

Pantheon Report

Generated at 2018-11-15 19:29:34 (UTC).

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

Repeated the test of 18 congestion control schemes 5 times.

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

NTP offsets were measured against `time.google.com` and have been applied to correct the timestamps in logs.

System info:

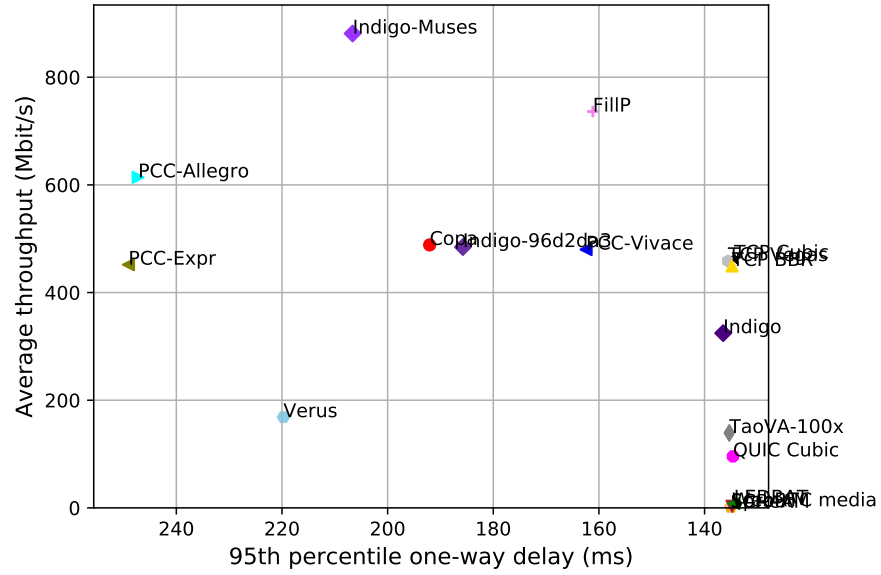
```
Linux 4.15.0-1021-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

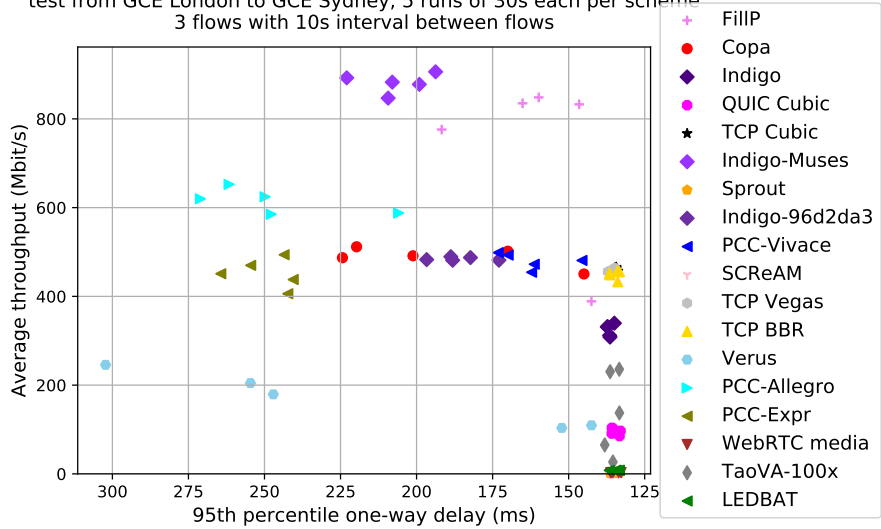
```
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
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-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

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



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



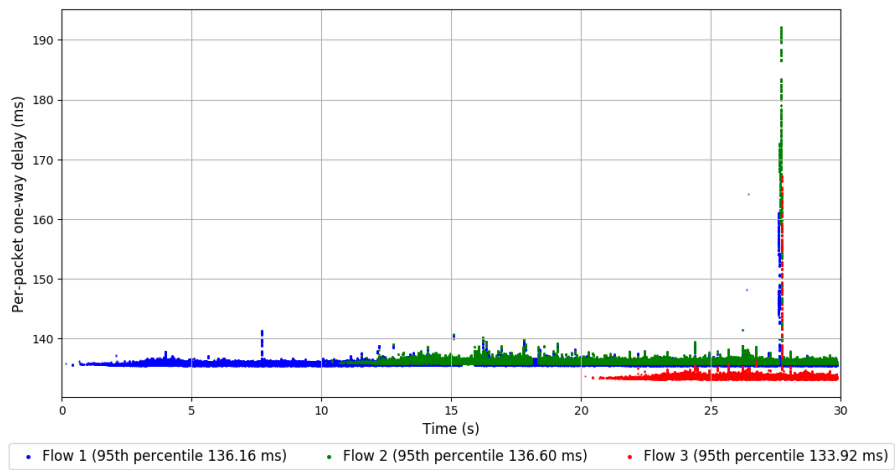
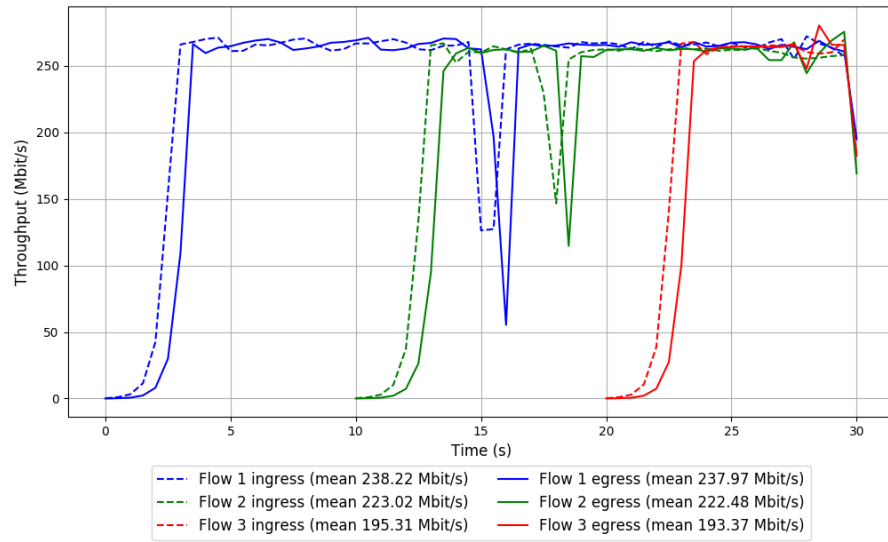
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	238.37	222.96	193.73	134.67	134.22	134.16	1.00	1.59	3.66
Copa	5	272.17	236.61	182.08	178.41	180.94	203.13	0.73	1.43	3.82
TCP Cubic	5	244.95	232.57	195.61	134.34	134.42	134.47	0.97	1.53	3.62
FillP	5	419.85	353.77	252.52	162.36	148.22	168.54	0.79	1.21	3.78
Indigo	5	176.24	150.65	150.14	134.92	136.13	139.76	0.83	1.39	3.24
Indigo-96d2da3	5	264.06	244.84	182.28	183.36	188.54	184.26	1.03	1.05	3.83
LEDBAT	5	5.22	3.44	1.65	134.52	133.72	133.64	1.79	2.71	5.43
Indigo-Muses	5	502.72	441.00	271.18	201.23	212.92	219.06	1.09	2.15	5.99
PCC-Allegro	5	347.66	293.40	223.24	221.62	224.79	268.72	5.09	3.30	6.00
PCC-Expr	5	273.84	191.40	158.25	250.03	180.50	239.40	3.60	2.35	7.97
QUIC Cubic	5	52.91	49.31	30.01	133.07	133.18	134.71	1.29	2.03	4.49
SCReAM	5	0.18	0.18	0.18	134.45	134.61	133.90	0.89	1.41	2.38
Sprout	5	0.64	0.58	0.64	133.64	134.49	134.20	0.70	1.39	2.88
TaoVA-100x	5	78.23	46.85	91.40	134.95	133.68	134.39	0.95	1.37	3.25
TCP Vegas	5	243.19	232.42	188.50	135.61	134.99	136.44	0.98	1.54	3.36
Verus	5	97.58	75.27	66.05	202.28	188.34	172.36	2.35	1.75	1.42
PCC-Vivace	5	309.06	185.45	150.87	158.67	156.00	193.46	1.20	1.83	3.34
WebRTC media	5	1.70	1.02	0.31	134.17	133.28	134.40	1.16	1.90	6.20

Run 1: Statistics of TCP BBR

Start at: 2018-11-15 14:44:15
End at: 2018-11-15 14:44:45
Local clock offset: 0.443 ms
Remote clock offset: -0.049 ms

Below is generated by plot.py at 2018-11-15 17:46:22
Datalink statistics
-- Total of 3 flows:
Average throughput: 448.50 Mbit/s
95th percentile per-packet one-way delay: 136.392 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 237.97 Mbit/s
95th percentile per-packet one-way delay: 136.155 ms
Loss rate: 1.00%
-- Flow 2:
Average throughput: 222.48 Mbit/s
95th percentile per-packet one-way delay: 136.601 ms
Loss rate: 1.61%
-- Flow 3:
Average throughput: 193.37 Mbit/s
95th percentile per-packet one-way delay: 133.917 ms
Loss rate: 3.67%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-11-15 15:19:25

End at: 2018-11-15 15:19:55

Local clock offset: 0.149 ms

Remote clock offset: 0.042 ms

Below is generated by plot.py at 2018-11-15 17:46:22

Datalink statistics

-- Total of 3 flows:

Average throughput: 432.89 Mbit/s

95th percentile per-packet one-way delay: 133.840 ms

Loss rate: 1.64%

-- Flow 1:

Average throughput: 238.97 Mbit/s

95th percentile per-packet one-way delay: 133.910 ms

Loss rate: 1.00%

-- Flow 2:

Average throughput: 195.70 Mbit/s

95th percentile per-packet one-way delay: 133.559 ms

Loss rate: 1.82%

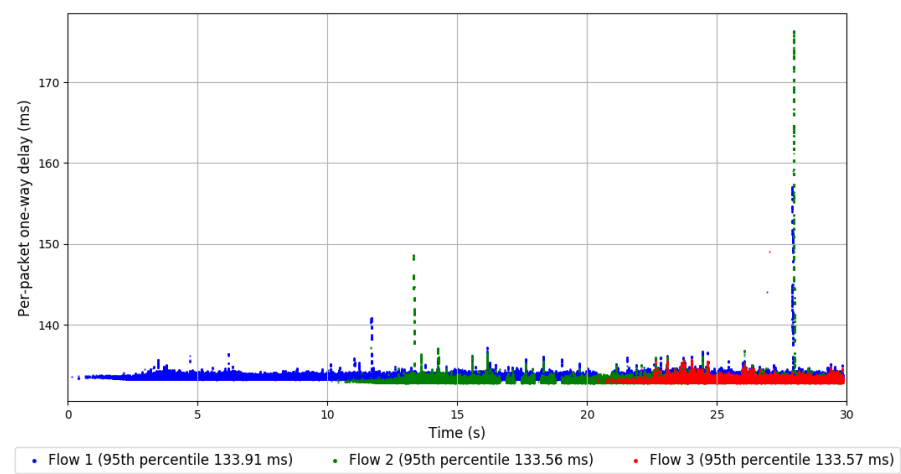
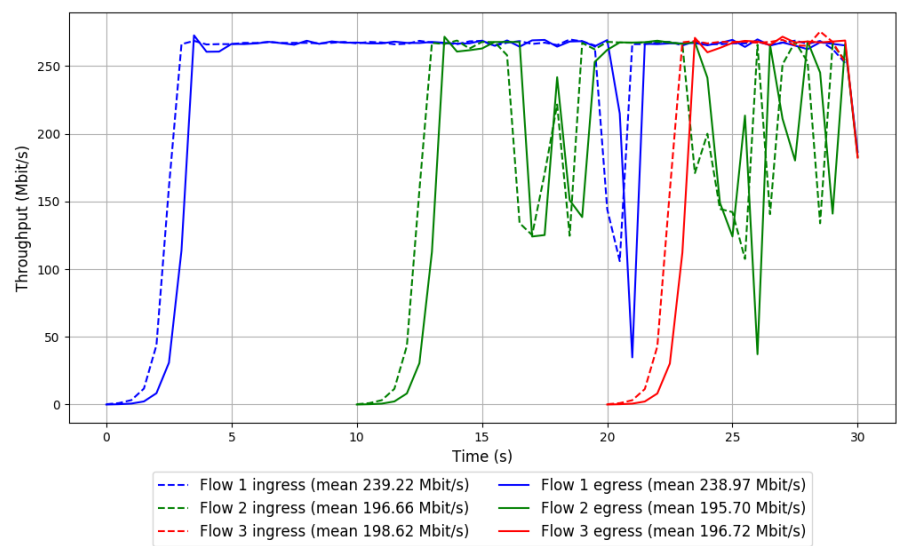
-- Flow 3:

Average throughput: 196.72 Mbit/s

95th percentile per-packet one-way delay: 133.573 ms

Loss rate: 3.60%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-11-15 15:54:18

End at: 2018-11-15 15:54:48

Local clock offset: 0.595 ms

Remote clock offset: 0.063 ms

Below is generated by plot.py at 2018-11-15 17:46:26

Datalink statistics

-- Total of 3 flows:

Average throughput: 452.11 Mbit/s

95th percentile per-packet one-way delay: 136.559 ms

Loss rate: 1.56%

-- Flow 1:

Average throughput: 234.85 Mbit/s

95th percentile per-packet one-way delay: 136.651 ms

Loss rate: 1.00%

-- Flow 2:

Average throughput: 232.12 Mbit/s

95th percentile per-packet one-way delay: 133.870 ms

Loss rate: 1.54%

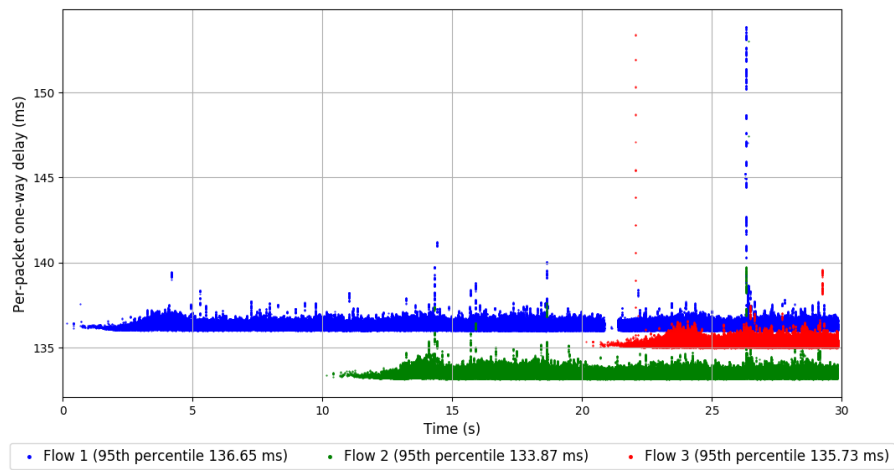
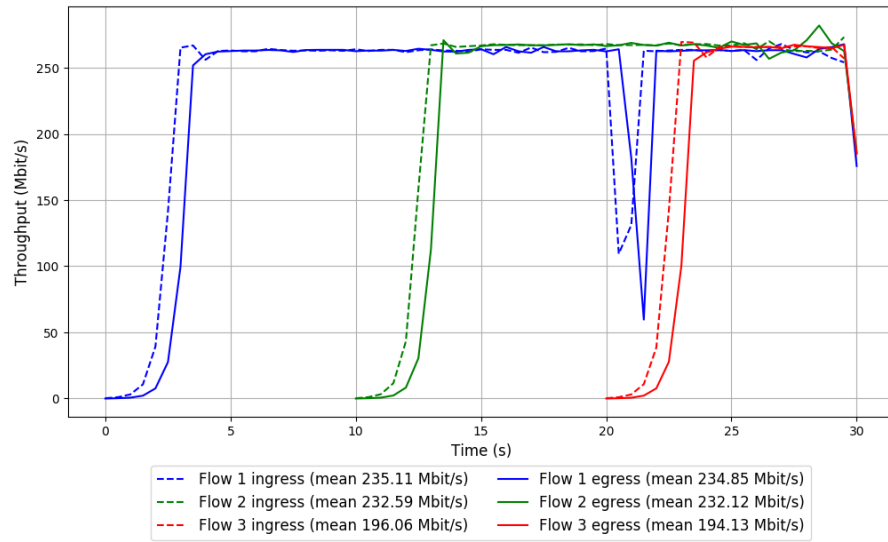
-- Flow 3:

Average throughput: 194.13 Mbit/s

95th percentile per-packet one-way delay: 135.734 ms

Loss rate: 3.65%

Run 3: Report of TCP BBR — Data Link



Run 4: Statistics of TCP BBR

Start at: 2018-11-15 16:29:30

End at: 2018-11-15 16:30:00

Local clock offset: 0.498 ms

Remote clock offset: 0.065 ms

Below is generated by plot.py at 2018-11-15 17:46:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 457.90 Mbit/s

95th percentile per-packet one-way delay: 133.870 ms

Loss rate: 1.55%

-- Flow 1:

Average throughput: 239.86 Mbit/s

95th percentile per-packet one-way delay: 133.328 ms

Loss rate: 0.99%

-- Flow 2:

Average throughput: 232.09 Mbit/s

95th percentile per-packet one-way delay: 133.752 ms

Loss rate: 1.53%

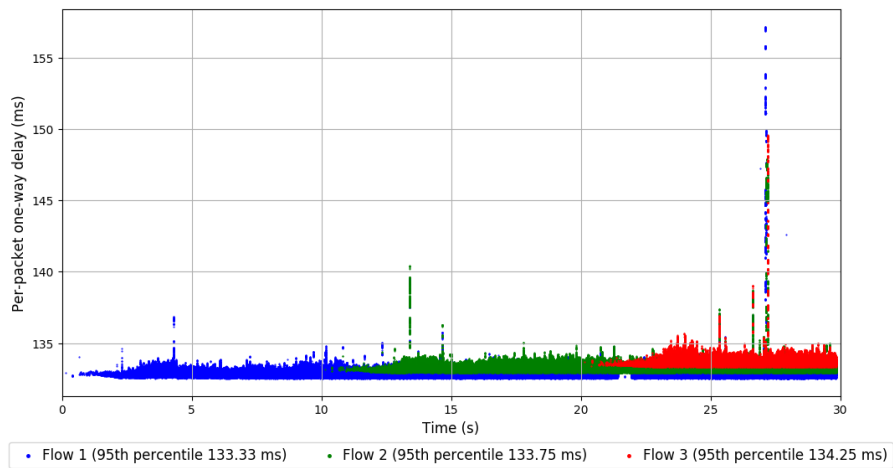
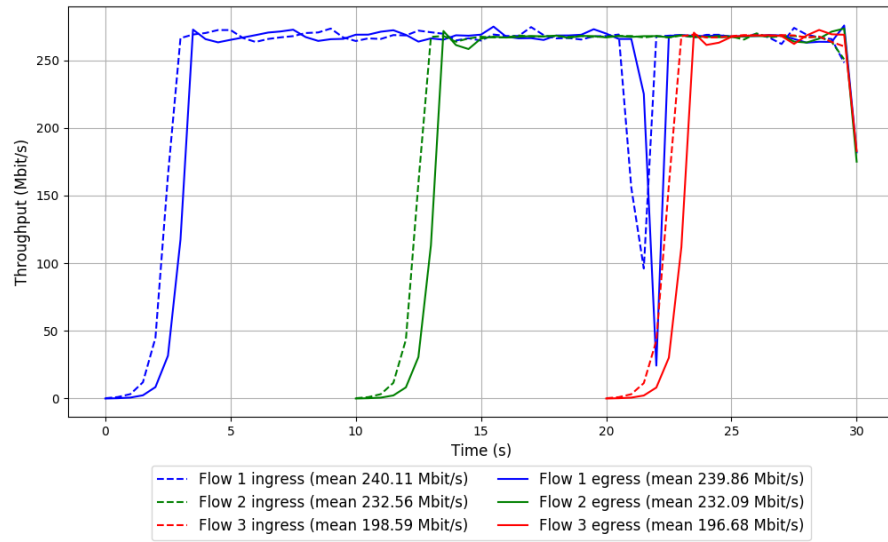
-- Flow 3:

Average throughput: 196.68 Mbit/s

95th percentile per-packet one-way delay: 134.245 ms

Loss rate: 3.61%

Run 4: Report of TCP BBR — Data Link



Run 5: Statistics of TCP BBR

Start at: 2018-11-15 17:03:26

End at: 2018-11-15 17:03:56

Local clock offset: 0.494 ms

Remote clock offset: 0.425 ms

Below is generated by plot.py at 2018-11-15 17:46:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 455.51 Mbit/s

95th percentile per-packet one-way delay: 133.311 ms

Loss rate: 1.53%

-- Flow 1:

Average throughput: 240.20 Mbit/s

95th percentile per-packet one-way delay: 133.285 ms

Loss rate: 0.99%

-- Flow 2:

Average throughput: 232.41 Mbit/s

95th percentile per-packet one-way delay: 133.340 ms

Loss rate: 1.47%

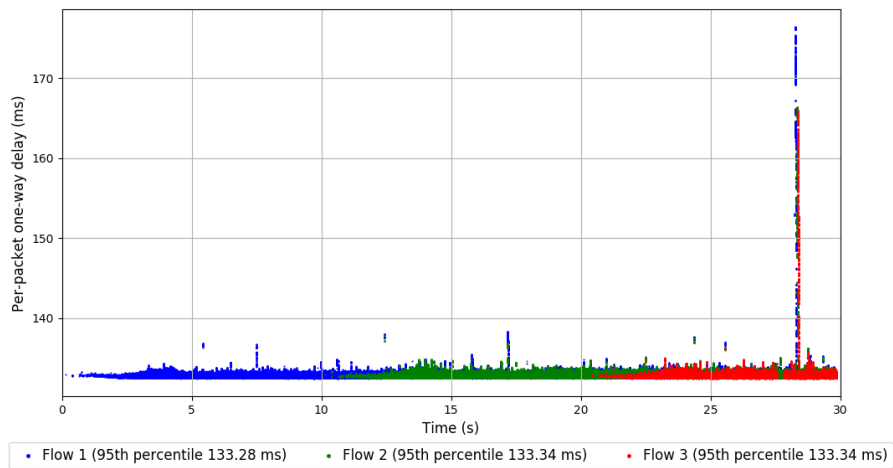
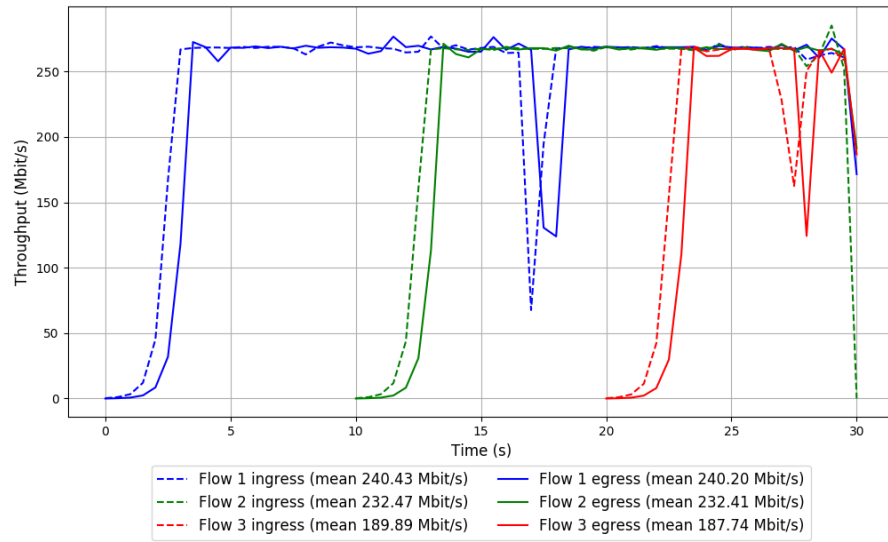
-- Flow 3:

Average throughput: 187.74 Mbit/s

95th percentile per-packet one-way delay: 133.339 ms

Loss rate: 3.76%

Run 5: Report of TCP BBR — Data Link

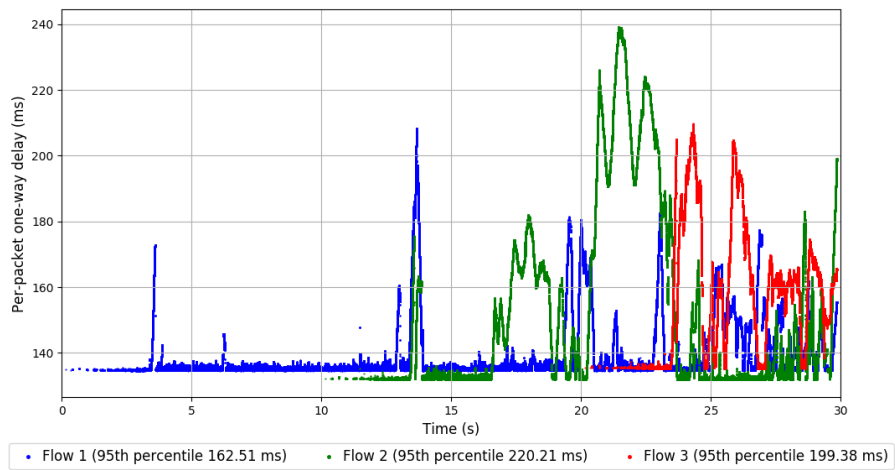
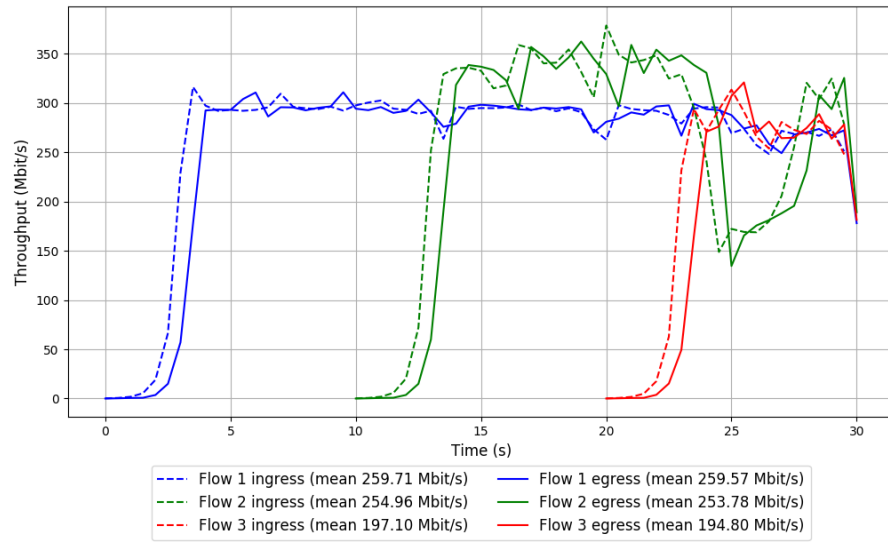


Run 1: Statistics of Copa

Start at: 2018-11-15 14:55:03
End at: 2018-11-15 14:55:33
Local clock offset: -0.346 ms
Remote clock offset: -0.024 ms

Below is generated by plot.py at 2018-11-15 17:56:08
Datalink statistics
-- Total of 3 flows:
Average throughput: 491.45 Mbit/s
95th percentile per-packet one-way delay: 201.172 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 259.57 Mbit/s
95th percentile per-packet one-way delay: 162.508 ms
Loss rate: 0.95%
-- Flow 2:
Average throughput: 253.78 Mbit/s
95th percentile per-packet one-way delay: 220.209 ms
Loss rate: 1.79%
-- Flow 3:
Average throughput: 194.80 Mbit/s
95th percentile per-packet one-way delay: 199.381 ms
Loss rate: 3.84%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-11-15 15:29:39

End at: 2018-11-15 15:30:09

Local clock offset: 0.583 ms

Remote clock offset: 0.018 ms

Below is generated by plot.py at 2018-11-15 17:56:30

Datalink statistics

-- Total of 3 flows:

Average throughput: 501.78 Mbit/s

95th percentile per-packet one-way delay: 169.998 ms

Loss rate: 1.45%

-- Flow 1:

Average throughput: 283.51 Mbit/s

95th percentile per-packet one-way delay: 171.719 ms

Loss rate: 0.86%

-- Flow 2:

Average throughput: 241.63 Mbit/s

95th percentile per-packet one-way delay: 141.599 ms

Loss rate: 1.44%

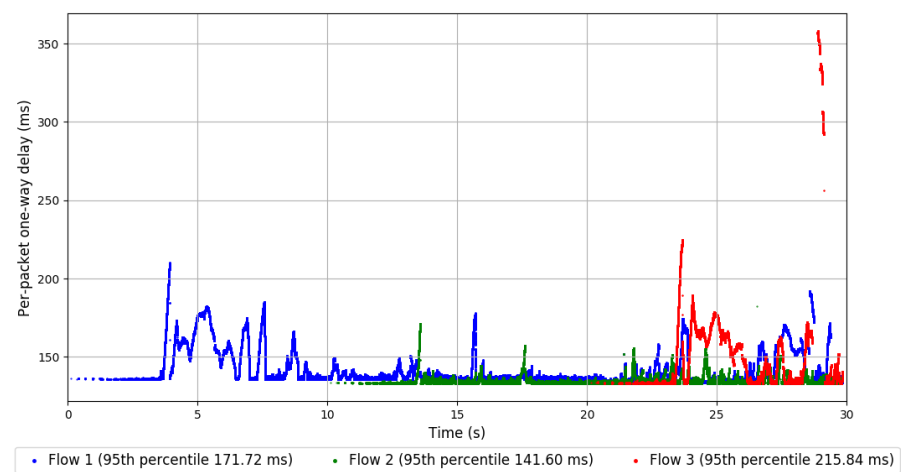
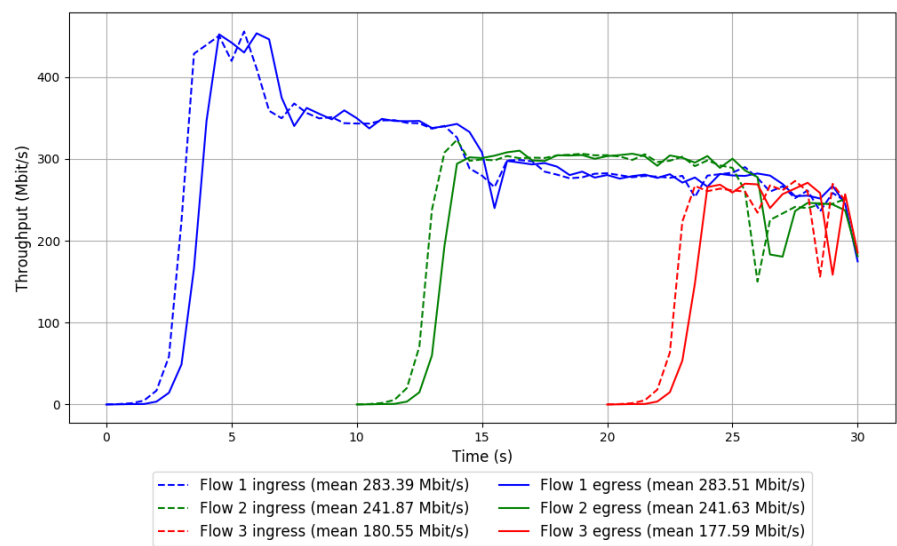
-- Flow 3:

Average throughput: 177.59 Mbit/s

95th percentile per-packet one-way delay: 215.840 ms

Loss rate: 4.28%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-11-15 16:04:46

End at: 2018-11-15 16:05:16

Local clock offset: 0.22 ms

Remote clock offset: 0.043 ms

Below is generated by plot.py at 2018-11-15 17:56:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 511.79 Mbit/s

95th percentile per-packet one-way delay: 219.725 ms

Loss rate: 1.25%

-- Flow 1:

Average throughput: 290.49 Mbit/s

95th percentile per-packet one-way delay: 246.652 ms

Loss rate: 0.82%

-- Flow 2:

Average throughput: 241.46 Mbit/s

95th percentile per-packet one-way delay: 156.721 ms

Loss rate: 1.19%

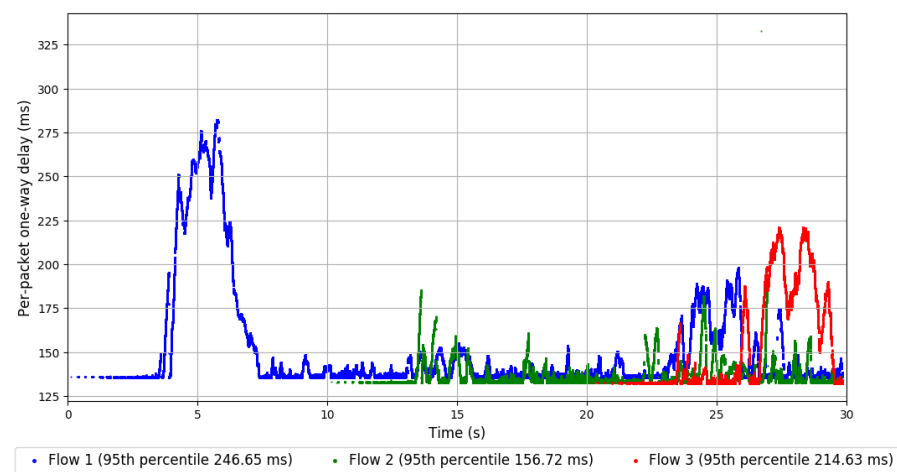
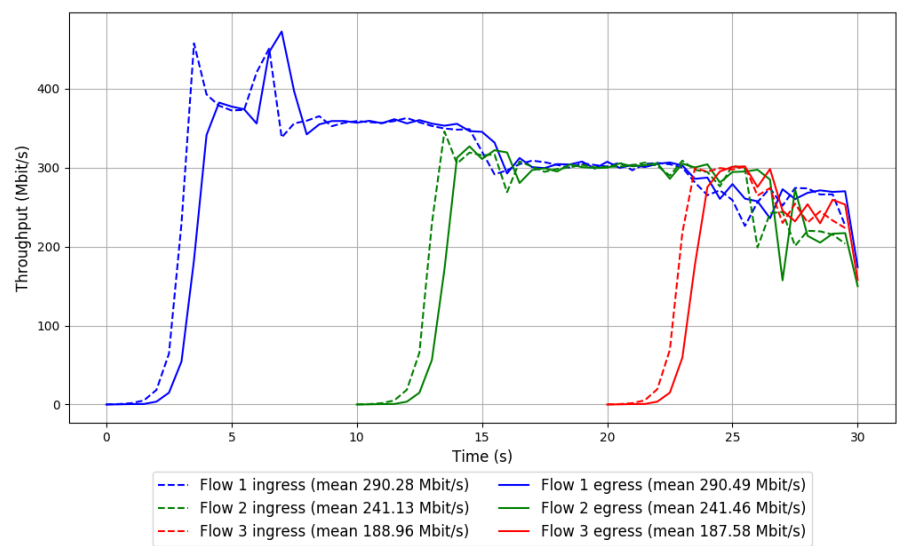
-- Flow 3:

Average throughput: 187.58 Mbit/s

95th percentile per-packet one-way delay: 214.633 ms

Loss rate: 3.38%

Run 3: Report of Copa — Data Link



Run 4: Statistics of Copa

Start at: 2018-11-15 16:40:05

End at: 2018-11-15 16:40:35

Local clock offset: -0.15 ms

Remote clock offset: 0.117 ms

Below is generated by plot.py at 2018-11-15 18:03:36

Datalink statistics

-- Total of 3 flows:

Average throughput: 450.47 Mbit/s

95th percentile per-packet one-way delay: 144.973 ms

Loss rate: 1.21%

-- Flow 1:

Average throughput: 252.57 Mbit/s

95th percentile per-packet one-way delay: 146.348 ms

Loss rate: 0.63%

-- Flow 2:

Average throughput: 210.81 Mbit/s

95th percentile per-packet one-way delay: 139.698 ms

Loss rate: 1.20%

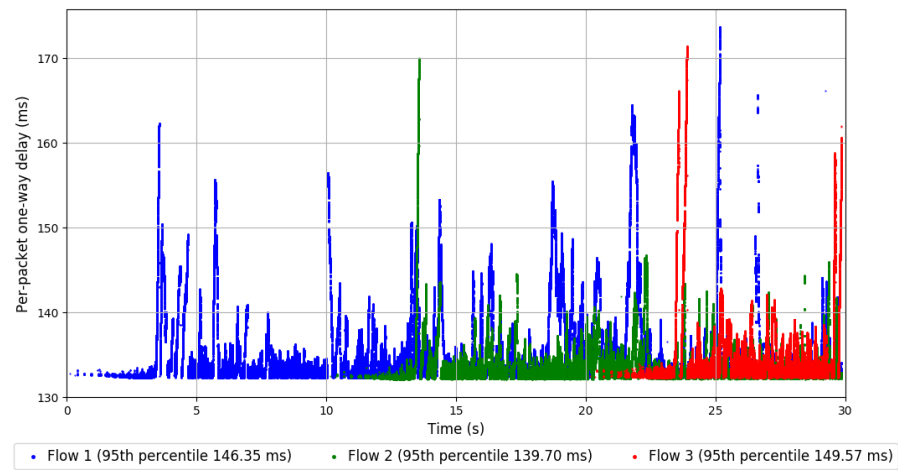
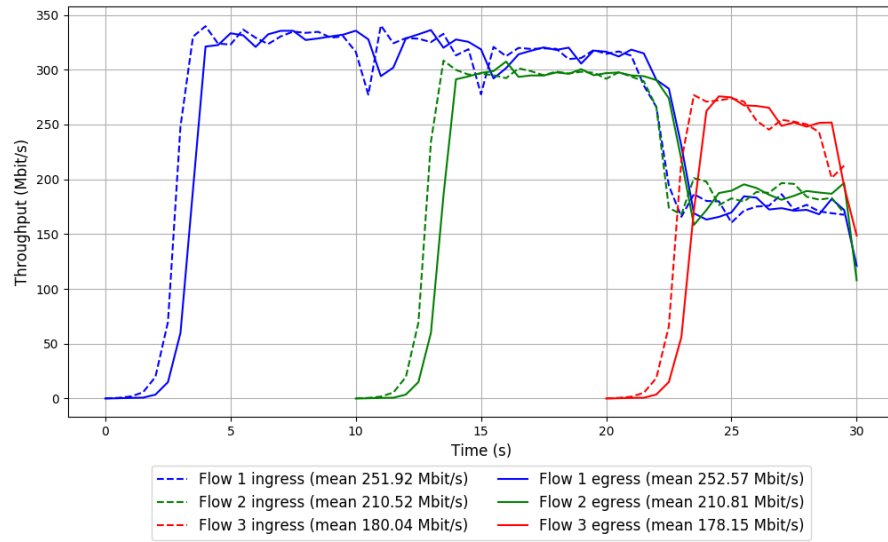
-- Flow 3:

Average throughput: 178.15 Mbit/s

95th percentile per-packet one-way delay: 149.568 ms

Loss rate: 3.68%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-11-15 17:14:17

End at: 2018-11-15 17:14:47

Local clock offset: -0.077 ms

Remote clock offset: 0.086 ms

Below is generated by plot.py at 2018-11-15 18:05:25

Datalink statistics

-- Total of 3 flows:

Average throughput: 487.07 Mbit/s

95th percentile per-packet one-way delay: 224.372 ms

Loss rate: 1.19%

-- Flow 1:

Average throughput: 274.70 Mbit/s

95th percentile per-packet one-way delay: 164.813 ms

Loss rate: 0.40%

-- Flow 2:

Average throughput: 235.39 Mbit/s

95th percentile per-packet one-way delay: 246.476 ms

Loss rate: 1.55%

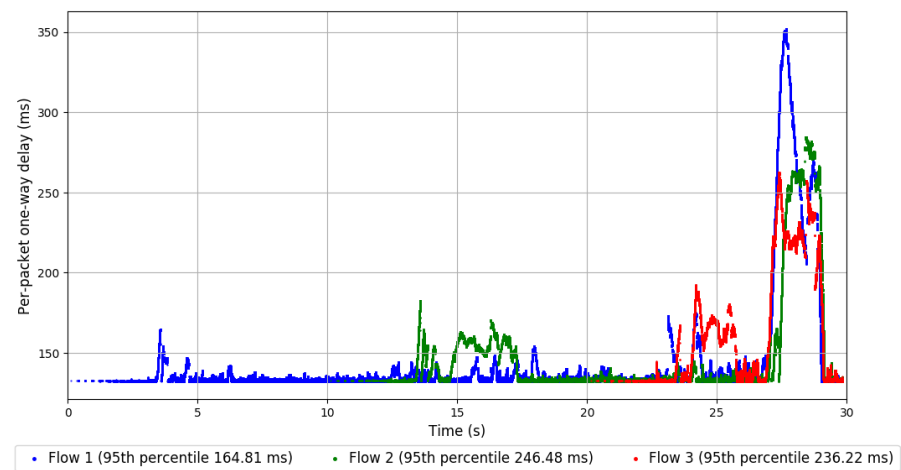
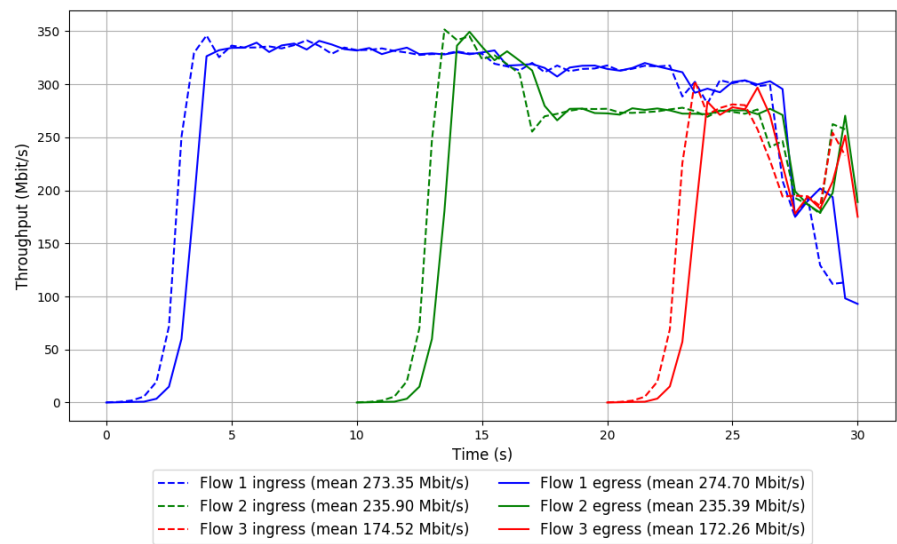
-- Flow 3:

Average throughput: 172.26 Mbit/s

95th percentile per-packet one-way delay: 236.223 ms

Loss rate: 3.92%

Run 5: Report of Copa — Data Link

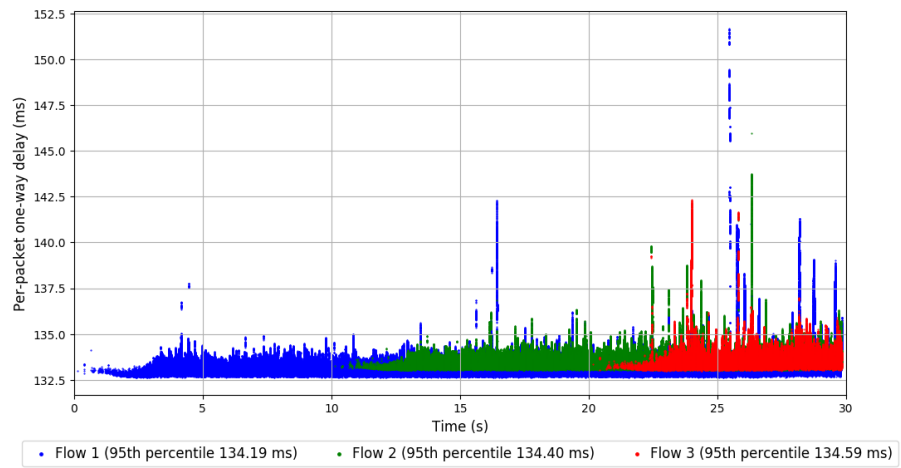
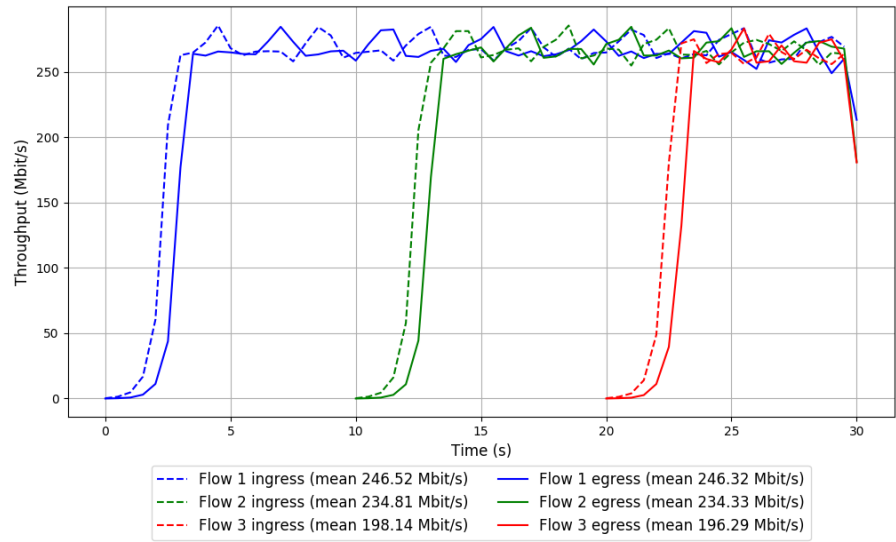


Run 1: Statistics of TCP Cubic

Start at: 2018-11-15 14:38:00
End at: 2018-11-15 14:38:30
Local clock offset: 0.278 ms
Remote clock offset: -0.024 ms

Below is generated by plot.py at 2018-11-15 18:05:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 465.72 Mbit/s
95th percentile per-packet one-way delay: 134.374 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 246.32 Mbit/s
95th percentile per-packet one-way delay: 134.188 ms
Loss rate: 0.96%
-- Flow 2:
Average throughput: 234.33 Mbit/s
95th percentile per-packet one-way delay: 134.404 ms
Loss rate: 1.52%
-- Flow 3:
Average throughput: 196.29 Mbit/s
95th percentile per-packet one-way delay: 134.587 ms
Loss rate: 3.59%

Run 1: Report of TCP Cubic — Data Link

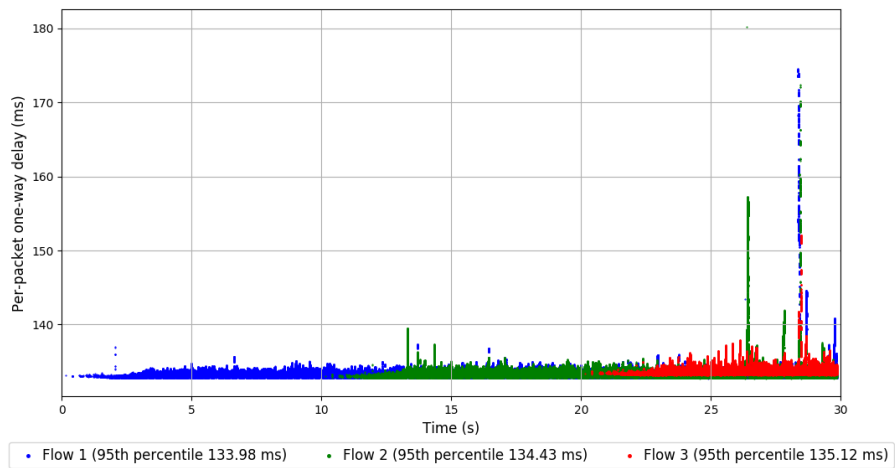
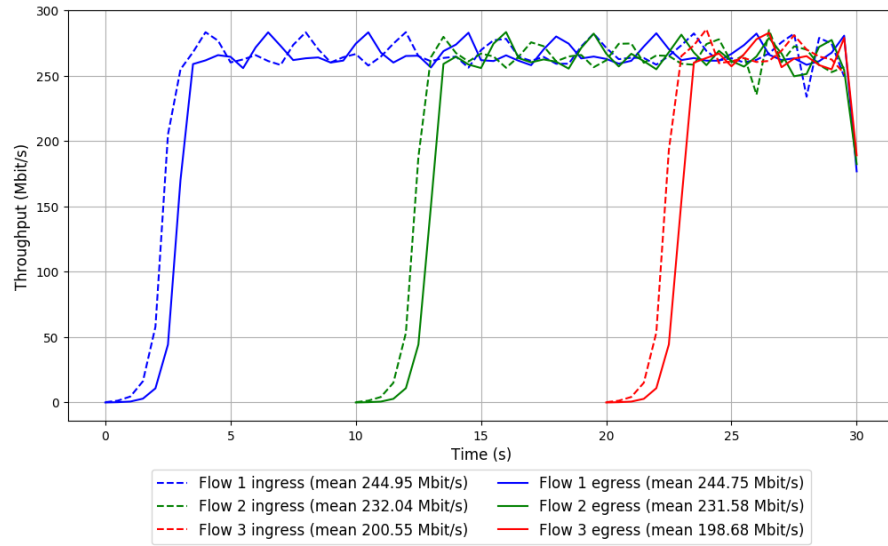


Run 2: Statistics of TCP Cubic

Start at: 2018-11-15 15:13:13
End at: 2018-11-15 15:13:43
Local clock offset: 0.131 ms
Remote clock offset: -0.049 ms

Below is generated by plot.py at 2018-11-15 18:05:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 463.12 Mbit/s
95th percentile per-packet one-way delay: 134.311 ms
Loss rate: 1.53%
-- Flow 1:
Average throughput: 244.75 Mbit/s
95th percentile per-packet one-way delay: 133.982 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 231.58 Mbit/s
95th percentile per-packet one-way delay: 134.425 ms
Loss rate: 1.54%
-- Flow 3:
Average throughput: 198.68 Mbit/s
95th percentile per-packet one-way delay: 135.122 ms
Loss rate: 3.57%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-11-15 15:48:00

End at: 2018-11-15 15:48:30

Local clock offset: 0.587 ms

Remote clock offset: 0.034 ms

Below is generated by plot.py at 2018-11-15 18:05:25

Datalink statistics

-- Total of 3 flows:

Average throughput: 464.05 Mbit/s

95th percentile per-packet one-way delay: 134.773 ms

Loss rate: 1.52%

-- Flow 1:

Average throughput: 244.63 Mbit/s

95th percentile per-packet one-way delay: 134.710 ms

Loss rate: 0.97%

-- Flow 2:

Average throughput: 233.33 Mbit/s

95th percentile per-packet one-way delay: 134.648 ms

Loss rate: 1.53%

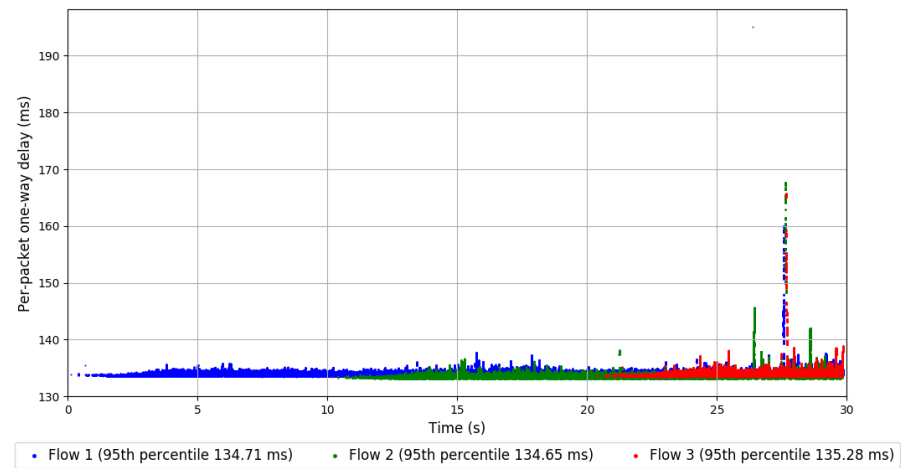
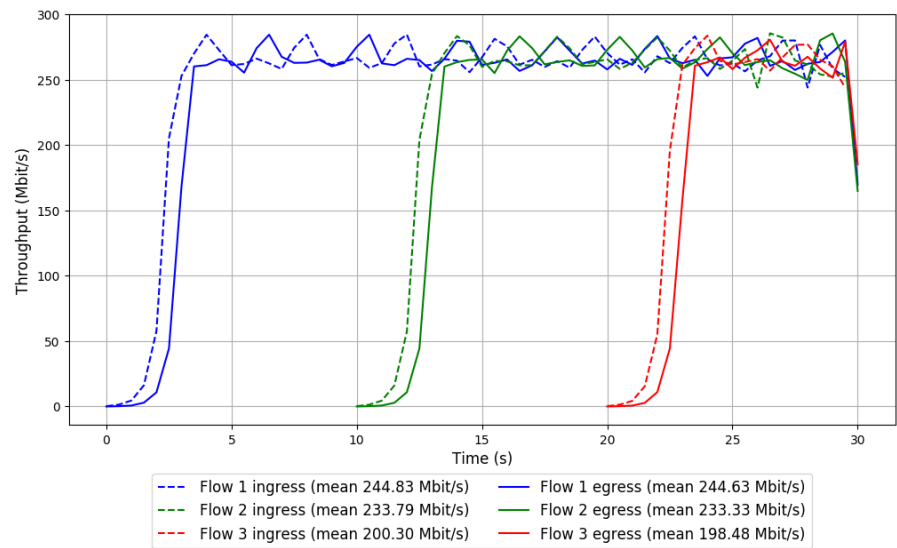
-- Flow 3:

Average throughput: 198.48 Mbit/s

95th percentile per-packet one-way delay: 135.281 ms

Loss rate: 3.55%

Run 3: Report of TCP Cubic — Data Link



Run 4: Statistics of TCP Cubic

Start at: 2018-11-15 16:22:27

End at: 2018-11-15 16:22:57

Local clock offset: 0.438 ms

Remote clock offset: 0.096 ms

Below is generated by plot.py at 2018-11-15 18:05:46

Datalink statistics

-- Total of 3 flows:

Average throughput: 464.91 Mbit/s

95th percentile per-packet one-way delay: 134.780 ms

Loss rate: 1.53%

-- Flow 1:

Average throughput: 244.30 Mbit/s

95th percentile per-packet one-way delay: 134.868 ms

Loss rate: 0.97%

-- Flow 2:

Average throughput: 233.96 Mbit/s

95th percentile per-packet one-way delay: 134.838 ms

Loss rate: 1.52%

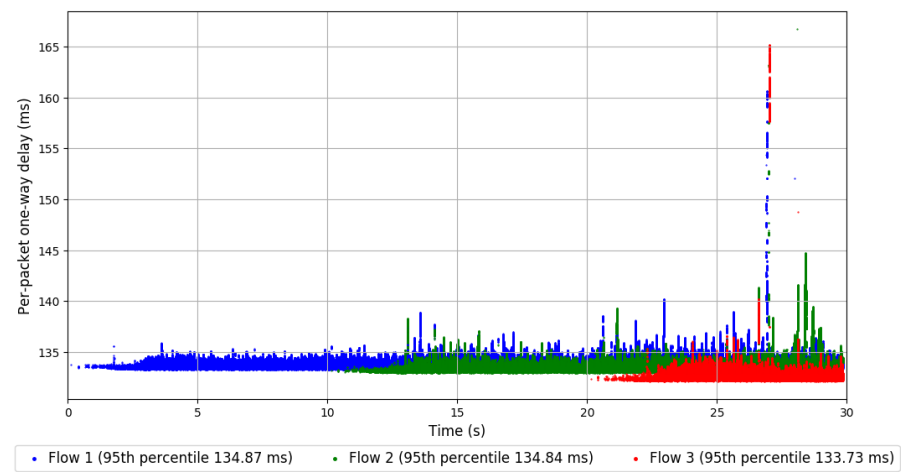
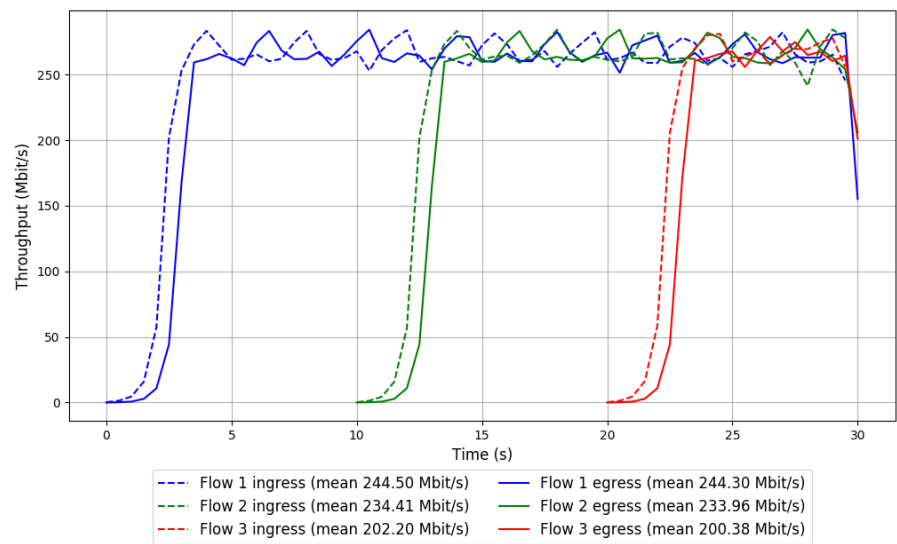
-- Flow 3:

Average throughput: 200.38 Mbit/s

95th percentile per-packet one-way delay: 133.730 ms

Loss rate: 3.54%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-11-15 16:57:22

End at: 2018-11-15 16:57:52

Local clock offset: -0.044 ms

Remote clock offset: 0.077 ms

Below is generated by plot.py at 2018-11-15 18:05:46

Datalink statistics

-- Total of 3 flows:

Average throughput: 457.11 Mbit/s

95th percentile per-packet one-way delay: 133.853 ms

Loss rate: 1.55%

-- Flow 1:

Average throughput: 244.74 Mbit/s

95th percentile per-packet one-way delay: 133.940 ms

Loss rate: 0.97%

-- Flow 2:

Average throughput: 229.63 Mbit/s

95th percentile per-packet one-way delay: 133.765 ms

Loss rate: 1.54%

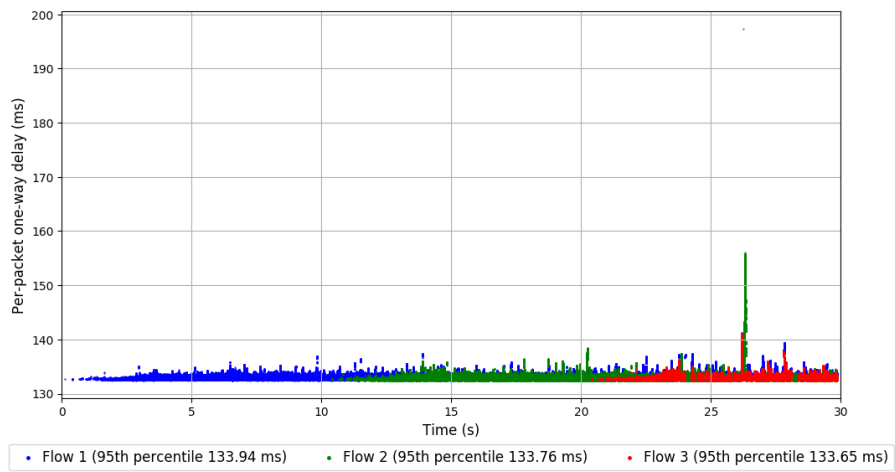
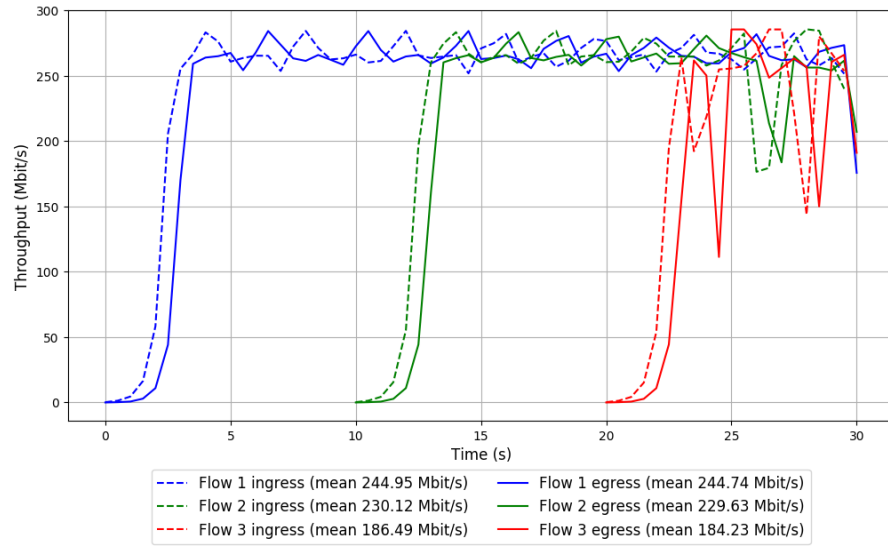
-- Flow 3:

Average throughput: 184.23 Mbit/s

95th percentile per-packet one-way delay: 133.653 ms

Loss rate: 3.84%

Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-11-15 15:03:07

End at: 2018-11-15 15:03:37

Local clock offset: 0.108 ms

Remote clock offset: 0.014 ms

Below is generated by plot.py at 2018-11-15 18:17:17

Datalink statistics

-- Total of 3 flows:

Average throughput: 835.08 Mbit/s

95th percentile per-packet one-way delay: 165.146 ms

Loss rate: 1.36%

-- Flow 1:

Average throughput: 521.13 Mbit/s

95th percentile per-packet one-way delay: 172.274 ms

Loss rate: 1.04%

-- Flow 2:

Average throughput: 349.21 Mbit/s

95th percentile per-packet one-way delay: 138.380 ms

Loss rate: 1.31%

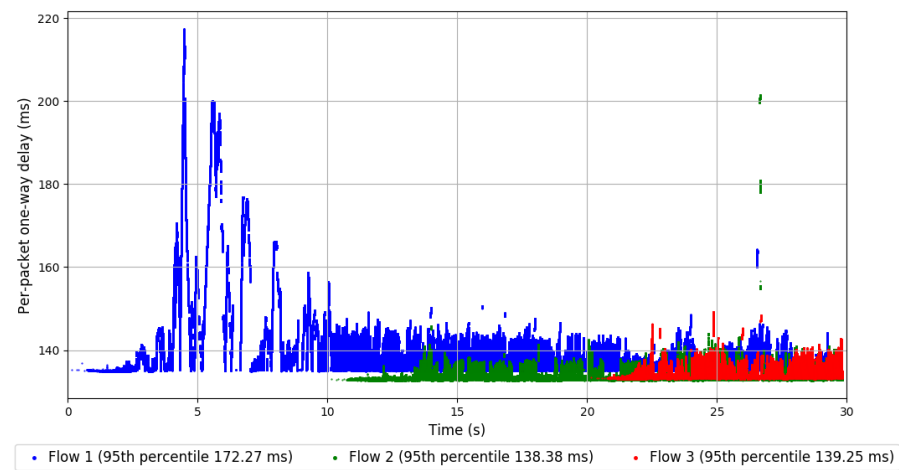
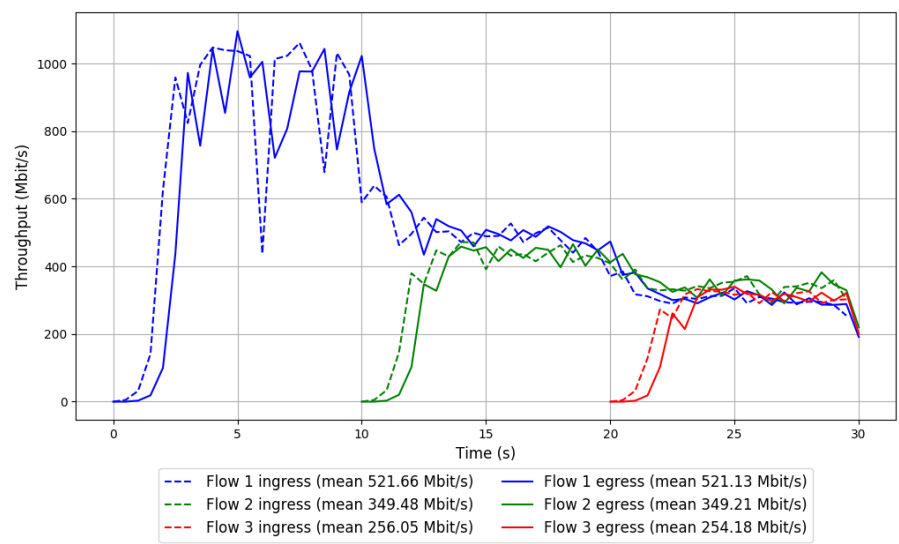
-- Flow 3:

Average throughput: 254.18 Mbit/s

95th percentile per-packet one-way delay: 139.246 ms

Loss rate: 3.40%

Run 1: Report of FillP — Data Link

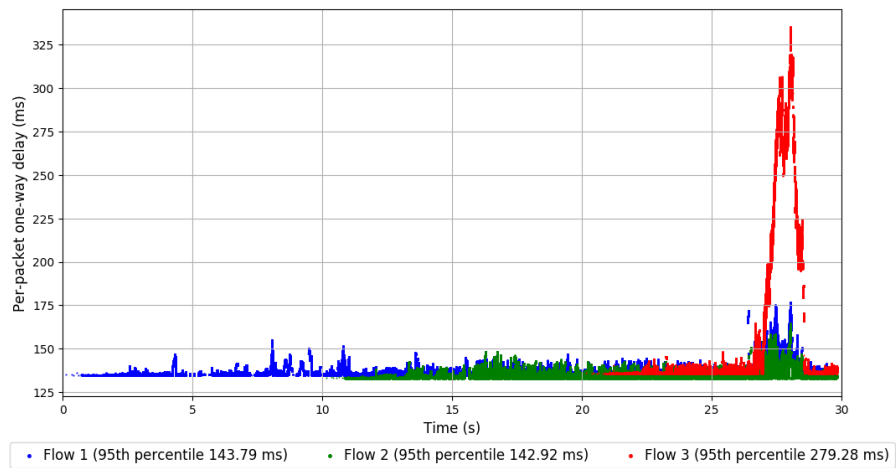
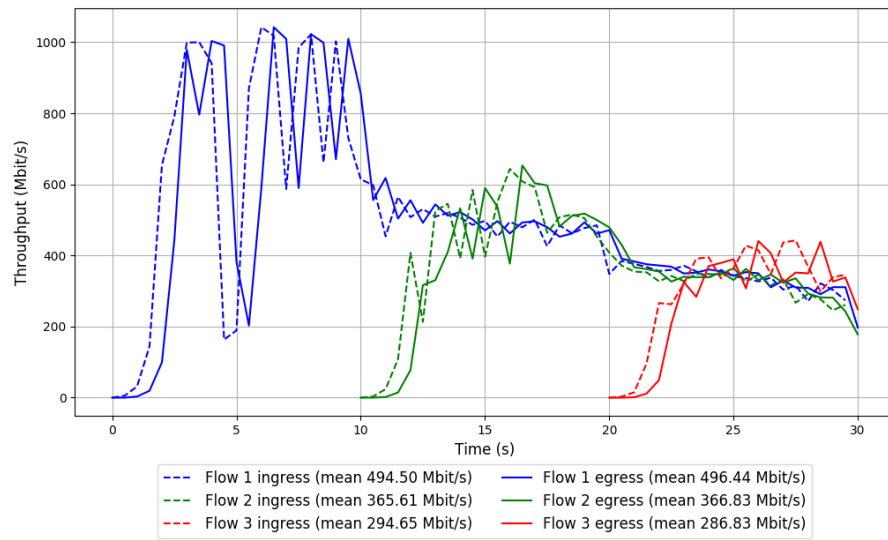


Run 2: Statistics of FillP

Start at: 2018-11-15 15:37:44
End at: 2018-11-15 15:38:14
Local clock offset: 0.134 ms
Remote clock offset: -0.035 ms

Below is generated by plot.py at 2018-11-15 18:17:23
Datalink statistics
-- Total of 3 flows:
Average throughput: 832.77 Mbit/s
95th percentile per-packet one-way delay: 146.545 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 496.44 Mbit/s
95th percentile per-packet one-way delay: 143.795 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 366.83 Mbit/s
95th percentile per-packet one-way delay: 142.919 ms
Loss rate: 1.08%
-- Flow 3:
Average throughput: 286.83 Mbit/s
95th percentile per-packet one-way delay: 279.276 ms
Loss rate: 5.44%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-11-15 16:12:51

End at: 2018-11-15 16:13:21

Local clock offset: 0.279 ms

Remote clock offset: 0.089 ms

Below is generated by plot.py at 2018-11-15 18:17:23

Datalink statistics

-- Total of 3 flows:

Average throughput: 388.86 Mbit/s

95th percentile per-packet one-way delay: 142.515 ms

Loss rate: 1.42%

-- Flow 1:

Average throughput: 53.12 Mbit/s

95th percentile per-packet one-way delay: 134.613 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 367.47 Mbit/s

95th percentile per-packet one-way delay: 140.249 ms

Loss rate: 0.97%

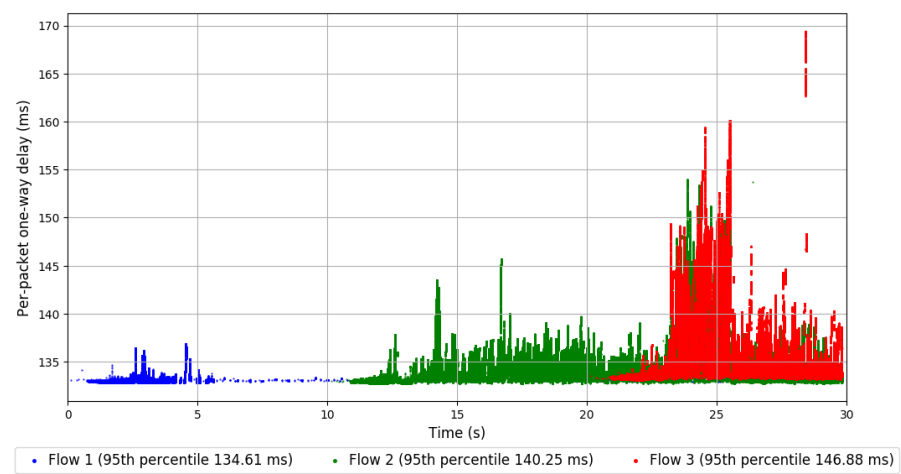
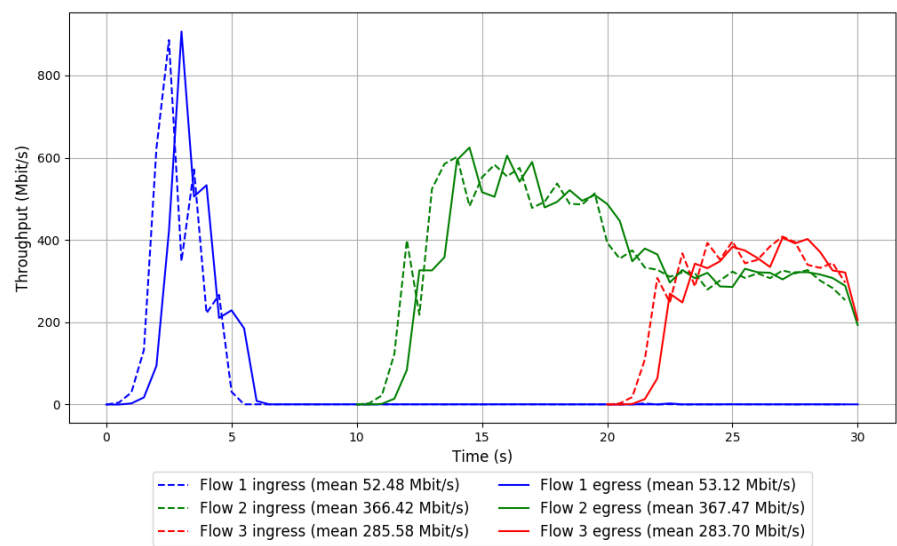
-- Flow 3:

Average throughput: 283.70 Mbit/s

95th percentile per-packet one-way delay: 146.879 ms

Loss rate: 3.33%

Run 3: Report of FillP — Data Link



Run 4: Statistics of FillP

Start at: 2018-11-15 16:47:38

End at: 2018-11-15 16:48:08

Local clock offset: 0.497 ms

Remote clock offset: 0.053 ms

Below is generated by plot.py at 2018-11-15 18:19:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 848.42 Mbit/s

95th percentile per-packet one-way delay: 159.842 ms

Loss rate: 1.01%

-- Flow 1:

Average throughput: 542.90 Mbit/s

95th percentile per-packet one-way delay: 164.794 ms

Loss rate: 0.59%

-- Flow 2:

Average throughput: 355.04 Mbit/s

95th percentile per-packet one-way delay: 142.763 ms

Loss rate: 1.25%

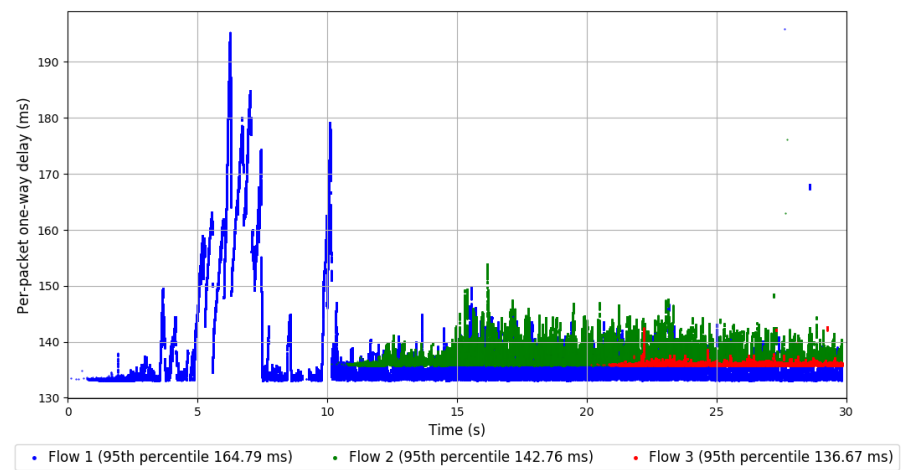
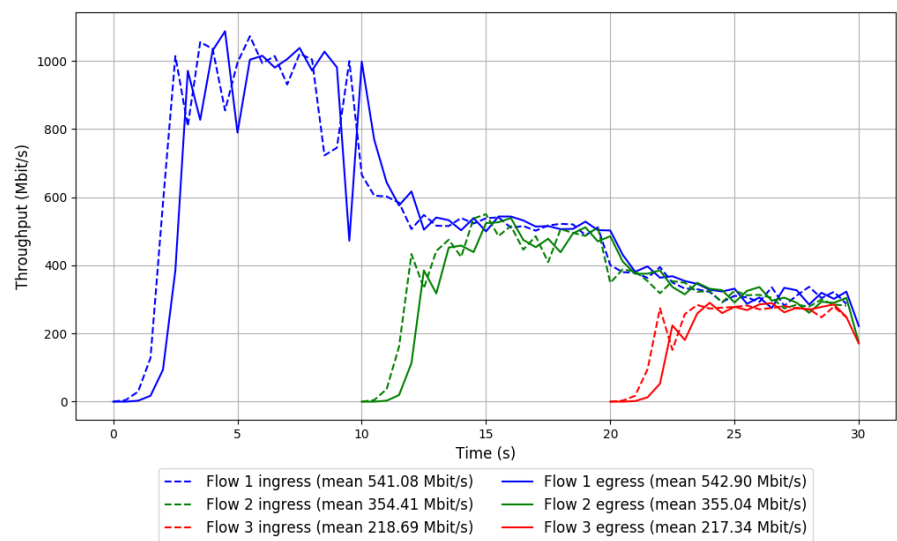
-- Flow 3:

Average throughput: 217.34 Mbit/s

95th percentile per-packet one-way delay: 136.671 ms

Loss rate: 3.32%

Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-11-15 17:22:33

End at: 2018-11-15 17:23:03

Local clock offset: 0.382 ms

Remote clock offset: 0.058 ms

Below is generated by plot.py at 2018-11-15 18:23:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 775.95 Mbit/s

95th percentile per-packet one-way delay: 191.734 ms

Loss rate: 1.83%

-- Flow 1:

Average throughput: 485.65 Mbit/s

95th percentile per-packet one-way delay: 196.345 ms

Loss rate: 1.76%

-- Flow 2:

Average throughput: 330.29 Mbit/s

95th percentile per-packet one-way delay: 176.766 ms

Loss rate: 1.44%

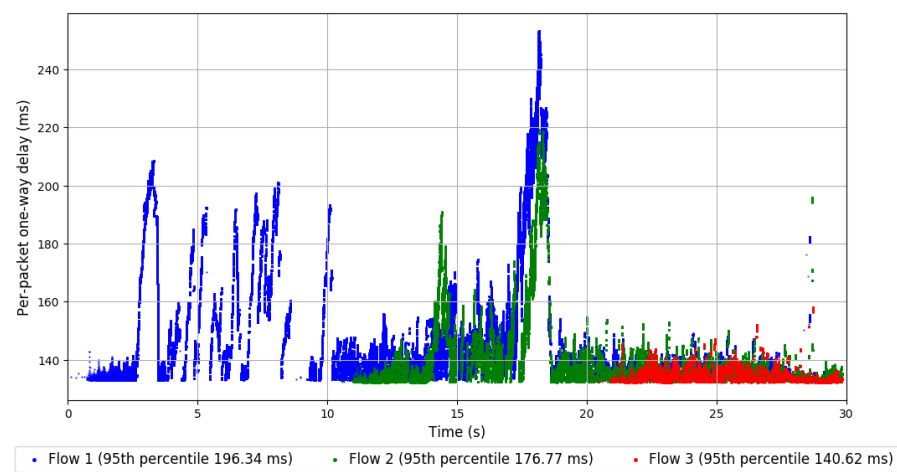
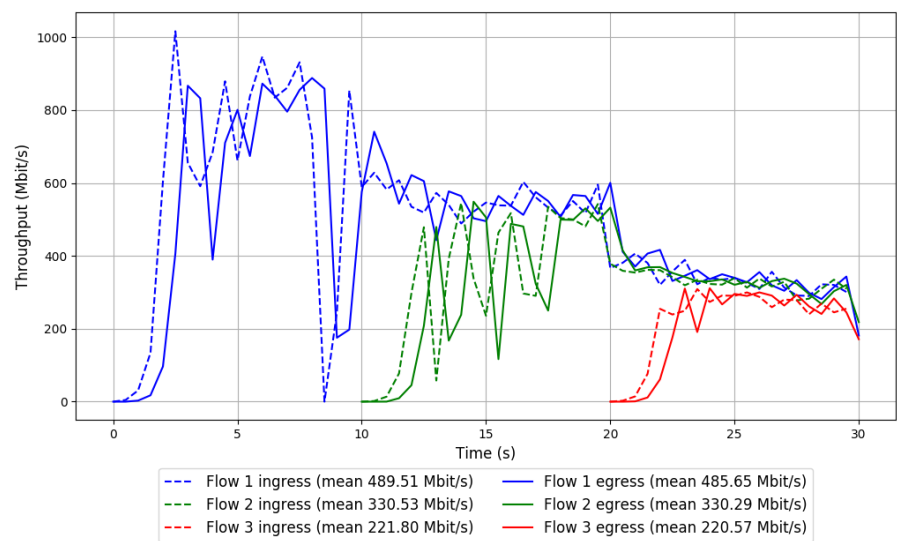
-- Flow 3:

Average throughput: 220.57 Mbit/s

95th percentile per-packet one-way delay: 140.625 ms

Loss rate: 3.41%

Run 5: Report of FillP — Data Link

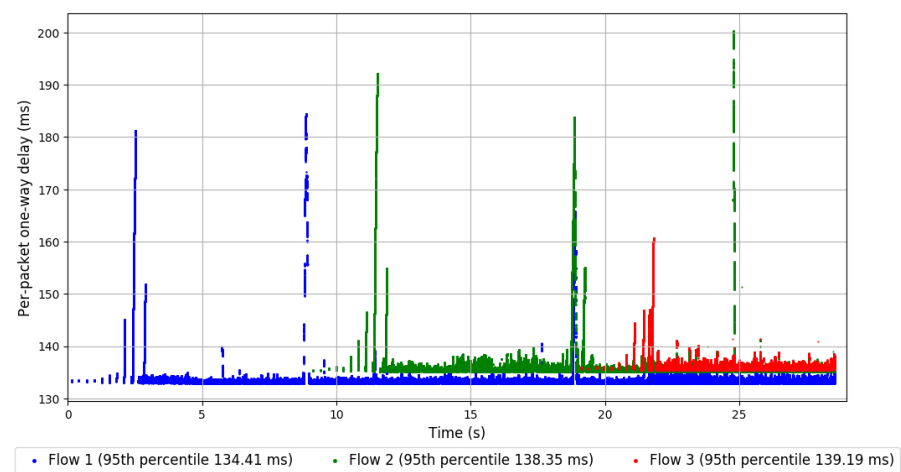
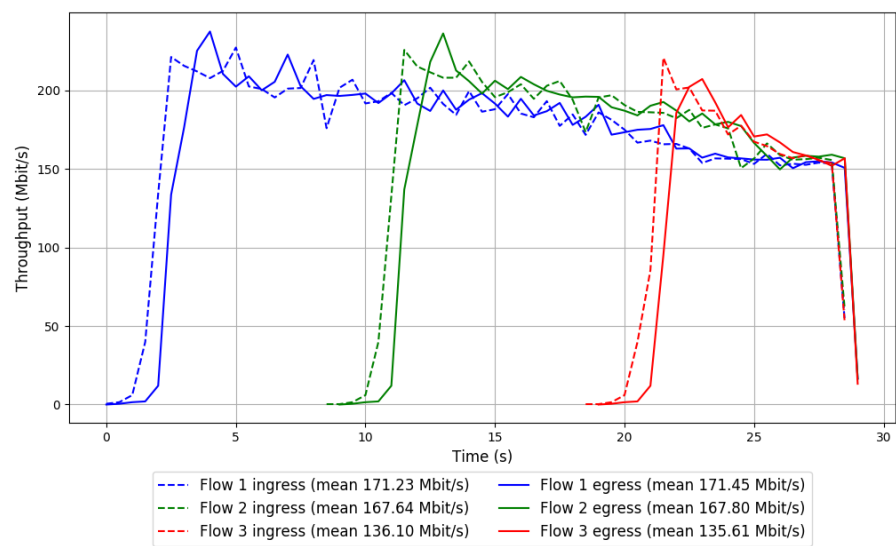



```
Run 1: Statistics of Indigo

Start at: 2018-11-15 14:46:25
End at: 2018-11-15 14:46:55
Local clock offset: 0.252 ms
Remote clock offset: 0.03 ms

# Below is generated by plot.py at 2018-11-15 18:23:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 331.25 Mbit/s
95th percentile per-packet one-way delay: 137.300 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 171.45 Mbit/s
95th percentile per-packet one-way delay: 134.415 ms
Loss rate: 0.81%
-- Flow 2:
Average throughput: 167.80 Mbit/s
95th percentile per-packet one-way delay: 138.353 ms
Loss rate: 1.27%
-- Flow 3:
Average throughput: 135.61 Mbit/s
95th percentile per-packet one-way delay: 139.191 ms
Loss rate: 3.11%
```

Run 1: Report of Indigo — Data Link

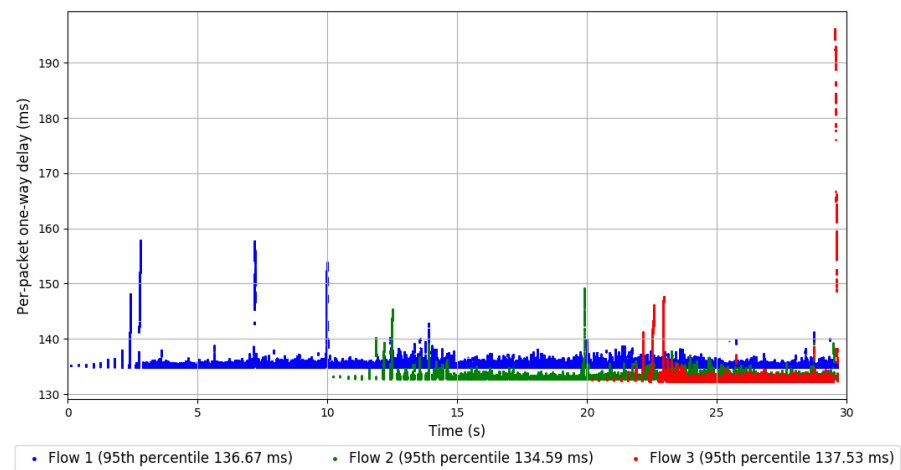
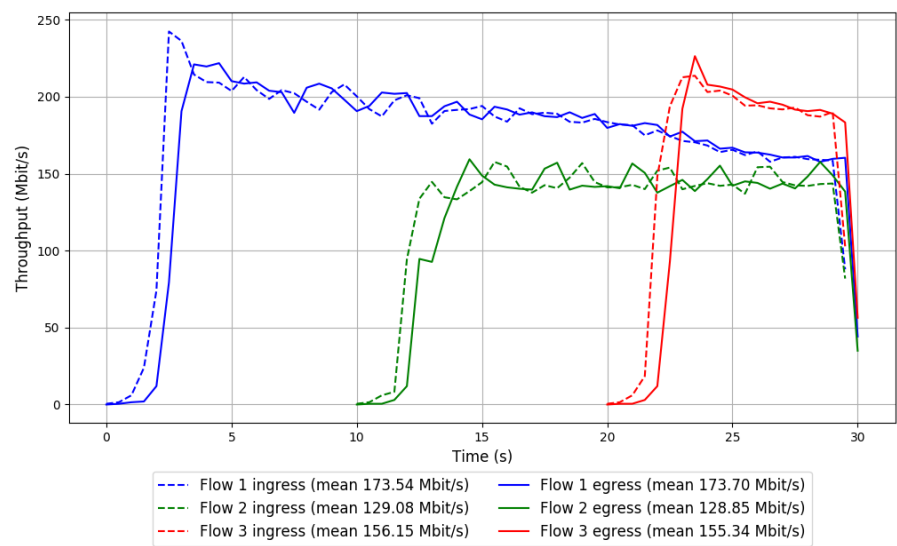


Run 2: Statistics of Indigo

Start at: 2018-11-15 15:21:27
End at: 2018-11-15 15:21:57
Local clock offset: -0.334 ms
Remote clock offset: -0.033 ms

Below is generated by plot.py at 2018-11-15 18:23:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 308.31 Mbit/s
95th percentile per-packet one-way delay: 136.411 ms
Loss rate: 1.43%
-- Flow 1:
Average throughput: 173.70 Mbit/s
95th percentile per-packet one-way delay: 136.674 ms
Loss rate: 0.83%
-- Flow 2:
Average throughput: 128.85 Mbit/s
95th percentile per-packet one-way delay: 134.594 ms
Loss rate: 1.54%
-- Flow 3:
Average throughput: 155.34 Mbit/s
95th percentile per-packet one-way delay: 137.525 ms
Loss rate: 3.30%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-11-15 15:56:13

End at: 2018-11-15 15:56:43

Local clock offset: 0.381 ms

Remote clock offset: 0.073 ms

Below is generated by plot.py at 2018-11-15 18:23:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 312.01 Mbit/s

95th percentile per-packet one-way delay: 136.530 ms

Loss rate: 1.36%

-- Flow 1:

Average throughput: 178.81 Mbit/s

95th percentile per-packet one-way delay: 134.308 ms

Loss rate: 0.82%

-- Flow 2:

Average throughput: 130.61 Mbit/s

95th percentile per-packet one-way delay: 137.049 ms

Loss rate: 1.53%

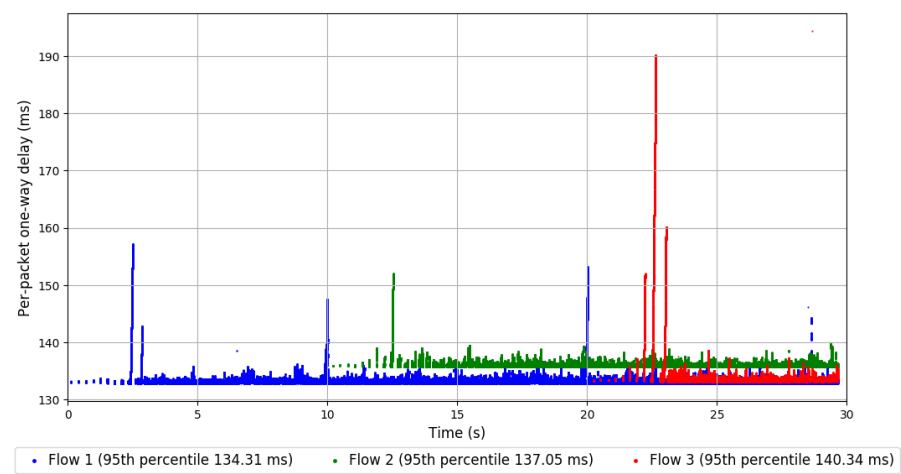
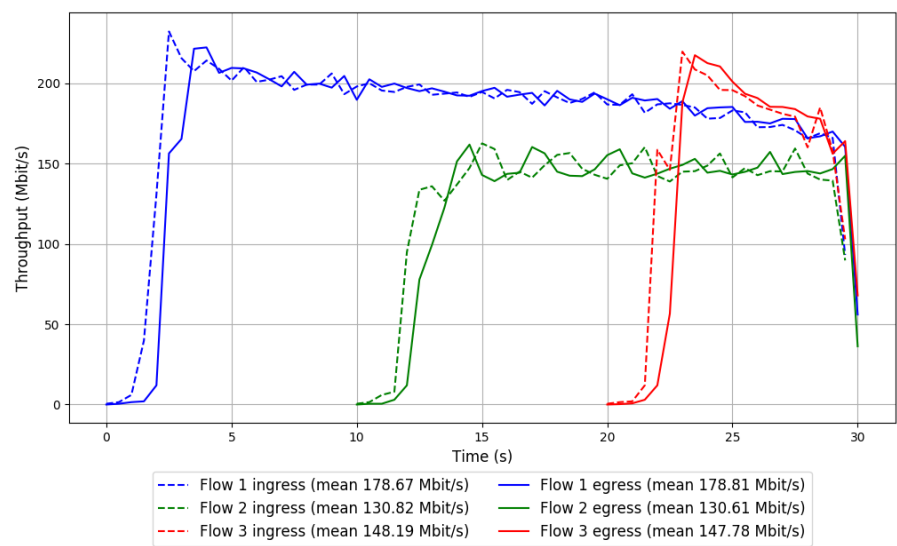
-- Flow 3:

Average throughput: 147.78 Mbit/s

95th percentile per-packet one-way delay: 140.345 ms

Loss rate: 3.02%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-11-15 16:31:42

End at: 2018-11-15 16:32:12

Local clock offset: 0.258 ms

Remote clock offset: 0.074 ms

Below is generated by plot.py at 2018-11-15 18:23:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 331.72 Mbit/s

95th percentile per-packet one-way delay: 137.182 ms

Loss rate: 1.34%

-- Flow 1:

Average throughput: 174.35 Mbit/s

95th percentile per-packet one-way delay: 134.390 ms

Loss rate: 0.80%

-- Flow 2:

Average throughput: 165.32 Mbit/s

95th percentile per-packet one-way delay: 135.565 ms

Loss rate: 1.29%

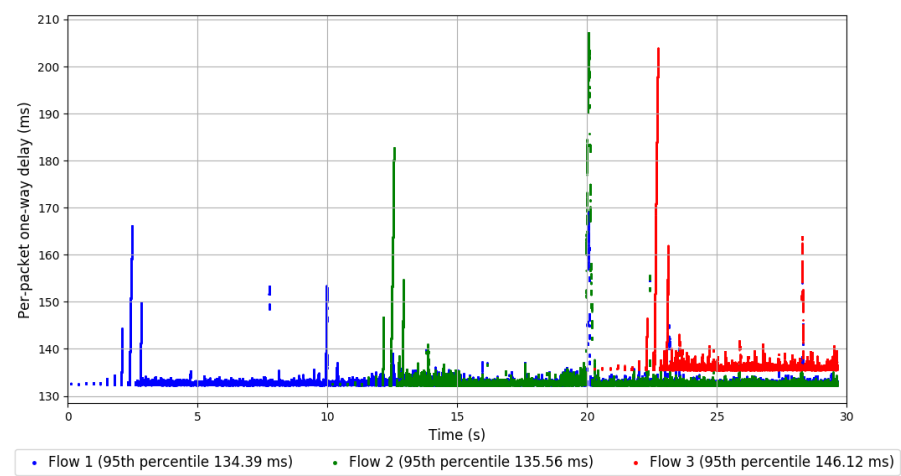
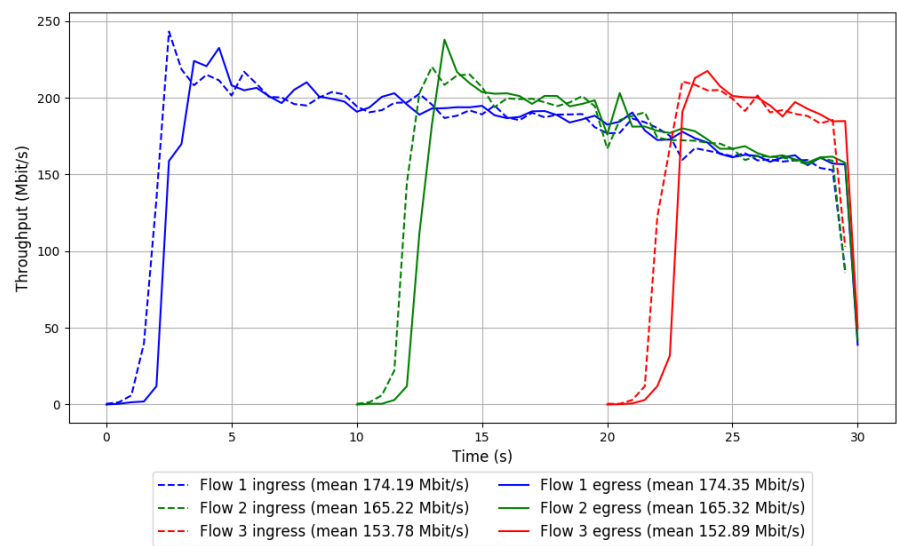
-- Flow 3:

Average throughput: 152.89 Mbit/s

95th percentile per-packet one-way delay: 146.117 ms

Loss rate: 3.36%

Run 4: Report of Indigo — Data Link



Run 5: Statistics of Indigo

Start at: 2018-11-15 17:05:16

End at: 2018-11-15 17:05:46

Local clock offset: 0.428 ms

Remote clock offset: 0.147 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 339.56 Mbit/s

95th percentile per-packet one-way delay: 134.974 ms

Loss rate: 1.40%

-- Flow 1:

Average throughput: 182.89 Mbit/s

95th percentile per-packet one-way delay: 134.807 ms

Loss rate: 0.87%

-- Flow 2:

Average throughput: 160.67 Mbit/s

95th percentile per-packet one-way delay: 135.071 ms

Loss rate: 1.32%

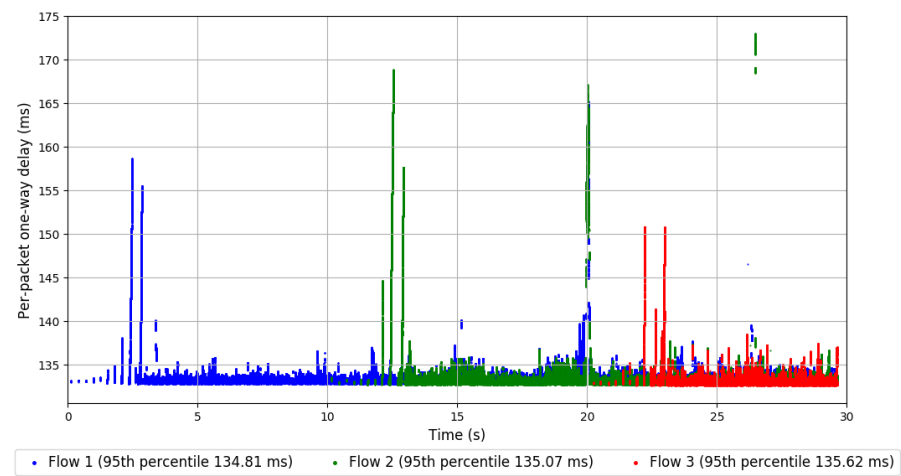
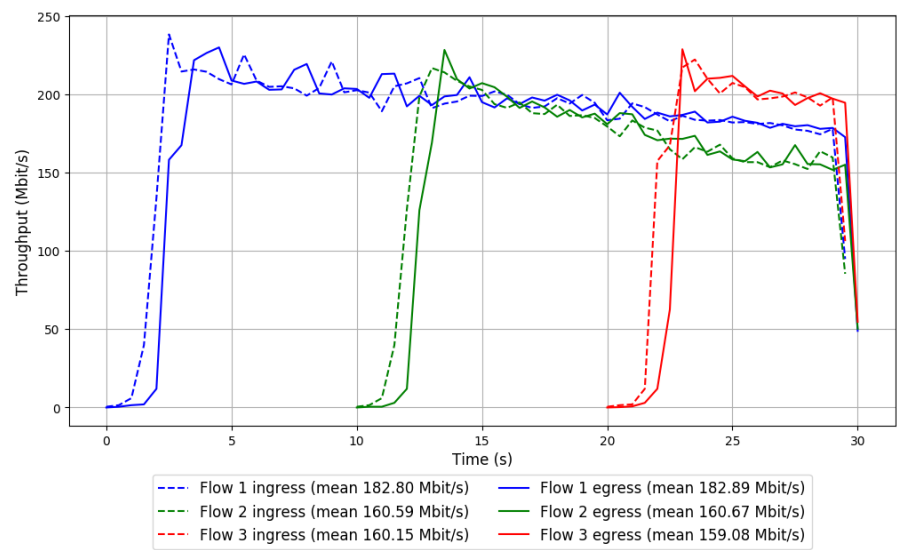
-- Flow 3:

Average throughput: 159.08 Mbit/s

95th percentile per-packet one-way delay: 135.619 ms

Loss rate: 3.40%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-15 14:42:07

End at: 2018-11-15 14:42:37

Local clock offset: 0.199 ms

Remote clock offset: 0.033 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 481.35 Mbit/s

95th percentile per-packet one-way delay: 188.134 ms

Loss rate: 1.38%

-- Flow 1:

Average throughput: 268.37 Mbit/s

95th percentile per-packet one-way delay: 188.102 ms

Loss rate: 0.39%

-- Flow 2:

Average throughput: 241.17 Mbit/s

95th percentile per-packet one-way delay: 194.982 ms

Loss rate: 0.65%

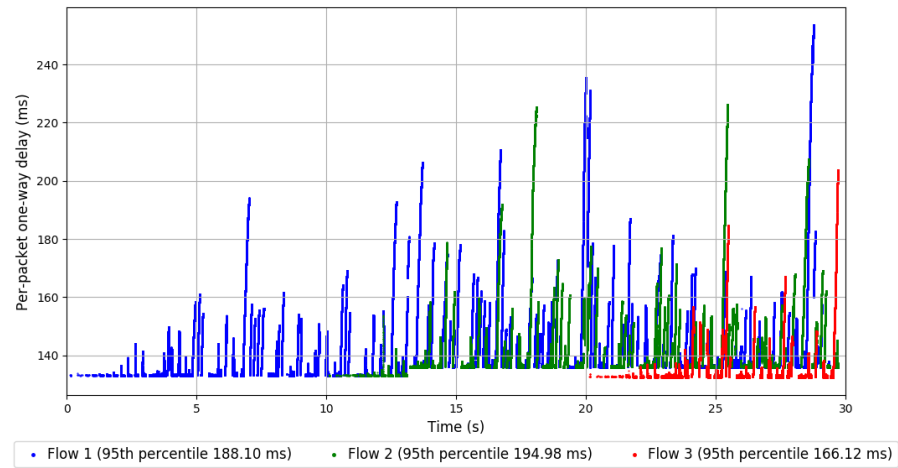
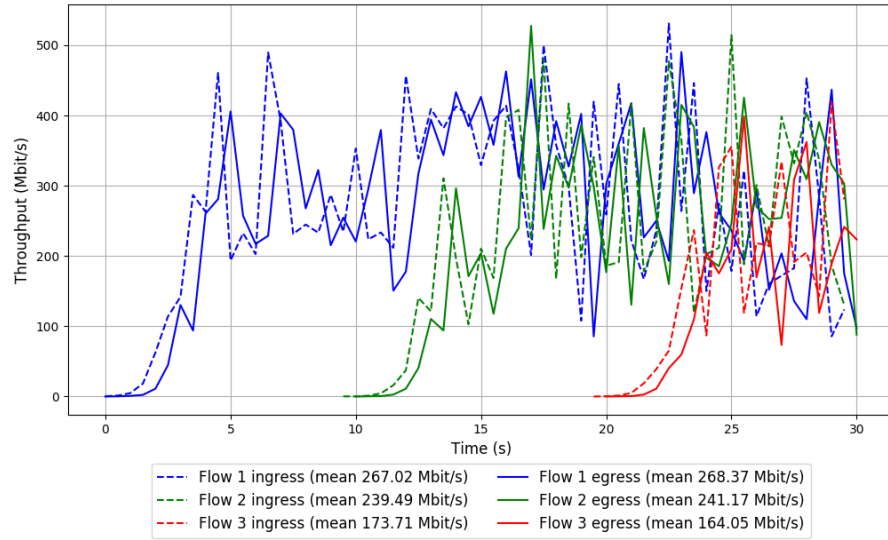
-- Flow 3:

Average throughput: 164.05 Mbit/s

95th percentile per-packet one-way delay: 166.121 ms

Loss rate: 8.03%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-15 15:17:31

End at: 2018-11-15 15:18:01

Local clock offset: -0.04 ms

Remote clock offset: 0.011 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 481.53 Mbit/s

95th percentile per-packet one-way delay: 172.926 ms

Loss rate: 1.35%

-- Flow 1:

Average throughput: 268.93 Mbit/s

95th percentile per-packet one-way delay: 176.234 ms

Loss rate: 0.89%

-- Flow 2:

Average throughput: 235.28 Mbit/s

95th percentile per-packet one-way delay: 163.828 ms

Loss rate: 0.41%

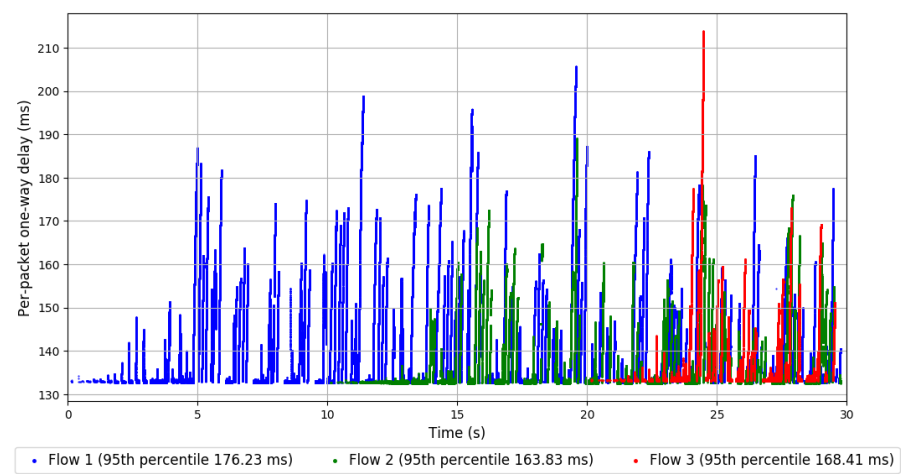
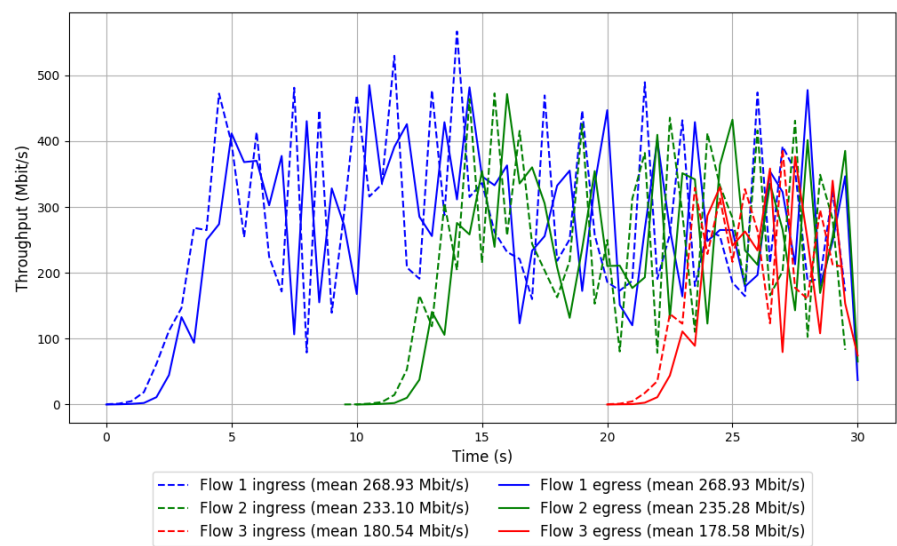
-- Flow 3:

Average throughput: 178.58 Mbit/s

95th percentile per-packet one-way delay: 168.411 ms

Loss rate: 5.85%

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



Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-15 15:52:24

End at: 2018-11-15 15:52:54

Local clock offset: 0.211 ms

Remote clock offset: 0.419 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 482.86 Mbit/s

95th percentile per-packet one-way delay: 196.682 ms

Loss rate: 0.99%

-- Flow 1:

Average throughput: 257.69 Mbit/s

95th percentile per-packet one-way delay: 191.922 ms

Loss rate: 1.50%

-- Flow 2:

Average throughput: 247.61 Mbit/s

95th percentile per-packet one-way delay: 197.880 ms

Loss rate: 0.17%

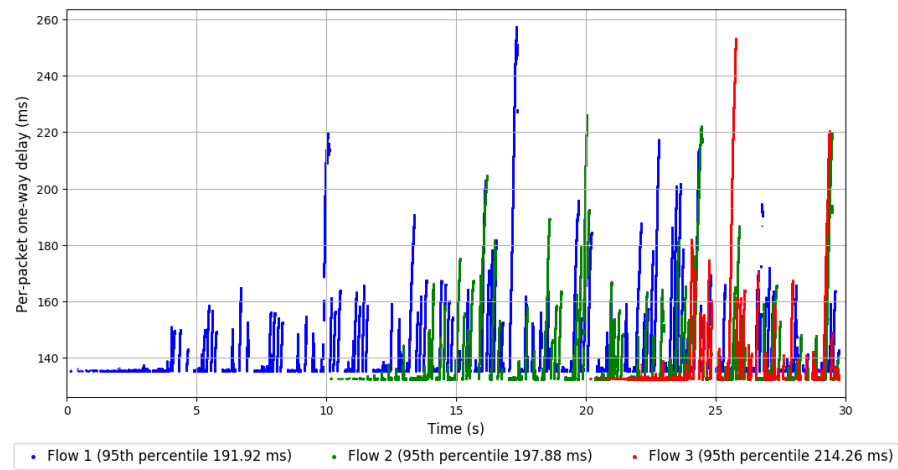
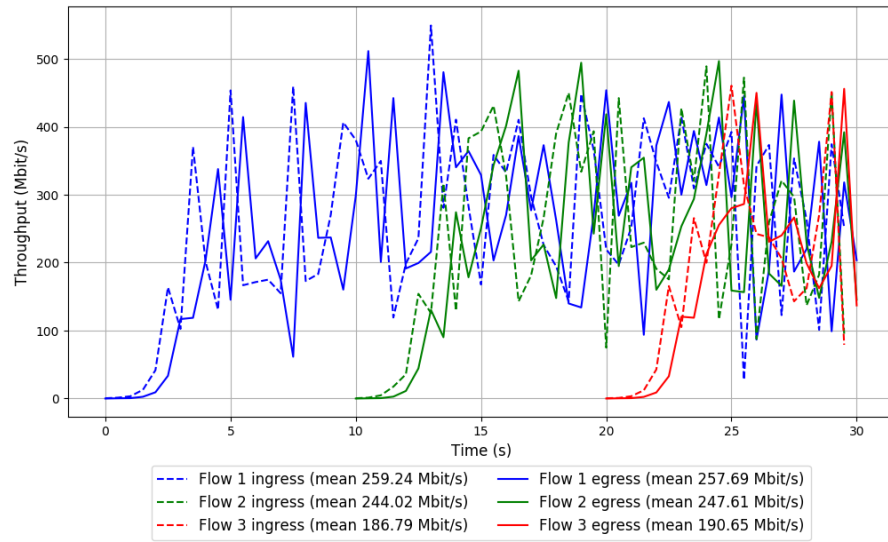
-- Flow 3:

Average throughput: 190.65 Mbit/s

95th percentile per-packet one-way delay: 214.262 ms

Loss rate: 0.98%

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



Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-15 16:27:18

End at: 2018-11-15 16:27:48

Local clock offset: 0.743 ms

Remote clock offset: 0.073 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 487.43 Mbit/s

95th percentile per-packet one-way delay: 182.284 ms

Loss rate: 1.90%

-- Flow 1:

Average throughput: 263.98 Mbit/s

95th percentile per-packet one-way delay: 177.651 ms

Loss rate: 1.91%

-- Flow 2:

Average throughput: 250.30 Mbit/s

95th percentile per-packet one-way delay: 186.581 ms

Loss rate: 1.76%

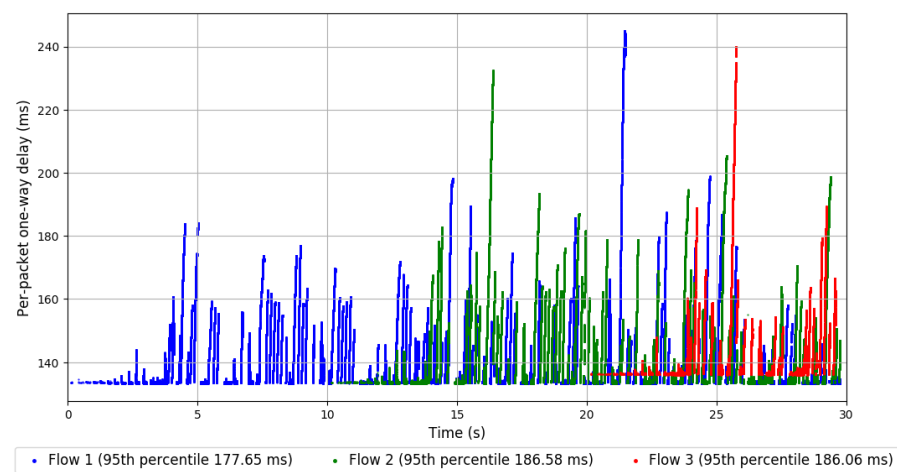
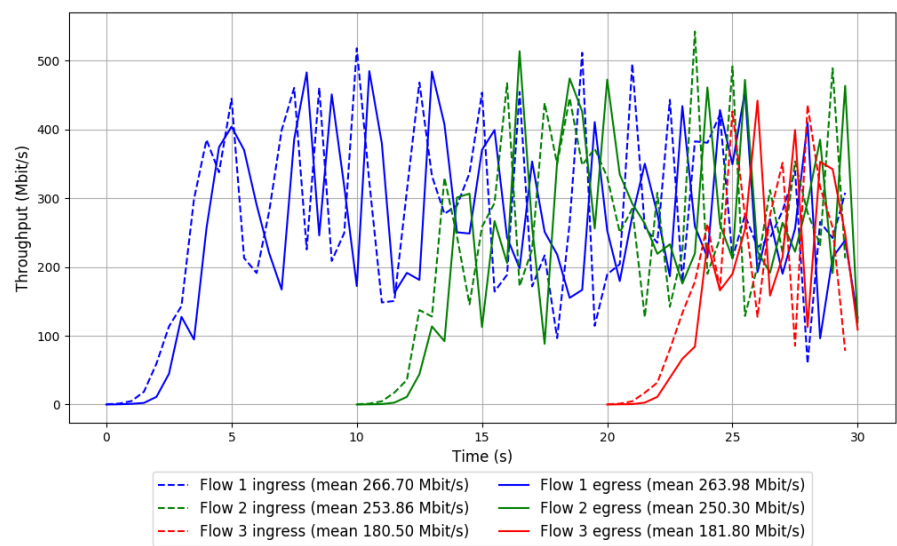
-- Flow 3:

Average throughput: 181.80 Mbit/s

95th percentile per-packet one-way delay: 186.065 ms

Loss rate: 2.23%

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



Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-15 17:01:32

End at: 2018-11-15 17:02:02

Local clock offset: 0.338 ms

Remote clock offset: 0.067 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 489.39 Mbit/s

95th percentile per-packet one-way delay: 188.739 ms

Loss rate: 1.27%

-- Flow 1:

Average throughput: 261.33 Mbit/s

95th percentile per-packet one-way delay: 182.897 ms

Loss rate: 0.44%

-- Flow 2:

Average throughput: 249.86 Mbit/s

95th percentile per-packet one-way delay: 199.431 ms

Loss rate: 2.25%

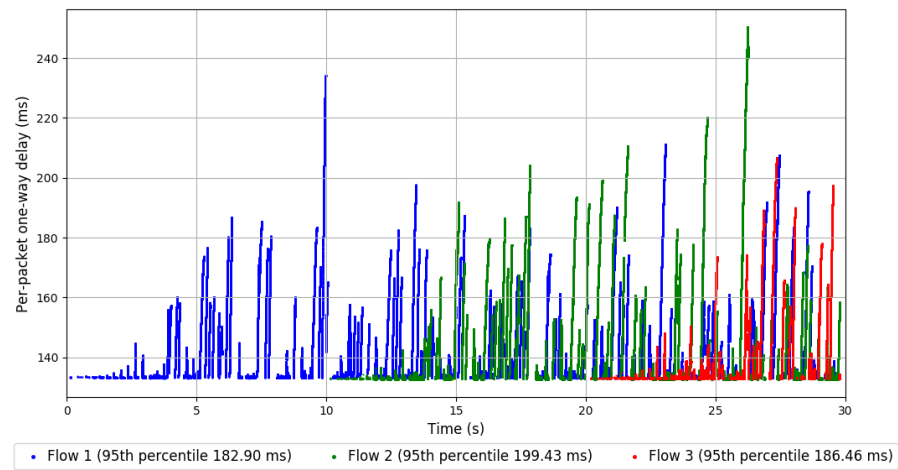
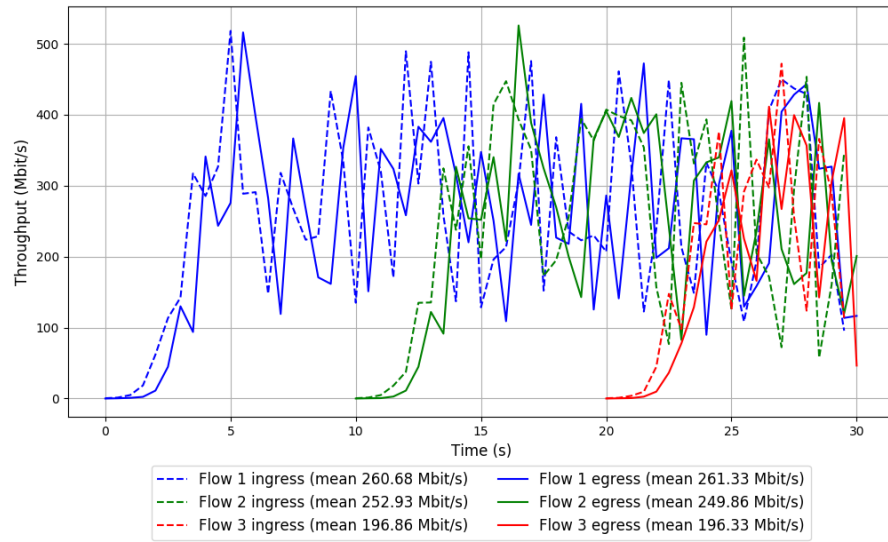
-- Flow 3:

Average throughput: 196.33 Mbit/s

95th percentile per-packet one-way delay: 186.455 ms

Loss rate: 2.05%

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

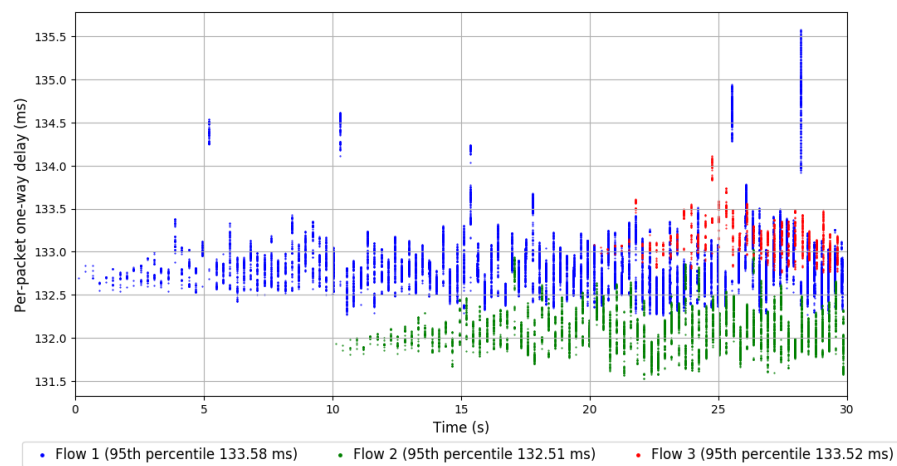
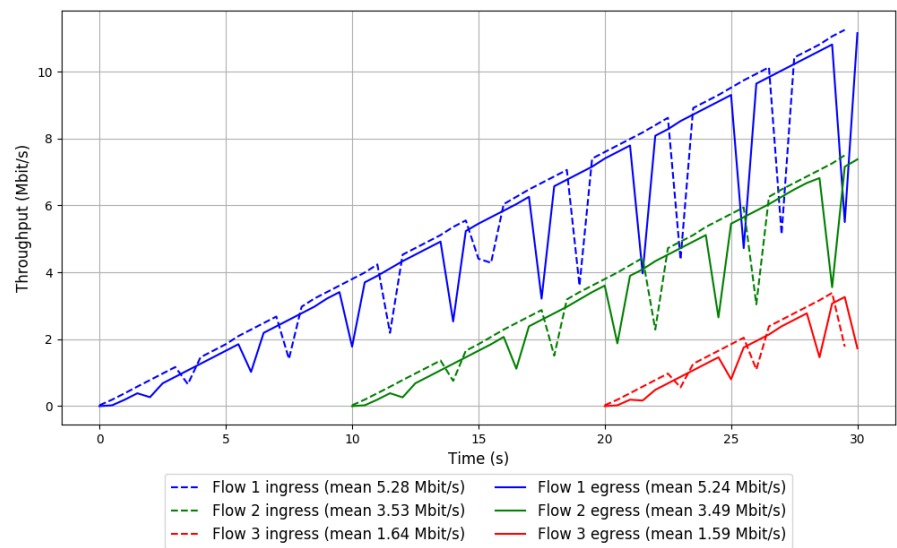


```
Run 1: Statistics of LEDBAT

Start at: 2018-11-15 14:31:43
End at: 2018-11-15 14:32:13
Local clock offset: -0.419 ms
Remote clock offset: 0.068 ms

# Below is generated by plot.py at 2018-11-15 18:30:44
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.05 Mbit/s
95th percentile per-packet one-way delay: 133.408 ms
Loss rate: 2.29%
-- Flow 1:
Average throughput: 5.24 Mbit/s
95th percentile per-packet one-way delay: 133.584 ms
Loss rate: 1.79%
-- Flow 2:
Average throughput: 3.49 Mbit/s
95th percentile per-packet one-way delay: 132.511 ms
Loss rate: 2.68%
-- Flow 3:
Average throughput: 1.59 Mbit/s
95th percentile per-packet one-way delay: 133.517 ms
Loss rate: 5.57%
```

Run 1: Report of LEDBAT — Data Link

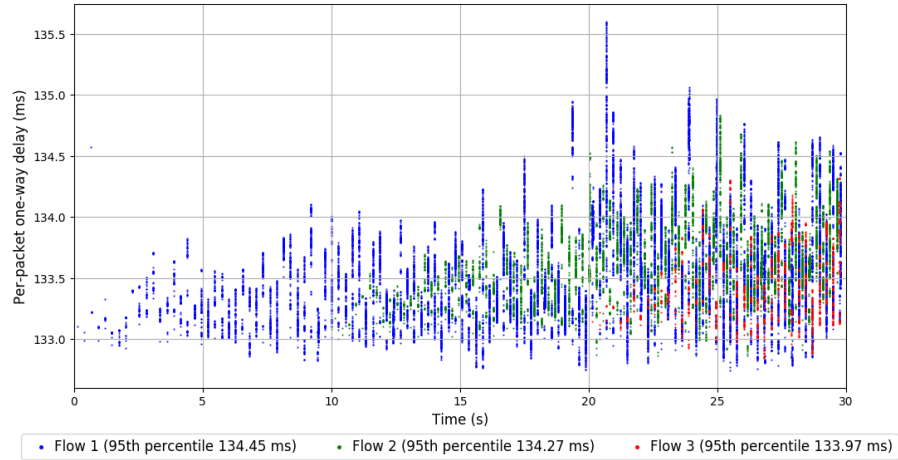
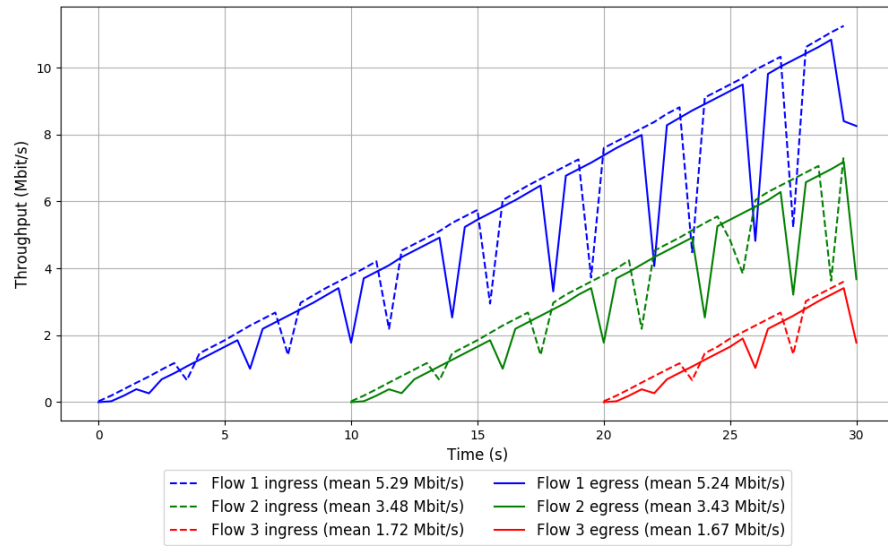


Run 2: Statistics of LEDBAT

Start at: 2018-11-15 15:06:45
End at: 2018-11-15 15:07:15
Local clock offset: 0.087 ms
Remote clock offset: -0.025 ms

Below is generated by plot.py at 2018-11-15 18:30:44
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.04 Mbit/s
95th percentile per-packet one-way delay: 134.381 ms
Loss rate: 2.30%
-- Flow 1:
Average throughput: 5.24 Mbit/s
95th percentile per-packet one-way delay: 134.454 ms
Loss rate: 1.79%
-- Flow 2:
Average throughput: 3.43 Mbit/s
95th percentile per-packet one-way delay: 134.267 ms
Loss rate: 2.71%
-- Flow 3:
Average throughput: 1.67 Mbit/s
95th percentile per-packet one-way delay: 133.974 ms
Loss rate: 5.37%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-11-15 15:41:33

End at: 2018-11-15 15:42:03

Local clock offset: 0.568 ms

Remote clock offset: 0.393 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 7.94 Mbit/s

95th percentile per-packet one-way delay: 136.687 ms

Loss rate: 2.32%

-- Flow 1:

Average throughput: 5.15 Mbit/s

95th percentile per-packet one-way delay: 136.915 ms

Loss rate: 1.80%

-- Flow 2:

Average throughput: 3.42 Mbit/s

95th percentile per-packet one-way delay: 134.083 ms

Loss rate: 2.72%

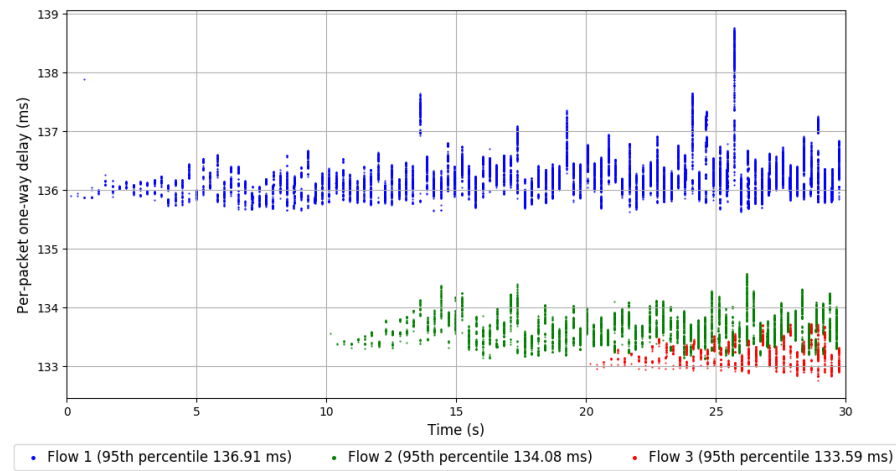
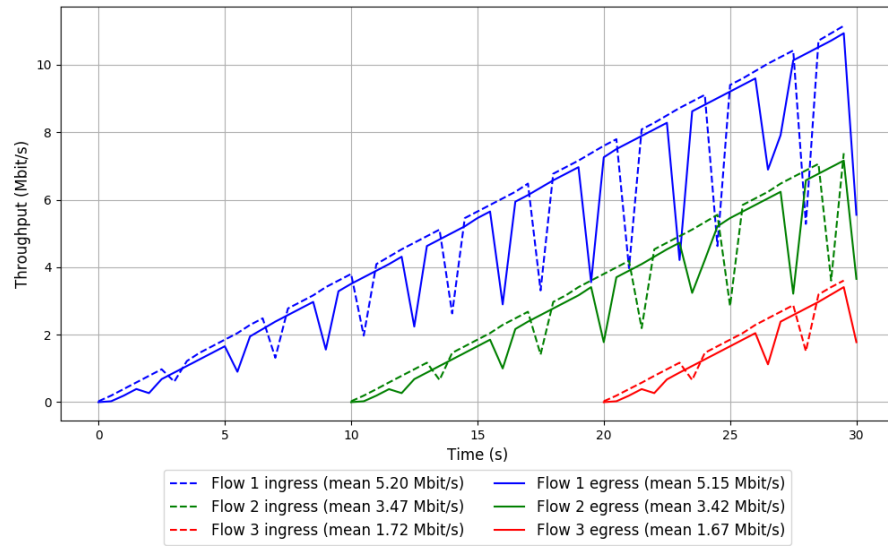
-- Flow 3:

Average throughput: 1.67 Mbit/s

95th percentile per-packet one-way delay: 133.591 ms

Loss rate: 5.40%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-11-15 16:16:00

End at: 2018-11-15 16:16:30

Local clock offset: 0.668 ms

Remote clock offset: 0.024 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.02 Mbit/s

95th percentile per-packet one-way delay: 134.498 ms

Loss rate: 2.30%

-- Flow 1:

Average throughput: 5.23 Mbit/s

95th percentile per-packet one-way delay: 134.587 ms

Loss rate: 1.79%

-- Flow 2:

Average throughput: 3.43 Mbit/s

95th percentile per-packet one-way delay: 134.288 ms

Loss rate: 2.71%

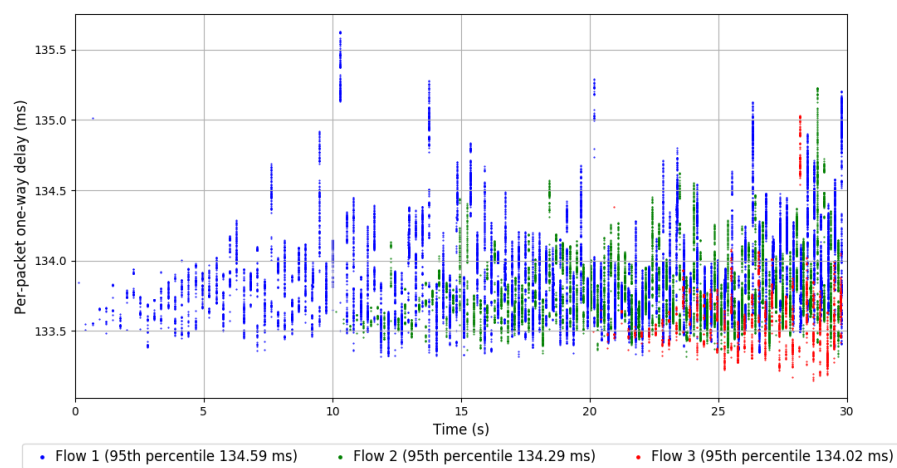
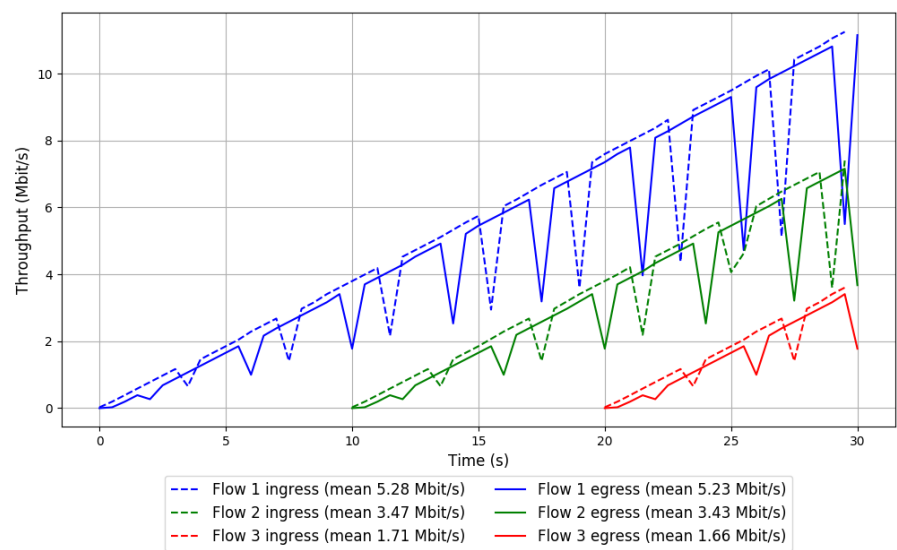
-- Flow 3:

Average throughput: 1.66 Mbit/s

95th percentile per-packet one-way delay: 134.016 ms

Loss rate: 5.40%

Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-11-15 16:51:14

End at: 2018-11-15 16:51:44

Local clock offset: 0.09 ms

Remote clock offset: 0.415 ms

Below is generated by plot.py at 2018-11-15 18:30:44

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.04 Mbit/s

95th percentile per-packet one-way delay: 133.336 ms

Loss rate: 2.30%

-- Flow 1:

Average throughput: 5.24 Mbit/s

95th percentile per-packet one-way delay: 133.058 ms

Loss rate: 1.79%

-- Flow 2:

Average throughput: 3.43 Mbit/s

95th percentile per-packet one-way delay: 133.459 ms

Loss rate: 2.71%

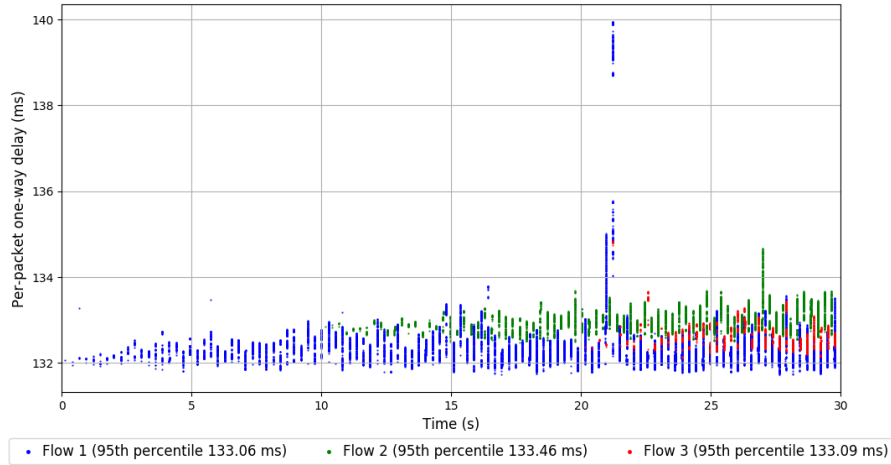
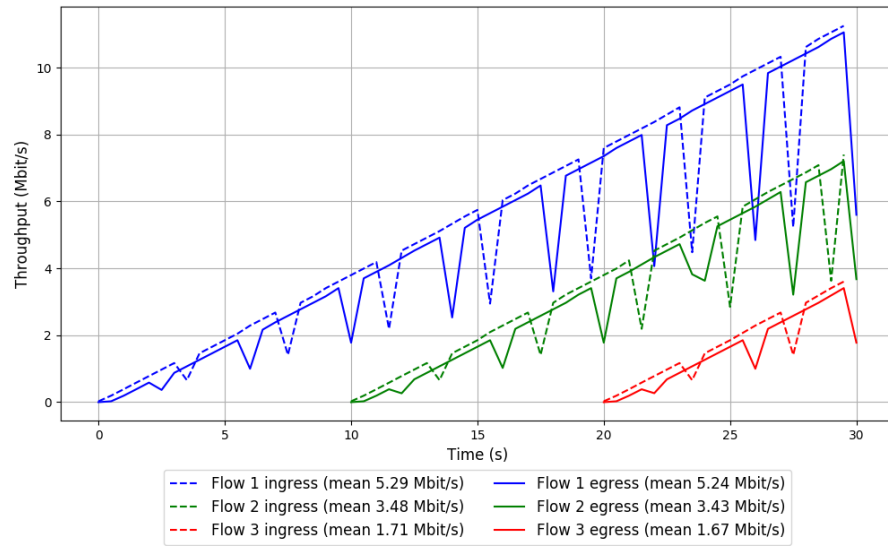
-- Flow 3:

Average throughput: 1.67 Mbit/s

95th percentile per-packet one-way delay: 133.093 ms

Loss rate: 5.40%

Run 5: Report of LEDBAT — Data Link

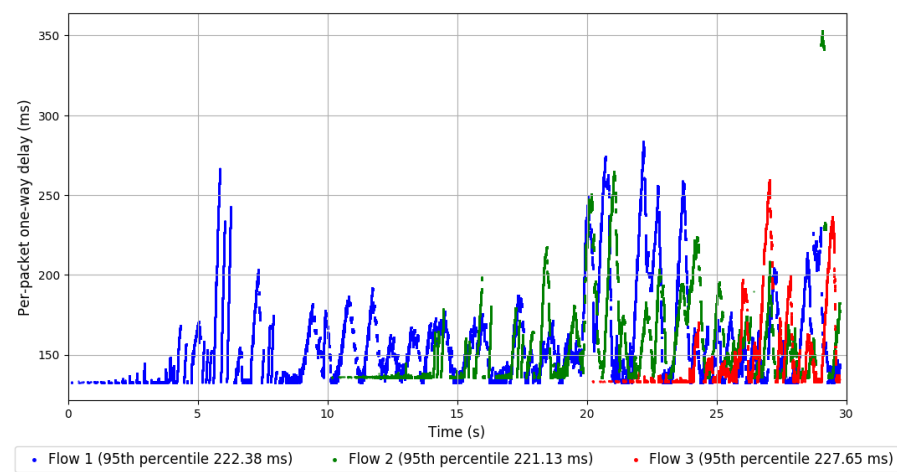
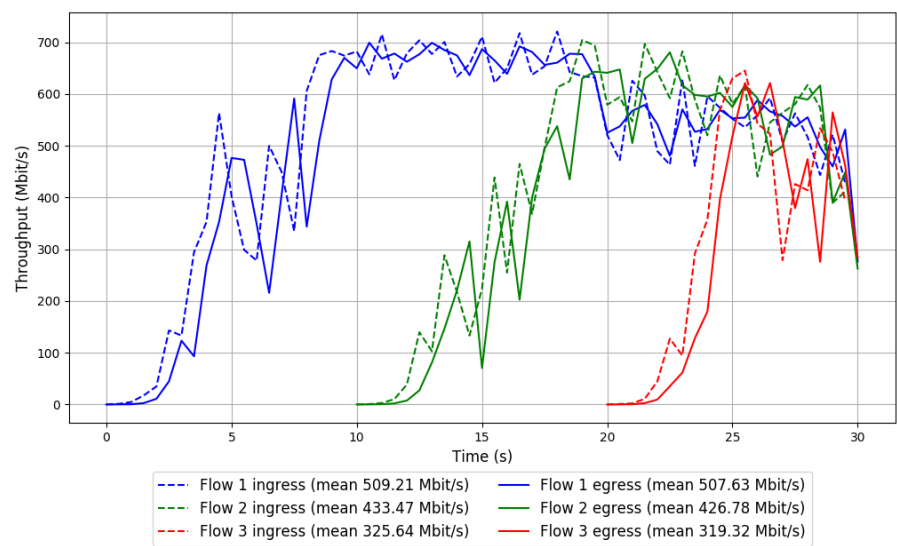


Run 1: Statistics of Indigo-Muses

Start at: 2018-11-15 14:52:23
End at: 2018-11-15 14:52:53
Local clock offset: 0.461 ms
Remote clock offset: -0.014 ms

Below is generated by plot.py at 2018-11-15 18:38:28
Datalink statistics
-- Total of 3 flows:
Average throughput: 892.50 Mbit/s
95th percentile per-packet one-way delay: 222.962 ms
Loss rate: 2.15%
-- Flow 1:
Average throughput: 507.63 Mbit/s
95th percentile per-packet one-way delay: 222.380 ms
Loss rate: 1.20%
-- Flow 2:
Average throughput: 426.78 Mbit/s
95th percentile per-packet one-way delay: 221.135 ms
Loss rate: 2.91%
-- Flow 3:
Average throughput: 319.32 Mbit/s
95th percentile per-packet one-way delay: 227.650 ms
Loss rate: 4.61%

Run 1: Report of Indigo-Muses — Data Link



Run 2: Statistics of Indigo-Muses

Start at: 2018-11-15 15:27:00

End at: 2018-11-15 15:27:30

Local clock offset: -0.243 ms

Remote clock offset: 0.008 ms

Below is generated by plot.py at 2018-11-15 18:42:18

Datalink statistics

-- Total of 3 flows:

Average throughput: 906.07 Mbit/s

95th percentile per-packet one-way delay: 193.743 ms

Loss rate: 2.20%

-- Flow 1:

Average throughput: 502.65 Mbit/s

95th percentile per-packet one-way delay: 192.883 ms

Loss rate: 1.22%

-- Flow 2:

Average throughput: 474.19 Mbit/s

95th percentile per-packet one-way delay: 196.359 ms

Loss rate: 1.89%

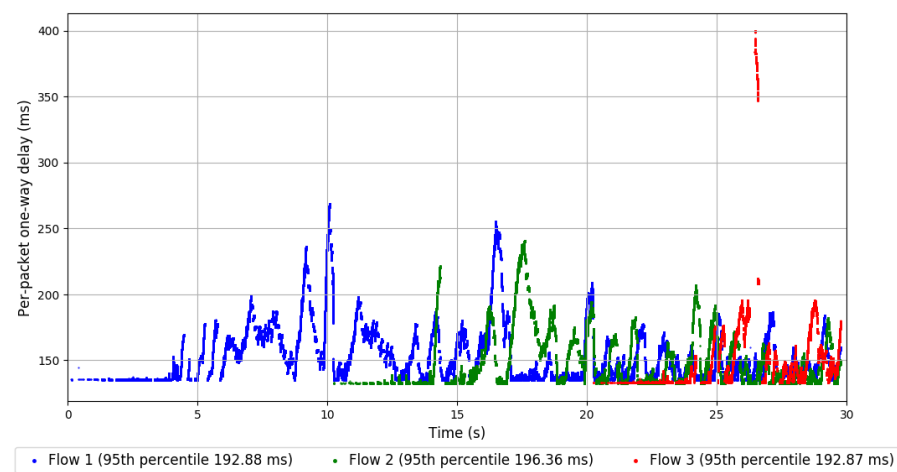
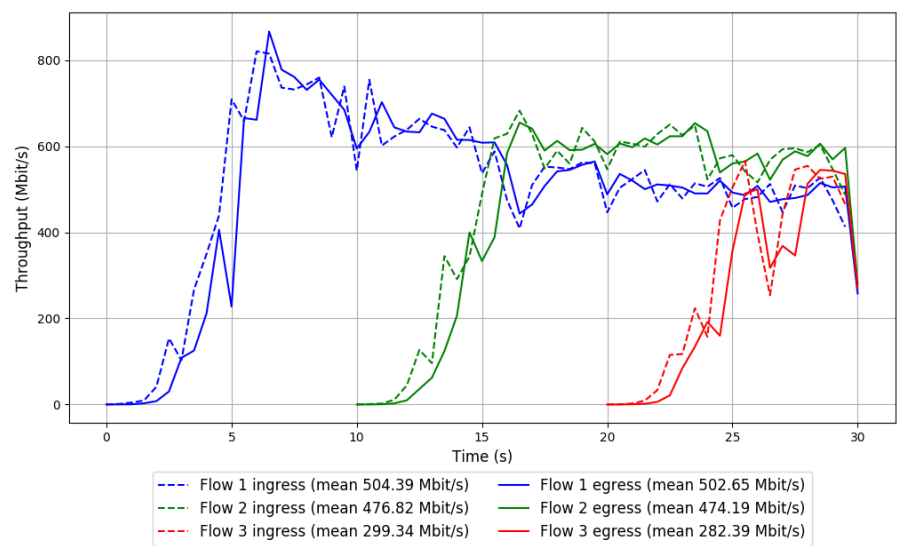
-- Flow 3:

Average throughput: 282.39 Mbit/s

95th percentile per-packet one-way delay: 192.867 ms

Loss rate: 8.24%

Run 2: Report of Indigo-Muses — Data Link



Run 3: Statistics of Indigo-Muses

Start at: 2018-11-15 16:02:12

End at: 2018-11-15 16:02:42

Local clock offset: 0.717 ms

Remote clock offset: 0.058 ms

Below is generated by plot.py at 2018-11-15 18:45:57

Datalink statistics

-- Total of 3 flows:

Average throughput: 877.75 Mbit/s

95th percentile per-packet one-way delay: 199.083 ms

Loss rate: 1.67%

-- Flow 1:

Average throughput: 509.65 Mbit/s

95th percentile per-packet one-way delay: 193.470 ms

Loss rate: 0.98%

-- Flow 2:

Average throughput: 436.82 Mbit/s

95th percentile per-packet one-way delay: 203.150 ms

Loss rate: 1.86%

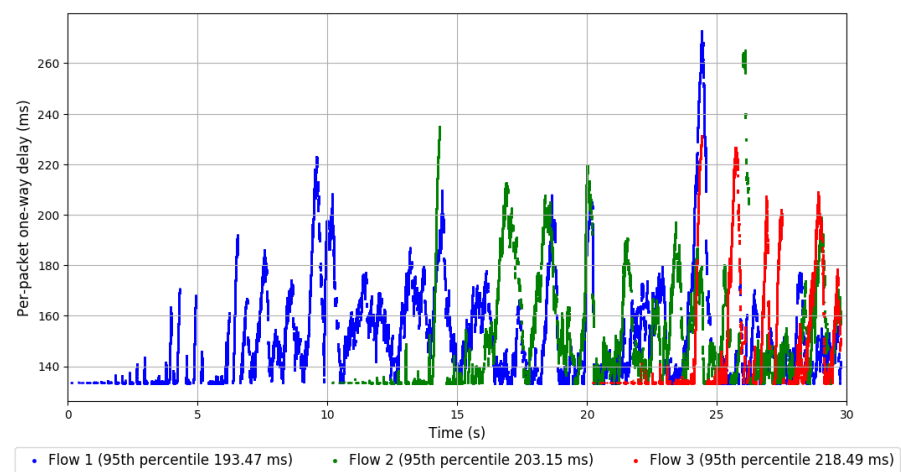
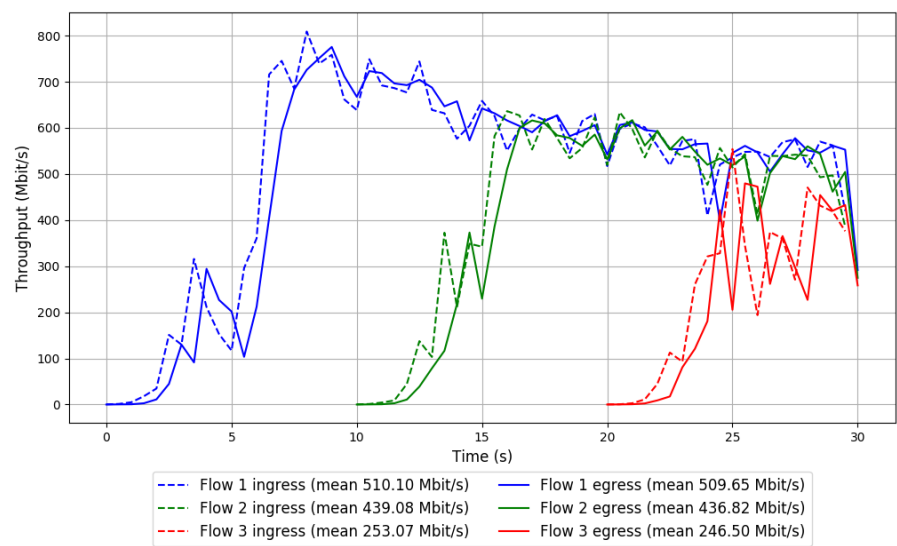
-- Flow 3:

Average throughput: 246.50 Mbit/s

95th percentile per-packet one-way delay: 218.486 ms

Loss rate: 5.24%

Run 3: Report of Indigo-Muses — Data Link



Run 4: Statistics of Indigo-Muses

Start at: 2018-11-15 16:37:25

End at: 2018-11-15 16:37:55

Local clock offset: 0.569 ms

Remote clock offset: 0.066 ms

Below is generated by plot.py at 2018-11-15 18:46:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 882.79 Mbit/s

95th percentile per-packet one-way delay: 207.977 ms

Loss rate: 1.81%

-- Flow 1:

Average throughput: 509.44 Mbit/s

95th percentile per-packet one-way delay: 195.759 ms

Loss rate: 0.93%

-- Flow 2:

Average throughput: 432.11 Mbit/s

95th percentile per-packet one-way delay: 228.255 ms

Loss rate: 2.26%

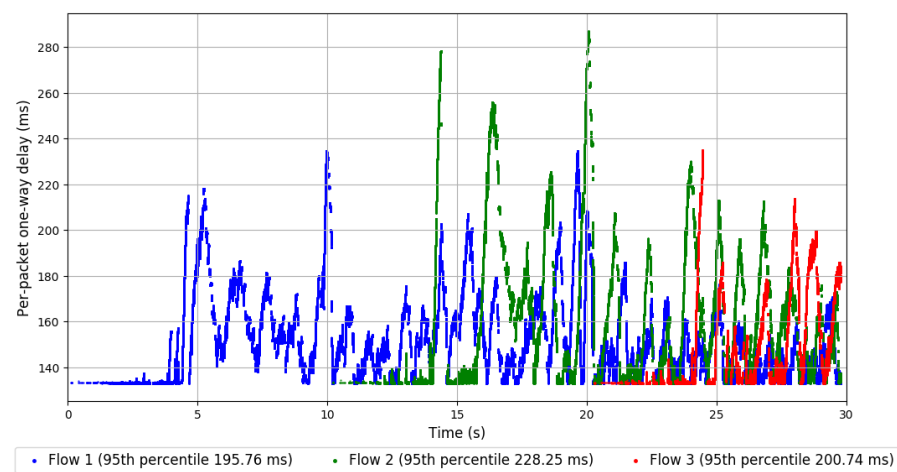
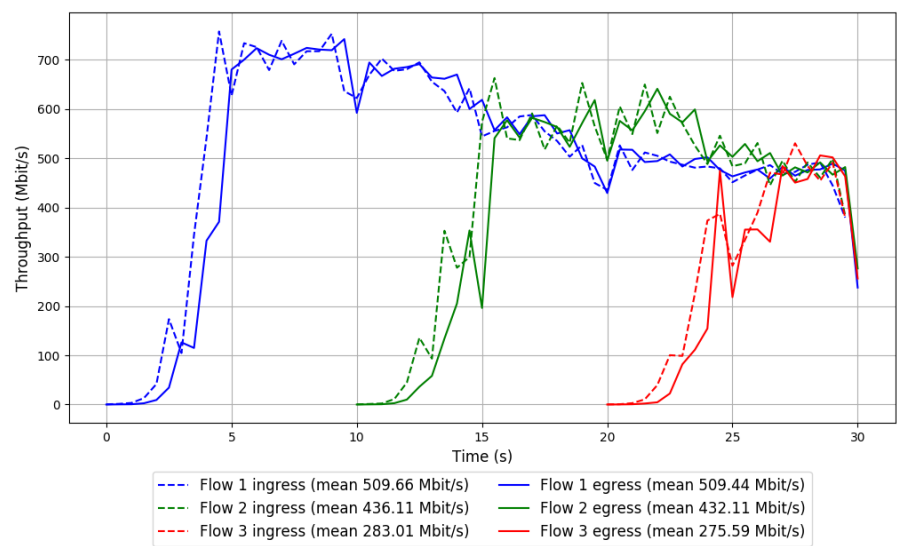
-- Flow 3:

Average throughput: 275.59 Mbit/s

95th percentile per-packet one-way delay: 200.742 ms

Loss rate: 5.28%

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-11-15 17:11:43

End at: 2018-11-15 17:12:13

Local clock offset: 0.545 ms

Remote clock offset: 0.083 ms

Below is generated by plot.py at 2018-11-15 18:46:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 846.77 Mbit/s

95th percentile per-packet one-way delay: 209.339 ms

Loss rate: 1.87%

-- Flow 1:

Average throughput: 484.24 Mbit/s

95th percentile per-packet one-way delay: 201.633 ms

Loss rate: 1.13%

-- Flow 2:

Average throughput: 435.09 Mbit/s

95th percentile per-packet one-way delay: 215.719 ms

Loss rate: 1.82%

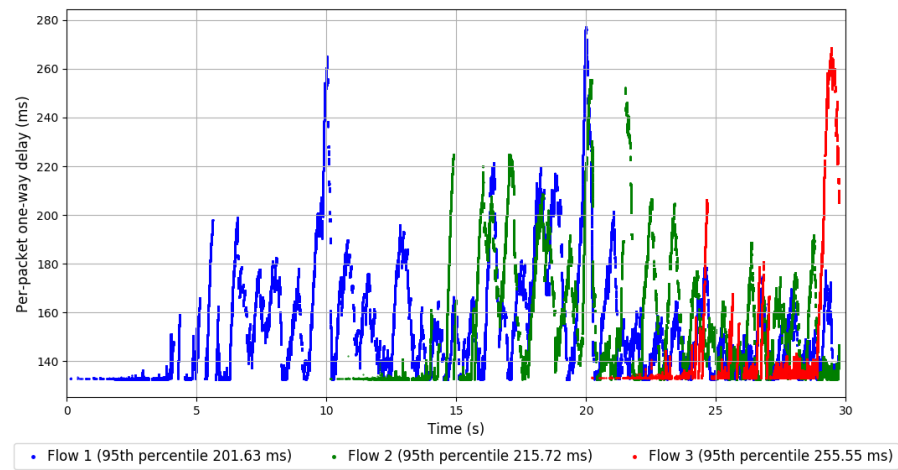
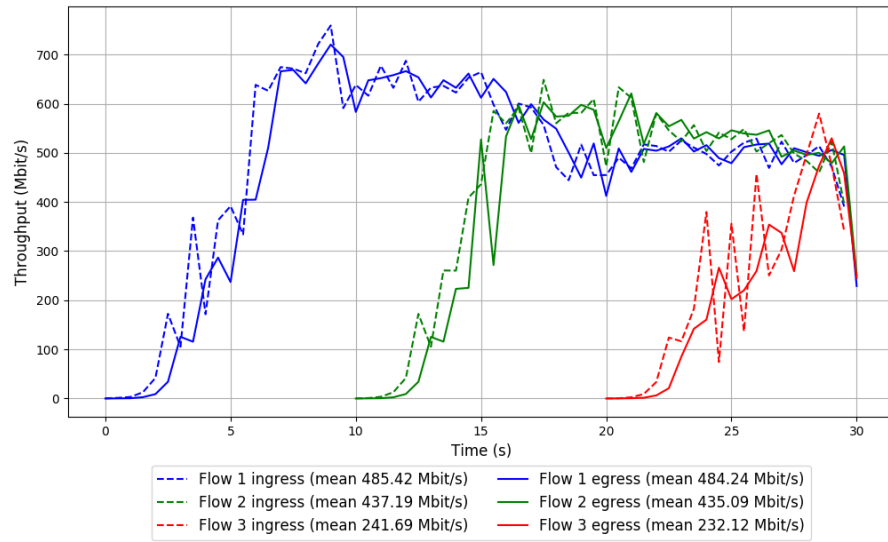
-- Flow 3:

Average throughput: 232.12 Mbit/s

95th percentile per-packet one-way delay: 255.547 ms

Loss rate: 6.57%

Run 5: Report of Indigo-Muses — Data Link

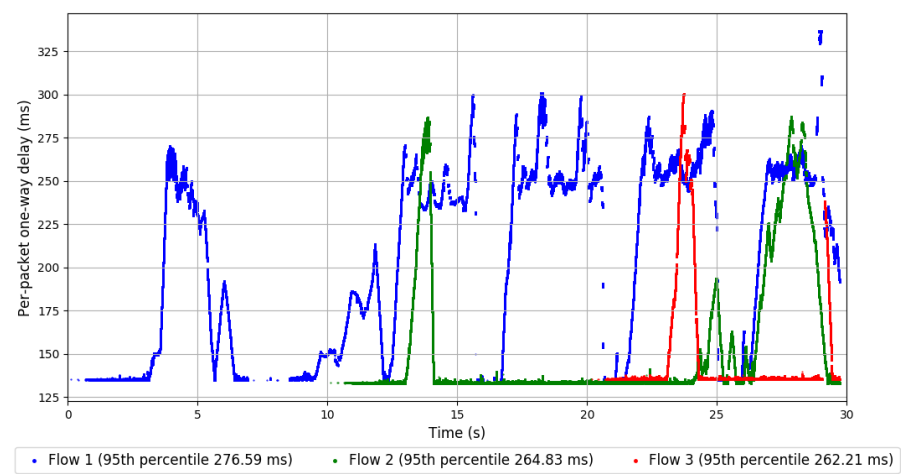
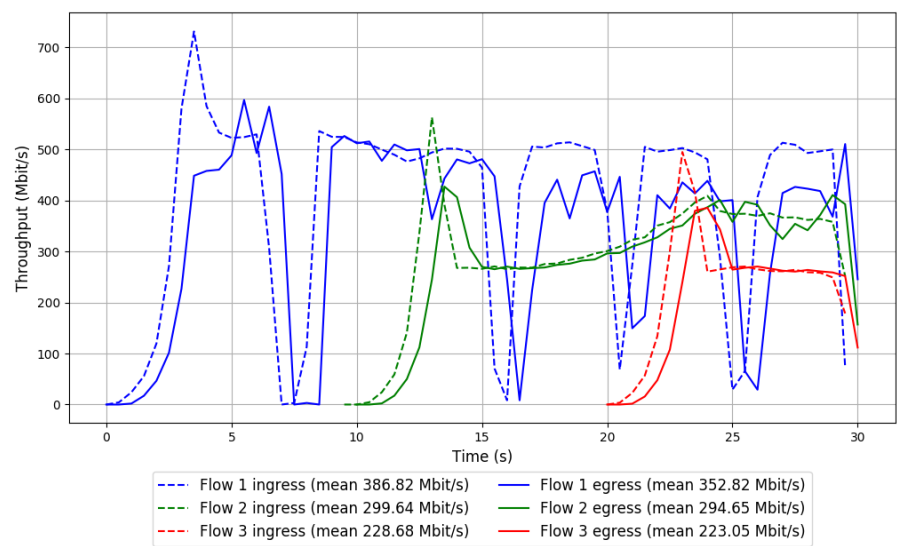



```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-15 14:59:06
End at: 2018-11-15 14:59:36
Local clock offset: -0.093 ms
Remote clock offset: -0.009 ms

# Below is generated by plot.py at 2018-11-15 18:53:03
# Datalink statistics
-- Total of 3 flows:
Average throughput: 619.91 Mbit/s
95th percentile per-packet one-way delay: 271.036 ms
Loss rate: 6.93%
-- Flow 1:
Average throughput: 352.82 Mbit/s
95th percentile per-packet one-way delay: 276.590 ms
Loss rate: 9.32%
-- Flow 2:
Average throughput: 294.65 Mbit/s
95th percentile per-packet one-way delay: 264.830 ms
Loss rate: 2.99%
-- Flow 3:
Average throughput: 223.05 Mbit/s
95th percentile per-packet one-way delay: 262.212 ms
Loss rate: 5.14%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-11-15 15:33:21

End at: 2018-11-15 15:33:51

Local clock offset: -0.071 ms

Remote clock offset: 0.002 ms

Below is generated by plot.py at 2018-11-15 18:54:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 652.43 Mbit/s

95th percentile per-packet one-way delay: 261.642 ms

Loss rate: 6.26%

-- Flow 1:

Average throughput: 397.52 Mbit/s

95th percentile per-packet one-way delay: 262.597 ms

Loss rate: 7.19%

-- Flow 2:

Average throughput: 279.14 Mbit/s

95th percentile per-packet one-way delay: 191.401 ms

Loss rate: 3.24%

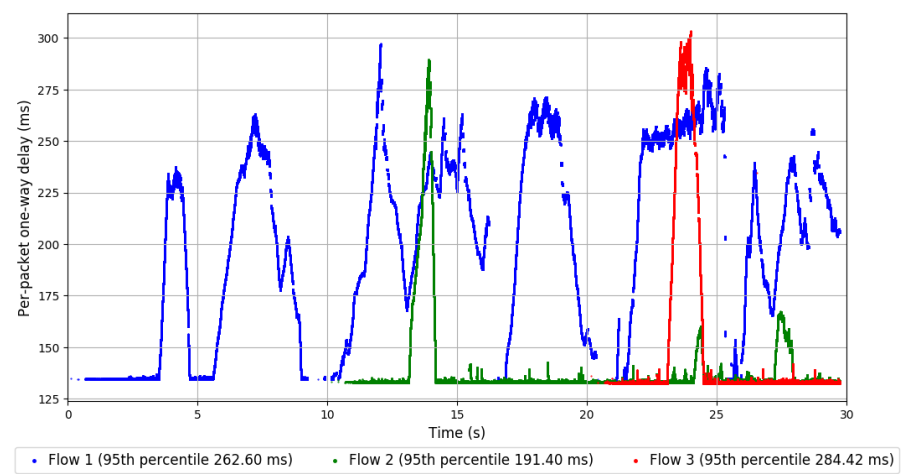
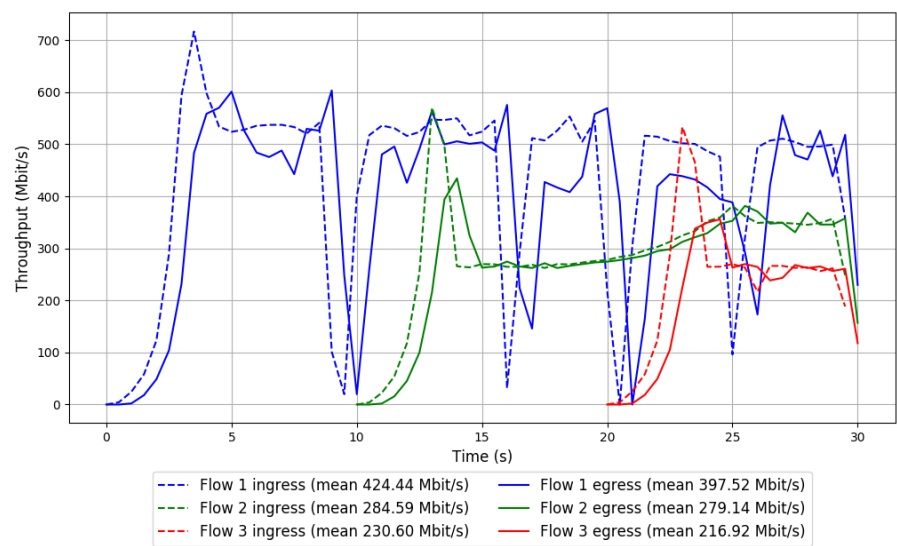
-- Flow 3:

Average throughput: 216.92 Mbit/s

95th percentile per-packet one-way delay: 284.421 ms

Loss rate: 8.53%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-11-15 16:08:38

End at: 2018-11-15 16:09:08

Local clock offset: 0.652 ms

Remote clock offset: 0.053 ms

Below is generated by plot.py at 2018-11-15 18:55:05

Datalink statistics

-- Total of 3 flows:

Average throughput: 624.52 Mbit/s

95th percentile per-packet one-way delay: 249.785 ms

Loss rate: 4.50%

-- Flow 1:

Average throughput: 357.44 Mbit/s

95th percentile per-packet one-way delay: 253.601 ms

Loss rate: 5.07%

-- Flow 2:

Average throughput: 290.93 Mbit/s

95th percentile per-packet one-way delay: 195.267 ms

Loss rate: 3.70%

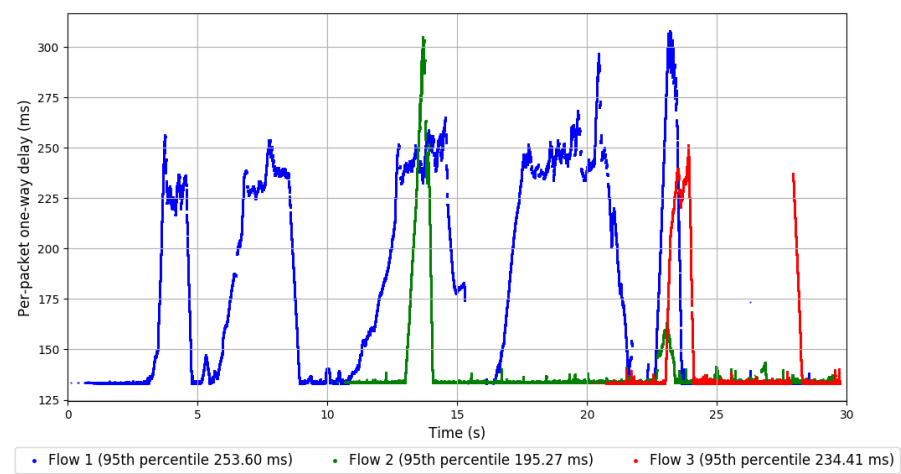
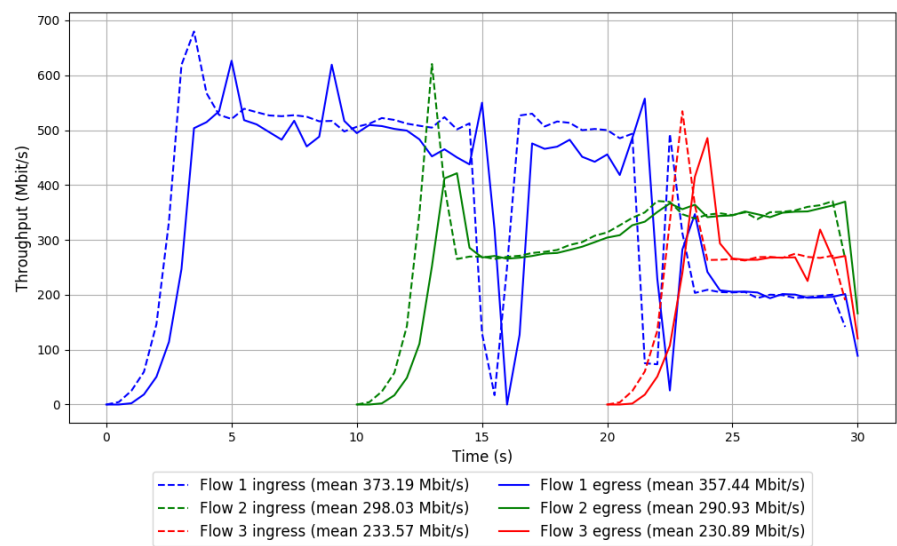
-- Flow 3:

Average throughput: 230.89 Mbit/s

95th percentile per-packet one-way delay: 234.405 ms

Loss rate: 3.81%

Run 3: Report of PCC-Allegro — Data Link



Run 4: Statistics of PCC-Allegro

Start at: 2018-11-15 16:43:49

End at: 2018-11-15 16:44:19

Local clock offset: 0.172 ms

Remote clock offset: 0.442 ms

Below is generated by plot.py at 2018-11-15 19:04:05

Datalink statistics

-- Total of 3 flows:

Average throughput: 587.90 Mbit/s

95th percentile per-packet one-way delay: 205.885 ms

Loss rate: 2.90%

-- Flow 1:

Average throughput: 321.62 Mbit/s

95th percentile per-packet one-way delay: 148.952 ms

Loss rate: 2.24%

-- Flow 2:

Average throughput: 293.99 Mbit/s

95th percentile per-packet one-way delay: 213.665 ms

Loss rate: 2.95%

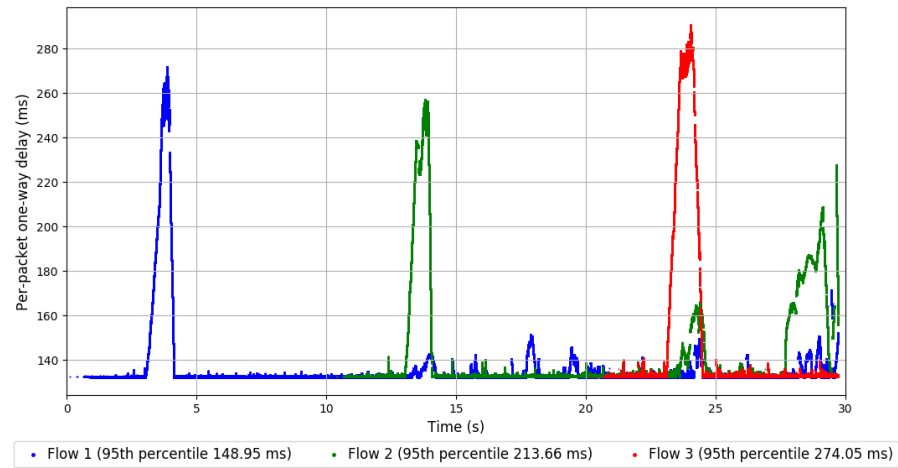
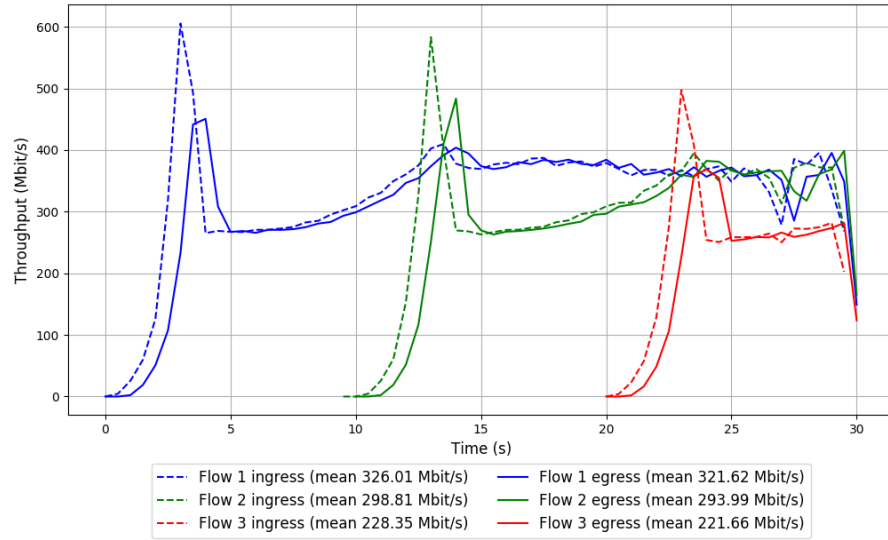
-- Flow 3:

Average throughput: 221.66 Mbit/s

95th percentile per-packet one-way delay: 274.049 ms

Loss rate: 5.60%

Run 4: Report of PCC-Allegro — Data Link



Run 5: Statistics of PCC-Allegro

Start at: 2018-11-15 17:18:08

End at: 2018-11-15 17:18:38

Local clock offset: 0.224 ms

Remote clock offset: 0.071 ms

Below is generated by plot.py at 2018-11-15 19:08:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 585.05 Mbit/s

95th percentile per-packet one-way delay: 247.768 ms

Loss rate: 3.02%

-- Flow 1:

Average throughput: 308.89 Mbit/s

95th percentile per-packet one-way delay: 166.377 ms

Loss rate: 1.65%

-- Flow 2:

Average throughput: 308.29 Mbit/s

95th percentile per-packet one-way delay: 258.766 ms

Loss rate: 3.62%

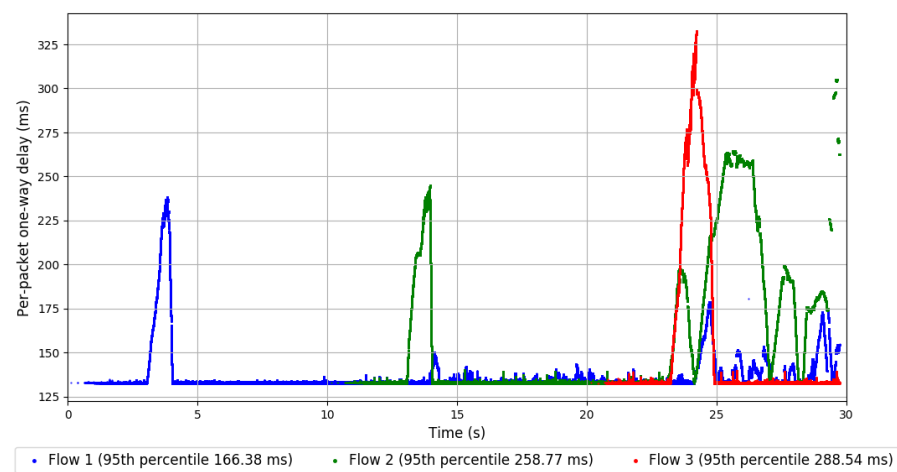
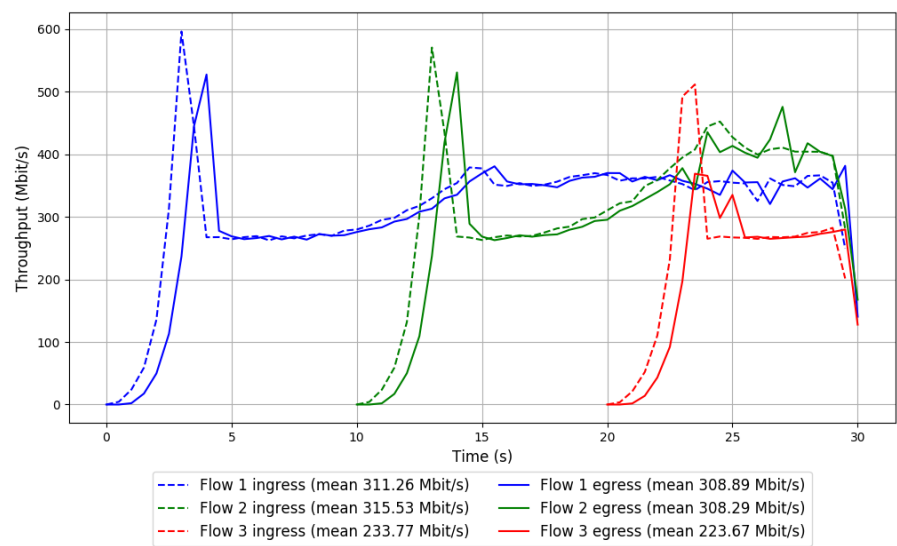
-- Flow 3:

Average throughput: 223.67 Mbit/s

95th percentile per-packet one-way delay: 288.537 ms

Loss rate: 6.94%

Run 5: Report of PCC-Allegro — Data Link

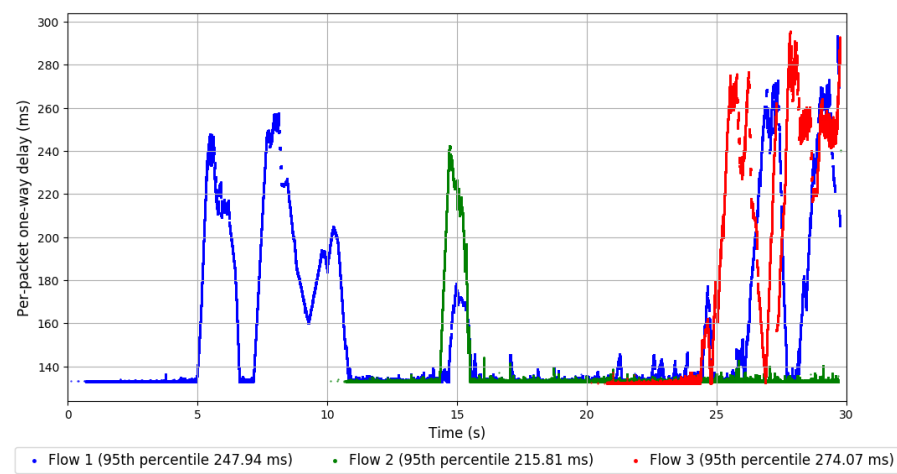
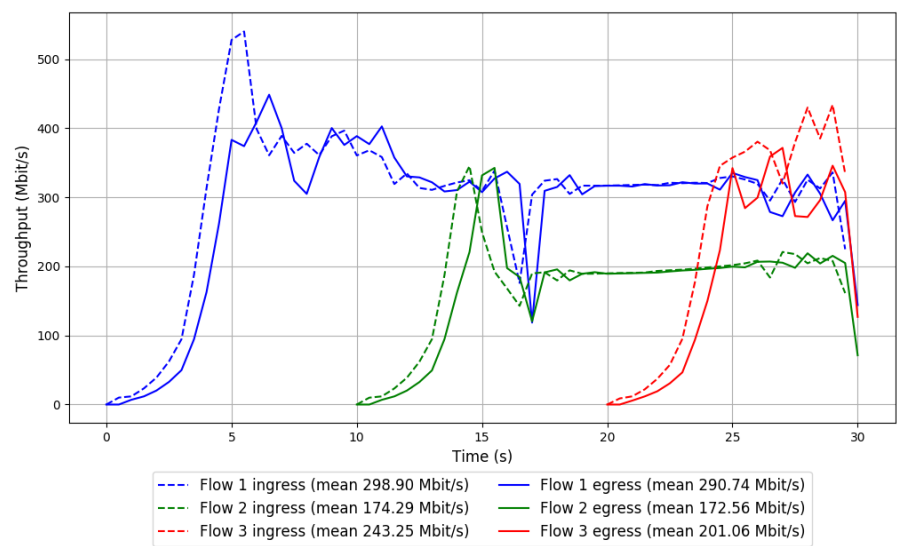


```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-15 14:39:49
End at: 2018-11-15 14:40:19
Local clock offset: 0.291 ms
Remote clock offset: 0.033 ms

# Below is generated by plot.py at 2018-11-15 19:08:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 469.88 Mbit/s
95th percentile per-packet one-way delay: 254.543 ms
Loss rate: 5.86%
-- Flow 1:
Average throughput: 290.74 Mbit/s
95th percentile per-packet one-way delay: 247.939 ms
Loss rate: 3.60%
-- Flow 2:
Average throughput: 172.56 Mbit/s
95th percentile per-packet one-way delay: 215.813 ms
Loss rate: 2.19%
-- Flow 3:
Average throughput: 201.06 Mbit/s
95th percentile per-packet one-way delay: 274.074 ms
Loss rate: 19.58%
```

Run 1: Report of PCC-Expr — Data Link

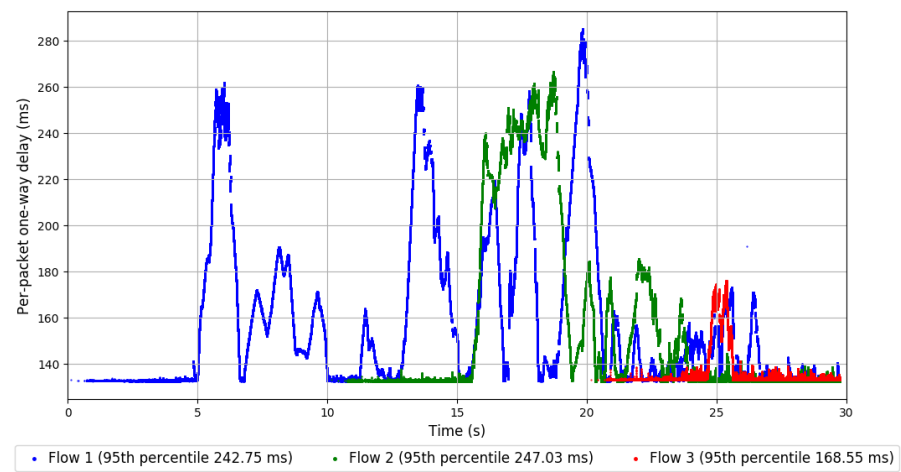
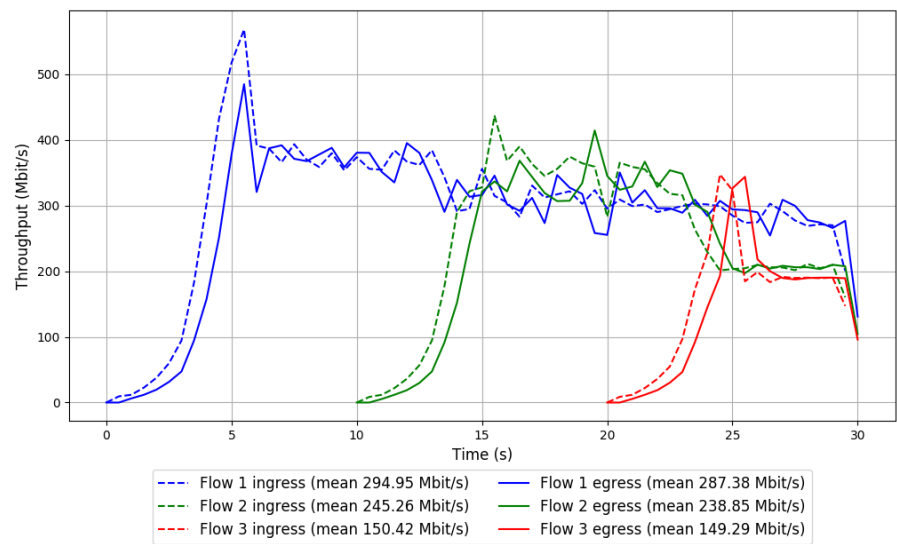


Run 2: Statistics of PCC-Expr

Start at: 2018-11-15 15:15:09
End at: 2018-11-15 15:15:39
Local clock offset: -0.117 ms
Remote clock offset: -0.016 ms

Below is generated by plot.py at 2018-11-15 19:08:04
Datalink statistics
-- Total of 3 flows:
Average throughput: 493.82 Mbit/s
95th percentile per-packet one-way delay: 243.555 ms
Loss rate: 3.59%
-- Flow 1:
Average throughput: 287.38 Mbit/s
95th percentile per-packet one-way delay: 242.749 ms
Loss rate: 3.43%
-- Flow 2:
Average throughput: 238.85 Mbit/s
95th percentile per-packet one-way delay: 247.031 ms
Loss rate: 3.92%
-- Flow 3:
Average throughput: 149.29 Mbit/s
95th percentile per-packet one-way delay: 168.547 ms
Loss rate: 3.44%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-11-15 15:50:05

End at: 2018-11-15 15:50:35

Local clock offset: 0.631 ms

Remote clock offset: 0.368 ms

Below is generated by plot.py at 2018-11-15 19:08:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 406.00 Mbit/s

95th percentile per-packet one-way delay: 242.333 ms

Loss rate: 3.35%

-- Flow 1:

Average throughput: 241.43 Mbit/s

95th percentile per-packet one-way delay: 244.134 ms

Loss rate: 3.64%

-- Flow 2:

Average throughput: 177.09 Mbit/s

95th percentile per-packet one-way delay: 150.907 ms

Loss rate: 1.62%

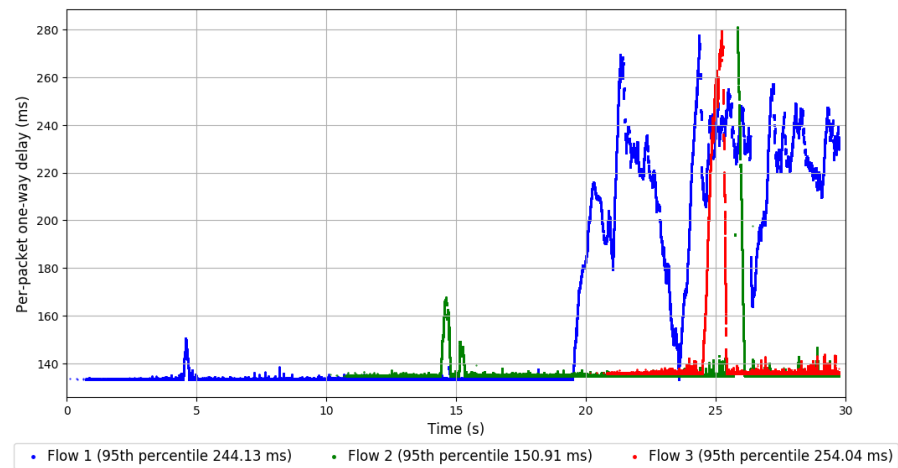
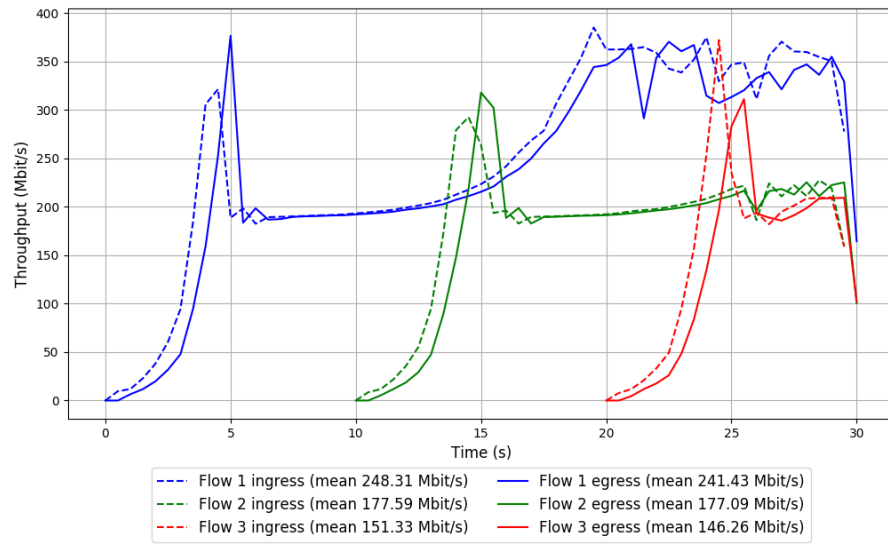
-- Flow 3:

Average throughput: 146.26 Mbit/s

95th percentile per-packet one-way delay: 254.036 ms

Loss rate: 5.98%

Run 3: Report of PCC-Expr — Data Link



Run 4: Statistics of PCC-Expr

Start at: 2018-11-15 16:24:24

End at: 2018-11-15 16:24:54

Local clock offset: 0.287 ms

Remote clock offset: 0.08 ms

Below is generated by plot.py at 2018-11-15 19:12:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 437.97 Mbit/s

95th percentile per-packet one-way delay: 240.565 ms

Loss rate: 3.88%

-- Flow 1:

Average throughput: 269.90 Mbit/s

95th percentile per-packet one-way delay: 246.685 ms

Loss rate: 4.71%

-- Flow 2:

Average throughput: 180.15 Mbit/s

95th percentile per-packet one-way delay: 136.881 ms

Loss rate: 1.70%

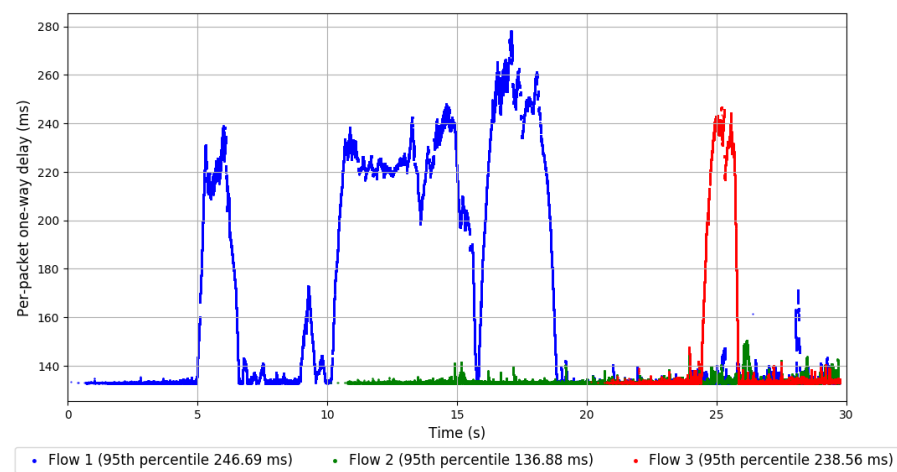
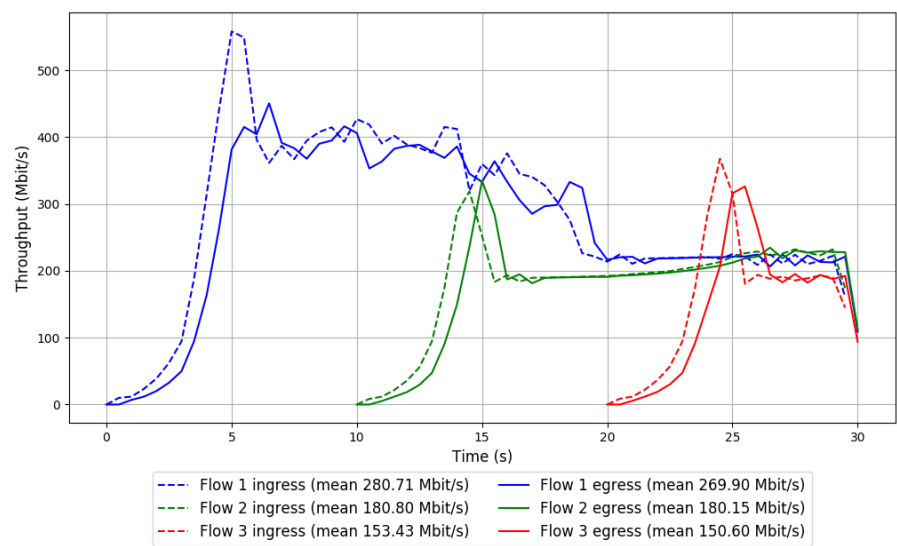
-- Flow 3:

Average throughput: 150.60 Mbit/s

95th percentile per-packet one-way delay: 238.557 ms

Loss rate: 4.51%

Run 4: Report of PCC-Expr — Data Link

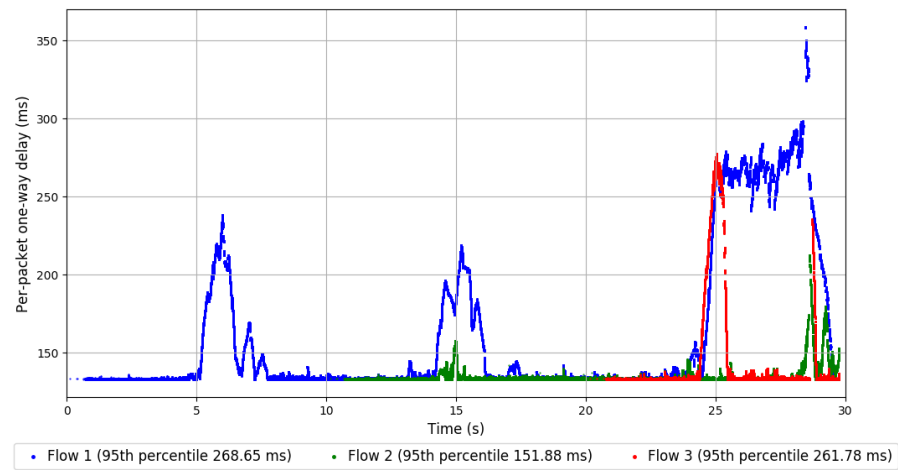
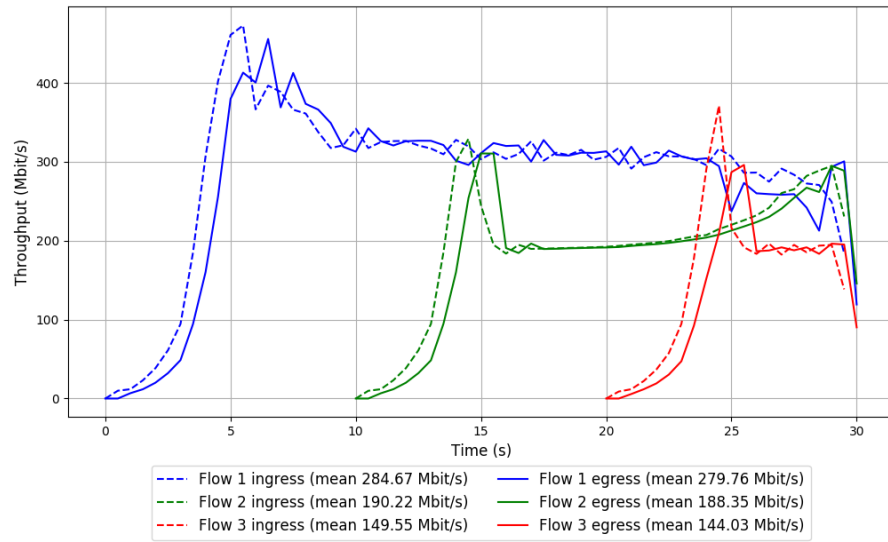


Run 5: Statistics of PCC-Expr

Start at: 2018-11-15 16:59:13
End at: 2018-11-15 16:59:43
Local clock offset: -0.009 ms
Remote clock offset: -0.274 ms

Below is generated by plot.py at 2018-11-15 19:14:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 451.07 Mbit/s
95th percentile per-packet one-way delay: 264.365 ms
Loss rate: 2.92%
-- Flow 1:
Average throughput: 279.76 Mbit/s
95th percentile per-packet one-way delay: 268.651 ms
Loss rate: 2.60%
-- Flow 2:
Average throughput: 188.35 Mbit/s
95th percentile per-packet one-way delay: 151.880 ms
Loss rate: 2.30%
-- Flow 3:
Average throughput: 144.03 Mbit/s
95th percentile per-packet one-way delay: 261.779 ms
Loss rate: 6.32%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-11-15 14:34:22

End at: 2018-11-15 14:34:52

Local clock offset: -0.268 ms

Remote clock offset: 0.034 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 96.92 Mbit/s

95th percentile per-packet one-way delay: 132.944 ms

Loss rate: 2.10%

-- Flow 1:

Average throughput: 52.56 Mbit/s

95th percentile per-packet one-way delay: 131.933 ms

Loss rate: 1.21%

-- Flow 2:

Average throughput: 54.37 Mbit/s

95th percentile per-packet one-way delay: 133.003 ms

Loss rate: 1.89%

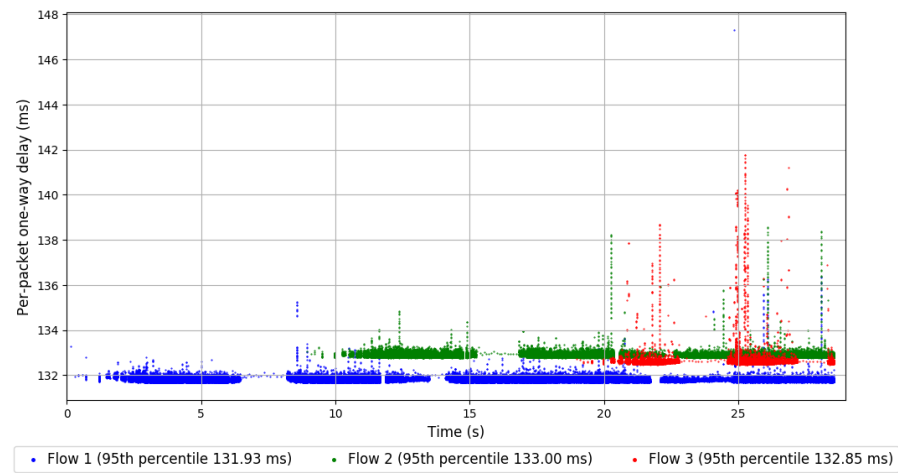
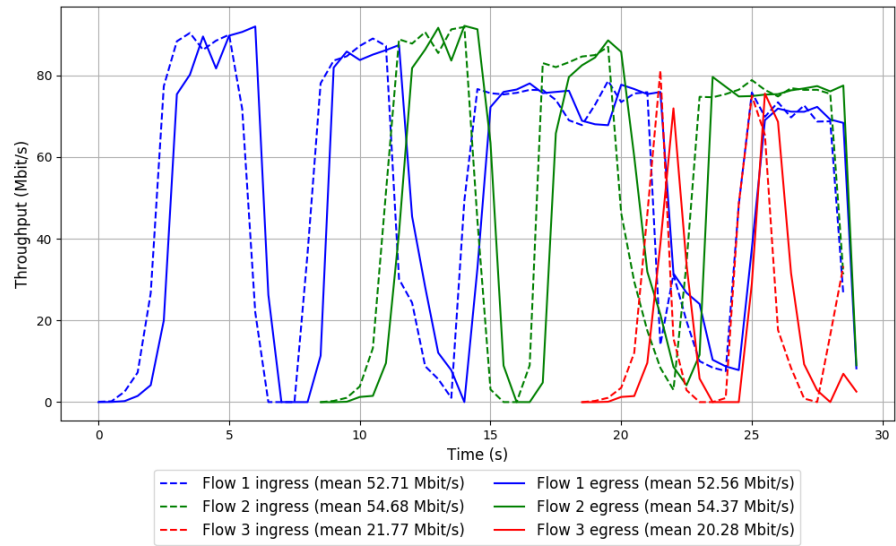
-- Flow 3:

Average throughput: 20.28 Mbit/s

95th percentile per-packet one-way delay: 132.851 ms

Loss rate: 9.36%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-11-15 15:09:24

End at: 2018-11-15 15:09:54

Local clock offset: 0.511 ms

Remote clock offset: 0.331 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 103.77 Mbit/s

95th percentile per-packet one-way delay: 135.779 ms

Loss rate: 1.35%

-- Flow 1:

Average throughput: 58.23 Mbit/s

95th percentile per-packet one-way delay: 133.543 ms

Loss rate: 1.12%

-- Flow 2:

Average throughput: 51.15 Mbit/s

95th percentile per-packet one-way delay: 133.118 ms

Loss rate: 1.97%

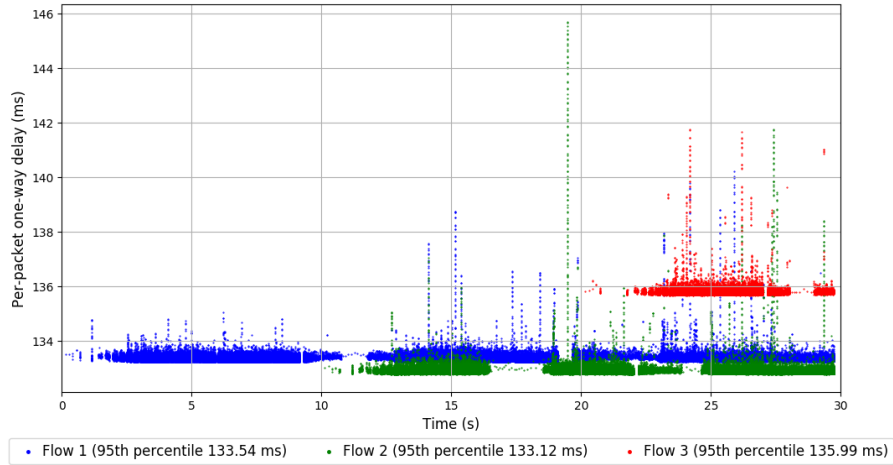
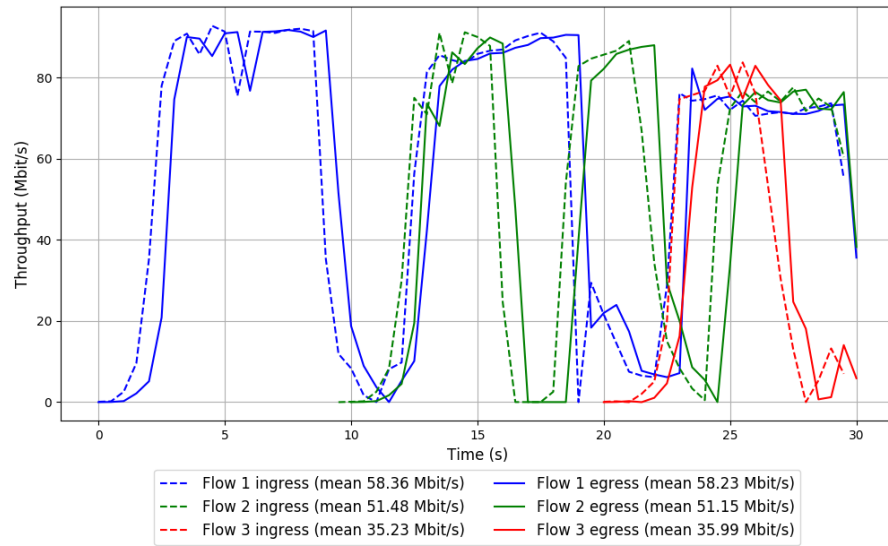
-- Flow 3:

Average throughput: 35.99 Mbit/s

95th percentile per-packet one-way delay: 135.989 ms

Loss rate: 0.64%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-11-15 15:44:12

End at: 2018-11-15 15:44:42

Local clock offset: 0.412 ms

Remote clock offset: 0.024 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 90.86 Mbit/s

95th percentile per-packet one-way delay: 135.836 ms

Loss rate: 1.50%

-- Flow 1:

Average throughput: 51.83 Mbit/s

95th percentile per-packet one-way delay: 133.578 ms

Loss rate: 1.37%

-- Flow 2:

Average throughput: 42.23 Mbit/s

95th percentile per-packet one-way delay: 133.334 ms

Loss rate: 2.30%

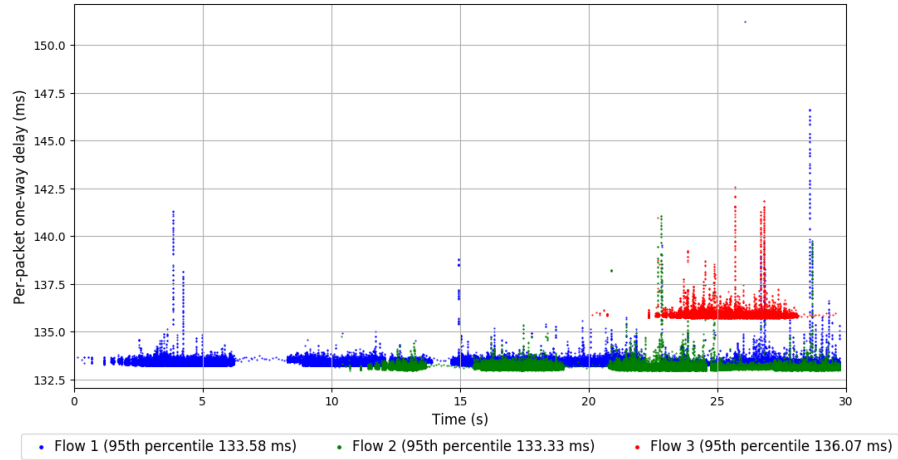
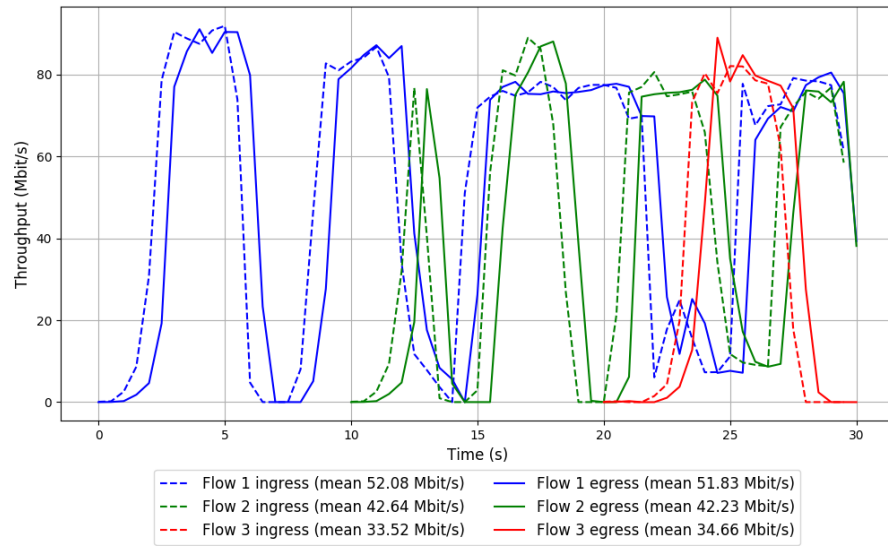
-- Flow 3:

Average throughput: 34.66 Mbit/s

95th percentile per-packet one-way delay: 136.074 ms

Loss rate: 0.00%

Run 3: Report of QUIC Cubic — Data Link



Run 4: Statistics of QUIC Cubic

Start at: 2018-11-15 16:18:39

End at: 2018-11-15 16:19:09

Local clock offset: -0.019 ms

Remote clock offset: 0.092 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 101.70 Mbit/s

95th percentile per-packet one-way delay: 135.287 ms

Loss rate: 1.98%

-- Flow 1:

Average throughput: 58.48 Mbit/s

95th percentile per-packet one-way delay: 133.170 ms

Loss rate: 1.23%

-- Flow 2:

Average throughput: 53.21 Mbit/s

95th percentile per-packet one-way delay: 133.053 ms

Loss rate: 1.92%

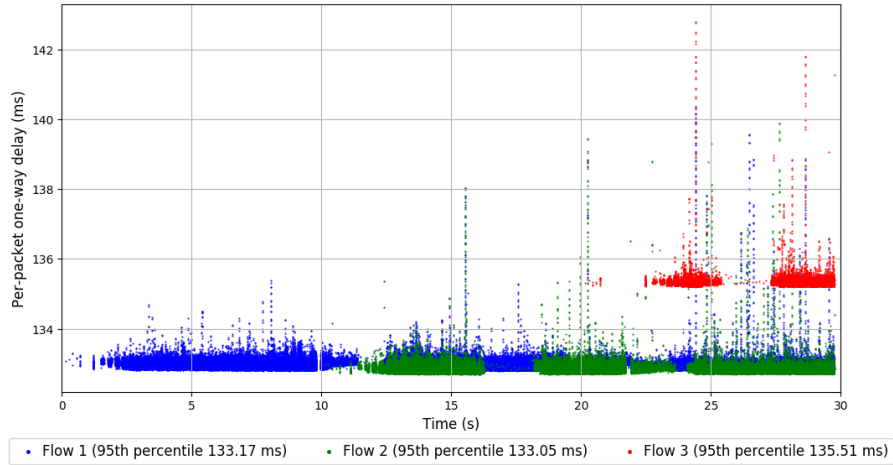
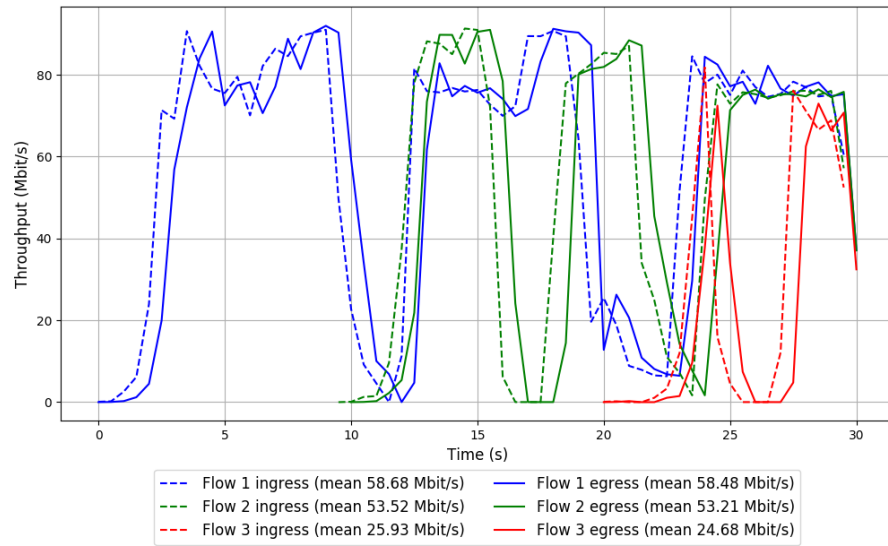
-- Flow 3:

Average throughput: 24.68 Mbit/s

95th percentile per-packet one-way delay: 135.507 ms

Loss rate: 7.35%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-11-15 16:53:53

End at: 2018-11-15 16:54:23

Local clock offset: 0.34 ms

Remote clock offset: 0.092 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 85.25 Mbit/s

95th percentile per-packet one-way delay: 133.280 ms

Loss rate: 2.20%

-- Flow 1:

Average throughput: 43.44 Mbit/s

95th percentile per-packet one-way delay: 133.143 ms

Loss rate: 1.51%

-- Flow 2:

Average throughput: 45.57 Mbit/s

95th percentile per-packet one-way delay: 133.375 ms

Loss rate: 2.07%

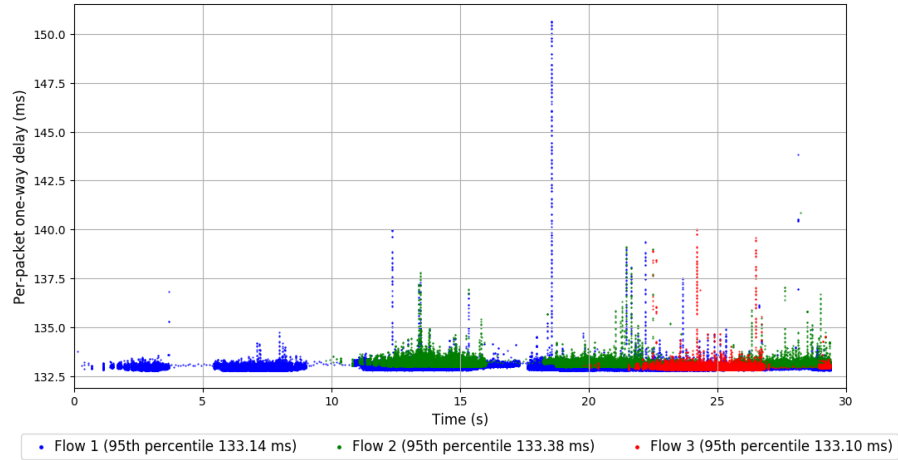
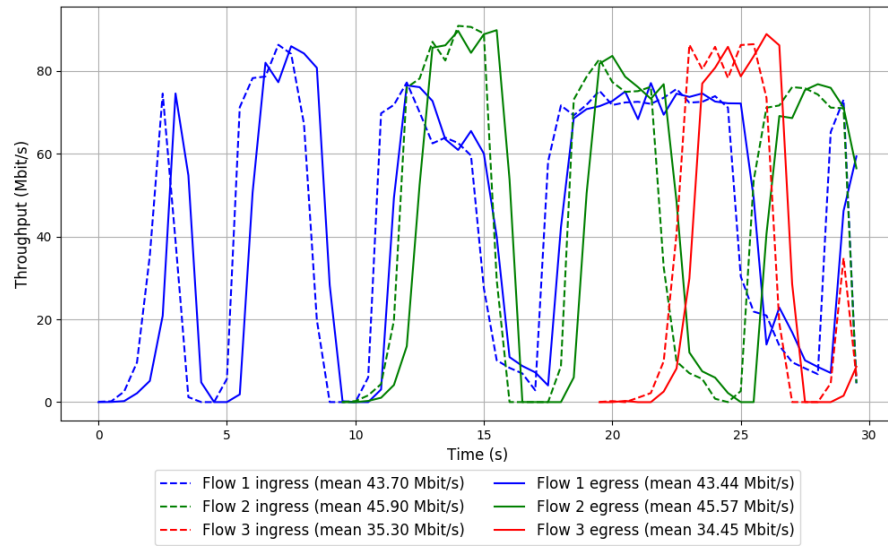
-- Flow 3:

Average throughput: 34.45 Mbit/s

95th percentile per-packet one-way delay: 133.104 ms

Loss rate: 5.08%

Run 5: Report of QUIC Cubic — Data Link

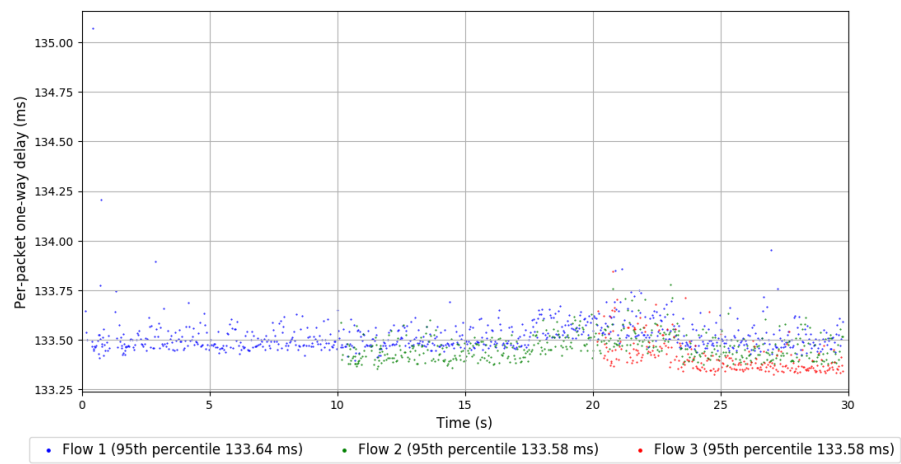
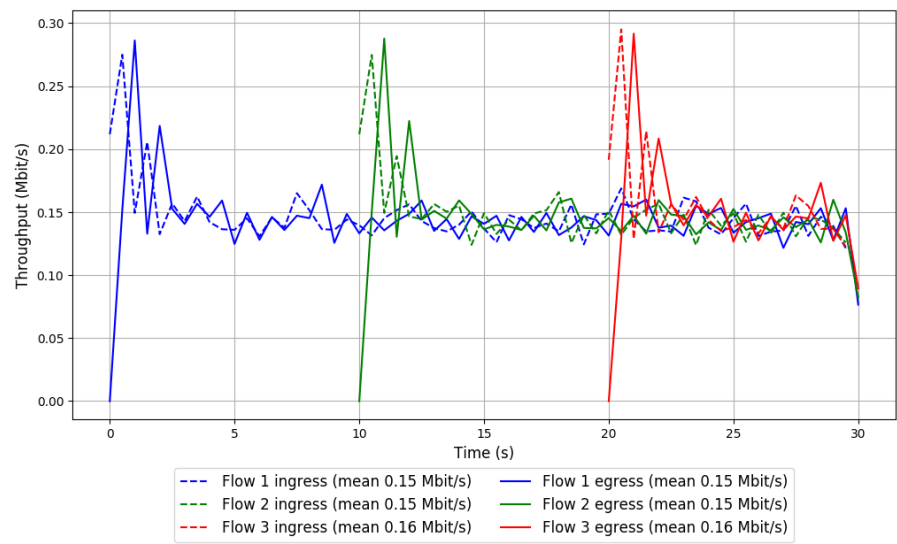


```
Run 1: Statistics of SCReAM

Start at: 2018-11-15 14:33:03
End at: 2018-11-15 14:33:33
Local clock offset: 0.429 ms
Remote clock offset: 0.047 ms

# Below is generated by plot.py at 2018-11-15 19:14:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 133.624 ms
Loss rate: 1.27%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 133.644 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 133.580 ms
Loss rate: 1.39%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 133.583 ms
Loss rate: 2.13%
```

Run 1: Report of SReAM — Data Link

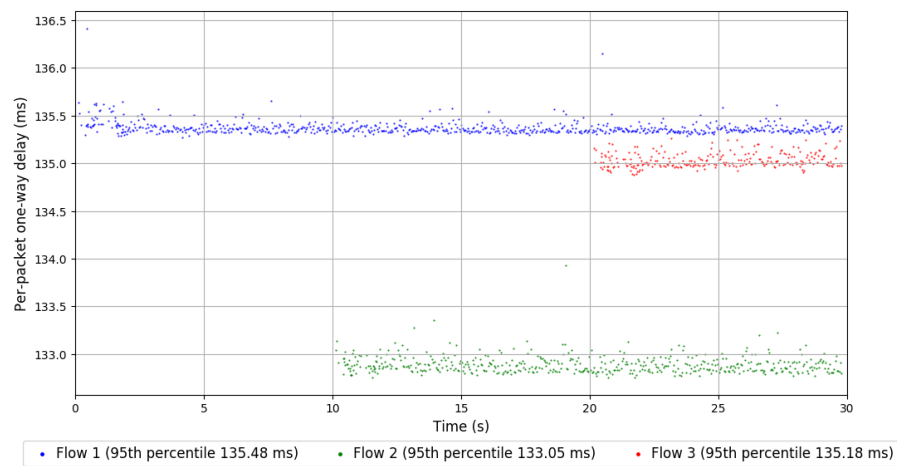
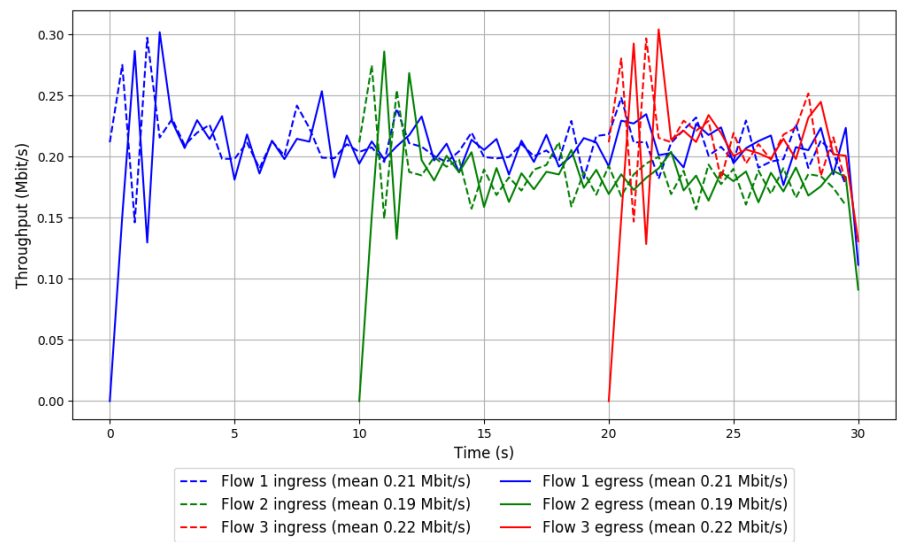


Run 2: Statistics of SCReAM

Start at: 2018-11-15 15:08:05
End at: 2018-11-15 15:08:35
Local clock offset: -0.144 ms
Remote clock offset: -0.05 ms

Below is generated by plot.py at 2018-11-15 19:14:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 135.433 ms
Loss rate: 1.36%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 135.481 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 133.049 ms
Loss rate: 1.42%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 135.179 ms
Loss rate: 2.60%

Run 2: Report of SReAM — Data Link

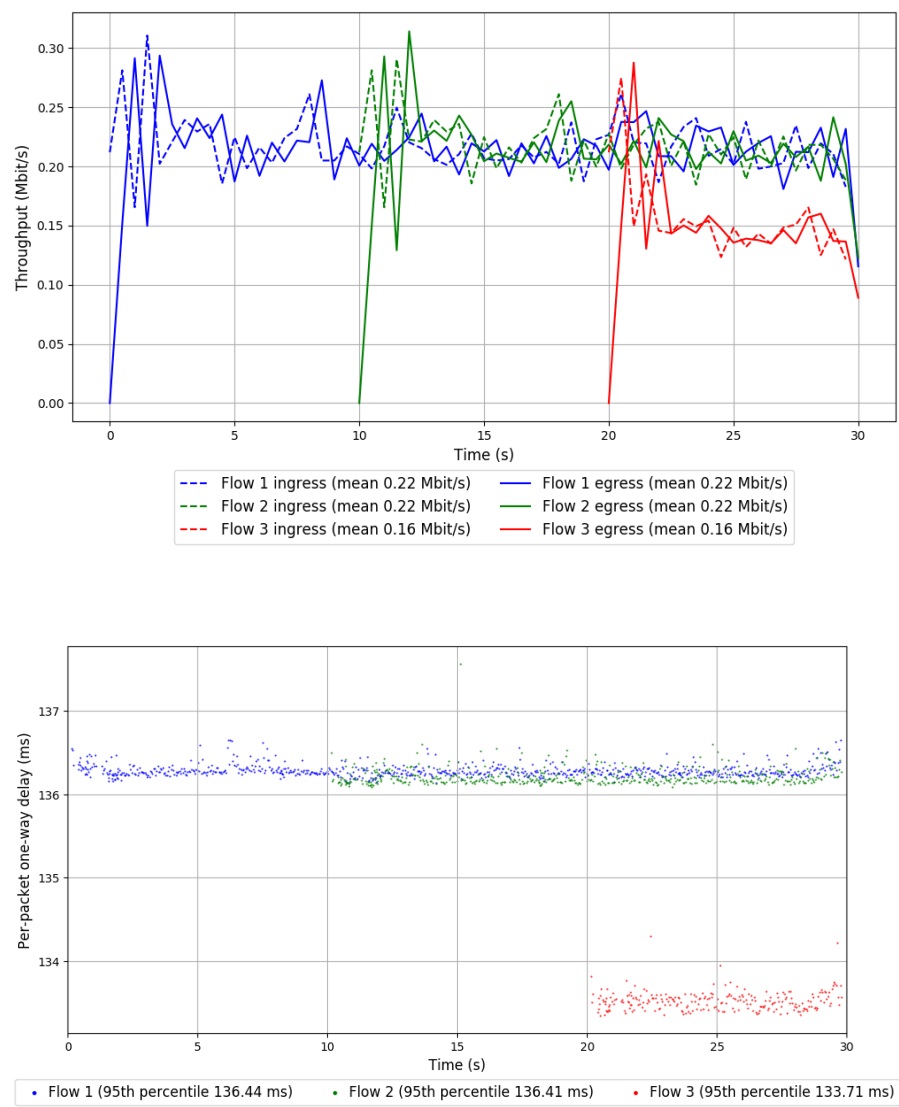


Run 3: Statistics of SReAM

Start at: 2018-11-15 15:42:53
End at: 2018-11-15 15:43:23
Local clock offset: 0.173 ms
Remote clock offset: -0.355 ms

Below is generated by plot.py at 2018-11-15 19:14:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 136.410 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 136.445 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 136.411 ms
Loss rate: 1.43%
-- Flow 3:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 133.706 ms
Loss rate: 2.44%

Run 3: Report of SReAM — Data Link



Run 4: Statistics of SCReAM

Start at: 2018-11-15 16:17:21

End at: 2018-11-15 16:17:51

Local clock offset: 0.252 ms

Remote clock offset: 0.053 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.30 Mbit/s

95th percentile per-packet one-way delay: 133.502 ms

Loss rate: 1.32%

-- Flow 1:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 133.151 ms

Loss rate: 0.88%

-- Flow 2:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 133.565 ms

Loss rate: 1.39%

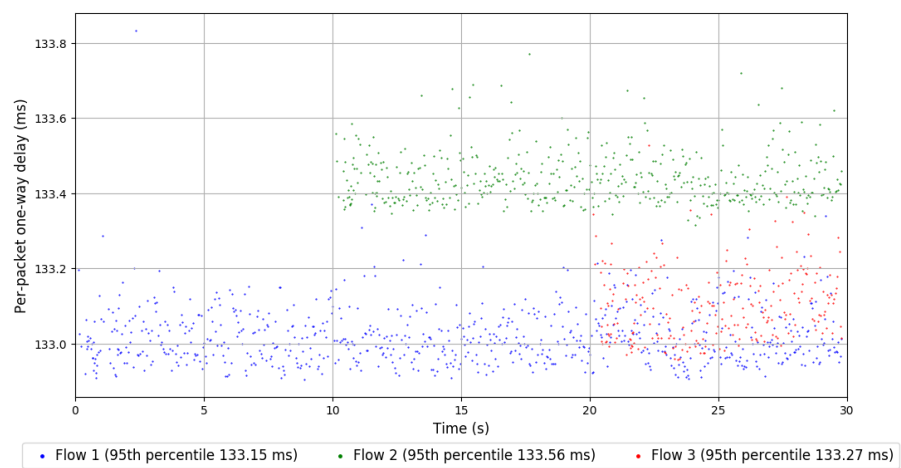
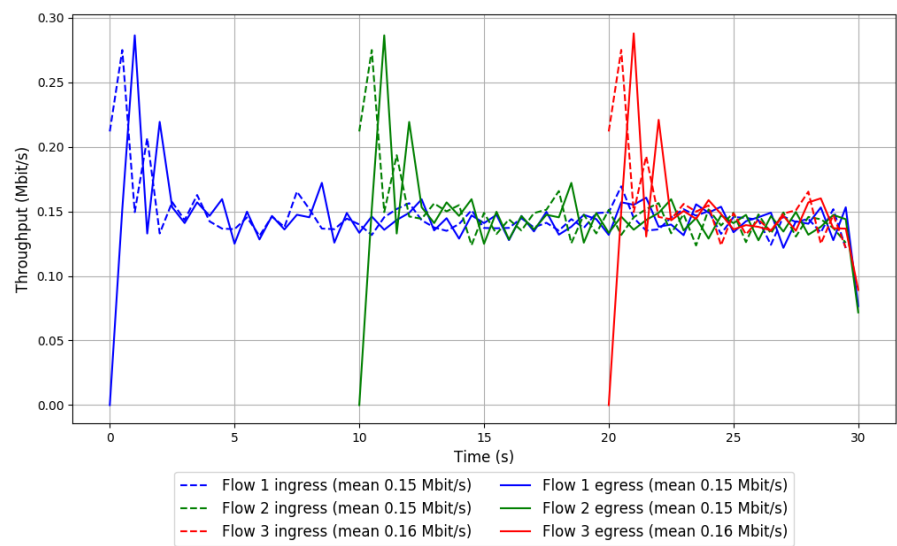
-- Flow 3:

Average throughput: 0.16 Mbit/s

95th percentile per-packet one-way delay: 133.268 ms

Loss rate: 2.45%

Run 4: Report of SReAM — Data Link



Run 5: Statistics of SCReAM

Start at: 2018-11-15 16:52:34

End at: 2018-11-15 16:53:04

Local clock offset: 0.742 ms

Remote clock offset: 0.049 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.36 Mbit/s

95th percentile per-packet one-way delay: 136.366 ms

Loss rate: 1.37%

-- Flow 1:

Average throughput: 0.15 Mbit/s

95th percentile per-packet one-way delay: 133.553 ms

Loss rate: 0.88%

-- Flow 2:

Average throughput: 0.21 Mbit/s

95th percentile per-packet one-way delay: 136.445 ms

Loss rate: 1.43%

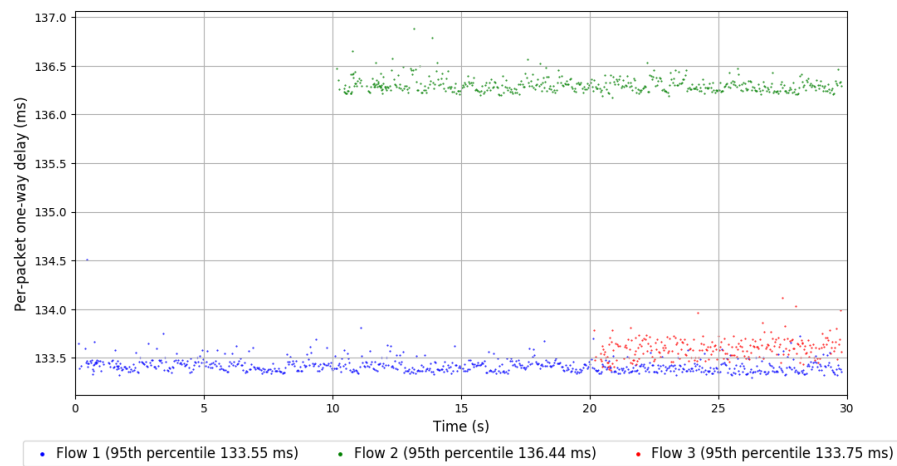
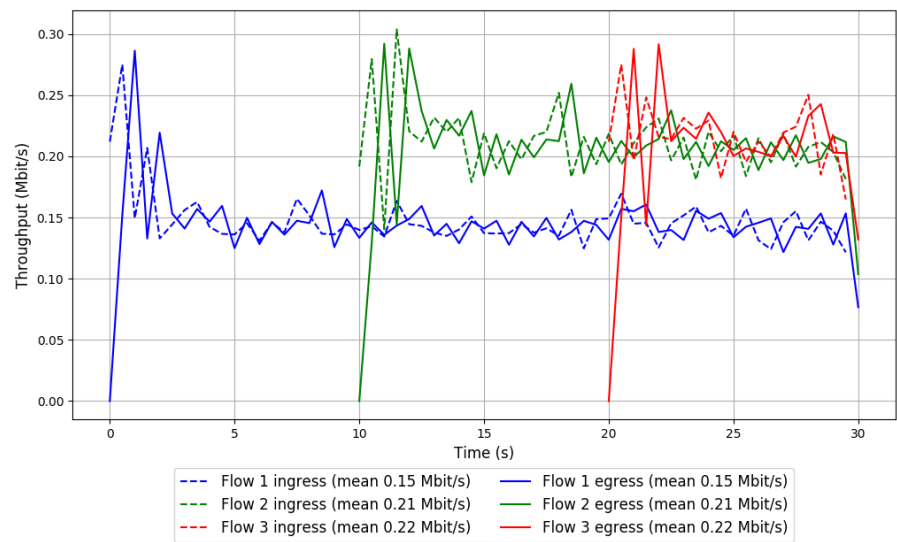
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 133.748 ms

Loss rate: 2.26%

Run 5: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-11-15 14:57:47

End at: 2018-11-15 14:58:17

Local clock offset: 0.064 ms

Remote clock offset: 0.0 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.93 Mbit/s

95th percentile per-packet one-way delay: 136.075 ms

Loss rate: 1.50%

-- Flow 1:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 133.231 ms

Loss rate: 1.00%

-- Flow 2:

Average throughput: 0.40 Mbit/s

95th percentile per-packet one-way delay: 136.170 ms

Loss rate: 1.37%

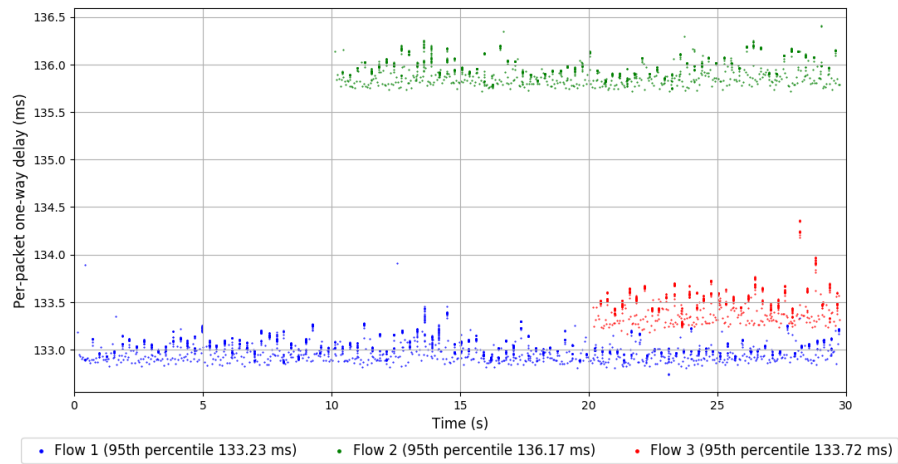
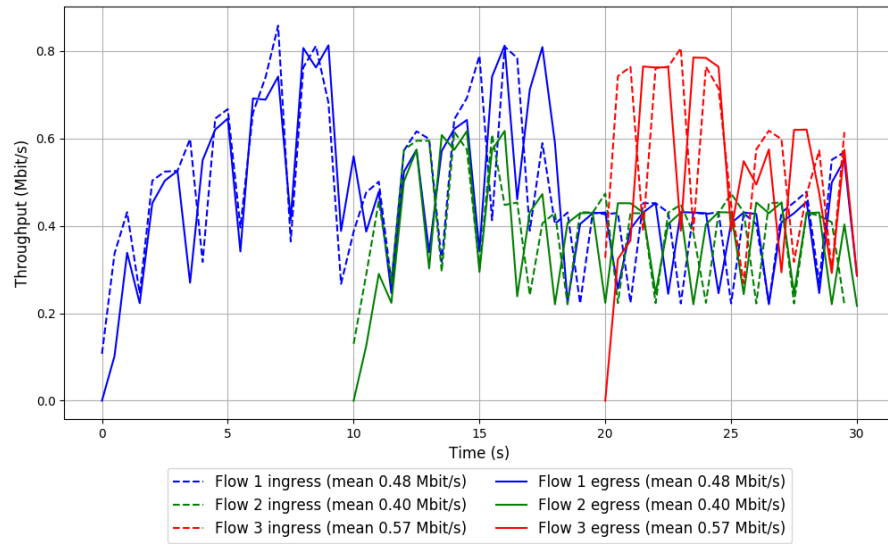
-- Flow 3:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 133.723 ms

Loss rate: 2.96%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-11-15 15:32:02

End at: 2018-11-15 15:32:32

Local clock offset: 0.411 ms

Remote clock offset: 0.003 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.32 Mbit/s

95th percentile per-packet one-way delay: 135.413 ms

Loss rate: 1.25%

-- Flow 1:

Average throughput: 0.67 Mbit/s

95th percentile per-packet one-way delay: 133.903 ms

Loss rate: 0.56%

-- Flow 2:

Average throughput: 0.63 Mbit/s

95th percentile per-packet one-way delay: 135.483 ms

Loss rate: 1.52%

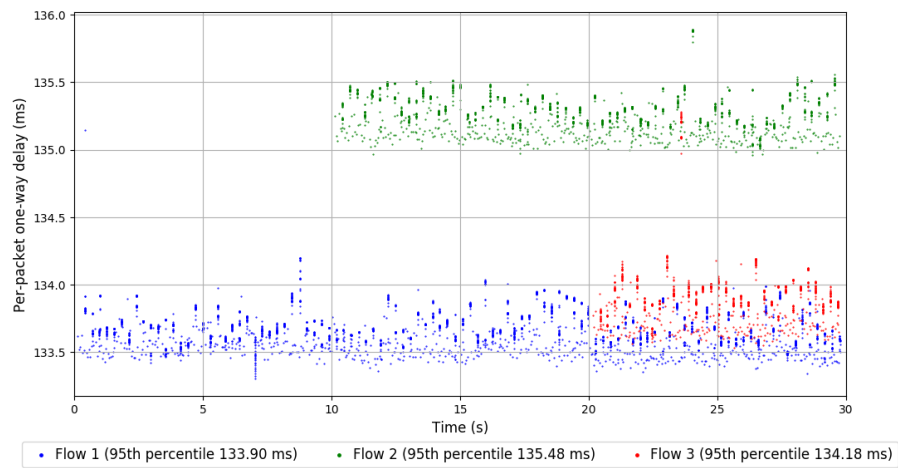
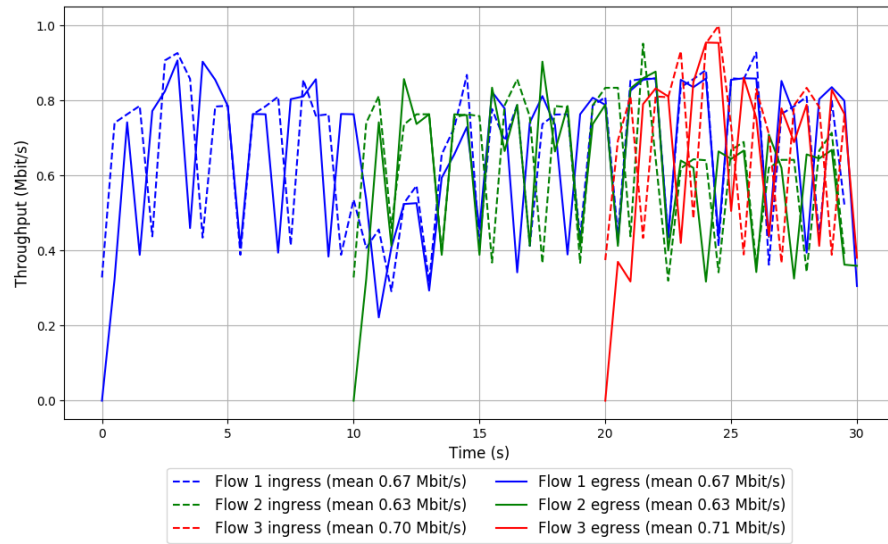
-- Flow 3:

Average throughput: 0.71 Mbit/s

95th percentile per-packet one-way delay: 134.178 ms

Loss rate: 2.75%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-11-15 16:07:19

End at: 2018-11-15 16:07:49

Local clock offset: 0.641 ms

Remote clock offset: 0.07 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.33 Mbit/s

95th percentile per-packet one-way delay: 133.955 ms

Loss rate: 1.57%

-- Flow 1:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 133.798 ms

Loss rate: 0.99%

-- Flow 2:

Average throughput: 0.65 Mbit/s

95th percentile per-packet one-way delay: 134.023 ms

Loss rate: 1.75%

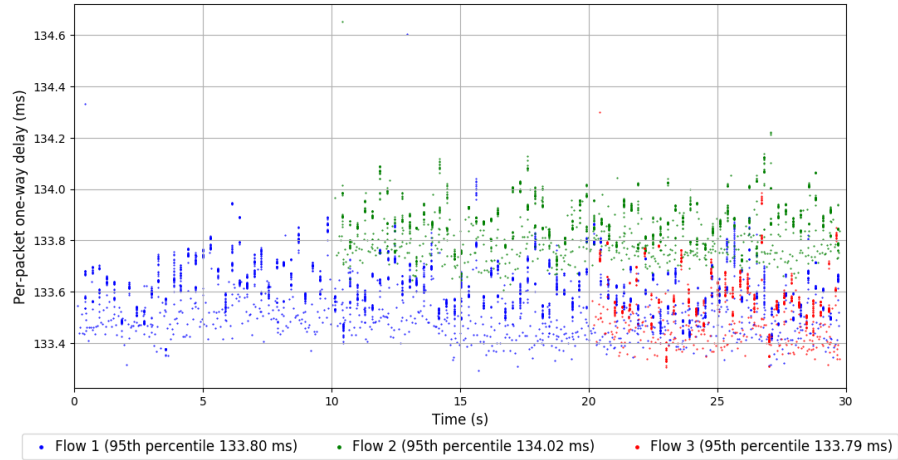
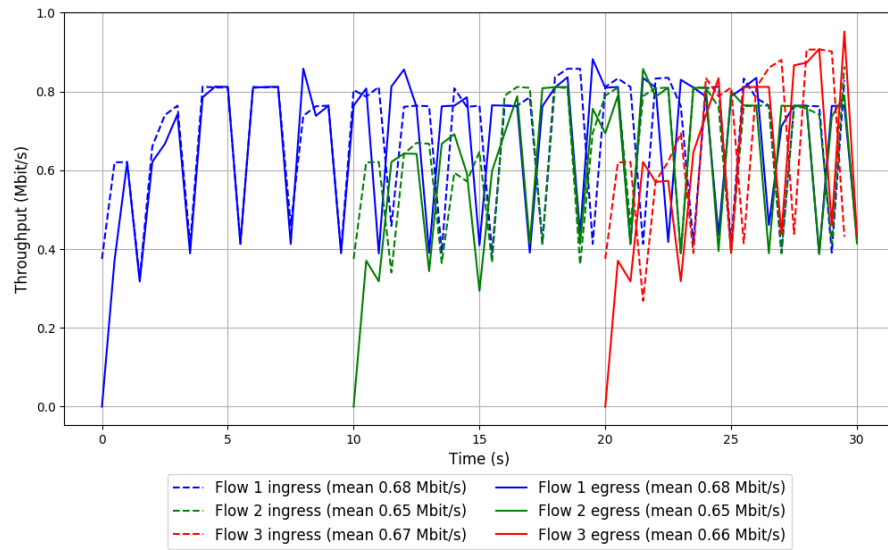
-- Flow 3:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 133.788 ms

Loss rate: 3.00%

Run 3: Report of Sprout — Data Link



Run 4: Statistics of Sprout

Start at: 2018-11-15 16:42:30

End at: 2018-11-15 16:43:00

Local clock offset: 0.62 ms

Remote clock offset: 0.078 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.26 Mbit/s

95th percentile per-packet one-way delay: 136.353 ms

Loss rate: 1.24%

-- Flow 1:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 133.764 ms

Loss rate: 0.94%

-- Flow 2:

Average throughput: 0.56 Mbit/s

95th percentile per-packet one-way delay: 133.672 ms

Loss rate: 1.06%

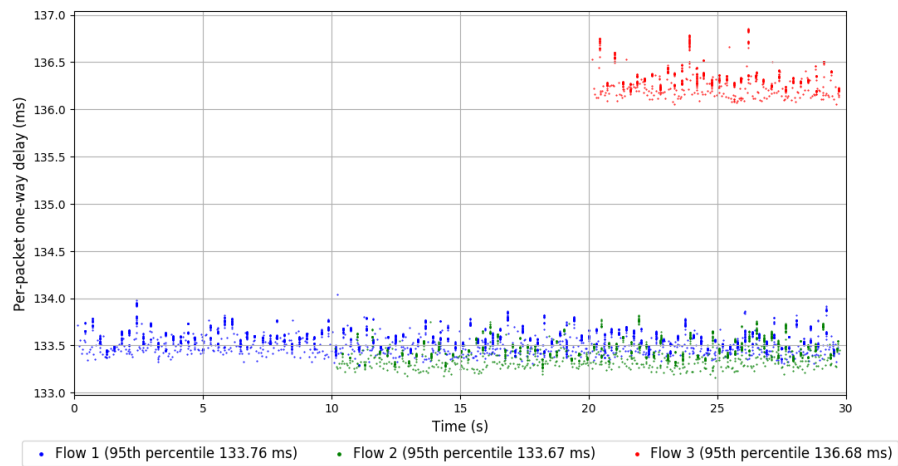
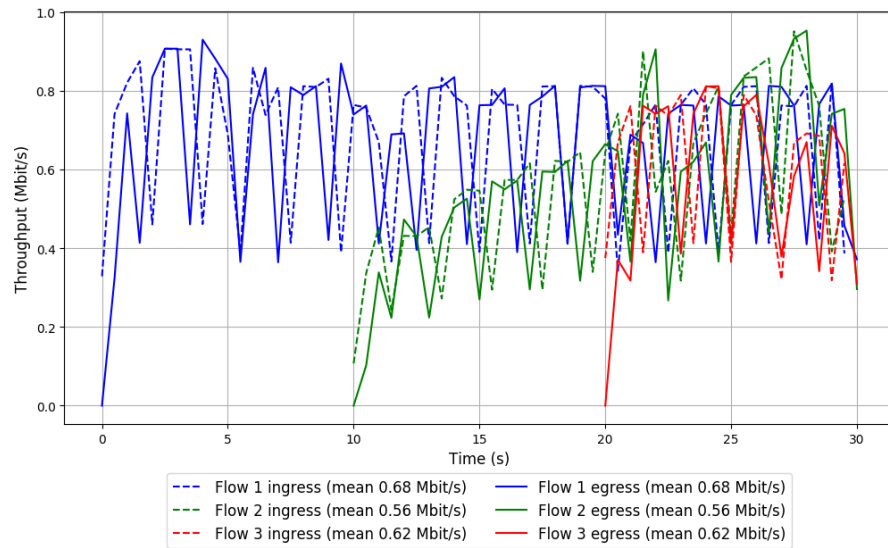
-- Flow 3:

Average throughput: 0.62 Mbit/s

95th percentile per-packet one-way delay: 136.680 ms

Loss rate: 2.55%

Run 4: Report of Sprout — Data Link



Run 5: Statistics of Sprout

Start at: 2018-11-15 17:16:49

End at: 2018-11-15 17:17:19

Local clock offset: 0.123 ms

Remote clock offset: 0.038 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 1.34 Mbit/s

95th percentile per-packet one-way delay: 133.392 ms

Loss rate: 0.94%

-- Flow 1:

Average throughput: 0.68 Mbit/s

95th percentile per-packet one-way delay: 133.485 ms

Loss rate: 0.03%

-- Flow 2:

Average throughput: 0.67 Mbit/s

95th percentile per-packet one-way delay: 133.091 ms

Loss rate: 1.24%

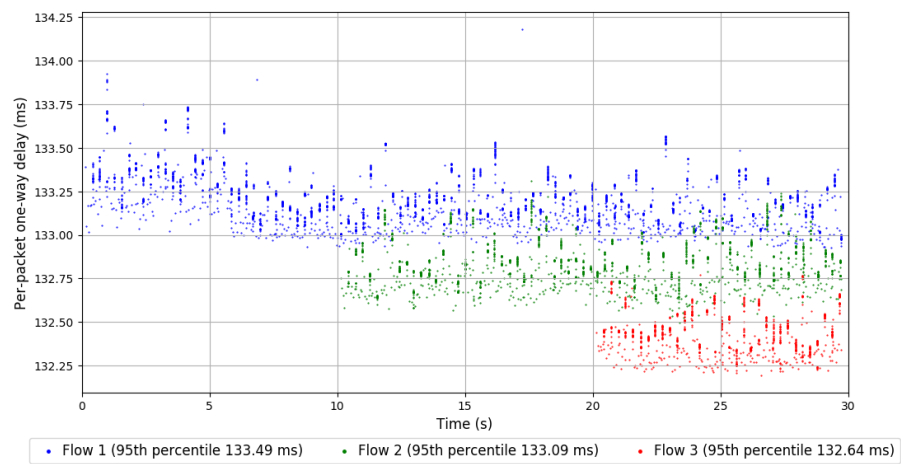
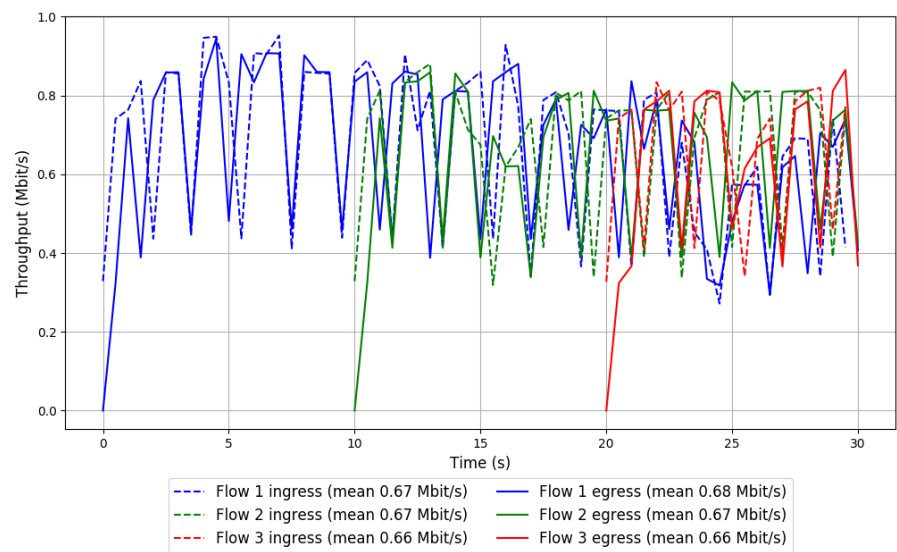
-- Flow 3:

Average throughput: 0.66 Mbit/s

95th percentile per-packet one-way delay: 132.644 ms

Loss rate: 3.12%

Run 5: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-11-15 15:01:39

End at: 2018-11-15 15:02:09

Local clock offset: 0.439 ms

Remote clock offset: 0.007 ms

Below is generated by plot.py at 2018-11-15 19:14:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 65.34 Mbit/s

95th percentile per-packet one-way delay: 138.141 ms

Loss rate: 3.05%

-- Flow 1:

Average throughput: 12.85 Mbit/s

95th percentile per-packet one-way delay: 136.117 ms

Loss rate: 0.92%

-- Flow 2:

Average throughput: 12.77 Mbit/s

95th percentile per-packet one-way delay: 133.584 ms

Loss rate: 1.36%

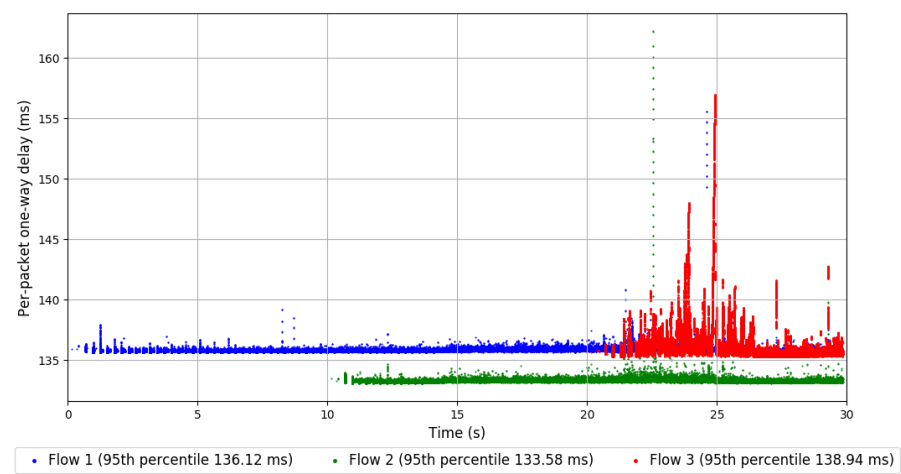
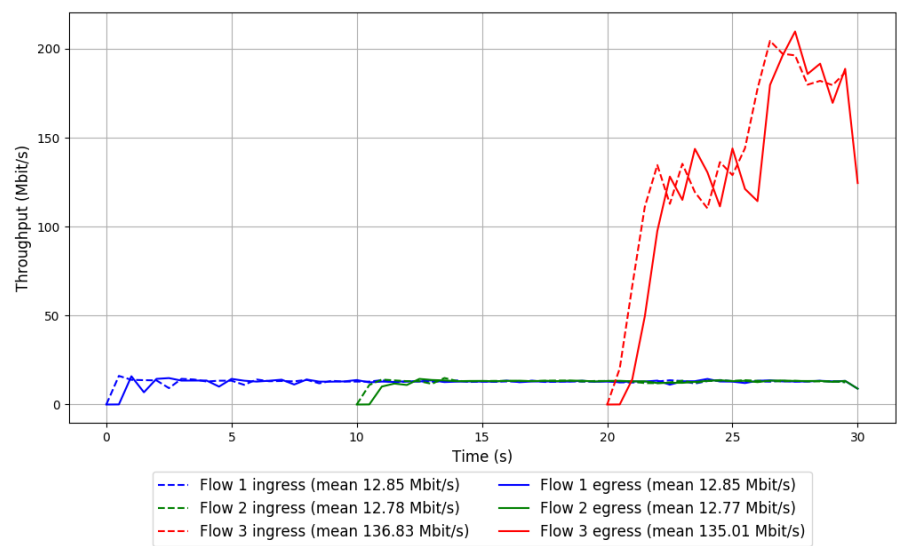
-- Flow 3:

Average throughput: 135.01 Mbit/s

95th percentile per-packet one-way delay: 138.940 ms

Loss rate: 3.97%

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

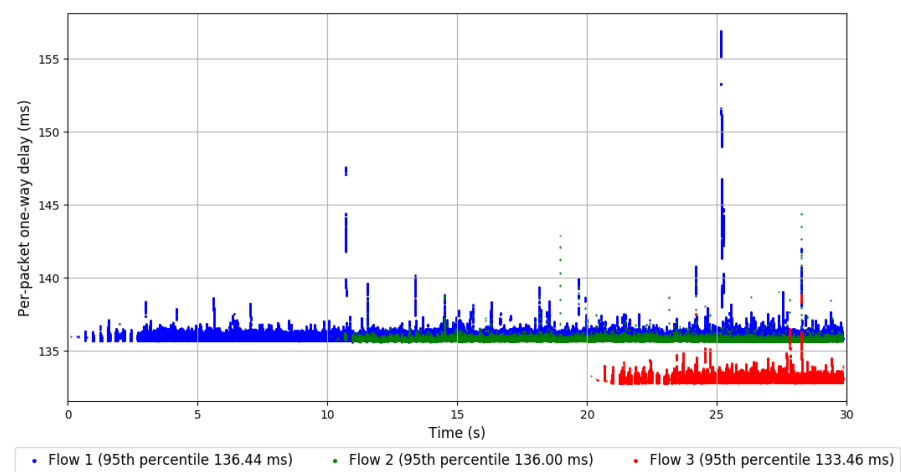
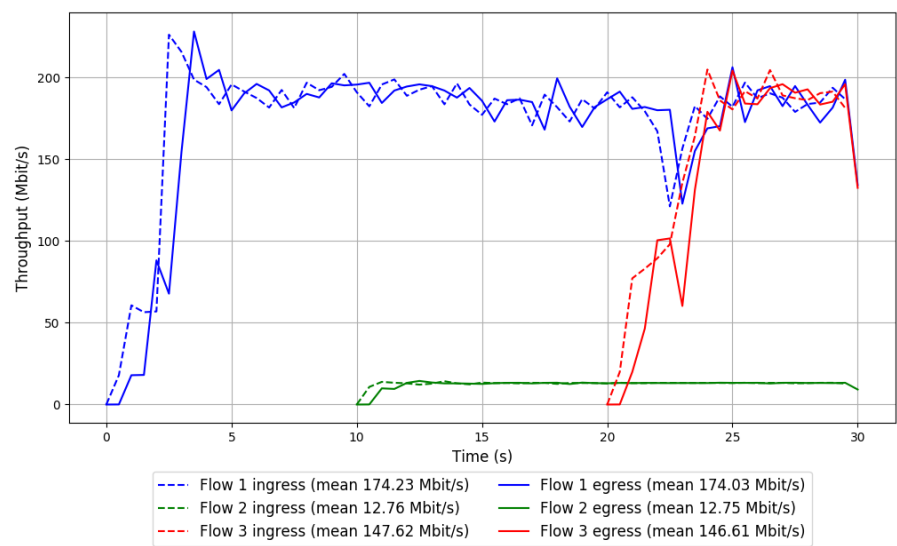


Run 2: Statistics of TaoVA-100x

Start at: 2018-11-15 15:35:46
End at: 2018-11-15 15:36:16
Local clock offset: 0.177 ms
Remote clock offset: -0.015 ms

Below is generated by plot.py at 2018-11-15 19:15:04
Datalink statistics
-- Total of 3 flows:
Average throughput: 230.38 Mbit/s
95th percentile per-packet one-way delay: 136.367 ms
Loss rate: 1.52%
-- Flow 1:
Average throughput: 174.03 Mbit/s
95th percentile per-packet one-way delay: 136.435 ms
Loss rate: 1.01%
-- Flow 2:
Average throughput: 12.75 Mbit/s
95th percentile per-packet one-way delay: 136.005 ms
Loss rate: 1.41%
-- Flow 3:
Average throughput: 146.61 Mbit/s
95th percentile per-packet one-way delay: 133.462 ms
Loss rate: 3.37%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-11-15 16:11:04

End at: 2018-11-15 16:11:34

Local clock offset: 0.24 ms

Remote clock offset: 0.089 ms

Below is generated by plot.py at 2018-11-15 19:15:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 137.38 Mbit/s

95th percentile per-packet one-way delay: 133.311 ms

Loss rate: 1.46%

-- Flow 1:

Average throughput: 13.05 Mbit/s

95th percentile per-packet one-way delay: 133.380 ms

Loss rate: 0.91%

-- Flow 2:

Average throughput: 181.20 Mbit/s

95th percentile per-packet one-way delay: 133.276 ms

Loss rate: 1.47%

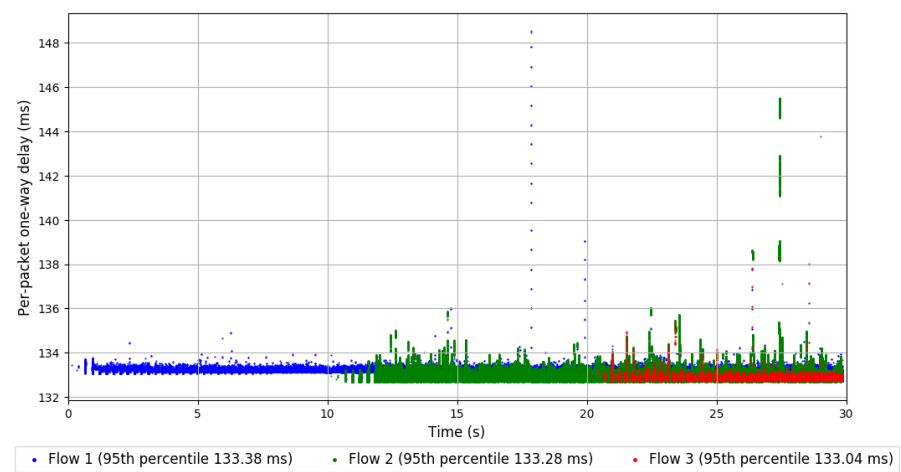
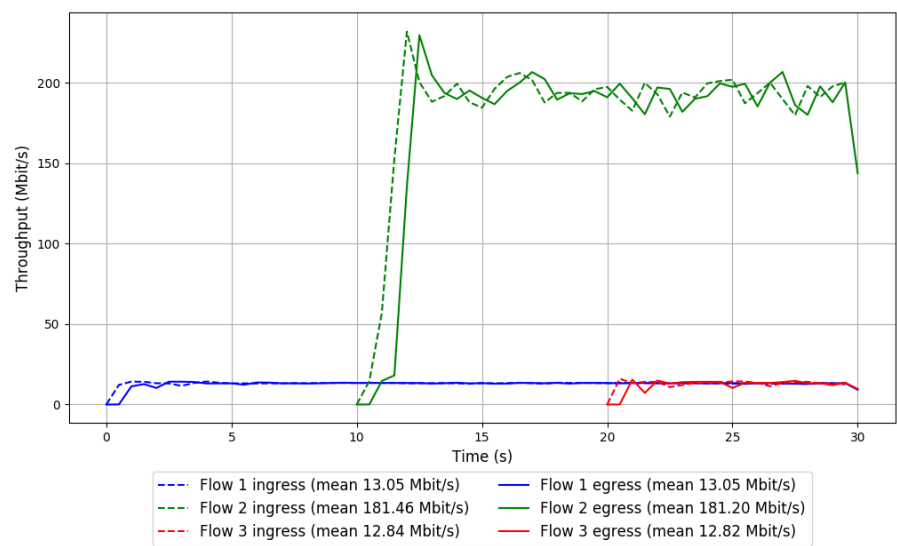
-- Flow 3:

Average throughput: 12.82 Mbit/s

95th percentile per-packet one-way delay: 133.038 ms

Loss rate: 2.74%

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



Run 4: Statistics of TaoVA-100x

Start at: 2018-11-15 16:46:14

End at: 2018-11-15 16:46:44

Local clock offset: -0.083 ms

Remote clock offset: 0.082 ms

Below is generated by plot.py at 2018-11-15 19:15:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 26.79 Mbit/s

95th percentile per-packet one-way delay: 135.451 ms

Loss rate: 1.34%

-- Flow 1:

Average throughput: 13.02 Mbit/s

95th percentile per-packet one-way delay: 135.512 ms

Loss rate: 0.92%

-- Flow 2:

Average throughput: 14.52 Mbit/s

95th percentile per-packet one-way delay: 132.767 ms

Loss rate: 1.24%

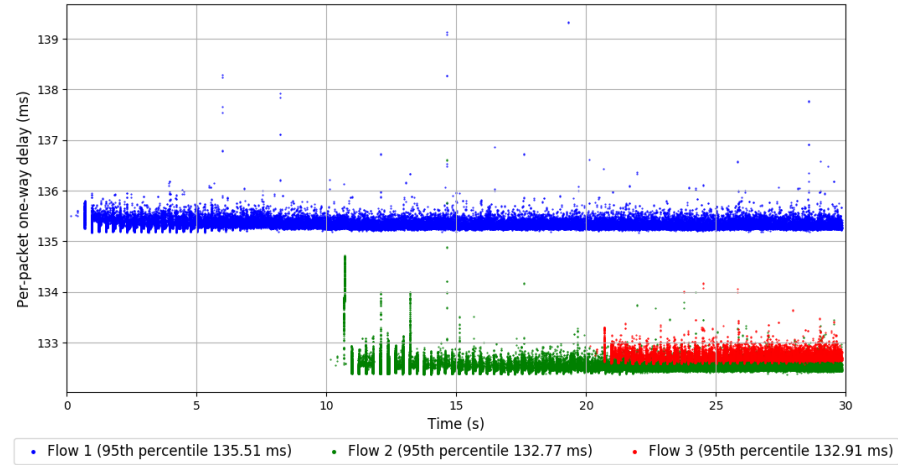
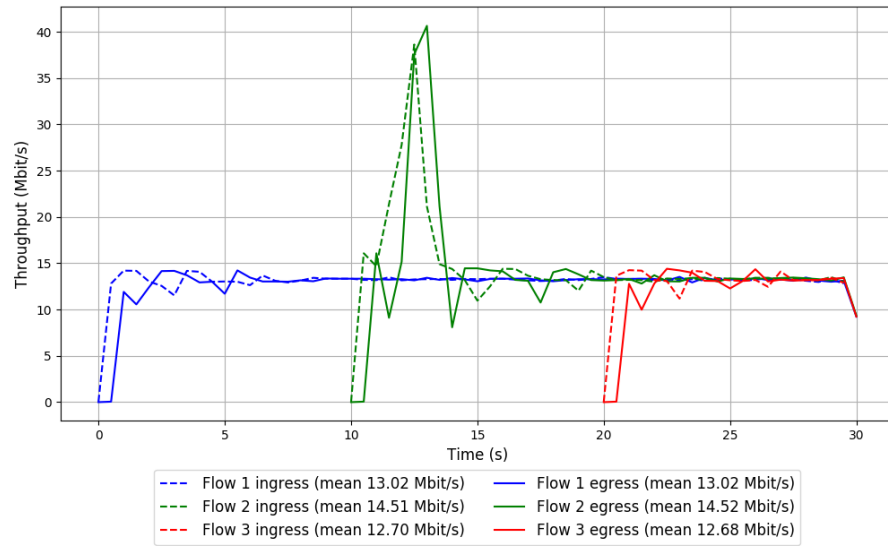
-- Flow 3:

Average throughput: 12.68 Mbit/s

95th percentile per-packet one-way delay: 132.907 ms

Loss rate: 2.83%

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



Run 5: Statistics of TaoVA-100x

Start at: 2018-11-15 17:20:25

End at: 2018-11-15 17:20:55

Local clock offset: 0.154 ms

Remote clock offset: 0.046 ms

Below is generated by plot.py at 2018-11-15 19:16:53

Datalink statistics

-- Total of 3 flows:

Average throughput: 235.75 Mbit/s

95th percentile per-packet one-way delay: 133.364 ms

Loss rate: 1.51%

-- Flow 1:

Average throughput: 178.22 Mbit/s

95th percentile per-packet one-way delay: 133.305 ms

Loss rate: 1.01%

-- Flow 2:

Average throughput: 13.00 Mbit/s

95th percentile per-packet one-way delay: 132.772 ms

Loss rate: 1.36%

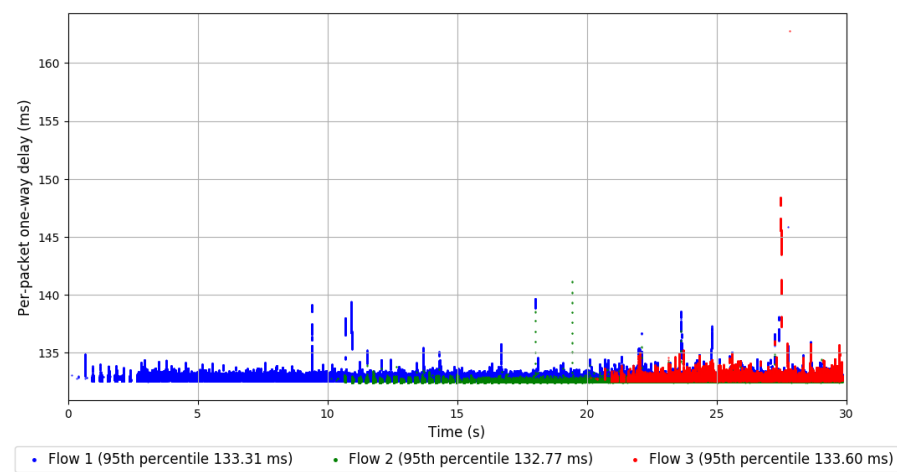
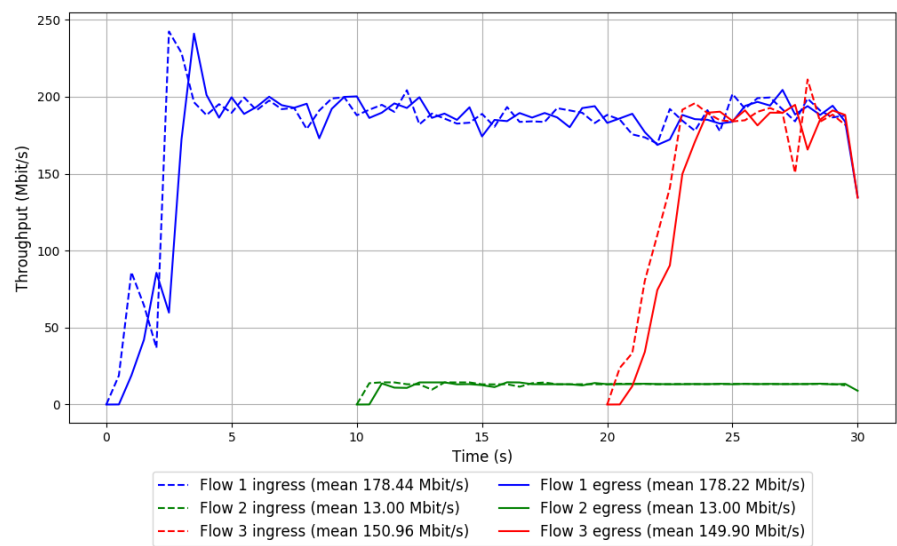
-- Flow 3:

Average throughput: 149.90 Mbit/s

95th percentile per-packet one-way delay: 133.604 ms

Loss rate: 3.32%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-11-15 14:50:18

End at: 2018-11-15 14:50:48

Local clock offset: 0.265 ms

Remote clock offset: -0.07 ms

Below is generated by plot.py at 2018-11-15 19:17:30

Datalink statistics

-- Total of 3 flows:

Average throughput: 455.85 Mbit/s

95th percentile per-packet one-way delay: 137.106 ms

Loss rate: 1.55%

-- Flow 1:

Average throughput: 240.64 Mbit/s

95th percentile per-packet one-way delay: 137.350 ms

Loss rate: 0.98%

-- Flow 2:

Average throughput: 230.35 Mbit/s

95th percentile per-packet one-way delay: 134.307 ms

Loss rate: 1.57%

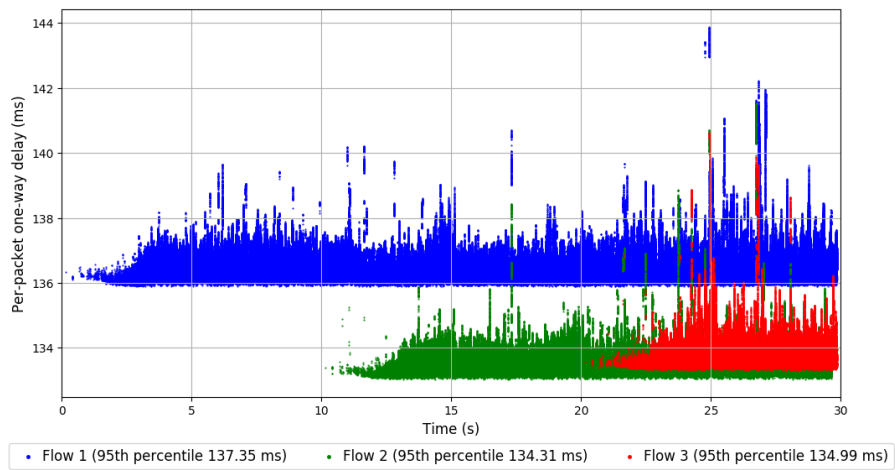
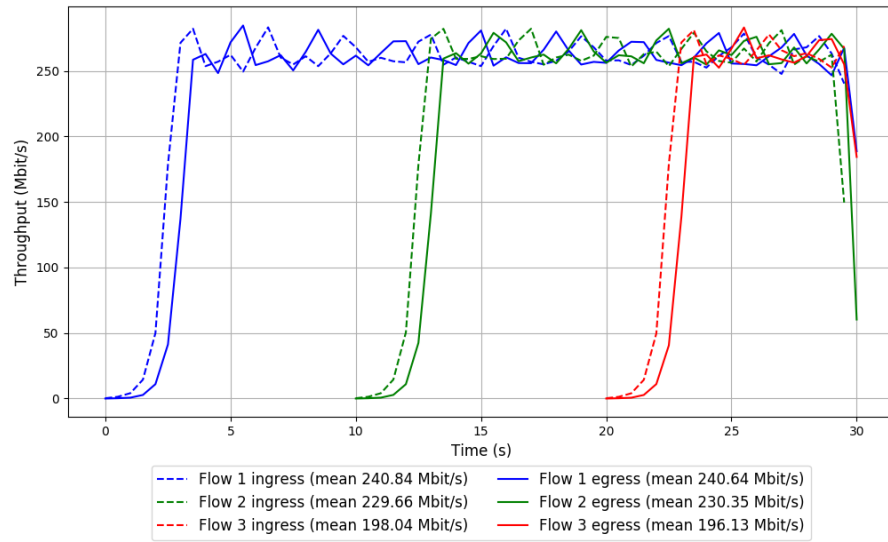
-- Flow 3:

Average throughput: 196.13 Mbit/s

95th percentile per-packet one-way delay: 134.987 ms

Loss rate: 3.61%

Run 1: Report of TCP Vegas — Data Link

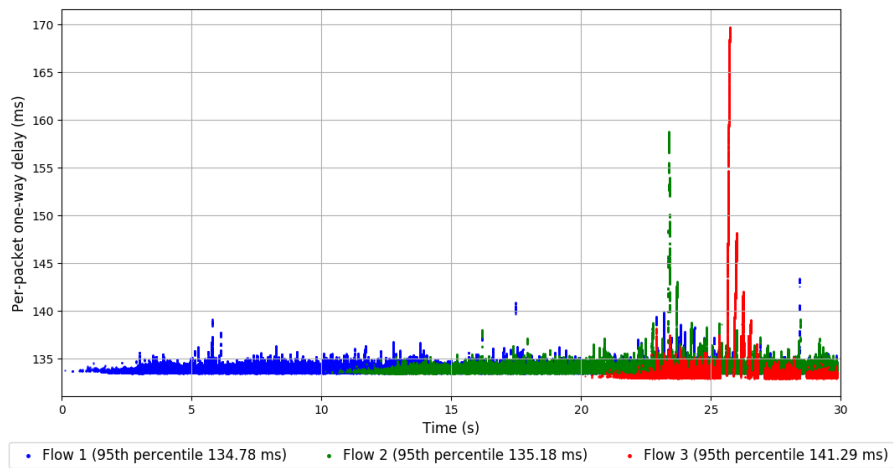
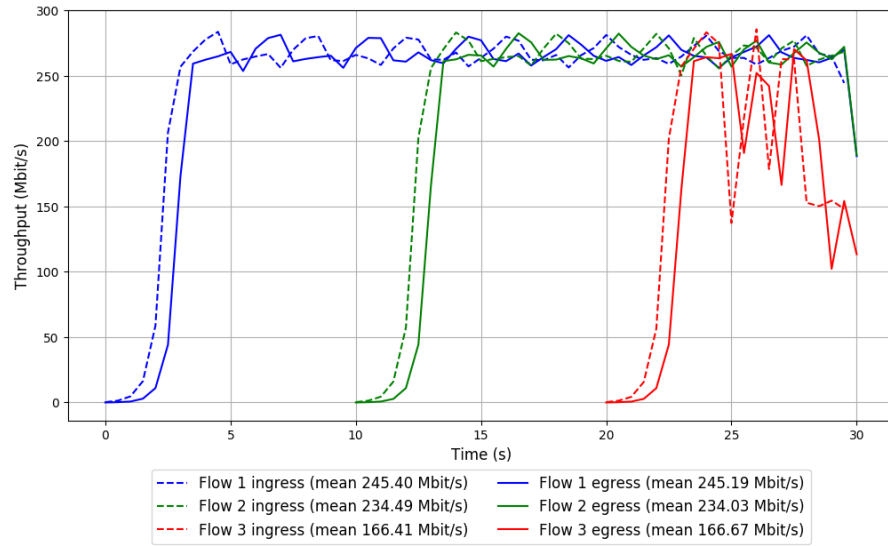


Run 2: Statistics of TCP Vegas

Start at: 2018-11-15 15:25:00
End at: 2018-11-15 15:25:30
Local clock offset: 0.333 ms
Remote clock offset: -0.034 ms

Below is generated by plot.py at 2018-11-15 19:18:01
Datalink statistics
-- Total of 3 flows:
Average throughput: 454.78 Mbit/s
95th percentile per-packet one-way delay: 135.131 ms
Loss rate: 1.34%
-- Flow 1:
Average throughput: 245.19 Mbit/s
95th percentile per-packet one-way delay: 134.781 ms
Loss rate: 0.97%
-- Flow 2:
Average throughput: 234.03 Mbit/s
95th percentile per-packet one-way delay: 135.181 ms
Loss rate: 1.52%
-- Flow 3:
Average throughput: 166.67 Mbit/s
95th percentile per-packet one-way delay: 141.293 ms
Loss rate: 2.51%

Run 2: Report of TCP Vegas — Data Link

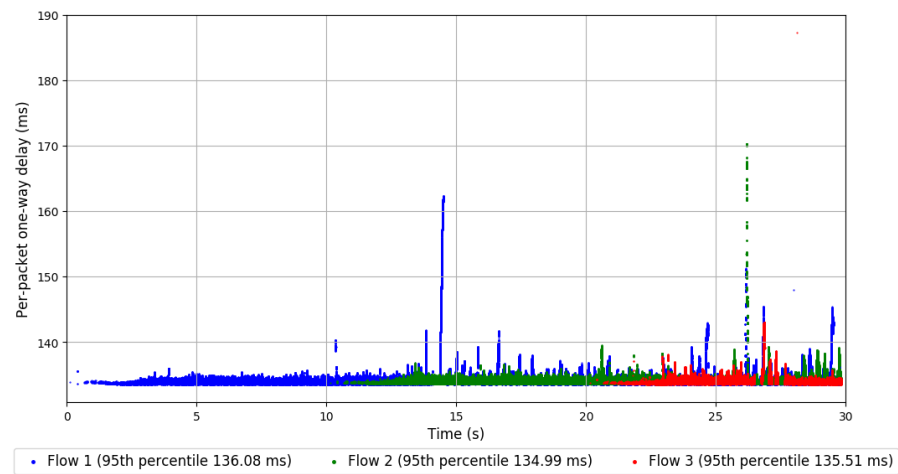
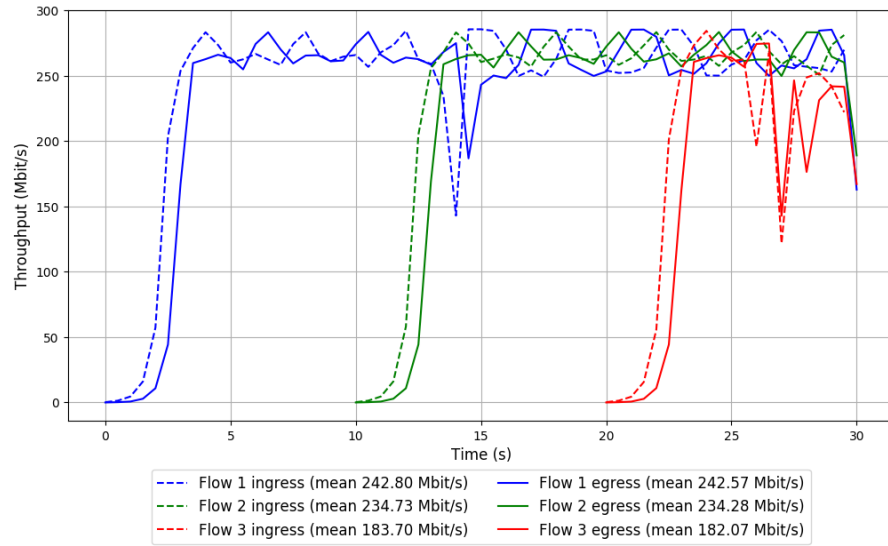


Run 3: Statistics of TCP Vegas

Start at: 2018-11-15 16:00:18
End at: 2018-11-15 16:00:48
Local clock offset: 0.621 ms
Remote clock offset: -0.339 ms

Below is generated by plot.py at 2018-11-15 19:18:15
Datalink statistics
-- Total of 3 flows:
Average throughput: 457.32 Mbit/s
95th percentile per-packet one-way delay: 135.644 ms
Loss rate: 1.50%
-- Flow 1:
Average throughput: 242.57 Mbit/s
95th percentile per-packet one-way delay: 136.076 ms
Loss rate: 0.98%
-- Flow 2:
Average throughput: 234.28 Mbit/s
95th percentile per-packet one-way delay: 134.992 ms
Loss rate: 1.52%
-- Flow 3:
Average throughput: 182.07 Mbit/s
95th percentile per-packet one-way delay: 135.506 ms
Loss rate: 3.54%

Run 3: Report of TCP Vegas — Data Link



Run 4: Statistics of TCP Vegas

Start at: 2018-11-15 16:35:30

End at: 2018-11-15 16:36:00

Local clock offset: 0.678 ms

Remote clock offset: 0.063 ms

Below is generated by plot.py at 2018-11-15 19:22:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 464.13 Mbit/s

95th percentile per-packet one-way delay: 134.831 ms

Loss rate: 1.53%

-- Flow 1:

Average throughput: 244.80 Mbit/s

95th percentile per-packet one-way delay: 134.727 ms

Loss rate: 0.97%

-- Flow 2:

Average throughput: 233.31 Mbit/s

95th percentile per-packet one-way delay: 134.744 ms

Loss rate: 1.53%

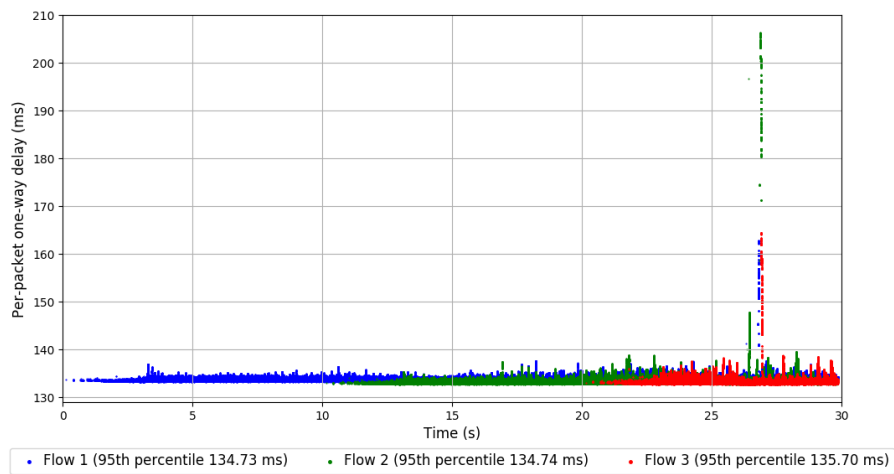
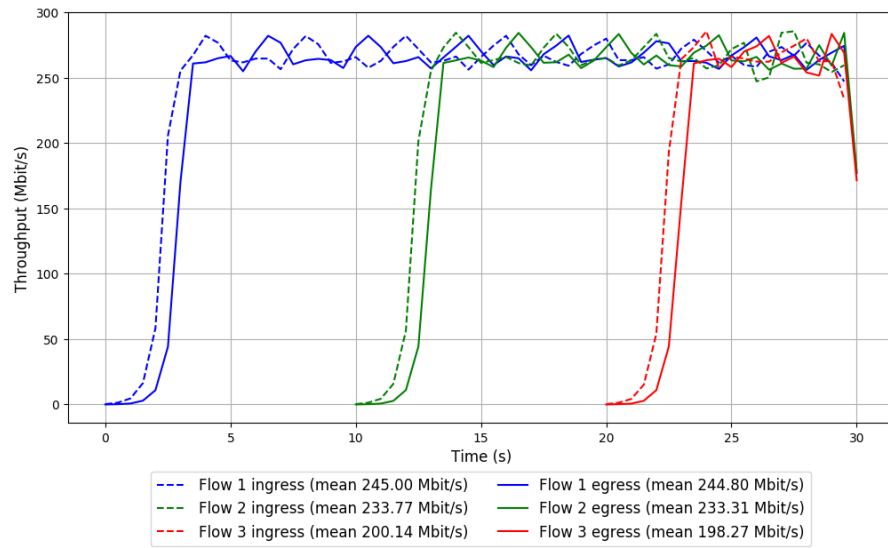
-- Flow 3:

Average throughput: 198.27 Mbit/s

95th percentile per-packet one-way delay: 135.704 ms

Loss rate: 3.58%

Run 4: Report of TCP Vegas — Data Link



Run 5: Statistics of TCP Vegas

Start at: 2018-11-15 17:09:35

End at: 2018-11-15 17:10:05

Local clock offset: 0.819 ms

Remote clock offset: 0.025 ms

Below is generated by plot.py at 2018-11-15 19:22:51

Datalink statistics

-- Total of 3 flows:

Average throughput: 460.23 Mbit/s

95th percentile per-packet one-way delay: 135.227 ms

Loss rate: 1.54%

-- Flow 1:

Average throughput: 242.77 Mbit/s

95th percentile per-packet one-way delay: 135.130 ms

Loss rate: 0.98%

-- Flow 2:

Average throughput: 230.11 Mbit/s

95th percentile per-packet one-way delay: 135.722 ms

Loss rate: 1.55%

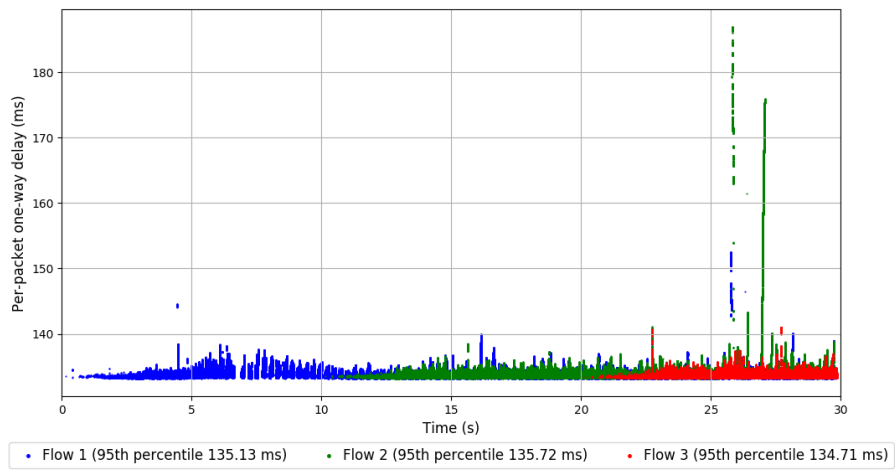
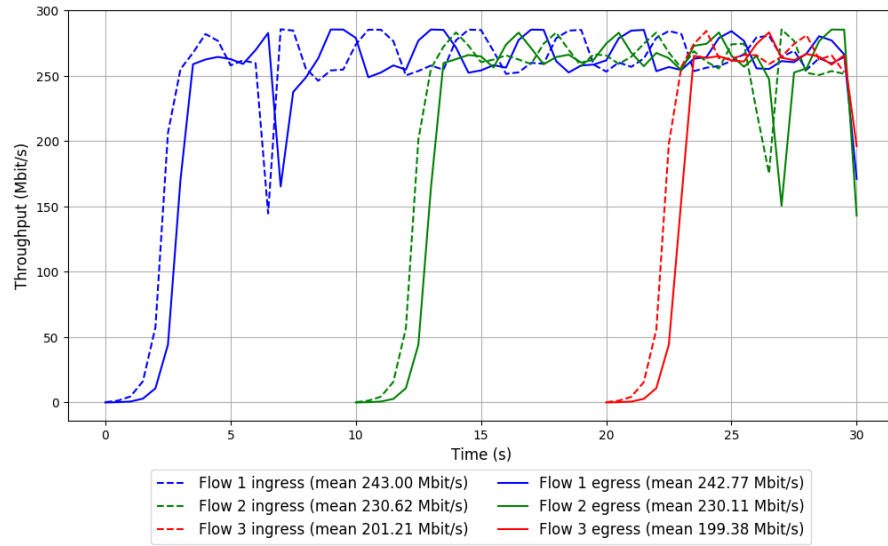
-- Flow 3:

Average throughput: 199.38 Mbit/s

95th percentile per-packet one-way delay: 134.706 ms

Loss rate: 3.55%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-11-15 14:48:33

End at: 2018-11-15 14:49:03

Local clock offset: 0.04 ms

Remote clock offset: 0.019 ms

Below is generated by plot.py at 2018-11-15 19:23:30

Datalink statistics

-- Total of 3 flows:

Average throughput: 204.61 Mbit/s

95th percentile per-packet one-way delay: 254.613 ms

Loss rate: 2.00%

-- Flow 1:

Average throughput: 171.63 Mbit/s

95th percentile per-packet one-way delay: 256.957 ms

Loss rate: 1.80%

-- Flow 2:

Average throughput: 27.87 Mbit/s

95th percentile per-packet one-way delay: 136.143 ms

Loss rate: 3.12%

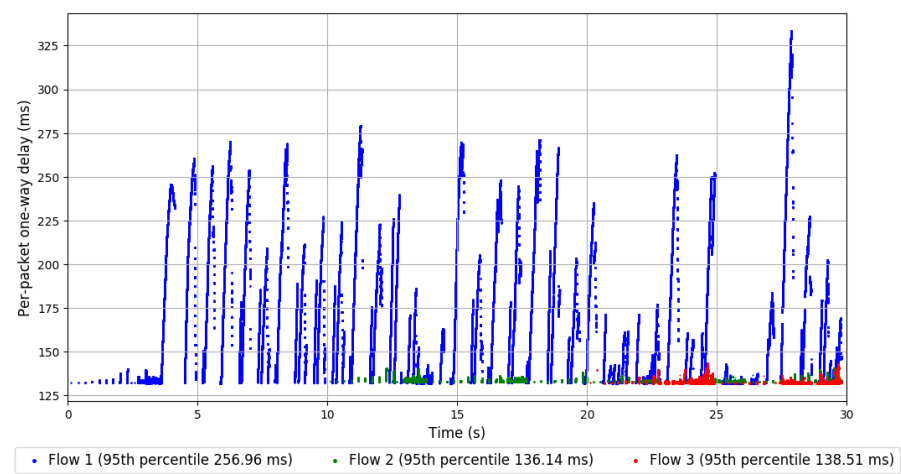
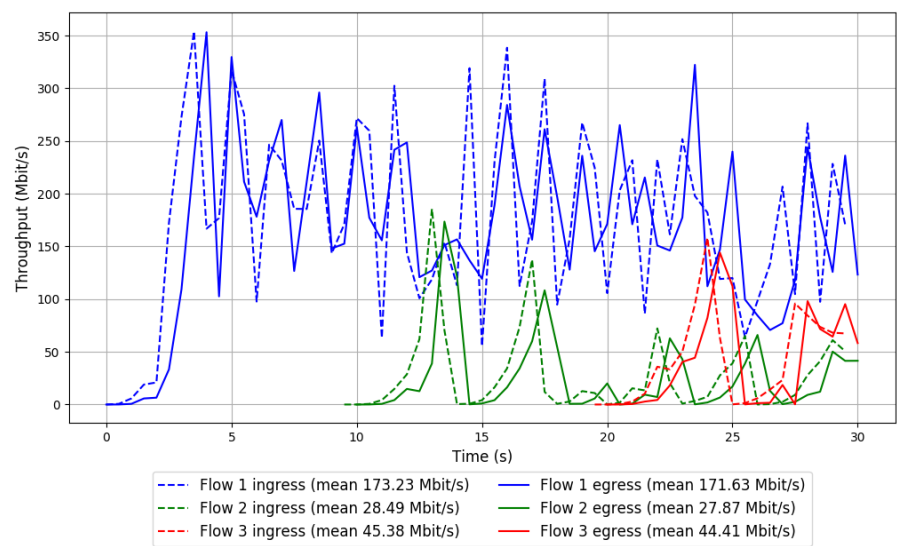
-- Flow 3:

Average throughput: 44.41 Mbit/s

95th percentile per-packet one-way delay: 138.514 ms

Loss rate: 2.81%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-11-15 15:23:25

End at: 2018-11-15 15:23:55

Local clock offset: 0.365 ms

Remote clock offset: 0.357 ms

Below is generated by plot.py at 2018-11-15 19:23:30

Datalink statistics

-- Total of 3 flows:

Average throughput: 103.51 Mbit/s

95th percentile per-packet one-way delay: 152.250 ms

Loss rate: 0.27%

-- Flow 1:

Average throughput: 64.25 Mbit/s

95th percentile per-packet one-way delay: 172.136 ms

Loss rate: 0.13%

-- Flow 2:

Average throughput: 36.81 Mbit/s

95th percentile per-packet one-way delay: 140.885 ms

Loss rate: 0.14%

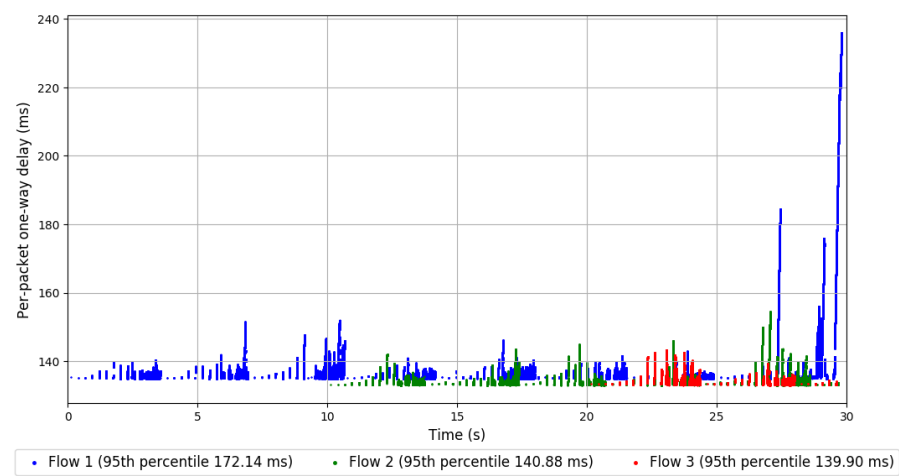
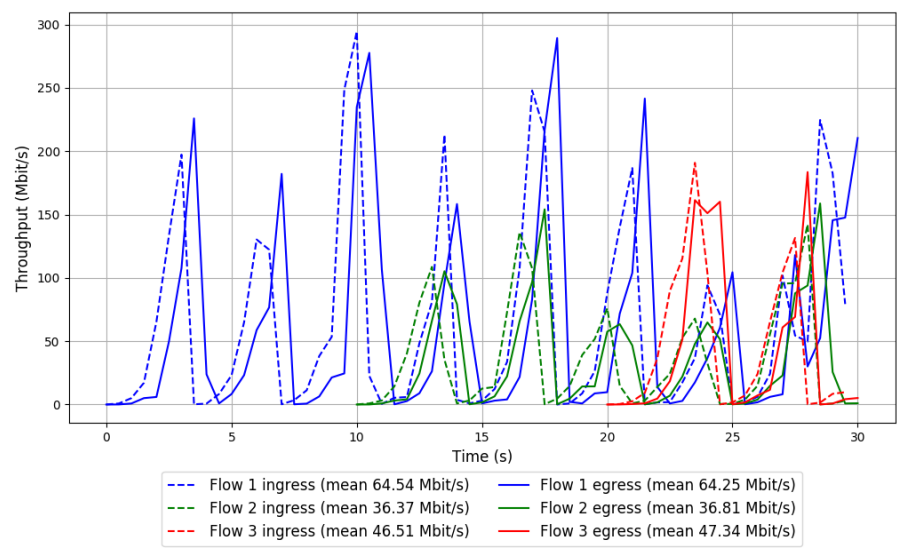
-- Flow 3:

Average throughput: 47.34 Mbit/s

95th percentile per-packet one-way delay: 139.898 ms

Loss rate: 1.08%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-11-15 15:58:27

End at: 2018-11-15 15:58:57

Local clock offset: -0.01 ms

Remote clock offset: 0.067 ms

Below is generated by plot.py at 2018-11-15 19:24:20

Datalink statistics

-- Total of 3 flows:

Average throughput: 179.22 Mbit/s

95th percentile per-packet one-way delay: 247.088 ms

Loss rate: 0.95%

-- Flow 1:

Average throughput: 35.90 Mbit/s

95th percentile per-packet one-way delay: 138.818 ms

Loss rate: 0.82%

-- Flow 2:

Average throughput: 141.84 Mbit/s

95th percentile per-packet one-way delay: 220.198 ms

Loss rate: 0.45%

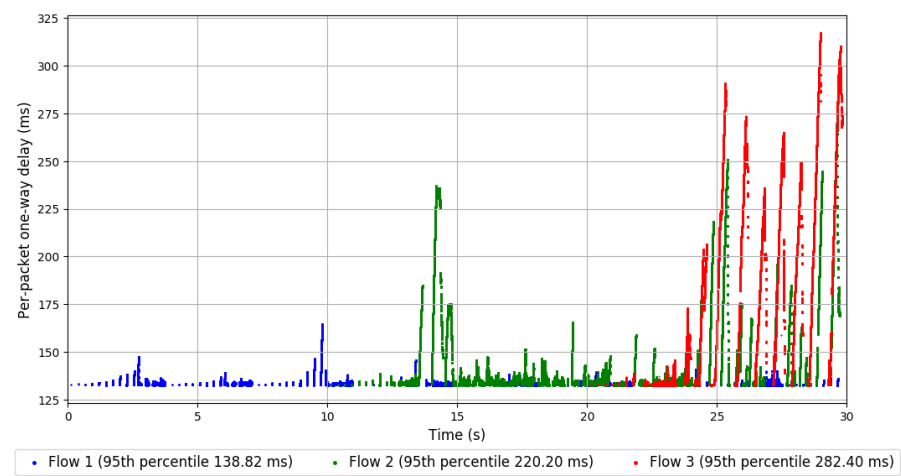
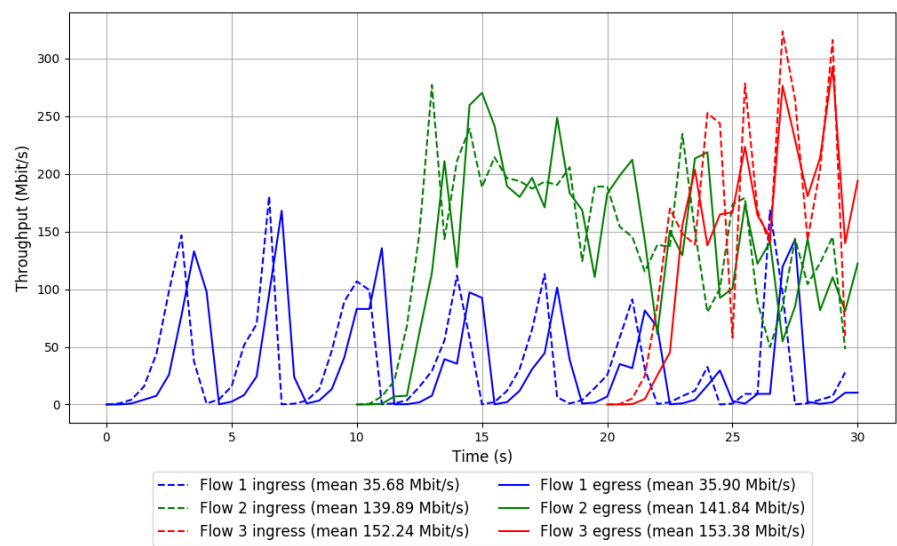
-- Flow 3:

Average throughput: 153.38 Mbit/s

95th percentile per-packet one-way delay: 282.396 ms

Loss rate: 1.96%

Run 3: Report of Verus — Data Link



Run 4: Statistics of Verus

Start at: 2018-11-15 16:33:55

End at: 2018-11-15 16:34:25

Local clock offset: 0.279 ms

Remote clock offset: 0.069 ms

Below is generated by plot.py at 2018-11-15 19:24:20

Datalink statistics

-- Total of 3 flows:

Average throughput: 109.46 Mbit/s

95th percentile per-packet one-way delay: 142.493 ms

Loss rate: 0.17%

-- Flow 1:

Average throughput: 73.64 Mbit/s

95th percentile per-packet one-way delay: 145.836 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 41.10 Mbit/s

95th percentile per-packet one-way delay: 136.515 ms

Loss rate: 0.23%

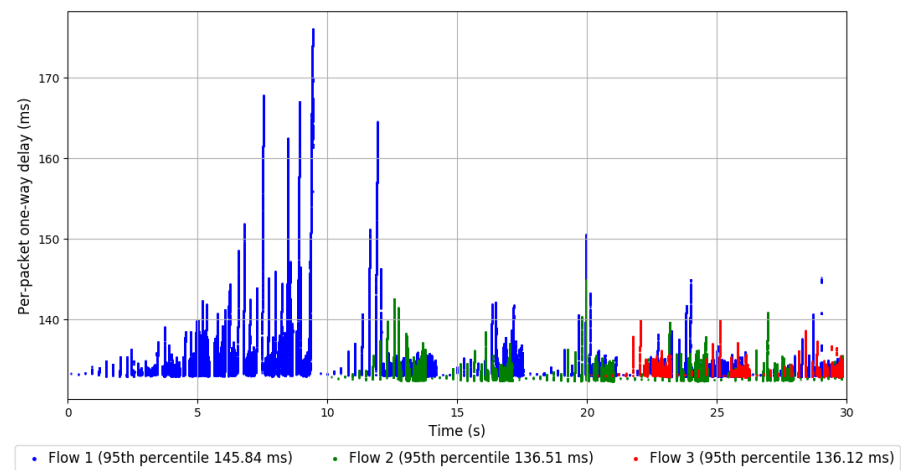
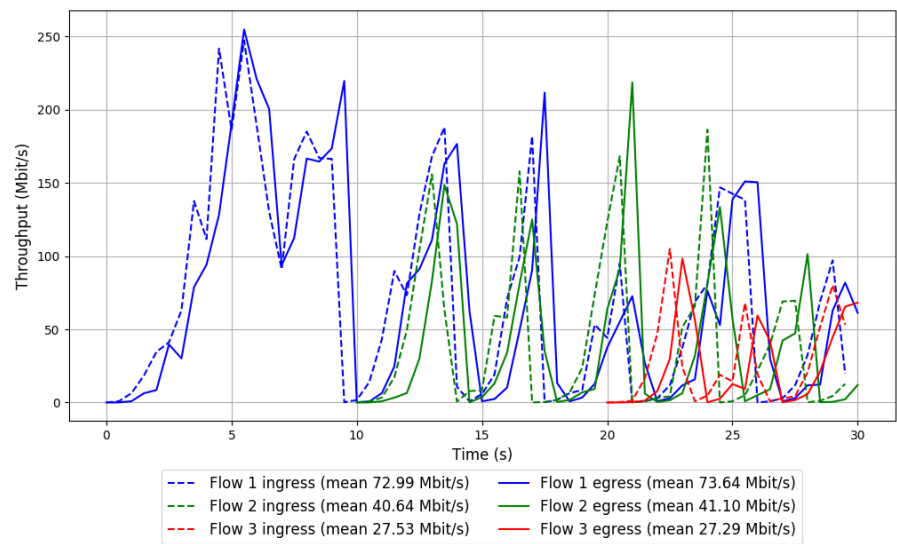
-- Flow 3:

Average throughput: 27.29 Mbit/s

95th percentile per-packet one-way delay: 136.122 ms

Loss rate: 1.25%

Run 4: Report of Verus — Data Link



Run 5: Statistics of Verus

Start at: 2018-11-15 17:07:24

End at: 2018-11-15 17:07:54

Local clock offset: 0.538 ms

Remote clock offset: 0.046 ms

Below is generated by plot.py at 2018-11-15 19:27:18

Datalink statistics

-- Total of 3 flows:

Average throughput: 245.77 Mbit/s

95th percentile per-packet one-way delay: 302.228 ms

Loss rate: 6.95%

-- Flow 1:

Average throughput: 142.50 Mbit/s

95th percentile per-packet one-way delay: 297.665 ms

Loss rate: 9.00%

-- Flow 2:

Average throughput: 128.75 Mbit/s

95th percentile per-packet one-way delay: 307.967 ms

Loss rate: 4.82%

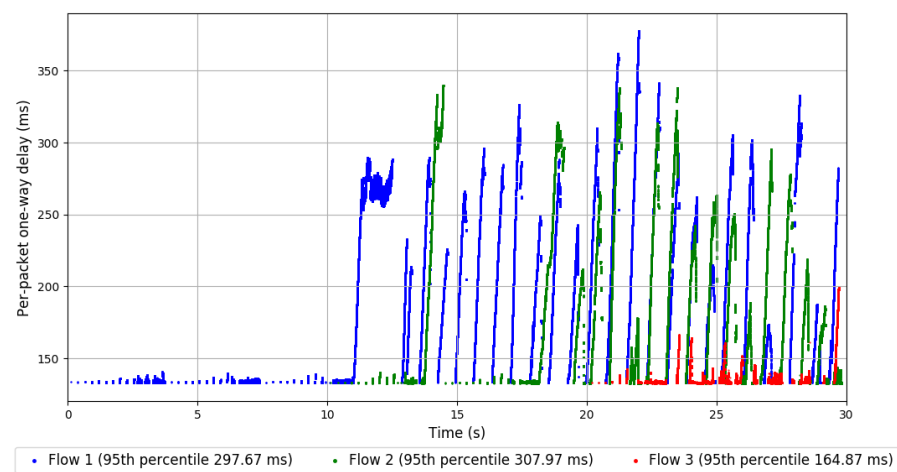
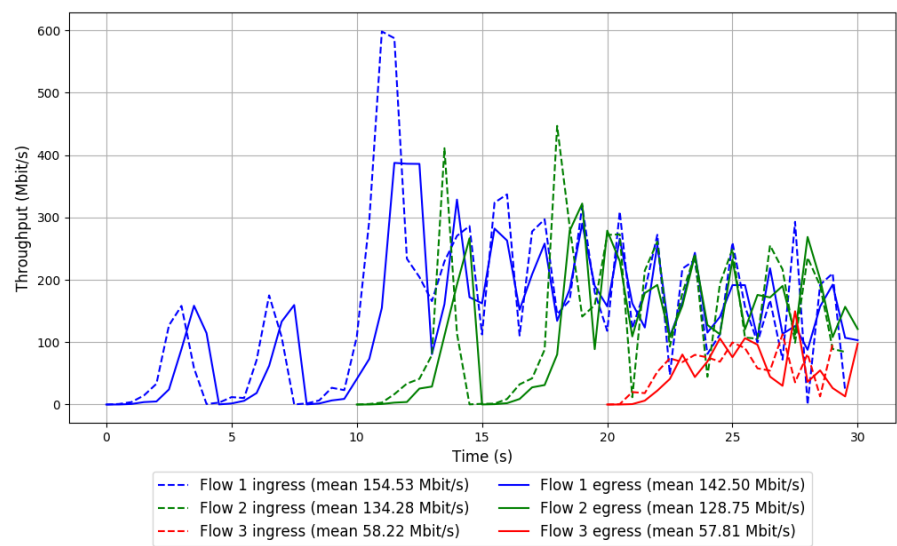
-- Flow 3:

Average throughput: 57.81 Mbit/s

95th percentile per-packet one-way delay: 164.866 ms

Loss rate: 0.00%

Run 5: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-11-15 14:35:49

End at: 2018-11-15 14:36:19

Local clock offset: -0.156 ms

Remote clock offset: 0.048 ms

Below is generated by plot.py at 2018-11-15 19:27:39

Datalink statistics

-- Total of 3 flows:

Average throughput: 481.01 Mbit/s

95th percentile per-packet one-way delay: 145.628 ms

Loss rate: 1.07%

-- Flow 1:

Average throughput: 320.65 Mbit/s

95th percentile per-packet one-way delay: 144.669 ms

Loss rate: 1.04%

-- Flow 2:

Average throughput: 163.32 Mbit/s

95th percentile per-packet one-way delay: 142.927 ms

Loss rate: 1.66%

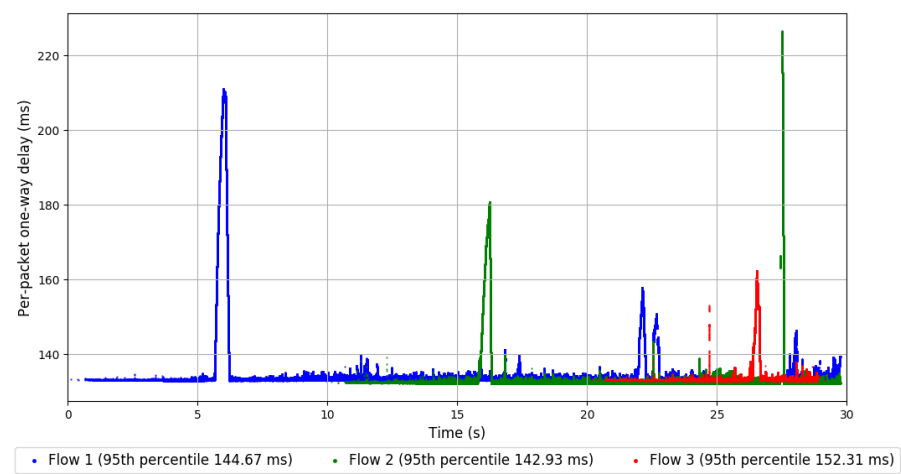
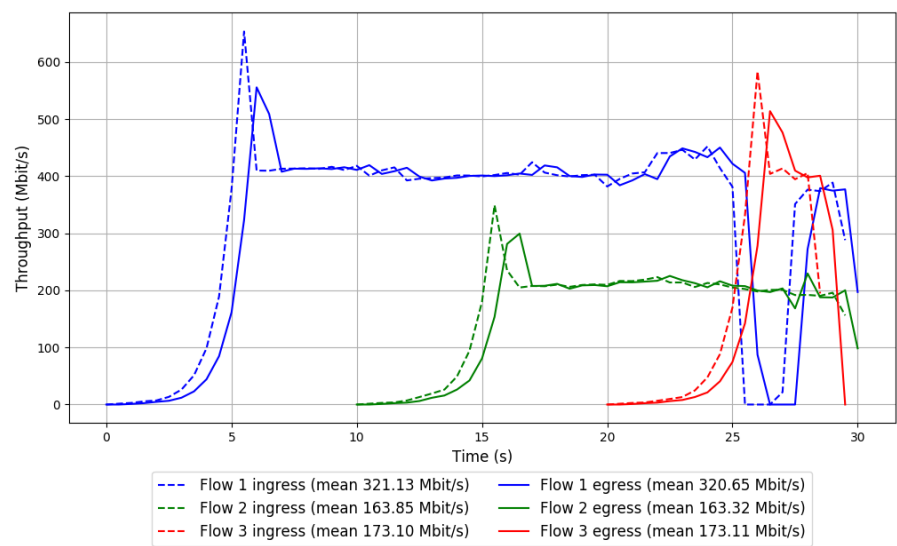
-- Flow 3:

Average throughput: 173.11 Mbit/s

95th percentile per-packet one-way delay: 152.314 ms

Loss rate: 0.00%

Run 1: Report of PCC-Vivace — Data Link

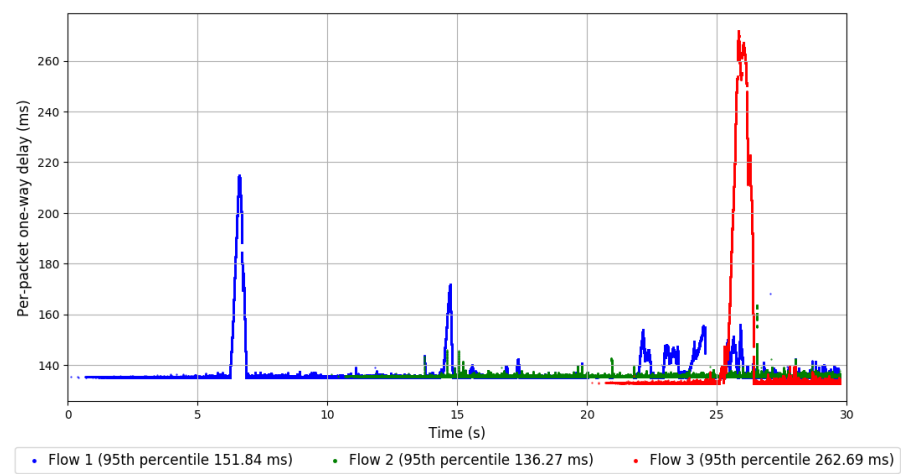
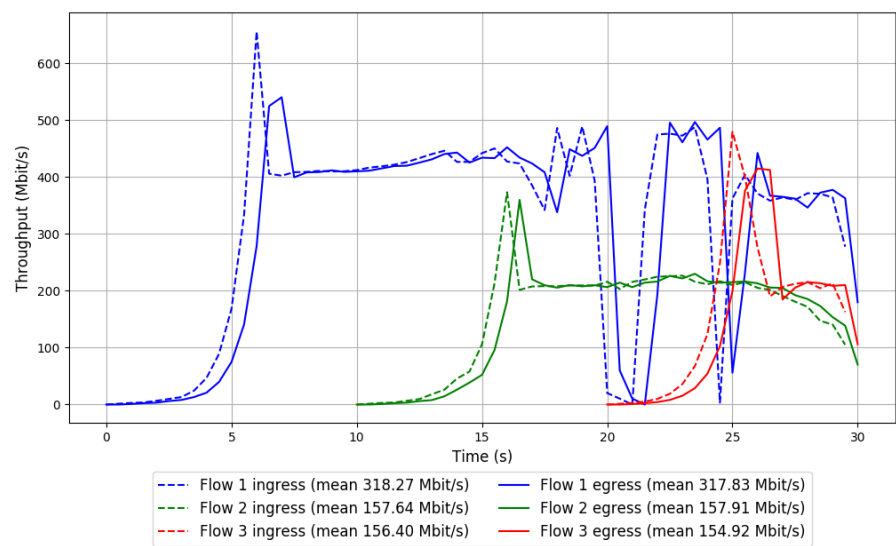


Run 2: Statistics of PCC-Vivace

Start at: 2018-11-15 15:10:55
End at: 2018-11-15 15:11:25
Local clock offset: 0.101 ms
Remote clock offset: -0.014 ms

Below is generated by plot.py at 2018-11-15 19:28:16
Datalink statistics
-- Total of 3 flows:
Average throughput: 472.41 Mbit/s
95th percentile per-packet one-way delay: 161.325 ms
Loss rate: 1.35%
-- Flow 1:
Average throughput: 317.83 Mbit/s
95th percentile per-packet one-way delay: 151.836 ms
Loss rate: 1.03%
-- Flow 2:
Average throughput: 157.91 Mbit/s
95th percentile per-packet one-way delay: 136.268 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 154.92 Mbit/s
95th percentile per-packet one-way delay: 262.685 ms
Loss rate: 3.63%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-11-15 15:45:41

End at: 2018-11-15 15:46:11

Local clock offset: -0.025 ms

Remote clock offset: 0.023 ms

Below is generated by plot.py at 2018-11-15 19:29:11

Datalink statistics

-- Total of 3 flows:

Average throughput: 454.31 Mbit/s

95th percentile per-packet one-way delay: 162.187 ms

Loss rate: 1.83%

-- Flow 1:

Average throughput: 295.68 Mbit/s

95th percentile per-packet one-way delay: 182.036 ms

Loss rate: 1.43%

-- Flow 2:

Average throughput: 179.36 Mbit/s

95th percentile per-packet one-way delay: 139.582 ms

Loss rate: 1.80%

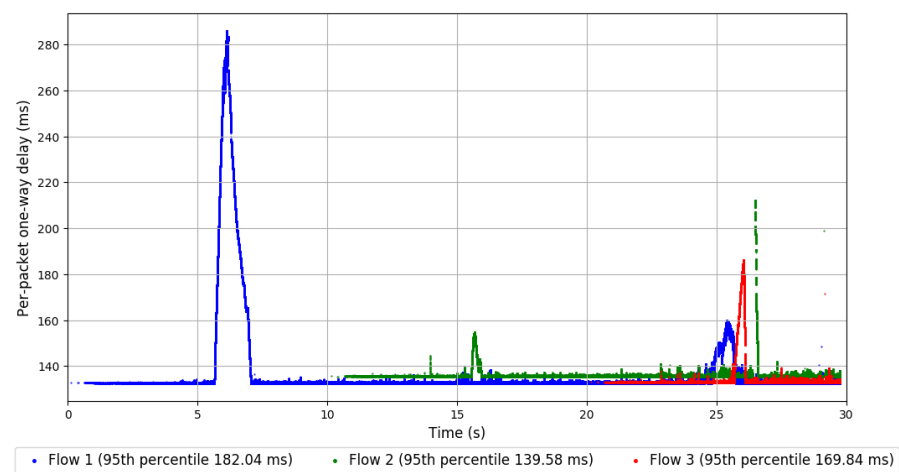
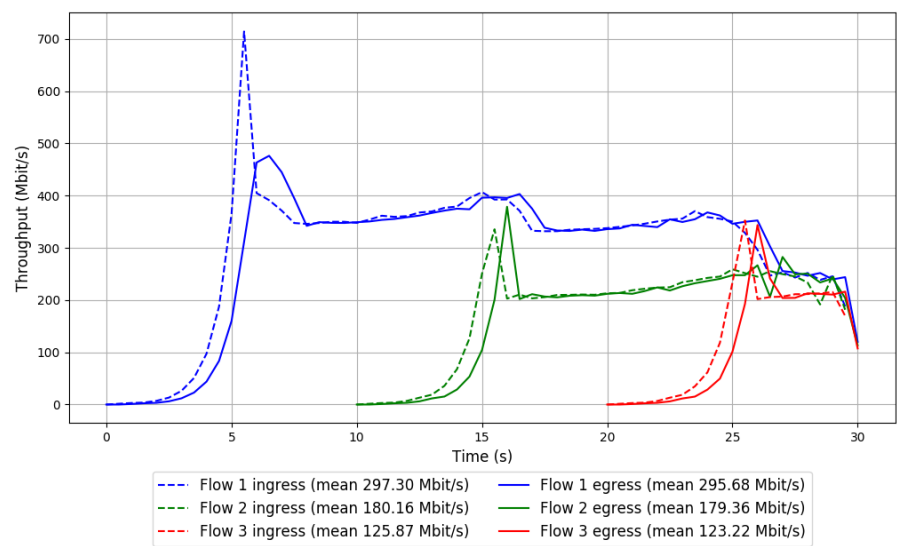
-- Flow 3:

Average throughput: 123.22 Mbit/s

95th percentile per-packet one-way delay: 169.843 ms

Loss rate: 4.77%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-11-15 16:20:09

End at: 2018-11-15 16:20:39

Local clock offset: 0.295 ms

Remote clock offset: 0.043 ms

Below is generated by plot.py at 2018-11-15 19:29:29

Datalink statistics

-- Total of 3 flows:

Average throughput: 498.60 Mbit/s

95th percentile per-packet one-way delay: 173.151 ms

Loss rate: 1.99%

-- Flow 1:

Average throughput: 312.23 Mbit/s

95th percentile per-packet one-way delay: 170.060 ms

Loss rate: 1.22%

-- Flow 2:

Average throughput: 227.06 Mbit/s

95th percentile per-packet one-way delay: 220.044 ms

Loss rate: 2.80%

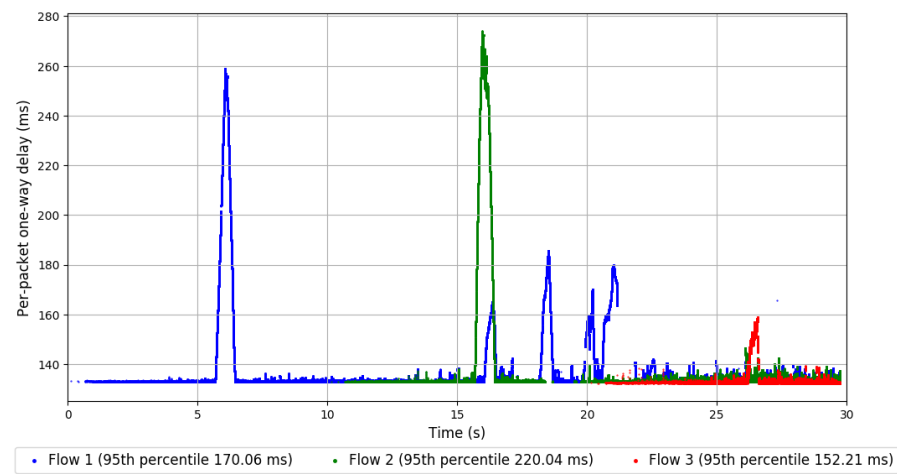
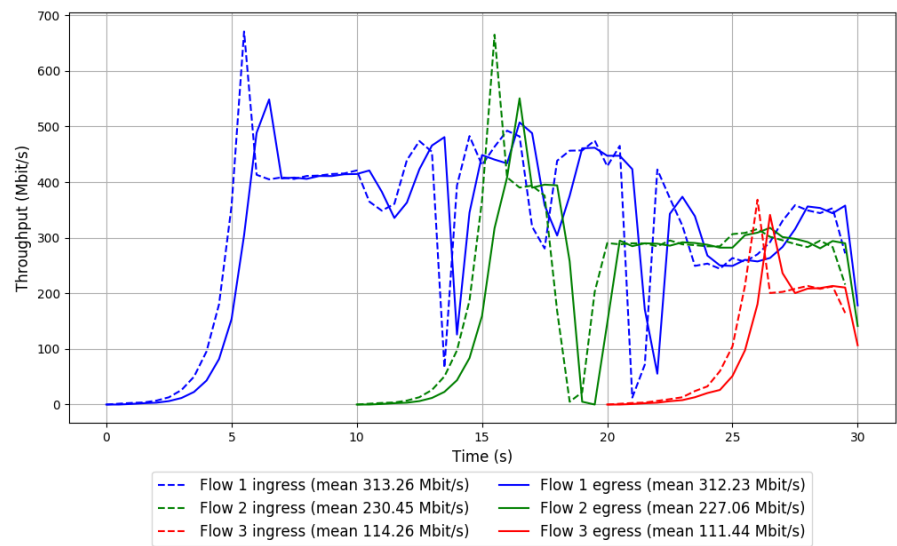
-- Flow 3:

Average throughput: 111.44 Mbit/s

95th percentile per-packet one-way delay: 152.213 ms

Loss rate: 5.11%

Run 4: Report of PCC-Vivace — Data Link



Run 5: Statistics of PCC-Vivace

Start at: 2018-11-15 16:55:20

End at: 2018-11-15 16:55:50

Local clock offset: 0.099 ms

Remote clock offset: 0.054 ms

Below is generated by plot.py at 2018-11-15 19:29:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 493.07 Mbit/s

95th percentile per-packet one-way delay: 169.898 ms

Loss rate: 1.65%

-- Flow 1:

Average throughput: 298.90 Mbit/s

95th percentile per-packet one-way delay: 144.771 ms

Loss rate: 1.30%

-- Flow 2:

Average throughput: 199.58 Mbit/s

95th percentile per-packet one-way delay: 141.183 ms

Loss rate: 1.71%

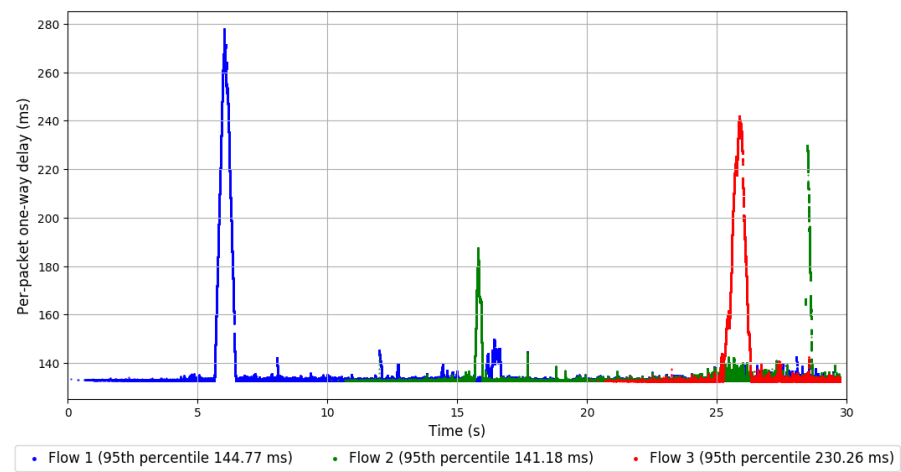
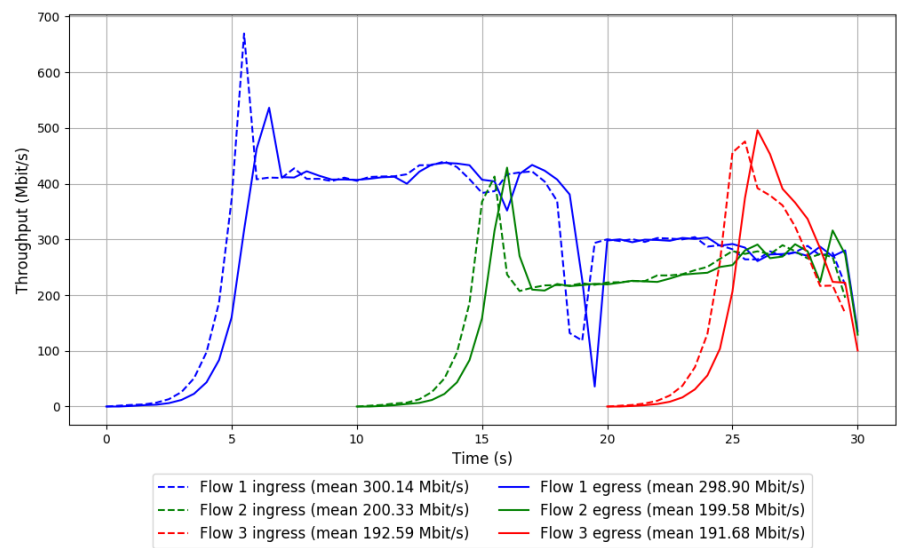
-- Flow 3:

Average throughput: 191.68 Mbit/s

95th percentile per-packet one-way delay: 230.258 ms

Loss rate: 3.17%

Run 5: Report of PCC-Vivace — Data Link

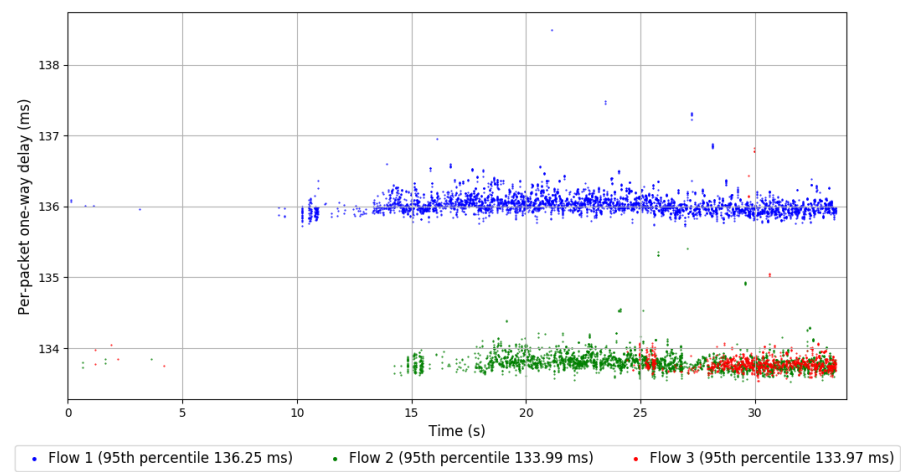
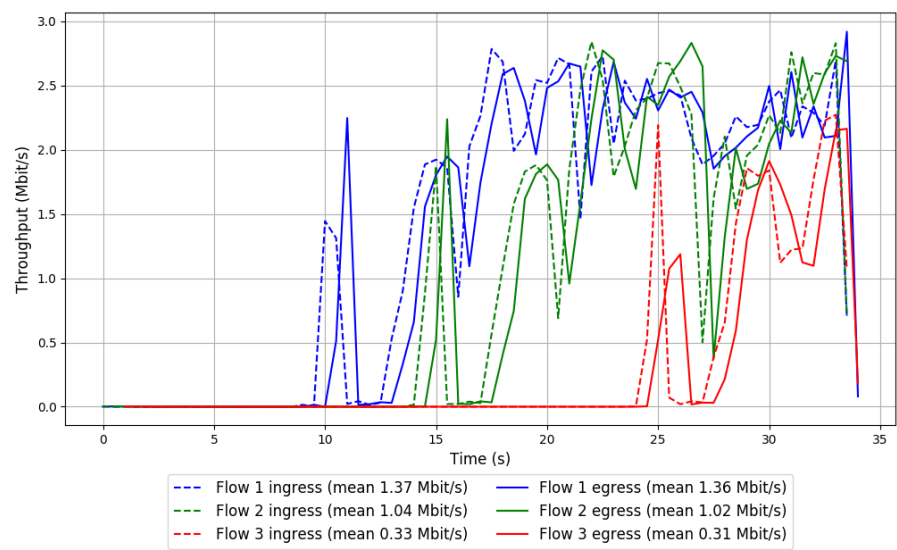


Run 1: Statistics of WebRTC media

Start at: 2018-11-15 15:05:25
End at: 2018-11-15 15:05:55
Local clock offset: 0.506 ms
Remote clock offset: -0.026 ms

Below is generated by plot.py at 2018-11-15 19:29:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 2.67 Mbit/s
95th percentile per-packet one-way delay: 136.191 ms
Loss rate: 2.35%
-- Flow 1:
Average throughput: 1.36 Mbit/s
95th percentile per-packet one-way delay: 136.255 ms
Loss rate: 1.43%
-- Flow 2:
Average throughput: 1.02 Mbit/s
95th percentile per-packet one-way delay: 133.990 ms
Loss rate: 2.06%
-- Flow 3:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 133.967 ms
Loss rate: 7.14%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-11-15 15:40:14

End at: 2018-11-15 15:40:44

Local clock offset: -0.274 ms

Remote clock offset: 0.0 ms

Below is generated by plot.py at 2018-11-15 19:29:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.05 Mbit/s

95th percentile per-packet one-way delay: 135.497 ms

Loss rate: 1.95%

-- Flow 1:

Average throughput: 1.77 Mbit/s

95th percentile per-packet one-way delay: 134.762 ms

Loss rate: 1.14%

-- Flow 2:

Average throughput: 1.01 Mbit/s

95th percentile per-packet one-way delay: 132.903 ms

Loss rate: 2.05%

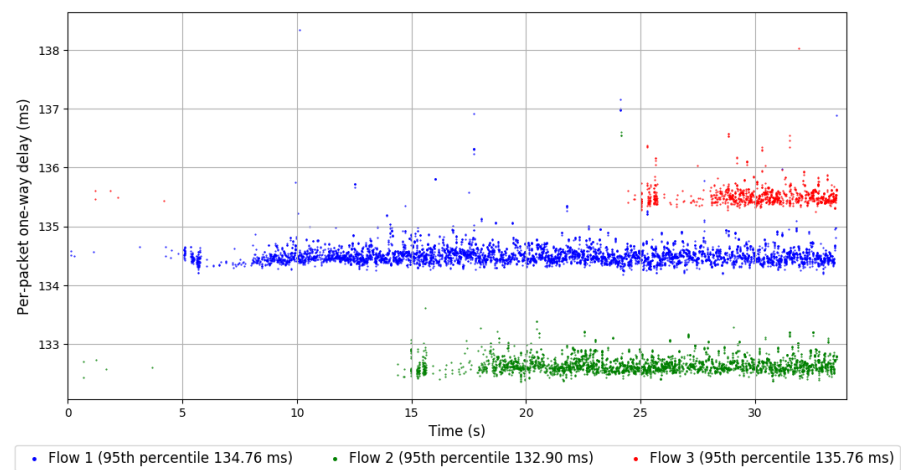
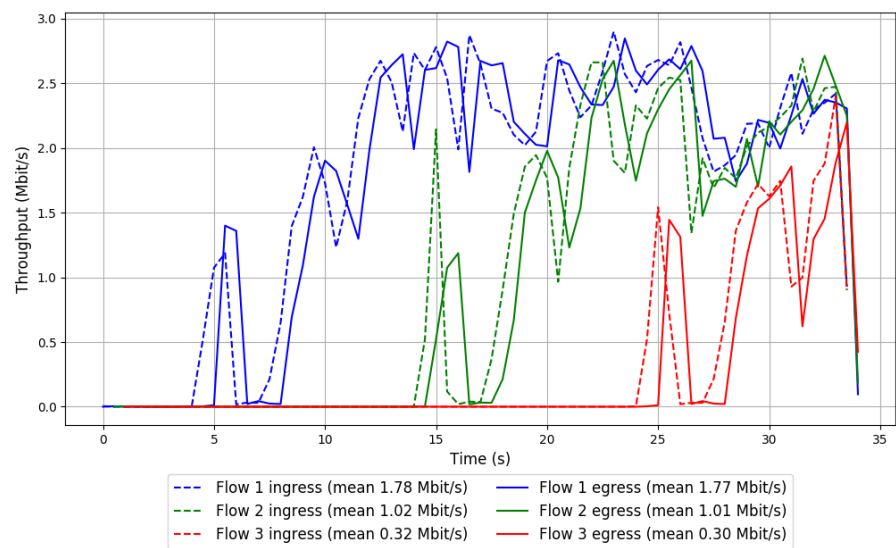
-- Flow 3:

Average throughput: 0.30 Mbit/s

95th percentile per-packet one-way delay: 135.763 ms

Loss rate: 6.30%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-11-15 16:14:41

End at: 2018-11-15 16:15:11

Local clock offset: 0.458 ms

Remote clock offset: 0.052 ms

Below is generated by plot.py at 2018-11-15 19:29:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.10 Mbit/s

95th percentile per-packet one-way delay: 135.984 ms

Loss rate: 1.69%

-- Flow 1:

Average throughput: 1.79 Mbit/s

95th percentile per-packet one-way delay: 133.476 ms

Loss rate: 1.15%

-- Flow 2:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 133.419 ms

Loss rate: 1.69%

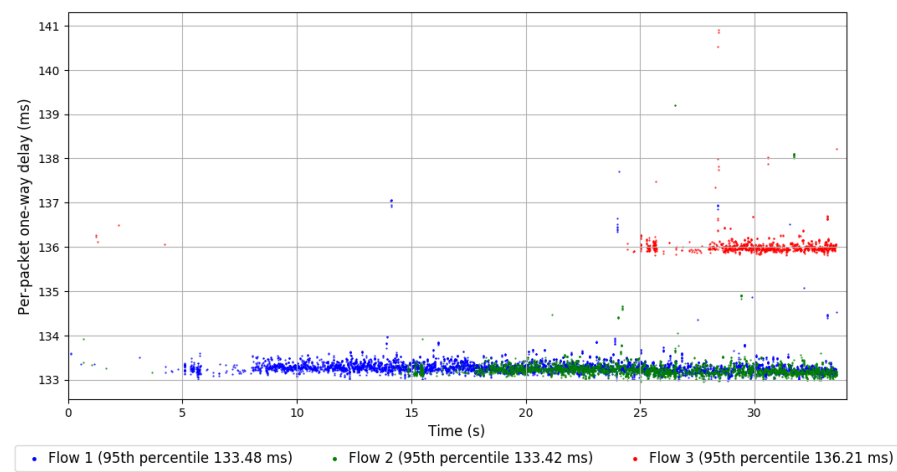
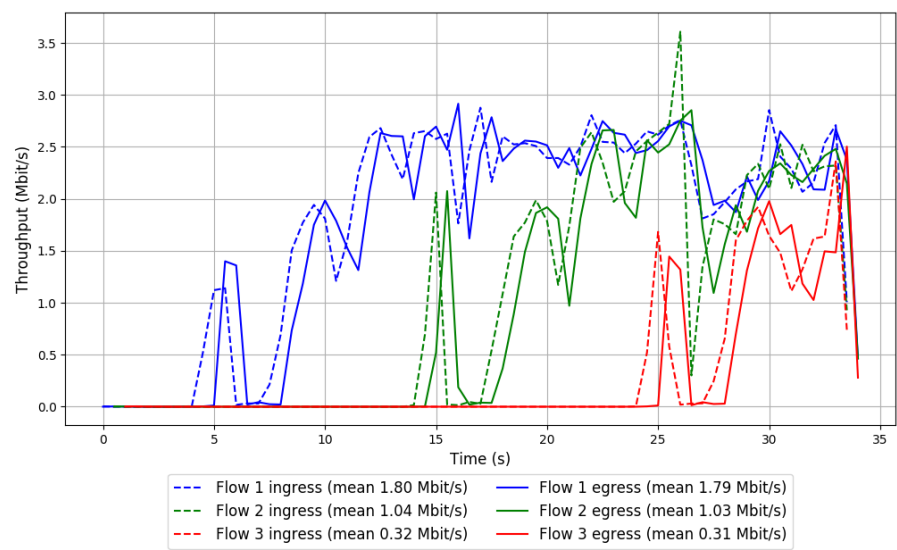
-- Flow 3:

Average throughput: 0.31 Mbit/s

95th percentile per-packet one-way delay: 136.213 ms

Loss rate: 4.84%

Run 3: Report of WebRTC media — Data Link



Run 4: Statistics of WebRTC media

Start at: 2018-11-15 16:49:54

End at: 2018-11-15 16:50:24

Local clock offset: -0.127 ms

Remote clock offset: 0.475 ms

Below is generated by plot.py at 2018-11-15 19:29:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.09 Mbit/s

95th percentile per-packet one-way delay: 132.769 ms

Loss rate: 1.90%

-- Flow 1:

Average throughput: 1.79 Mbit/s

95th percentile per-packet one-way delay: 132.815 ms

Loss rate: 0.96%

-- Flow 2:

Average throughput: 1.00 Mbit/s

95th percentile per-packet one-way delay: 132.674 ms

Loss rate: 2.03%

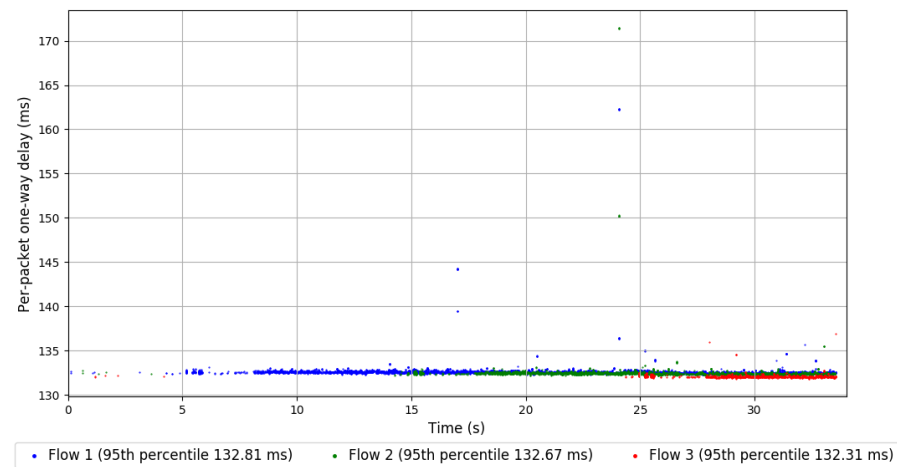
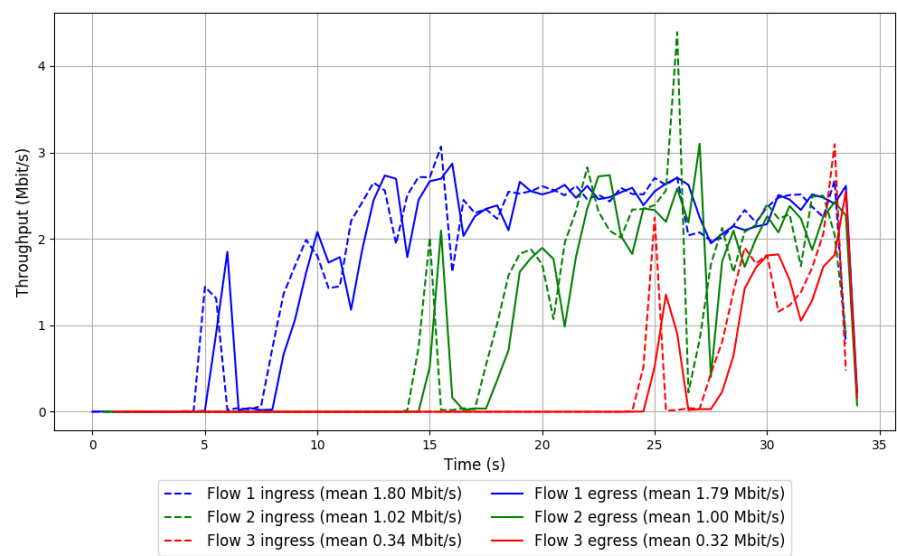
-- Flow 3:

Average throughput: 0.32 Mbit/s

95th percentile per-packet one-way delay: 132.308 ms

Loss rate: 6.72%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-11-15 17:25:09

End at: 2018-11-15 17:25:39

Local clock offset: 0.711 ms

Remote clock offset: 0.072 ms

Below is generated by plot.py at 2018-11-15 19:29:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.08 Mbit/s

95th percentile per-packet one-way delay: 133.597 ms

Loss rate: 1.79%

-- Flow 1:

Average throughput: 1.78 Mbit/s

95th percentile per-packet one-way delay: 133.565 ms

Loss rate: 1.14%

-- Flow 2:

Average throughput: 1.03 Mbit/s

95th percentile per-packet one-way delay: 133.404 ms

Loss rate: 1.65%

-- Flow 3:

Average throughput: 0.30 Mbit/s

95th percentile per-packet one-way delay: 133.765 ms

Loss rate: 6.01%

Run 5: Report of WebRTC media — Data Link

