Pantheon Report

Generated at 2018-09-11 06:45:13 (UTC).

Data path: GCE Iowa on ens4 (*remote*) →GCE Sydney on ens4 (*local*).

Repeated the test of 18 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 time.google.com and have been applied to correct the timestamps in logs.
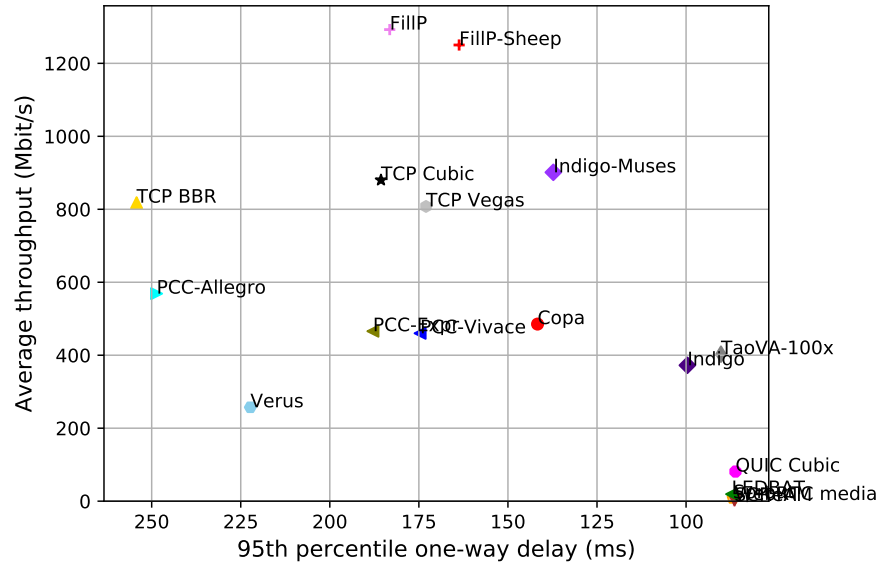
```
System info:
Linux 4.15.0-1018-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 190986 254651 381972

Git summary:
branch: muses @ f30bceca2aec2ef14a3cf71e25642f4a30905a03
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ cbfce6db5ff5740dafe1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
 M receiver/src/buffer.h
 M receiver/src/core.cpp
 M sender/src/buffer.h
 M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
 M src/ScreamClient
 M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
 M src/examples/cellsim.cc
 M src/examples/sproutbt2.cc
 M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
 M src/verus.hpp
```
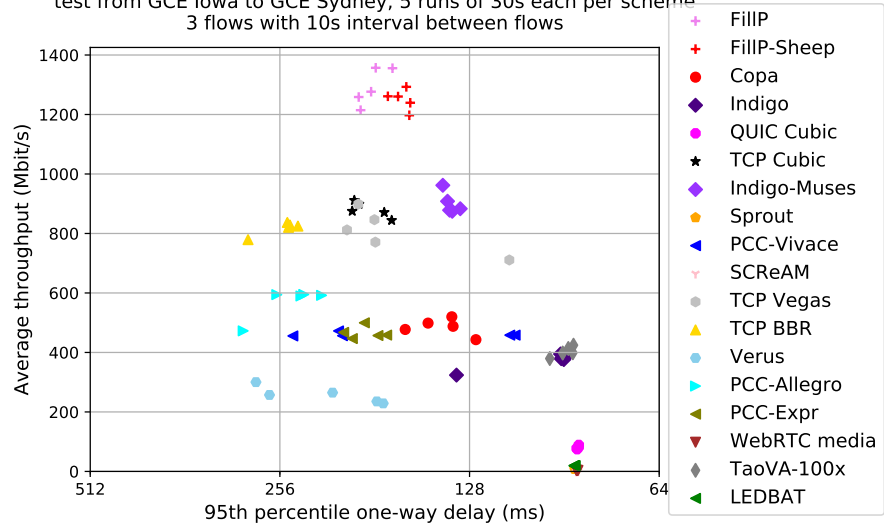
```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from GCE Iowa to GCE Sydney, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)

test from GCE Iowa to GCE Sydney, 5 runs of 30s each per scheme
3 flows with 10s interval between flows

3

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	439.59	392.42	358.56	244.65	254.18	228.54	5.77	6.17	6.25
Copa	5	254.77	238.72	219.20	118.18	168.06	145.51	0.54	1.06	2.09
TCP Cubic	5	472.90	429.55	370.56	169.28	190.10	194.04	0.73	1.26	3.18
FillP	5	687.01	647.87	536.14	180.73	177.08	179.76	6.72	6.54	7.19
FillP-Sheep	5	677.37	606.44	521.34	168.20	165.01	139.94	3.42	3.83	3.18
Indigo	5	199.77	180.95	162.68	100.90	93.13	104.31	0.60	0.97	2.12
LEDBAT	5	12.49	8.28	4.02	87.36	86.91	86.99	1.15	1.73	3.51
Indigo-Muses	5	508.72	433.20	327.90	134.00	143.43	133.59	0.67	1.06	2.90
PCC-Allegro	5	317.75	267.90	227.47	236.32	217.34	242.43	5.35	7.60	7.67
PCC-Expr	5	261.24	227.88	164.09	186.92	191.72	180.17	2.03	2.99	3.32
QUIC Cubic	5	50.45	35.62	20.88	85.97	86.03	86.15	0.91	1.54	2.96
SCReAM	5	0.22	0.22	0.22	86.38	86.17	86.29	0.51	0.91	1.77
Sprout	5	4.42	4.05	2.83	86.87	86.68	86.81	0.70	1.19	3.59
TaoVA-100x	5	209.21	197.31	190.49	89.19	91.48	89.63	0.60	0.80	1.85
TCP Vegas	5	449.38	389.56	303.06	177.29	160.31	159.68	0.60	1.15	2.49
Verus	5	160.73	98.50	95.72	229.04	172.25	195.49	5.87	1.47	3.22
PCC-Vivace	5	271.56	204.06	163.34	153.20	138.81	137.62	1.03	1.09	3.25
WebRTC media	5	1.80	1.13	0.41	86.23	86.41	86.20	0.66	1.11	3.15

```
Run 1: Statistics of TCP BBR

Start at: 2018-09-11 01:31:40
End at: 2018-09-11 01:32:10
Local clock offset: 0.203 ms
Remote clock offset: 0.29 ms


# Below is generated by plot.py at 2018-09-11 04:33:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 837.09 Mbit/s
95th percentile per-packet one-way delay: 249.121 ms
Loss rate: 6.08%
-- Flow 1:
Average throughput: 448.57 Mbit/s
95th percentile per-packet one-way delay: 258.877 ms
Loss rate: 8.24%
-- Flow 2:
Average throughput: 389.87 Mbit/s
95th percentile per-packet one-way delay: 241.360 ms
Loss rate: 2.85%
-- Flow 3:
Average throughput: 394.07 Mbit/s
95th percentile per-packet one-way delay: 214.590 ms
Loss rate: 4.66%
```
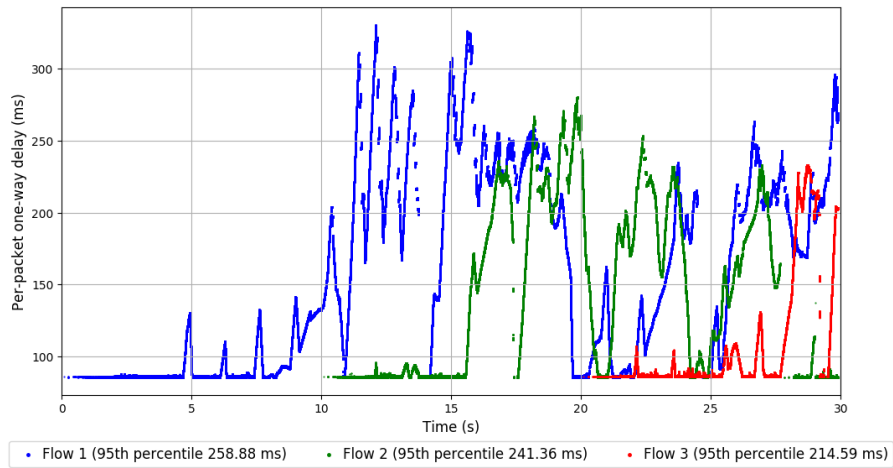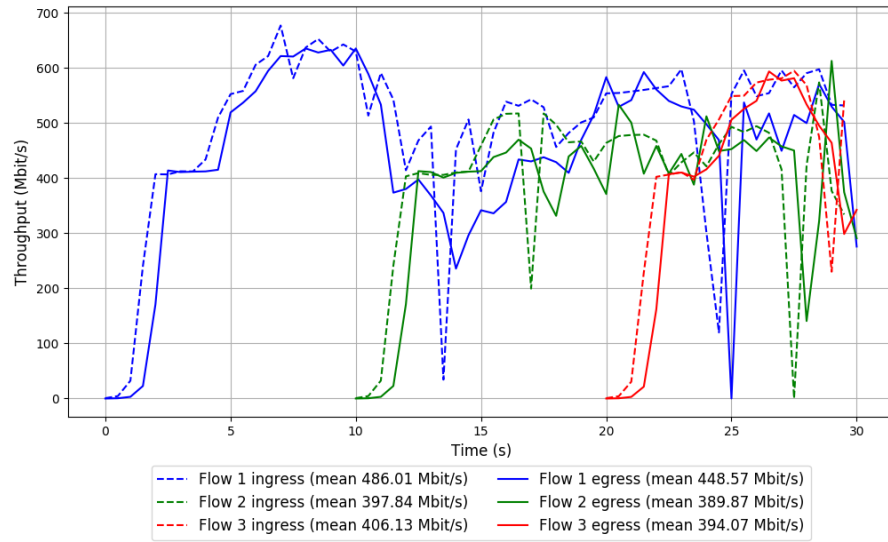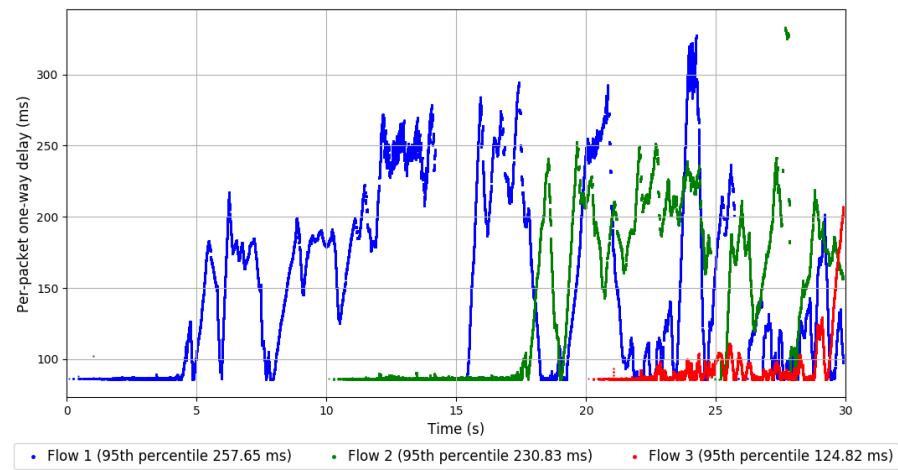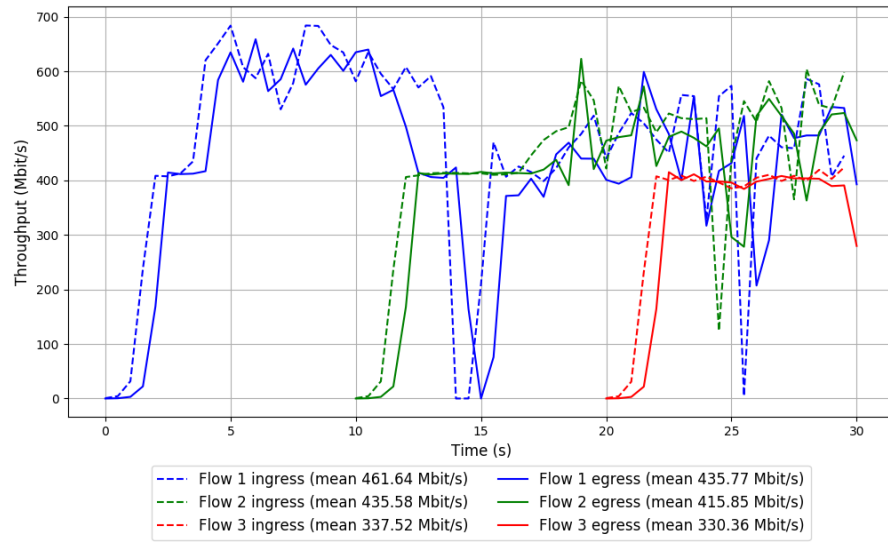
Run 1: Report of TCP BBR — Data Link

Flow 1 ingress (mean 486.01 Mbit/s) --- Flow 1 egress (mean 448.57 Mbit/s)
Flow 2 ingress (mean 397.84 Mbit/s) --- Flow 2 egress (mean 389.87 Mbit/s)
Flow 3 ingress (mean 406.13 Mbit/s) --- Flow 3 egress (mean 394.07 Mbit/s)

Flow 1 (95th percentile 258.88 ms)　　Flow 2 (95th percentile 241.36 ms)　　Flow 3 (95th percentile 214.59 ms)

6

```
Run 2: Statistics of TCP BBR

Start at: 2018-09-11 02:04:01
End at: 2018-09-11 02:04:31
Local clock offset: 0.187 ms
Remote clock offset: 0.133 ms


# Below is generated by plot.py at 2018-09-11 04:33:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 820.52 Mbit/s
95th percentile per-packet one-way delay: 248.017 ms
Loss rate: 5.58%
-- Flow 1:
Average throughput: 435.77 Mbit/s
95th percentile per-packet one-way delay: 257.651 ms
Loss rate: 6.15%
-- Flow 2:
Average throughput: 415.85 Mbit/s
95th percentile per-packet one-way delay: 230.829 ms
Loss rate: 5.36%
-- Flow 3:
Average throughput: 330.36 Mbit/s
95th percentile per-packet one-way delay: 124.819 ms
Loss rate: 3.82%
```
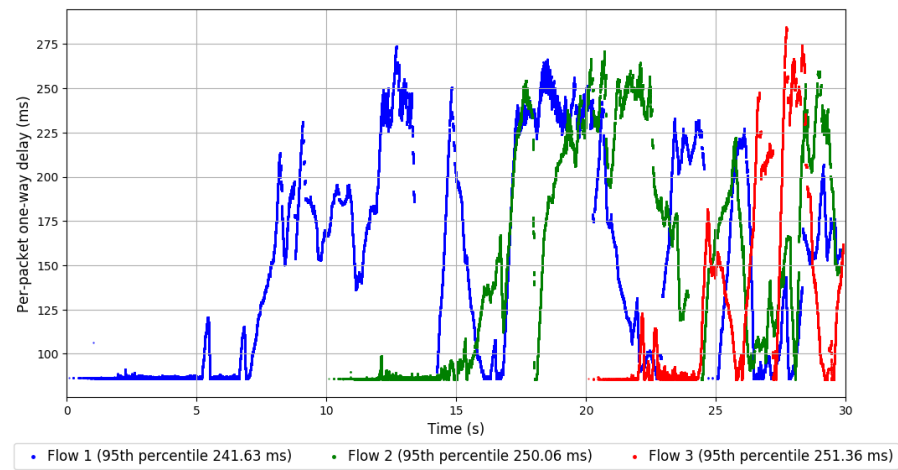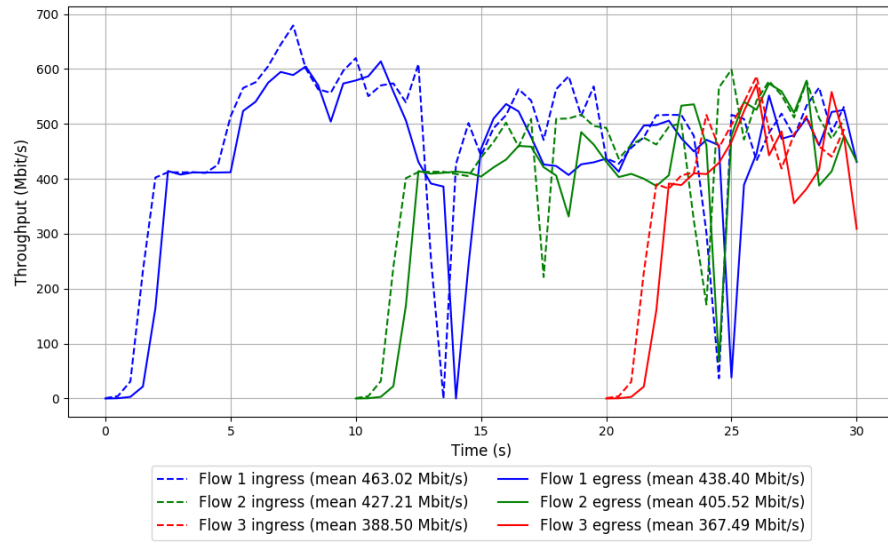
Run 2: Report of TCP BBR — Data Link

Flow 1 ingress (mean 461.64 Mbit/s) --- Flow 1 egress (mean 435.77 Mbit/s)
Flow 2 ingress (mean 435.58 Mbit/s) --- Flow 2 egress (mean 415.85 Mbit/s)
Flow 3 ingress (mean 337.52 Mbit/s) --- Flow 3 egress (mean 330.36 Mbit/s)

Flow 1 (95th percentile 257.65 ms) Flow 2 (95th percentile 230.83 ms) Flow 3 (95th percentile 124.82 ms)
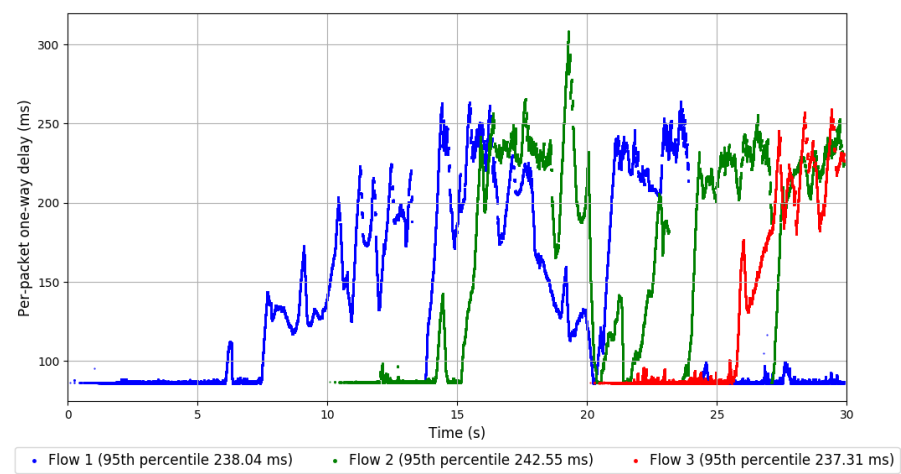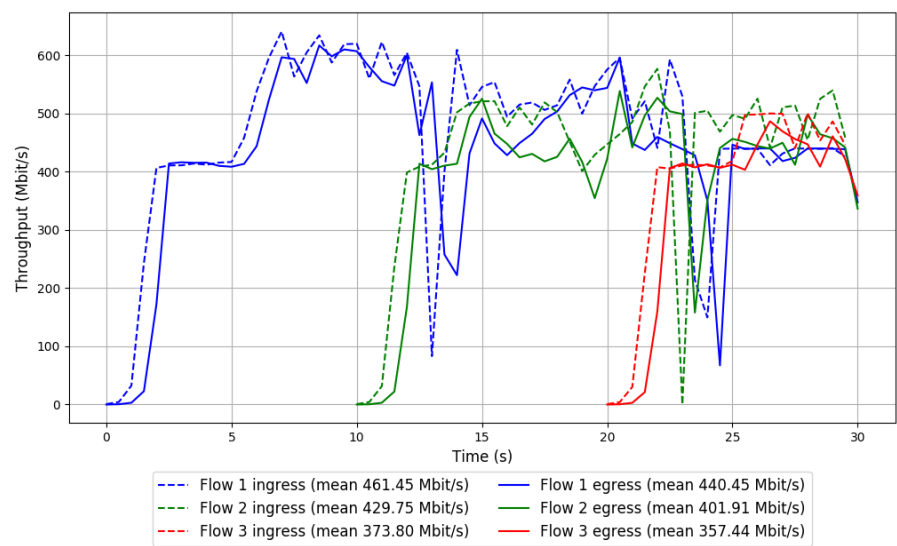
8

```
Run 3: Statistics of TCP BBR

Start at: 2018-09-11 02:36:27
End at: 2018-09-11 02:36:57
Local clock offset: -0.136 ms
Remote clock offset: 0.019 ms


# Below is generated by plot.py at 2018-09-11 04:33:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 828.55 Mbit/s
95th percentile per-packet one-way delay: 246.756 ms
Loss rate: 6.05%
-- Flow 1:
Average throughput: 438.40 Mbit/s
95th percentile per-packet one-way delay: 241.631 ms
Loss rate: 5.86%
-- Flow 2:
Average throughput: 405.52 Mbit/s
95th percentile per-packet one-way delay: 250.061 ms
Loss rate: 5.90%
-- Flow 3:
Average throughput: 367.49 Mbit/s
95th percentile per-packet one-way delay: 251.357 ms
Loss rate: 7.05%
```
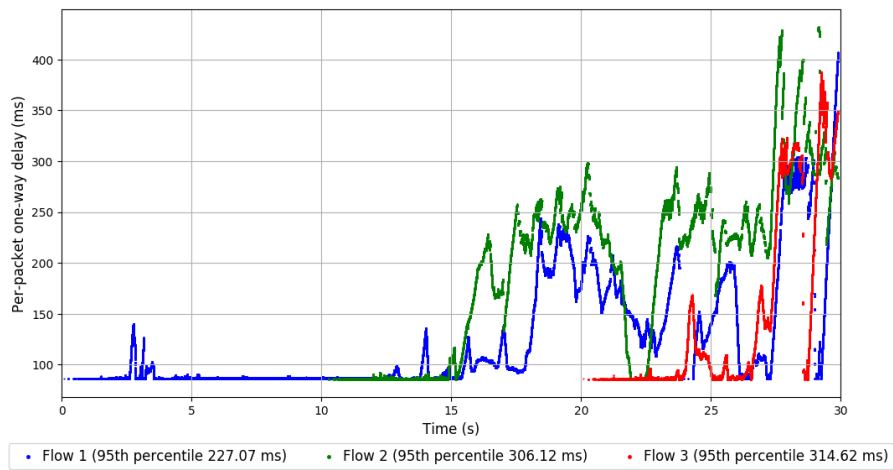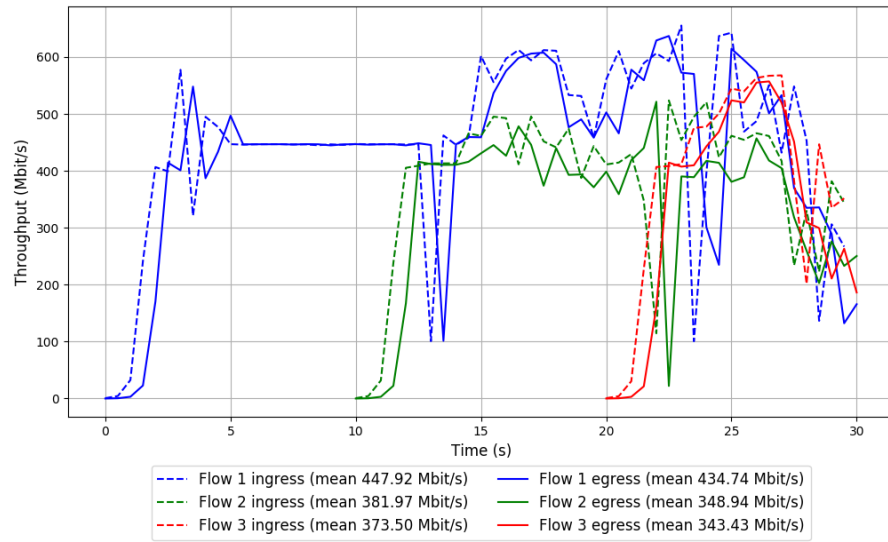
Run 3: Report of TCP BBR — Data Link

Flow 1 ingress (mean 463.02 Mbit/s) --- Flow 1 egress (mean 438.40 Mbit/s)
Flow 2 ingress (mean 427.21 Mbit/s) --- Flow 2 egress (mean 405.52 Mbit/s)
Flow 3 ingress (mean 388.50 Mbit/s) --- Flow 3 egress (mean 367.49 Mbit/s)

Flow 1 (95th percentile 241.63 ms)   Flow 2 (95th percentile 250.06 ms)   Flow 3 (95th percentile 251.36 ms)

```
Run 4: Statistics of TCP BBR

Start at: 2018-09-11 03:08:26
End at: 2018-09-11 03:08:56
Local clock offset: 0.021 ms
Remote clock offset: -0.064 ms


# Below is generated by plot.py at 2018-09-11 04:33:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 824.84 Mbit/s
95th percentile per-packet one-way delay: 239.686 ms
Loss rate: 5.97%
-- Flow 1:
Average throughput: 440.45 Mbit/s
95th percentile per-packet one-way delay: 238.040 ms
Loss rate: 5.11%
-- Flow 2:
Average throughput: 401.91 Mbit/s
95th percentile per-packet one-way delay: 242.546 ms
Loss rate: 7.31%
-- Flow 3:
Average throughput: 357.44 Mbit/s
95th percentile per-packet one-way delay: 237.305 ms
Loss rate: 6.07%
```

Run 4: Report of TCP BBR — Data Link

```
Run 5: Statistics of TCP BBR

Start at: 2018-09-11 03:40:50
End at: 2018-09-11 03:41:20
Local clock offset: -0.075 ms
Remote clock offset: -0.007 ms


# Below is generated by plot.py at 2018-09-11 04:33:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 779.31 Mbit/s
95th percentile per-packet one-way delay: 287.595 ms
Loss rate: 6.25%
-- Flow 1:
Average throughput: 434.74 Mbit/s
95th percentile per-packet one-way delay: 227.069 ms
Loss rate: 3.50%
-- Flow 2:
Average throughput: 348.94 Mbit/s
95th percentile per-packet one-way delay: 306.120 ms
Loss rate: 9.44%
-- Flow 3:
Average throughput: 343.43 Mbit/s
95th percentile per-packet one-way delay: 314.618 ms
Loss rate: 9.64%
```
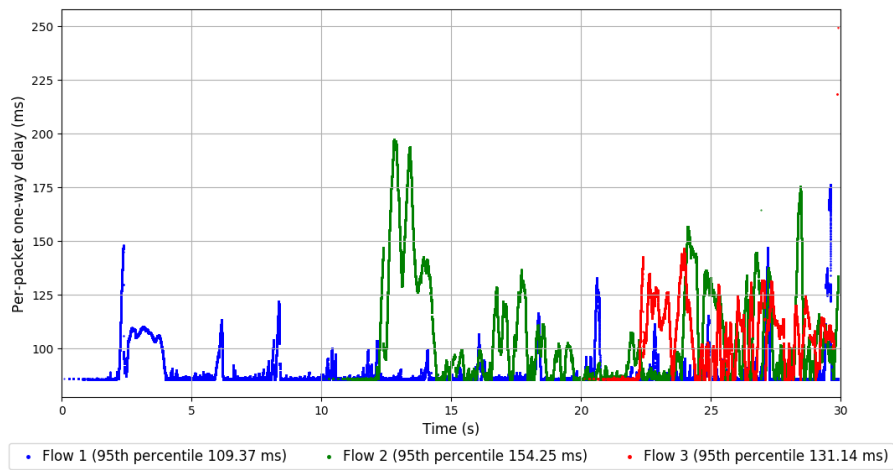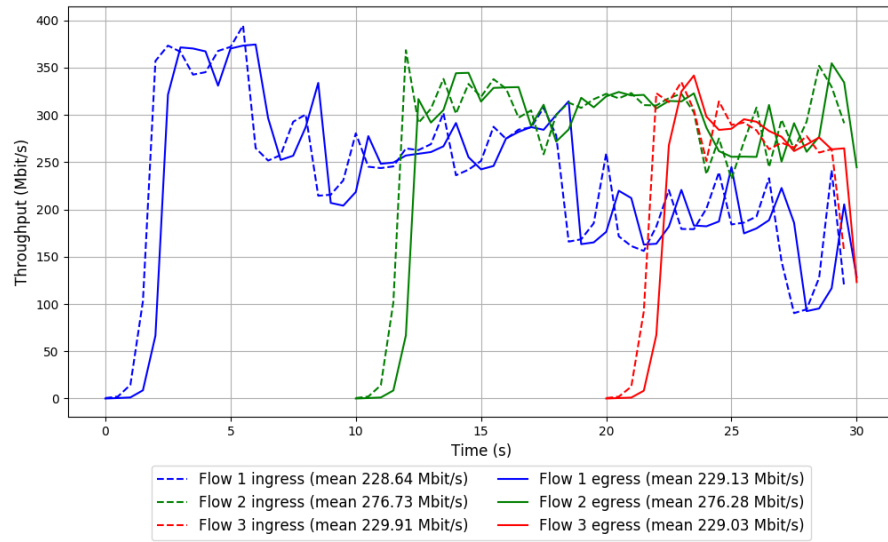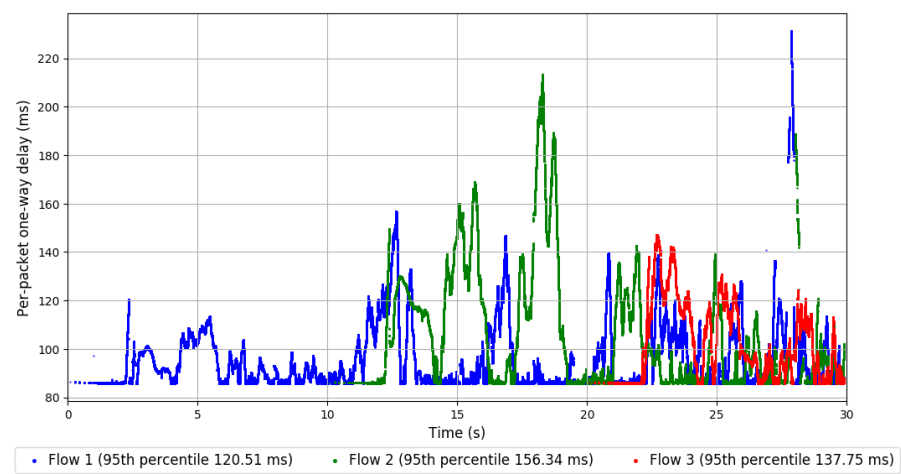
Run 5: Report of TCP BBR — Data Link

Flow 1 ingress (mean 447.92 Mbit/s) Flow 1 egress (mean 434.74 Mbit/s)
Flow 2 ingress (mean 381.97 Mbit/s) Flow 2 egress (mean 348.94 Mbit/s)
Flow 3 ingress (mean 373.50 Mbit/s) Flow 3 egress (mean 343.43 Mbit/s)

Flow 1 (95th percentile 227.07 ms)   Flow 2 (95th percentile 306.12 ms)   Flow 3 (95th percentile 314.62 ms)
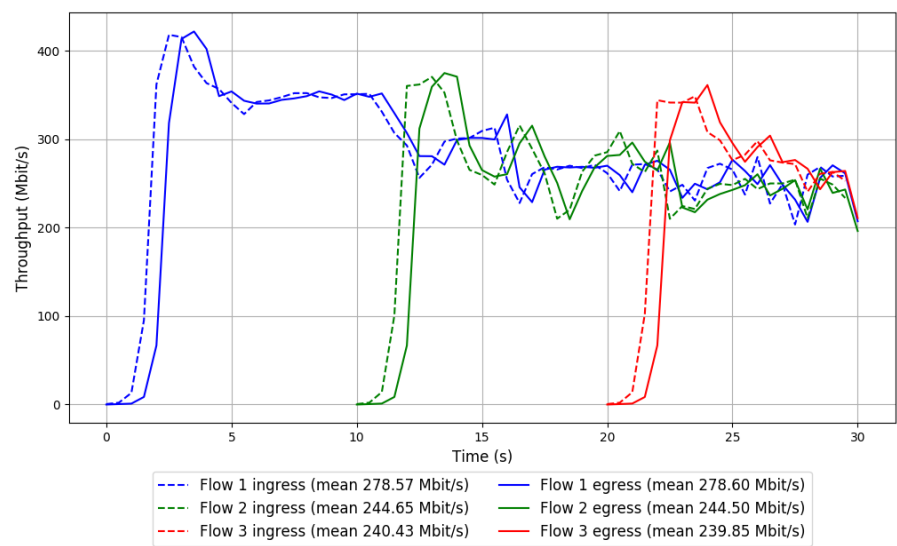
14

```
Run 1: Statistics of Copa

Start at: 2018-09-11 01:39:36
End at: 2018-09-11 01:40:06
Local clock offset: 0.239 ms
Remote clock offset: 0.164 ms


# Below is generated by plot.py at 2018-09-11 04:33:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 487.89 Mbit/s
95th percentile per-packet one-way delay: 135.944 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 229.13 Mbit/s
95th percentile per-packet one-way delay: 109.371 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 276.28 Mbit/s
95th percentile per-packet one-way delay: 154.252 ms
Loss rate: 1.02%
-- Flow 3:
Average throughput: 229.03 Mbit/s
95th percentile per-packet one-way delay: 131.142 ms
Loss rate: 1.88%
```
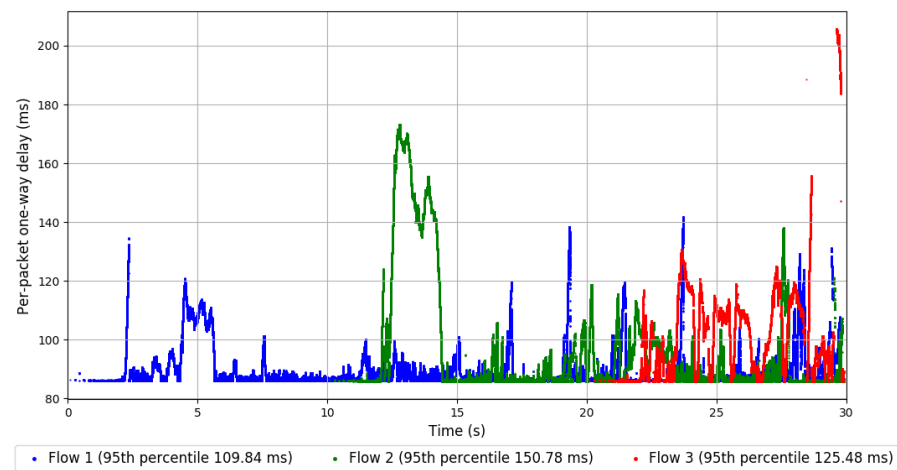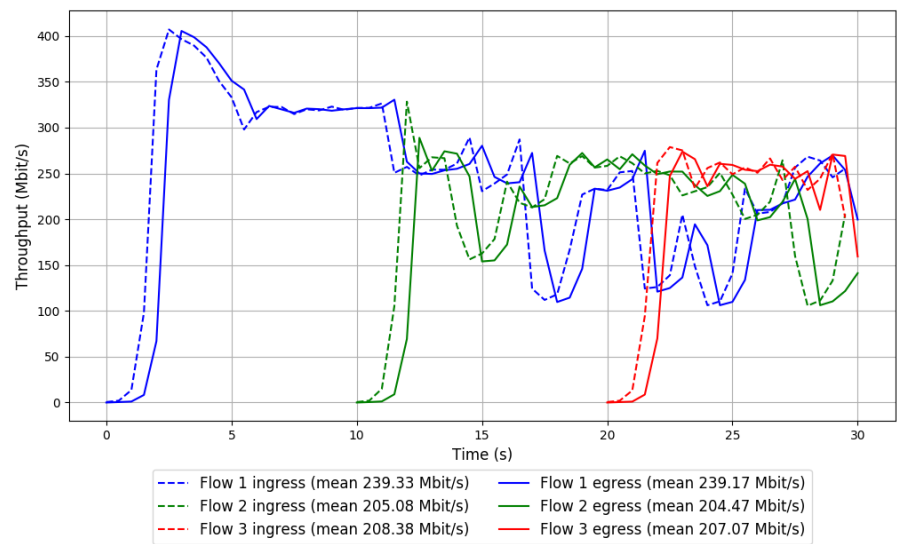
Run 1: Report of Copa — Data Link

- - - Flow 1 ingress (mean 228.64 Mbit/s) ——— Flow 1 egress (mean 229.13 Mbit/s)
- - - Flow 2 ingress (mean 276.73 Mbit/s) ——— Flow 2 egress (mean 276.28 Mbit/s)
- - - Flow 3 ingress (mean 229.91 Mbit/s) ——— Flow 3 egress (mean 229.03 Mbit/s)

• Flow 1 (95th percentile 109.37 ms)　　• Flow 2 (95th percentile 154.25 ms)　　• Flow 3 (95th percentile 131.14 ms)
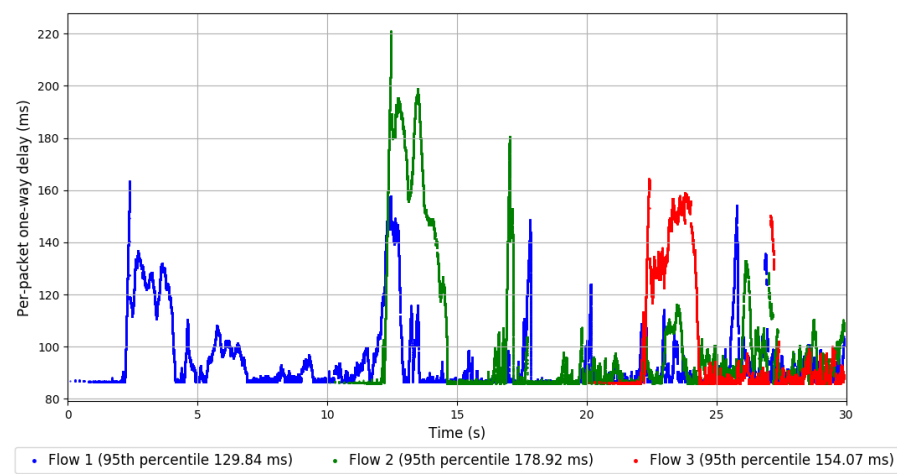
16

```
Run 2: Statistics of Copa

Start at: 2018-09-11 02:12:10
End at: 2018-09-11 02:12:40
Local clock offset: 0.095 ms
Remote clock offset: 0.013 ms


# Below is generated by plot.py at 2018-09-11 04:35:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 519.91 Mbit/s
95th percentile per-packet one-way delay: 136.566 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 278.60 Mbit/s
95th percentile per-packet one-way delay: 120.513 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 244.50 Mbit/s
95th percentile per-packet one-way delay: 156.335 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 239.85 Mbit/s
95th percentile per-packet one-way delay: 137.745 ms
Loss rate: 1.96%
```
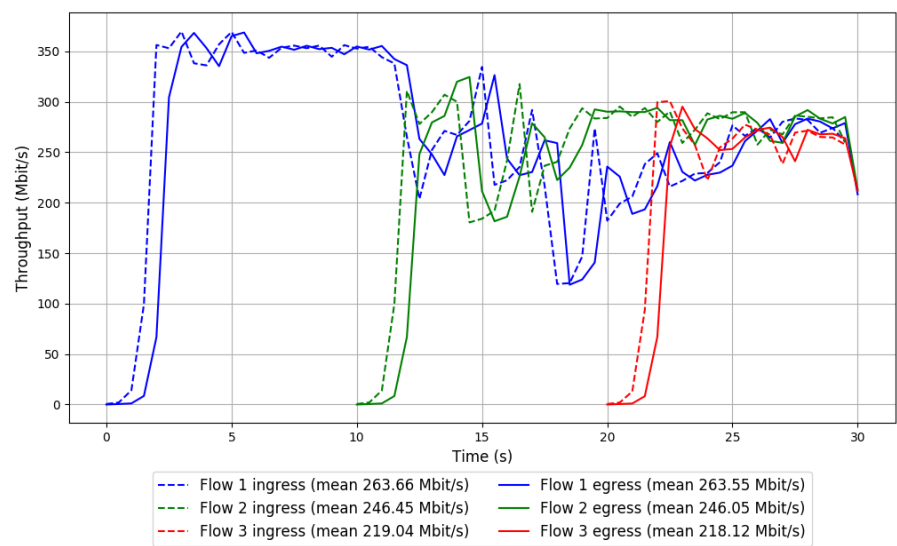
Run 2: Report of Copa — Data Link

18

```
Run 3: Statistics of Copa

Start at: 2018-09-11 02:44:36
End at: 2018-09-11 02:45:06
Local clock offset: 0.066 ms
Remote clock offset: -0.043 ms


# Below is generated by plot.py at 2018-09-11 04:35:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 443.00 Mbit/s
95th percentile per-packet one-way delay: 125.062 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 239.17 Mbit/s
95th percentile per-packet one-way delay: 109.839 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 204.47 Mbit/s
95th percentile per-packet one-way delay: 150.779 ms
Loss rate: 1.15%
-- Flow 3:
Average throughput: 207.07 Mbit/s
95th percentile per-packet one-way delay: 125.483 ms
Loss rate: 2.35%
```
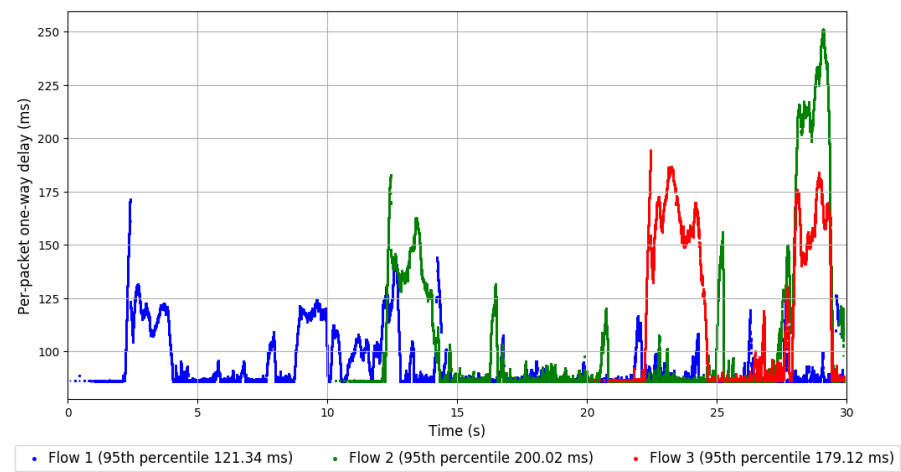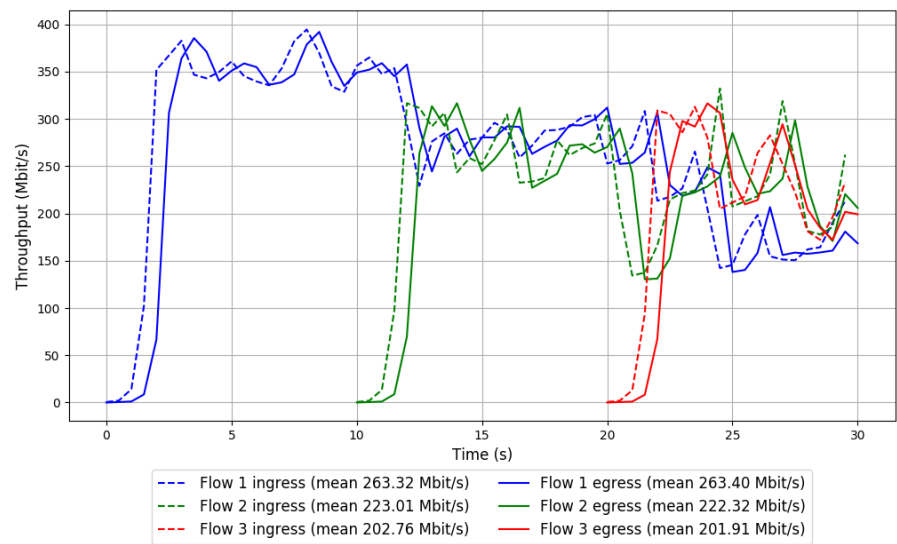
Run 3: Report of Copa — Data Link

```
Run 4: Statistics of Copa

Start at: 2018-09-11 03:16:29
End at: 2018-09-11 03:16:59
Local clock offset: 0.017 ms
Remote clock offset: -0.059 ms


# Below is generated by plot.py at 2018-09-11 04:49:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 498.65 Mbit/s
95th percentile per-packet one-way delay: 148.955 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 263.55 Mbit/s
95th percentile per-packet one-way delay: 129.844 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 246.05 Mbit/s
95th percentile per-packet one-way delay: 178.923 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 218.12 Mbit/s
95th percentile per-packet one-way delay: 154.073 ms
Loss rate: 2.14%
```
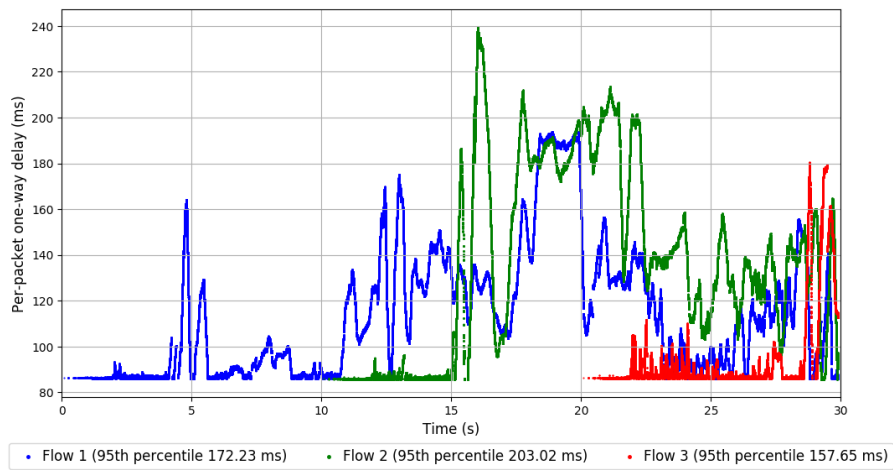
Run 4: Report of Copa — Data Link

- - - - Flow 1 ingress (mean 263.66 Mbit/s)   —— Flow 1 egress (mean 263.55 Mbit/s)
- - - - Flow 2 ingress (mean 246.45 Mbit/s)   —— Flow 2 egress (mean 246.05 Mbit/s)
- - - - Flow 3 ingress (mean 219.04 Mbit/s)   —— Flow 3 egress (mean 218.12 Mbit/s)

- Flow 1 (95th percentile 129.84 ms)   • Flow 2 (95th percentile 178.92 ms)   • Flow 3 (95th percentile 154.07 ms)

```
Run 5: Statistics of Copa

Start at: 2018-09-11 03:48:54
End at: 2018-09-11 03:49:24
Local clock offset: -0.01 ms
Remote clock offset: -0.099 ms


# Below is generated by plot.py at 2018-09-11 04:49:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 477.28 Mbit/s
95th percentile per-packet one-way delay: 161.924 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 263.40 Mbit/s
95th percentile per-packet one-way delay: 121.341 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 222.32 Mbit/s
95th percentile per-packet one-way delay: 200.016 ms
Loss rate: 1.17%
-- Flow 3:
Average throughput: 201.91 Mbit/s
95th percentile per-packet one-way delay: 179.124 ms
Loss rate: 2.14%
```
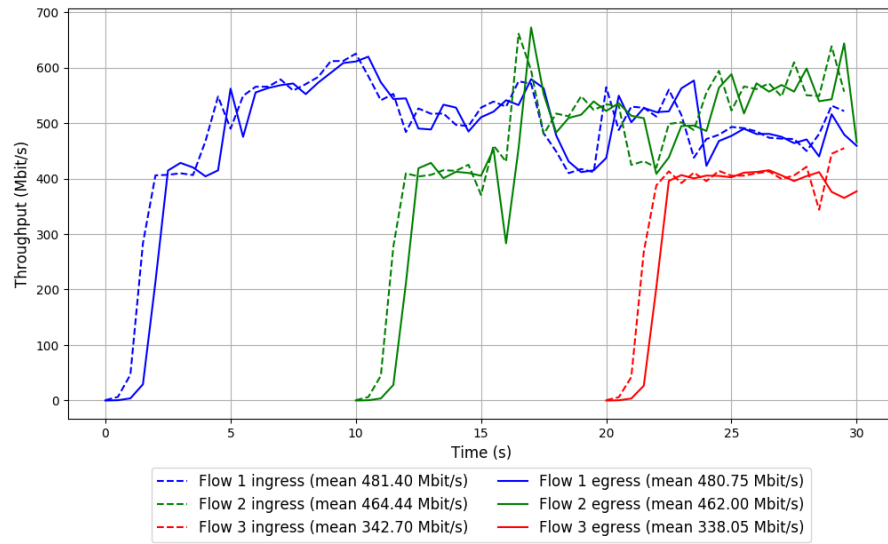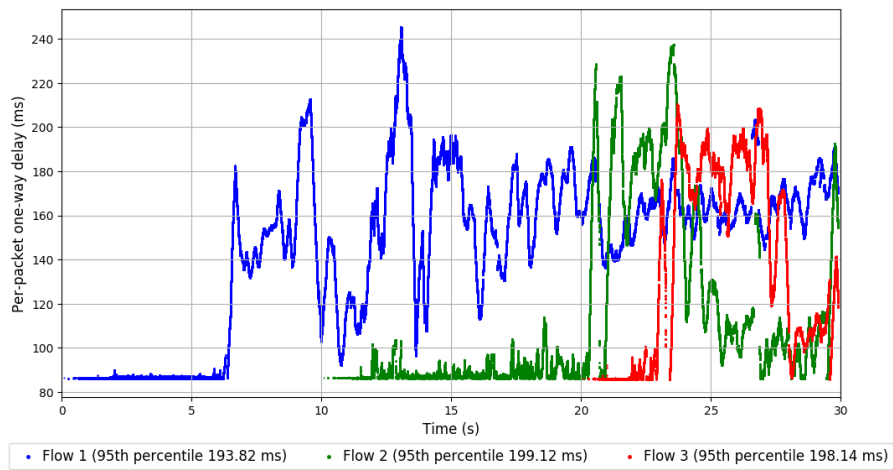
Run 5: Report of Copa — Data Link

```
Run 1: Statistics of TCP Cubic

Start at: 2018-09-11 01:22:46
End at: 2018-09-11 01:23:17
Local clock offset: 0.263 ms
Remote clock offset: 0.479 ms


# Below is generated by plot.py at 2018-09-11 04:49:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 898.65 Mbit/s
95th percentile per-packet one-way delay: 191.710 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 480.75 Mbit/s
95th percentile per-packet one-way delay: 172.230 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 462.00 Mbit/s
95th percentile per-packet one-way delay: 203.020 ms
Loss rate: 1.38%
-- Flow 3:
Average throughput: 338.05 Mbit/s
95th percentile per-packet one-way delay: 157.645 ms
Loss rate: 3.07%
```
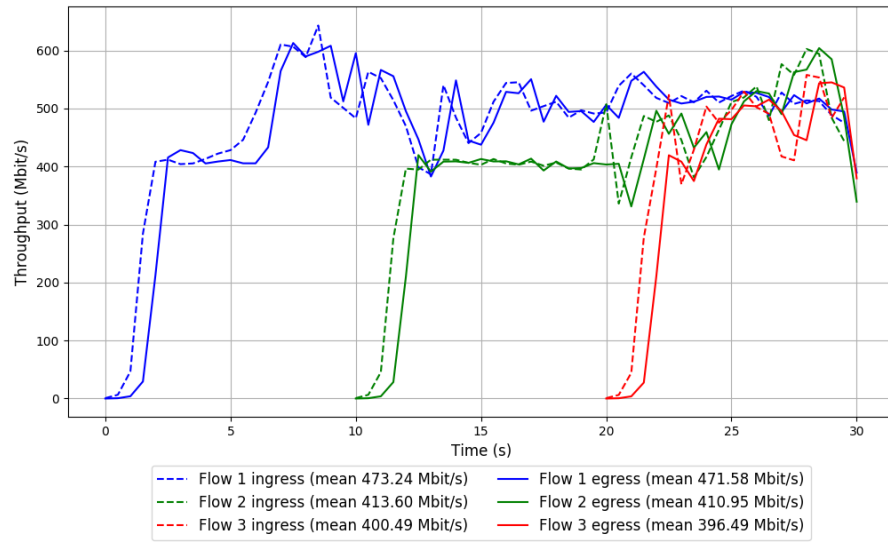
Run 1: Report of TCP Cubic — Data Link

```
Run 2: Statistics of TCP Cubic

Start at: 2018-09-11 01:55:03
End at: 2018-09-11 01:55:33
Local clock offset: 0.294 ms
Remote clock offset: 0.143 ms


# Below is generated by plot.py at 2018-09-11 04:49:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 874.97 Mbit/s
95th percentile per-packet one-way delay: 196.526 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 471.58 Mbit/s
95th percentile per-packet one-way delay: 193.823 ms
Loss rate: 0.92%
-- Flow 2:
Average throughput: 410.95 Mbit/s
95th percentile per-packet one-way delay: 199.115 ms
Loss rate: 1.50%
-- Flow 3:
Average throughput: 396.49 Mbit/s
95th percentile per-packet one-way delay: 198.136 ms
Loss rate: 2.72%
```
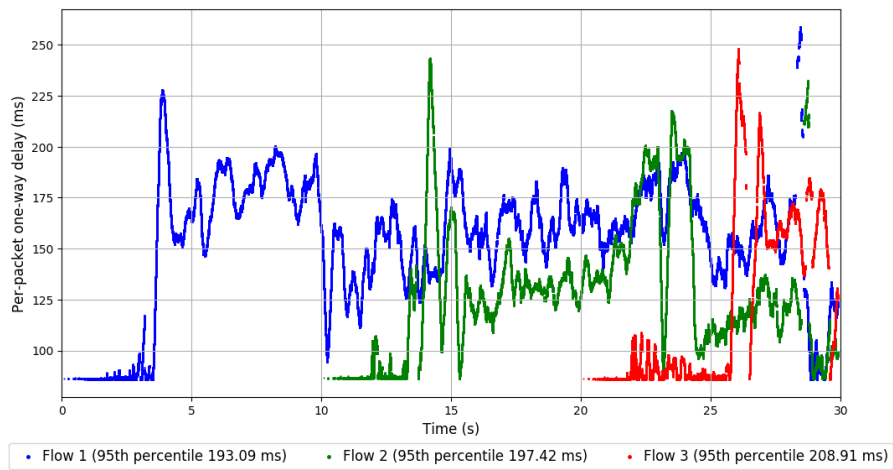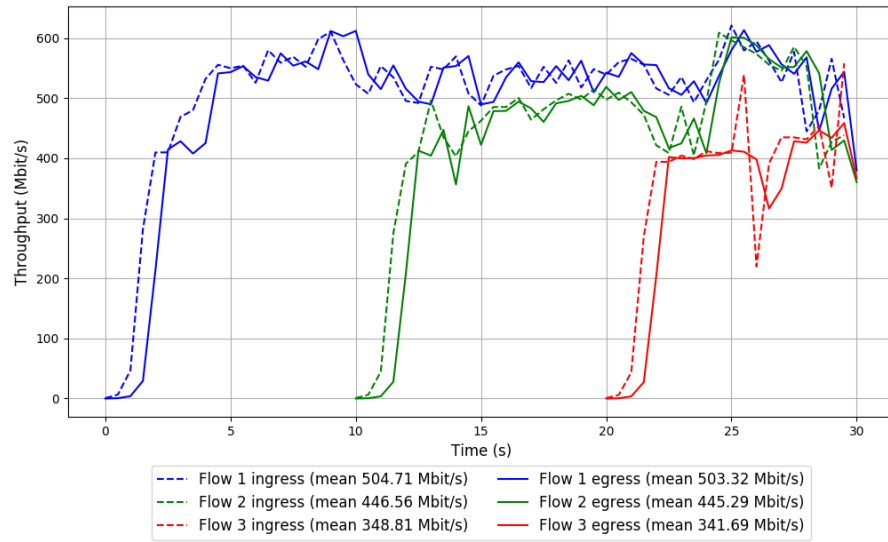
Run 2: Report of TCP Cubic — Data Link

```
Run 3: Statistics of TCP Cubic

Start at: 2018-09-11 02:27:33
End at: 2018-09-11 02:28:03
Local clock offset: 0.041 ms
Remote clock offset: 0.037 ms


# Below is generated by plot.py at 2018-09-11 04:50:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 911.41 Mbit/s
95th percentile per-packet one-way delay: 195.001 ms
Loss rate: 1.31%
-- Flow 1:
Average throughput: 503.32 Mbit/s
95th percentile per-packet one-way delay: 193.093 ms
Loss rate: 0.85%
-- Flow 2:
Average throughput: 445.29 Mbit/s
95th percentile per-packet one-way delay: 197.423 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 341.69 Mbit/s
95th percentile per-packet one-way delay: 208.908 ms
Loss rate: 3.73%
```
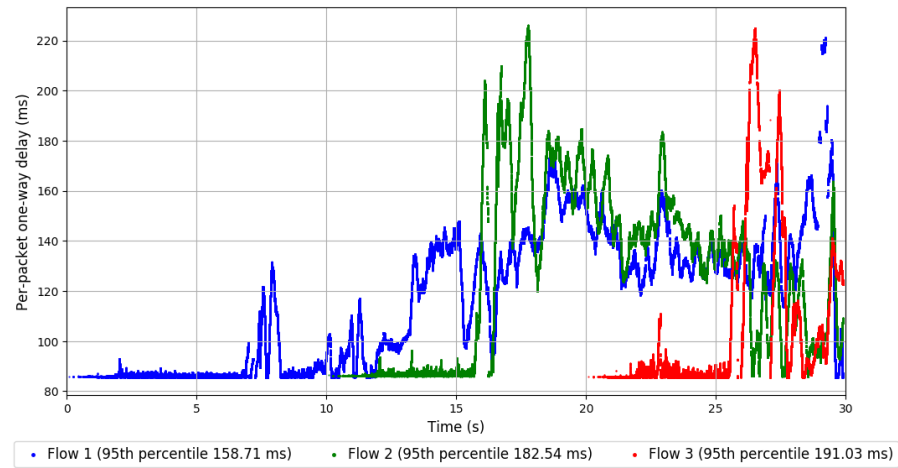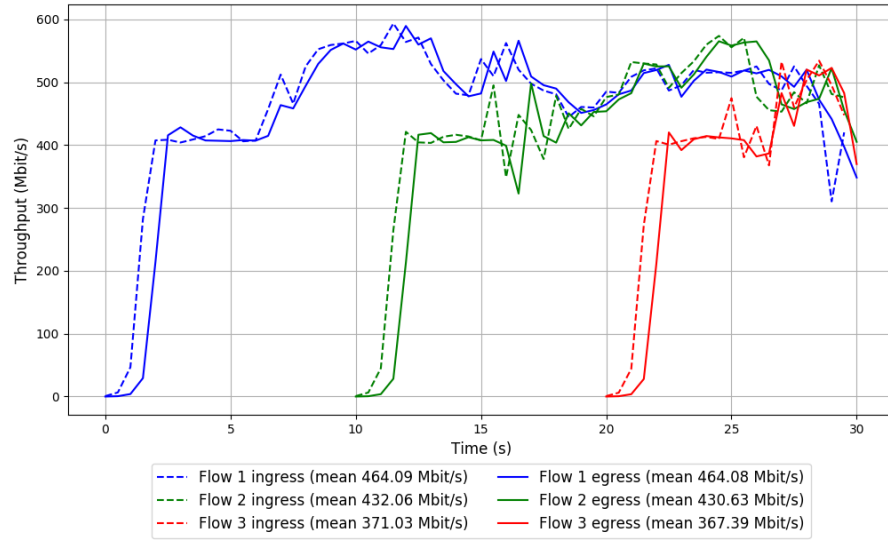
Run 3: Report of TCP Cubic — Data Link

Flow 1 ingress (mean 504.71 Mbit/s)   Flow 1 egress (mean 503.32 Mbit/s)
Flow 2 ingress (mean 446.56 Mbit/s)   Flow 2 egress (mean 445.29 Mbit/s)
Flow 3 ingress (mean 348.81 Mbit/s)   Flow 3 egress (mean 341.69 Mbit/s)

Flow 1 (95th percentile 193.09 ms)   Flow 2 (95th percentile 197.42 ms)   Flow 3 (95th percentile 208.91 ms)
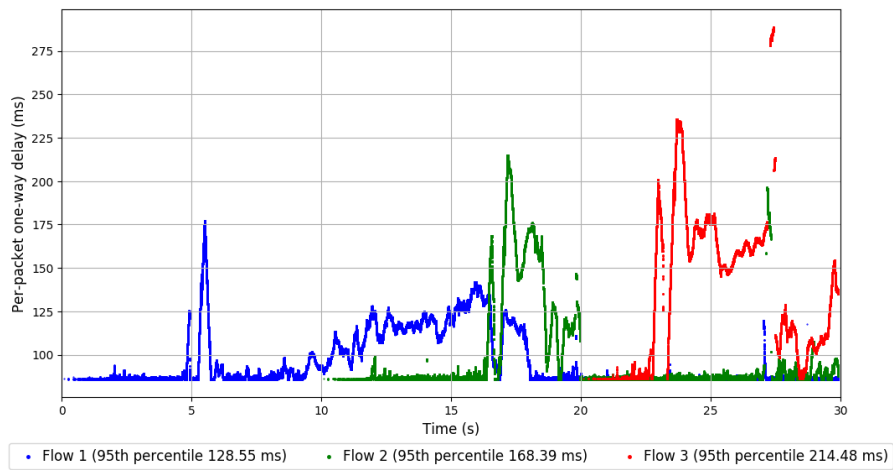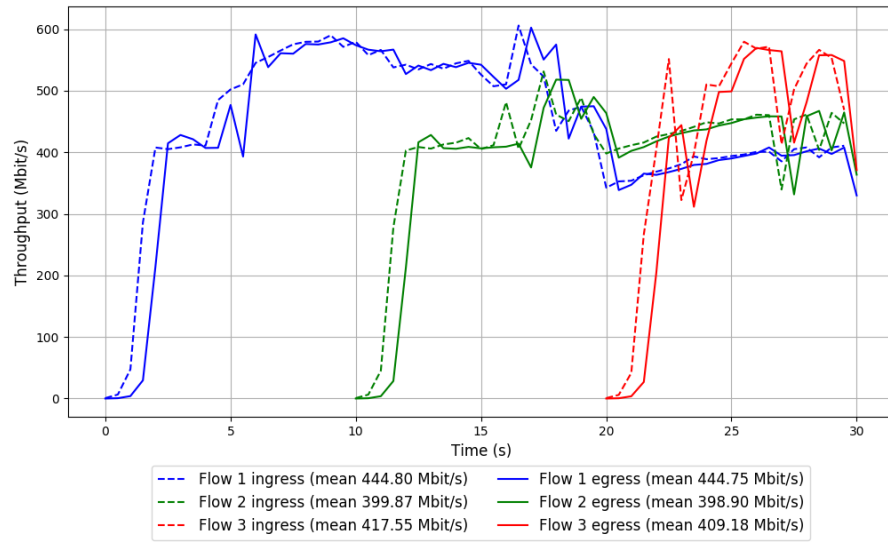
```
Run 4: Statistics of TCP Cubic

Start at: 2018-09-11 02:59:38
End at: 2018-09-11 03:00:08
Local clock offset: -0.18 ms
Remote clock offset: -0.04 ms


# Below is generated by plot.py at 2018-09-11 04:50:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 870.86 Mbit/s
95th percentile per-packet one-way delay: 174.821 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 464.08 Mbit/s
95th percentile per-packet one-way delay: 158.709 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 430.63 Mbit/s
95th percentile per-packet one-way delay: 182.543 ms
Loss rate: 1.19%
-- Flow 3:
Average throughput: 367.39 Mbit/s
95th percentile per-packet one-way delay: 191.034 ms
Loss rate: 2.69%
```

Run 4: Report of TCP Cubic — Data Link

```
Run 5: Statistics of TCP Cubic

Start at: 2018-09-11 03:32:03
End at: 2018-09-11 03:32:33
Local clock offset: -0.1 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-09-11 04:50:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 844.16 Mbit/s
95th percentile per-packet one-way delay: 170.148 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 444.75 Mbit/s
95th percentile per-packet one-way delay: 128.548 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 398.90 Mbit/s
95th percentile per-packet one-way delay: 168.388 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 409.18 Mbit/s
95th percentile per-packet one-way delay: 214.476 ms
Loss rate: 3.70%
```
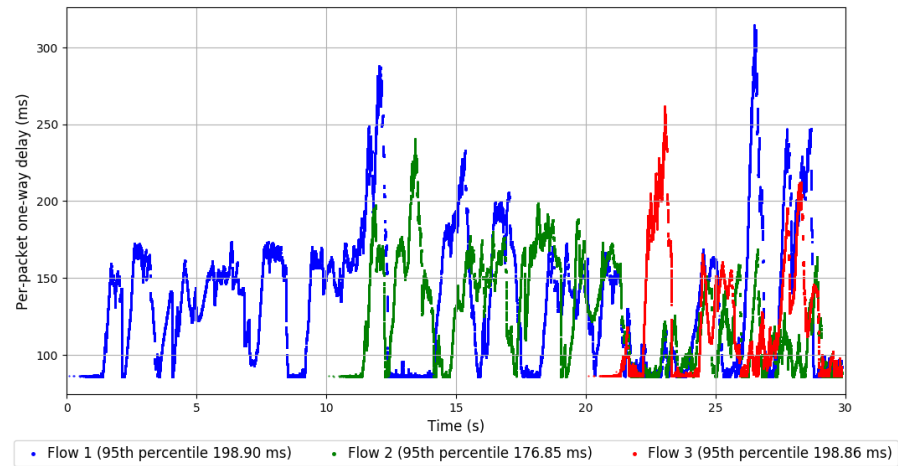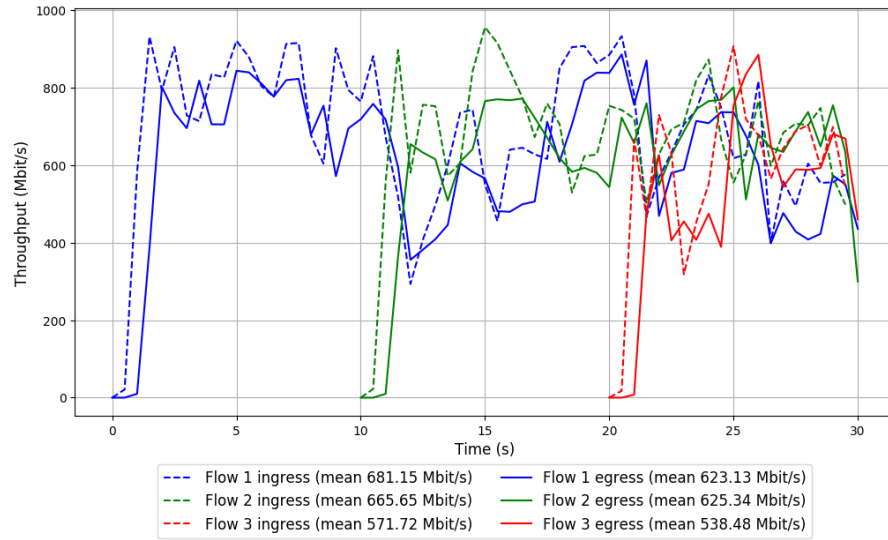
Run 5: Report of TCP Cubic — Data Link

```
Run 1: Statistics of FillP

Start at: 2018-09-11 01:48:22
End at: 2018-09-11 01:48:52
Local clock offset: 0.329 ms
Remote clock offset: 0.147 ms

# Below is generated by plot.py at 2018-09-11 05:02:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1214.51 Mbit/s
95th percentile per-packet one-way delay: 190.588 ms
Loss rate: 8.10%
-- Flow 1:
Average throughput: 623.13 Mbit/s
95th percentile per-packet one-way delay: 198.897 ms
Loss rate: 9.05%
-- Flow 2:
Average throughput: 625.34 Mbit/s
95th percentile per-packet one-way delay: 176.851 ms
Loss rate: 6.87%
-- Flow 3:
Average throughput: 538.48 Mbit/s
95th percentile per-packet one-way delay: 198.858 ms
Loss rate: 7.56%
```
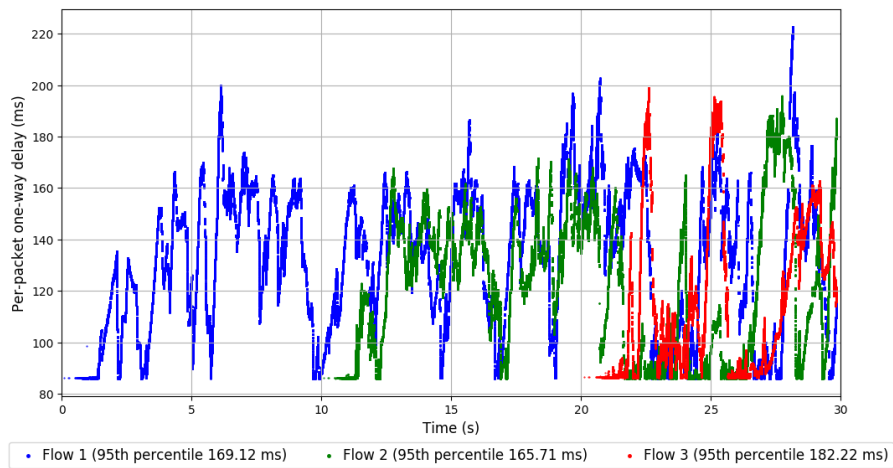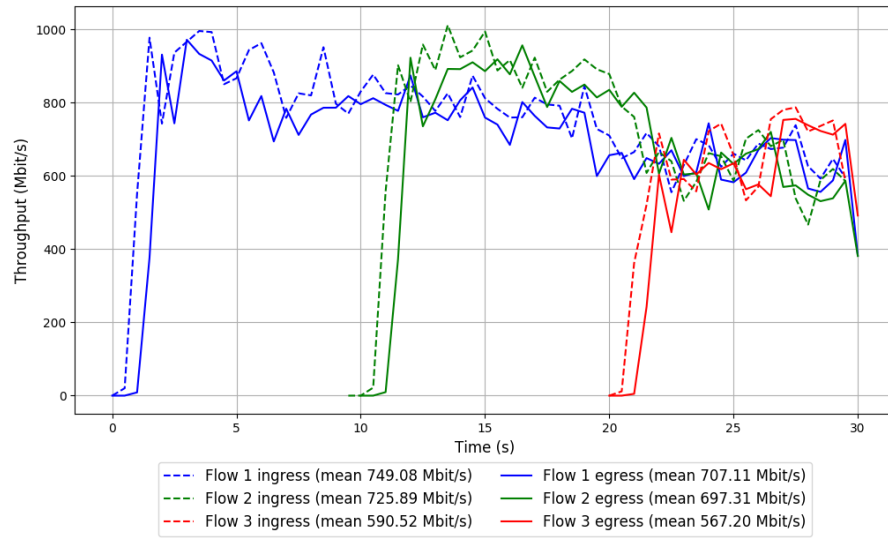
Run 1: Report of FillP — Data Link

Flow 1 ingress (mean 681.15 Mbit/s) --- Flow 1 egress (mean 623.13 Mbit/s)
Flow 2 ingress (mean 665.65 Mbit/s) --- Flow 2 egress (mean 625.34 Mbit/s)
Flow 3 ingress (mean 571.72 Mbit/s) --- Flow 3 egress (mean 538.48 Mbit/s)

Flow 1 (95th percentile 198.90 ms)   Flow 2 (95th percentile 176.85 ms)   Flow 3 (95th percentile 198.86 ms)
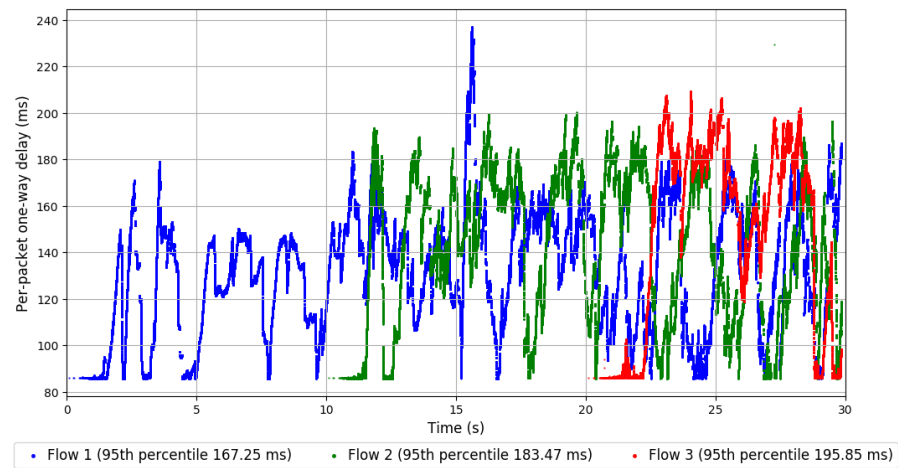
```
Run 2: Statistics of FillP

Start at: 2018-09-11 02:20:48
End at: 2018-09-11 02:21:18
Local clock offset: 0.18 ms
Remote clock offset: 0.012 ms

# Below is generated by plot.py at 2018-09-11 05:20:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1355.68 Mbit/s
95th percentile per-packet one-way delay: 169.635 ms
Loss rate: 5.63%
-- Flow 1:
Average throughput: 707.11 Mbit/s
95th percentile per-packet one-way delay: 169.119 ms
Loss rate: 6.16%
-- Flow 2:
Average throughput: 697.31 Mbit/s
95th percentile per-packet one-way delay: 165.712 ms
Loss rate: 4.79%
-- Flow 3:
Average throughput: 567.20 Mbit/s
95th percentile per-packet one-way delay: 182.220 ms
Loss rate: 5.65%
```
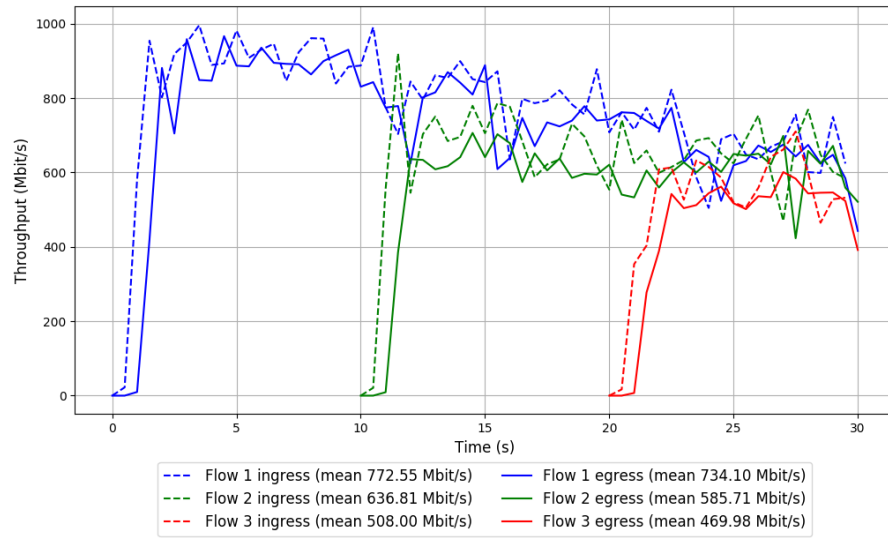
Run 2: Report of FillP — Data Link

Flow 1 ingress (mean 749.08 Mbit/s) --- Flow 1 egress (mean 707.11 Mbit/s)
Flow 2 ingress (mean 725.89 Mbit/s) --- Flow 2 egress (mean 697.31 Mbit/s)
Flow 3 ingress (mean 590.52 Mbit/s) --- Flow 3 egress (mean 567.20 Mbit/s)

Flow 1 (95th percentile 169.12 ms)   Flow 2 (95th percentile 165.71 ms)   Flow 3 (95th percentile 182.22 ms)
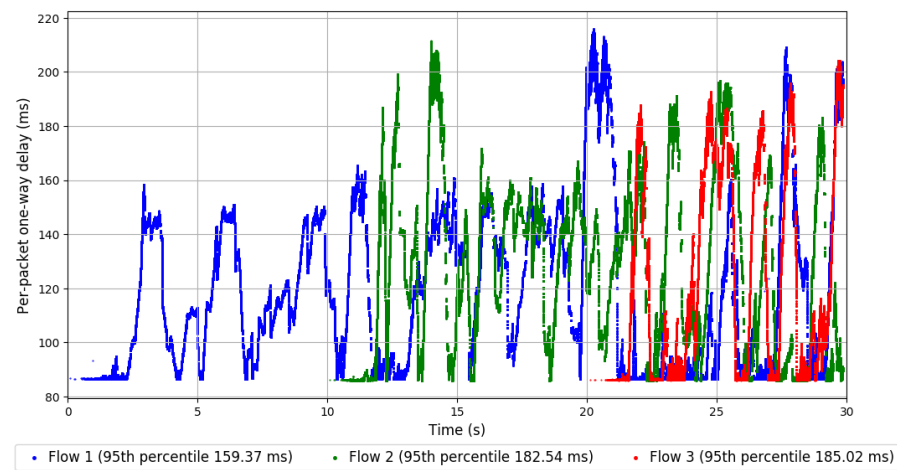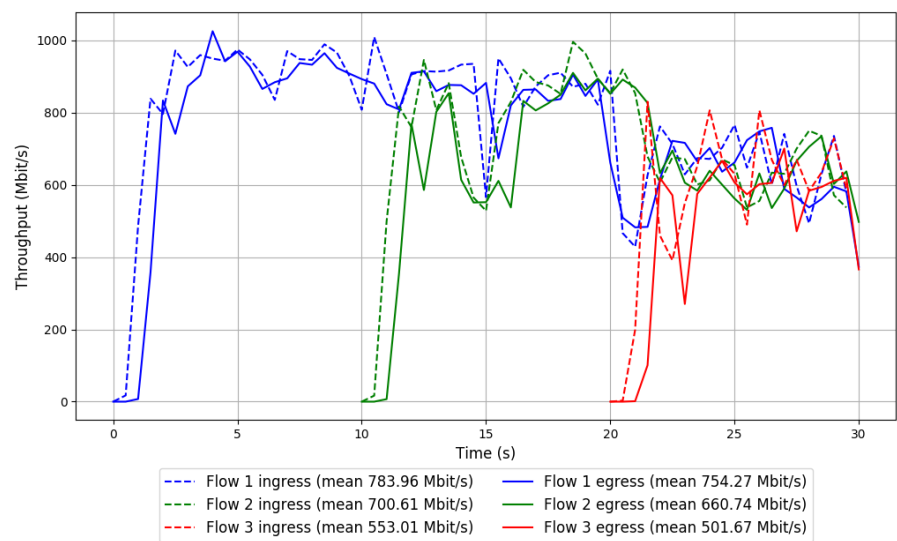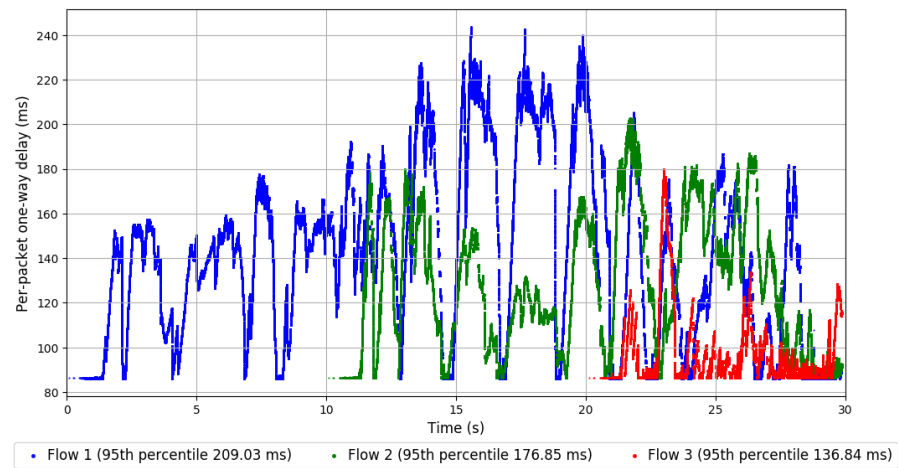
```
Run 3: Statistics of FillP

Start at: 2018-09-11 02:53:04
End at: 2018-09-11 02:53:34
Local clock offset: 0.031 ms
Remote clock offset: -0.052 ms

# Below is generated by plot.py at 2018-09-11 05:20:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1276.69 Mbit/s
95th percentile per-packet one-way delay: 183.418 ms
Loss rate: 6.99%
-- Flow 1:
Average throughput: 734.10 Mbit/s
95th percentile per-packet one-way delay: 167.254 ms
Loss rate: 5.52%
-- Flow 2:
Average throughput: 585.71 Mbit/s
95th percentile per-packet one-way delay: 183.466 ms
Loss rate: 8.82%
-- Flow 3:
Average throughput: 469.98 Mbit/s
95th percentile per-packet one-way delay: 195.850 ms
Loss rate: 9.09%
```

Run 3: Report of FillP — Data Link

- - - - Flow 1 ingress (mean 772.55 Mbit/s)   —— Flow 1 egress (mean 734.10 Mbit/s)
- - - - Flow 2 ingress (mean 636.81 Mbit/s)   —— Flow 2 egress (mean 585.71 Mbit/s)
- - - - Flow 3 ingress (mean 508.00 Mbit/s)   —— Flow 3 egress (mean 469.98 Mbit/s)

- Flow 1 (95th percentile 167.25 ms)   • Flow 2 (95th percentile 183.47 ms)   • Flow 3 (95th percentile 195.85 ms)
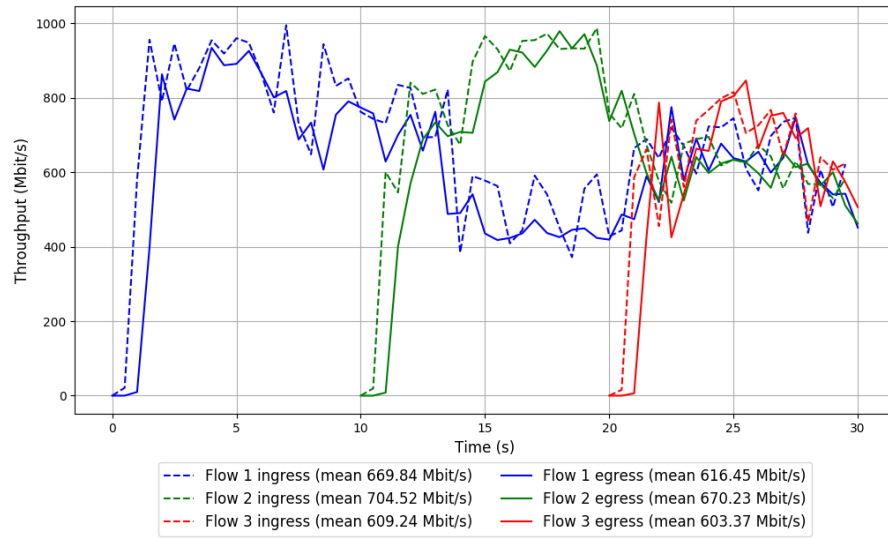
```
Run 4: Statistics of FillP

Start at: 2018-09-11 03:25:16
End at: 2018-09-11 03:25:46
Local clock offset: 0.066 ms
Remote clock offset: -0.037 ms

# Below is generated by plot.py at 2018-09-11 05:20:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1356.97 Mbit/s
95th percentile per-packet one-way delay: 180.351 ms
Loss rate: 5.90%
-- Flow 1:
Average throughput: 754.27 Mbit/s
95th percentile per-packet one-way delay: 159.373 ms
Loss rate: 4.35%
-- Flow 2:
Average throughput: 660.74 Mbit/s
95th percentile per-packet one-way delay: 182.540 ms
Loss rate: 6.53%
-- Flow 3:
Average throughput: 501.67 Mbit/s
95th percentile per-packet one-way delay: 185.021 ms
Loss rate: 10.96%
```

Run 4: Report of FillP — Data Link

```
Run 5: Statistics of FillP

Start at: 2018-09-11 03:57:31
End at: 2018-09-11 03:58:01
Local clock offset: -0.06 ms
Remote clock offset: -0.166 ms


# Below is generated by plot.py at 2018-09-11 05:20:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1258.76 Mbit/s
95th percentile per-packet one-way delay: 191.921 ms
Loss rate: 6.65%
-- Flow 1:
Average throughput: 616.45 Mbit/s
95th percentile per-packet one-way delay: 209.028 ms
Loss rate: 8.51%
-- Flow 2:
Average throughput: 670.23 Mbit/s
95th percentile per-packet one-way delay: 176.851 ms
Loss rate: 5.70%
-- Flow 3:
Average throughput: 603.37 Mbit/s
95th percentile per-packet one-way delay: 136.835 ms
Loss rate: 2.71%
```
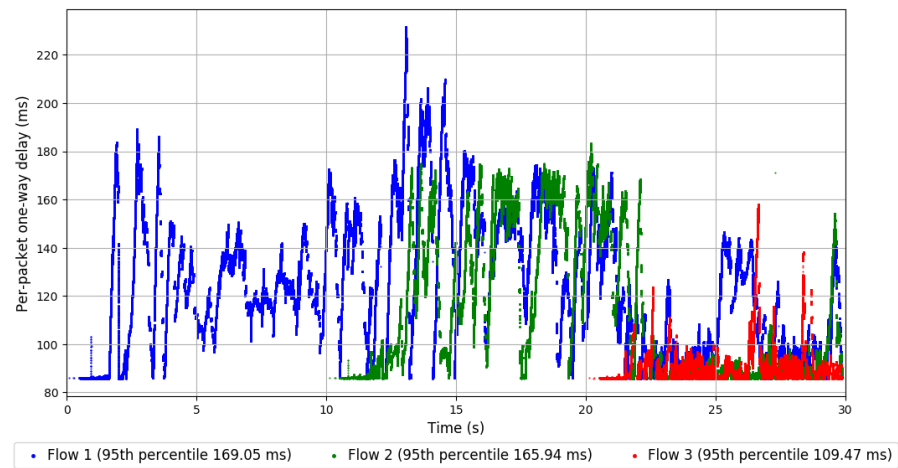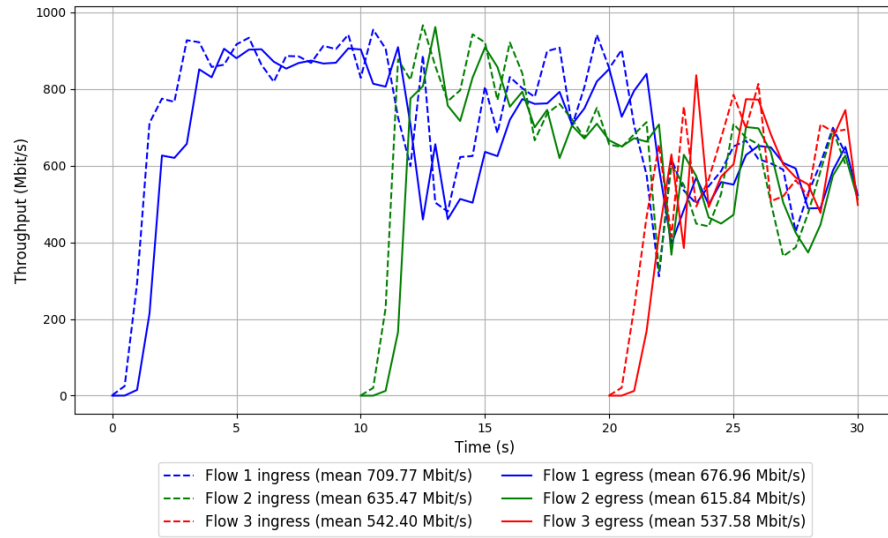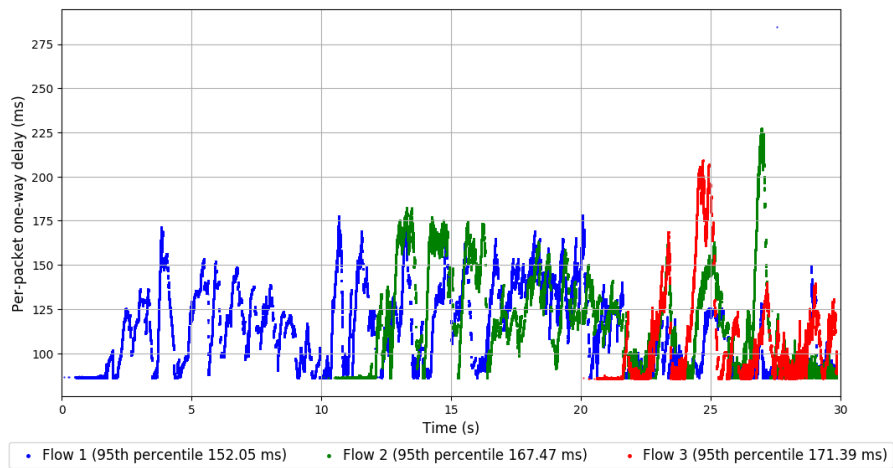
Run 5: Report of FillP — Data Link

Flow 1 ingress (mean 669.84 Mbit/s) — — — Flow 1 egress (mean 616.45 Mbit/s)
Flow 2 ingress (mean 704.52 Mbit/s) — — — Flow 2 egress (mean 670.23 Mbit/s)
Flow 3 ingress (mean 609.24 Mbit/s) — — — Flow 3 egress (mean 603.37 Mbit/s)

Flow 1 (95th percentile 209.03 ms)   Flow 2 (95th percentile 176.85 ms)   Flow 3 (95th percentile 136.84 ms)

44

```
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-11 01:37:26
End at: 2018-09-11 01:37:56
Local clock offset: 0.303 ms
Remote clock offset: 0.178 ms


# Below is generated by plot.py at 2018-09-11 05:20:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1260.42 Mbit/s
95th percentile per-packet one-way delay: 166.221 ms
Loss rate: 4.45%
-- Flow 1:
Average throughput: 676.96 Mbit/s
95th percentile per-packet one-way delay: 169.052 ms
Loss rate: 5.17%
-- Flow 2:
Average throughput: 615.84 Mbit/s
95th percentile per-packet one-way delay: 165.939 ms
Loss rate: 3.92%
-- Flow 3:
Average throughput: 537.58 Mbit/s
95th percentile per-packet one-way delay: 109.466 ms
Loss rate: 2.81%
```
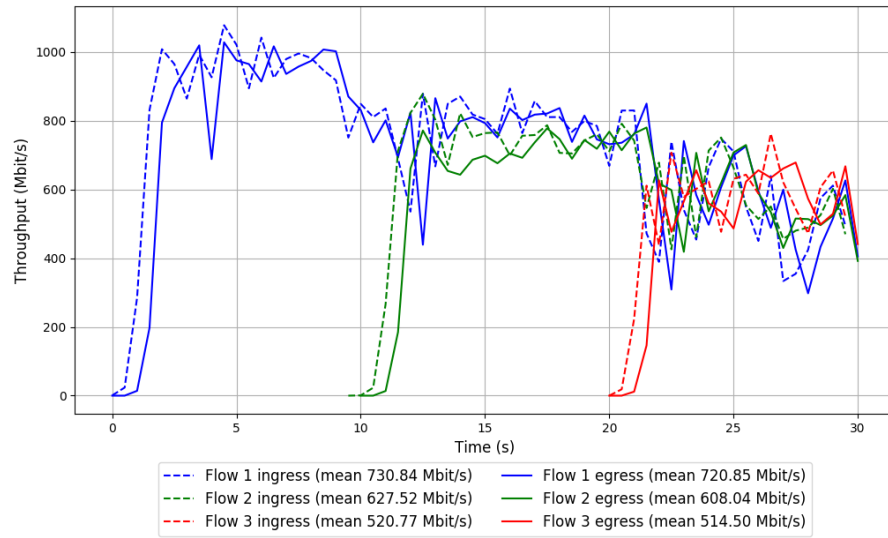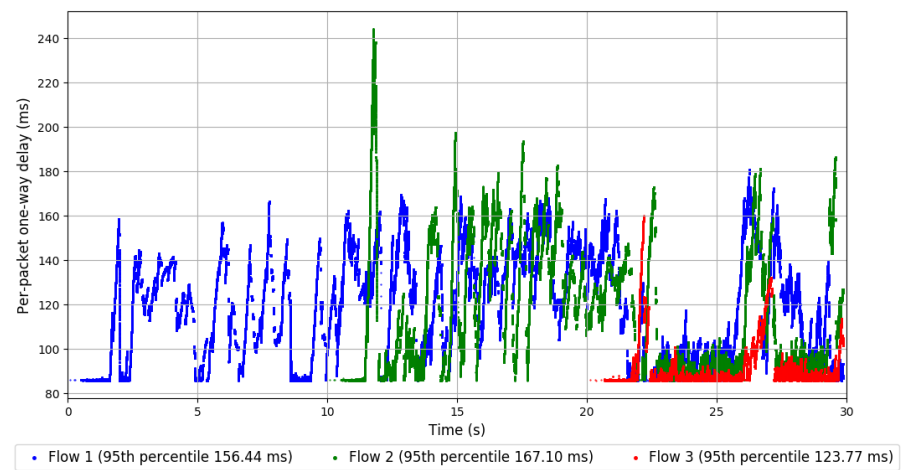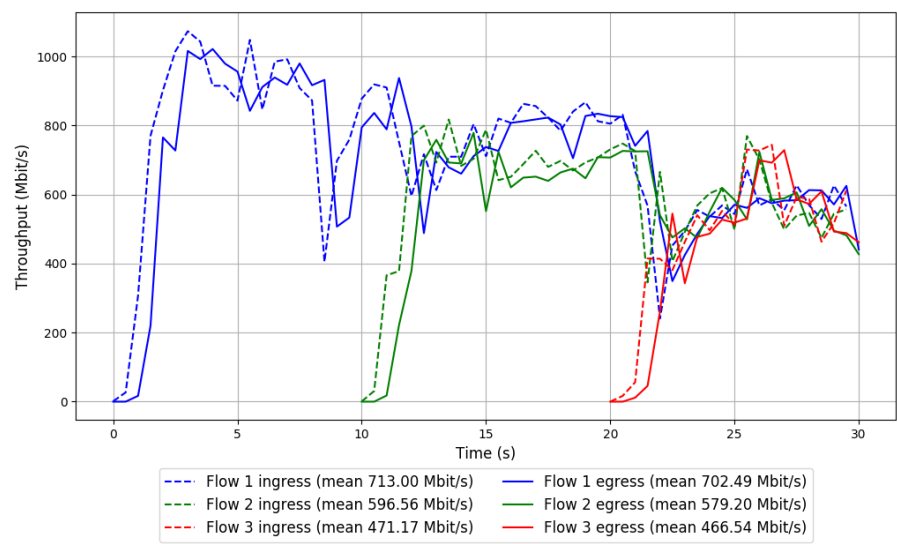
Run 1: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 709.77 Mbit/s) ----   Flow 1 egress (mean 676.96 Mbit/s) ——
Flow 2 ingress (mean 635.47 Mbit/s) ----   Flow 2 egress (mean 615.84 Mbit/s) ——
Flow 3 ingress (mean 542.40 Mbit/s) ----   Flow 3 egress (mean 537.58 Mbit/s) ——

Flow 1 (95th percentile 169.05 ms)   Flow 2 (95th percentile 165.94 ms)   Flow 3 (95th percentile 109.47 ms)

```
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-11 02:09:59
End at: 2018-09-11 02:10:29
Local clock offset: 0.078 ms
Remote clock offset: 0.026 ms


# Below is generated by plot.py at 2018-09-11 05:20:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1292.97 Mbit/s
95th percentile per-packet one-way delay: 161.275 ms
Loss rate: 2.69%
-- Flow 1:
Average throughput: 720.85 Mbit/s
95th percentile per-packet one-way delay: 152.046 ms
Loss rate: 1.95%
-- Flow 2:
Average throughput: 608.04 Mbit/s
95th percentile per-packet one-way delay: 167.467 ms
Loss rate: 3.92%
-- Flow 3:
Average throughput: 514.50 Mbit/s
95th percentile per-packet one-way delay: 171.387 ms
Loss rate: 2.89%
```

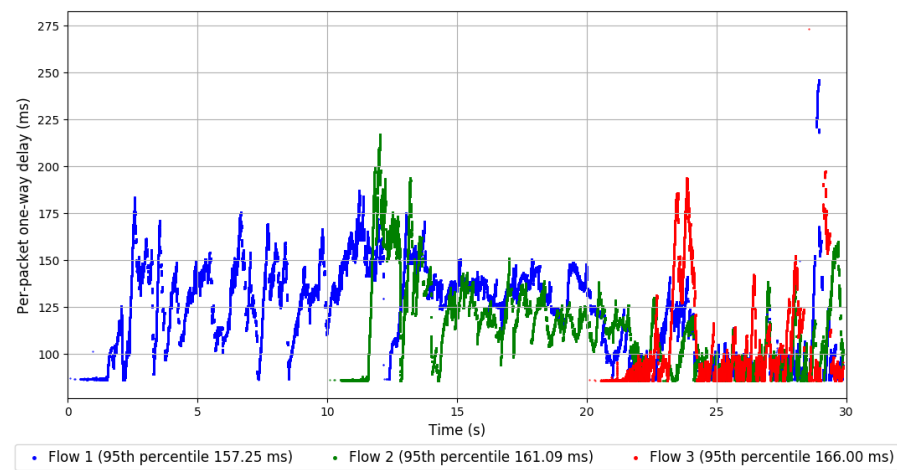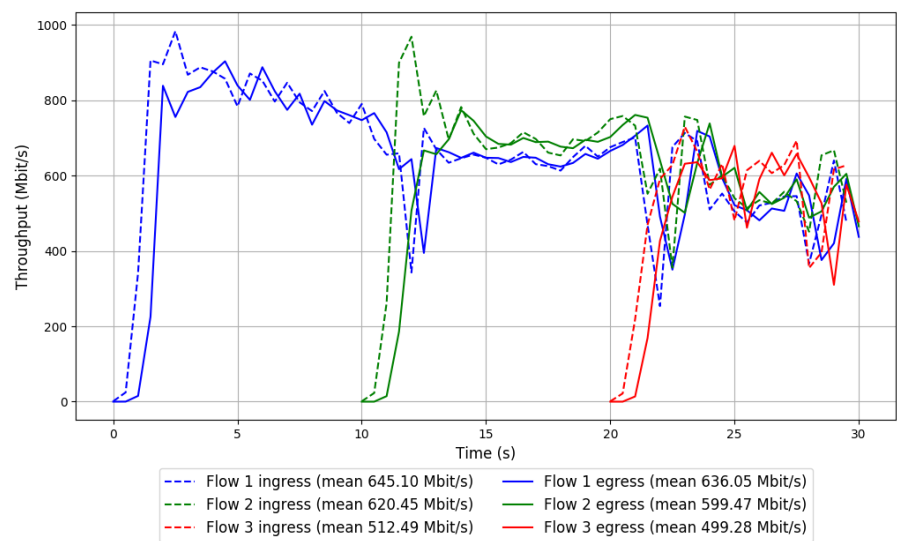Run 2: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 730.84 Mbit/s) ------- Flow 1 egress (mean 720.85 Mbit/s)
Flow 2 ingress (mean 627.52 Mbit/s) ------- Flow 2 egress (mean 608.04 Mbit/s)
Flow 3 ingress (mean 520.77 Mbit/s) ------- Flow 3 egress (mean 514.50 Mbit/s)

Flow 1 (95th percentile 152.05 ms)   Flow 2 (95th percentile 167.47 ms)   Flow 3 (95th percentile 171.39 ms)
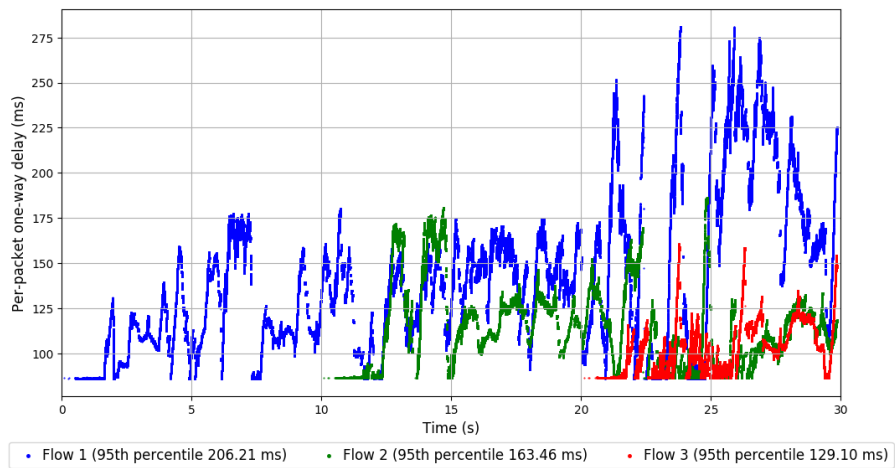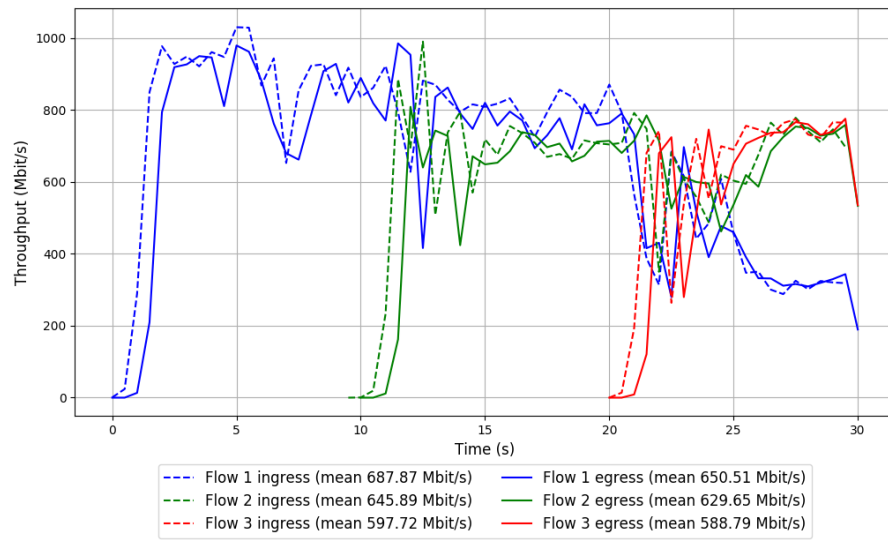
```
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-11 02:42:25
End at: 2018-09-11 02:42:55
Local clock offset: 0.011 ms
Remote clock offset: -0.011 ms


# Below is generated by plot.py at 2018-09-11 05:20:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1239.43 Mbit/s
95th percentile per-packet one-way delay: 158.972 ms
Loss rate: 2.67%
-- Flow 1:
Average throughput: 702.49 Mbit/s
95th percentile per-packet one-way delay: 156.436 ms
Loss rate: 2.05%
-- Flow 2:
Average throughput: 579.20 Mbit/s
95th percentile per-packet one-way delay: 167.100 ms
Loss rate: 3.76%
-- Flow 3:
Average throughput: 466.54 Mbit/s
95th percentile per-packet one-way delay: 123.765 ms
Loss rate: 2.72%
```

Run 3: Report of FillP-Sheep — Data Link

Flow 1 ingress (mean 713.00 Mbit/s) — Flow 1 egress (mean 702.49 Mbit/s)
Flow 2 ingress (mean 596.56 Mbit/s) — Flow 2 egress (mean 579.20 Mbit/s)
Flow 3 ingress (mean 471.17 Mbit/s) — Flow 3 egress (mean 466.54 Mbit/s)

Flow 1 (95th percentile 156.44 ms)   Flow 2 (95th percentile 167.10 ms)   Flow 3 (95th percentile 123.77 ms)

```
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-11 03:14:21
End at: 2018-09-11 03:14:51
Local clock offset: 0.045 ms
Remote clock offset: -0.043 ms


# Below is generated by plot.py at 2018-09-11 05:34:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1197.41 Mbit/s
95th percentile per-packet one-way delay: 159.518 ms
Loss rate: 3.04%
-- Flow 1:
Average throughput: 636.05 Mbit/s
95th percentile per-packet one-way delay: 157.255 ms
Loss rate: 1.95%
-- Flow 2:
Average throughput: 599.47 Mbit/s
95th percentile per-packet one-way delay: 161.093 ms
Loss rate: 4.23%
-- Flow 3:
Average throughput: 499.28 Mbit/s
95th percentile per-packet one-way delay: 165.996 ms
Loss rate: 4.28%
```
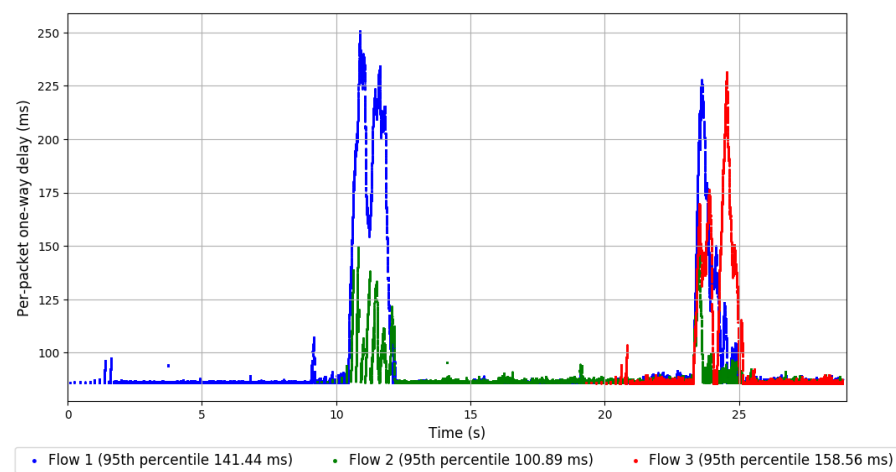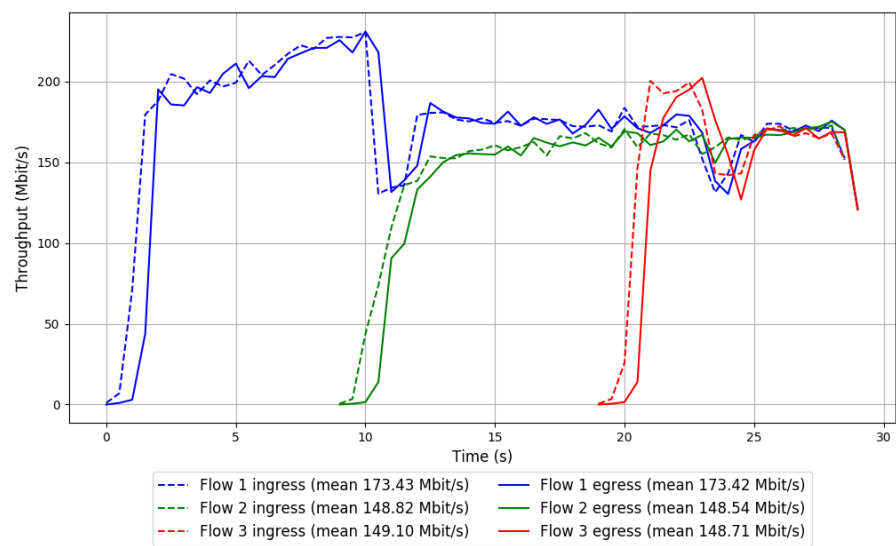
Run 4: Report of FillP-Sheep — Data Link

- - - - Flow 1 ingress (mean 645.10 Mbit/s) —— Flow 1 egress (mean 636.05 Mbit/s)
- - - - Flow 2 ingress (mean 620.45 Mbit/s) —— Flow 2 egress (mean 599.47 Mbit/s)
- - - - Flow 3 ingress (mean 512.49 Mbit/s) —— Flow 3 egress (mean 499.28 Mbit/s)

• Flow 1 (95th percentile 157.25 ms)   • Flow 2 (95th percentile 161.09 ms)   • Flow 3 (95th percentile 166.00 ms)

```
Run 5: Statistics of FillP-Sheep

Start at: 2018-09-11 03:46:44
End at: 2018-09-11 03:47:14
Local clock offset: -0.073 ms
Remote clock offset: -0.071 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1261.16 Mbit/s
95th percentile per-packet one-way delay: 172.517 ms
Loss rate: 4.69%
-- Flow 1:
Average throughput: 650.51 Mbit/s
95th percentile per-packet one-way delay: 206.212 ms
Loss rate: 5.96%
-- Flow 2:
Average throughput: 629.65 Mbit/s
95th percentile per-packet one-way delay: 163.459 ms
Loss rate: 3.34%
-- Flow 3:
Average throughput: 588.79 Mbit/s
95th percentile per-packet one-way delay: 129.097 ms
Loss rate: 3.21%
```
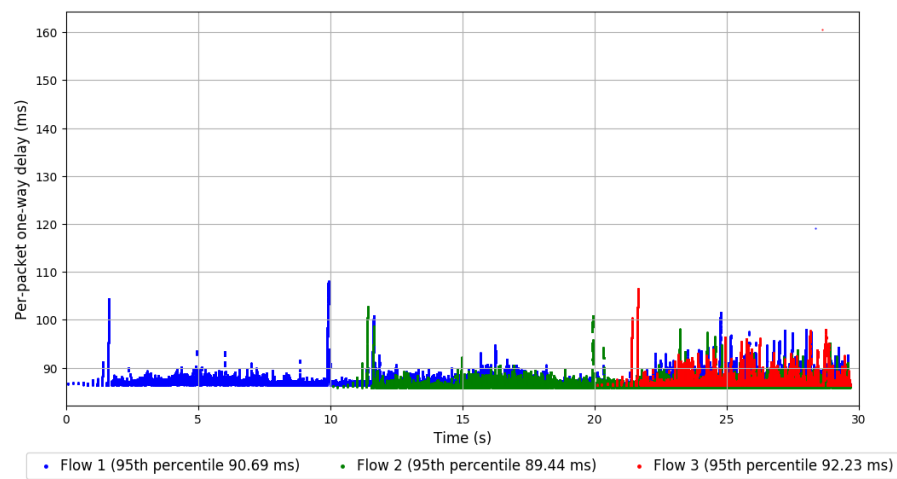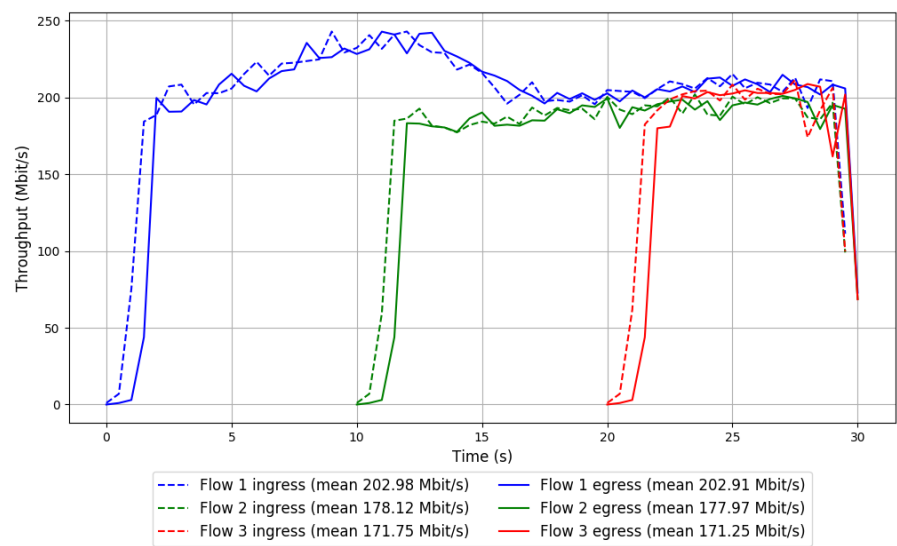
Run 5: Report of FillP-Sheep — Data Link

- - - - Flow 1 ingress (mean 687.87 Mbit/s) ——— Flow 1 egress (mean 650.51 Mbit/s)
- - - - Flow 2 ingress (mean 645.89 Mbit/s) ——— Flow 2 egress (mean 629.65 Mbit/s)
- - - - Flow 3 ingress (mean 597.72 Mbit/s) ——— Flow 3 egress (mean 588.79 Mbit/s)

- Flow 1 (95th percentile 206.21 ms)   - Flow 2 (95th percentile 163.46 ms)   - Flow 3 (95th percentile 129.10 ms)
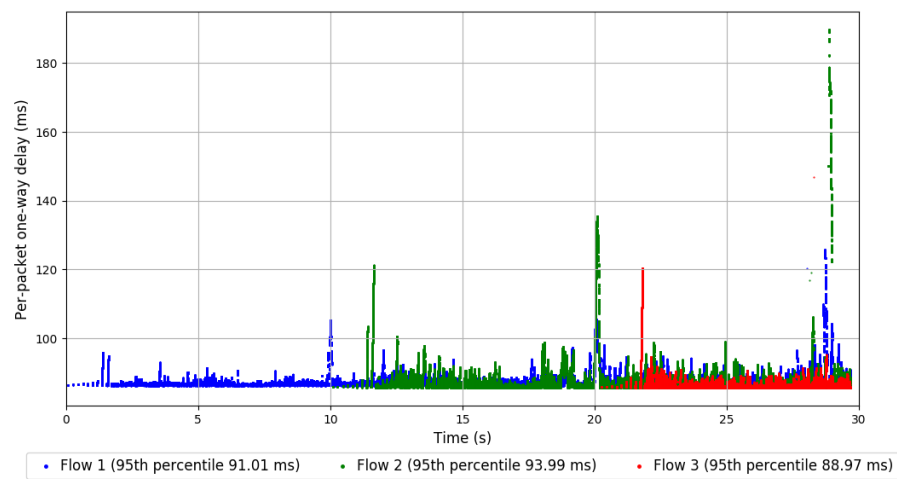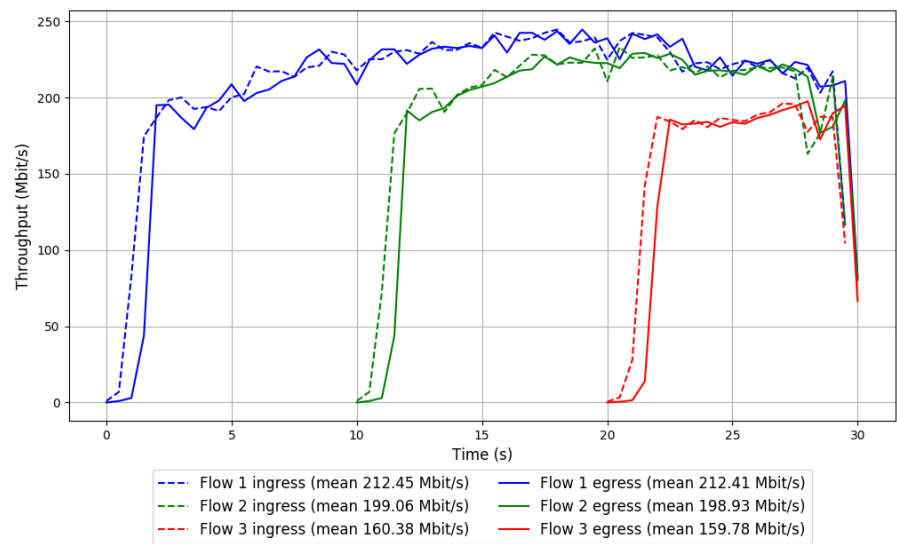
54

```
Run 1: Statistics of Indigo

Start at: 2018-09-11 01:33:45
End at: 2018-09-11 01:34:15
Local clock offset: 0.199 ms
Remote clock offset: 0.251 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 323.88 Mbit/s
95th percentile per-packet one-way delay: 134.251 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 173.42 Mbit/s
95th percentile per-packet one-way delay: 141.443 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 148.54 Mbit/s
95th percentile per-packet one-way delay: 100.895 ms
Loss rate: 1.02%
-- Flow 3:
Average throughput: 148.71 Mbit/s
95th percentile per-packet one-way delay: 158.564 ms
Loss rate: 2.01%
```

Run 1: Report of Indigo — Data Link

Flow 1 ingress (mean 173.43 Mbit/s) ----   Flow 1 egress (mean 173.42 Mbit/s) ——

Flow 2 ingress (mean 148.82 Mbit/s) ----   Flow 2 egress (mean 148.54 Mbit/s) ——

Flow 3 ingress (mean 149.10 Mbit/s) ----   Flow 3 egress (mean 148.71 Mbit/s) ——

Flow 1 (95th percentile 141.44 ms)   Flow 2 (95th percentile 100.89 ms)   Flow 3 (95th percentile 158.56 ms)

```
Run 2: Statistics of Indigo

Start at: 2018-09-11 02:06:07
End at: 2018-09-11 02:06:37
Local clock offset: 0.346 ms
Remote clock offset: 0.1 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 376.08 Mbit/s
95th percentile per-packet one-way delay: 90.697 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 202.91 Mbit/s
95th percentile per-packet one-way delay: 90.686 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 177.97 Mbit/s
95th percentile per-packet one-way delay: 89.441 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 171.25 Mbit/s
95th percentile per-packet one-way delay: 92.235 ms
Loss rate: 2.06%
```
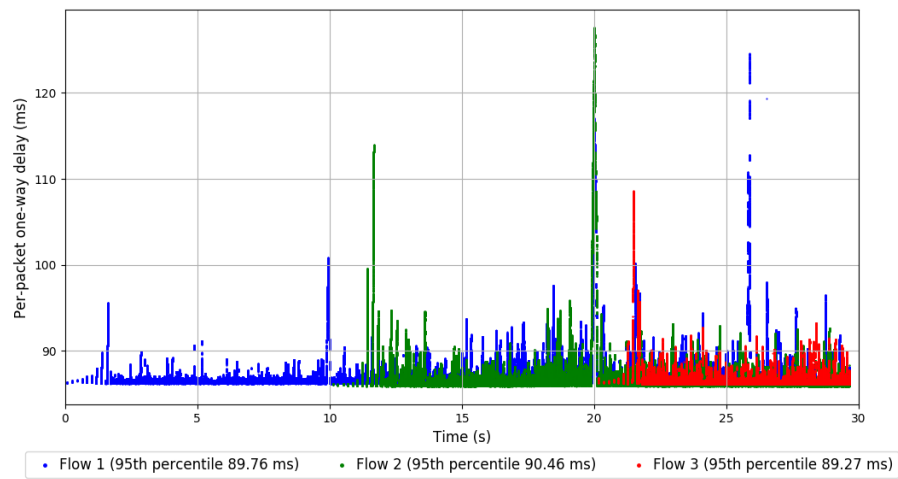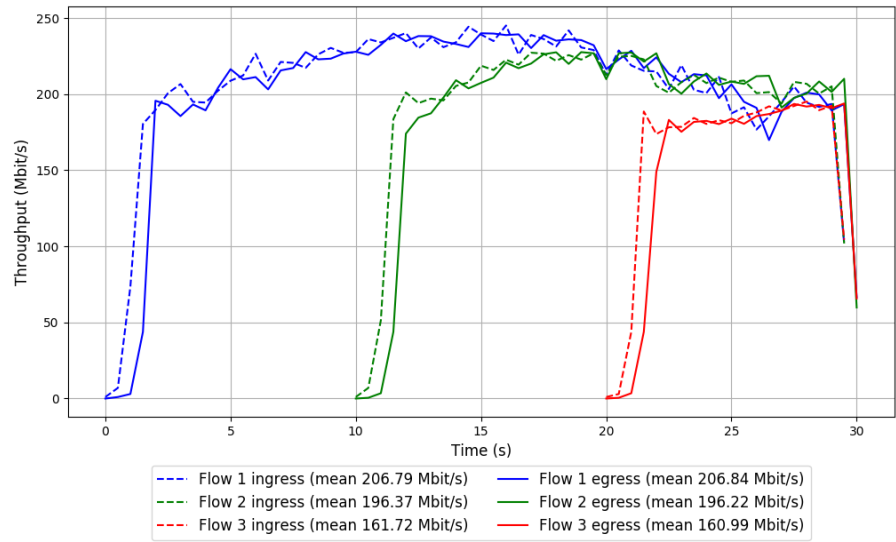
Run 2: Report of Indigo — Data Link

```
Run 3: Statistics of Indigo

Start at: 2018-09-11 02:38:35
End at: 2018-09-11 02:39:05
Local clock offset: 0.136 ms
Remote clock offset: -0.011 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 379.15 Mbit/s
95th percentile per-packet one-way delay: 91.555 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 203.29 Mbit/s
95th percentile per-packet one-way delay: 91.592 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 183.07 Mbit/s
95th percentile per-packet one-way delay: 90.848 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 172.65 Mbit/s
95th percentile per-packet one-way delay: 92.499 ms
Loss rate: 2.14%
```
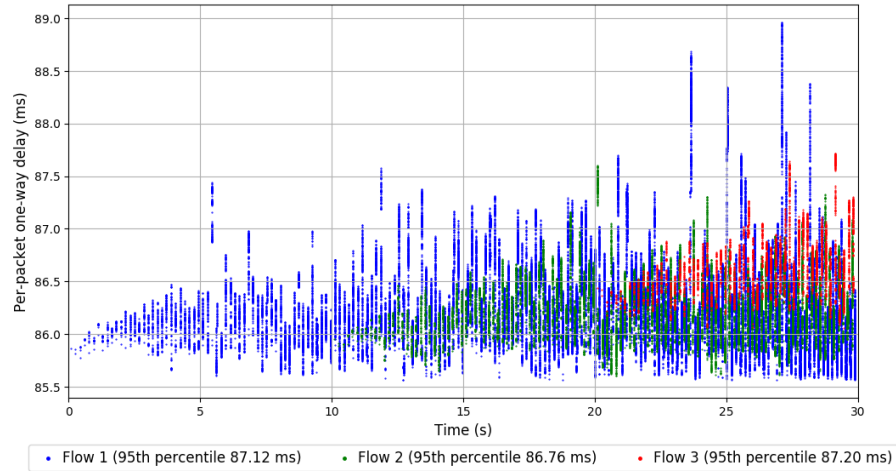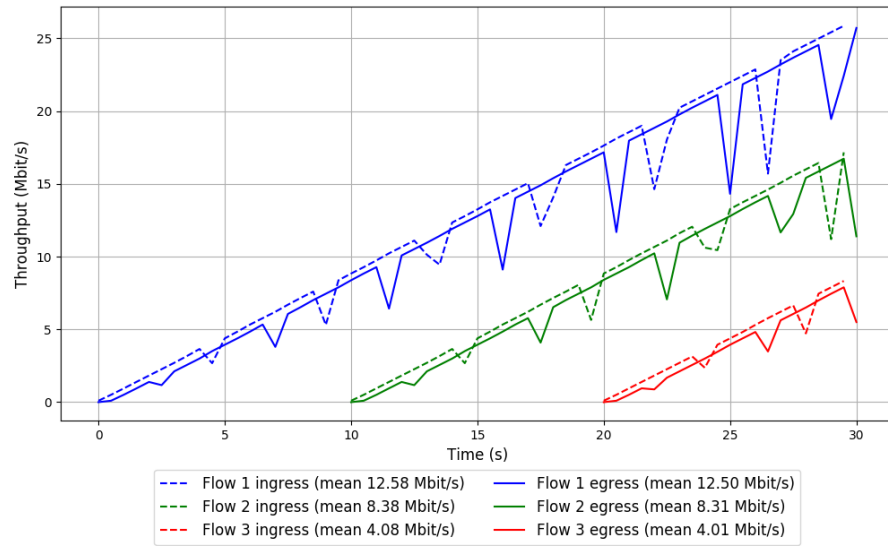
Run 3: Report of Indigo — Data Link

```
Run 4: Statistics of Indigo

Start at: 2018-09-11 03:10:33
End at: 2018-09-11 03:11:03
Local clock offset: -0.08 ms
Remote clock offset: -0.081 ms

# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 394.81 Mbit/s
95th percentile per-packet one-way delay: 91.782 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 212.41 Mbit/s
95th percentile per-packet one-way delay: 91.007 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 198.93 Mbit/s
95th percentile per-packet one-way delay: 93.993 ms
Loss rate: 0.93%
-- Flow 3:
Average throughput: 159.78 Mbit/s
95th percentile per-packet one-way delay: 88.973 ms
Loss rate: 2.14%
```
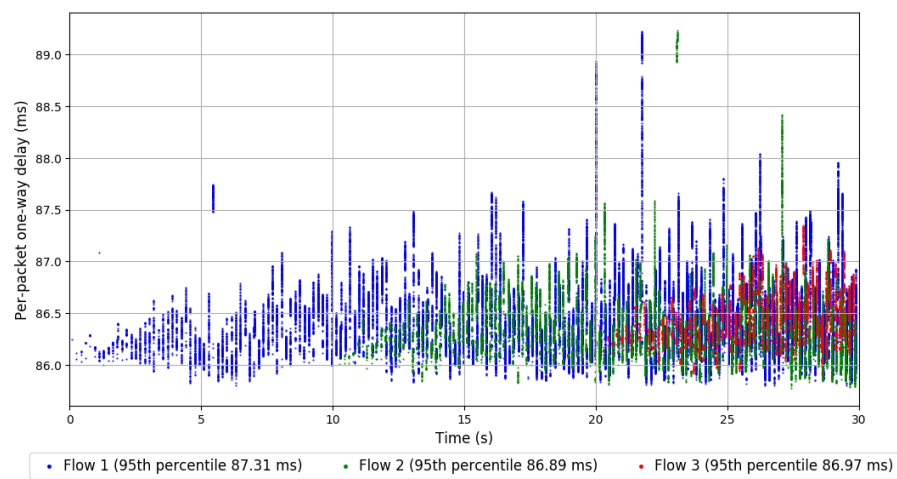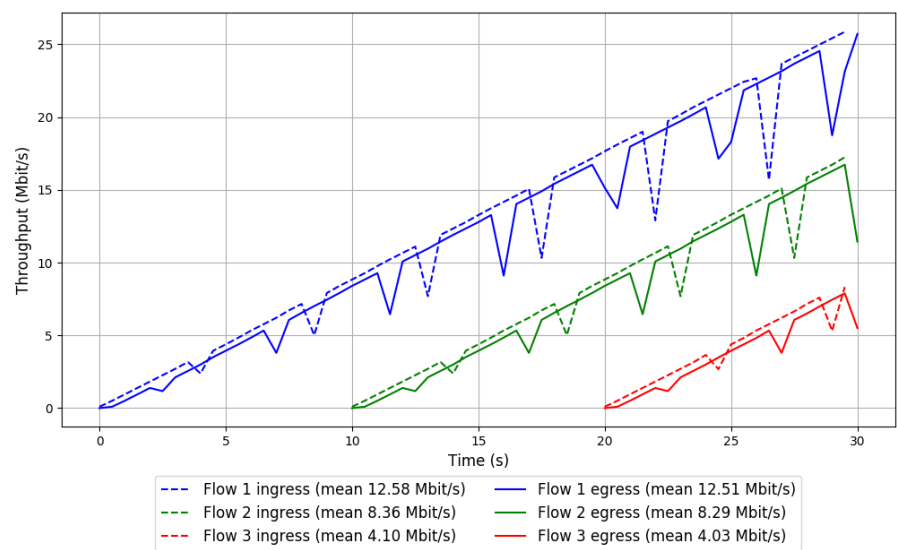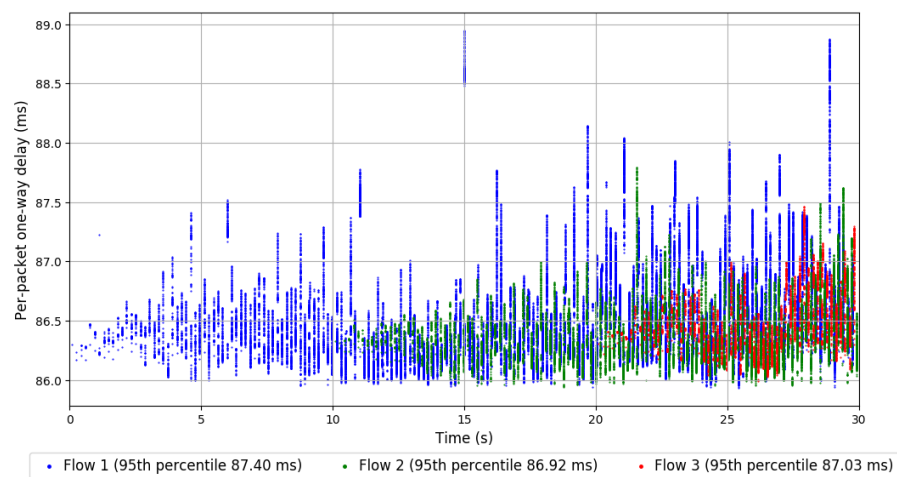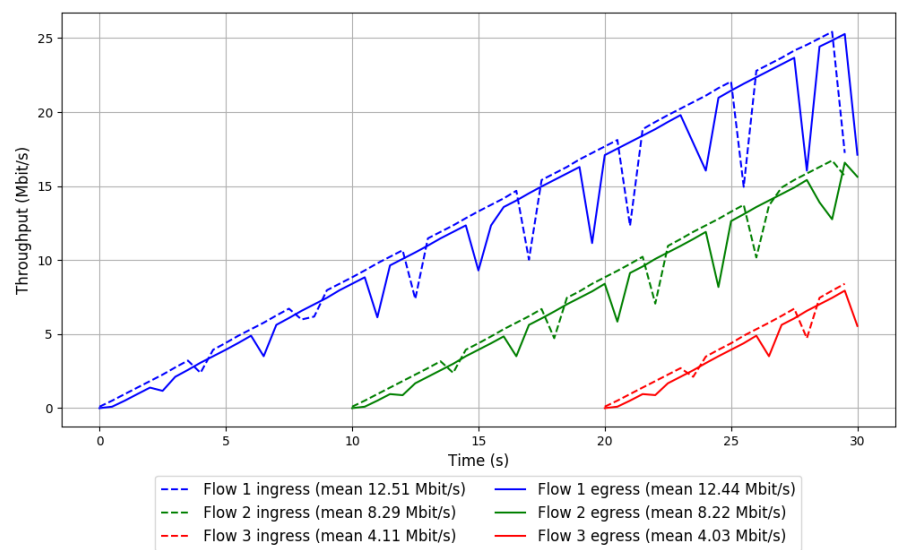
Run 4: Report of Indigo — Data Link

```
Run 5: Statistics of Indigo

Start at: 2018-09-11 03:42:52
End at: 2018-09-11 03:43:22
Local clock offset: -0.14 ms
Remote clock offset: -0.025 ms

# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 388.02 Mbit/s
95th percentile per-packet one-way delay: 89.916 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 206.84 Mbit/s
95th percentile per-packet one-way delay: 89.761 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 196.22 Mbit/s
95th percentile per-packet one-way delay: 90.460 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 160.99 Mbit/s
95th percentile per-packet one-way delay: 89.274 ms
Loss rate: 2.23%
```

Run 5: Report of Indigo — Data Link

Flow 1 ingress (mean 206.79 Mbit/s) --- Flow 1 egress (mean 206.84 Mbit/s)
Flow 2 ingress (mean 196.37 Mbit/s) --- Flow 2 egress (mean 196.22 Mbit/s)
Flow 3 ingress (mean 161.72 Mbit/s) --- Flow 3 egress (mean 160.99 Mbit/s)

Flow 1 (95th percentile 89.76 ms) • Flow 2 (95th percentile 90.46 ms) • Flow 3 (95th percentile 89.27 ms)

64

```
Run 1: Statistics of LEDBAT

Start at: 2018-09-11 01:50:32
End at: 2018-09-11 01:51:02
Local clock offset: 0.089 ms
Remote clock offset: 0.108 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.30 Mbit/s
95th percentile per-packet one-way delay: 87.042 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 12.50 Mbit/s
95th percentile per-packet one-way delay: 87.116 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.31 Mbit/s
95th percentile per-packet one-way delay: 86.762 ms
Loss rate: 1.73%
-- Flow 3:
Average throughput: 4.01 Mbit/s
95th percentile per-packet one-way delay: 87.203 ms
Loss rate: 3.50%
```
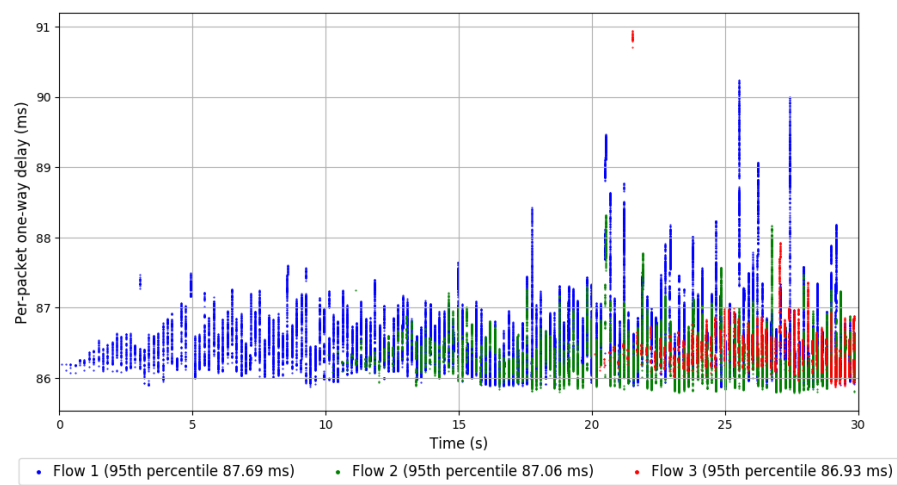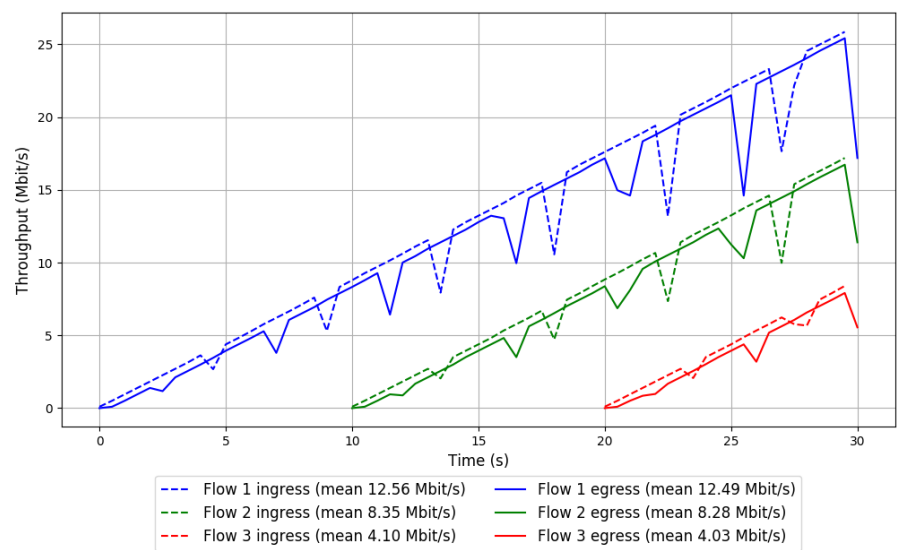
Run 1: Report of LEDBAT — Data Link

```
Run 2: Statistics of LEDBAT

Start at: 2018-09-11 02:23:04
End at: 2018-09-11 02:23:34
Local clock offset: 0.054 ms
Remote clock offset: 0.013 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.31 Mbit/s
95th percentile per-packet one-way delay: 87.212 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 12.51 Mbit/s
95th percentile per-packet one-way delay: 87.313 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.29 Mbit/s
95th percentile per-packet one-way delay: 86.889 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 86.966 ms
Loss rate: 3.50%
```
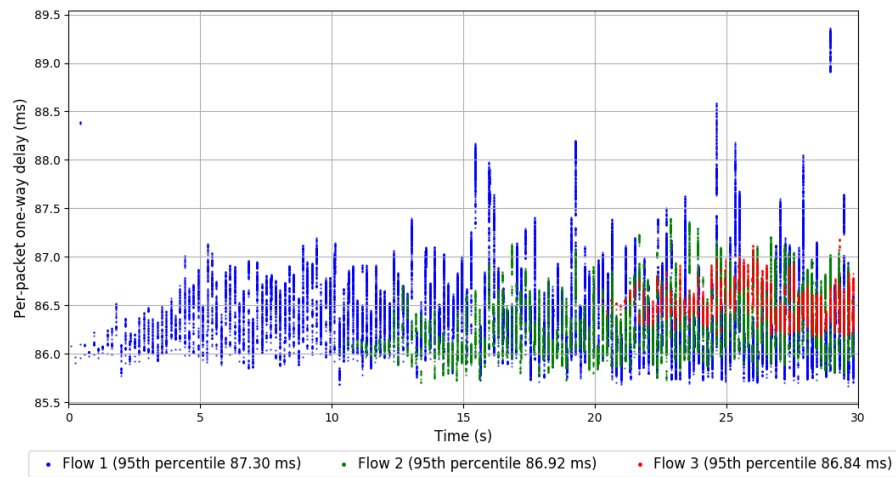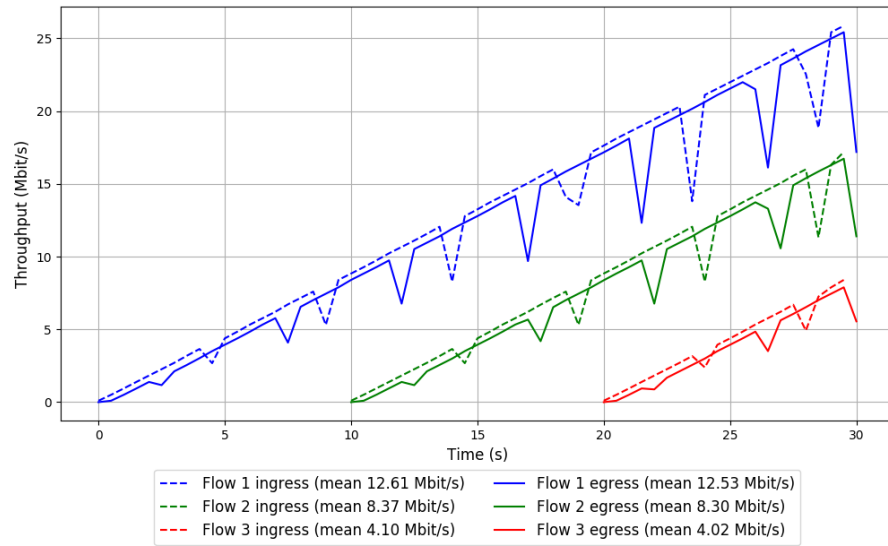
Run 2: Report of LEDBAT — Data Link

```
Run 3: Statistics of LEDBAT

Start at: 2018-09-11 02:55:16
End at: 2018-09-11 02:55:46
Local clock offset: -0.2 ms
Remote clock offset: -0.045 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.15 Mbit/s
95th percentile per-packet one-way delay: 87.279 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 12.44 Mbit/s
95th percentile per-packet one-way delay: 87.398 ms
Loss rate: 1.16%
-- Flow 2:
Average throughput: 8.22 Mbit/s
95th percentile per-packet one-way delay: 86.915 ms
Loss rate: 1.71%
-- Flow 3:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 87.033 ms
Loss rate: 3.51%
```

Run 3: Report of LEDBAT — Data Link

```
Run 4: Statistics of LEDBAT

Start at: 2018-09-11 03:27:32
End at: 2018-09-11 03:28:02
Local clock offset: -0.096 ms
Remote clock offset: -0.027 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.29 Mbit/s
95th percentile per-packet one-way delay: 87.432 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 12.49 Mbit/s
95th percentile per-packet one-way delay: 87.687 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.28 Mbit/s
95th percentile per-packet one-way delay: 87.058 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 86.927 ms
Loss rate: 3.51%
```
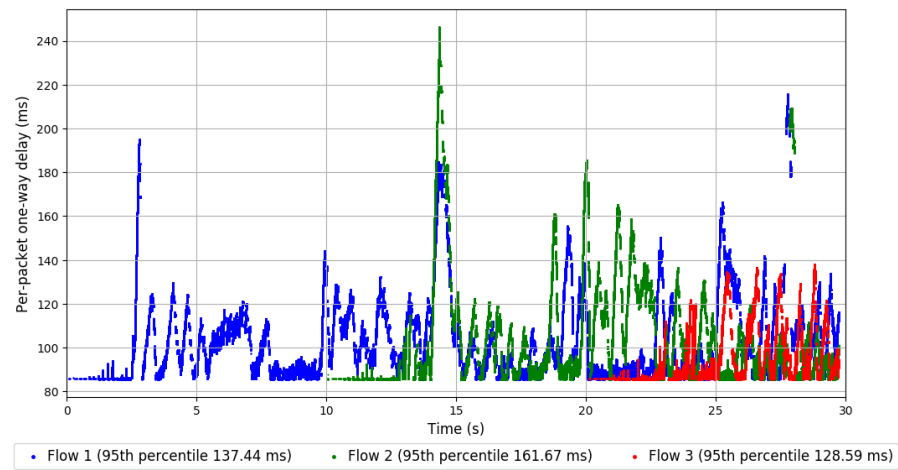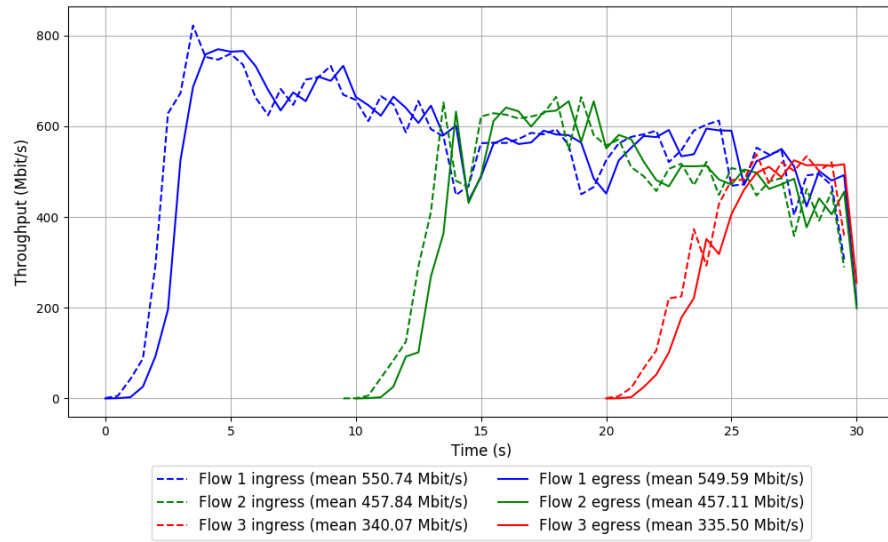
Run 4: Report of LEDBAT — Data Link

```
Run 5: Statistics of LEDBAT

Start at: 2018-09-11 03:59:43
End at: 2018-09-11 04:00:13
Local clock offset: -0.074 ms
Remote clock offset: -0.131 ms

# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.34 Mbit/s
95th percentile per-packet one-way delay: 87.129 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 12.53 Mbit/s
95th percentile per-packet one-way delay: 87.304 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.30 Mbit/s
95th percentile per-packet one-way delay: 86.925 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 86.837 ms
Loss rate: 3.52%
```
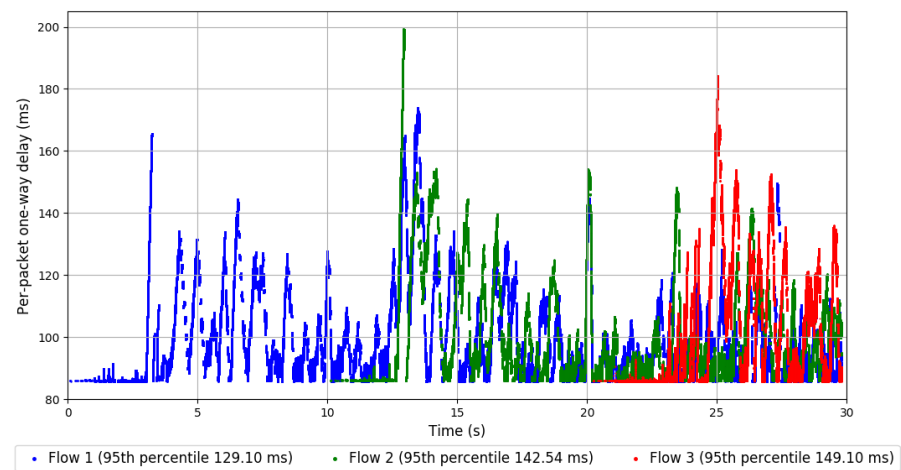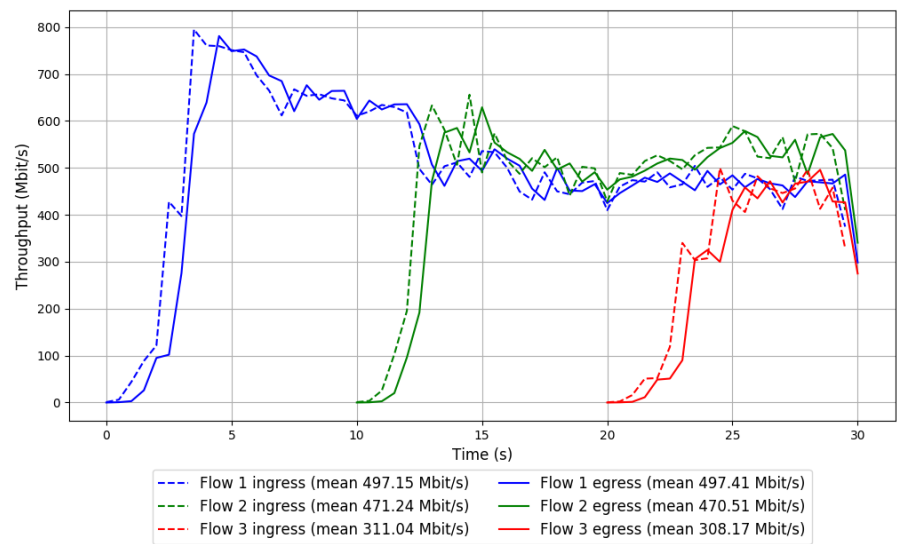
Run 5: Report of LEDBAT — Data Link

```
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-11 01:24:49
End at: 2018-09-11 01:25:19
Local clock offset: 0.151 ms
Remote clock offset: 0.482 ms


# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 961.97 Mbit/s
95th percentile per-packet one-way delay: 141.132 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 549.59 Mbit/s
95th percentile per-packet one-way delay: 137.444 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 457.11 Mbit/s
95th percentile per-packet one-way delay: 161.672 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 335.50 Mbit/s
95th percentile per-packet one-way delay: 128.594 ms
Loss rate: 3.08%
```

Run 1: Report of Indigo-Muses — Data Link

```
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-11 01:57:06
End at: 2018-09-11 01:57:36
Local clock offset: 0.216 ms
Remote clock offset: 0.158 ms

# Below is generated by plot.py at 2018-09-11 05:48:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 908.36 Mbit/s
95th percentile per-packet one-way delay: 138.724 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 497.41 Mbit/s
95th percentile per-packet one-way delay: 129.103 ms
Loss rate: 0.53%
-- Flow 2:
Average throughput: 470.51 Mbit/s
95th percentile per-packet one-way delay: 142.542 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 308.17 Mbit/s
95th percentile per-packet one-way delay: 149.104 ms
Loss rate: 2.72%
```
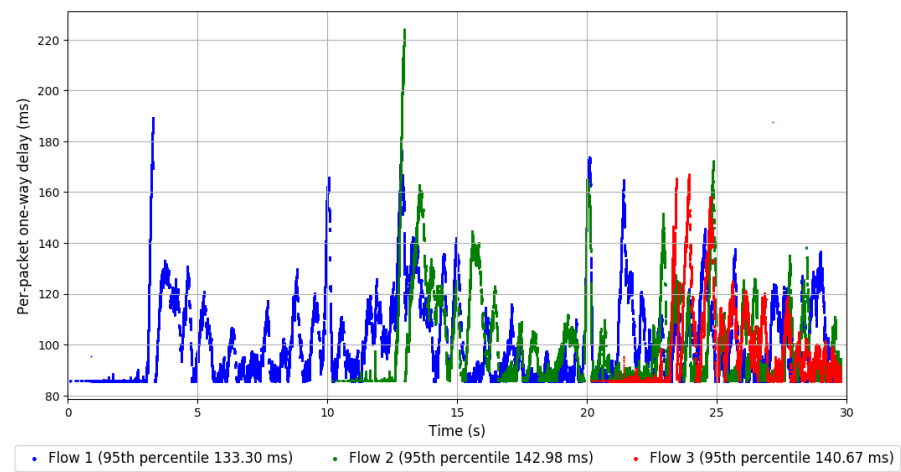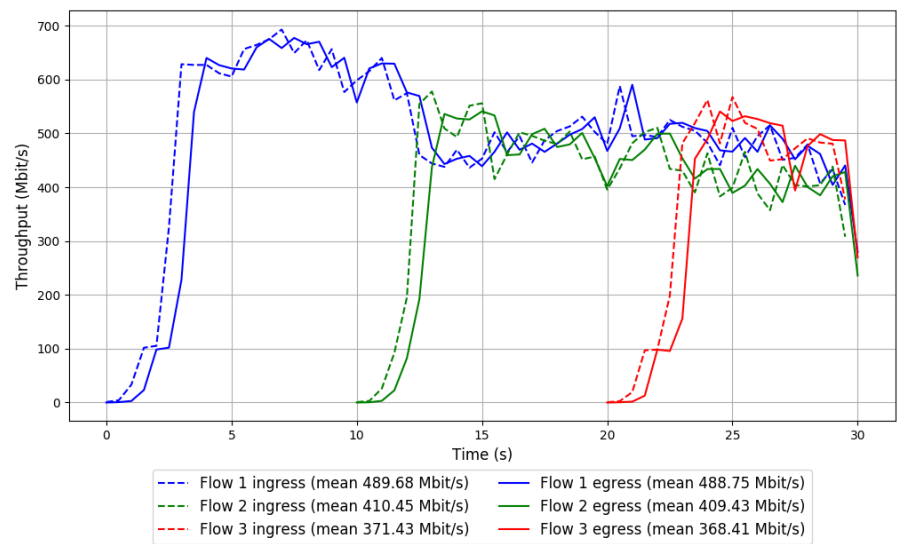
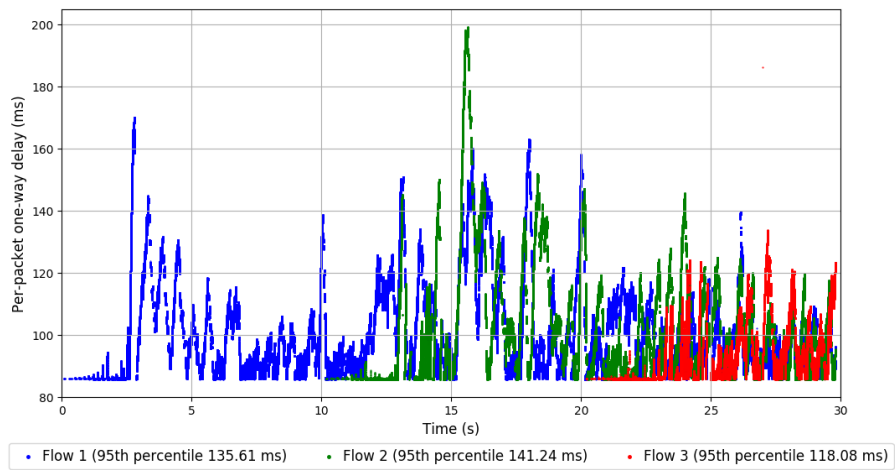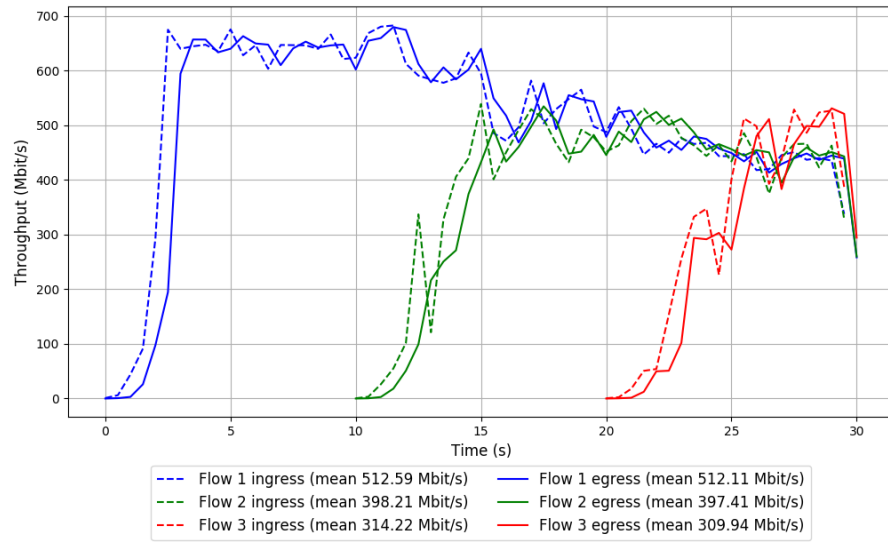# Run 2: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 497.15 Mbit/s)   Flow 1 egress (mean 497.41 Mbit/s)
Flow 2 ingress (mean 471.24 Mbit/s)   Flow 2 egress (mean 470.51 Mbit/s)
Flow 3 ingress (mean 311.04 Mbit/s)   Flow 3 egress (mean 308.17 Mbit/s)

Flow 1 (95th percentile 129.10 ms)   Flow 2 (95th percentile 142.54 ms)   Flow 3 (95th percentile 149.10 ms)
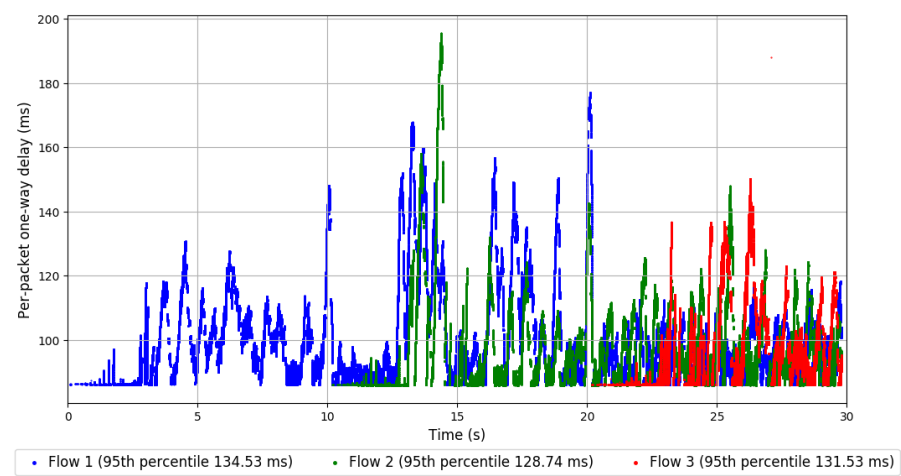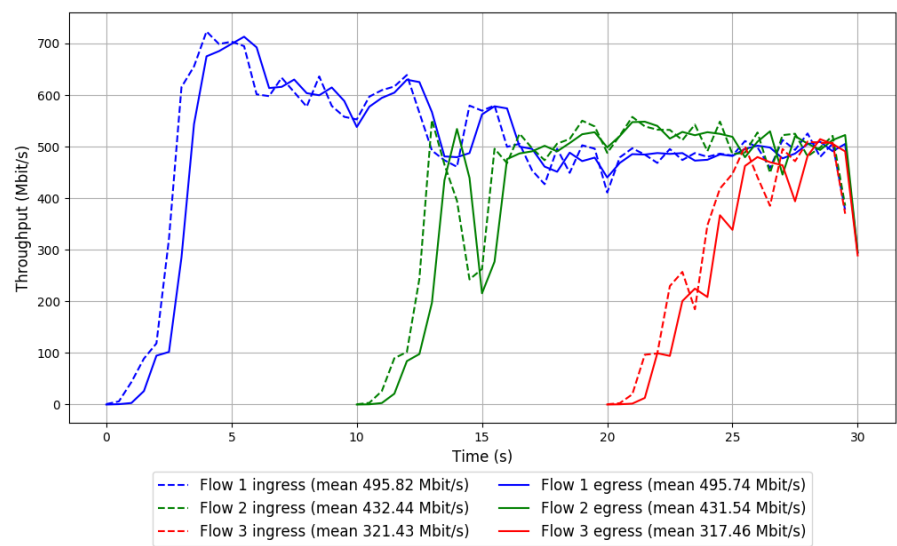
```
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-11 02:29:38
End at: 2018-09-11 02:30:08
Local clock offset: -0.206 ms
Remote clock offset: 0.047 ms


# Below is generated by plot.py at 2018-09-11 05:49:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 878.30 Mbit/s
95th percentile per-packet one-way delay: 137.684 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 488.75 Mbit/s
95th percentile per-packet one-way delay: 133.304 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 409.43 Mbit/s
95th percentile per-packet one-way delay: 142.979 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 368.41 Mbit/s
95th percentile per-packet one-way delay: 140.666 ms
Loss rate: 2.57%
```

Run 3: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 489.68 Mbit/s) --- Flow 1 egress (mean 488.75 Mbit/s)
Flow 2 ingress (mean 410.45 Mbit/s) --- Flow 2 egress (mean 409.43 Mbit/s)
Flow 3 ingress (mean 371.43 Mbit/s) --- Flow 3 egress (mean 368.41 Mbit/s)

Flow 1 (95th percentile 133.30 ms)   Flow 2 (95th percentile 142.98 ms)   Flow 3 (95th percentile 140.67 ms)

```
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-11 03:01:41
End at: 2018-09-11 03:02:11
Local clock offset: -0.108 ms
Remote clock offset: -0.105 ms


# Below is generated by plot.py at 2018-09-11 05:49:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 874.60 Mbit/s
95th percentile per-packet one-way delay: 136.356 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 512.11 Mbit/s
95th percentile per-packet one-way delay: 135.613 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 397.41 Mbit/s
95th percentile per-packet one-way delay: 141.235 ms
Loss rate: 1.07%
-- Flow 3:
Average throughput: 309.94 Mbit/s
95th percentile per-packet one-way delay: 118.080 ms
Loss rate: 3.10%
```
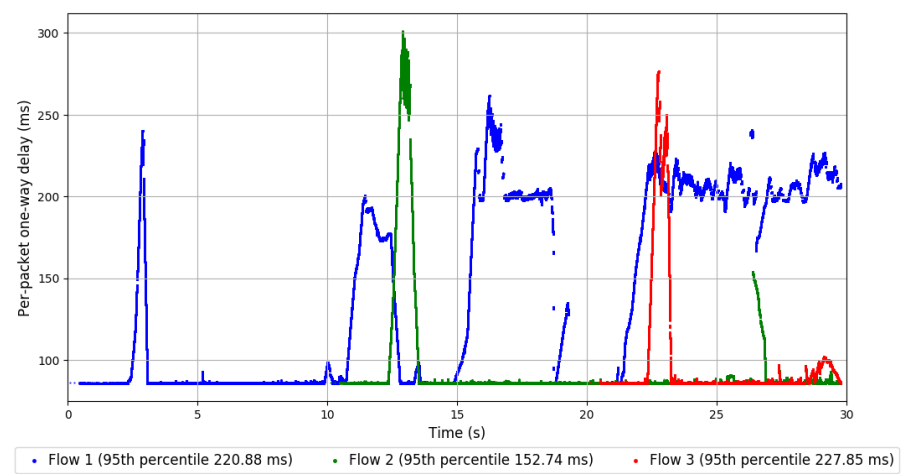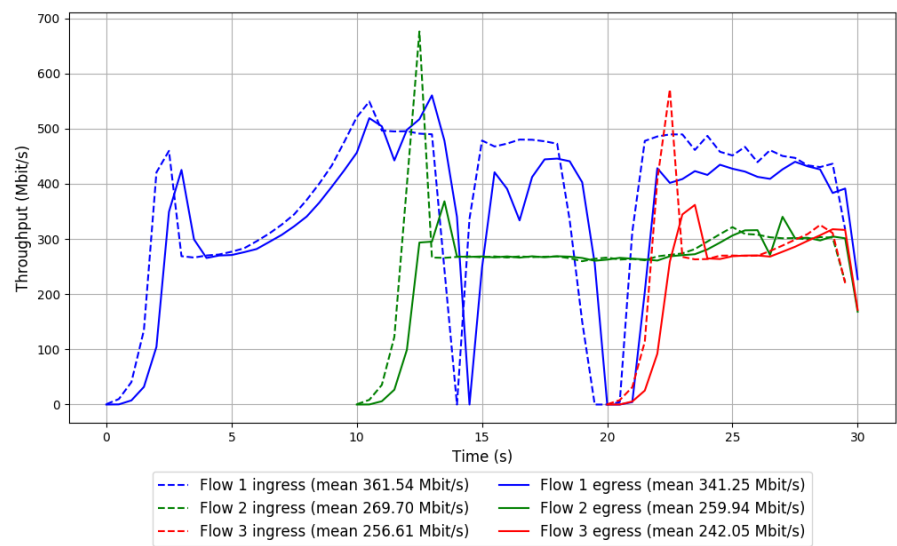
Run 4: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 512.59 Mbit/s)   Flow 1 egress (mean 512.11 Mbit/s)
Flow 2 ingress (mean 398.21 Mbit/s)   Flow 2 egress (mean 397.41 Mbit/s)
Flow 3 ingress (mean 314.22 Mbit/s)   Flow 3 egress (mean 309.94 Mbit/s)

Flow 1 (95th percentile 135.61 ms)   Flow 2 (95th percentile 141.24 ms)   Flow 3 (95th percentile 118.08 ms)

```
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-11 03:34:05
End at: 2018-09-11 03:34:35
Local clock offset: 0.041 ms
Remote clock offset: -0.063 ms

# Below is generated by plot.py at 2018-09-11 05:52:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 883.19 Mbit/s
95th percentile per-packet one-way delay: 132.416 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 495.74 Mbit/s
95th percentile per-packet one-way delay: 134.535 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 431.54 Mbit/s
95th percentile per-packet one-way delay: 128.742 ms
Loss rate: 1.08%
-- Flow 3:
Average throughput: 317.46 Mbit/s
95th percentile per-packet one-way delay: 131.528 ms
Loss rate: 3.05%
```
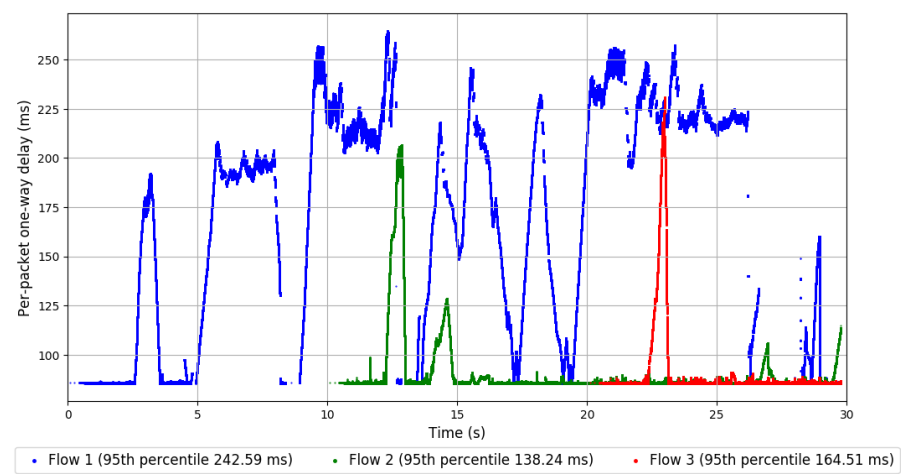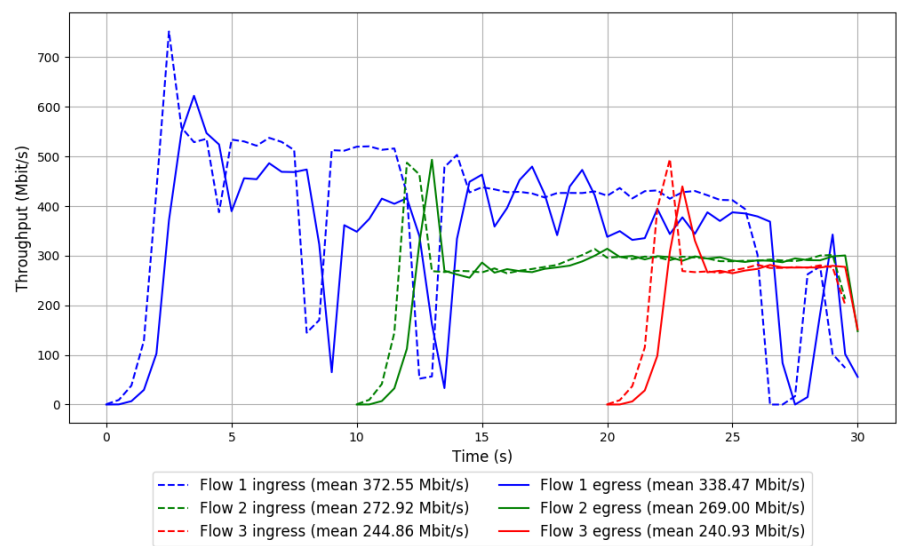
Run 5: Report of Indigo-Muses — Data Link

Flow 1 ingress (mean 495.82 Mbit/s)   Flow 1 egress (mean 495.74 Mbit/s)
Flow 2 ingress (mean 432.44 Mbit/s)   Flow 2 egress (mean 431.54 Mbit/s)
Flow 3 ingress (mean 321.43 Mbit/s)   Flow 3 egress (mean 317.46 Mbit/s)

Flow 1 (95th percentile 134.53 ms)   Flow 2 (95th percentile 128.74 ms)   Flow 3 (95th percentile 131.53 ms)

```
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-11 01:19:34
End at: 2018-09-11 01:20:04
Local clock offset: 0.3 ms
Remote clock offset: 0.412 ms


# Below is generated by plot.py at 2018-09-11 05:56:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 591.98 Mbit/s
95th percentile per-packet one-way delay: 219.828 ms
Loss rate: 5.83%
-- Flow 1:
Average throughput: 341.25 Mbit/s
95th percentile per-packet one-way delay: 220.878 ms
Loss rate: 6.16%
-- Flow 2:
Average throughput: 259.94 Mbit/s
95th percentile per-packet one-way delay: 152.741 ms
Loss rate: 4.46%
-- Flow 3:
Average throughput: 242.05 Mbit/s
95th percentile per-packet one-way delay: 227.852 ms
Loss rate: 7.34%
```
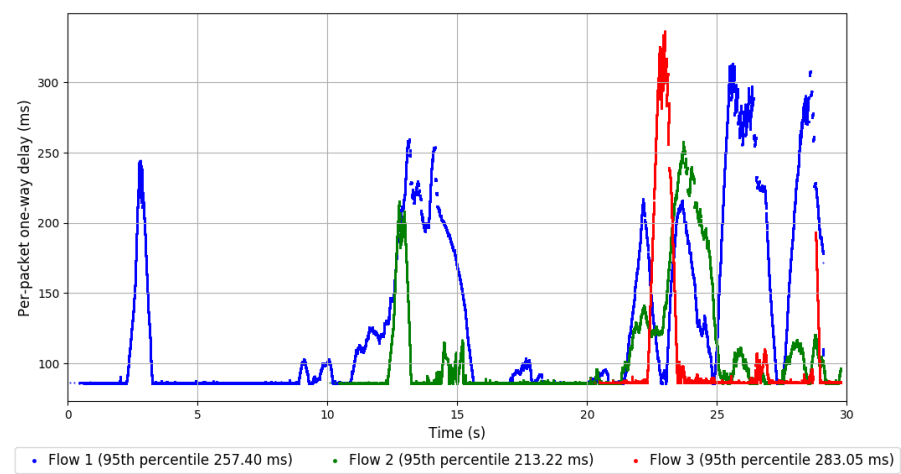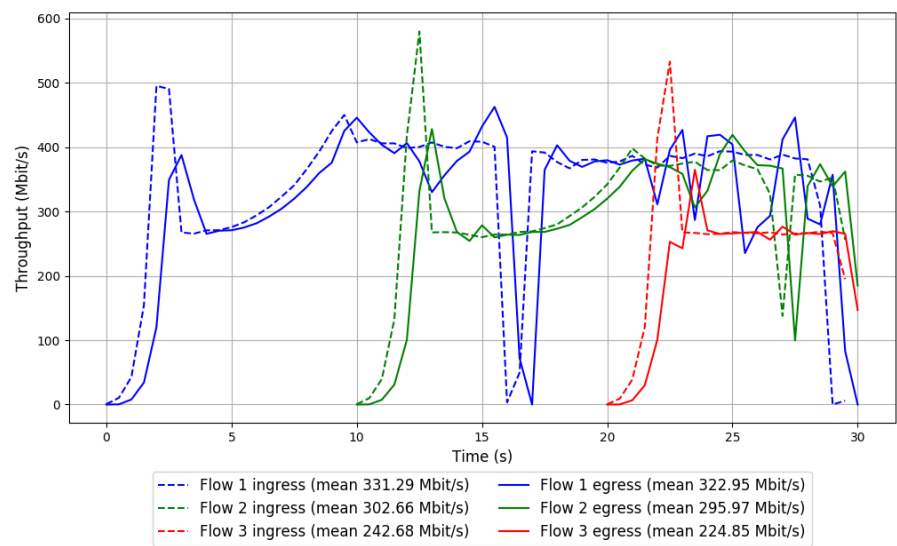
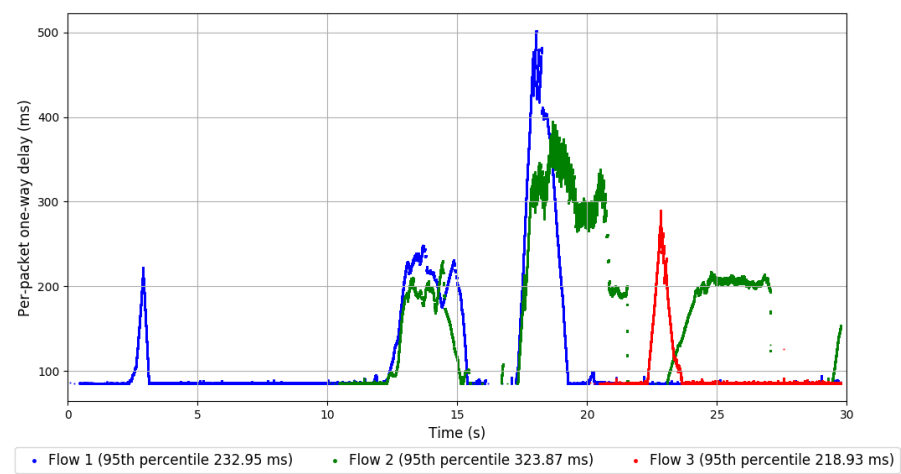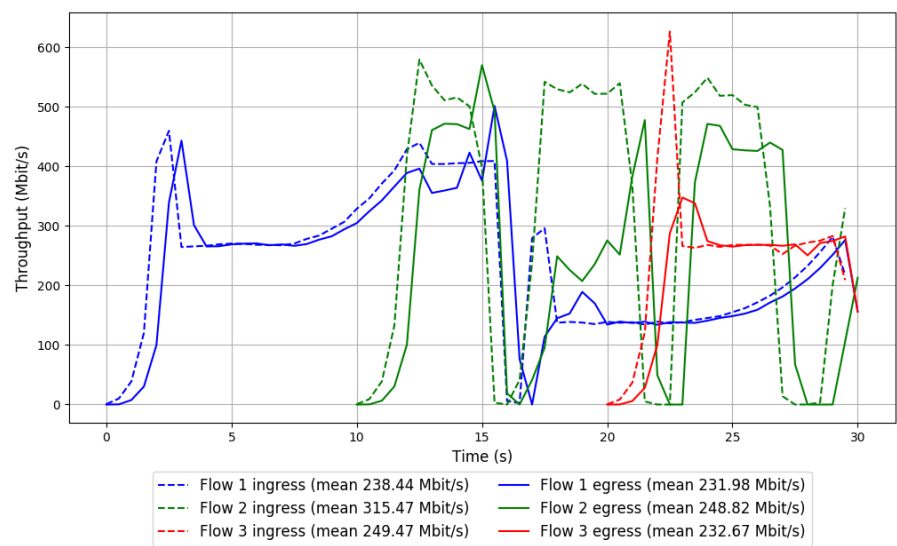Run 1: Report of PCC-Allegro — Data Link

```
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-11 01:51:49
End at: 2018-09-11 01:52:19
Local clock offset: 0.064 ms
Remote clock offset: 0.153 ms


# Below is generated by plot.py at 2018-09-11 05:57:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 595.00 Mbit/s
95th percentile per-packet one-way delay: 234.585 ms
Loss rate: 6.76%
-- Flow 1:
Average throughput: 338.47 Mbit/s
95th percentile per-packet one-way delay: 242.587 ms
Loss rate: 9.67%
-- Flow 2:
Average throughput: 269.00 Mbit/s
95th percentile per-packet one-way delay: 138.236 ms
Loss rate: 2.29%
-- Flow 3:
Average throughput: 240.93 Mbit/s
95th percentile per-packet one-way delay: 164.515 ms
Loss rate: 3.33%
```

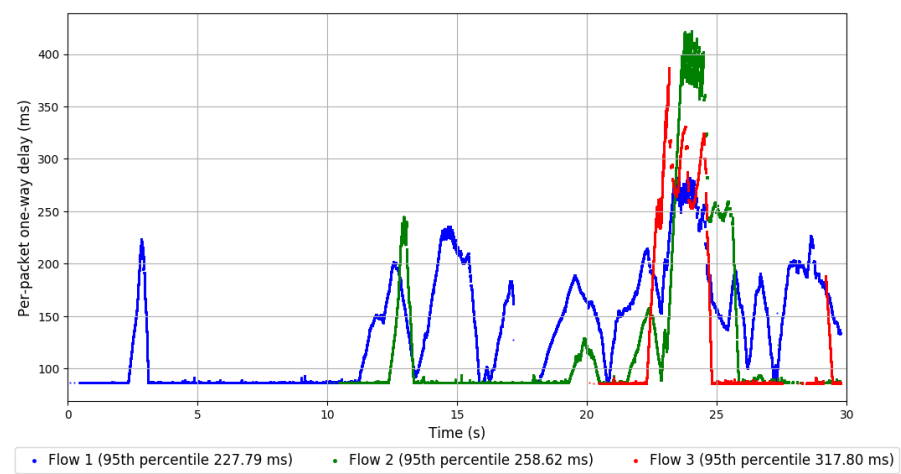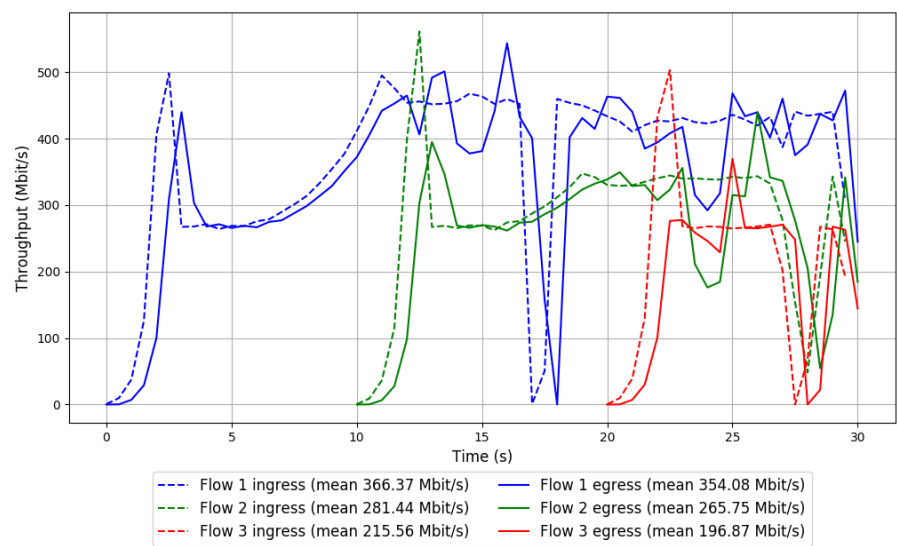Run 2: Report of PCC-Allegro — Data Link

```
Run 3: Statistics of PCC-Allegro

Start at: 2018-09-11 02:24:21
End at: 2018-09-11 02:24:51
Local clock offset: -0.074 ms
Remote clock offset: 0.017 ms


# Below is generated by plot.py at 2018-09-11 06:07:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 589.89 Mbit/s
95th percentile per-packet one-way delay: 237.032 ms
Loss rate: 4.21%
-- Flow 1:
Average throughput: 322.95 Mbit/s
95th percentile per-packet one-way delay: 257.405 ms
Loss rate: 3.74%
-- Flow 2:
Average throughput: 295.97 Mbit/s
95th percentile per-packet one-way delay: 213.224 ms
Loss rate: 3.06%
-- Flow 3:
Average throughput: 224.85 Mbit/s
95th percentile per-packet one-way delay: 283.051 ms
Loss rate: 9.01%
```
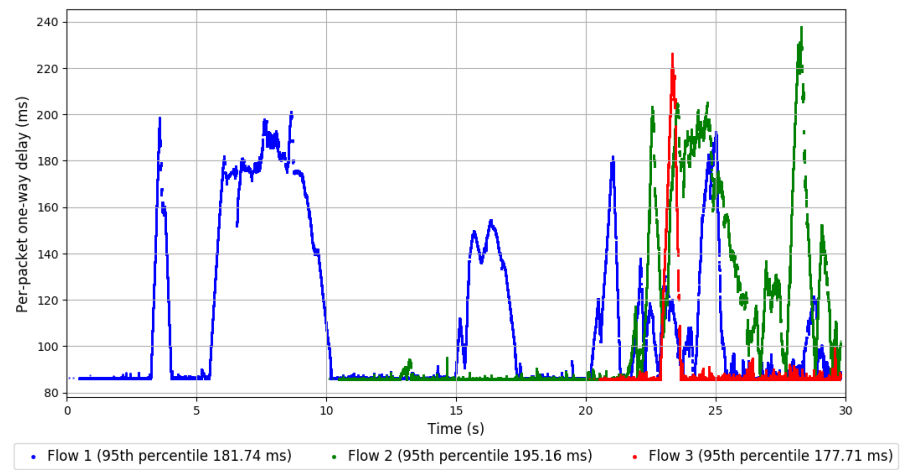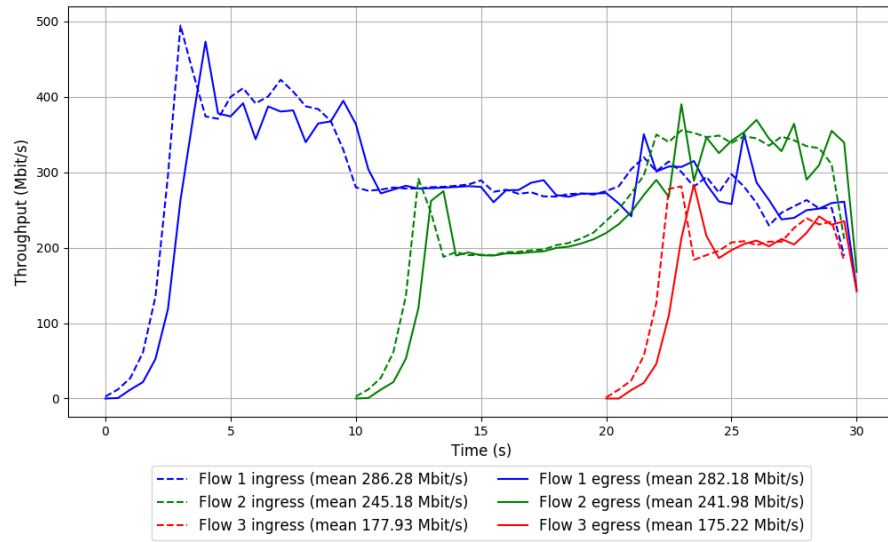
Run 3: Report of PCC-Allegro — Data Link

```
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-11 02:56:32
End at: 2018-09-11 02:57:02
Local clock offset: 0.008 ms
Remote clock offset: -0.099 ms


# Below is generated by plot.py at 2018-09-11 06:07:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 472.59 Mbit/s
95th percentile per-packet one-way delay: 292.743 ms
Loss rate: 11.39%
-- Flow 1:
Average throughput: 231.98 Mbit/s
95th percentile per-packet one-way delay: 232.946 ms
Loss rate: 3.27%
-- Flow 2:
Average throughput: 248.82 Mbit/s
95th percentile per-packet one-way delay: 323.867 ms
Loss rate: 21.81%
-- Flow 3:
Average throughput: 232.67 Mbit/s
95th percentile per-packet one-way delay: 218.933 ms
Loss rate: 8.37%
```

Run 4: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 238.44 Mbit/s)   Flow 1 egress (mean 231.98 Mbit/s)
Flow 2 ingress (mean 315.47 Mbit/s)   Flow 2 egress (mean 248.82 Mbit/s)
Flow 3 ingress (mean 249.47 Mbit/s)   Flow 3 egress (mean 232.67 Mbit/s)

Flow 1 (95th percentile 232.95 ms)   Flow 2 (95th percentile 323.87 ms)   Flow 3 (95th percentile 218.93 ms)
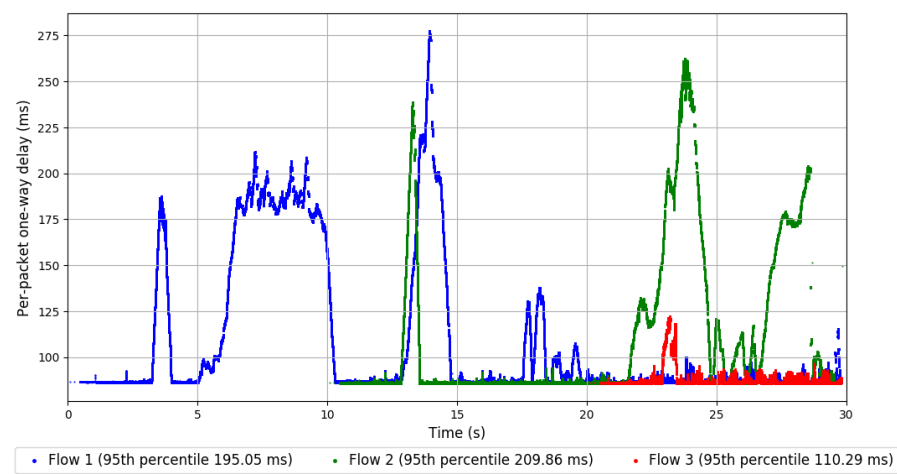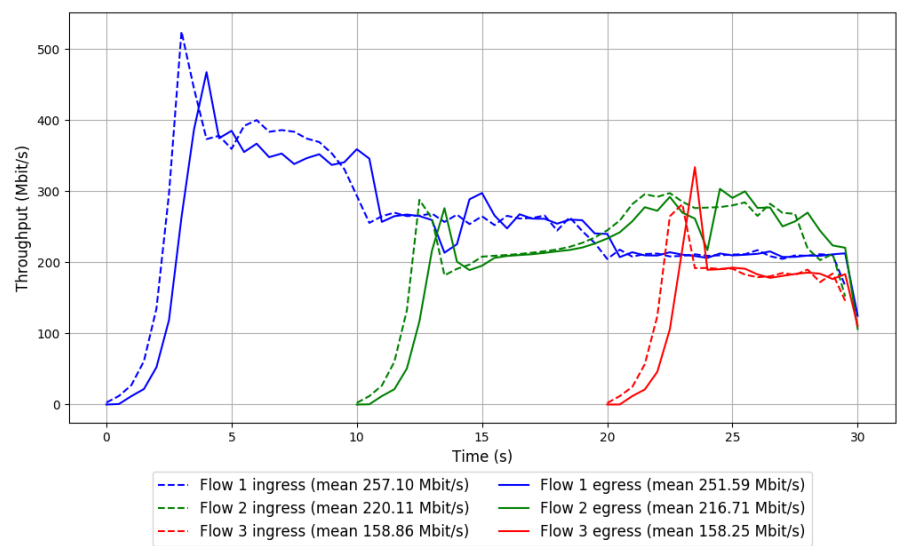
92

```
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-11 03:28:49
End at: 2018-09-11 03:29:19
Local clock offset: 0.078 ms
Remote clock offset: -0.079 ms


# Below is generated by plot.py at 2018-09-11 06:12:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 594.42 Mbit/s
95th percentile per-packet one-way delay: 258.884 ms
Loss rate: 5.39%
-- Flow 1:
Average throughput: 354.08 Mbit/s
95th percentile per-packet one-way delay: 227.795 ms
Loss rate: 3.92%
-- Flow 2:
Average throughput: 265.75 Mbit/s
95th percentile per-packet one-way delay: 258.617 ms
Loss rate: 6.40%
-- Flow 3:
Average throughput: 196.87 Mbit/s
95th percentile per-packet one-way delay: 317.799 ms
Loss rate: 10.28%
```

Run 5: Report of PCC-Allegro — Data Link

Flow 1 ingress (mean 366.37 Mbit/s) Flow 1 egress (mean 354.08 Mbit/s)
Flow 2 ingress (mean 281.44 Mbit/s) Flow 2 egress (mean 265.75 Mbit/s)
Flow 3 ingress (mean 215.56 Mbit/s) Flow 3 egress (mean 196.87 Mbit/s)

Flow 1 (95th percentile 227.79 ms) Flow 2 (95th percentile 258.62 ms) Flow 3 (95th percentile 317.80 ms)

94

```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-11 01:44:19
End at: 2018-09-11 01:44:49
Local clock offset: -0.008 ms
Remote clock offset: 0.047 ms


# Below is generated by plot.py at 2018-09-11 06:12:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 499.63 Mbit/s
95th percentile per-packet one-way delay: 188.030 ms
Loss rate: 2.20%
-- Flow 1:
Average throughput: 282.18 Mbit/s
95th percentile per-packet one-way delay: 181.741 ms
Loss rate: 2.00%
-- Flow 2:
Average throughput: 241.98 Mbit/s
95th percentile per-packet one-way delay: 195.157 ms
Loss rate: 2.17%
-- Flow 3:
Average throughput: 175.22 Mbit/s
95th percentile per-packet one-way delay: 177.705 ms
Loss rate: 3.27%
```
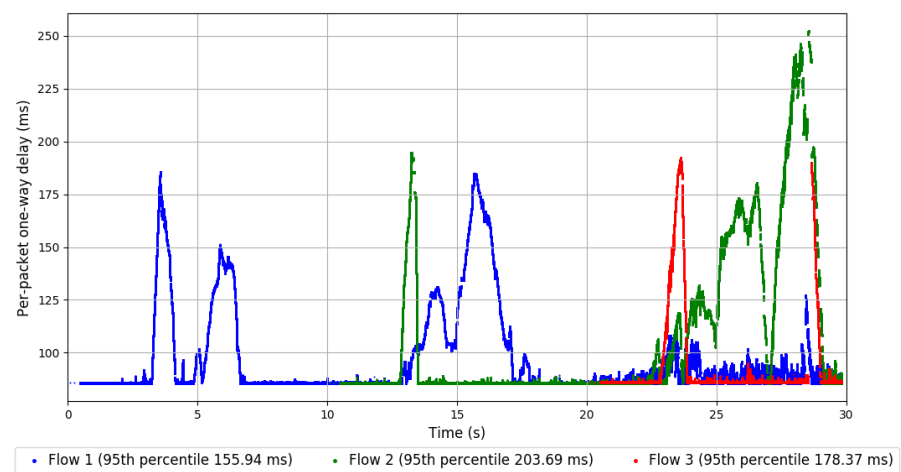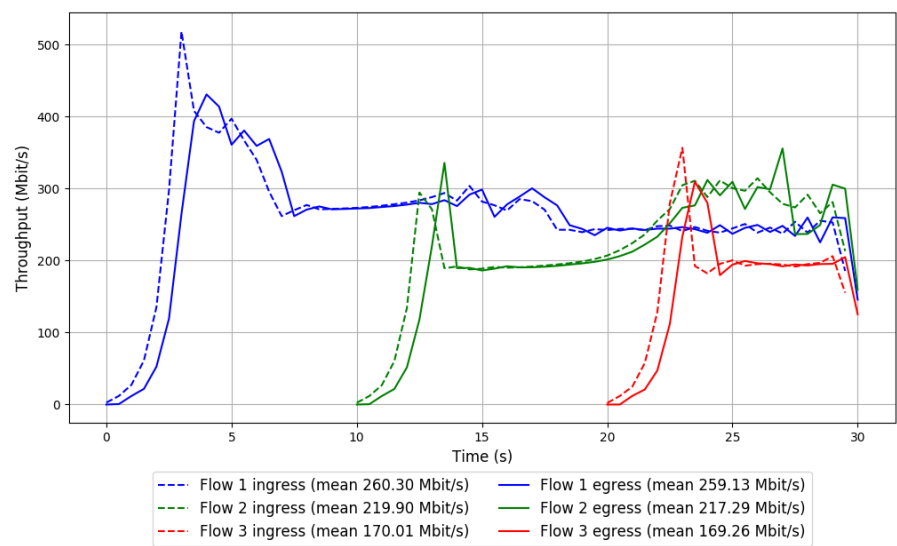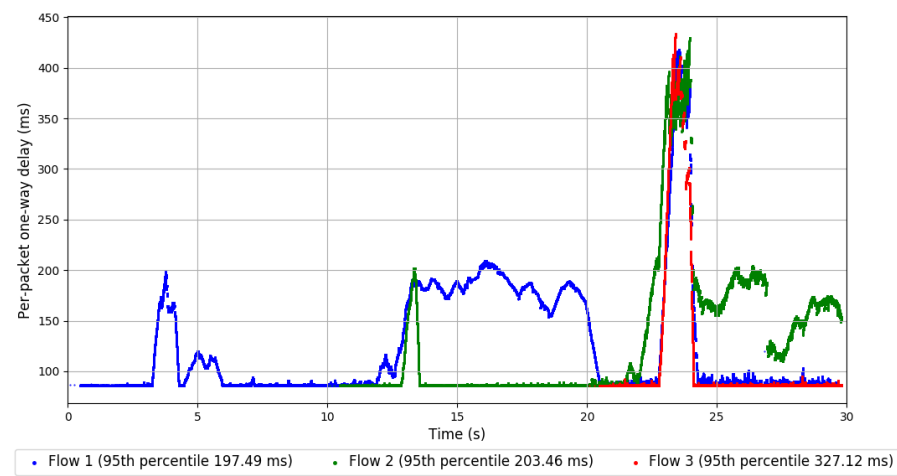
Run 1: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 286.28 Mbit/s)   Flow 1 egress (mean 282.18 Mbit/s)
Flow 2 ingress (mean 245.18 Mbit/s)   Flow 2 egress (mean 241.98 Mbit/s)
Flow 3 ingress (mean 177.93 Mbit/s)   Flow 3 egress (mean 175.22 Mbit/s)

Flow 1 (95th percentile 181.74 ms)   Flow 2 (95th percentile 195.16 ms)   Flow 3 (95th percentile 177.71 ms)
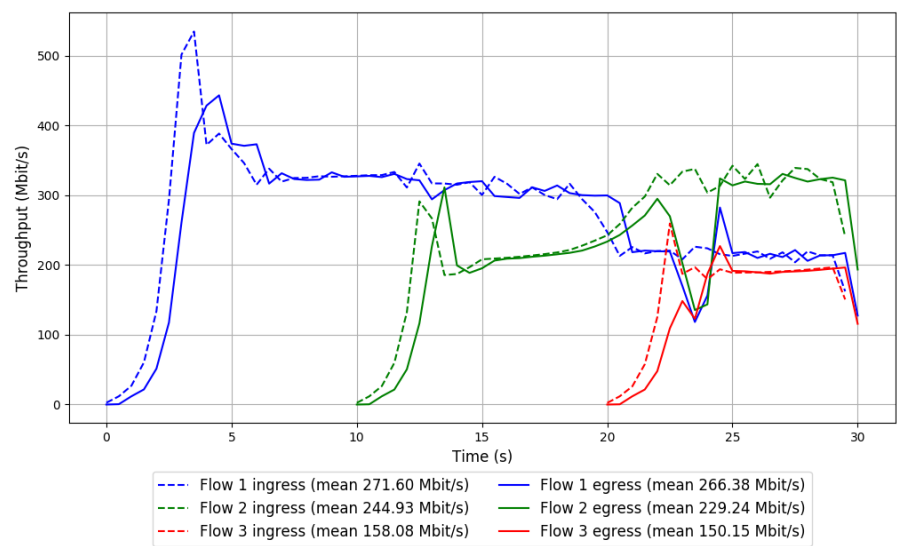
```
Run 2: Statistics of PCC-Expr

Start at: 2018-09-11 02:16:52
End at: 2018-09-11 02:17:22
Local clock offset: 0.021 ms
Remote clock offset: -0.017 ms


# Below is generated by plot.py at 2018-09-11 06:12:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 446.61 Mbit/s
95th percentile per-packet one-way delay: 196.482 ms
Loss rate: 2.48%
-- Flow 1:
Average throughput: 251.59 Mbit/s
95th percentile per-packet one-way delay: 195.052 ms
Loss rate: 2.71%
-- Flow 2:
Average throughput: 216.71 Mbit/s
95th percentile per-packet one-way delay: 209.864 ms
Loss rate: 2.21%
-- Flow 3:
Average throughput: 158.25 Mbit/s
95th percentile per-packet one-way delay: 110.289 ms
Loss rate: 2.13%
```

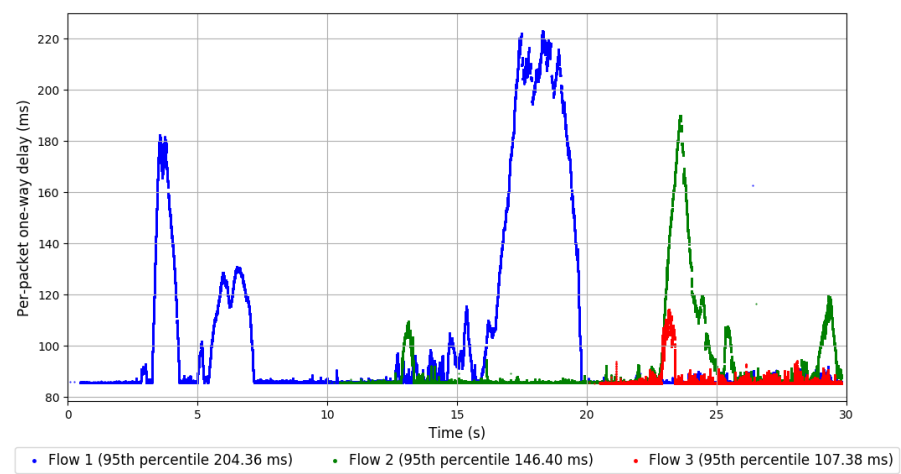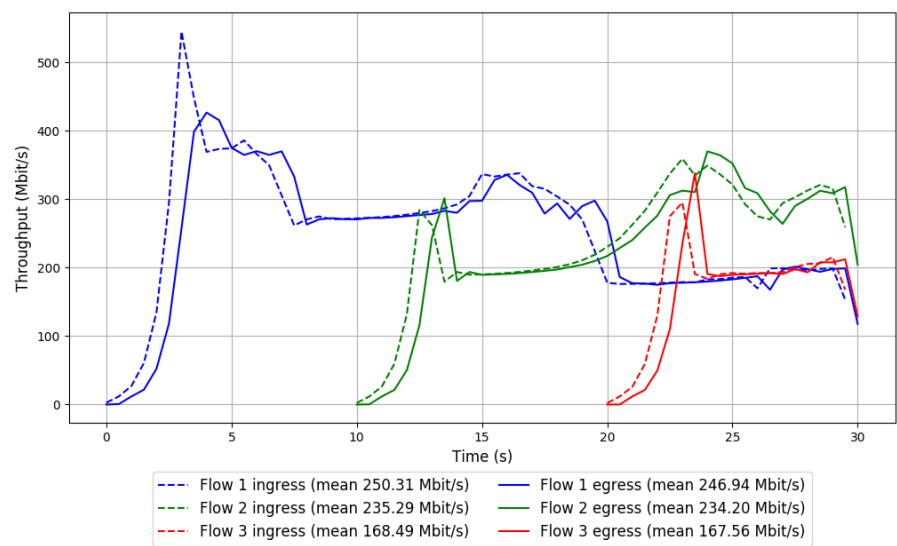Run 2: Report of PCC-Expr — Data Link

- - - Flow 1 ingress (mean 257.10 Mbit/s) —— Flow 1 egress (mean 251.59 Mbit/s)
- - - Flow 2 ingress (mean 220.11 Mbit/s) —— Flow 2 egress (mean 216.71 Mbit/s)
- - - Flow 3 ingress (mean 158.86 Mbit/s) —— Flow 3 egress (mean 158.25 Mbit/s)

• Flow 1 (95th percentile 195.05 ms)   • Flow 2 (95th percentile 209.86 ms)   • Flow 3 (95th percentile 110.29 ms)

```
Run 3: Statistics of PCC-Expr

Start at: 2018-09-11 02:49:10
End at: 2018-09-11 02:49:40
Local clock offset: -0.173 ms
Remote clock offset: -0.052 ms


# Below is generated by plot.py at 2018-09-11 06:12:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 458.41 Mbit/s
95th percentile per-packet one-way delay: 173.294 ms
Loss rate: 1.49%
-- Flow 1:
Average throughput: 259.13 Mbit/s
95th percentile per-packet one-way delay: 155.944 ms
Loss rate: 1.03%
-- Flow 2:
Average throughput: 217.29 Mbit/s
95th percentile per-packet one-way delay: 203.695 ms
Loss rate: 2.03%
-- Flow 3:
Average throughput: 169.26 Mbit/s
95th percentile per-packet one-way delay: 178.373 ms
Loss rate: 2.20%
```
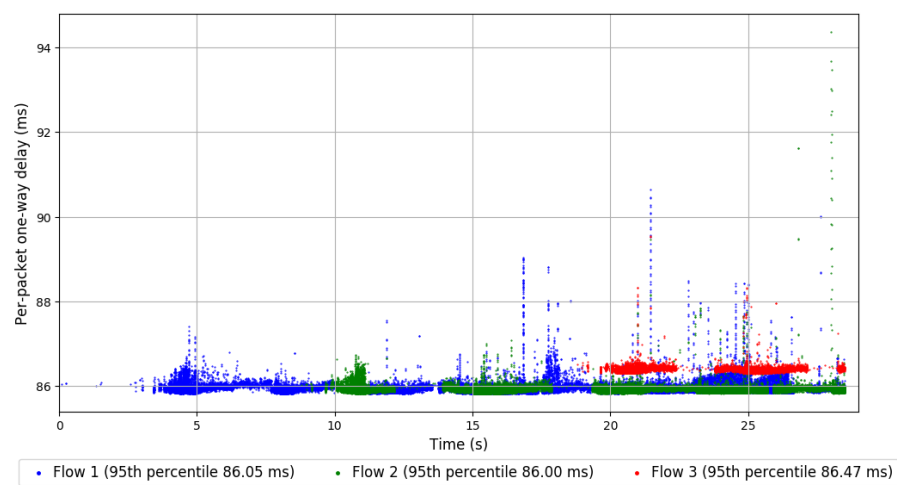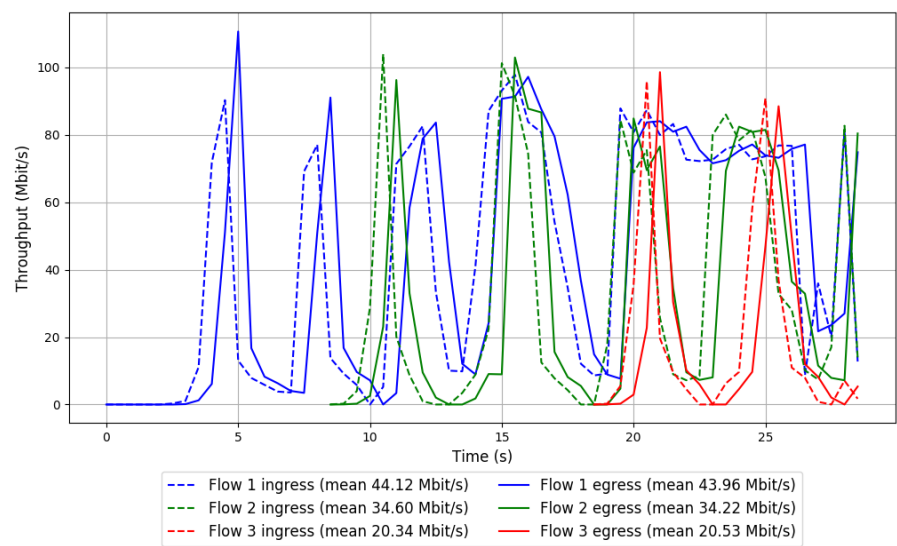
Run 3: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 260.30 Mbit/s) --- Flow 1 egress (mean 259.13 Mbit/s)
Flow 2 ingress (mean 219.90 Mbit/s) --- Flow 2 egress (mean 217.29 Mbit/s)
Flow 3 ingress (mean 170.01 Mbit/s) --- Flow 3 egress (mean 169.26 Mbit/s)

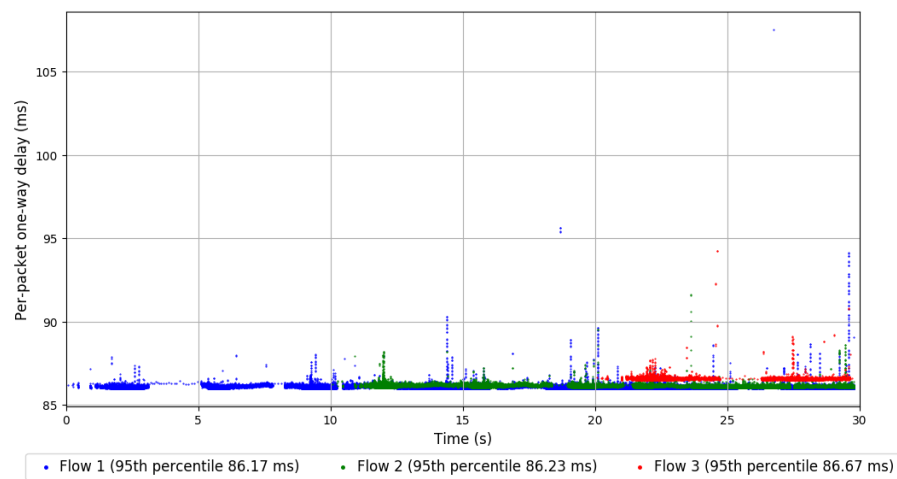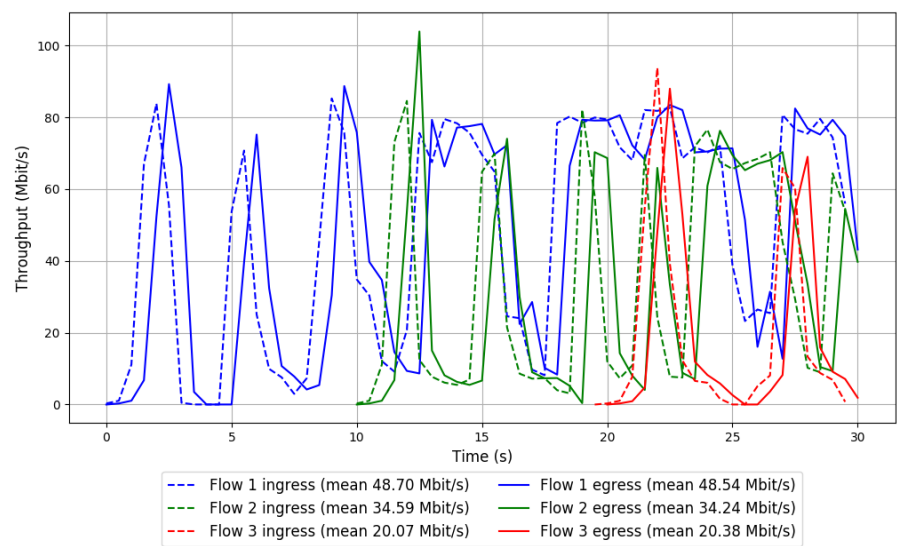Flow 1 (95th percentile 155.94 ms) • Flow 2 (95th percentile 203.69 ms) • Flow 3 (95th percentile 178.37 ms)

```
Run 4: Statistics of PCC-Expr

Start at: 2018-09-11 03:21:09
End at: 2018-09-11 03:21:39
Local clock offset: 0.193 ms
Remote clock offset: -0.064 ms


# Below is generated by plot.py at 2018-09-11 06:15:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 467.37 Mbit/s
95th percentile per-packet one-way delay: 202.791 ms
Loss rate: 4.52%
-- Flow 1:
Average throughput: 266.38 Mbit/s
95th percentile per-packet one-way delay: 197.487 ms
Loss rate: 2.49%
-- Flow 2:
Average throughput: 229.24 Mbit/s
95th percentile per-packet one-way delay: 203.461 ms
Loss rate: 7.22%
-- Flow 3:
Average throughput: 150.15 Mbit/s
95th percentile per-packet one-way delay: 327.119 ms
Loss rate: 6.68%
```

Run 4: Report of PCC-Expr — Data Link

Flow 1 ingress (mean 271.60 Mbit/s) — Flow 1 egress (mean 266.38 Mbit/s)
Flow 2 ingress (mean 244.93 Mbit/s) — Flow 2 egress (mean 229.24 Mbit/s)
Flow 3 ingress (mean 158.08 Mbit/s) — Flow 3 egress (mean 150.15 Mbit/s)

Flow 1 (95th percentile 197.49 ms)   Flow 2 (95th percentile 203.46 ms)   Flow 3 (95th percentile 327.12 ms)
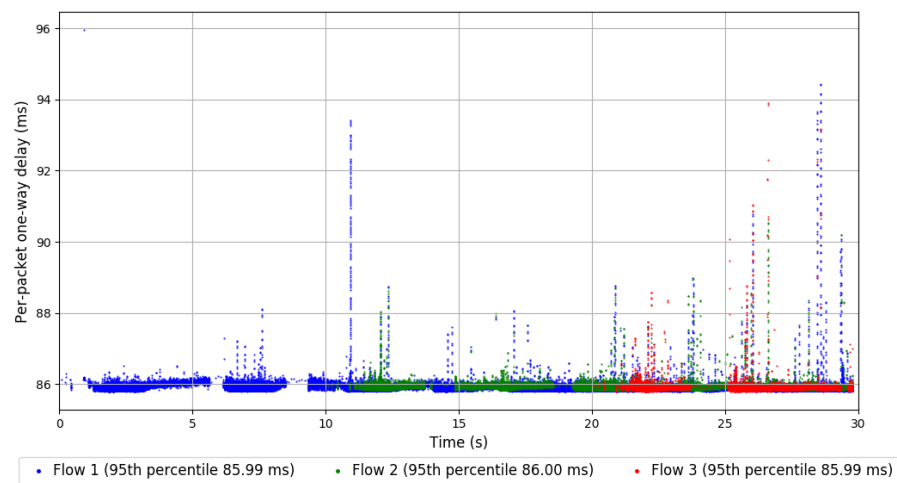
```
Run 5: Statistics of PCC-Expr

Start at: 2018-09-11 03:53:32
End at: 2018-09-11 03:54:02
Local clock offset: -0.323 ms
Remote clock offset: -0.129 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 456.87 Mbit/s
95th percentile per-packet one-way delay: 178.903 ms
Loss rate: 1.77%
-- Flow 1:
Average throughput: 246.94 Mbit/s
95th percentile per-packet one-way delay: 204.361 ms
Loss rate: 1.92%
-- Flow 2:
Average throughput: 234.20 Mbit/s
95th percentile per-packet one-way delay: 146.400 ms
Loss rate: 1.33%
-- Flow 3:
Average throughput: 167.56 Mbit/s
95th percentile per-packet one-way delay: 107.381 ms
Loss rate: 2.30%
```
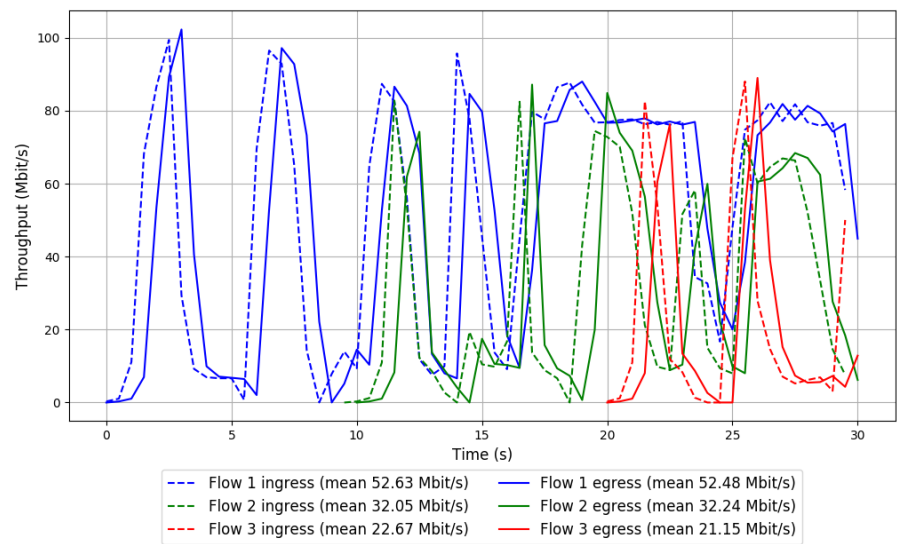
Run 5: Report of PCC-Expr — Data Link

```
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-11 01:41:45
End at: 2018-09-11 01:42:15
Local clock offset: 0.323 ms
Remote clock offset: 0.162 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 74.68 Mbit/s
95th percentile per-packet one-way delay: 86.370 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 43.96 Mbit/s
95th percentile per-packet one-way delay: 86.045 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 34.22 Mbit/s
95th percentile per-packet one-way delay: 86.005 ms
Loss rate: 1.96%
-- Flow 3:
Average throughput: 20.53 Mbit/s
95th percentile per-packet one-way delay: 86.467 ms
Loss rate: 0.86%
```
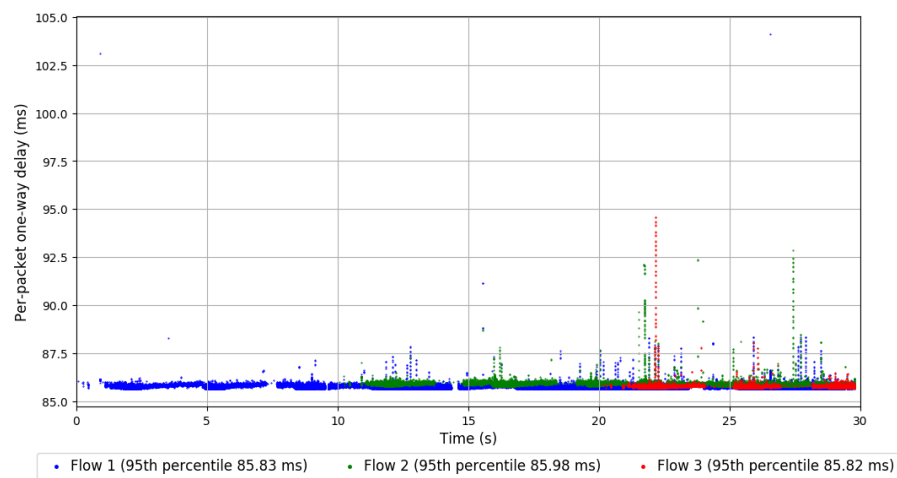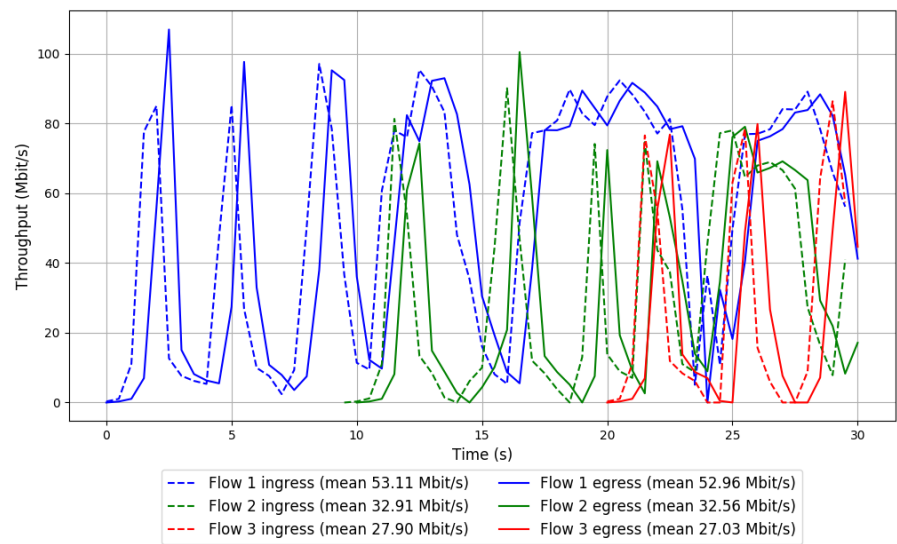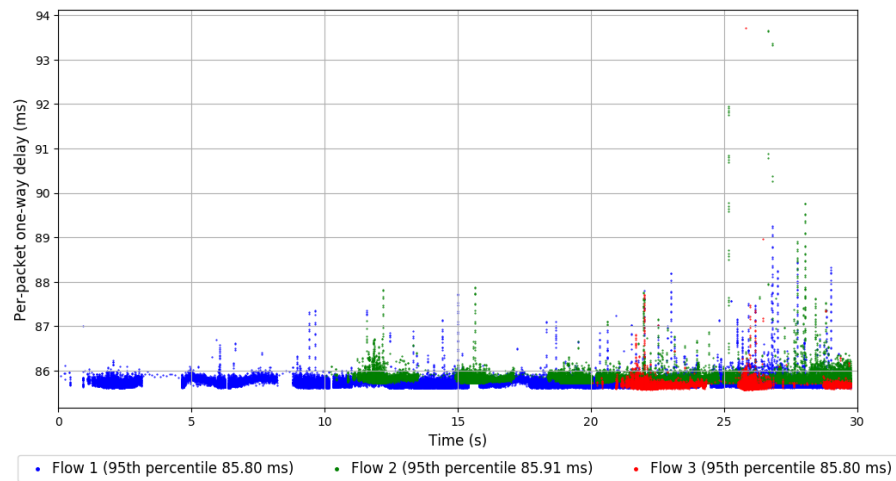
Run 1: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 44.12 Mbit/s)   Flow 1 egress (mean 43.96 Mbit/s)
Flow 2 ingress (mean 34.60 Mbit/s)   Flow 2 egress (mean 34.22 Mbit/s)
Flow 3 ingress (mean 20.34 Mbit/s)   Flow 3 egress (mean 20.53 Mbit/s)

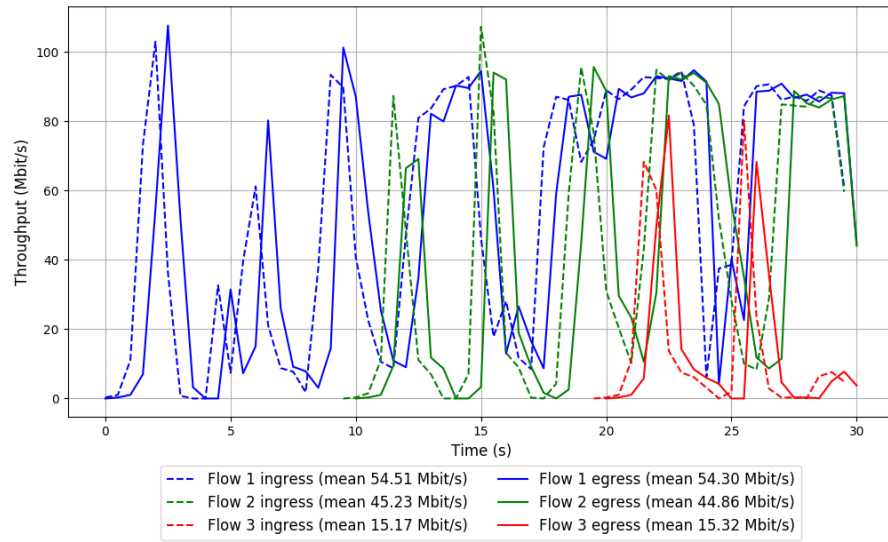Flow 1 (95th percentile 86.05 ms)   Flow 2 (95th percentile 86.00 ms)   Flow 3 (95th percentile 86.47 ms)

```
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-11 02:14:18
End at: 2018-09-11 02:14:48
Local clock offset: 0.281 ms
Remote clock offset: -0.004 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 77.86 Mbit/s
95th percentile per-packet one-way delay: 86.551 ms
Loss rate: 1.09%
-- Flow 1:
Average throughput: 48.54 Mbit/s
95th percentile per-packet one-way delay: 86.172 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 34.24 Mbit/s
95th percentile per-packet one-way delay: 86.235 ms
Loss rate: 1.85%
-- Flow 3:
Average throughput: 20.38 Mbit/s
95th percentile per-packet one-way delay: 86.665 ms
Loss rate: 0.00%
```

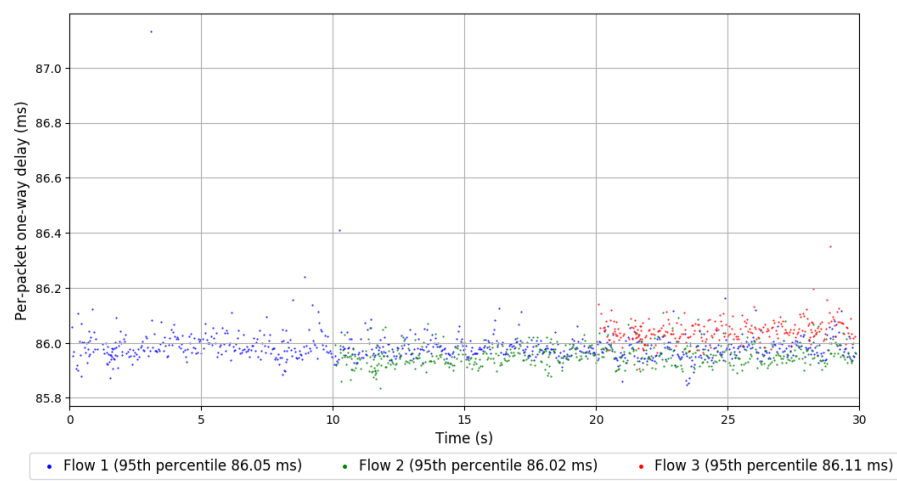# Run 2: Report of QUIC Cubic — Data Link

```
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-11 02:46:36
End at: 2018-09-11 02:47:06
Local clock offset: 0.109 ms
Remote clock offset: -0.028 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 80.77 Mbit/s
95th percentile per-packet one-way delay: 85.994 ms
Loss rate: 1.39%
-- Flow 1:
Average throughput: 52.48 Mbit/s
95th percentile per-packet one-way delay: 85.990 ms
Loss rate: 0.86%
-- Flow 2:
Average throughput: 32.24 Mbit/s
95th percentile per-packet one-way delay: 86.002 ms
Loss rate: 0.27%
-- Flow 3:
Average throughput: 21.15 Mbit/s
95th percentile per-packet one-way delay: 85.988 ms
Loss rate: 8.32%
```
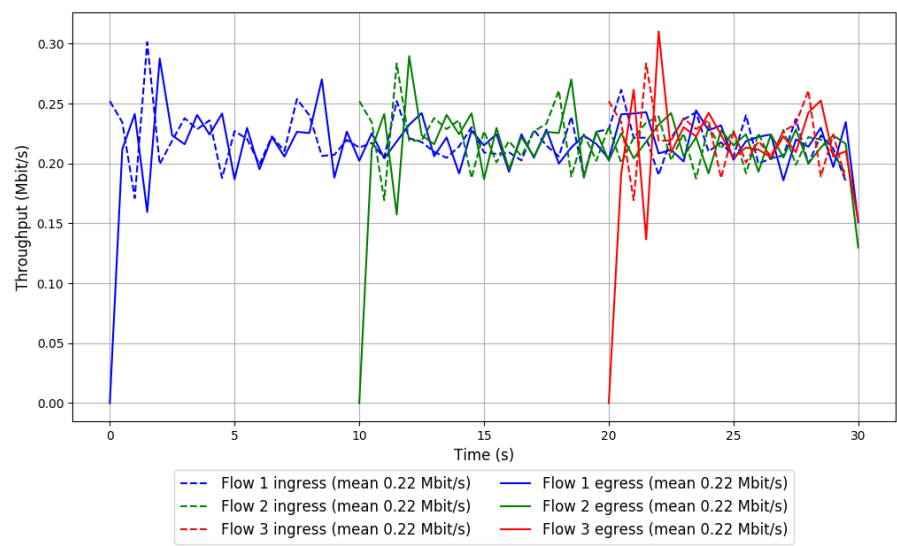
Run 3: Report of QUIC Cubic — Data Link

Flow 1 ingress (mean 52.63 Mbit/s) ---- Flow 1 egress (mean 52.48 Mbit/s) ——
Flow 2 ingress (mean 32.05 Mbit/s) ---- Flow 2 egress (mean 32.24 Mbit/s) ——
Flow 3 ingress (mean 22.67 Mbit/s) ---- Flow 3 egress (mean 21.15 Mbit/s) ——

Flow 1 (95th percentile 85.99 ms) Flow 2 (95th percentile 86.00 ms) Flow 3 (95th percentile 85.99 ms)

110

```
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-11 03:18:34
End at: 2018-09-11 03:19:04
Local clock offset: -0.089 ms
Remote clock offset: -0.04 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 83.38 Mbit/s
95th percentile per-packet one-way delay: 85.916 ms
Loss rate: 1.57%
-- Flow 1:
Average throughput: 52.96 Mbit/s
95th percentile per-packet one-way delay: 85.828 ms
Loss rate: 0.86%
-- Flow 2:
Average throughput: 32.56 Mbit/s
95th percentile per-packet one-way delay: 85.979 ms
Loss rate: 1.92%
-- Flow 3:
Average throughput: 27.03 Mbit/s
95th percentile per-packet one-way delay: 85.816 ms
Loss rate: 4.83%
```
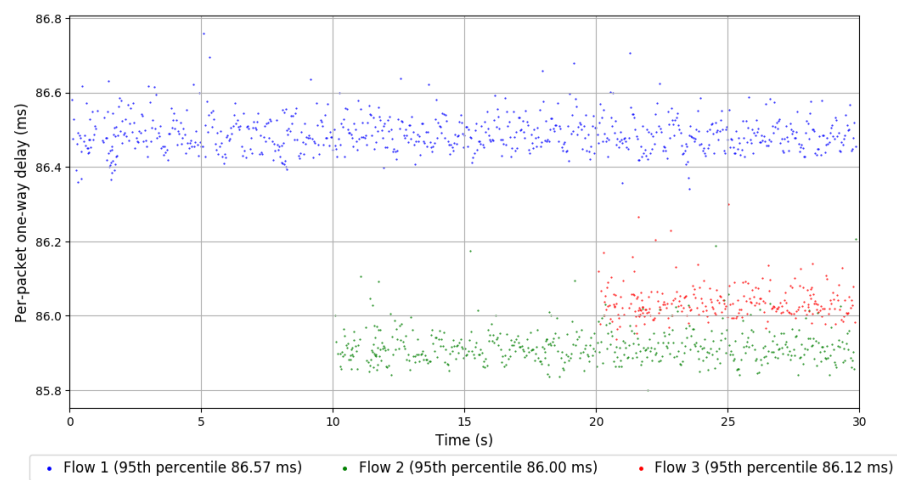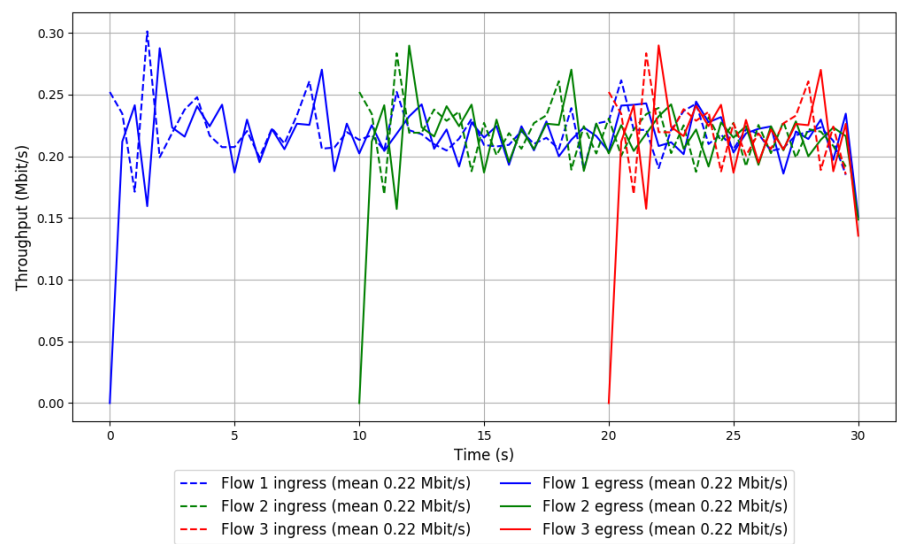
Run 4: Report of QUIC Cubic — Data Link

```
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-11 03:50:57
End at: 2018-09-11 03:51:27
Local clock offset: -0.207 ms
Remote clock offset: -0.068 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 89.07 Mbit/s
95th percentile per-packet one-way delay: 85.858 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 54.30 Mbit/s
95th percentile per-packet one-way delay: 85.797 ms
Loss rate: 0.96%
-- Flow 2:
Average throughput: 44.86 Mbit/s
95th percentile per-packet one-way delay: 85.908 ms
Loss rate: 1.68%
-- Flow 3:
Average throughput: 15.32 Mbit/s
95th percentile per-packet one-way delay: 85.804 ms
Loss rate: 0.81%
```

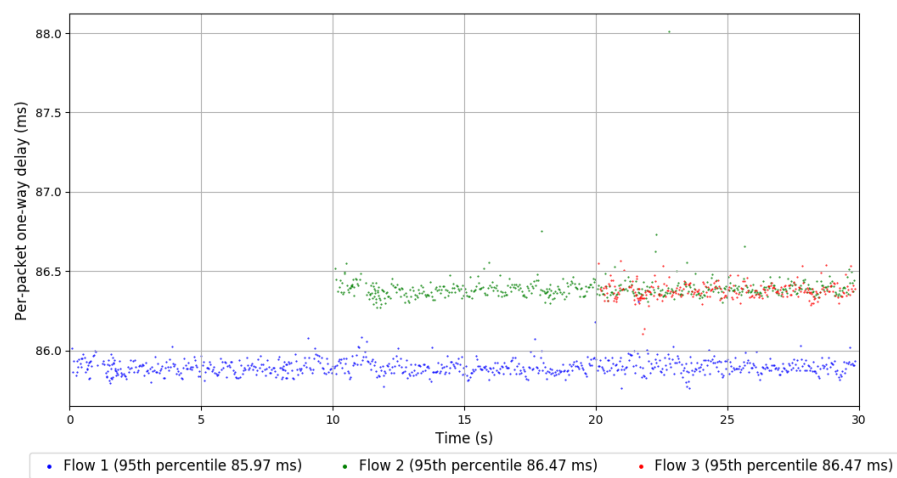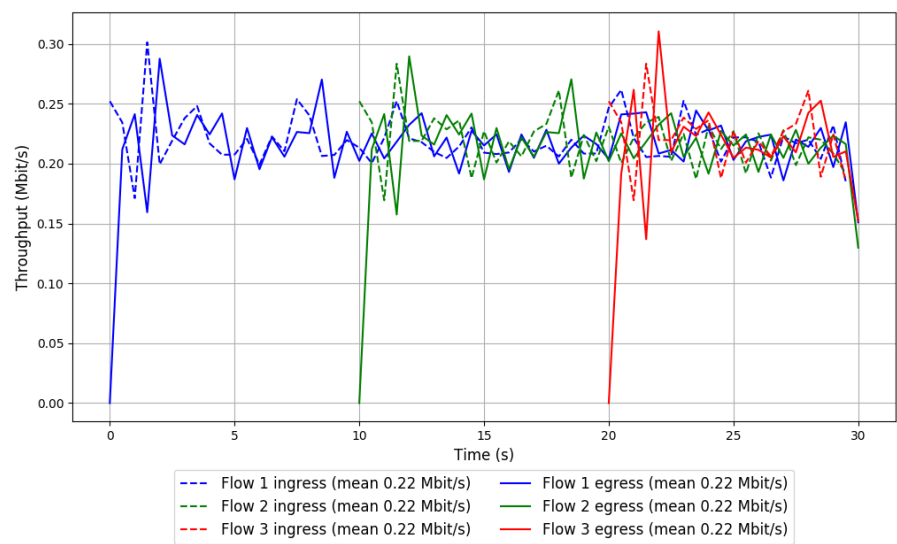Run 5: Report of QUIC Cubic — Data Link

```
Run 1: Statistics of SCReAM

Start at: 2018-09-11 01:28:44
End at: 2018-09-11 01:29:14
Local clock offset: 0.261 ms
Remote clock offset: 0.369 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.074 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.054 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.021 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.106 ms
Loss rate: 1.85%
```
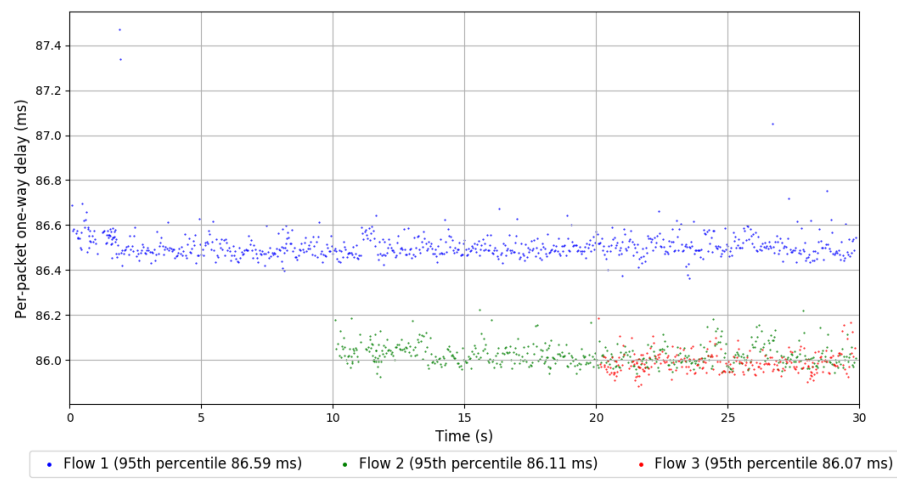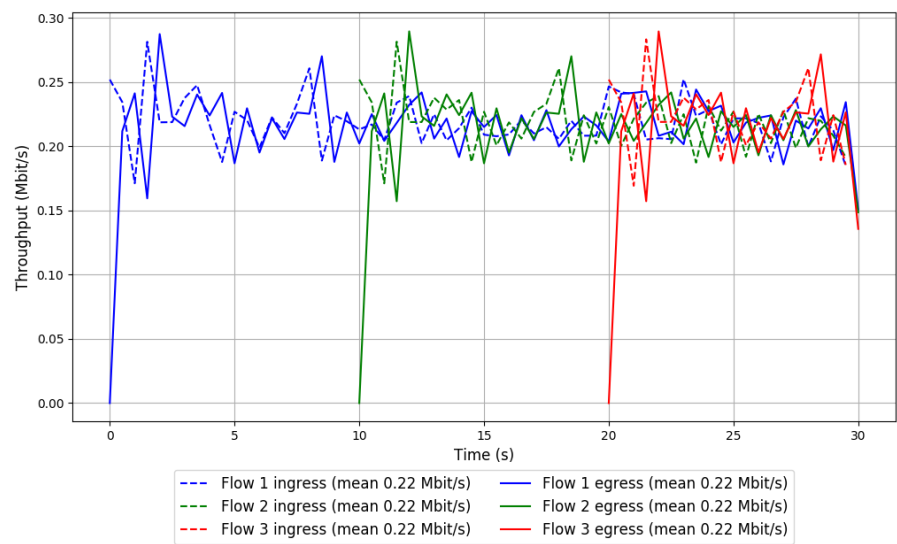
Run 1: Report of SCReAM — Data Link

```
Run 2: Statistics of SCReAM

Start at: 2018-09-11 02:00:59
End at: 2018-09-11 02:01:29
Local clock offset: 0.228 ms
Remote clock offset: 0.184 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.548 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.572 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.002 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.119 ms
Loss rate: 1.85%
```
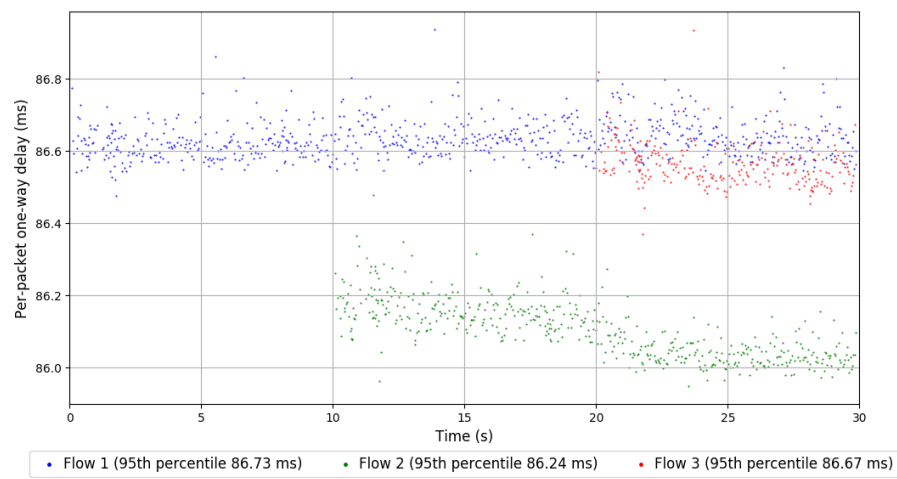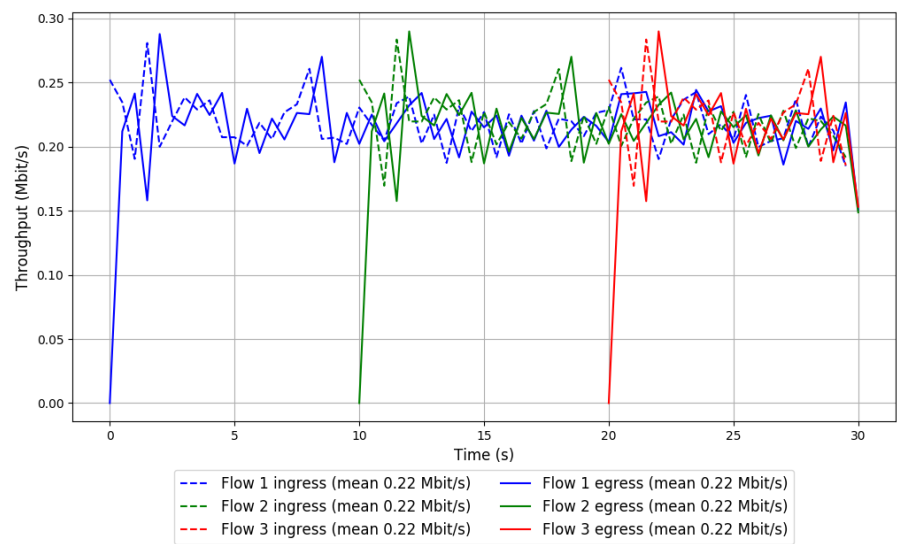
Run 2: Report of SCReAM — Data Link

```
Run 3: Statistics of SCReAM

Start at: 2018-09-11 02:33:30
End at: 2018-09-11 02:34:00
Local clock offset: -0.113 ms
Remote clock offset: 0.039 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.437 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.970 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.465 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.468 ms
Loss rate: 1.85%
```

Run 3: Report of SCReAM — Data Link

```
Run 4: Statistics of SCReAM

Start at: 2018-09-11 03:05:32
End at: 2018-09-11 03:06:02
Local clock offset: -0.004 ms
Remote clock offset: -0.091 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.571 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.588 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.115 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.073 ms
Loss rate: 1.85%
```
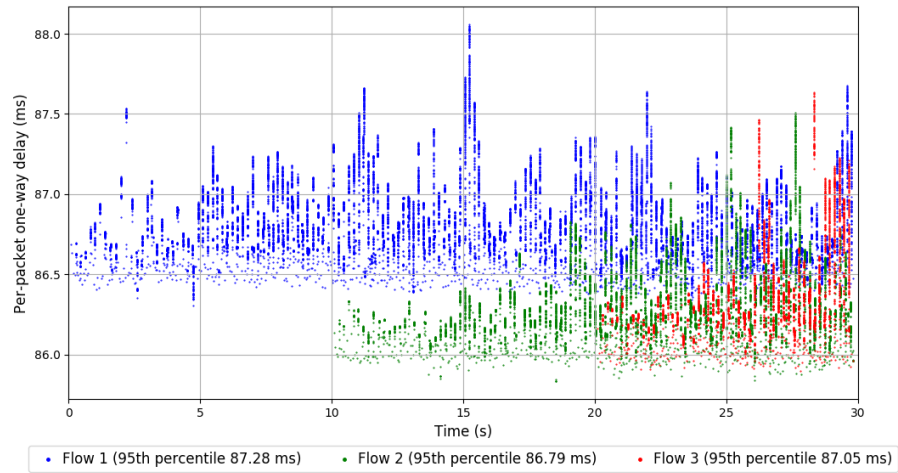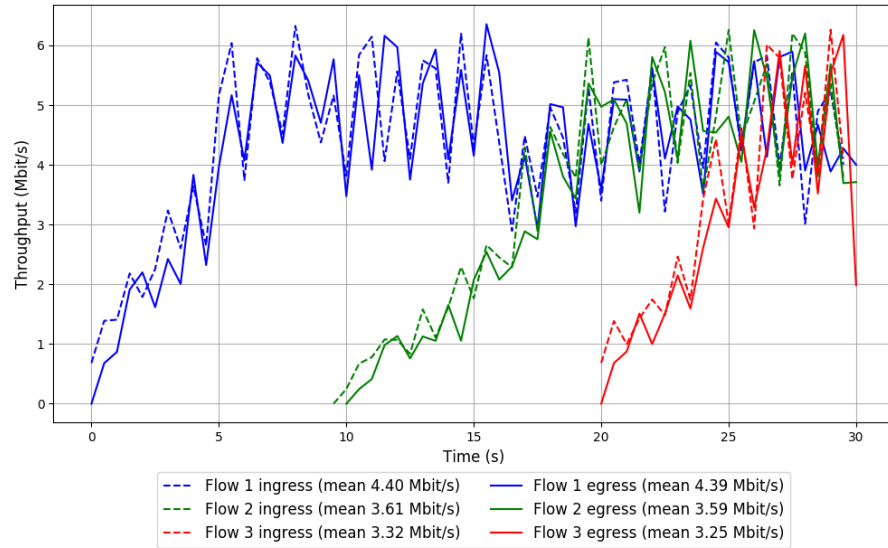
Run 4: Report of SCReAM — Data Link

```
Run 5: Statistics of SCReAM

Start at: 2018-09-11 03:37:56
End at: 2018-09-11 03:38:26
Local clock offset: -0.021 ms
Remote clock offset: -0.067 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.699 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.734 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.236 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.666 ms
Loss rate: 1.46%
```
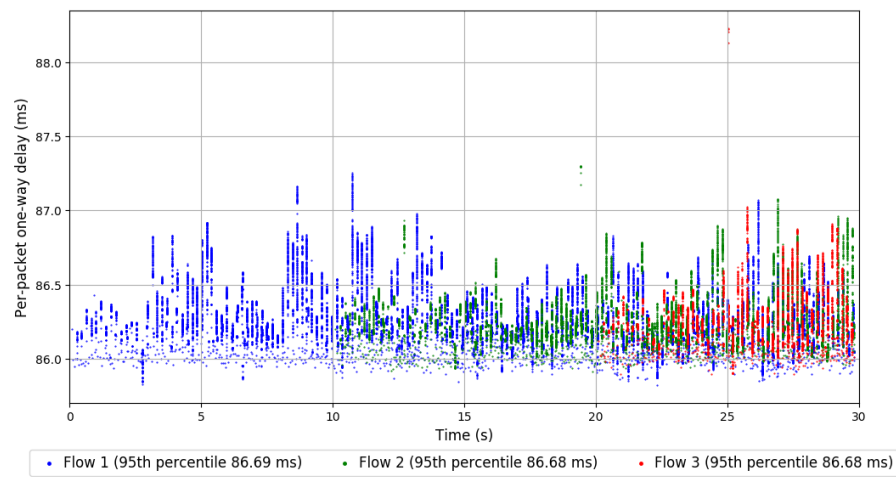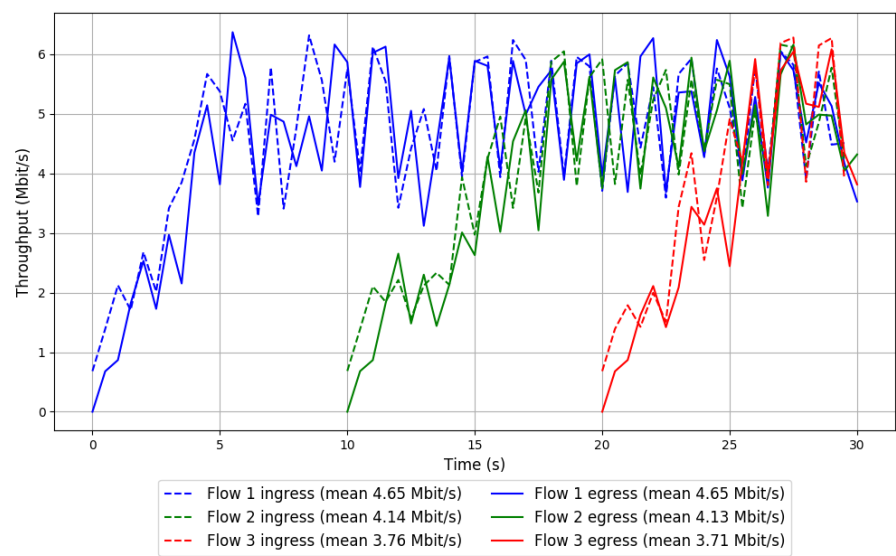
Run 5: Report of SCReAM — Data Link

Flow 1 ingress (mean 0.22 Mbit/s)   Flow 1 egress (mean 0.22 Mbit/s)
Flow 2 ingress (mean 0.22 Mbit/s)   Flow 2 egress (mean 0.22 Mbit/s)
Flow 3 ingress (mean 0.22 Mbit/s)   Flow 3 egress (mean 0.22 Mbit/s)

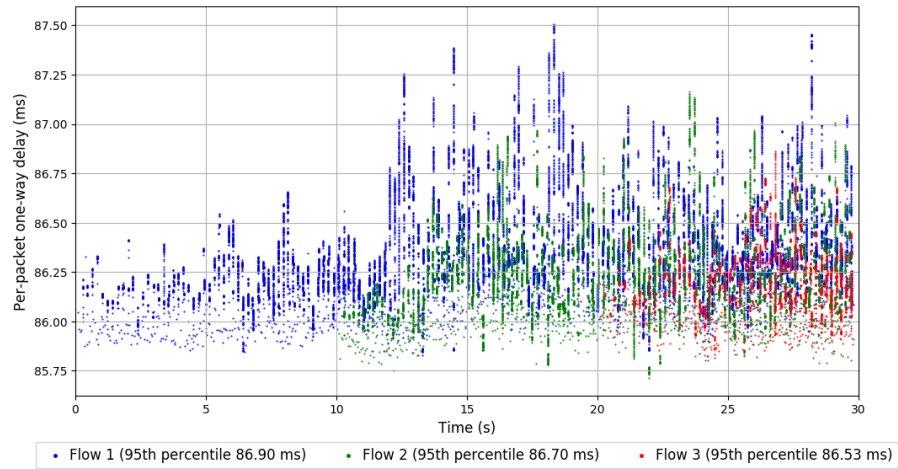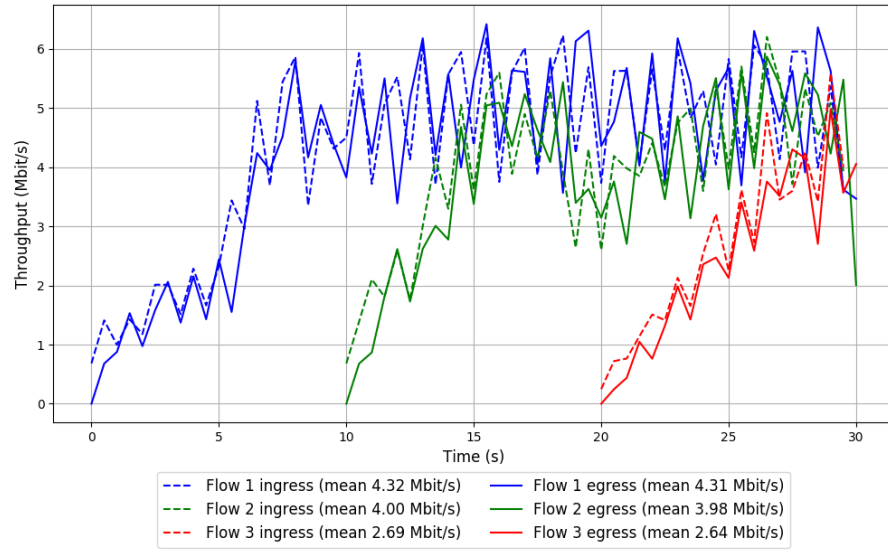Flow 1 (95th percentile 86.73 ms)   Flow 2 (95th percentile 86.24 ms)   Flow 3 (95th percentile 86.67 ms)

```
Run 1: Statistics of Sprout

Start at: 2018-09-11 01:43:04
End at: 2018-09-11 01:43:34
Local clock offset: 0.299 ms
Remote clock offset: 0.124 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.84 Mbit/s
95th percentile per-packet one-way delay: 87.210 ms
Loss rate: 1.26%
-- Flow 1:
Average throughput: 4.39 Mbit/s
95th percentile per-packet one-way delay: 87.279 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 86.791 ms
Loss rate: 1.22%
-- Flow 3:
Average throughput: 3.25 Mbit/s
95th percentile per-packet one-way delay: 87.048 ms
Loss rate: 3.38%
```
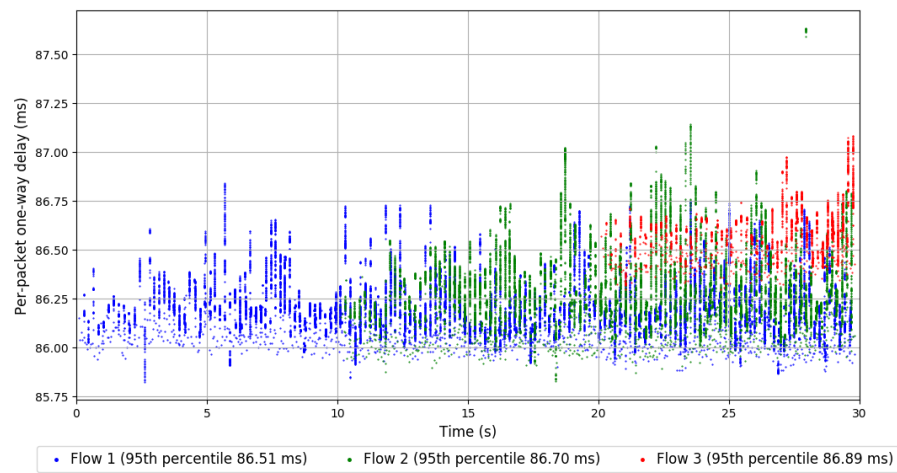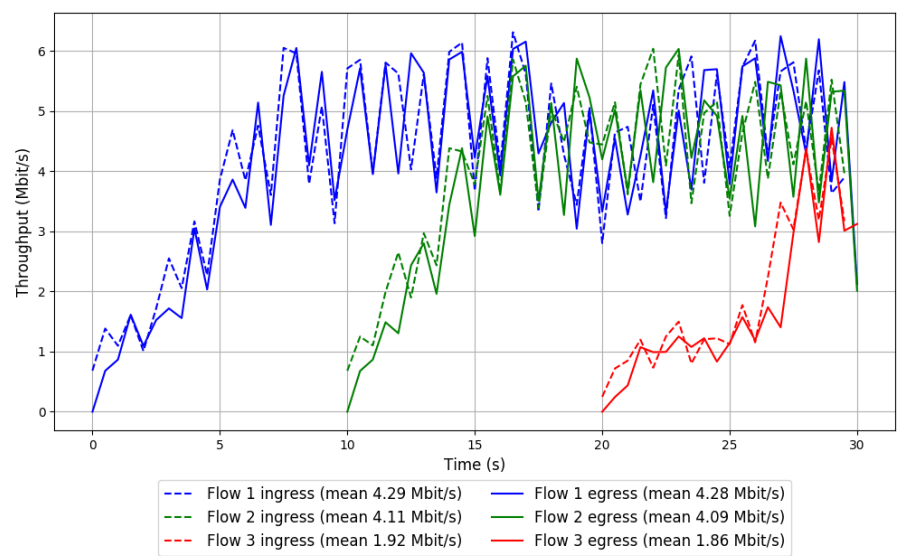
Run 1: Report of Sprout — Data Link

```
Run 2: Statistics of Sprout

Start at: 2018-09-11 02:15:37
End at: 2018-09-11 02:16:07
Local clock offset: 0.125 ms
Remote clock offset: 0.016 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.60 Mbit/s
95th percentile per-packet one-way delay: 86.684 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 4.65 Mbit/s
95th percentile per-packet one-way delay: 86.687 ms
Loss rate: 0.67%
-- Flow 2:
Average throughput: 4.13 Mbit/s
95th percentile per-packet one-way delay: 86.682 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 3.71 Mbit/s
95th percentile per-packet one-way delay: 86.680 ms
Loss rate: 2.81%
```
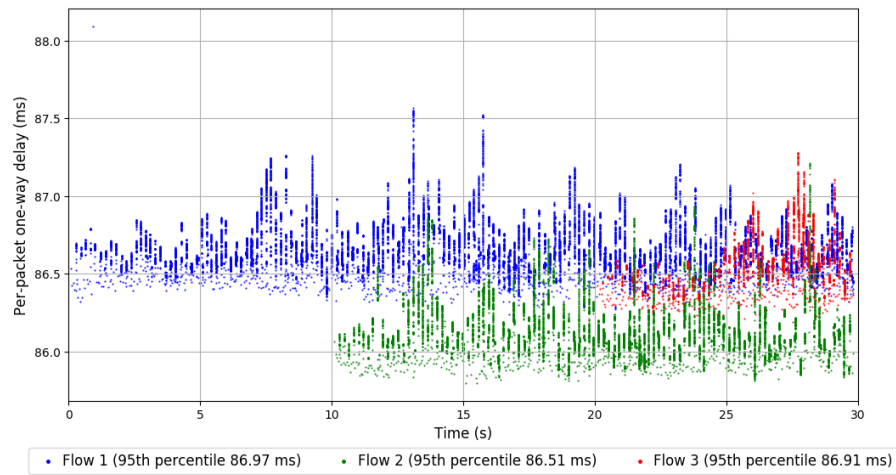
Run 2: Report of Sprout — Data Link

```
Run 3: Statistics of Sprout

Start at: 2018-09-11 02:47:56
End at: 2018-09-11 02:48:26
Local clock offset: -0.054 ms
Remote clock offset: -0.035 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.81 Mbit/s
95th percentile per-packet one-way delay: 86.820 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 86.899 ms
Loss rate: 0.72%
-- Flow 2:
Average throughput: 3.98 Mbit/s
95th percentile per-packet one-way delay: 86.697 ms
Loss rate: 1.21%
-- Flow 3:
Average throughput: 2.64 Mbit/s
95th percentile per-packet one-way delay: 86.528 ms
Loss rate: 3.70%
```
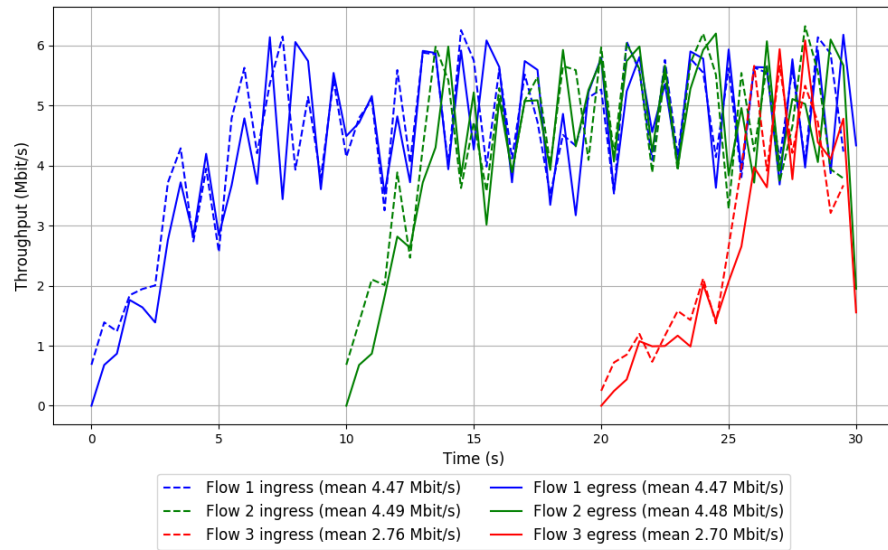
Run 3: Report of Sprout — Data Link

```
Run 4: Statistics of Sprout

Start at: 2018-09-11 03:19:54
End at: 2018-09-11 03:20:24
Local clock offset: -0.045 ms
Remote clock offset: -0.054 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 86.661 ms
Loss rate: 1.21%
-- Flow 1:
Average throughput: 4.28 Mbit/s
95th percentile per-packet one-way delay: 86.513 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 4.09 Mbit/s
95th percentile per-packet one-way delay: 86.704 ms
Loss rate: 1.32%
-- Flow 3:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 86.887 ms
Loss rate: 4.19%
```
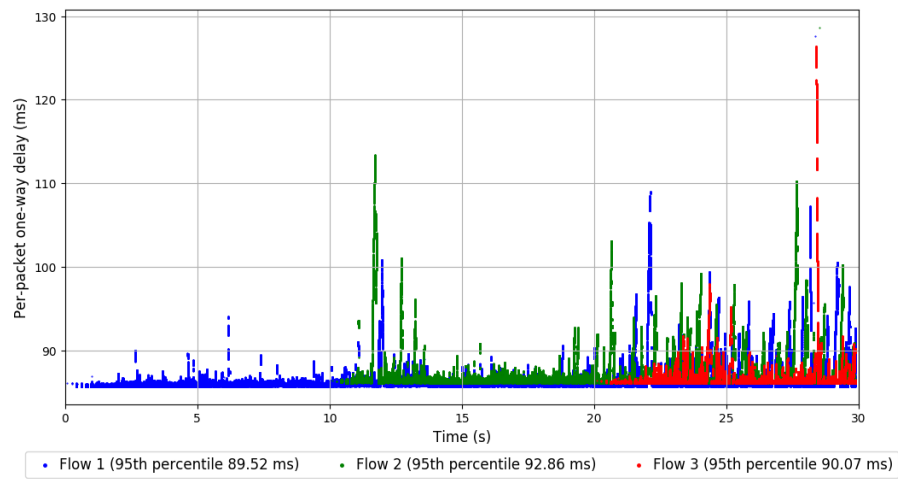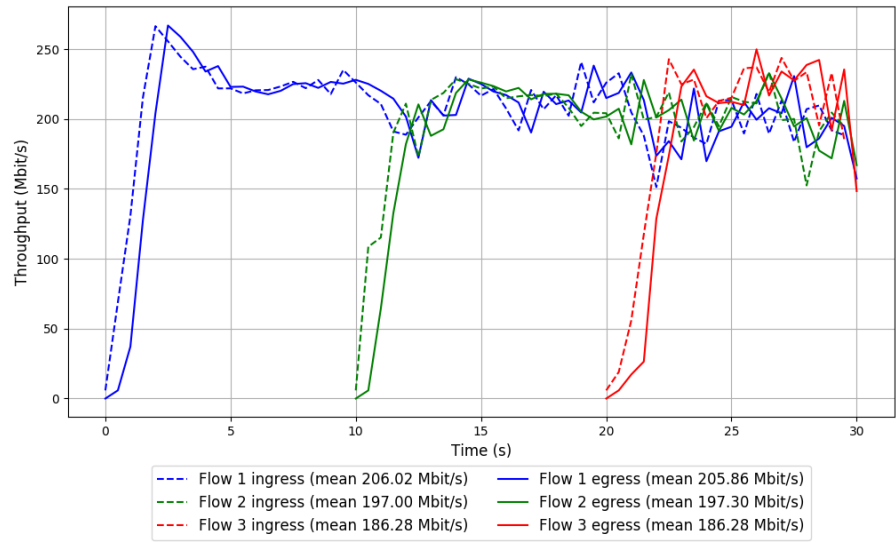
Run 4: Report of Sprout — Data Link

```
Run 5: Statistics of Sprout

Start at: 2018-09-11 03:52:17
End at: 2018-09-11 03:52:47
Local clock offset: -0.104 ms
Remote clock offset: -0.116 ms


# Below is generated by plot.py at 2018-09-11 06:16:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.31 Mbit/s
95th percentile per-packet one-way delay: 86.905 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 4.47 Mbit/s
95th percentile per-packet one-way delay: 86.974 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 4.48 Mbit/s
95th percentile per-packet one-way delay: 86.508 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 2.70 Mbit/s
95th percentile per-packet one-way delay: 86.914 ms
Loss rate: 3.89%
```

Run 5: Report of Sprout — Data Link

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

Start at: 2018-09-11 01:35:31
End at: 2018-09-11 01:36:01
Local clock offset: 0.182 ms
Remote clock offset: 0.217 ms


# Below is generated by plot.py at 2018-09-11 06:25:29
# Datalink statistics
-- Total of 3 flows:
Average throughput: 398.06 Mbit/s
95th percentile per-packet one-way delay: 91.069 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 205.86 Mbit/s
95th percentile per-packet one-way delay: 89.518 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 197.30 Mbit/s
95th percentile per-packet one-way delay: 92.861 ms
Loss rate: 0.73%
-- Flow 3:
Average throughput: 186.28 Mbit/s
95th percentile per-packet one-way delay: 90.074 ms
Loss rate: 1.73%
```
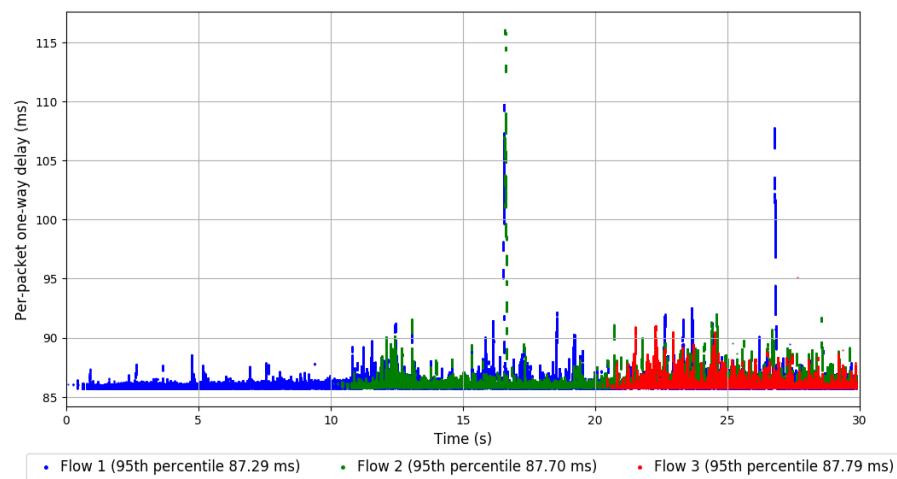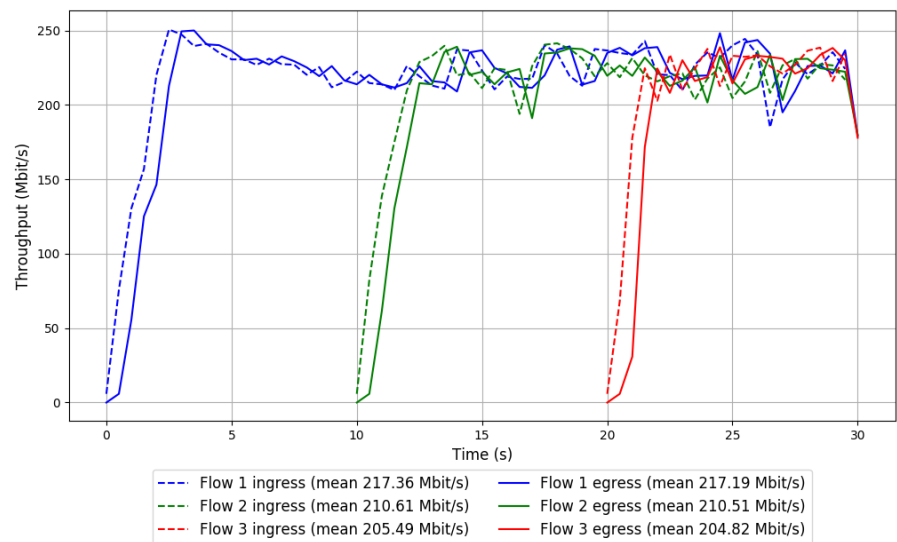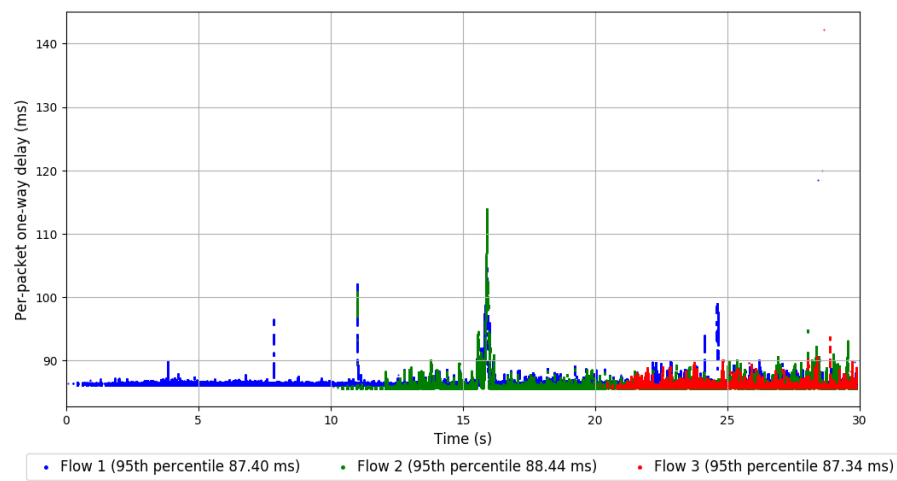
Run 1: Report of TaoVA-100x — Data Link

Throughput (Mbit/s) vs Time (s)

- - - Flow 1 ingress (mean 206.02 Mbit/s)   —— Flow 1 egress (mean 205.86 Mbit/s)
- - - Flow 2 ingress (mean 197.00 Mbit/s)   —— Flow 2 egress (mean 197.30 Mbit/s)
- - - Flow 3 ingress (mean 186.28 Mbit/s)   —— Flow 3 egress (mean 186.28 Mbit/s)

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

• Flow 1 (95th percentile 89.52 ms)   • Flow 2 (95th percentile 92.86 ms)   • Flow 3 (95th percentile 90.07 ms)
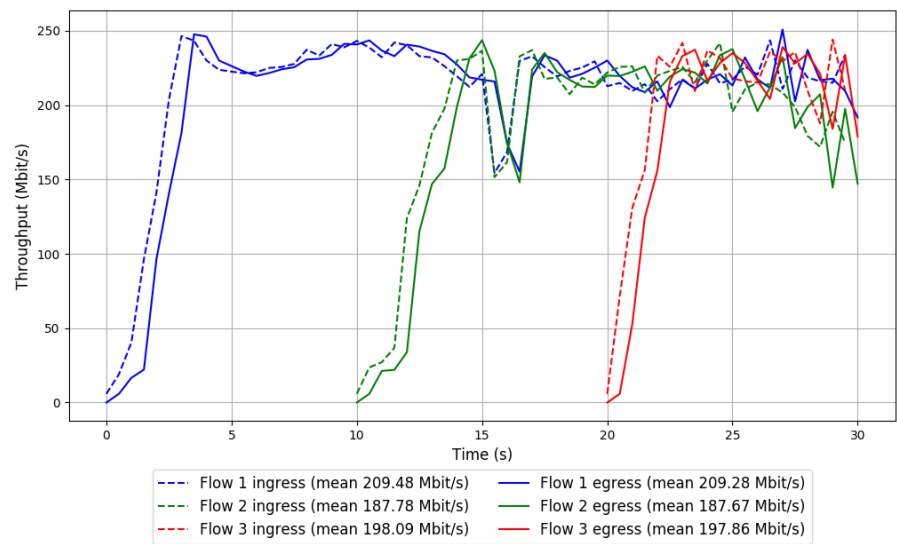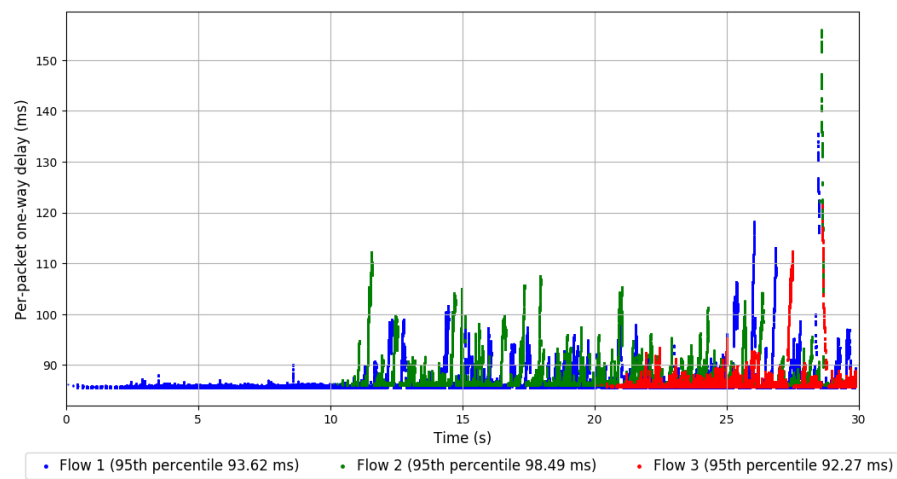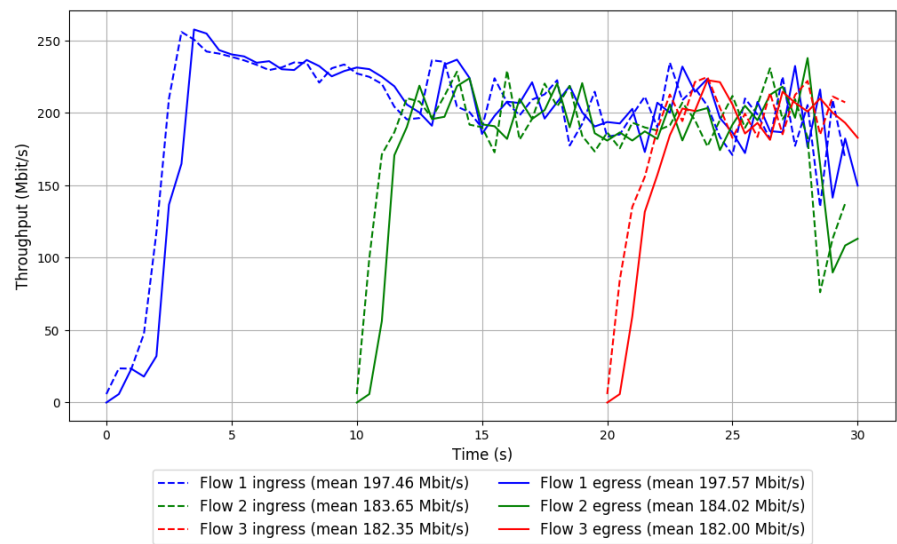
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-09-11 02:08:01
End at: 2018-09-11 02:08:31
Local clock offset: 0.149 ms
Remote clock offset: 0.065 ms

# Below is generated by plot.py at 2018-09-11 06:26:51
# Datalink statistics
-- Total of 3 flows:
Average throughput: 424.34 Mbit/s
95th percentile per-packet one-way delay: 87.541 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 217.19 Mbit/s
95th percentile per-packet one-way delay: 87.286 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 210.51 Mbit/s
95th percentile per-packet one-way delay: 87.696 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 204.82 Mbit/s
95th percentile per-packet one-way delay: 87.792 ms
Loss rate: 2.06%
```

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

- - - - Flow 1 ingress (mean 217.36 Mbit/s)   —— Flow 1 egress (mean 217.19 Mbit/s)
- - - - Flow 2 ingress (mean 210.61 Mbit/s)   —— Flow 2 egress (mean 210.51 Mbit/s)
- - - - Flow 3 ingress (mean 205.49 Mbit/s)   —— Flow 3 egress (mean 204.82 Mbit/s)

- Flow 1 (95th percentile 87.29 ms)   • Flow 2 (95th percentile 87.70 ms)   • Flow 3 (95th percentile 87.79 ms)
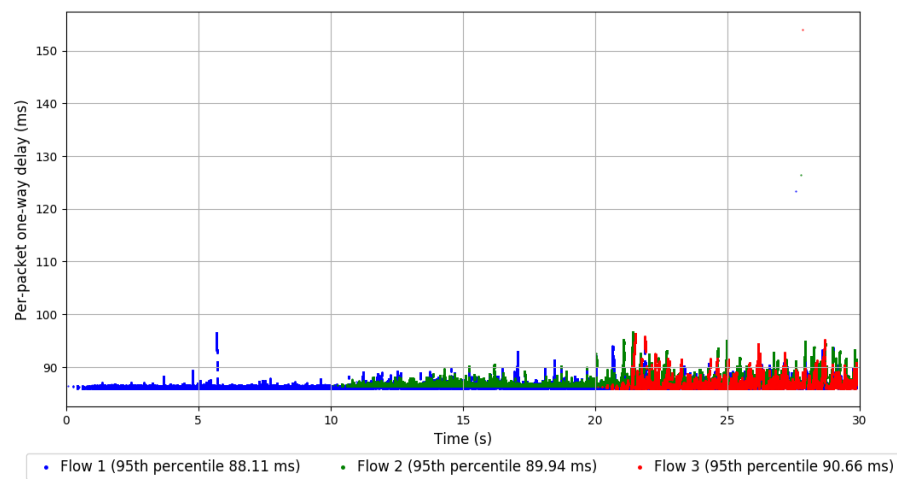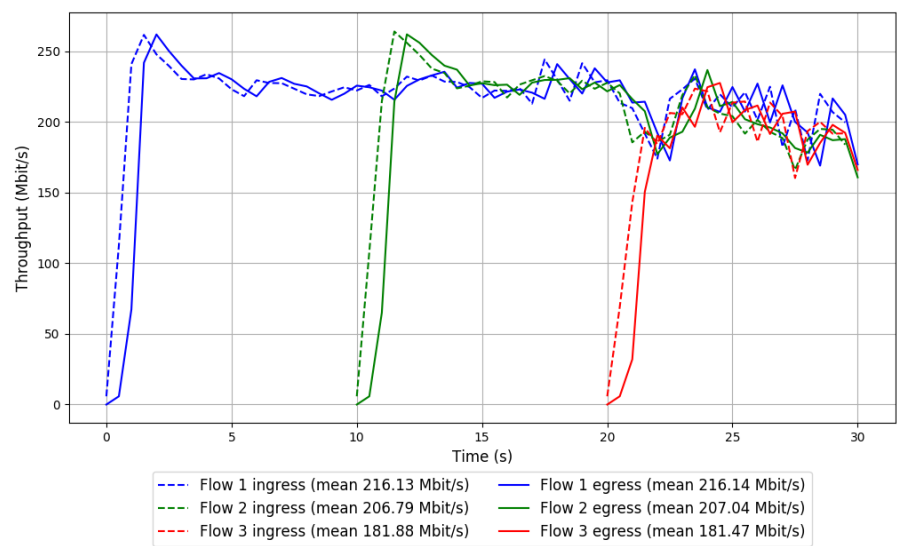
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-09-11 02:40:29
End at: 2018-09-11 02:40:59
Local clock offset: -0.142 ms
Remote clock offset: -0.045 ms

# Below is generated by plot.py at 2018-09-11 06:26:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 398.88 Mbit/s
95th percentile per-packet one-way delay: 87.753 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 209.28 Mbit/s
95th percentile per-packet one-way delay: 87.397 ms
Loss rate: 0.68%
-- Flow 2:
Average throughput: 187.67 Mbit/s
95th percentile per-packet one-way delay: 88.435 ms
Loss rate: 0.93%
-- Flow 3:
Average throughput: 197.86 Mbit/s
95th percentile per-packet one-way delay: 87.339 ms
Loss rate: 1.85%
```

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

140

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

Start at: 2018-09-11 03:12:27
End at: 2018-09-11 03:12:57
Local clock offset: -0.213 ms
Remote clock offset: -0.052 ms


# Below is generated by plot.py at 2018-09-11 06:26:52
# Datalink statistics
-- Total of 3 flows:
Average throughput: 379.56 Mbit/s
95th percentile per-packet one-way delay: 95.465 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 197.57 Mbit/s
95th percentile per-packet one-way delay: 93.620 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 184.02 Mbit/s
95th percentile per-packet one-way delay: 98.491 ms
Loss rate: 0.67%
-- Flow 3:
Average throughput: 182.00 Mbit/s
95th percentile per-packet one-way delay: 92.268 ms
Loss rate: 1.87%
```
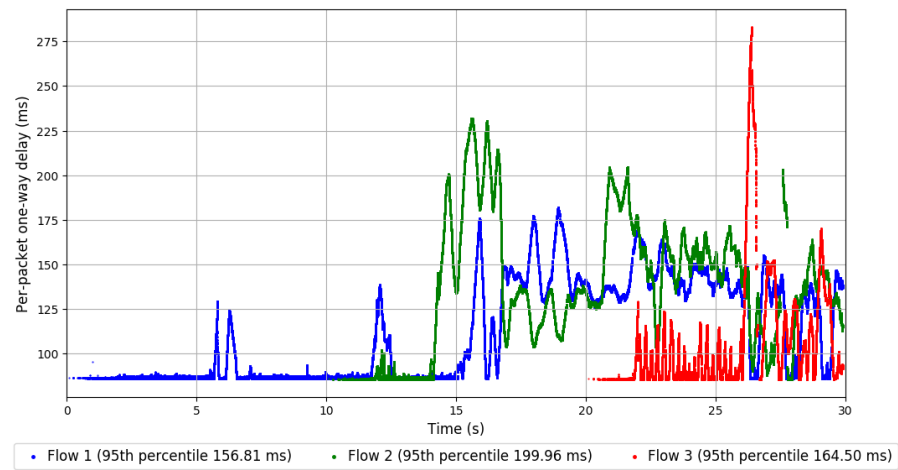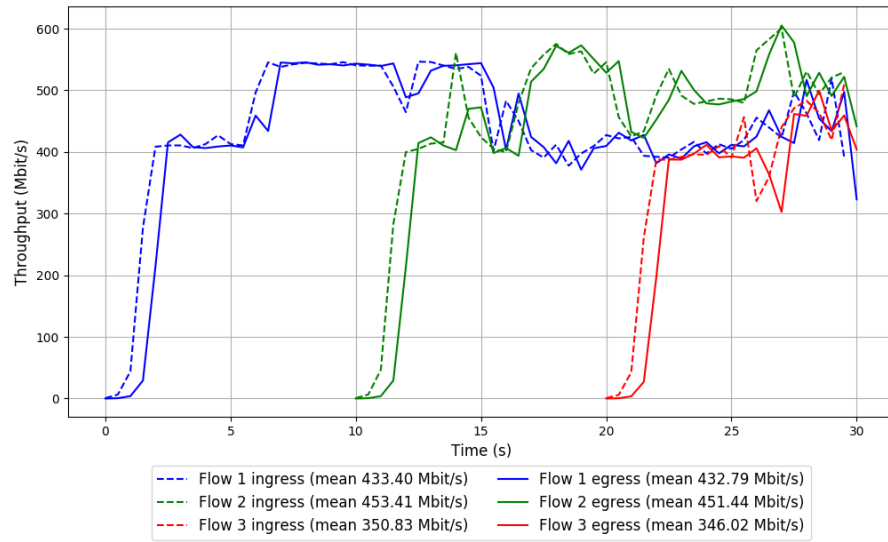
Run 4: Report of TaoVA-100x — Data Link

Flow 1 ingress (mean 197.46 Mbit/s) --- Flow 1 egress (mean 197.57 Mbit/s)
Flow 2 ingress (mean 183.65 Mbit/s) --- Flow 2 egress (mean 184.02 Mbit/s)
Flow 3 ingress (mean 182.35 Mbit/s) --- Flow 3 egress (mean 182.00 Mbit/s)

Flow 1 (95th percentile 93.62 ms)   Flow 2 (95th percentile 98.49 ms)   Flow 3 (95th percentile 92.27 ms)

142

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

Start at: 2018-09-11 03:44:47
End at: 2018-09-11 03:45:17
Local clock offset: 0.053 ms
Remote clock offset: -0.074 ms

# Below is generated by plot.py at 2018-09-11 06:27:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 413.35 Mbit/s
95th percentile per-packet one-way delay: 89.216 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 216.14 Mbit/s
95th percentile per-packet one-way delay: 88.114 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 207.04 Mbit/s
95th percentile per-packet one-way delay: 89.937 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 181.47 Mbit/s
95th percentile per-packet one-way delay: 90.660 ms
Loss rate: 1.75%
```
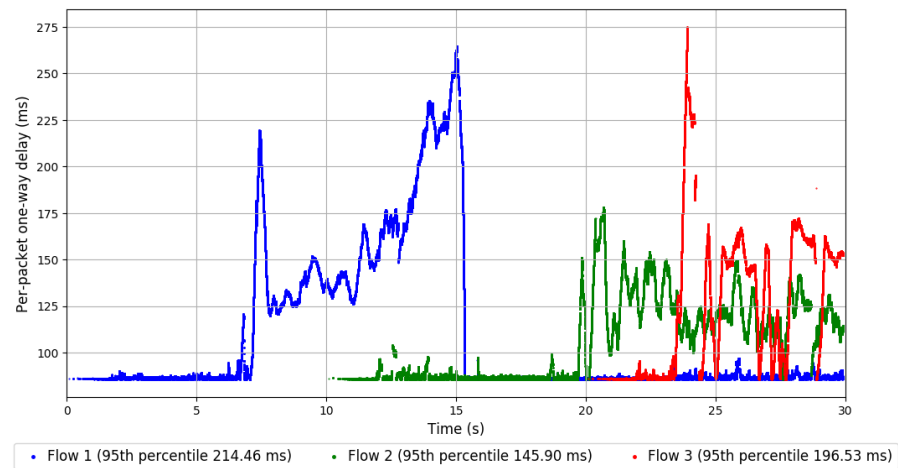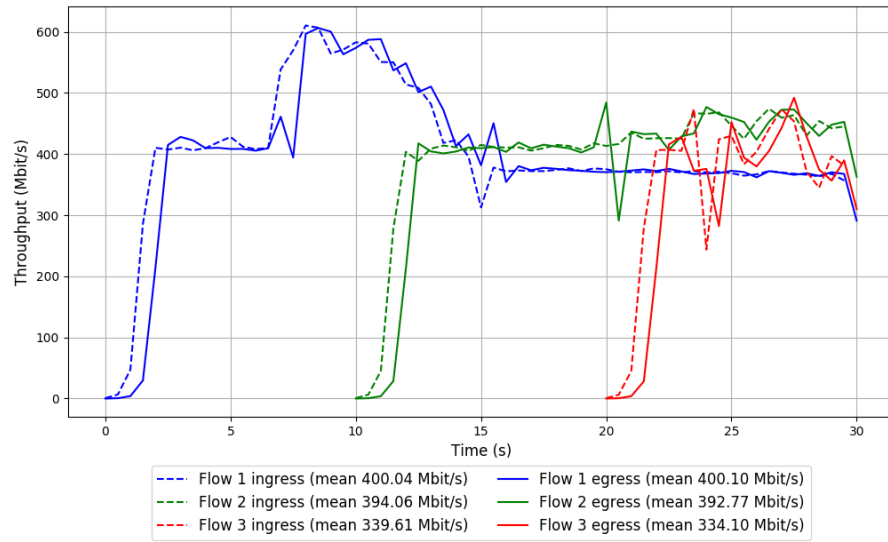
Run 5: Report of TaoVA-100x — Data Link

```
Run 1: Statistics of TCP Vegas

Start at: 2018-09-11 01:46:22
End at: 2018-09-11 01:46:52
Local clock offset: 0.209 ms
Remote clock offset: 0.141 ms


# Below is generated by plot.py at 2018-09-11 06:30:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 846.40 Mbit/s
95th percentile per-packet one-way delay: 181.202 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 432.79 Mbit/s
95th percentile per-packet one-way delay: 156.811 ms
Loss rate: 0.71%
-- Flow 2:
Average throughput: 451.44 Mbit/s
95th percentile per-packet one-way delay: 199.959 ms
Loss rate: 1.29%
-- Flow 3:
Average throughput: 346.02 Mbit/s
95th percentile per-packet one-way delay: 164.502 ms
Loss rate: 3.08%
```
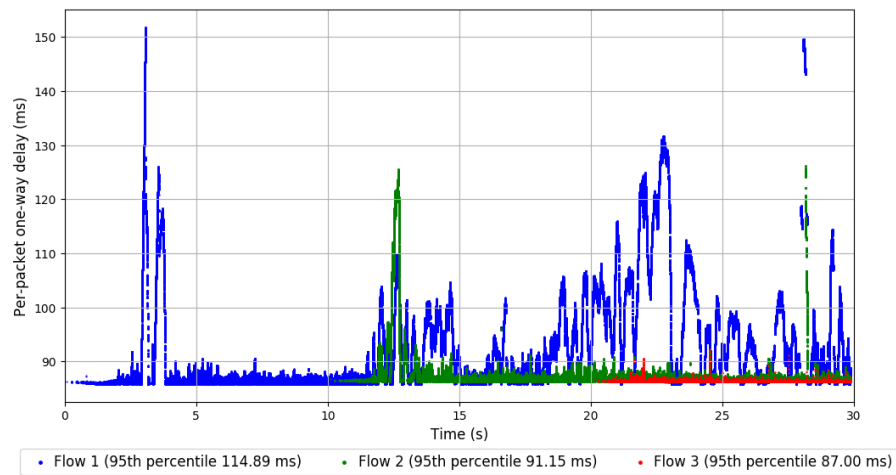
Run 1: Report of TCP Vegas — Data Link

146

```
Run 2: Statistics of TCP Vegas

Start at: 2018-09-11 02:18:51
End at: 2018-09-11 02:19:21
Local clock offset: 0.032 ms
Remote clock offset: 0.059 ms


# Below is generated by plot.py at 2018-09-11 06:31:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 770.87 Mbit/s
95th percentile per-packet one-way delay: 180.591 ms
Loss rate: 1.17%
-- Flow 1:
Average throughput: 400.10 Mbit/s
95th percentile per-packet one-way delay: 214.463 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 392.77 Mbit/s
95th percentile per-packet one-way delay: 145.900 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 334.10 Mbit/s
95th percentile per-packet one-way delay: 196.531 ms
Loss rate: 3.32%
```
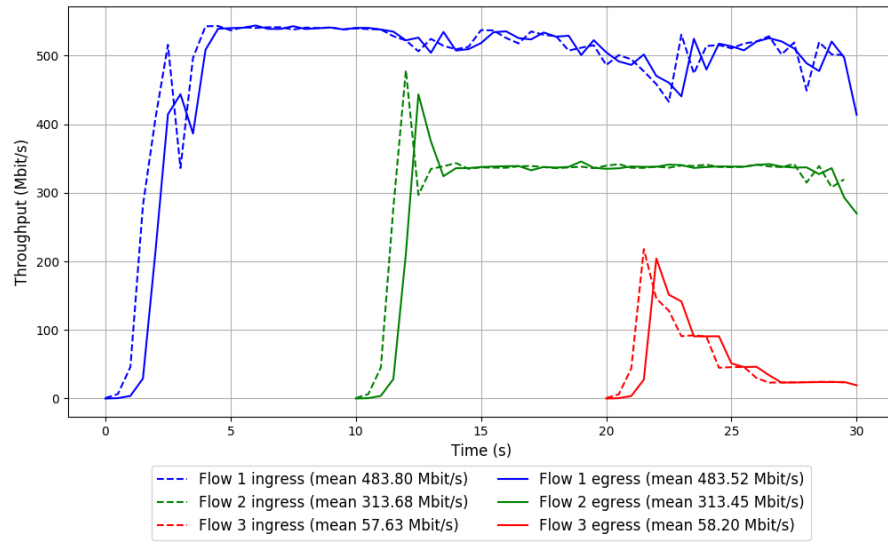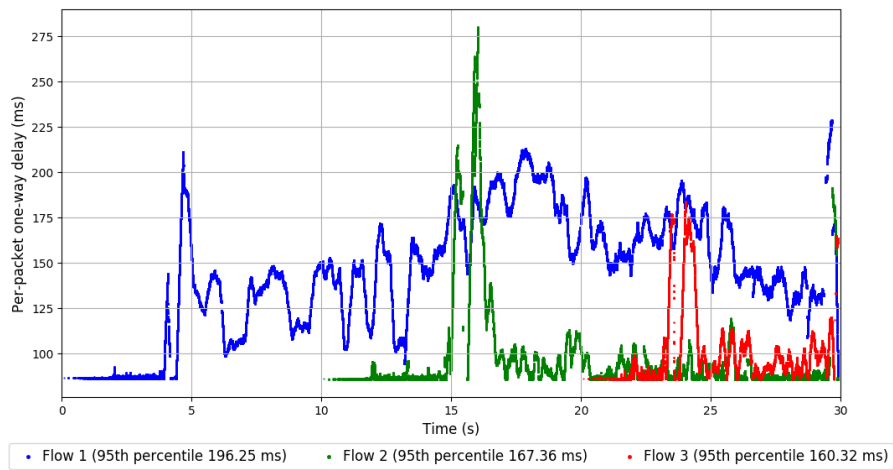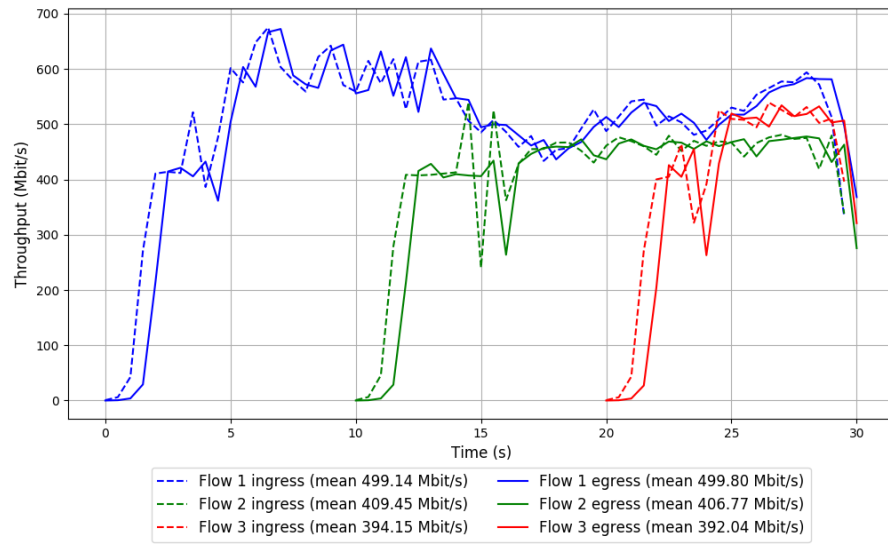
Run 2: Report of TCP Vegas — Data Link

```
Run 3: Statistics of TCP Vegas

Start at: 2018-09-11 02:51:11
End at: 2018-09-11 02:51:41
Local clock offset: 0.077 ms
Remote clock offset: -0.05 ms


# Below is generated by plot.py at 2018-09-11 06:31:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 710.87 Mbit/s
95th percentile per-packet one-way delay: 110.678 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 483.52 Mbit/s
95th percentile per-packet one-way delay: 114.891 ms
Loss rate: 0.63%
-- Flow 2:
Average throughput: 313.45 Mbit/s
95th percentile per-packet one-way delay: 91.146 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 58.20 Mbit/s
95th percentile per-packet one-way delay: 86.999 ms
Loss rate: 0.75%
```

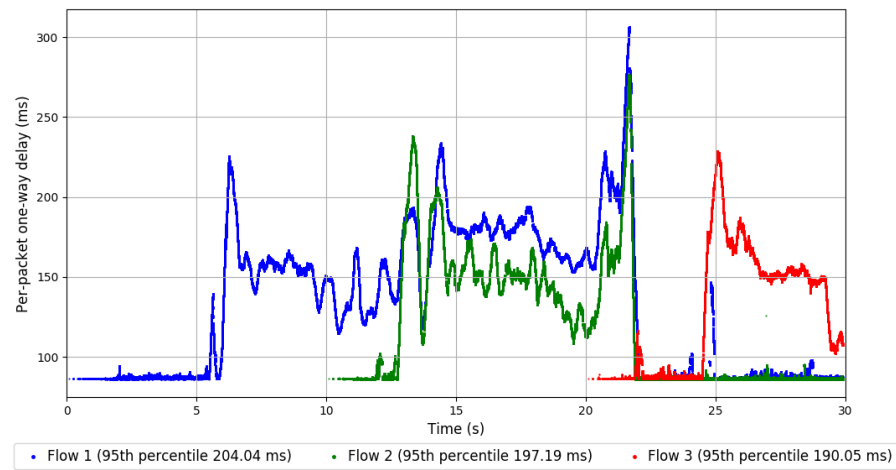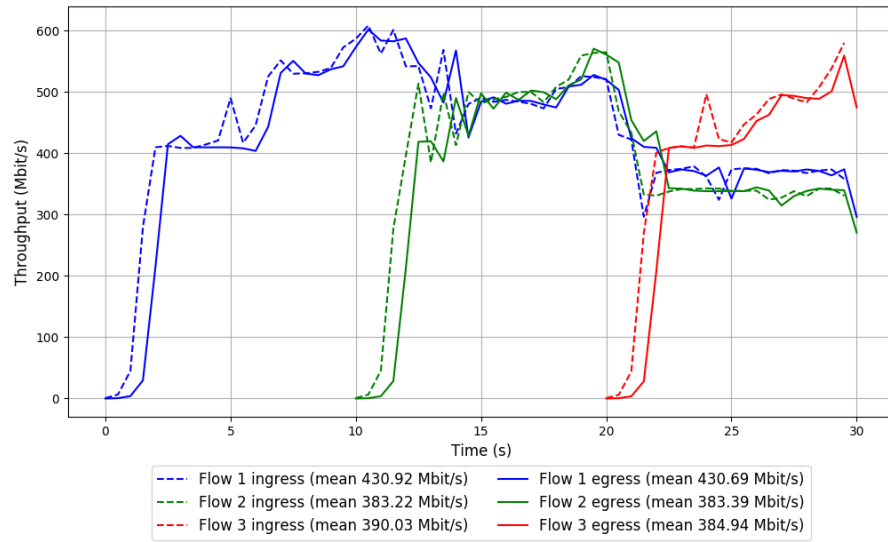Run 3: Report of TCP Vegas — Data Link

```
Run 4: Statistics of TCP Vegas

Start at: 2018-09-11 03:23:10
End at: 2018-09-11 03:23:40
Local clock offset: -0.217 ms
Remote clock offset: -0.036 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 898.81 Mbit/s
95th percentile per-packet one-way delay: 192.191 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 499.80 Mbit/s
95th percentile per-packet one-way delay: 196.255 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 406.77 Mbit/s
95th percentile per-packet one-way delay: 167.360 ms
Loss rate: 1.51%
-- Flow 3:
Average throughput: 392.04 Mbit/s
95th percentile per-packet one-way delay: 160.323 ms
Loss rate: 2.27%
```

Run 4: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 499.14 Mbit/s) — Flow 1 egress (mean 499.80 Mbit/s)
Flow 2 ingress (mean 409.45 Mbit/s) — Flow 2 egress (mean 406.77 Mbit/s)
Flow 3 ingress (mean 394.15 Mbit/s) — Flow 3 egress (mean 392.04 Mbit/s)

Flow 1 (95th percentile 196.25 ms) • Flow 2 (95th percentile 167.36 ms) • Flow 3 (95th percentile 160.32 ms)

```
Run 5: Statistics of TCP Vegas

Start at: 2018-09-11 03:55:32
End at: 2018-09-11 03:56:02
Local clock offset: -0.023 ms
Remote clock offset: -0.142 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 811.89 Mbit/s
95th percentile per-packet one-way delay: 200.335 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 430.69 Mbit/s
95th percentile per-packet one-way delay: 204.038 ms
Loss rate: 0.63%
-- Flow 2:
Average throughput: 383.39 Mbit/s
95th percentile per-packet one-way delay: 197.186 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 384.94 Mbit/s
95th percentile per-packet one-way delay: 190.050 ms
Loss rate: 3.01%
```
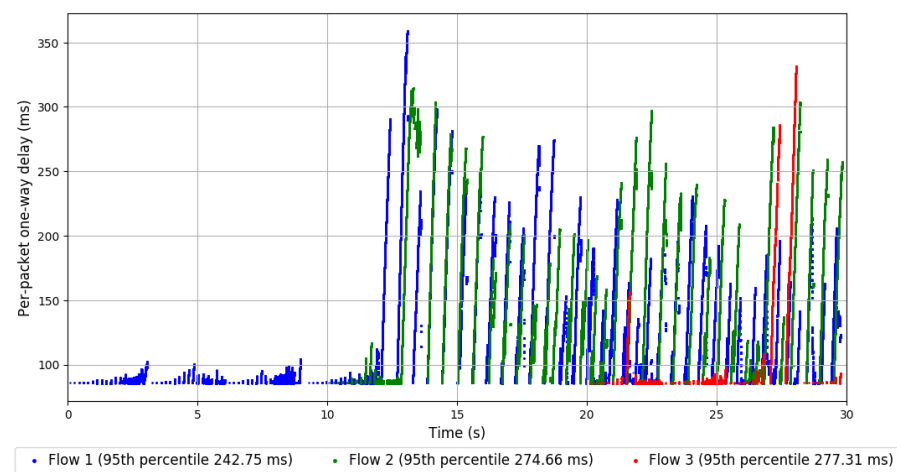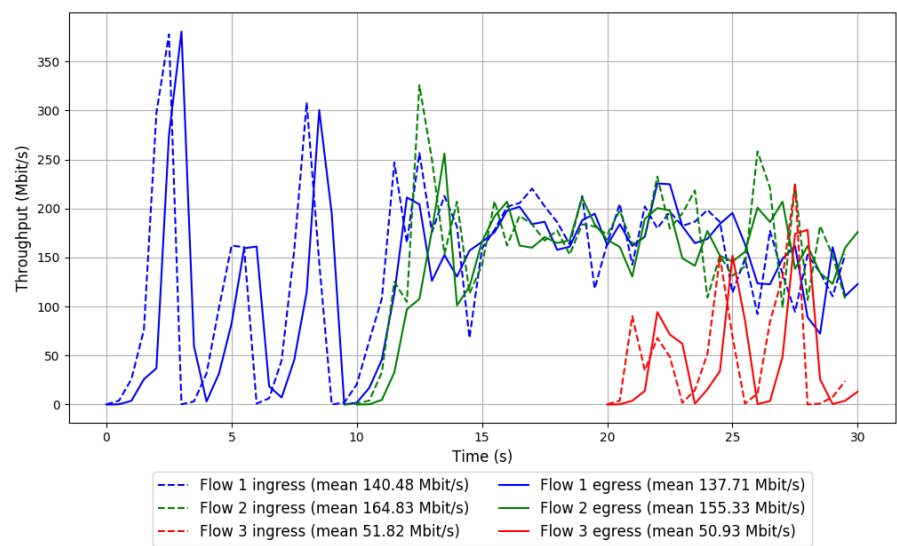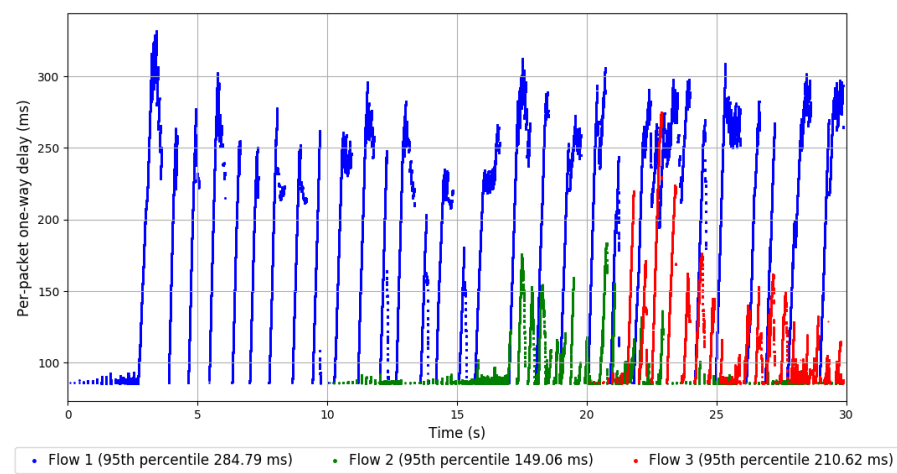
Run 5: Report of TCP Vegas — Data Link

Flow 1 ingress (mean 430.92 Mbit/s)   Flow 1 egress (mean 430.69 Mbit/s)
Flow 2 ingress (mean 383.22 Mbit/s)   Flow 2 egress (mean 383.39 Mbit/s)
Flow 3 ingress (mean 390.03 Mbit/s)   Flow 3 egress (mean 384.94 Mbit/s)

Flow 1 (95th percentile 204.04 ms)   Flow 2 (95th percentile 197.19 ms)   Flow 3 (95th percentile 190.05 ms)

154

```
Run 1: Statistics of Verus

Start at: 2018-09-11 01:29:58
End at: 2018-09-11 01:30:28
Local clock offset: -0.013 ms
Remote clock offset: 0.357 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 257.14 Mbit/s
95th percentile per-packet one-way delay: 265.891 ms
Loss rate: 3.85%
-- Flow 1:
Average throughput: 137.71 Mbit/s
95th percentile per-packet one-way delay: 242.755 ms
Loss rate: 2.74%
-- Flow 2:
Average throughput: 155.33 Mbit/s
95th percentile per-packet one-way delay: 274.657 ms
Loss rate: 5.31%
-- Flow 3:
Average throughput: 50.93 Mbit/s
95th percentile per-packet one-way delay: 277.314 ms
Loss rate: 3.61%
```
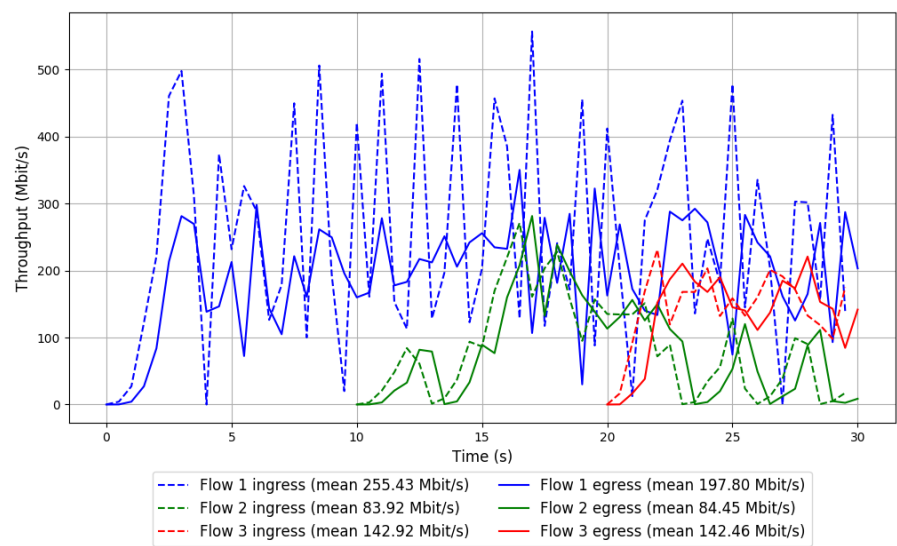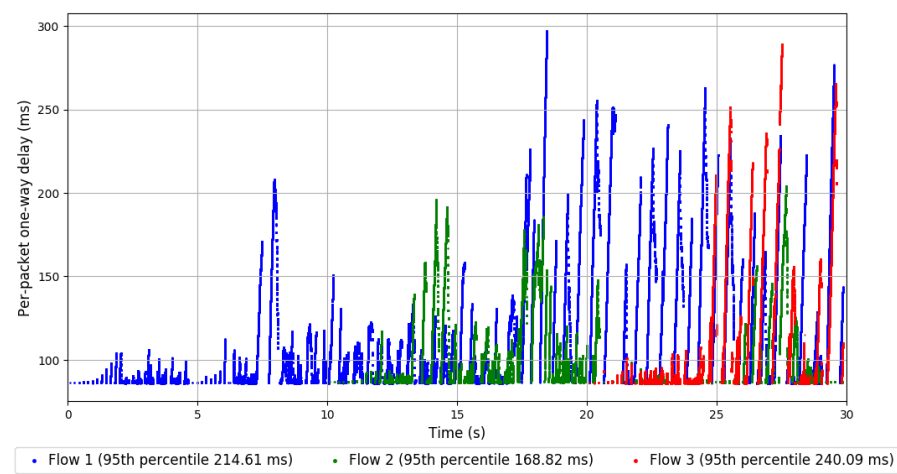
Run 1: Report of Verus — Data Link

```
Run 2: Statistics of Verus

Start at: 2018-09-11 02:02:13
End at: 2018-09-11 02:02:43
Local clock offset: 0.309 ms
Remote clock offset: 0.135 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 300.26 Mbit/s
95th percentile per-packet one-way delay: 279.395 ms
Loss rate: 16.13%
-- Flow 1:
Average throughput: 197.80 Mbit/s
95th percentile per-packet one-way delay: 284.785 ms
Loss rate: 22.24%
-- Flow 2:
Average throughput: 84.45 Mbit/s
95th percentile per-packet one-way delay: 149.065 ms
Loss rate: 0.35%
-- Flow 3:
Average throughput: 142.46 Mbit/s
95th percentile per-packet one-way delay: 210.617 ms
Loss rate: 2.06%
```
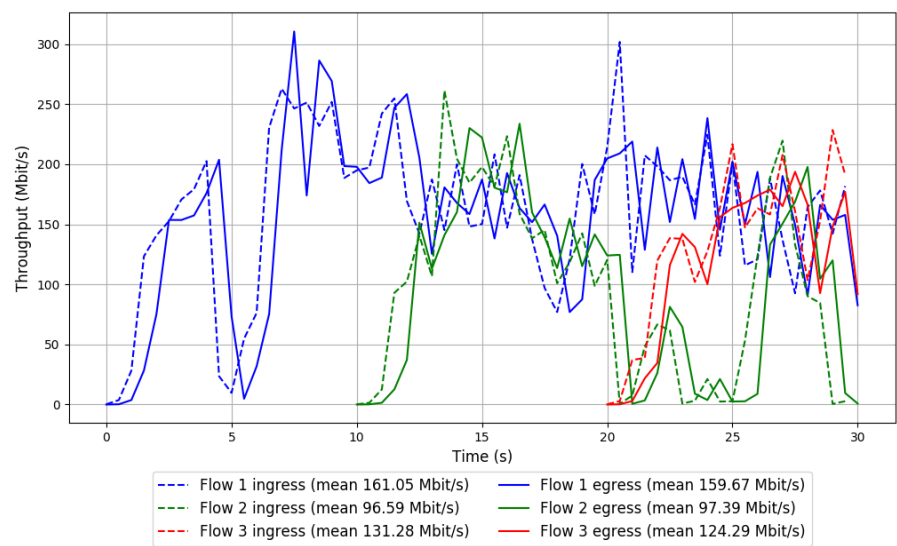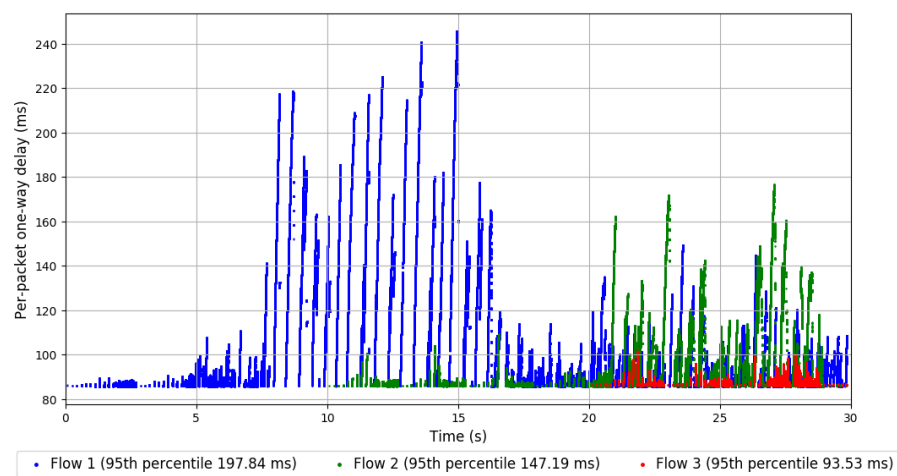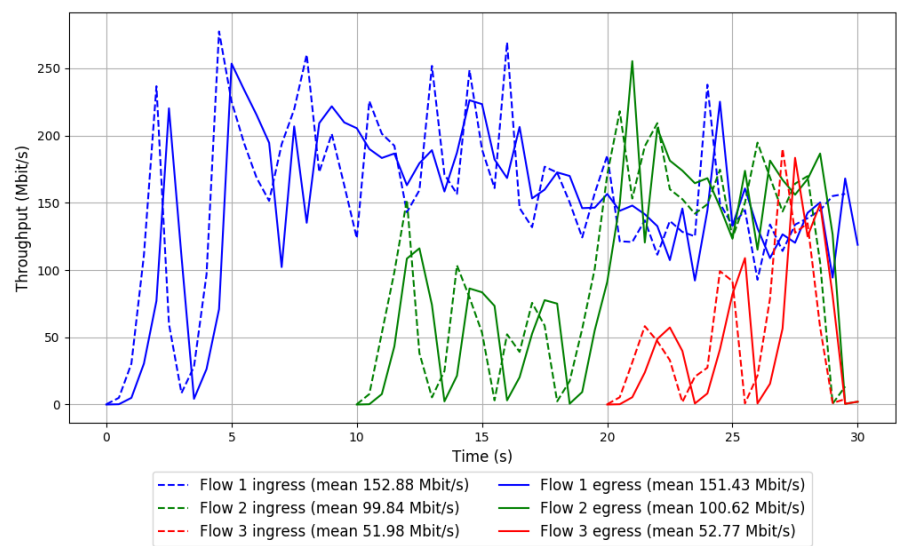
Run 2: Report of Verus — Data Link

```
Run 3: Statistics of Verus

Start at: 2018-09-11 02:34:44
End at: 2018-09-11 02:35:14
Local clock offset: 0.166 ms
Remote clock offset: 0.045 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 264.92 Mbit/s
95th percentile per-packet one-way delay: 211.145 ms
Loss rate: 1.96%
-- Flow 1:
Average throughput: 159.67 Mbit/s
95th percentile per-packet one-way delay: 214.606 ms
Loss rate: 1.43%
-- Flow 2:
Average throughput: 97.39 Mbit/s
95th percentile per-packet one-way delay: 168.824 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 124.29 Mbit/s
95th percentile per-packet one-way delay: 240.085 ms
Loss rate: 6.73%
```

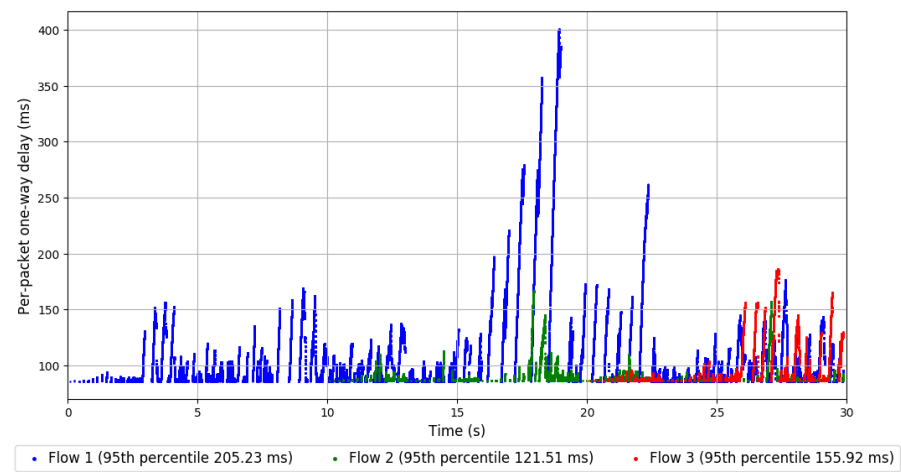# Run 3: Report of Verus — Data Link

```
Run 4: Statistics of Verus

Start at: 2018-09-11 03:06:46
End at: 2018-09-11 03:07:16
Local clock offset: -0.092 ms
Remote clock offset: -0.073 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 235.37 Mbit/s
95th percentile per-packet one-way delay: 179.639 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 151.43 Mbit/s
95th percentile per-packet one-way delay: 197.841 ms
Loss rate: 1.52%
-- Flow 2:
Average throughput: 100.62 Mbit/s
95th percentile per-packet one-way delay: 147.191 ms
Loss rate: 0.28%
-- Flow 3:
Average throughput: 52.77 Mbit/s
95th percentile per-packet one-way delay: 93.526 ms
Loss rate: 0.24%
```

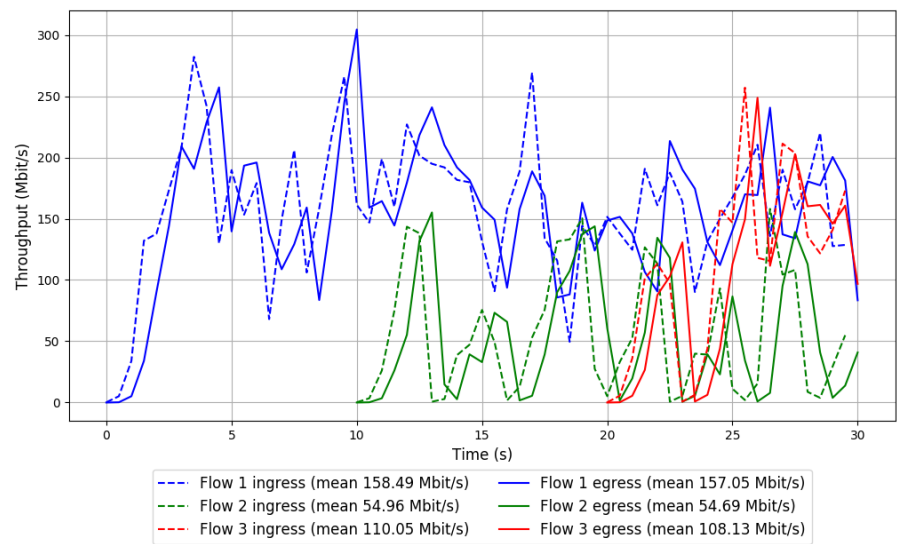Run 4: Report of Verus — Data Link

```
Run 5: Statistics of Verus

Start at: 2018-09-11 03:39:10
End at: 2018-09-11 03:39:40
Local clock offset: -0.071 ms
Remote clock offset: -0.033 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 228.80 Mbit/s
95th percentile per-packet one-way delay: 175.477 ms
Loss rate: 1.72%
-- Flow 1:
Average throughput: 157.05 Mbit/s
95th percentile per-packet one-way delay: 205.227 ms
Loss rate: 1.40%
-- Flow 2:
Average throughput: 54.69 Mbit/s
95th percentile per-packet one-way delay: 121.514 ms
Loss rate: 1.35%
-- Flow 3:
Average throughput: 108.13 Mbit/s
95th percentile per-packet one-way delay: 155.923 ms
Loss rate: 3.48%
```
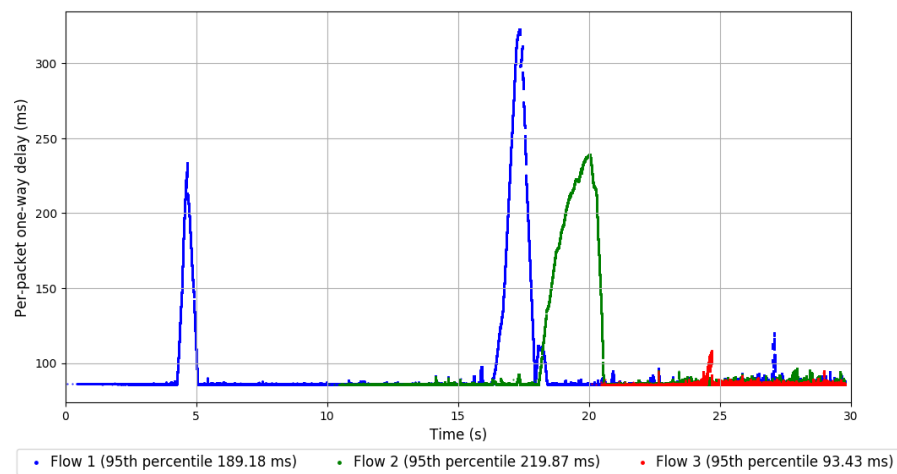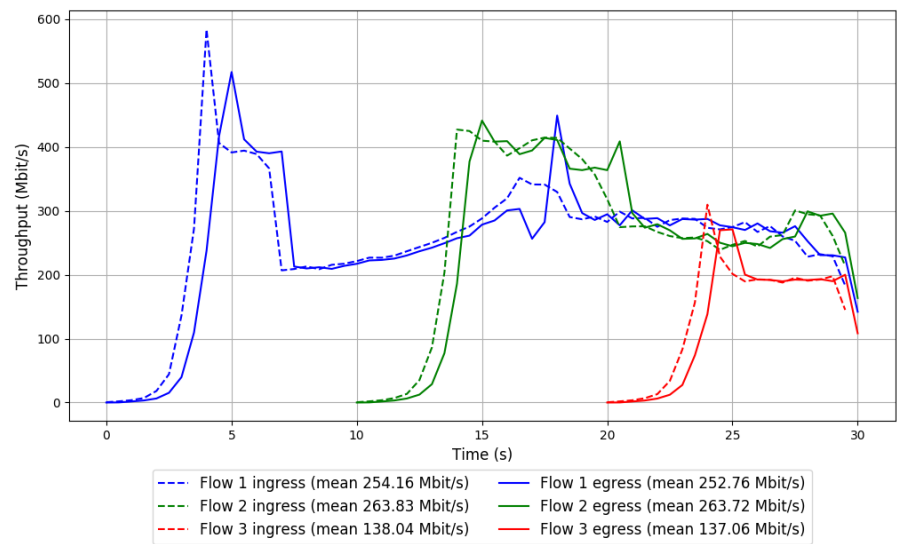
Run 5: Report of Verus — Data Link

```
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-11 01:26:55
End at: 2018-09-11 01:27:25
Local clock offset: 0.471 ms
Remote clock offset: 0.493 ms


# Below is generated by plot.py at 2018-09-11 06:43:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 472.31 Mbit/s
95th percentile per-packet one-way delay: 206.628 ms
Loss rate: 1.18%
-- Flow 1:
Average throughput: 252.76 Mbit/s
95th percentile per-packet one-way delay: 189.179 ms
Loss rate: 1.12%
-- Flow 2:
Average throughput: 263.72 Mbit/s
95th percentile per-packet one-way delay: 219.867 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 137.06 Mbit/s
95th percentile per-packet one-way delay: 93.434 ms
Loss rate: 2.52%
```
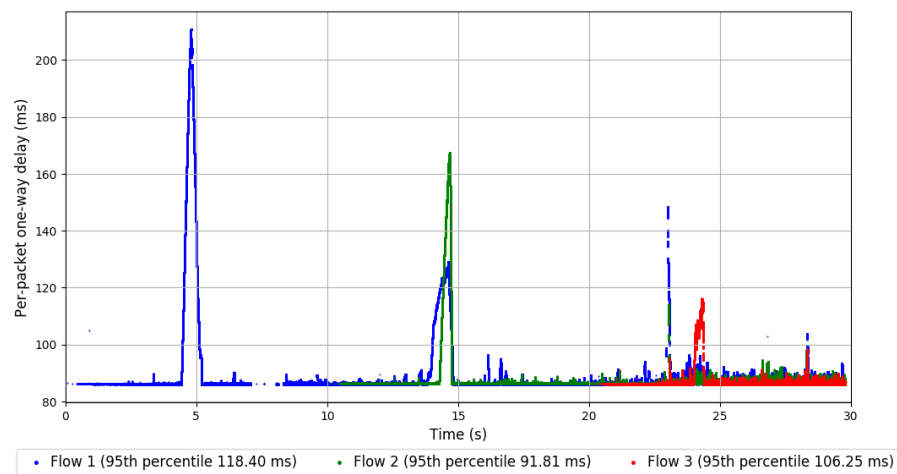
Run 1: Report of PCC-Vivace — Data Link

Legend:
- Flow 1 ingress (mean 254.16 Mbit/s)
- Flow 1 egress (mean 252.76 Mbit/s)
- Flow 2 ingress (mean 263.83 Mbit/s)
- Flow 2 egress (mean 263.72 Mbit/s)
- Flow 3 ingress (mean 138.04 Mbit/s)
- Flow 3 egress (mean 137.06 Mbit/s)

Legend:
- Flow 1 (95th percentile 189.18 ms)
- Flow 2 (95th percentile 219.87 ms)
- Flow 3 (95th percentile 93.43 ms)

```
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-11 01:59:11
End at: 2018-09-11 01:59:41
Local clock offset: 0.51 ms
Remote clock offset: 0.174 ms


# Below is generated by plot.py at 2018-09-11 06:44:13
# Datalink statistics
-- Total of 3 flows:
Average throughput: 458.17 Mbit/s
95th percentile per-packet one-way delay: 110.494 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 286.68 Mbit/s
95th percentile per-packet one-way delay: 118.397 ms
Loss rate: 0.81%
-- Flow 2:
Average throughput: 184.84 Mbit/s
95th percentile per-packet one-way delay: 91.815 ms
Loss rate: 1.14%
-- Flow 3:
Average throughput: 150.09 Mbit/s
95th percentile per-packet one-way delay: 106.247 ms
Loss rate: 2.48%
```
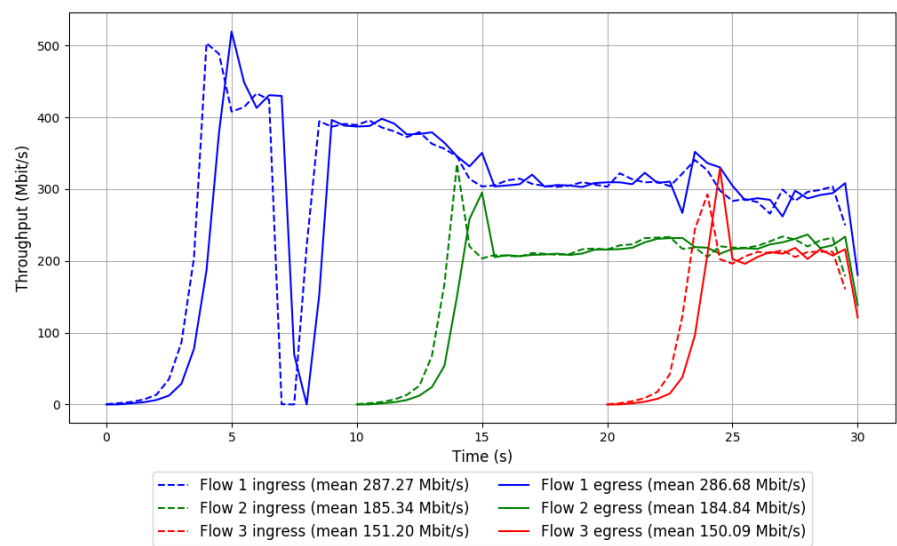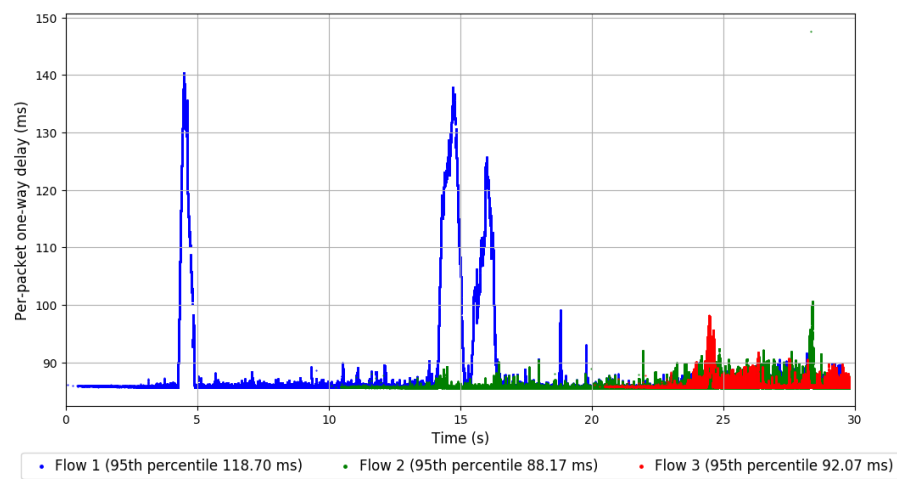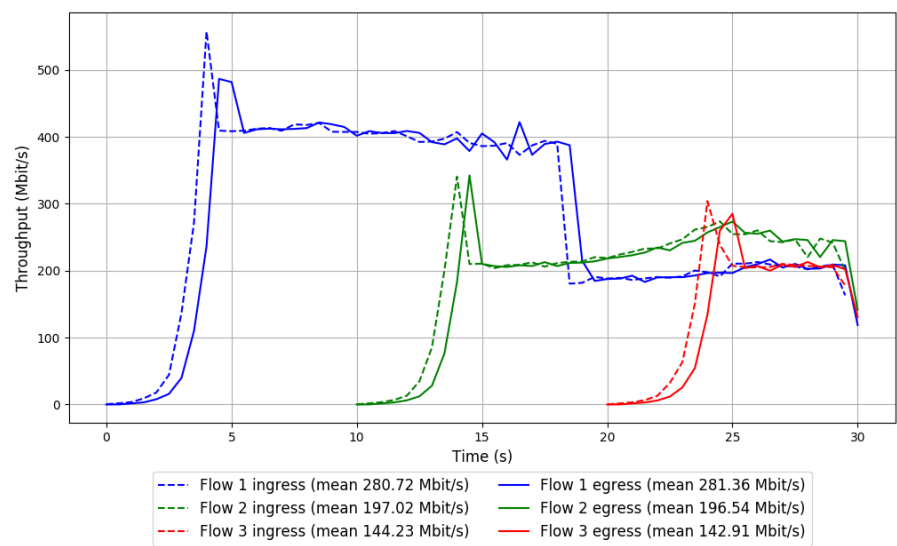
Run 2: Report of PCC-Vivace — Data Link

```
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-11 02:31:40
End at: 2018-09-11 02:32:10
Local clock offset: -0.132 ms
Remote clock offset: 0.014 ms


# Below is generated by plot.py at 2018-09-11 06:44:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 458.24 Mbit/s
95th percentile per-packet one-way delay: 108.367 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 281.36 Mbit/s
95th percentile per-packet one-way delay: 118.696 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 196.54 Mbit/s
95th percentile per-packet one-way delay: 88.175 ms
Loss rate: 1.28%
-- Flow 3:
Average throughput: 142.91 Mbit/s
95th percentile per-packet one-way delay: 92.073 ms
Loss rate: 2.98%
```
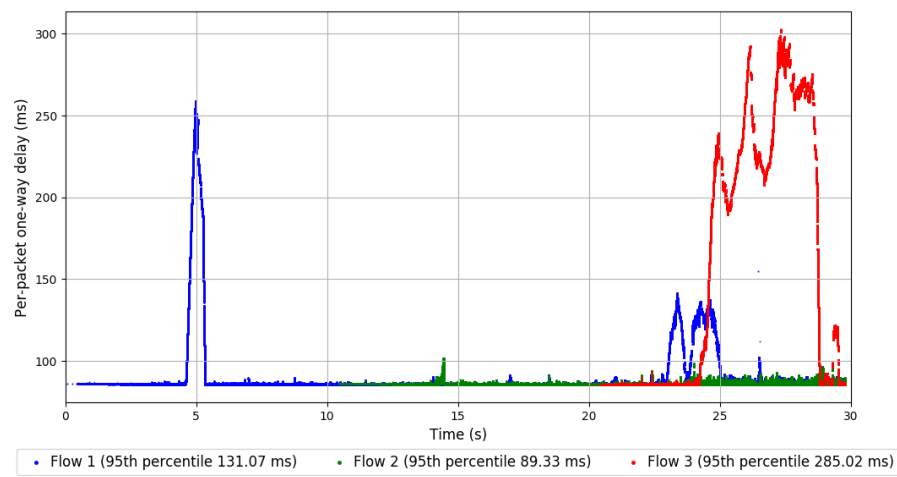
Run 3: Report of PCC-Vivace — Data Link

```
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-11 03:03:43
End at: 2018-09-11 03:04:13
Local clock offset: 0.062 ms
Remote clock offset: 0.052 ms


# Below is generated by plot.py at 2018-09-11 06:45:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 455.51 Mbit/s
95th percentile per-packet one-way delay: 244.170 ms
Loss rate: 2.12%
-- Flow 1:
Average throughput: 245.52 Mbit/s
95th percentile per-packet one-way delay: 131.070 ms
Loss rate: 1.35%
-- Flow 2:
Average throughput: 200.06 Mbit/s
95th percentile per-packet one-way delay: 89.335 ms
Loss rate: 1.25%
-- Flow 3:
Average throughput: 237.38 Mbit/s
95th percentile per-packet one-way delay: 285.022 ms
Loss rate: 5.86%
```
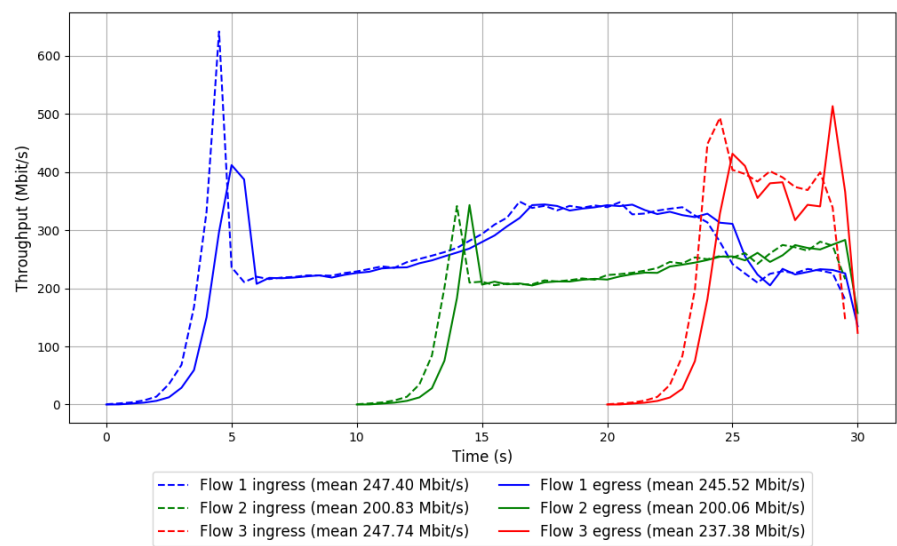
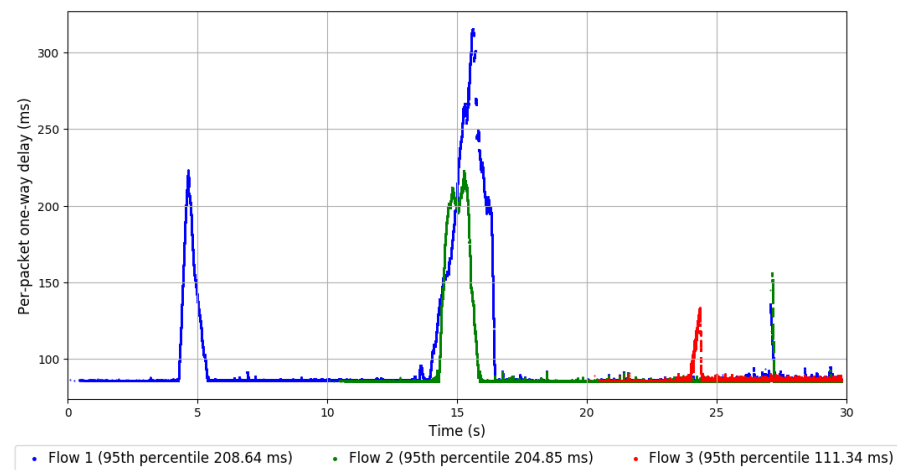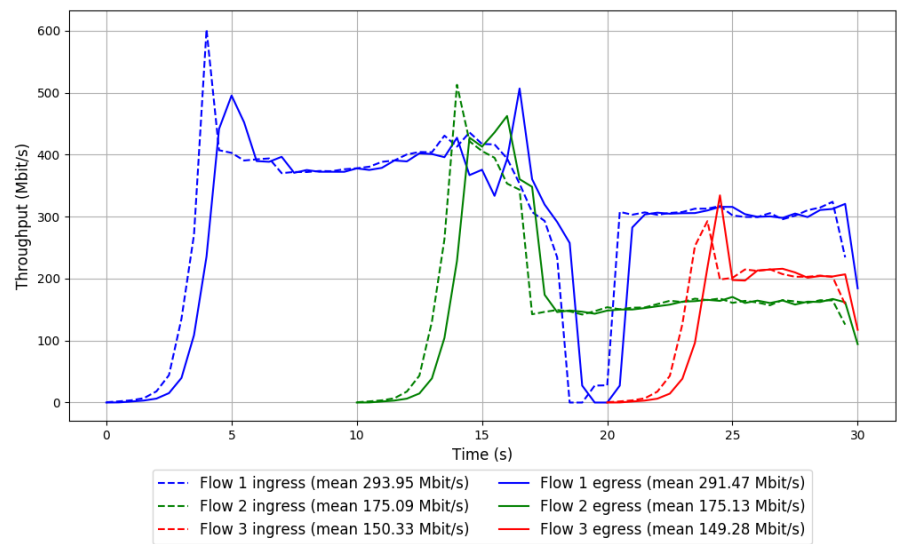Run 4: Report of PCC-Vivace — Data Link

```
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-11 03:36:08
End at: 2018-09-11 03:36:38
Local clock offset: -0.404 ms
Remote clock offset: -0.034 ms


# Below is generated by plot.py at 2018-09-11 06:45:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 456.28 Mbit/s
95th percentile per-packet one-way delay: 203.647 ms
Loss rate: 1.39%
-- Flow 1:
Average throughput: 291.47 Mbit/s
95th percentile per-packet one-way delay: 208.640 ms
Loss rate: 1.42%
-- Flow 2:
Average throughput: 175.13 Mbit/s
95th percentile per-packet one-way delay: 204.850 ms
Loss rate: 0.85%
-- Flow 3:
Average throughput: 149.28 Mbit/s
95th percentile per-packet one-way delay: 111.338 ms
Loss rate: 2.43%
```
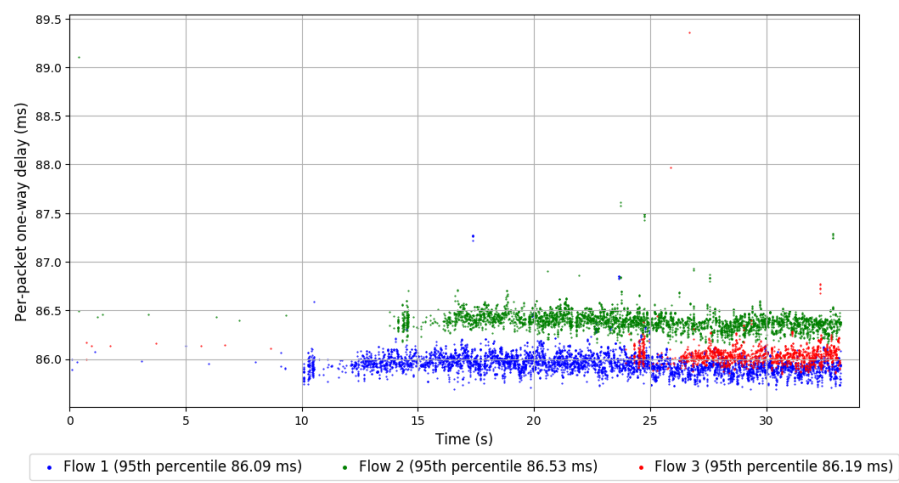
Run 5: Report of PCC-Vivace — Data Link

Flow 1 ingress (mean 293.95 Mbit/s)   Flow 1 egress (mean 291.47 Mbit/s)
Flow 2 ingress (mean 175.09 Mbit/s)   Flow 2 egress (mean 175.13 Mbit/s)
Flow 3 ingress (mean 150.33 Mbit/s)   Flow 3 egress (mean 149.28 Mbit/s)

Flow 1 (95th percentile 208.64 ms)   Flow 2 (95th percentile 204.85 ms)   Flow 3 (95th percentile 111.34 ms)

```
Run 1: Statistics of WebRTC media

Start at: 2018-09-11 01:21:32
End at: 2018-09-11 01:22:02
Local clock offset: 0.314 ms
Remote clock offset: 0.451 ms


# Below is generated by plot.py at 2018-09-11 06:45:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.04 Mbit/s
95th percentile per-packet one-way delay: 86.477 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 86.095 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 86.526 ms
Loss rate: 1.31%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 86.188 ms
Loss rate: 3.29%
```
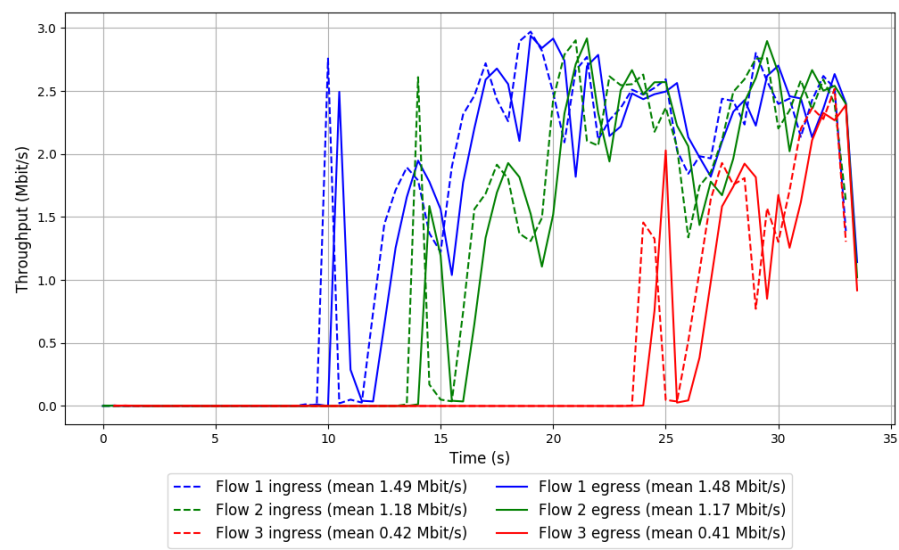
Run 1: Report of WebRTC media — Data Link

```
Run 2: Statistics of WebRTC media

Start at: 2018-09-11 01:53:48
End at: 2018-09-11 01:54:18
Local clock offset: 0.213 ms
Remote clock offset: 0.132 ms


# Below is generated by plot.py at 2018-09-11 06:45:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.44 Mbit/s
95th percentile per-packet one-way delay: 86.522 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 86.159 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 86.590 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 86.278 ms
Loss rate: 3.28%
```
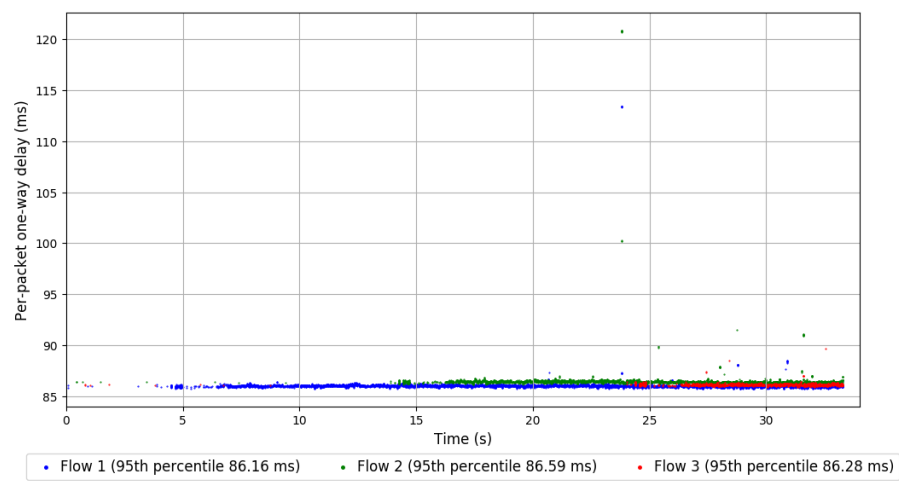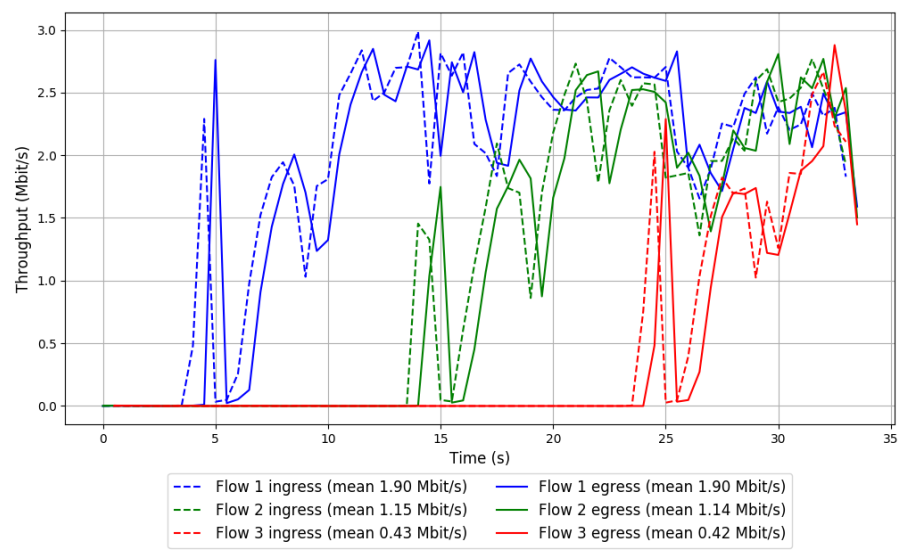
Run 2: Report of WebRTC media — Data Link

```
Run 3: Statistics of WebRTC media

Start at: 2018-09-11 02:26:18
End at: 2018-09-11 02:26:48
Local clock offset: -0.072 ms
Remote clock offset: 0.009 ms


# Below is generated by plot.py at 2018-09-11 06:45:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.40 Mbit/s
95th percentile per-packet one-way delay: 86.130 ms
Loss rate: 1.10%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 86.135 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 86.102 ms
Loss rate: 0.87%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 86.147 ms
Loss rate: 3.58%
```
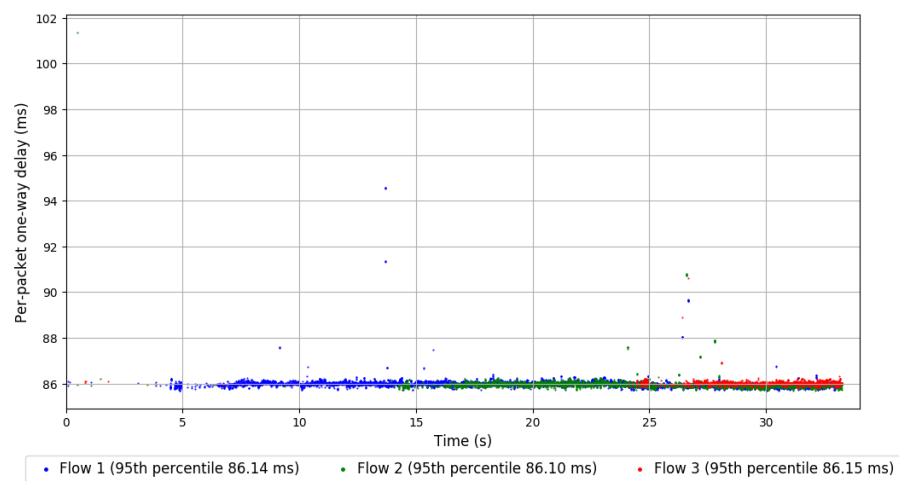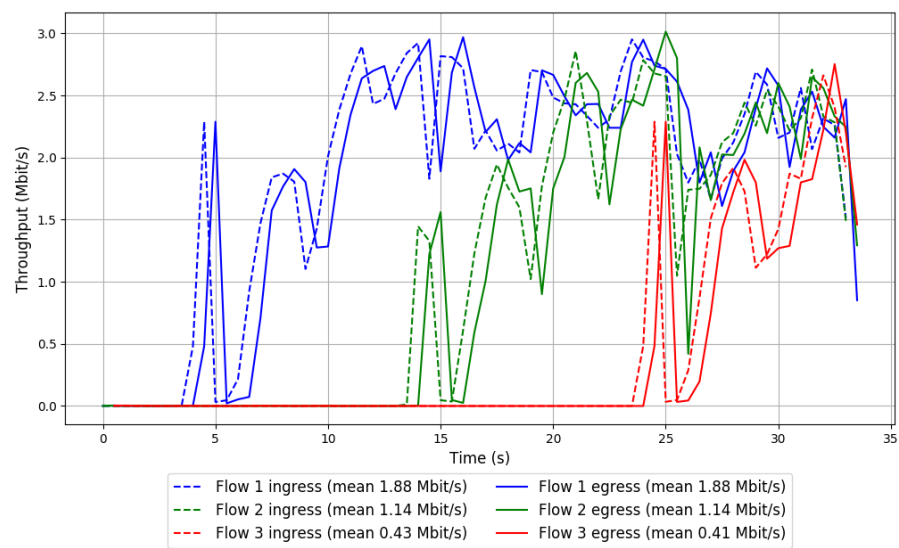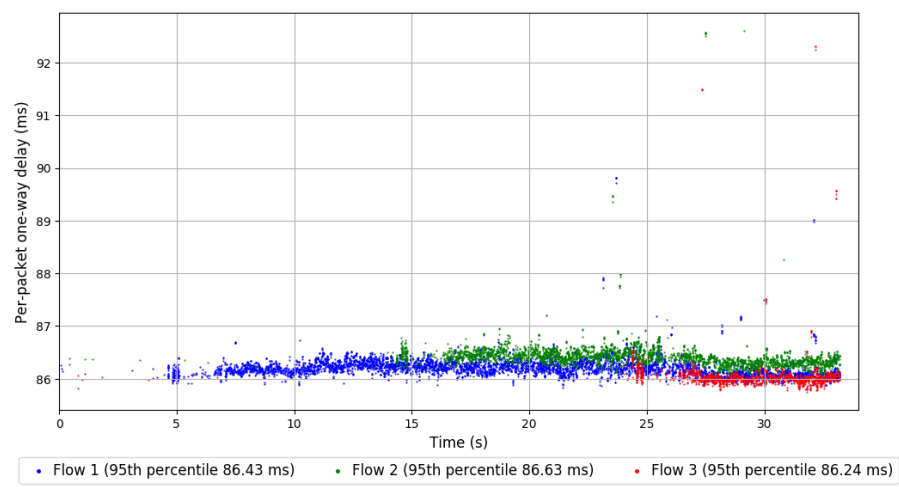
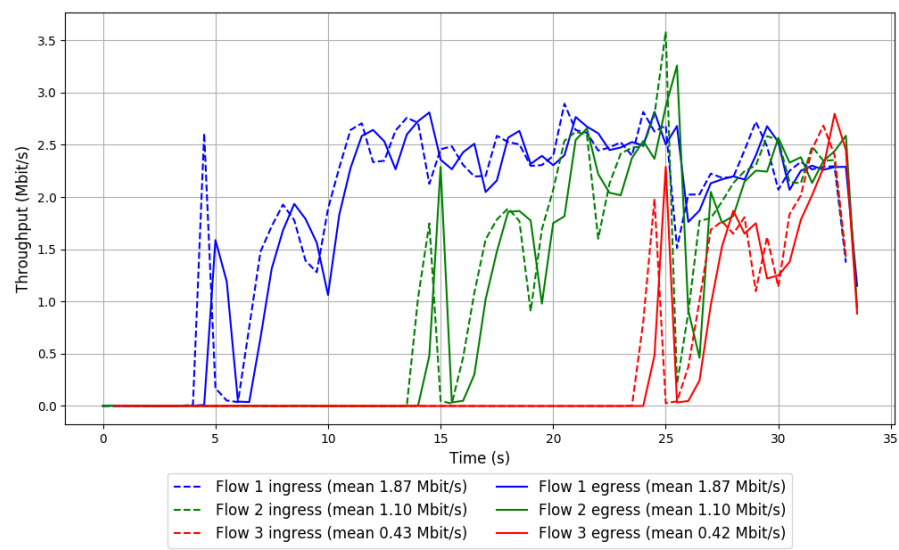Run 3: Report of WebRTC media — Data Link

```
Run 4: Statistics of WebRTC media

Start at: 2018-09-11 02:58:24
End at: 2018-09-11 02:58:54
Local clock offset: -0.081 ms
Remote clock offset: -0.083 ms


# Below is generated by plot.py at 2018-09-11 06:45:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.37 Mbit/s
95th percentile per-packet one-way delay: 86.556 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 86.432 ms
Loss rate: 0.55%
-- Flow 2:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 86.632 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 86.240 ms
Loss rate: 3.26%
```

Run 4: Report of WebRTC media — Data Link

```
Run 5: Statistics of WebRTC media

Start at: 2018-09-11 03:30:48
End at: 2018-09-11 03:31:18
Local clock offset: -0.053 ms
Remote clock offset: -0.039 ms


# Below is generated by plot.py at 2018-09-11 06:45:08
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 86.298 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 1.87 Mbit/s
95th percentile per-packet one-way delay: 86.317 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 1.10 Mbit/s
95th percentile per-packet one-way delay: 86.214 ms
Loss rate: 1.28%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 86.161 ms
Loss rate: 2.36%
```

Run 5: Report of WebRTC media — Data Link