Pantheon Report

Generated at 2018-12-02 16:56:54 (UTC).

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

Repeated the test of 19 congestion control schemes 5 times.

Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

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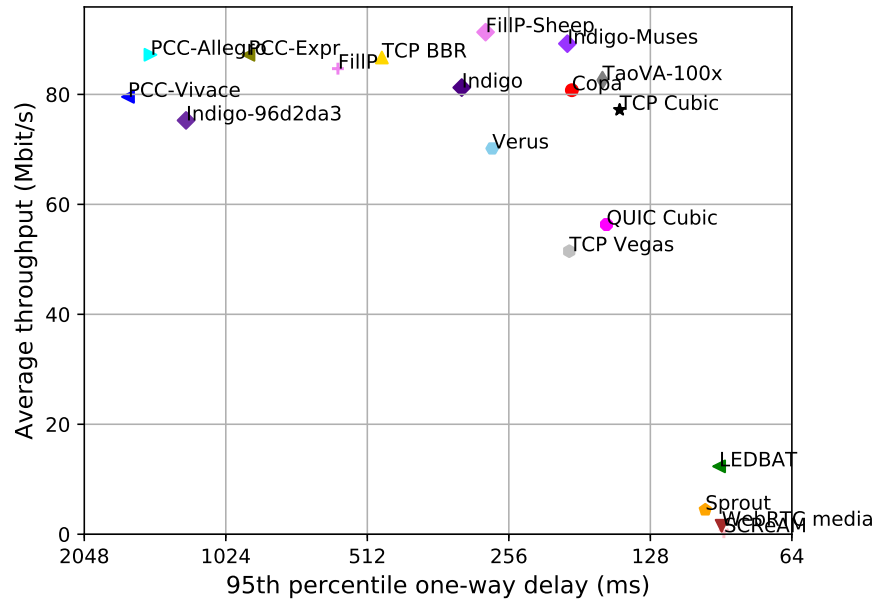
```
System info:
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912

Git summary:
branch: muses @ 7b6dad87cde3ab65f7c4052140eb54098aa58e9d
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/fillp-sheep @ 0e5bb722943babcd2b090d2c64fcd45e12e923f9
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
```
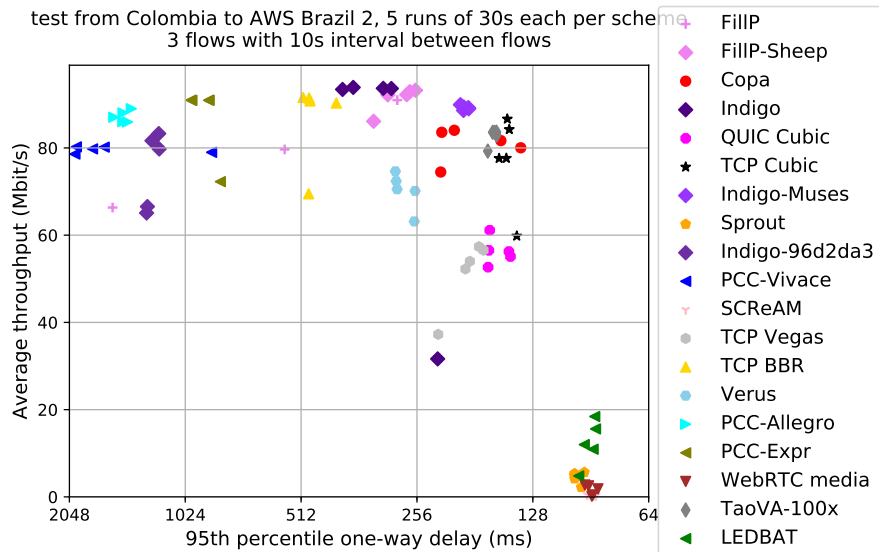
```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from Colombia to AWS Brazil 2, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from Colombia to AWS Brazil 2, 5 runs of 30s each per scheme
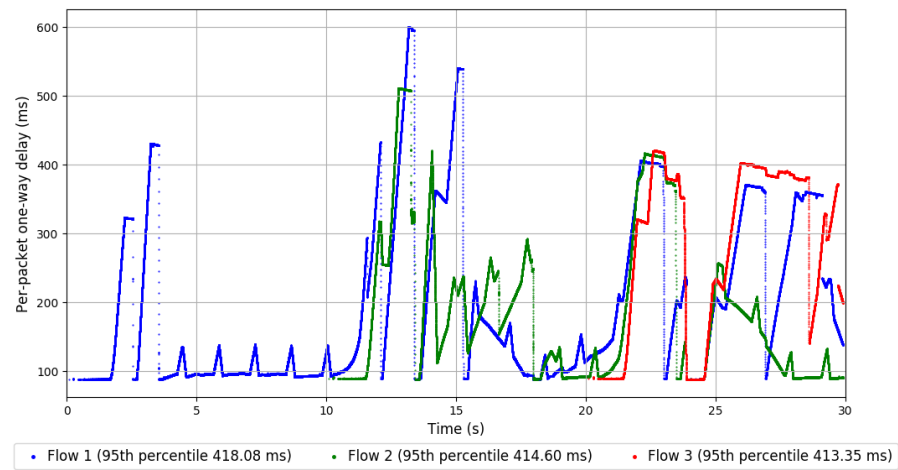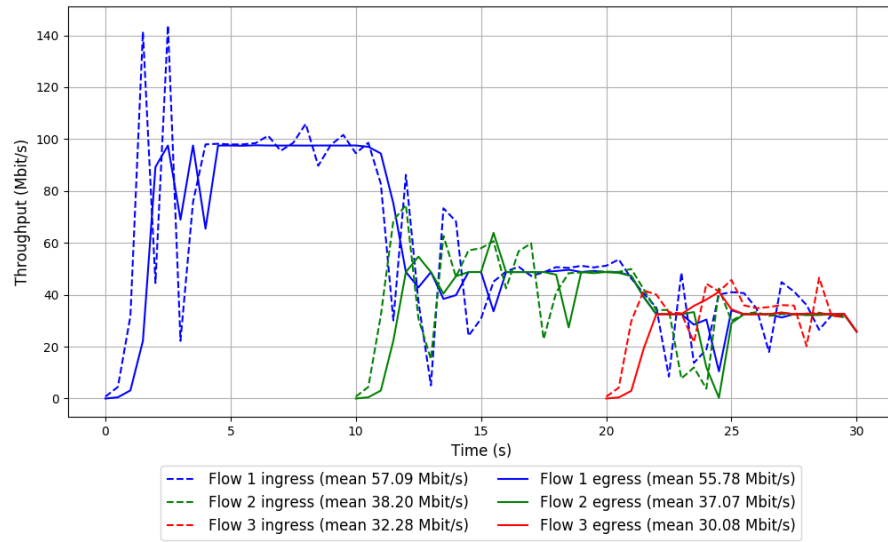3 flows with 10s interval between flows

scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	53.83	36.18	27.22	431.31	589.76	451.83	2.37	4.12	5.20
Copa	5	49.27	35.99	23.95	205.96	153.24	151.17	0.49	0.71	1.90
TCP Cubic	5	42.67	35.84	32.62	148.09	155.30	151.17	0.46	0.70	2.00
FillP	5	51.48	37.30	27.56	660.19	285.02	341.84	2.86	2.47	3.38
FillP-Sheep	5	56.32	38.37	29.00	280.74	282.57	303.94	0.84	2.23	3.43
Indigo	5	53.08	31.24	23.53	337.62	138.77	141.44	2.97	0.83	1.86
Indigo-96d2da3	5	45.14	32.98	28.64	1268.05	1298.44	1236.71	21.59	33.92	28.80
LEDBAT	5	7.87	5.30	2.99	91.31	92.37	90.04	0.94	1.46	2.83
Indigo-Muses	5	56.54	37.14	24.59	192.32	189.78	199.05	0.91	2.24	3.57
PCC-Allegro	5	55.28	33.72	29.48	1443.00	912.84	1605.35	24.55	8.98	20.15
PCC-Expr	5	52.99	38.85	25.85	899.79	825.66	234.40	30.99	7.30	3.49
QUIC Cubic	5	34.03	22.57	22.43	134.01	214.13	181.21	0.50	1.41	2.54
SCReAM	5	0.19	0.18	0.18	89.23	89.18	89.09	0.43	0.97	1.56
Sprout	5	1.97	2.86	1.81	96.67	97.84	93.97	1.00	1.17	1.82
TaoVA-100x	5	48.94	37.56	29.11	158.40	170.59	164.01	0.36	0.71	1.71
TCP Vegas	5	26.07	28.55	19.02	179.47	183.26	185.20	0.55	0.82	2.04
Verus	5	45.16	26.35	22.14	267.24	291.88	318.27	0.89	1.61	1.55
PCC-Vivace	5	50.28	33.10	22.41	1634.05	999.42	354.88	6.80	5.75	3.07
WebRTC media	5	0.72	0.56	0.28	90.31	90.16	90.28	2.16	2.64	2.13

```
Run 1: Statistics of TCP BBR

Start at: 2018-12-02 14:49:24
End at: 2018-12-02 14:49:54
Local clock offset: -2.558 ms
Remote clock offset: -28.029 ms


# Below is generated by plot.py at 2018-12-02 16:46:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.29 Mbit/s
95th percentile per-packet one-way delay: 414.747 ms
Loss rate: 3.76%
-- Flow 1:
Average throughput: 55.78 Mbit/s
95th percentile per-packet one-way delay: 418.080 ms
Loss rate: 2.87%
-- Flow 2:
Average throughput: 37.07 Mbit/s
95th percentile per-packet one-way delay: 414.600 ms
Loss rate: 3.80%
-- Flow 3:
Average throughput: 30.08 Mbit/s
95th percentile per-packet one-way delay: 413.349 ms
Loss rate: 8.42%
```
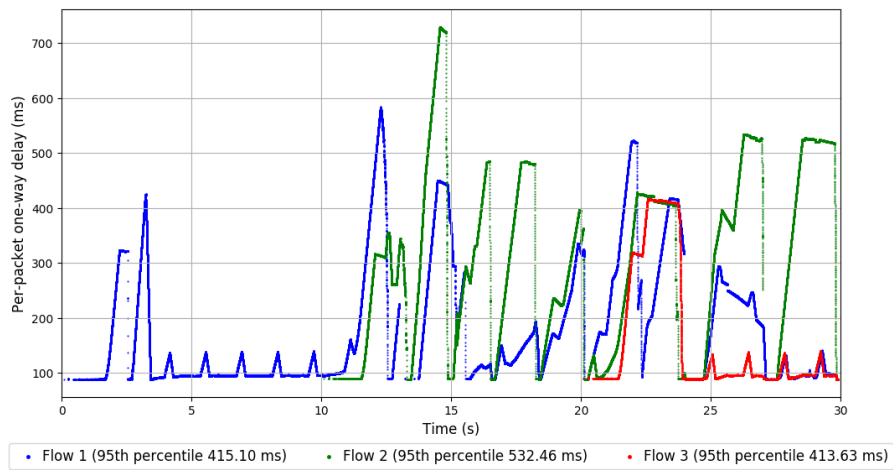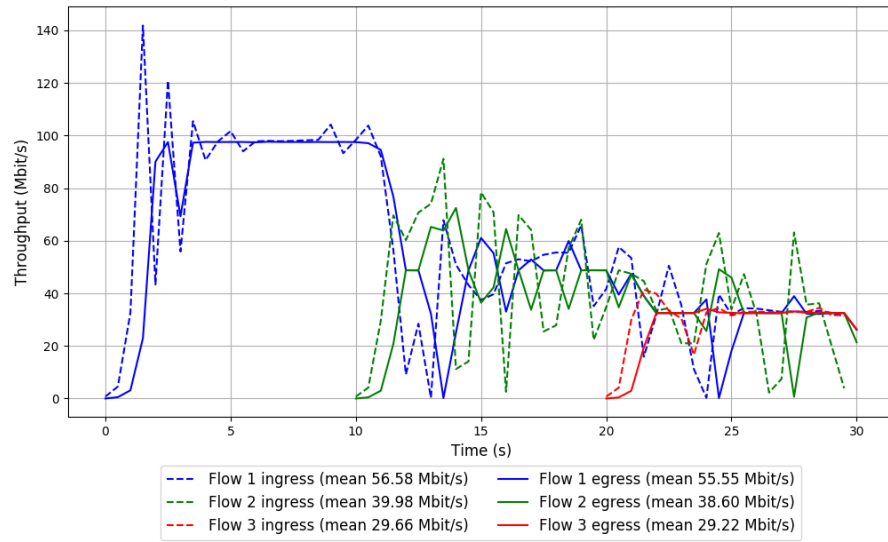
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 57.09 Mbit/s) --- Flow 1 egress (mean 55.78 Mbit/s)
Flow 2 ingress (mean 38.20 Mbit/s) --- Flow 2 egress (mean 37.07 Mbit/s)
Flow 3 ingress (mean 32.28 Mbit/s) --- Flow 3 egress (mean 30.08 Mbit/s)

Flow 1 (95th percentile 418.08 ms)   Flow 2 (95th percentile 414.60 ms)   Flow 3 (95th percentile 413.35 ms)

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```
Run 2: Statistics of TCP BBR

Start at: 2018-12-02 15:14:29
End at: 2018-12-02 15:14:59
Local clock offset: -7.062 ms
Remote clock offset: -34.733 ms


# Below is generated by plot.py at 2018-12-02 16:46:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.78 Mbit/s
95th percentile per-packet one-way delay: 485.644 ms
Loss rate: 2.97%
-- Flow 1:
Average throughput: 55.55 Mbit/s
95th percentile per-packet one-way delay: 415.099 ms
Loss rate: 2.39%
-- Flow 2:
Average throughput: 38.60 Mbit/s
95th percentile per-packet one-way delay: 532.464 ms
Loss rate: 4.13%
-- Flow 3:
Average throughput: 29.22 Mbit/s
95th percentile per-packet one-way delay: 413.632 ms
Loss rate: 3.21%
```

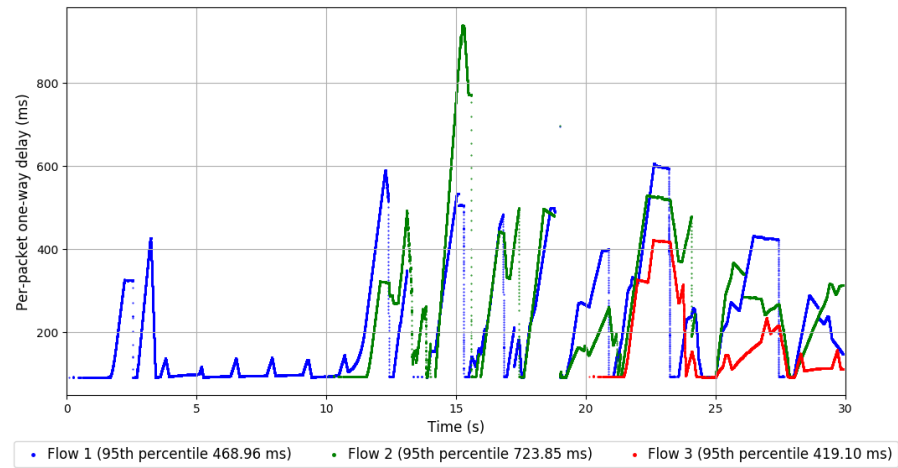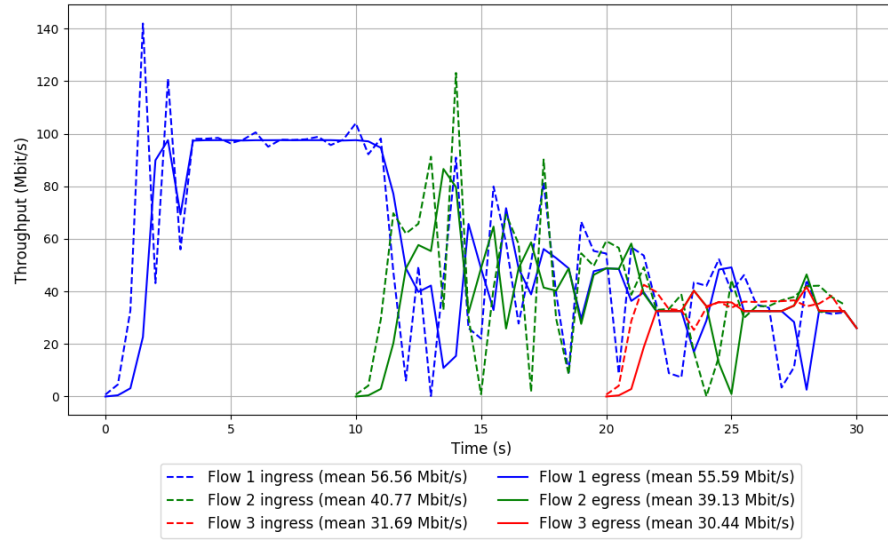Run 2: Report of TCP BBR — Data Link

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Run 3: Statistics of TCP BBR

Start at: 2018-12-02 15:38:59
End at: 2018-12-02 15:39:29
Local clock offset: -5.975 ms
Remote clock offset: -44.366 ms


# Below is generated by plot.py at 2018-12-02 16:46:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.57 Mbit/s
95th percentile per-packet one-way delay: 506.154 ms
Loss rate: 3.40%
-- Flow 1:
Average throughput: 55.59 Mbit/s
95th percentile per-packet one-way delay: 468.964 ms
Loss rate: 2.28%
-- Flow 2:
Average throughput: 39.13 Mbit/s
95th percentile per-packet one-way delay: 723.852 ms
Loss rate: 4.86%
-- Flow 3:
Average throughput: 30.44 Mbit/s
95th percentile per-packet one-way delay: 419.096 ms
Loss rate: 5.63%
```
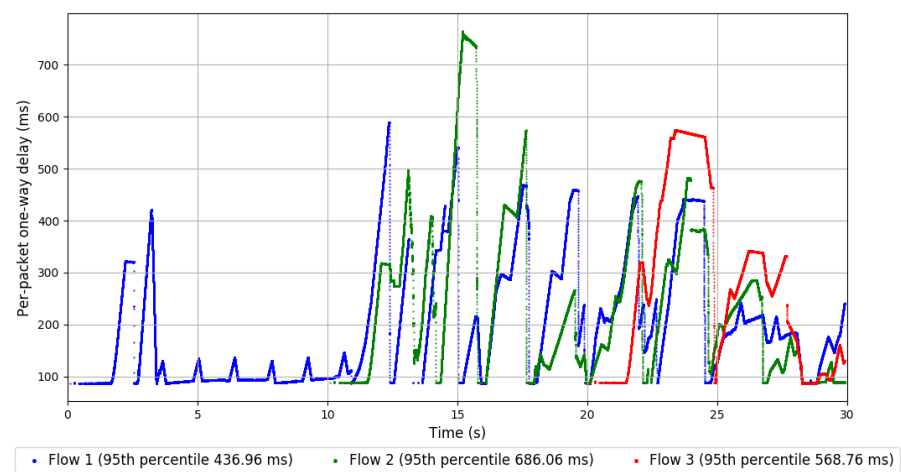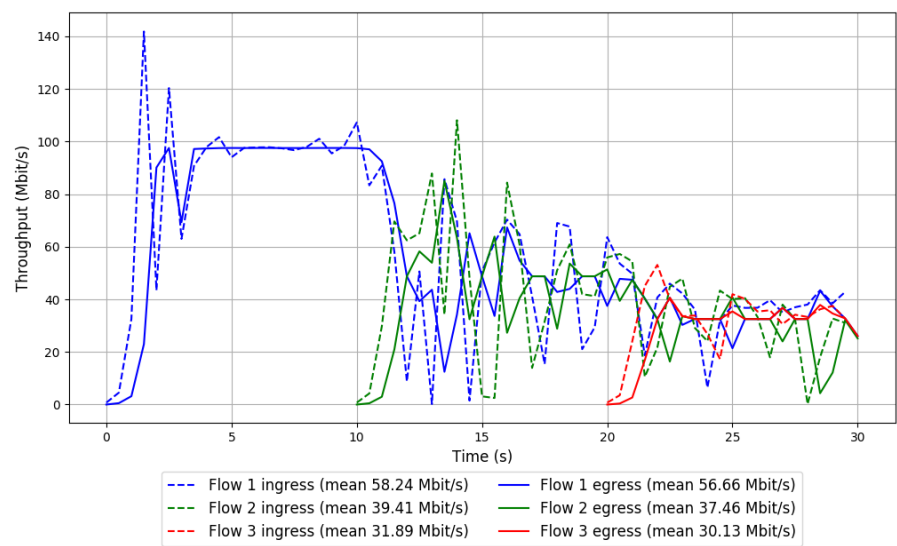
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 56.56 Mbit/s) — Flow 1 egress (mean 55.59 Mbit/s)
Flow 2 ingress (mean 40.77 Mbit/s) — Flow 2 egress (mean 39.13 Mbit/s)
Flow 3 ingress (mean 31.69 Mbit/s) — Flow 3 egress (mean 30.44 Mbit/s)

Flow 1 (95th percentile 468.96 ms)   Flow 2 (95th percentile 723.85 ms)   Flow 3 (95th percentile 419.10 ms)

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Run 4: Statistics of TCP BBR

Start at: 2018-12-02 16:03:37
End at: 2018-12-02 16:04:07
Local clock offset: -6.79 ms
Remote clock offset: -45.854 ms


# Below is generated by plot.py at 2018-12-02 16:46:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.44 Mbit/s
95th percentile per-packet one-way delay: 487.874 ms
Loss rate: 4.40%
-- Flow 1:
Average throughput: 56.66 Mbit/s
95th percentile per-packet one-way delay: 436.959 ms
Loss rate: 3.26%
-- Flow 2:
Average throughput: 37.46 Mbit/s
95th percentile per-packet one-way delay: 686.062 ms
Loss rate: 5.80%
-- Flow 3:
Average throughput: 30.13 Mbit/s
95th percentile per-packet one-way delay: 568.765 ms
Loss rate: 7.18%
```
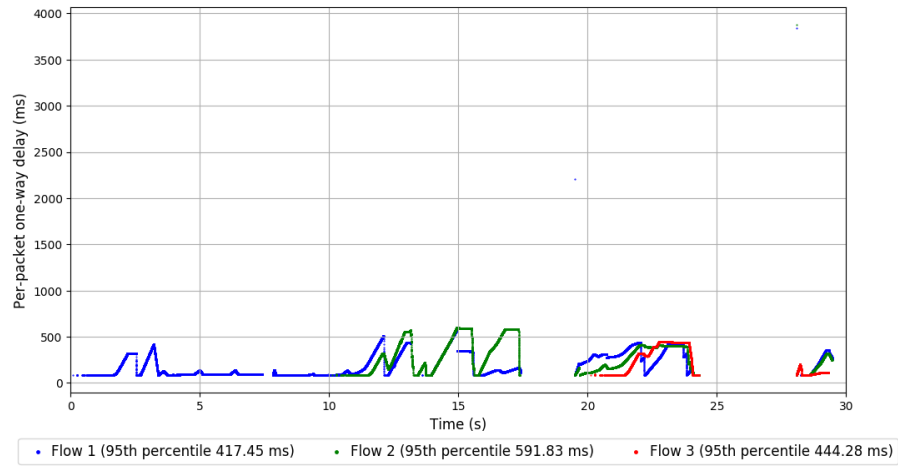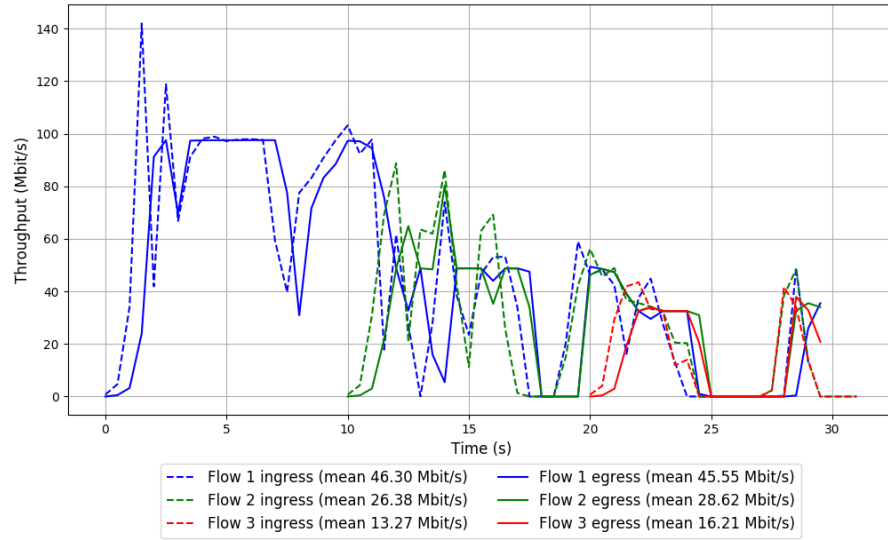
Run 4: Report of TCP BBR — Data Link

- - - Flow 1 ingress (mean 58.24 Mbit/s) —— Flow 1 egress (mean 56.66 Mbit/s)
- - - Flow 2 ingress (mean 39.41 Mbit/s) —— Flow 2 egress (mean 37.46 Mbit/s)
- - - Flow 3 ingress (mean 31.89 Mbit/s) —— Flow 3 egress (mean 30.13 Mbit/s)

• Flow 1 (95th percentile 436.96 ms)   • Flow 2 (95th percentile 686.06 ms)   • Flow 3 (95th percentile 568.76 ms)

```
Run 5: Statistics of TCP BBR

Start at: 2018-12-02 16:28:25
End at: 2018-12-02 16:28:55
Local clock offset: -7.542 ms
Remote clock offset: -53.441 ms

# Below is generated by plot.py at 2018-12-02 16:46:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 69.48 Mbit/s
95th percentile per-packet one-way delay: 489.410 ms
Loss rate: 1.36%
-- Flow 1:
Average throughput: 45.55 Mbit/s
95th percentile per-packet one-way delay: 417.446 ms
Loss rate: 1.05%
-- Flow 2:
Average throughput: 28.62 Mbit/s
95th percentile per-packet one-way delay: 591.834 ms
Loss rate: 2.03%
-- Flow 3:
Average throughput: 16.21 Mbit/s
95th percentile per-packet one-way delay: 444.284 ms
Loss rate: 1.54%
```
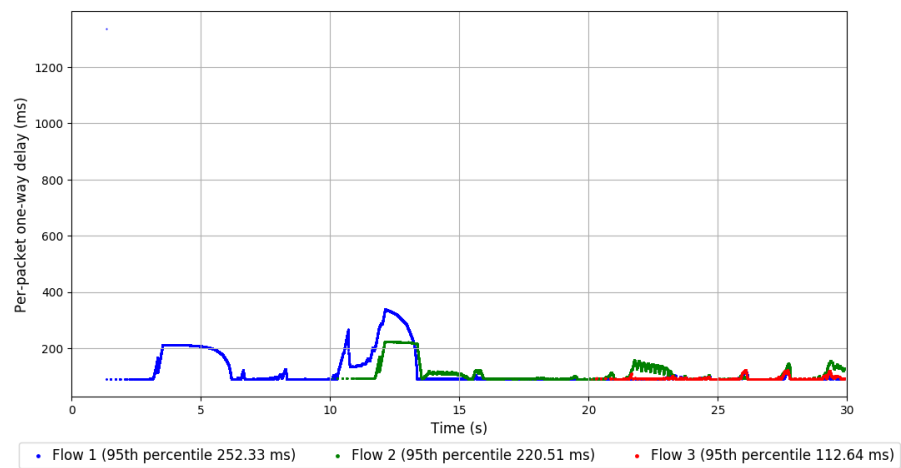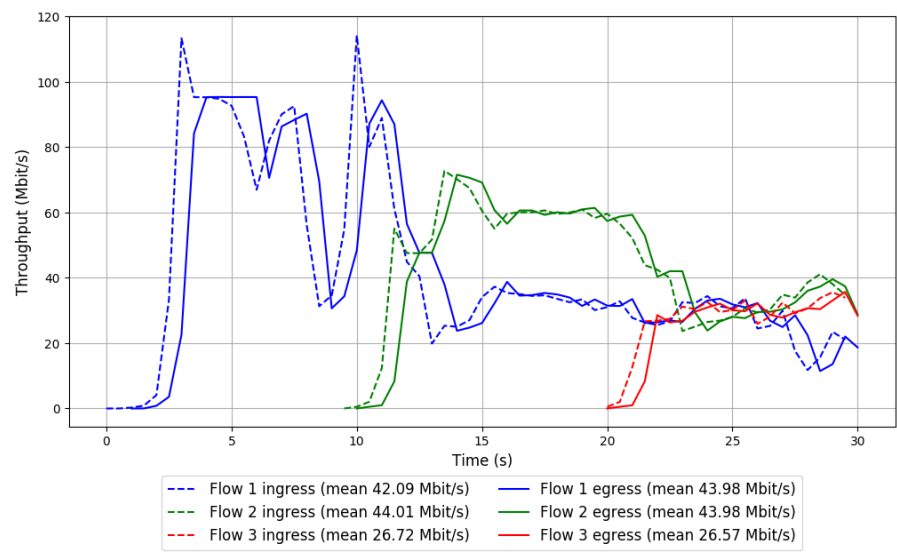
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 46.30 Mbit/s)   Flow 1 egress (mean 45.55 Mbit/s)
Flow 2 ingress (mean 26.38 Mbit/s)   Flow 2 egress (mean 28.62 Mbit/s)
Flow 3 ingress (mean 13.27 Mbit/s)   Flow 3 egress (mean 16.21 Mbit/s)

Flow 1 (95th percentile 417.45 ms)   Flow 2 (95th percentile 591.83 ms)   Flow 3 (95th percentile 444.28 ms)
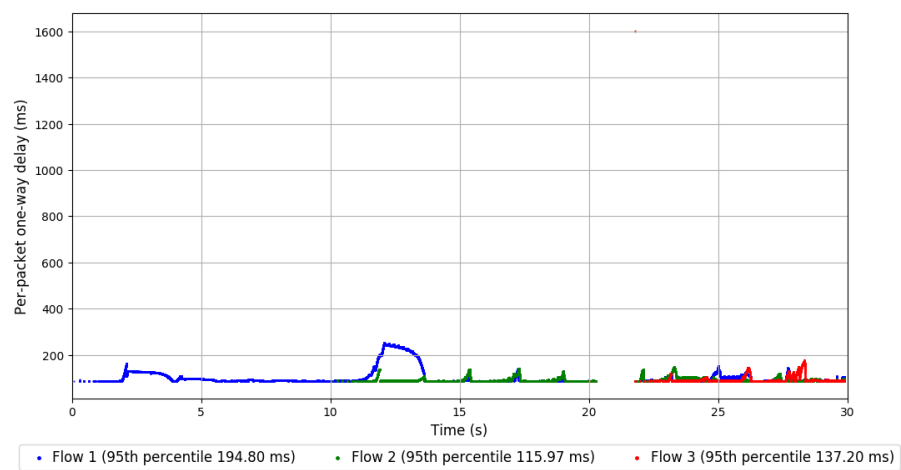
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```
Run 1: Statistics of Copa

Start at: 2018-12-02 14:59:36
End at: 2018-12-02 15:00:06
Local clock offset: -5.517 ms
Remote clock offset: -33.67 ms


# Below is generated by plot.py at 2018-12-02 16:47:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.59 Mbit/s
95th percentile per-packet one-way delay: 220.692 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 43.98 Mbit/s
95th percentile per-packet one-way delay: 252.333 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 43.98 Mbit/s
95th percentile per-packet one-way delay: 220.515 ms
Loss rate: 0.93%
-- Flow 3:
Average throughput: 26.57 Mbit/s
95th percentile per-packet one-way delay: 112.641 ms
Loss rate: 2.30%
```

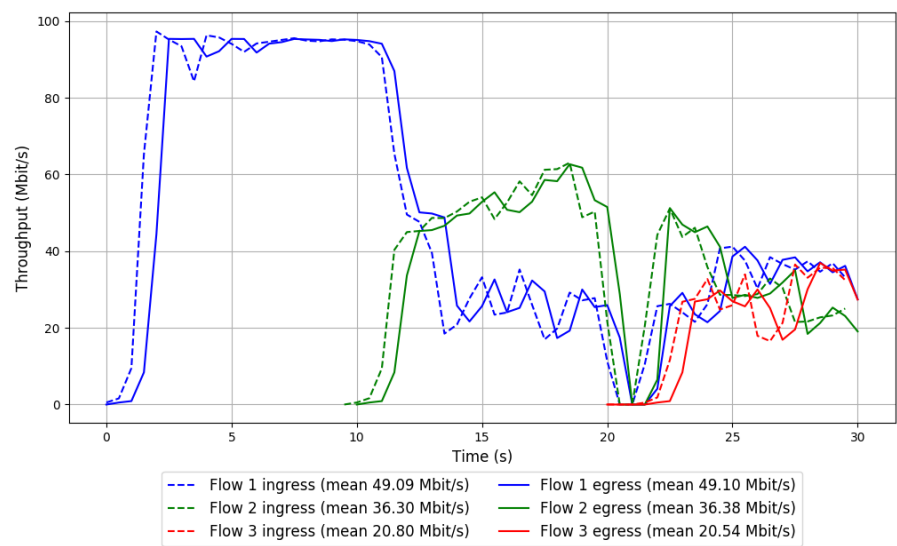Run 1: Report of Copa — Data Link

```
Run 2: Statistics of Copa

Start at: 2018-12-02 15:24:43
End at: 2018-12-02 15:25:13
Local clock offset: -6.063 ms
Remote clock offset: -36.32 ms


# Below is generated by plot.py at 2018-12-02 16:47:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.03 Mbit/s
95th percentile per-packet one-way delay: 137.590 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 49.10 Mbit/s
95th percentile per-packet one-way delay: 194.802 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 36.38 Mbit/s
95th percentile per-packet one-way delay: 115.965 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 20.54 Mbit/s
95th percentile per-packet one-way delay: 137.200 ms
Loss rate: 2.95%
```
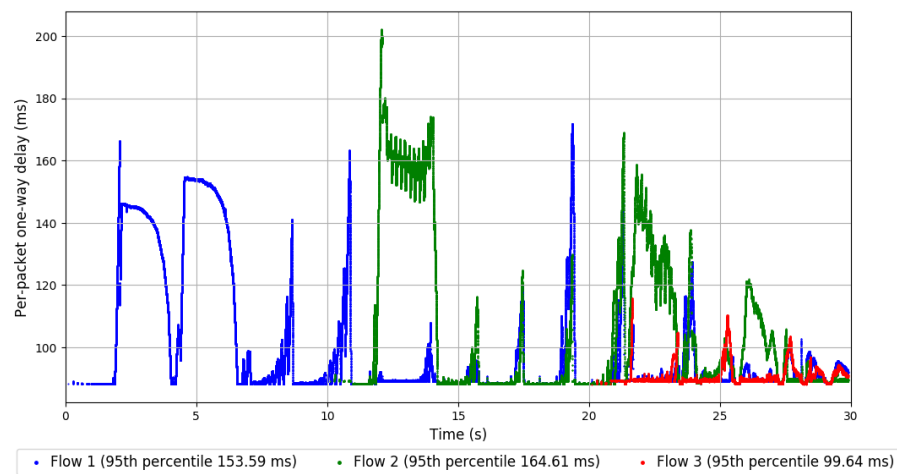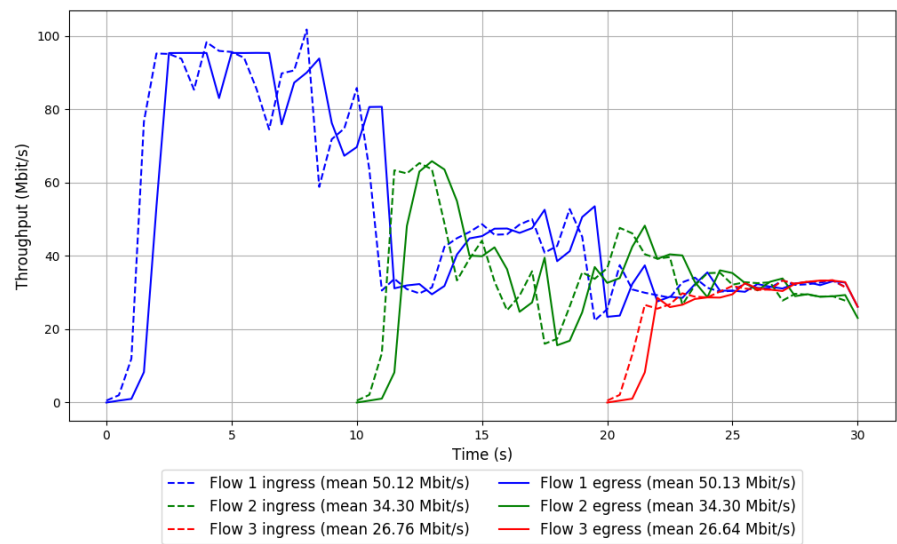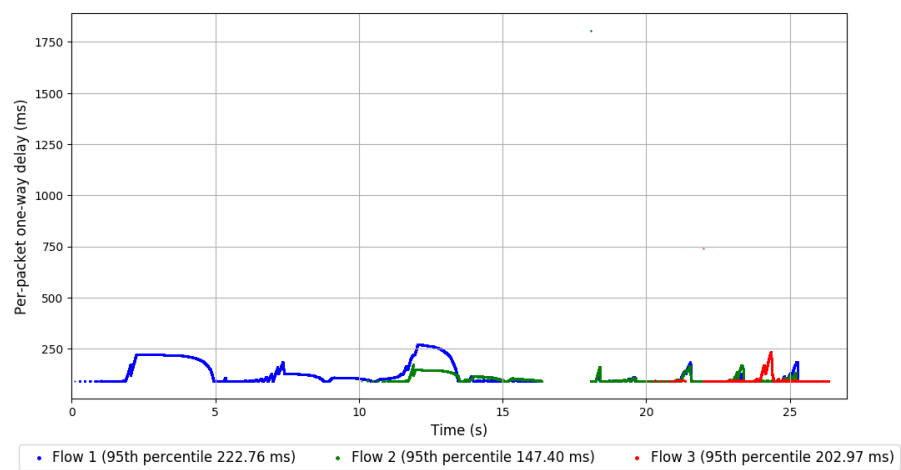
Run 2: Report of Copa — Data Link

Flow 1 ingress (mean 49.09 Mbit/s) — — — Flow 1 egress (mean 49.10 Mbit/s)
Flow 2 ingress (mean 36.30 Mbit/s) — — — Flow 2 egress (mean 36.38 Mbit/s)
Flow 3 ingress (mean 20.80 Mbit/s) — — — Flow 3 egress (mean 20.54 Mbit/s)

Flow 1 (95th percentile 194.80 ms)   Flow 2 (95th percentile 115.97 ms)   Flow 3 (95th percentile 137.20 ms)

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```
Run 3: Statistics of Copa

Start at: 2018-12-02 15:49:11
End at: 2018-12-02 15:49:41
Local clock offset: -6.985 ms
Remote clock offset: -44.11 ms


# Below is generated by plot.py at 2018-12-02 16:47:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.68 Mbit/s
95th percentile per-packet one-way delay: 154.960 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 50.13 Mbit/s
95th percentile per-packet one-way delay: 153.592 ms
Loss rate: 0.55%
-- Flow 2:
Average throughput: 34.30 Mbit/s
95th percentile per-packet one-way delay: 164.609 ms
Loss rate: 0.88%
-- Flow 3:
Average throughput: 26.64 Mbit/s
95th percentile per-packet one-way delay: 99.644 ms
Loss rate: 2.15%
```
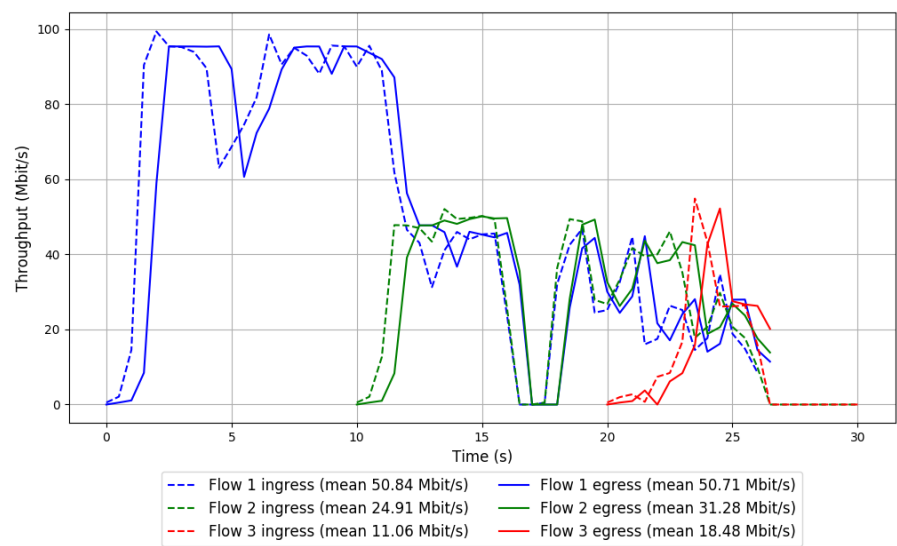
Run 3: Report of Copa — Data Link

Flow 1 ingress (mean 50.12 Mbit/s) — — — Flow 1 egress (mean 50.13 Mbit/s)
Flow 2 ingress (mean 34.30 Mbit/s) — — — Flow 2 egress (mean 34.30 Mbit/s)
Flow 3 ingress (mean 26.76 Mbit/s) — — — Flow 3 egress (mean 26.64 Mbit/s)

Flow 1 (95th percentile 153.59 ms)   Flow 2 (95th percentile 164.61 ms)   Flow 3 (95th percentile 99.64 ms)
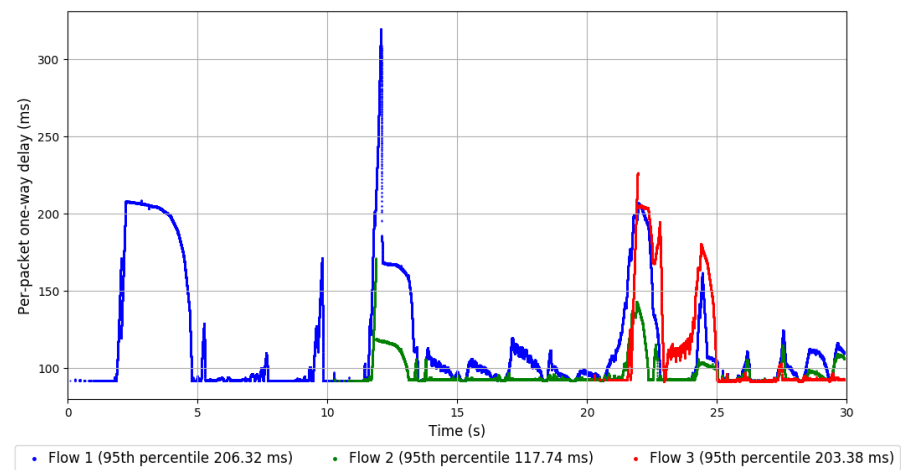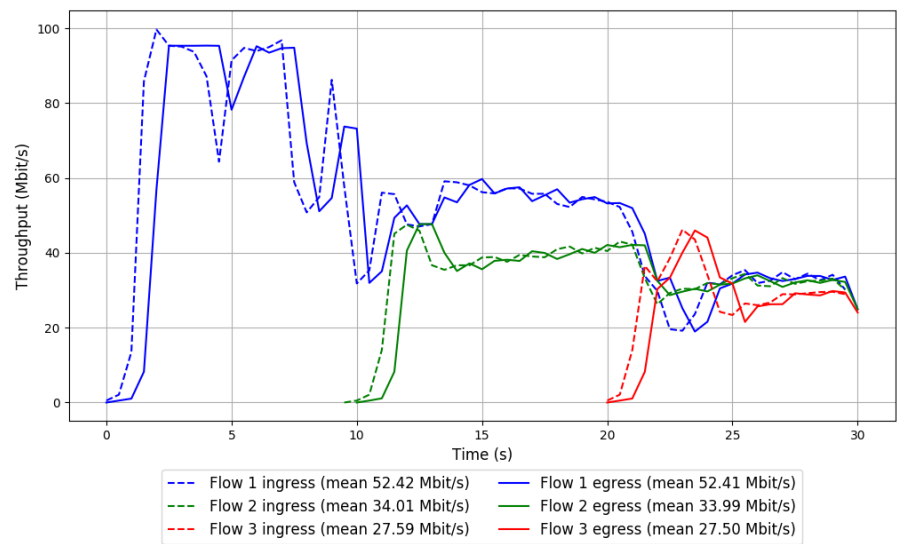
```
Run 4: Statistics of Copa

Start at: 2018-12-02 16:13:46
End at: 2018-12-02 16:14:16
Local clock offset: -7.088 ms
Remote clock offset: -54.531 ms


# Below is generated by plot.py at 2018-12-02 16:47:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 74.47 Mbit/s
95th percentile per-packet one-way delay: 222.077 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 50.71 Mbit/s
95th percentile per-packet one-way delay: 222.759 ms
Loss rate: 0.25%
-- Flow 2:
Average throughput: 31.28 Mbit/s
95th percentile per-packet one-way delay: 147.396 ms
Loss rate: 0.18%
-- Flow 3:
Average throughput: 18.48 Mbit/s
95th percentile per-packet one-way delay: 202.966 ms
Loss rate: 0.05%
```
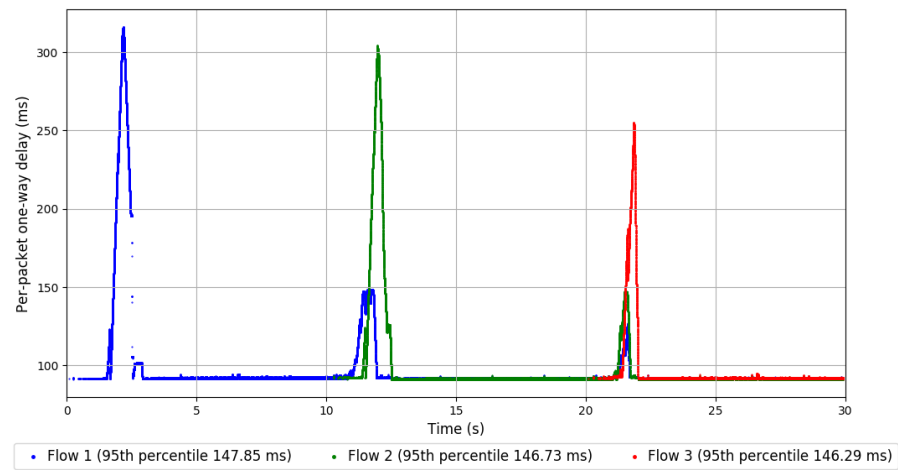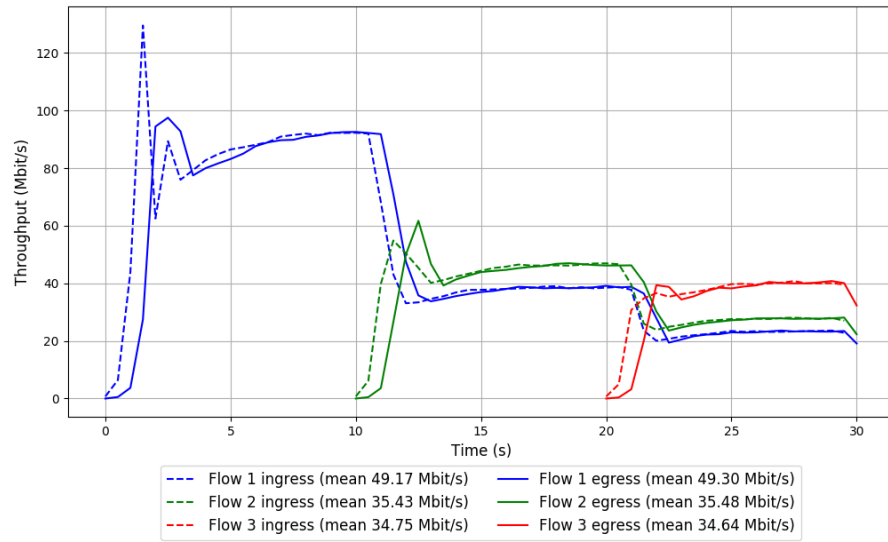
Run 4: Report of Copa — Data Link

- - - Flow 1 ingress (mean 50.84 Mbit/s) ——— Flow 1 egress (mean 50.71 Mbit/s)
- - - Flow 2 ingress (mean 24.91 Mbit/s) ——— Flow 2 egress (mean 31.28 Mbit/s)
- - - Flow 3 ingress (mean 11.06 Mbit/s) ——— Flow 3 egress (mean 18.48 Mbit/s)

• Flow 1 (95th percentile 222.76 ms)   • Flow 2 (95th percentile 147.40 ms)   • Flow 3 (95th percentile 202.97 ms)

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```
Run 5: Statistics of Copa

Start at: 2018-12-02 16:38:40
End at: 2018-12-02 16:39:10
Local clock offset: -6.841 ms
Remote clock offset: -60.186 ms


# Below is generated by plot.py at 2018-12-02 16:48:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.04 Mbit/s
95th percentile per-packet one-way delay: 204.748 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 52.41 Mbit/s
95th percentile per-packet one-way delay: 206.320 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 33.99 Mbit/s
95th percentile per-packet one-way delay: 117.738 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 27.50 Mbit/s
95th percentile per-packet one-way delay: 203.383 ms
Loss rate: 2.07%
```
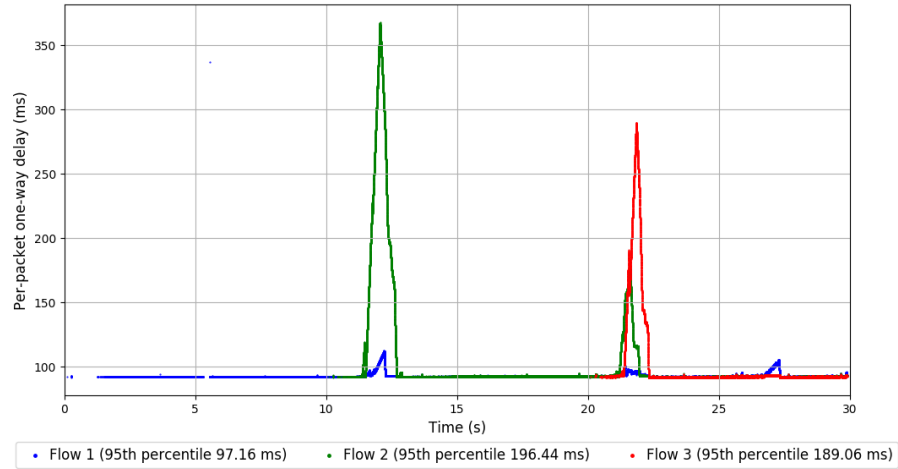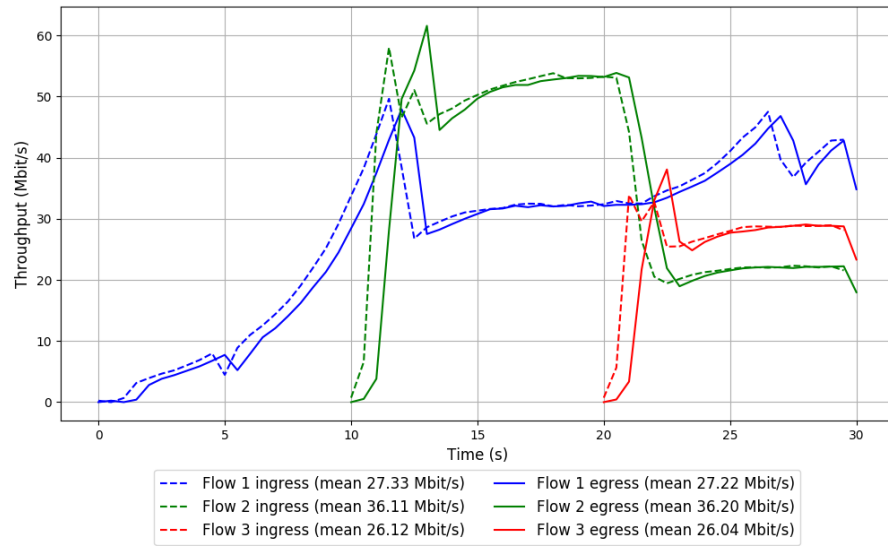
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-12-02 15:00:57
End at: 2018-12-02 15:01:27
Local clock offset: -5.755 ms
Remote clock offset: -34.029 ms


# Below is generated by plot.py at 2018-12-02 16:48:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 84.24 Mbit/s
95th percentile per-packet one-way delay: 147.362 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 49.30 Mbit/s
95th percentile per-packet one-way delay: 147.846 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 35.48 Mbit/s
95th percentile per-packet one-way delay: 146.730 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 34.64 Mbit/s
95th percentile per-packet one-way delay: 146.286 ms
Loss rate: 2.08%
```
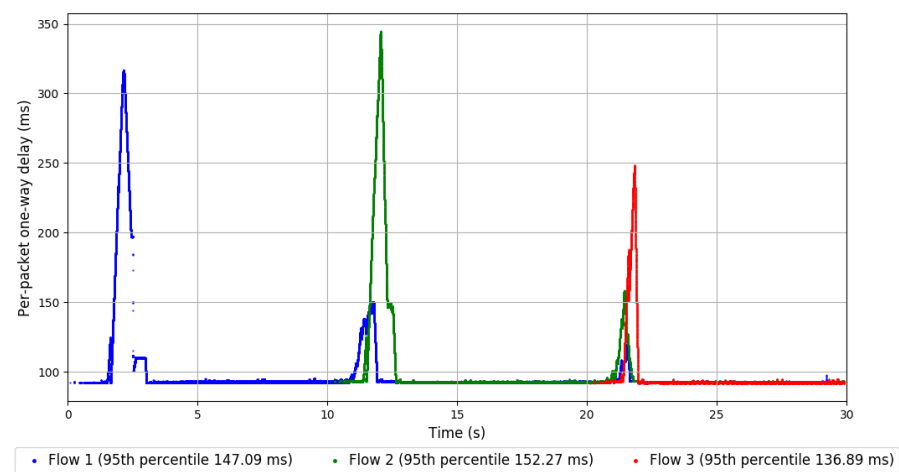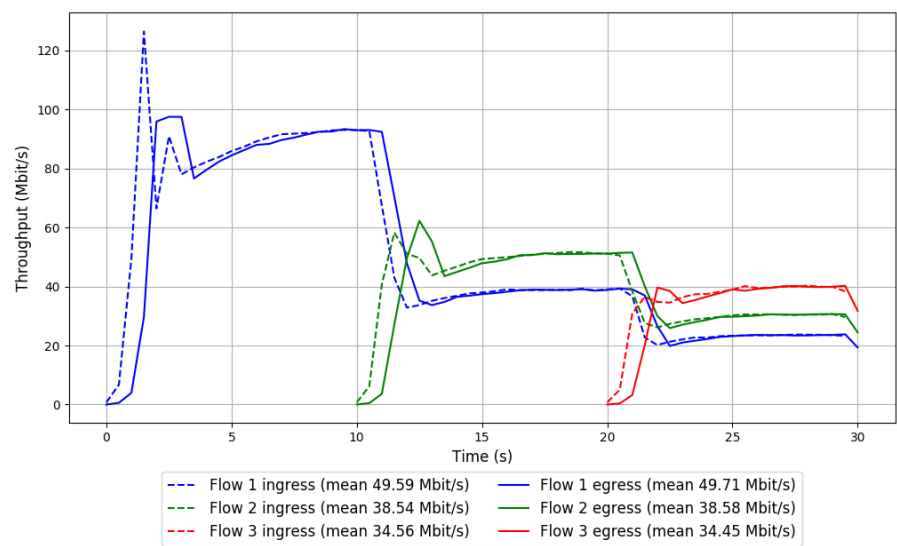
Run 1: Report of TCP Cubic — Data Link

- - - Flow 1 ingress (mean 49.17 Mbit/s)   —— Flow 1 egress (mean 49.30 Mbit/s)
- - - Flow 2 ingress (mean 35.43 Mbit/s)   —— Flow 2 egress (mean 35.48 Mbit/s)
- - - Flow 3 ingress (mean 34.75 Mbit/s)   —— Flow 3 egress (mean 34.64 Mbit/s)

• Flow 1 (95th percentile 147.85 ms)   • Flow 2 (95th percentile 146.73 ms)   • Flow 3 (95th percentile 146.29 ms)

```
Run 2: Statistics of TCP Cubic

Start at: 2018-12-02 15:26:04
End at: 2018-12-02 15:26:34
Local clock offset: -6.077 ms
Remote clock offset: -40.99 ms


# Below is generated by plot.py at 2018-12-02 16:48:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 59.81 Mbit/s
95th percentile per-packet one-way delay: 140.917 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 27.22 Mbit/s
95th percentile per-packet one-way delay: 97.157 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 36.20 Mbit/s
95th percentile per-packet one-way delay: 196.445 ms
Loss rate: 0.63%
-- Flow 3:
Average throughput: 26.04 Mbit/s
95th percentile per-packet one-way delay: 189.058 ms
Loss rate: 2.07%
```
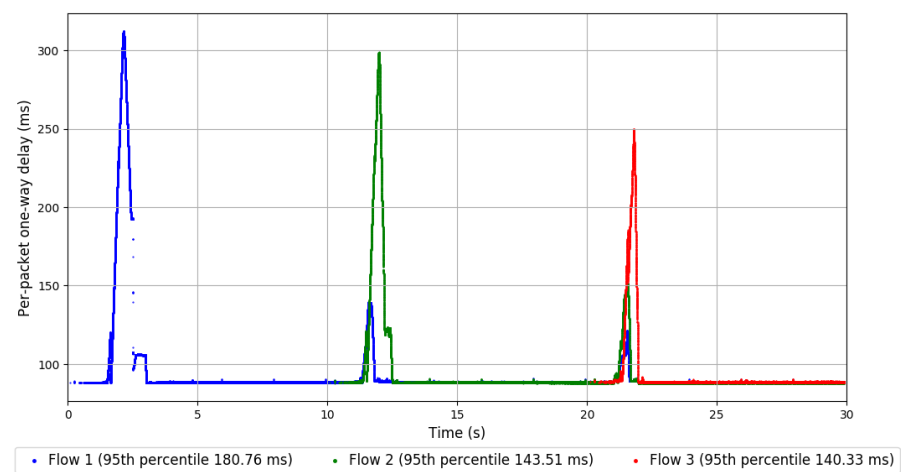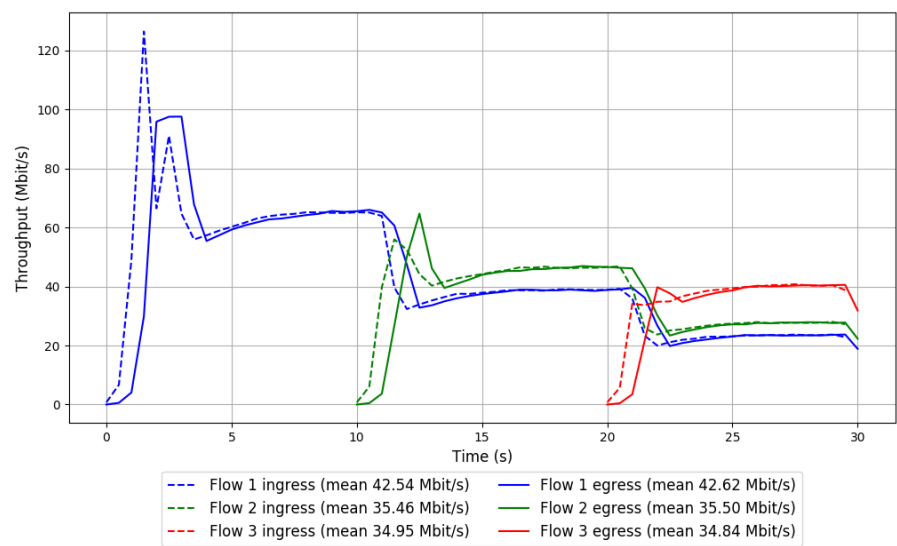
Run 2: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 27.33 Mbit/s)   Flow 1 egress (mean 27.22 Mbit/s)
Flow 2 ingress (mean 36.11 Mbit/s)   Flow 2 egress (mean 36.20 Mbit/s)
Flow 3 ingress (mean 26.12 Mbit/s)   Flow 3 egress (mean 26.04 Mbit/s)

Flow 1 (95th percentile 97.16 ms)   Flow 2 (95th percentile 196.44 ms)   Flow 3 (95th percentile 189.06 ms)

```
Run 3: Statistics of TCP Cubic

Start at: 2018-12-02 15:50:32
End at: 2018-12-02 15:51:02
Local clock offset: -7.12 ms
Remote clock offset: -48.359 ms


# Below is generated by plot.py at 2018-12-02 16:48:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.64 Mbit/s
95th percentile per-packet one-way delay: 149.103 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 49.71 Mbit/s
95th percentile per-packet one-way delay: 147.085 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 38.58 Mbit/s
95th percentile per-packet one-way delay: 152.267 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 34.45 Mbit/s
95th percentile per-packet one-way delay: 136.892 ms
Loss rate: 2.06%
```
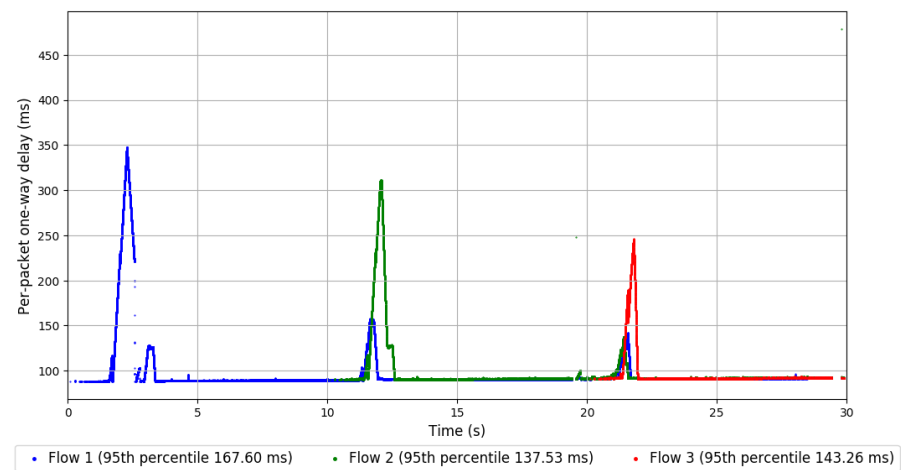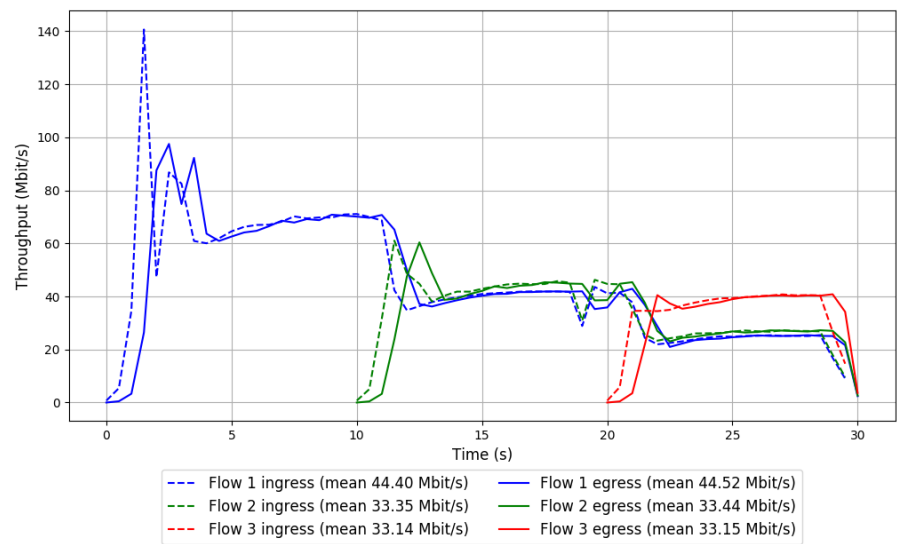
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 49.59 Mbit/s) --- Flow 1 egress (mean 49.71 Mbit/s)
Flow 2 ingress (mean 38.54 Mbit/s) --- Flow 2 egress (mean 38.58 Mbit/s)
Flow 3 ingress (mean 34.56 Mbit/s) --- Flow 3 egress (mean 34.45 Mbit/s)

Flow 1 (95th percentile 147.09 ms) · Flow 2 (95th percentile 152.27 ms) · Flow 3 (95th percentile 136.89 ms)

```
Run 4: Statistics of TCP Cubic

Start at: 2018-12-02 16:15:05
End at: 2018-12-02 16:15:35
Local clock offset: -7.129 ms
Remote clock offset: -50.061 ms


# Below is generated by plot.py at 2018-12-02 16:48:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.64 Mbit/s
95th percentile per-packet one-way delay: 149.969 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 42.62 Mbit/s
95th percentile per-packet one-way delay: 180.761 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 35.50 Mbit/s
95th percentile per-packet one-way delay: 143.507 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 34.84 Mbit/s
95th percentile per-packet one-way delay: 140.334 ms
Loss rate: 2.06%
```
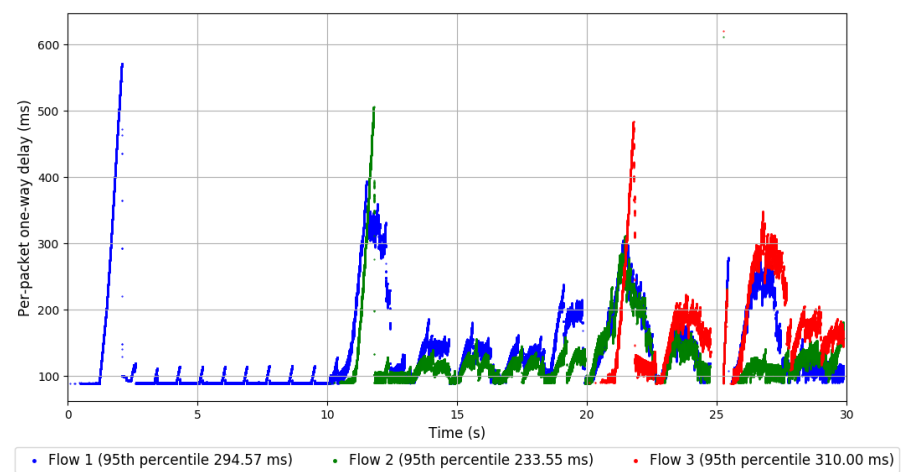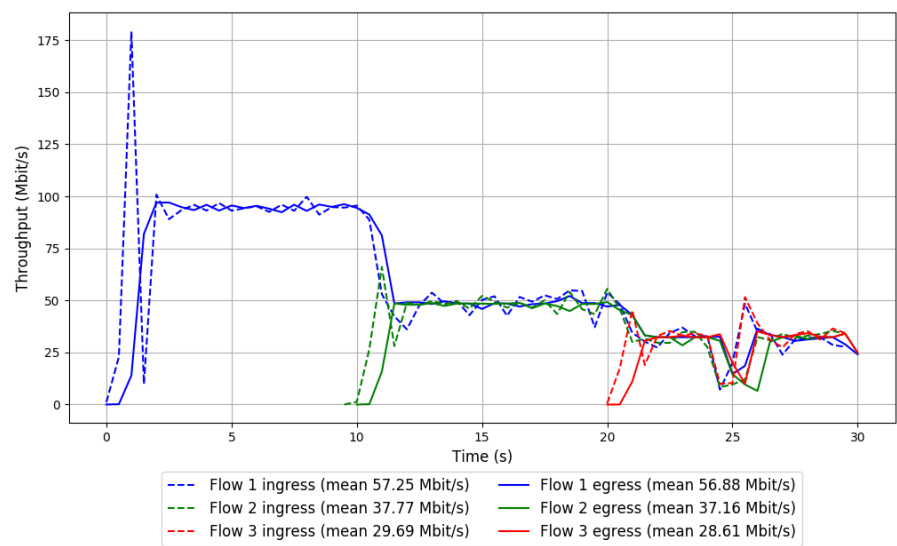
Run 4: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 42.54 Mbit/s) — — — Flow 1 egress (mean 42.62 Mbit/s)
Flow 2 ingress (mean 35.46 Mbit/s) — — — Flow 2 egress (mean 35.50 Mbit/s)
Flow 3 ingress (mean 34.95 Mbit/s) — — — Flow 3 egress (mean 34.84 Mbit/s)

Flow 1 (95th percentile 180.76 ms) • Flow 2 (95th percentile 143.51 ms) • Flow 3 (95th percentile 140.33 ms)

```
Run 5: Statistics of TCP Cubic

Start at: 2018-12-02 16:40:15
End at: 2018-12-02 16:40:45
Local clock offset: -7.552 ms
Remote clock offset: -56.62 ms


# Below is generated by plot.py at 2018-12-02 16:48:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.61 Mbit/s
95th percentile per-packet one-way delay: 156.590 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 44.52 Mbit/s
95th percentile per-packet one-way delay: 167.605 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 33.44 Mbit/s
95th percentile per-packet one-way delay: 137.534 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 33.15 Mbit/s
95th percentile per-packet one-way delay: 143.265 ms
Loss rate: 1.71%
```

Run 5: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 44.40 Mbit/s) — — — Flow 1 egress (mean 44.52 Mbit/s)
Flow 2 ingress (mean 33.35 Mbit/s) — — — Flow 2 egress (mean 33.44 Mbit/s)
Flow 3 ingress (mean 33.14 Mbit/s) — — — Flow 3 egress (mean 33.15 Mbit/s)

Flow 1 (95th percentile 167.60 ms)   Flow 2 (95th percentile 137.53 ms)   Flow 3 (95th percentile 143.26 ms)
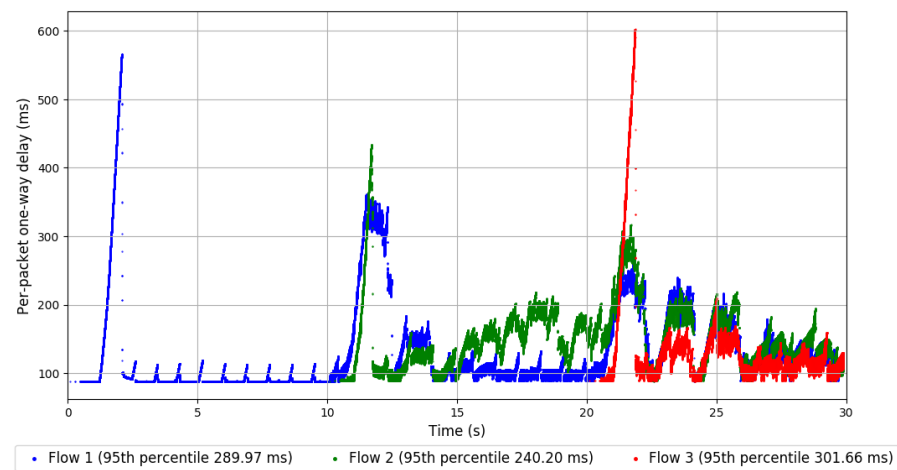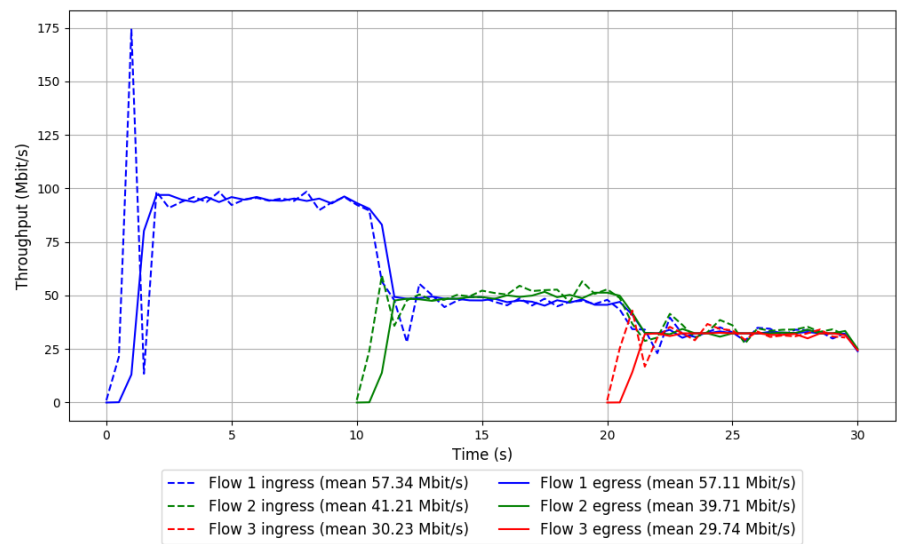
```
Run 1: Statistics of FillP

Start at: 2018-12-02 14:52:00
End at: 2018-12-02 14:52:30
Local clock offset: -2.796 ms
Remote clock offset: -29.132 ms


# Below is generated by plot.py at 2018-12-02 16:48:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.96 Mbit/s
95th percentile per-packet one-way delay: 287.994 ms
Loss rate: 1.97%
-- Flow 1:
Average throughput: 56.88 Mbit/s
95th percentile per-packet one-way delay: 294.572 ms
Loss rate: 1.23%
-- Flow 2:
Average throughput: 37.16 Mbit/s
95th percentile per-packet one-way delay: 233.550 ms
Loss rate: 2.39%
-- Flow 3:
Average throughput: 28.61 Mbit/s
95th percentile per-packet one-way delay: 309.999 ms
Loss rate: 5.20%
```
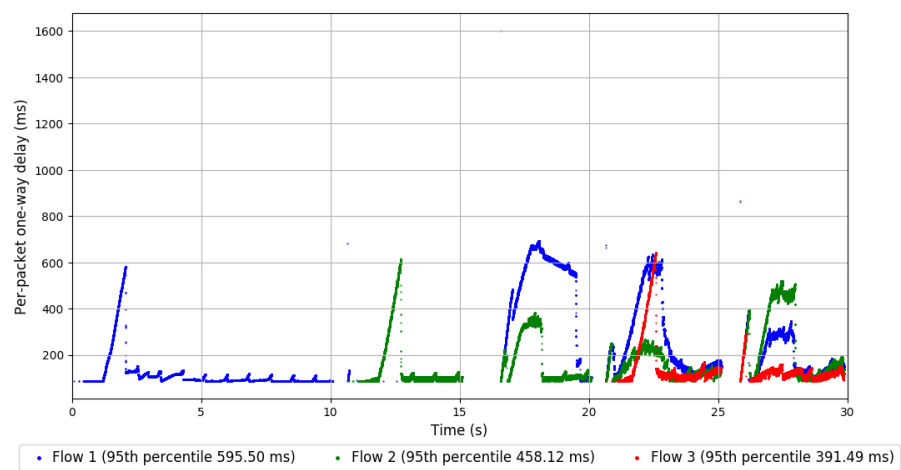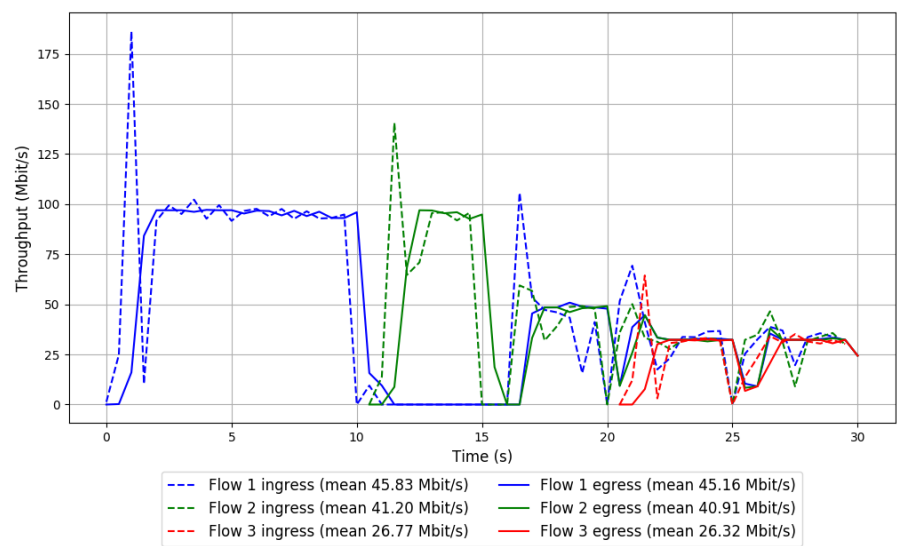
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 57.25 Mbit/s) ---- Flow 1 egress (mean 56.88 Mbit/s)
Flow 2 ingress (mean 37.77 Mbit/s) ---- Flow 2 egress (mean 37.16 Mbit/s)
Flow 3 ingress (mean 29.69 Mbit/s) ---- Flow 3 egress (mean 28.61 Mbit/s)

Flow 1 (95th percentile 294.57 ms) • Flow 2 (95th percentile 233.55 ms) • Flow 3 (95th percentile 310.00 ms)

```
Run 2: Statistics of FillP

Start at: 2018-12-02 15:17:05
End at: 2018-12-02 15:17:35
Local clock offset: -6.455 ms
Remote clock offset: -34.473 ms


# Below is generated by plot.py at 2018-12-02 16:48:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.22 Mbit/s
95th percentile per-packet one-way delay: 254.529 ms
Loss rate: 2.01%
-- Flow 1:
Average throughput: 57.85 Mbit/s
95th percentile per-packet one-way delay: 263.559 ms
Loss rate: 2.04%
-- Flow 2:
Average throughput: 38.53 Mbit/s
95th percentile per-packet one-way delay: 232.321 ms
Loss rate: 1.82%
-- Flow 3:
Average throughput: 29.71 Mbit/s
95th percentile per-packet one-way delay: 292.310 ms
Loss rate: 2.40%
```
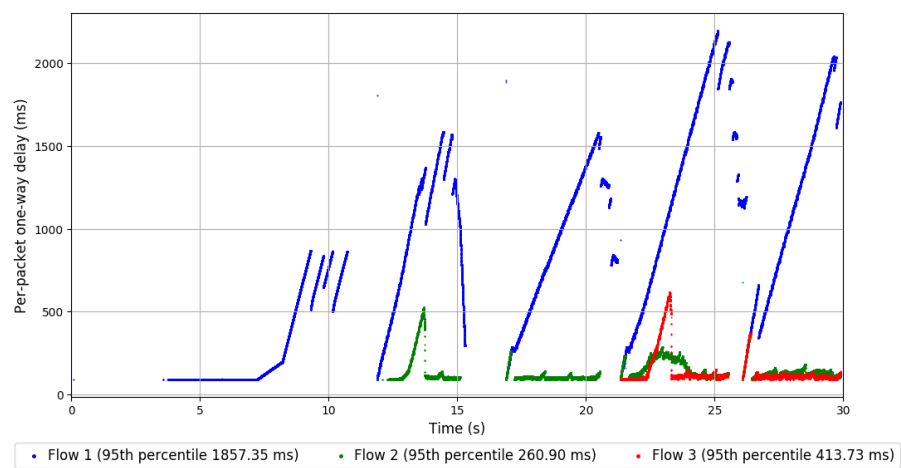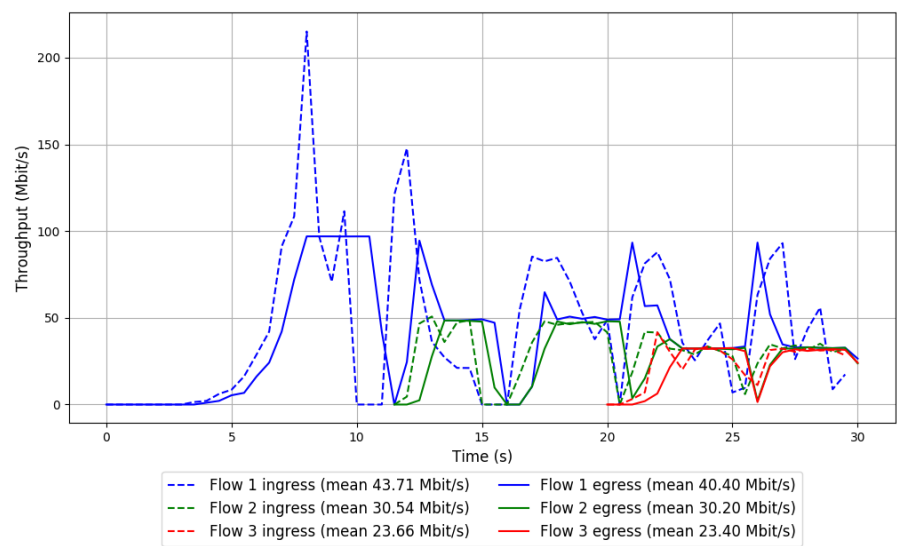
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 58.75 Mbit/s)   Flow 1 egress (mean 57.85 Mbit/s)
Flow 2 ingress (mean 38.90 Mbit/s)   Flow 2 egress (mean 38.53 Mbit/s)
Flow 3 ingress (mean 29.93 Mbit/s)   Flow 3 egress (mean 29.71 Mbit/s)

Flow 1 (95th percentile 263.56 ms)   Flow 2 (95th percentile 232.32 ms)   Flow 3 (95th percentile 292.31 ms)

38

```
Run 3: Statistics of FillP

Start at: 2018-12-02 15:41:35
End at: 2018-12-02 15:42:05
Local clock offset: -6.852 ms
Remote clock offset: -42.139 ms


# Below is generated by plot.py at 2018-12-02 16:48:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.25 Mbit/s
95th percentile per-packet one-way delay: 267.079 ms
Loss rate: 2.21%
-- Flow 1:
Average throughput: 57.11 Mbit/s
95th percentile per-packet one-way delay: 289.971 ms
Loss rate: 0.95%
-- Flow 2:
Average throughput: 39.71 Mbit/s
95th percentile per-packet one-way delay: 240.200 ms
Loss rate: 4.48%
-- Flow 3:
Average throughput: 29.74 Mbit/s
95th percentile per-packet one-way delay: 301.664 ms
Loss rate: 3.18%
```
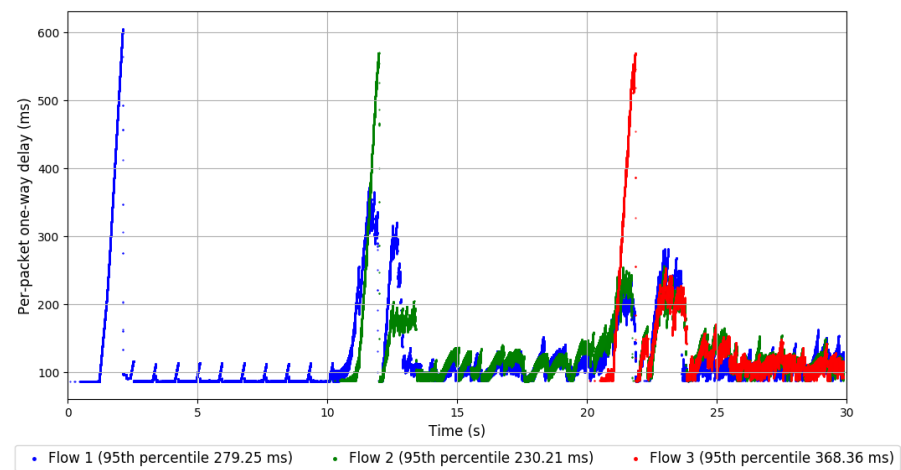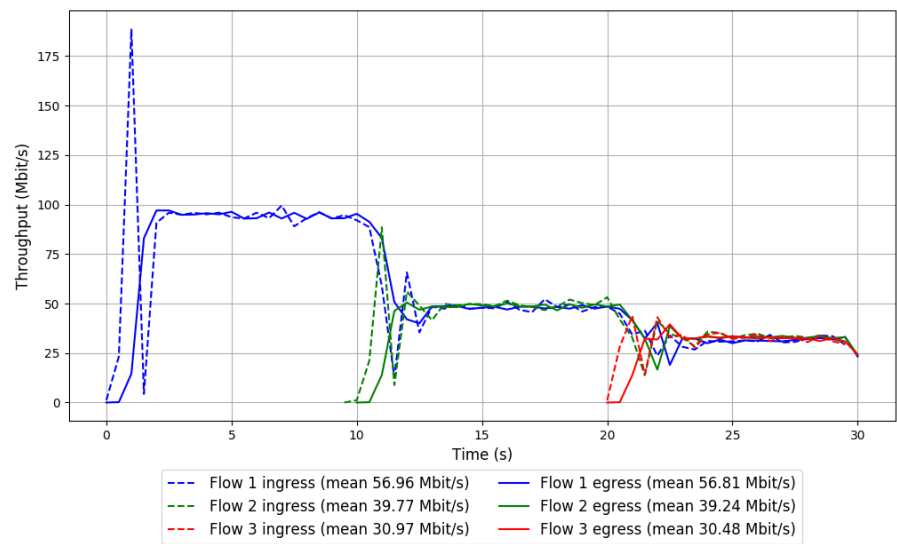
Run 3: Report of FillP — Data Link

Flow 1 ingress (mean 57.34 Mbit/s)   Flow 1 egress (mean 57.11 Mbit/s)
Flow 2 ingress (mean 41.21 Mbit/s)   Flow 2 egress (mean 39.71 Mbit/s)
Flow 3 ingress (mean 30.23 Mbit/s)   Flow 3 egress (mean 29.74 Mbit/s)

Flow 1 (95th percentile 289.97 ms)   Flow 2 (95th percentile 240.20 ms)   Flow 3 (95th percentile 301.66 ms)

```
Run 4: Statistics of FillP

Start at: 2018-12-02 16:06:13
End at: 2018-12-02 16:06:43
Local clock offset: -7.634 ms
Remote clock offset: -47.841 ms


# Below is generated by plot.py at 2018-12-02 16:48:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.65 Mbit/s
95th percentile per-packet one-way delay: 564.970 ms
Loss rate: 1.99%
-- Flow 1:
Average throughput: 45.16 Mbit/s
95th percentile per-packet one-way delay: 595.505 ms
Loss rate: 1.96%
-- Flow 2:
Average throughput: 40.91 Mbit/s
95th percentile per-packet one-way delay: 458.125 ms
Loss rate: 1.59%
-- Flow 3:
Average throughput: 26.32 Mbit/s
95th percentile per-packet one-way delay: 391.488 ms
Loss rate: 3.42%
```
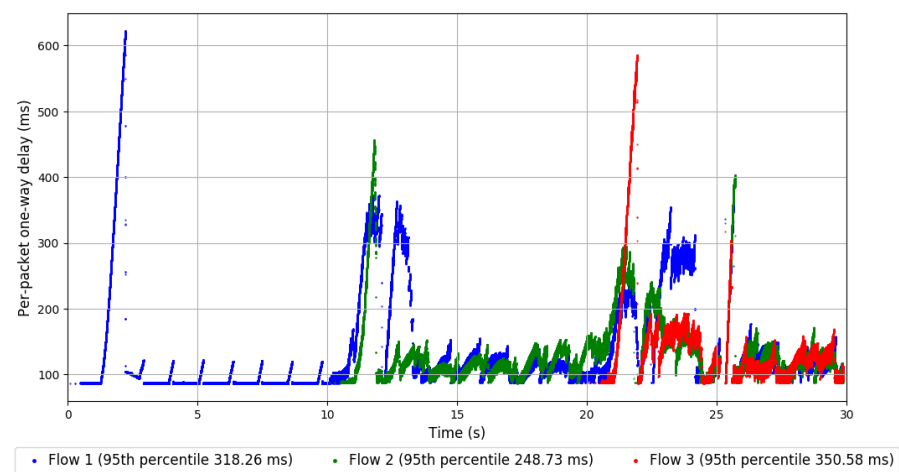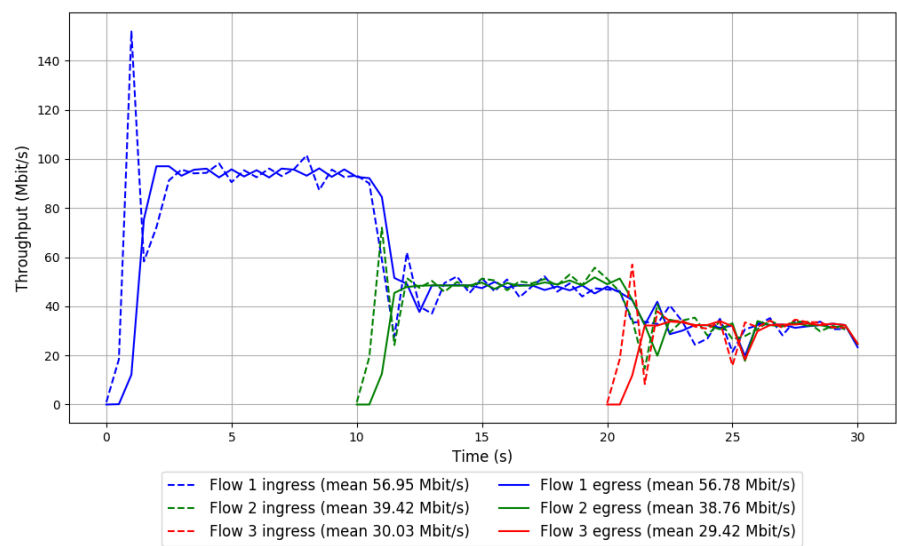
Run 4: Report of FillP — Data Link

Flow 1 ingress (mean 45.83 Mbit/s) — Flow 1 egress (mean 45.16 Mbit/s)
Flow 2 ingress (mean 41.20 Mbit/s) — Flow 2 egress (mean 40.91 Mbit/s)
Flow 3 ingress (mean 26.77 Mbit/s) — Flow 3 egress (mean 26.32 Mbit/s)

Flow 1 (95th percentile 595.50 ms)   Flow 2 (95th percentile 458.12 ms)   Flow 3 (95th percentile 391.49 ms)

42

```
Run 5: Statistics of FillP

Start at: 2018-12-02 16:31:03
End at: 2018-12-02 16:31:33
Local clock offset: -7.522 ms
Remote clock offset: -59.567 ms


# Below is generated by plot.py at 2018-12-02 16:48:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 66.33 Mbit/s
95th percentile per-packet one-way delay: 1581.707 ms
Loss rate: 5.89%
-- Flow 1:
Average throughput: 40.40 Mbit/s
95th percentile per-packet one-way delay: 1857.349 ms
Loss rate: 8.10%
-- Flow 2:
Average throughput: 30.20 Mbit/s
95th percentile per-packet one-way delay: 260.900 ms
Loss rate: 2.05%
-- Flow 3:
Average throughput: 23.40 Mbit/s
95th percentile per-packet one-way delay: 413.732 ms
Loss rate: 2.70%
```
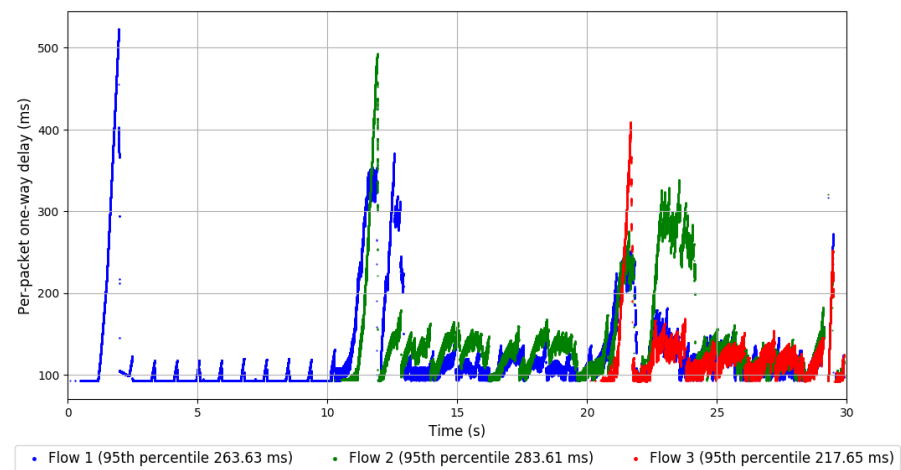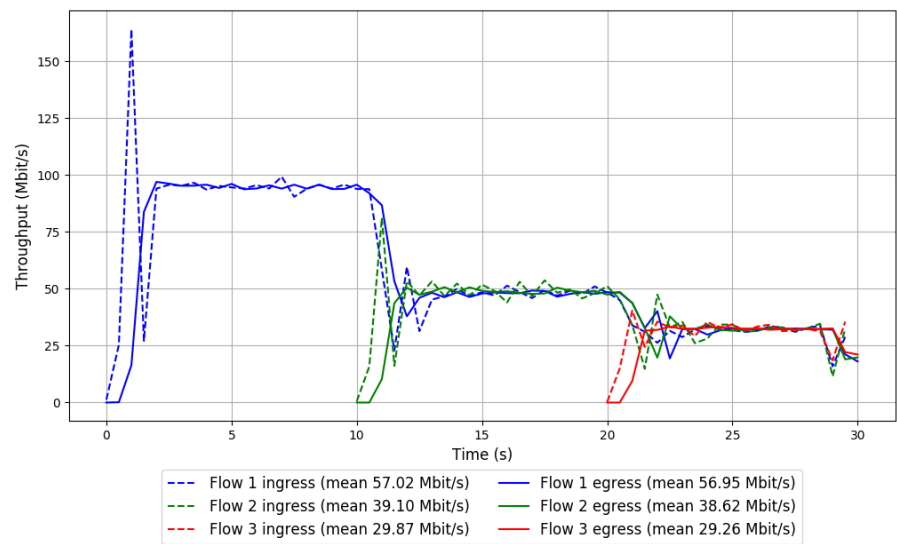
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 43.71 Mbit/s) --- Flow 1 egress (mean 40.40 Mbit/s)
Flow 2 ingress (mean 30.54 Mbit/s) --- Flow 2 egress (mean 30.20 Mbit/s)
Flow 3 ingress (mean 23.66 Mbit/s) --- Flow 3 egress (mean 23.40 Mbit/s)

Flow 1 (95th percentile 1857.35 ms) • Flow 2 (95th percentile 260.90 ms) • Flow 3 (95th percentile 413.73 ms)
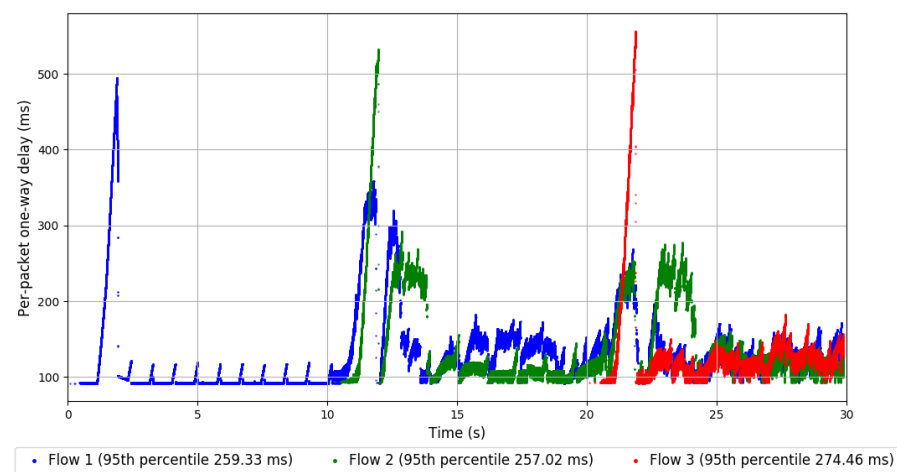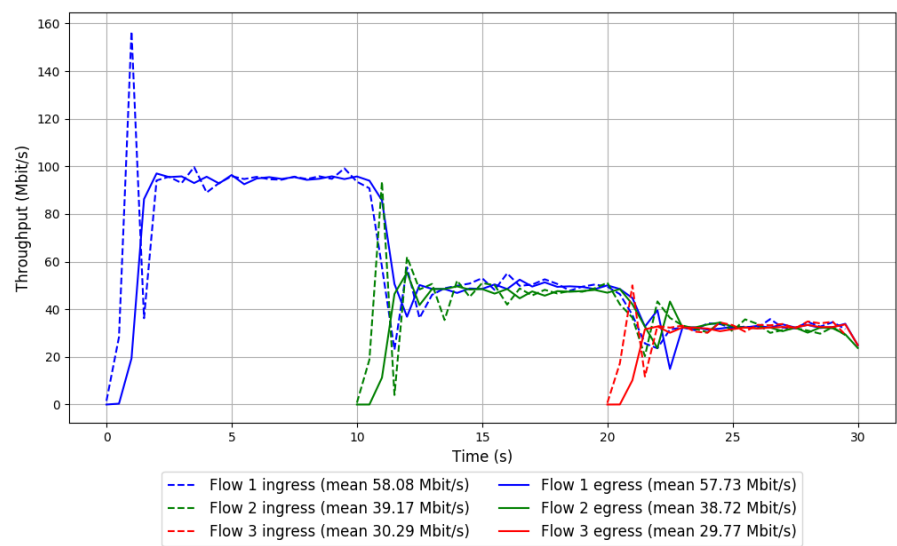
```
Run 1: Statistics of FillP-Sheep

Start at: 2018-12-02 14:44:14
End at: 2018-12-02 14:44:44
Local clock offset: -1.751 ms
Remote clock offset: -25.342 ms


# Below is generated by plot.py at 2018-12-02 16:49:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.89 Mbit/s
95th percentile per-packet one-way delay: 267.188 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 56.81 Mbit/s
95th percentile per-packet one-way delay: 279.253 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 39.24 Mbit/s
95th percentile per-packet one-way delay: 230.205 ms
Loss rate: 2.18%
-- Flow 3:
Average throughput: 30.48 Mbit/s
95th percentile per-packet one-way delay: 368.362 ms
Loss rate: 3.19%
```

Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 56.96 Mbit/s)   Flow 1 egress (mean 56.81 Mbit/s)
Flow 2 ingress (mean 39.77 Mbit/s)   Flow 2 egress (mean 39.24 Mbit/s)
Flow 3 ingress (mean 30.97 Mbit/s)   Flow 3 egress (mean 30.48 Mbit/s)

Flow 1 (95th percentile 279.25 ms)   Flow 2 (95th percentile 230.21 ms)   Flow 3 (95th percentile 368.36 ms)

46

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-12-02 15:09:23
End at: 2018-12-02 15:09:53
Local clock offset: -5.972 ms
Remote clock offset: -31.217 ms


# Below is generated by plot.py at 2018-12-02 16:49:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.17 Mbit/s
95th percentile per-packet one-way delay: 304.806 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 56.78 Mbit/s
95th percentile per-packet one-way delay: 318.257 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 38.76 Mbit/s
95th percentile per-packet one-way delay: 248.730 ms
Loss rate: 2.48%
-- Flow 3:
Average throughput: 29.42 Mbit/s
95th percentile per-packet one-way delay: 350.584 ms
Loss rate: 3.70%
```

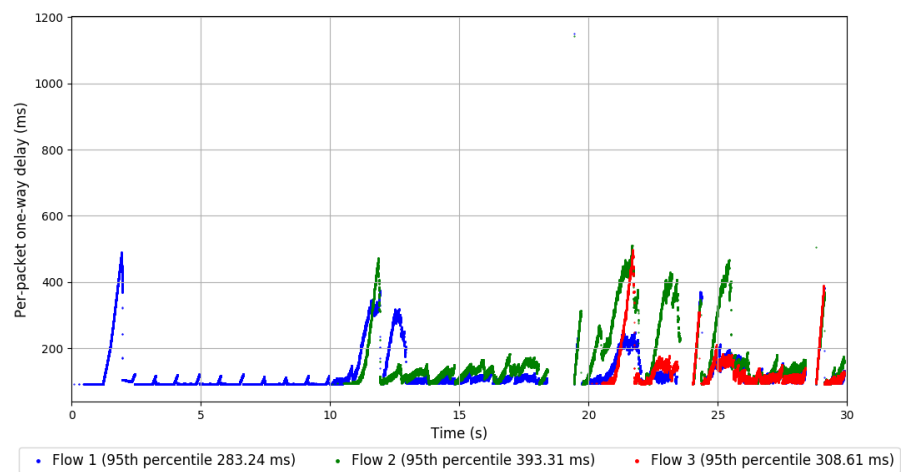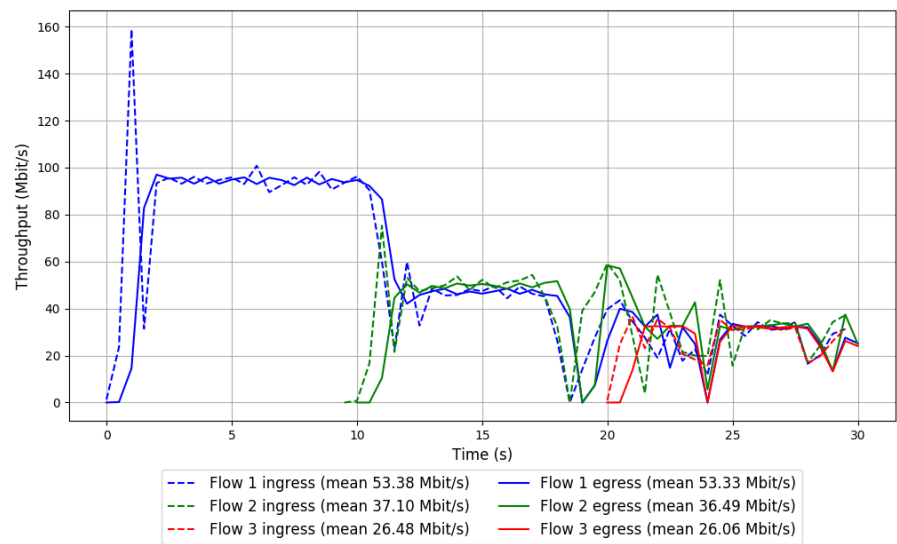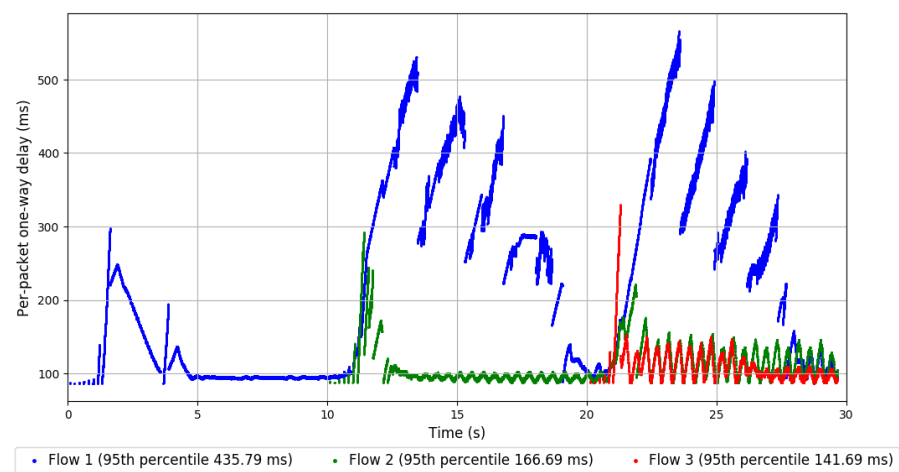Run 2: Report of FillP-Sheep — Data Link

- - - Flow 1 ingress (mean 56.95 Mbit/s) —— Flow 1 egress (mean 56.78 Mbit/s)
- - - Flow 2 ingress (mean 39.42 Mbit/s) —— Flow 2 egress (mean 38.76 Mbit/s)
- - - Flow 3 ingress (mean 30.03 Mbit/s) —— Flow 3 egress (mean 29.42 Mbit/s)

• Flow 1 (95th percentile 318.26 ms)   • Flow 2 (95th percentile 248.73 ms)   • Flow 3 (95th percentile 350.58 ms)

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```
Run 3: Statistics of FillP-Sheep

Start at: 2018-12-02 15:33:56
End at: 2018-12-02 15:34:26
Local clock offset: -6.718 ms
Remote clock offset: -43.95 ms


# Below is generated by plot.py at 2018-12-02 16:49:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 92.20 Mbit/s
95th percentile per-packet one-way delay: 272.176 ms
Loss rate: 1.39%
-- Flow 1:
Average throughput: 56.95 Mbit/s
95th percentile per-packet one-way delay: 263.629 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 38.62 Mbit/s
95th percentile per-packet one-way delay: 283.605 ms
Loss rate: 2.02%
-- Flow 3:
Average throughput: 29.26 Mbit/s
95th percentile per-packet one-way delay: 217.654 ms
Loss rate: 3.73%
```

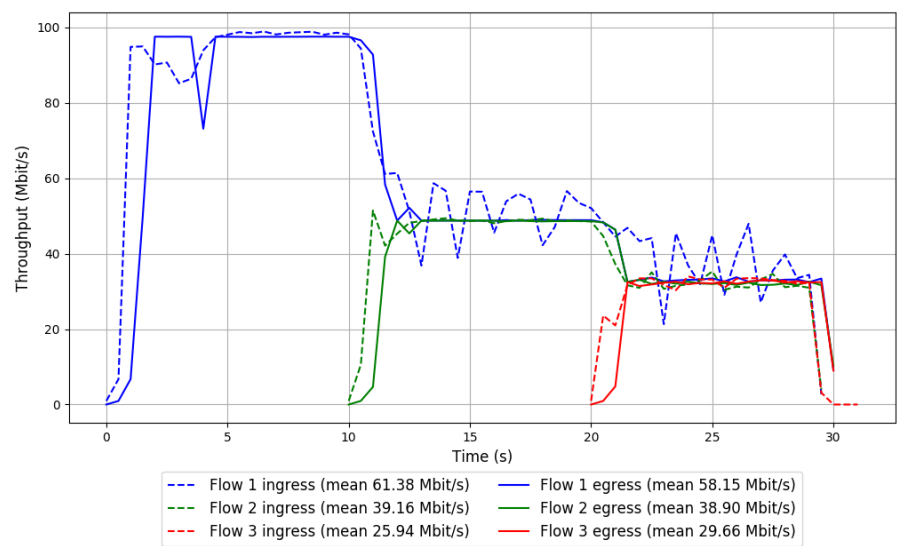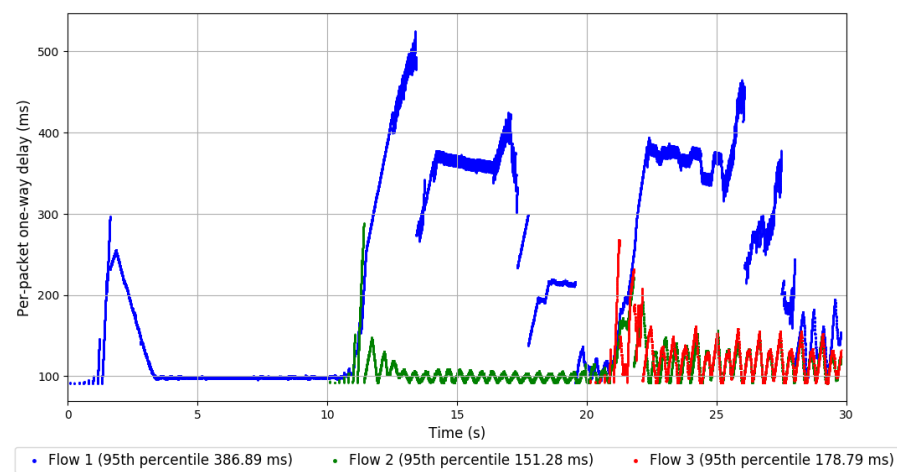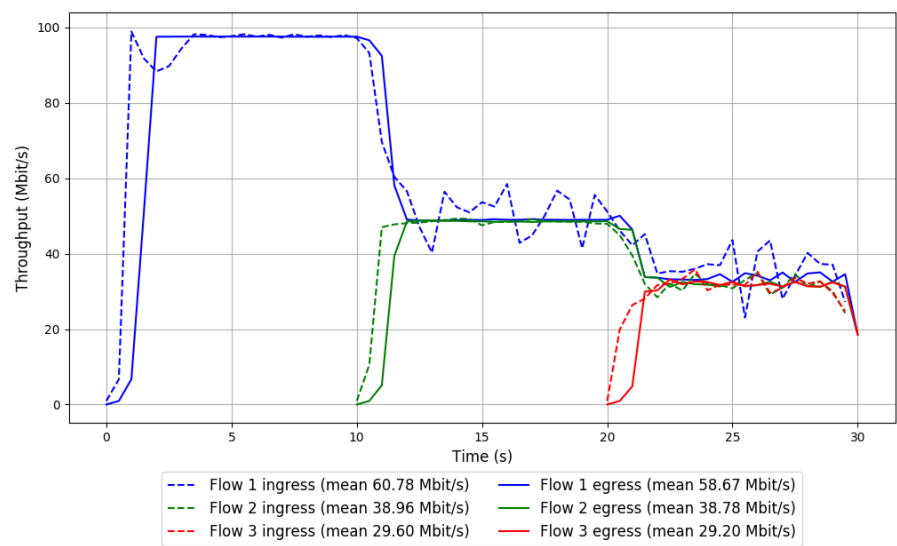## Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 57.02 Mbit/s) --- Flow 1 egress (mean 56.95 Mbit/s)
Flow 2 ingress (mean 39.10 Mbit/s) --- Flow 2 egress (mean 38.62 Mbit/s)
Flow 3 ingress (mean 29.87 Mbit/s) --- Flow 3 egress (mean 29.26 Mbit/s)

Flow 1 (95th percentile 263.63 ms) • Flow 2 (95th percentile 283.61 ms) • Flow 3 (95th percentile 217.65 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-12-02 15:58:32
End at: 2018-12-02 15:59:02
Local clock offset: -7.389 ms
Remote clock offset: -50.564 ms


# Below is generated by plot.py at 2018-12-02 16:49:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.21 Mbit/s
95th percentile per-packet one-way delay: 258.423 ms
Loss rate: 1.64%
-- Flow 1:
Average throughput: 57.73 Mbit/s
95th percentile per-packet one-way delay: 259.328 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 38.72 Mbit/s
95th percentile per-packet one-way delay: 257.020 ms
Loss rate: 1.98%
-- Flow 3:
Average throughput: 29.77 Mbit/s
95th percentile per-packet one-way delay: 274.463 ms
Loss rate: 3.44%
```

Run 4: Report of FillP-Sheep — Data Link
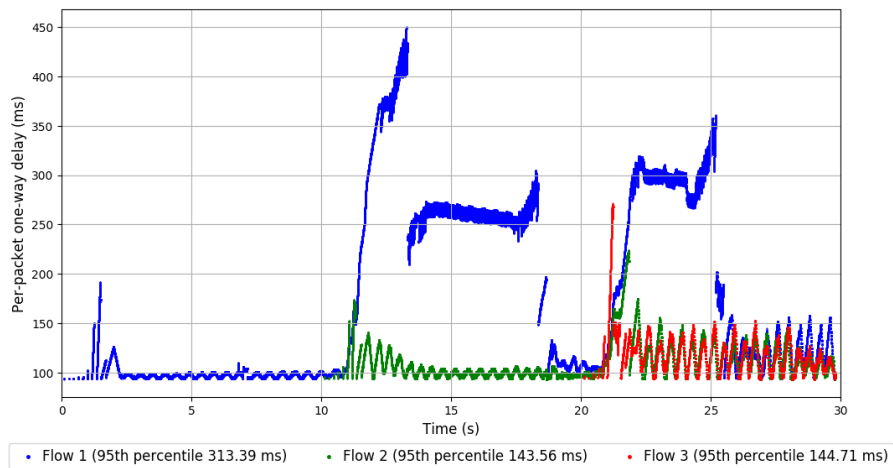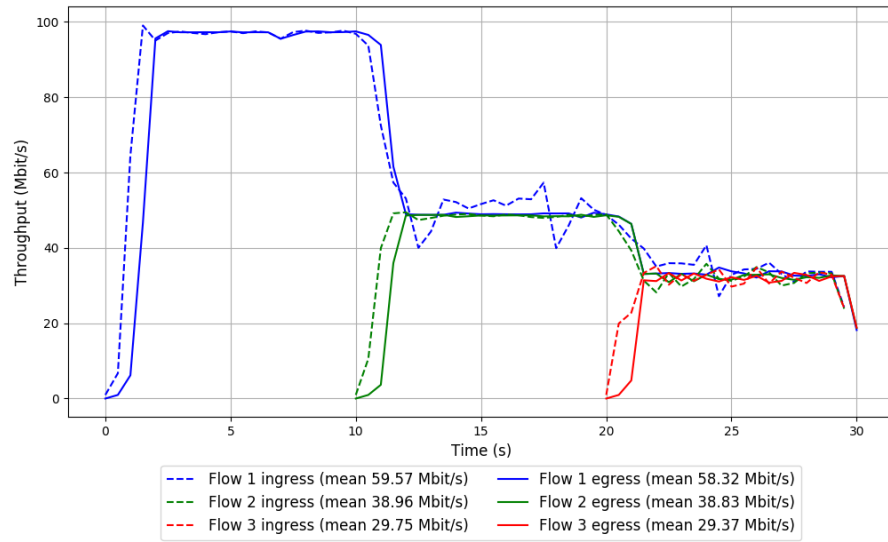
```
Run 5: Statistics of FillP-Sheep

Start at: 2018-12-02 16:22:56
End at: 2018-12-02 16:23:26
Local clock offset: -7.673 ms
Remote clock offset: -57.229 ms


# Below is generated by plot.py at 2018-12-02 16:49:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.11 Mbit/s
95th percentile per-packet one-way delay: 331.812 ms
Loss rate: 1.44%
-- Flow 1:
Average throughput: 53.33 Mbit/s
95th percentile per-packet one-way delay: 283.235 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 36.49 Mbit/s
95th percentile per-packet one-way delay: 393.314 ms
Loss rate: 2.49%
-- Flow 3:
Average throughput: 26.06 Mbit/s
95th percentile per-packet one-way delay: 308.613 ms
Loss rate: 3.09%
```

Run 5: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 53.38 Mbit/s) — — — Flow 1 egress (mean 53.33 Mbit/s)
Flow 2 ingress (mean 37.10 Mbit/s) — — — Flow 2 egress (mean 36.49 Mbit/s)
Flow 3 ingress (mean 26.48 Mbit/s) — — — Flow 3 egress (mean 26.06 Mbit/s)

Flow 1 (95th percentile 283.24 ms)   Flow 2 (95th percentile 393.31 ms)   Flow 3 (95th percentile 308.61 ms)
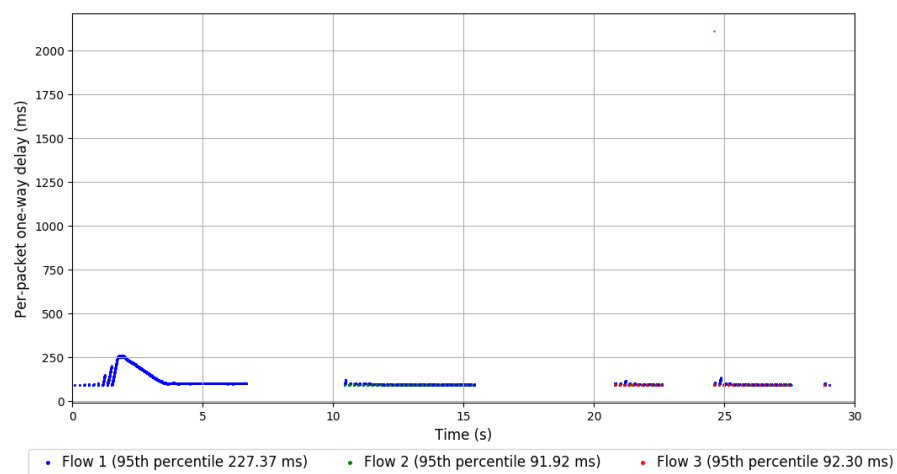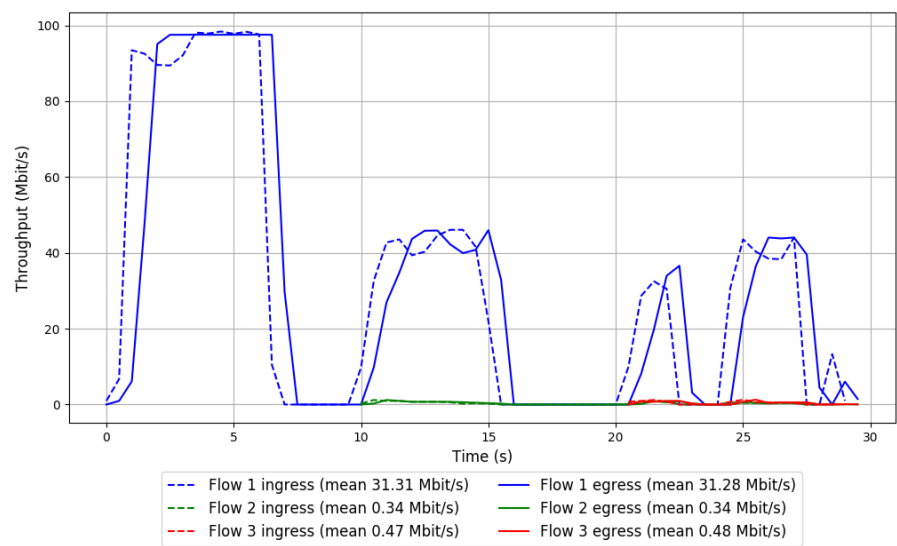
54

```
Run 1: Statistics of Indigo

Start at: 2018-12-02 14:53:17
End at: 2018-12-02 14:53:47
Local clock offset: -3.278 ms
Remote clock offset: -26.664 ms


# Below is generated by plot.py at 2018-12-02 16:49:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.41 Mbit/s
95th percentile per-packet one-way delay: 399.565 ms
Loss rate: 3.60%
-- Flow 1:
Average throughput: 58.15 Mbit/s
95th percentile per-packet one-way delay: 435.790 ms
Loss rate: 5.25%
-- Flow 2:
Average throughput: 38.90 Mbit/s
95th percentile per-packet one-way delay: 166.694 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 29.66 Mbit/s
95th percentile per-packet one-way delay: 141.689 ms
Loss rate: 1.12%
```
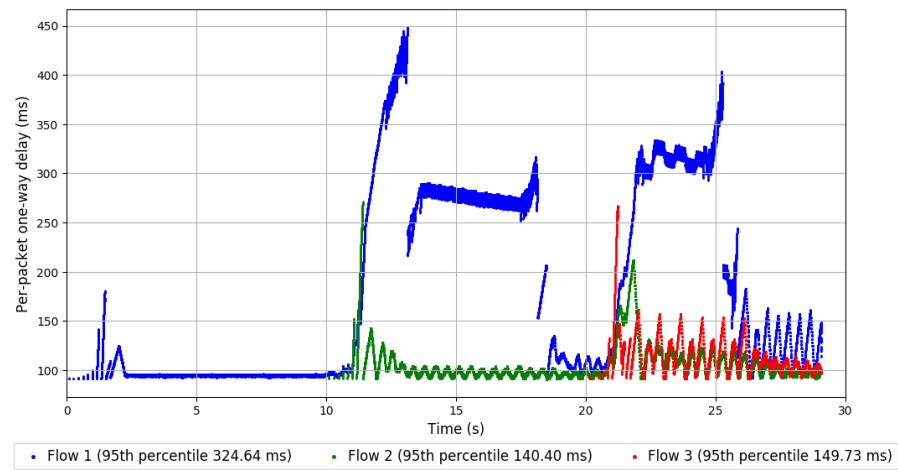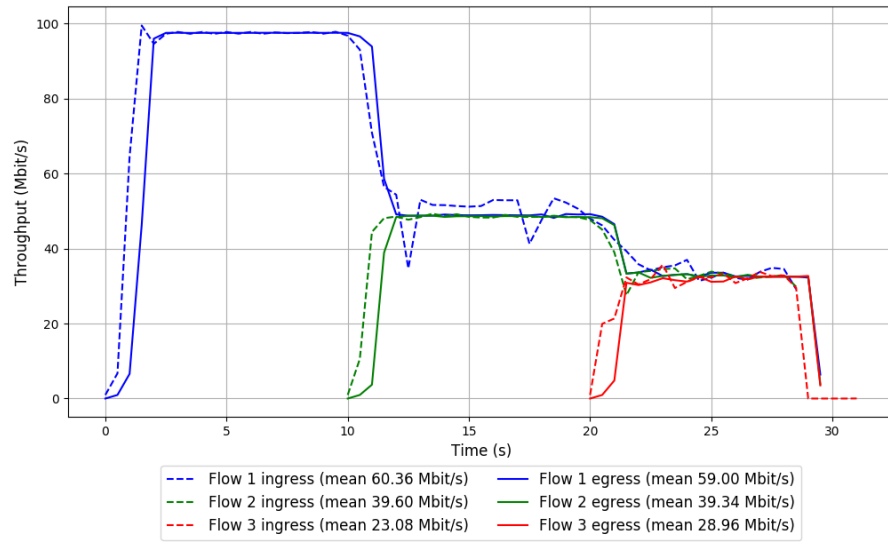
Run 1: Report of Indigo — Data Link

```
Run 2: Statistics of Indigo

Start at: 2018-12-02 15:18:22
End at: 2018-12-02 15:18:52
Local clock offset: -7.217 ms
Remote clock offset: -38.974 ms


# Below is generated by plot.py at 2018-12-02 16:49:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.87 Mbit/s
95th percentile per-packet one-way delay: 374.880 ms
Loss rate: 3.20%
-- Flow 1:
Average throughput: 58.67 Mbit/s
95th percentile per-packet one-way delay: 386.893 ms
Loss rate: 4.02%
-- Flow 2:
Average throughput: 38.78 Mbit/s
95th percentile per-packet one-way delay: 151.281 ms
Loss rate: 1.32%
-- Flow 3:
Average throughput: 29.20 Mbit/s
95th percentile per-packet one-way delay: 178.786 ms
Loss rate: 3.08%
```
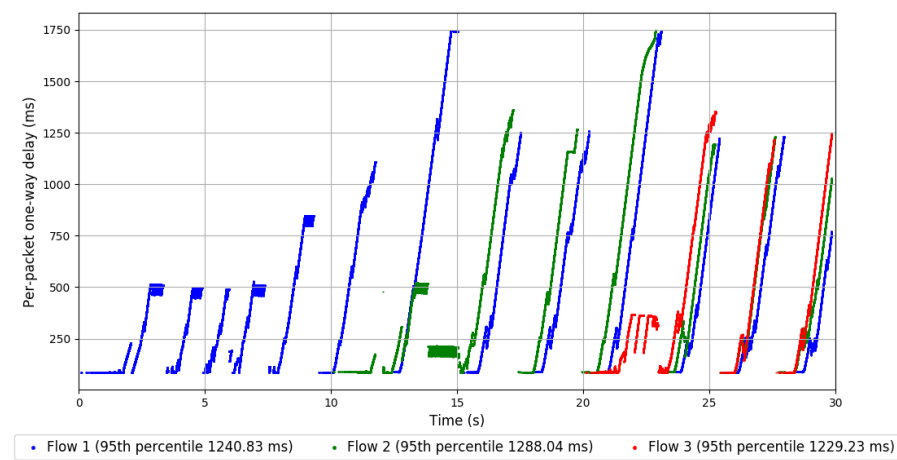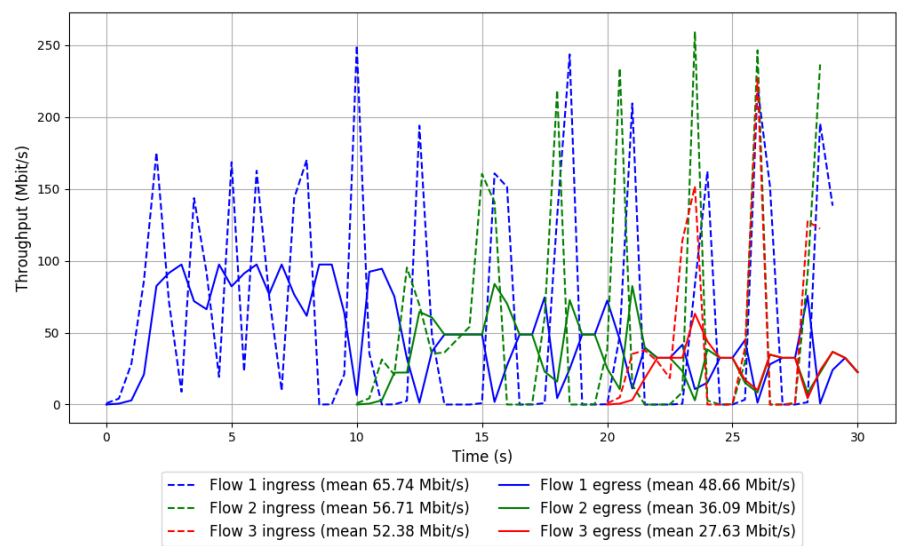
Run 2: Report of Indigo — Data Link

- - - - Flow 1 ingress (mean 60.78 Mbit/s)   —— Flow 1 egress (mean 58.67 Mbit/s)
- - - - Flow 2 ingress (mean 38.96 Mbit/s)   —— Flow 2 egress (mean 38.78 Mbit/s)
- - - - Flow 3 ingress (mean 29.60 Mbit/s)   —— Flow 3 egress (mean 29.20 Mbit/s)

- Flow 1 (95th percentile 386.89 ms)   • Flow 2 (95th percentile 151.28 ms)   • Flow 3 (95th percentile 178.79 ms)

```
Run 3: Statistics of Indigo

Start at: 2018-12-02 15:42:52
End at: 2018-12-02 15:43:22
Local clock offset: -6.079 ms
Remote clock offset: -46.622 ms


# Below is generated by plot.py at 2018-12-02 16:49:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.62 Mbit/s
95th percentile per-packet one-way delay: 298.381 ms
Loss rate: 2.31%
-- Flow 1:
Average throughput: 58.32 Mbit/s
95th percentile per-packet one-way delay: 313.390 ms
Loss rate: 2.67%
-- Flow 2:
Average throughput: 38.83 Mbit/s
95th percentile per-packet one-way delay: 143.555 ms
Loss rate: 1.23%
-- Flow 3:
Average throughput: 29.37 Mbit/s
95th percentile per-packet one-way delay: 144.714 ms
Loss rate: 3.00%
```
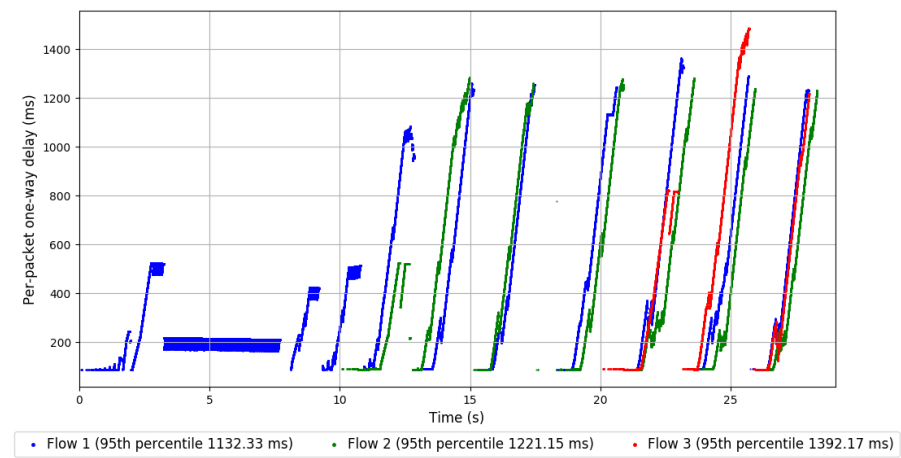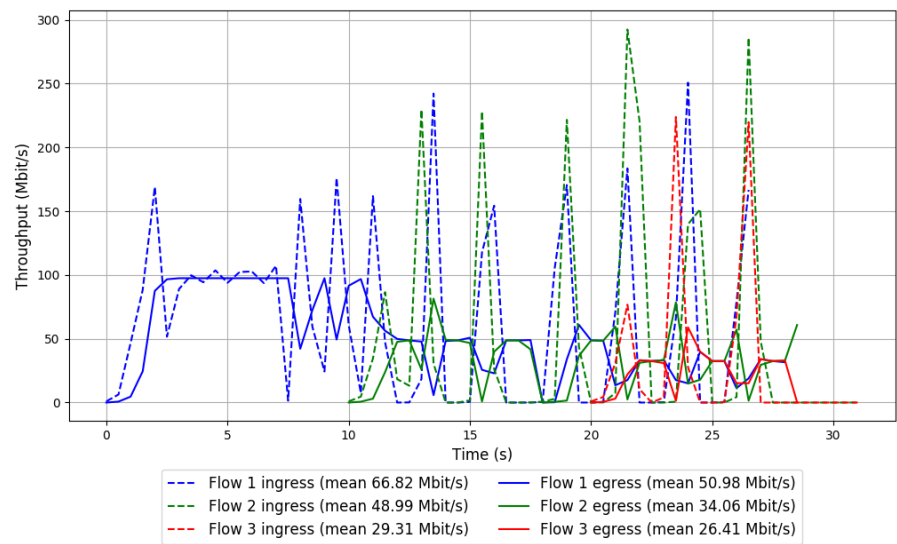
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-12-02 16:07:32
End at: 2018-12-02 16:08:02
Local clock offset: -7.732 ms
Remote clock offset: -51.749 ms


# Below is generated by plot.py at 2018-12-02 16:49:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 31.63 Mbit/s
95th percentile per-packet one-way delay: 226.204 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 31.28 Mbit/s
95th percentile per-packet one-way delay: 227.373 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 91.921 ms
Loss rate: 0.38%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 92.301 ms
Loss rate: 1.21%
```
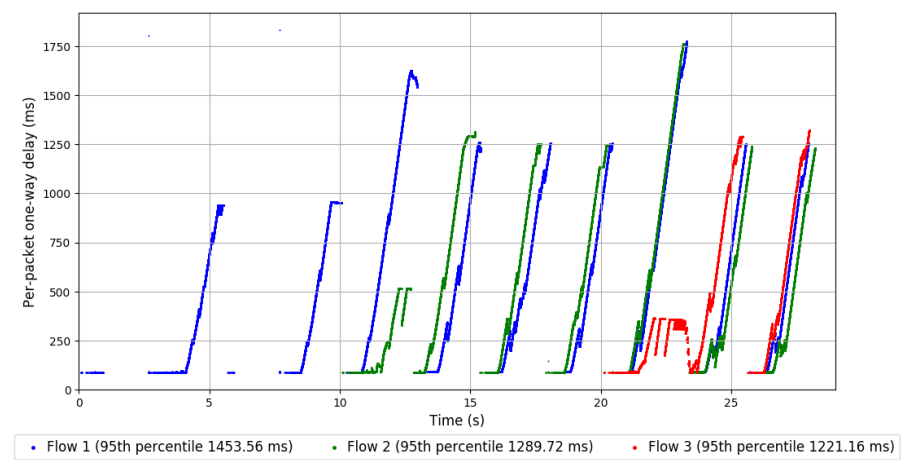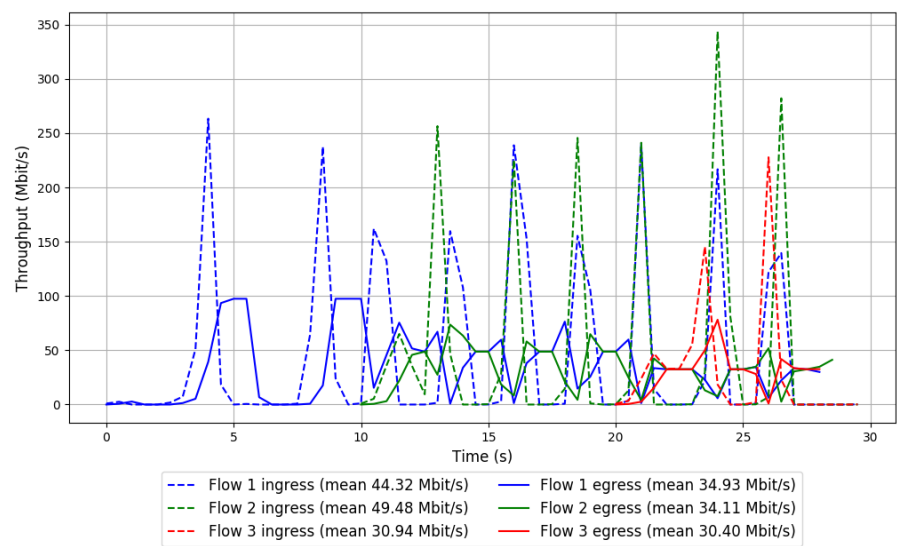
Run 4: Report of Indigo — Data Link

- - - Flow 1 ingress (mean 31.31 Mbit/s) —— Flow 1 egress (mean 31.28 Mbit/s)
- - - Flow 2 ingress (mean 0.34 Mbit/s) —— Flow 2 egress (mean 0.34 Mbit/s)
- - - Flow 3 ingress (mean 0.47 Mbit/s) —— Flow 3 egress (mean 0.48 Mbit/s)

• Flow 1 (95th percentile 227.37 ms) • Flow 2 (95th percentile 91.92 ms) • Flow 3 (95th percentile 92.30 ms)

```
Run 5: Statistics of Indigo

Start at: 2018-12-02 16:32:20
End at: 2018-12-02 16:32:50
Local clock offset: -7.506 ms
Remote clock offset: -58.413 ms

# Below is generated by plot.py at 2018-12-02 16:50:37
# Datalink statistics
-- Total of 3 flows:
Average throughput: 93.67 Mbit/s
95th percentile per-packet one-way delay: 313.161 ms
Loss rate: 1.64%
-- Flow 1:
Average throughput: 59.00 Mbit/s
95th percentile per-packet one-way delay: 324.645 ms
Loss rate: 2.19%
-- Flow 2:
Average throughput: 39.34 Mbit/s
95th percentile per-packet one-way delay: 140.402 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 28.96 Mbit/s
95th percentile per-packet one-way delay: 149.727 ms
Loss rate: 0.90%
```
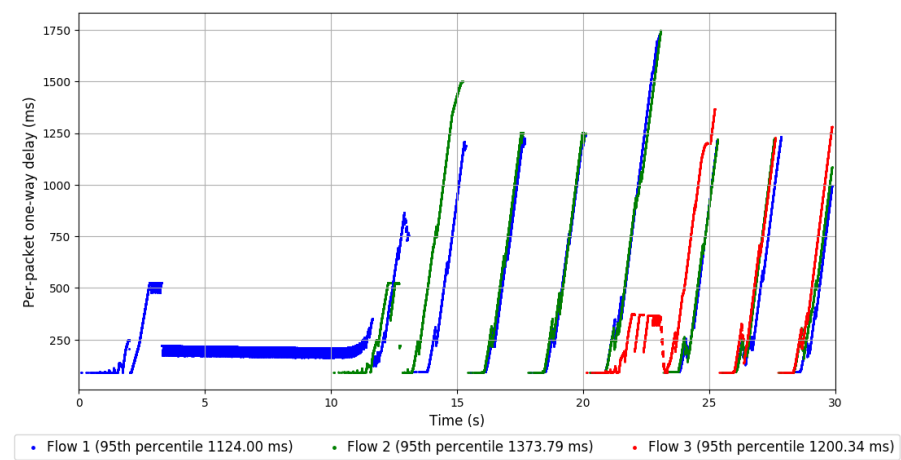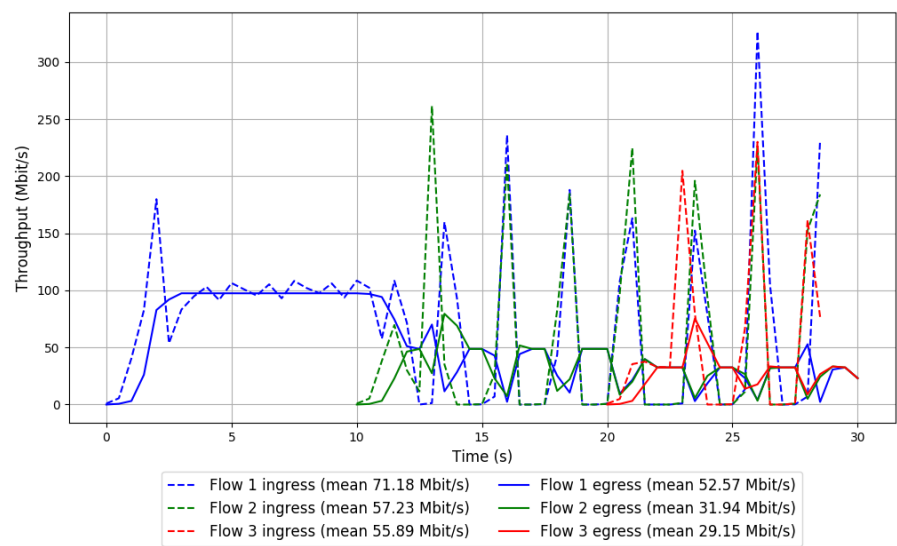
Run 5: Report of Indigo — Data Link

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

Start at: 2018-12-02 14:55:49
End at: 2018-12-02 14:56:19
Local clock offset: -4.797 ms
Remote clock offset: -28.608 ms


# Below is generated by plot.py at 2018-12-02 16:50:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 81.66 Mbit/s
95th percentile per-packet one-way delay: 1249.570 ms
Loss rate: 29.40%
-- Flow 1:
Average throughput: 48.66 Mbit/s
95th percentile per-packet one-way delay: 1240.832 ms
Loss rate: 24.57%
-- Flow 2:
Average throughput: 36.09 Mbit/s
95th percentile per-packet one-way delay: 1288.036 ms
Loss rate: 33.21%
-- Flow 3:
Average throughput: 27.63 Mbit/s
95th percentile per-packet one-way delay: 1229.227 ms
Loss rate: 40.82%
```
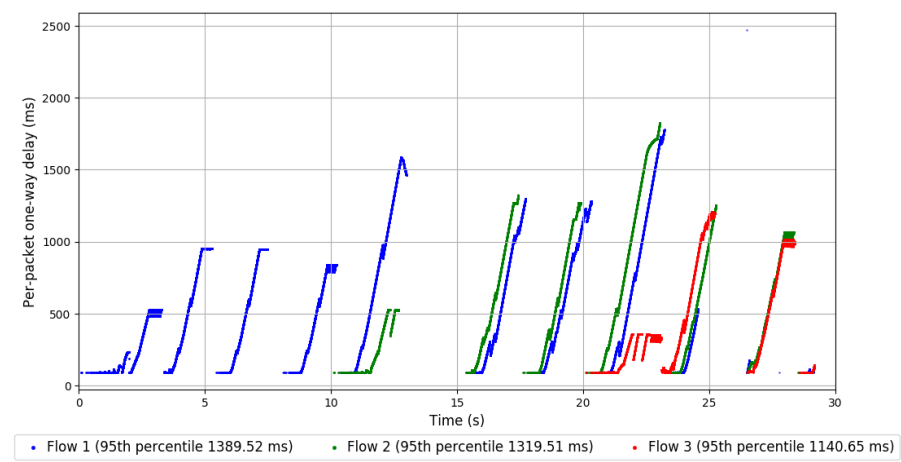
Run 1: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 15:20:53
End at: 2018-12-02 15:21:23
Local clock offset: -7.065 ms
Remote clock offset: -35.218 ms


# Below is generated by plot.py at 2018-12-02 16:50:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.76 Mbit/s
95th percentile per-packet one-way delay: 1196.436 ms
Loss rate: 28.92%
-- Flow 1:
Average throughput: 50.98 Mbit/s
95th percentile per-packet one-way delay: 1132.325 ms
Loss rate: 20.44%
-- Flow 2:
Average throughput: 34.06 Mbit/s
95th percentile per-packet one-way delay: 1221.148 ms
Loss rate: 40.73%
-- Flow 3:
Average throughput: 26.41 Mbit/s
95th percentile per-packet one-way delay: 1392.166 ms
Loss rate: 37.34%
```
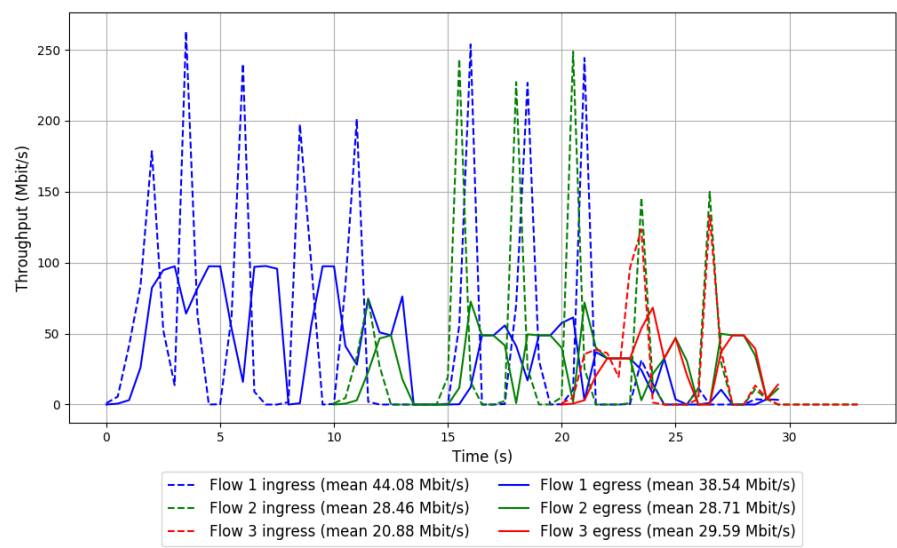
Run 2: Report of Indigo-96d2da3 — Data Link

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

Start at: 2018-12-02 15:45:24
End at: 2018-12-02 15:45:54
Local clock offset: -6.102 ms
Remote clock offset: -42.011 ms

# Below is generated by plot.py at 2018-12-02 16:50:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 65.09 Mbit/s
95th percentile per-packet one-way delay: 1290.600 ms
Loss rate: 30.06%
-- Flow 1:
Average throughput: 34.93 Mbit/s
95th percentile per-packet one-way delay: 1453.559 ms
Loss rate: 26.61%
-- Flow 2:
Average throughput: 34.11 Mbit/s
95th percentile per-packet one-way delay: 1289.723 ms
Loss rate: 37.25%
-- Flow 3:
Average throughput: 30.40 Mbit/s
95th percentile per-packet one-way delay: 1221.163 ms
Loss rate: 21.91%
```
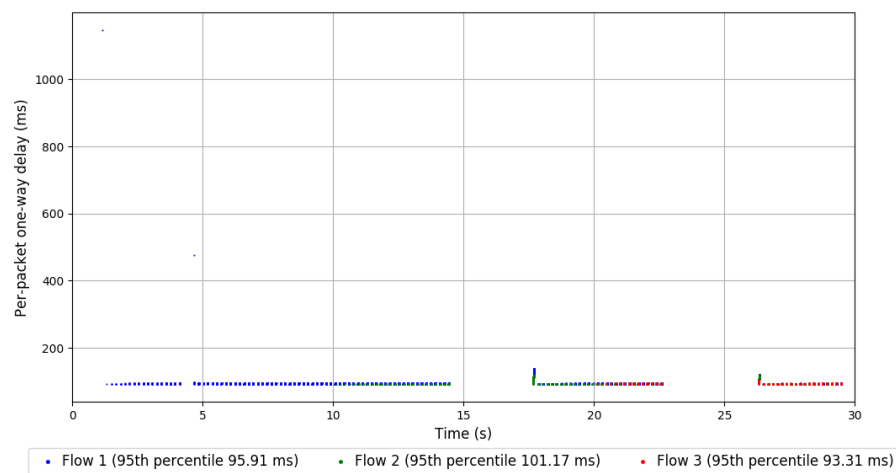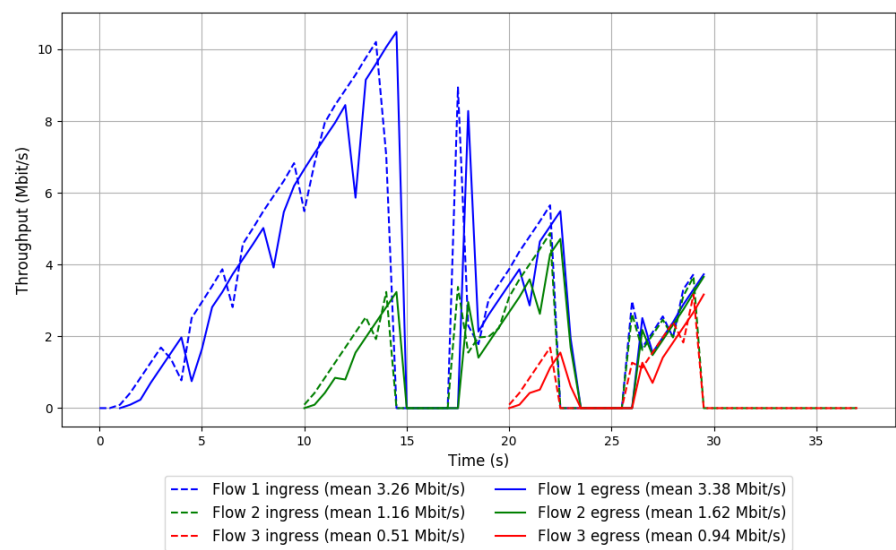
Run 3: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 44.32 Mbit/s) Flow 1 egress (mean 34.93 Mbit/s)
Flow 2 ingress (mean 49.48 Mbit/s) Flow 2 egress (mean 34.11 Mbit/s)
Flow 3 ingress (mean 30.94 Mbit/s) Flow 3 egress (mean 30.40 Mbit/s)

Flow 1 (95th percentile 1453.56 ms)   Flow 2 (95th percentile 1289.72 ms)   Flow 3 (95th percentile 1221.16 ms)

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

Start at: 2018-12-02 16:09:59
End at: 2018-12-02 16:10:29
Local clock offset: -6.977 ms
Remote clock offset: -52.479 ms


# Below is generated by plot.py at 2018-12-02 16:50:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.29 Mbit/s
95th percentile per-packet one-way delay: 1199.952 ms
Loss rate: 31.36%
-- Flow 1:
Average throughput: 52.57 Mbit/s
95th percentile per-packet one-way delay: 1124.002 ms
Loss rate: 23.88%
-- Flow 2:
Average throughput: 31.94 Mbit/s
95th percentile per-packet one-way delay: 1373.793 ms
Loss rate: 41.27%
-- Flow 3:
Average throughput: 29.15 Mbit/s
95th percentile per-packet one-way delay: 1200.335 ms
Loss rate: 41.18%
```
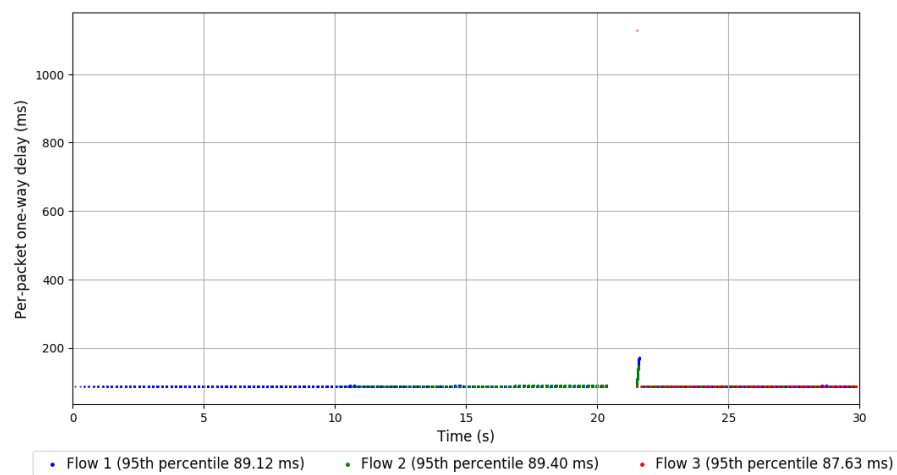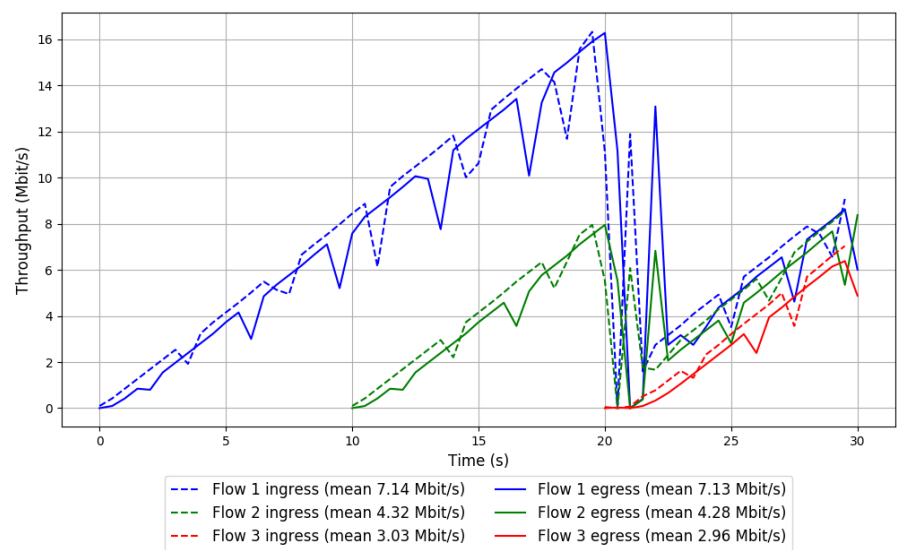
Run 4: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 71.18 Mbit/s) --- Flow 1 egress (mean 52.57 Mbit/s)
Flow 2 ingress (mean 57.23 Mbit/s) --- Flow 2 egress (mean 31.94 Mbit/s)
Flow 3 ingress (mean 55.89 Mbit/s) --- Flow 3 egress (mean 29.15 Mbit/s)

Flow 1 (95th percentile 1124.00 ms)   Flow 2 (95th percentile 1373.79 ms)   Flow 3 (95th percentile 1200.34 ms)

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

Start at: 2018-12-02 16:34:53
End at: 2018-12-02 16:35:23
Local clock offset: -6.757 ms
Remote clock offset: -59.161 ms

# Below is generated by plot.py at 2018-12-02 16:50:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 66.55 Mbit/s
95th percentile per-packet one-way delay: 1284.254 ms
Loss rate: 12.64%
-- Flow 1:
Average throughput: 38.54 Mbit/s
95th percentile per-packet one-way delay: 1389.518 ms
Loss rate: 12.44%
-- Flow 2:
Average throughput: 28.71 Mbit/s
95th percentile per-packet one-way delay: 1319.509 ms
Loss rate: 17.16%
-- Flow 3:
Average throughput: 29.59 Mbit/s
95th percentile per-packet one-way delay: 1140.653 ms
Loss rate: 2.74%
```
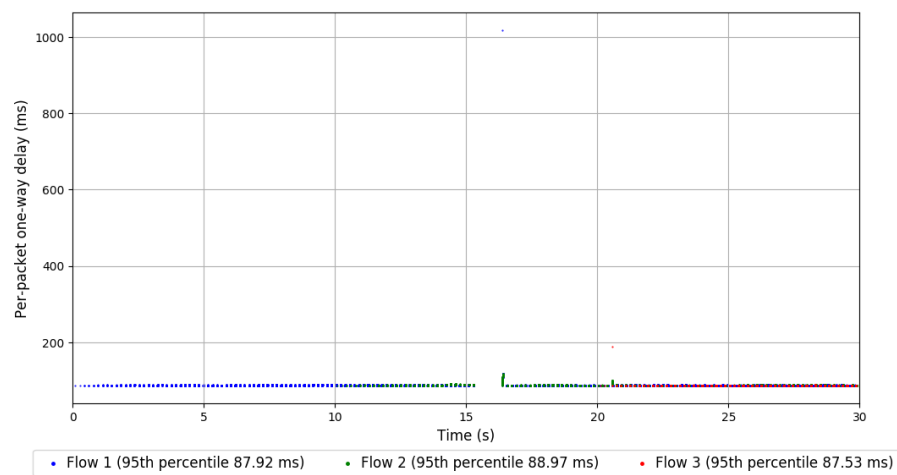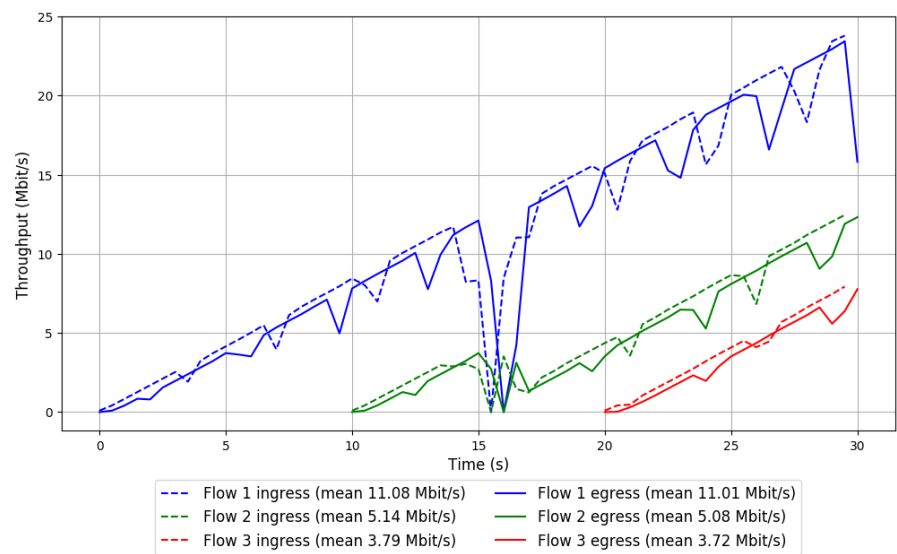
Run 5: Report of Indigo-96d2da3 — Data Link

Flow 1 ingress (mean 44.08 Mbit/s)   Flow 1 egress (mean 38.54 Mbit/s)
Flow 2 ingress (mean 28.46 Mbit/s)   Flow 2 egress (mean 28.71 Mbit/s)
Flow 3 ingress (mean 20.88 Mbit/s)   Flow 3 egress (mean 29.59 Mbit/s)

Flow 1 (95th percentile 1389.52 ms)   Flow 2 (95th percentile 1319.51 ms)   Flow 3 (95th percentile 1140.65 ms)
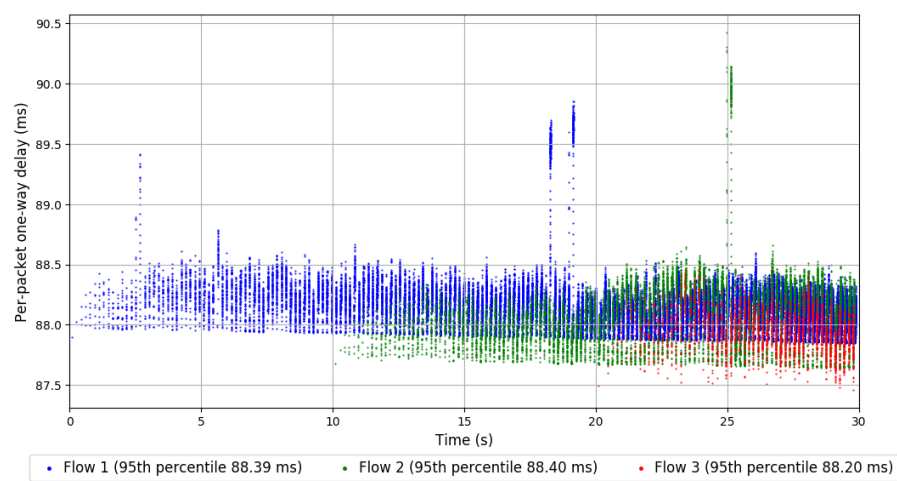
74

```
Run 1: Statistics of LEDBAT

Start at: 2018-12-02 14:41:32
End at: 2018-12-02 14:42:02
Local clock offset: -1.838 ms
Remote clock offset: -29.949 ms


# Below is generated by plot.py at 2018-12-02 16:50:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.80 Mbit/s
95th percentile per-packet one-way delay: 97.277 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 3.38 Mbit/s
95th percentile per-packet one-way delay: 95.910 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.62 Mbit/s
95th percentile per-packet one-way delay: 101.166 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 93.305 ms
Loss rate: 0.01%
```
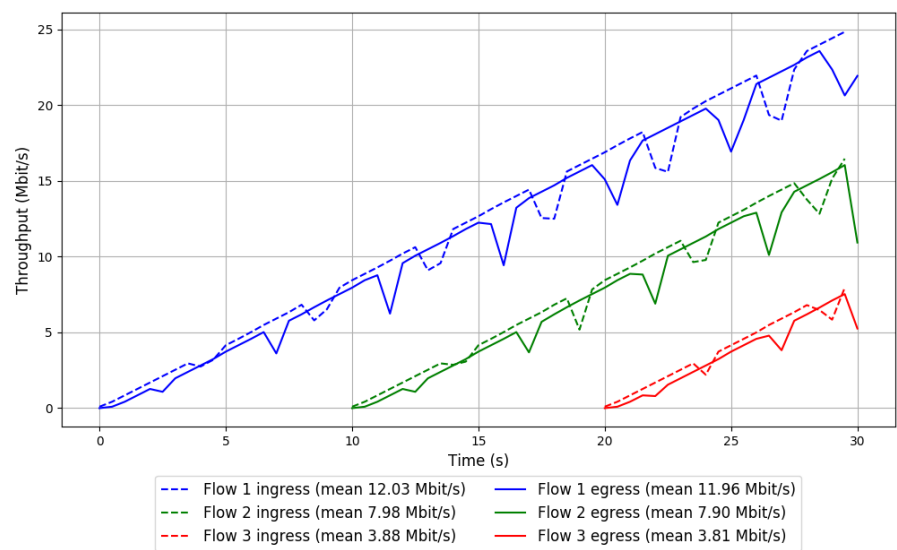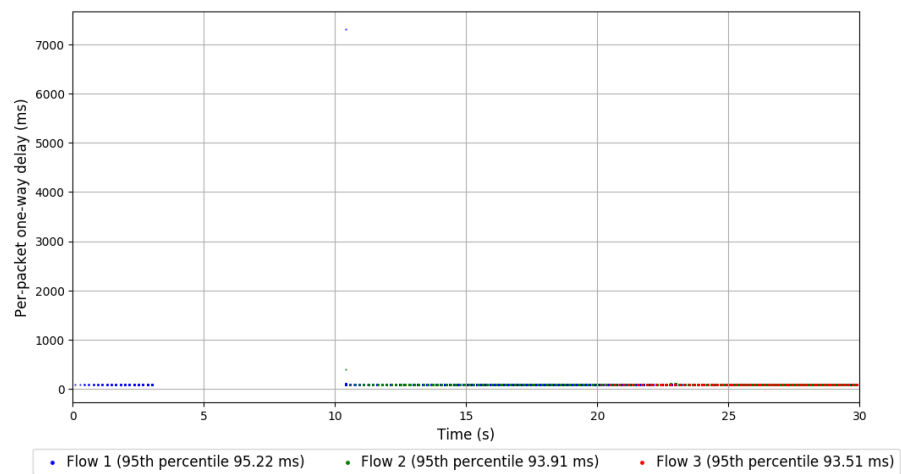
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-12-02 15:06:19
End at: 2018-12-02 15:06:49
Local clock offset: -6.422 ms
Remote clock offset: -31.697 ms


# Below is generated by plot.py at 2018-12-02 16:50:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 10.93 Mbit/s
95th percentile per-packet one-way delay: 89.253 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 7.13 Mbit/s
95th percentile per-packet one-way delay: 89.121 ms
Loss rate: 0.72%
-- Flow 2:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 89.401 ms
Loss rate: 1.69%
-- Flow 3:
Average throughput: 2.96 Mbit/s
95th percentile per-packet one-way delay: 87.630 ms
Loss rate: 3.98%
```
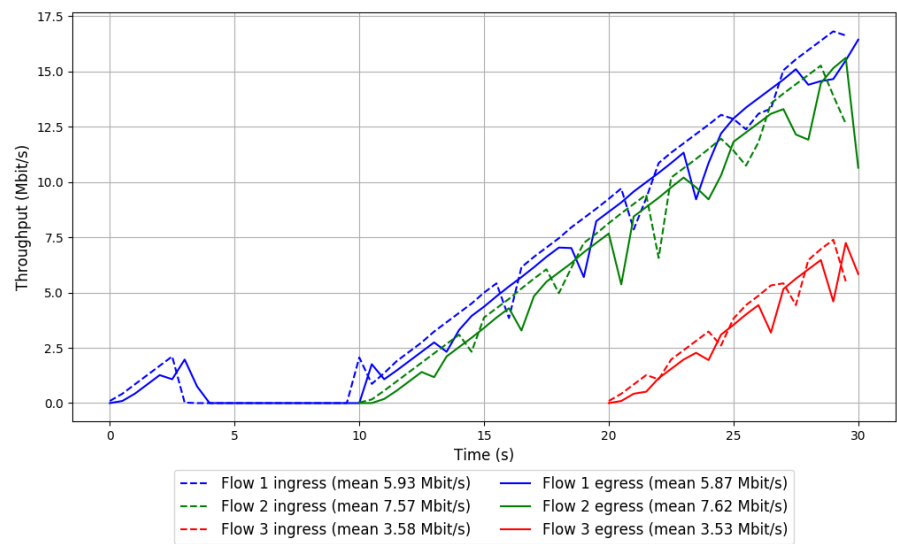
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-12-02 15:31:17
End at: 2018-12-02 15:31:47
Local clock offset: -6.788 ms
Remote clock offset: -38.253 ms

# Below is generated by plot.py at 2018-12-02 16:50:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 15.58 Mbit/s
95th percentile per-packet one-way delay: 87.984 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 11.01 Mbit/s
95th percentile per-packet one-way delay: 87.921 ms
Loss rate: 1.20%
-- Flow 2:
Average throughput: 5.08 Mbit/s
95th percentile per-packet one-way delay: 88.967 ms
Loss rate: 2.05%
-- Flow 3:
Average throughput: 3.72 Mbit/s
95th percentile per-packet one-way delay: 87.529 ms
Loss rate: 3.58%
```
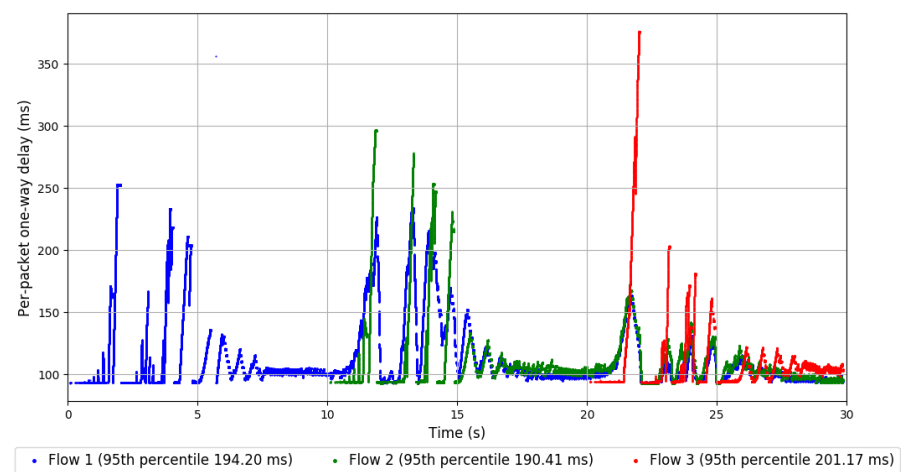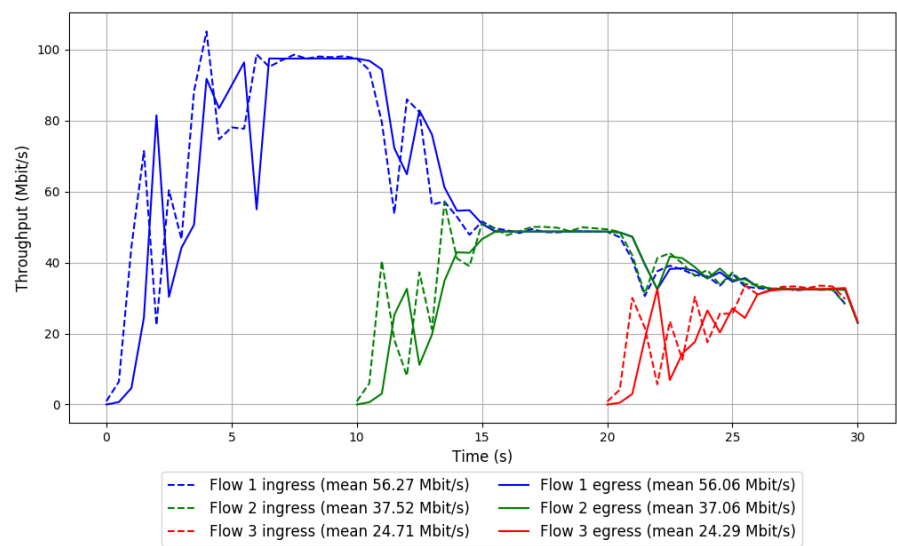
Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-12-02 15:55:50
End at: 2018-12-02 15:56:20
Local clock offset: -6.589 ms
Remote clock offset: -44.689 ms


# Below is generated by plot.py at 2018-12-02 16:50:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.43 Mbit/s
95th percentile per-packet one-way delay: 88.388 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 11.96 Mbit/s
95th percentile per-packet one-way delay: 88.391 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 7.90 Mbit/s
95th percentile per-packet one-way delay: 88.397 ms
Loss rate: 1.75%
-- Flow 3:
Average throughput: 3.81 Mbit/s
95th percentile per-packet one-way delay: 88.204 ms
Loss rate: 3.53%
```

Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-12-02 16:20:20
End at: 2018-12-02 16:20:50
Local clock offset: -7.806 ms
Remote clock offset: -56.758 ms


# Below is generated by plot.py at 2018-12-02 16:50:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 11.98 Mbit/s
95th percentile per-packet one-way delay: 94.118 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 5.87 Mbit/s
95th percentile per-packet one-way delay: 95.217 ms
Loss rate: 1.63%
-- Flow 2:
Average throughput: 7.62 Mbit/s
95th percentile per-packet one-way delay: 93.914 ms
Loss rate: 1.79%
-- Flow 3:
Average throughput: 3.53 Mbit/s
95th percentile per-packet one-way delay: 93.512 ms
Loss rate: 3.06%
```
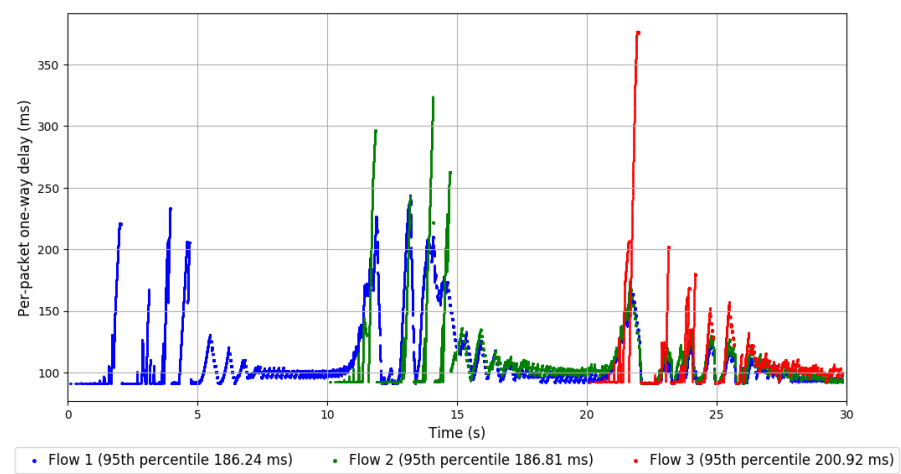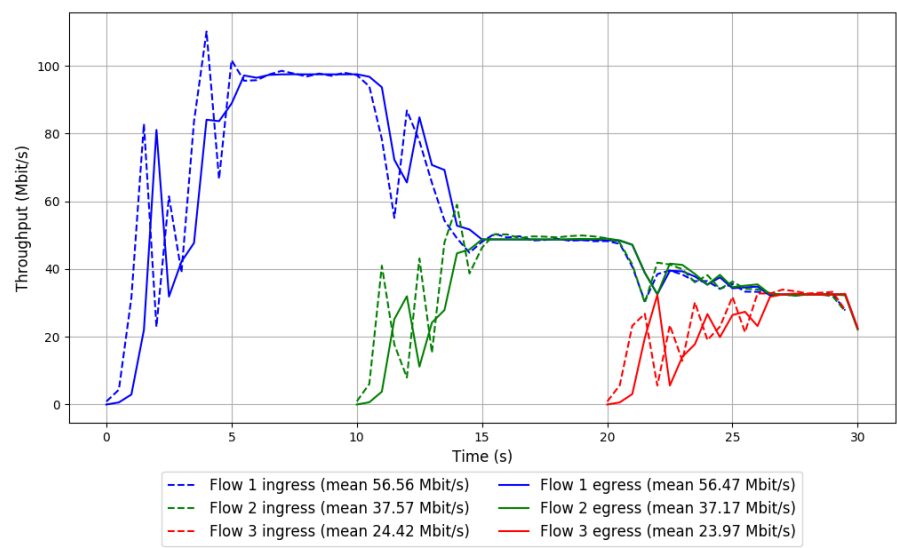
Run 5: Report of LEDBAT — Data Link

Flow 1 ingress (mean 5.93 Mbit/s)   Flow 1 egress (mean 5.87 Mbit/s)
Flow 2 ingress (mean 7.57 Mbit/s)   Flow 2 egress (mean 7.62 Mbit/s)
Flow 3 ingress (mean 3.58 Mbit/s)   Flow 3 egress (mean 3.53 Mbit/s)

Flow 1 (95th percentile 95.22 ms)   Flow 2 (95th percentile 93.91 ms)   Flow 3 (95th percentile 93.51 ms)
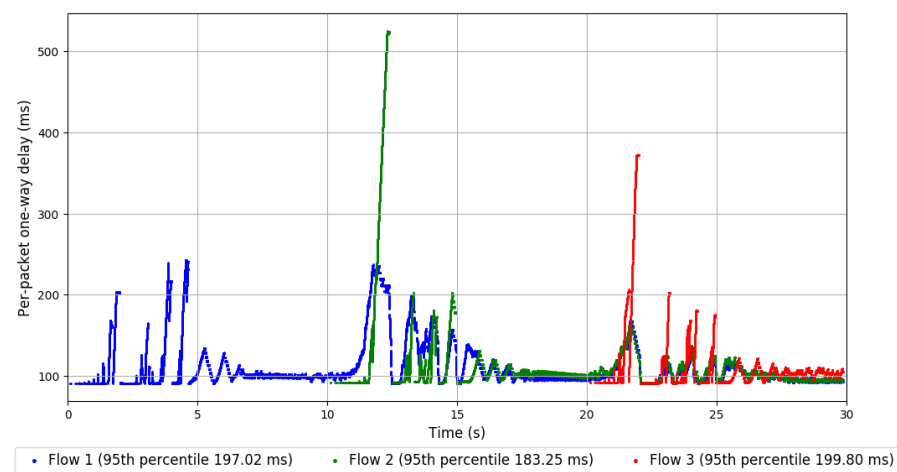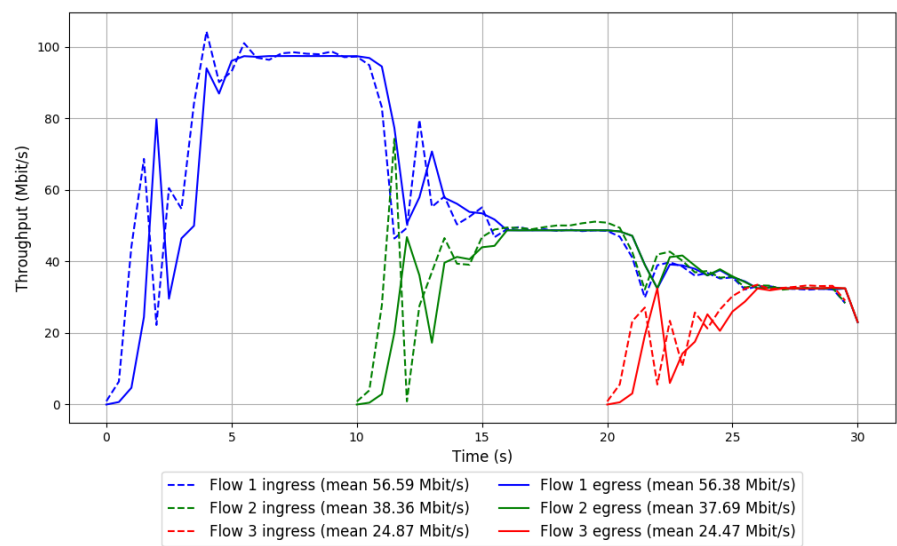
```
Run 1: Statistics of Indigo-Muses

Start at: 2018-12-02 15:02:14
End at: 2018-12-02 15:02:44
Local clock offset: -5.161 ms
Remote clock offset: -35.479 ms


# Below is generated by plot.py at 2018-12-02 16:51:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.60 Mbit/s
95th percentile per-packet one-way delay: 193.811 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 56.06 Mbit/s
95th percentile per-packet one-way delay: 194.202 ms
Loss rate: 0.96%
-- Flow 2:
Average throughput: 37.06 Mbit/s
95th percentile per-packet one-way delay: 190.414 ms
Loss rate: 2.10%
-- Flow 3:
Average throughput: 24.29 Mbit/s
95th percentile per-packet one-way delay: 201.172 ms
Loss rate: 3.42%
```

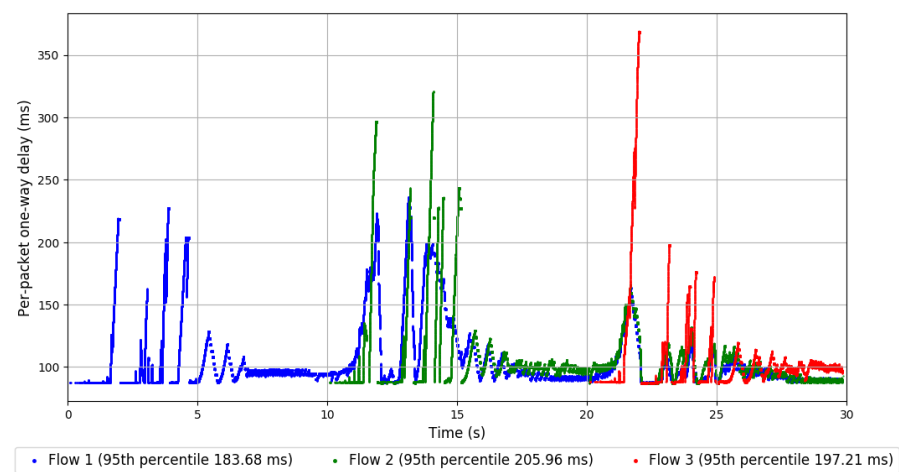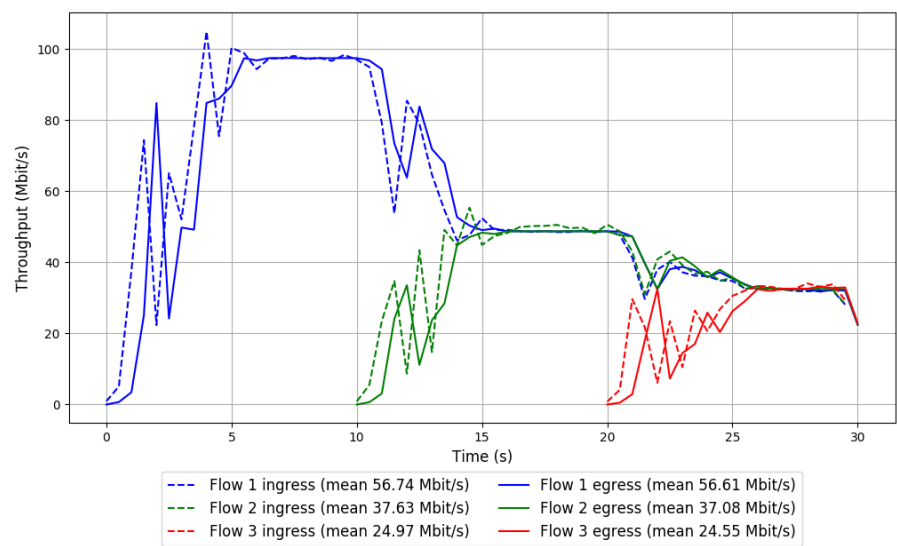Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-12-02 15:27:20
End at: 2018-12-02 15:27:50
Local clock offset: -6.755 ms
Remote clock offset: -41.224 ms


# Below is generated by plot.py at 2018-12-02 16:51:26
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.98 Mbit/s
95th percentile per-packet one-way delay: 187.818 ms
Loss rate: 1.32%
-- Flow 1:
Average throughput: 56.47 Mbit/s
95th percentile per-packet one-way delay: 186.239 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 37.17 Mbit/s
95th percentile per-packet one-way delay: 186.814 ms
Loss rate: 1.94%
-- Flow 3:
Average throughput: 23.97 Mbit/s
95th percentile per-packet one-way delay: 200.918 ms
Loss rate: 3.55%
```
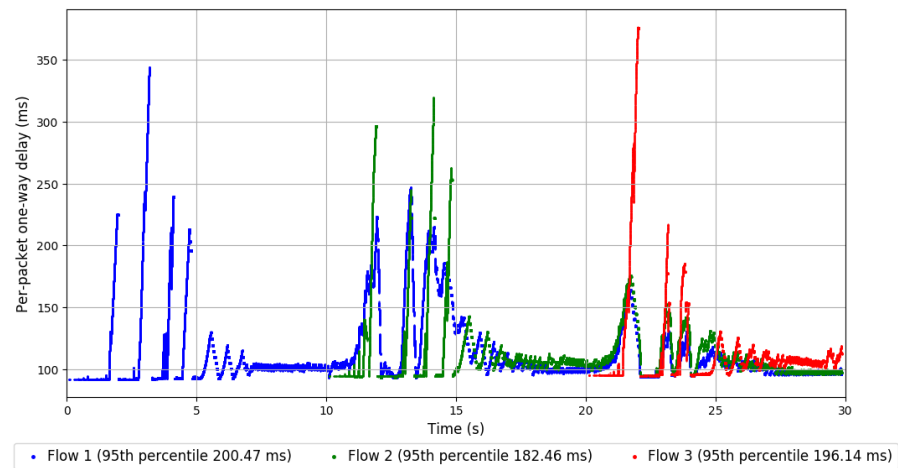
Run 2: Report of Indigo-Muses — Data Link

```
Run 3: Statistics of Indigo-Muses

Start at: 2018-12-02 15:51:50
End at: 2018-12-02 15:52:20
Local clock offset: -7.119 ms
Remote clock offset: -47.669 ms


# Below is generated by plot.py at 2018-12-02 16:51:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.39 Mbit/s
95th percentile per-packet one-way delay: 193.543 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 56.38 Mbit/s
95th percentile per-packet one-way delay: 197.023 ms
Loss rate: 0.95%
-- Flow 2:
Average throughput: 37.69 Mbit/s
95th percentile per-packet one-way delay: 183.253 ms
Loss rate: 2.61%
-- Flow 3:
Average throughput: 24.47 Mbit/s
95th percentile per-packet one-way delay: 199.802 ms
Loss rate: 3.34%
```

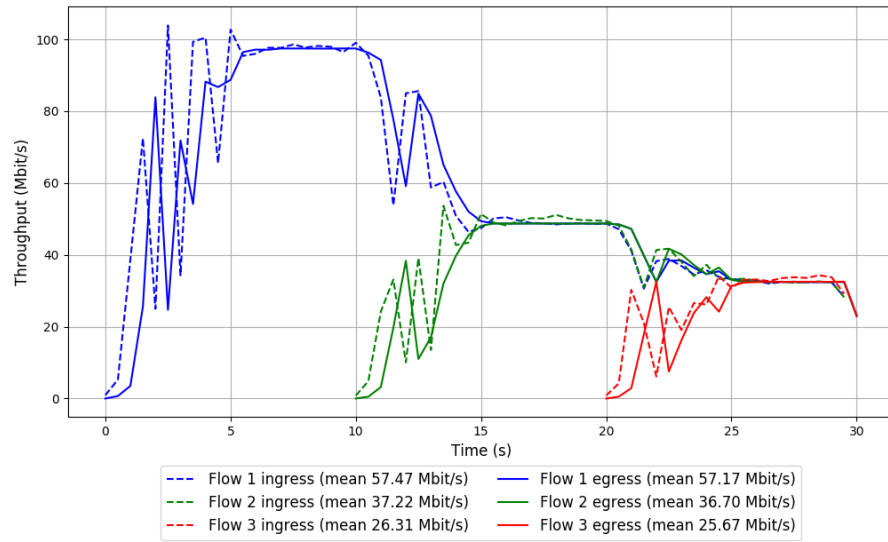Run 3: Report of Indigo-Muses — Data Link

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-12-02 16:16:22
End at: 2018-12-02 16:16:52
Local clock offset: -7.92 ms
Remote clock offset: -50.273 ms


# Below is generated by plot.py at 2018-12-02 16:51:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.25 Mbit/s
95th percentile per-packet one-way delay: 188.333 ms
Loss rate: 1.46%
-- Flow 1:
Average throughput: 56.61 Mbit/s
95th percentile per-packet one-way delay: 183.679 ms
Loss rate: 0.82%
-- Flow 2:
Average throughput: 37.08 Mbit/s
95th percentile per-packet one-way delay: 205.959 ms
Loss rate: 2.28%
-- Flow 3:
Average throughput: 24.55 Mbit/s
95th percentile per-packet one-way delay: 197.211 ms
Loss rate: 3.44%
```

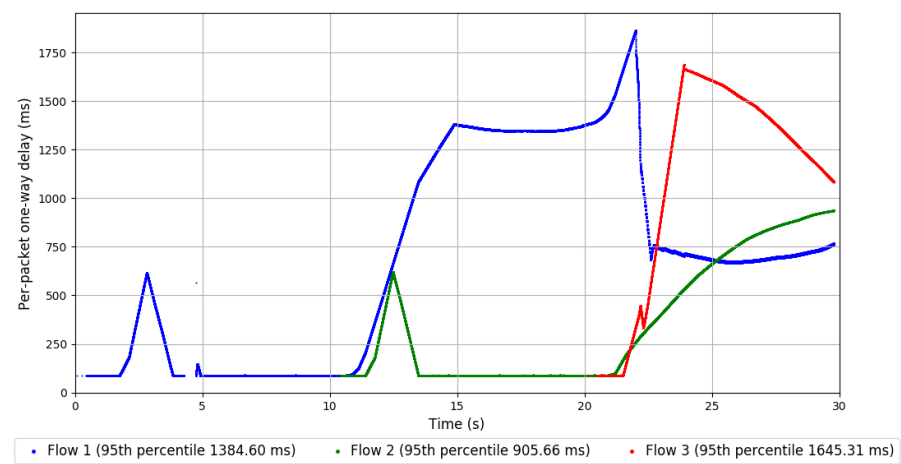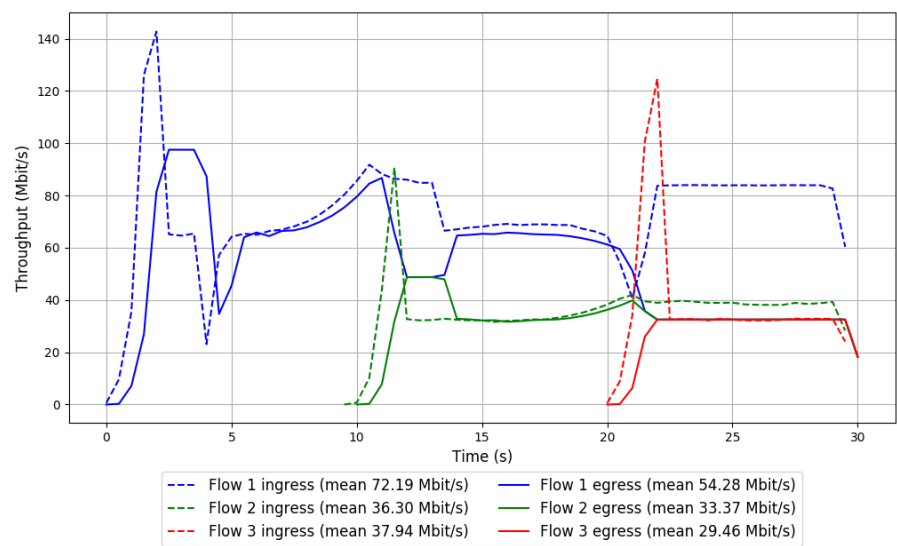Run 4: Report of Indigo-Muses — Data Link

- - - - Flow 1 ingress (mean 56.74 Mbit/s) —— Flow 1 egress (mean 56.61 Mbit/s)
- - - - Flow 2 ingress (mean 37.63 Mbit/s) —— Flow 2 egress (mean 37.08 Mbit/s)
- - - - Flow 3 ingress (mean 24.97 Mbit/s) —— Flow 3 egress (mean 24.55 Mbit/s)

- Flow 1 (95th percentile 183.68 ms) · Flow 2 (95th percentile 205.96 ms) · Flow 3 (95th percentile 197.21 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-12-02 16:41:32
End at: 2018-12-02 16:42:02
Local clock offset: -7.563 ms
Remote clock offset: -51.889 ms


# Below is generated by plot.py at 2018-12-02 16:51:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.91 Mbit/s
95th percentile per-packet one-way delay: 197.452 ms
Loss rate: 1.70%
-- Flow 1:
Average throughput: 57.17 Mbit/s
95th percentile per-packet one-way delay: 200.466 ms
Loss rate: 1.09%
-- Flow 2:
Average throughput: 36.70 Mbit/s
95th percentile per-packet one-way delay: 182.464 ms
Loss rate: 2.25%
-- Flow 3:
Average throughput: 25.67 Mbit/s
95th percentile per-packet one-way delay: 196.139 ms
Loss rate: 4.12%
```
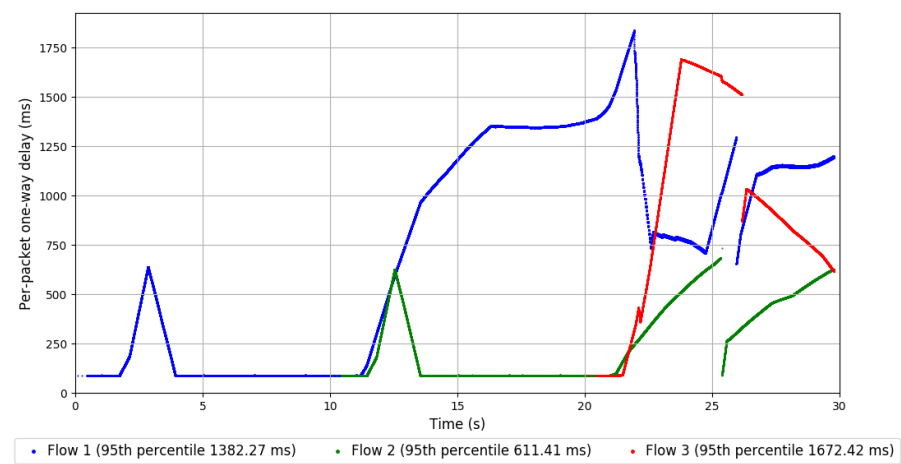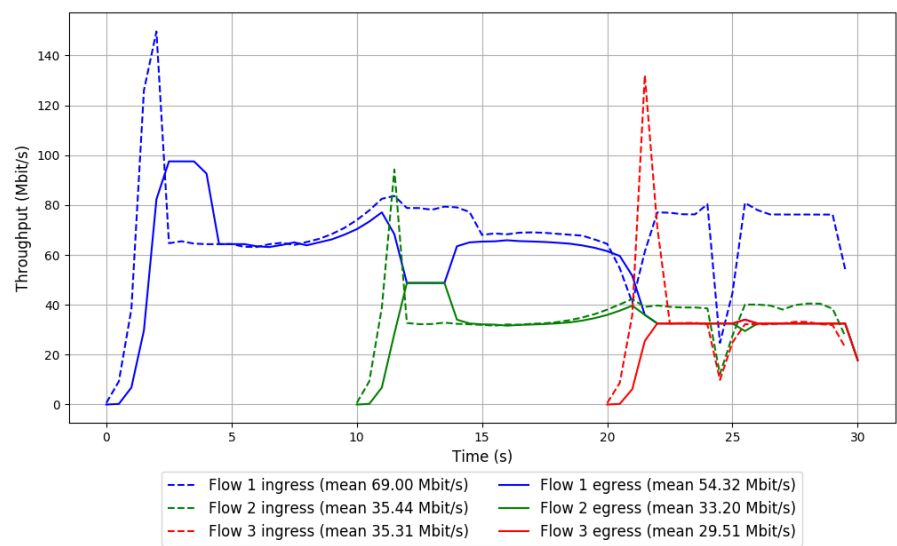
Run 5: Report of Indigo-Muses — Data Link

- Flow 1 ingress (mean 57.47 Mbit/s)
- Flow 1 egress (mean 57.17 Mbit/s)
- Flow 2 ingress (mean 37.22 Mbit/s)
- Flow 2 egress (mean 36.70 Mbit/s)
- Flow 3 ingress (mean 26.31 Mbit/s)
- Flow 3 egress (mean 25.67 Mbit/s)

- Flow 1 (95th percentile 200.47 ms)
- Flow 2 (95th percentile 182.46 ms)
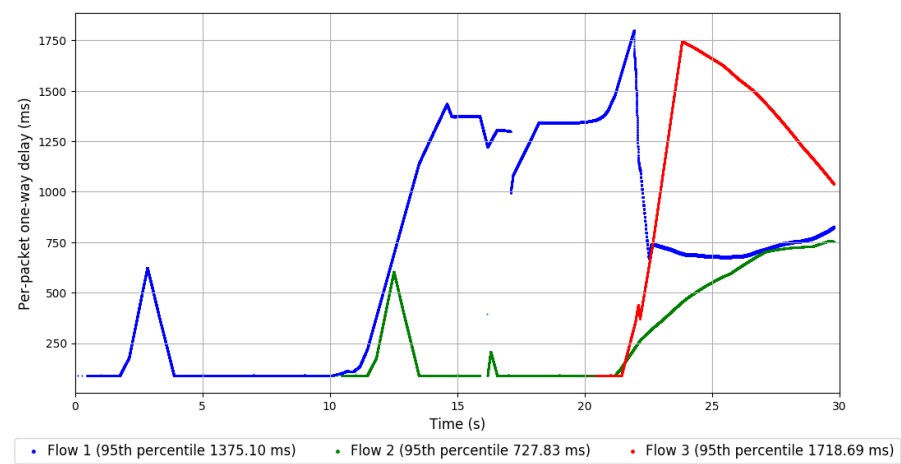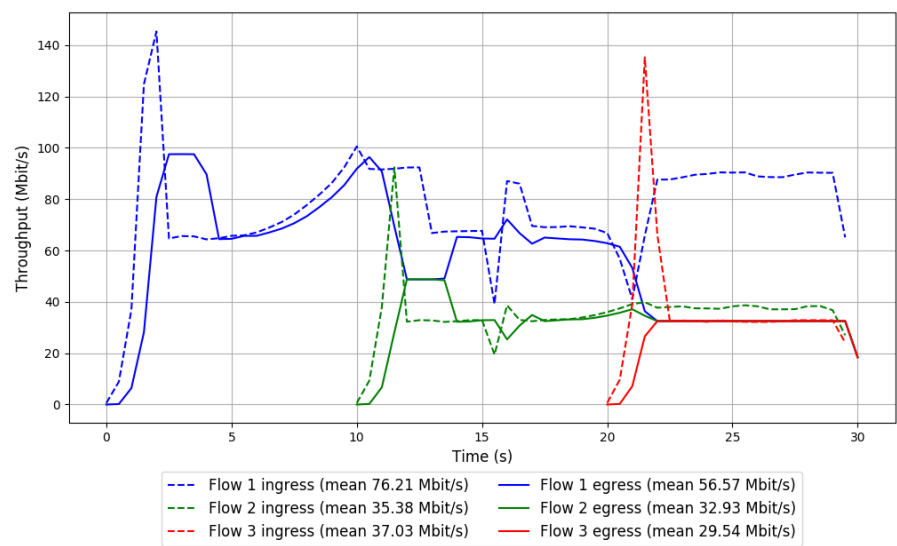- Flow 3 (95th percentile 196.14 ms)

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```
Run 1: Statistics of PCC-Allegro

Start at: 2018-12-02 14:50:43
End at: 2018-12-02 14:51:13
Local clock offset: -2.426 ms
Remote clock offset: -27.183 ms


# Below is generated by plot.py at 2018-12-02 16:51:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 86.03 Mbit/s
95th percentile per-packet one-way delay: 1487.890 ms
Loss rate: 21.44%
-- Flow 1:
Average throughput: 54.28 Mbit/s
95th percentile per-packet one-way delay: 1384.604 ms
Loss rate: 25.24%
-- Flow 2:
Average throughput: 33.37 Mbit/s
95th percentile per-packet one-way delay: 905.663 ms
Loss rate: 8.90%
-- Flow 3:
Average throughput: 29.46 Mbit/s
95th percentile per-packet one-way delay: 1645.308 ms
Loss rate: 23.72%
```

Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-12-02 15:15:48
End at: 2018-12-02 15:16:18
Local clock offset: -6.376 ms
Remote clock offset: -33.967 ms


# Below is generated by plot.py at 2018-12-02 16:51:59
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.95 Mbit/s
95th percentile per-packet one-way delay: 1446.442 ms
Loss rate: 18.00%
-- Flow 1:
Average throughput: 54.32 Mbit/s
95th percentile per-packet one-way delay: 1382.268 ms
Loss rate: 21.73%
-- Flow 2:
Average throughput: 33.20 Mbit/s
95th percentile per-packet one-way delay: 611.406 ms
Loss rate: 7.16%
-- Flow 3:
Average throughput: 29.51 Mbit/s
95th percentile per-packet one-way delay: 1672.419 ms
Loss rate: 17.88%
```
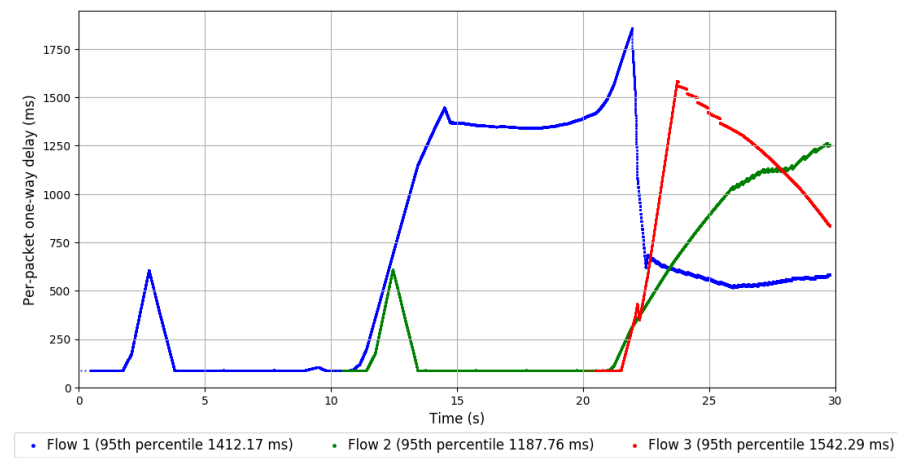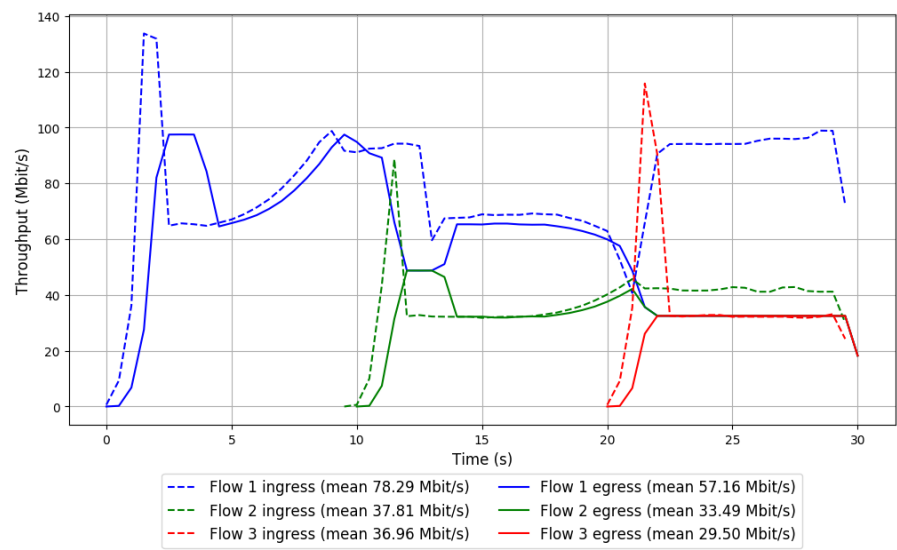
Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-12-02 15:40:18
End at: 2018-12-02 15:40:48
Local clock offset: -6.023 ms
Remote clock offset: -42.036 ms


# Below is generated by plot.py at 2018-12-02 16:52:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.04 Mbit/s
95th percentile per-packet one-way delay: 1486.186 ms
Loss rate: 21.82%
-- Flow 1:
Average throughput: 56.57 Mbit/s
95th percentile per-packet one-way delay: 1375.098 ms
Loss rate: 26.19%
-- Flow 2:
Average throughput: 32.93 Mbit/s
95th percentile per-packet one-way delay: 727.830 ms
Loss rate: 7.72%
-- Flow 3:
Average throughput: 29.54 Mbit/s
95th percentile per-packet one-way delay: 1718.686 ms
Loss rate: 21.65%
```
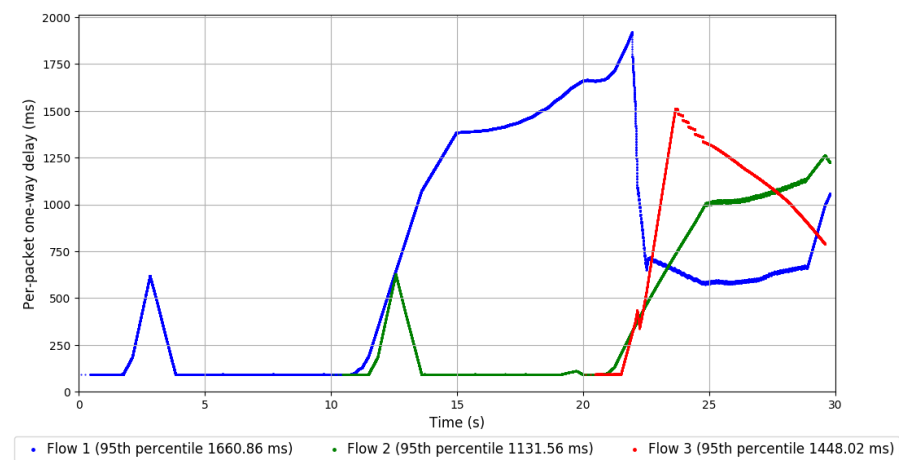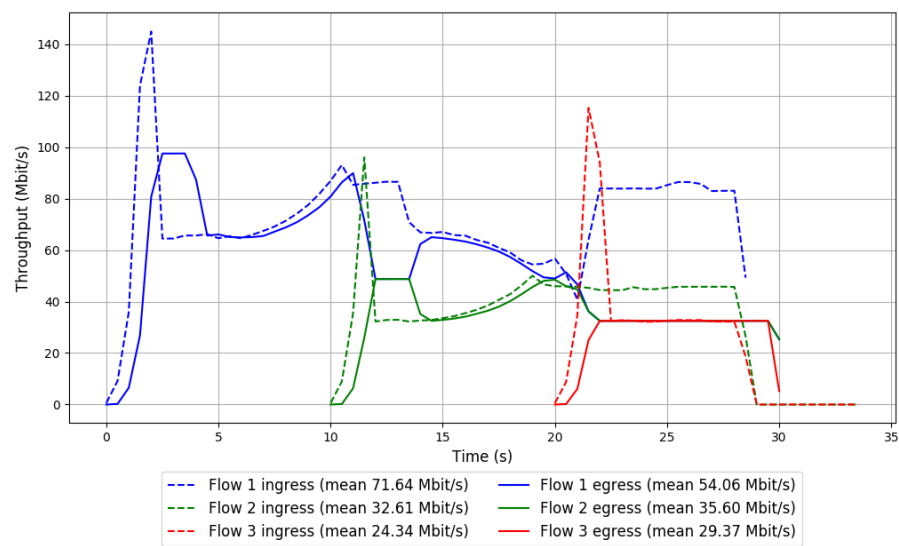
Run 3: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 76.21 Mbit/s) — — — Flow 1 egress (mean 56.57 Mbit/s)
Flow 2 ingress (mean 35.38 Mbit/s) — — — Flow 2 egress (mean 32.93 Mbit/s)
Flow 3 ingress (mean 37.03 Mbit/s) — — — Flow 3 egress (mean 29.54 Mbit/s)

Flow 1 (95th percentile 1375.10 ms) • Flow 2 (95th percentile 727.83 ms) • Flow 3 (95th percentile 1718.69 ms)

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-12-02 16:04:55
End at: 2018-12-02 16:05:25
Local clock offset: -7.594 ms
Remote clock offset: -48.499 ms


# Below is generated by plot.py at 2018-12-02 16:52:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 88.99 Mbit/s
95th percentile per-packet one-way delay: 1413.710 ms
Loss rate: 23.49%
-- Flow 1:
Average throughput: 57.16 Mbit/s
95th percentile per-packet one-way delay: 1412.172 ms
Loss rate: 27.41%
-- Flow 2:
Average throughput: 33.49 Mbit/s
95th percentile per-packet one-way delay: 1187.758 ms
Loss rate: 12.20%
-- Flow 3:
Average throughput: 29.50 Mbit/s
95th percentile per-packet one-way delay: 1542.292 ms
Loss rate: 21.60%
```
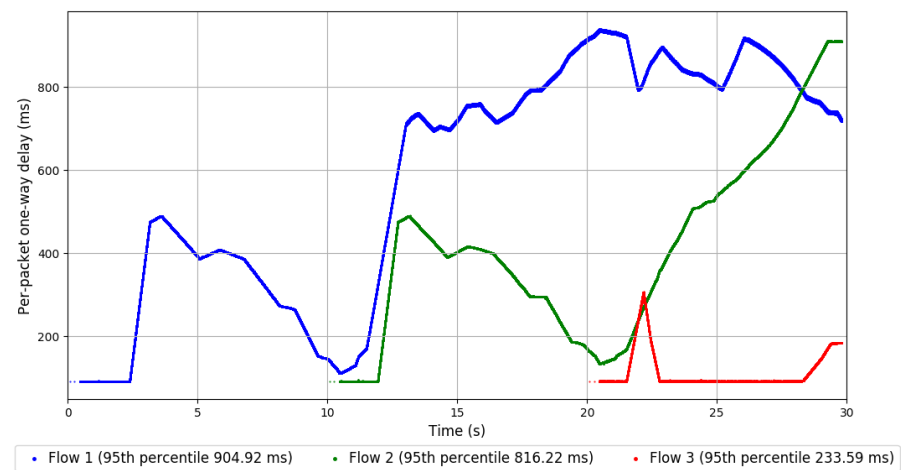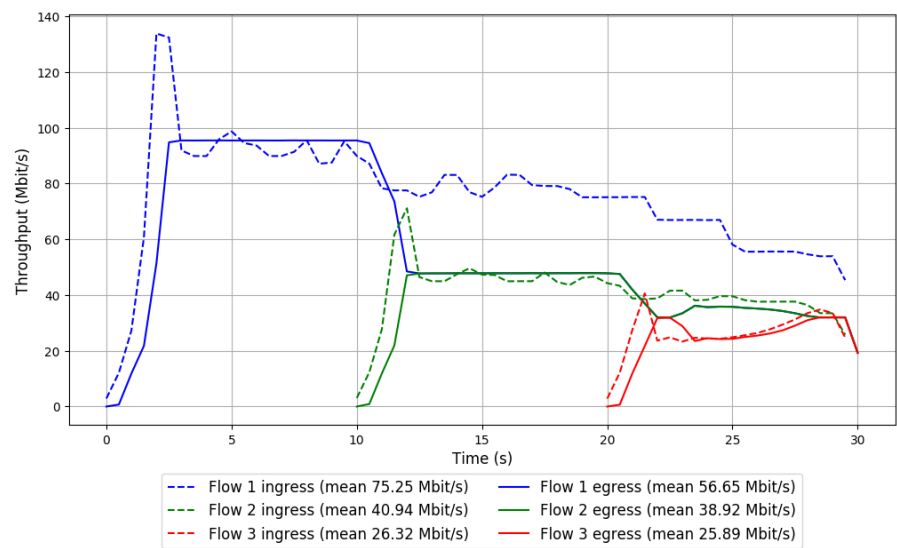
Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 78.29 Mbit/s)   Flow 1 egress (mean 57.16 Mbit/s)
Flow 2 ingress (mean 37.81 Mbit/s)   Flow 2 egress (mean 33.49 Mbit/s)
Flow 3 ingress (mean 36.96 Mbit/s)   Flow 3 egress (mean 29.50 Mbit/s)

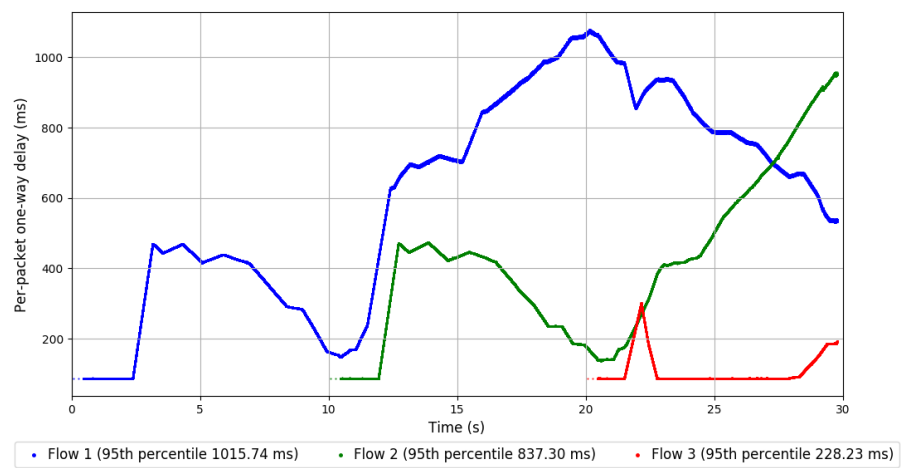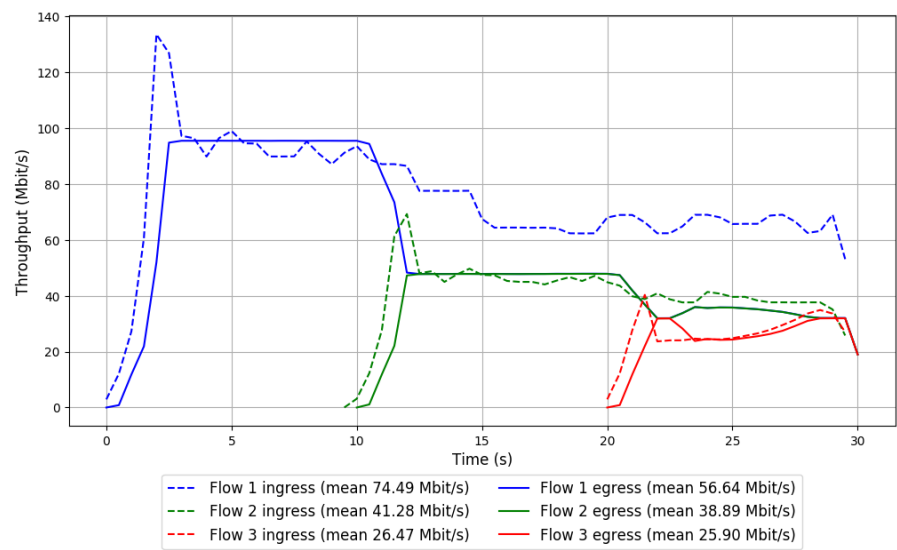Flow 1 (95th percentile 1412.17 ms)   Flow 2 (95th percentile 1187.76 ms)   Flow 3 (95th percentile 1542.29 ms)

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-12-02 16:29:44
End at: 2018-12-02 16:30:14
Local clock offset: -6.769 ms
Remote clock offset: -59.176 ms


# Below is generated by plot.py at 2018-12-02 16:52:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.04 Mbit/s
95th percentile per-packet one-way delay: 1569.958 ms
Loss rate: 18.29%
-- Flow 1:
Average throughput: 54.06 Mbit/s
95th percentile per-packet one-way delay: 1660.857 ms
Loss rate: 22.18%
-- Flow 2:
Average throughput: 35.60 Mbit/s
95th percentile per-packet one-way delay: 1131.559 ms
Loss rate: 8.91%
-- Flow 3:
Average throughput: 29.37 Mbit/s
95th percentile per-packet one-way delay: 1448.023 ms
Loss rate: 15.91%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 71.64 Mbit/s) --- Flow 1 egress (mean 54.06 Mbit/s)
Flow 2 ingress (mean 32.61 Mbit/s) --- Flow 2 egress (mean 35.60 Mbit/s)
Flow 3 ingress (mean 24.34 Mbit/s) --- Flow 3 egress (mean 29.37 Mbit/s)

Flow 1 (95th percentile 1660.86 ms)   Flow 2 (95th percentile 1131.56 ms)   Flow 3 (95th percentile 1448.02 ms)
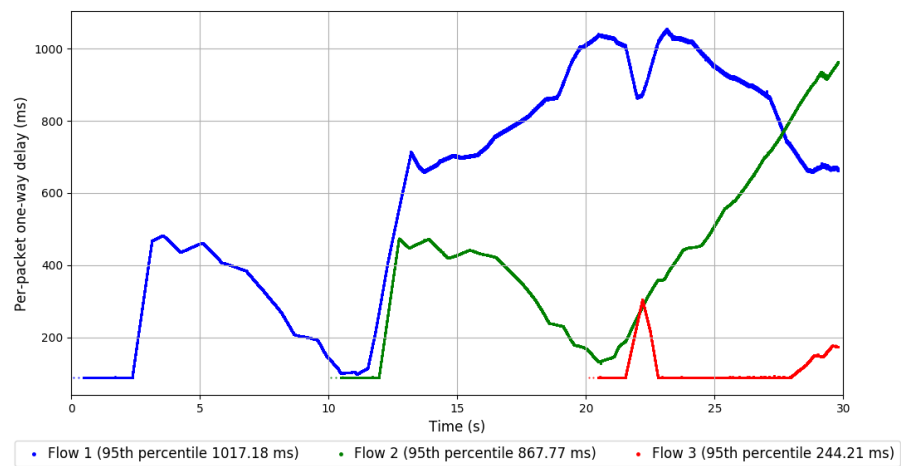
```
Run 1: Statistics of PCC-Expr

Start at: 2018-12-02 14:42:52
End at: 2018-12-02 14:43:22
Local clock offset: -1.778 ms
Remote clock offset: -29.157 ms


# Below is generated by plot.py at 2018-12-02 16:53:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.92 Mbit/s
95th percentile per-packet one-way delay: 890.285 ms
Loss rate: 18.70%
-- Flow 1:
Average throughput: 56.65 Mbit/s
95th percentile per-packet one-way delay: 904.920 ms
Loss rate: 25.15%
-- Flow 2:
Average throughput: 38.92 Mbit/s
95th percentile per-packet one-way delay: 816.220 ms
Loss rate: 5.77%
-- Flow 3:
Average throughput: 25.89 Mbit/s
95th percentile per-packet one-way delay: 233.593 ms
Loss rate: 3.38%
```

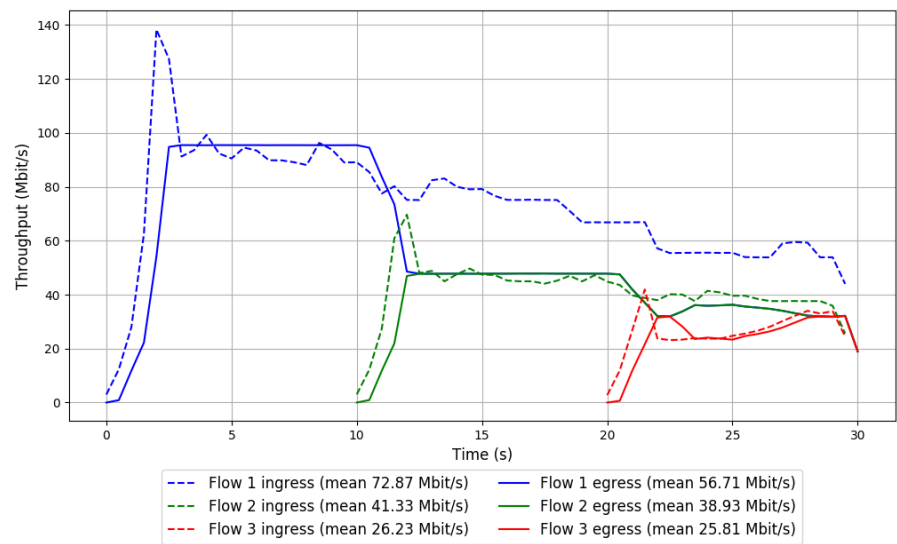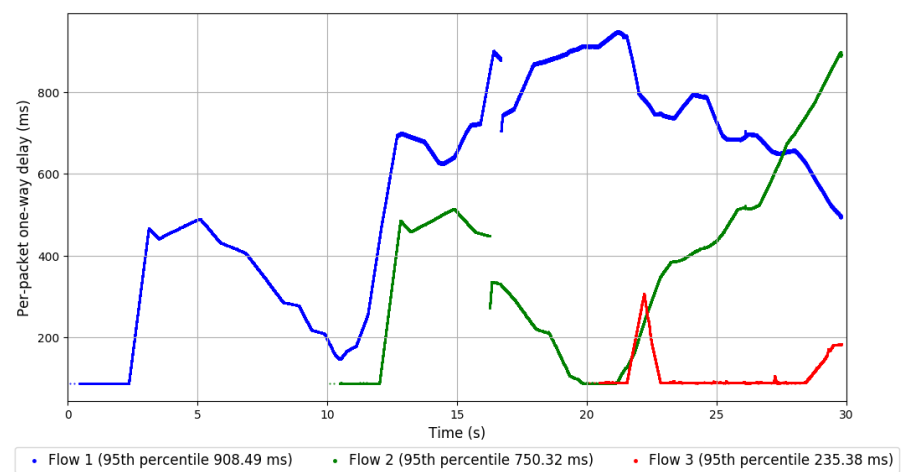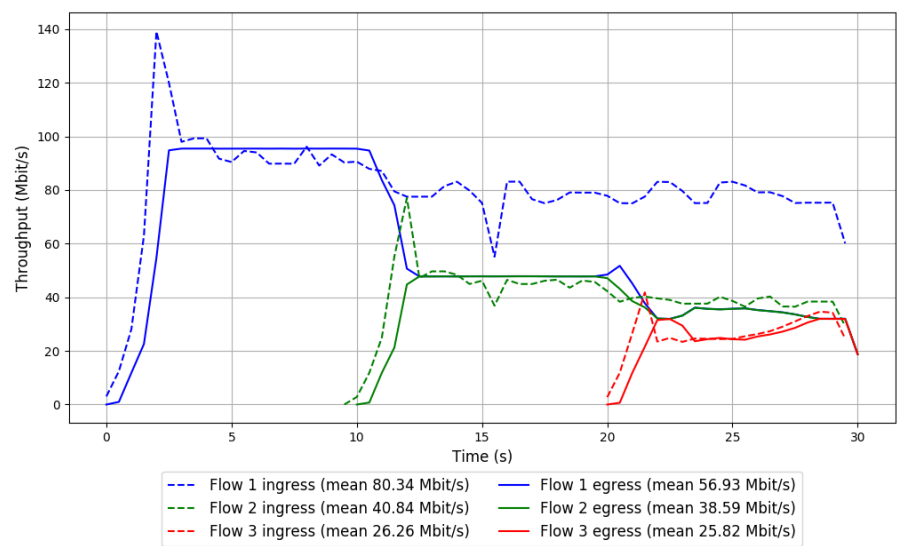Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 75.25 Mbit/s) Flow 1 egress (mean 56.65 Mbit/s)
Flow 2 ingress (mean 40.94 Mbit/s) Flow 2 egress (mean 38.92 Mbit/s)
Flow 3 ingress (mean 26.32 Mbit/s) Flow 3 egress (mean 25.89 Mbit/s)

Flow 1 (95th percentile 904.92 ms) Flow 2 (95th percentile 816.22 ms) Flow 3 (95th percentile 233.59 ms)

```
Run 2: Statistics of PCC-Expr

Start at: 2018-12-02 15:07:32
End at: 2018-12-02 15:08:02
Local clock offset: -6.547 ms
Remote clock offset: -30.897 ms


# Below is generated by plot.py at 2018-12-02 16:53:56
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.90 Mbit/s
95th percentile per-packet one-way delay: 984.169 ms
Loss rate: 18.36%
-- Flow 1:
Average throughput: 56.64 Mbit/s
95th percentile per-packet one-way delay: 1015.740 ms
Loss rate: 24.41%
-- Flow 2:
Average throughput: 38.89 Mbit/s
95th percentile per-packet one-way delay: 837.303 ms
Loss rate: 6.57%
-- Flow 3:
Average throughput: 25.90 Mbit/s
95th percentile per-packet one-way delay: 228.231 ms
Loss rate: 3.90%
```
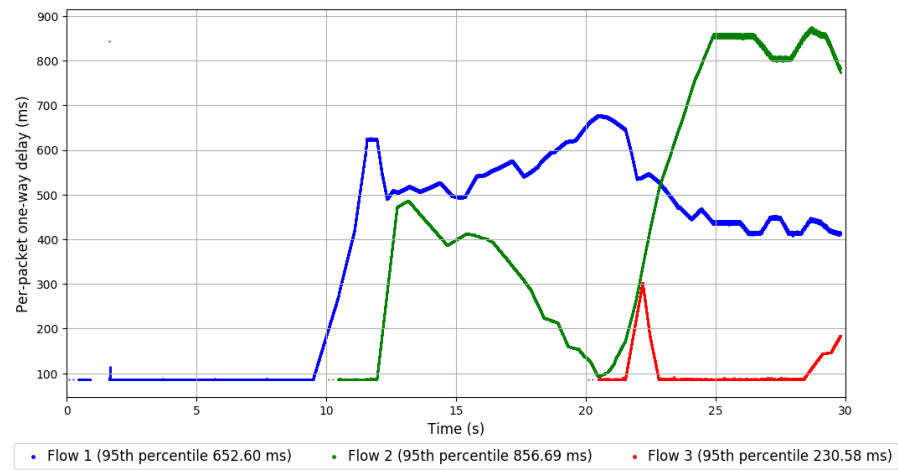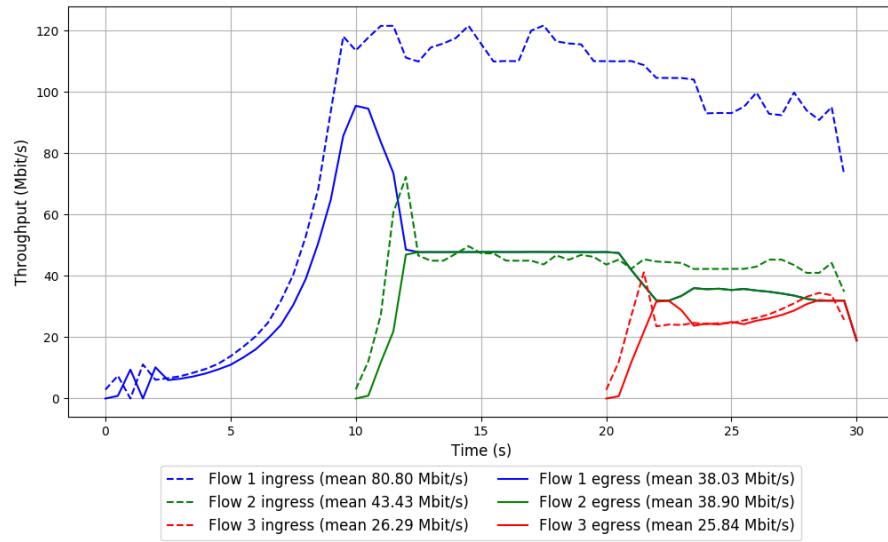
Run 2: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 74.49 Mbit/s) --- Flow 1 egress (mean 56.64 Mbit/s)
Flow 2 ingress (mean 41.28 Mbit/s) --- Flow 2 egress (mean 38.89 Mbit/s)
Flow 3 ingress (mean 26.47 Mbit/s) --- Flow 3 egress (mean 25.90 Mbit/s)

• Flow 1 (95th percentile 1015.74 ms)   • Flow 2 (95th percentile 837.30 ms)   • Flow 3 (95th percentile 228.23 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-12-02 15:32:32
End at: 2018-12-02 15:33:02
Local clock offset: -6.785 ms
Remote clock offset: -39.956 ms


# Below is generated by plot.py at 2018-12-02 16:54:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.95 Mbit/s
95th percentile per-packet one-way delay: 989.411 ms
Loss rate: 17.06%
-- Flow 1:
Average throughput: 56.71 Mbit/s
95th percentile per-packet one-way delay: 1017.182 ms
Loss rate: 22.62%
-- Flow 2:
Average throughput: 38.93 Mbit/s
95th percentile per-packet one-way delay: 867.767 ms
Loss rate: 6.63%
-- Flow 3:
Average throughput: 25.81 Mbit/s
95th percentile per-packet one-way delay: 244.210 ms
Loss rate: 3.33%
```

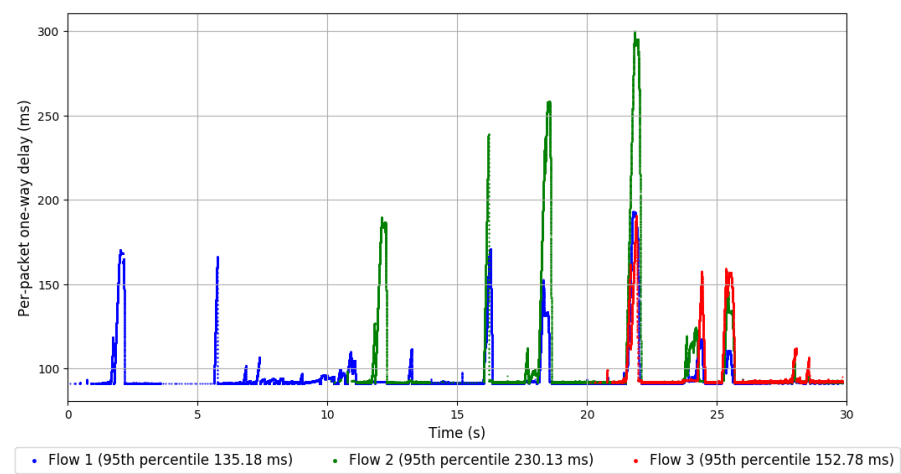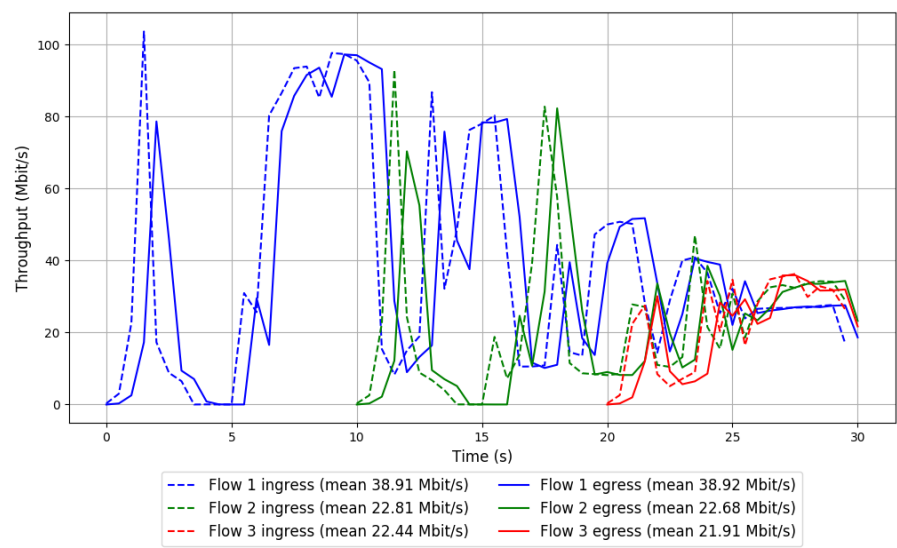# Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 72.87 Mbit/s) — Flow 1 egress (mean 56.71 Mbit/s)
Flow 2 ingress (mean 41.33 Mbit/s) — Flow 2 egress (mean 38.93 Mbit/s)
Flow 3 ingress (mean 26.23 Mbit/s) — Flow 3 egress (mean 25.81 Mbit/s)

Flow 1 (95th percentile 1017.18 ms) • Flow 2 (95th percentile 867.77 ms) • Flow 3 (95th percentile 244.21 ms)
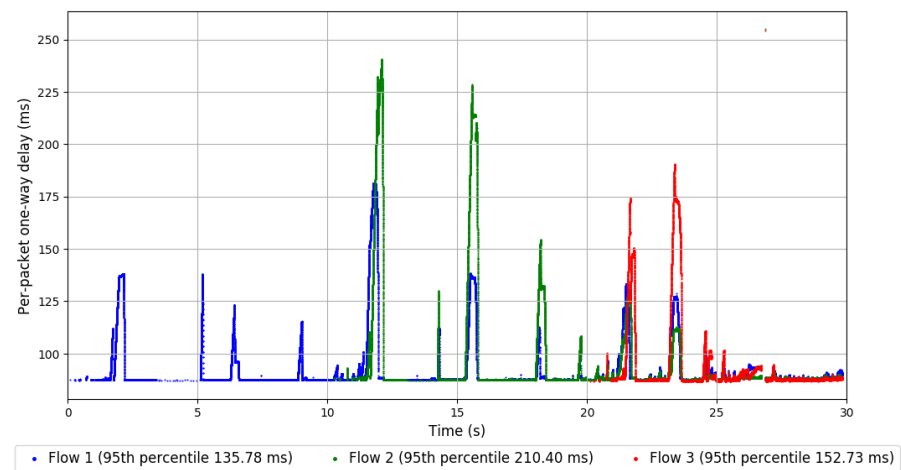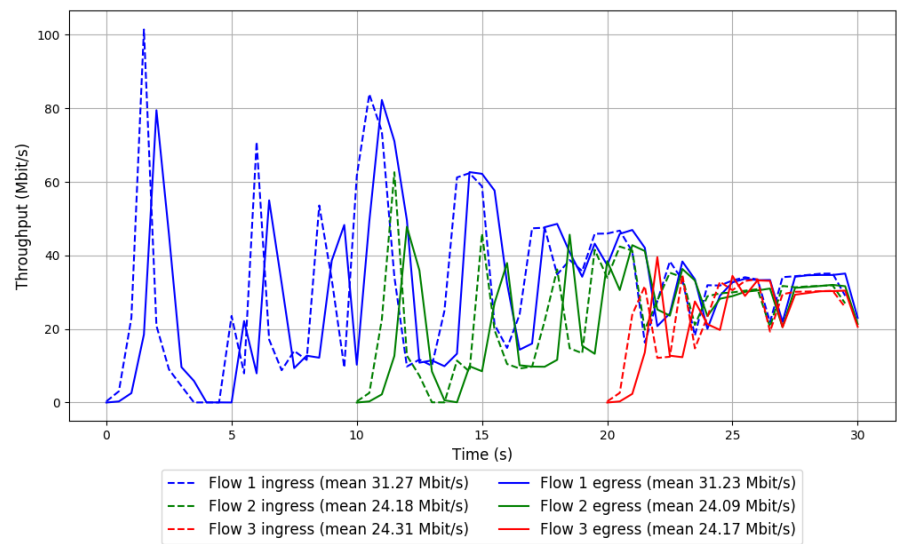
```
Run 4: Statistics of PCC-Expr

Start at: 2018-12-02 15:57:05
End at: 2018-12-02 15:57:35
Local clock offset: -7.323 ms
Remote clock offset: -44.957 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 90.94 Mbit/s
95th percentile per-packet one-way delay: 888.077 ms
Loss rate: 22.16%
-- Flow 1:
Average throughput: 56.93 Mbit/s
95th percentile per-packet one-way delay: 908.491 ms
Loss rate: 29.55%
-- Flow 2:
Average throughput: 38.59 Mbit/s
95th percentile per-packet one-way delay: 750.319 ms
Loss rate: 6.31%
-- Flow 3:
Average throughput: 25.82 Mbit/s
95th percentile per-packet one-way delay: 235.385 ms
Loss rate: 3.41%
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 80.34 Mbit/s)   Flow 1 egress (mean 56.93 Mbit/s)
Flow 2 ingress (mean 40.84 Mbit/s)   Flow 2 egress (mean 38.59 Mbit/s)
Flow 3 ingress (mean 26.26 Mbit/s)   Flow 3 egress (mean 25.82 Mbit/s)

Flow 1 (95th percentile 908.49 ms)   Flow 2 (95th percentile 750.32 ms)   Flow 3 (95th percentile 235.38 ms)

```
Run 5: Statistics of PCC-Expr

Start at: 2018-12-02 16:21:34
End at: 2018-12-02 16:22:04
Local clock offset: -7.749 ms
Remote clock offset: -50.893 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.27 Mbit/s
95th percentile per-packet one-way delay: 830.198 ms
Loss rate: 39.30%
-- Flow 1:
Average throughput: 38.03 Mbit/s
95th percentile per-packet one-way delay: 652.597 ms
Loss rate: 53.20%
-- Flow 2:
Average throughput: 38.90 Mbit/s
95th percentile per-packet one-way delay: 856.694 ms
Loss rate: 11.21%
-- Flow 3:
Average throughput: 25.84 Mbit/s
95th percentile per-packet one-way delay: 230.579 ms
Loss rate: 3.45%
```

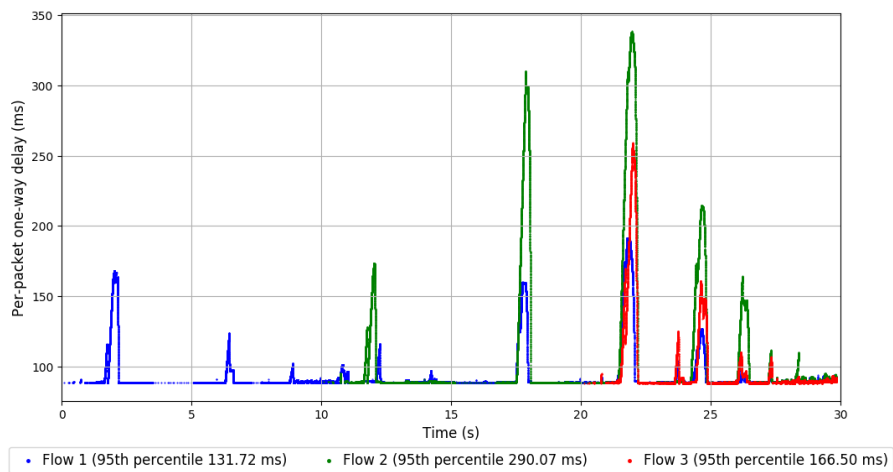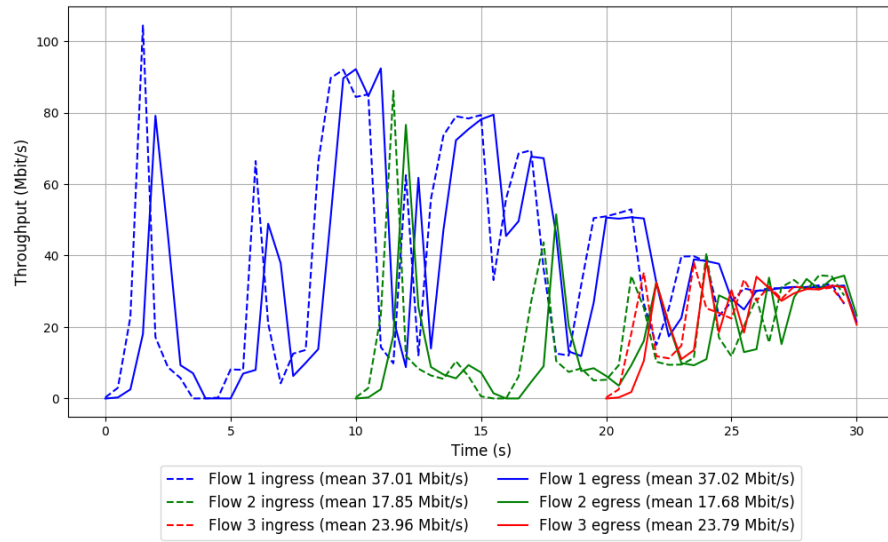Run 5: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 80.80 Mbit/s) --- Flow 1 egress (mean 38.03 Mbit/s)
Flow 2 ingress (mean 43.43 Mbit/s) --- Flow 2 egress (mean 38.90 Mbit/s)
Flow 3 ingress (mean 26.29 Mbit/s) --- Flow 3 egress (mean 25.84 Mbit/s)

Flow 1 (95th percentile 652.60 ms)   Flow 2 (95th percentile 856.69 ms)   Flow 3 (95th percentile 230.58 ms)

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-12-02 14:48:07
End at: 2018-12-02 14:48:37
Local clock offset: -1.872 ms
Remote clock offset: -30.68 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 61.12 Mbit/s
95th percentile per-packet one-way delay: 165.660 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 38.92 Mbit/s
95th percentile per-packet one-way delay: 135.175 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 22.68 Mbit/s
95th percentile per-packet one-way delay: 230.133 ms
Loss rate: 1.44%
-- Flow 3:
Average throughput: 21.91 Mbit/s
95th percentile per-packet one-way delay: 152.776 ms
Loss rate: 4.04%
```

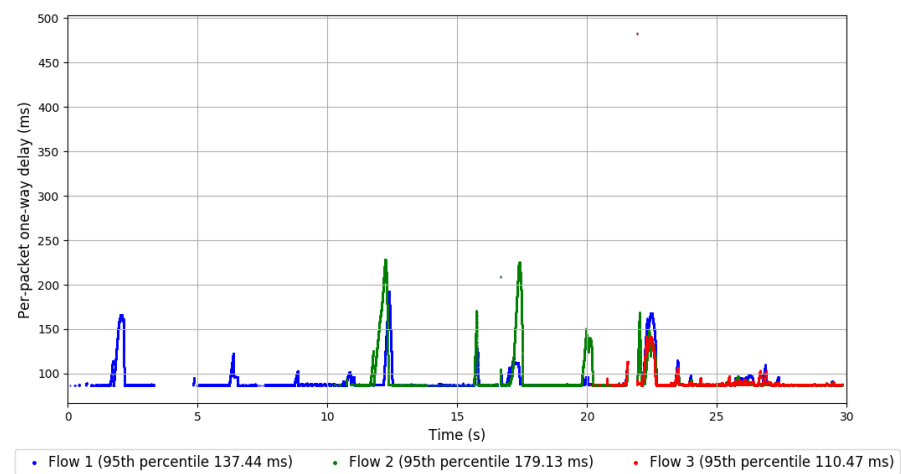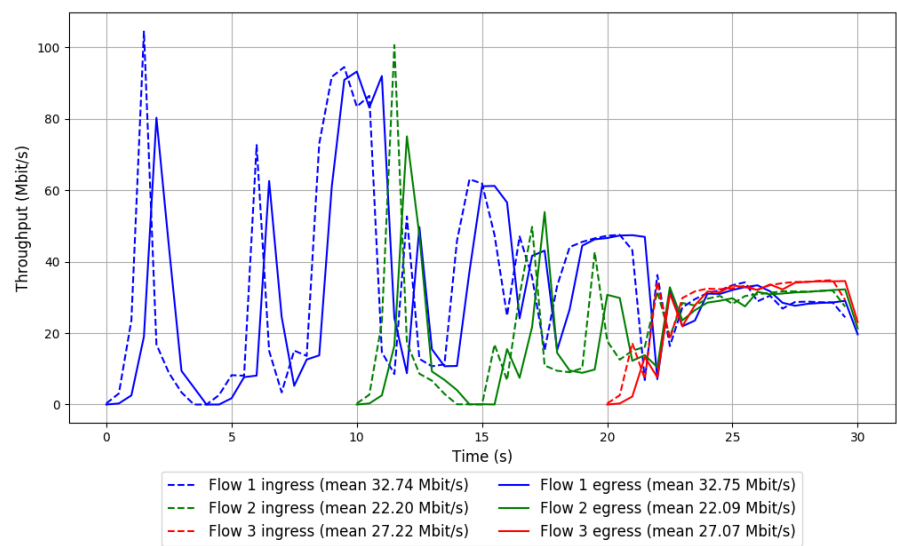## Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 38.91 Mbit/s) --- Flow 1 egress (mean 38.92 Mbit/s)
Flow 2 ingress (mean 22.81 Mbit/s) --- Flow 2 egress (mean 22.68 Mbit/s)
Flow 3 ingress (mean 22.44 Mbit/s) --- Flow 3 egress (mean 21.91 Mbit/s)

Flow 1 (95th percentile 135.18 ms)   Flow 2 (95th percentile 230.13 ms)   Flow 3 (95th percentile 152.78 ms)

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```
Run 2: Statistics of QUIC Cubic

Start at: 2018-12-02 15:13:12
End at: 2018-12-02 15:13:42
Local clock offset: -7.03 ms
Remote clock offset: -33.317 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 55.11 Mbit/s
95th percentile per-packet one-way delay: 146.320 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 31.23 Mbit/s
95th percentile per-packet one-way delay: 135.775 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 24.09 Mbit/s
95th percentile per-packet one-way delay: 210.402 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 24.17 Mbit/s
95th percentile per-packet one-way delay: 152.731 ms
Loss rate: 2.31%
```

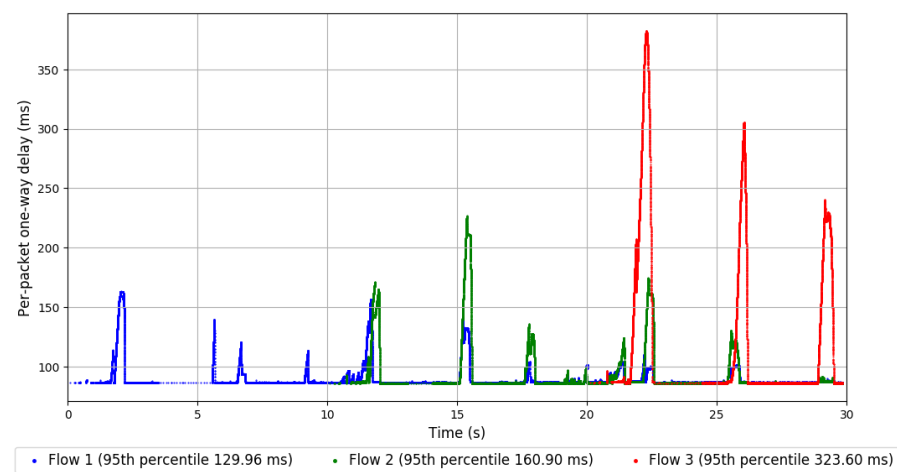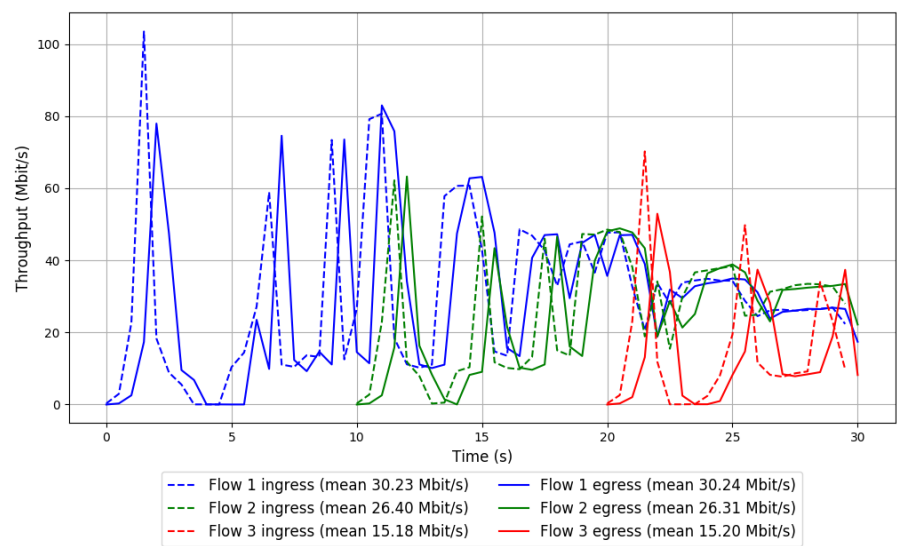## Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-12-02 15:37:43
End at: 2018-12-02 15:38:13
Local clock offset: -5.985 ms
Remote clock offset: -40.248 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 56.52 Mbit/s
95th percentile per-packet one-way delay: 166.516 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 37.02 Mbit/s
95th percentile per-packet one-way delay: 131.725 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 17.68 Mbit/s
95th percentile per-packet one-way delay: 290.071 ms
Loss rate: 1.86%
-- Flow 3:
Average throughput: 23.79 Mbit/s
95th percentile per-packet one-way delay: 166.497 ms
Loss rate: 2.44%
```

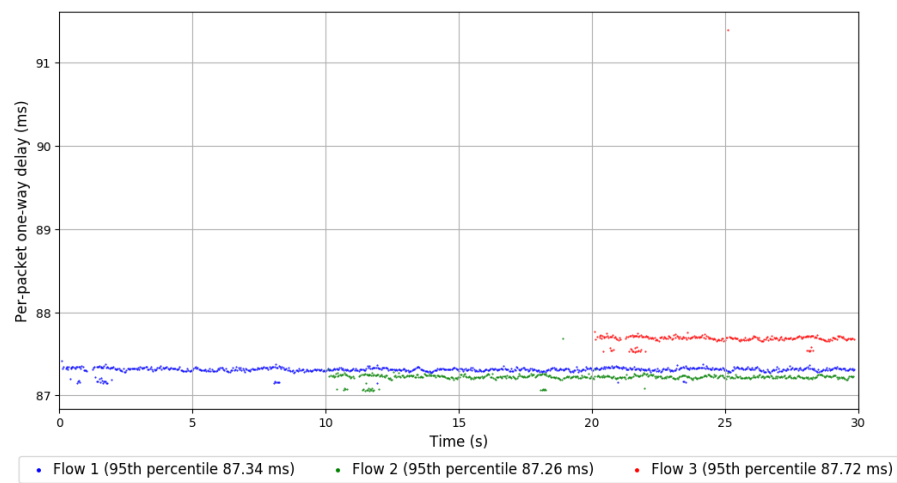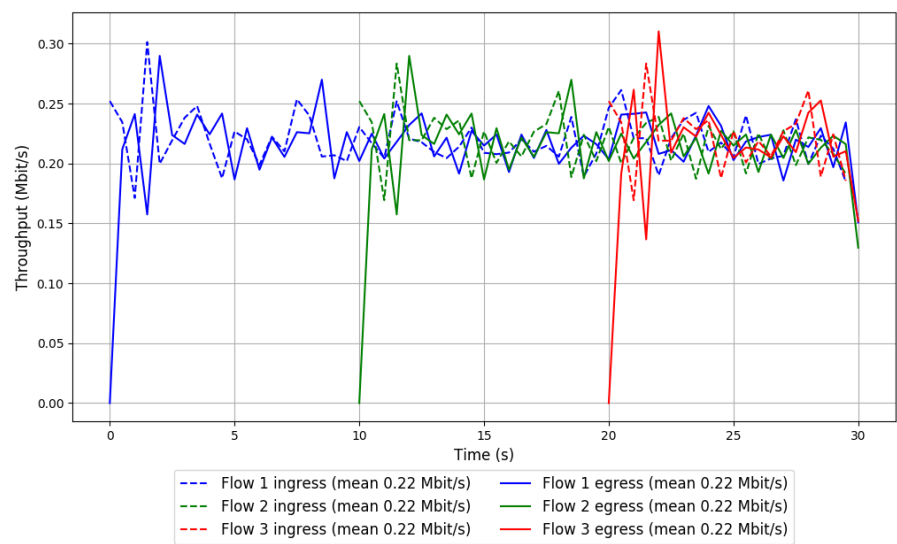Run 3: Report of QUIC Cubic — Data Link

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-12-02 16:02:20
End at: 2018-12-02 16:02:50
Local clock offset: -7.583 ms
Remote clock offset: -46.269 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 56.25 Mbit/s
95th percentile per-packet one-way delay: 147.678 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 32.75 Mbit/s
95th percentile per-packet one-way delay: 137.439 ms
Loss rate: 0.55%
-- Flow 2:
Average throughput: 22.09 Mbit/s
95th percentile per-packet one-way delay: 179.129 ms
Loss rate: 1.35%
-- Flow 3:
Average throughput: 27.07 Mbit/s
95th percentile per-packet one-way delay: 110.469 ms
Loss rate: 2.30%
```

Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-12-02 16:27:08
End at: 2018-12-02 16:27:38
Local clock offset: -7.553 ms
Remote clock offset: -52.188 ms

# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 52.66 Mbit/s
95th percentile per-packet one-way delay: 167.266 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 30.24 Mbit/s
95th percentile per-packet one-way delay: 129.955 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 26.31 Mbit/s
95th percentile per-packet one-way delay: 160.899 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 15.20 Mbit/s
95th percentile per-packet one-way delay: 323.595 ms
Loss rate: 1.61%
```

Run 5: Report of QUIC Cubic — Data Link

- Flow 1 ingress (mean 30.23 Mbit/s)
- Flow 1 egress (mean 30.24 Mbit/s)
- Flow 2 ingress (mean 26.40 Mbit/s)
- Flow 2 egress (mean 26.31 Mbit/s)
- Flow 3 ingress (mean 15.18 Mbit/s)
- Flow 3 egress (mean 15.20 Mbit/s)

- Flow 1 (95th percentile 129.96 ms)
- Flow 2 (95th percentile 160.90 ms)
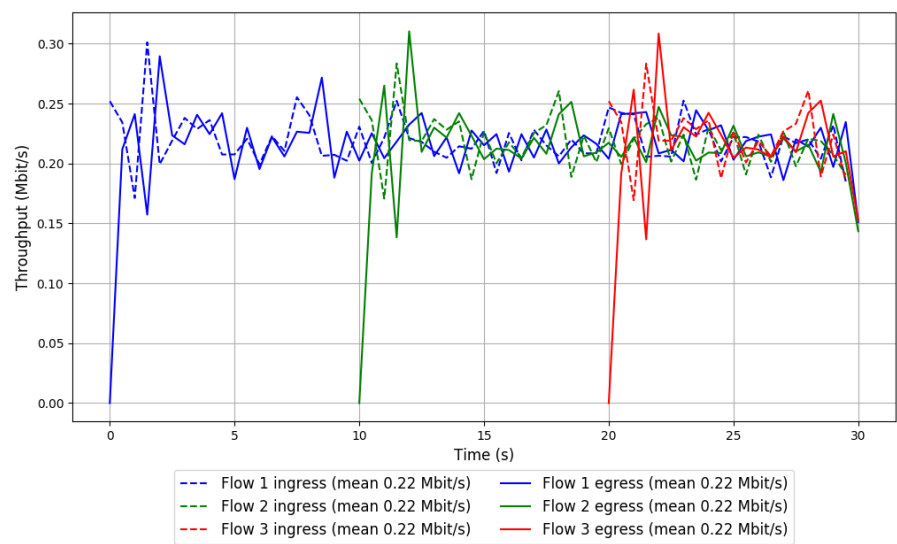- Flow 3 (95th percentile 323.60 ms)

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```
Run 1: Statistics of SCReAM

Start at: 2018-12-02 14:54:37
End at: 2018-12-02 14:55:07
Local clock offset: -4.444 ms
Remote clock offset: -28.523 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 87.704 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.345 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.257 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 87.723 ms
Loss rate: 1.85%
```
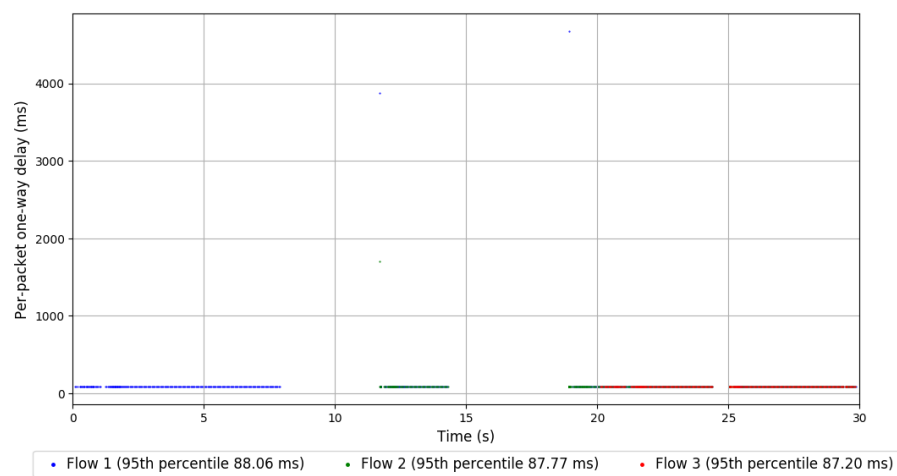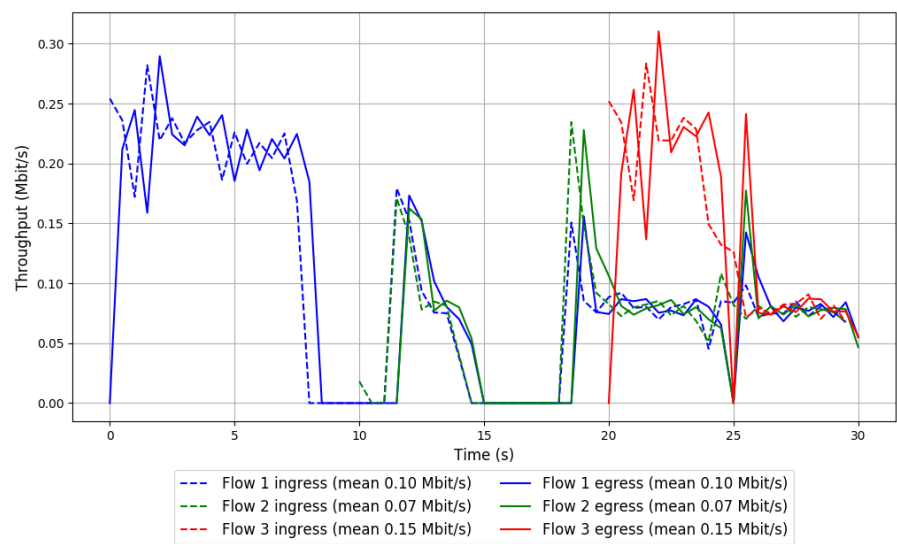
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-12-02 15:19:41
End at: 2018-12-02 15:20:11
Local clock offset: -6.401 ms
Remote clock offset: -36.212 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 89.177 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 89.189 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 89.153 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 89.137 ms
Loss rate: 1.23%
```
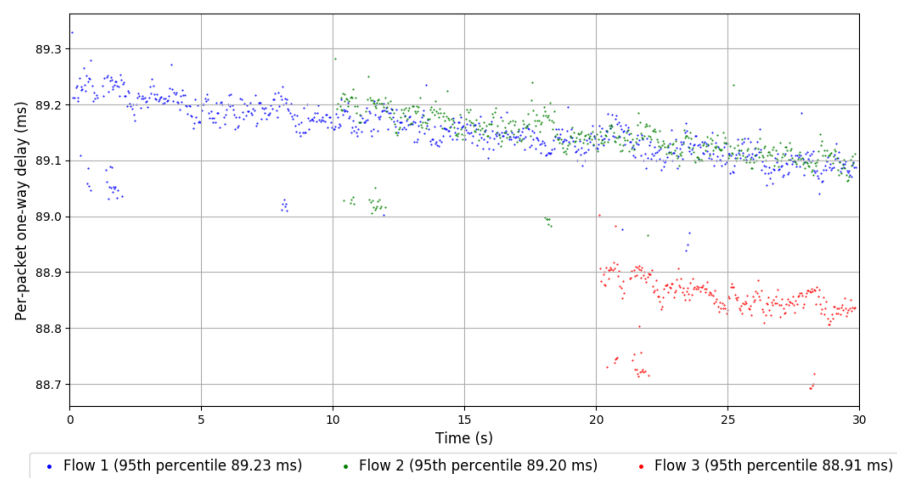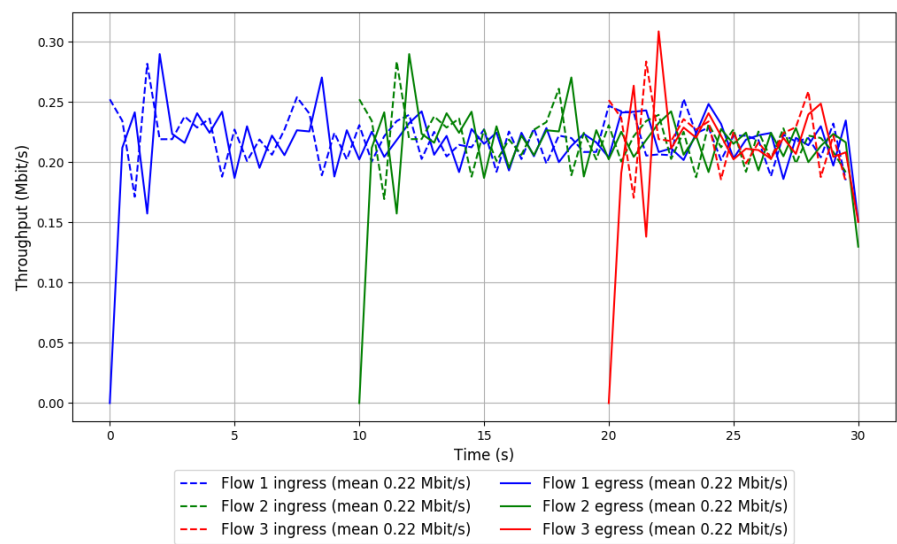
Run 2: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.18 Mbit/s) ---- Flow 1 egress (mean 0.18 Mbit/s) ——
Flow 2 ingress (mean 0.16 Mbit/s) ---- Flow 2 egress (mean 0.16 Mbit/s) ——
Flow 3 ingress (mean 0.10 Mbit/s) ---- Flow 3 egress (mean 0.10 Mbit/s) ——

Flow 1 (95th percentile 89.19 ms)   Flow 2 (95th percentile 89.15 ms)   Flow 3 (95th percentile 89.14 ms)

```
Run 3: Statistics of SCReAM

Start at: 2018-12-02 15:44:12
End at: 2018-12-02 15:44:42
Local clock offset: -6.836 ms
Remote clock offset: -46.776 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 92.493 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 92.342 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 92.512 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 92.483 ms
Loss rate: 1.85%
```
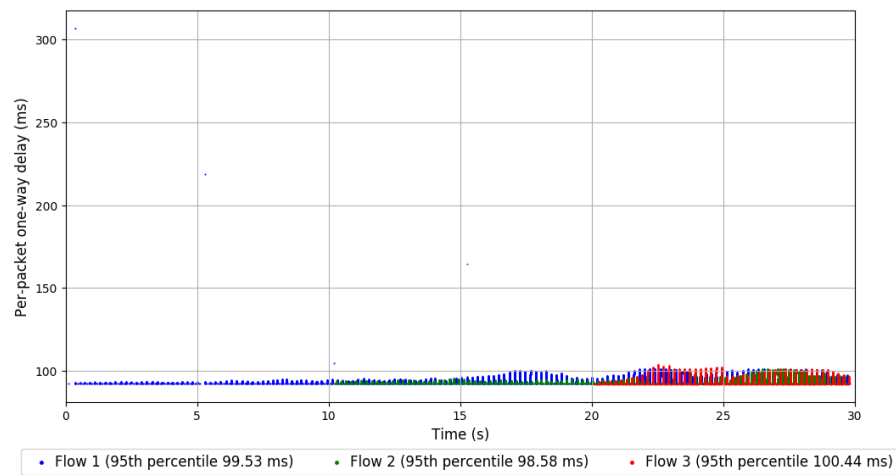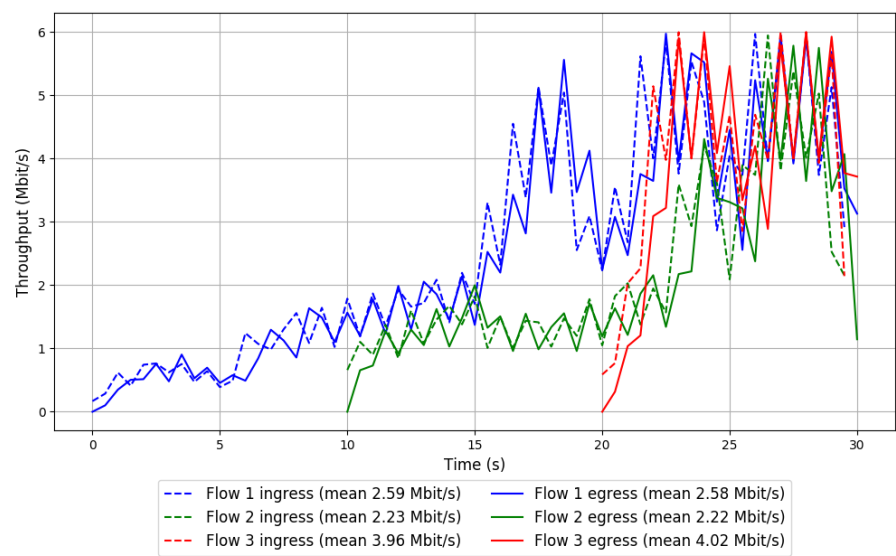
Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-12-02 16:08:47
End at: 2018-12-02 16:09:17
Local clock offset: -7.715 ms
Remote clock offset: -48.354 ms

# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 87.886 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 88.061 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 87.772 ms
Loss rate: 1.22%
-- Flow 3:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 87.203 ms
Loss rate: 1.02%
```
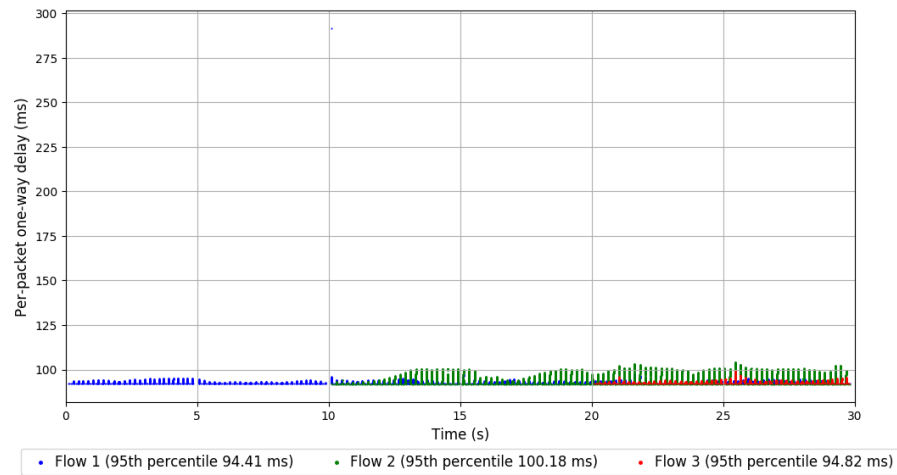
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-12-02 16:33:40
End at: 2018-12-02 16:34:10
Local clock offset: -6.752 ms
Remote clock offset: -55.959 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 89.214 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 89.227 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 89.205 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 88.905 ms
Loss rate: 1.84%
```
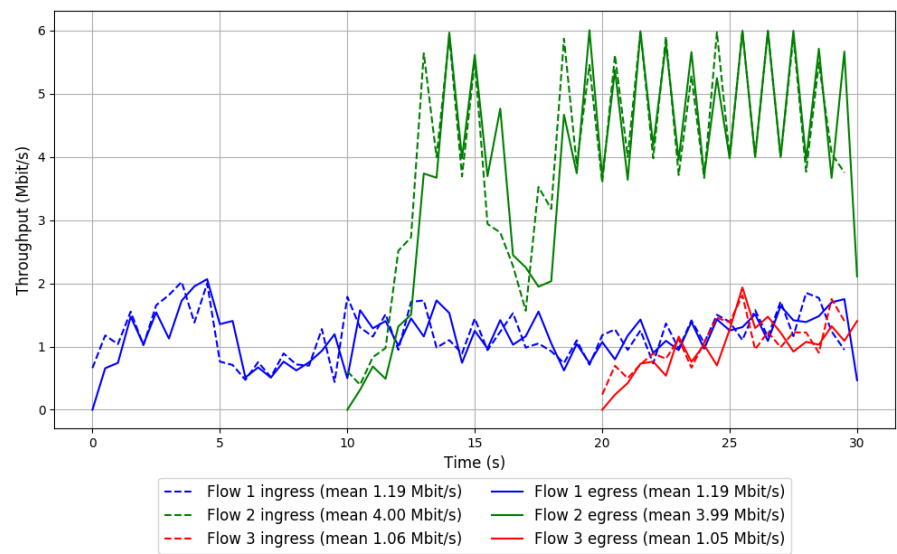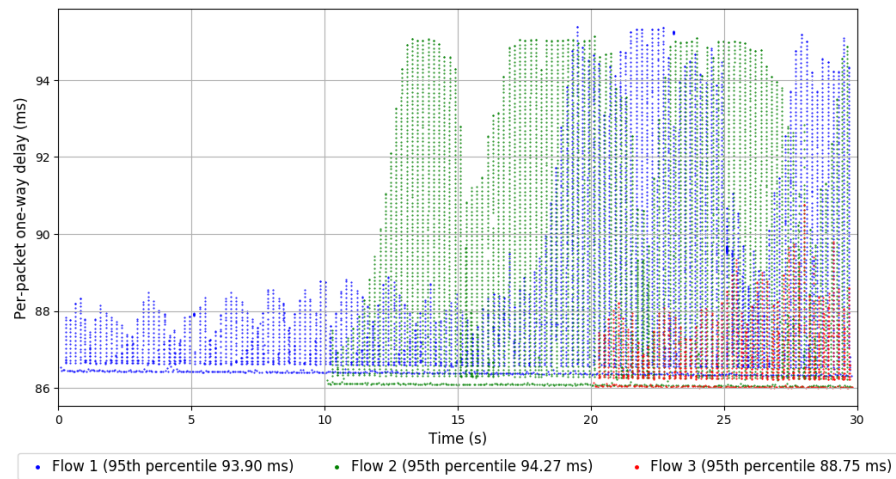
Run 5: Report of SCReAM — Data Link

```
Run 1: Statistics of Sprout

Start at: 2018-12-02 14:46:54
End at: 2018-12-02 14:47:24
Local clock offset: -1.679 ms
Remote clock offset: -31.321 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.36 Mbit/s
95th percentile per-packet one-way delay: 99.696 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 2.58 Mbit/s
95th percentile per-packet one-way delay: 99.533 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 98.584 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 100.437 ms
Loss rate: 0.39%
```
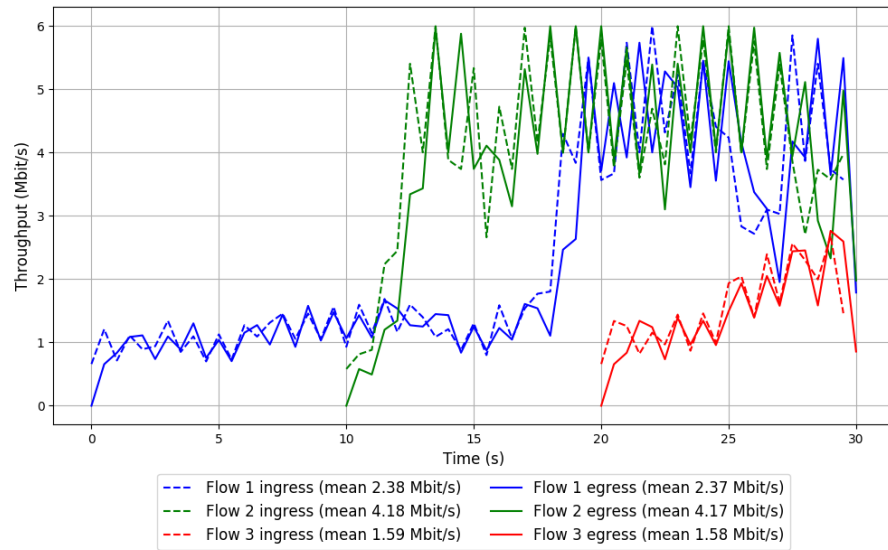
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-12-02 15:11:59
End at: 2018-12-02 15:12:29
Local clock offset: -6.916 ms
Remote clock offset: -38.047 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.17 Mbit/s
95th percentile per-packet one-way delay: 99.683 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 94.407 ms
Loss rate: 0.68%
-- Flow 2:
Average throughput: 3.99 Mbit/s
95th percentile per-packet one-way delay: 100.178 ms
Loss rate: 1.17%
-- Flow 3:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 94.822 ms
Loss rate: 3.17%
```
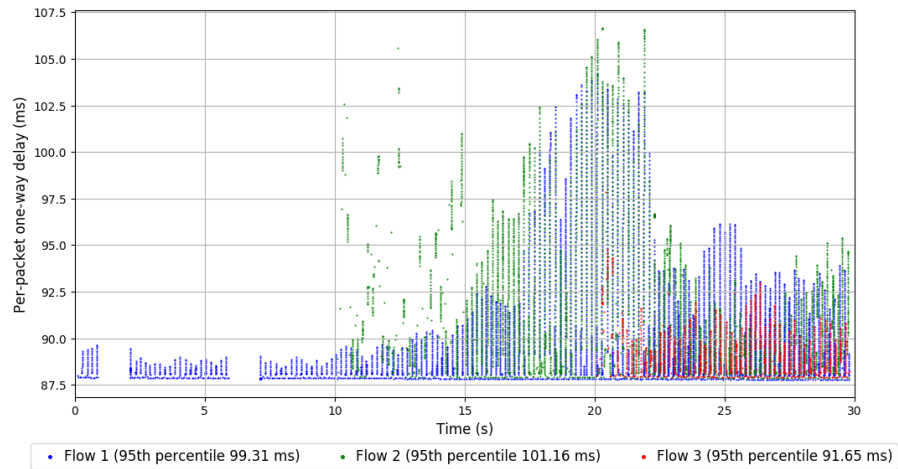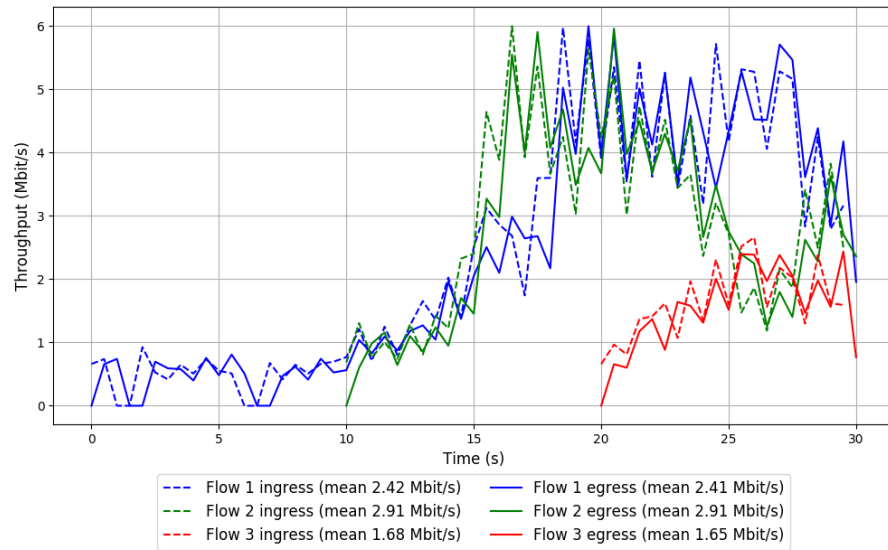
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-12-02 15:36:30
End at: 2018-12-02 15:37:00
Local clock offset: -6.747 ms
Remote clock offset: -38.737 ms

# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.64 Mbit/s
95th percentile per-packet one-way delay: 94.039 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 2.37 Mbit/s
95th percentile per-packet one-way delay: 93.903 ms
Loss rate: 1.26%
-- Flow 2:
Average throughput: 4.17 Mbit/s
95th percentile per-packet one-way delay: 94.272 ms
Loss rate: 1.20%
-- Flow 3:
Average throughput: 1.58 Mbit/s
95th percentile per-packet one-way delay: 88.745 ms
Loss rate: 2.41%
```
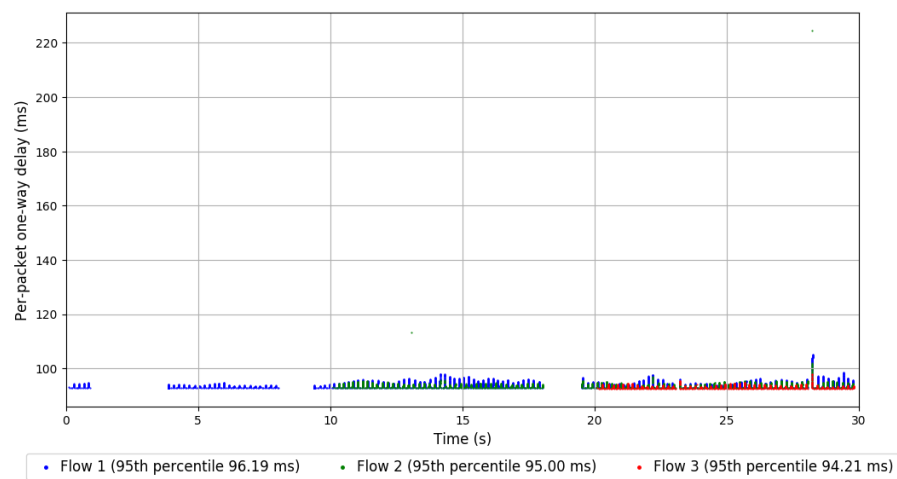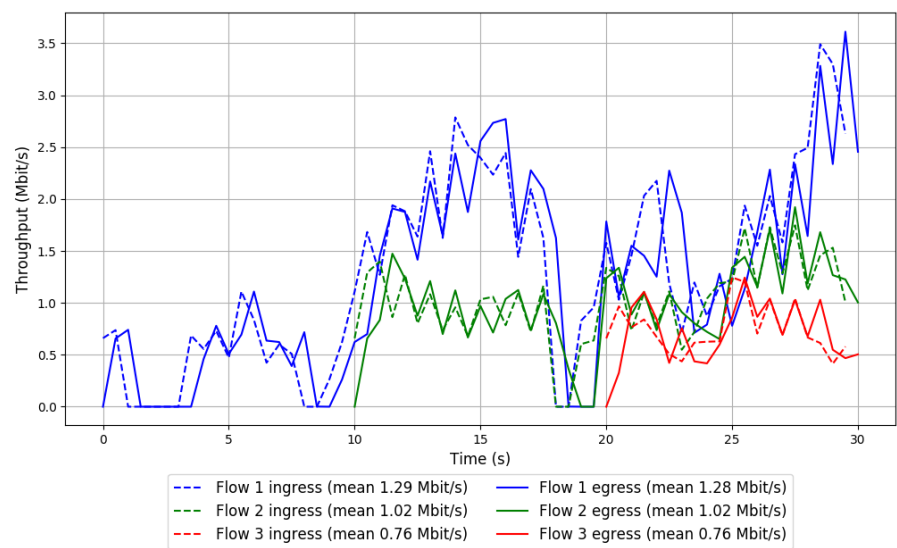
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-12-02 16:01:07
End at: 2018-12-02 16:01:37
Local clock offset: -6.767 ms
Remote clock offset: -46.204 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.88 Mbit/s
95th percentile per-packet one-way delay: 99.833 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 2.41 Mbit/s
95th percentile per-packet one-way delay: 99.315 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 101.160 ms
Loss rate: 1.09%
-- Flow 3:
Average throughput: 1.65 Mbit/s
95th percentile per-packet one-way delay: 91.651 ms
Loss rate: 2.52%
```
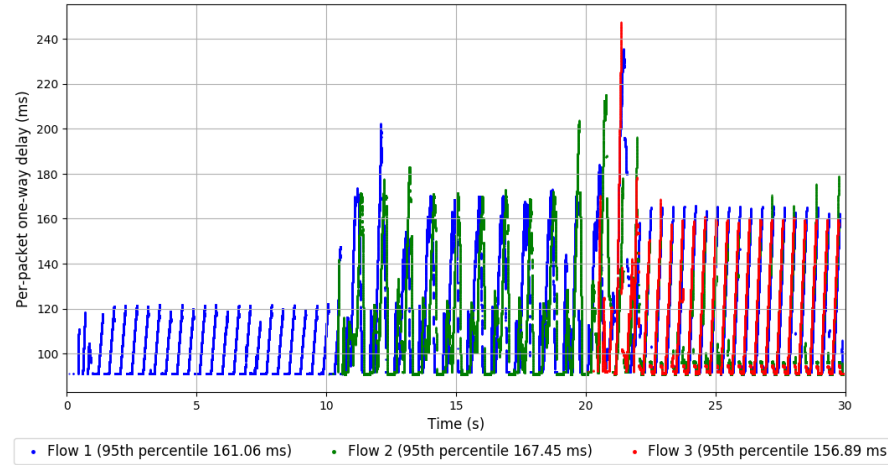
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-12-02 16:25:49
End at: 2018-12-02 16:26:19
Local clock offset: -6.827 ms
Remote clock offset: -57.767 ms


# Below is generated by plot.py at 2018-12-02 16:54:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.21 Mbit/s
95th percentile per-packet one-way delay: 95.777 ms
Loss rate: 1.21%
-- Flow 1:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 96.187 ms
Loss rate: 1.32%
-- Flow 2:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 95.004 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 0.76 Mbit/s
95th percentile per-packet one-way delay: 94.214 ms
Loss rate: 0.60%
```
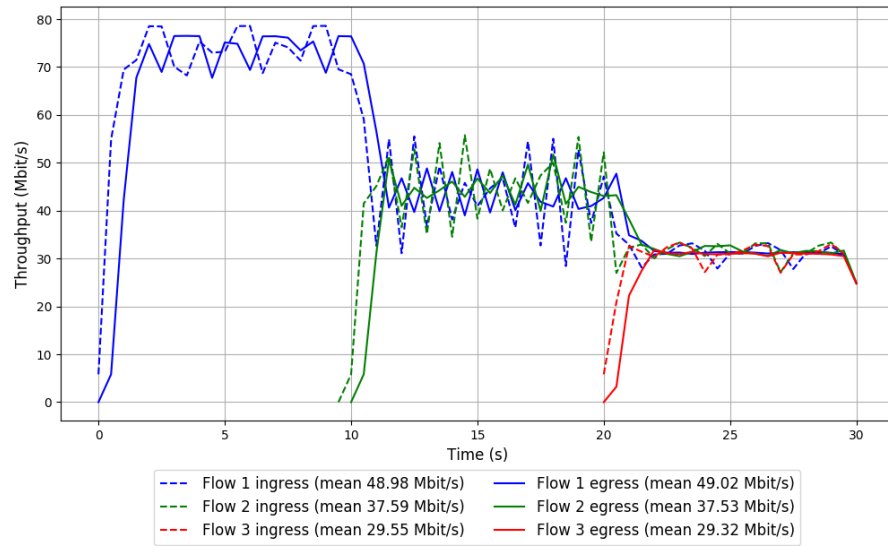
Run 5: Report of Sprout — Data Link

Flow 1 ingress (mean 1.29 Mbit/s) --- Flow 1 egress (mean 1.28 Mbit/s)
Flow 2 ingress (mean 1.02 Mbit/s) --- Flow 2 egress (mean 1.02 Mbit/s)
Flow 3 ingress (mean 0.76 Mbit/s) --- Flow 3 egress (mean 0.76 Mbit/s)

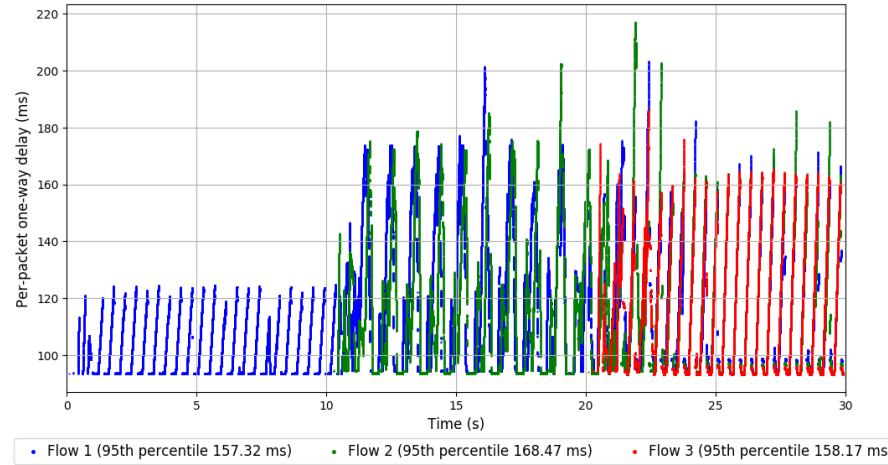Flow 1 (95th percentile 96.19 ms) · Flow 2 (95th percentile 95.00 ms) · Flow 3 (95th percentile 94.21 ms)

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

Start at: 2018-12-02 14:40:04
End at: 2018-12-02 14:40:34
Local clock offset: -1.935 ms
Remote clock offset: -28.281 ms

# Below is generated by plot.py at 2018-12-02 16:55:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.59 Mbit/s
95th percentile per-packet one-way delay: 162.736 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 49.02 Mbit/s
95th percentile per-packet one-way delay: 161.062 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 37.53 Mbit/s
95th percentile per-packet one-way delay: 167.446 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 29.32 Mbit/s
95th percentile per-packet one-way delay: 156.894 ms
Loss rate: 2.57%
```

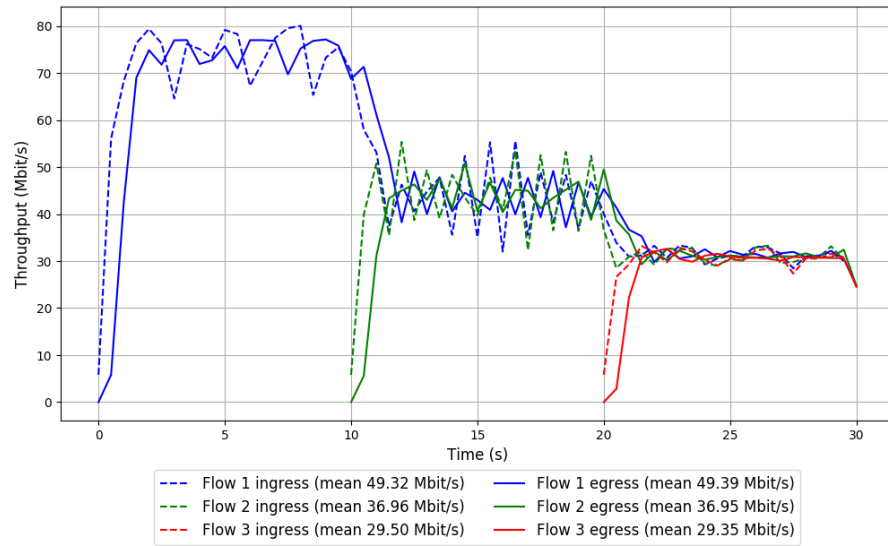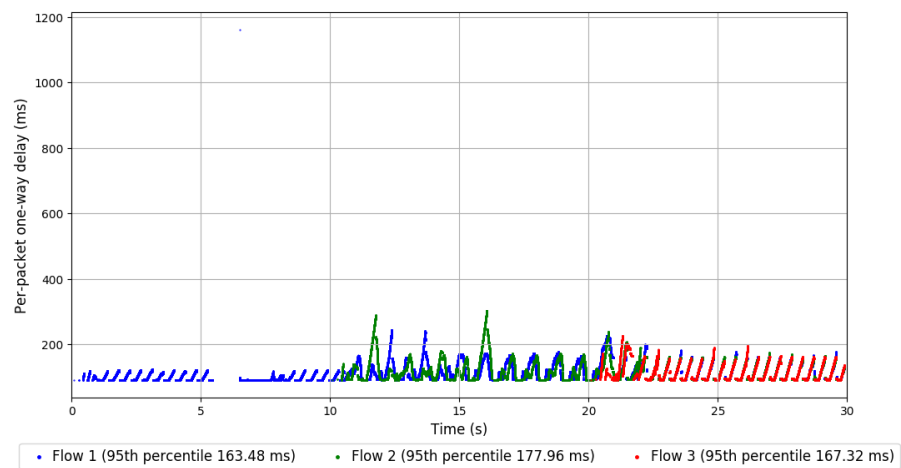Run 1: Report of TaoVA-100x — Data Link

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

Start at: 2018-12-02 15:04:55
End at: 2018-12-02 15:05:25
Local clock offset: -5.488 ms
Remote clock offset: -36.393 ms


# Below is generated by plot.py at 2018-12-02 16:55:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.58 Mbit/s
95th percentile per-packet one-way delay: 160.850 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 49.39 Mbit/s
95th percentile per-packet one-way delay: 157.319 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 168.470 ms
Loss rate: 0.90%
-- Flow 3:
Average throughput: 29.35 Mbit/s
95th percentile per-packet one-way delay: 158.168 ms
Loss rate: 2.25%
```

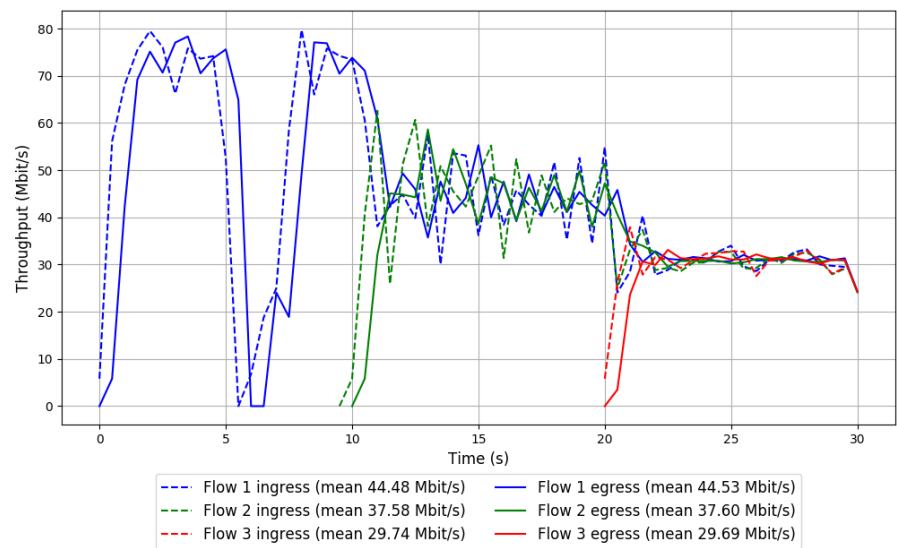## Run 2: Report of TaoVA-100x — Data Link

- Flow 1 ingress (mean 49.32 Mbit/s)
- Flow 1 egress (mean 49.39 Mbit/s)
- Flow 2 ingress (mean 36.96 Mbit/s)
- Flow 2 egress (mean 36.95 Mbit/s)
- Flow 3 ingress (mean 29.50 Mbit/s)
- Flow 3 egress (mean 29.35 Mbit/s)

- Flow 1 (95th percentile 157.32 ms)
- Flow 2 (95th percentile 168.47 ms)
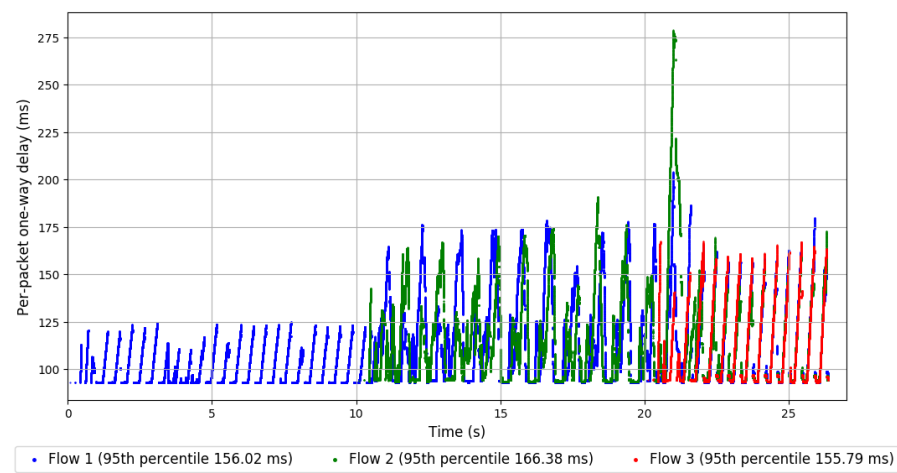- Flow 3 (95th percentile 158.17 ms)

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

Start at: 2018-12-02 15:29:57
End at: 2018-12-02 15:30:27
Local clock offset: -6.714 ms
Remote clock offset: -42.991 ms


# Below is generated by plot.py at 2018-12-02 16:55:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.27 Mbit/s
95th percentile per-packet one-way delay: 167.578 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 44.53 Mbit/s
95th percentile per-packet one-way delay: 163.484 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 37.60 Mbit/s
95th percentile per-packet one-way delay: 177.956 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 29.69 Mbit/s
95th percentile per-packet one-way delay: 167.324 ms
Loss rate: 1.92%
```

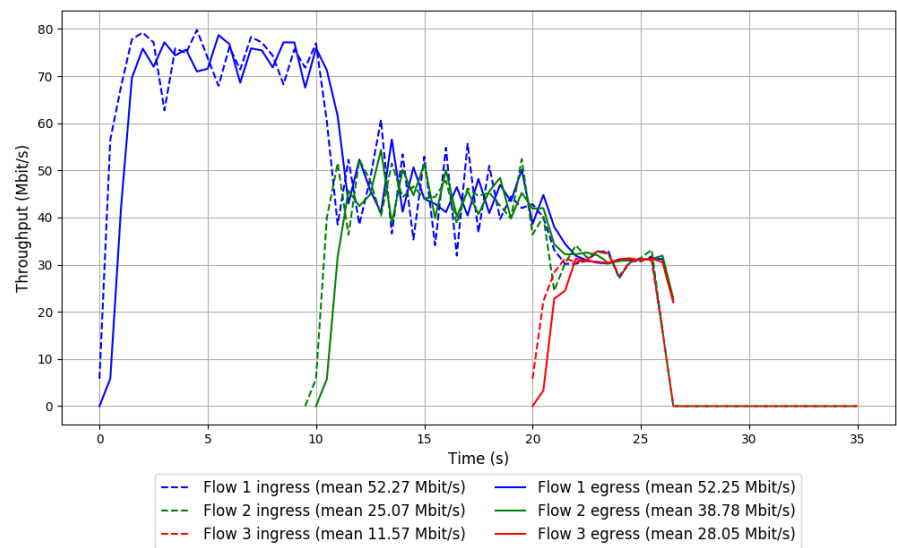## Run 3: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 44.48 Mbit/s) ---- Flow 1 egress (mean 44.53 Mbit/s)
Flow 2 ingress (mean 37.58 Mbit/s) ---- Flow 2 egress (mean 37.60 Mbit/s)
Flow 3 ingress (mean 29.74 Mbit/s) ---- Flow 3 egress (mean 29.69 Mbit/s)

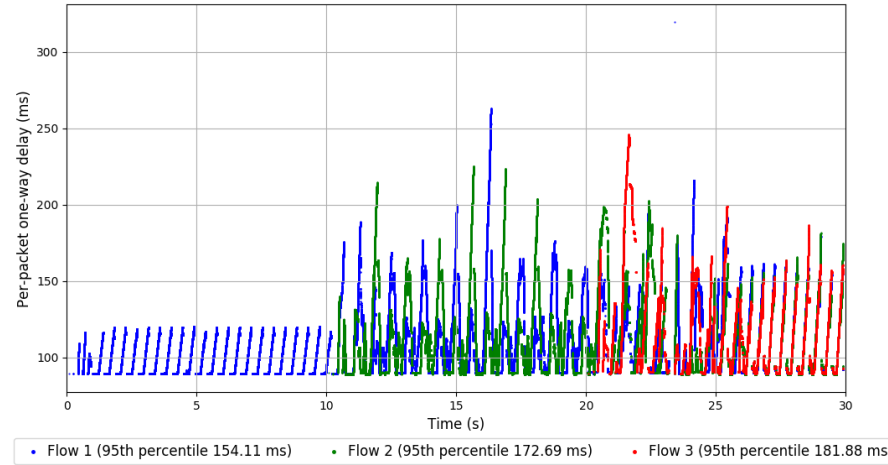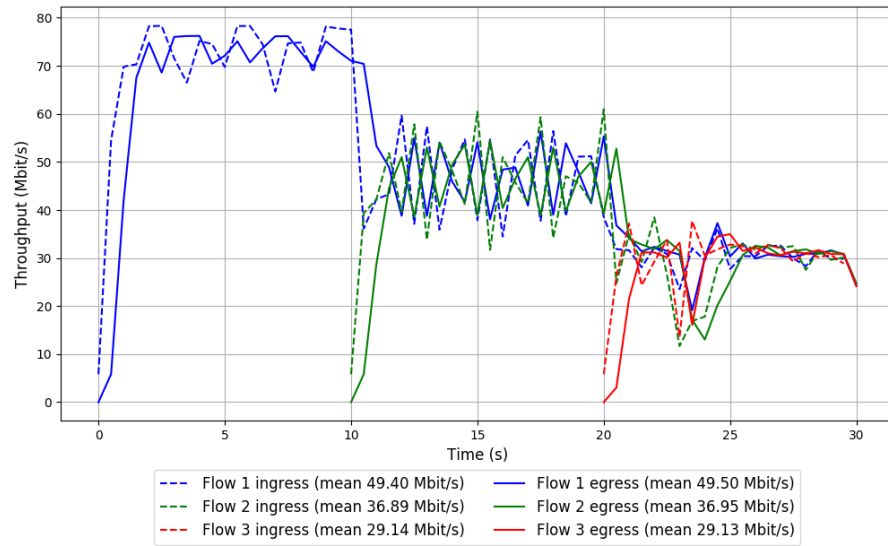Flow 1 (95th percentile 163.48 ms) • Flow 2 (95th percentile 177.96 ms) • Flow 3 (95th percentile 167.32 ms)

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

Start at: 2018-12-02 15:54:26
End at: 2018-12-02 15:54:56
Local clock offset: -6.481 ms
Remote clock offset: -49.609 ms

# Below is generated by plot.py at 2018-12-02 16:55:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 82.94 Mbit/s
95th percentile per-packet one-way delay: 158.955 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 52.25 Mbit/s
95th percentile per-packet one-way delay: 156.021 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 38.78 Mbit/s
95th percentile per-packet one-way delay: 166.376 ms
Loss rate: 0.07%
-- Flow 3:
Average throughput: 28.05 Mbit/s
95th percentile per-packet one-way delay: 155.787 ms
Loss rate: 0.04%
```
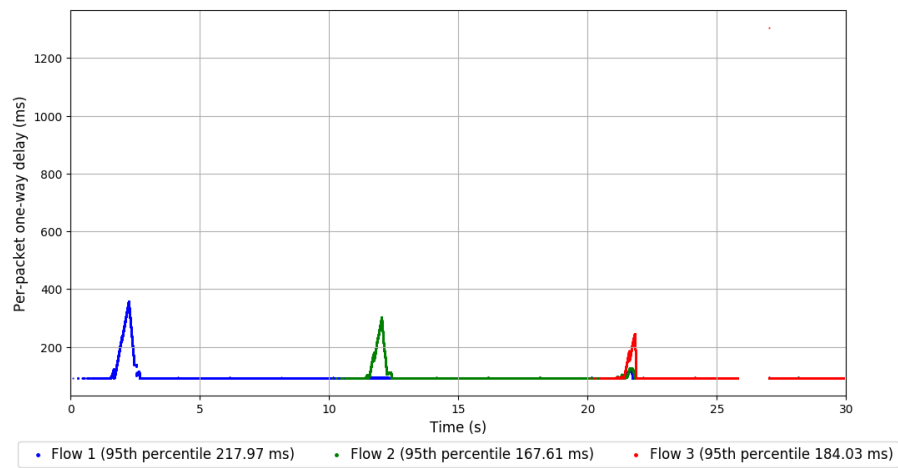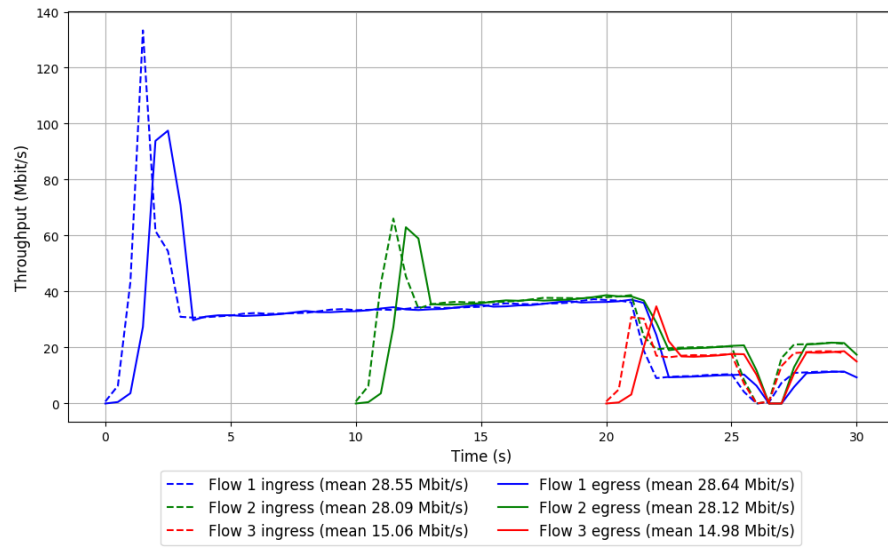
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 52.27 Mbit/s) --- Flow 1 egress (mean 52.25 Mbit/s)
Flow 2 ingress (mean 25.07 Mbit/s) --- Flow 2 egress (mean 38.78 Mbit/s)
Flow 3 ingress (mean 11.57 Mbit/s) --- Flow 3 egress (mean 28.05 Mbit/s)

Flow 1 (95th percentile 156.02 ms) • Flow 2 (95th percentile 166.38 ms) • Flow 3 (95th percentile 155.79 ms)

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

Start at: 2018-12-02 16:18:59
End at: 2018-12-02 16:19:29
Local clock offset: -7.111 ms
Remote clock offset: -52.344 ms

# Below is generated by plot.py at 2018-12-02 16:55:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.62 Mbit/s
95th percentile per-packet one-way delay: 159.087 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 49.50 Mbit/s
95th percentile per-packet one-way delay: 154.107 ms
Loss rate: 0.39%
-- Flow 2:
Average throughput: 36.95 Mbit/s
95th percentile per-packet one-way delay: 172.689 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 29.13 Mbit/s
95th percentile per-packet one-way delay: 181.882 ms
Loss rate: 1.78%
```

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

Flow 1 ingress (mean 49.40 Mbit/s) --- Flow 1 egress (mean 49.50 Mbit/s)
Flow 2 ingress (mean 36.89 Mbit/s) --- Flow 2 egress (mean 36.95 Mbit/s)
Flow 3 ingress (mean 29.14 Mbit/s) --- Flow 3 egress (mean 29.13 Mbit/s)

Flow 1 (95th percentile 154.11 ms)   Flow 2 (95th percentile 172.69 ms)   Flow 3 (95th percentile 181.88 ms)
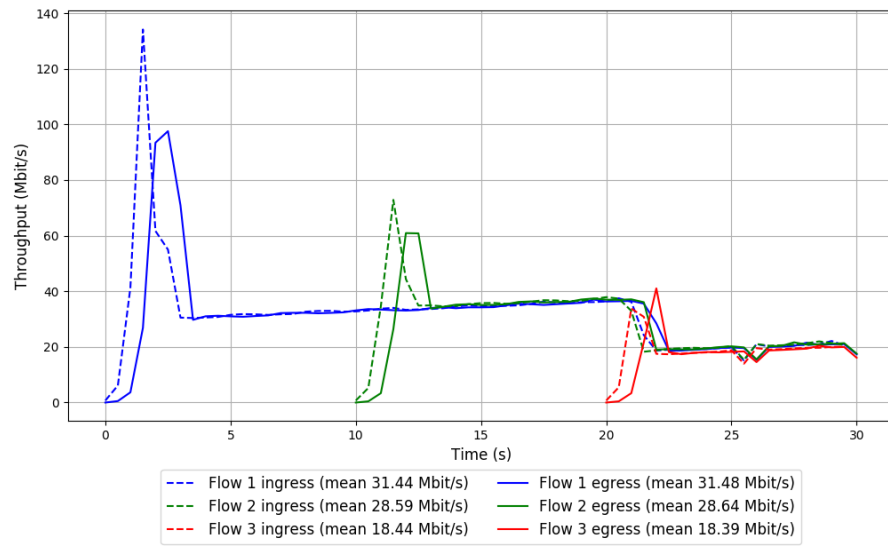
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```
Run 1: Statistics of TCP Vegas

Start at: 2018-12-02 14:57:07
End at: 2018-12-02 14:57:37
Local clock offset: -5.027 ms
Remote clock offset: -34.224 ms


# Below is generated by plot.py at 2018-12-02 16:55:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 52.24 Mbit/s
95th percentile per-packet one-way delay: 191.602 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 28.64 Mbit/s
95th percentile per-packet one-way delay: 217.974 ms
Loss rate: 0.28%
-- Flow 2:
Average throughput: 28.12 Mbit/s
95th percentile per-packet one-way delay: 167.611 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 14.98 Mbit/s
95th percentile per-packet one-way delay: 184.025 ms
Loss rate: 2.26%
```

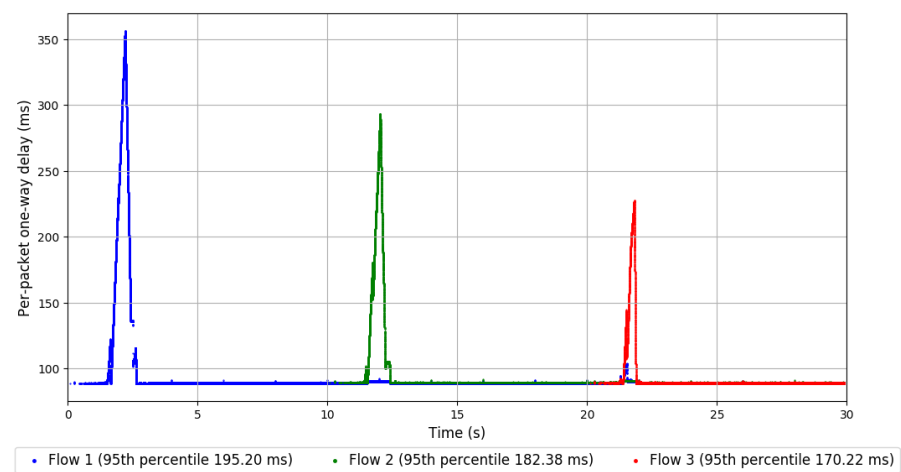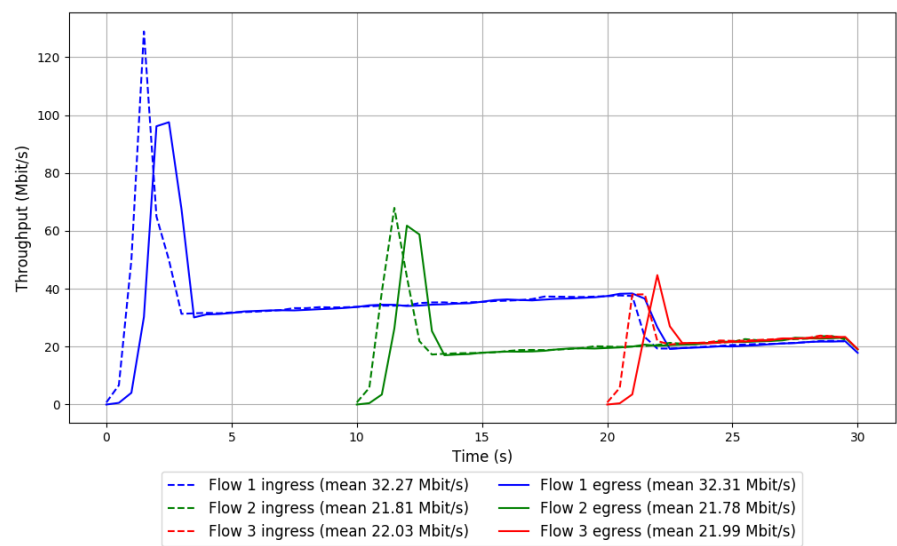Run 1: Report of TCP Vegas — Data Link

```
Run 2: Statistics of TCP Vegas

Start at: 2018-12-02 15:22:12
End at: 2018-12-02 15:22:42
Local clock offset: -6.923 ms
Remote clock offset: -36.891 ms


# Below is generated by plot.py at 2018-12-02 16:55:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 56.54 Mbit/s
95th percentile per-packet one-way delay: 171.911 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 31.48 Mbit/s
95th percentile per-packet one-way delay: 196.673 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 28.64 Mbit/s
95th percentile per-packet one-way delay: 157.696 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 18.39 Mbit/s
95th percentile per-packet one-way delay: 163.333 ms
Loss rate: 1.98%
```
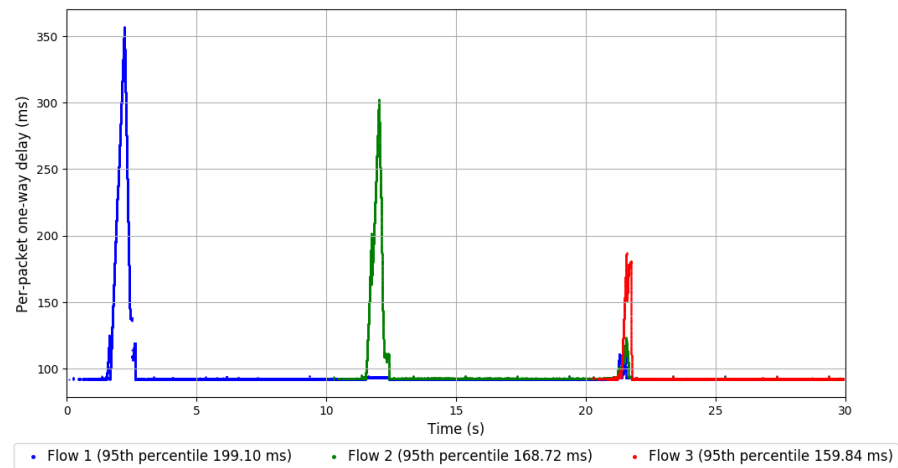
Run 2: Report of TCP Vegas — Data Link

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```
Run 3: Statistics of TCP Vegas

Start at: 2018-12-02 15:46:41
End at: 2018-12-02 15:47:11
Local clock offset: -6.128 ms
Remote clock offset: -43.427 ms


# Below is generated by plot.py at 2018-12-02 16:55:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 54.01 Mbit/s
95th percentile per-packet one-way delay: 186.571 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 32.31 Mbit/s
95th percentile per-packet one-way delay: 195.196 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 21.78 Mbit/s
95th percentile per-packet one-way delay: 182.375 ms
Loss rate: 1.00%
-- Flow 3:
Average throughput: 21.99 Mbit/s
95th percentile per-packet one-way delay: 170.222 ms
Loss rate: 1.94%
```

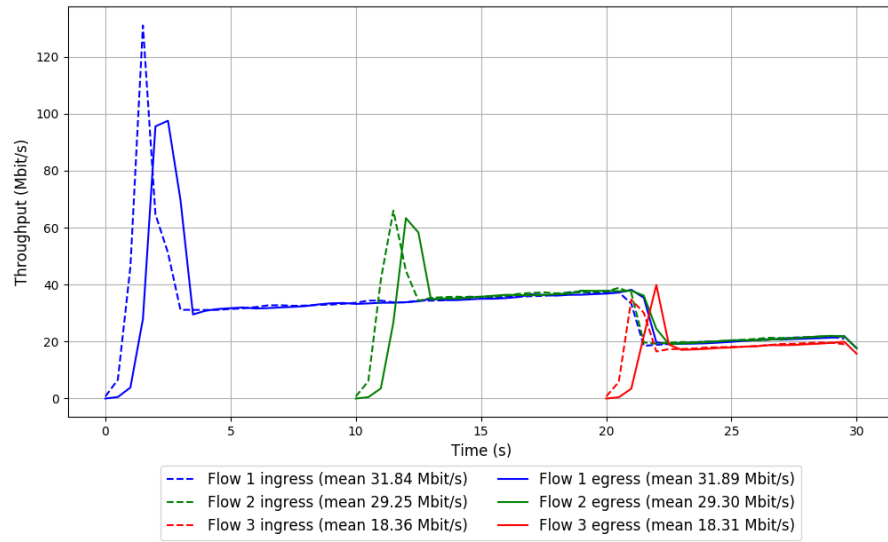Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-12-02 16:11:18
End at: 2018-12-02 16:11:48
Local clock offset: -7.014 ms
Remote clock offset: -52.975 ms


# Below is generated by plot.py at 2018-12-02 16:55:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 57.36 Mbit/s
95th percentile per-packet one-way delay: 176.662 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 31.89 Mbit/s
95th percentile per-packet one-way delay: 199.101 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 29.30 Mbit/s
95th percentile per-packet one-way delay: 168.720 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 18.31 Mbit/s
95th percentile per-packet one-way delay: 159.838 ms
Loss rate: 2.03%
```

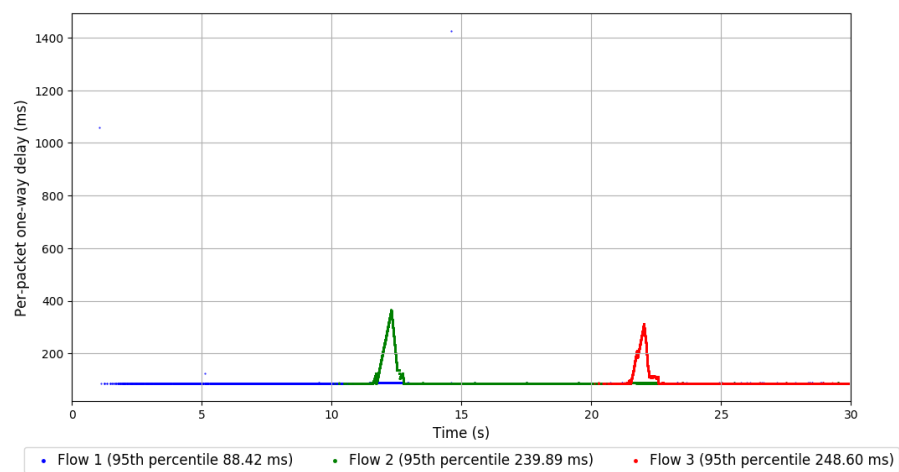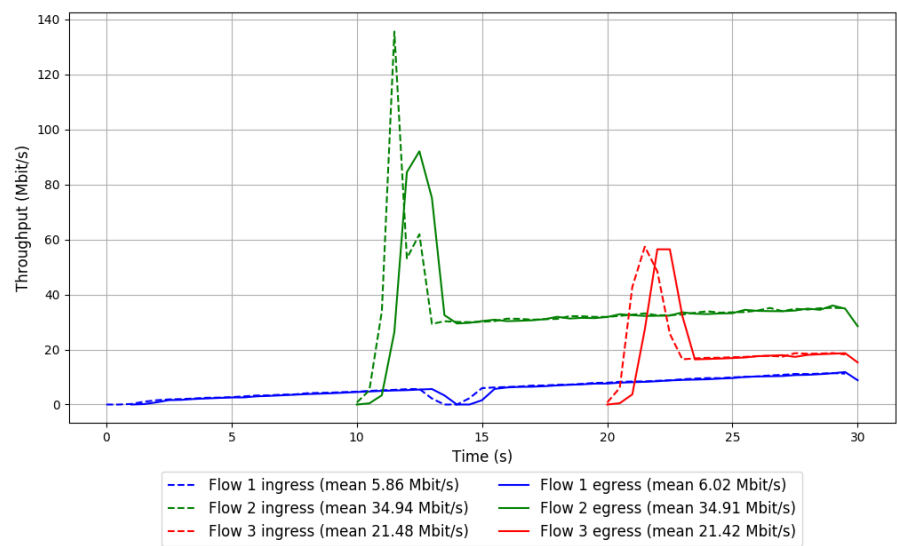Run 4: Report of TCP Vegas — Data Link

```
Run 5: Statistics of TCP Vegas

Start at: 2018-12-02 16:36:12
End at: 2018-12-02 16:36:42
Local clock offset: -7.526 ms
Remote clock offset: -55.555 ms


# Below is generated by plot.py at 2018-12-02 16:55:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 37.26 Mbit/s
95th percentile per-packet one-way delay: 225.462 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 6.02 Mbit/s
95th percentile per-packet one-way delay: 88.420 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 34.91 Mbit/s
95th percentile per-packet one-way delay: 239.887 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 21.42 Mbit/s
95th percentile per-packet one-way delay: 248.600 ms
Loss rate: 1.99%
```

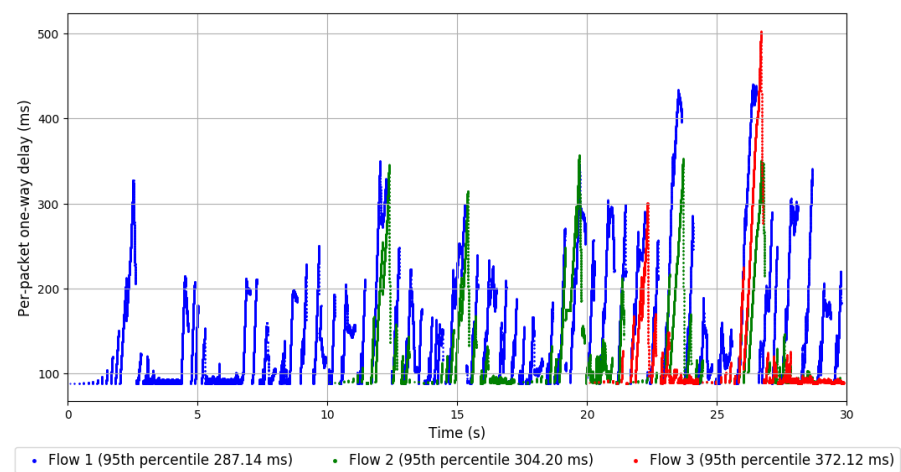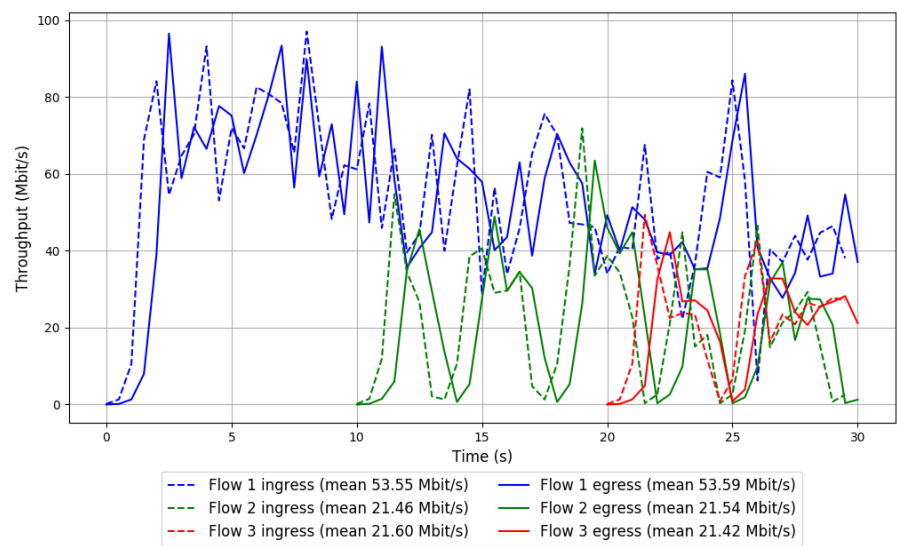## Run 5: Report of TCP Vegas — Data Link

```
Run 1: Statistics of Verus

Start at: 2018-12-02 14:45:31
End at: 2018-12-02 14:46:01
Local clock offset: -1.004 ms
Remote clock offset: -26.781 ms


# Below is generated by plot.py at 2018-12-02 16:55:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 74.64 Mbit/s
95th percentile per-packet one-way delay: 291.297 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 53.59 Mbit/s
95th percentile per-packet one-way delay: 287.140 ms
Loss rate: 0.83%
-- Flow 2:
Average throughput: 21.54 Mbit/s
95th percentile per-packet one-way delay: 304.204 ms
Loss rate: 0.50%
-- Flow 3:
Average throughput: 21.42 Mbit/s
95th percentile per-packet one-way delay: 372.121 ms
Loss rate: 2.58%
```
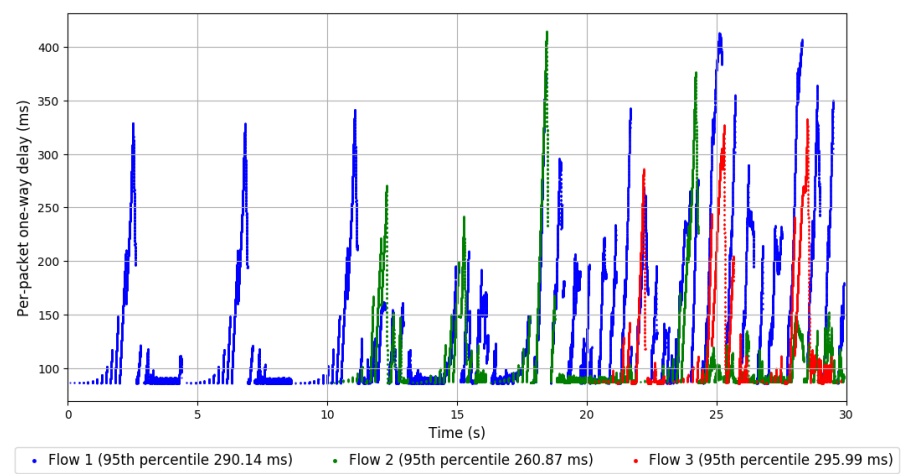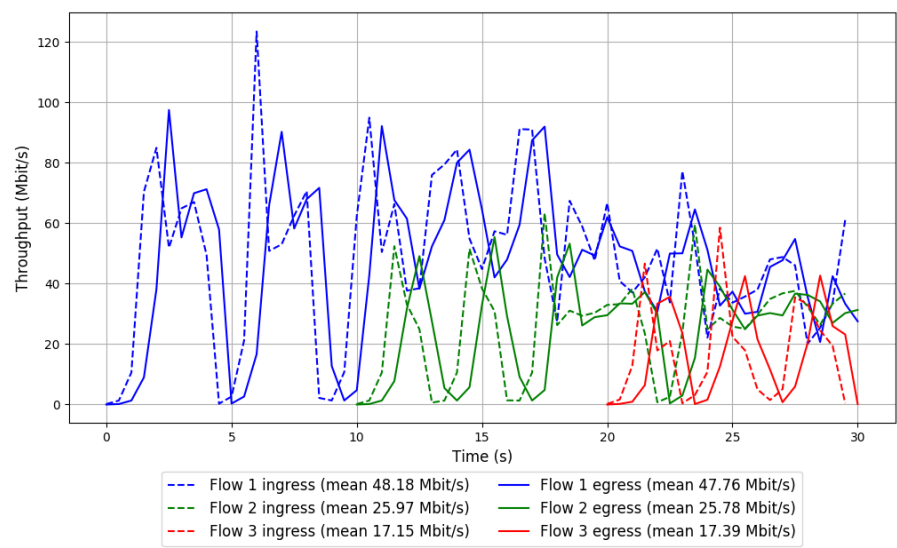
Run 1: Report of Verus — Data Link

Flow 1 ingress (mean 53.55 Mbit/s)   Flow 1 egress (mean 53.59 Mbit/s)
Flow 2 ingress (mean 21.46 Mbit/s)   Flow 2 egress (mean 21.54 Mbit/s)
Flow 3 ingress (mean 21.60 Mbit/s)   Flow 3 egress (mean 21.42 Mbit/s)

Flow 1 (95th percentile 287.14 ms)   Flow 2 (95th percentile 304.20 ms)   Flow 3 (95th percentile 372.12 ms)

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```
Run 2: Statistics of Verus

Start at: 2018-12-02 15:10:40
End at: 2018-12-02 15:11:10
Local clock offset: -6.818 ms
Remote clock offset: -31.599 ms


# Below is generated by plot.py at 2018-12-02 16:56:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.54 Mbit/s
95th percentile per-packet one-way delay: 288.274 ms
Loss rate: 1.38%
-- Flow 1:
Average throughput: 47.76 Mbit/s
95th percentile per-packet one-way delay: 290.136 ms
Loss rate: 1.43%
-- Flow 2:
Average throughput: 25.78 Mbit/s
95th percentile per-packet one-way delay: 260.866 ms
Loss rate: 1.58%
-- Flow 3:
Average throughput: 17.39 Mbit/s
95th percentile per-packet one-way delay: 295.987 ms
Loss rate: 0.41%
```

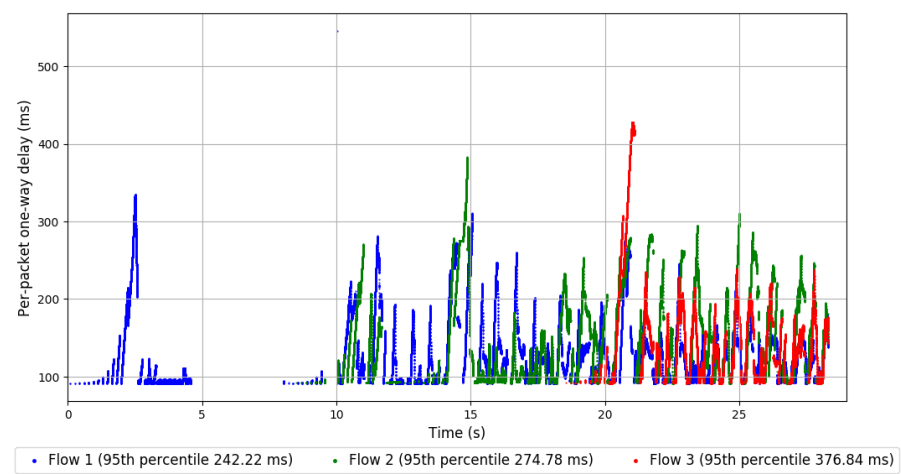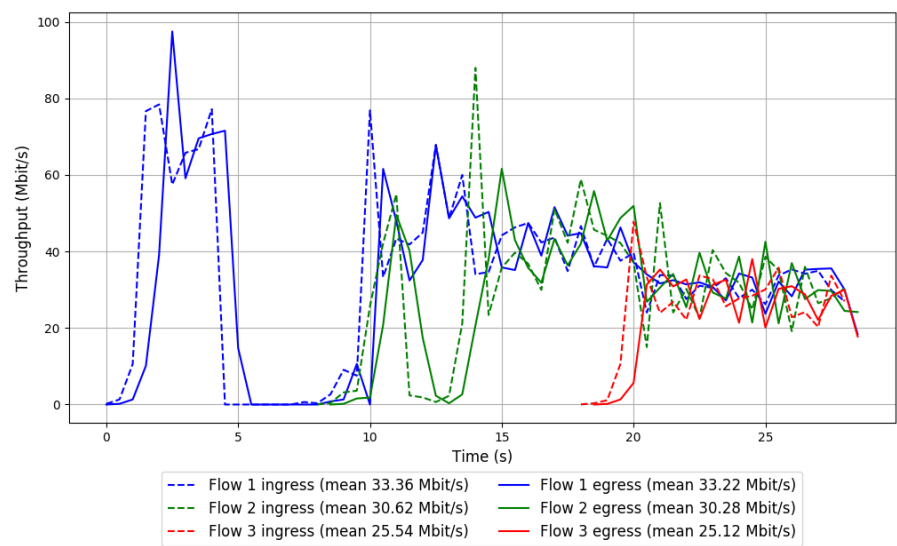## Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-12-02 15:35:13
End at: 2018-12-02 15:35:43
Local clock offset: -5.96 ms
Remote clock offset: -43.079 ms


# Below is generated by plot.py at 2018-12-02 16:56:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 63.15 Mbit/s
95th percentile per-packet one-way delay: 260.211 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 33.22 Mbit/s
95th percentile per-packet one-way delay: 242.217 ms
Loss rate: 1.04%
-- Flow 2:
Average throughput: 30.28 Mbit/s
95th percentile per-packet one-way delay: 274.778 ms
Loss rate: 1.96%
-- Flow 3:
Average throughput: 25.12 Mbit/s
95th percentile per-packet one-way delay: 376.842 ms
Loss rate: 3.35%
```

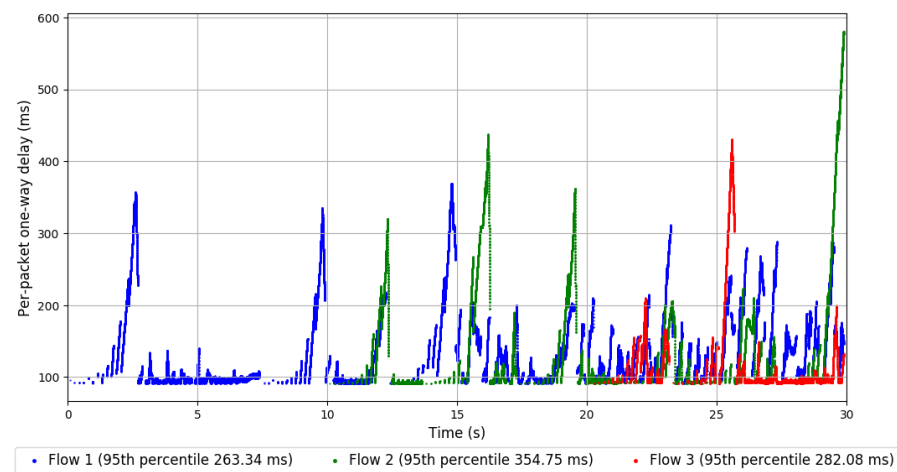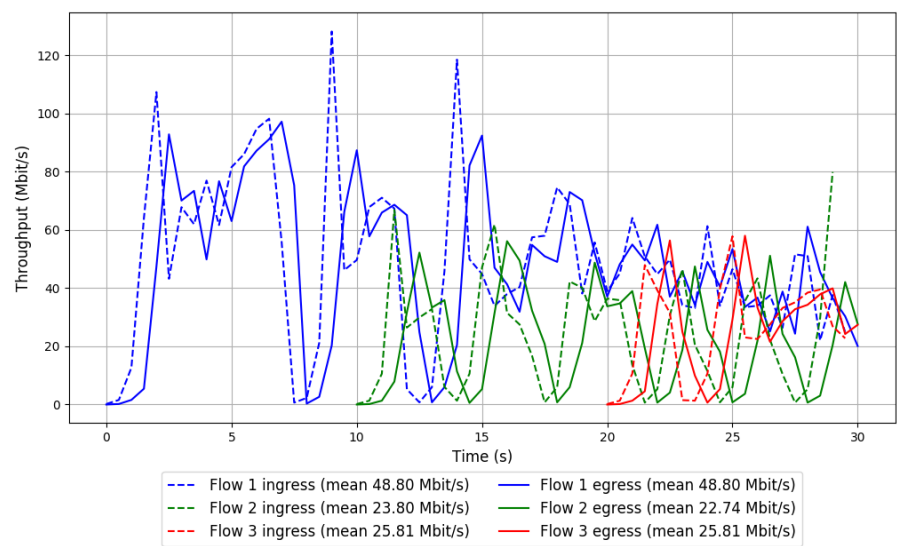# Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-12-02 15:59:49
End at: 2018-12-02 16:00:19
Local clock offset: -7.43 ms
Remote clock offset: -50.022 ms


# Below is generated by plot.py at 2018-12-02 16:56:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 72.38 Mbit/s
95th percentile per-packet one-way delay: 289.923 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 48.80 Mbit/s
95th percentile per-packet one-way delay: 263.343 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 22.74 Mbit/s
95th percentile per-packet one-way delay: 354.750 ms
Loss rate: 2.53%
-- Flow 3:
Average throughput: 25.81 Mbit/s
95th percentile per-packet one-way delay: 282.078 ms
Loss rate: 1.14%
```

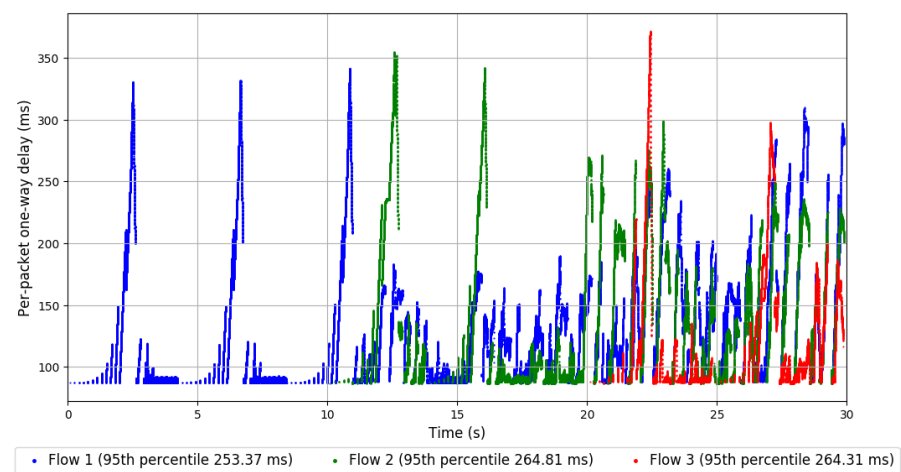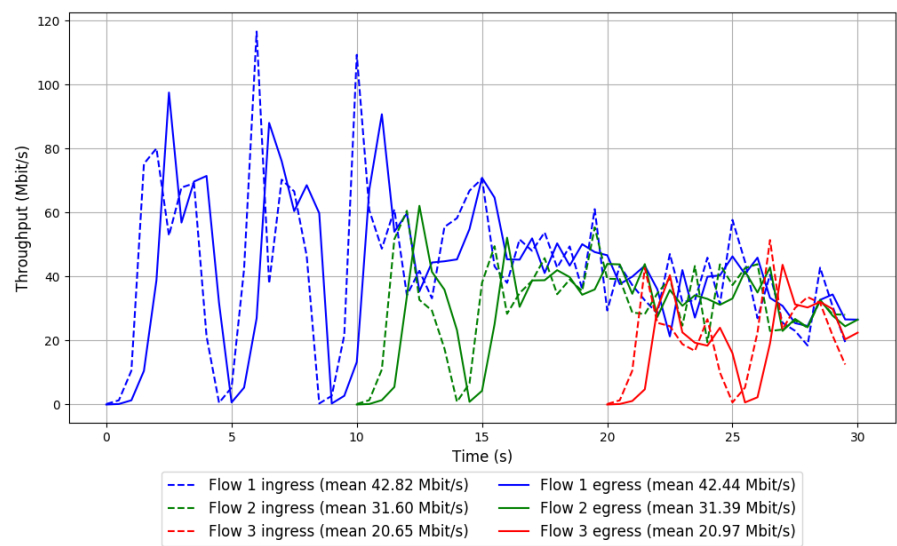## Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-12-02 16:24:13
End at: 2018-12-02 16:24:43
Local clock offset: -6.88 ms
Remote clock offset: -51.493 ms

# Below is generated by plot.py at 2018-12-02 16:56:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 70.15 Mbit/s
95th percentile per-packet one-way delay: 258.904 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 42.44 Mbit/s
95th percentile per-packet one-way delay: 253.369 ms
Loss rate: 0.55%
-- Flow 2:
Average throughput: 31.39 Mbit/s
95th percentile per-packet one-way delay: 264.806 ms
Loss rate: 1.49%
-- Flow 3:
Average throughput: 20.97 Mbit/s
95th percentile per-packet one-way delay: 264.308 ms
Loss rate: 0.27%
```
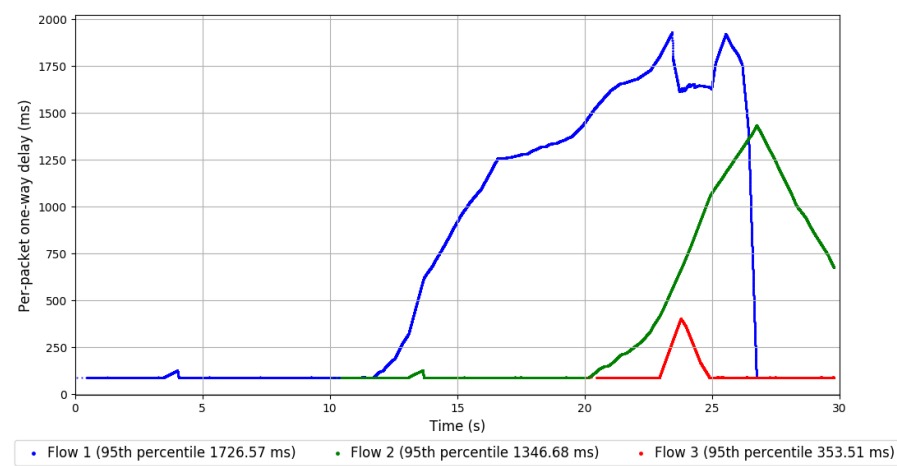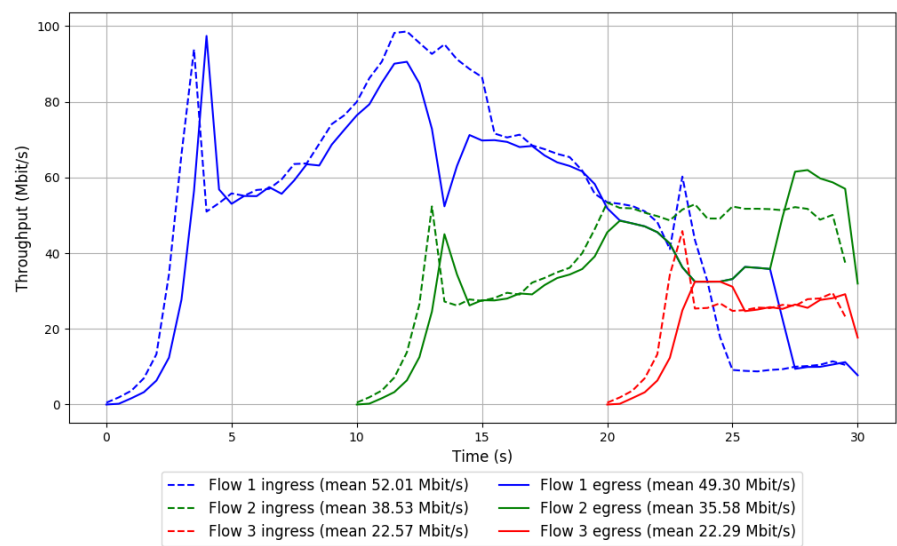
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-12-02 15:03:32
End at: 2018-12-02 15:04:02
Local clock offset: -6.112 ms
Remote clock offset: -30.614 ms


# Below is generated by plot.py at 2018-12-02 16:56:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.18 Mbit/s
95th percentile per-packet one-way delay: 1663.262 ms
Loss rate: 6.33%
-- Flow 1:
Average throughput: 49.30 Mbit/s
95th percentile per-packet one-way delay: 1726.573 ms
Loss rate: 5.77%
-- Flow 2:
Average throughput: 35.58 Mbit/s
95th percentile per-packet one-way delay: 1346.684 ms
Loss rate: 8.46%
-- Flow 3:
Average throughput: 22.29 Mbit/s
95th percentile per-packet one-way delay: 353.506 ms
Loss rate: 2.98%
```

Run 1: Report of PCC-Vivace — Data Link

- Flow 1 ingress (mean 52.01 Mbit/s)
- Flow 1 egress (mean 49.30 Mbit/s)
- Flow 2 ingress (mean 38.53 Mbit/s)
- Flow 2 egress (mean 35.58 Mbit/s)
- Flow 3 ingress (mean 22.57 Mbit/s)
- Flow 3 egress (mean 22.29 Mbit/s)

- Flow 1 (95th percentile 1726.57 ms)
- Flow 2 (95th percentile 1346.68 ms)
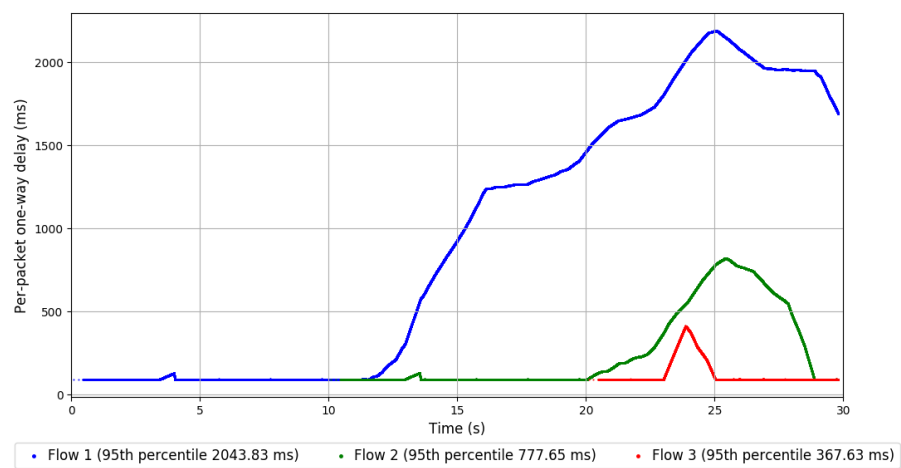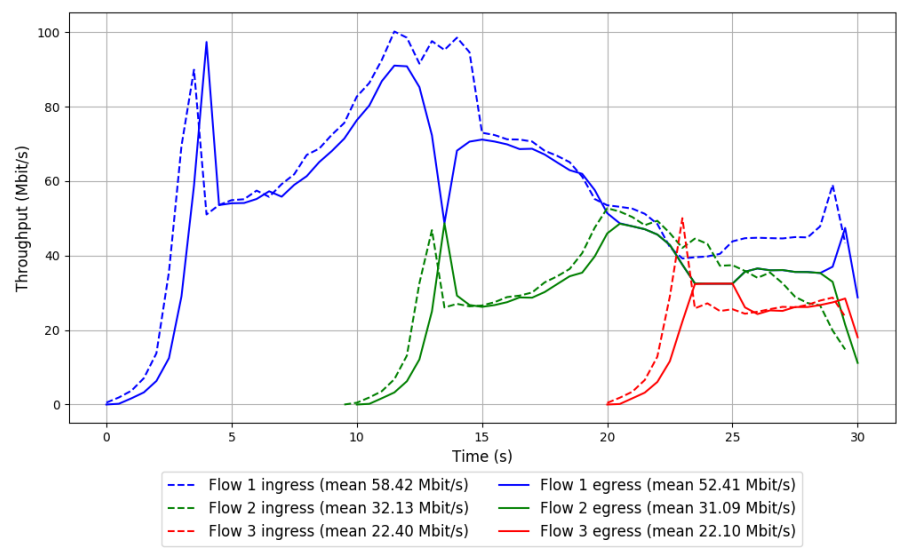- Flow 3 (95th percentile 353.51 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-12-02 15:28:37
End at: 2018-12-02 15:29:08
Local clock offset: -5.958 ms
Remote clock offset: -41.506 ms


# Below is generated by plot.py at 2018-12-02 16:56:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.25 Mbit/s
95th percentile per-packet one-way delay: 1964.630 ms
Loss rate: 8.50%
-- Flow 1:
Average throughput: 52.41 Mbit/s
95th percentile per-packet one-way delay: 2043.828 ms
Loss rate: 10.80%
-- Flow 2:
Average throughput: 31.09 Mbit/s
95th percentile per-packet one-way delay: 777.647 ms
Loss rate: 4.08%
-- Flow 3:
Average throughput: 22.10 Mbit/s
95th percentile per-packet one-way delay: 367.629 ms
Loss rate: 3.09%
```

Run 2: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 58.42 Mbit/s)   Flow 1 egress (mean 52.41 Mbit/s)
Flow 2 ingress (mean 32.13 Mbit/s)   Flow 2 egress (mean 31.09 Mbit/s)
Flow 3 ingress (mean 22.40 Mbit/s)   Flow 3 egress (mean 22.10 Mbit/s)

Flow 1 (95th percentile 2043.83 ms)   Flow 2 (95th percentile 777.65 ms)   Flow 3 (95th percentile 367.63 ms)
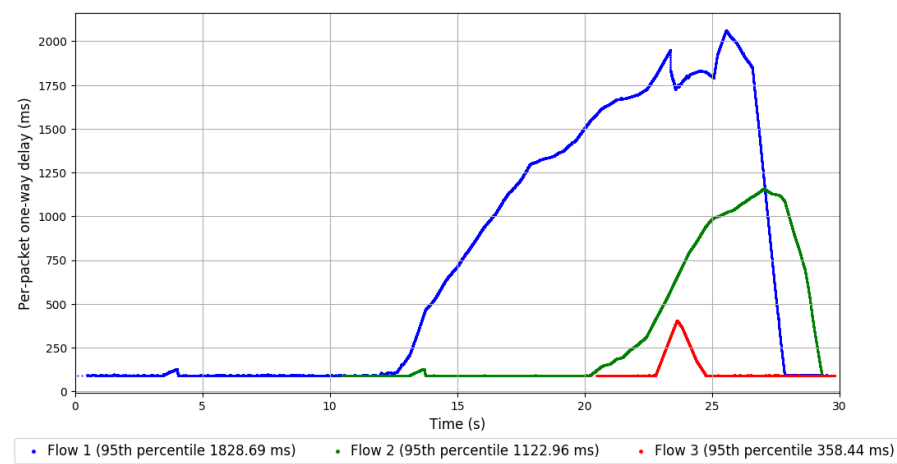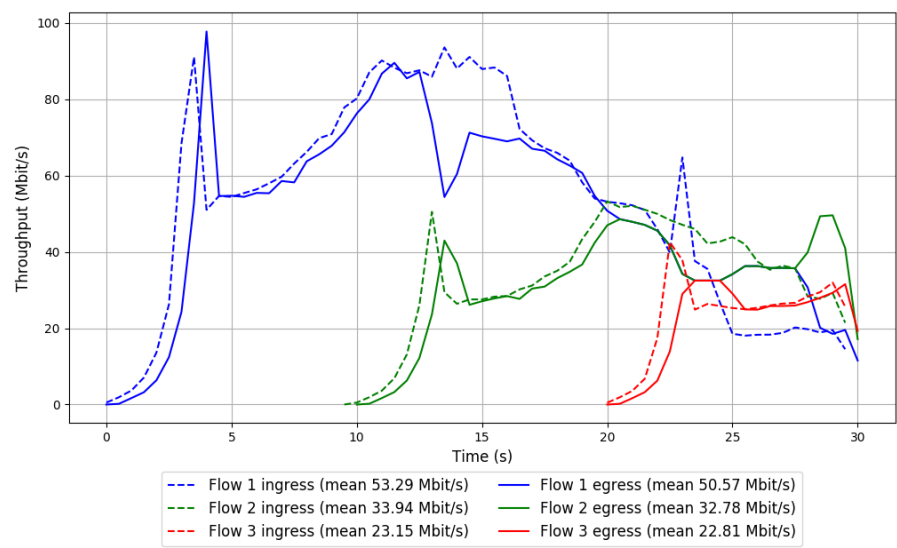
```
Run 3: Statistics of PCC-Vivace

Start at: 2018-12-02 15:53:07
End at: 2018-12-02 15:53:37
Local clock offset: -6.402 ms
Remote clock offset: -48.116 ms


# Below is generated by plot.py at 2018-12-02 16:56:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 79.78 Mbit/s
95th percentile per-packet one-way delay: 1783.481 ms
Loss rate: 5.06%
-- Flow 1:
Average throughput: 50.57 Mbit/s
95th percentile per-packet one-way delay: 1828.688 ms
Loss rate: 5.66%
-- Flow 2:
Average throughput: 32.78 Mbit/s
95th percentile per-packet one-way delay: 1122.962 ms
Loss rate: 4.28%
-- Flow 3:
Average throughput: 22.81 Mbit/s
95th percentile per-packet one-way delay: 358.438 ms
Loss rate: 3.18%
```

Run 3: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 53.29 Mbit/s) — — —   Flow 1 egress (mean 50.57 Mbit/s)
Flow 2 ingress (mean 33.94 Mbit/s) — — —   Flow 2 egress (mean 32.78 Mbit/s)
Flow 3 ingress (mean 23.15 Mbit/s) — — —   Flow 3 egress (mean 22.81 Mbit/s)

• Flow 1 (95th percentile 1828.69 ms)   • Flow 2 (95th percentile 1122.96 ms)   • Flow 3 (95th percentile 358.44 ms)
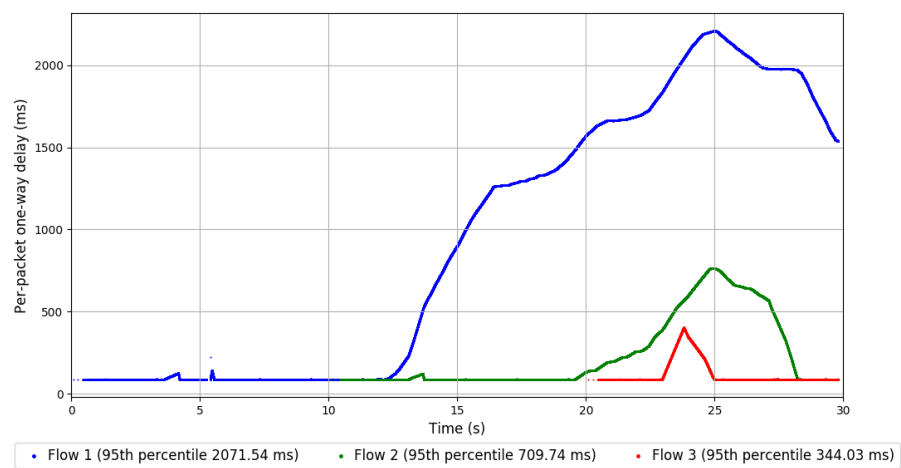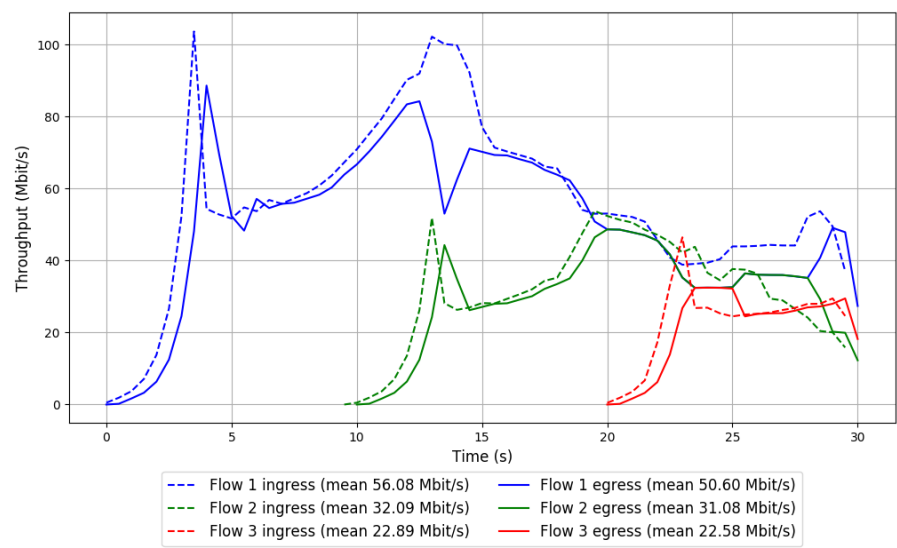
```
Run 4: Statistics of PCC-Vivace

Start at: 2018-12-02 16:17:40
End at: 2018-12-02 16:18:10
Local clock offset: -7.96 ms
Remote clock offset: -51.865 ms


# Below is generated by plot.py at 2018-12-02 16:56:50
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.59 Mbit/s
95th percentile per-packet one-way delay: 1981.609 ms
Loss rate: 8.07%
-- Flow 1:
Average throughput: 50.60 Mbit/s
95th percentile per-packet one-way delay: 2071.544 ms
Loss rate: 10.29%
-- Flow 2:
Average throughput: 31.08 Mbit/s
95th percentile per-packet one-way delay: 709.739 ms
Loss rate: 3.99%
-- Flow 3:
Average throughput: 22.58 Mbit/s
95th percentile per-packet one-way delay: 344.029 ms
Loss rate: 3.10%
```

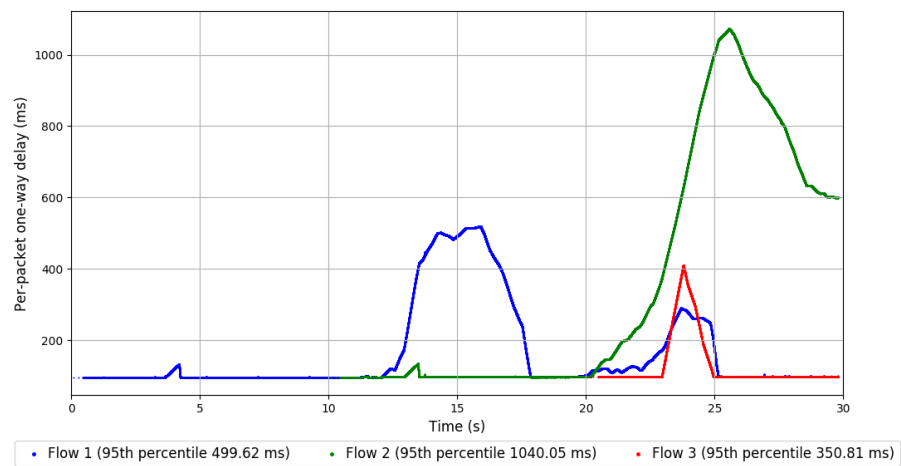## Run 4: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 56.08 Mbit/s) ---- Flow 1 egress (mean 50.60 Mbit/s) ——
Flow 2 ingress (mean 32.09 Mbit/s) ---- Flow 2 egress (mean 31.08 Mbit/s) ——
Flow 3 ingress (mean 22.89 Mbit/s) ---- Flow 3 egress (mean 22.58 Mbit/s) ——

Flow 1 (95th percentile 2071.54 ms)   Flow 2 (95th percentile 709.74 ms)   Flow 3 (95th percentile 344.03 ms)
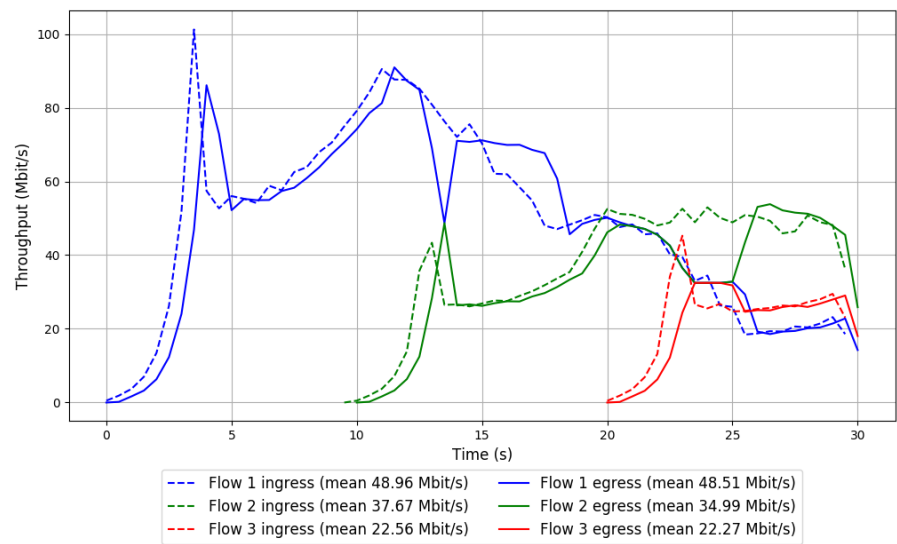
```
Run 5: Statistics of PCC-Vivace

Start at: 2018-12-02 16:42:50
End at: 2018-12-02 16:43:20
Local clock offset: -6.813 ms
Remote clock offset: -45.978 ms


# Below is generated by plot.py at 2018-12-02 16:56:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 78.99 Mbit/s
95th percentile per-packet one-way delay: 874.802 ms
Loss rate: 3.60%
-- Flow 1:
Average throughput: 48.51 Mbit/s
95th percentile per-packet one-way delay: 499.624 ms
Loss rate: 1.48%
-- Flow 2:
Average throughput: 34.99 Mbit/s
95th percentile per-packet one-way delay: 1040.050 ms
Loss rate: 7.92%
-- Flow 3:
Average throughput: 22.27 Mbit/s
95th percentile per-packet one-way delay: 350.811 ms
Loss rate: 2.99%
```

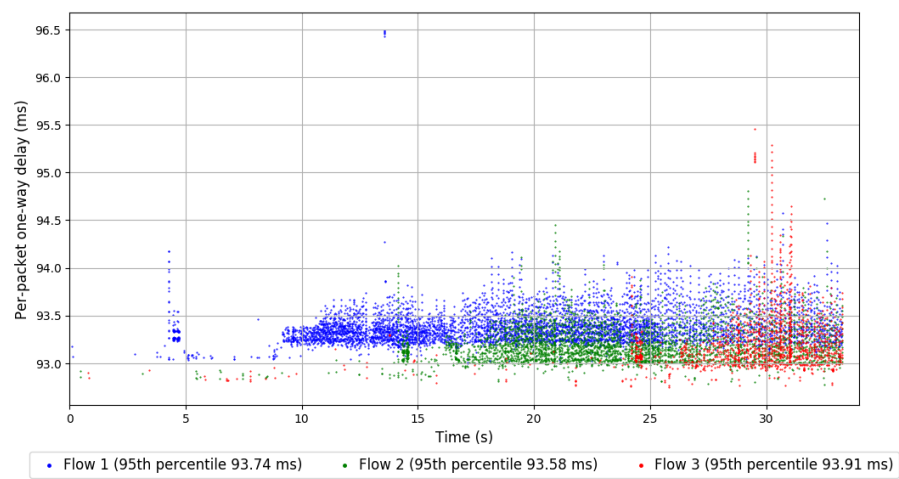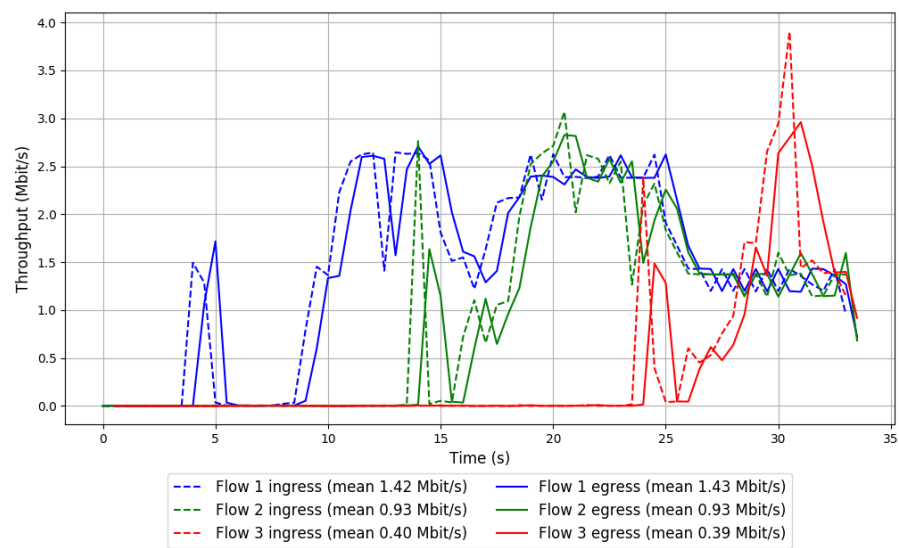## Run 5: Report of PCC-Vivace — Data Link

- - - Flow 1 ingress (mean 48.96 Mbit/s)   —— Flow 1 egress (mean 48.51 Mbit/s)
- - - Flow 2 ingress (mean 37.67 Mbit/s)   —— Flow 2 egress (mean 34.99 Mbit/s)
- - - Flow 3 ingress (mean 22.56 Mbit/s)   —— Flow 3 egress (mean 22.27 Mbit/s)

• Flow 1 (95th percentile 499.62 ms)   • Flow 2 (95th percentile 1040.05 ms)   • Flow 3 (95th percentile 350.81 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-12-02 14:58:23
End at: 2018-12-02 14:58:53
Local clock offset: -4.537 ms
Remote clock offset: -34.561 ms


# Below is generated by plot.py at 2018-12-02 16:56:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.73 Mbit/s
95th percentile per-packet one-way delay: 93.714 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 1.43 Mbit/s
95th percentile per-packet one-way delay: 93.743 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 93.582 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 93.907 ms
Loss rate: 1.76%
```

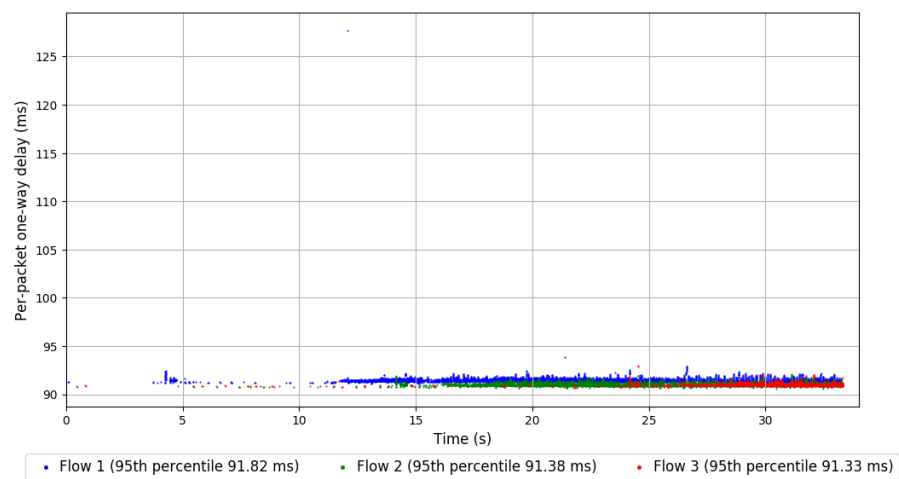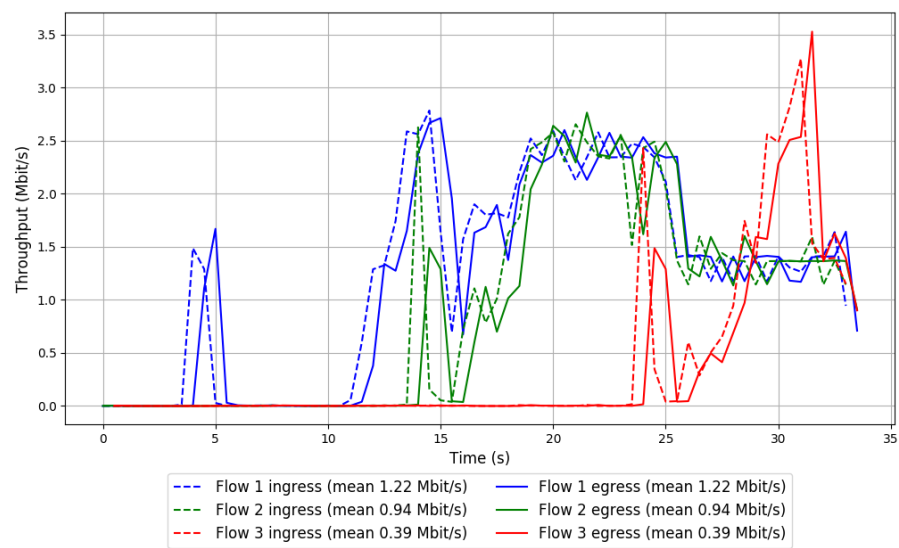## Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-12-02 15:23:28
End at: 2018-12-02 15:23:58
Local clock offset: -6.872 ms
Remote clock offset: -40.112 ms


# Below is generated by plot.py at 2018-12-02 16:56:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.52 Mbit/s
95th percentile per-packet one-way delay: 91.710 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 91.820 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.94 Mbit/s
95th percentile per-packet one-way delay: 91.381 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 91.333 ms
Loss rate: 1.87%
```

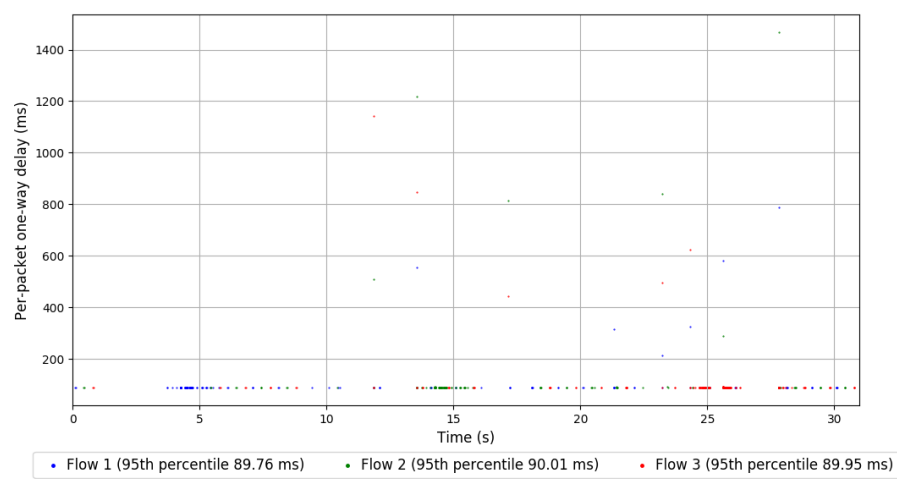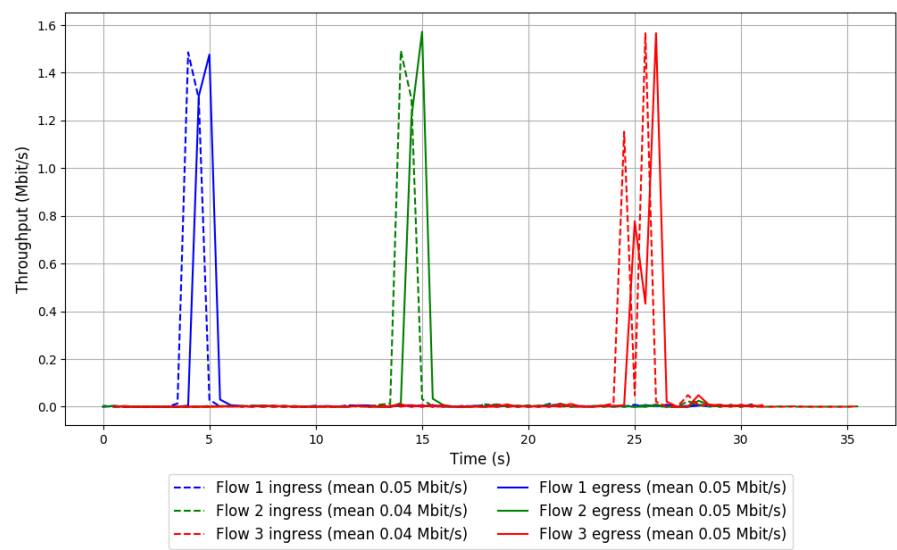Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-12-02 15:47:57
End at: 2018-12-02 15:48:27
Local clock offset: -6.161 ms
Remote clock offset: -43.742 ms


# Below is generated by plot.py at 2018-12-02 16:56:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 89.897 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 89.760 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 90.013 ms
Loss rate: 0.10%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 89.954 ms
Loss rate: 0.11%
```

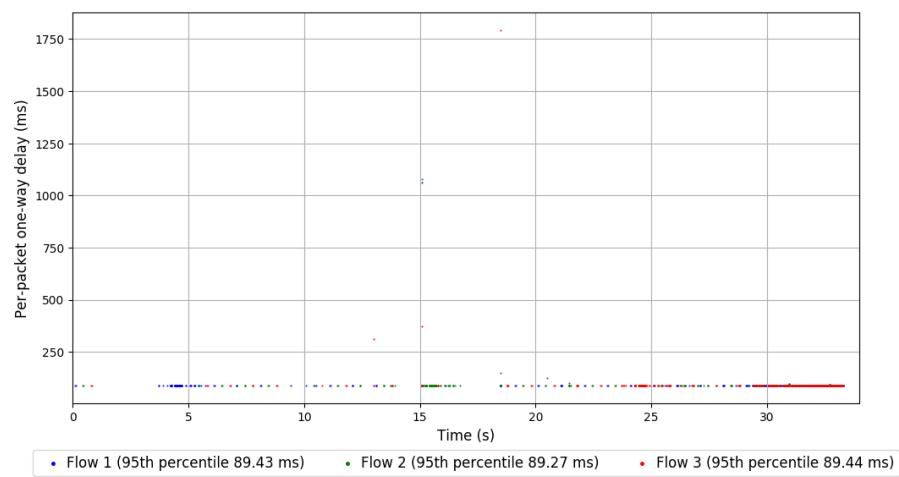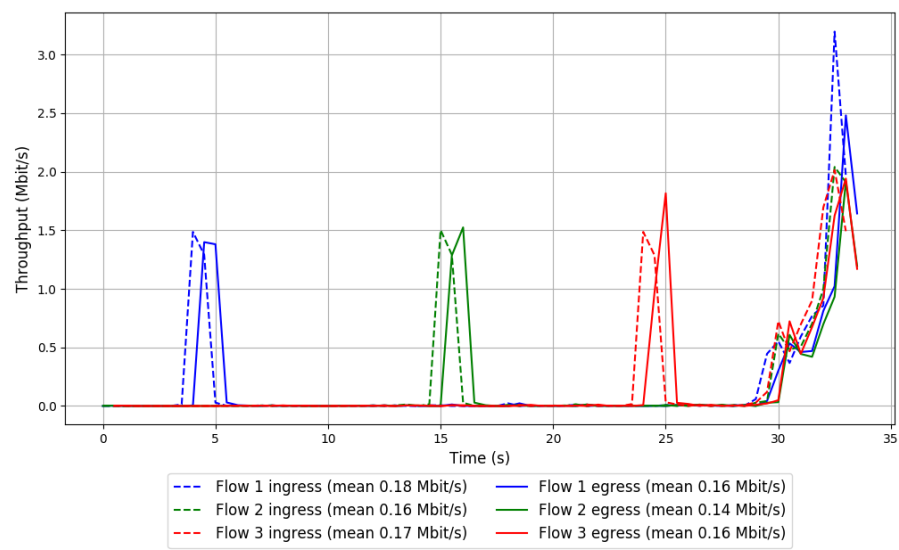Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-12-02 16:12:34
End at: 2018-12-02 16:13:04
Local clock offset: -7.13 ms
Remote clock offset: -50.259 ms


# Below is generated by plot.py at 2018-12-02 16:56:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.46 Mbit/s
95th percentile per-packet one-way delay: 89.407 ms
Loss rate: 8.02%
-- Flow 1:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 89.433 ms
Loss rate: 8.79%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 89.270 ms
Loss rate: 10.26%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 89.442 ms
Loss rate: 5.13%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-12-02 16:37:28
End at: 2018-12-02 16:37:58
Local clock offset: -7.529 ms
Remote clock offset: -54.884 ms


# Below is generated by plot.py at 2018-12-02 16:56:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1.84 Mbit/s
95th percentile per-packet one-way delay: 86.700 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 0.73 Mbit/s
95th percentile per-packet one-way delay: 86.783 ms
Loss rate: 0.94%
-- Flow 2:
Average throughput: 0.75 Mbit/s
95th percentile per-packet one-way delay: 86.534 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 86.739 ms
Loss rate: 1.80%
```

Run 5: Report of WebRTC media — Data Link