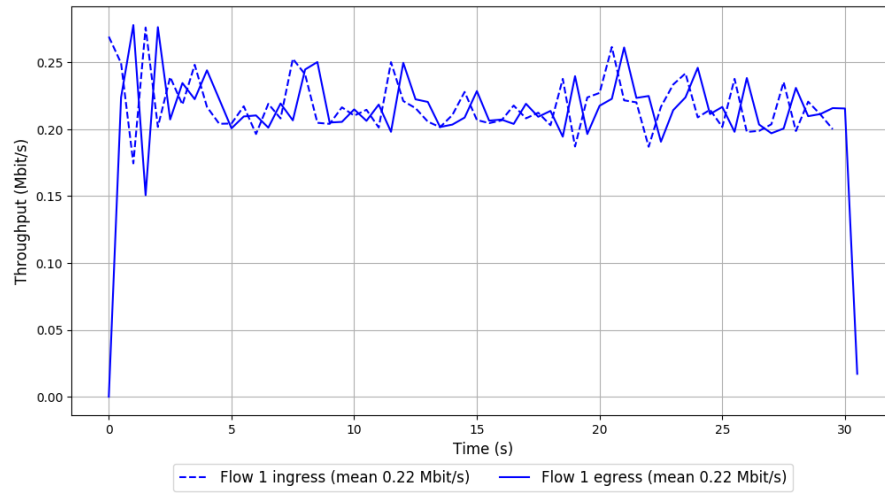

• Flow 1 (95th percentile 75.47 ms)

```
Run 1: Statistics of SCReAM

Start at: 2018-09-06 04:58:58
End at: 2018-09-06 04:59:28
Local clock offset: 4.775 ms
Remote clock offset: 0.938 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 79.616 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 79.616 ms
Loss rate: 0.00%
```

Run 1: Report of SCReAM — Data Link

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

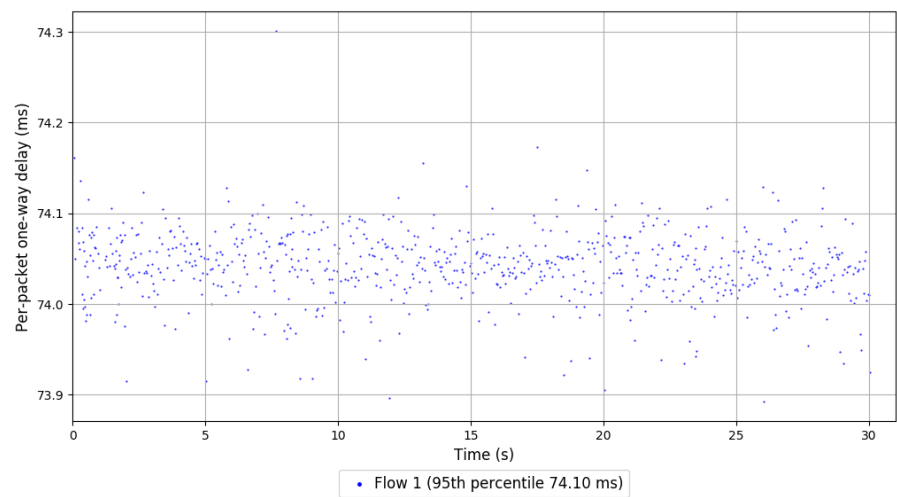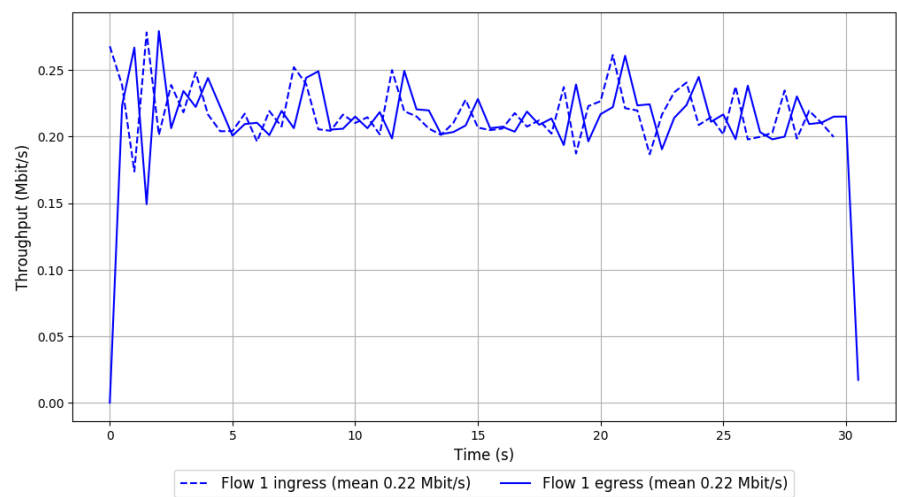
• Flow 1 (95th percentile 79.62 ms)

```
Run 2: Statistics of SCReAM

Start at: 2018-09-06 05:19:58
End at: 2018-09-06 05:20:28
Local clock offset: 5.764 ms
Remote clock offset: 1.286 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 74.098 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 74.098 ms
Loss rate: 0.00%
```

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 74.10 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-09-06 05:40:53
End at: 2018-09-06 05:41:23
Local clock offset: 5.104 ms
Remote clock offset: 0.28 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 80.623 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 80.623 ms
Loss rate: 0.00%
```
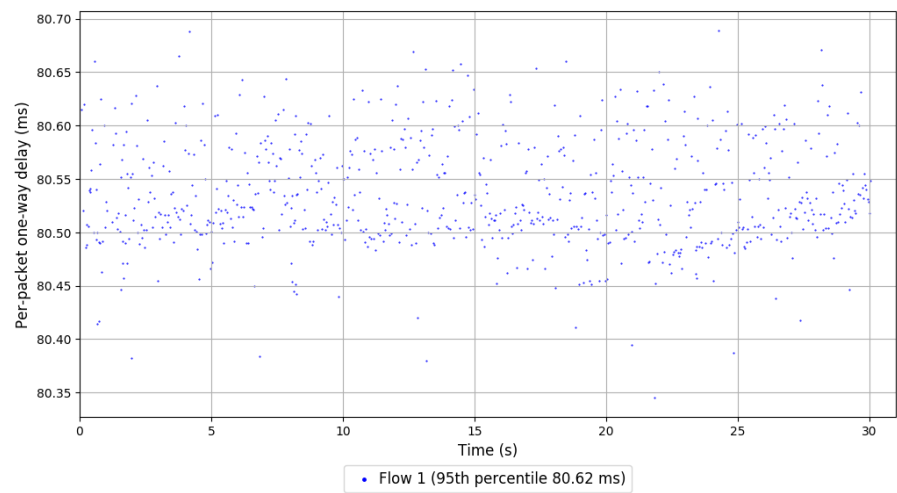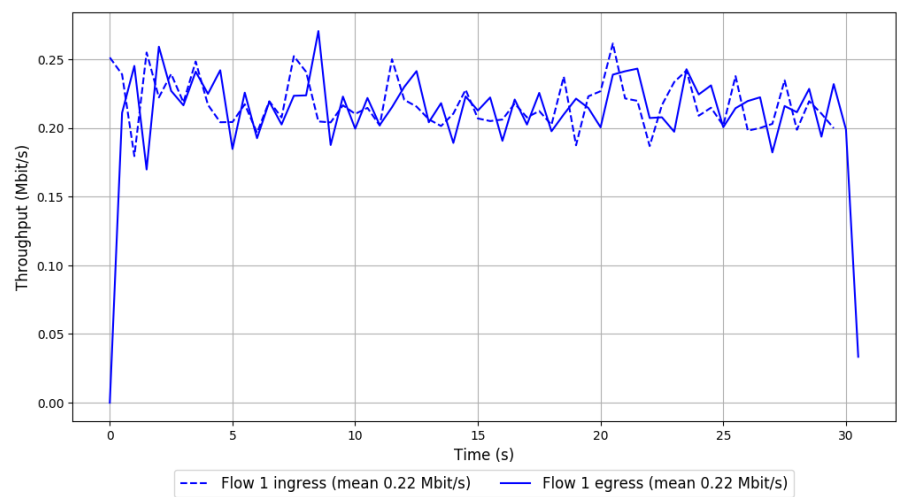
Run 3: Report of SCReAM — Data Link

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

Flow 1 (95th percentile 80.62 ms)

```
Run 4: Statistics of SCReAM

Start at: 2018-09-06 06:02:03
End at: 2018-09-06 06:02:33
Local clock offset: 4.337 ms
Remote clock offset: 2.369 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.115 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 84.115 ms
Loss rate: 0.00%
```
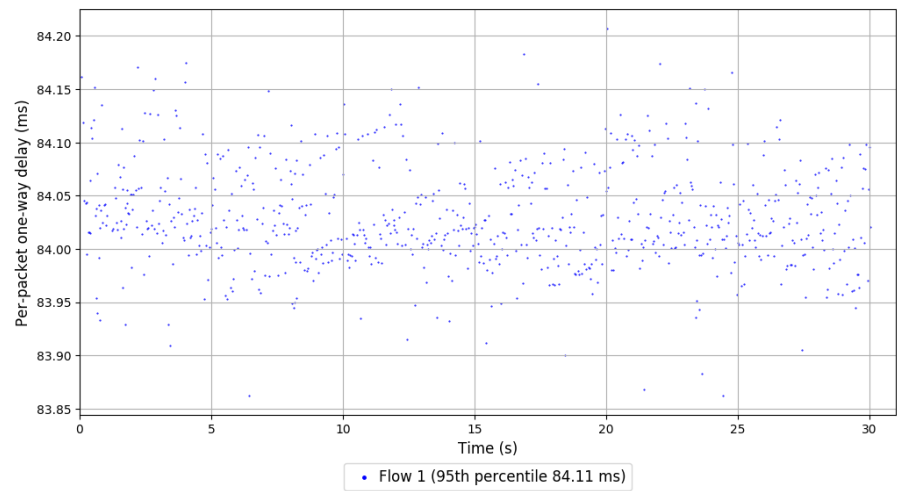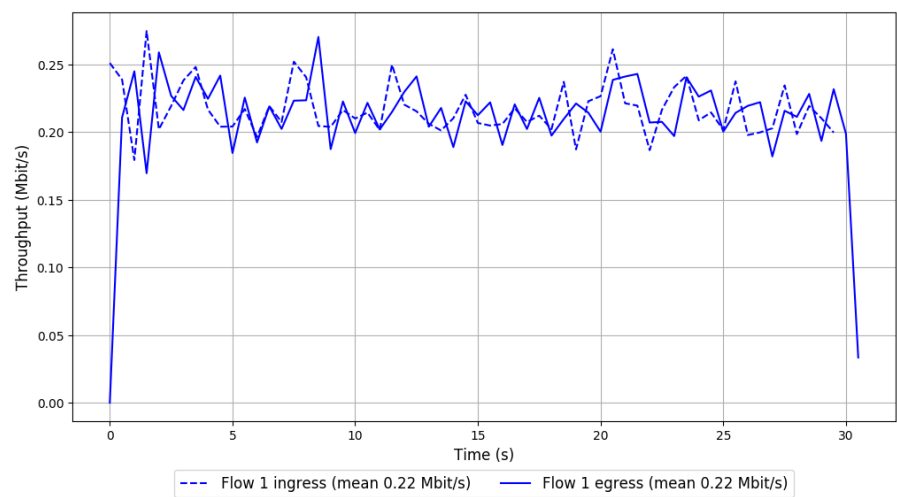
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-09-06 06:23:13
End at: 2018-09-06 06:23:43
Local clock offset: 4.402 ms
Remote clock offset: 2.385 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 75.537 ms
Loss rate: 1.23%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 75.537 ms
Loss rate: 1.23%
```
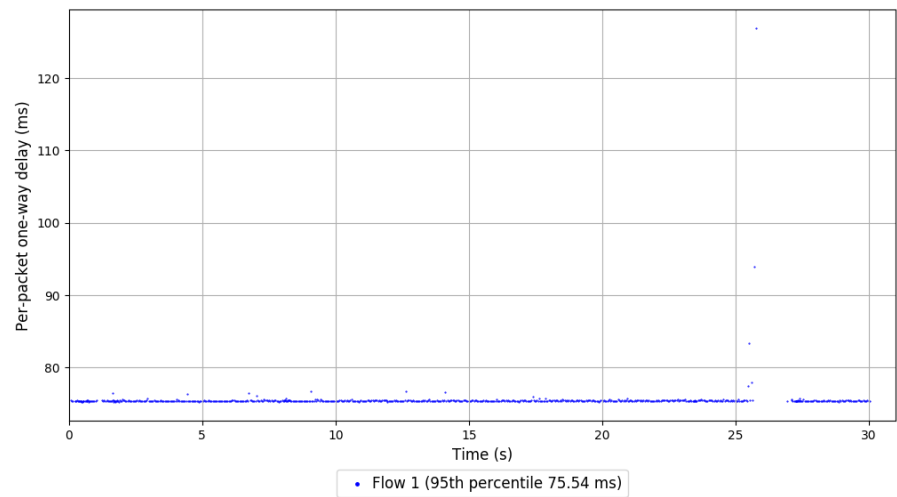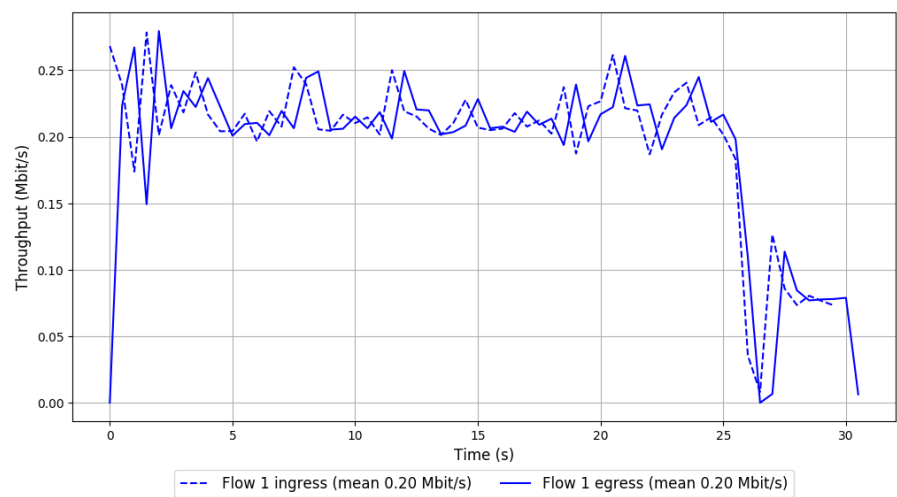
Run 5: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.20 Mbit/s) — Flow 1 egress (mean 0.20 Mbit/s)

• Flow 1 (95th percentile 75.54 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-09-06 04:42:39
End at: 2018-09-06 04:43:09
Local clock offset: 1.82 ms
Remote clock offset: -0.96 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 74.650 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 74.650 ms
Loss rate: 0.87%
```
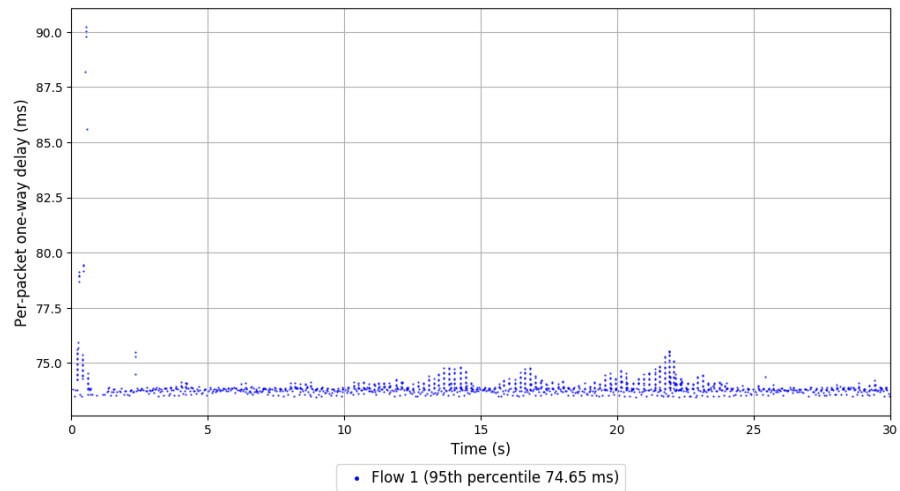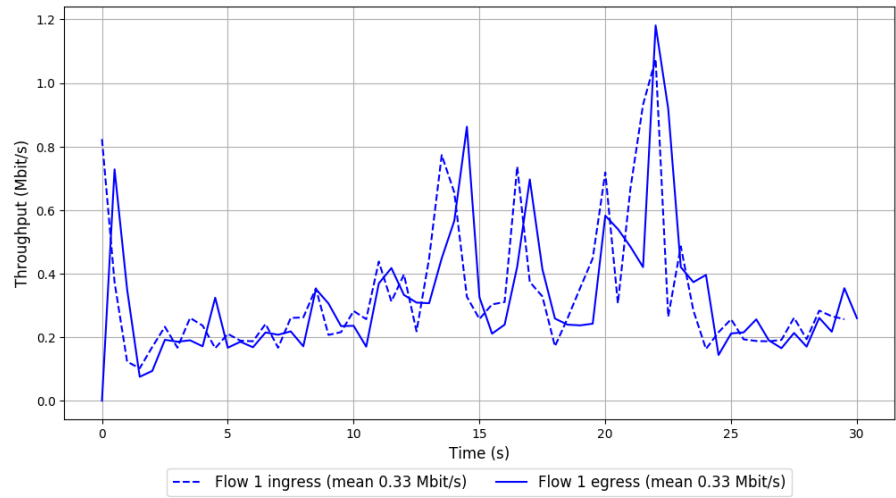
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-09-06 05:03:36
End at: 2018-09-06 05:04:06
Local clock offset: 5.165 ms
Remote clock offset: 1.079 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 76.852 ms
Loss rate: 2.23%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 76.852 ms
Loss rate: 2.23%
```
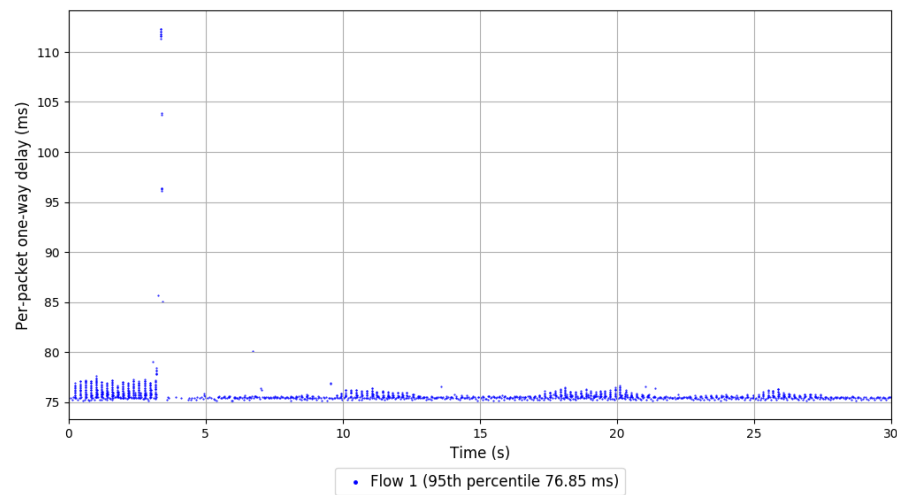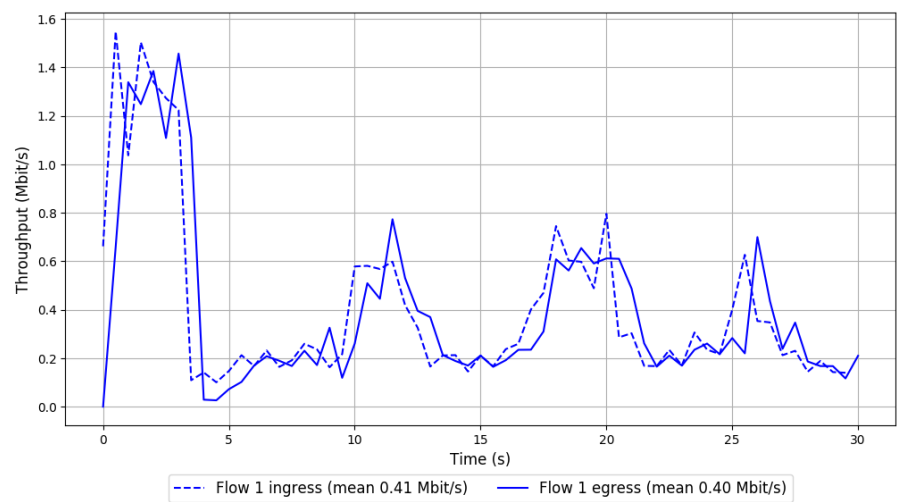
Run 2: Report of Sprout — Data Link

Flow 1 ingress (mean 0.41 Mbit/s)   Flow 1 egress (mean 0.40 Mbit/s)

Flow 1 (95th percentile 76.85 ms)

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```
Run 3: Statistics of Sprout

Start at: 2018-09-06 05:24:36
End at: 2018-09-06 05:25:06
Local clock offset: 4.954 ms
Remote clock offset: 1.056 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 82.259 ms
Loss rate: 5.55%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 82.259 ms
Loss rate: 5.55%
```
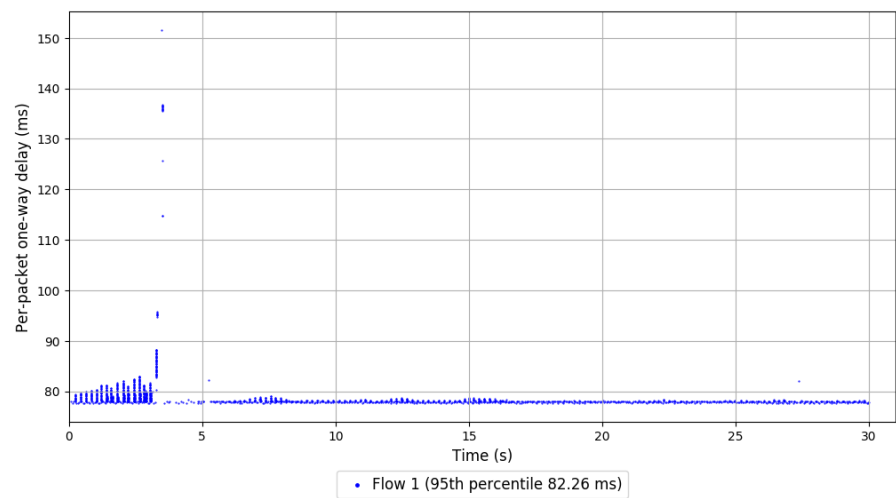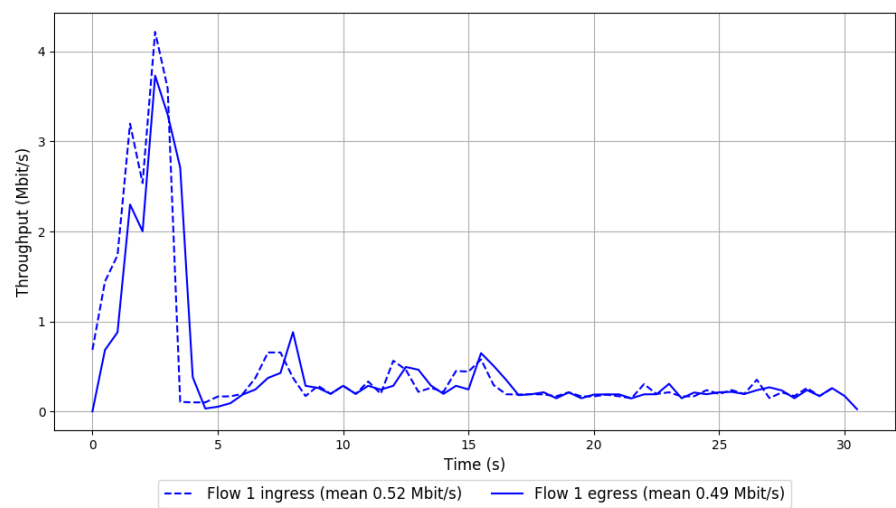
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-09-06 05:45:43
End at: 2018-09-06 05:46:13
Local clock offset: 5.188 ms
Remote clock offset: 0.425 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 77.381 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 0.25 Mbit/s
95th percentile per-packet one-way delay: 77.381 ms
Loss rate: 0.33%
```
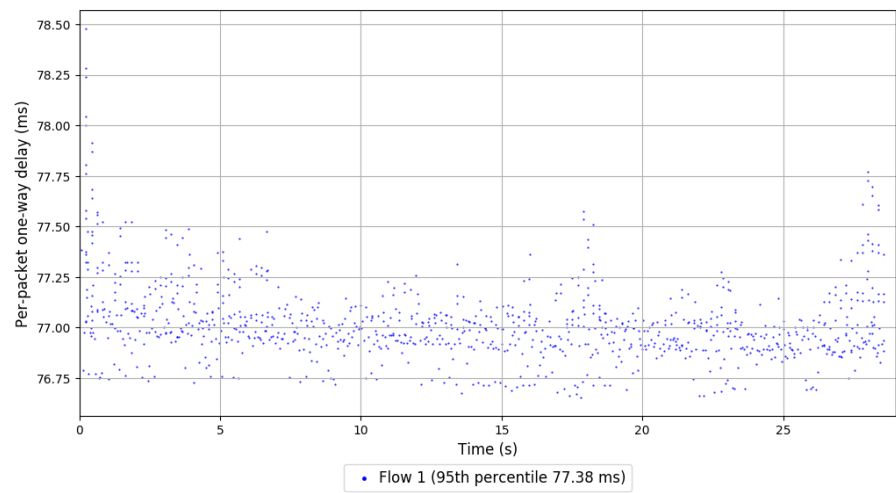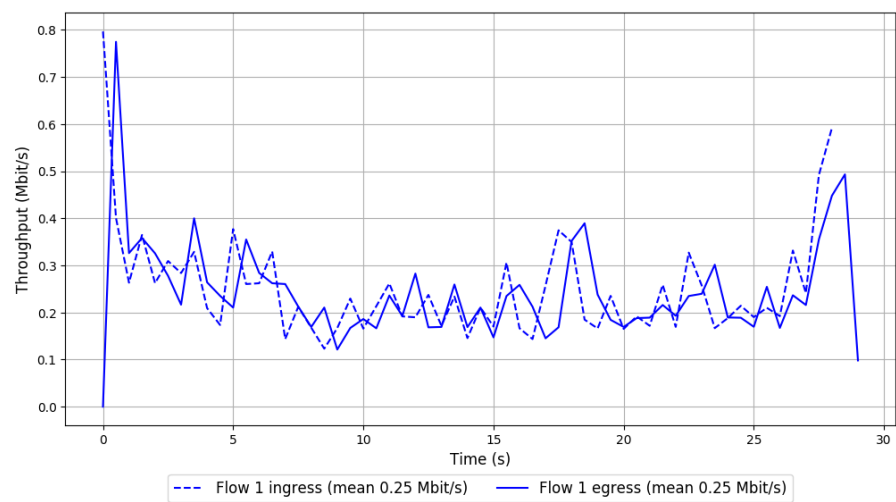
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-09-06 06:06:52
End at: 2018-09-06 06:07:22
Local clock offset: 4.223 ms
Remote clock offset: 2.535 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 81.108 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 81.108 ms
Loss rate: 0.00%
```
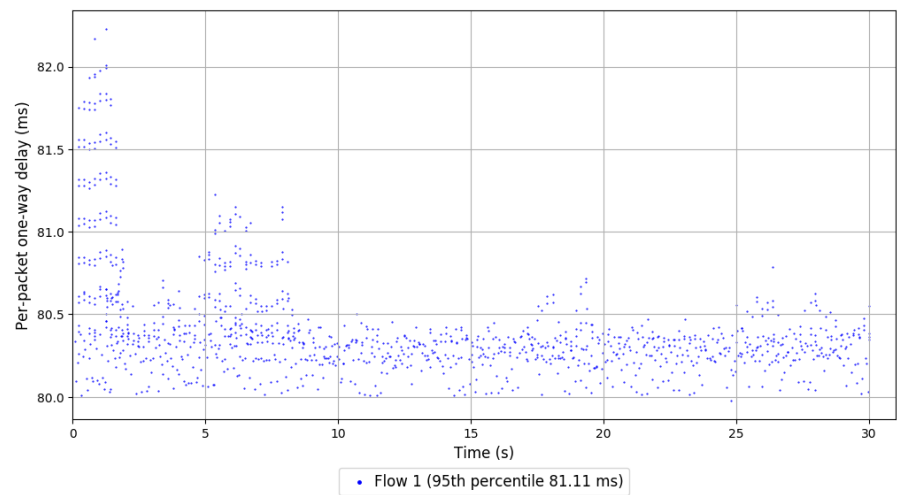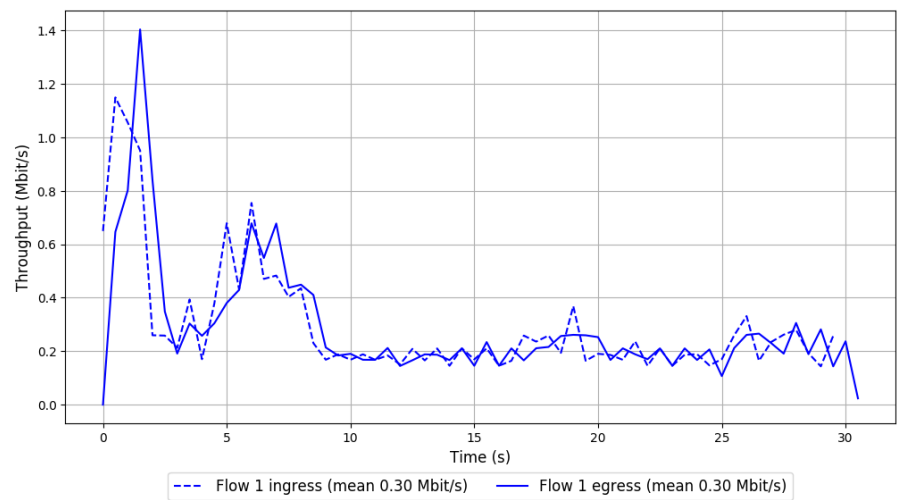
Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 0.30 Mbit/s) --- Flow 1 egress (mean 0.30 Mbit/s)
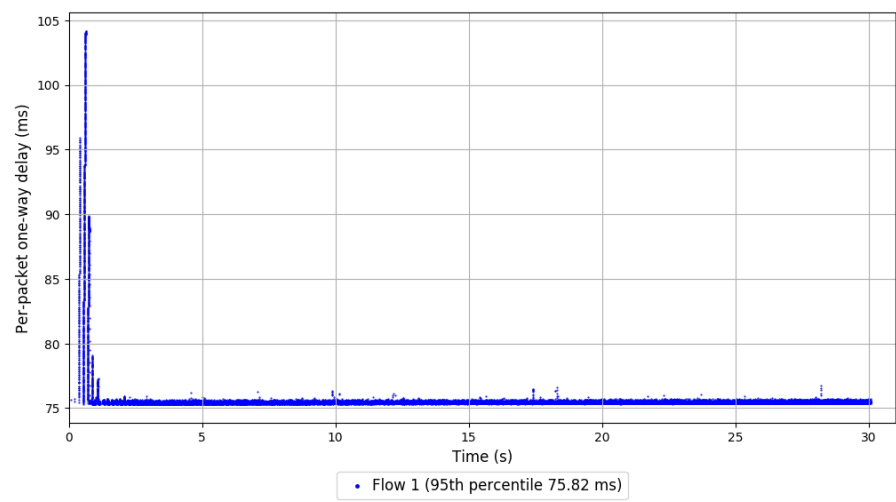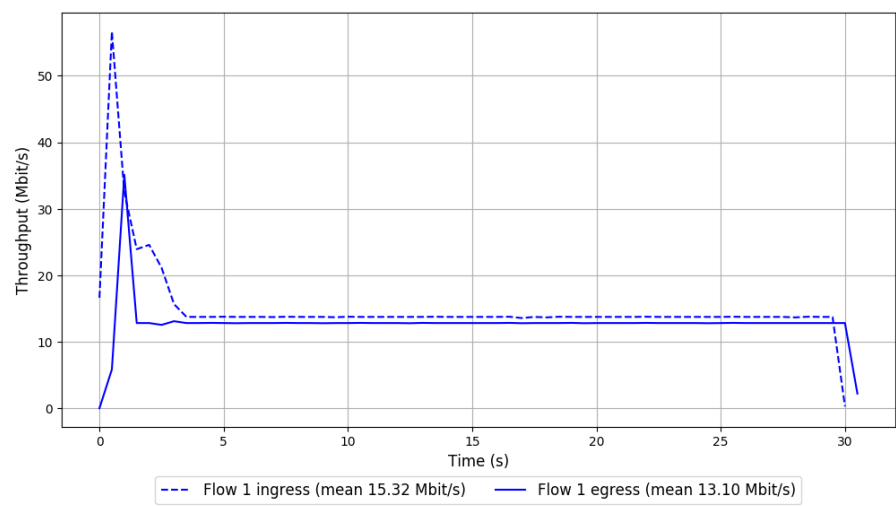

Flow 1 (95th percentile 81.11 ms)

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

Start at: 2018-09-06 04:51:56
End at: 2018-09-06 04:52:26
Local clock offset: 2.966 ms
Remote clock offset: 1.997 ms

# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 75.817 ms
Loss rate: 14.47%
-- Flow 1:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 75.817 ms
Loss rate: 14.47%
```

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

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

Start at: 2018-09-06 05:12:52
End at: 2018-09-06 05:13:22
Local clock offset: 5.063 ms
Remote clock offset: 1.072 ms


# Below is generated by plot.py at 2018-09-06 06:31:50
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 76.005 ms
Loss rate: 9.57%
-- Flow 1:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 76.005 ms
Loss rate: 9.57%
```
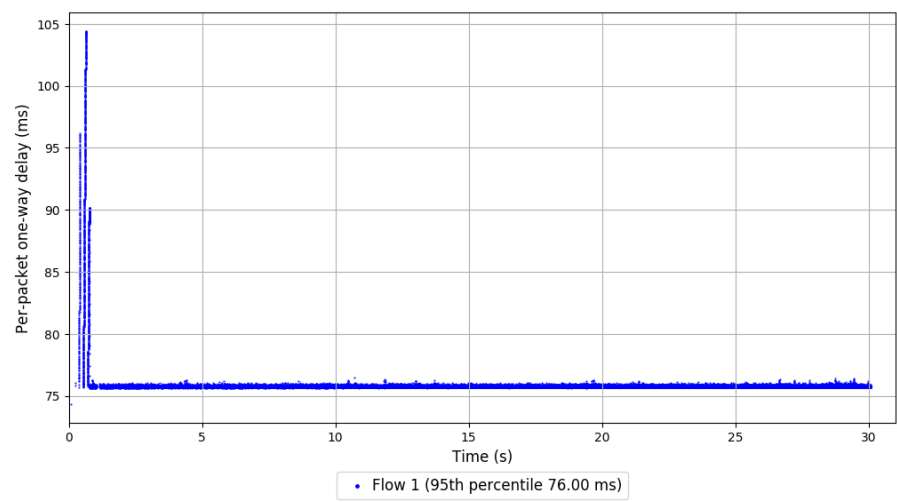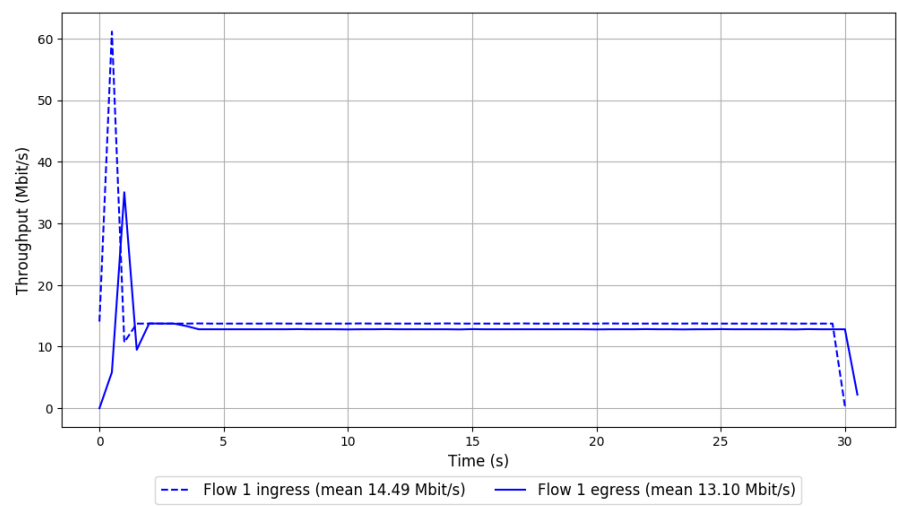
Run 2: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 14.49 Mbit/s) --- Flow 1 egress (mean 13.10 Mbit/s)

Flow 1 (95th percentile 76.00 ms)

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

Start at: 2018-09-06 05:33:51
End at: 2018-09-06 05:34:21
Local clock offset: 4.955 ms
Remote clock offset: 0.572 ms


# Below is generated by plot.py at 2018-09-06 06:31:53
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 73.358 ms
Loss rate: 9.33%
-- Flow 1:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 73.358 ms
Loss rate: 9.33%
```
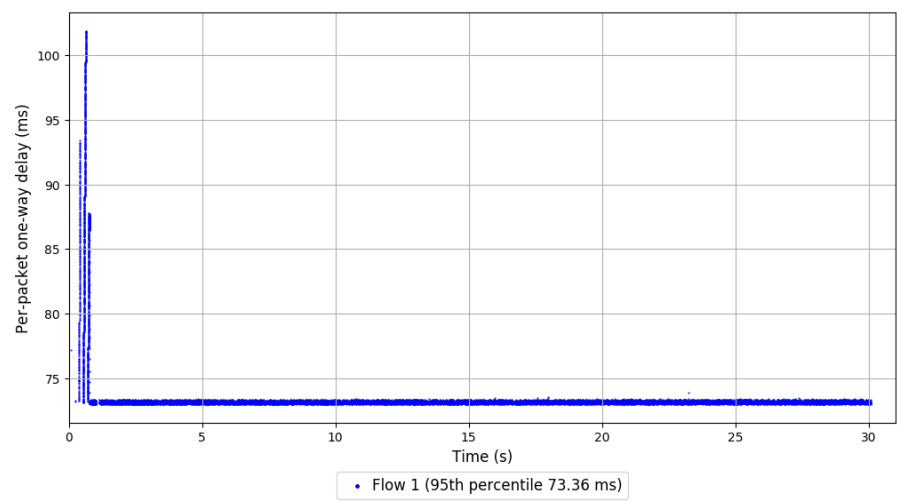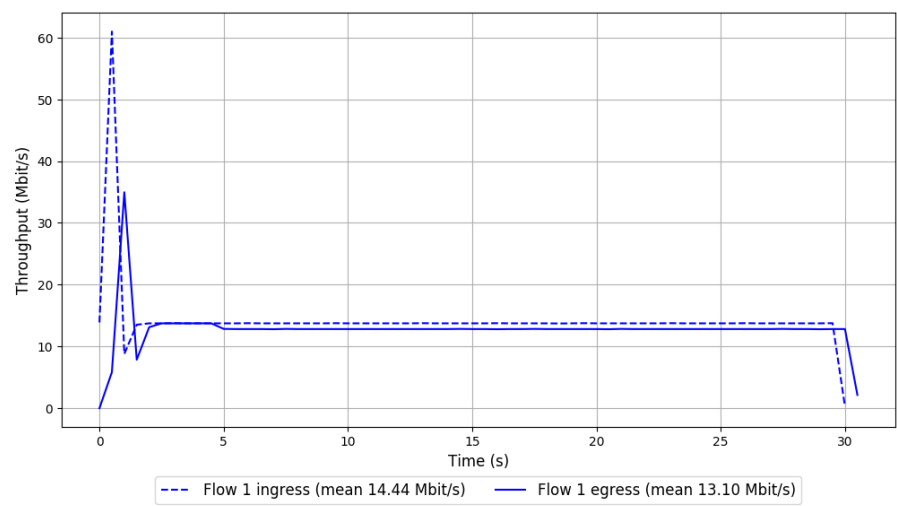
Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 14.44 Mbit/s) --- Flow 1 egress (mean 13.10 Mbit/s)

Flow 1 (95th percentile 73.36 ms)

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

Start at: 2018-09-06 05:55:01
End at: 2018-09-06 05:55:31
Local clock offset: 3.914 ms
Remote clock offset: 2.502 ms


# Below is generated by plot.py at 2018-09-06 06:31:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 75.361 ms
Loss rate: 21.48%
-- Flow 1:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 75.361 ms
Loss rate: 21.48%
```
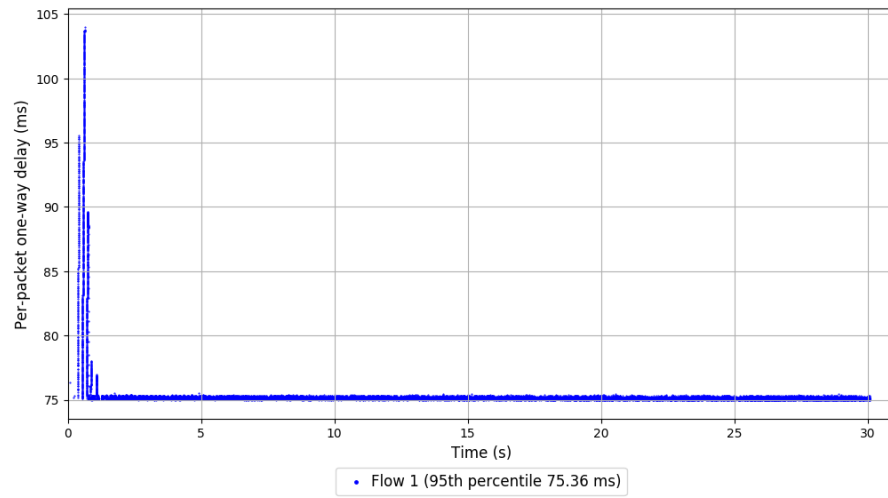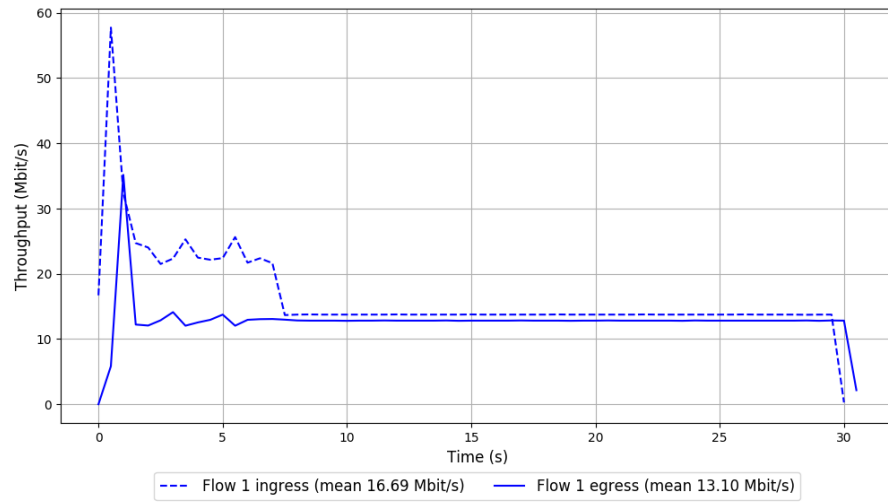
Run 4: Report of TaoVA-100x — Data Link

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

Start at: 2018-09-06 06:16:07
End at: 2018-09-06 06:16:37
Local clock offset: 3.373 ms
Remote clock offset: 2.447 ms


# Below is generated by plot.py at 2018-09-06 06:31:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 78.728 ms
Loss rate: 9.69%
-- Flow 1:
Average throughput: 13.10 Mbit/s
95th percentile per-packet one-way delay: 78.728 ms
Loss rate: 9.69%
```
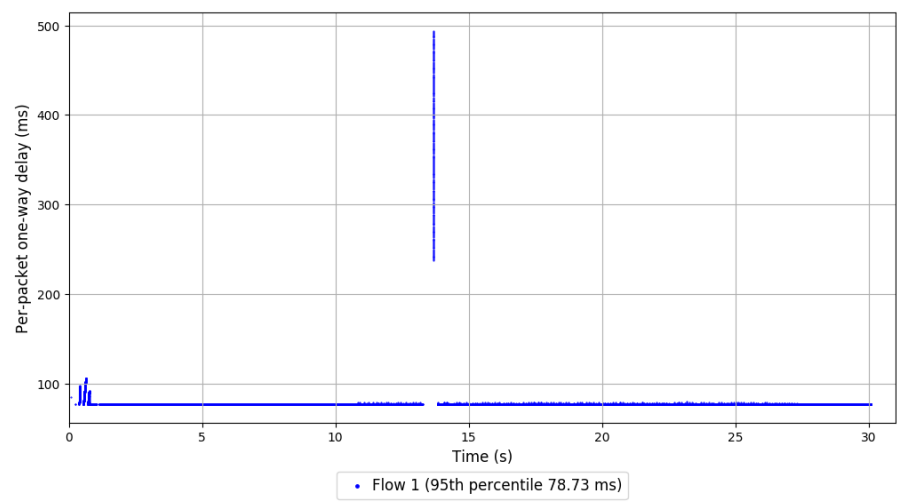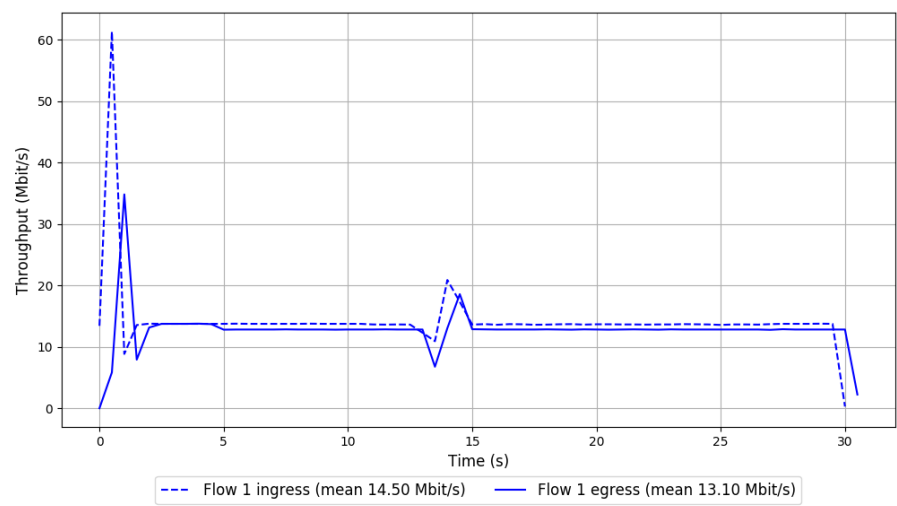
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-09-06 04:57:47
End at: 2018-09-06 04:58:17
Local clock offset: 4.589 ms
Remote clock offset: 1.973 ms


# Below is generated by plot.py at 2018-09-06 06:32:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 87.18 Mbit/s
95th percentile per-packet one-way delay: 78.055 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 87.18 Mbit/s
95th percentile per-packet one-way delay: 78.055 ms
Loss rate: 0.39%
```
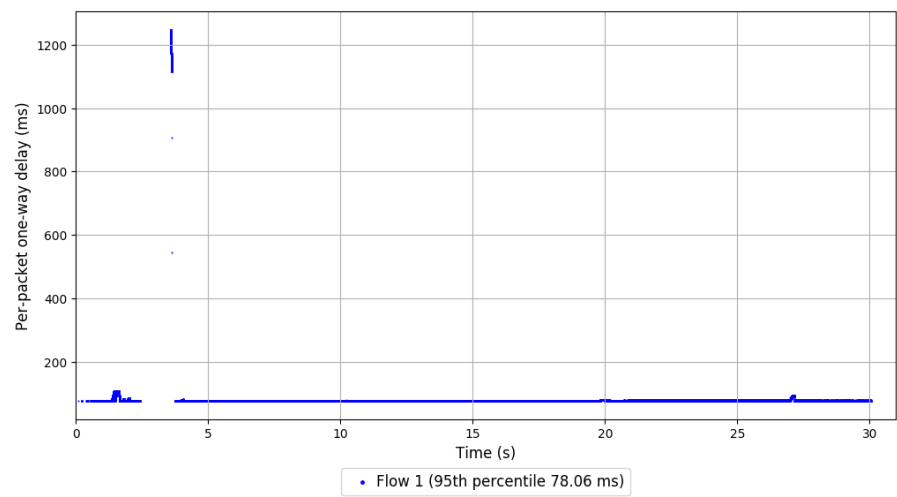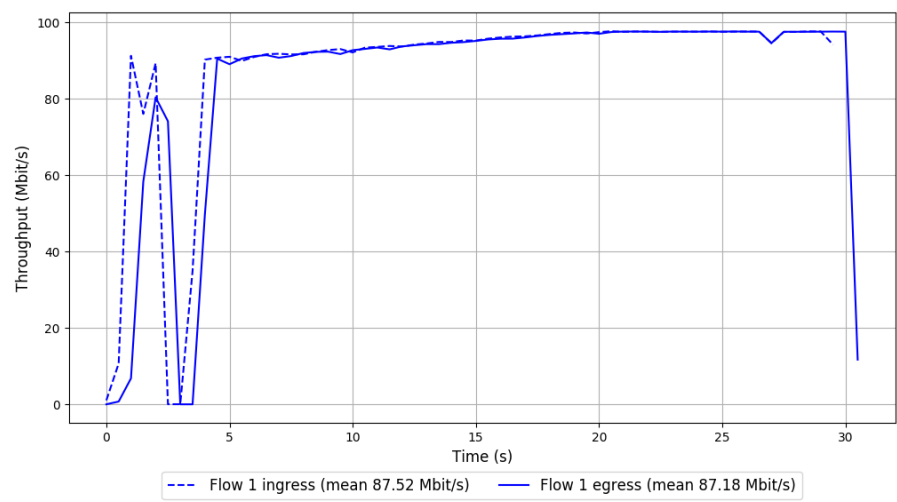
Run 1: Report of TCP Vegas — Data Link

145

```
Run 2: Statistics of TCP Vegas

Start at: 2018-09-06 05:18:47
End at: 2018-09-06 05:19:17
Local clock offset: 5.056 ms
Remote clock offset: 1.195 ms


# Below is generated by plot.py at 2018-09-06 06:32:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.80 Mbit/s
95th percentile per-packet one-way delay: 77.266 ms
Loss rate: 0.41%
-- Flow 1:
Average throughput: 80.80 Mbit/s
95th percentile per-packet one-way delay: 77.266 ms
Loss rate: 0.41%
```
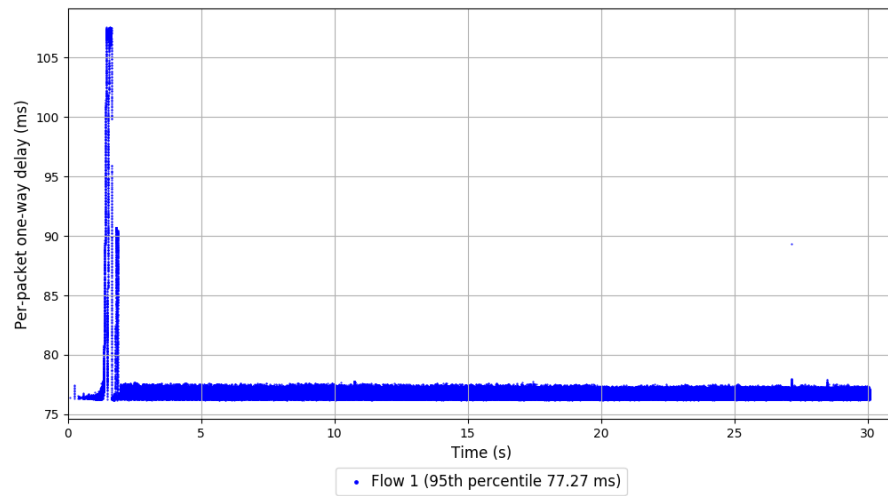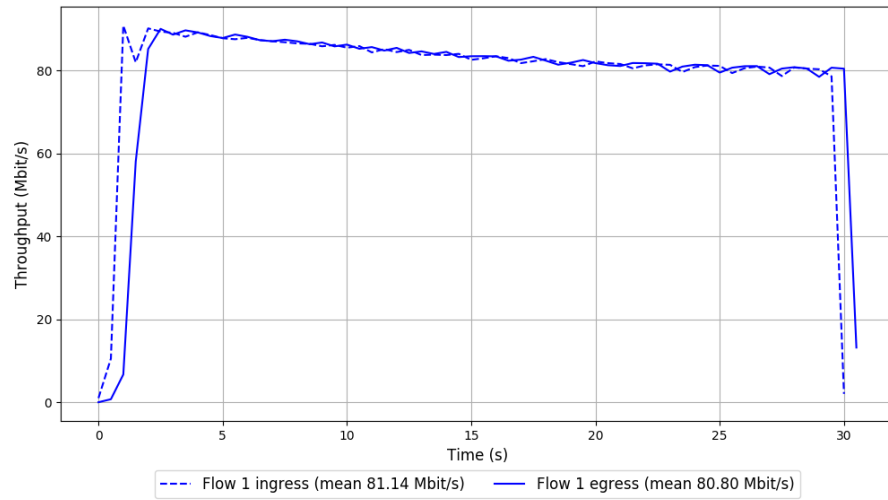
Run 2: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 81.14 Mbit/s)   Flow 1 egress (mean 80.80 Mbit/s)

Flow 1 (95th percentile 77.27 ms)

```
Run 3: Statistics of TCP Vegas

Start at: 2018-09-06 05:39:42
End at: 2018-09-06 05:40:12
Local clock offset: 5.832 ms
Remote clock offset: 1.368 ms


# Below is generated by plot.py at 2018-09-06 06:32:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.14 Mbit/s
95th percentile per-packet one-way delay: 75.048 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 86.14 Mbit/s
95th percentile per-packet one-way delay: 75.048 ms
Loss rate: 0.39%
```
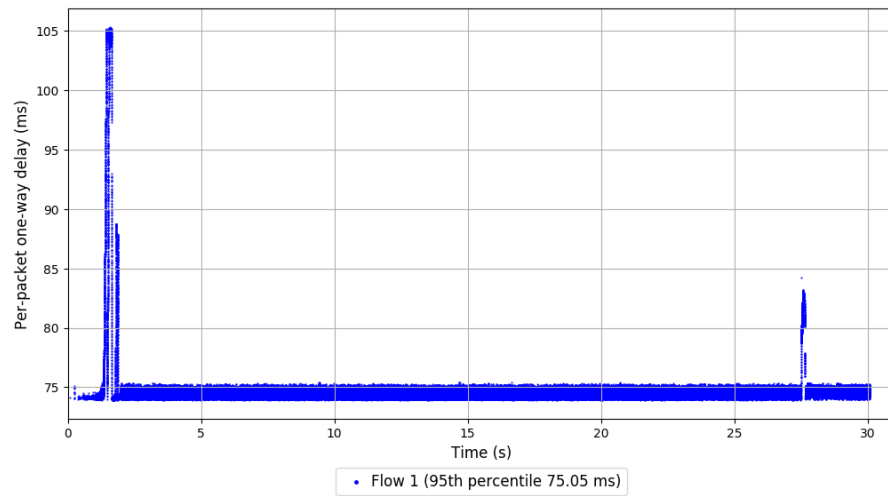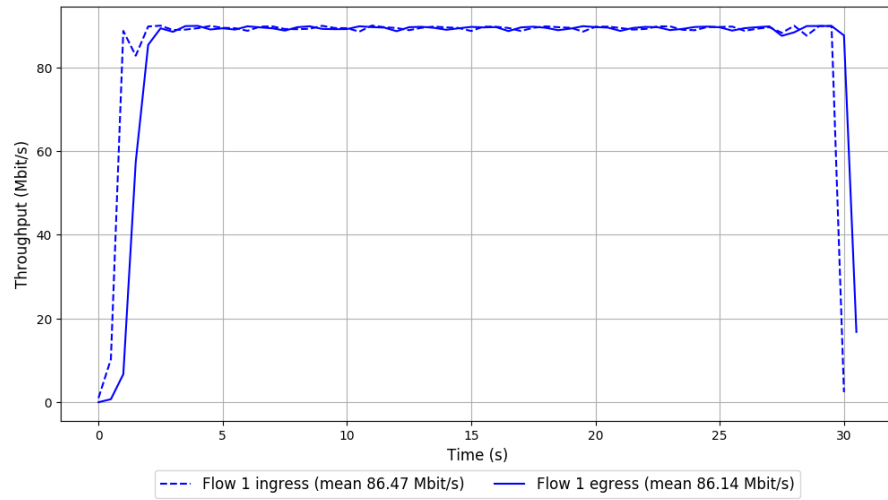
Run 3: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 86.47 Mbit/s)   Flow 1 egress (mean 86.14 Mbit/s)

Flow 1 (95th percentile 75.05 ms)

```
Run 4: Statistics of TCP Vegas

Start at: 2018-09-06 06:00:51
End at: 2018-09-06 06:01:21
Local clock offset: 3.578 ms
Remote clock offset: 1.57 ms


# Below is generated by plot.py at 2018-09-06 06:32:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 89.72 Mbit/s
95th percentile per-packet one-way delay: 81.099 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 89.72 Mbit/s
95th percentile per-packet one-way delay: 81.099 ms
Loss rate: 0.37%
```
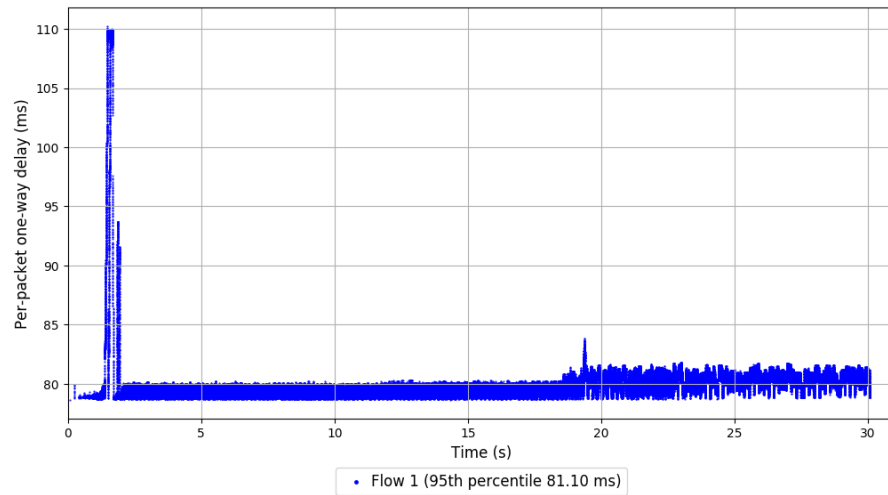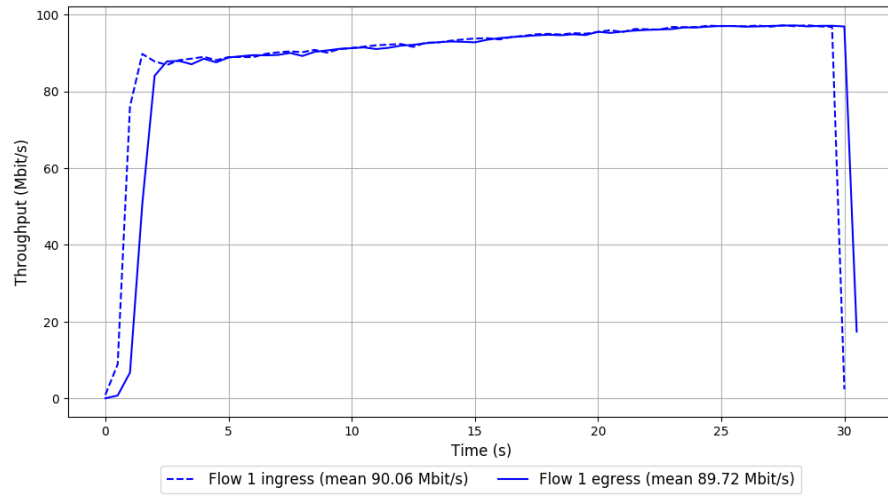
Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 90.06 Mbit/s)   Flow 1 egress (mean 89.72 Mbit/s)

Flow 1 (95th percentile 81.10 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-09-06 06:22:02
End at: 2018-09-06 06:22:32
Local clock offset: 3.621 ms
Remote clock offset: 1.141 ms


# Below is generated by plot.py at 2018-09-06 06:32:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 86.43 Mbit/s
95th percentile per-packet one-way delay: 76.938 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 86.43 Mbit/s
95th percentile per-packet one-way delay: 76.938 ms
Loss rate: 0.39%
```
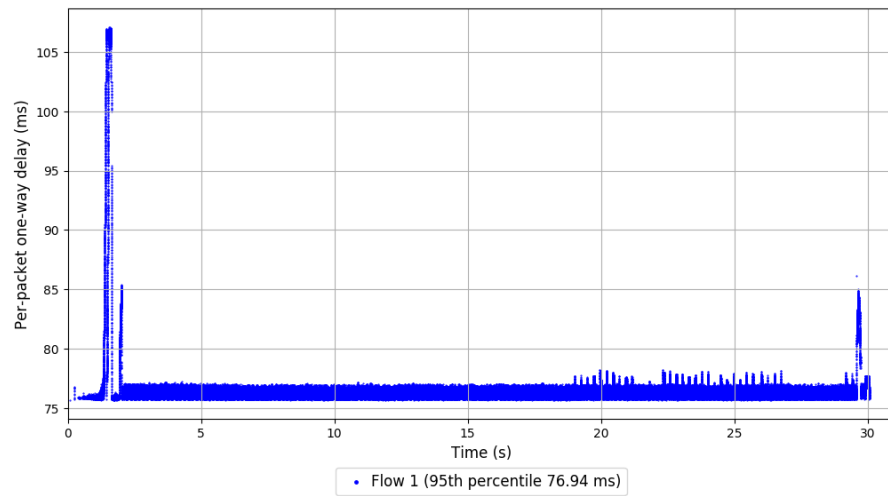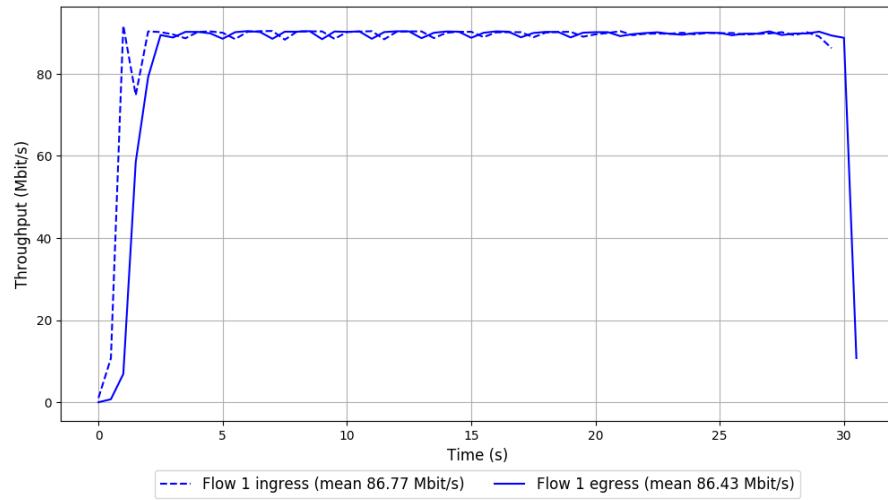
Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 86.77 Mbit/s)   Flow 1 egress (mean 86.43 Mbit/s)
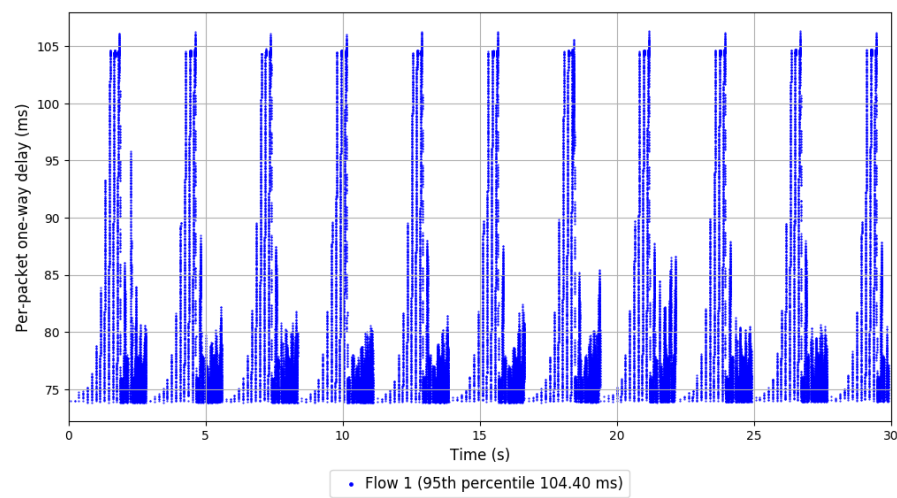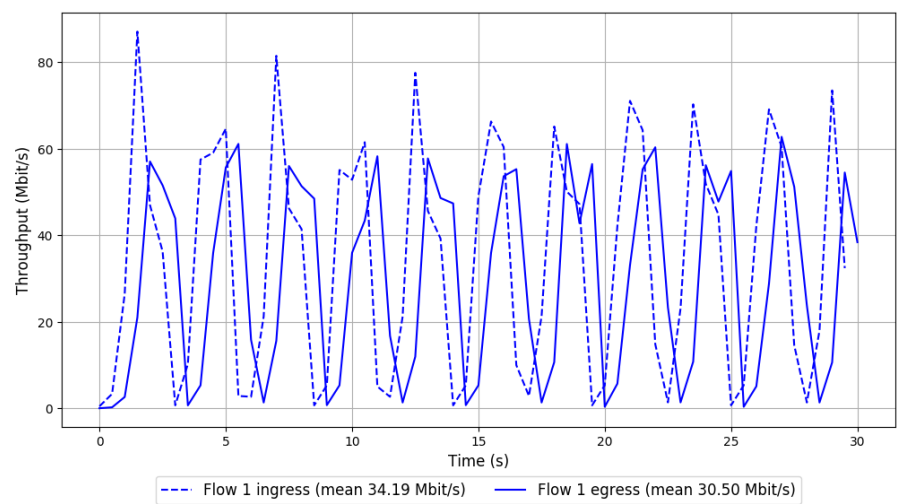

Flow 1 (95th percentile 76.94 ms)

```
Run 1: Statistics of Verus

Start at: 2018-09-06 04:44:56
End at: 2018-09-06 04:45:27
Local clock offset: 1.857 ms
Remote clock offset: -0.844 ms


# Below is generated by plot.py at 2018-09-06 06:32:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 30.50 Mbit/s
95th percentile per-packet one-way delay: 104.400 ms
Loss rate: 10.78%
-- Flow 1:
Average throughput: 30.50 Mbit/s
95th percentile per-packet one-way delay: 104.400 ms
Loss rate: 10.78%
```

Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-09-06 05:05:55
End at: 2018-09-06 05:06:25
Local clock offset: 4.652 ms
Remote clock offset: 1.022 ms


# Below is generated by plot.py at 2018-09-06 06:32:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 29.05 Mbit/s
95th percentile per-packet one-way delay: 106.358 ms
Loss rate: 10.69%
-- Flow 1:
Average throughput: 29.05 Mbit/s
95th percentile per-packet one-way delay: 106.358 ms
Loss rate: 10.69%
```
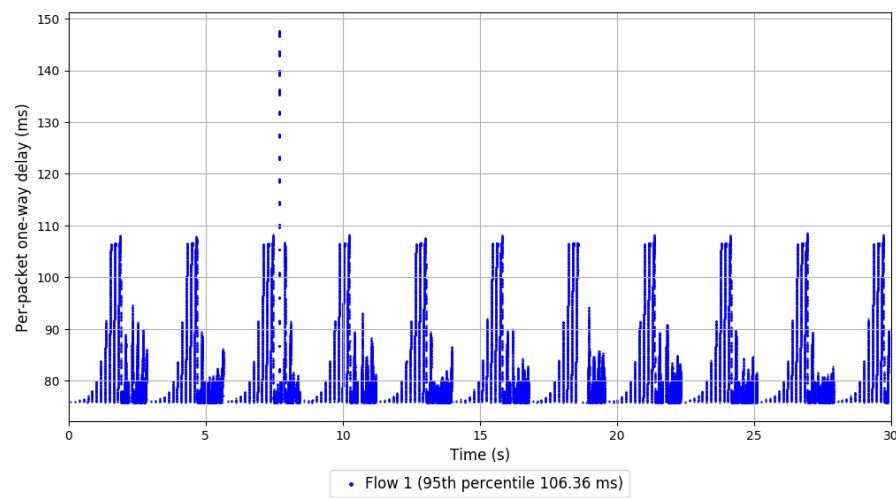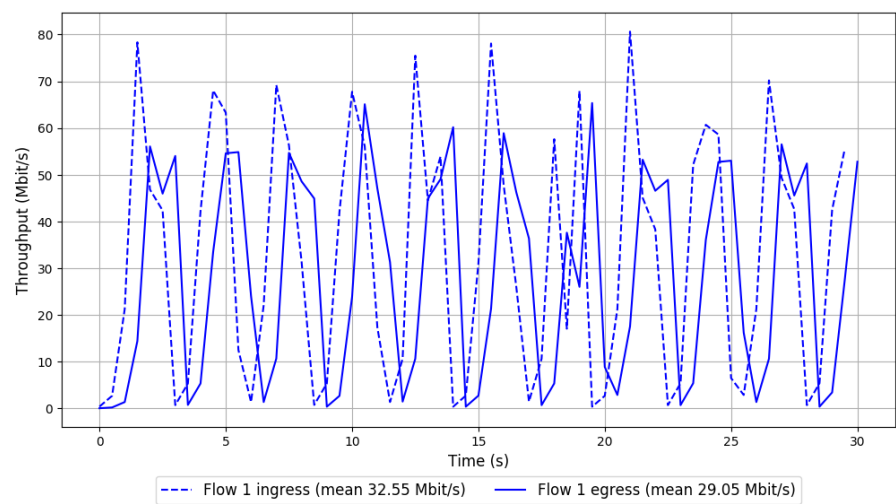
Run 2: Report of Verus — Data Link

Flow 1 ingress (mean 32.55 Mbit/s)   Flow 1 egress (mean 29.05 Mbit/s)

Flow 1 (95th percentile 106.36 ms)

```
Run 3: Statistics of Verus

Start at: 2018-09-06 05:26:54
End at: 2018-09-06 05:27:24
Local clock offset: 4.961 ms
Remote clock offset: 1.018 ms


# Below is generated by plot.py at 2018-09-06 06:32:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 28.99 Mbit/s
95th percentile per-packet one-way delay: 108.864 ms
Loss rate: 10.16%
-- Flow 1:
Average throughput: 28.99 Mbit/s
95th percentile per-packet one-way delay: 108.864 ms
Loss rate: 10.16%
```
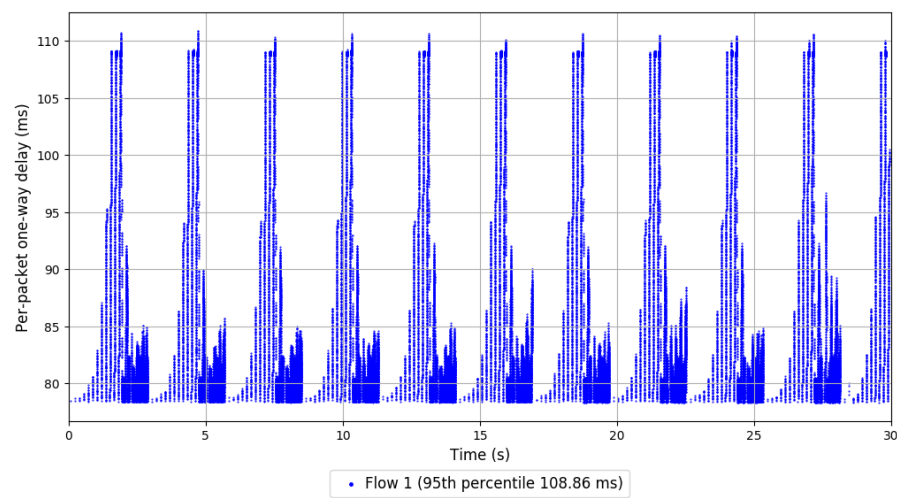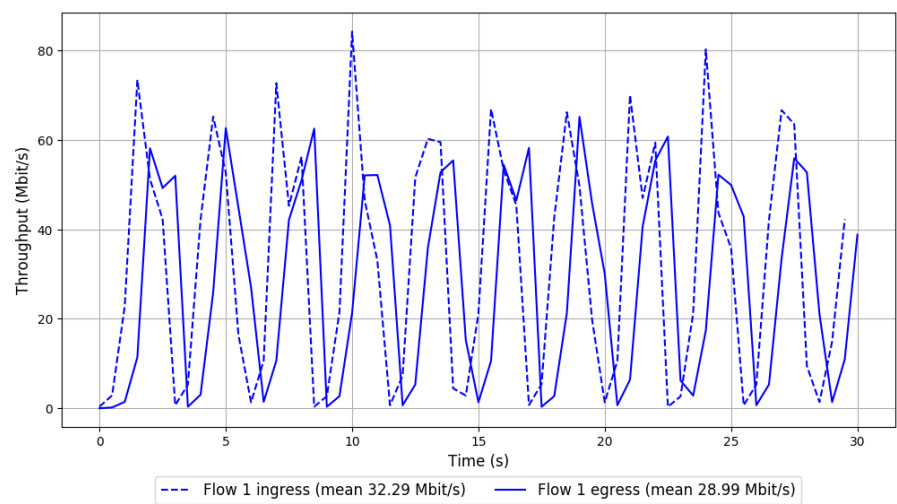
Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-09-06 05:48:01
End at: 2018-09-06 05:48:31
Local clock offset: 4.752 ms
Remote clock offset: 0.274 ms


# Below is generated by plot.py at 2018-09-06 06:32:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 36.58 Mbit/s
95th percentile per-packet one-way delay: 107.732 ms
Loss rate: 31.67%
-- Flow 1:
Average throughput: 36.58 Mbit/s
95th percentile per-packet one-way delay: 107.732 ms
Loss rate: 31.67%
```
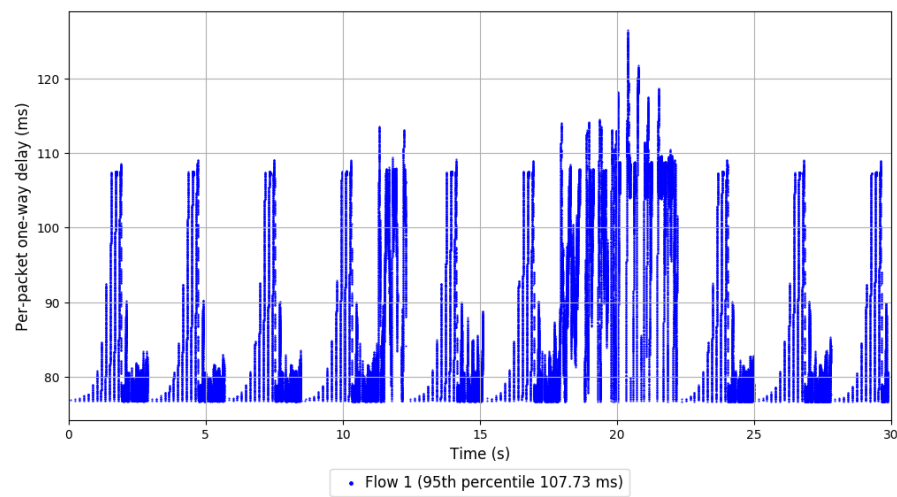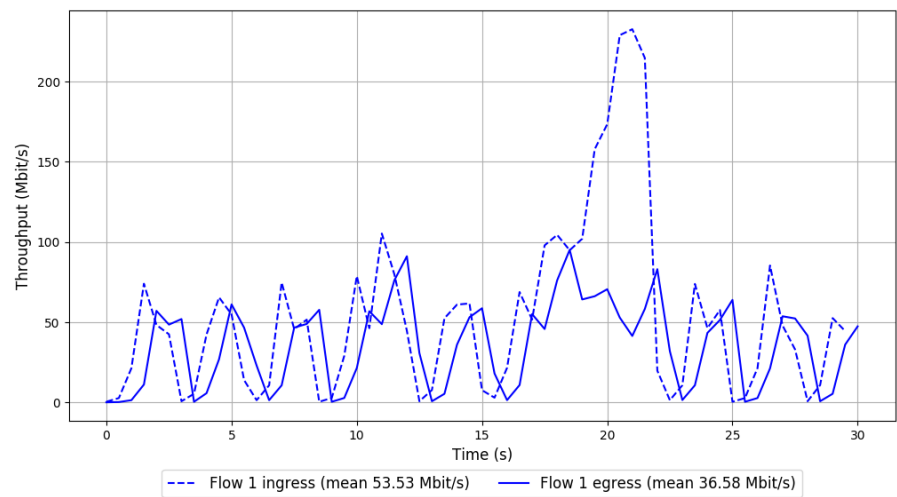
Run 4: Report of Verus — Data Link

Flow 1 ingress (mean 53.53 Mbit/s)   Flow 1 egress (mean 36.58 Mbit/s)

Flow 1 (95th percentile 107.73 ms)

```
Run 5: Statistics of Verus

Start at: 2018-09-06 06:09:10
End at: 2018-09-06 06:09:40
Local clock offset: 4.162 ms
Remote clock offset: 1.432 ms


# Below is generated by plot.py at 2018-09-06 06:32:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 32.49 Mbit/s
95th percentile per-packet one-way delay: 107.805 ms
Loss rate: 14.95%
-- Flow 1:
Average throughput: 32.49 Mbit/s
95th percentile per-packet one-way delay: 107.805 ms
Loss rate: 14.95%
```
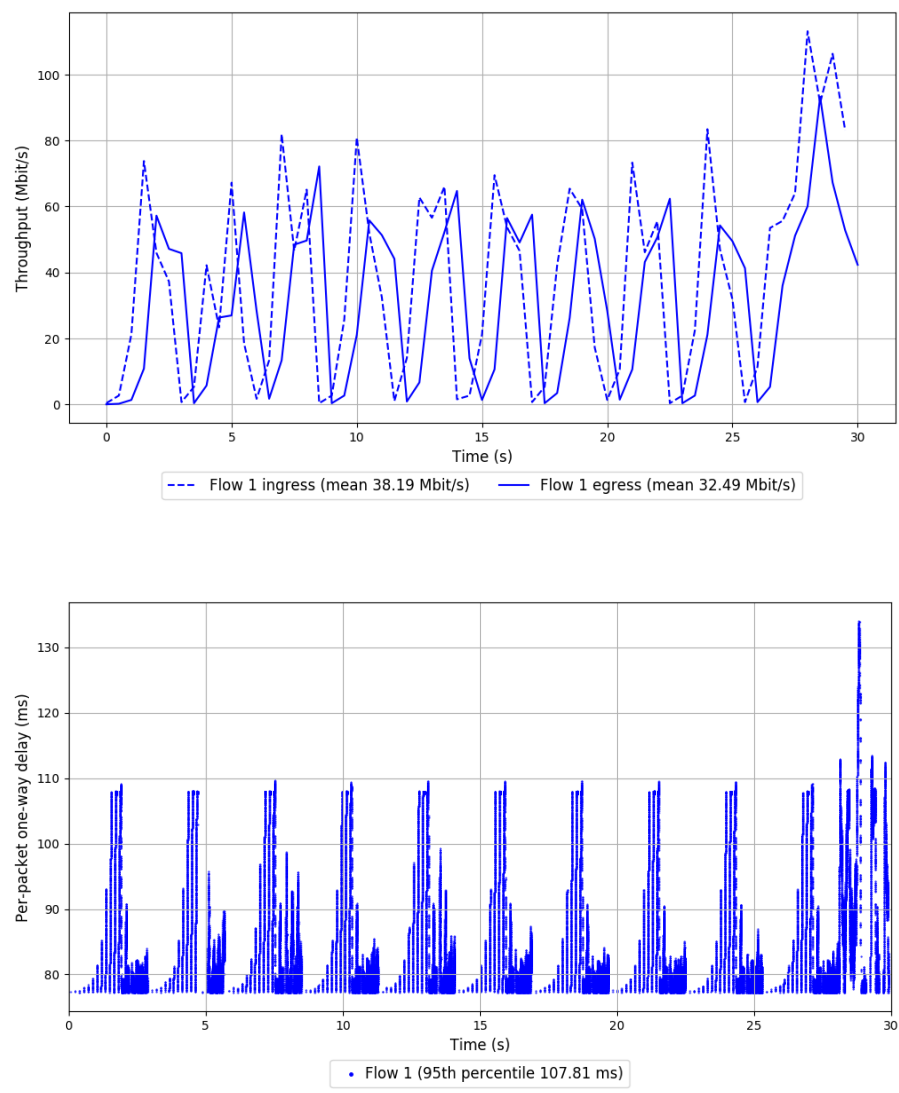
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-06 04:55:27
End at: 2018-09-06 04:55:57
Local clock offset: 3.613 ms
Remote clock offset: 0.982 ms


# Below is generated by plot.py at 2018-09-06 06:33:03
# Datalink statistics
-- Total of 1 flow:
Average throughput: 61.26 Mbit/s
95th percentile per-packet one-way delay: 106.738 ms
Loss rate: 2.48%
-- Flow 1:
Average throughput: 61.26 Mbit/s
95th percentile per-packet one-way delay: 106.738 ms
Loss rate: 2.48%
```
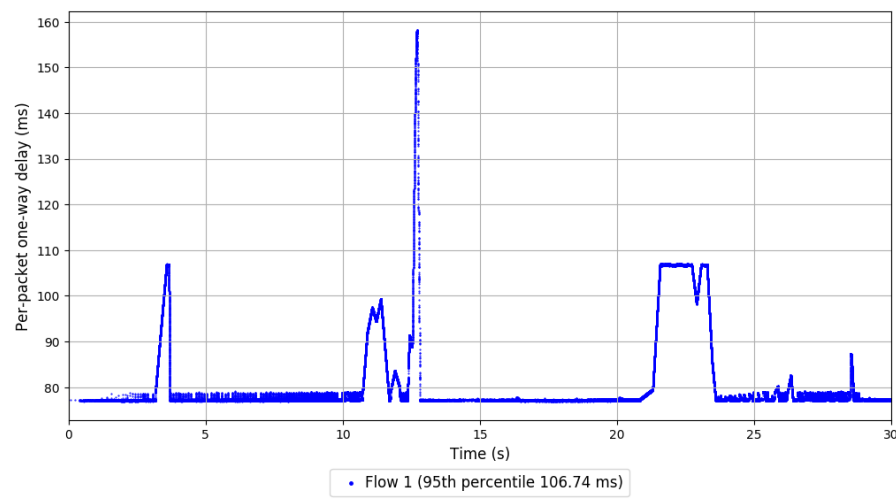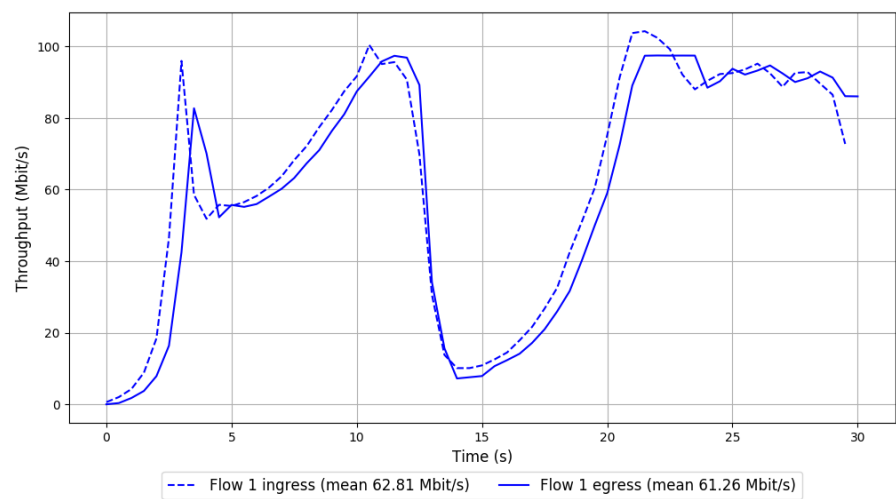
Run 1: Report of PCC-Vivace — Data Link

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-06 05:16:27
End at: 2018-09-06 05:16:57
Local clock offset: 5.895 ms
Remote clock offset: 1.244 ms


# Below is generated by plot.py at 2018-09-06 06:33:15
# Datalink statistics
-- Total of 1 flow:
Average throughput: 57.84 Mbit/s
95th percentile per-packet one-way delay: 87.963 ms
Loss rate: 2.84%
-- Flow 1:
Average throughput: 57.84 Mbit/s
95th percentile per-packet one-way delay: 87.963 ms
Loss rate: 2.84%
```
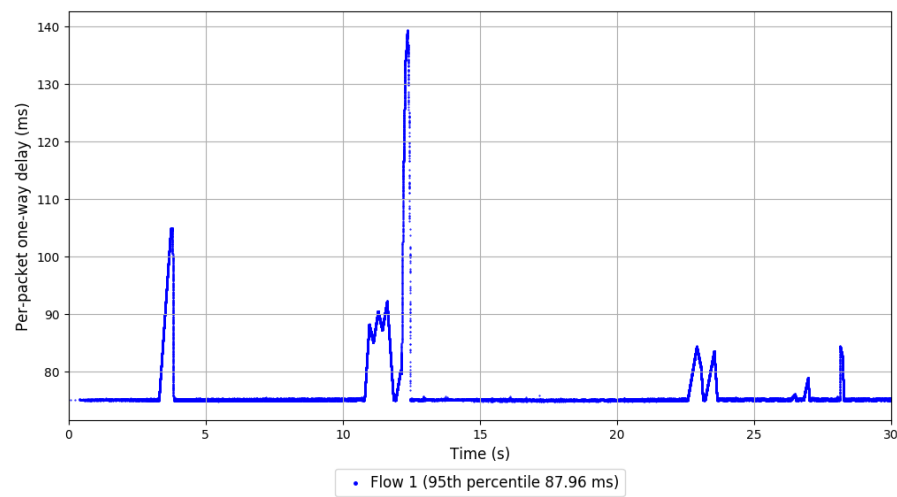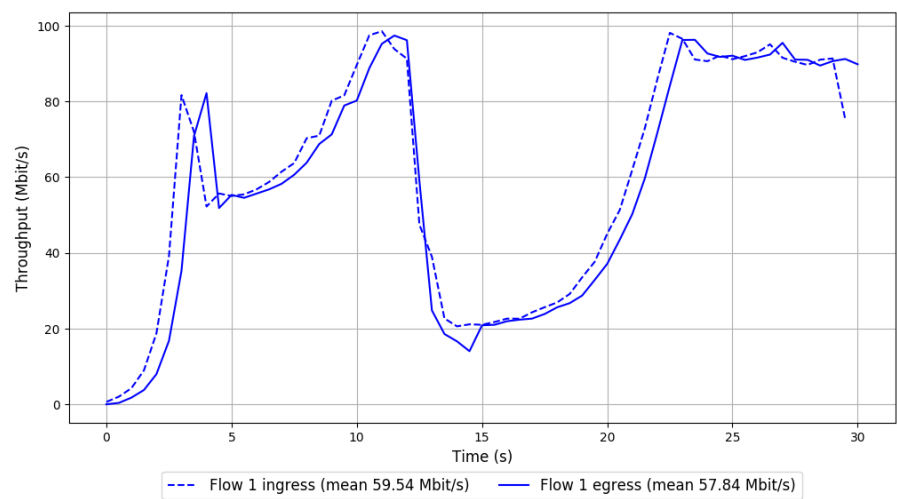
Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-06 05:37:22
End at: 2018-09-06 05:37:52
Local clock offset: 5.807 ms
Remote clock offset: 1.3 ms


# Below is generated by plot.py at 2018-09-06 06:33:16
# Datalink statistics
-- Total of 1 flow:
Average throughput: 60.40 Mbit/s
95th percentile per-packet one-way delay: 104.434 ms
Loss rate: 2.17%
-- Flow 1:
Average throughput: 60.40 Mbit/s
95th percentile per-packet one-way delay: 104.434 ms
Loss rate: 2.17%
```
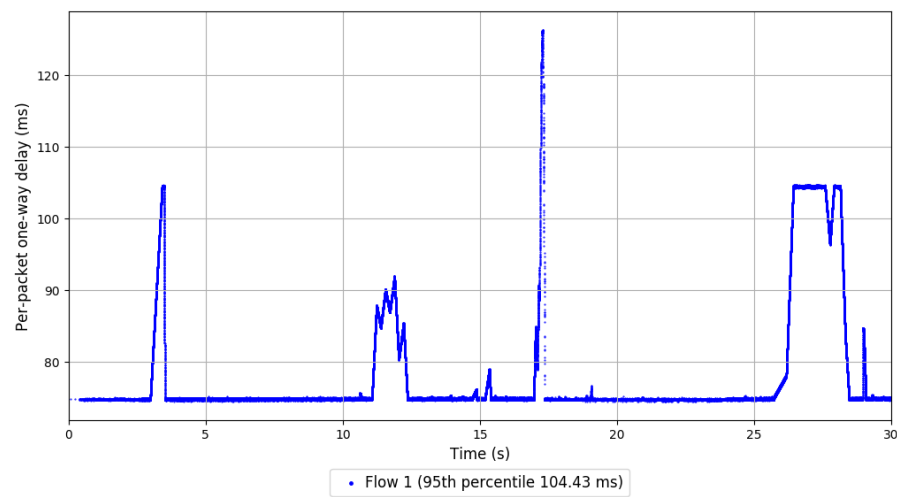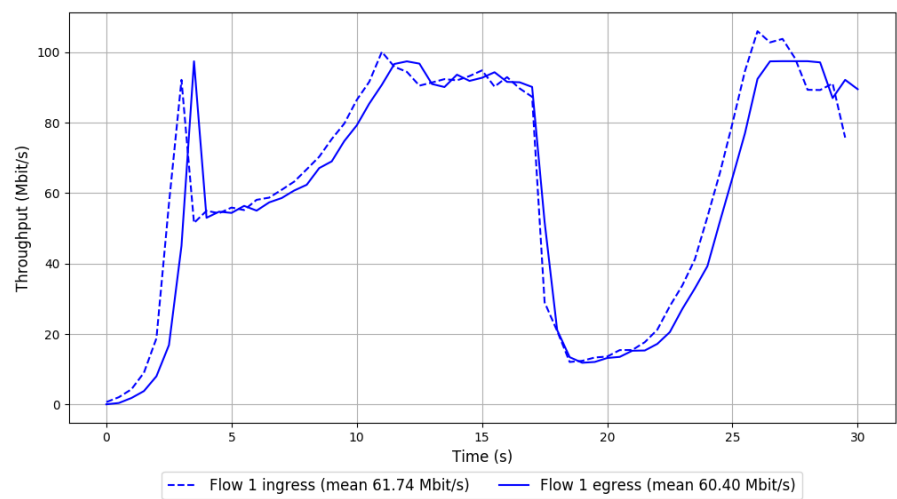
Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 61.74 Mbit/s)   Flow 1 egress (mean 60.40 Mbit/s)

Flow 1 (95th percentile 104.43 ms)

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-06 05:58:32
End at: 2018-09-06 05:59:03
Local clock offset: 3.749 ms
Remote clock offset: 1.443 ms


# Below is generated by plot.py at 2018-09-06 06:33:19
# Datalink statistics
-- Total of 1 flow:
Average throughput: 73.44 Mbit/s
95th percentile per-packet one-way delay: 108.138 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 73.44 Mbit/s
95th percentile per-packet one-way delay: 108.138 ms
Loss rate: 1.33%
```
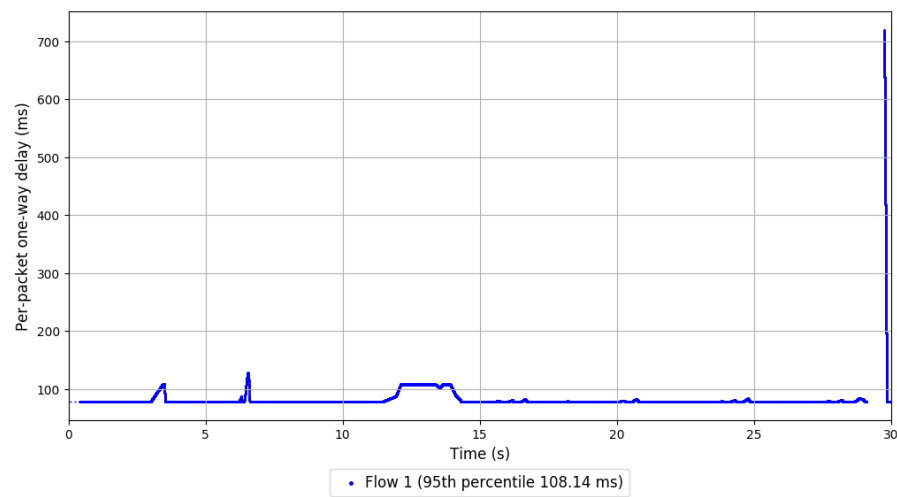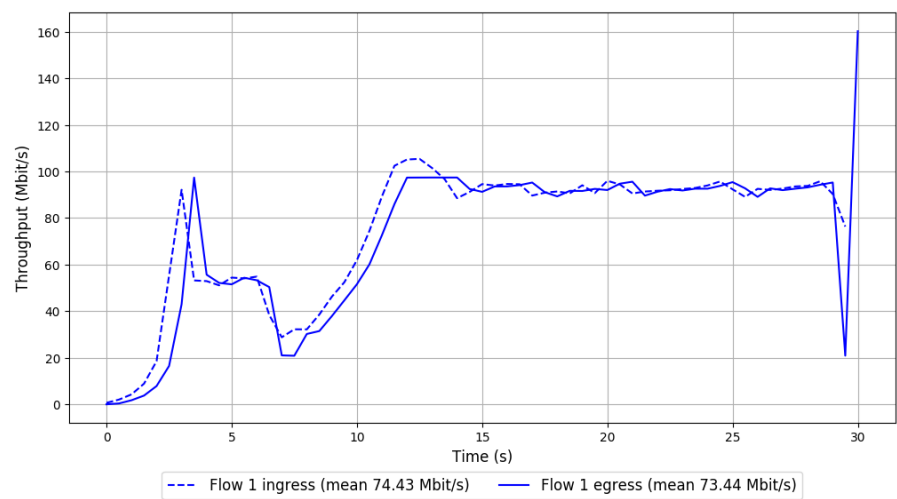
Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 74.43 Mbit/s) —— Flow 1 egress (mean 73.44 Mbit/s)

• Flow 1 (95th percentile 108.14 ms)

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-06 06:19:40
End at: 2018-09-06 06:20:10
Local clock offset: 4.307 ms
Remote clock offset: 2.449 ms


# Below is generated by plot.py at 2018-09-06 06:33:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 77.50 Mbit/s
95th percentile per-packet one-way delay: 89.854 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 77.50 Mbit/s
95th percentile per-packet one-way delay: 89.854 ms
Loss rate: 0.03%
```
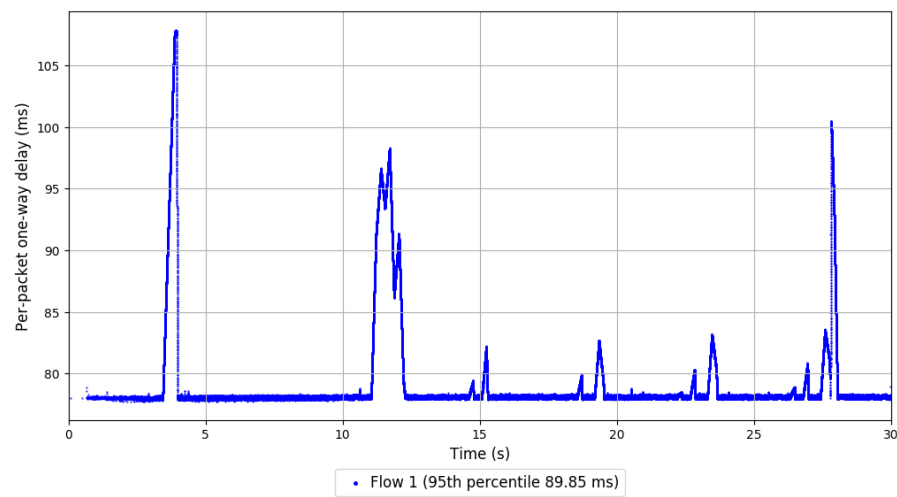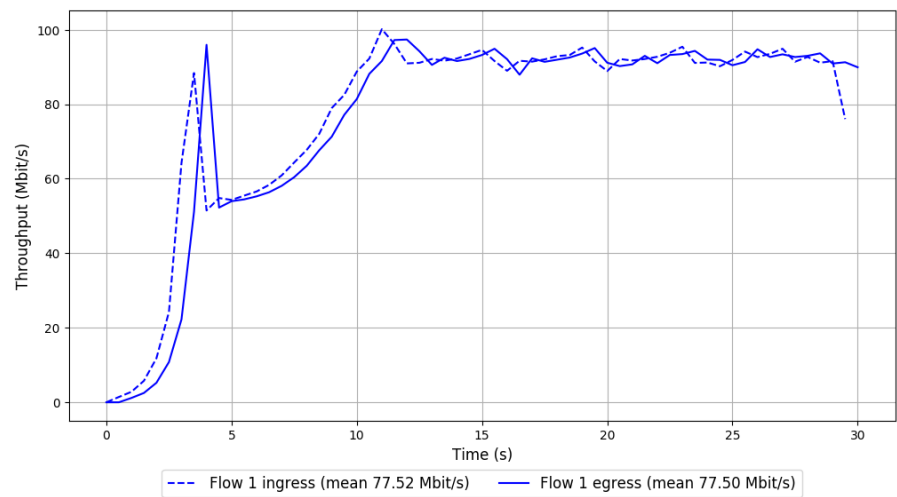
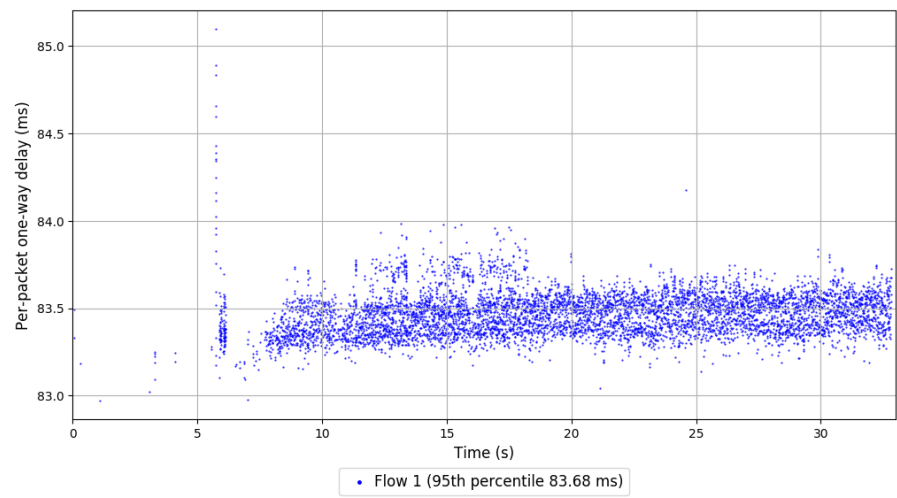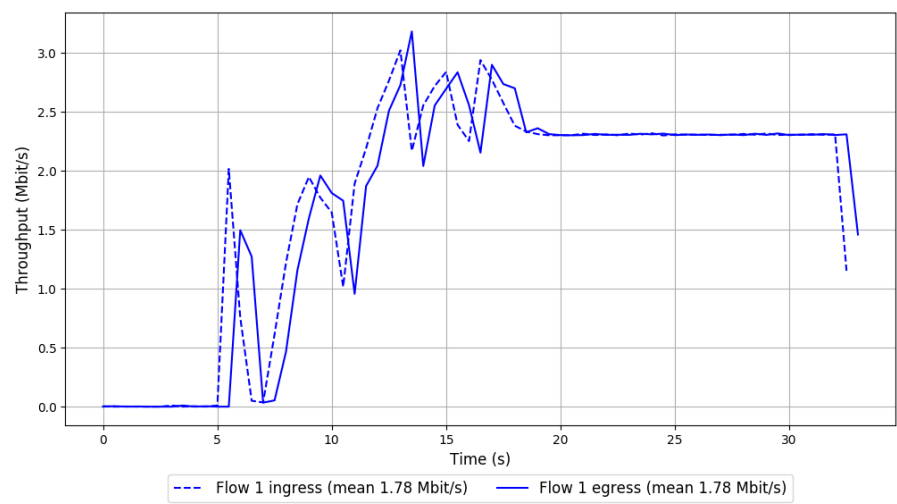# Run 5: Report of PCC-Vivace — Data Link

```
Run 1: Statistics of WebRTC media

Start at: 2018-09-06 05:00:05
End at: 2018-09-06 05:00:35
Local clock offset: 4.18 ms
Remote clock offset: 1.993 ms


# Below is generated by plot.py at 2018-09-06 06:33:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 83.681 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 1.78 Mbit/s
95th percentile per-packet one-way delay: 83.681 ms
Loss rate: 0.07%
```

Run 1: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.78 Mbit/s)   Flow 1 egress (mean 1.78 Mbit/s)

Flow 1 (95th percentile 83.68 ms)

```
Run 2: Statistics of WebRTC media

Start at: 2018-09-06 05:21:05
End at: 2018-09-06 05:21:35
Local clock offset: 5.725 ms
Remote clock offset: 0.037 ms


# Below is generated by plot.py at 2018-09-06 06:33:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 80.190 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 80.190 ms
Loss rate: 0.07%
```
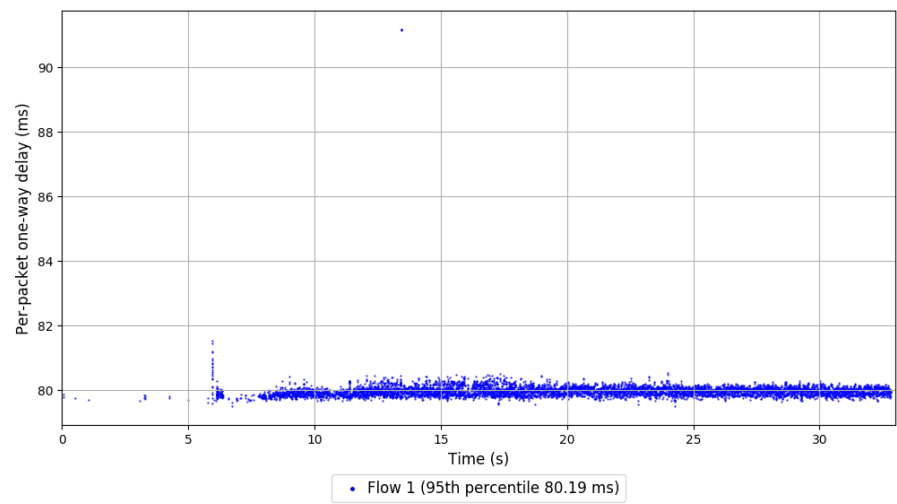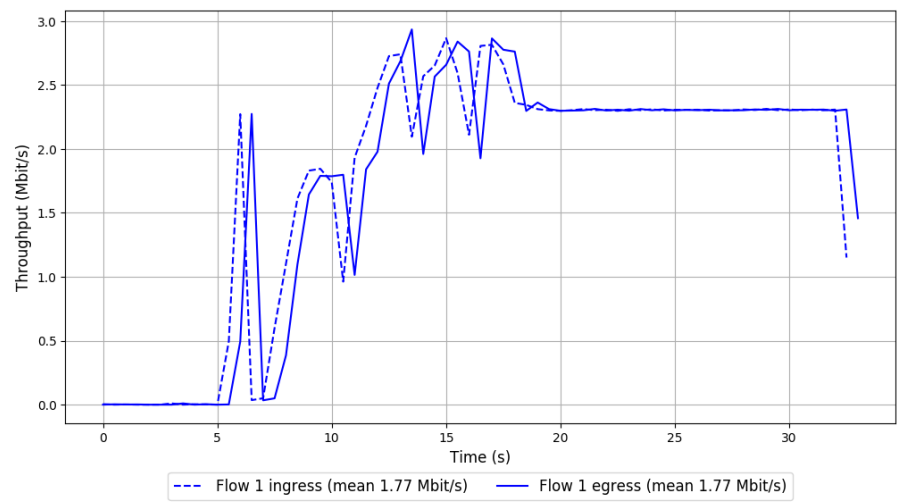
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-09-06 05:42:00
End at: 2018-09-06 05:42:30
Local clock offset: 5.886 ms
Remote clock offset: 1.447 ms


# Below is generated by plot.py at 2018-09-06 06:33:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 75.633 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.76 Mbit/s
95th percentile per-packet one-way delay: 75.633 ms
Loss rate: 0.00%
```
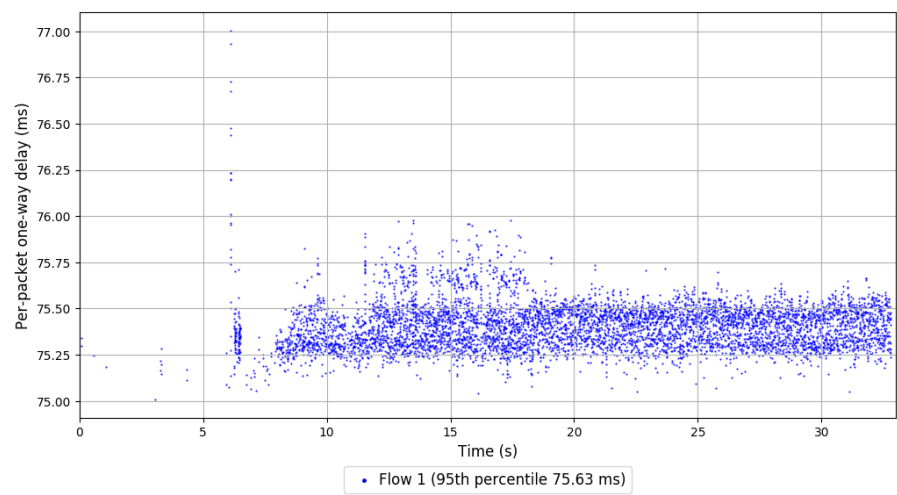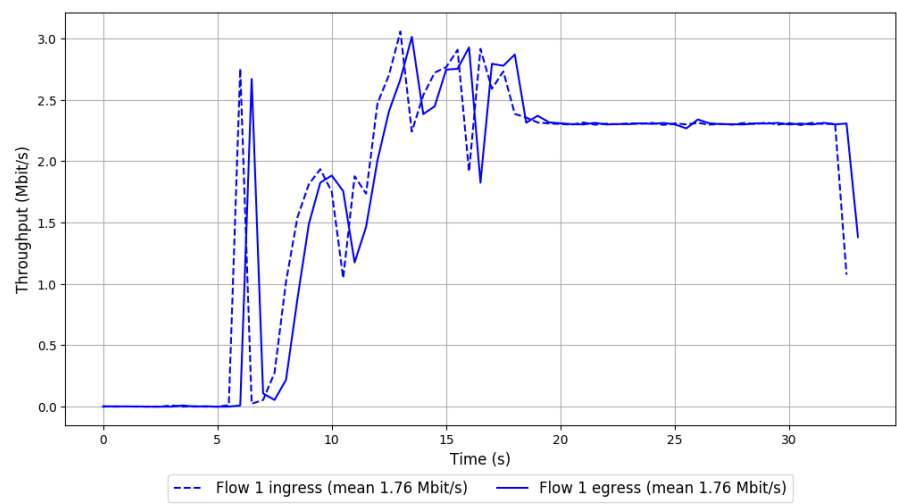
Run 3: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.76 Mbit/s)   Flow 1 egress (mean 1.76 Mbit/s)

Flow 1 (95th percentile 75.63 ms)

```
Run 4: Statistics of WebRTC media

Start at: 2018-09-06 06:03:10
End at: 2018-09-06 06:03:40
Local clock offset: 4.314 ms
Remote clock offset: 0.116 ms


# Below is generated by plot.py at 2018-09-06 06:33:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 74.770 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 1.73 Mbit/s
95th percentile per-packet one-way delay: 74.770 ms
Loss rate: 1.31%
```
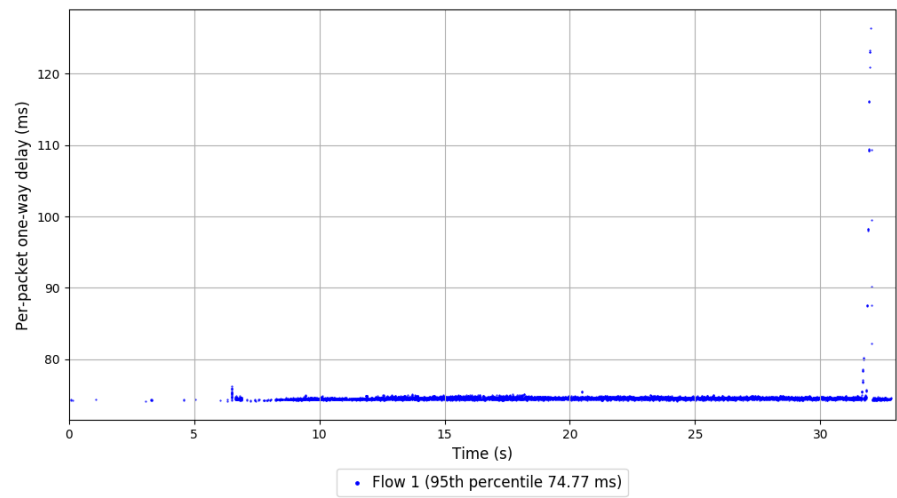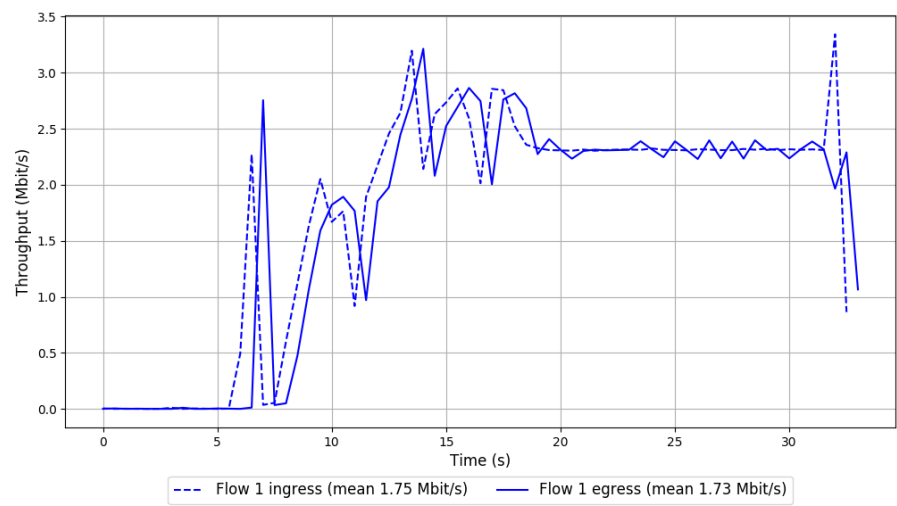
Run 4: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.75 Mbit/s) --- Flow 1 egress (mean 1.73 Mbit/s)

• Flow 1 (95th percentile 74.77 ms)

```
Run 5: Statistics of WebRTC media

Start at: 2018-09-06 06:24:20
End at: 2018-09-06 06:24:50
Local clock offset: 3.692 ms
Remote clock offset: 1.355 ms


# Below is generated by plot.py at 2018-09-06 06:33:20
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 78.527 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 1.46 Mbit/s
95th percentile per-packet one-way delay: 78.527 ms
Loss rate: 1.51%
```

Run 5: Report of WebRTC media — Data Link

Flow 1 ingress (mean 1.48 Mbit/s)   Flow 1 egress (mean 1.46 Mbit/s)

Flow 1 (95th percentile 78.53 ms)