Pantheon Report

Generated at 2018-11-30 20:00:37 (UTC).

Data path: Saudi Arabia on `enp2s0` (*remote*) →AWS India 2 on `ens5` (*local*).

Repeated the test of 19 congestion control schemes 5 times.

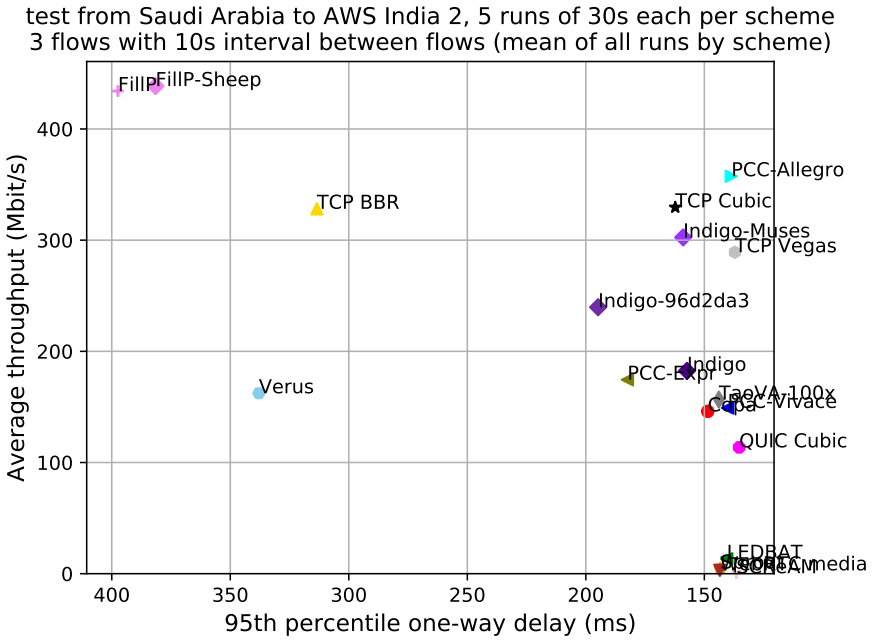
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.

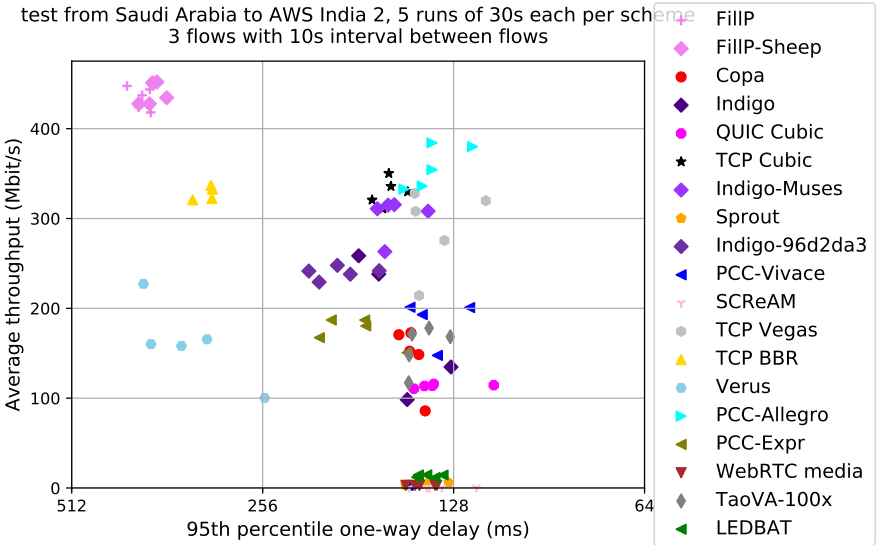
NTP offsets were measured against `nets.org.sg` and have been applied to correct the timestamps in logs.

```
System info:
Linux 4.15.0-1023-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

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

```
 M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```


test from Saudi Arabia to AWS India 2, 5 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
FillP
FillP-Sheep
PCC-Allegro
TCP BBR
TCP Cubic
Indigo-Muses
TCP Vegas
Indigo-96d2da3
Indigo
PCC-Expr
Verus
TaoVA-100x
QUIC Cubic
LEDBAT
0
100
200
300
400
400
350
300
250
200
150


test from Saudi Arabia to AWS India 2, 5 runs of 30s each per scheme
3 flows with 10s interval between flows
Average throughput (Mbit/s)
95th percentile one-way delay (ms)
0
100
200
300
400
512
256
128
64
FillP
FillP-Sheep
Copa
Indigo
QUIC Cubic
TCP Cubic
Indigo-Muses
Sprout
Indigo-96d2da3
PCC-Vivace
SCReAM
TCP Vegas
TCP BBR
Verus
PCC-Allegro
PCC-Expr
WebRTC media
TaoVA-100x
LEDBAT

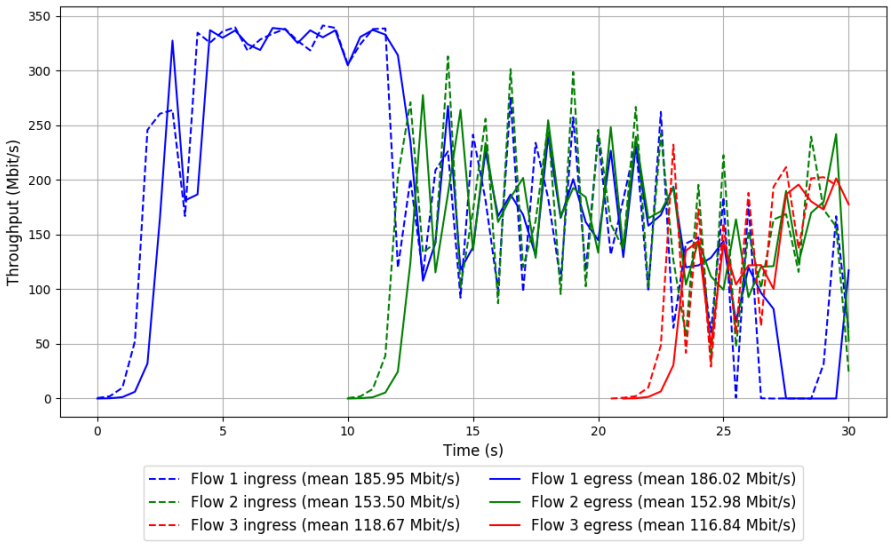
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	4	203.10	139.34	103.38	272.48	311.79	377.94	0.83	1.36	3.14
Copa	5	102.45	45.79	40.32	147.67	150.49	149.71	0.46	1.33	2.63
TCP Cubic	5	191.81	148.74	119.87	150.66	185.48	194.79	0.47	0.84	2.32
FillP	5	294.46	179.49	104.30	407.06	337.97	277.85	3.39	7.82	19.25
FillP-Sheep	5	285.31	174.88	120.03	383.93	379.97	304.87	2.57	5.65	10.49
Indigo	4	90.67	102.01	74.49	150.72	158.63	161.34	0.69	1.03	2.46
Indigo-96d2da3	5	145.22	114.06	62.14	189.31	198.69	216.27	0.97	0.80	4.64
LEDBAT	5	8.78	5.64	2.79	139.86	140.56	140.23	1.33	2.05	4.15
Indigo-Muses	5	210.86	105.46	67.85	159.24	154.63	164.11	0.40	1.23	4.03
PCC-Allegro	5	315.09	49.60	29.36	139.45	136.82	138.00	0.69	1.07	2.10
PCC-Expr	5	157.97	17.59	14.94	191.90	147.40	147.91	0.70	1.87	3.02
QUIC Cubic	5	58.89	56.74	52.44	135.23	134.46	135.50	0.71	1.03	2.41
SCReAM	5	0.22	0.22	0.22	136.22	135.63	136.24	0.64	1.07	1.85
Sprout	5	2.58	2.20	1.69	142.66	142.91	142.88	0.75	1.75	3.59
TaoVA-100x	5	94.64	69.74	48.66	143.61	143.64	145.12	0.44	0.89	2.75
TCP Vegas	5	194.66	114.01	57.17	136.96	136.58	148.51	0.58	1.02	2.35
Verus	5	102.21	78.96	26.82	325.93	255.27	265.65	0.98	1.15	3.80
PCC-Vivace	5	105.94	53.54	23.66	139.44	139.69	140.45	1.52	3.23	4.80
WebRTC media	5	1.67	1.00	0.36	142.87	143.09	142.92	0.50	1.15	3.10

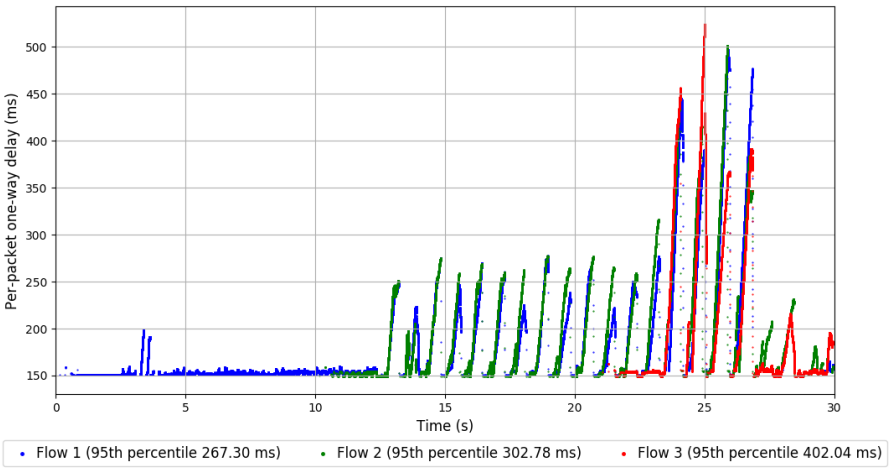
```
Run 1: Statistics of TCP BBR

Start at: 2018-11-30 16:09:15
End at: 2018-11-30 16:09:45
Local clock offset: 0.971 ms
Remote clock offset: -46.78 ms

# Below is generated by plot.py at 2018-11-30 19:33:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 322.33 Mbit/s
95th percentile per-packet one-way delay: 307.753 ms
Loss rate: 1.95%
-- Flow 1:
Average throughput: 186.02 Mbit/s
95th percentile per-packet one-way delay: 267.296 ms
Loss rate: 1.33%
-- Flow 2:
Average throughput: 152.98 Mbit/s
95th percentile per-packet one-way delay: 302.784 ms
Loss rate: 2.40%
-- Flow 3:
Average throughput: 116.84 Mbit/s
95th percentile per-packet one-way delay: 402.044 ms
Loss rate: 3.87%
```

Run 1: Report of TCP BBR — Data Link



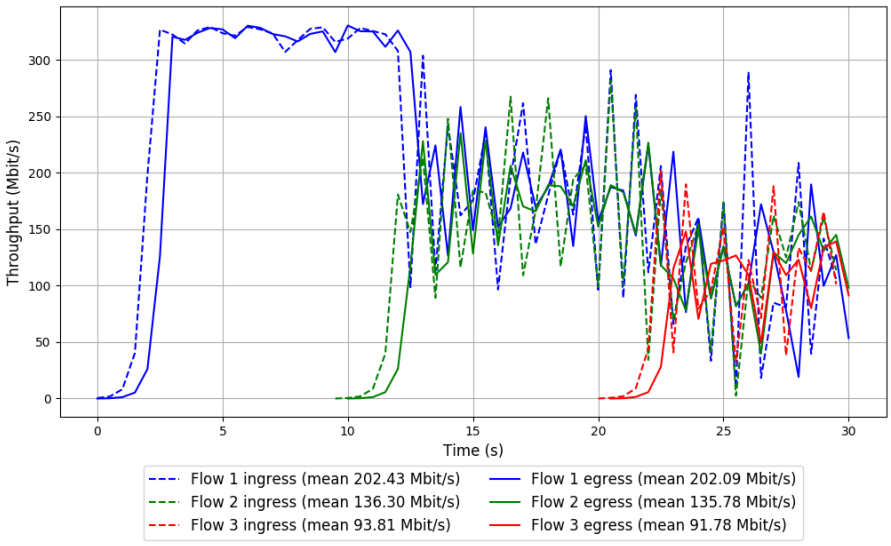


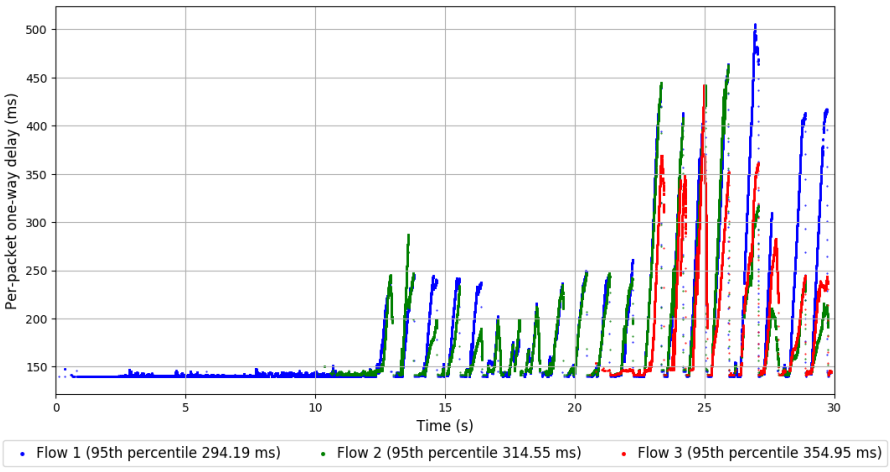
```
Run 2: Statistics of TCP BBR

Start at: 2018-11-30 17:04:16
End at: 2018-11-30 17:04:46
Local clock offset: 0.962 ms
Remote clock offset: -37.448 ms

# Below is generated by plot.py at 2018-11-30 19:33:01
# Datalink statistics
-- Total of 3 flows:
Average throughput: 320.87 Mbit/s
95th percentile per-packet one-way delay: 330.052 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 202.09 Mbit/s
95th percentile per-packet one-way delay: 294.190 ms
Loss rate: 0.94%
-- Flow 2:
Average throughput: 135.78 Mbit/s
95th percentile per-packet one-way delay: 314.548 ms
Loss rate: 1.51%
-- Flow 3:
Average throughput: 91.78 Mbit/s
95th percentile per-packet one-way delay: 354.947 ms
Loss rate: 4.50%
```

Run 2: Report of TCP BBR — Data Link



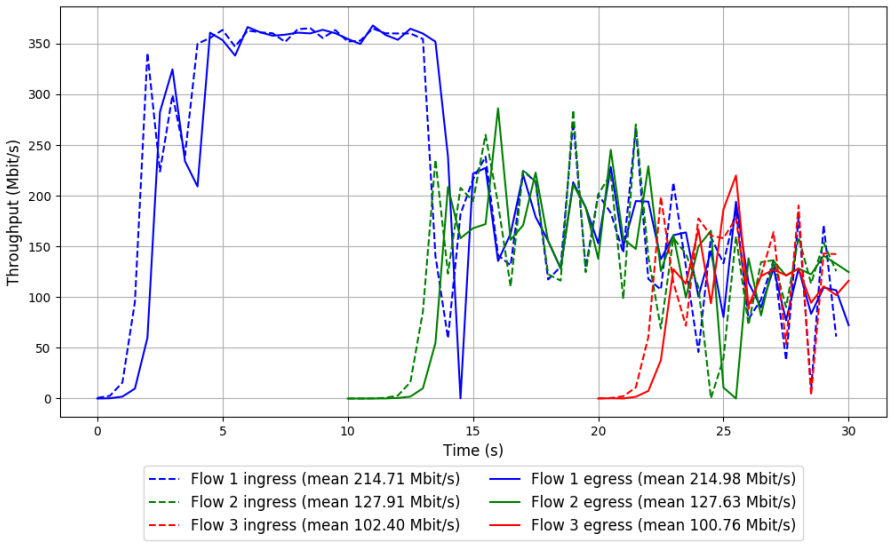


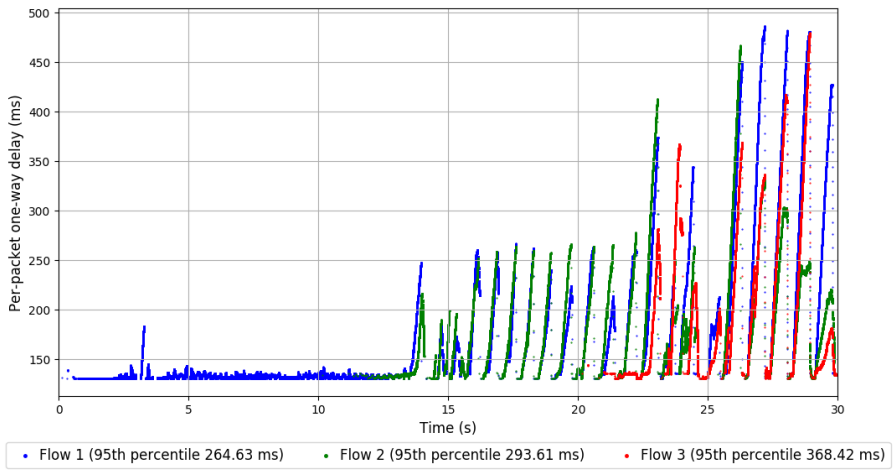
```
Run 3: Statistics of TCP BBR

Start at: 2018-11-30 18:06:30
End at: 2018-11-30 18:07:00
Local clock offset: 1.292 ms
Remote clock offset: -34.17 ms

# Below is generated by plot.py at 2018-11-30 19:33:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 332.71 Mbit/s
95th percentile per-packet one-way delay: 307.168 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 214.98 Mbit/s
95th percentile per-packet one-way delay: 264.635 ms
Loss rate: 0.55%
-- Flow 2:
Average throughput: 127.63 Mbit/s
95th percentile per-packet one-way delay: 293.609 ms
Loss rate: 1.23%
-- Flow 3:
Average throughput: 100.76 Mbit/s
95th percentile per-packet one-way delay: 368.415 ms
Loss rate: 3.60%
```

Run 3: Report of TCP BBR — Data Link



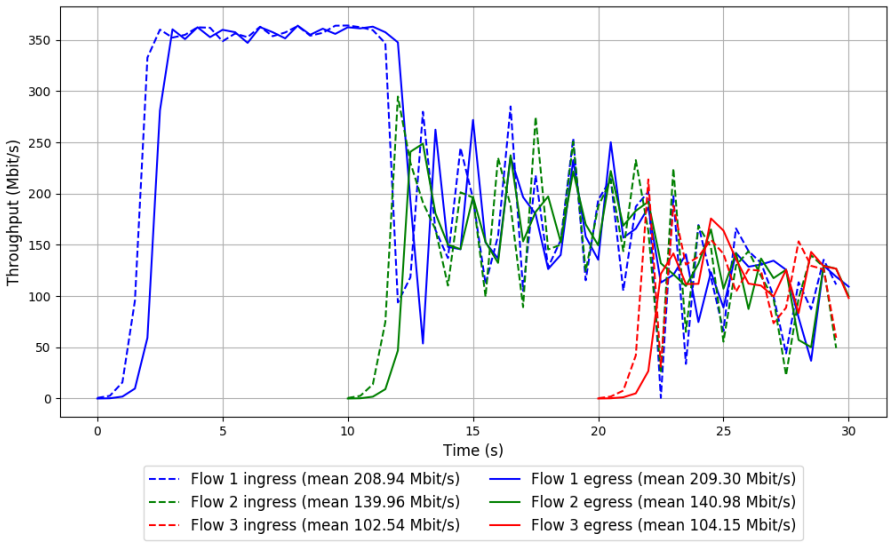


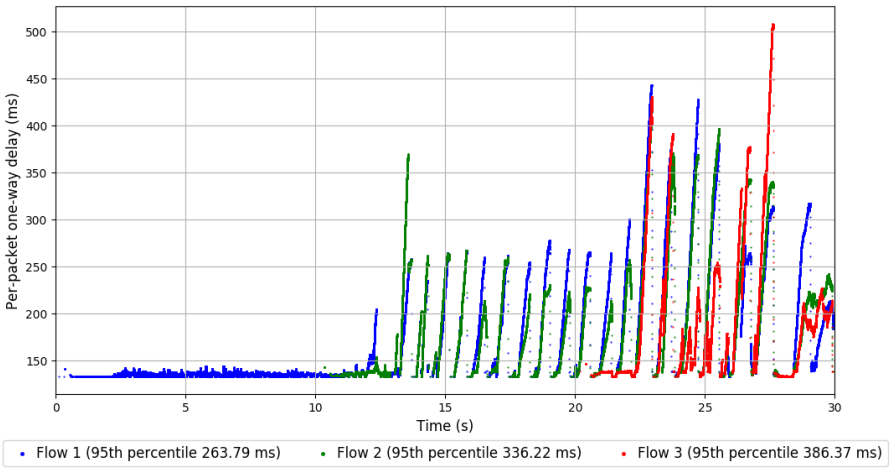
```
Run 4: Statistics of TCP BBR

Start at: 2018-11-30 18:47:30
End at: 2018-11-30 18:48:00
Local clock offset: 3.056 ms
Remote clock offset: -37.841 ms

# Below is generated by plot.py at 2018-11-30 19:33:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 336.90 Mbit/s
95th percentile per-packet one-way delay: 308.910 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 209.30 Mbit/s
95th percentile per-packet one-way delay: 263.789 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 140.98 Mbit/s
95th percentile per-packet one-way delay: 336.216 ms
Loss rate: 0.31%
-- Flow 3:
Average throughput: 104.15 Mbit/s
95th percentile per-packet one-way delay: 386.372 ms
Loss rate: 0.58%
```

Run 4: Report of TCP BBR — Data Link

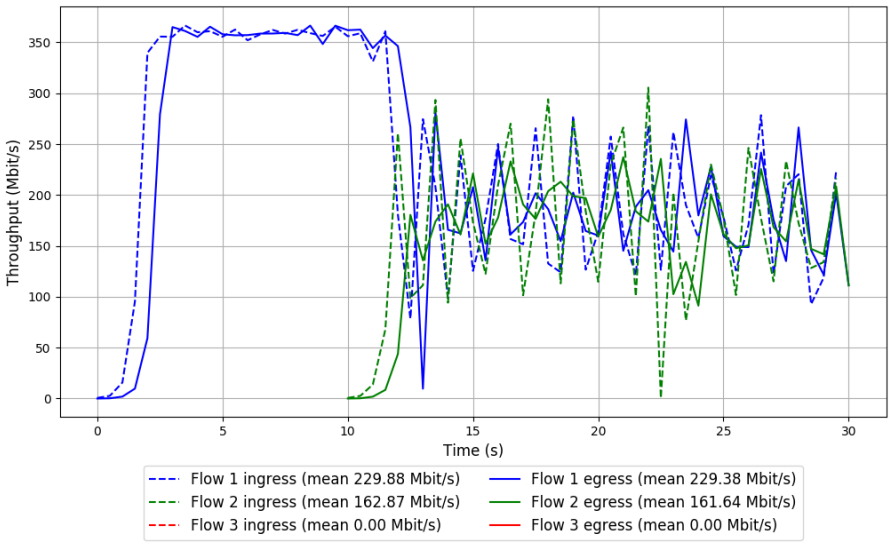


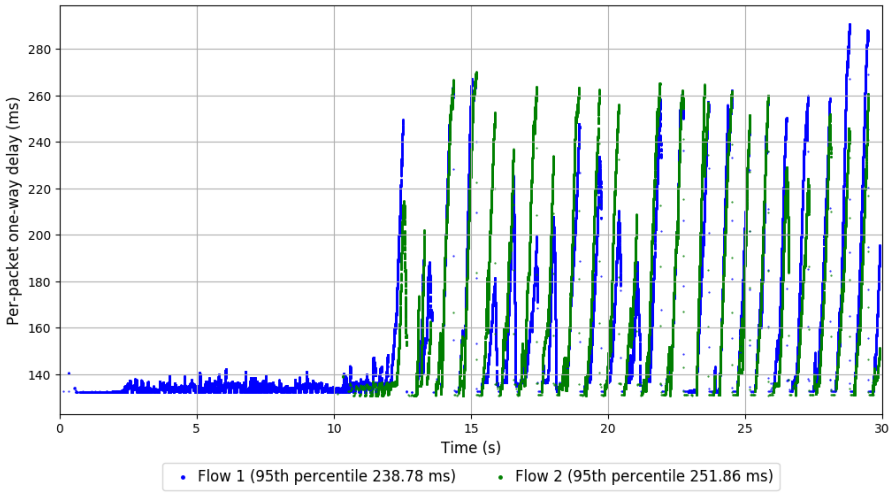


```
Run 5: Statistics of TCP BBR

Start at: 2018-11-30 19:21:20
End at: 2018-11-30 19:21:50
Local clock offset: -0.077 ms
Remote clock offset: -36.665 ms
```

Run 5: Report of TCP BBR — Data Link



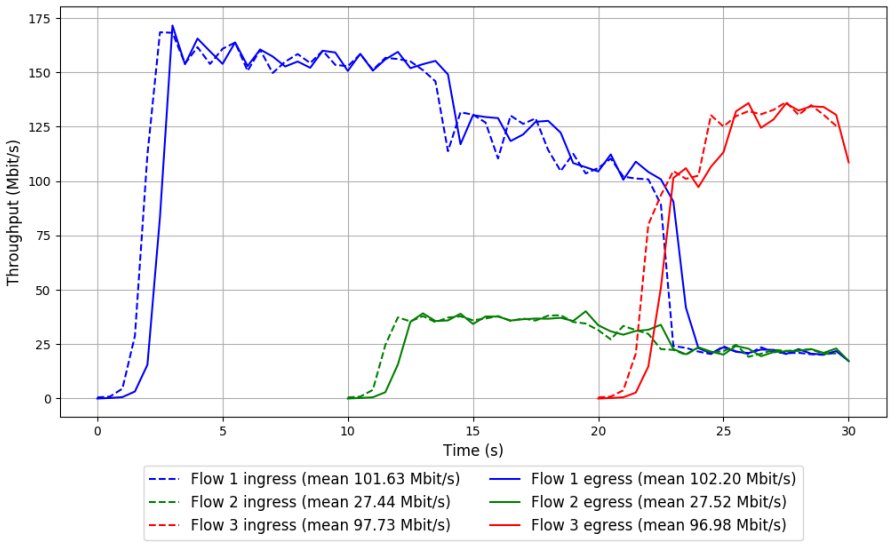


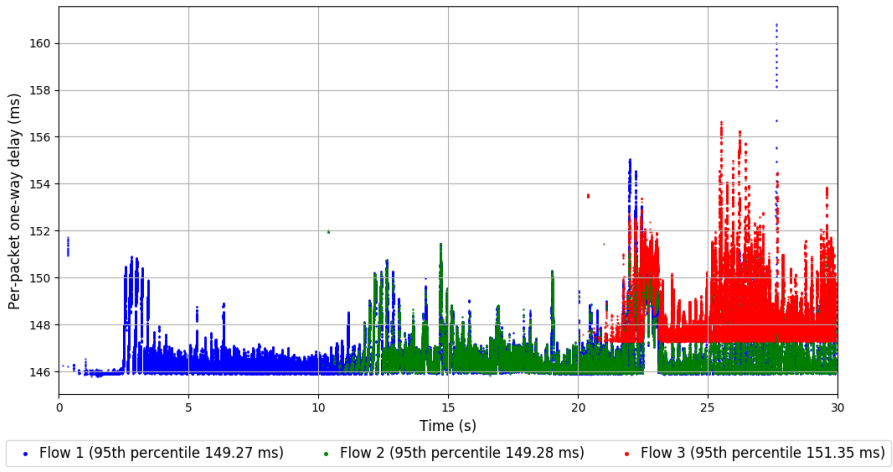
```
Run 1: Statistics of Copa

Start at: 2018-11-30 15:37:28
End at: 2018-11-30 15:37:58
Local clock offset: 1.405 ms
Remote clock offset: -43.049 ms

# Below is generated by plot.py at 2018-11-30 19:33:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 152.21 Mbit/s
95th percentile per-packet one-way delay: 150.135 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 102.20 Mbit/s
95th percentile per-packet one-way delay: 149.270 ms
Loss rate: 0.14%
-- Flow 2:
Average throughput: 27.52 Mbit/s
95th percentile per-packet one-way delay: 149.284 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 96.98 Mbit/s
95th percentile per-packet one-way delay: 151.348 ms
Loss rate: 2.87%
```

Run 1: Report of Copa — Data Link



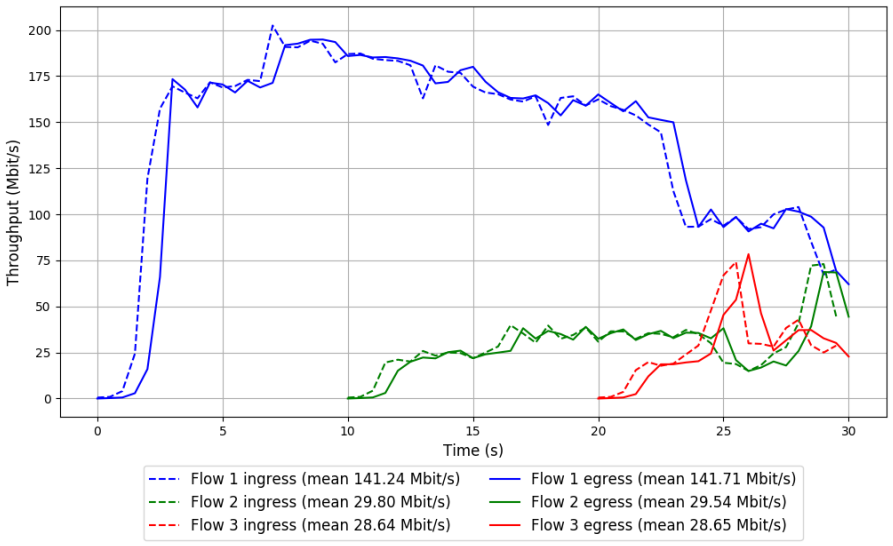


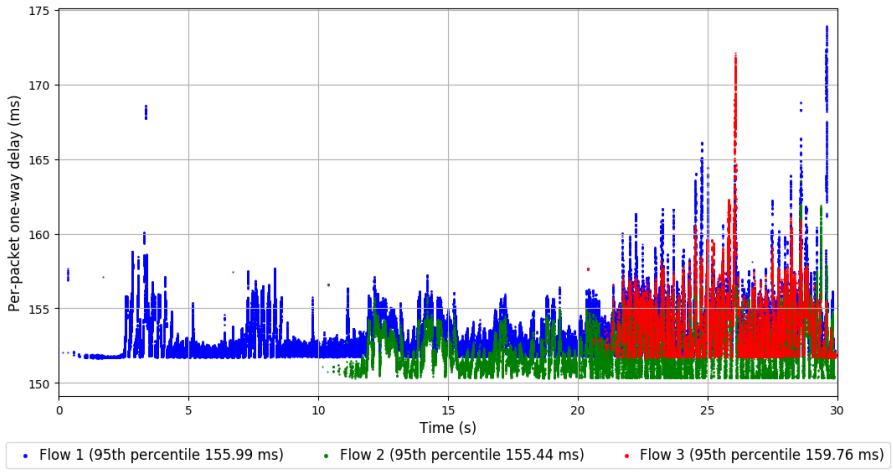
```
Run 2: Statistics of Copa

Start at: 2018-11-30 16:28:41
End at: 2018-11-30 16:29:11
Local clock offset: 3.224 ms
Remote clock offset: -45.092 ms

# Below is generated by plot.py at 2018-11-30 19:33:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 170.66 Mbit/s
95th percentile per-packet one-way delay: 156.162 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 141.71 Mbit/s
95th percentile per-packet one-way delay: 155.985 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 29.54 Mbit/s
95th percentile per-packet one-way delay: 155.436 ms
Loss rate: 1.88%
-- Flow 3:
Average throughput: 28.65 Mbit/s
95th percentile per-packet one-way delay: 159.765 ms
Loss rate: 2.11%
```

Run 2: Report of Copa — Data Link



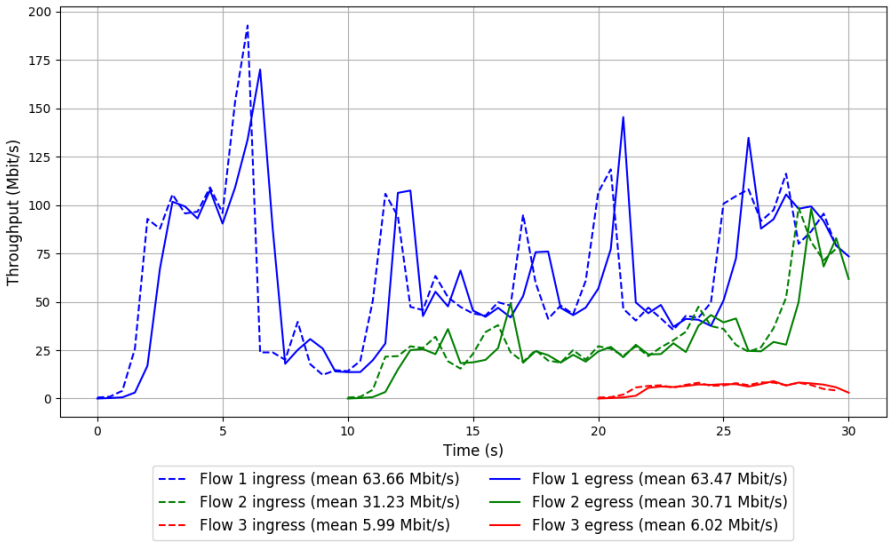


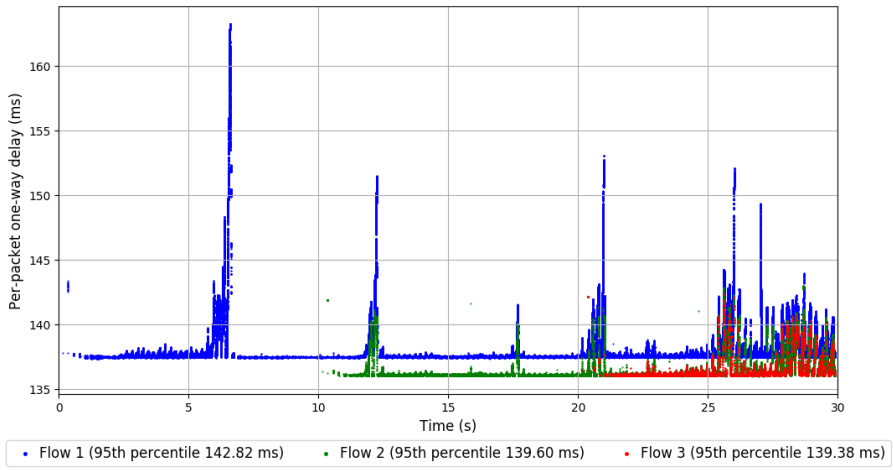
```
Run 3: Statistics of Copa

Start at: 2018-11-30 17:23:43
End at: 2018-11-30 17:24:13
Local clock offset: 3.263 ms
Remote clock offset: -31.738 ms

# Below is generated by plot.py at 2018-11-30 19:33:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 85.83 Mbit/s
95th percentile per-packet one-way delay: 141.906 ms
Loss rate: 1.42%
-- Flow 1:
Average throughput: 63.47 Mbit/s
95th percentile per-packet one-way delay: 142.816 ms
Loss rate: 0.99%
-- Flow 2:
Average throughput: 30.71 Mbit/s
95th percentile per-packet one-way delay: 139.601 ms
Loss rate: 2.68%
-- Flow 3:
Average throughput: 6.02 Mbit/s
95th percentile per-packet one-way delay: 139.375 ms
Loss rate: 1.74%
```

Run 3: Report of Copa — Data Link



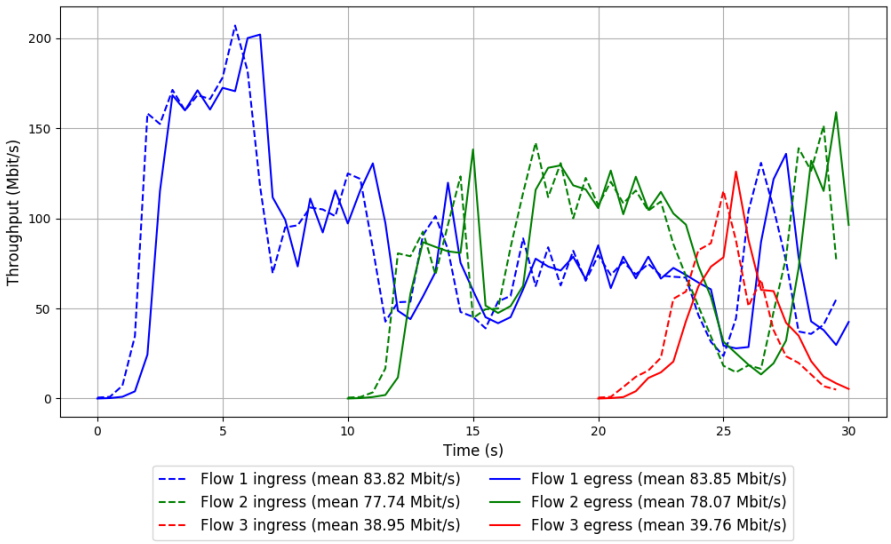


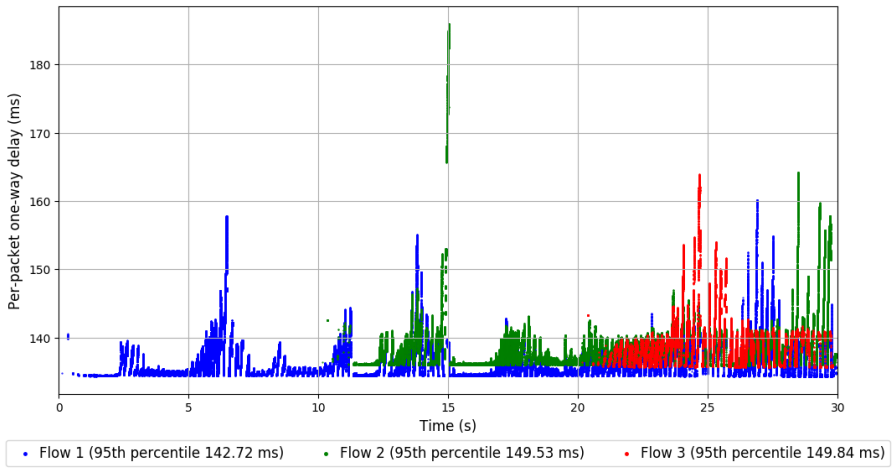
```
Run 4: Statistics of Copa

Start at: 2018-11-30 18:22:24
End at: 2018-11-30 18:22:54
Local clock offset: 2.961 ms
Remote clock offset: -39.883 ms

# Below is generated by plot.py at 2018-11-30 19:34:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 148.56 Mbit/s
95th percentile per-packet one-way delay: 145.254 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 83.85 Mbit/s
95th percentile per-packet one-way delay: 142.715 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 78.07 Mbit/s
95th percentile per-packet one-way delay: 149.528 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 39.76 Mbit/s
95th percentile per-packet one-way delay: 149.844 ms
Loss rate: 0.27%
```

Run 4: Report of Copa — Data Link



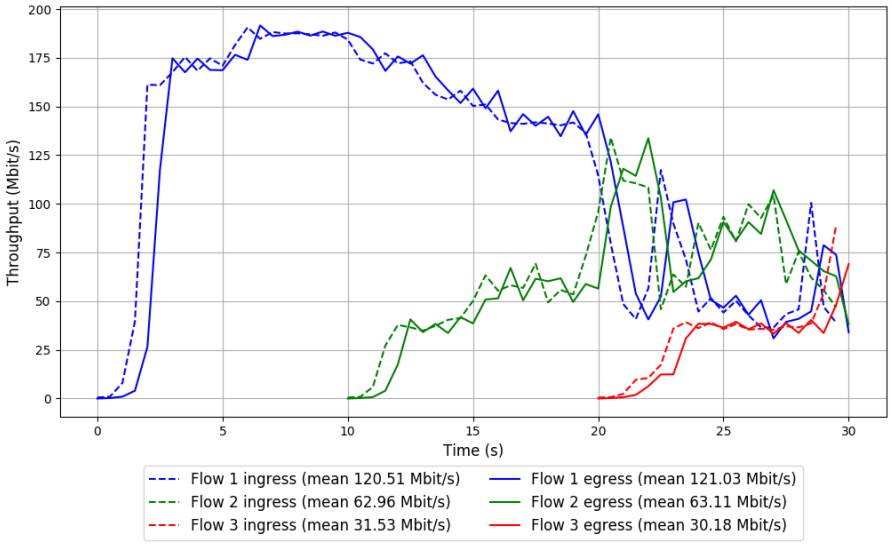


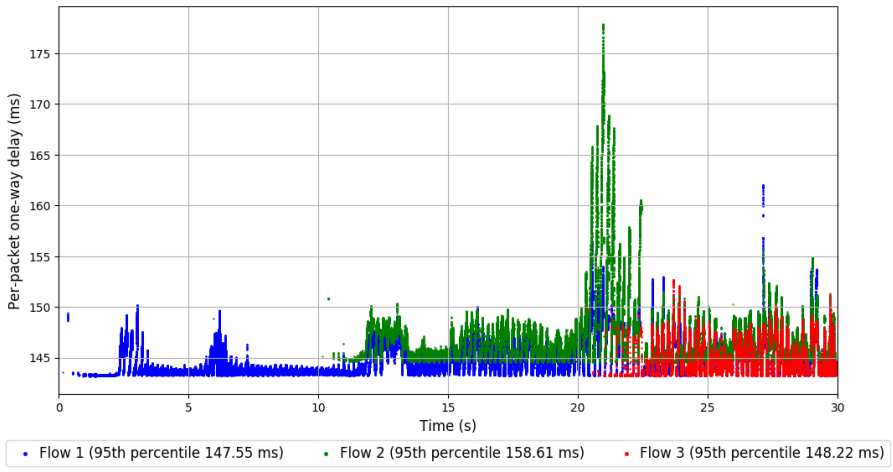
```
Run 5: Statistics of Copa

Start at: 2018-11-30 18:57:46
End at: 2018-11-30 18:58:16
Local clock offset: 3.456 ms
Remote clock offset: -48.272 ms

# Below is generated by plot.py at 2018-11-30 19:36:15
# Datalink statistics
-- Total of 3 flows:
Average throughput: 172.78 Mbit/s
95th percentile per-packet one-way delay: 149.465 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 121.03 Mbit/s
95th percentile per-packet one-way delay: 147.554 ms
Loss rate: 0.21%
-- Flow 2:
Average throughput: 63.11 Mbit/s
95th percentile per-packet one-way delay: 158.614 ms
Loss rate: 0.76%
-- Flow 3:
Average throughput: 30.18 Mbit/s
95th percentile per-packet one-way delay: 148.216 ms
Loss rate: 6.18%
```

Run 5: Report of Copa — Data Link



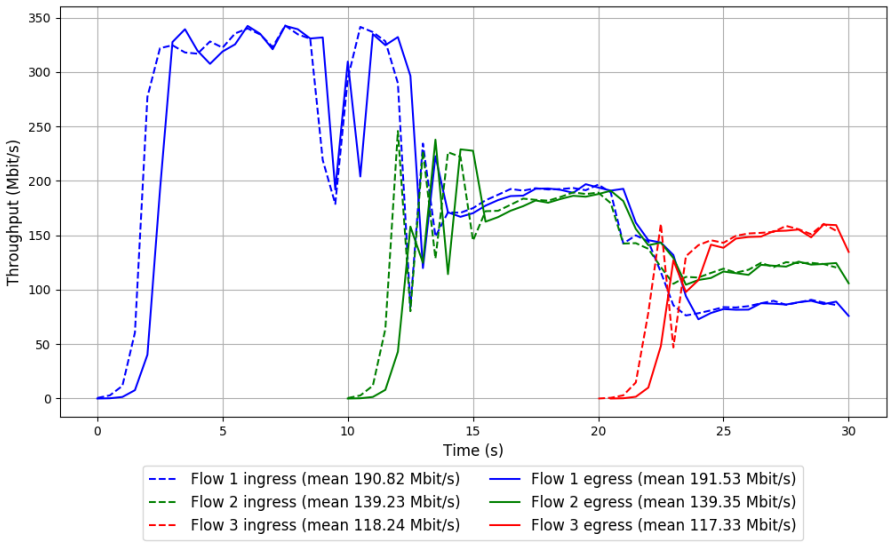


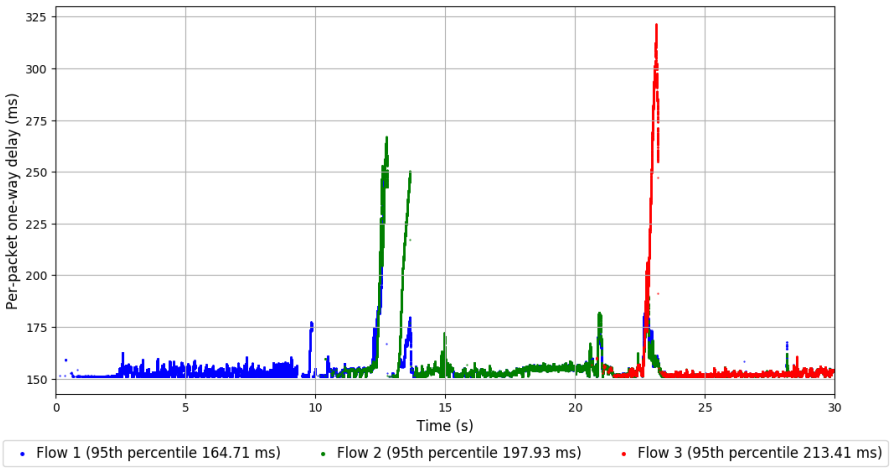
```
Run 1: Statistics of TCP Cubic

Start at: 2018-11-30 16:06:50
End at: 2018-11-30 16:07:20
Local clock offset: 2.59 ms
Remote clock offset: -46.054 ms

# Below is generated by plot.py at 2018-11-30 19:36:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 320.69 Mbit/s
95th percentile per-packet one-way delay: 172.074 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 191.53 Mbit/s
95th percentile per-packet one-way delay: 164.714 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 139.35 Mbit/s
95th percentile per-packet one-way delay: 197.933 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 117.33 Mbit/s
95th percentile per-packet one-way delay: 213.405 ms
Loss rate: 3.02%
```

Run 1: Report of TCP Cubic — Data Link



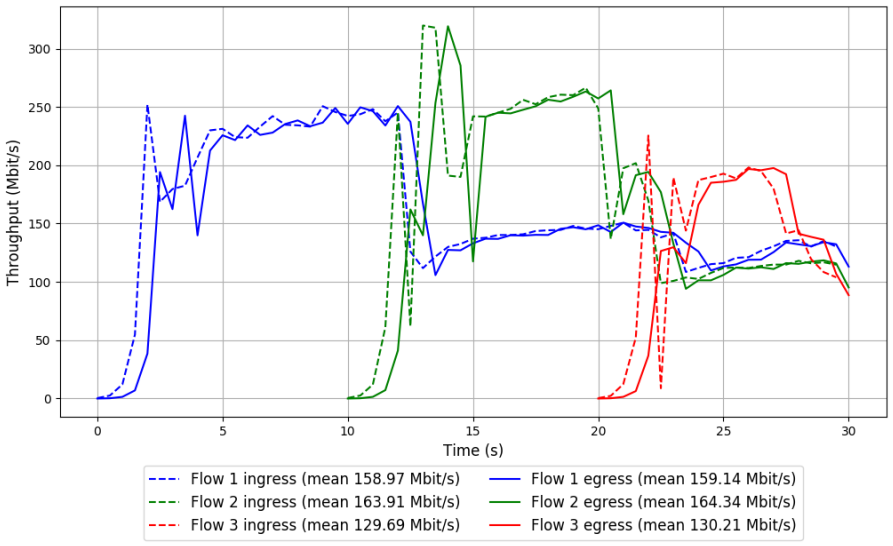


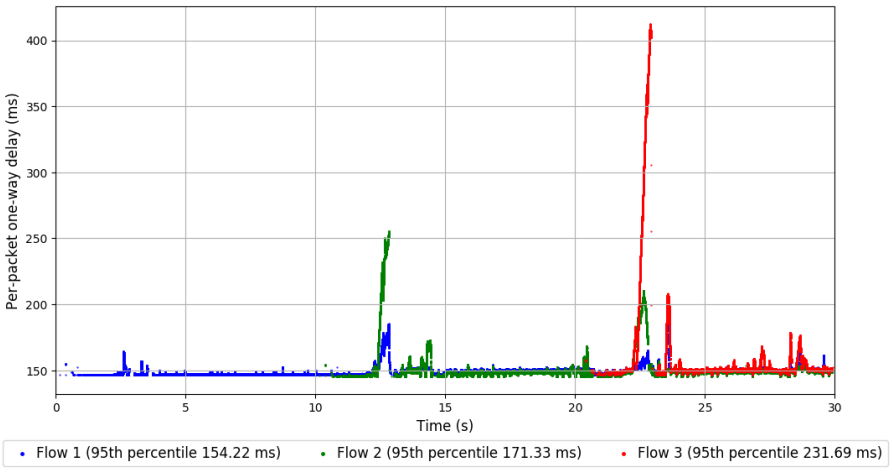
```
Run 2: Statistics of TCP Cubic

Start at: 2018-11-30 17:01:52
End at: 2018-11-30 17:02:22
Local clock offset: 0.942 ms
Remote clock offset: -42.867 ms

# Below is generated by plot.py at 2018-11-30 19:36:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 310.83 Mbit/s
95th percentile per-packet one-way delay: 165.472 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 159.14 Mbit/s
95th percentile per-packet one-way delay: 154.218 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 164.34 Mbit/s
95th percentile per-packet one-way delay: 171.330 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 130.21 Mbit/s
95th percentile per-packet one-way delay: 231.690 ms
Loss rate: 1.89%
```

Run 2: Report of TCP Cubic — Data Link



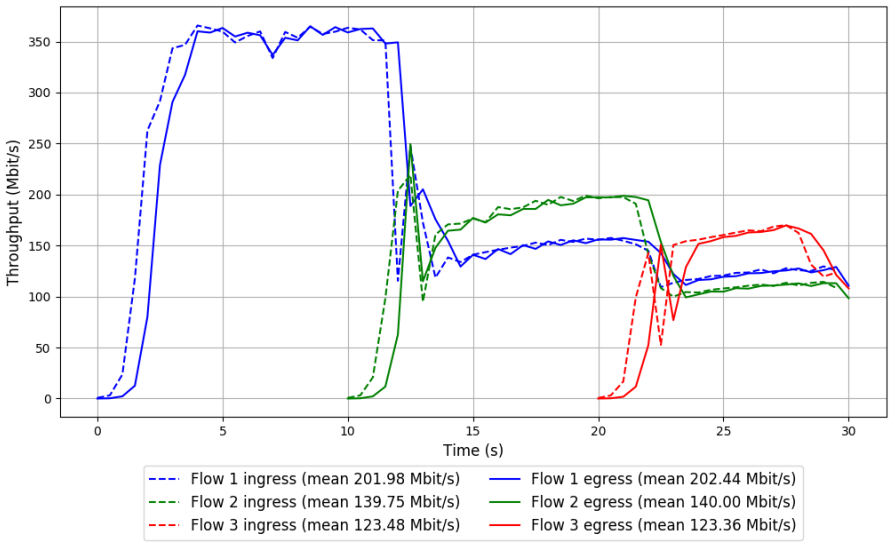


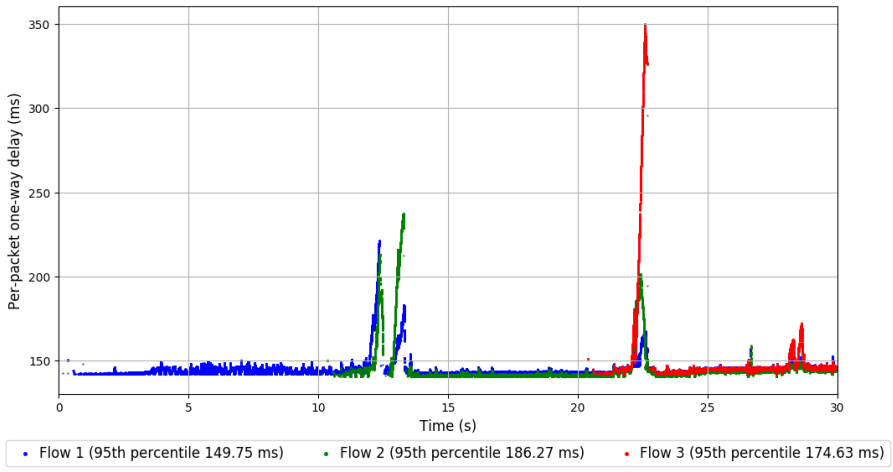
```
Run 3: Statistics of TCP Cubic

Start at: 2018-11-30 17:59:26
End at: 2018-11-30 17:59:56
Local clock offset: 3.116 ms
Remote clock offset: -43.026 ms

# Below is generated by plot.py at 2018-11-30 19:36:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 335.86 Mbit/s
95th percentile per-packet one-way delay: 160.700 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 202.44 Mbit/s
95th percentile per-packet one-way delay: 149.748 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 140.00 Mbit/s
95th percentile per-packet one-way delay: 186.270 ms
Loss rate: 0.81%
-- Flow 3:
Average throughput: 123.36 Mbit/s
95th percentile per-packet one-way delay: 174.635 ms
Loss rate: 2.08%
```

Run 3: Report of TCP Cubic — Data Link



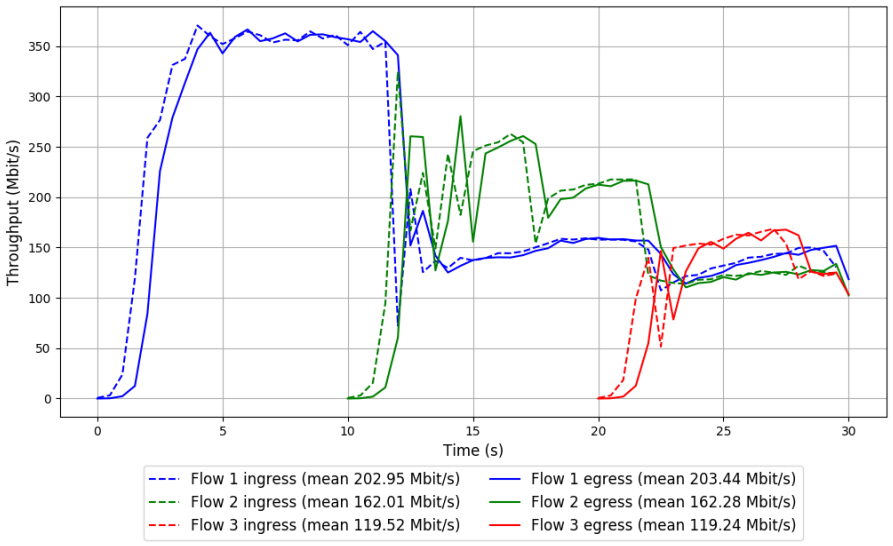


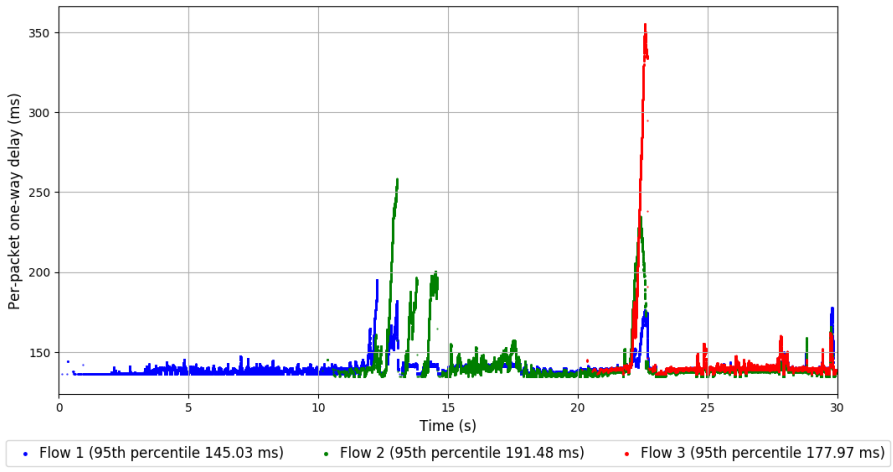
```
Run 4: Statistics of TCP Cubic

Start at: 2018-11-30 18:45:56
End at: 2018-11-30 18:46:26
Local clock offset: 2.201 ms
Remote clock offset: -41.483 ms

# Below is generated by plot.py at 2018-11-30 19:36:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 350.30 Mbit/s
95th percentile per-packet one-way delay: 161.959 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 203.44 Mbit/s
95th percentile per-packet one-way delay: 145.034 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 162.28 Mbit/s
95th percentile per-packet one-way delay: 191.480 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 119.24 Mbit/s
95th percentile per-packet one-way delay: 177.966 ms
Loss rate: 2.21%
```

Run 4: Report of TCP Cubic — Data Link



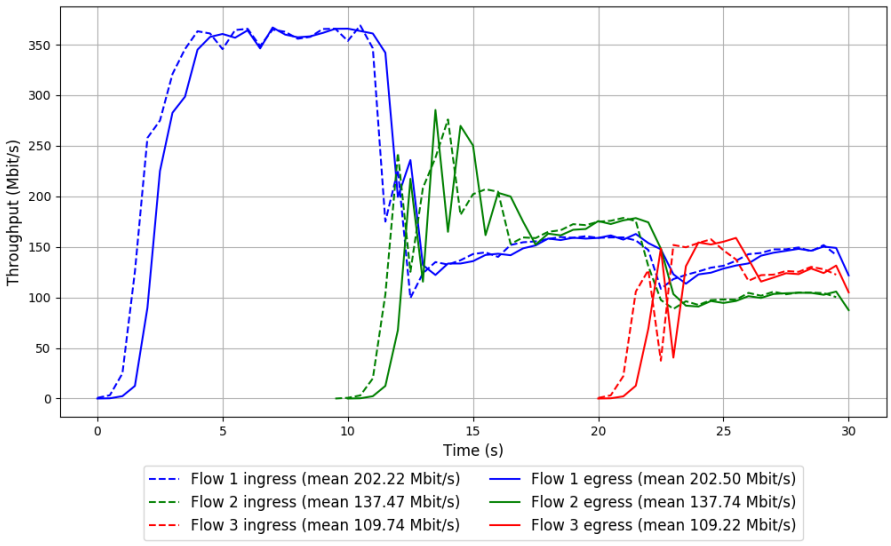


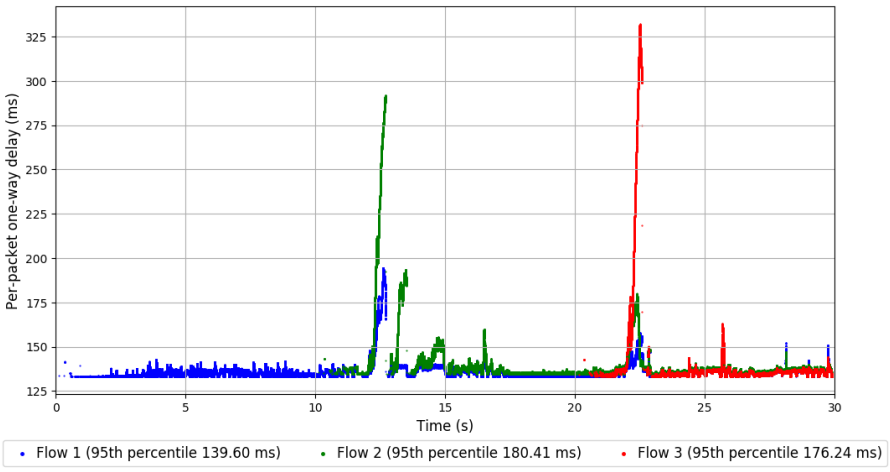
```
Run 5: Statistics of TCP Cubic

Start at: 2018-11-30 19:14:14
End at: 2018-11-30 19:14:44
Local clock offset: 0.129 ms
Remote clock offset: -41.084 ms

# Below is generated by plot.py at 2018-11-30 19:36:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 329.81 Mbit/s
95th percentile per-packet one-way delay: 151.201 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 202.50 Mbit/s
95th percentile per-packet one-way delay: 139.602 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 137.74 Mbit/s
95th percentile per-packet one-way delay: 180.410 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 109.22 Mbit/s
95th percentile per-packet one-way delay: 176.243 ms
Loss rate: 2.39%
```

Run 5: Report of TCP Cubic — Data Link



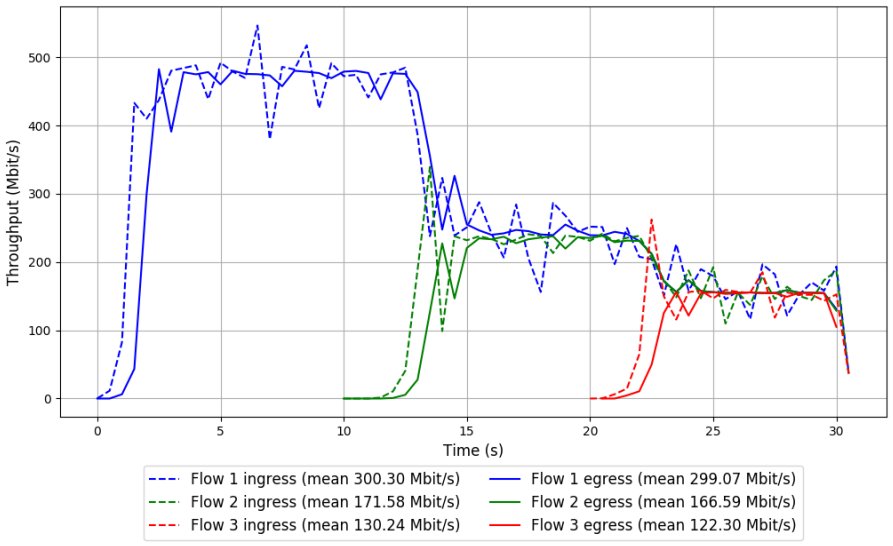


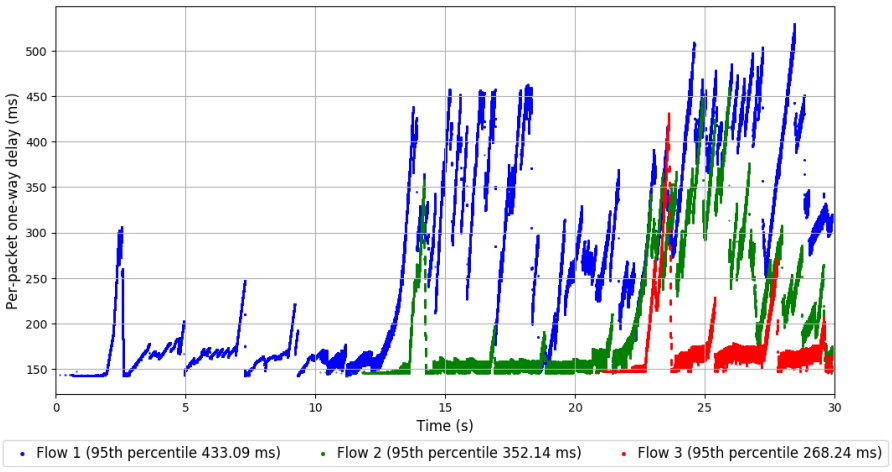
```
Run 1: Statistics of FillP

Start at: 2018-11-30 15:20:01
End at: 2018-11-30 15:20:31
Local clock offset: 2.76 ms
Remote clock offset: -37.097 ms

# Below is generated by plot.py at 2018-11-30 19:38:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 447.57 Mbit/s
95th percentile per-packet one-way delay: 418.873 ms
Loss rate: 5.15%
-- Flow 1:
Average throughput: 299.07 Mbit/s
95th percentile per-packet one-way delay: 433.090 ms
Loss rate: 3.17%
-- Flow 2:
Average throughput: 166.59 Mbit/s
95th percentile per-packet one-way delay: 352.138 ms
Loss rate: 6.96%
-- Flow 3:
Average throughput: 122.30 Mbit/s
95th percentile per-packet one-way delay: 268.240 ms
Loss rate: 14.08%
```

Run 1: Report of FillP — Data Link



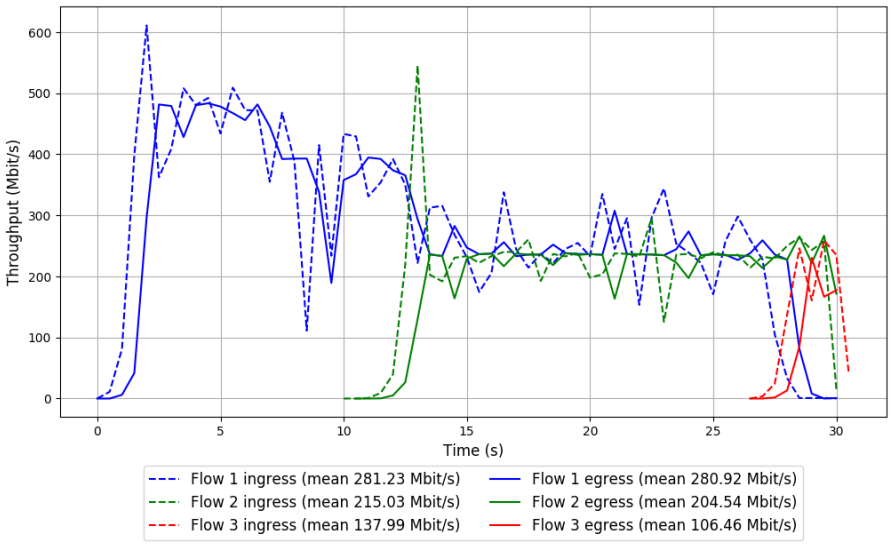


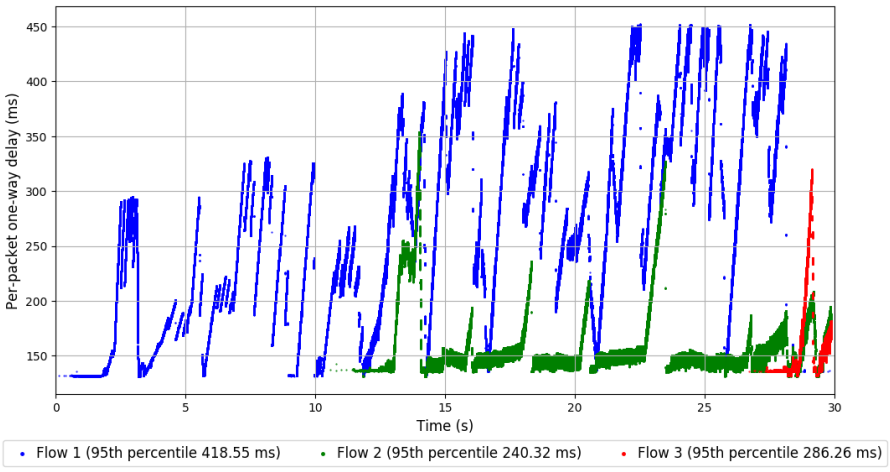
```
Run 2: Statistics of FillP

Start at: 2018-11-30 16:20:59
End at: 2018-11-30 16:21:29
Local clock offset: 1.717 ms
Remote clock offset: -26.962 ms

# Below is generated by plot.py at 2018-11-30 19:40:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 424.10 Mbit/s
95th percentile per-packet one-way delay: 401.728 ms
Loss rate: 4.75%
-- Flow 1:
Average throughput: 280.92 Mbit/s
95th percentile per-packet one-way delay: 418.553 ms
Loss rate: 1.75%
-- Flow 2:
Average throughput: 204.54 Mbit/s
95th percentile per-packet one-way delay: 240.324 ms
Loss rate: 6.27%
-- Flow 3:
Average throughput: 106.46 Mbit/s
95th percentile per-packet one-way delay: 286.264 ms
Loss rate: 39.10%
```

Run 2: Report of FillP — Data Link



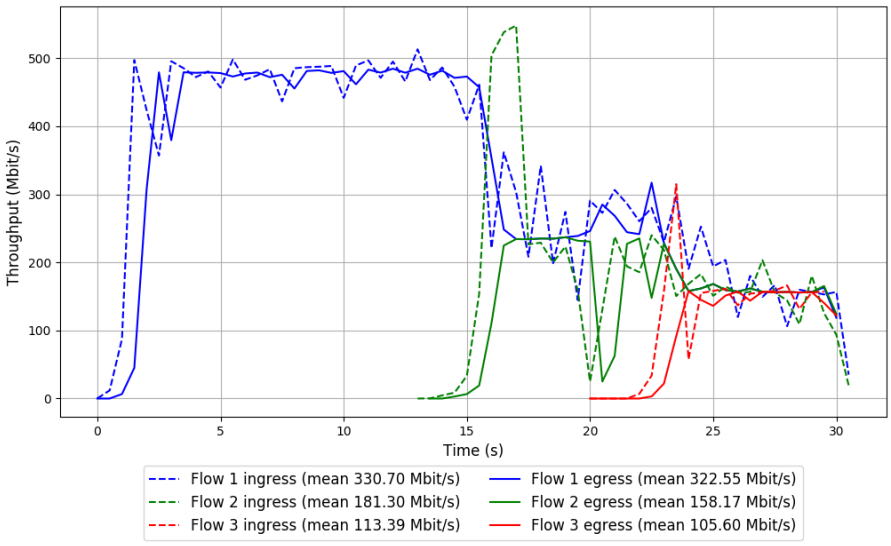


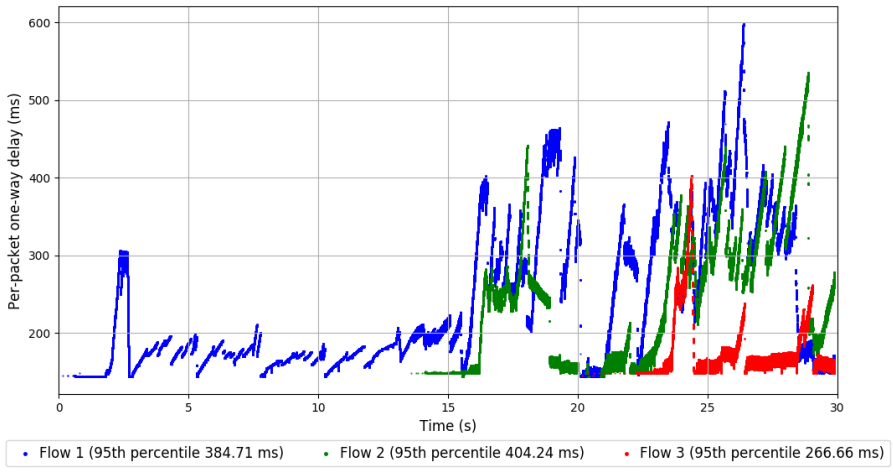
```
Run 3: Statistics of FillP

Start at: 2018-11-30 17:16:04
End at: 2018-11-30 17:16:34
Local clock offset: 3.464 ms
Remote clock offset: -38.384 ms

# Below is generated by plot.py at 2018-11-30 19:42:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 443.72 Mbit/s
95th percentile per-packet one-way delay: 385.540 ms
Loss rate: 8.09%
-- Flow 1:
Average throughput: 322.55 Mbit/s
95th percentile per-packet one-way delay: 384.715 ms
Loss rate: 5.18%
-- Flow 2:
Average throughput: 158.17 Mbit/s
95th percentile per-packet one-way delay: 404.236 ms
Loss rate: 17.14%
-- Flow 3:
Average throughput: 105.60 Mbit/s
95th percentile per-packet one-way delay: 266.662 ms
Loss rate: 9.26%
```

Run 3: Report of FillP — Data Link



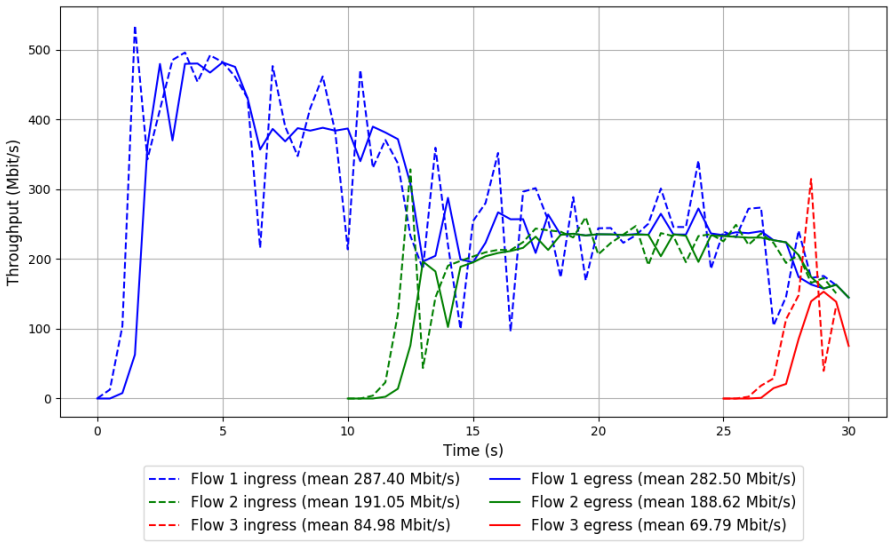


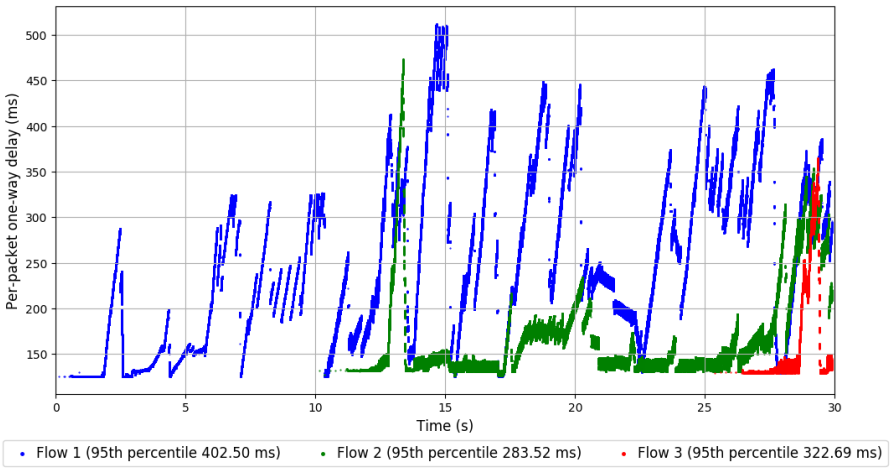
```
Run 4: Statistics of FillP

Start at: 2018-11-30 18:16:33
End at: 2018-11-30 18:17:03
Local clock offset: 1.934 ms
Remote clock offset: -30.773 ms

# Below is generated by plot.py at 2018-11-30 19:42:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 418.10 Mbit/s
95th percentile per-packet one-way delay: 384.345 ms
Loss rate: 2.89%
-- Flow 1:
Average throughput: 282.50 Mbit/s
95th percentile per-packet one-way delay: 402.500 ms
Loss rate: 2.35%
-- Flow 2:
Average throughput: 188.62 Mbit/s
95th percentile per-packet one-way delay: 283.516 ms
Loss rate: 2.17%
-- Flow 3:
Average throughput: 69.79 Mbit/s
95th percentile per-packet one-way delay: 322.687 ms
Loss rate: 21.27%
```

Run 4: Report of FillP — Data Link



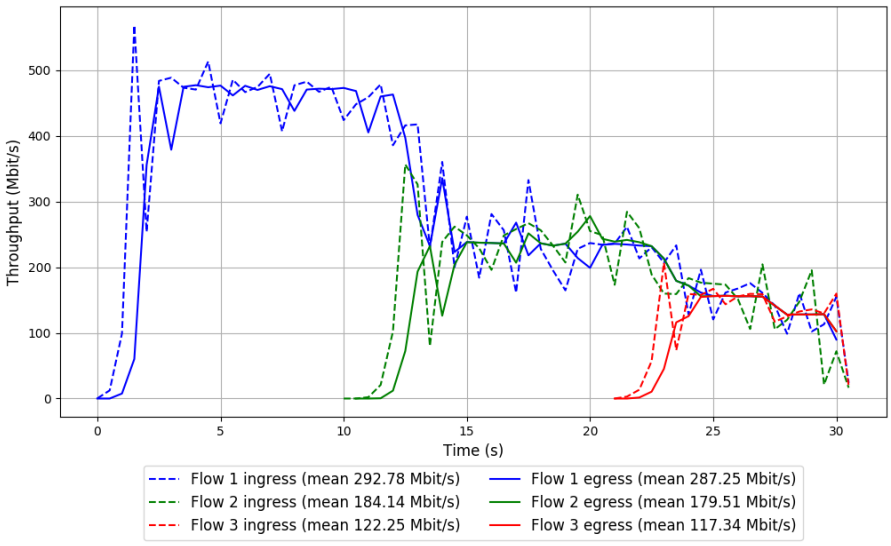


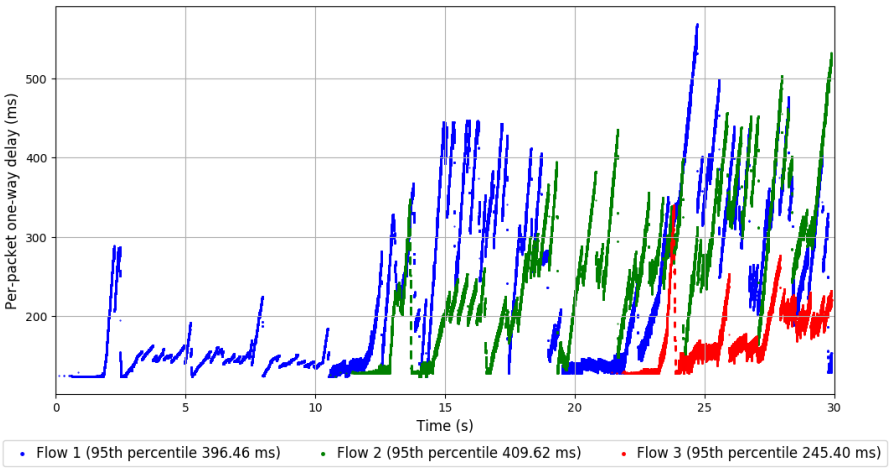
```
Run 5: Statistics of FillP

Start at: 2018-11-30 18:51:59
End at: 2018-11-30 18:52:29
Local clock offset: 1.093 ms
Remote clock offset: -30.687 ms

# Below is generated by plot.py at 2018-11-30 19:42:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 437.17 Mbit/s
95th percentile per-packet one-way delay: 396.465 ms
Loss rate: 5.70%
-- Flow 1:
Average throughput: 287.25 Mbit/s
95th percentile per-packet one-way delay: 396.457 ms
Loss rate: 4.48%
-- Flow 2:
Average throughput: 179.51 Mbit/s
95th percentile per-packet one-way delay: 409.616 ms
Loss rate: 6.54%
-- Flow 3:
Average throughput: 117.34 Mbit/s
95th percentile per-packet one-way delay: 245.404 ms
Loss rate: 12.55%
```

Run 5: Report of FillP — Data Link



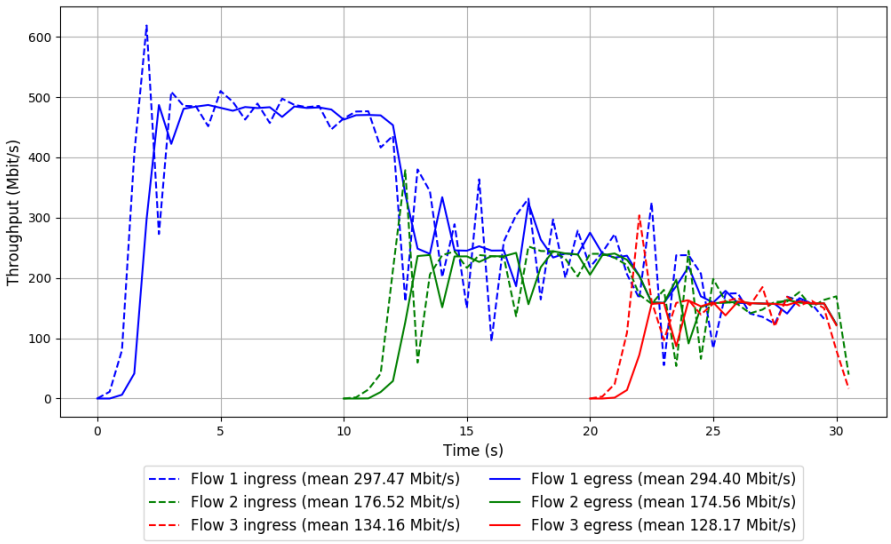


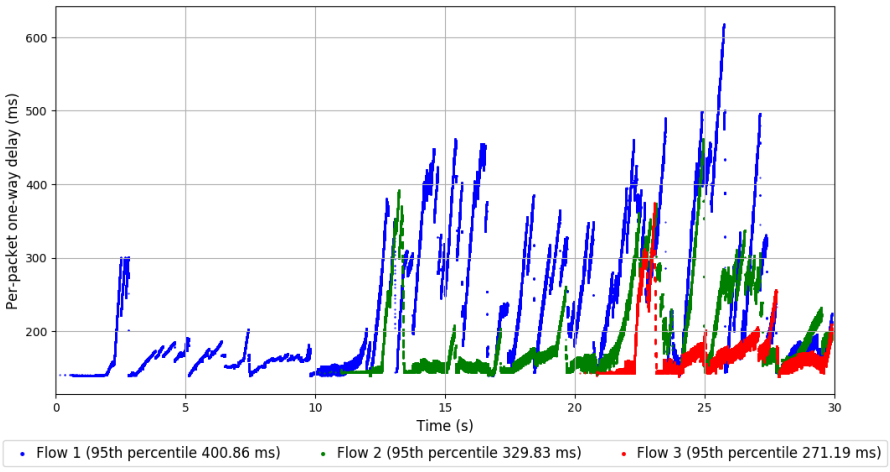
```
Run 1: Statistics of FillP-Sheep

Start at: 2018-11-30 15:42:15
End at: 2018-11-30 15:42:45
Local clock offset: 0.611 ms
Remote clock offset: -36.764 ms

# Below is generated by plot.py at 2018-11-30 19:42:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 452.02 Mbit/s
95th percentile per-packet one-way delay: 375.822 ms
Loss rate: 3.77%
-- Flow 1:
Average throughput: 294.40 Mbit/s
95th percentile per-packet one-way delay: 400.858 ms
Loss rate: 1.82%
-- Flow 2:
Average throughput: 174.56 Mbit/s
95th percentile per-packet one-way delay: 329.832 ms
Loss rate: 5.27%
-- Flow 3:
Average throughput: 128.17 Mbit/s
95th percentile per-packet one-way delay: 271.188 ms
Loss rate: 12.22%
```

Run 1: Report of FillP-Sheep — Data Link



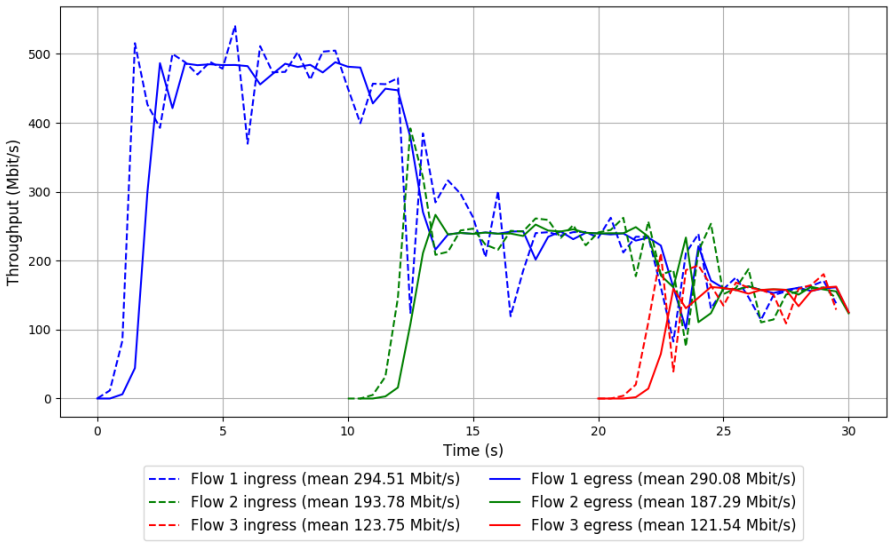


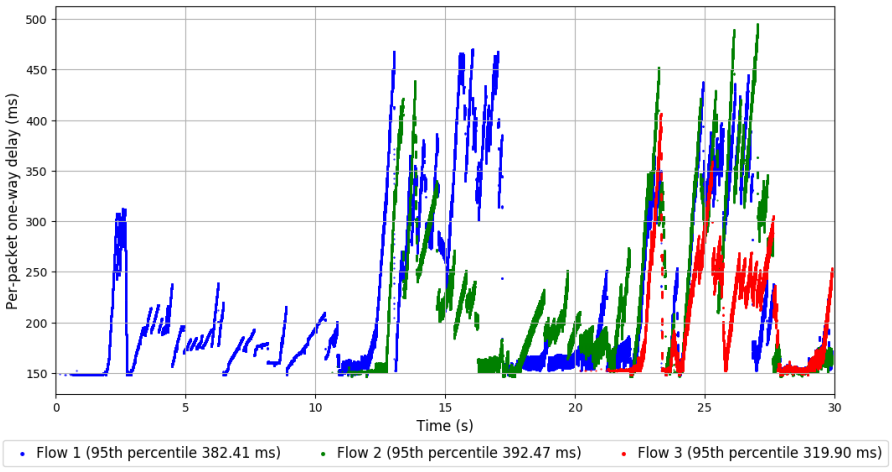
```
Run 2: Statistics of FillP-Sheep

Start at: 2018-11-30 16:33:23
End at: 2018-11-30 16:33:53
Local clock offset: 2.966 ms
Remote clock offset: -41.651 ms

# Below is generated by plot.py at 2018-11-30 19:42:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 451.09 Mbit/s
95th percentile per-packet one-way delay: 381.878 ms
Loss rate: 2.90%
-- Flow 1:
Average throughput: 290.08 Mbit/s
95th percentile per-packet one-way delay: 382.410 ms
Loss rate: 2.21%
-- Flow 2:
Average throughput: 187.29 Mbit/s
95th percentile per-packet one-way delay: 392.469 ms
Loss rate: 4.39%
-- Flow 3:
Average throughput: 121.54 Mbit/s
95th percentile per-packet one-way delay: 319.901 ms
Loss rate: 3.34%
```

Run 2: Report of FillP-Sheep — Data Link



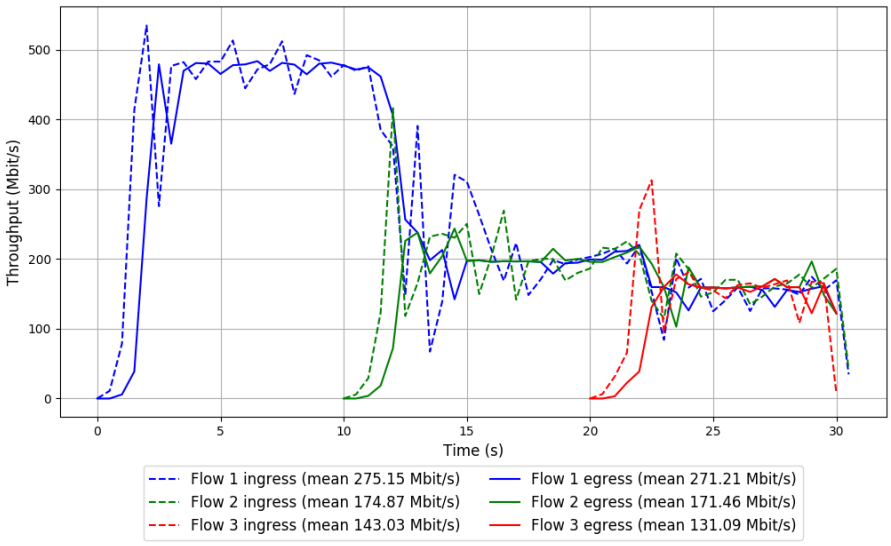


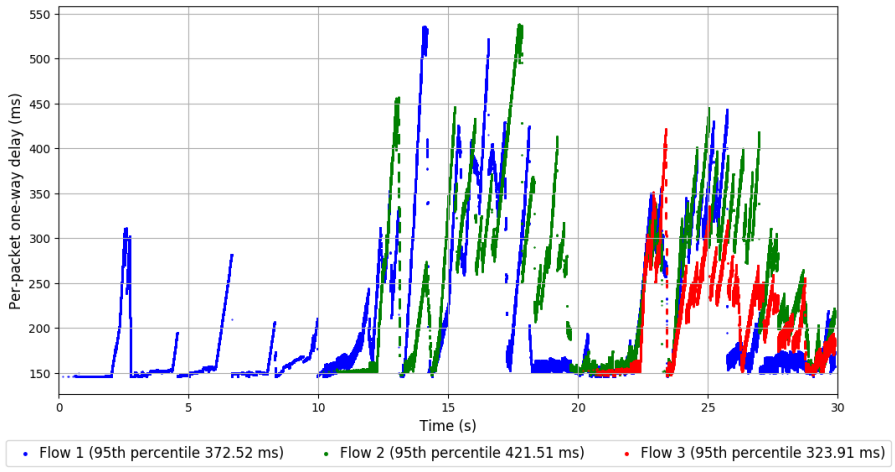
```
Run 3: Statistics of FillP-Sheep

Start at: 2018-11-30 17:28:04
End at: 2018-11-30 17:28:34
Local clock offset: 5.132 ms
Remote clock offset: -39.771 ms

# Below is generated by plot.py at 2018-11-30 19:42:32
# Datalink statistics
-- Total of 3 flows:
Average throughput: 427.64 Mbit/s
95th percentile per-packet one-way delay: 386.092 ms
Loss rate: 5.46%
-- Flow 1:
Average throughput: 271.21 Mbit/s
95th percentile per-packet one-way delay: 372.518 ms
Loss rate: 4.22%
-- Flow 2:
Average throughput: 171.46 Mbit/s
95th percentile per-packet one-way delay: 421.509 ms
Loss rate: 6.17%
-- Flow 3:
Average throughput: 131.09 Mbit/s
95th percentile per-packet one-way delay: 323.914 ms
Loss rate: 11.00%
```

Run 3: Report of FillP-Sheep — Data Link



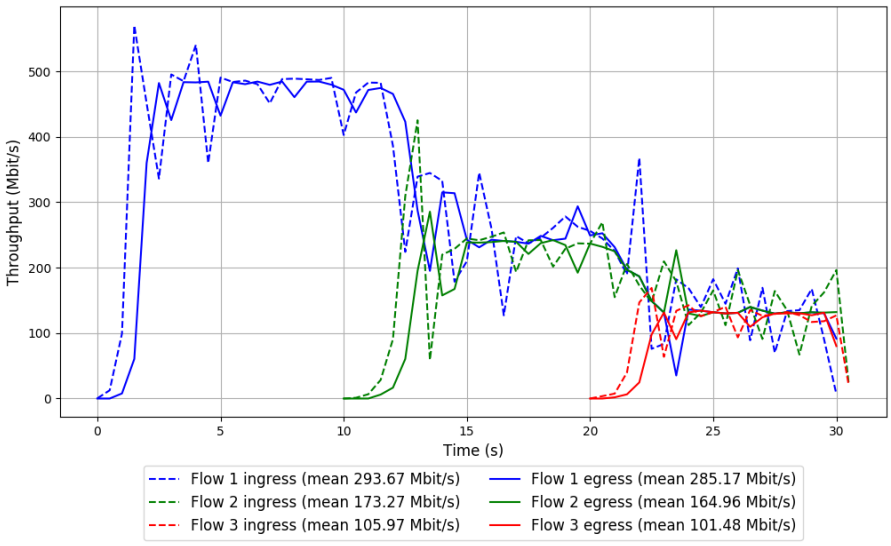


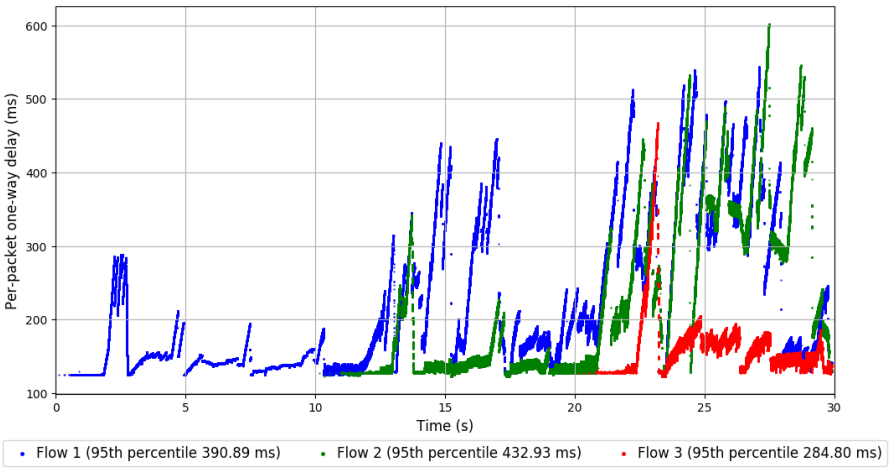
```
Run 4: Statistics of FillP-Sheep

Start at: 2018-11-30 18:25:31
End at: 2018-11-30 18:26:02
Local clock offset: 3.64 ms
Remote clock offset: -28.37 ms

# Below is generated by plot.py at 2018-11-30 19:45:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 427.68 Mbit/s
95th percentile per-packet one-way delay: 401.240 ms
Loss rate: 5.62%
-- Flow 1:
Average throughput: 285.17 Mbit/s
95th percentile per-packet one-way delay: 390.891 ms
Loss rate: 3.68%
-- Flow 2:
Average throughput: 164.96 Mbit/s
95th percentile per-packet one-way delay: 432.930 ms
Loss rate: 8.58%
-- Flow 3:
Average throughput: 101.48 Mbit/s
95th percentile per-packet one-way delay: 284.799 ms
Loss rate: 11.54%
```

Run 4: Report of FillP-Sheep — Data Link



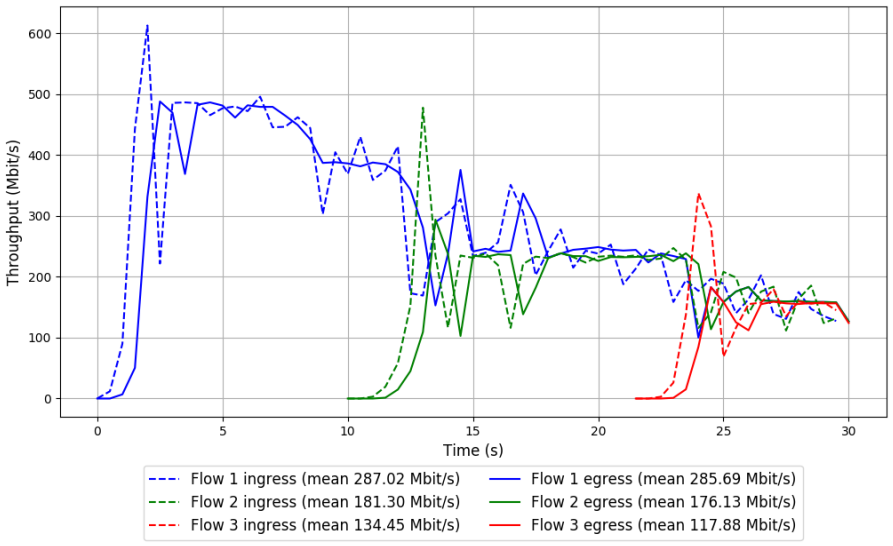


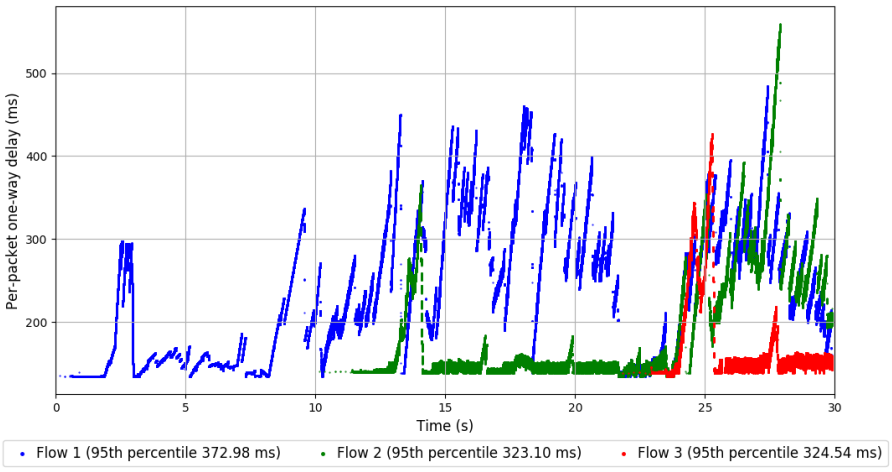
```
Run 5: Statistics of FillP-Sheep

Start at: 2018-11-30 19:00:55
End at: 2018-11-30 19:01:25
Local clock offset: 3.734 ms
Remote clock offset: -38.19 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 434.47 Mbit/s
95th percentile per-packet one-way delay: 362.661 ms
Loss rate: 2.84%
-- Flow 1:
Average throughput: 285.69 Mbit/s
95th percentile per-packet one-way delay: 372.984 ms
Loss rate: 0.93%
-- Flow 2:
Average throughput: 176.13 Mbit/s
95th percentile per-packet one-way delay: 323.096 ms
Loss rate: 3.82%
-- Flow 3:
Average throughput: 117.88 Mbit/s
95th percentile per-packet one-way delay: 324.540 ms
Loss rate: 14.37%
```

Run 5: Report of FillP-Sheep — Data Link



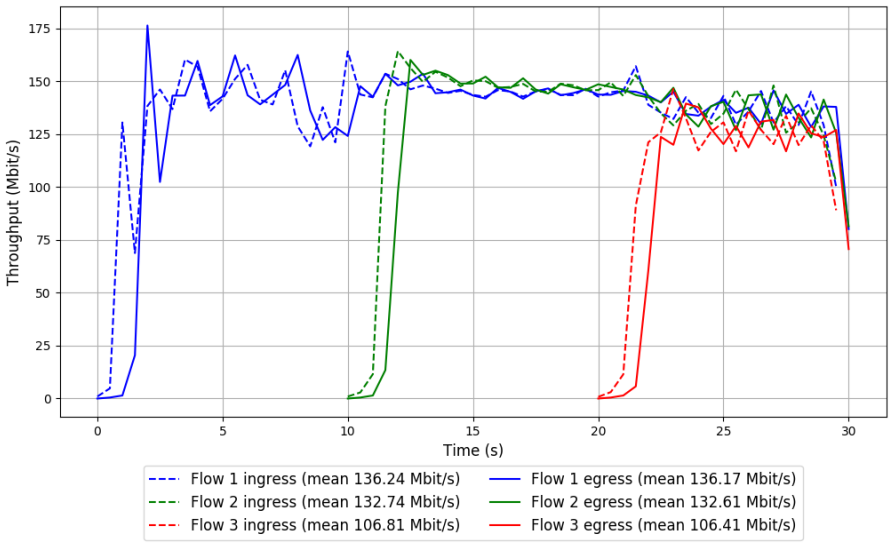


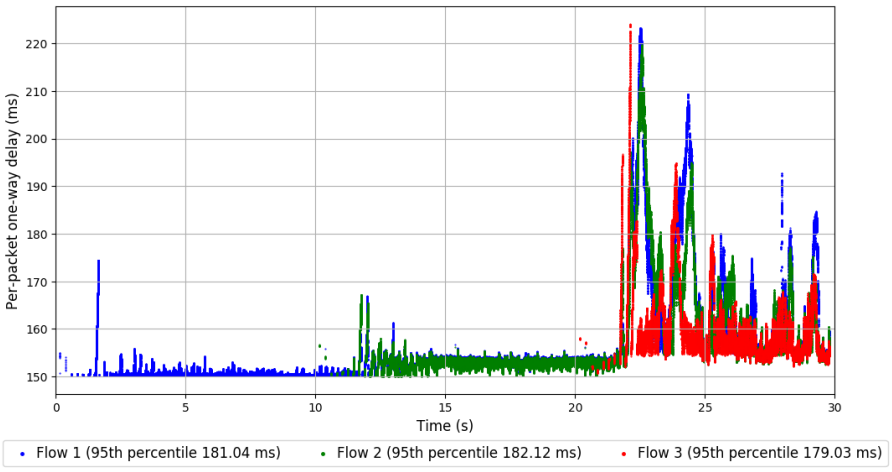
```
Run 1: Statistics of Indigo

Start at: 2018-11-30 15:49:20
End at: 2018-11-30 15:49:50
Local clock offset: 3.077 ms
Remote clock offset: -44.163 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 258.50 Mbit/s
95th percentile per-packet one-way delay: 180.658 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 136.17 Mbit/s
95th percentile per-packet one-way delay: 181.040 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 132.61 Mbit/s
95th percentile per-packet one-way delay: 182.115 ms
Loss rate: 1.19%
-- Flow 3:
Average throughput: 106.41 Mbit/s
95th percentile per-packet one-way delay: 179.034 ms
Loss rate: 2.61%
```

Run 1: Report of Indigo — Data Link



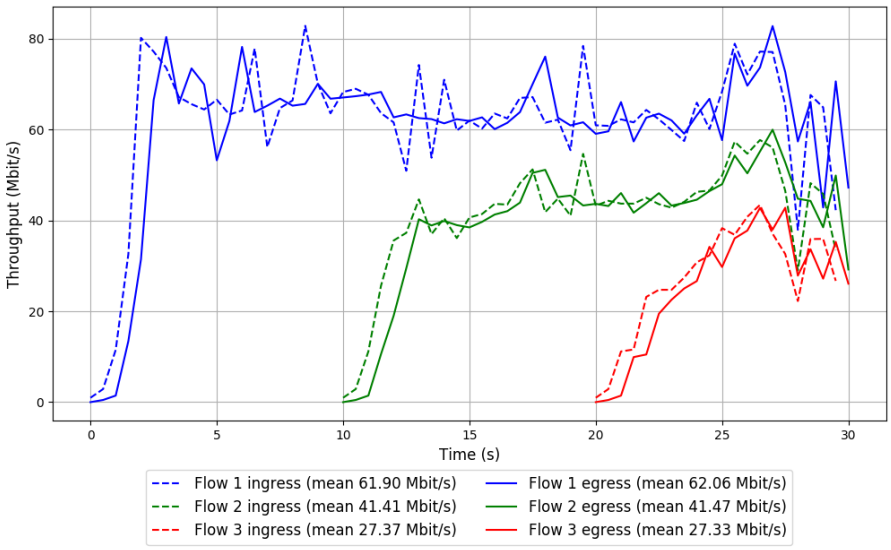


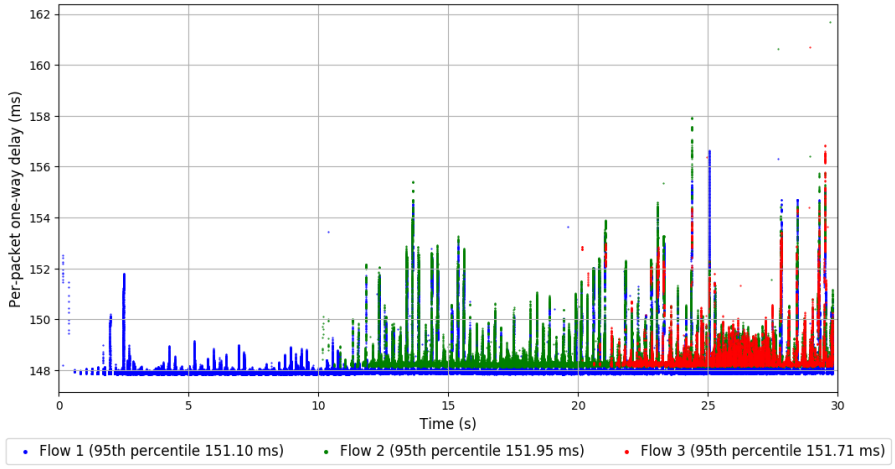
```
Run 2: Statistics of Indigo

Start at: 2018-11-30 16:39:31
End at: 2018-11-30 16:40:01
Local clock offset: 2.796 ms
Remote clock offset: -41.249 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 98.41 Mbit/s
95th percentile per-packet one-way delay: 151.472 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 62.06 Mbit/s
95th percentile per-packet one-way delay: 151.098 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 41.47 Mbit/s
95th percentile per-packet one-way delay: 151.951 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 27.33 Mbit/s
95th percentile per-packet one-way delay: 151.706 ms
Loss rate: 2.27%
```

Run 2: Report of Indigo — Data Link





```
Run 3: Statistics of Indigo

Start at: 2018-11-30 17:35:17
End at: 2018-11-30 17:35:47
Local clock offset: 4.306 ms
Remote clock offset: -42.697 ms
```

Run 3: Report of Indigo — Data Link

Figure is missing

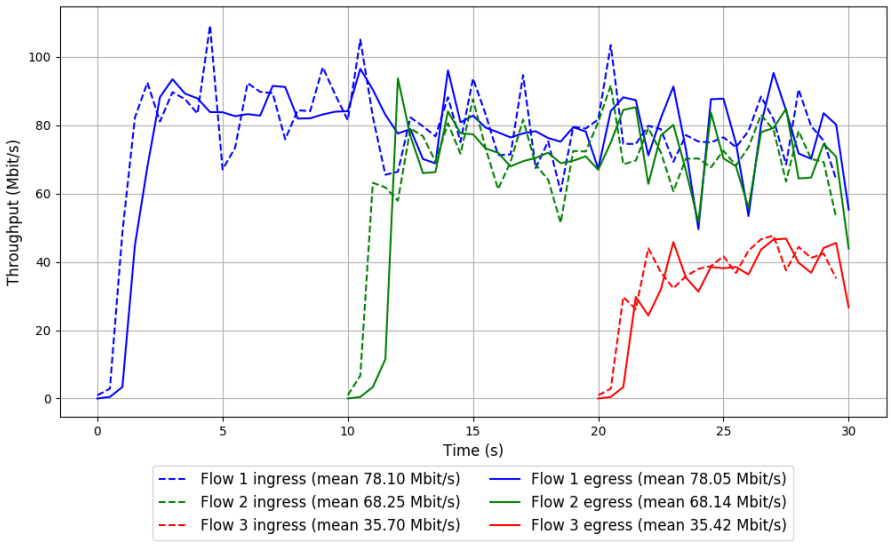
Figure is missing

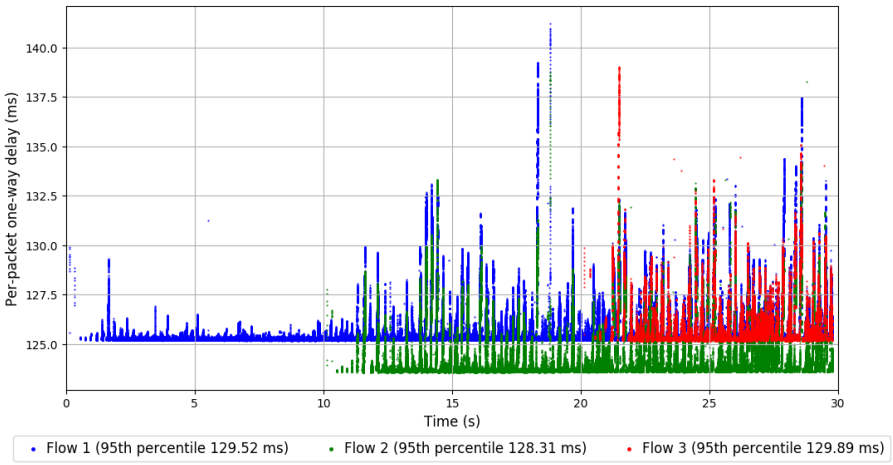
```
Run 4: Statistics of Indigo

Start at: 2018-11-30 18:30:20
End at: 2018-11-30 18:30:50
Local clock offset: 3.85 ms
Remote clock offset: -29.073 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 134.73 Mbit/s
95th percentile per-packet one-way delay: 129.206 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 78.05 Mbit/s
95th percentile per-packet one-way delay: 129.522 ms
Loss rate: 0.74%
-- Flow 2:
Average throughput: 68.14 Mbit/s
95th percentile per-packet one-way delay: 128.315 ms
Loss rate: 1.15%
-- Flow 3:
Average throughput: 35.42 Mbit/s
95th percentile per-packet one-way delay: 129.894 ms
Loss rate: 2.65%
```

Run 4: Report of Indigo — Data Link



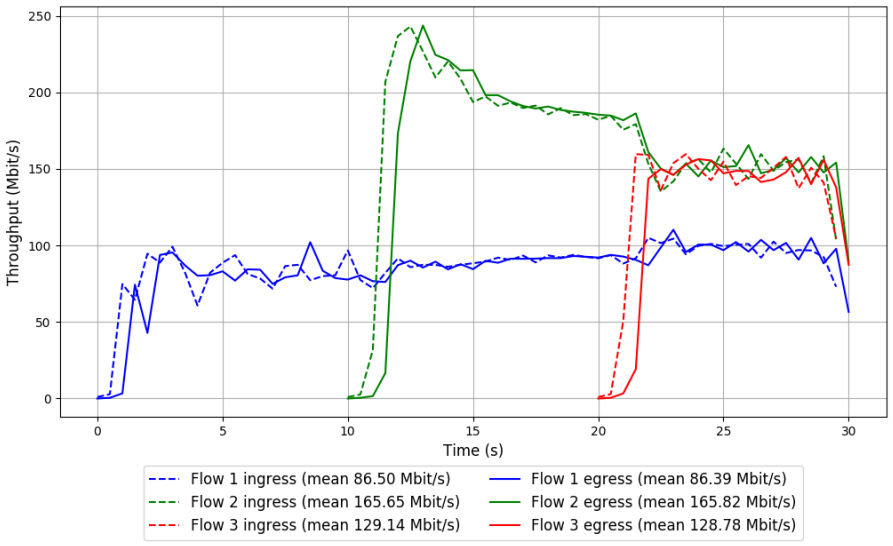


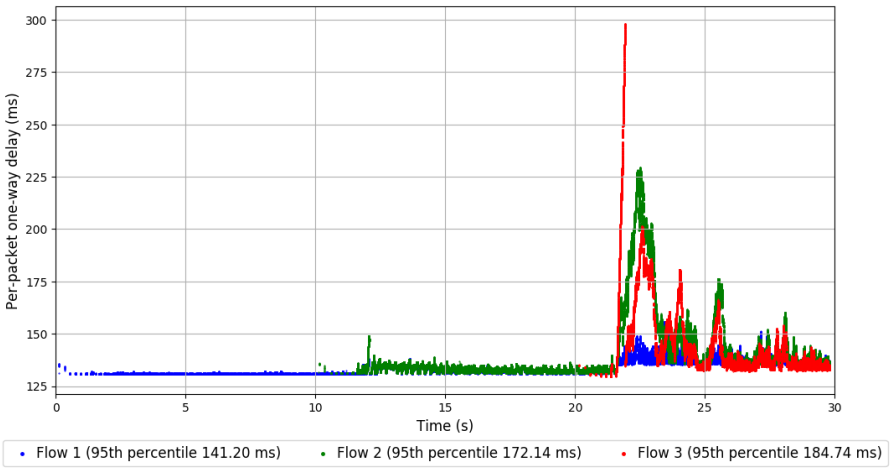
```
Run 5: Statistics of Indigo

Start at: 2018-11-30 19:05:29
End at: 2018-11-30 19:05:59
Local clock offset: 1.176 ms
Remote clock offset: -36.699 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 238.11 Mbit/s
95th percentile per-packet one-way delay: 167.969 ms
Loss rate: 1.11%
-- Flow 1:
Average throughput: 86.39 Mbit/s
95th percentile per-packet one-way delay: 141.202 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 165.82 Mbit/s
95th percentile per-packet one-way delay: 172.140 ms
Loss rate: 0.89%
-- Flow 3:
Average throughput: 128.78 Mbit/s
95th percentile per-packet one-way delay: 184.736 ms
Loss rate: 2.31%
```

Run 5: Report of Indigo — Data Link



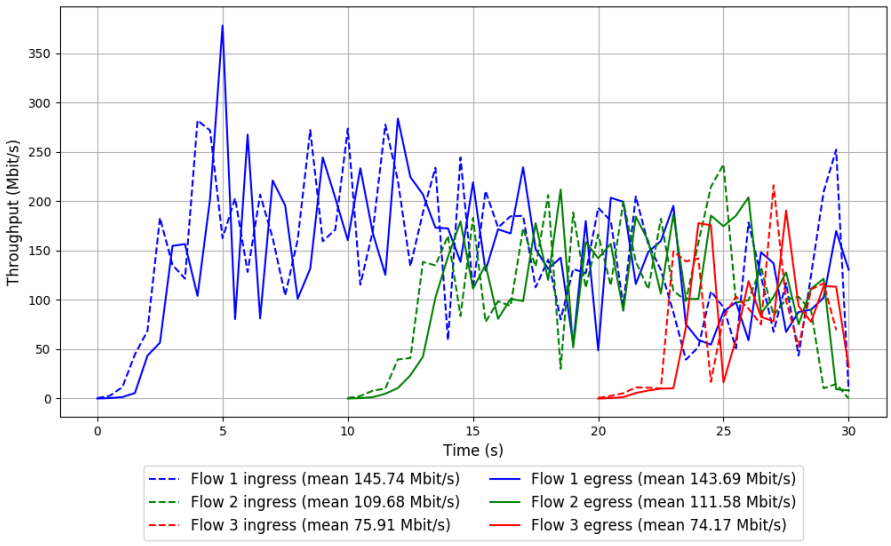


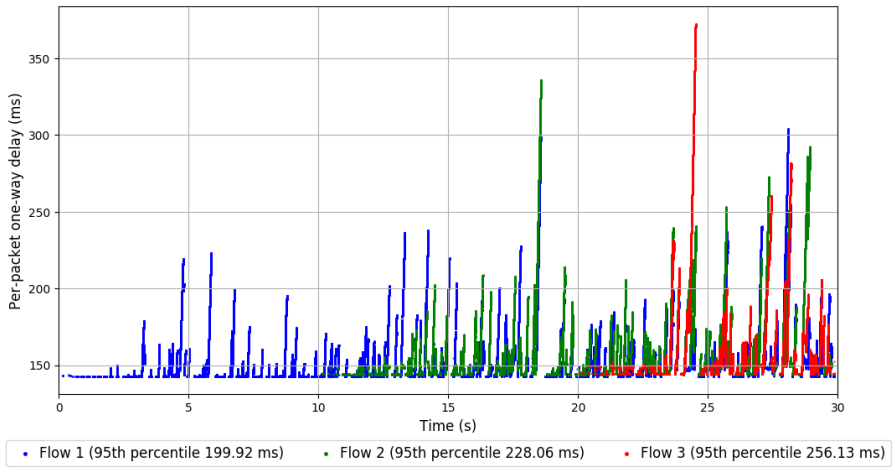
```
Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-30 15:44:57
End at: 2018-11-30 15:45:27
Local clock offset: 0.673 ms
Remote clock offset: -40.338 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 241.48 Mbit/s
95th percentile per-packet one-way delay: 216.474 ms
Loss rate: 1.92%
-- Flow 1:
Average throughput: 143.69 Mbit/s
95th percentile per-packet one-way delay: 199.917 ms
Loss rate: 2.36%
-- Flow 2:
Average throughput: 111.58 Mbit/s
95th percentile per-packet one-way delay: 228.055 ms
Loss rate: 0.18%
-- Flow 3:
Average throughput: 74.17 Mbit/s
95th percentile per-packet one-way delay: 256.133 ms
Loss rate: 4.43%
```

Run 1: Report of Indigo-96d2da3 — Data Link



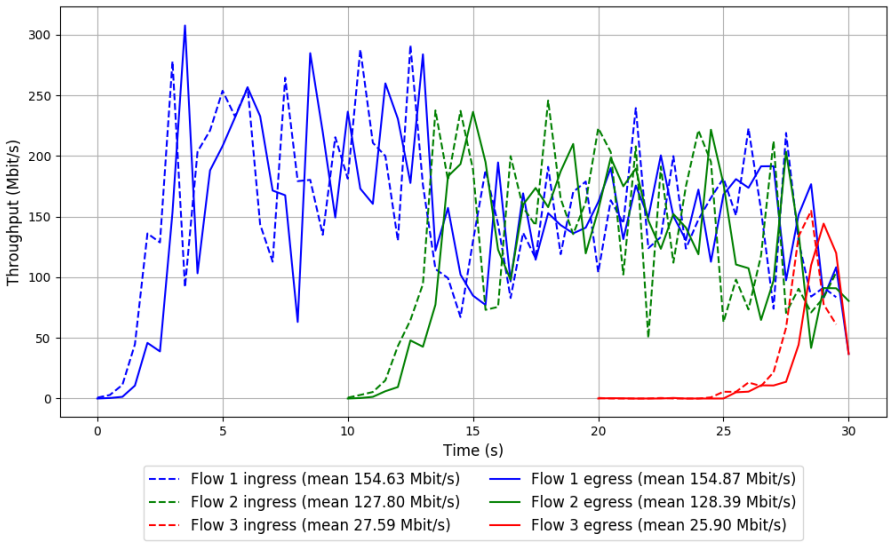


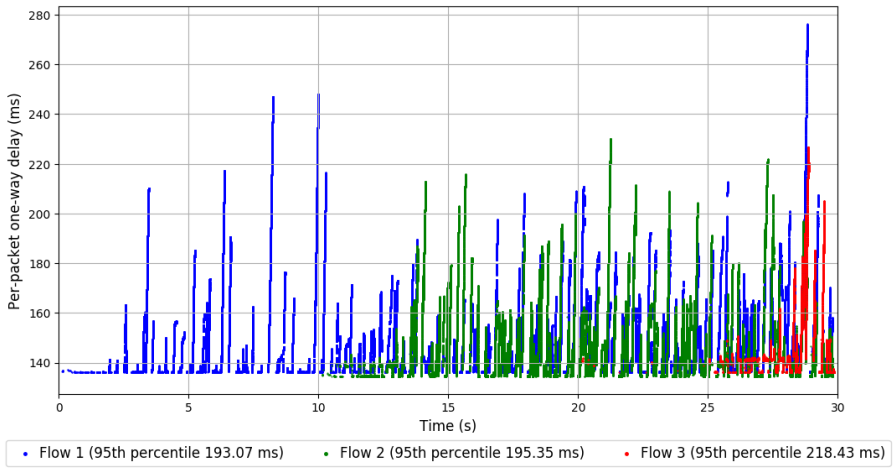
```
Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-30 16:36:03
End at: 2018-11-30 16:36:33
Local clock offset: 0.533 ms
Remote clock offset: -31.617 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 247.85 Mbit/s
95th percentile per-packet one-way delay: 195.199 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 154.87 Mbit/s
95th percentile per-packet one-way delay: 193.066 ms
Loss rate: 0.59%
-- Flow 2:
Average throughput: 128.39 Mbit/s
95th percentile per-packet one-way delay: 195.352 ms
Loss rate: 0.89%
-- Flow 3:
Average throughput: 25.90 Mbit/s
95th percentile per-packet one-way delay: 218.431 ms
Loss rate: 7.64%
```

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



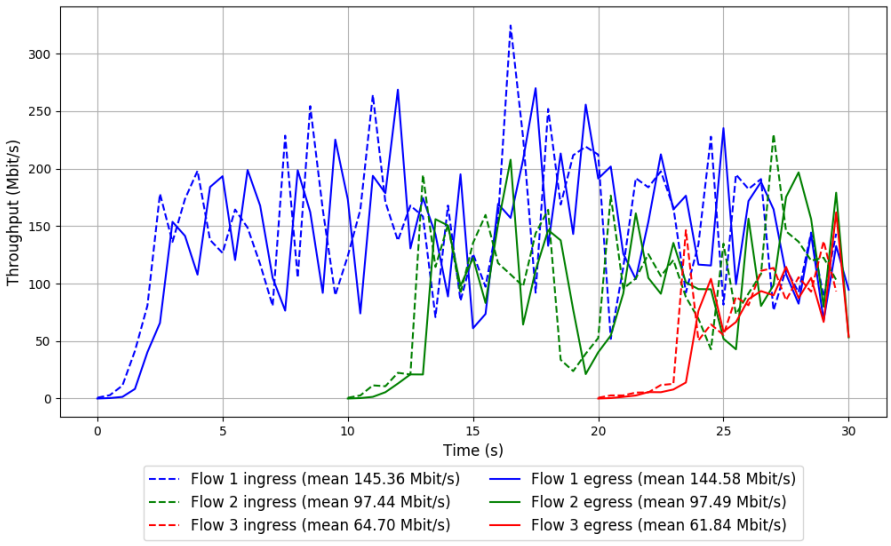


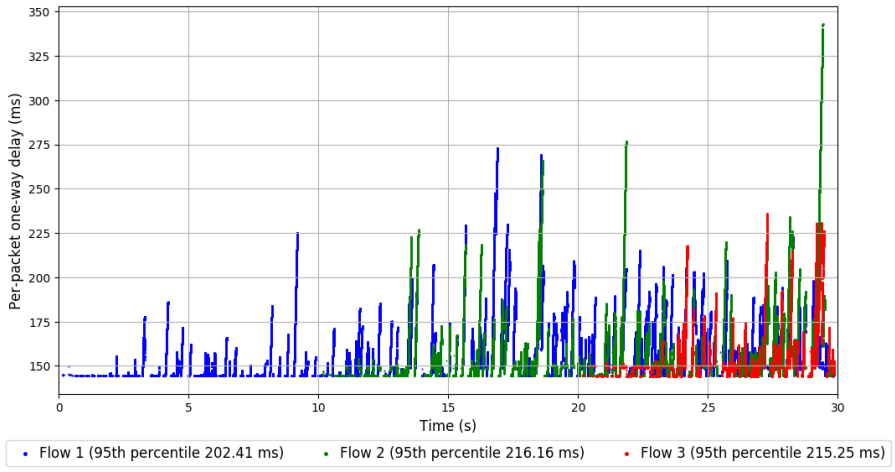
```
Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-30 17:30:46
End at: 2018-11-30 17:31:16
Local clock offset: 1.877 ms
Remote clock offset: -39.793 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 229.21 Mbit/s
95th percentile per-packet one-way delay: 208.533 ms
Loss rate: 1.68%
-- Flow 1:
Average throughput: 144.58 Mbit/s
95th percentile per-packet one-way delay: 202.405 ms
Loss rate: 1.24%
-- Flow 2:
Average throughput: 97.49 Mbit/s
95th percentile per-packet one-way delay: 216.155 ms
Loss rate: 1.54%
-- Flow 3:
Average throughput: 61.84 Mbit/s
95th percentile per-packet one-way delay: 215.254 ms
Loss rate: 5.13%
```

Run 3: Report of Indigo-96d2da3 — Data Link



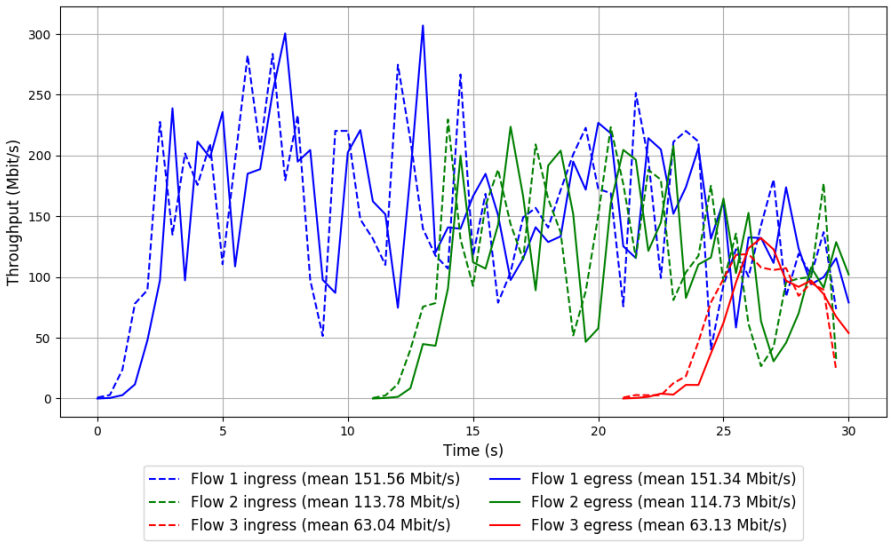


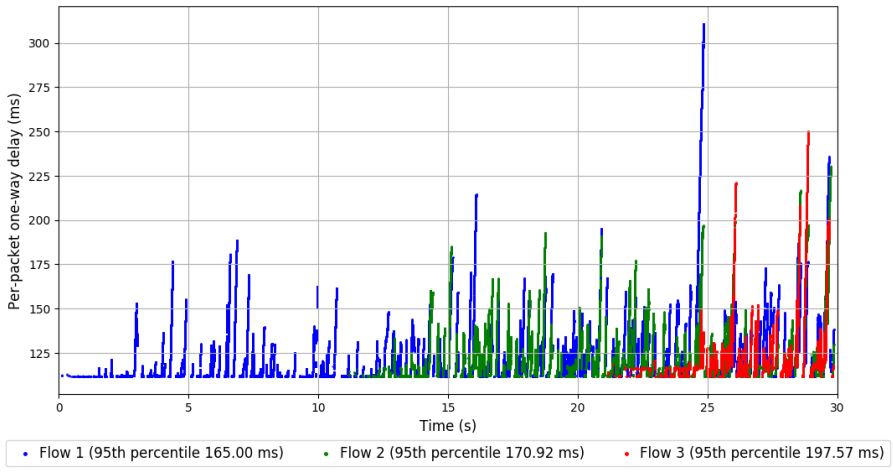
```
Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-30 18:27:08
End at: 2018-11-30 18:27:38
Local clock offset: 2.32 ms
Remote clock offset: -16.902 ms

# Below is generated by plot.py at 2018-11-30 19:46:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 241.89 Mbit/s
95th percentile per-packet one-way delay: 167.691 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 151.34 Mbit/s
95th percentile per-packet one-way delay: 165.002 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 114.73 Mbit/s
95th percentile per-packet one-way delay: 170.917 ms
Loss rate: 0.20%
-- Flow 3:
Average throughput: 63.13 Mbit/s
95th percentile per-packet one-way delay: 197.575 ms
Loss rate: 1.50%
```

Run 4: Report of Indigo-96d2da3 — Data Link



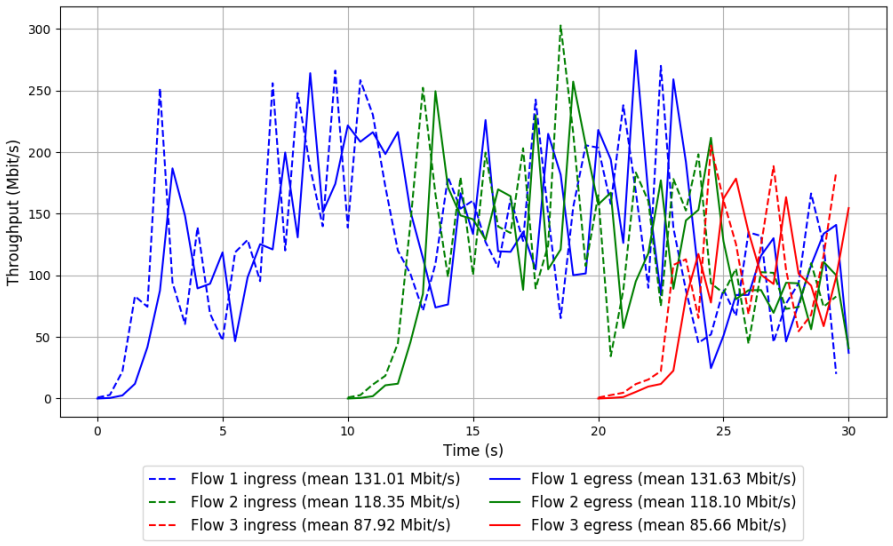


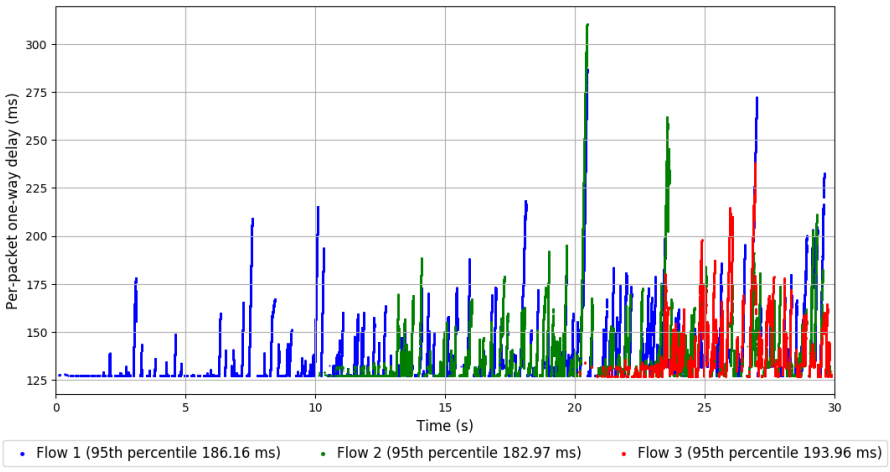
```
Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-30 19:02:31
End at: 2018-11-30 19:03:01
Local clock offset: 3.266 ms
Remote clock offset: -30.632 ms

# Below is generated by plot.py at 2018-11-30 19:47:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 237.97 Mbit/s
95th percentile per-packet one-way delay: 186.231 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 131.63 Mbit/s
95th percentile per-packet one-way delay: 186.157 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 118.10 Mbit/s
95th percentile per-packet one-way delay: 182.966 ms
Loss rate: 1.20%
-- Flow 3:
Average throughput: 85.66 Mbit/s
95th percentile per-packet one-way delay: 193.961 ms
Loss rate: 4.49%
```

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



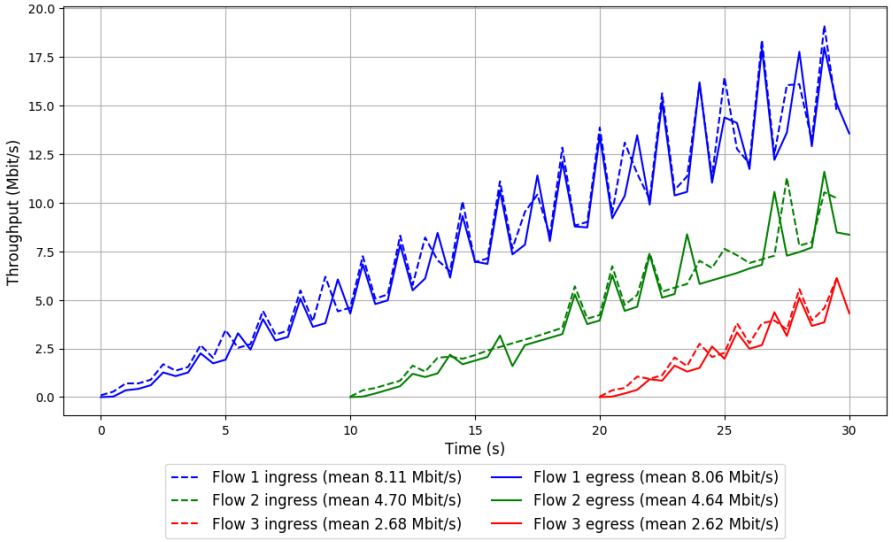


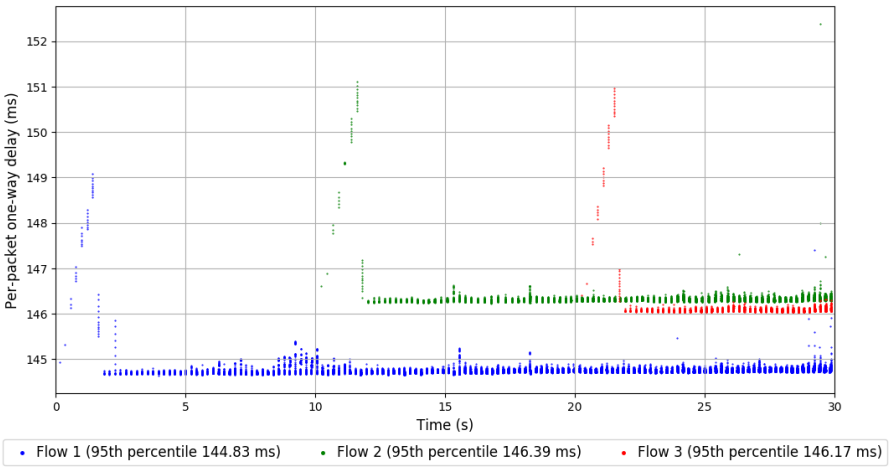
```
Run 1: Statistics of LEDBAT

Start at: 2018-11-30 16:17:20
End at: 2018-11-30 16:17:50
Local clock offset: 2.889 ms
Remote clock offset: -40.735 ms

# Below is generated by plot.py at 2018-11-30 19:47:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 11.97 Mbit/s
95th percentile per-packet one-way delay: 146.343 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 8.06 Mbit/s
95th percentile per-packet one-way delay: 144.828 ms
Loss rate: 1.41%
-- Flow 2:
Average throughput: 4.64 Mbit/s
95th percentile per-packet one-way delay: 146.392 ms
Loss rate: 2.27%
-- Flow 3:
Average throughput: 2.62 Mbit/s
95th percentile per-packet one-way delay: 146.170 ms
Loss rate: 4.28%
```

Run 1: Report of LEDBAT — Data Link



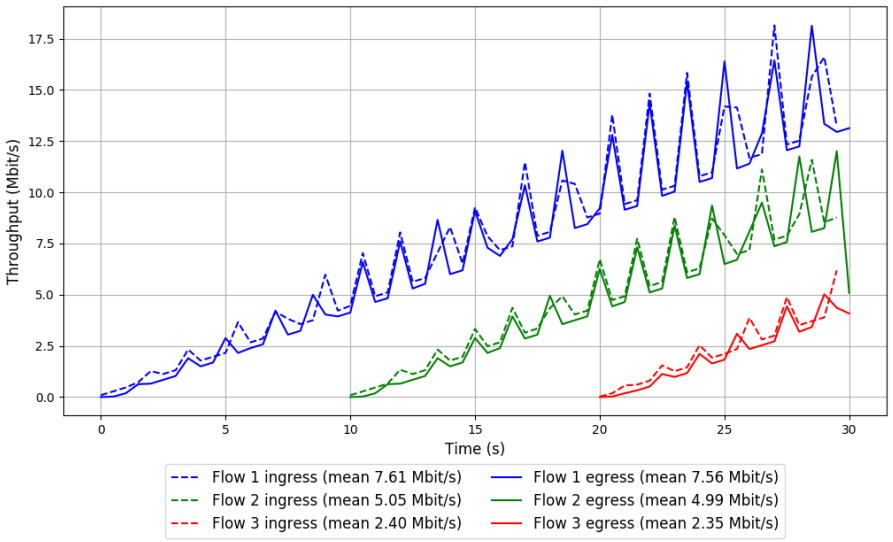


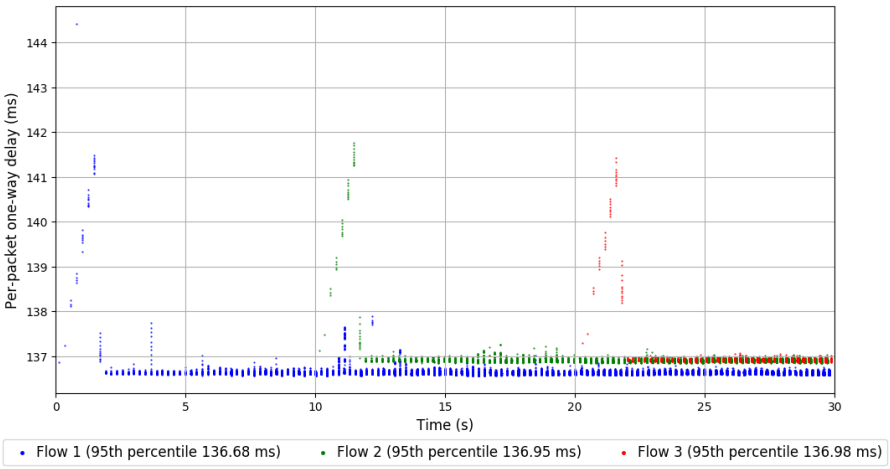
```
Run 2: Statistics of LEDBAT

Start at: 2018-11-30 17:12:37
End at: 2018-11-30 17:13:07
Local clock offset: 2.352 ms
Remote clock offset: -31.757 ms

# Below is generated by plot.py at 2018-11-30 19:47:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 11.59 Mbit/s
95th percentile per-packet one-way delay: 136.934 ms
Loss rate: 1.87%
-- Flow 1:
Average throughput: 7.56 Mbit/s
95th percentile per-packet one-way delay: 136.683 ms
Loss rate: 1.46%
-- Flow 2:
Average throughput: 4.99 Mbit/s
95th percentile per-packet one-way delay: 136.953 ms
Loss rate: 2.21%
-- Flow 3:
Average throughput: 2.35 Mbit/s
95th percentile per-packet one-way delay: 136.982 ms
Loss rate: 4.47%
```

Run 2: Report of LEDBAT — Data Link



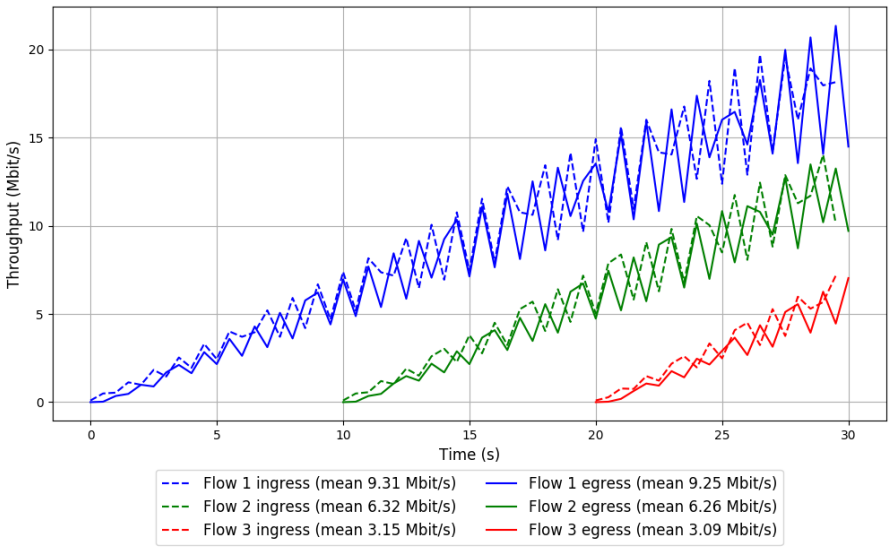


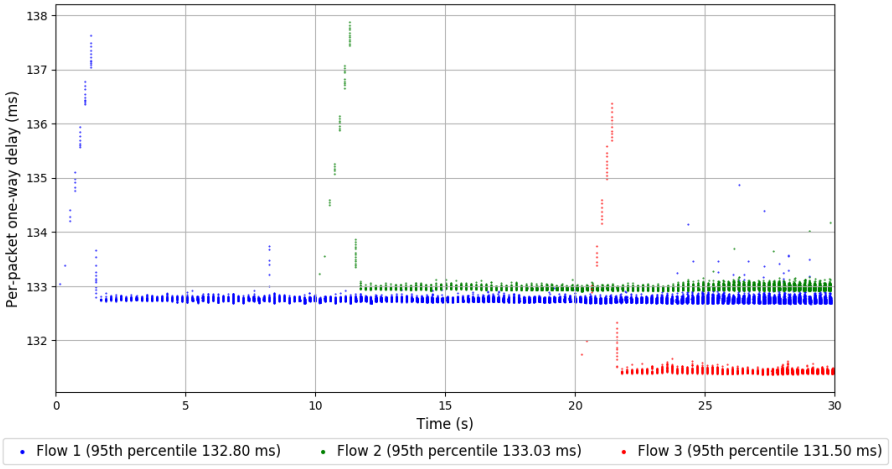
```
Run 3: Statistics of LEDBAT

Start at: 2018-11-30 18:08:07
End at: 2018-11-30 18:08:37
Local clock offset: 2.122 ms
Remote clock offset: -35.835 ms

# Below is generated by plot.py at 2018-11-30 19:47:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 14.37 Mbit/s
95th percentile per-packet one-way delay: 132.997 ms
Loss rate: 1.69%
-- Flow 1:
Average throughput: 9.25 Mbit/s
95th percentile per-packet one-way delay: 132.798 ms
Loss rate: 1.31%
-- Flow 2:
Average throughput: 6.26 Mbit/s
95th percentile per-packet one-way delay: 133.032 ms
Loss rate: 1.96%
-- Flow 3:
Average throughput: 3.09 Mbit/s
95th percentile per-packet one-way delay: 131.505 ms
Loss rate: 3.92%
```

Run 3: Report of LEDBAT — Data Link



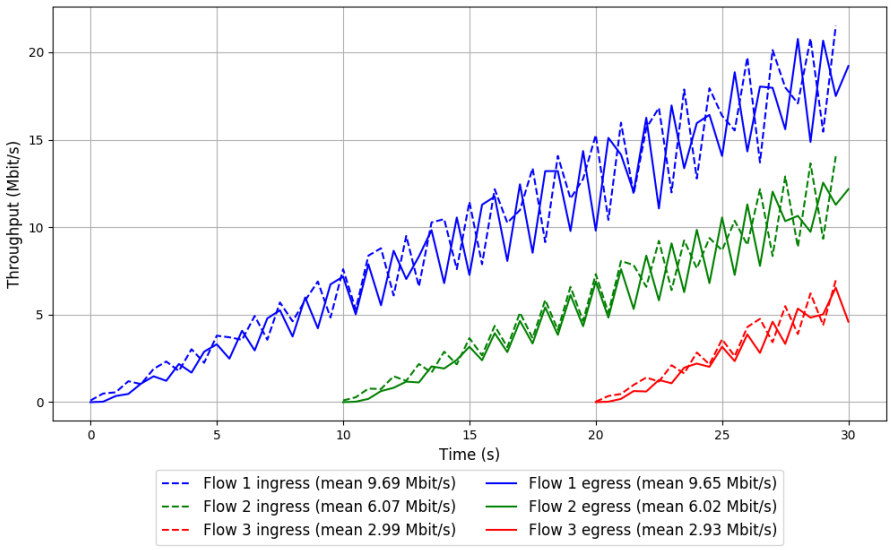


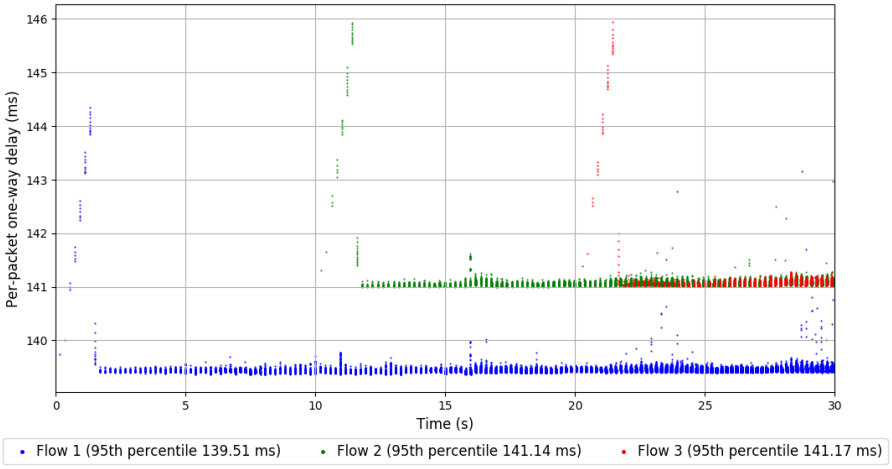
```
Run 4: Statistics of LEDBAT

Start at: 2018-11-30 18:49:05
End at: 2018-11-30 18:49:36
Local clock offset: 1.461 ms
Remote clock offset: -46.835 ms

# Below is generated by plot.py at 2018-11-30 19:47:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 14.57 Mbit/s
95th percentile per-packet one-way delay: 141.109 ms
Loss rate: 1.54%
-- Flow 1:
Average throughput: 9.65 Mbit/s
95th percentile per-packet one-way delay: 139.512 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 6.02 Mbit/s
95th percentile per-packet one-way delay: 141.144 ms
Loss rate: 1.87%
-- Flow 3:
Average throughput: 2.93 Mbit/s
95th percentile per-packet one-way delay: 141.166 ms
Loss rate: 4.03%
```

Run 4: Report of LEDBAT — Data Link



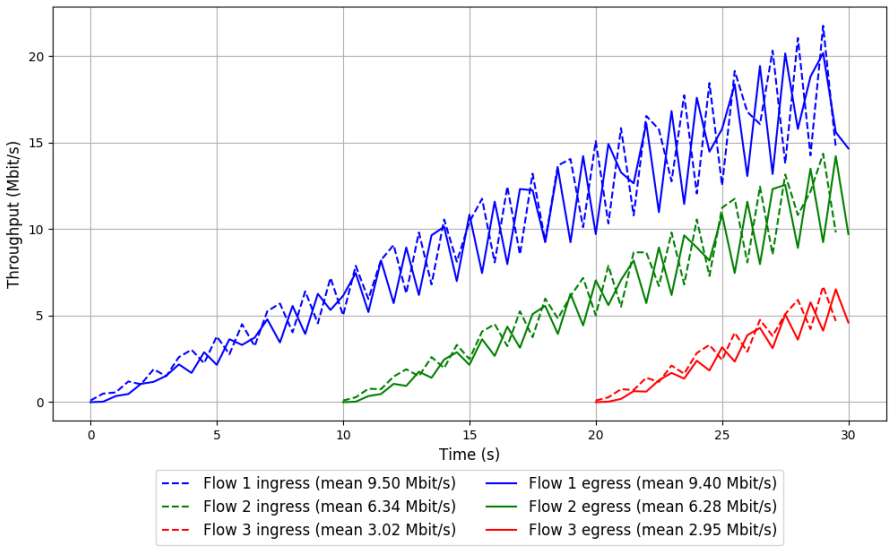


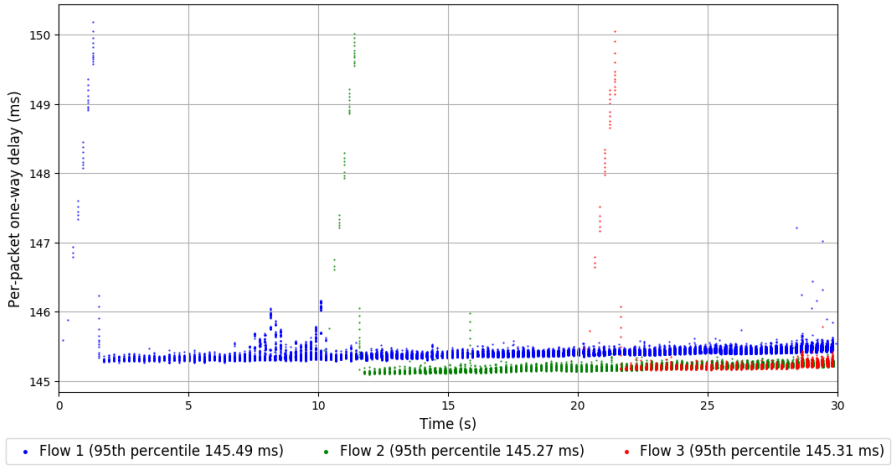
```
Run 5: Statistics of LEDBAT

Start at: 2018-11-30 19:23:01
End at: 2018-11-30 19:23:31
Local clock offset: -0.189 ms
Remote clock offset: -49.057 ms

# Below is generated by plot.py at 2018-11-30 19:47:21
# Datalink statistics
-- Total of 3 flows:
Average throughput: 14.48 Mbit/s
95th percentile per-packet one-way delay: 145.475 ms
Loss rate: 1.67%
-- Flow 1:
Average throughput: 9.40 Mbit/s
95th percentile per-packet one-way delay: 145.487 ms
Loss rate: 1.30%
-- Flow 2:
Average throughput: 6.28 Mbit/s
95th percentile per-packet one-way delay: 145.267 ms
Loss rate: 1.96%
-- Flow 3:
Average throughput: 2.95 Mbit/s
95th percentile per-packet one-way delay: 145.313 ms
Loss rate: 4.03%
```

Run 5: Report of LEDBAT — Data Link



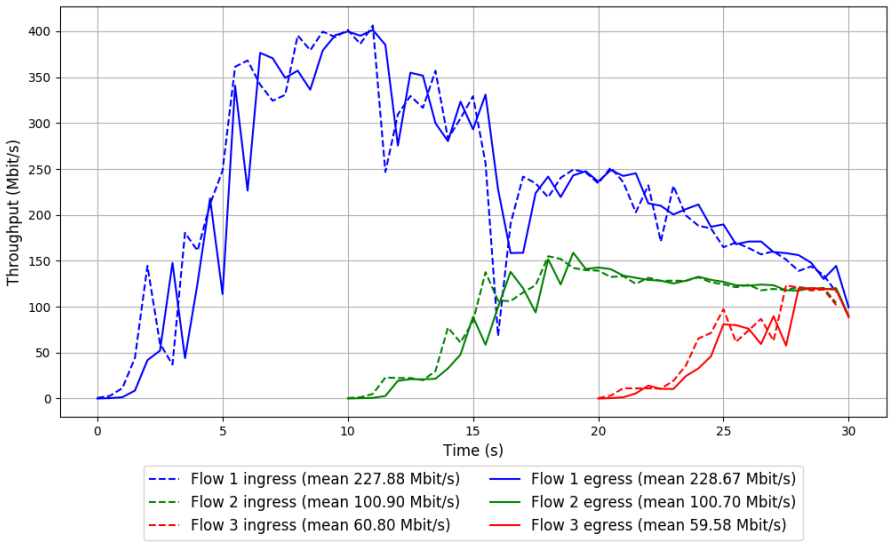


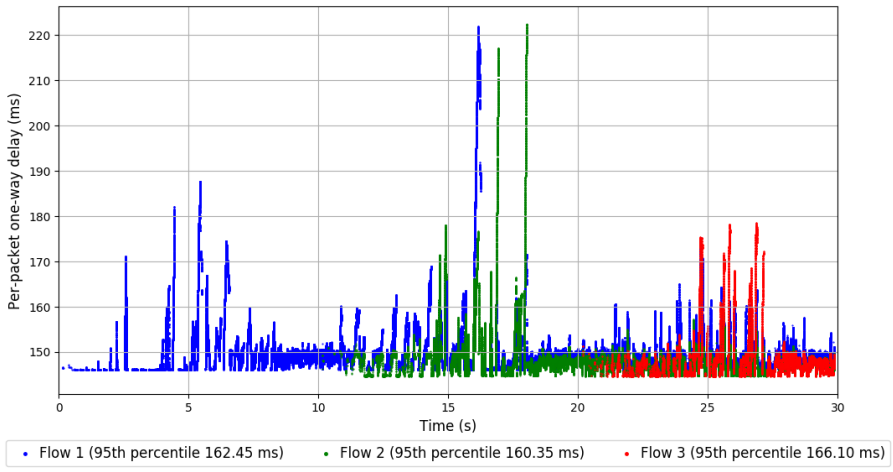
```
Run 1: Statistics of Indigo-Muses

Start at: 2018-11-30 15:35:02
End at: 2018-11-30 15:35:32
Local clock offset: 2.308 ms
Remote clock offset: -40.849 ms

# Below is generated by plot.py at 2018-11-30 19:48:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 314.89 Mbit/s
95th percentile per-packet one-way delay: 162.382 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 228.67 Mbit/s
95th percentile per-packet one-way delay: 162.453 ms
Loss rate: 0.39%
-- Flow 2:
Average throughput: 100.70 Mbit/s
95th percentile per-packet one-way delay: 160.346 ms
Loss rate: 1.26%
-- Flow 3:
Average throughput: 59.58 Mbit/s
95th percentile per-packet one-way delay: 166.102 ms
Loss rate: 4.12%
```

Run 1: Report of Indigo-Muses — Data Link



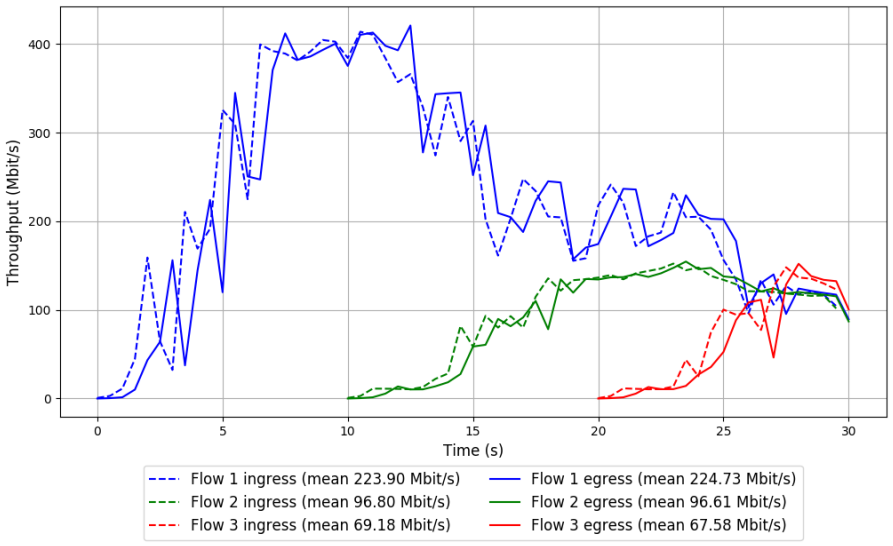


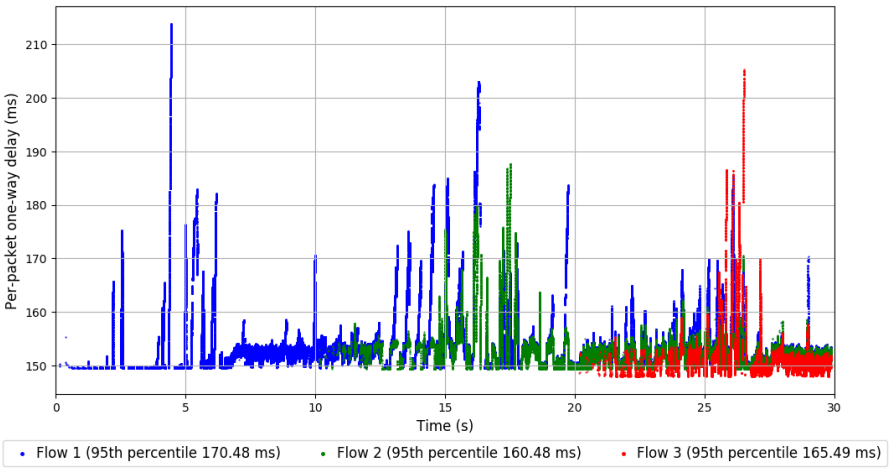
```
Run 2: Statistics of Indigo-Muses

Start at: 2018-11-30 16:26:18
End at: 2018-11-30 16:26:48
Local clock offset: 2.881 ms
Remote clock offset: -43.229 ms

# Below is generated by plot.py at 2018-11-30 19:48:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 310.84 Mbit/s
95th percentile per-packet one-way delay: 168.811 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 224.73 Mbit/s
95th percentile per-packet one-way delay: 170.483 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 96.61 Mbit/s
95th percentile per-packet one-way delay: 160.476 ms
Loss rate: 1.28%
-- Flow 3:
Average throughput: 67.58 Mbit/s
95th percentile per-packet one-way delay: 165.485 ms
Loss rate: 4.42%
```

Run 2: Report of Indigo-Muses — Data Link



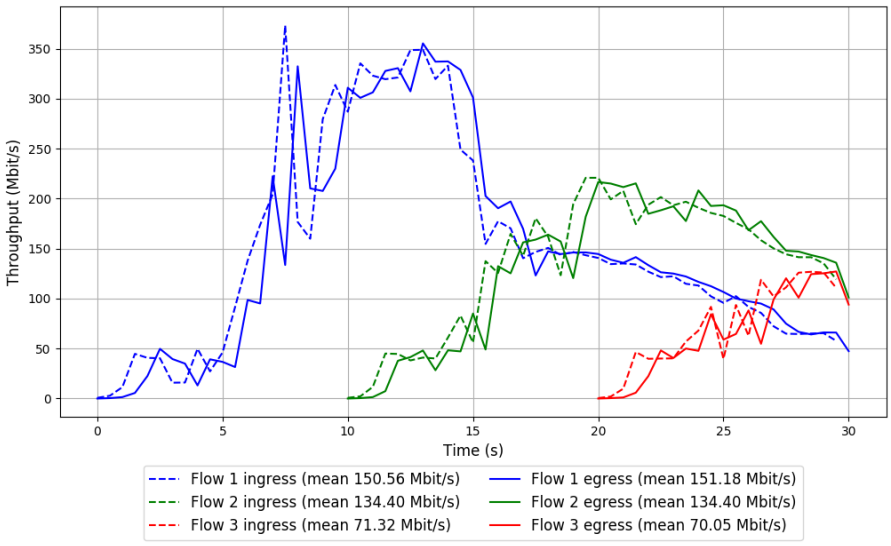


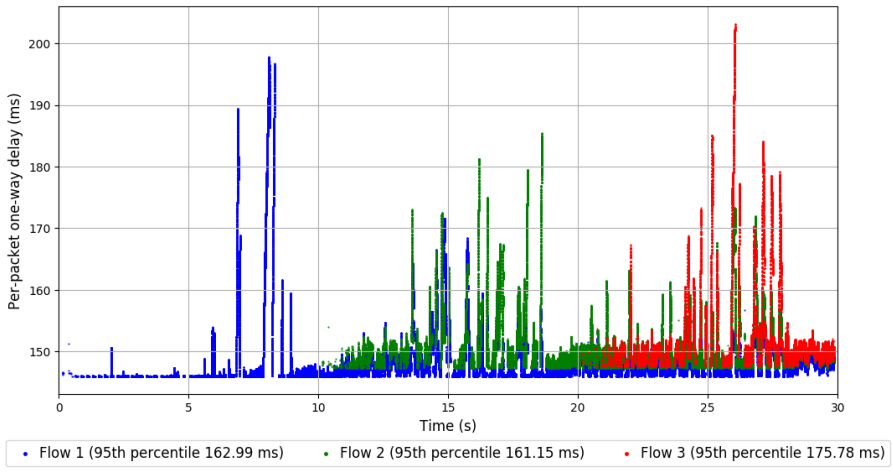
```
Run 3: Statistics of Indigo-Muses

Start at: 2018-11-30 17:21:28
End at: 2018-11-30 17:21:58
Local clock offset: 3.394 ms
Remote clock offset: -41.453 ms

# Below is generated by plot.py at 2018-11-30 19:48:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 263.16 Mbit/s
95th percentile per-packet one-way delay: 164.289 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 151.18 Mbit/s
95th percentile per-packet one-way delay: 162.990 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 134.40 Mbit/s
95th percentile per-packet one-way delay: 161.149 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 70.05 Mbit/s
95th percentile per-packet one-way delay: 175.779 ms
Loss rate: 3.92%
```

Run 3: Report of Indigo-Muses — Data Link



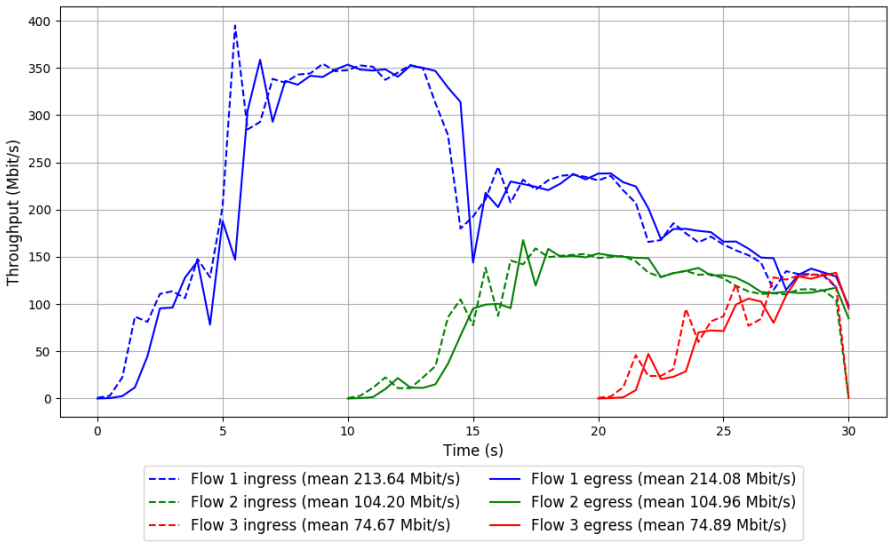


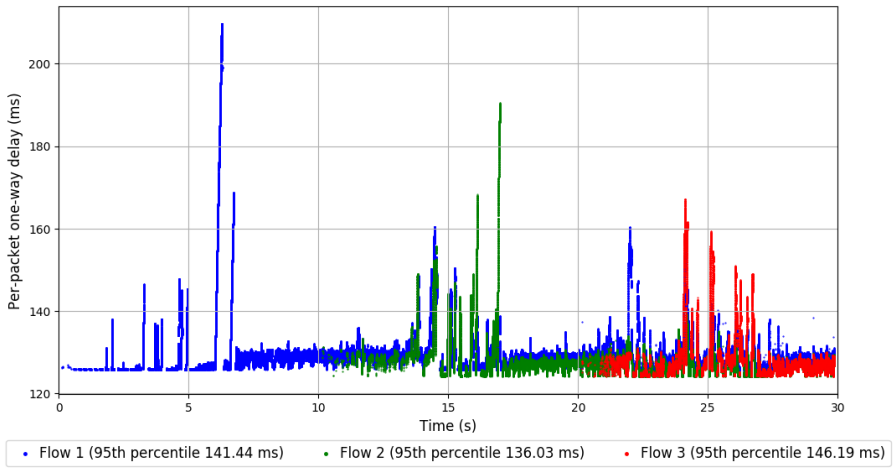
```
Run 4: Statistics of Indigo-Muses

Start at: 2018-11-30 18:20:51
End at: 2018-11-30 18:21:21
Local clock offset: 1.401 ms
Remote clock offset: -30.995 ms

# Below is generated by plot.py at 2018-11-30 19:48:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 308.13 Mbit/s
95th percentile per-packet one-way delay: 140.403 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 214.08 Mbit/s
95th percentile per-packet one-way delay: 141.441 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 104.96 Mbit/s
95th percentile per-packet one-way delay: 136.031 ms
Loss rate: 1.31%
-- Flow 3:
Average throughput: 74.89 Mbit/s
95th percentile per-packet one-way delay: 146.190 ms
Loss rate: 3.67%
```

Run 4: Report of Indigo-Muses — Data Link



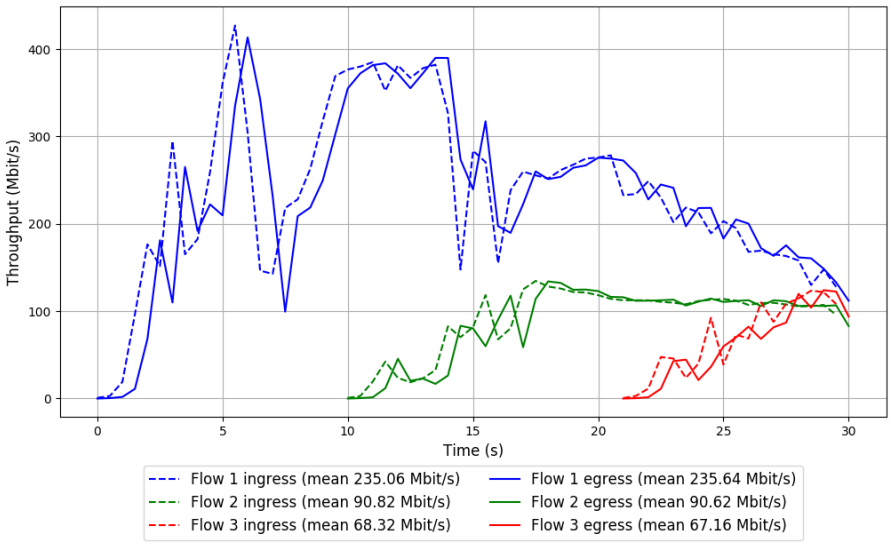


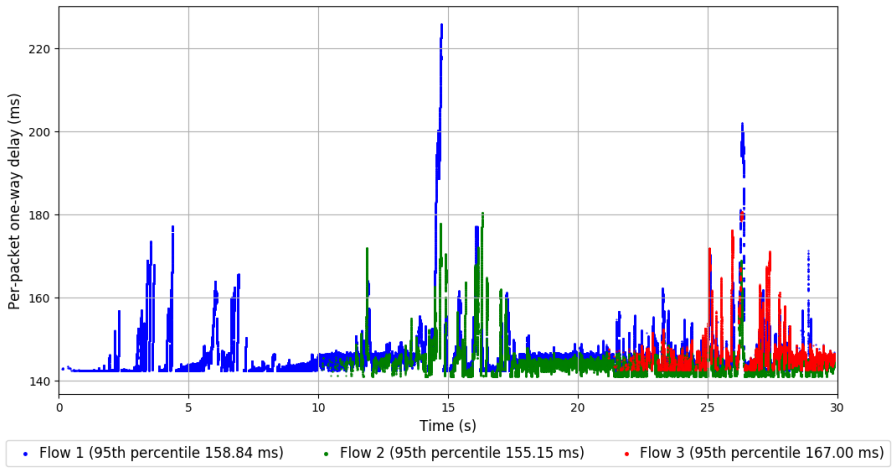
```
Run 5: Statistics of Indigo-Muses

Start at: 2018-11-30 18:56:11
End at: 2018-11-30 18:56:41
Local clock offset: 0.998 ms
Remote clock offset: -48.576 ms

# Below is generated by plot.py at 2018-11-30 19:49:23
# Datalink statistics
-- Total of 3 flows:
Average throughput: 315.42 Mbit/s
95th percentile per-packet one-way delay: 158.758 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 235.64 Mbit/s
95th percentile per-packet one-way delay: 158.836 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 90.62 Mbit/s
95th percentile per-packet one-way delay: 155.148 ms
Loss rate: 1.21%
-- Flow 3:
Average throughput: 67.16 Mbit/s
95th percentile per-packet one-way delay: 166.999 ms
Loss rate: 4.03%
```

Run 5: Report of Indigo-Muses — Data Link



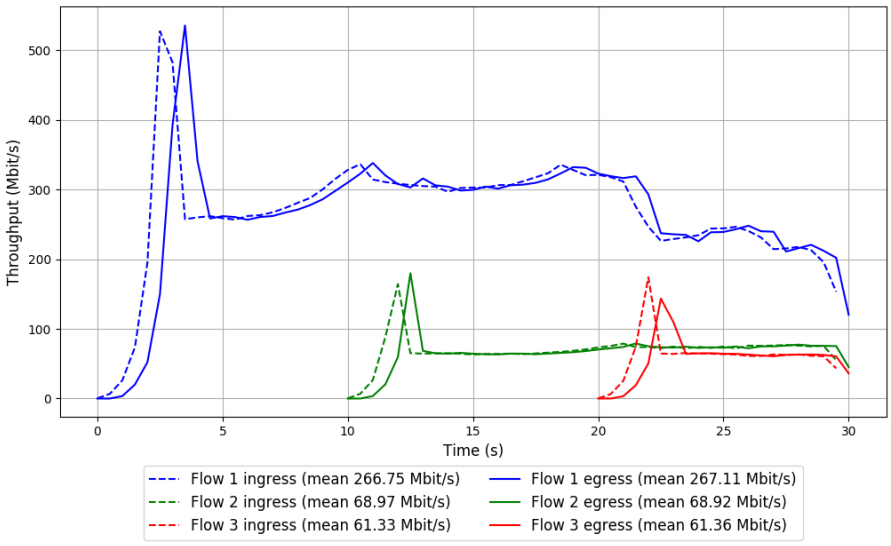


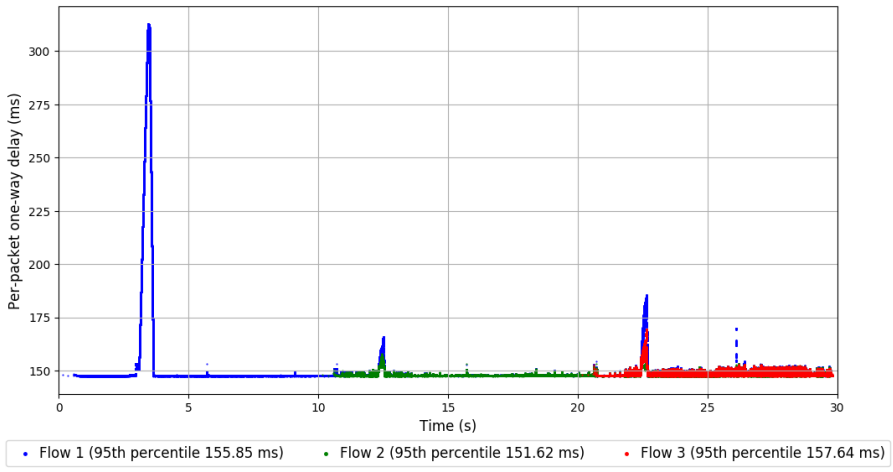
```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-30 16:01:09
End at: 2018-11-30 16:01:39
Local clock offset: 2.385 ms
Remote clock offset: -42.336 ms

# Below is generated by plot.py at 2018-11-30 19:50:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 332.68 Mbit/s
95th percentile per-packet one-way delay: 153.322 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 267.11 Mbit/s
95th percentile per-packet one-way delay: 155.853 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 68.92 Mbit/s
95th percentile per-packet one-way delay: 151.616 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 61.36 Mbit/s
95th percentile per-packet one-way delay: 157.641 ms
Loss rate: 2.09%
```

Run 1: Report of PCC-Allegro — Data Link



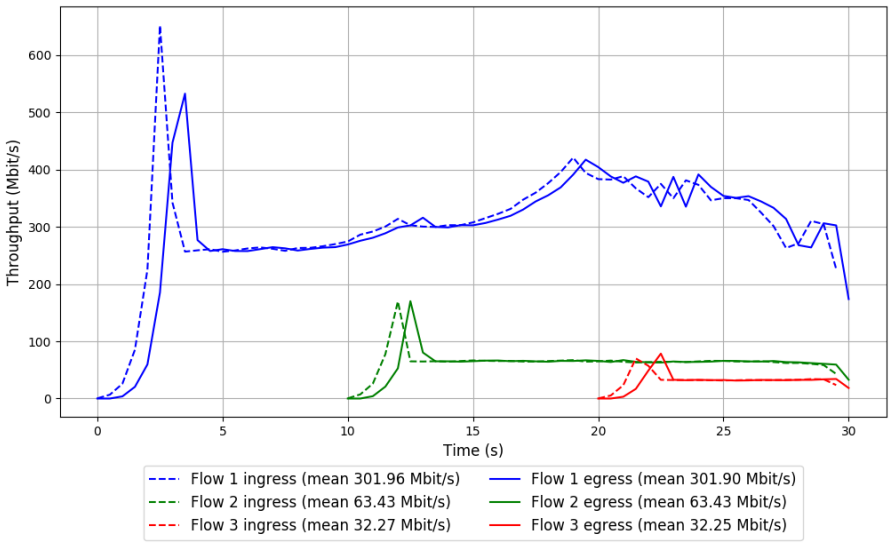


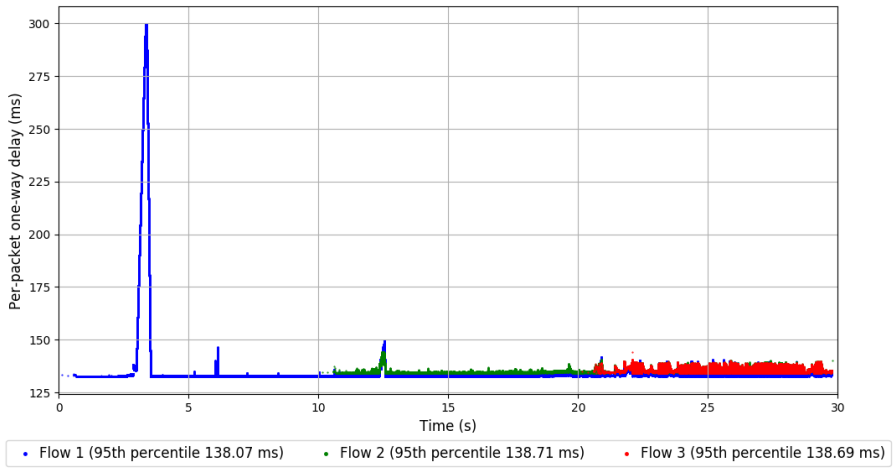
```
Run 2: Statistics of PCC-Allegro

Start at: 2018-11-30 16:44:37
End at: 2018-11-30 16:45:07
Local clock offset: -0.078 ms
Remote clock offset: -30.261 ms

# Below is generated by plot.py at 2018-11-30 19:50:30
# Datalink statistics
-- Total of 3 flows:
Average throughput: 354.34 Mbit/s
95th percentile per-packet one-way delay: 138.443 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 301.90 Mbit/s
95th percentile per-packet one-way delay: 138.075 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 63.43 Mbit/s
95th percentile per-packet one-way delay: 138.712 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 32.25 Mbit/s
95th percentile per-packet one-way delay: 138.689 ms
Loss rate: 2.22%
```

Run 2: Report of PCC-Allegro — Data Link



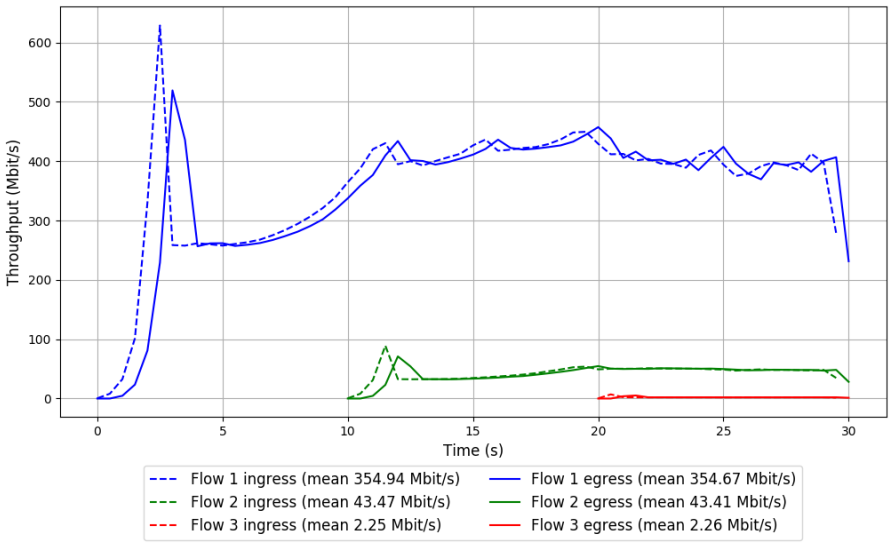


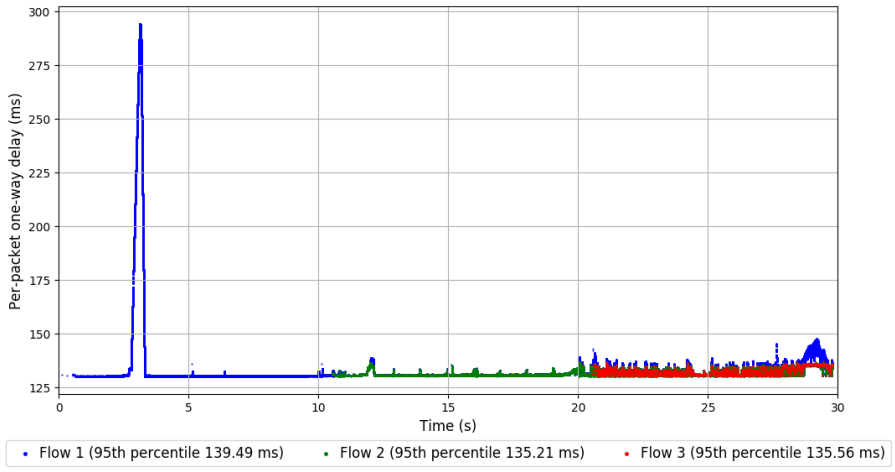
```
Run 3: Statistics of PCC-Allegro

Start at: 2018-11-30 17:55:03
End at: 2018-11-30 17:55:33
Local clock offset: 2.126 ms
Remote clock offset: -31.633 ms

# Below is generated by plot.py at 2018-11-30 19:52:09
# Datalink statistics
-- Total of 3 flows:
Average throughput: 384.16 Mbit/s
95th percentile per-packet one-way delay: 138.465 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 354.67 Mbit/s
95th percentile per-packet one-way delay: 139.485 ms
Loss rate: 0.73%
-- Flow 2:
Average throughput: 43.41 Mbit/s
95th percentile per-packet one-way delay: 135.211 ms
Loss rate: 1.13%
-- Flow 3:
Average throughput: 2.26 Mbit/s
95th percentile per-packet one-way delay: 135.563 ms
Loss rate: 1.99%
```

Run 3: Report of PCC-Allegro — Data Link



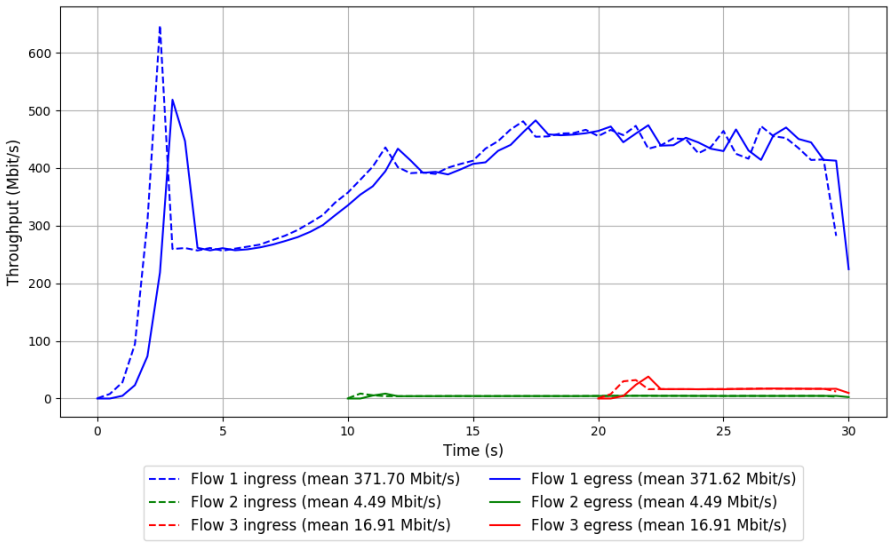


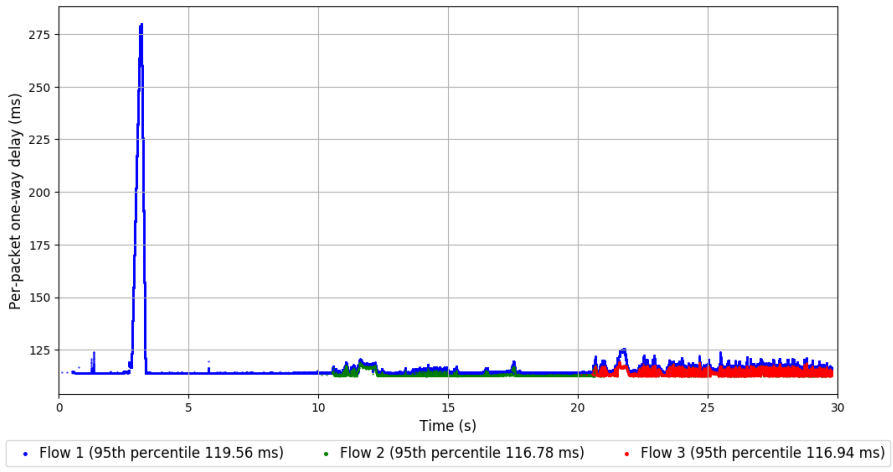
```
Run 4: Statistics of PCC-Allegro

Start at: 2018-11-30 18:34:37
End at: 2018-11-30 18:35:07
Local clock offset: 2.021 ms
Remote clock offset: -19.613 ms

# Below is generated by plot.py at 2018-11-30 19:52:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 380.07 Mbit/s
95th percentile per-packet one-way delay: 119.475 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 371.62 Mbit/s
95th percentile per-packet one-way delay: 119.562 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 4.49 Mbit/s
95th percentile per-packet one-way delay: 116.777 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 16.91 Mbit/s
95th percentile per-packet one-way delay: 116.941 ms
Loss rate: 1.98%
```

Run 4: Report of PCC-Allegro — Data Link



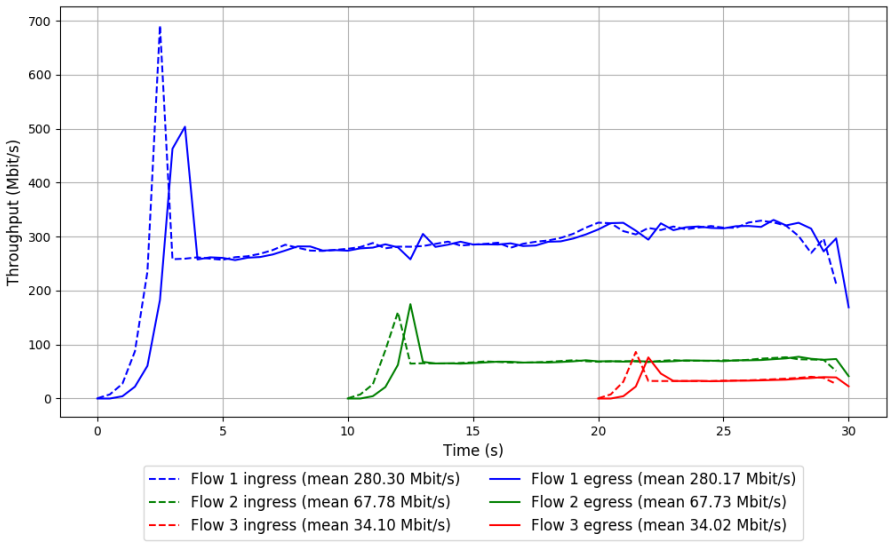


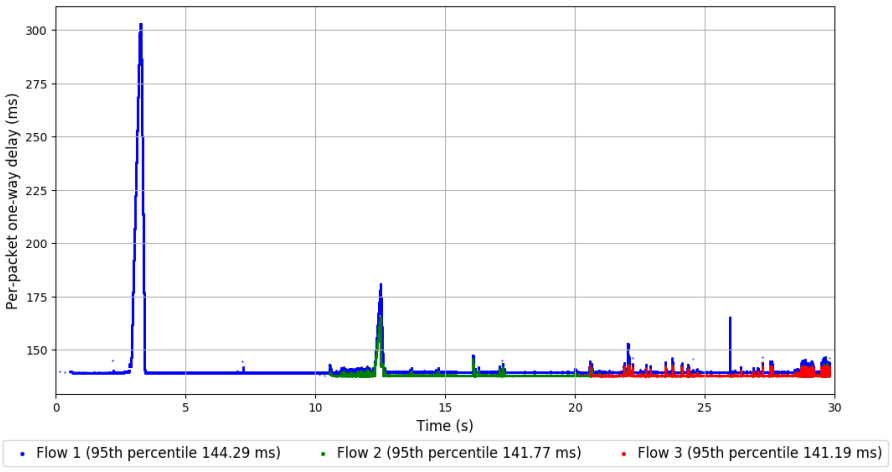
```
Run 5: Statistics of PCC-Allegro

Start at: 2018-11-30 19:09:50
End at: 2018-11-30 19:10:20
Local clock offset: 1.922 ms
Remote clock offset: -43.816 ms

# Below is generated by plot.py at 2018-11-30 19:52:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 336.09 Mbit/s
95th percentile per-packet one-way delay: 143.440 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 280.17 Mbit/s
95th percentile per-packet one-way delay: 144.291 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 67.73 Mbit/s
95th percentile per-packet one-way delay: 141.770 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 34.02 Mbit/s
95th percentile per-packet one-way delay: 141.185 ms
Loss rate: 2.22%
```

Run 5: Report of PCC-Allegro — Data Link



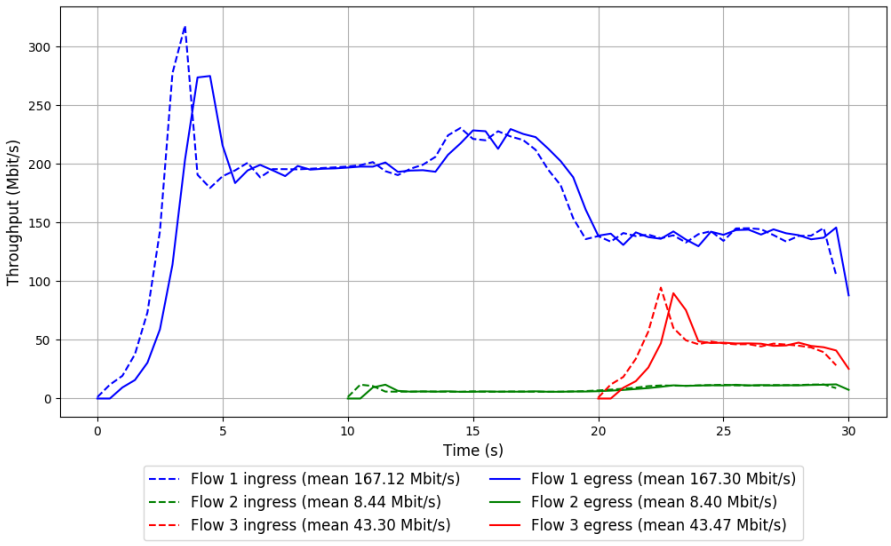


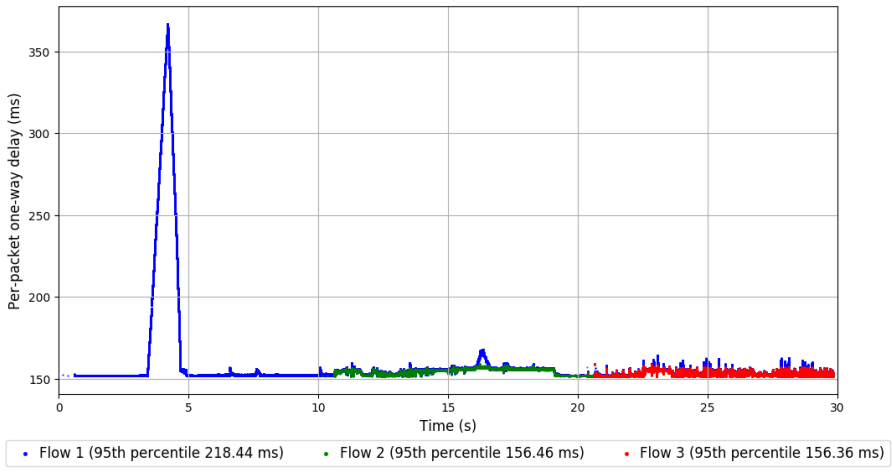
```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-30 15:39:47
End at: 2018-11-30 15:40:17
Local clock offset: 2.304 ms
Remote clock offset: -46.522 ms

# Below is generated by plot.py at 2018-11-30 19:52:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 187.01 Mbit/s
95th percentile per-packet one-way delay: 199.565 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 167.30 Mbit/s
95th percentile per-packet one-way delay: 218.439 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 8.40 Mbit/s
95th percentile per-packet one-way delay: 156.462 ms
Loss rate: 1.50%
-- Flow 3:
Average throughput: 43.47 Mbit/s
95th percentile per-packet one-way delay: 156.359 ms
Loss rate: 1.75%
```

Run 1: Report of PCC-Expr — Data Link



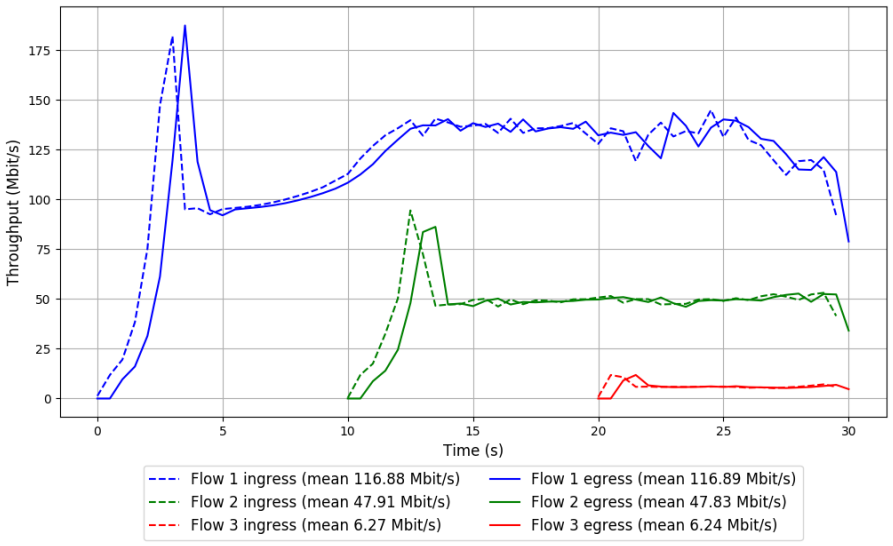


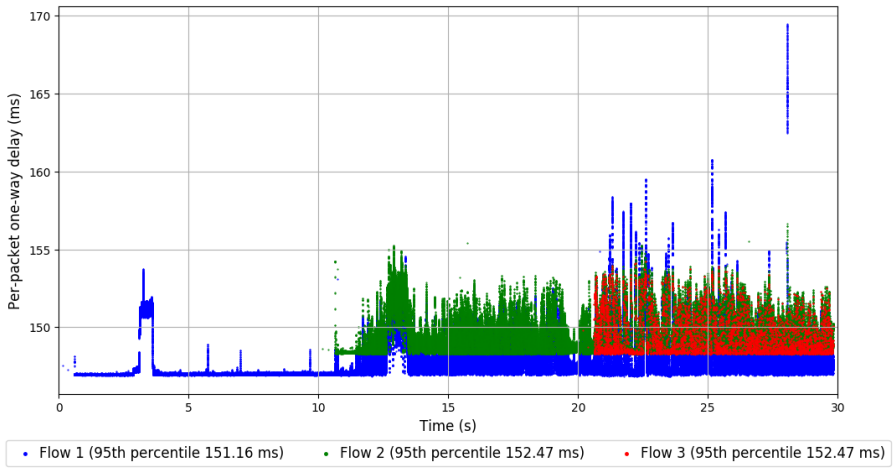
```
Run 2: Statistics of PCC-Expr

Start at: 2018-11-30 16:31:06
End at: 2018-11-30 16:31:36
Local clock offset: 0.343 ms
Remote clock offset: -44.412 ms

# Below is generated by plot.py at 2018-11-30 19:52:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 150.61 Mbit/s
95th percentile per-packet one-way delay: 151.566 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 116.89 Mbit/s
95th percentile per-packet one-way delay: 151.161 ms
Loss rate: 0.69%
-- Flow 2:
Average throughput: 47.83 Mbit/s
95th percentile per-packet one-way delay: 152.470 ms
Loss rate: 1.23%
-- Flow 3:
Average throughput: 6.24 Mbit/s
95th percentile per-packet one-way delay: 152.465 ms
Loss rate: 2.72%
```

Run 2: Report of PCC-Expr — Data Link



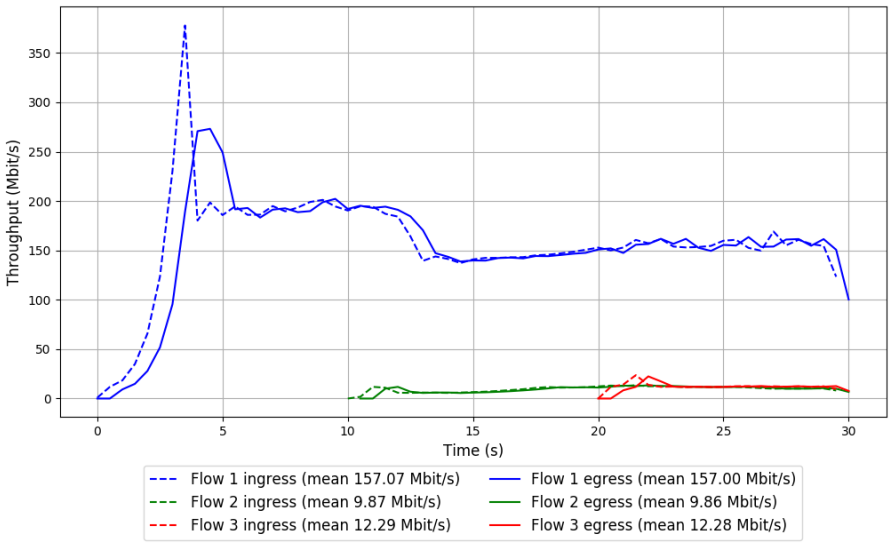


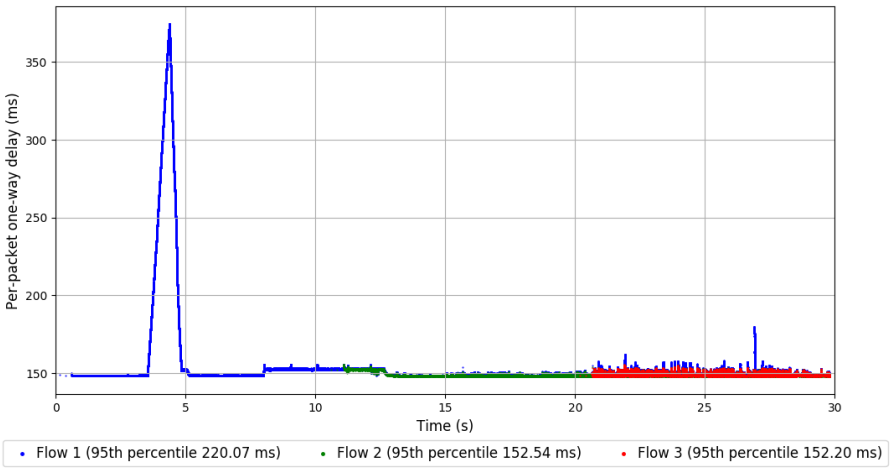
```
Run 3: Statistics of PCC-Expr

Start at: 2018-11-30 17:25:36
End at: 2018-11-30 17:26:06
Local clock offset: 3.596 ms
Remote clock offset: -42.182 ms

# Below is generated by plot.py at 2018-11-30 19:52:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 167.37 Mbit/s
95th percentile per-packet one-way delay: 208.395 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 157.00 Mbit/s
95th percentile per-packet one-way delay: 220.070 ms
Loss rate: 0.77%
-- Flow 2:
Average throughput: 9.86 Mbit/s
95th percentile per-packet one-way delay: 152.545 ms
Loss rate: 1.22%
-- Flow 3:
Average throughput: 12.28 Mbit/s
95th percentile per-packet one-way delay: 152.197 ms
Loss rate: 2.30%
```

Run 3: Report of PCC-Expr — Data Link



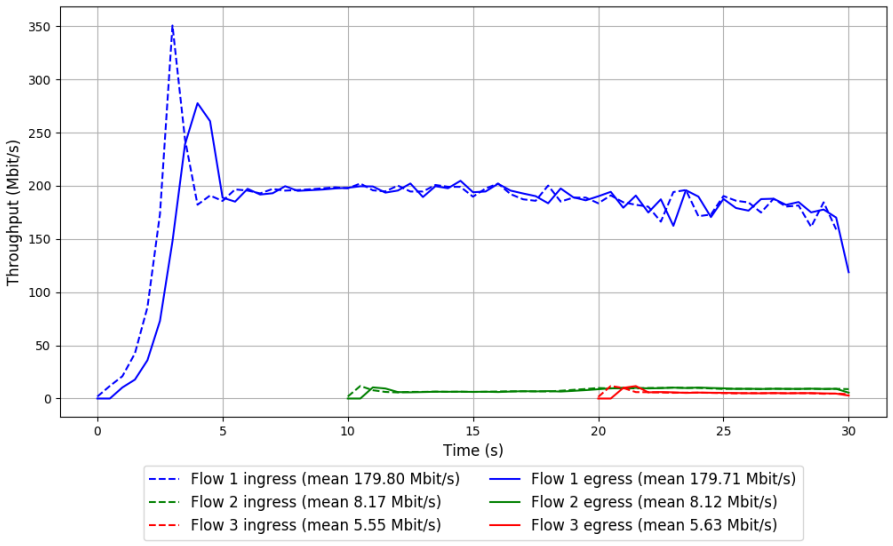


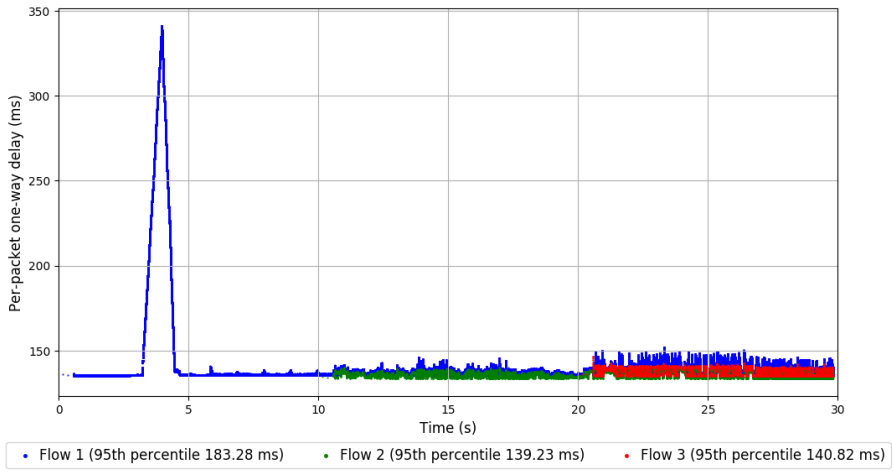
```
Run 4: Statistics of PCC-Expr

Start at: 2018-11-30 18:23:57
End at: 2018-11-30 18:24:27
Local clock offset: 3.408 ms
Remote clock offset: -38.968 ms

# Below is generated by plot.py at 2018-11-30 19:54:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 186.93 Mbit/s
95th percentile per-packet one-way delay: 176.766 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 179.71 Mbit/s
95th percentile per-packet one-way delay: 183.283 ms
Loss rate: 0.87%
-- Flow 2:
Average throughput: 8.12 Mbit/s
95th percentile per-packet one-way delay: 139.228 ms
Loss rate: 4.43%
-- Flow 3:
Average throughput: 5.63 Mbit/s
95th percentile per-packet one-way delay: 140.824 ms
Loss rate: 6.21%
```

Run 4: Report of PCC-Expr — Data Link



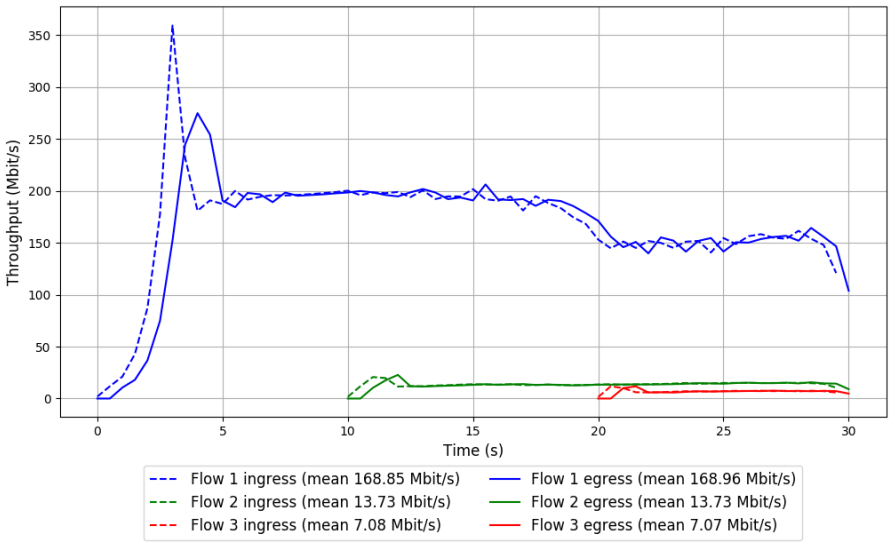


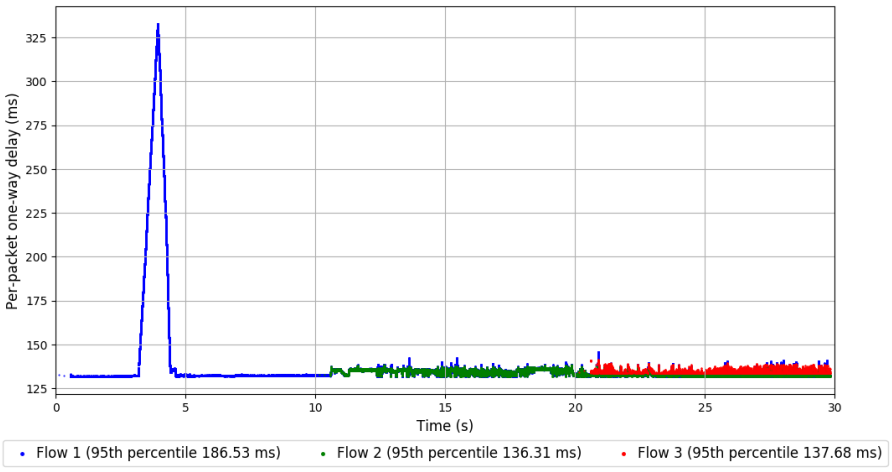
```
Run 5: Statistics of PCC-Expr

Start at: 2018-11-30 18:59:20
End at: 2018-11-30 18:59:50
Local clock offset: 3.289 ms
Remote clock offset: -37.064 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 180.35 Mbit/s
95th percentile per-packet one-way delay: 176.099 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 168.96 Mbit/s
95th percentile per-packet one-way delay: 186.533 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 13.73 Mbit/s
95th percentile per-packet one-way delay: 136.309 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 7.07 Mbit/s
95th percentile per-packet one-way delay: 137.680 ms
Loss rate: 2.11%
```

Run 5: Report of PCC-Expr — Data Link



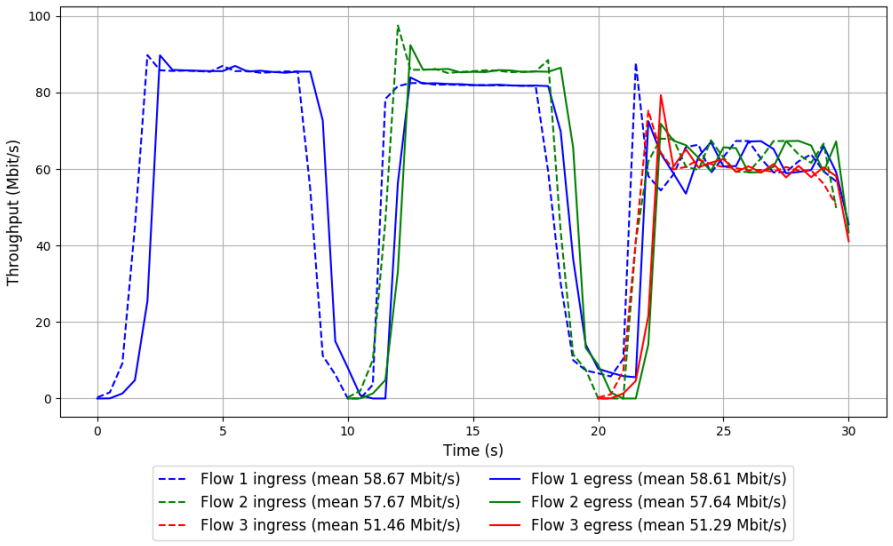


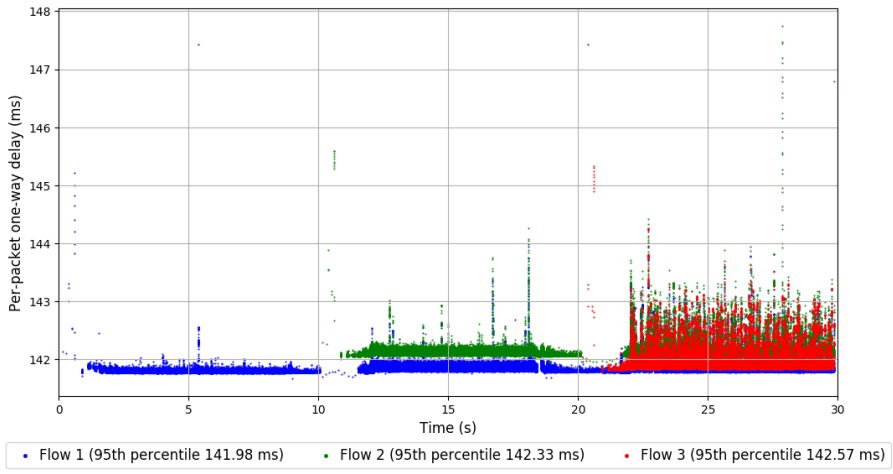
```
Run 1: Statistics of QUIC Cubic

Start at: 2018-11-30 16:03:20
End at: 2018-11-30 16:03:50
Local clock offset: 3.641 ms
Remote clock offset: -35.707 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 113.54 Mbit/s
95th percentile per-packet one-way delay: 142.284 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 58.61 Mbit/s
95th percentile per-packet one-way delay: 141.977 ms
Loss rate: 0.81%
-- Flow 2:
Average throughput: 57.64 Mbit/s
95th percentile per-packet one-way delay: 142.327 ms
Loss rate: 1.09%
-- Flow 3:
Average throughput: 51.29 Mbit/s
95th percentile per-packet one-way delay: 142.573 ms
Loss rate: 2.53%
```

Run 1: Report of QUIC Cubic — Data Link



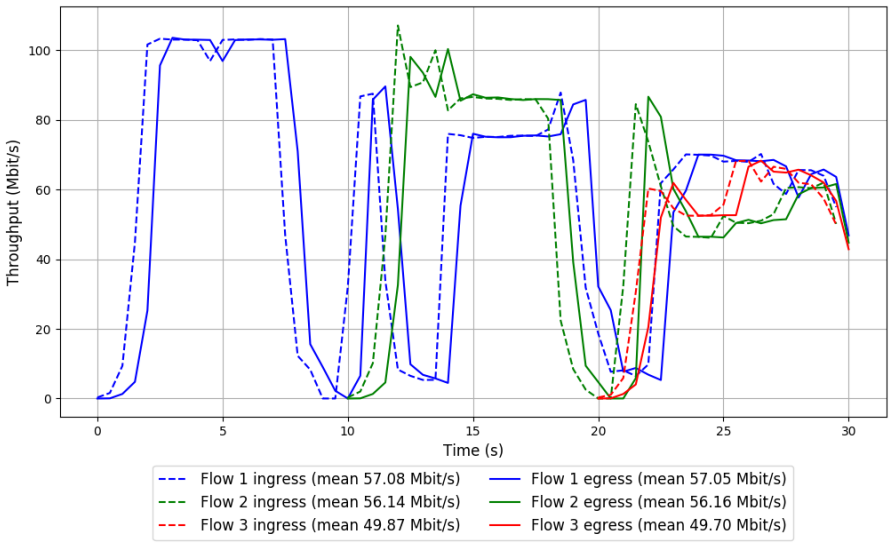


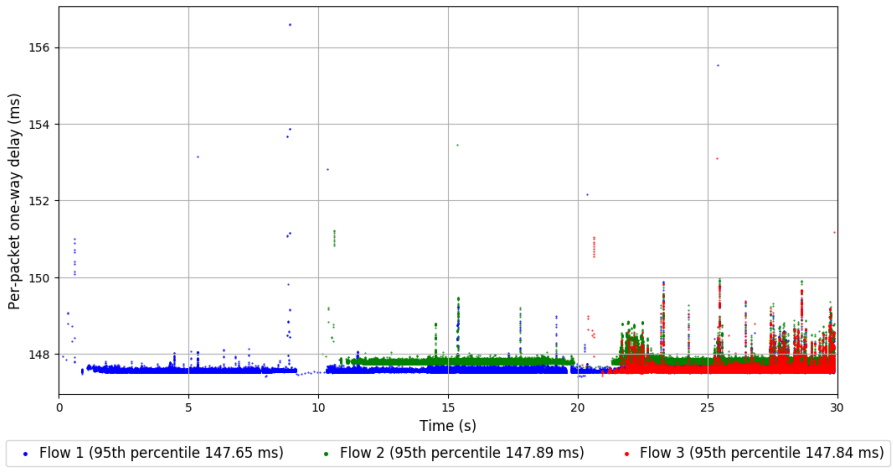
```
Run 2: Statistics of QUIC Cubic

Start at: 2018-11-30 16:52:34
End at: 2018-11-30 16:53:04
Local clock offset: 1.479 ms
Remote clock offset: -42.742 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 110.50 Mbit/s
95th percentile per-packet one-way delay: 147.855 ms
Loss rate: 1.13%
-- Flow 1:
Average throughput: 57.05 Mbit/s
95th percentile per-packet one-way delay: 147.651 ms
Loss rate: 0.80%
-- Flow 2:
Average throughput: 56.16 Mbit/s
95th percentile per-packet one-way delay: 147.894 ms
Loss rate: 1.06%
-- Flow 3:
Average throughput: 49.70 Mbit/s
95th percentile per-packet one-way delay: 147.841 ms
Loss rate: 2.46%
```

Run 2: Report of QUIC Cubic — Data Link



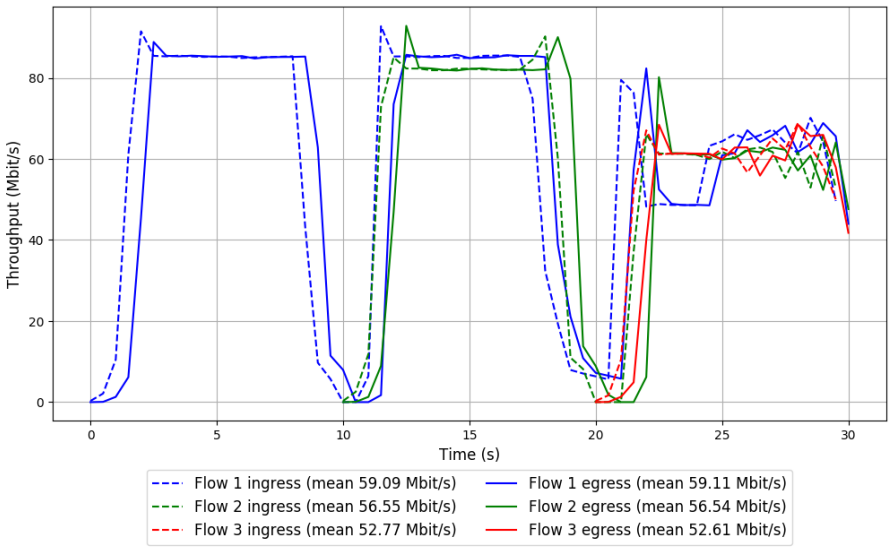


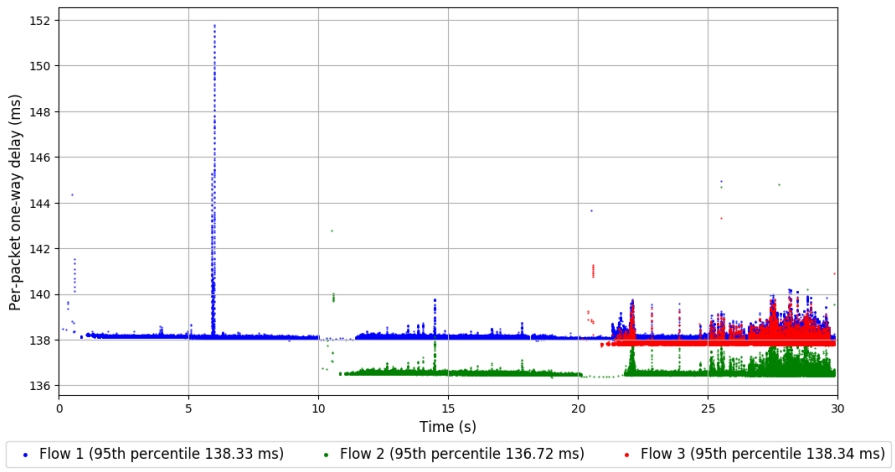
```
Run 3: Statistics of QUIC Cubic

Start at: 2018-11-30 17:56:34
End at: 2018-11-30 17:57:04
Local clock offset: 0.07 ms
Remote clock offset: -41.226 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 113.79 Mbit/s
95th percentile per-packet one-way delay: 138.212 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 59.11 Mbit/s
95th percentile per-packet one-way delay: 138.327 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 56.54 Mbit/s
95th percentile per-packet one-way delay: 136.725 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 52.61 Mbit/s
95th percentile per-packet one-way delay: 138.336 ms
Loss rate: 2.33%
```

Run 3: Report of QUIC Cubic — Data Link



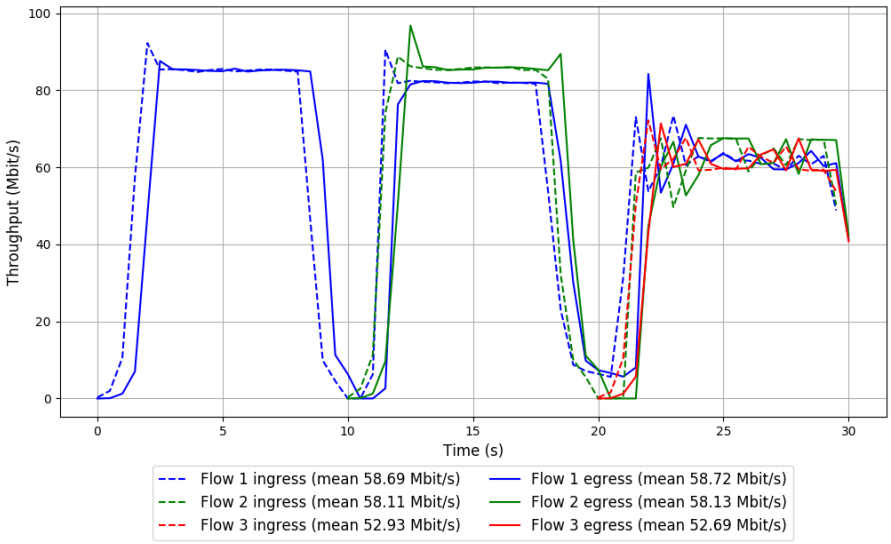


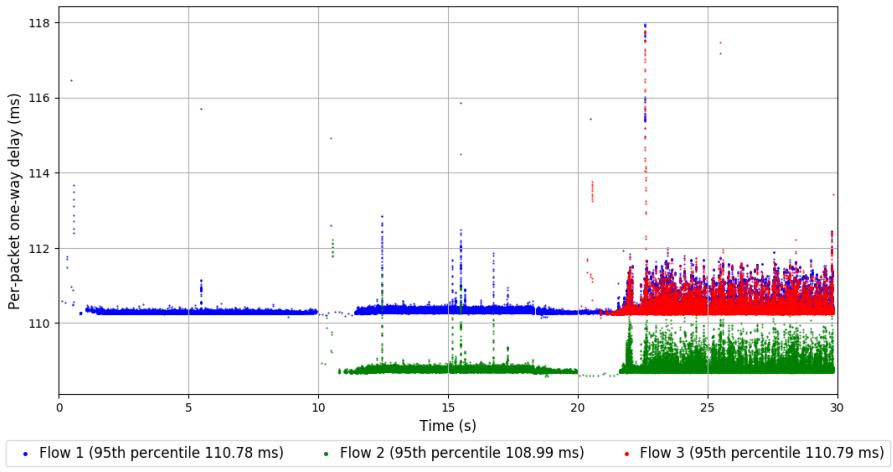
```
Run 4: Statistics of QUIC Cubic

Start at: 2018-11-30 18:42:55
End at: 2018-11-30 18:43:25
Local clock offset: 3.506 ms
Remote clock offset: -14.234 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 114.47 Mbit/s
95th percentile per-packet one-way delay: 110.632 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 58.72 Mbit/s
95th percentile per-packet one-way delay: 110.780 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 58.13 Mbit/s
95th percentile per-packet one-way delay: 108.990 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 52.69 Mbit/s
95th percentile per-packet one-way delay: 110.791 ms
Loss rate: 2.48%
```

Run 4: Report of QUIC Cubic — Data Link



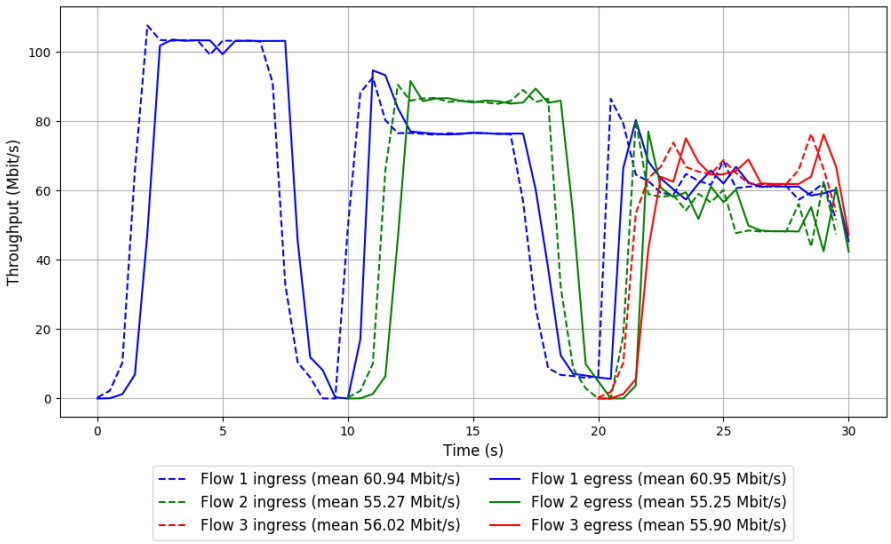


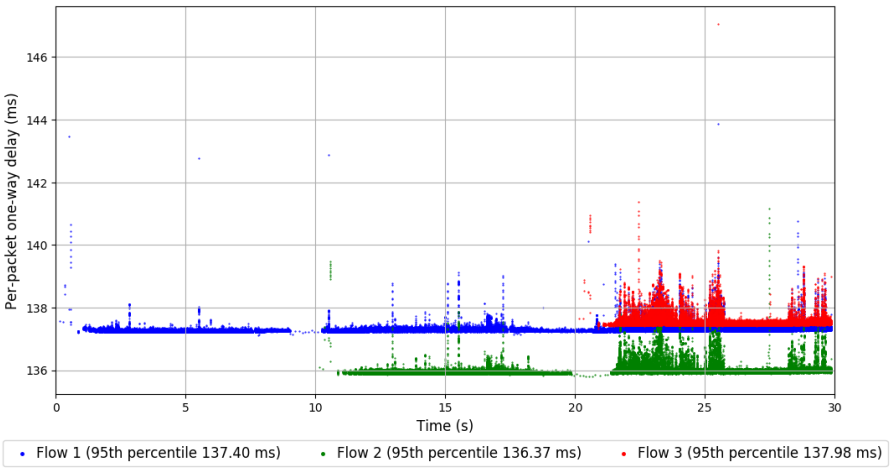
```
Run 5: Statistics of QUIC Cubic

Start at: 2018-11-30 19:11:21
End at: 2018-11-30 19:11:51
Local clock offset: 4.07 ms
Remote clock offset: -39.856 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 115.85 Mbit/s
95th percentile per-packet one-way delay: 137.559 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 60.95 Mbit/s
95th percentile per-packet one-way delay: 137.400 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 55.25 Mbit/s
95th percentile per-packet one-way delay: 136.369 ms
Loss rate: 1.00%
-- Flow 3:
Average throughput: 55.90 Mbit/s
95th percentile per-packet one-way delay: 137.977 ms
Loss rate: 2.27%
```

Run 5: Report of QUIC Cubic — Data Link



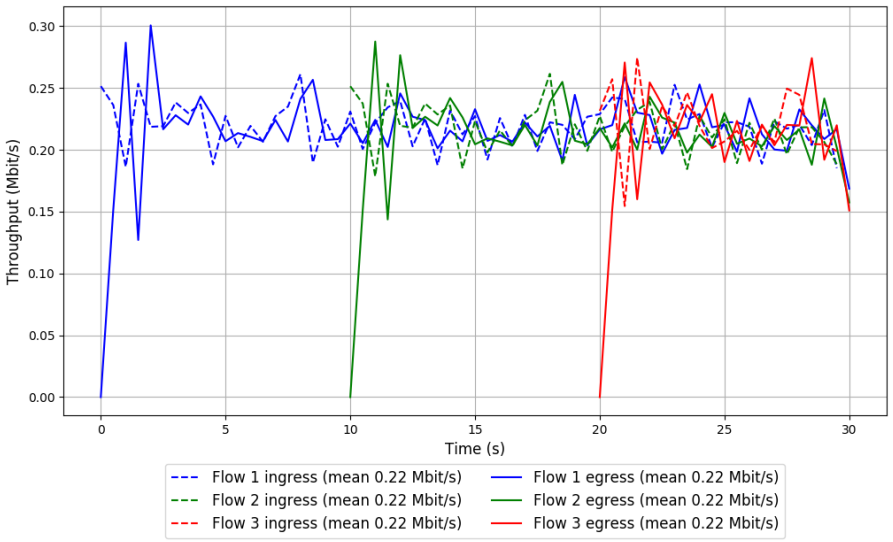


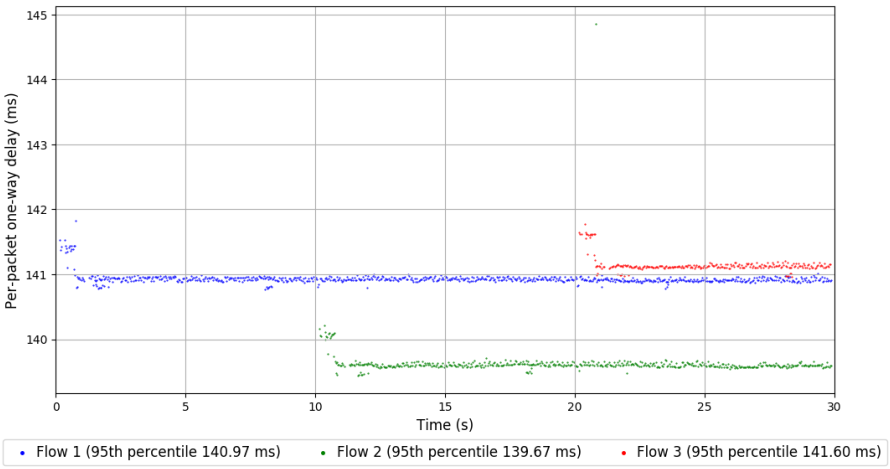
```
Run 1: Statistics of SCReAM

Start at: 2018-11-30 15:57:26
End at: 2018-11-30 15:57:56
Local clock offset: 1.219 ms
Remote clock offset: -37.015 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 141.146 ms
Loss rate: 1.03%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 140.975 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 139.672 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 141.600 ms
Loss rate: 2.22%
```

Run 1: Report of SCReAM — Data Link



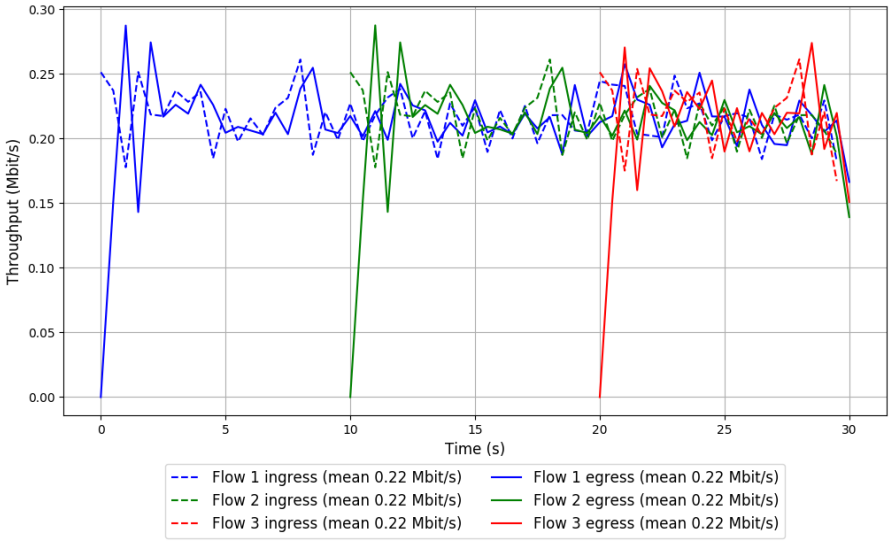


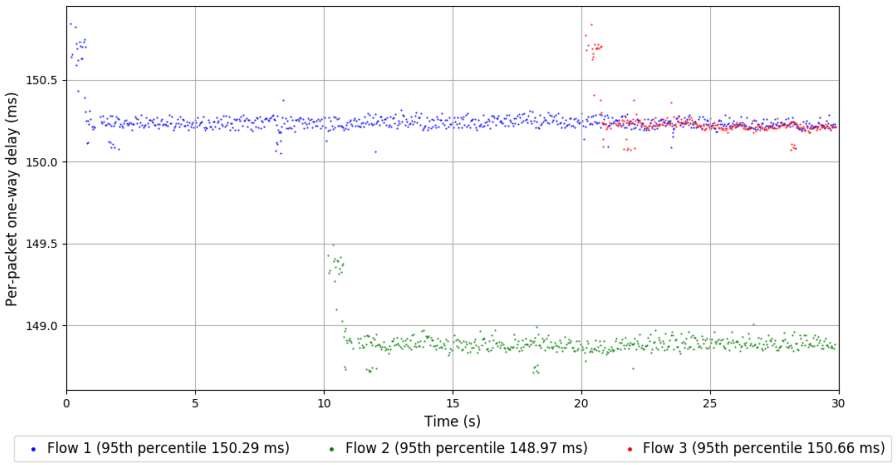
```
Run 2: Statistics of SCReAM

Start at: 2018-11-30 16:41:17
End at: 2018-11-30 16:41:47
Local clock offset: -0.697 ms
Remote clock offset: -46.914 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 150.283 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 150.288 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 148.966 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 150.663 ms
Loss rate: 1.87%
```

Run 2: Report of SCReAM — Data Link



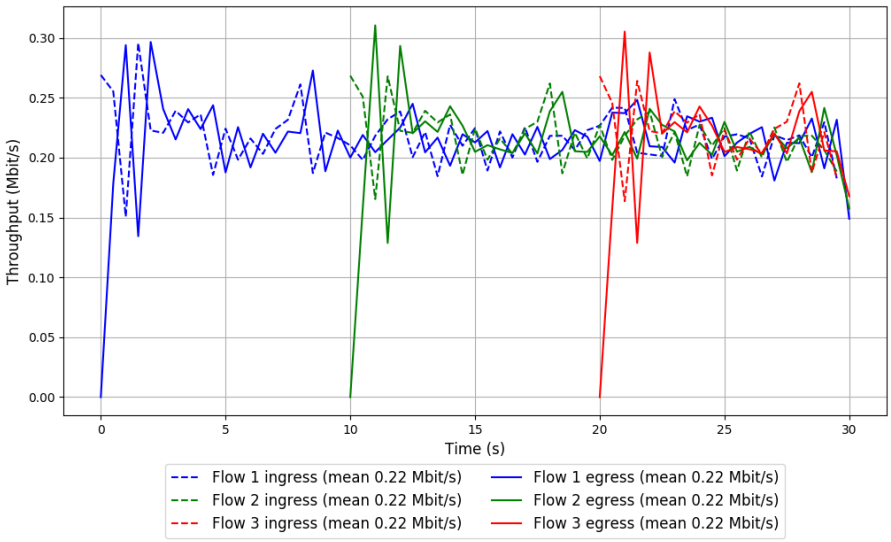


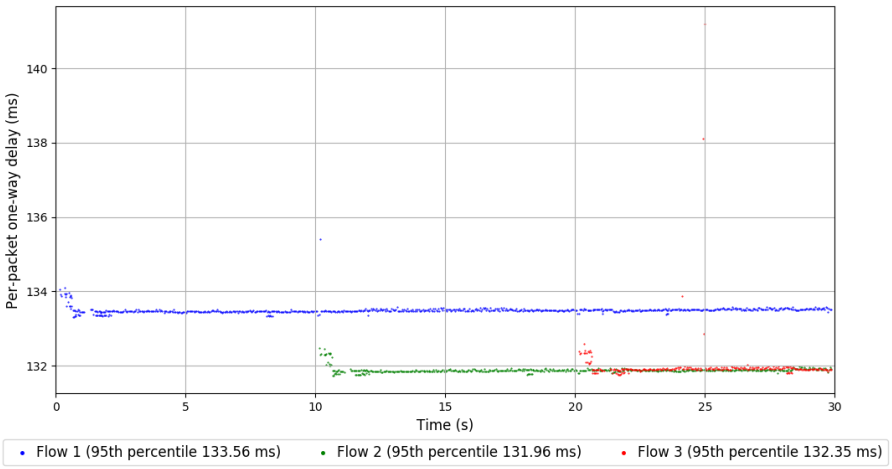
```
Run 3: Statistics of SCReAM

Start at: 2018-11-30 17:52:16
End at: 2018-11-30 17:52:46
Local clock offset: 1.804 ms
Remote clock offset: -35.161 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 133.538 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 133.555 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 131.957 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 132.348 ms
Loss rate: 1.83%
```

Run 3: Report of SCReAM — Data Link



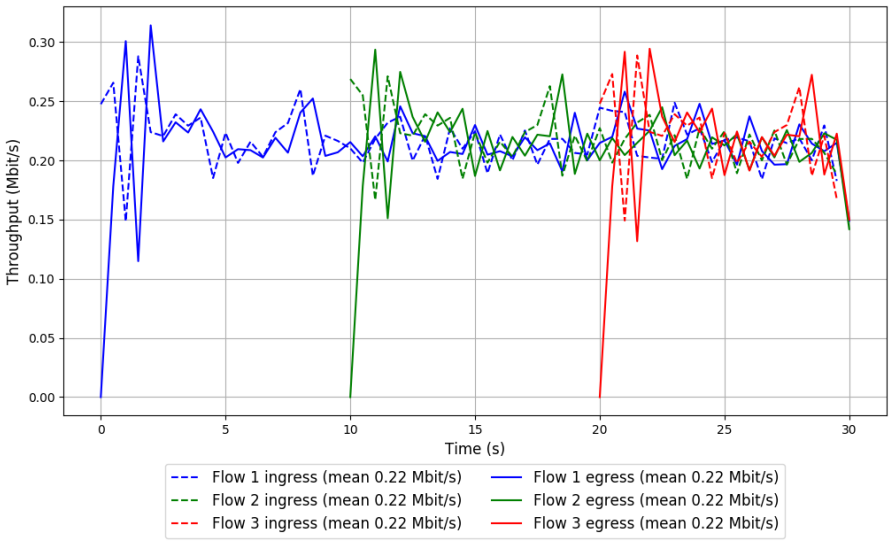


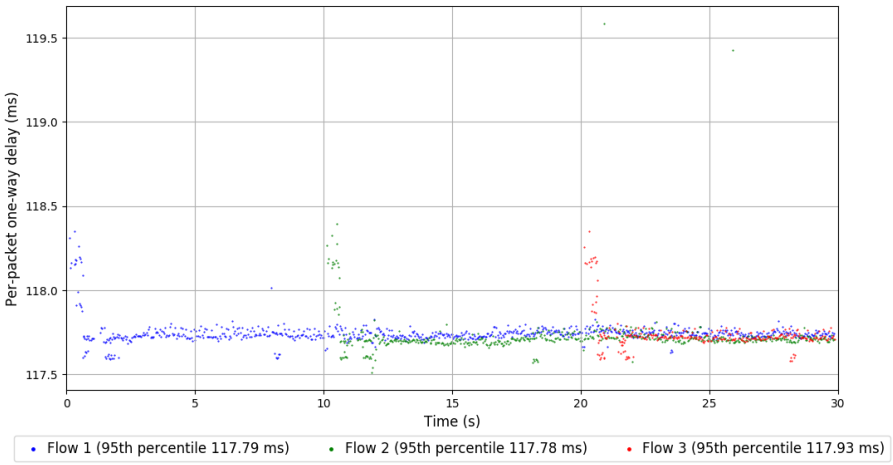
```
Run 4: Statistics of SCReAM

Start at: 2018-11-30 18:31:48
End at: 2018-11-30 18:32:18
Local clock offset: 3.008 ms
Remote clock offset: -22.458 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 117.793 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 117.789 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 117.783 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 117.930 ms
Loss rate: 1.48%
```

Run 4: Report of SCReAM — Data Link



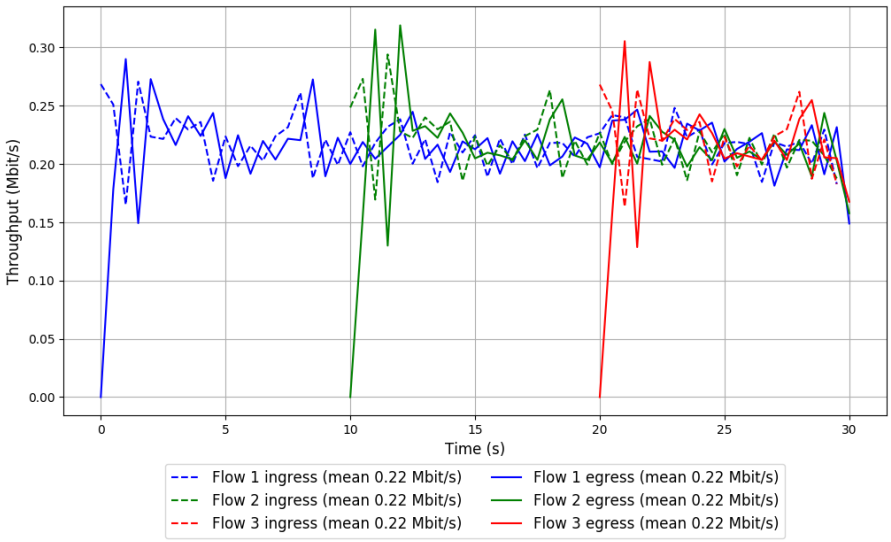


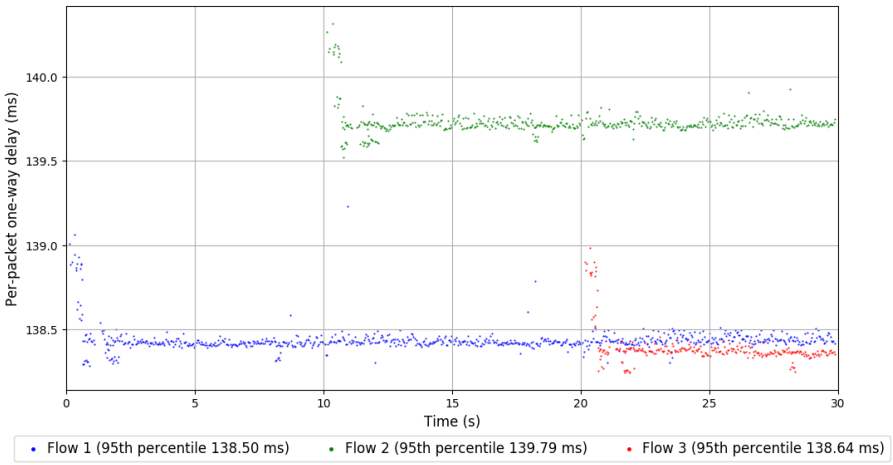
```
Run 5: Statistics of SCReAM

Start at: 2018-11-30 19:07:01
End at: 2018-11-30 19:07:31
Local clock offset: 3.232 ms
Remote clock offset: -43.228 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 139.756 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 138.496 ms
Loss rate: 0.64%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 139.792 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 138.637 ms
Loss rate: 1.83%
```

Run 5: Report of SCReAM — Data Link



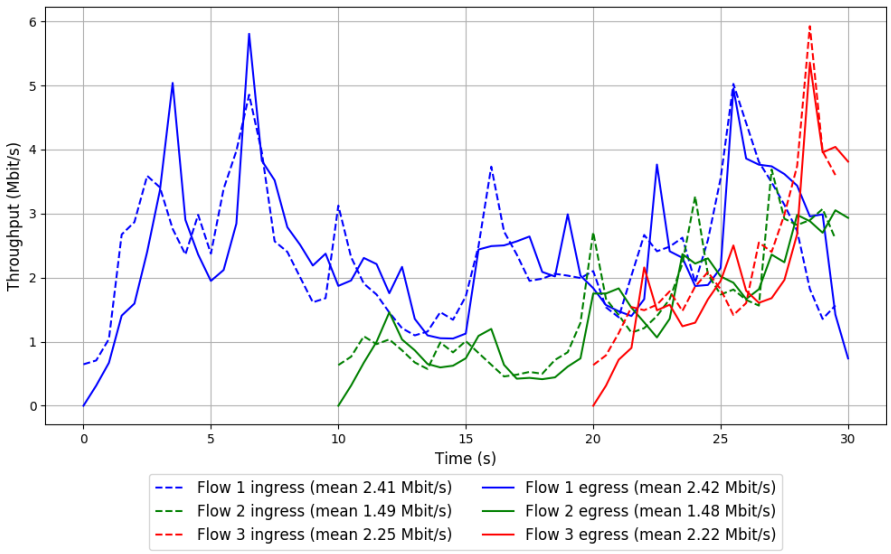


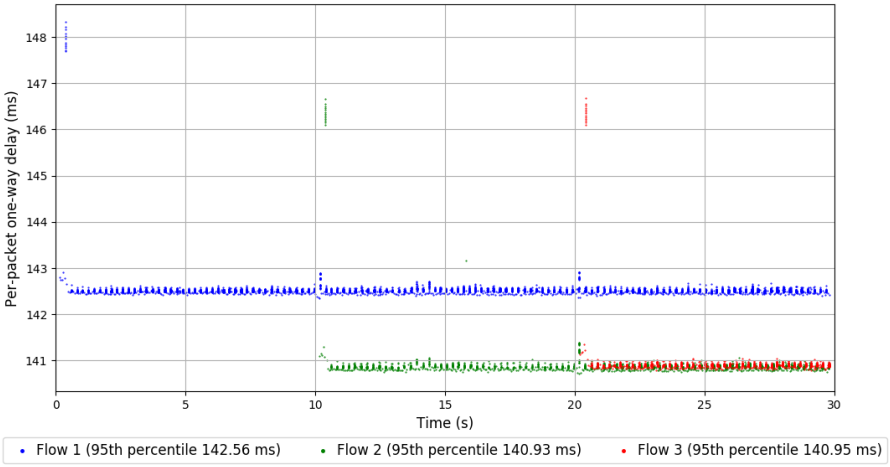
```
Run 1: Statistics of Sprout

Start at: 2018-11-30 15:24:03
End at: 2018-11-30 15:24:33
Local clock offset: 1.81 ms
Remote clock offset: -37.437 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 4.12 Mbit/s
95th percentile per-packet one-way delay: 142.547 ms
Loss rate: 1.51%
-- Flow 1:
Average throughput: 2.42 Mbit/s
95th percentile per-packet one-way delay: 142.564 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 1.48 Mbit/s
95th percentile per-packet one-way delay: 140.930 ms
Loss rate: 2.07%
-- Flow 3:
Average throughput: 2.22 Mbit/s
95th percentile per-packet one-way delay: 140.950 ms
Loss rate: 3.82%
```

Run 1: Report of Sprout — Data Link



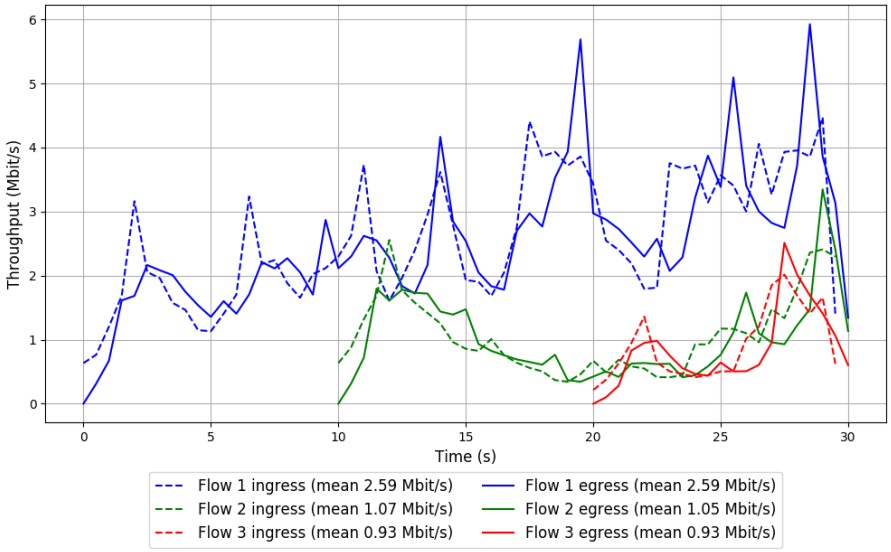


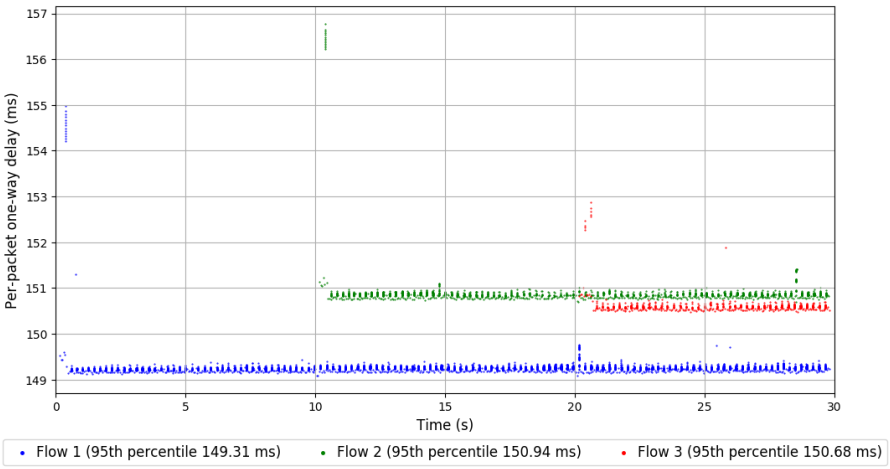
```
Run 2: Statistics of Sprout

Start at: 2018-11-30 16:24:59
End at: 2018-11-30 16:25:29
Local clock offset: 1.823 ms
Remote clock offset: -45.545 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.59 Mbit/s
95th percentile per-packet one-way delay: 150.884 ms
Loss rate: 1.47%
-- Flow 1:
Average throughput: 2.59 Mbit/s
95th percentile per-packet one-way delay: 149.305 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 1.05 Mbit/s
95th percentile per-packet one-way delay: 150.942 ms
Loss rate: 2.74%
-- Flow 3:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 150.678 ms
Loss rate: 3.35%
```

Run 2: Report of Sprout — Data Link



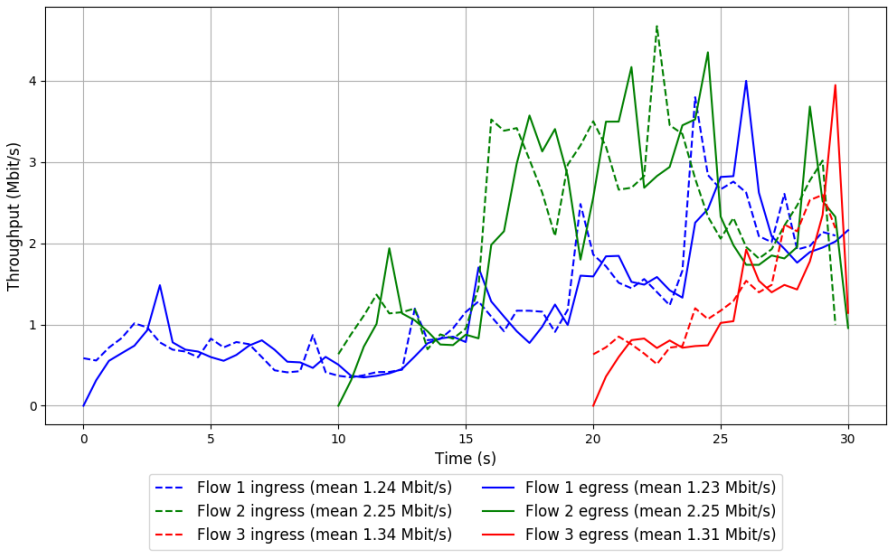


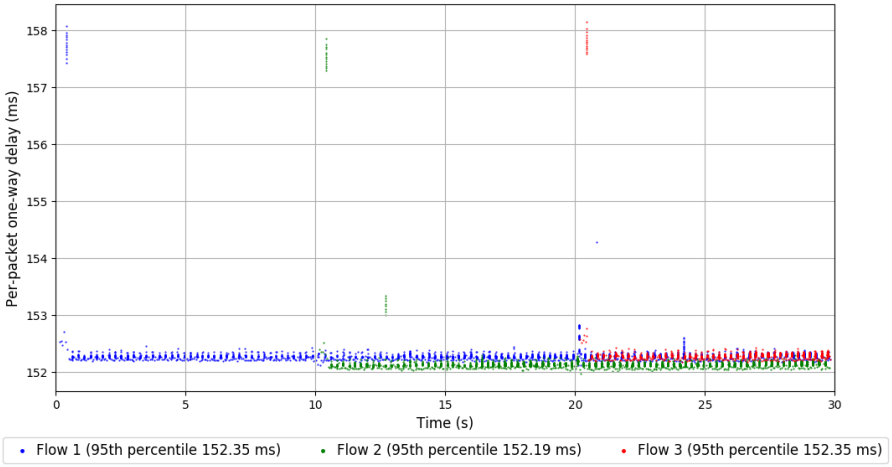
```
Run 3: Statistics of Sprout

Start at: 2018-11-30 17:20:09
End at: 2018-11-30 17:20:39
Local clock offset: 3.843 ms
Remote clock offset: -45.761 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.15 Mbit/s
95th percentile per-packet one-way delay: 152.328 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 152.346 ms
Loss rate: 1.40%
-- Flow 2:
Average throughput: 2.25 Mbit/s
95th percentile per-packet one-way delay: 152.193 ms
Loss rate: 1.11%
-- Flow 3:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 152.352 ms
Loss rate: 3.97%
```

Run 3: Report of Sprout — Data Link



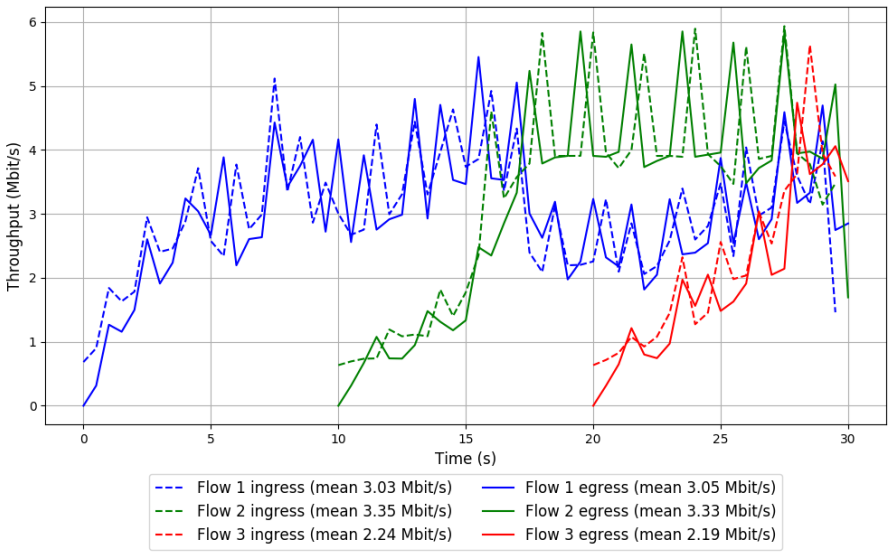


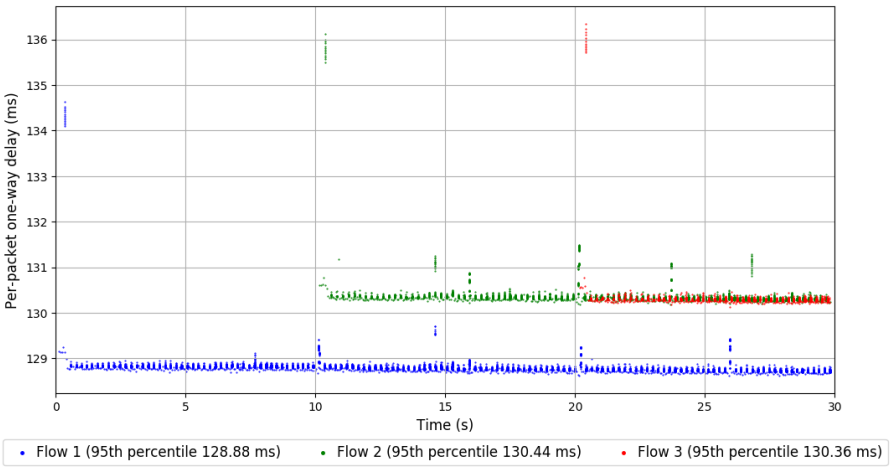
```
Run 4: Statistics of Sprout

Start at: 2018-11-30 18:19:34
End at: 2018-11-30 18:20:04
Local clock offset: 2.104 ms
Remote clock offset: -34.523 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 5.97 Mbit/s
95th percentile per-packet one-way delay: 130.374 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 3.05 Mbit/s
95th percentile per-packet one-way delay: 128.876 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 3.33 Mbit/s
95th percentile per-packet one-way delay: 130.443 ms
Loss rate: 1.34%
-- Flow 3:
Average throughput: 2.19 Mbit/s
95th percentile per-packet one-way delay: 130.357 ms
Loss rate: 4.14%
```

Run 4: Report of Sprout — Data Link



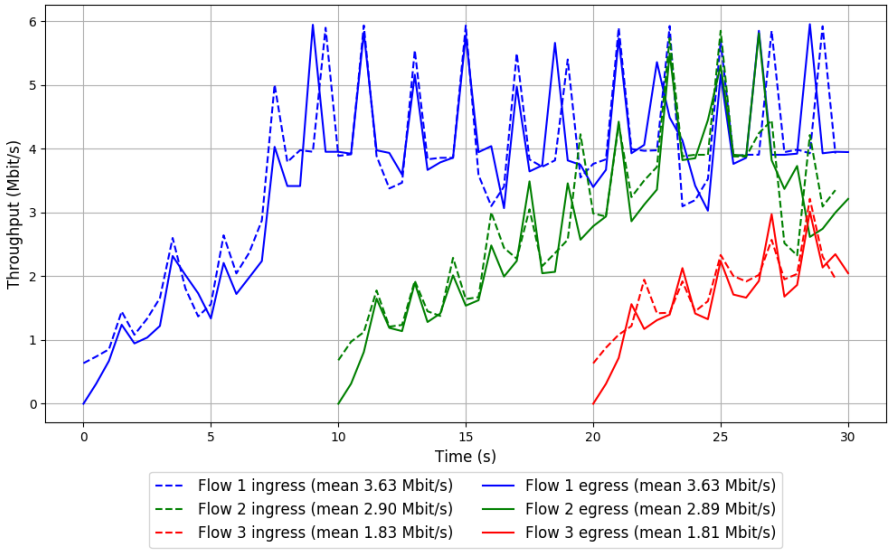


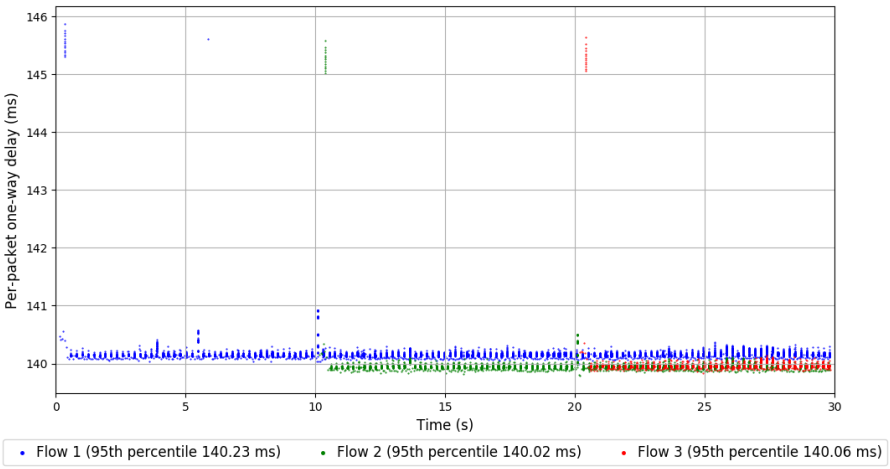
```
Run 5: Statistics of Sprout

Start at: 2018-11-30 18:54:54
End at: 2018-11-30 18:55:24
Local clock offset: 3.236 ms
Remote clock offset: -43.881 ms

# Below is generated by plot.py at 2018-11-30 19:54:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.13 Mbit/s
95th percentile per-packet one-way delay: 140.209 ms
Loss rate: 1.25%
-- Flow 1:
Average throughput: 3.63 Mbit/s
95th percentile per-packet one-way delay: 140.232 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 2.89 Mbit/s
95th percentile per-packet one-way delay: 140.024 ms
Loss rate: 1.48%
-- Flow 3:
Average throughput: 1.81 Mbit/s
95th percentile per-packet one-way delay: 140.056 ms
Loss rate: 2.67%
```

Run 5: Report of Sprout — Data Link



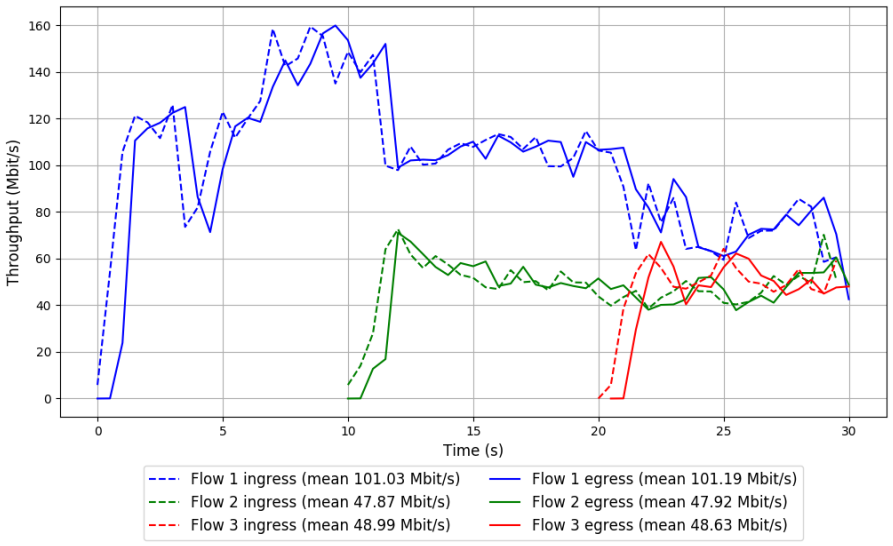


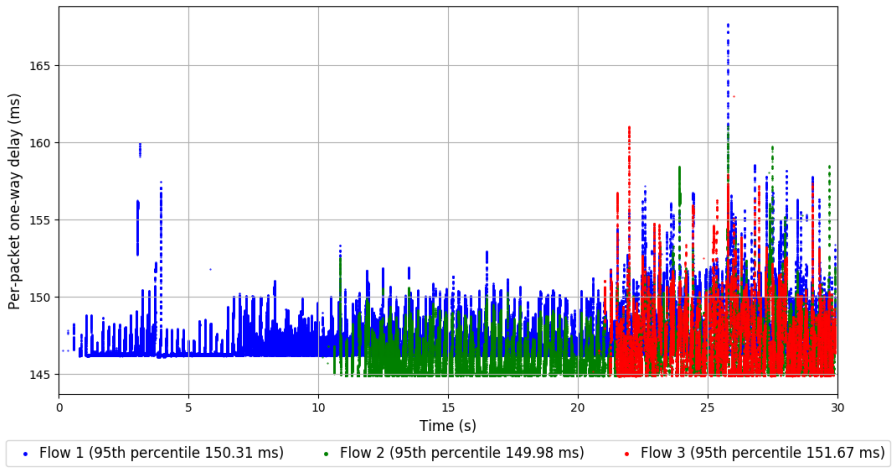
```
Run 1: Statistics of TaoVA-100x

Start at: 2018-11-30 16:18:42
End at: 2018-11-30 16:19:12
Local clock offset: 2.833 ms
Remote clock offset: -40.798 ms

# Below is generated by plot.py at 2018-11-30 19:56:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 148.21 Mbit/s
95th percentile per-packet one-way delay: 150.405 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 101.19 Mbit/s
95th percentile per-packet one-way delay: 150.306 ms
Loss rate: 0.52%
-- Flow 2:
Average throughput: 47.92 Mbit/s
95th percentile per-packet one-way delay: 149.981 ms
Loss rate: 0.96%
-- Flow 3:
Average throughput: 48.63 Mbit/s
95th percentile per-packet one-way delay: 151.671 ms
Loss rate: 2.99%
```

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



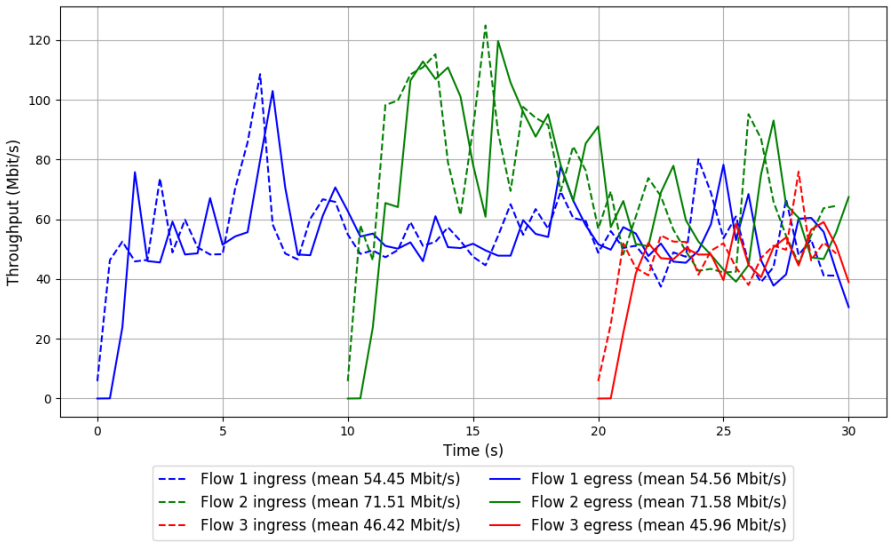


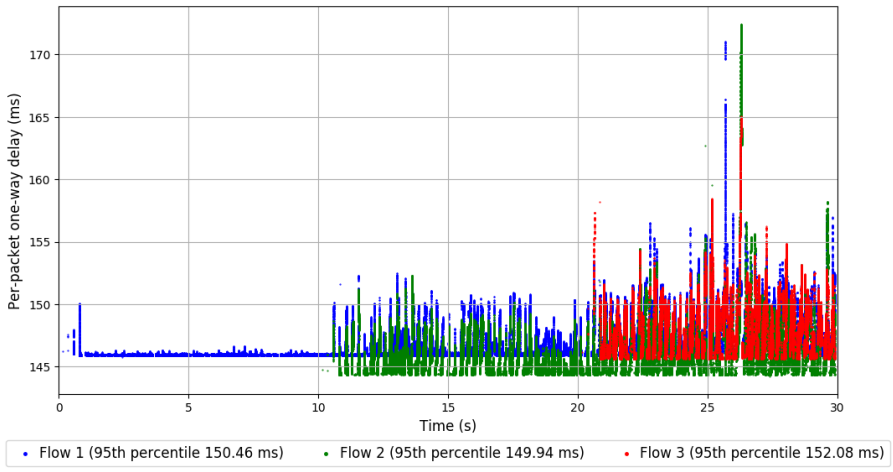
```
Run 2: Statistics of TaoVA-100x

Start at: 2018-11-30 17:13:58
End at: 2018-11-30 17:14:28
Local clock offset: 4.252 ms
Remote clock offset: -38.973 ms

# Below is generated by plot.py at 2018-11-30 19:56:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 117.09 Mbit/s
95th percentile per-packet one-way delay: 150.661 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 54.56 Mbit/s
95th percentile per-packet one-way delay: 150.455 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 71.58 Mbit/s
95th percentile per-packet one-way delay: 149.944 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 45.96 Mbit/s
95th percentile per-packet one-way delay: 152.077 ms
Loss rate: 3.05%
```

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



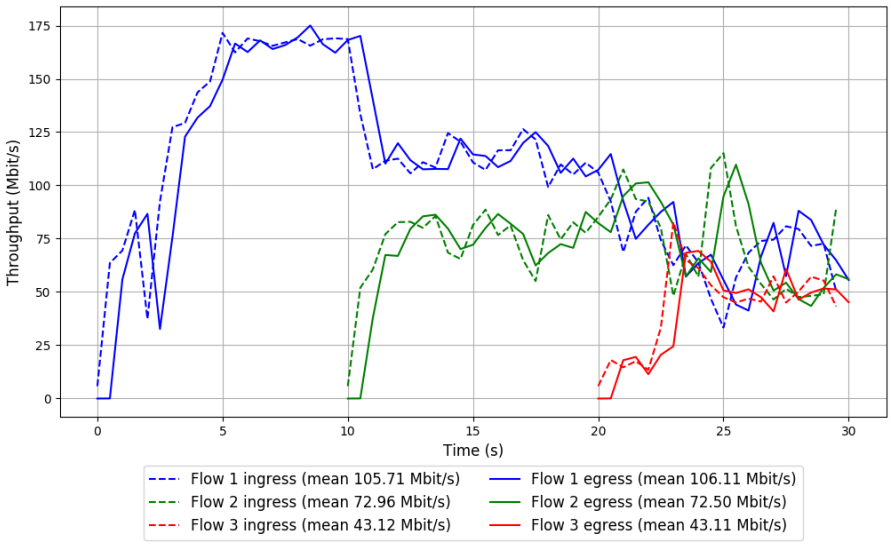


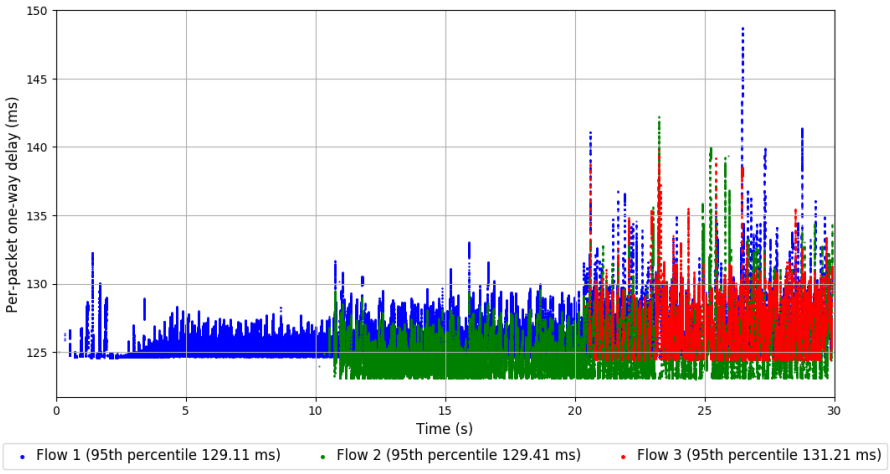
```
Run 3: Statistics of TaoVA-100x

Start at: 2018-11-30 18:09:27
End at: 2018-11-30 18:09:57
Local clock offset: 0.252 ms
Remote clock offset: -29.554 ms

# Below is generated by plot.py at 2018-11-30 19:57:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 168.35 Mbit/s
95th percentile per-packet one-way delay: 129.542 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 106.11 Mbit/s
95th percentile per-packet one-way delay: 129.111 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 72.50 Mbit/s
95th percentile per-packet one-way delay: 129.408 ms
Loss rate: 1.37%
-- Flow 3:
Average throughput: 43.11 Mbit/s
95th percentile per-packet one-way delay: 131.208 ms
Loss rate: 2.04%
```

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



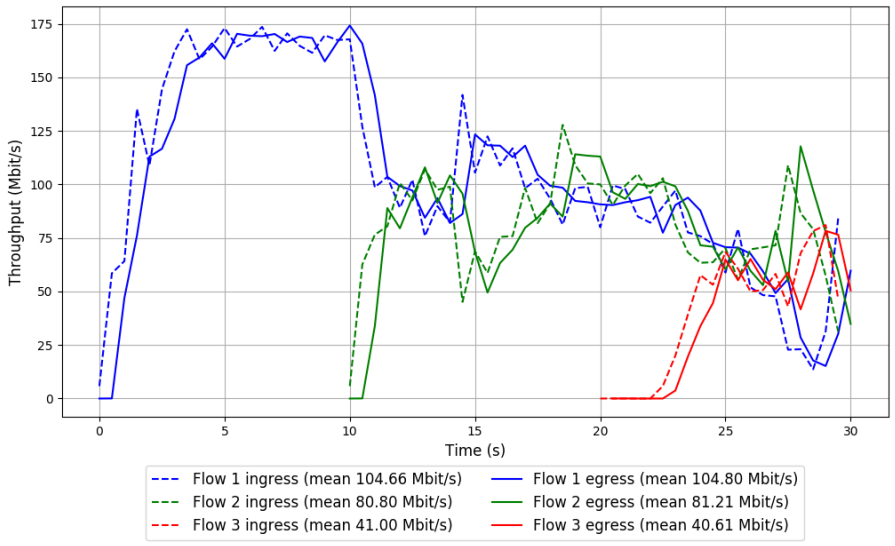


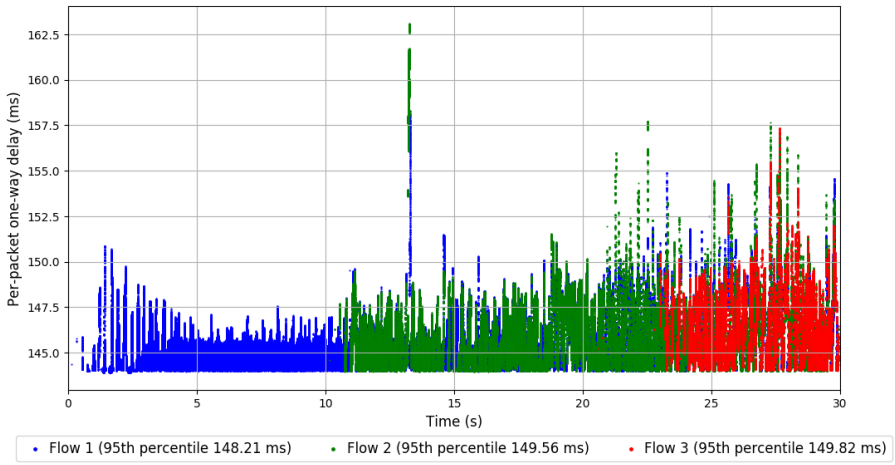
```
Run 4: Statistics of TaoVA-100x

Start at: 2018-11-30 18:50:25
End at: 2018-11-30 18:50:55
Local clock offset: 3.482 ms
Remote clock offset: -47.982 ms

# Below is generated by plot.py at 2018-11-30 19:57:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 171.44 Mbit/s
95th percentile per-packet one-way delay: 148.835 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 104.80 Mbit/s
95th percentile per-packet one-way delay: 148.208 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 81.21 Mbit/s
95th percentile per-packet one-way delay: 149.563 ms
Loss rate: 0.49%
-- Flow 3:
Average throughput: 40.61 Mbit/s
95th percentile per-packet one-way delay: 149.824 ms
Loss rate: 2.91%
```

Run 4: Report of TaoVA-100x — Data Link



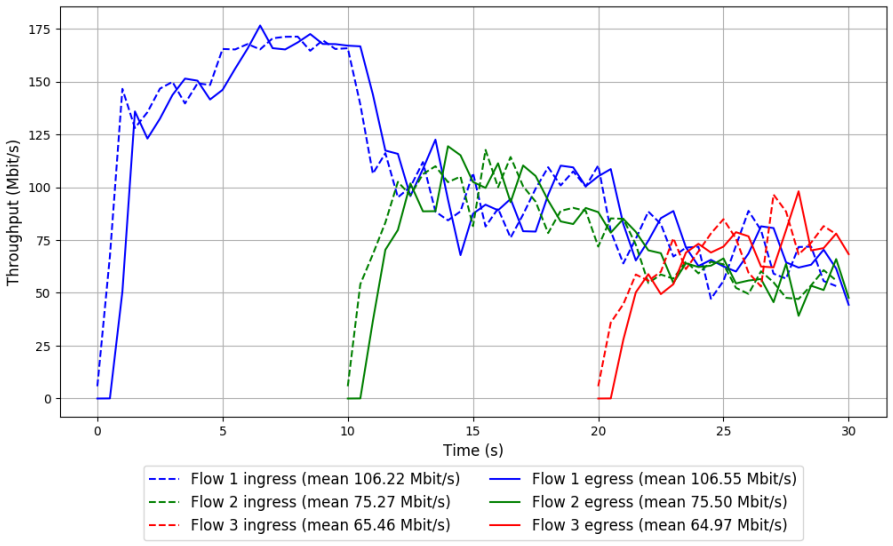


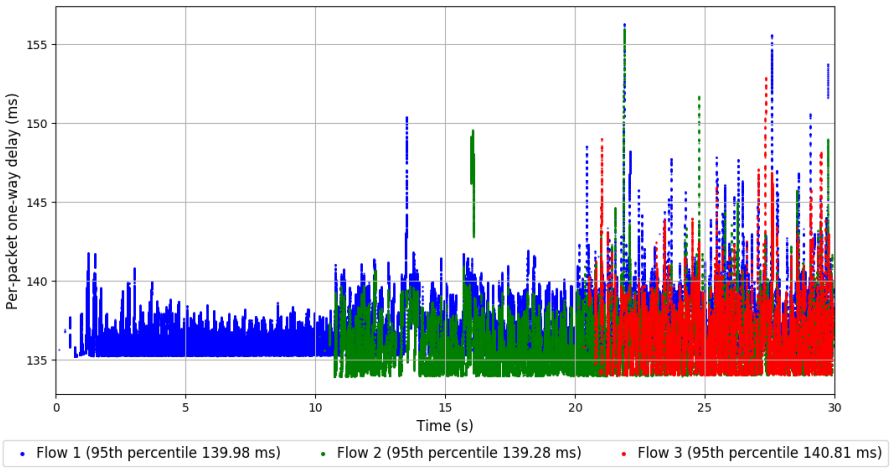
```
Run 5: Statistics of TaoVA-100x

Start at: 2018-11-30 19:24:20
End at: 2018-11-30 19:24:50
Local clock offset: -2.215 ms
Remote clock offset: -40.894 ms

# Below is generated by plot.py at 2018-11-30 19:57:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 177.98 Mbit/s
95th percentile per-packet one-way delay: 139.927 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 106.55 Mbit/s
95th percentile per-packet one-way delay: 139.981 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 75.50 Mbit/s
95th percentile per-packet one-way delay: 139.282 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 64.97 Mbit/s
95th percentile per-packet one-way delay: 140.813 ms
Loss rate: 2.74%
```

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



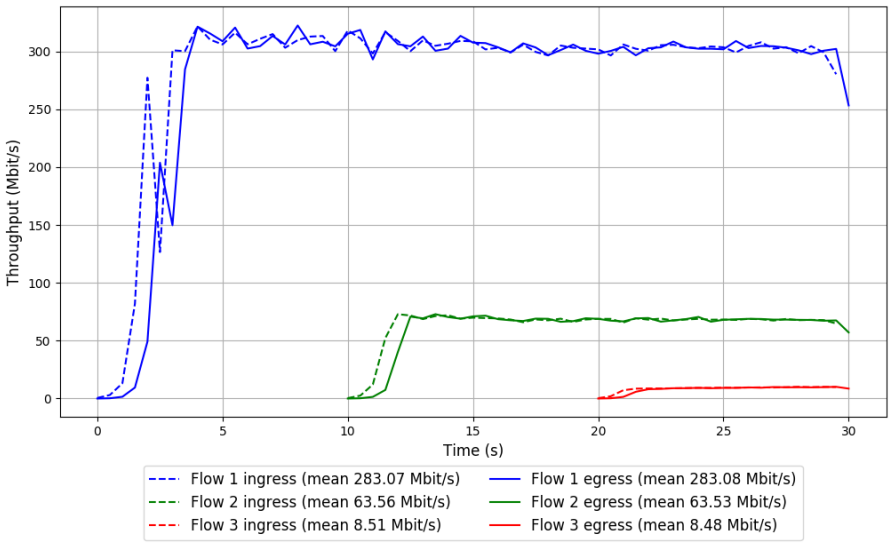


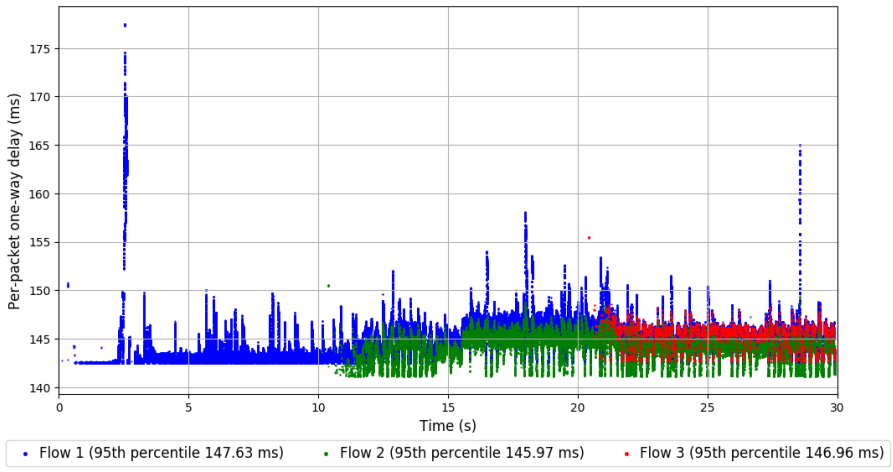
```
Run 1: Statistics of TCP Vegas

Start at: 2018-11-30 15:58:43
End at: 2018-11-30 15:59:13
Local clock offset: 2.107 ms
Remote clock offset: -37.77 ms

# Below is generated by plot.py at 2018-11-30 19:57:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 327.97 Mbit/s
95th percentile per-packet one-way delay: 147.419 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 283.08 Mbit/s
95th percentile per-packet one-way delay: 147.629 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 63.53 Mbit/s
95th percentile per-packet one-way delay: 145.965 ms
Loss rate: 1.12%
-- Flow 3:
Average throughput: 8.48 Mbit/s
95th percentile per-packet one-way delay: 146.960 ms
Loss rate: 2.61%
```

Run 1: Report of TCP Vegas — Data Link



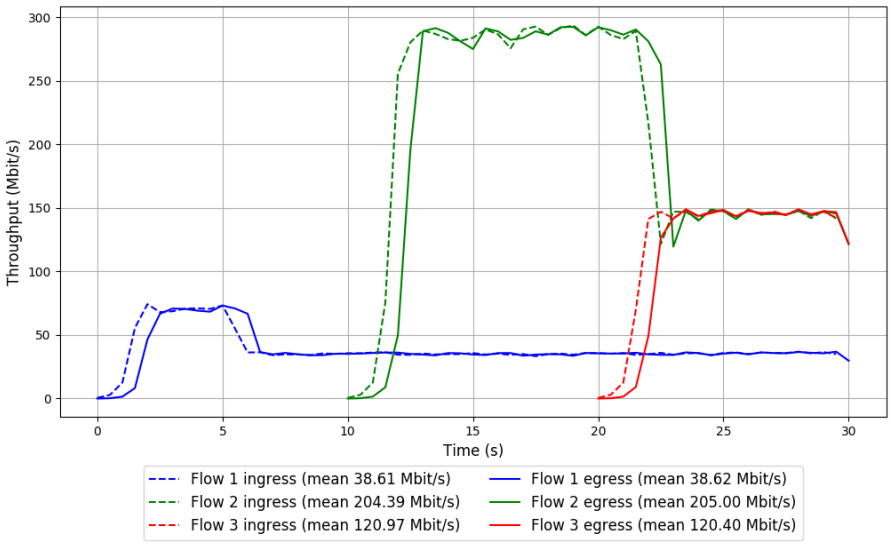


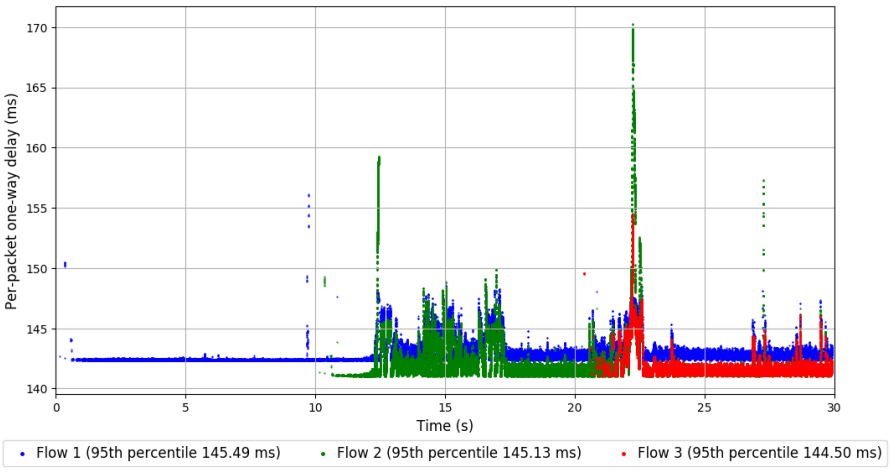
```
Run 2: Statistics of TCP Vegas

Start at: 2018-11-30 16:42:34
End at: 2018-11-30 16:43:04
Local clock offset: -0.687 ms
Remote clock offset: -39.137 ms

# Below is generated by plot.py at 2018-11-30 19:57:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 214.24 Mbit/s
95th percentile per-packet one-way delay: 145.110 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 38.62 Mbit/s
95th percentile per-packet one-way delay: 145.494 ms
Loss rate: 0.67%
-- Flow 2:
Average throughput: 205.00 Mbit/s
95th percentile per-packet one-way delay: 145.130 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 120.40 Mbit/s
95th percentile per-packet one-way delay: 144.497 ms
Loss rate: 2.54%
```

Run 2: Report of TCP Vegas — Data Link



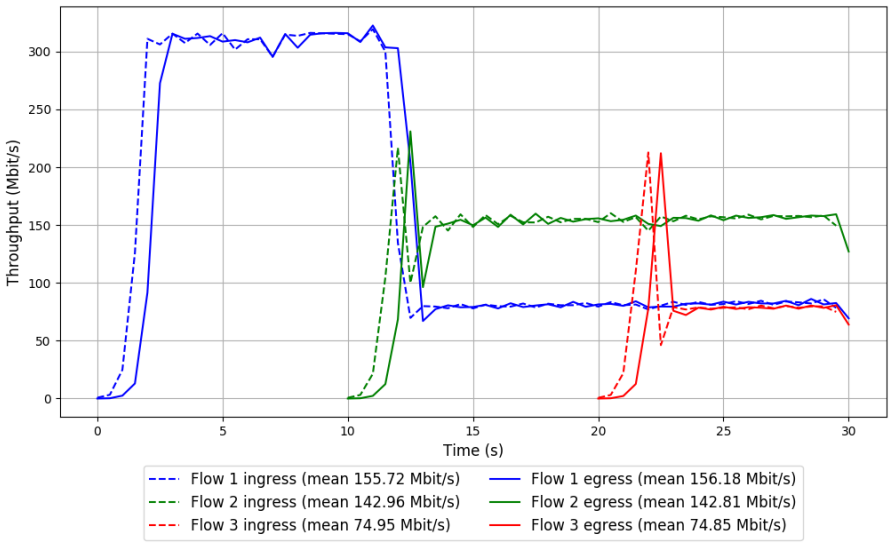


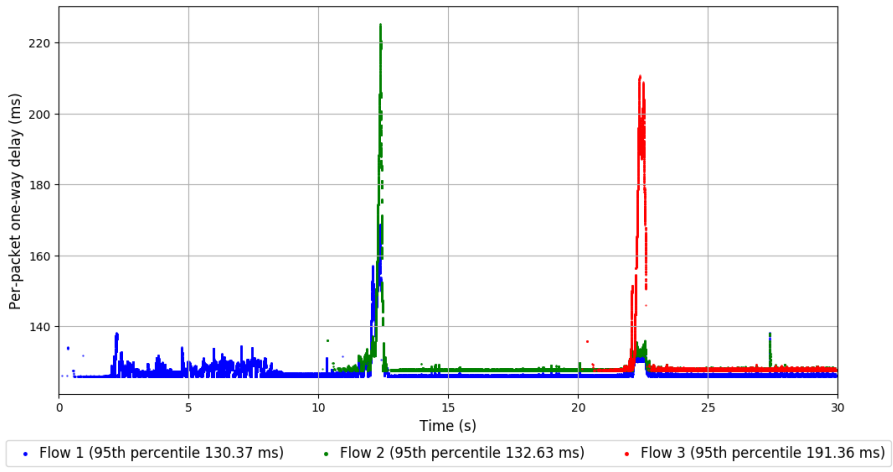
```
Run 3: Statistics of TCP Vegas

Start at: 2018-11-30 17:53:31
End at: 2018-11-30 17:54:01
Local clock offset: 0.607 ms
Remote clock offset: -30.226 ms

# Below is generated by plot.py at 2018-11-30 19:57:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 275.55 Mbit/s
95th percentile per-packet one-way delay: 132.354 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 156.18 Mbit/s
95th percentile per-packet one-way delay: 130.366 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 142.81 Mbit/s
95th percentile per-packet one-way delay: 132.631 ms
Loss rate: 1.08%
-- Flow 3:
Average throughput: 74.85 Mbit/s
95th percentile per-packet one-way delay: 191.361 ms
Loss rate: 2.08%
```

Run 3: Report of TCP Vegas — Data Link



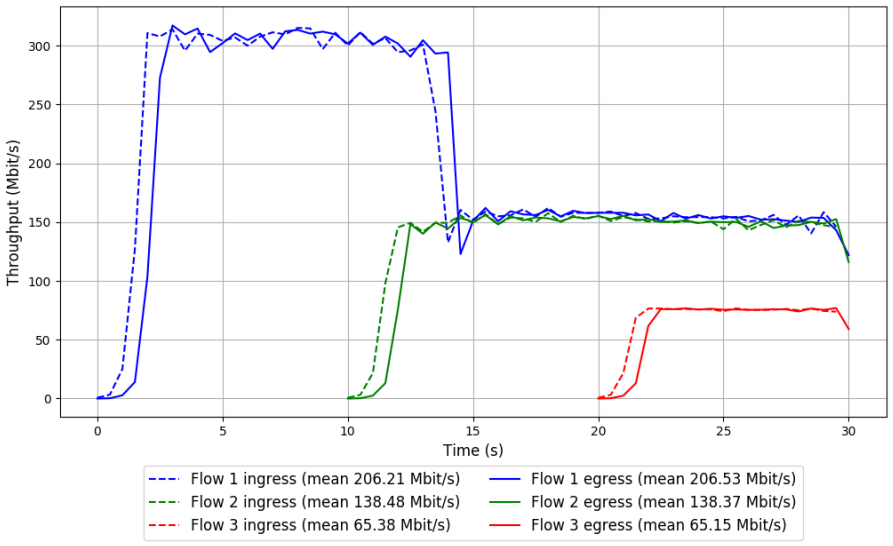


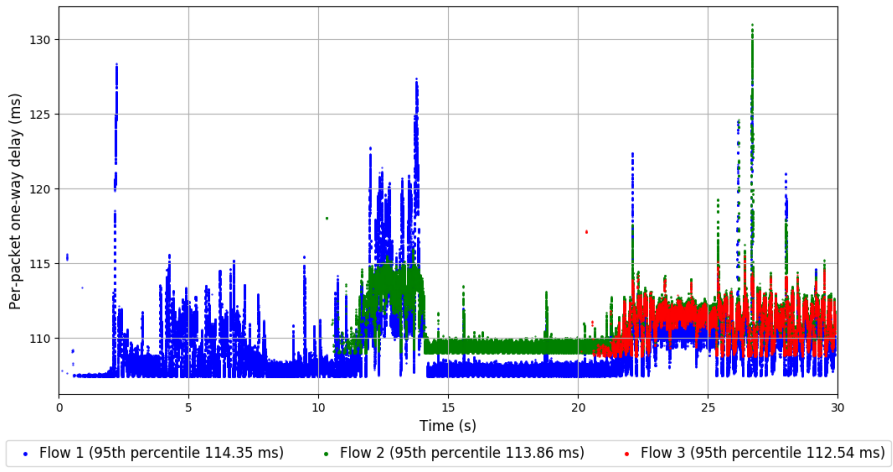
```
Run 4: Statistics of TCP Vegas

Start at: 2018-11-30 18:33:04
End at: 2018-11-30 18:33:34
Local clock offset: 1.341 ms
Remote clock offset: -15.214 ms

# Below is generated by plot.py at 2018-11-30 19:59:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 319.80 Mbit/s
95th percentile per-packet one-way delay: 113.870 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 206.53 Mbit/s
95th percentile per-packet one-way delay: 114.353 ms
Loss rate: 0.49%
-- Flow 2:
Average throughput: 138.37 Mbit/s
95th percentile per-packet one-way delay: 113.855 ms
Loss rate: 1.06%
-- Flow 3:
Average throughput: 65.15 Mbit/s
95th percentile per-packet one-way delay: 112.538 ms
Loss rate: 2.30%
```

Run 4: Report of TCP Vegas — Data Link



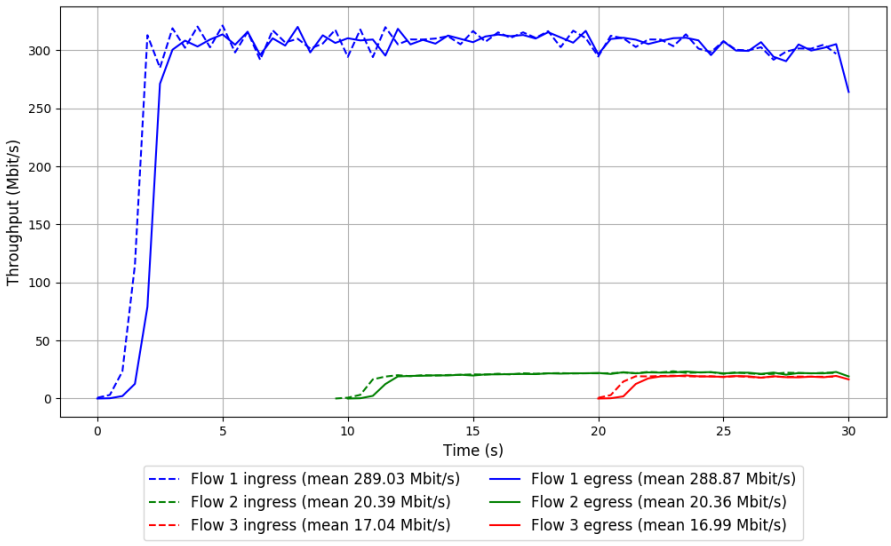


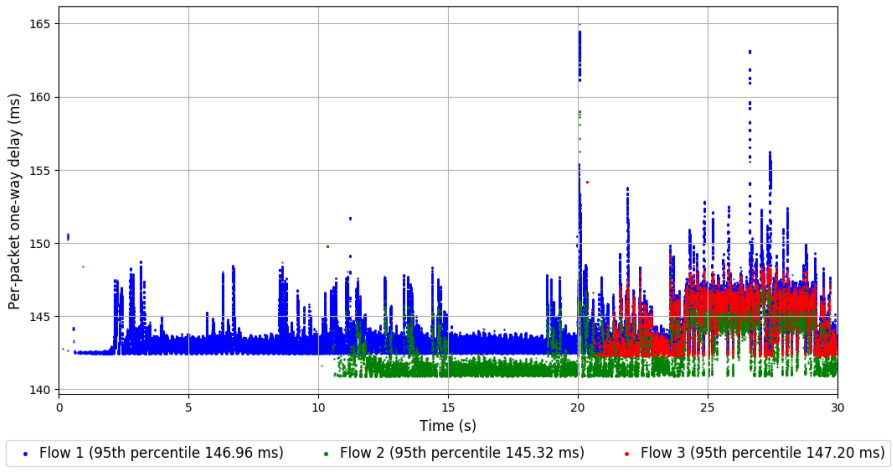
```
Run 5: Statistics of TCP Vegas

Start at: 2018-11-30 19:08:17
End at: 2018-11-30 19:08:47
Local clock offset: 0.636 ms
Remote clock offset: -48.394 ms

# Below is generated by plot.py at 2018-11-30 20:00:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 307.98 Mbit/s
95th percentile per-packet one-way delay: 146.927 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 288.87 Mbit/s
95th percentile per-packet one-way delay: 146.962 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 20.36 Mbit/s
95th percentile per-packet one-way delay: 145.320 ms
Loss rate: 1.08%
-- Flow 3:
Average throughput: 16.99 Mbit/s
95th percentile per-packet one-way delay: 147.199 ms
Loss rate: 2.24%
```

Run 5: Report of TCP Vegas — Data Link



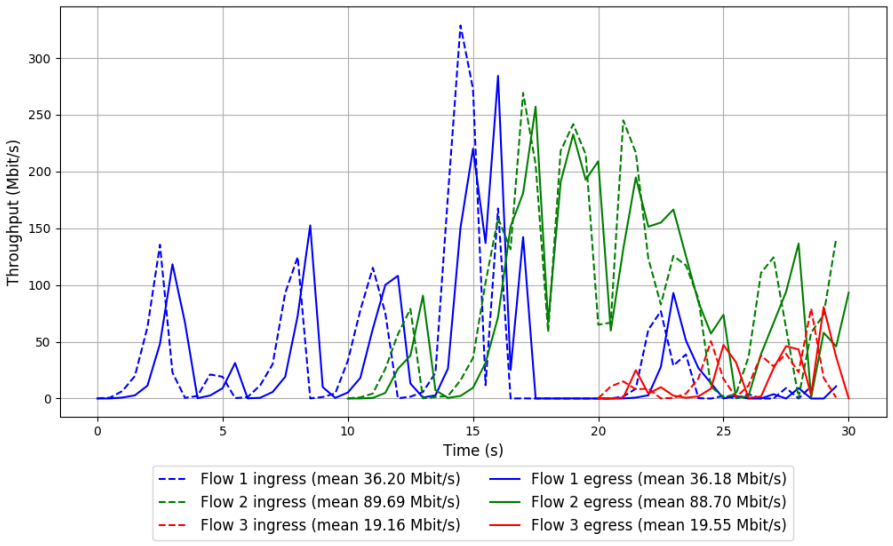


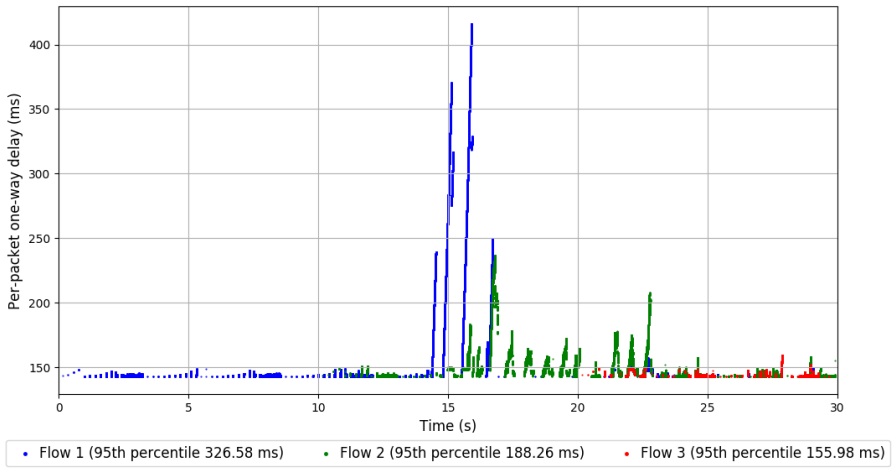
```
Run 1: Statistics of Verus

Start at: 2018-11-30 16:05:05
End at: 2018-11-30 16:05:35
Local clock offset: 1.099 ms
Remote clock offset: -39.323 ms

# Below is generated by plot.py at 2018-11-30 20:00:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 100.27 Mbit/s
95th percentile per-packet one-way delay: 254.115 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 36.18 Mbit/s
95th percentile per-packet one-way delay: 326.584 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 88.70 Mbit/s
95th percentile per-packet one-way delay: 188.262 ms
Loss rate: 2.12%
-- Flow 3:
Average throughput: 19.55 Mbit/s
95th percentile per-packet one-way delay: 155.983 ms
Loss rate: 0.19%
```

Run 1: Report of Verus — Data Link



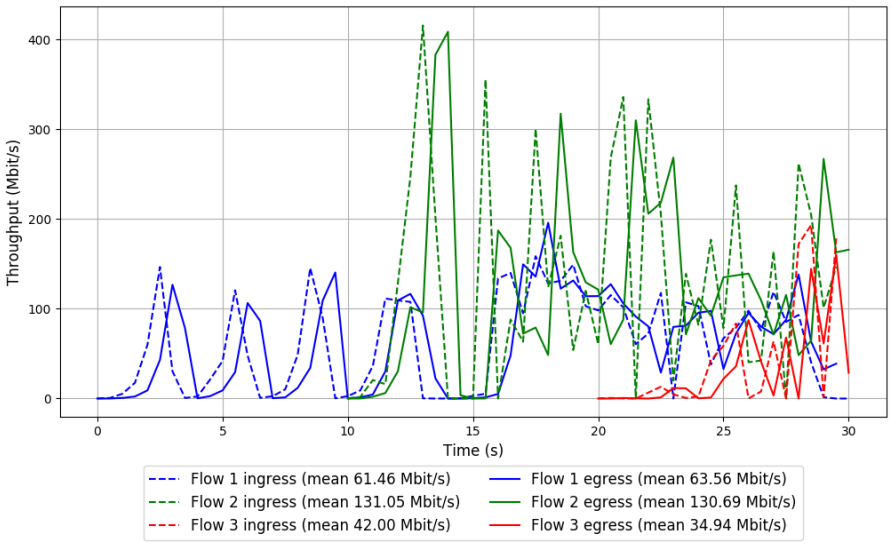


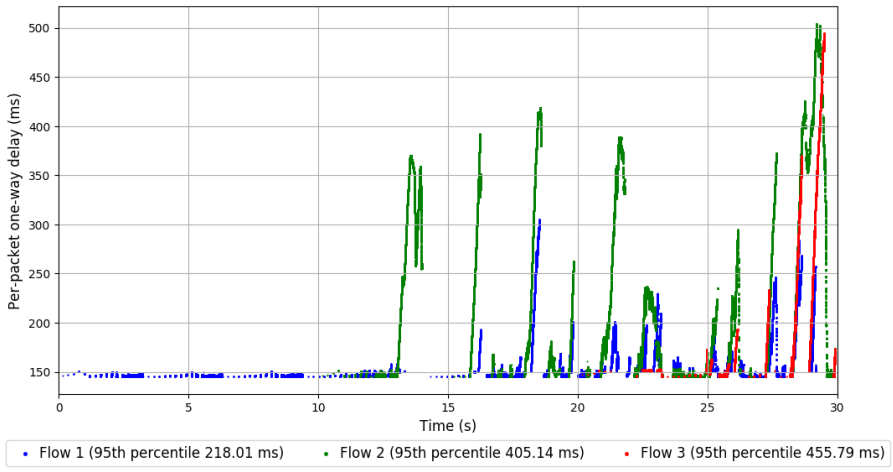
```
Run 2: Statistics of Verus

Start at: 2018-11-30 16:54:18
End at: 2018-11-30 16:54:48
Local clock offset: 4.144 ms
Remote clock offset: -37.926 ms

# Below is generated by plot.py at 2018-11-30 20:00:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 160.17 Mbit/s
95th percentile per-packet one-way delay: 383.951 ms
Loss rate: 2.14%
-- Flow 1:
Average throughput: 63.56 Mbit/s
95th percentile per-packet one-way delay: 218.015 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 130.69 Mbit/s
95th percentile per-packet one-way delay: 405.136 ms
Loss rate: 1.10%
-- Flow 3:
Average throughput: 34.94 Mbit/s
95th percentile per-packet one-way delay: 455.788 ms
Loss rate: 18.10%
```

Run 2: Report of Verus — Data Link



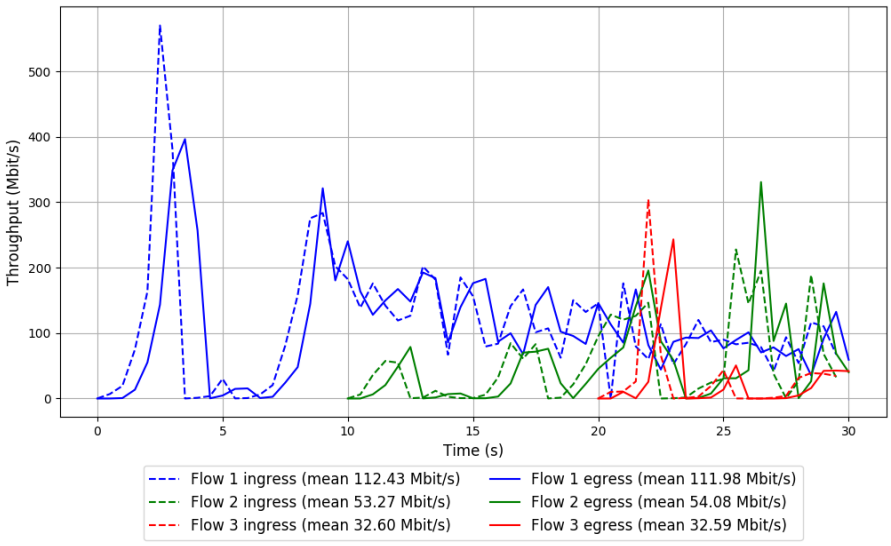


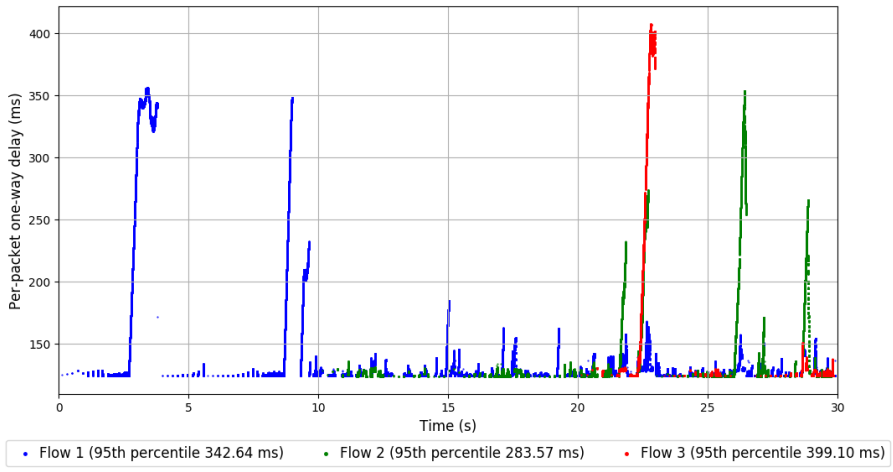
```
Run 3: Statistics of Verus

Start at: 2018-11-30 17:57:58
End at: 2018-11-30 17:58:28
Local clock offset: 3.097 ms
Remote clock offset: -24.753 ms

# Below is generated by plot.py at 2018-11-30 20:00:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 158.20 Mbit/s
95th percentile per-packet one-way delay: 343.809 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 111.98 Mbit/s
95th percentile per-packet one-way delay: 342.637 ms
Loss rate: 0.72%
-- Flow 2:
Average throughput: 54.08 Mbit/s
95th percentile per-packet one-way delay: 283.571 ms
Loss rate: 0.24%
-- Flow 3:
Average throughput: 32.59 Mbit/s
95th percentile per-packet one-way delay: 399.099 ms
Loss rate: 0.04%
```

Run 3: Report of Verus — Data Link



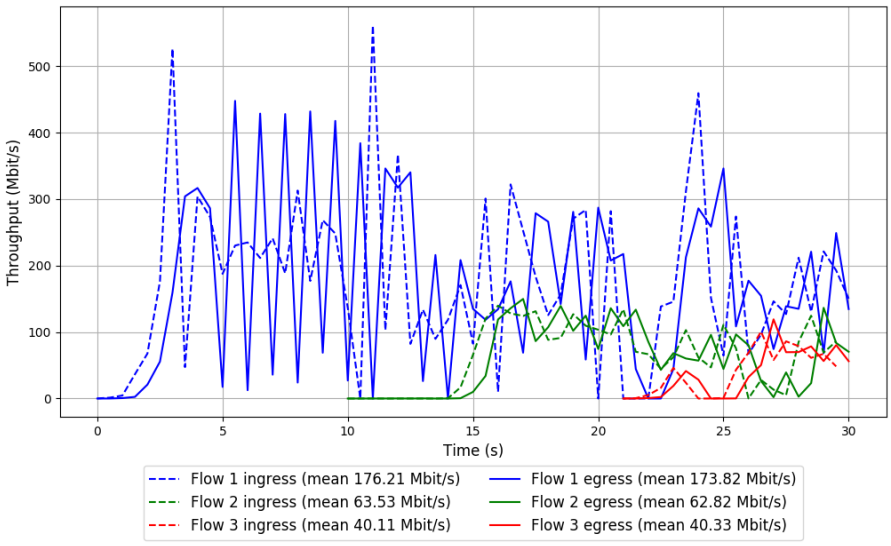


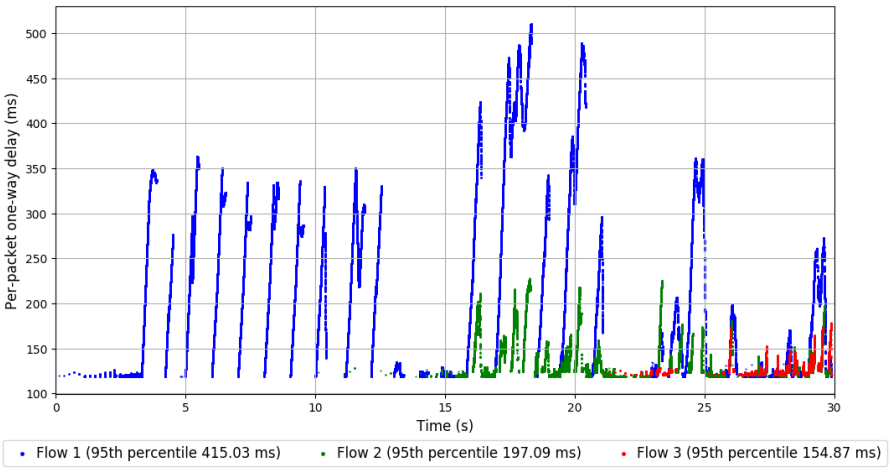
```
Run 4: Statistics of Verus

Start at: 2018-11-30 18:44:24
End at: 2018-11-30 18:44:54
Local clock offset: 4.457 ms
Remote clock offset: -23.777 ms

# Below is generated by plot.py at 2018-11-30 20:00:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 227.25 Mbit/s
95th percentile per-packet one-way delay: 394.580 ms
Loss rate: 2.62%
-- Flow 1:
Average throughput: 173.82 Mbit/s
95th percentile per-packet one-way delay: 415.033 ms
Loss rate: 2.90%
-- Flow 2:
Average throughput: 62.82 Mbit/s
95th percentile per-packet one-way delay: 197.091 ms
Loss rate: 2.13%
-- Flow 3:
Average throughput: 40.33 Mbit/s
95th percentile per-packet one-way delay: 154.873 ms
Loss rate: 0.06%
```

Run 4: Report of Verus — Data Link



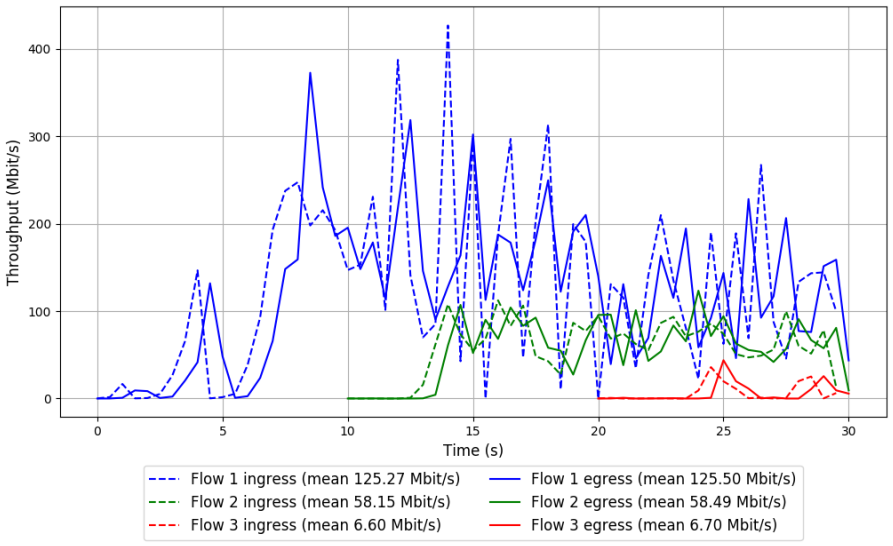


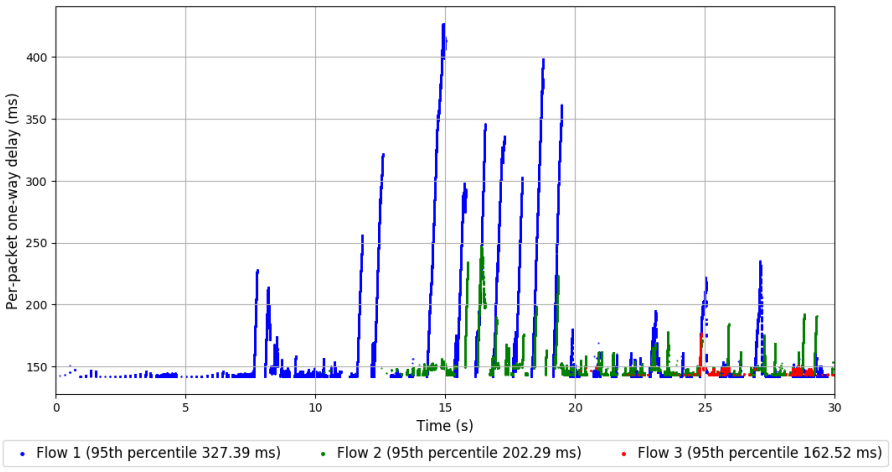
```
Run 5: Statistics of Verus

Start at: 2018-11-30 19:12:45
End at: 2018-11-30 19:13:15
Local clock offset: 2.39 ms
Remote clock offset: -47.621 ms

# Below is generated by plot.py at 2018-11-30 20:00:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 165.55 Mbit/s
95th percentile per-packet one-way delay: 313.284 ms
Loss rate: 0.98%
-- Flow 1:
Average throughput: 125.50 Mbit/s
95th percentile per-packet one-way delay: 327.387 ms
Loss rate: 1.24%
-- Flow 2:
Average throughput: 58.49 Mbit/s
95th percentile per-packet one-way delay: 202.288 ms
Loss rate: 0.16%
-- Flow 3:
Average throughput: 6.70 Mbit/s
95th percentile per-packet one-way delay: 162.516 ms
Loss rate: 0.61%
```

Run 5: Report of Verus — Data Link



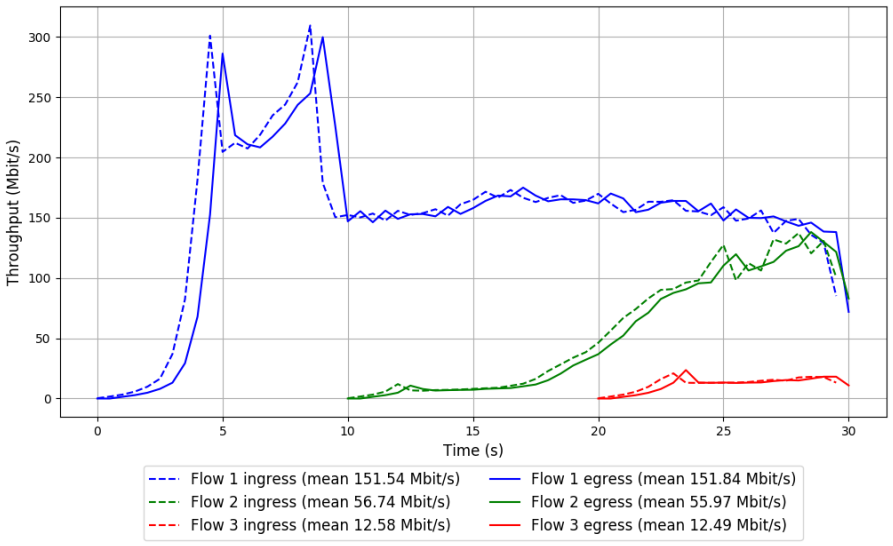


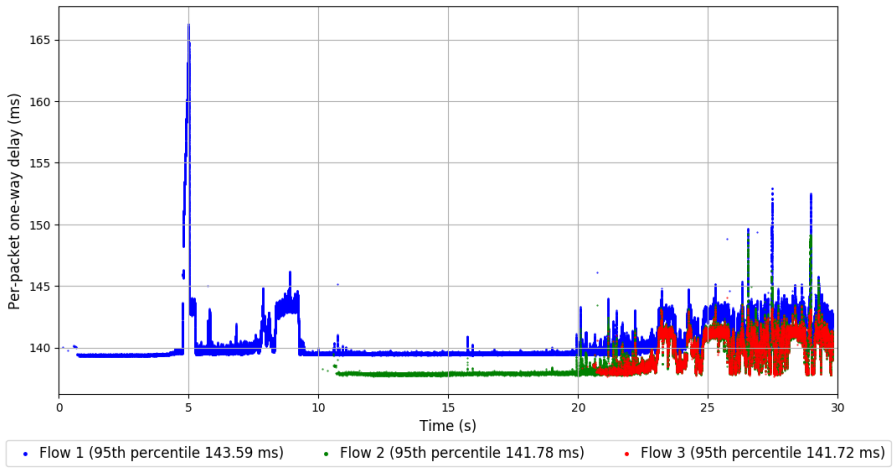
```
Run 1: Statistics of PCC-Vivace

Start at: 2018-11-30 15:47:05
End at: 2018-11-30 15:47:35
Local clock offset: 2.867 ms
Remote clock offset: -33.388 ms

# Below is generated by plot.py at 2018-11-30 20:00:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 192.99 Mbit/s
95th percentile per-packet one-way delay: 143.446 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 151.84 Mbit/s
95th percentile per-packet one-way delay: 143.587 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 55.97 Mbit/s
95th percentile per-packet one-way delay: 141.785 ms
Loss rate: 2.41%
-- Flow 3:
Average throughput: 12.49 Mbit/s
95th percentile per-packet one-way delay: 141.717 ms
Loss rate: 2.90%
```

Run 1: Report of PCC-Vivace — Data Link



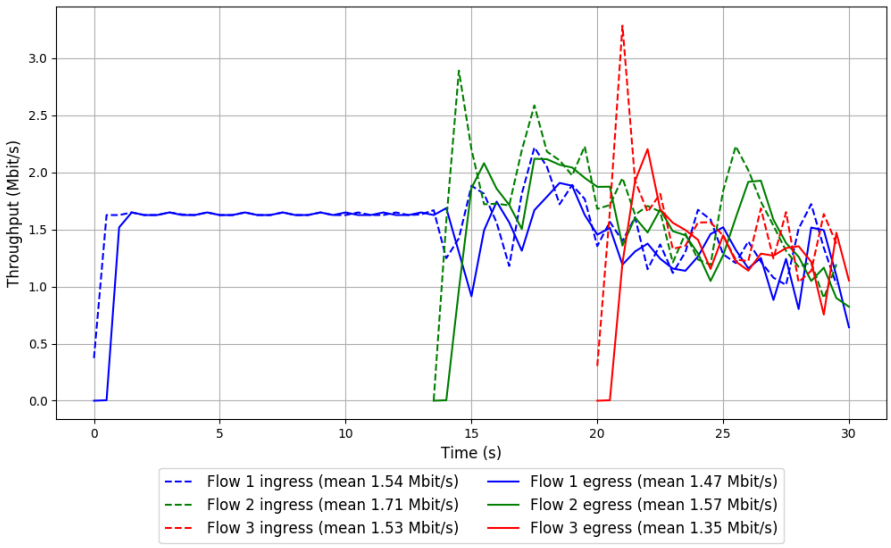


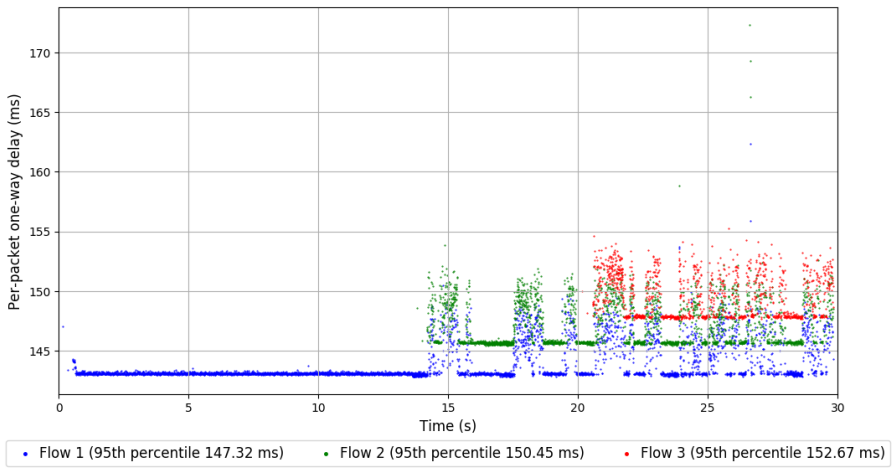
```
Run 2: Statistics of PCC-Vivace

Start at: 2018-11-30 16:38:12
End at: 2018-11-30 16:38:42
Local clock offset: 3.2 ms
Remote clock offset: -50.534 ms

# Below is generated by plot.py at 2018-11-30 20:00:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.76 Mbit/s
95th percentile per-packet one-way delay: 151.034 ms
Loss rate: 7.88%
-- Flow 1:
Average throughput: 1.47 Mbit/s
95th percentile per-packet one-way delay: 147.322 ms
Loss rate: 5.10%
-- Flow 2:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 150.448 ms
Loss rate: 9.66%
-- Flow 3:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 152.670 ms
Loss rate: 13.10%
```

Run 2: Report of PCC-Vivace — Data Link



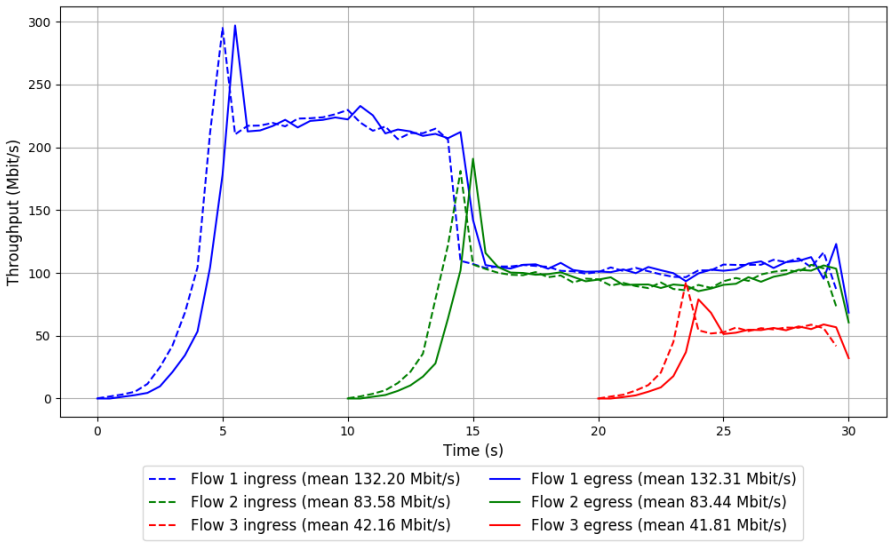


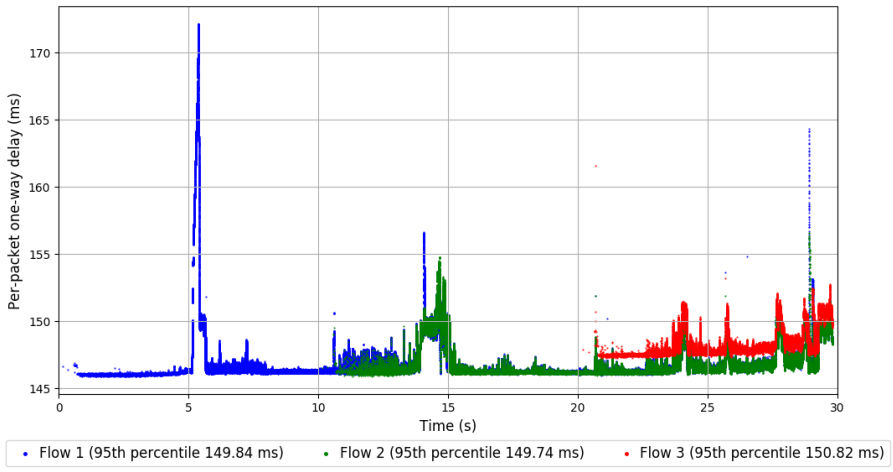
```
Run 3: Statistics of PCC-Vivace

Start at: 2018-11-30 17:32:55
End at: 2018-11-30 17:33:25
Local clock offset: 2.975 ms
Remote clock offset: -41.901 ms

# Below is generated by plot.py at 2018-11-30 20:00:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 201.16 Mbit/s
95th percentile per-packet one-way delay: 149.969 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 132.31 Mbit/s
95th percentile per-packet one-way delay: 149.837 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 83.44 Mbit/s
95th percentile per-packet one-way delay: 149.735 ms
Loss rate: 1.31%
-- Flow 3:
Average throughput: 41.81 Mbit/s
95th percentile per-packet one-way delay: 150.823 ms
Loss rate: 3.08%
```

Run 3: Report of PCC-Vivace — Data Link



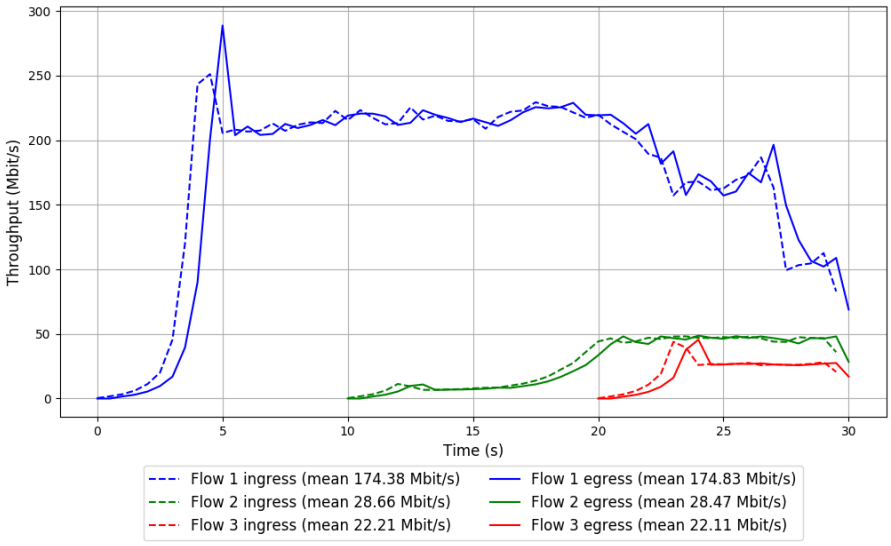


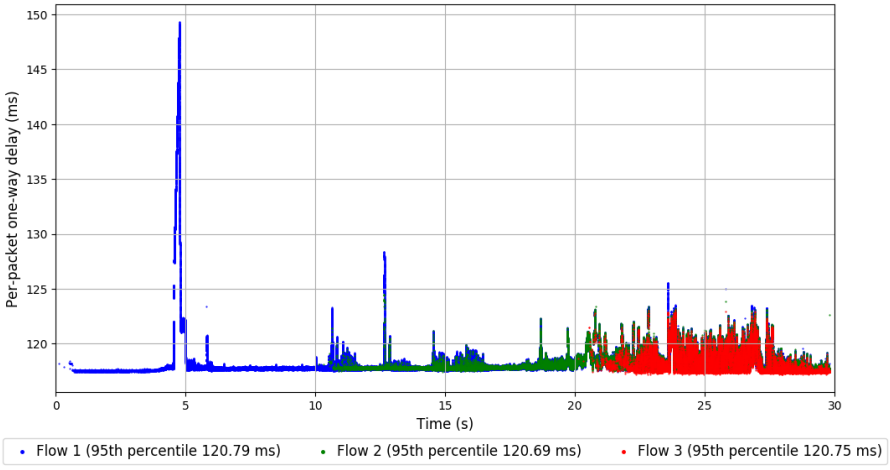
```
Run 4: Statistics of PCC-Vivace

Start at: 2018-11-30 18:28:47
End at: 2018-11-30 18:29:17
Local clock offset: 3.035 ms
Remote clock offset: -22.134 ms

# Below is generated by plot.py at 2018-11-30 20:00:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 200.87 Mbit/s
95th percentile per-packet one-way delay: 120.770 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 174.83 Mbit/s
95th percentile per-packet one-way delay: 120.793 ms
Loss rate: 0.40%
-- Flow 2:
Average throughput: 28.47 Mbit/s
95th percentile per-packet one-way delay: 120.689 ms
Loss rate: 1.59%
-- Flow 3:
Average throughput: 22.11 Mbit/s
95th percentile per-packet one-way delay: 120.754 ms
Loss rate: 2.40%
```

Run 4: Report of PCC-Vivace — Data Link



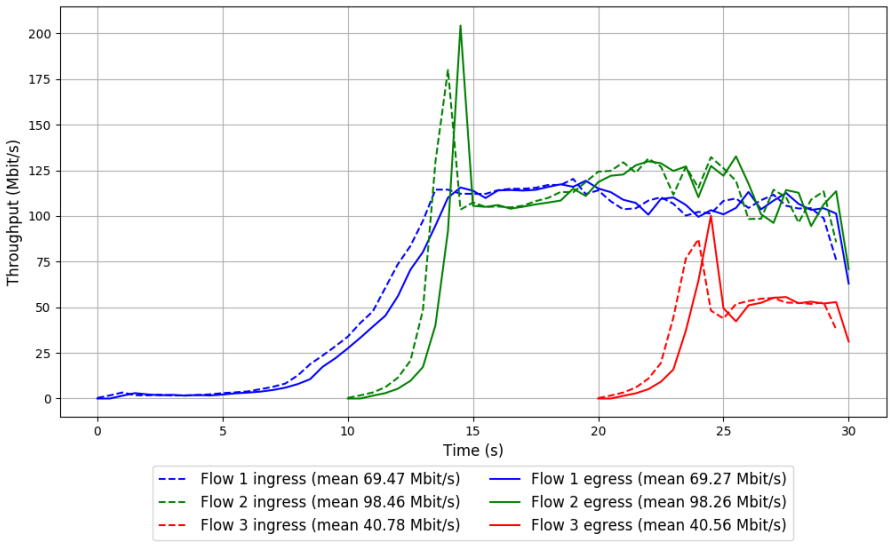


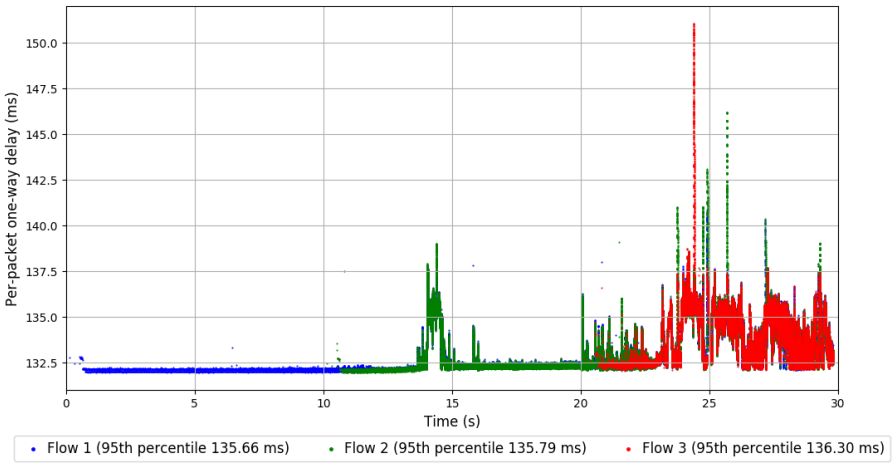
```
Run 5: Statistics of PCC-Vivace

Start at: 2018-11-30 19:04:00
End at: 2018-11-30 19:04:30
Local clock offset: 0.647 ms
Remote clock offset: -38.252 ms

# Below is generated by plot.py at 2018-11-30 20:00:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 147.62 Mbit/s
95th percentile per-packet one-way delay: 135.763 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 69.27 Mbit/s
95th percentile per-packet one-way delay: 135.658 ms
Loss rate: 0.94%
-- Flow 2:
Average throughput: 98.26 Mbit/s
95th percentile per-packet one-way delay: 135.789 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 40.56 Mbit/s
95th percentile per-packet one-way delay: 136.299 ms
Loss rate: 2.52%
```

Run 5: Report of PCC-Vivace — Data Link



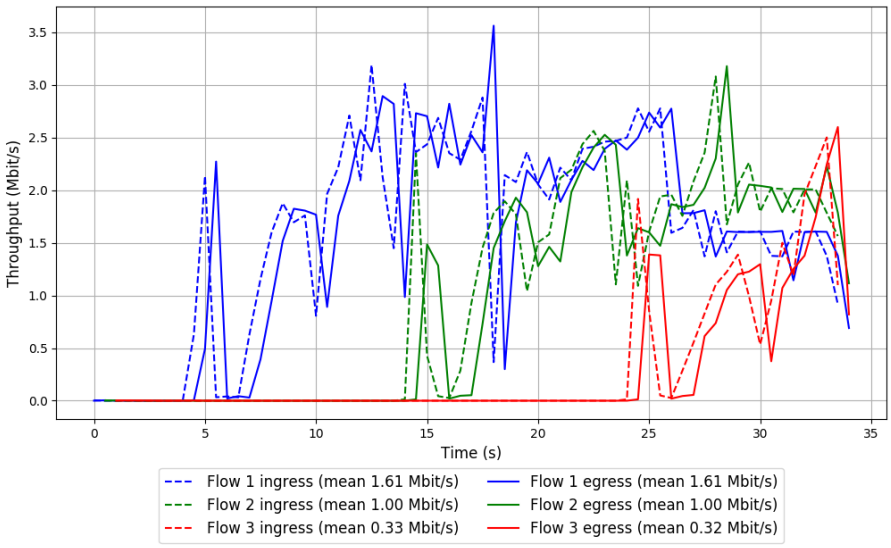


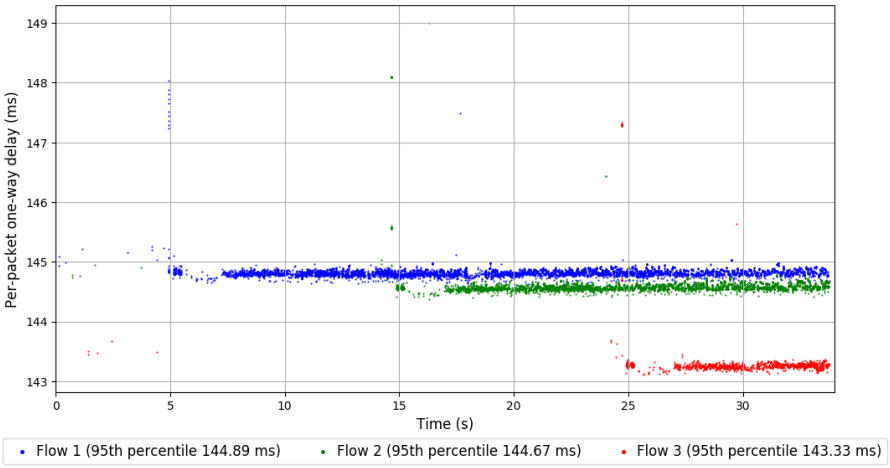
```
Run 1: Statistics of WebRTC media

Start at: 2018-11-30 15:22:44
End at: 2018-11-30 15:23:14
Local clock offset: 1.739 ms
Remote clock offset: -39.882 ms

# Below is generated by plot.py at 2018-11-30 20:00:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.89 Mbit/s
95th percentile per-packet one-way delay: 144.875 ms
Loss rate: 1.15%
-- Flow 1:
Average throughput: 1.61 Mbit/s
95th percentile per-packet one-way delay: 144.891 ms
Loss rate: 0.63%
-- Flow 2:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 144.673 ms
Loss rate: 1.34%
-- Flow 3:
Average throughput: 0.32 Mbit/s
95th percentile per-packet one-way delay: 143.333 ms
Loss rate: 3.24%
```

Run 1: Report of WebRTC media — Data Link



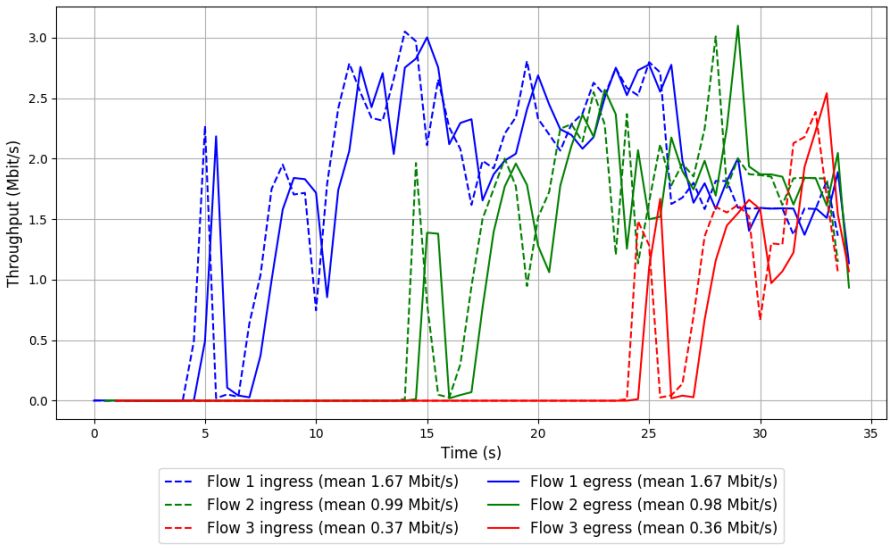


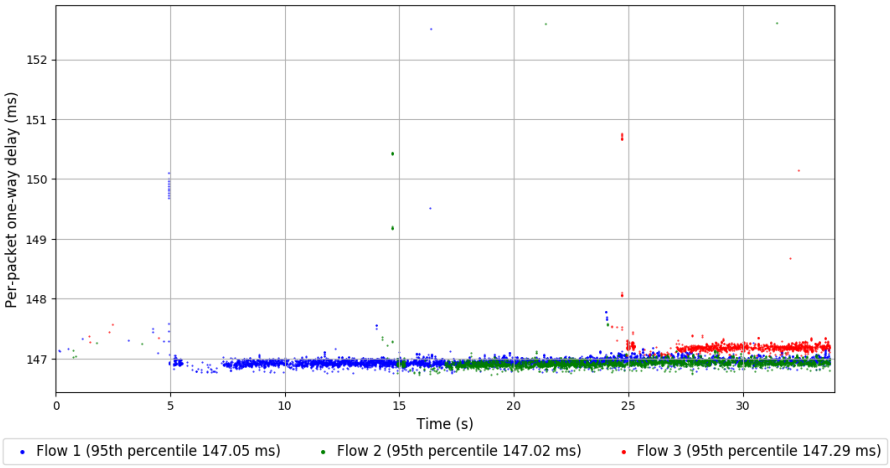
```
Run 2: Statistics of WebRTC media

Start at: 2018-11-30 16:23:41
End at: 2018-11-30 16:24:11
Local clock offset: 0.895 ms
Remote clock offset: -42.941 ms

# Below is generated by plot.py at 2018-11-30 20:00:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.99 Mbit/s
95th percentile per-packet one-way delay: 147.198 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 147.048 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 0.98 Mbit/s
95th percentile per-packet one-way delay: 147.017 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 147.288 ms
Loss rate: 2.21%
```

Run 2: Report of WebRTC media — Data Link



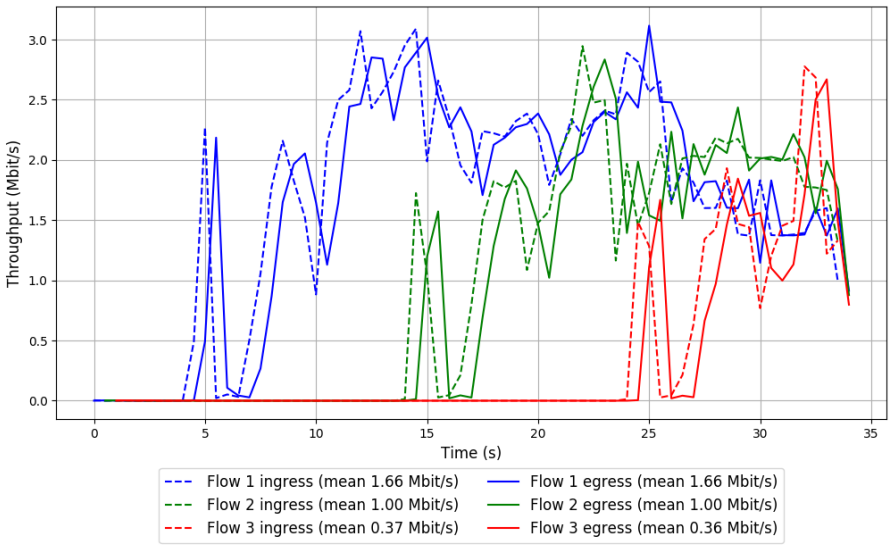


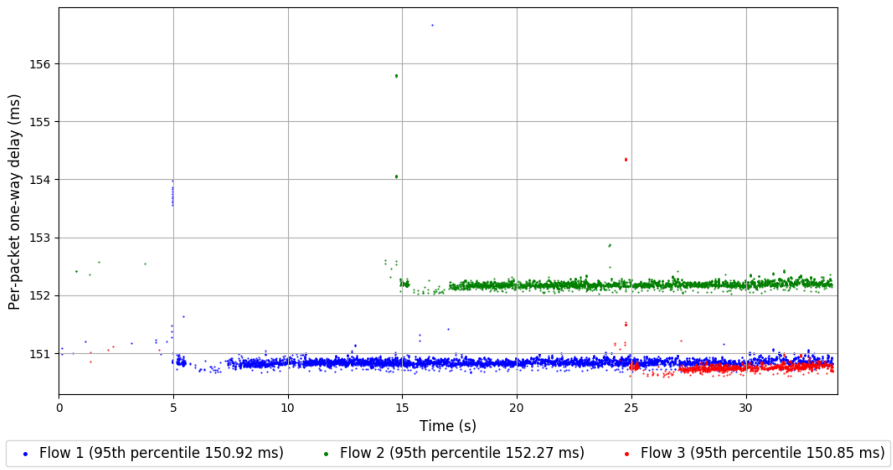
```
Run 3: Statistics of WebRTC media

Start at: 2018-11-30 17:18:51
End at: 2018-11-30 17:19:21
Local clock offset: 4.392 ms
Remote clock offset: -45.283 ms

# Below is generated by plot.py at 2018-11-30 20:00:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 2.98 Mbit/s
95th percentile per-packet one-way delay: 152.232 ms
Loss rate: 1.16%
-- Flow 1:
Average throughput: 1.66 Mbit/s
95th percentile per-packet one-way delay: 150.923 ms
Loss rate: 0.48%
-- Flow 2:
Average throughput: 1.00 Mbit/s
95th percentile per-packet one-way delay: 152.274 ms
Loss rate: 1.32%
-- Flow 3:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 150.849 ms
Loss rate: 3.85%
```

Run 3: Report of WebRTC media — Data Link



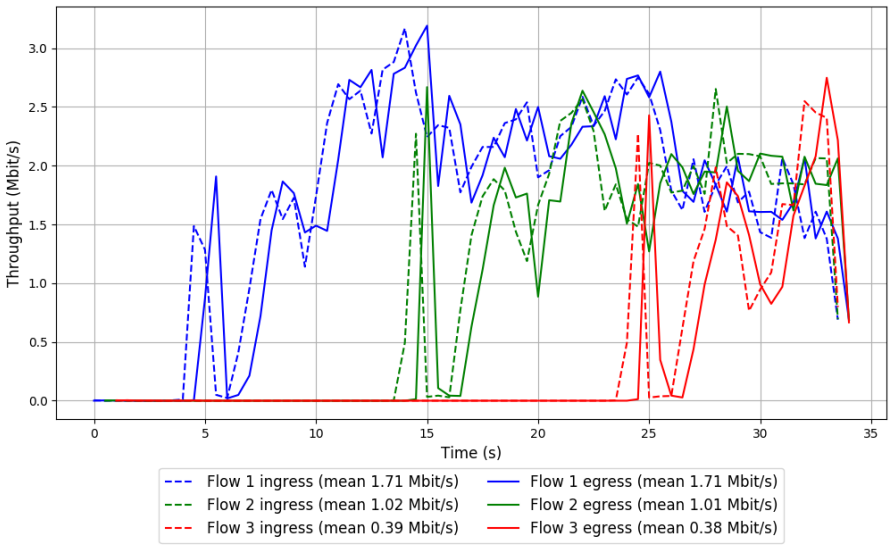


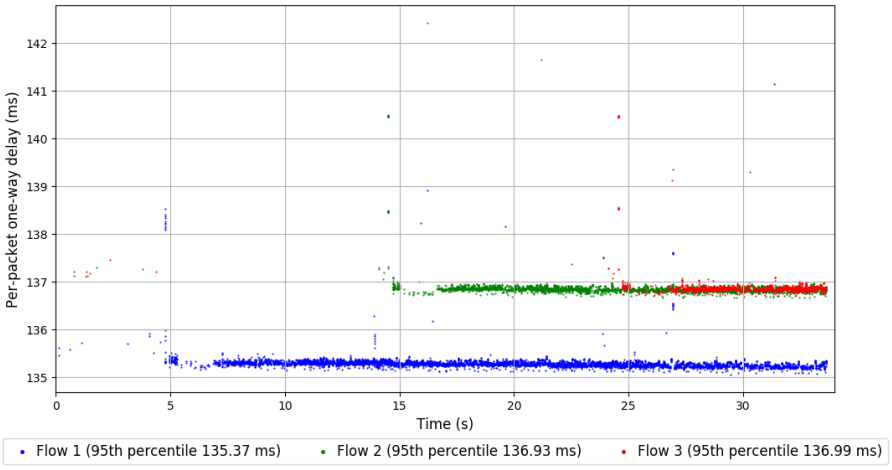
```
Run 4: Statistics of WebRTC media

Start at: 2018-11-30 18:18:16
End at: 2018-11-30 18:18:46
Local clock offset: 1.763 ms
Remote clock offset: -41.077 ms

# Below is generated by plot.py at 2018-11-30 20:00:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.07 Mbit/s
95th percentile per-packet one-way delay: 136.910 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 1.71 Mbit/s
95th percentile per-packet one-way delay: 135.371 ms
Loss rate: 0.40%
-- Flow 2:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 136.925 ms
Loss rate: 1.03%
-- Flow 3:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 136.985 ms
Loss rate: 3.14%
```

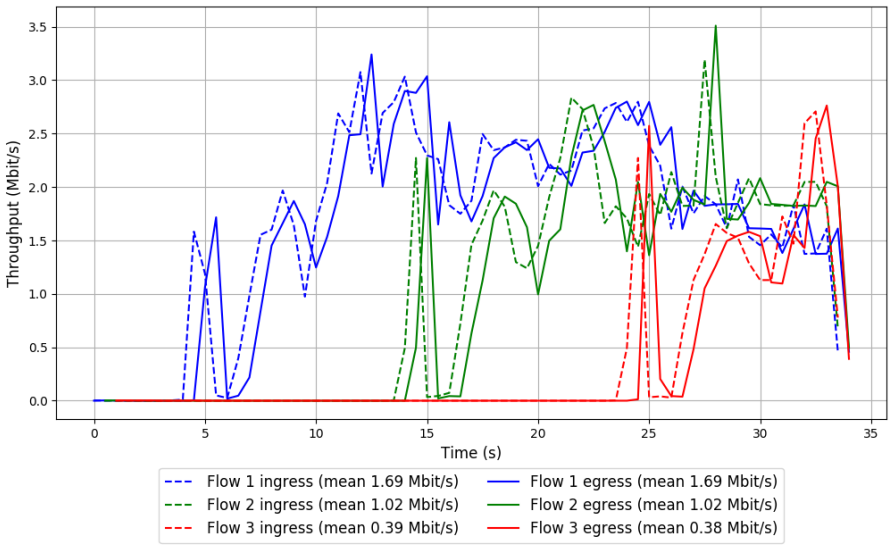
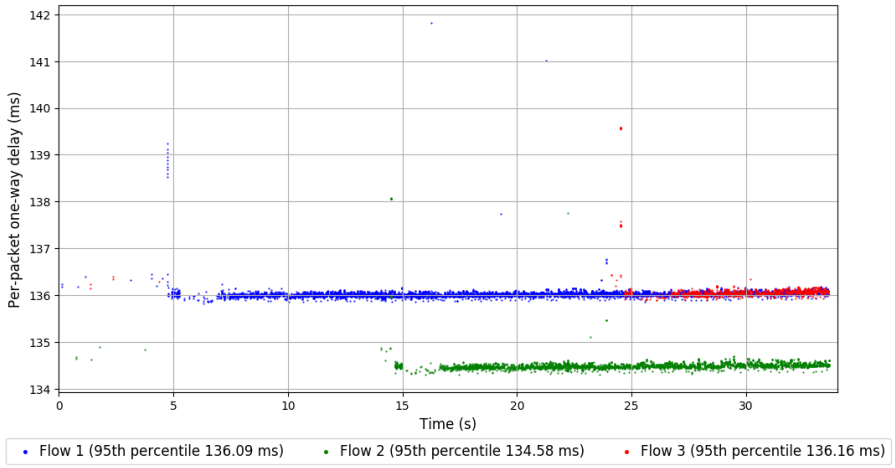
Run 4: Report of WebRTC media — Data Link





```
Run 5: Statistics of WebRTC media

Start at: 2018-11-30 18:53:36
End at: 2018-11-30 18:54:06
Local clock offset: 2.451 ms
Remote clock offset: -40.6 ms

# Below is generated by plot.py at 2018-11-30 20:00:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.06 Mbit/s
95th percentile per-packet one-way delay: 136.096 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 1.69 Mbit/s
95th percentile per-packet one-way delay: 136.094 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 134.576 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 136.156 ms
Loss rate: 3.06%
```

Run 5: Report of WebRTC media — Data Link