

Pantheon Report

Generated at 2018-11-30 02:45:37 (UTC).

Data path: AWS California 1 on **ens5** (*local*) → Stanford on **eno1** (*remote*).

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.stanford.edu** and have been applied to correct the timestamps in logs.

System info:

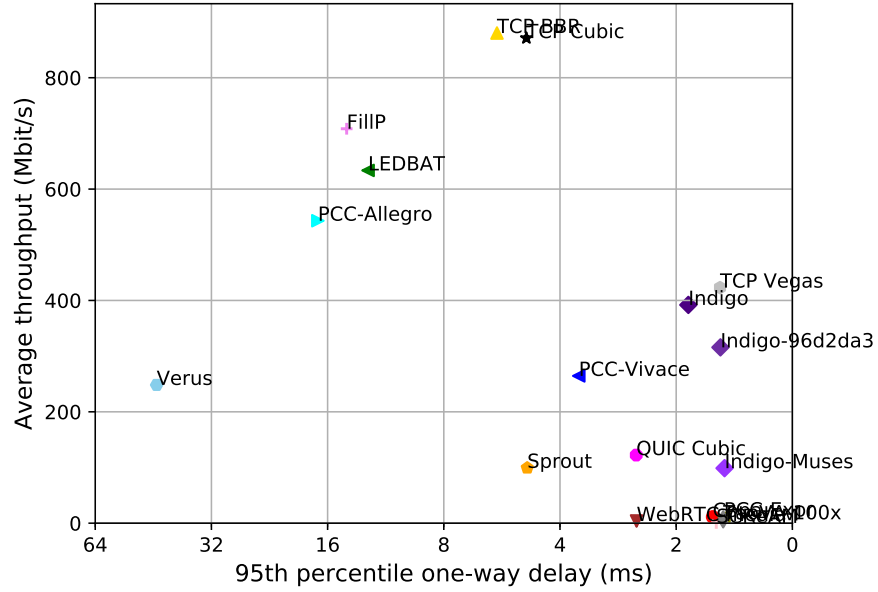
```
Linux 4.15.0-1027-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

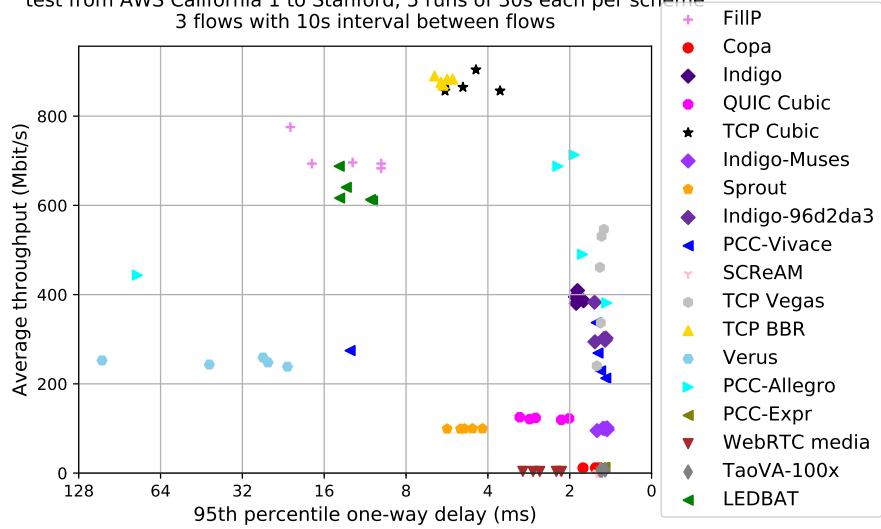
```
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
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 AWS California 1 to Stanford, 5 runs of 30s each per scheme
 3 flows with 10s interval between flows (mean of all runs by scheme)



test from AWS California 1 to Stanford, 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	511.47	432.12	243.64	5.77	5.96	3.10	5.07	9.27	14.21
Copa	5	6.48	5.60	5.92	1.42	1.38	1.24	50.03	53.91	55.77
TCP Cubic	5	513.19	386.31	302.62	5.59	2.20	2.22	0.07	0.07	0.09
FillP	5	462.84	271.93	194.91	15.91	4.35	4.39	9.96	15.63	12.97
Indigo	5	205.67	190.32	184.86	1.65	1.78	2.17	0.00	0.00	0.00
Indigo-96d2da3	5	159.14	149.46	173.98	1.26	1.20	1.19	0.00	0.00	0.00
LEDBAT	5	378.27	283.94	206.57	13.60	6.75	4.17	0.17	0.31	0.49
Indigo-Muses	5	49.53	48.93	50.94	1.18	1.17	1.13	0.00	0.01	0.01
PCC-Allegro	5	384.48	203.29	71.27	18.01	1.75	1.84	0.28	0.16	0.22
PCC-Expr	5	6.49	5.74	5.53	1.19	1.17	1.13	82.89	78.86	79.58
QUIC Cubic	5	64.76	61.42	50.95	1.46	2.51	5.44	0.00	0.00	0.01
SCReAM	5	0.22	0.22	0.22	1.31	1.31	1.31	0.00	0.00	0.00
Sprout	5	49.90	49.80	49.40	4.80	4.94	4.92	0.12	0.12	0.30
TaoVA-100x	5	0.00	4.87	11.07	1.15	1.23	1.13	95.92	42.39	54.85
TCP Vegas	5	197.31	181.51	315.14	1.23	1.22	1.33	0.01	0.00	0.00
Verus	5	135.48	110.93	119.72	39.98	21.63	58.21	4.70	5.24	9.09
PCC-Vivace	5	139.00	134.16	109.82	1.46	12.91	2.00	0.01	0.01	0.05
WebRTC media	5	2.02	1.36	0.49	2.43	2.41	3.05	0.00	0.00	0.00

Run 1: Statistics of TCP BBR

Start at: 2018-11-29 23:53:31

End at: 2018-11-29 23:54:01

Local clock offset: 4.864 ms

Remote clock offset: 3.128 ms

Below is generated by plot.py at 2018-11-30 02:11:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 882.98 Mbit/s

95th percentile per-packet one-way delay: 5.395 ms

Loss rate: 7.85%

-- Flow 1:

Average throughput: 453.94 Mbit/s

95th percentile per-packet one-way delay: 5.471 ms

Loss rate: 6.09%

-- Flow 2:

Average throughput: 481.66 Mbit/s

95th percentile per-packet one-way delay: 5.295 ms

Loss rate: 8.55%

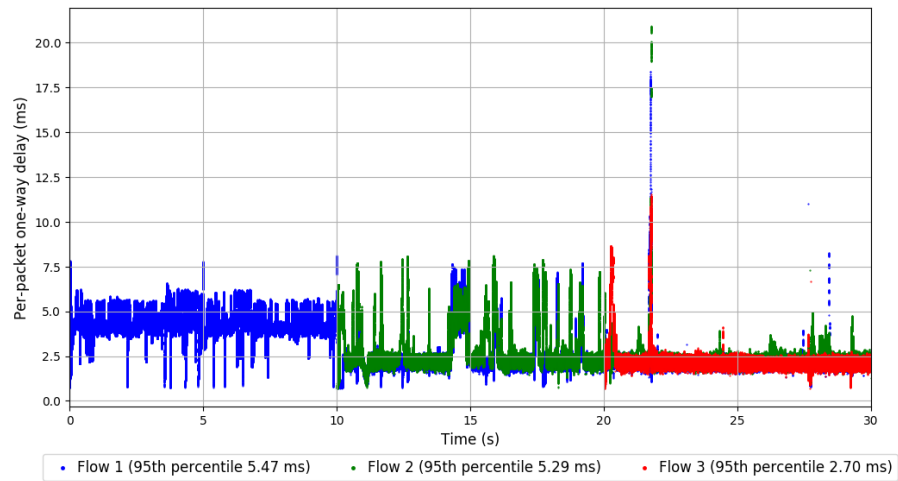
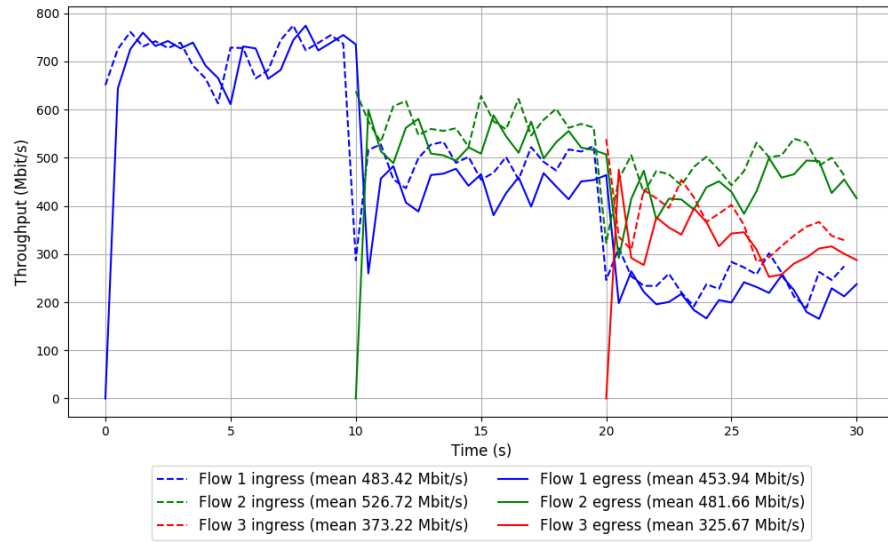
-- Flow 3:

Average throughput: 325.67 Mbit/s

95th percentile per-packet one-way delay: 2.703 ms

Loss rate: 12.74%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-11-30 00:18:57

End at: 2018-11-30 00:19:27

Local clock offset: 5.45 ms

Remote clock offset: 3.308 ms

Below is generated by plot.py at 2018-11-30 02:11:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 869.56 Mbit/s

95th percentile per-packet one-way delay: 5.855 ms

Loss rate: 8.27%

-- Flow 1:

Average throughput: 513.53 Mbit/s

95th percentile per-packet one-way delay: 5.842 ms

Loss rate: 6.03%

-- Flow 2:

Average throughput: 414.75 Mbit/s

95th percentile per-packet one-way delay: 6.085 ms

Loss rate: 10.37%

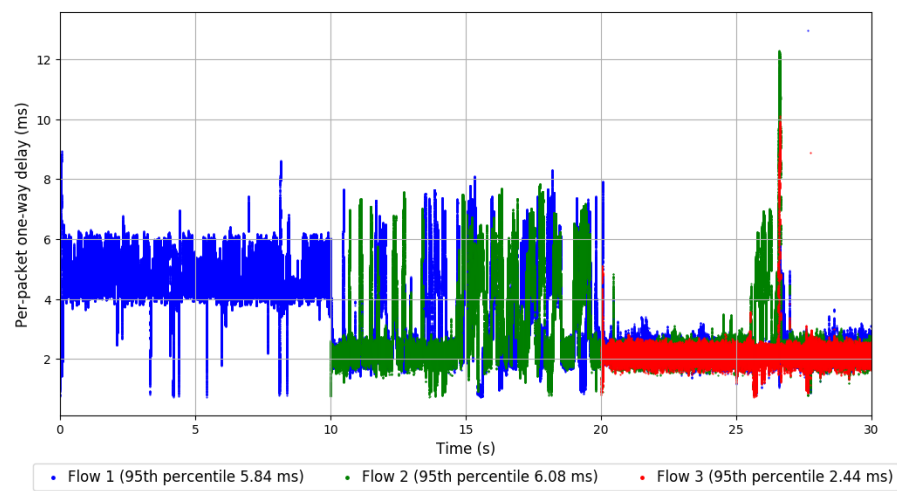
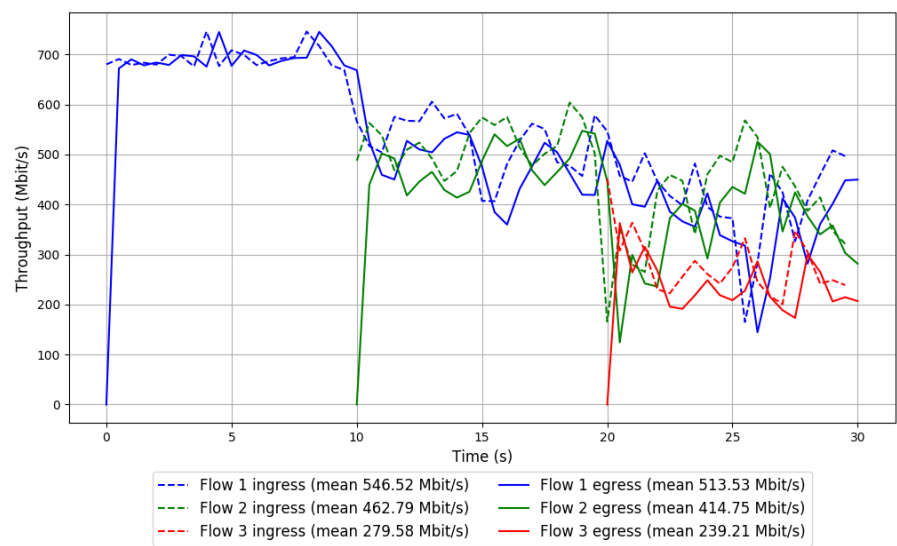
-- Flow 3:

Average throughput: 239.21 Mbit/s

95th percentile per-packet one-way delay: 2.444 ms

Loss rate: 14.44%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-11-30 00:44:38

End at: 2018-11-30 00:45:08

Local clock offset: 5.97 ms

Remote clock offset: 2.327 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 890.20 Mbit/s

95th percentile per-packet one-way delay: 6.282 ms

Loss rate: 6.84%

-- Flow 1:

Average throughput: 498.04 Mbit/s

95th percentile per-packet one-way delay: 5.839 ms

Loss rate: 5.58%

-- Flow 2:

Average throughput: 473.11 Mbit/s

95th percentile per-packet one-way delay: 6.912 ms

Loss rate: 6.78%

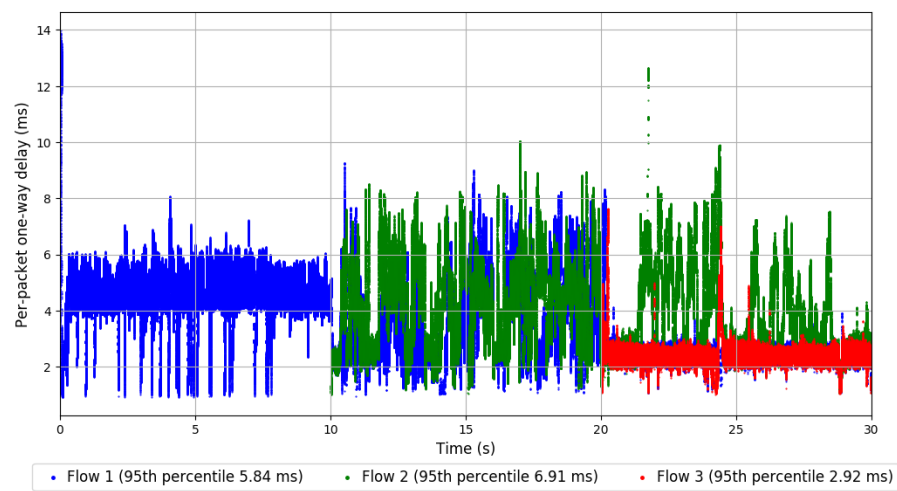
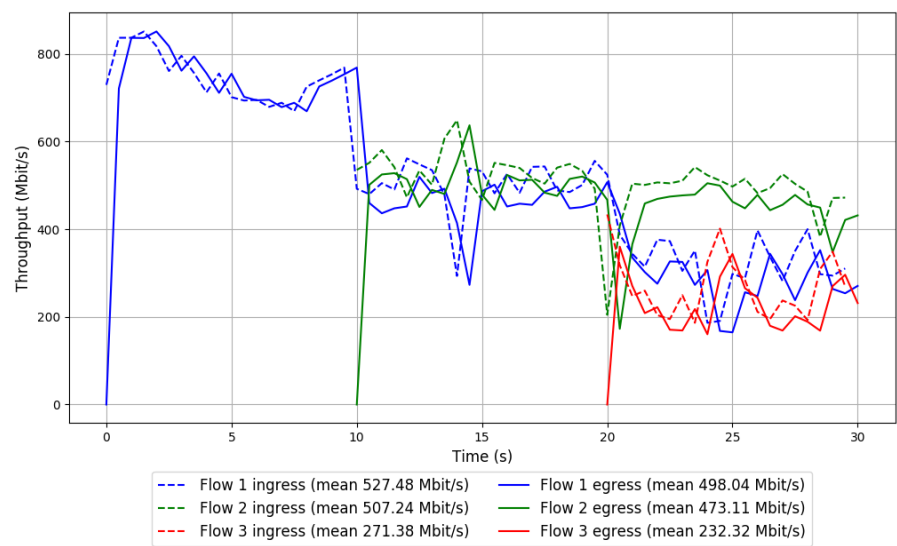
-- Flow 3:

Average throughput: 232.32 Mbit/s

95th percentile per-packet one-way delay: 2.916 ms

Loss rate: 14.40%

Run 3: Report of TCP BBR — Data Link

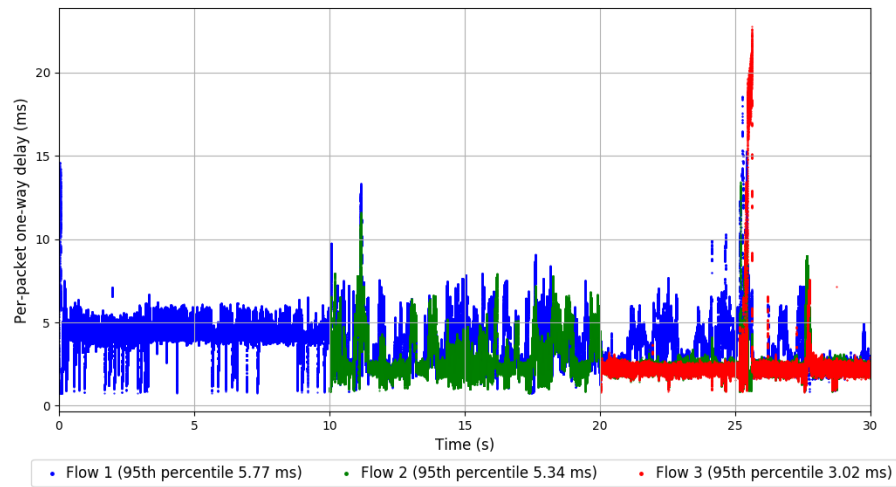
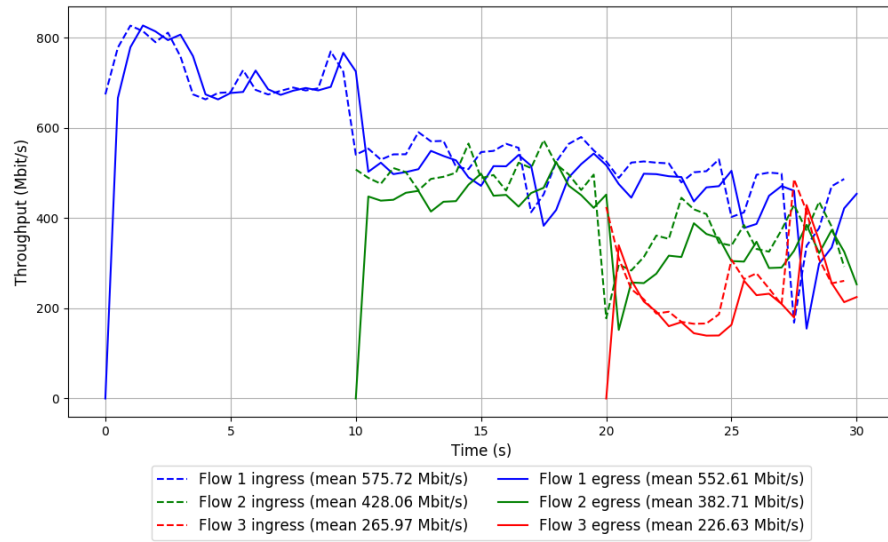


Run 4: Statistics of TCP BBR

Start at: 2018-11-30 01:10:20
End at: 2018-11-30 01:10:50
Local clock offset: 5.474 ms
Remote clock offset: -0.771 ms

Below is generated by plot.py at 2018-11-30 02:12:02
Datalink statistics
-- Total of 3 flows:
Average throughput: 882.82 Mbit/s
95th percentile per-packet one-way delay: 5.647 ms
Loss rate: 6.99%
-- Flow 1:
Average throughput: 552.61 Mbit/s
95th percentile per-packet one-way delay: 5.766 ms
Loss rate: 4.01%
-- Flow 2:
Average throughput: 382.71 Mbit/s
95th percentile per-packet one-way delay: 5.340 ms
Loss rate: 10.59%
-- Flow 3:
Average throughput: 226.63 Mbit/s
95th percentile per-packet one-way delay: 3.021 ms
Loss rate: 14.79%

Run 4: Report of TCP BBR — Data Link



Run 5: Statistics of TCP BBR

Start at: 2018-11-30 01:36:01

End at: 2018-11-30 01:36:31

Local clock offset: 5.599 ms

Remote clock offset: 2.937 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 875.85 Mbit/s

95th percentile per-packet one-way delay: 5.947 ms

Loss rate: 6.61%

-- Flow 1:

Average throughput: 539.22 Mbit/s

95th percentile per-packet one-way delay: 5.938 ms

Loss rate: 3.65%

-- Flow 2:

Average throughput: 408.36 Mbit/s

95th percentile per-packet one-way delay: 6.192 ms

Loss rate: 10.07%

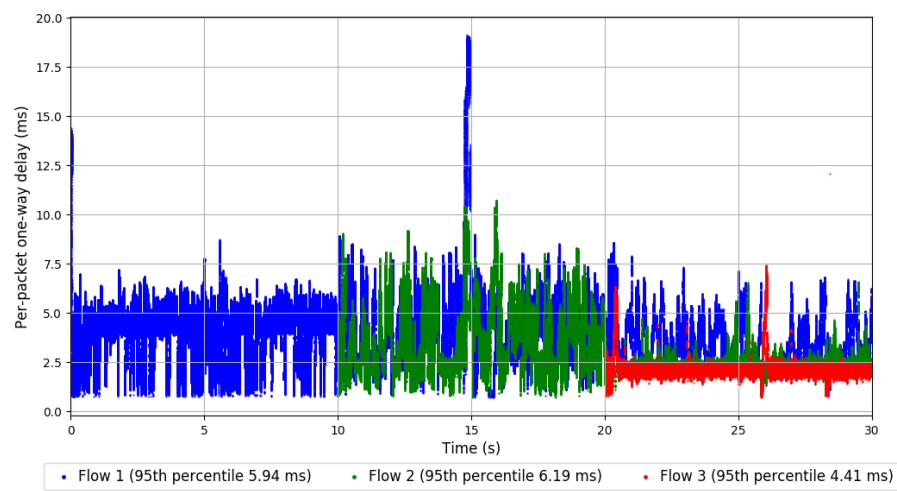
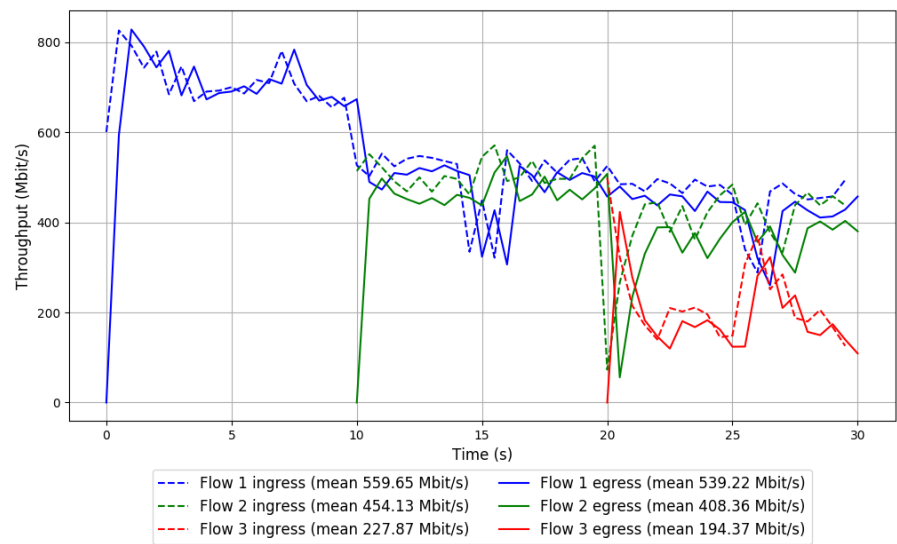
-- Flow 3:

Average throughput: 194.37 Mbit/s

95th percentile per-packet one-way delay: 4.410 ms

Loss rate: 14.70%

Run 5: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-11-29 23:59:08

End at: 2018-11-29 23:59:38

Local clock offset: 5.021 ms

Remote clock offset: 3.628 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 11.00 Mbit/s

95th percentile per-packet one-way delay: 1.294 ms

Loss rate: 52.19%

-- Flow 1:

Average throughput: 8.77 Mbit/s

95th percentile per-packet one-way delay: 1.312 ms

Loss rate: 49.94%

-- Flow 2:

Average throughput: 2.89 Mbit/s

95th percentile per-packet one-way delay: 1.313 ms

Loss rate: 55.23%

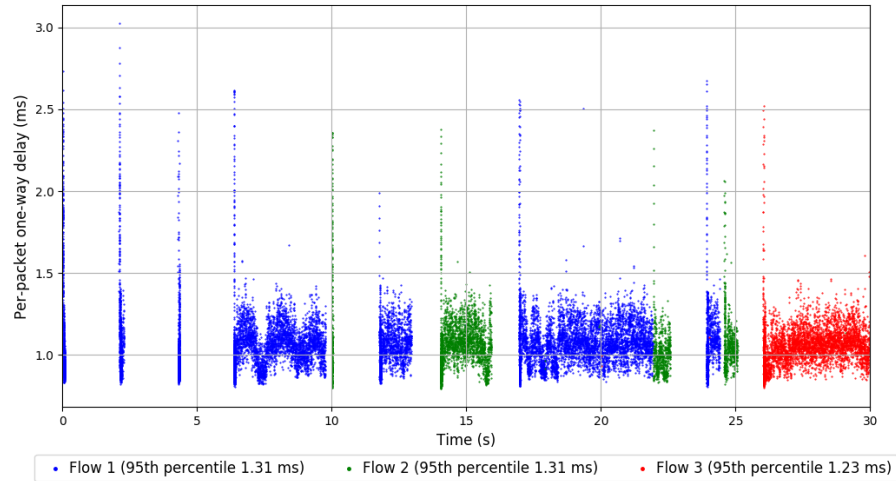
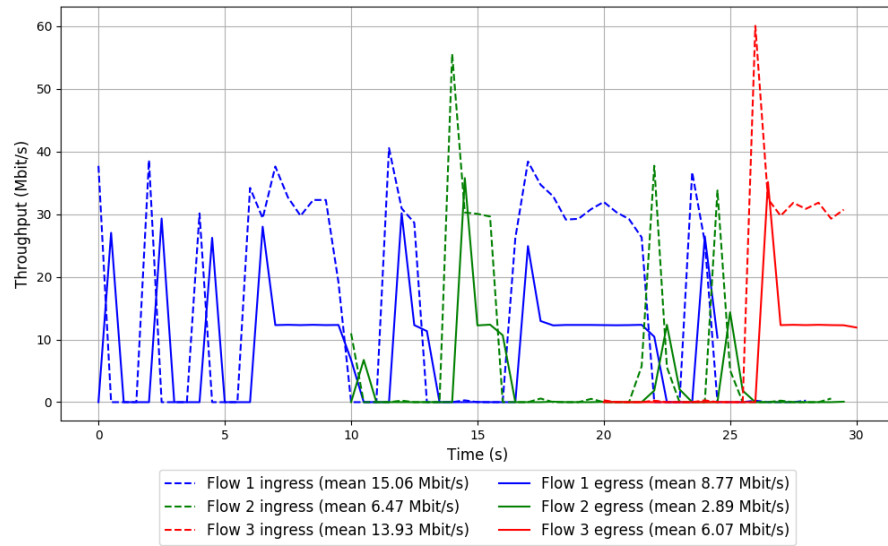
-- Flow 3:

Average throughput: 6.07 Mbit/s

95th percentile per-packet one-way delay: 1.233 ms

Loss rate: 56.43%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-11-30 00:24:40

End at: 2018-11-30 00:25:10

Local clock offset: 5.628 ms

Remote clock offset: 3.301 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 10.68 Mbit/s

95th percentile per-packet one-way delay: 1.283 ms

Loss rate: 50.43%

-- Flow 1:

Average throughput: 4.86 Mbit/s

95th percentile per-packet one-way delay: 1.329 ms

Loss rate: 45.37%

-- Flow 2:

Average throughput: 6.58 Mbit/s

95th percentile per-packet one-way delay: 1.273 ms

Loss rate: 52.66%

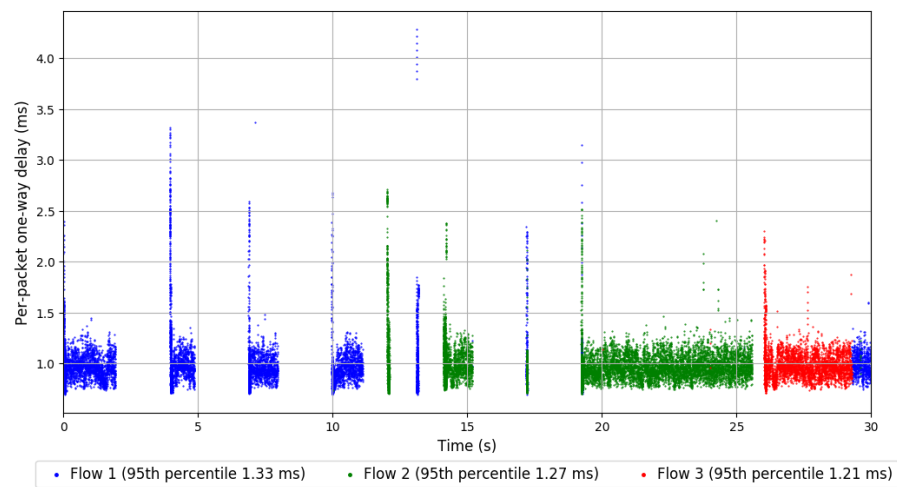
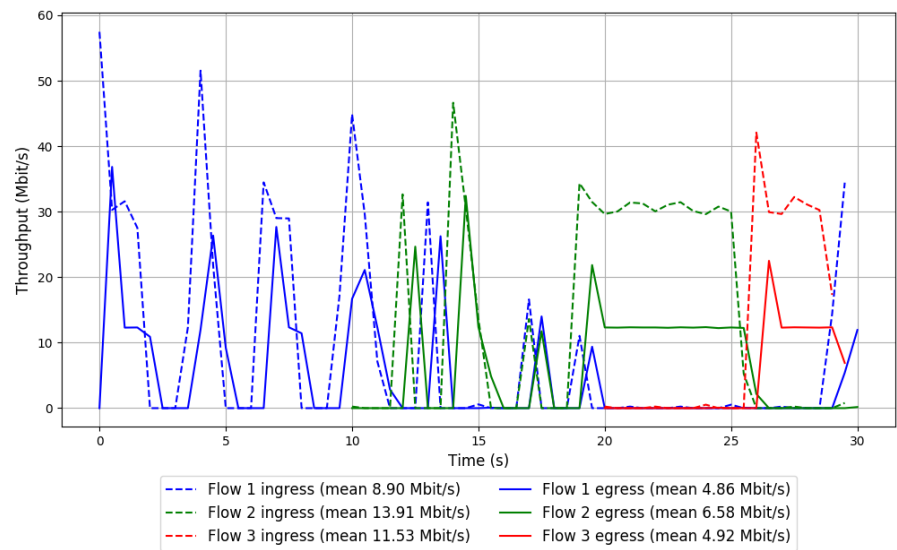
-- Flow 3:

Average throughput: 4.92 Mbit/s

95th percentile per-packet one-way delay: 1.213 ms

Loss rate: 57.36%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-11-30 00:50:21

End at: 2018-11-30 00:50:51

Local clock offset: 5.707 ms

Remote clock offset: 0.848 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 11.69 Mbit/s

95th percentile per-packet one-way delay: 1.368 ms

Loss rate: 54.71%

-- Flow 1:

Average throughput: 6.55 Mbit/s

95th percentile per-packet one-way delay: 1.456 ms

Loss rate: 54.64%

-- Flow 2:

Average throughput: 4.73 Mbit/s

95th percentile per-packet one-way delay: 1.291 ms

Loss rate: 56.91%

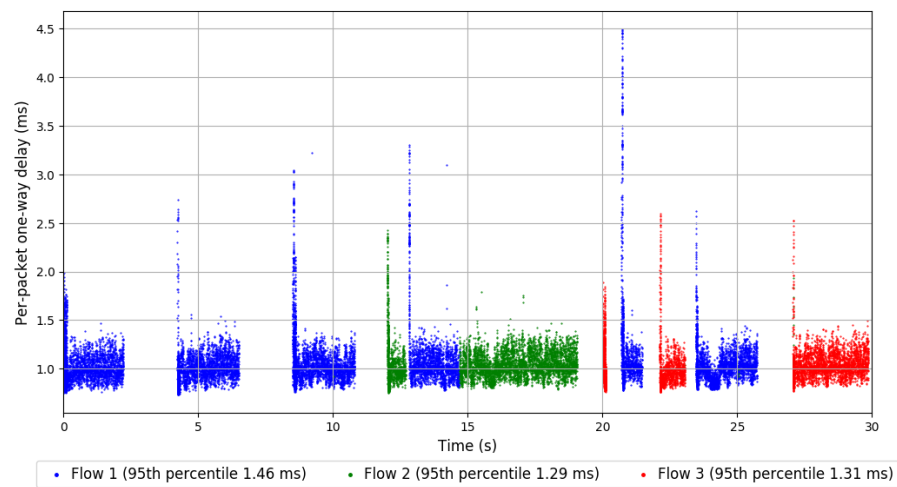
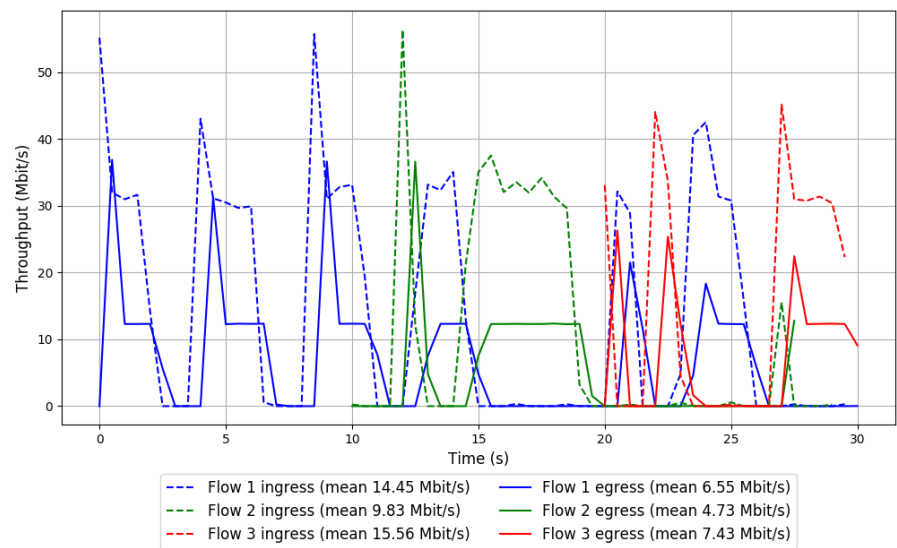
-- Flow 3:

Average throughput: 7.43 Mbit/s

95th percentile per-packet one-way delay: 1.312 ms

Loss rate: 52.24%

Run 3: Report of Copa — Data Link

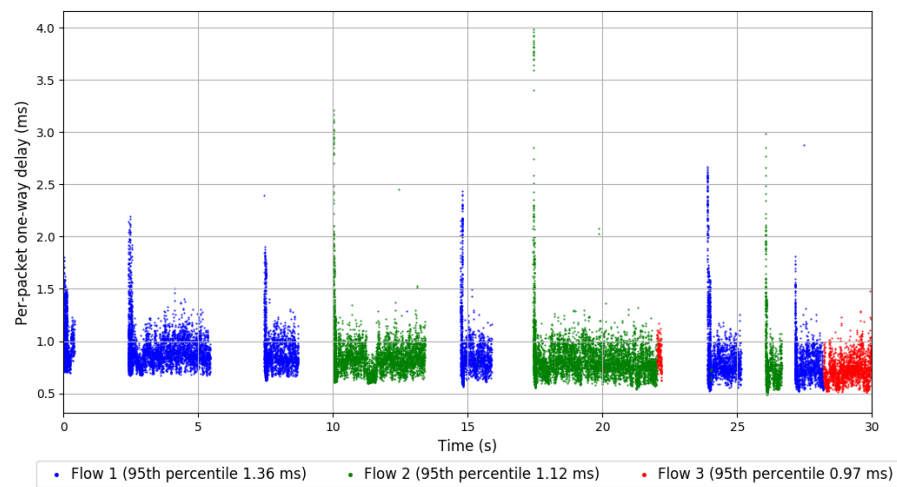
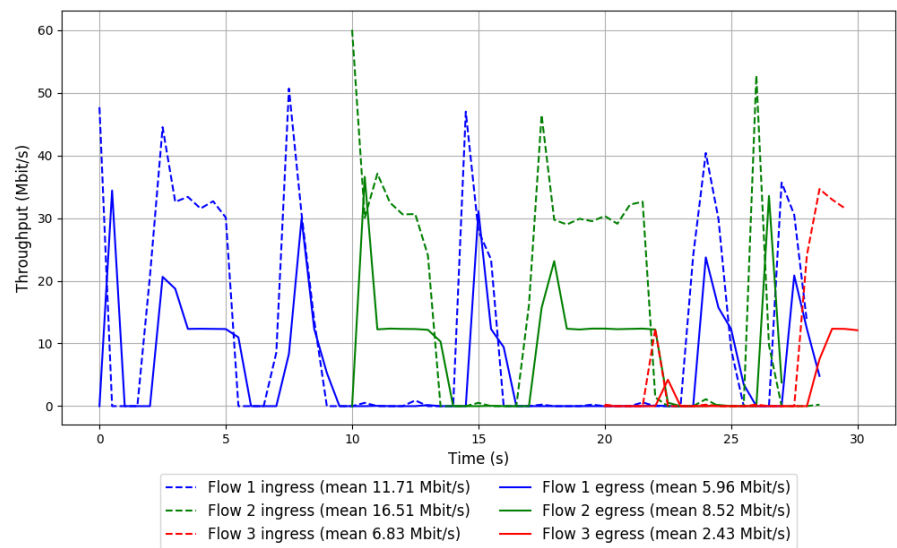


Run 4: Statistics of Copa

Start at: 2018-11-30 01:16:04
End at: 2018-11-30 01:16:34
Local clock offset: 5.522 ms
Remote clock offset: -0.513 ms

Below is generated by plot.py at 2018-11-30 02:12:02
Datalink statistics
-- Total of 3 flows:
Average throughput: 11.14 Mbit/s
95th percentile per-packet one-way delay: 1.240 ms
Loss rate: 52.68%
-- Flow 1:
Average throughput: 5.96 Mbit/s
95th percentile per-packet one-way delay: 1.357 ms
Loss rate: 49.11%
-- Flow 2:
Average throughput: 8.52 Mbit/s
95th percentile per-packet one-way delay: 1.123 ms
Loss rate: 53.91%
-- Flow 3:
Average throughput: 2.43 Mbit/s
95th percentile per-packet one-way delay: 0.969 ms
Loss rate: 64.43%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-11-30 01:41:43

End at: 2018-11-30 01:42:13

Local clock offset: 5.62 ms

Remote clock offset: 3.251 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 11.49 Mbit/s

95th percentile per-packet one-way delay: 1.675 ms

Loss rate: 50.57%

-- Flow 1:

Average throughput: 6.24 Mbit/s

95th percentile per-packet one-way delay: 1.629 ms

Loss rate: 51.08%

-- Flow 2:

Average throughput: 5.26 Mbit/s

95th percentile per-packet one-way delay: 1.892 ms

Loss rate: 50.83%

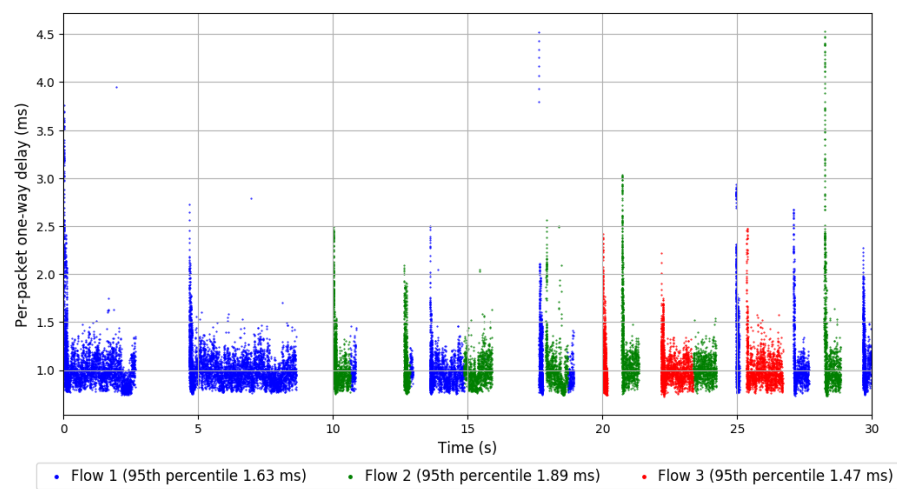
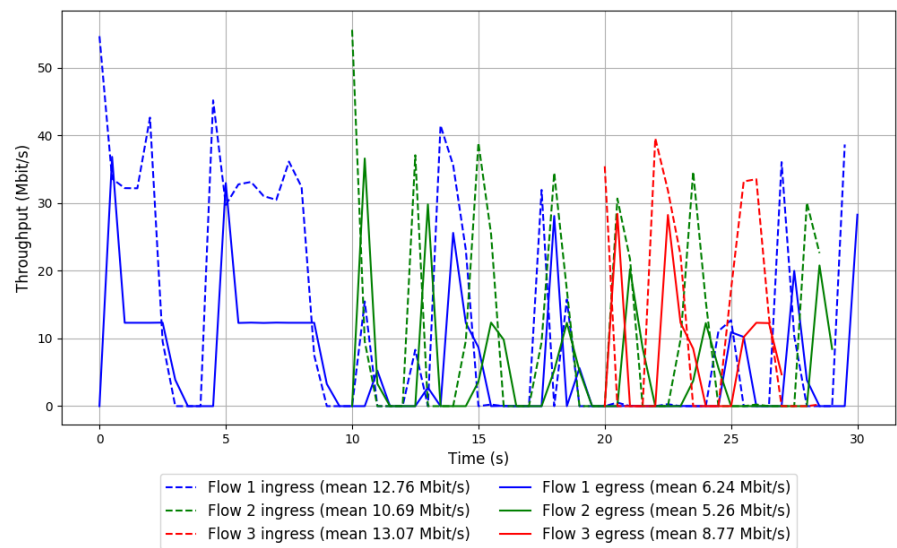
-- Flow 3:

Average throughput: 8.77 Mbit/s

95th percentile per-packet one-way delay: 1.471 ms

Loss rate: 48.38%

Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-11-30 00:04:24

End at: 2018-11-30 00:04:54

Local clock offset: 5.142 ms

Remote clock offset: 3.975 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 873.85 Mbit/s

95th percentile per-packet one-way delay: 5.713 ms

Loss rate: 0.10%

-- Flow 1:

Average throughput: 524.88 Mbit/s

95th percentile per-packet one-way delay: 7.660 ms

Loss rate: 0.08%

-- Flow 2:

Average throughput: 376.49 Mbit/s

95th percentile per-packet one-way delay: 2.196 ms

Loss rate: 0.10%

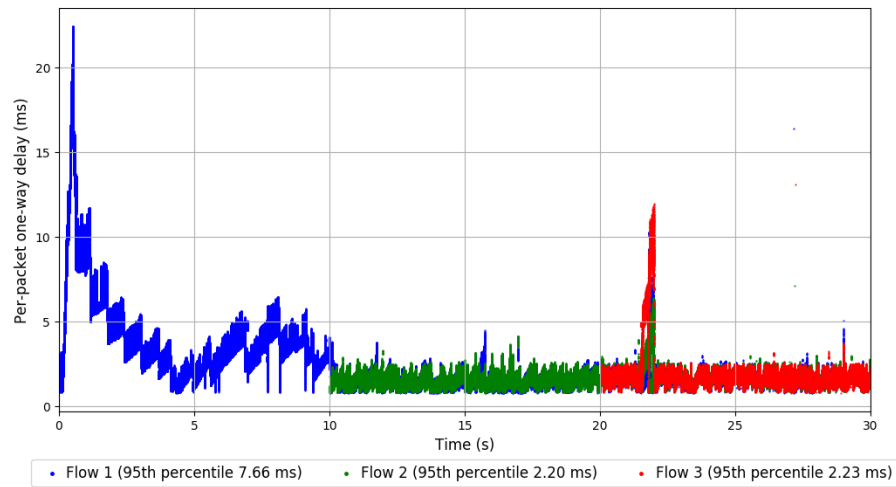
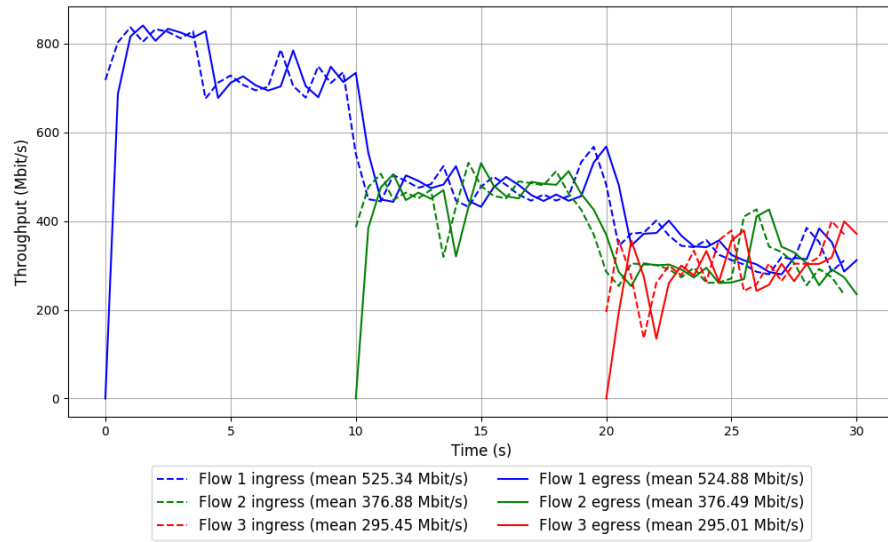
-- Flow 3:

Average throughput: 295.01 Mbit/s

95th percentile per-packet one-way delay: 2.233 ms

Loss rate: 0.14%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-11-30 00:29:54

End at: 2018-11-30 00:30:24

Local clock offset: 5.728 ms

Remote clock offset: 3.45 ms

Below is generated by plot.py at 2018-11-30 02:12:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 856.58 Mbit/s

95th percentile per-packet one-way delay: 5.751 ms

Loss rate: 0.09%

-- Flow 1:

Average throughput: 501.78 Mbit/s

95th percentile per-packet one-way delay: 6.240 ms

Loss rate: 0.09%

-- Flow 2:

Average throughput: 377.07 Mbit/s

95th percentile per-packet one-way delay: 2.332 ms

Loss rate: 0.09%

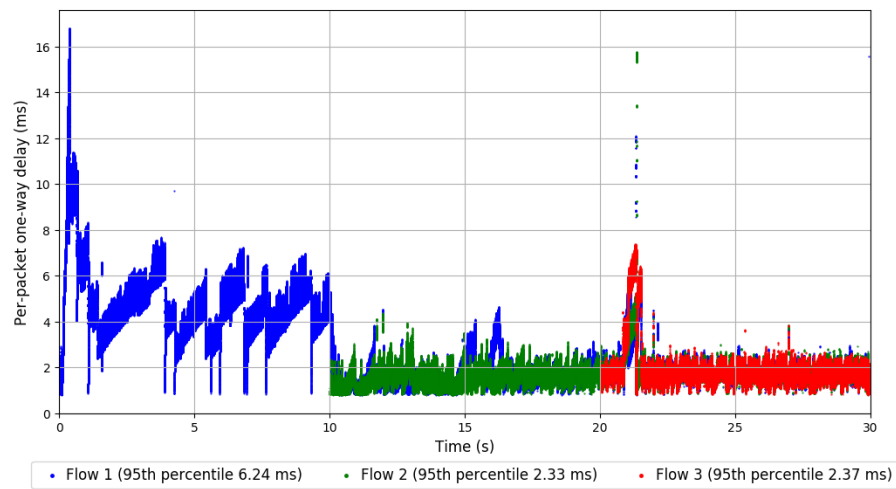
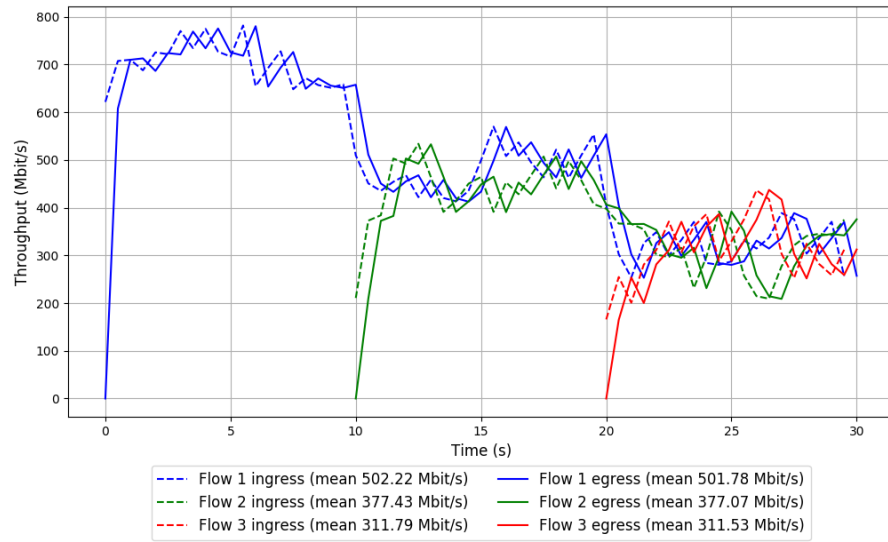
-- Flow 3:

Average throughput: 311.53 Mbit/s

95th percentile per-packet one-way delay: 2.370 ms

Loss rate: 0.08%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-11-30 00:55:36

End at: 2018-11-30 00:56:06

Local clock offset: 5.552 ms

Remote clock offset: 0.107 ms

Below is generated by plot.py at 2018-11-30 02:12:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 903.95 Mbit/s

95th percentile per-packet one-way delay: 4.425 ms

Loss rate: 0.07%

-- Flow 1:

Average throughput: 528.62 Mbit/s

95th percentile per-packet one-way delay: 4.891 ms

Loss rate: 0.08%

-- Flow 2:

Average throughput: 418.54 Mbit/s

95th percentile per-packet one-way delay: 2.138 ms

Loss rate: 0.04%

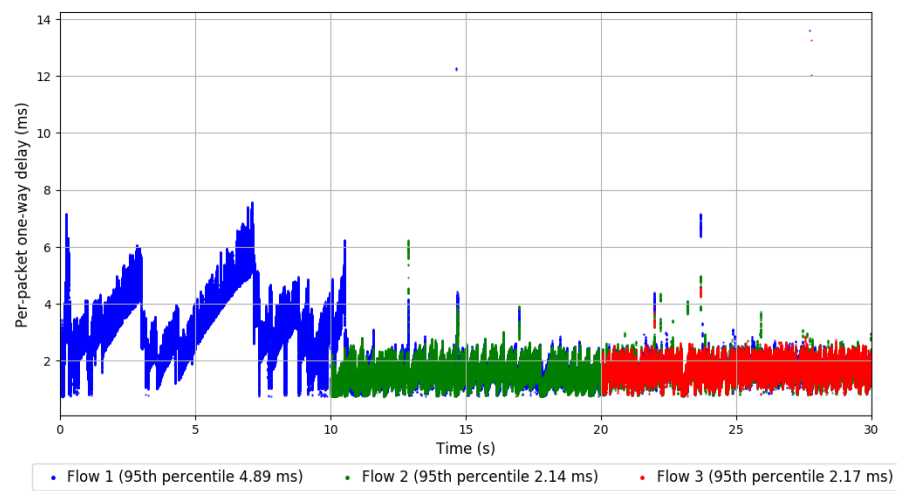
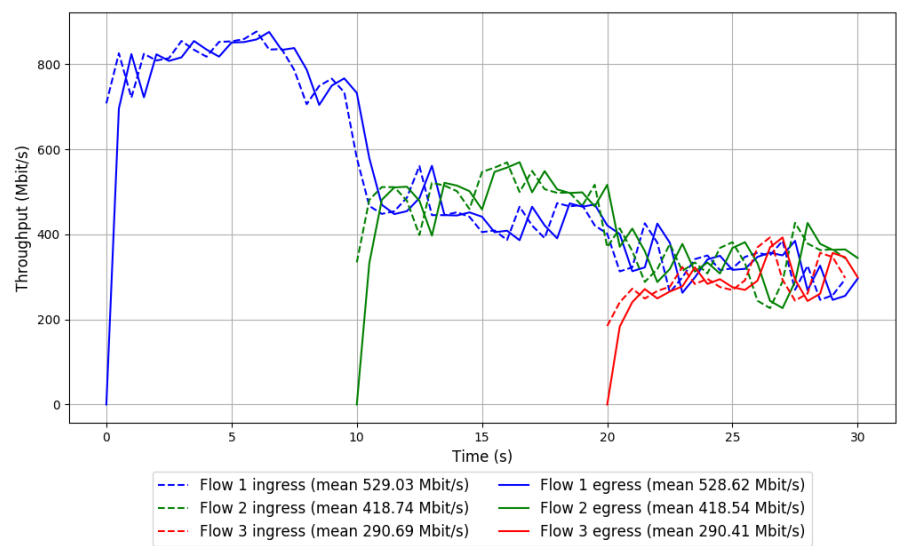
-- Flow 3:

Average throughput: 290.41 Mbit/s

95th percentile per-packet one-way delay: 2.165 ms

Loss rate: 0.09%

Run 3: Report of TCP Cubic — Data Link



Run 4: Statistics of TCP Cubic

Start at: 2018-11-30 01:21:19

End at: 2018-11-30 01:21:49

Local clock offset: 5.541 ms

Remote clock offset: 1.206 ms

Below is generated by plot.py at 2018-11-30 02:21:23

Datalink statistics

-- Total of 3 flows:

Average throughput: 856.72 Mbit/s

95th percentile per-packet one-way delay: 3.607 ms

Loss rate: 0.05%

-- Flow 1:

Average throughput: 499.99 Mbit/s

95th percentile per-packet one-way delay: 3.908 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 388.08 Mbit/s

95th percentile per-packet one-way delay: 2.073 ms

Loss rate: 0.05%

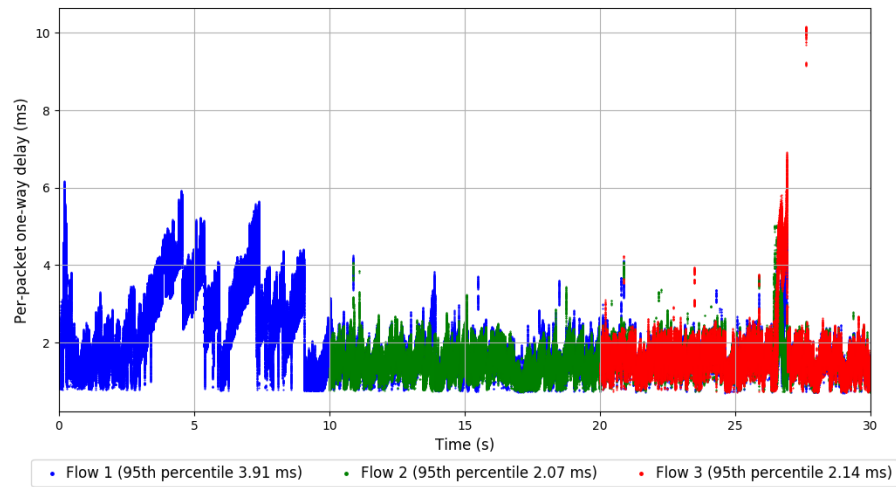
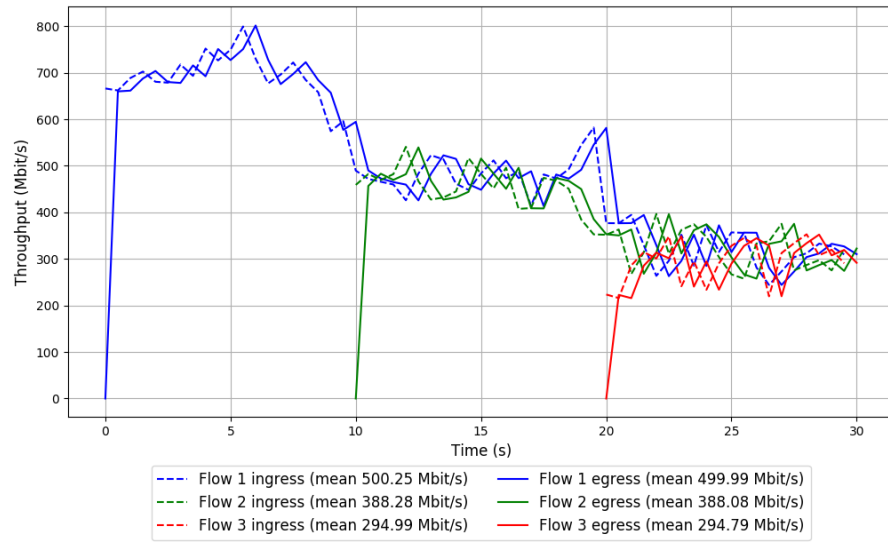
-- Flow 3:

Average throughput: 294.79 Mbit/s

95th percentile per-packet one-way delay: 2.137 ms

Loss rate: 0.07%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-11-30 01:46:58

End at: 2018-11-30 01:47:28

Local clock offset: 5.665 ms

Remote clock offset: 3.52 ms

Below is generated by plot.py at 2018-11-30 02:21:30

Datalink statistics

-- Total of 3 flows:

Average throughput: 864.83 Mbit/s

95th percentile per-packet one-way delay: 4.941 ms

Loss rate: 0.05%

-- Flow 1:

Average throughput: 510.68 Mbit/s

95th percentile per-packet one-way delay: 5.256 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 371.38 Mbit/s

95th percentile per-packet one-way delay: 2.238 ms

Loss rate: 0.06%

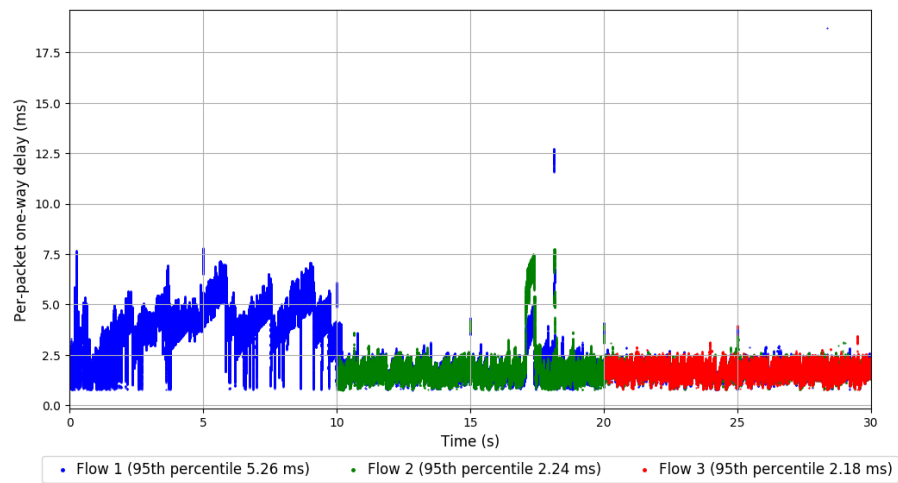
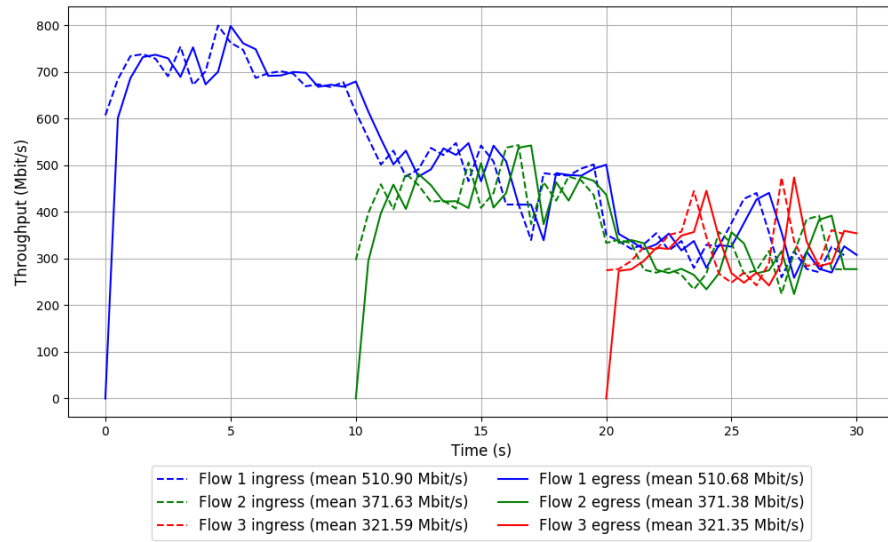
-- Flow 3:

Average throughput: 321.35 Mbit/s

95th percentile per-packet one-way delay: 2.182 ms

Loss rate: 0.07%

Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-11-29 23:50:23

End at: 2018-11-29 23:50:53

Local clock offset: 4.713 ms

Remote clock offset: 2.874 ms

Below is generated by plot.py at 2018-11-30 02:21:46

Datalink statistics

-- Total of 3 flows:

Average throughput: 683.12 Mbit/s

95th percentile per-packet one-way delay: 9.886 ms

Loss rate: 11.33%

-- Flow 1:

Average throughput: 452.27 Mbit/s

95th percentile per-packet one-way delay: 10.549 ms

Loss rate: 9.54%

-- Flow 2:

Average throughput: 302.87 Mbit/s

95th percentile per-packet one-way delay: 4.278 ms

Loss rate: 15.70%

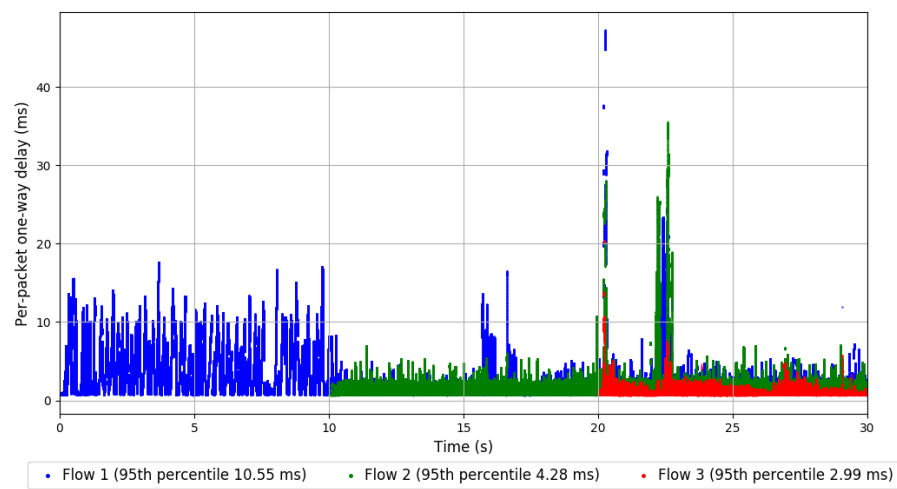
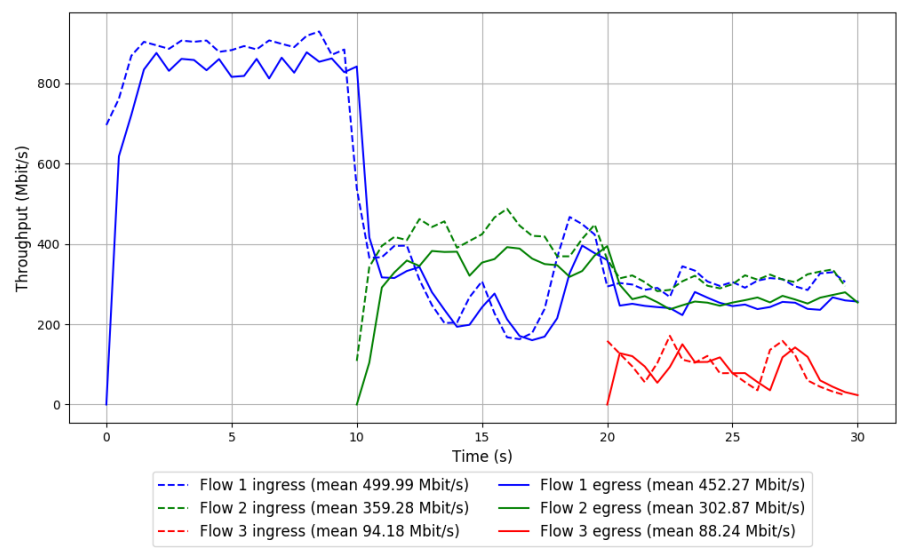
-- Flow 3:

Average throughput: 88.24 Mbit/s

95th percentile per-packet one-way delay: 2.993 ms

Loss rate: 6.31%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-11-30 00:15:56

End at: 2018-11-30 00:16:26

Local clock offset: 5.335 ms

Remote clock offset: 3.428 ms

Below is generated by plot.py at 2018-11-30 02:21:56

Datalink statistics

-- Total of 3 flows:

Average throughput: 693.68 Mbit/s

95th percentile per-packet one-way delay: 9.872 ms

Loss rate: 11.83%

-- Flow 1:

Average throughput: 429.46 Mbit/s

95th percentile per-packet one-way delay: 11.405 ms

Loss rate: 7.07%

-- Flow 2:

Average throughput: 272.21 Mbit/s

95th percentile per-packet one-way delay: 4.771 ms

Loss rate: 19.09%

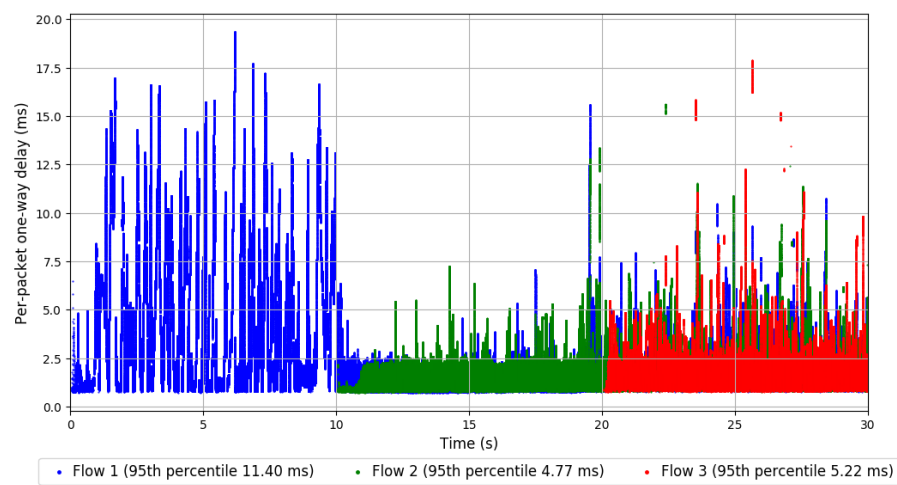
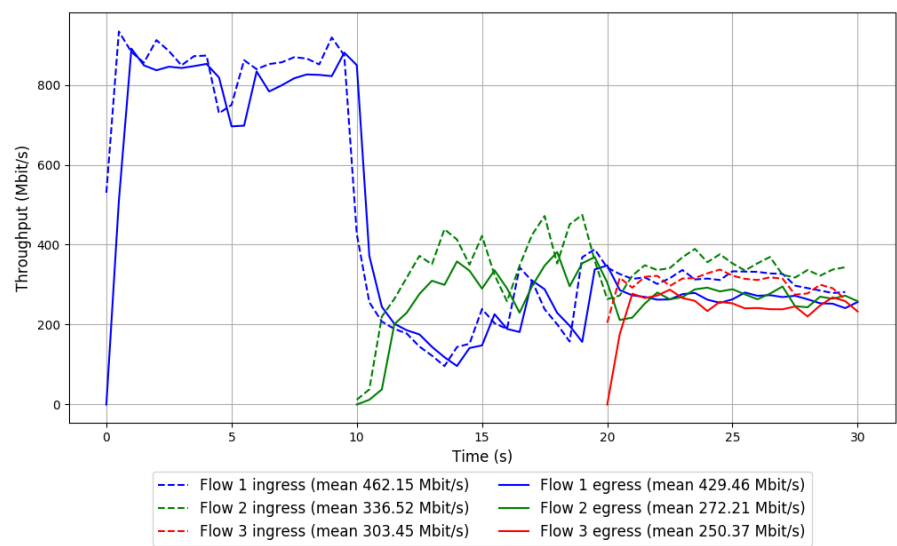
-- Flow 3:

Average throughput: 250.37 Mbit/s

95th percentile per-packet one-way delay: 5.223 ms

Loss rate: 17.49%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-11-30 00:41:39

End at: 2018-11-30 00:42:09

Local clock offset: 5.922 ms

Remote clock offset: 3.309 ms

Below is generated by plot.py at 2018-11-30 02:22:02

Datalink statistics

-- Total of 3 flows:

Average throughput: 693.56 Mbit/s

95th percentile per-packet one-way delay: 17.757 ms

Loss rate: 13.46%

-- Flow 1:

Average throughput: 490.02 Mbit/s

95th percentile per-packet one-way delay: 18.960 ms

Loss rate: 12.61%

-- Flow 2:

Average throughput: 180.48 Mbit/s

95th percentile per-packet one-way delay: 3.942 ms

Loss rate: 13.77%

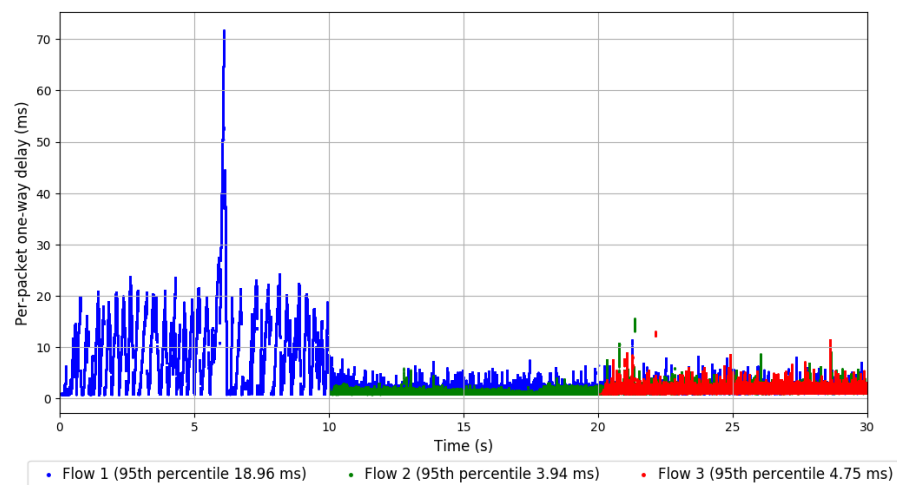
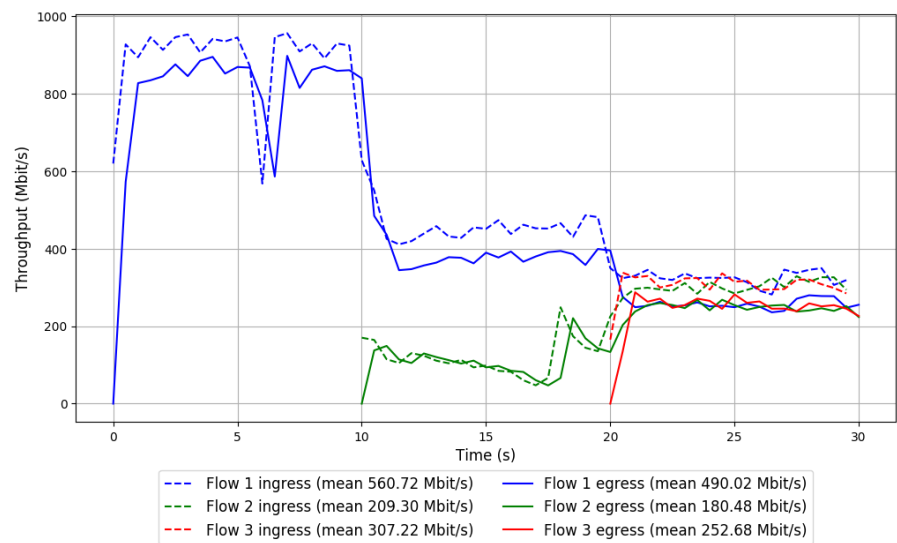
-- Flow 3:

Average throughput: 252.68 Mbit/s

95th percentile per-packet one-way delay: 4.752 ms

Loss rate: 17.75%

Run 3: Report of FillP — Data Link

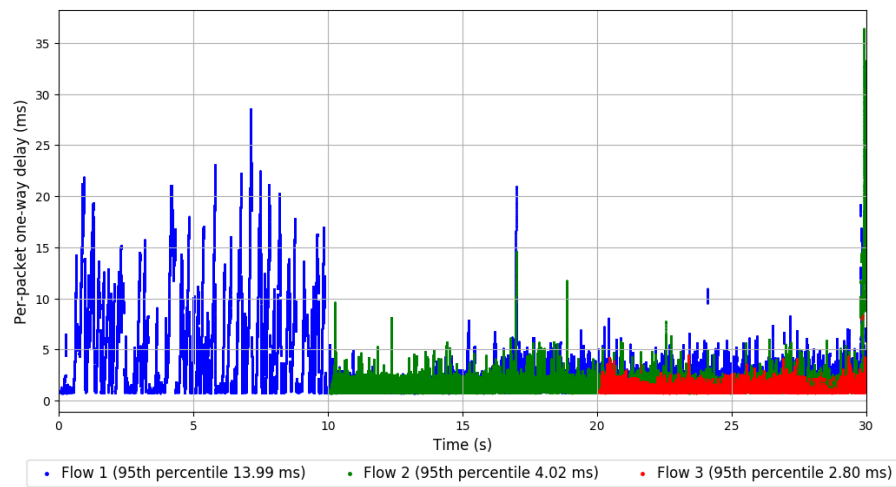
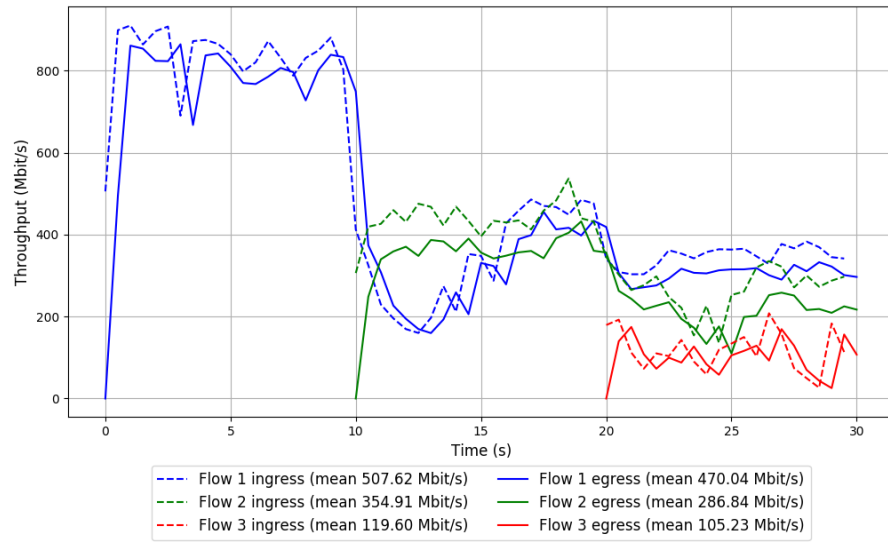


Run 4: Statistics of FillP

Start at: 2018-11-30 01:07:16
End at: 2018-11-30 01:07:46
Local clock offset: 5.474 ms
Remote clock offset: -0.613 ms

Below is generated by plot.py at 2018-11-30 02:22:05
Datalink statistics
-- Total of 3 flows:
Average throughput: 696.02 Mbit/s
95th percentile per-packet one-way delay: 12.578 ms
Loss rate: 11.14%
-- Flow 1:
Average throughput: 470.04 Mbit/s
95th percentile per-packet one-way delay: 13.994 ms
Loss rate: 7.37%
-- Flow 2:
Average throughput: 286.84 Mbit/s
95th percentile per-packet one-way delay: 4.019 ms
Loss rate: 19.09%
-- Flow 3:
Average throughput: 105.23 Mbit/s
95th percentile per-packet one-way delay: 2.803 ms
Loss rate: 12.01%

Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-11-30 01:32:50

End at: 2018-11-30 01:33:20

Local clock offset: 5.578 ms

Remote clock offset: 2.769 ms

Below is generated by plot.py at 2018-11-30 02:23:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 775.47 Mbit/s

95th percentile per-packet one-way delay: 21.311 ms

Loss rate: 12.25%

-- Flow 1:

Average throughput: 472.43 Mbit/s

95th percentile per-packet one-way delay: 24.654 ms

Loss rate: 13.19%

-- Flow 2:

Average throughput: 317.23 Mbit/s

95th percentile per-packet one-way delay: 4.729 ms

Loss rate: 10.52%

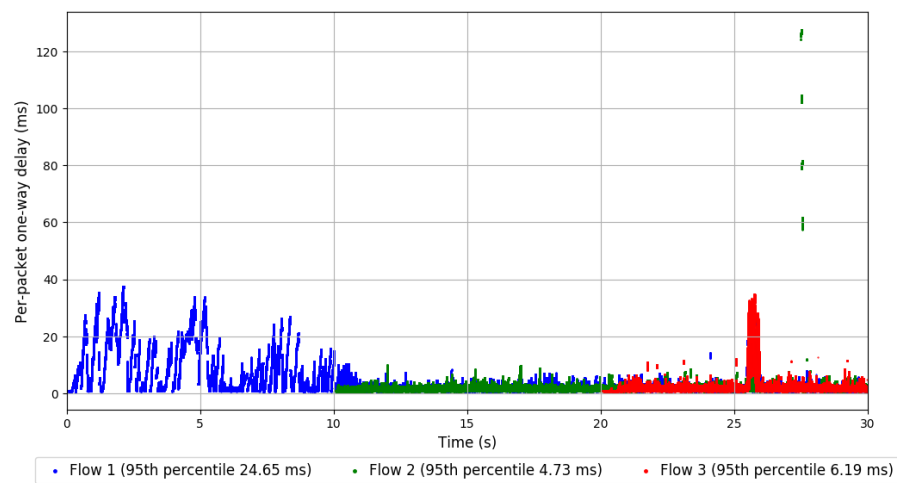
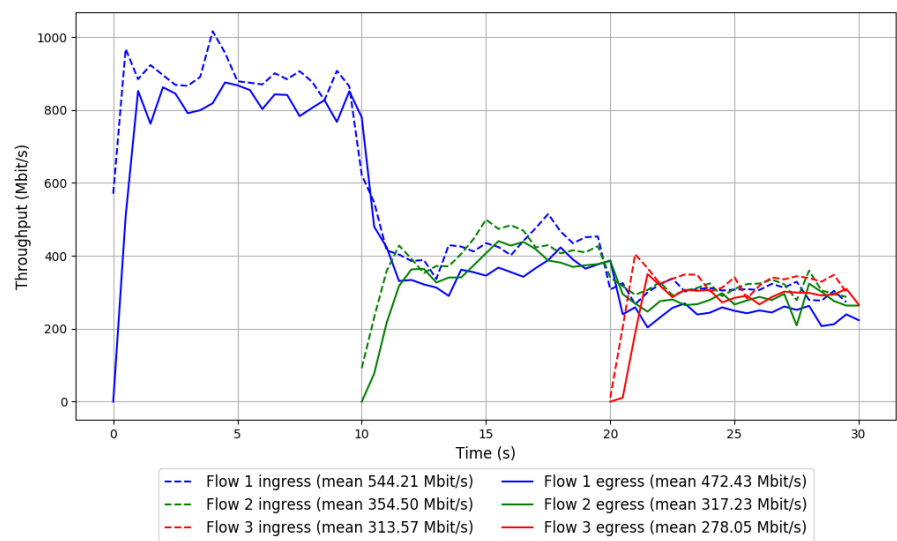
-- Flow 3:

Average throughput: 278.05 Mbit/s

95th percentile per-packet one-way delay: 6.186 ms

Loss rate: 11.29%

Run 5: Report of FillP — Data Link

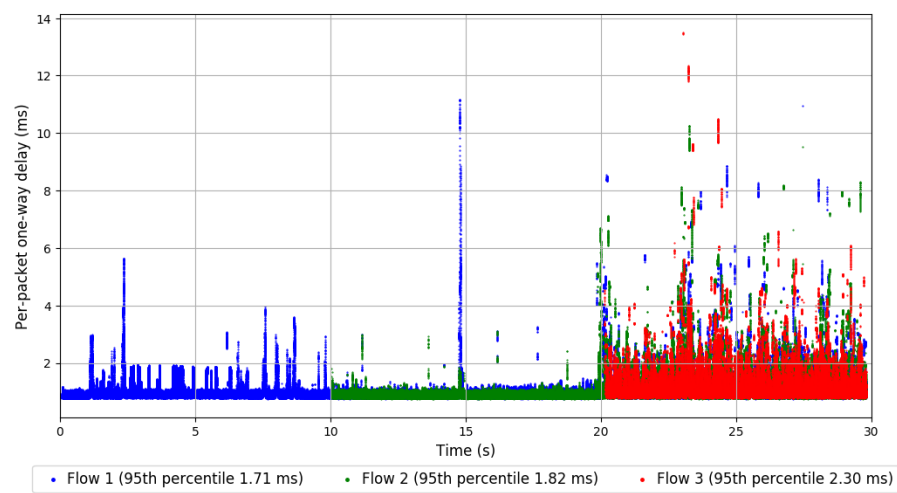
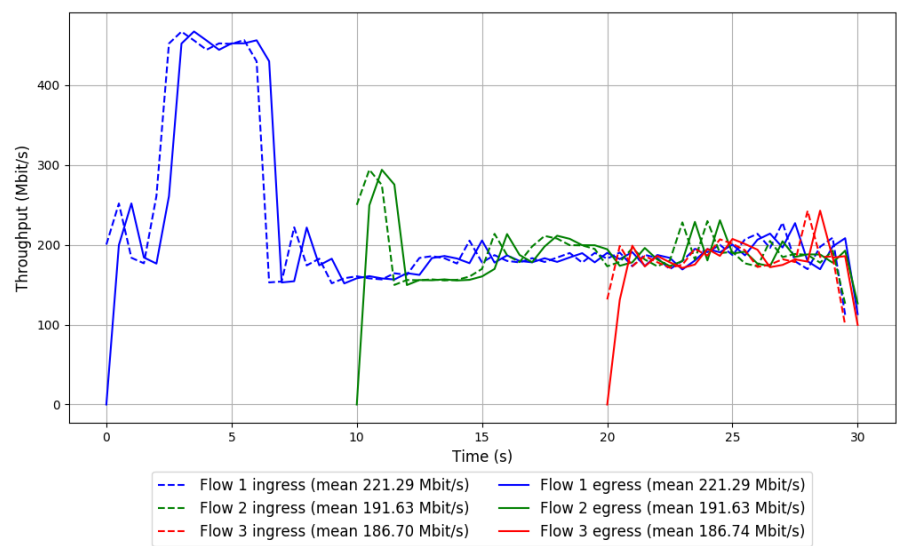


```
Run 1: Statistics of Indigo

Start at: 2018-11-30 00:00:22
End at: 2018-11-30 00:00:52
Local clock offset: 5.057 ms
Remote clock offset: 3.685 ms

# Below is generated by plot.py at 2018-11-30 02:23:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 409.13 Mbit/s
95th percentile per-packet one-way delay: 1.810 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 221.29 Mbit/s
95th percentile per-packet one-way delay: 1.710 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 191.63 Mbit/s
95th percentile per-packet one-way delay: 1.820 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 186.74 Mbit/s
95th percentile per-packet one-way delay: 2.297 ms
Loss rate: 0.00%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-11-30 00:25:54

End at: 2018-11-30 00:26:24

Local clock offset: 5.65 ms

Remote clock offset: 3.422 ms

Below is generated by plot.py at 2018-11-30 02:23:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 394.82 Mbit/s

95th percentile per-packet one-way delay: 1.860 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 213.29 Mbit/s

95th percentile per-packet one-way delay: 1.785 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 184.30 Mbit/s

95th percentile per-packet one-way delay: 1.829 ms

Loss rate: 0.00%

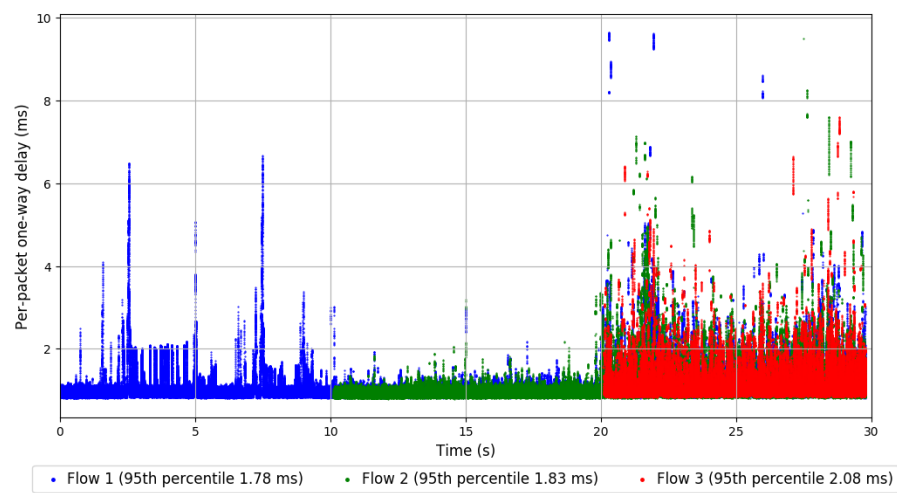
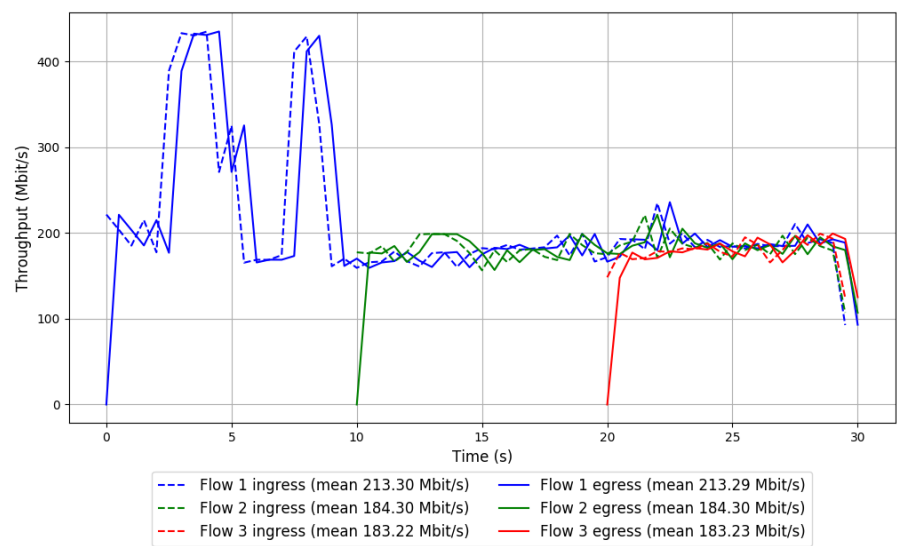
-- Flow 3:

Average throughput: 183.23 Mbit/s

95th percentile per-packet one-way delay: 2.076 ms

Loss rate: 0.00%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-11-30 00:51:36

End at: 2018-11-30 00:52:06

Local clock offset: 5.67 ms

Remote clock offset: 0.729 ms

Below is generated by plot.py at 2018-11-30 02:25:50

Datalink statistics

-- Total of 3 flows:

Average throughput: 380.44 Mbit/s

95th percentile per-packet one-way delay: 1.842 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 193.34 Mbit/s

95th percentile per-packet one-way delay: 1.659 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 191.34 Mbit/s

95th percentile per-packet one-way delay: 1.864 ms

Loss rate: 0.00%

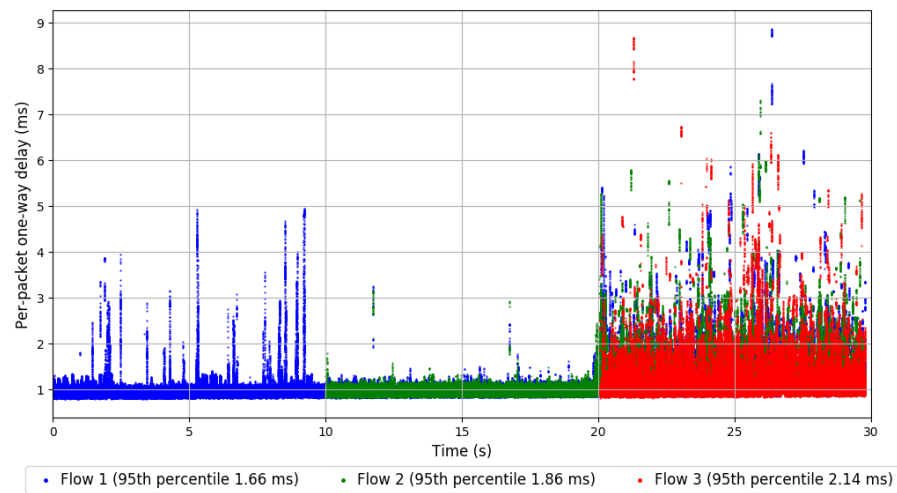
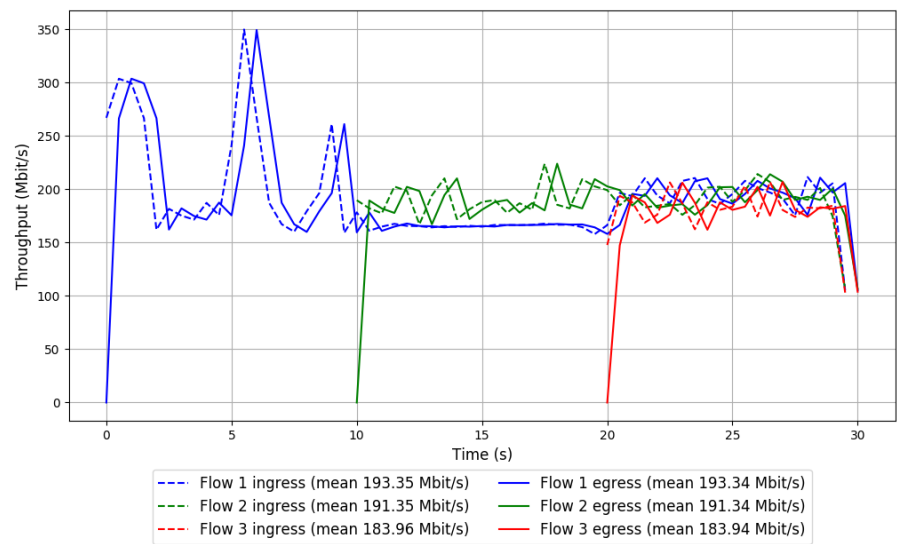
-- Flow 3:

Average throughput: 183.94 Mbit/s

95th percentile per-packet one-way delay: 2.143 ms

Loss rate: 0.01%

Run 3: Report of Indigo — Data Link

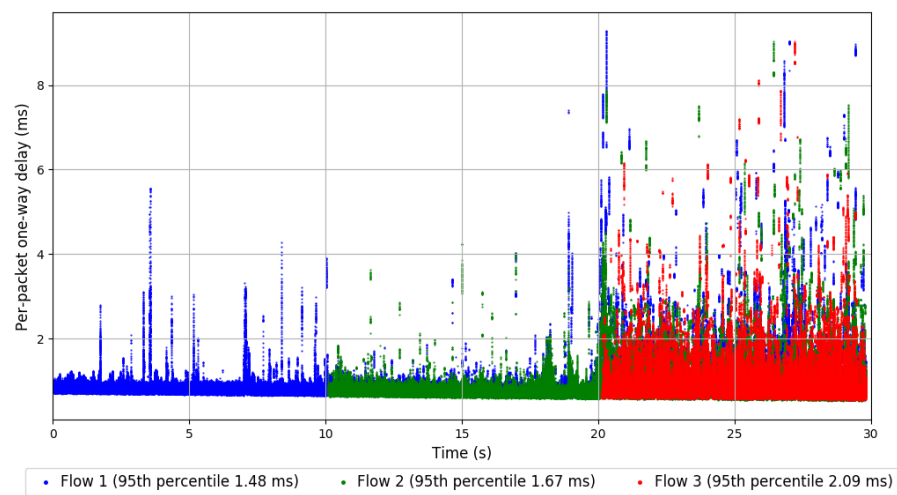
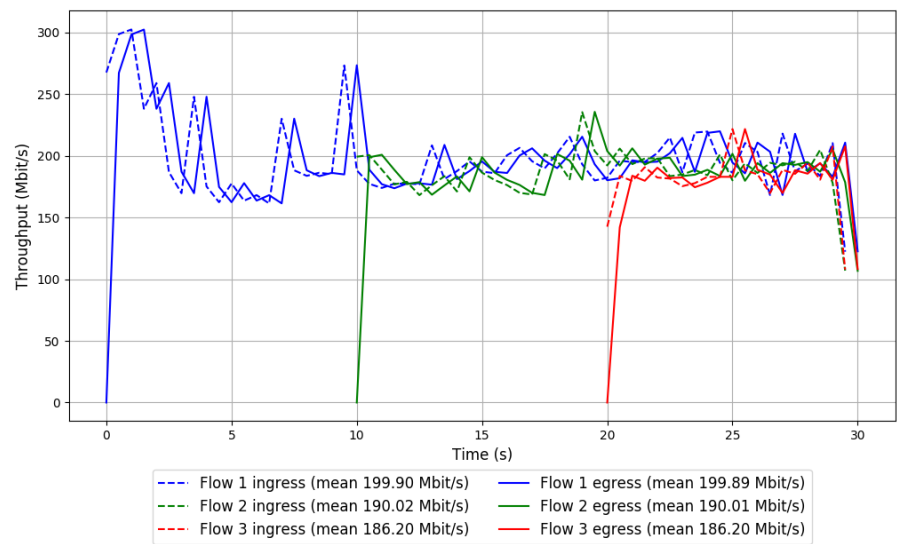


Run 4: Statistics of Indigo

Start at: 2018-11-30 01:17:18
End at: 2018-11-30 01:17:48
Local clock offset: 5.535 ms
Remote clock offset: -0.008 ms

Below is generated by plot.py at 2018-11-30 02:25:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 386.12 Mbit/s
95th percentile per-packet one-way delay: 1.663 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 199.89 Mbit/s
95th percentile per-packet one-way delay: 1.481 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 190.01 Mbit/s
95th percentile per-packet one-way delay: 1.665 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 186.20 Mbit/s
95th percentile per-packet one-way delay: 2.090 ms
Loss rate: 0.00%

Run 4: Report of Indigo — Data Link



Run 5: Statistics of Indigo

Start at: 2018-11-30 01:42:58

End at: 2018-11-30 01:43:28

Local clock offset: 5.632 ms

Remote clock offset: 3.268 ms

Below is generated by plot.py at 2018-11-30 02:26:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 389.51 Mbit/s

95th percentile per-packet one-way delay: 1.778 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 200.56 Mbit/s

95th percentile per-packet one-way delay: 1.637 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 194.32 Mbit/s

95th percentile per-packet one-way delay: 1.710 ms

Loss rate: 0.01%

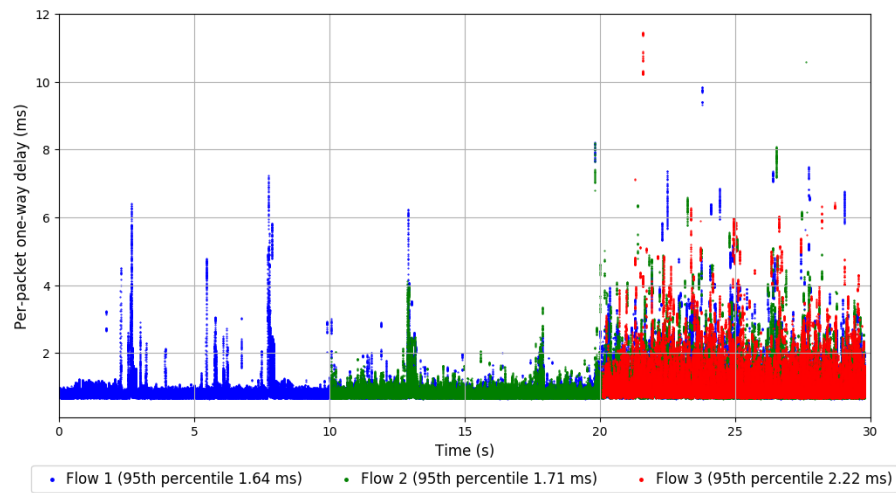
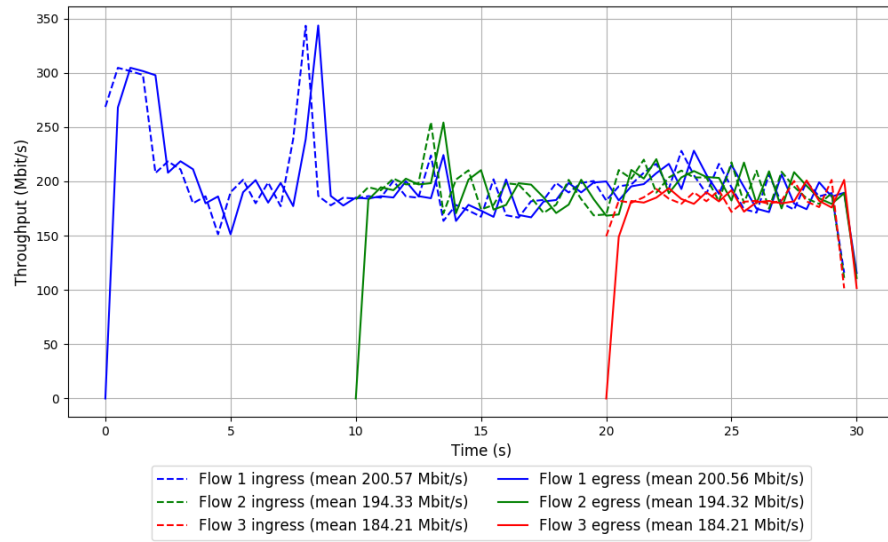
-- Flow 3:

Average throughput: 184.21 Mbit/s

95th percentile per-packet one-way delay: 2.223 ms

Loss rate: 0.00%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-30 00:06:06

End at: 2018-11-30 00:06:37

Local clock offset: 5.152 ms

Remote clock offset: 4.082 ms

Below is generated by plot.py at 2018-11-30 02:26:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 294.22 Mbit/s

95th percentile per-packet one-way delay: 1.384 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 147.30 Mbit/s

95th percentile per-packet one-way delay: 1.442 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 146.89 Mbit/s

95th percentile per-packet one-way delay: 1.389 ms

Loss rate: 0.00%

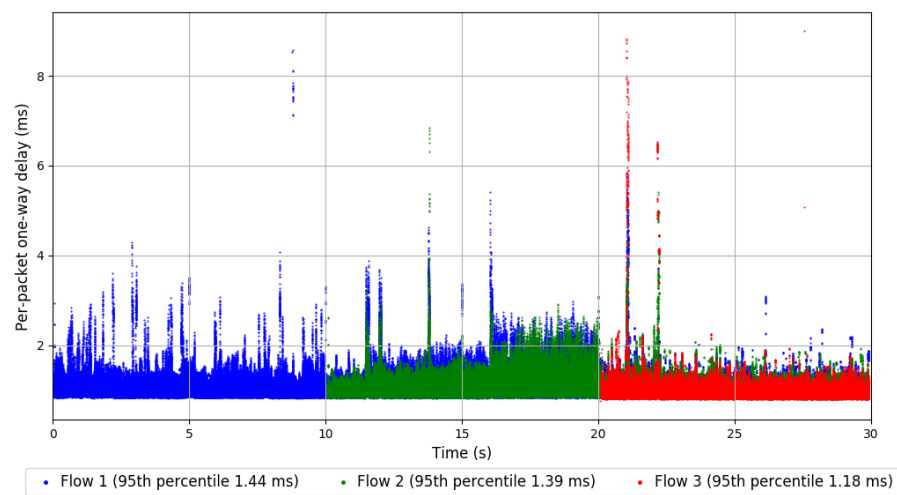
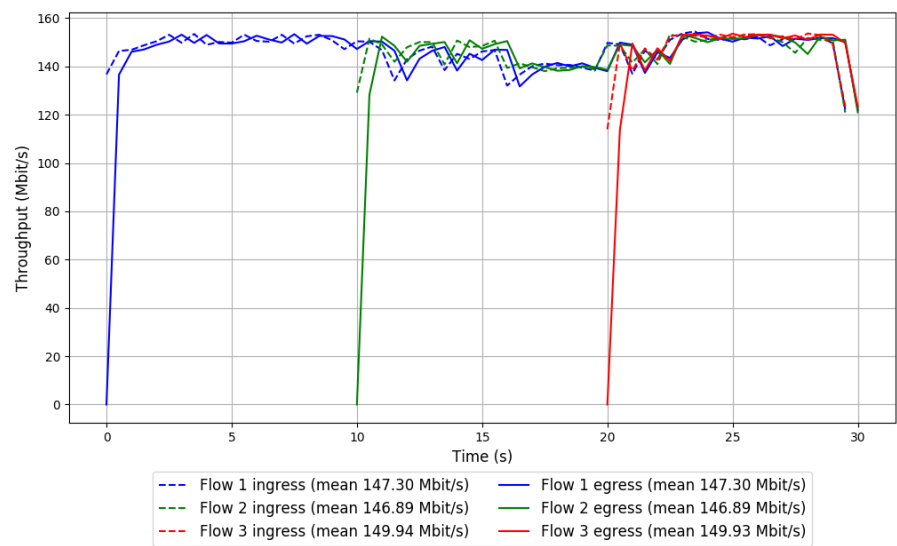
-- Flow 3:

Average throughput: 149.93 Mbit/s

95th percentile per-packet one-way delay: 1.182 ms

Loss rate: 0.01%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-30 00:31:37

End at: 2018-11-30 00:32:07

Local clock offset: 5.77 ms

Remote clock offset: 3.418 ms

Below is generated by plot.py at 2018-11-30 02:26:08

Datalink statistics

-- Total of 3 flows:

Average throughput: 302.48 Mbit/s

95th percentile per-packet one-way delay: 1.113 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 151.61 Mbit/s

95th percentile per-packet one-way delay: 1.165 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 153.42 Mbit/s

95th percentile per-packet one-way delay: 1.040 ms

Loss rate: 0.00%

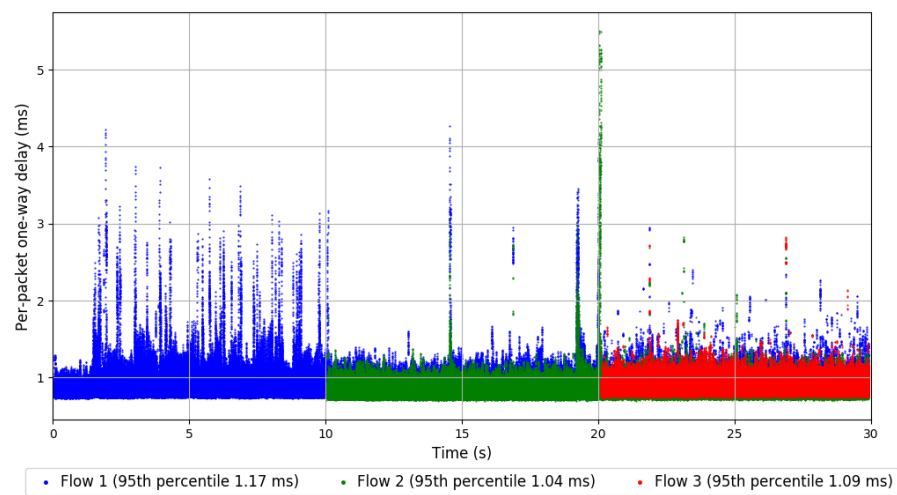
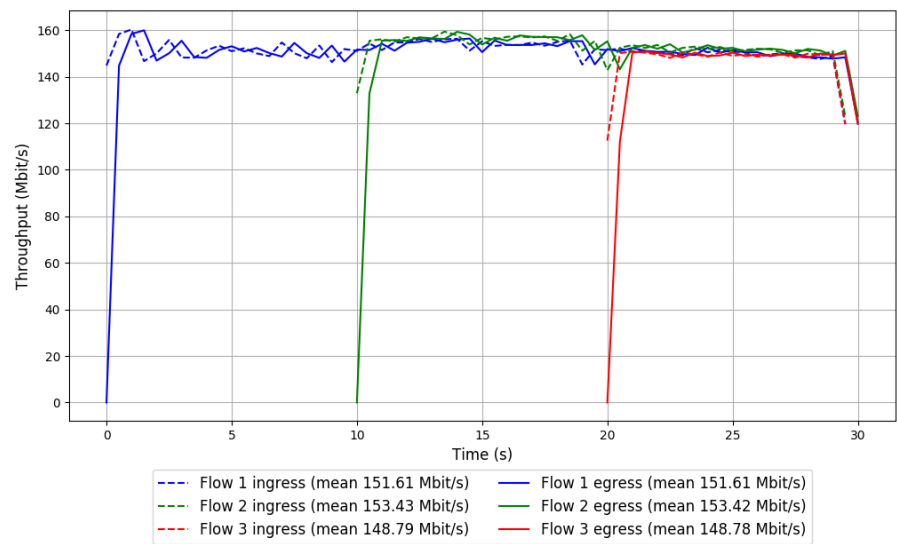
-- Flow 3:

Average throughput: 148.78 Mbit/s

95th percentile per-packet one-way delay: 1.088 ms

Loss rate: 0.00%

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



Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-30 00:57:20

End at: 2018-11-30 00:57:50

Local clock offset: 5.534 ms

Remote clock offset: -0.03 ms

Below is generated by plot.py at 2018-11-30 02:26:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 382.90 Mbit/s

95th percentile per-packet one-way delay: 1.393 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 196.12 Mbit/s

95th percentile per-packet one-way delay: 1.334 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 146.63 Mbit/s

95th percentile per-packet one-way delay: 1.303 ms

Loss rate: 0.00%

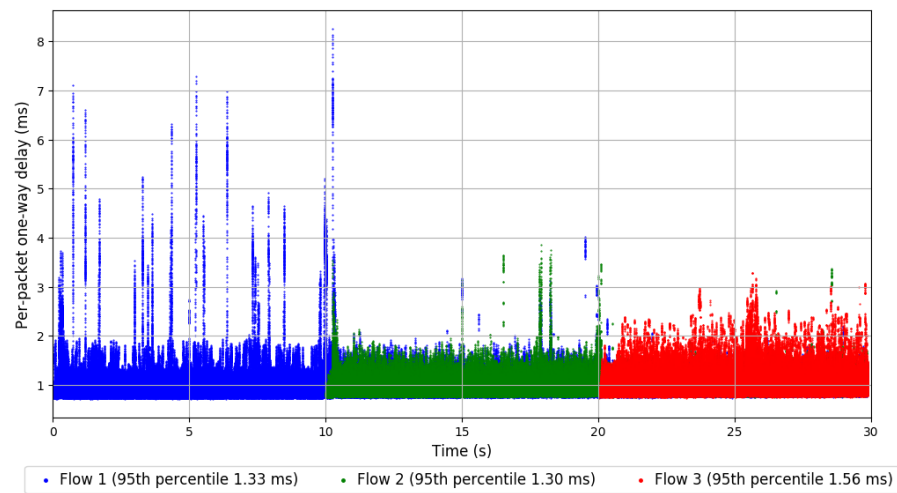
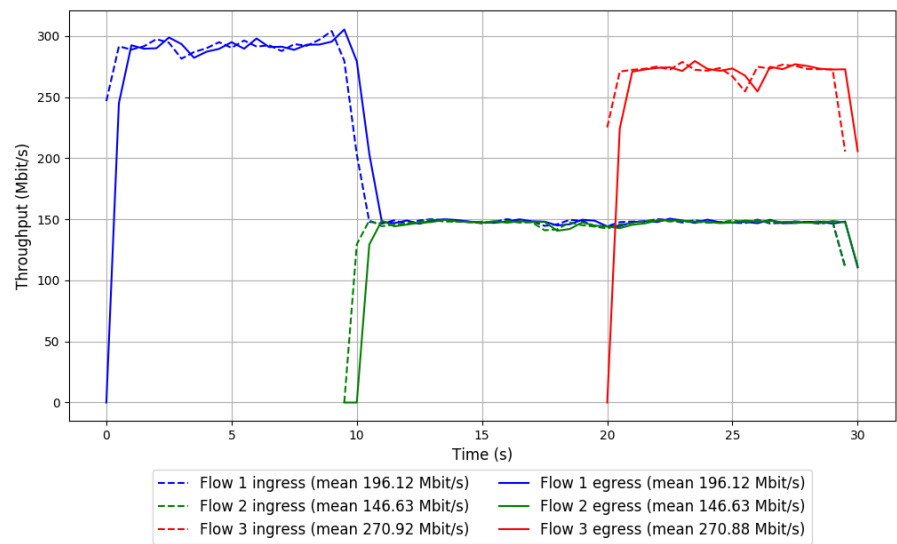
-- Flow 3:

Average throughput: 270.88 Mbit/s

95th percentile per-packet one-way delay: 1.560 ms

Loss rate: 0.00%

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



Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-30 01:23:01

End at: 2018-11-30 01:23:31

Local clock offset: 5.537 ms

Remote clock offset: 1.469 ms

Below is generated by plot.py at 2018-11-30 02:26:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 297.83 Mbit/s

95th percentile per-packet one-way delay: 1.134 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 149.62 Mbit/s

95th percentile per-packet one-way delay: 1.175 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 149.26 Mbit/s

95th percentile per-packet one-way delay: 1.127 ms

Loss rate: 0.00%

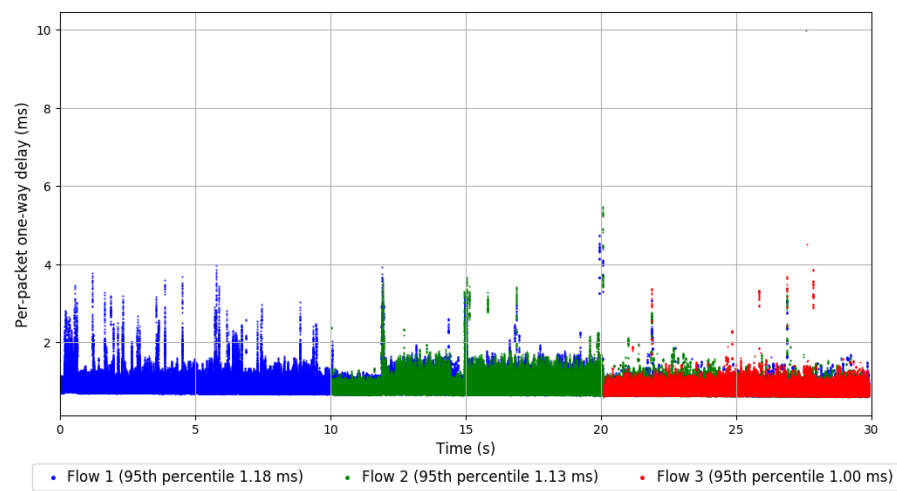
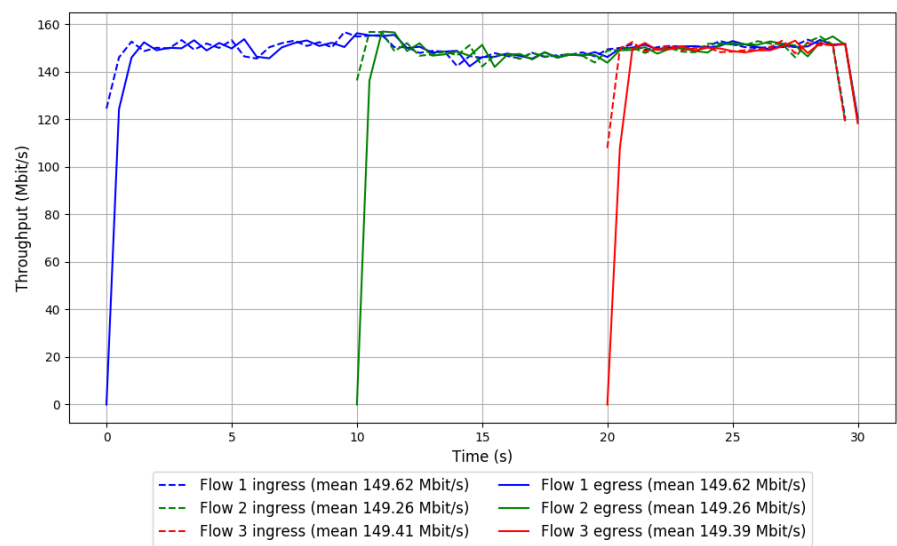
-- Flow 3:

Average throughput: 149.39 Mbit/s

95th percentile per-packet one-way delay: 1.001 ms

Loss rate: 0.01%

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



Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-30 01:48:40

End at: 2018-11-30 01:49:10

Local clock offset: 5.65 ms

Remote clock offset: 3.508 ms

Below is generated by plot.py at 2018-11-30 02:27:06

Datalink statistics

-- Total of 3 flows:

Average throughput: 301.31 Mbit/s

95th percentile per-packet one-way delay: 1.167 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 151.05 Mbit/s

95th percentile per-packet one-way delay: 1.203 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 151.08 Mbit/s

95th percentile per-packet one-way delay: 1.154 ms

Loss rate: 0.00%

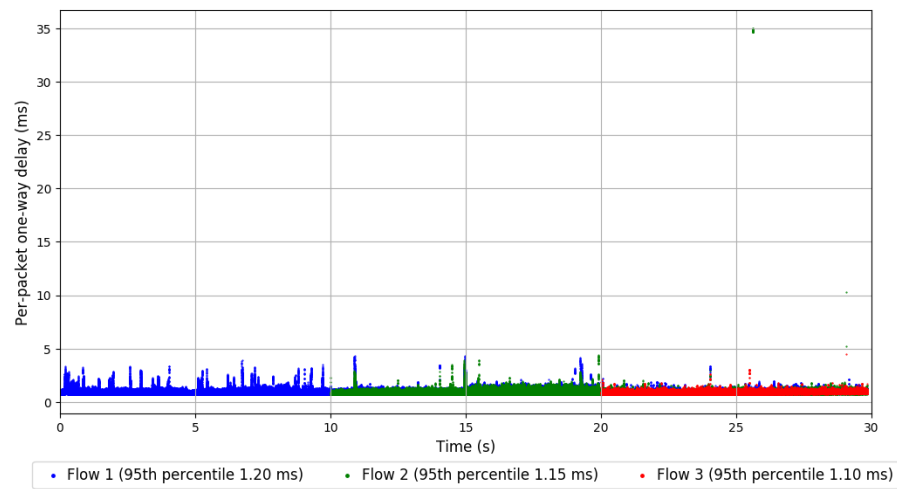
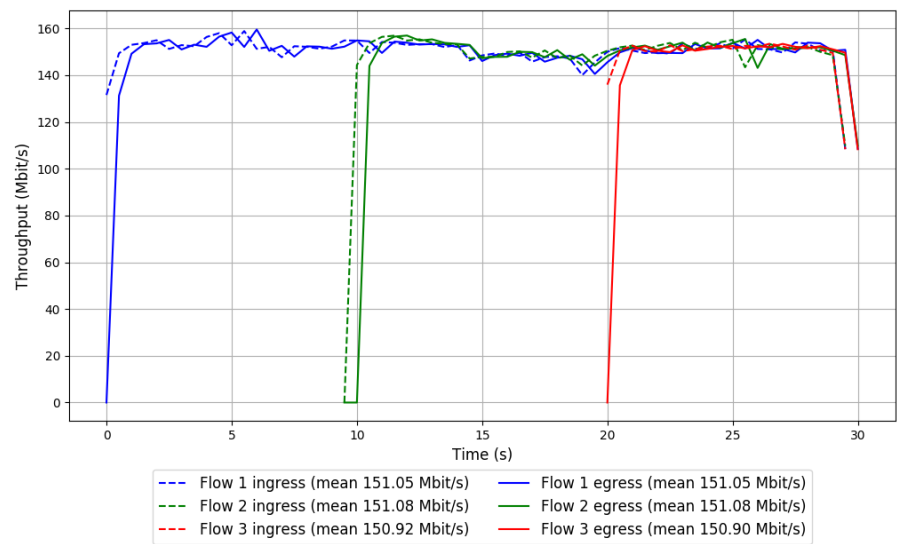
-- Flow 3:

Average throughput: 150.90 Mbit/s

95th percentile per-packet one-way delay: 1.097 ms

Loss rate: 0.00%

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



Run 1: Statistics of LEDBAT

Start at: 2018-11-30 00:08:55

End at: 2018-11-30 00:09:25

Local clock offset: 5.217 ms

Remote clock offset: 3.826 ms

Below is generated by plot.py at 2018-11-30 02:32:22

Datalink statistics

-- Total of 3 flows:

Average throughput: 612.96 Mbit/s

95th percentile per-packet one-way delay: 10.809 ms

Loss rate: 0.26%

-- Flow 1:

Average throughput: 340.66 Mbit/s

95th percentile per-packet one-way delay: 11.172 ms

Loss rate: 0.21%

-- Flow 2:

Average throughput: 315.29 Mbit/s

95th percentile per-packet one-way delay: 9.398 ms

Loss rate: 0.31%

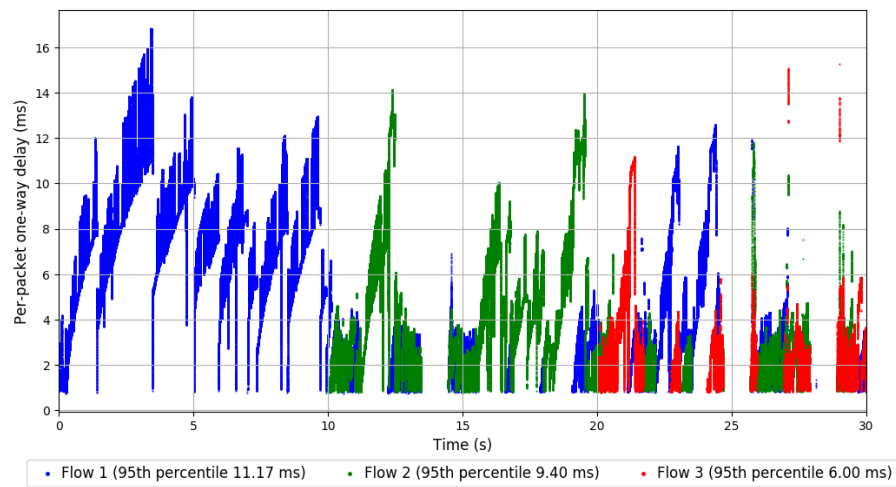
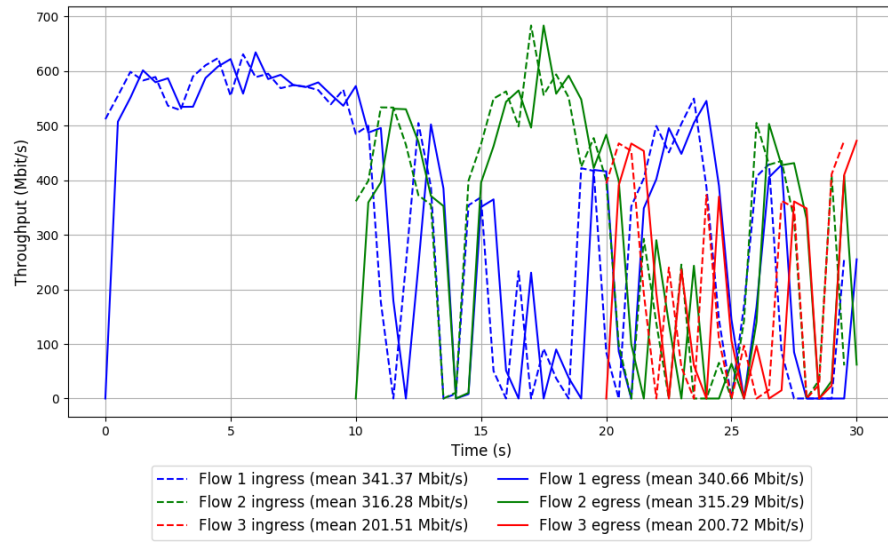
-- Flow 3:

Average throughput: 200.72 Mbit/s

95th percentile per-packet one-way delay: 5.997 ms

Loss rate: 0.39%

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-11-30 00:34:32

End at: 2018-11-30 00:35:02

Local clock offset: 5.815 ms

Remote clock offset: 3.481 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 687.78 Mbit/s

95th percentile per-packet one-way delay: 14.094 ms

Loss rate: 0.24%

-- Flow 1:

Average throughput: 361.98 Mbit/s

95th percentile per-packet one-way delay: 16.200 ms

Loss rate: 0.20%

-- Flow 2:

Average throughput: 321.66 Mbit/s

95th percentile per-packet one-way delay: 7.199 ms

Loss rate: 0.27%

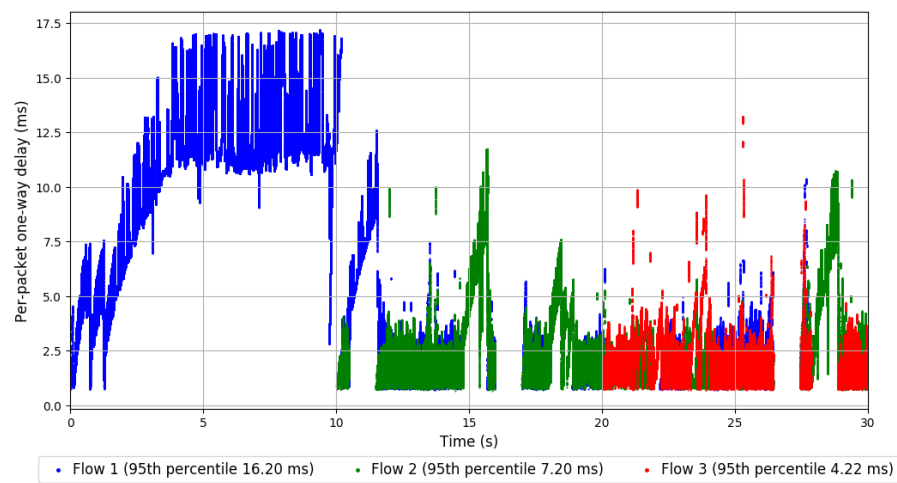
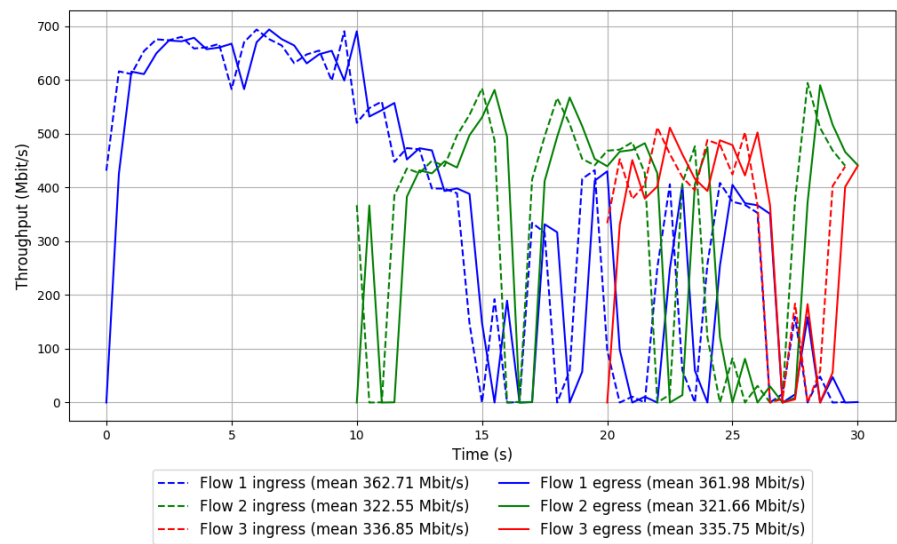
-- Flow 3:

Average throughput: 335.75 Mbit/s

95th percentile per-packet one-way delay: 4.217 ms

Loss rate: 0.32%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-11-30 01:00:17

End at: 2018-11-30 01:00:47

Local clock offset: 5.523 ms

Remote clock offset: -0.2 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 609.98 Mbit/s

95th percentile per-packet one-way delay: 10.630 ms

Loss rate: 0.20%

-- Flow 1:

Average throughput: 423.86 Mbit/s

95th percentile per-packet one-way delay: 11.238 ms

Loss rate: 0.14%

-- Flow 2:

Average throughput: 222.90 Mbit/s

95th percentile per-packet one-way delay: 3.111 ms

Loss rate: 0.31%

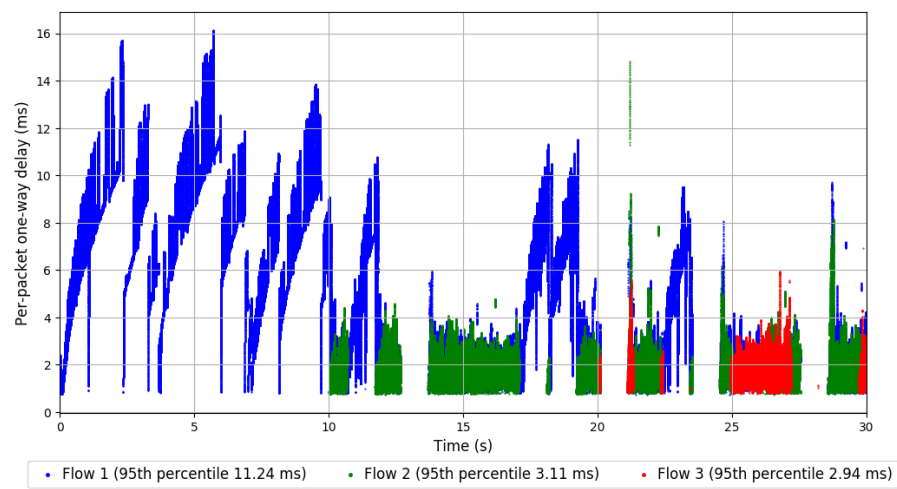
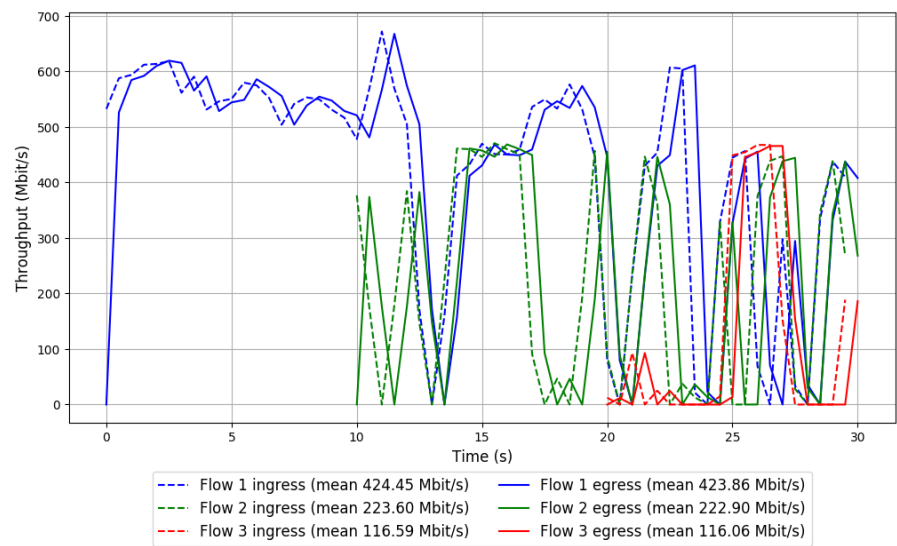
-- Flow 3:

Average throughput: 116.06 Mbit/s

95th percentile per-packet one-way delay: 2.941 ms

Loss rate: 0.45%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-11-30 01:25:48

End at: 2018-11-30 01:26:18

Local clock offset: 5.542 ms

Remote clock offset: 1.959 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 616.41 Mbit/s

95th percentile per-packet one-way delay: 14.042 ms

Loss rate: 0.21%

-- Flow 1:

Average throughput: 327.68 Mbit/s

95th percentile per-packet one-way delay: 15.168 ms

Loss rate: 0.18%

-- Flow 2:

Average throughput: 398.27 Mbit/s

95th percentile per-packet one-way delay: 7.412 ms

Loss rate: 0.19%

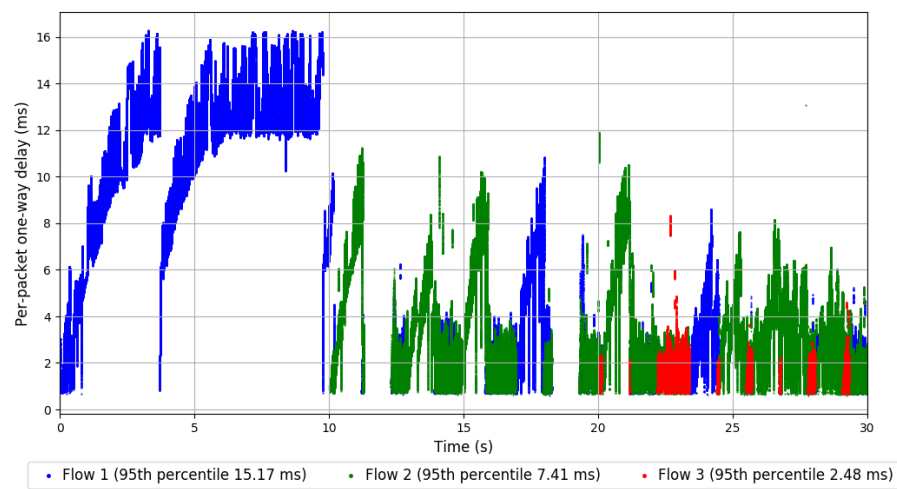
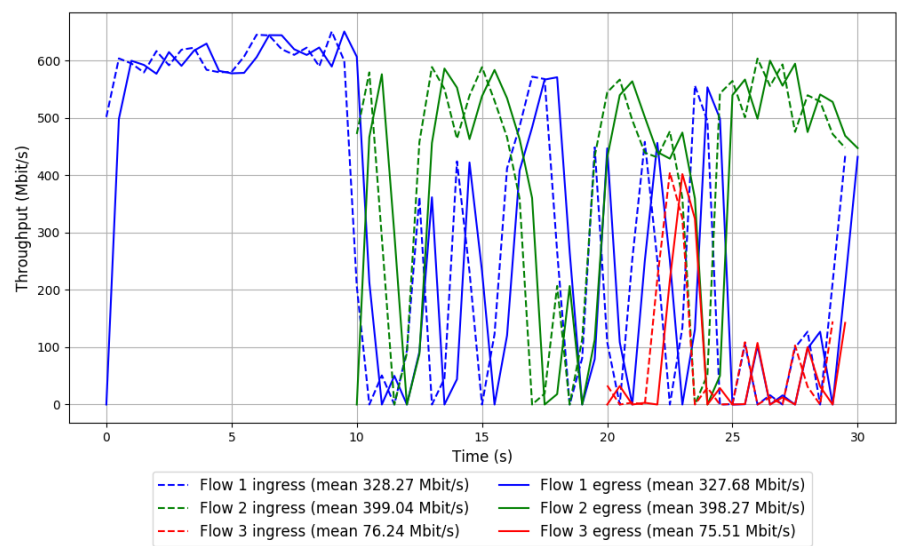
-- Flow 3:

Average throughput: 75.51 Mbit/s

95th percentile per-packet one-way delay: 2.476 ms

Loss rate: 0.95%

Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-11-30 01:51:30

End at: 2018-11-30 01:52:00

Local clock offset: 5.658 ms

Remote clock offset: 2.687 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 640.48 Mbit/s

95th percentile per-packet one-way delay: 13.276 ms

Loss rate: 0.21%

-- Flow 1:

Average throughput: 437.17 Mbit/s

95th percentile per-packet one-way delay: 14.222 ms

Loss rate: 0.13%

-- Flow 2:

Average throughput: 161.56 Mbit/s

95th percentile per-packet one-way delay: 6.619 ms

Loss rate: 0.45%

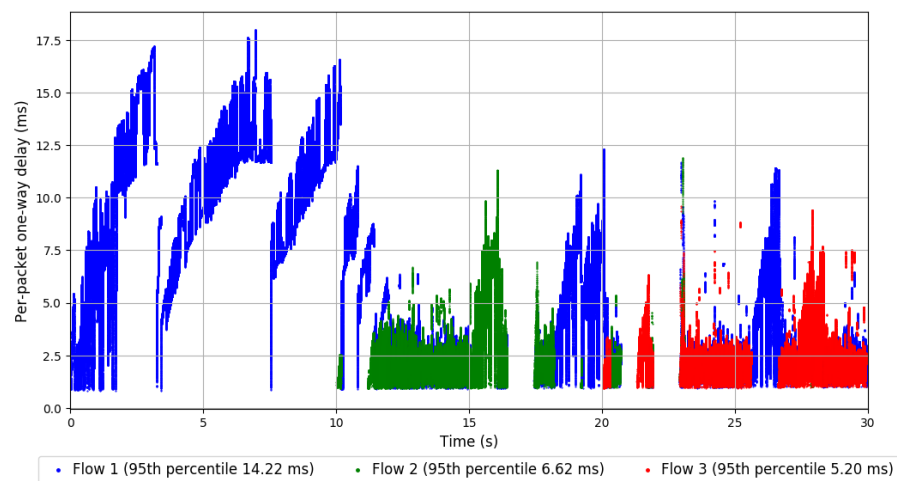
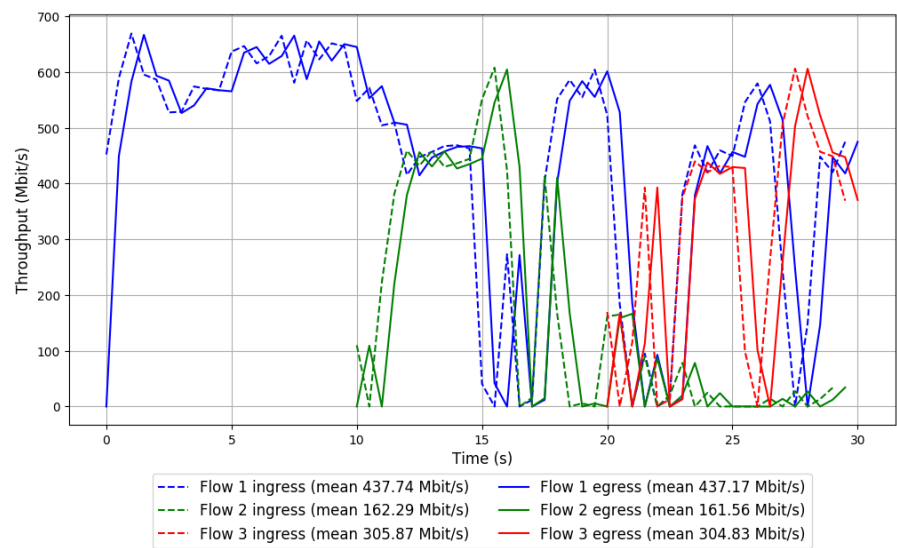
-- Flow 3:

Average throughput: 304.83 Mbit/s

95th percentile per-packet one-way delay: 5.200 ms

Loss rate: 0.34%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-11-30 00:12:00

End at: 2018-11-30 00:12:30

Local clock offset: 5.257 ms

Remote clock offset: 3.522 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 101.37 Mbit/s

95th percentile per-packet one-way delay: 1.088 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 52.20 Mbit/s

95th percentile per-packet one-way delay: 1.099 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 49.27 Mbit/s

95th percentile per-packet one-way delay: 1.075 ms

Loss rate: 0.00%

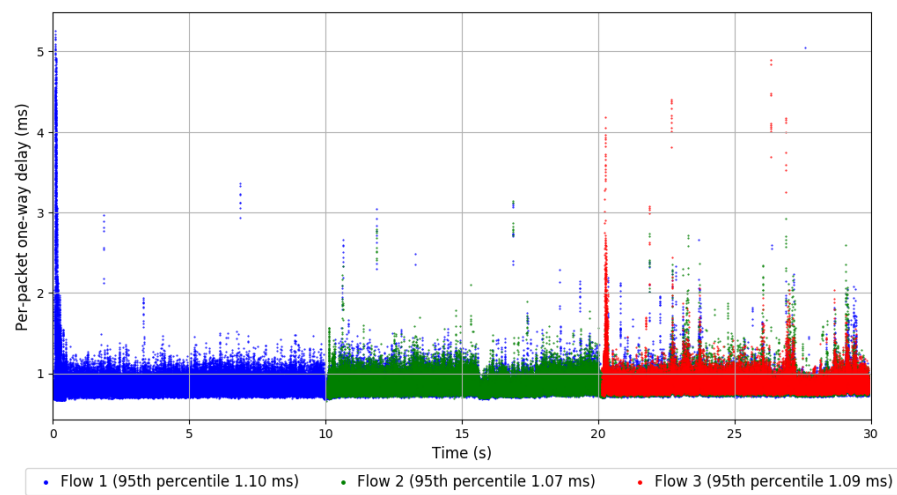
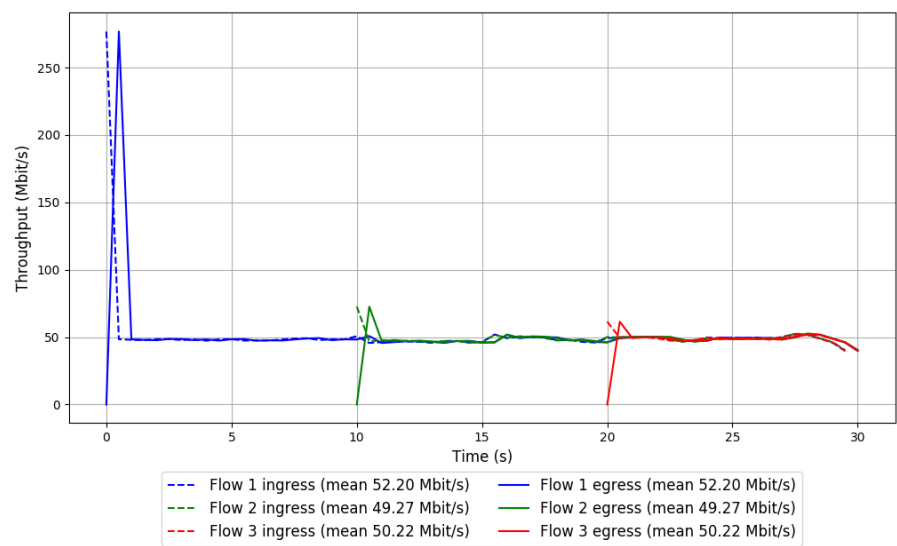
-- Flow 3:

Average throughput: 50.22 Mbit/s

95th percentile per-packet one-way delay: 1.087 ms

Loss rate: 0.00%

Run 1: Report of Indigo-Muses — Data Link



Run 2: Statistics of Indigo-Muses

Start at: 2018-11-30 00:37:44

End at: 2018-11-30 00:38:14

Local clock offset: 5.887 ms

Remote clock offset: 3.554 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 97.52 Mbit/s

95th percentile per-packet one-way delay: 1.086 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 49.12 Mbit/s

95th percentile per-packet one-way delay: 1.085 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 48.21 Mbit/s

95th percentile per-packet one-way delay: 1.096 ms

Loss rate: 0.02%

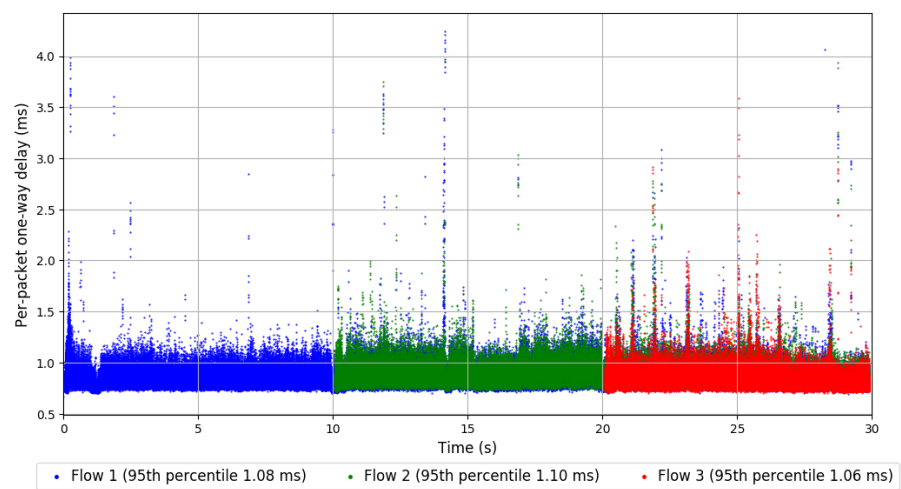
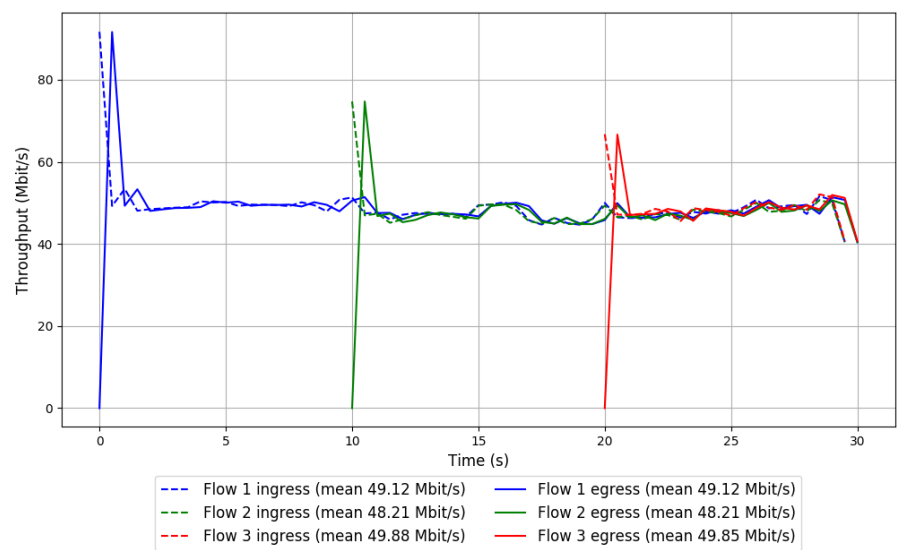
-- Flow 3:

Average throughput: 49.85 Mbit/s

95th percentile per-packet one-way delay: 1.058 ms

Loss rate: 0.05%

Run 2: Report of Indigo-Muses — Data Link

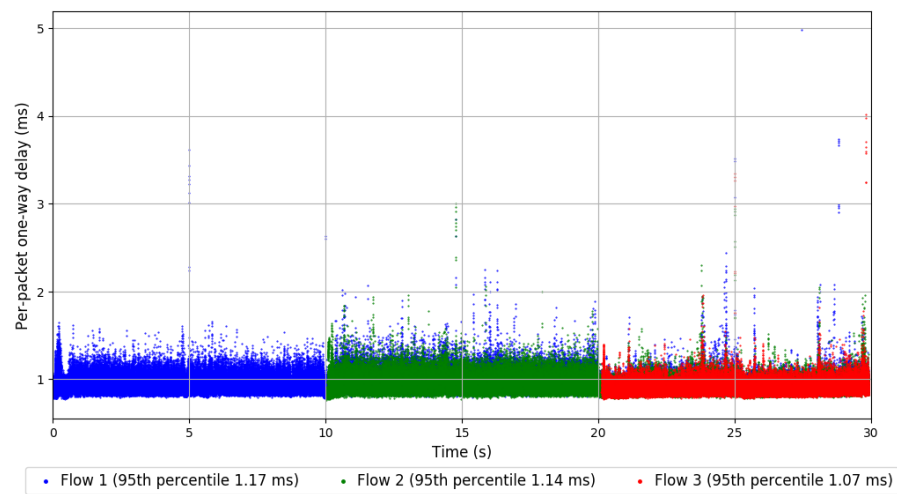
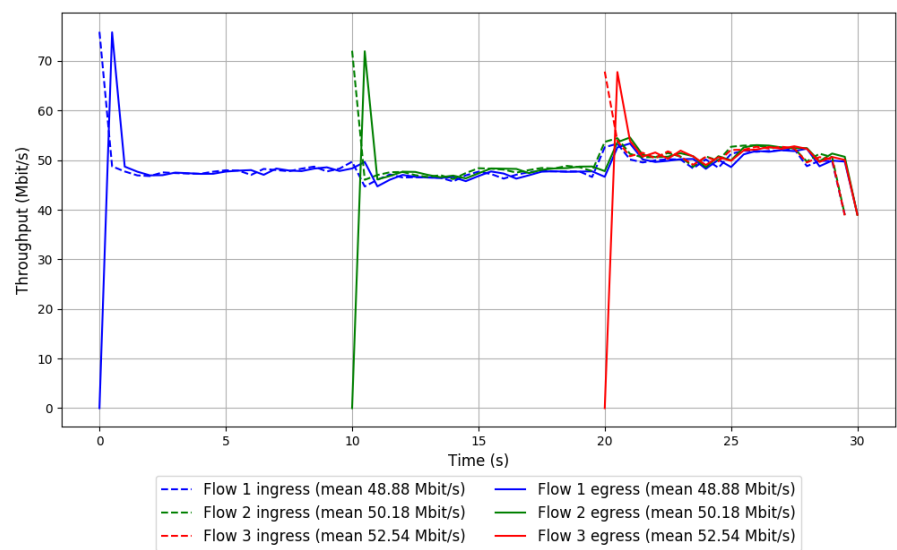


Run 3: Statistics of Indigo-Muses

Start at: 2018-11-30 01:03:20
End at: 2018-11-30 01:03:50
Local clock offset: 5.502 ms
Remote clock offset: -0.384 ms

Below is generated by plot.py at 2018-11-30 02:33:33
Datalink statistics
-- Total of 3 flows:
Average throughput: 99.44 Mbit/s
95th percentile per-packet one-way delay: 1.145 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 48.88 Mbit/s
95th percentile per-packet one-way delay: 1.166 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 50.18 Mbit/s
95th percentile per-packet one-way delay: 1.139 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 52.54 Mbit/s
95th percentile per-packet one-way delay: 1.072 ms
Loss rate: 0.00%

Run 3: Report of Indigo-Muses — Data Link



Run 4: Statistics of Indigo-Muses

Start at: 2018-11-30 01:28:54

End at: 2018-11-30 01:29:24

Local clock offset: 5.562 ms

Remote clock offset: 2.481 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 100.43 Mbit/s

95th percentile per-packet one-way delay: 1.186 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 49.95 Mbit/s

95th percentile per-packet one-way delay: 1.203 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 49.86 Mbit/s

95th percentile per-packet one-way delay: 1.187 ms

Loss rate: 0.01%

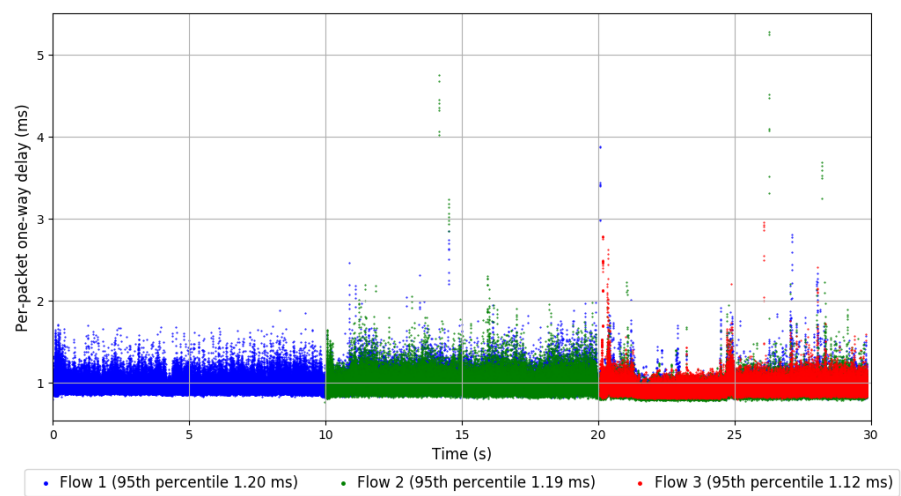
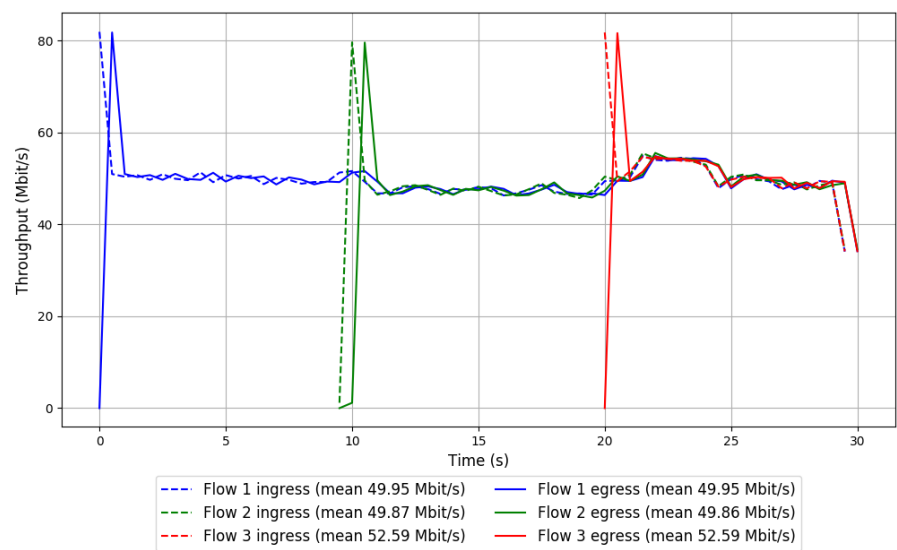
-- Flow 3:

Average throughput: 52.59 Mbit/s

95th percentile per-packet one-way delay: 1.119 ms

Loss rate: 0.00%

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-11-30 01:54:38

End at: 2018-11-30 01:55:08

Local clock offset: 5.667 ms

Remote clock offset: 1.766 ms

Below is generated by plot.py at 2018-11-30 02:33:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 95.20 Mbit/s

95th percentile per-packet one-way delay: 1.332 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 47.52 Mbit/s

95th percentile per-packet one-way delay: 1.336 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 47.15 Mbit/s

95th percentile per-packet one-way delay: 1.348 ms

Loss rate: 0.00%

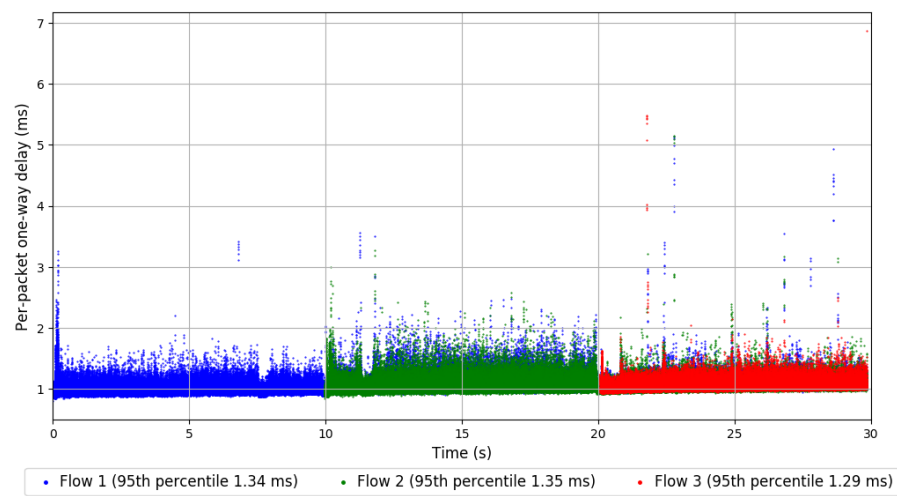
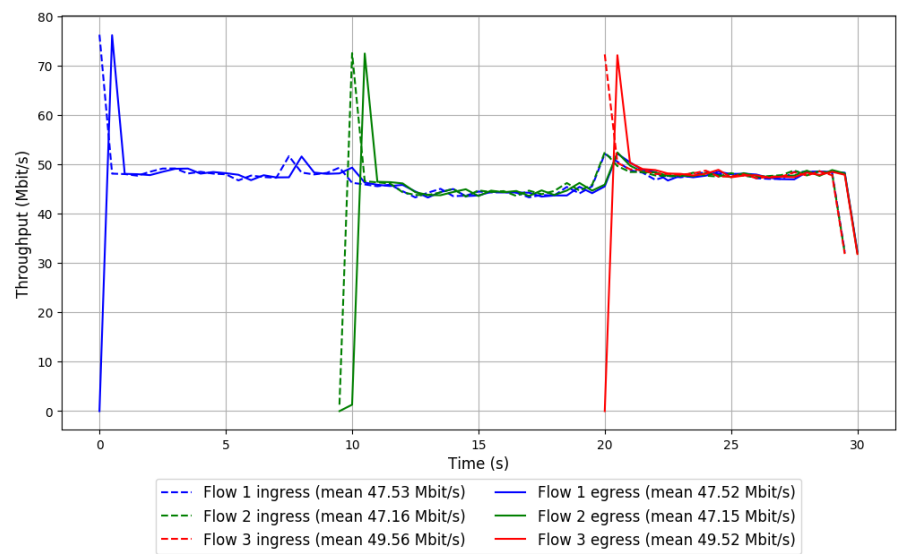
-- Flow 3:

Average throughput: 49.52 Mbit/s

95th percentile per-packet one-way delay: 1.293 ms

Loss rate: 0.02%

Run 5: Report of Indigo-Muses — Data Link

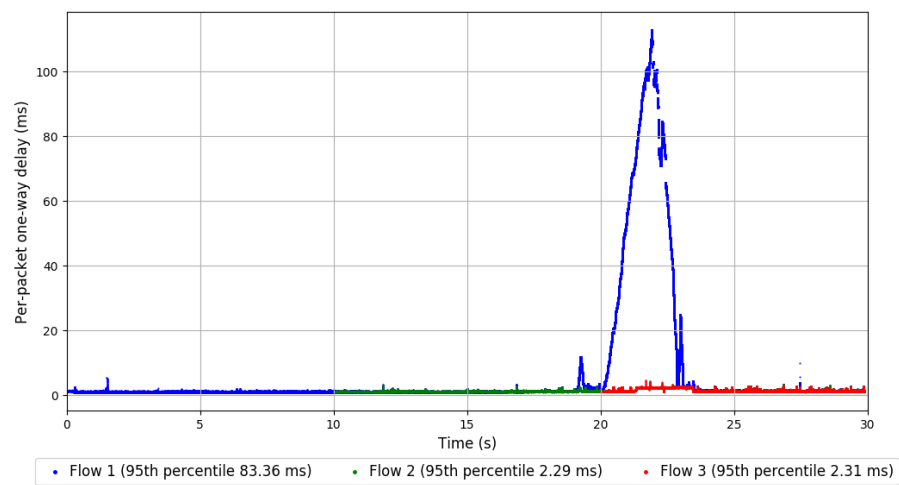
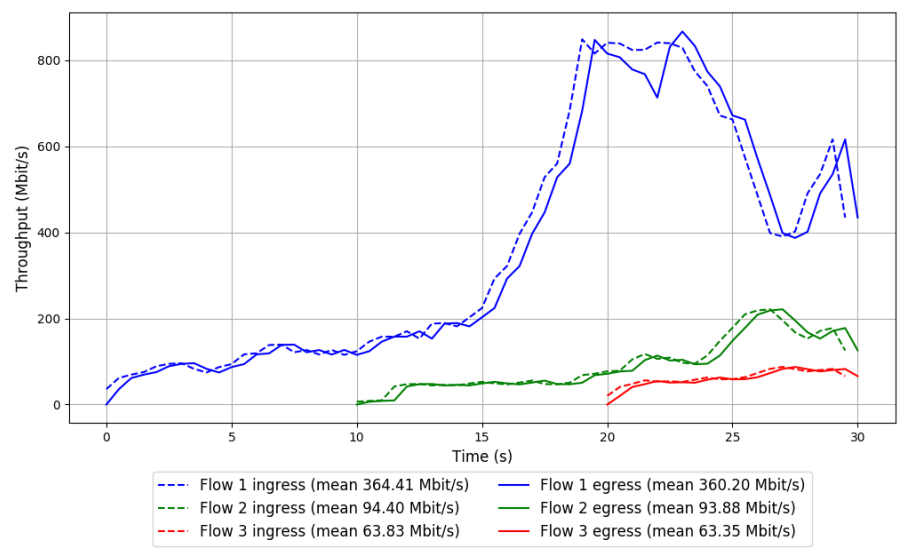


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-30 00:07:30
End at: 2018-11-30 00:08:00
Local clock offset: 5.183 ms
Remote clock offset: 4.045 ms

# Below is generated by plot.py at 2018-11-30 02:33:33
# Datalink statistics
-- Total of 3 flows:
Average throughput: 443.52 Mbit/s
95th percentile per-packet one-way delay: 77.894 ms
Loss rate: 1.05%
-- Flow 1:
Average throughput: 360.20 Mbit/s
95th percentile per-packet one-way delay: 83.358 ms
Loss rate: 1.16%
-- Flow 2:
Average throughput: 93.88 Mbit/s
95th percentile per-packet one-way delay: 2.292 ms
Loss rate: 0.55%
-- Flow 3:
Average throughput: 63.35 Mbit/s
95th percentile per-packet one-way delay: 2.312 ms
Loss rate: 0.76%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-11-30 00:33:01

End at: 2018-11-30 00:33:31

Local clock offset: 5.808 ms

Remote clock offset: 3.462 ms

Below is generated by plot.py at 2018-11-30 02:36:46

Datalink statistics

-- Total of 3 flows:

Average throughput: 713.15 Mbit/s

95th percentile per-packet one-way delay: 1.894 ms

Loss rate: 0.11%

-- Flow 1:

Average throughput: 401.06 Mbit/s

95th percentile per-packet one-way delay: 1.779 ms

Loss rate: 0.09%

-- Flow 2:

Average throughput: 462.80 Mbit/s

95th percentile per-packet one-way delay: 2.003 ms

Loss rate: 0.14%

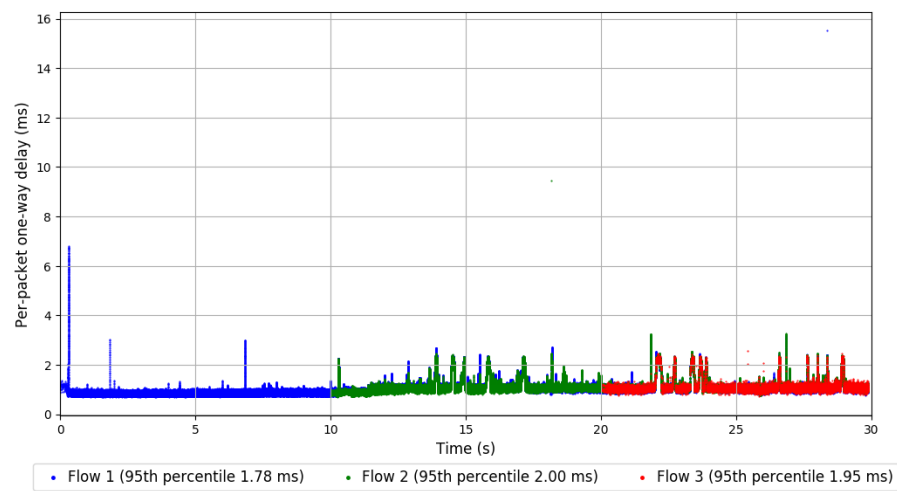
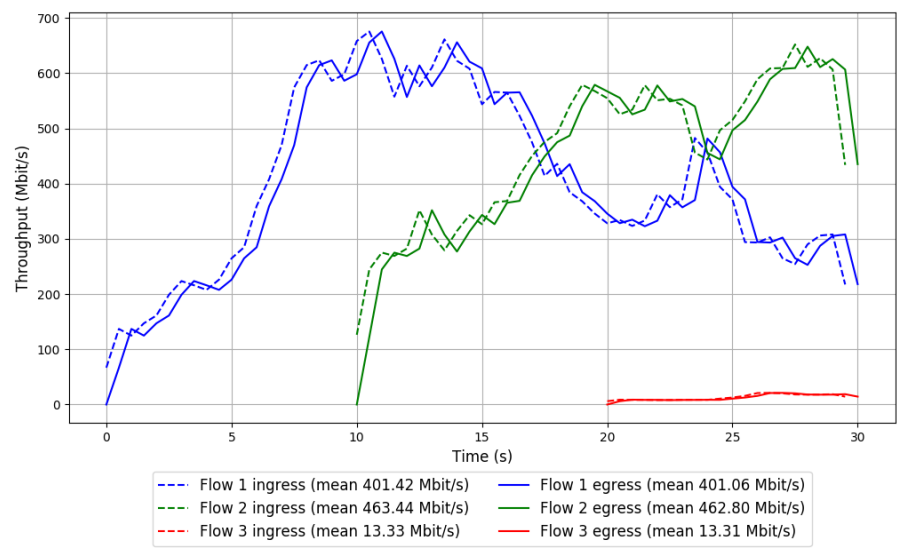
-- Flow 3:

Average throughput: 13.31 Mbit/s

95th percentile per-packet one-way delay: 1.951 ms

Loss rate: 0.11%

Run 2: Report of PCC-Allegro — Data Link

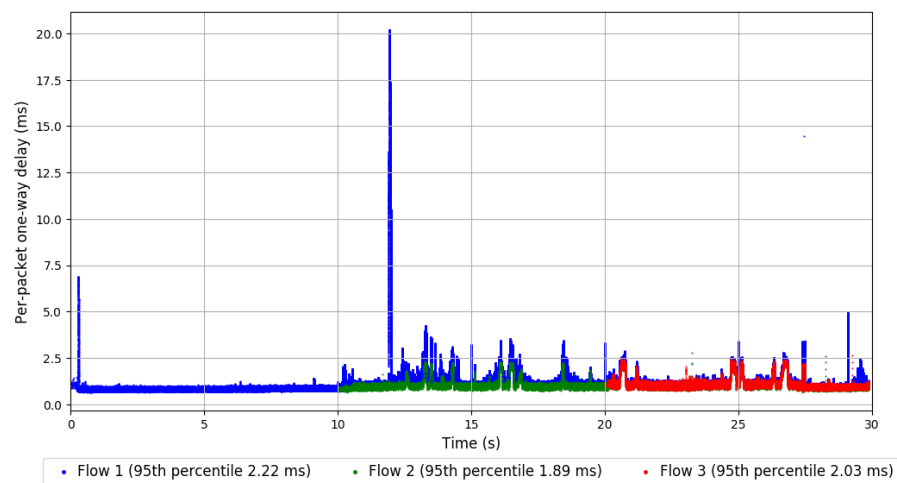
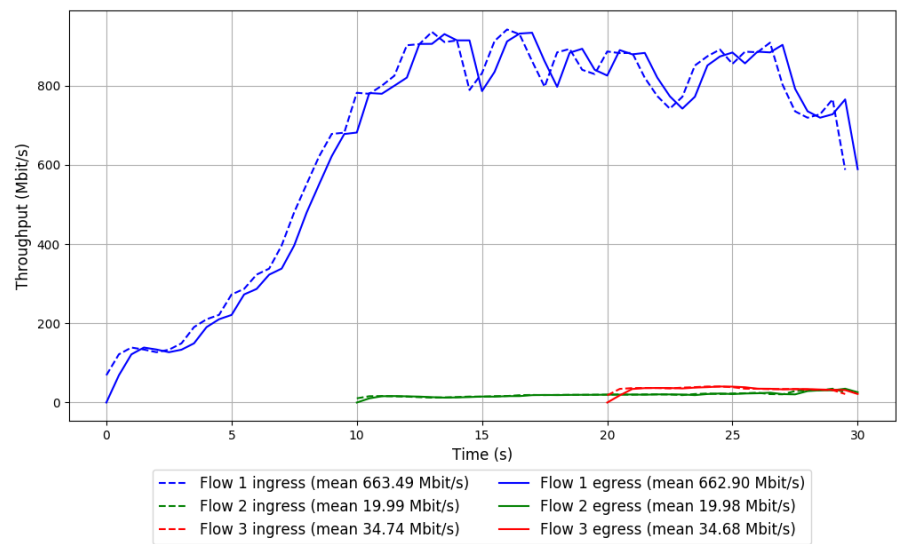


Run 3: Statistics of PCC-Allegro

Start at: 2018-11-30 00:58:46
End at: 2018-11-30 00:59:16
Local clock offset: 5.534 ms
Remote clock offset: -0.158 ms

Below is generated by plot.py at 2018-11-30 02:37:09
Datalink statistics
-- Total of 3 flows:
Average throughput: 687.60 Mbit/s
95th percentile per-packet one-way delay: 2.211 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 662.90 Mbit/s
95th percentile per-packet one-way delay: 2.222 ms
Loss rate: 0.09%
-- Flow 2:
Average throughput: 19.98 Mbit/s
95th percentile per-packet one-way delay: 1.889 ms
Loss rate: 0.08%
-- Flow 3:
Average throughput: 34.68 Mbit/s
95th percentile per-packet one-way delay: 2.030 ms
Loss rate: 0.17%

Run 3: Report of PCC-Allegro — Data Link



Run 4: Statistics of PCC-Allegro

Start at: 2018-11-30 01:24:25

End at: 2018-11-30 01:24:55

Local clock offset: 5.547 ms

Remote clock offset: 1.774 ms

Below is generated by plot.py at 2018-11-30 02:37:09

Datalink statistics

-- Total of 3 flows:

Average throughput: 381.34 Mbit/s

95th percentile per-packet one-way delay: 1.095 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 82.09 Mbit/s

95th percentile per-packet one-way delay: 1.026 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 434.84 Mbit/s

95th percentile per-packet one-way delay: 1.106 ms

Loss rate: 0.01%

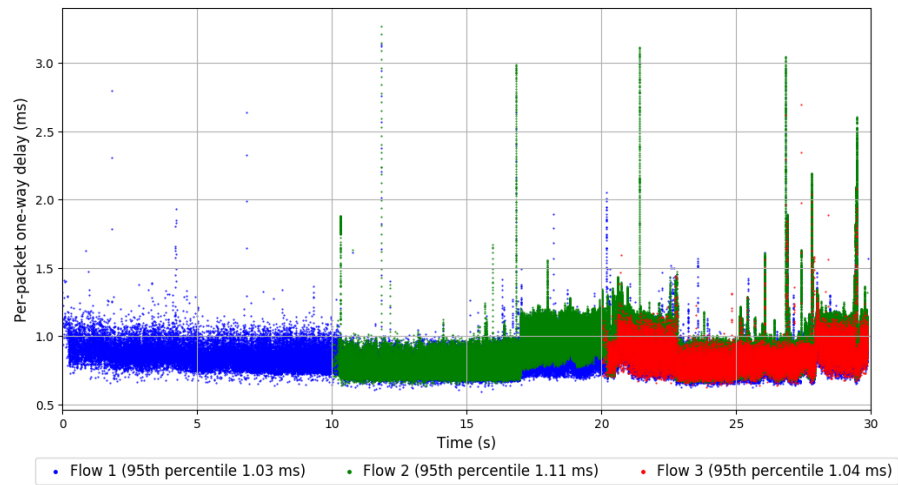
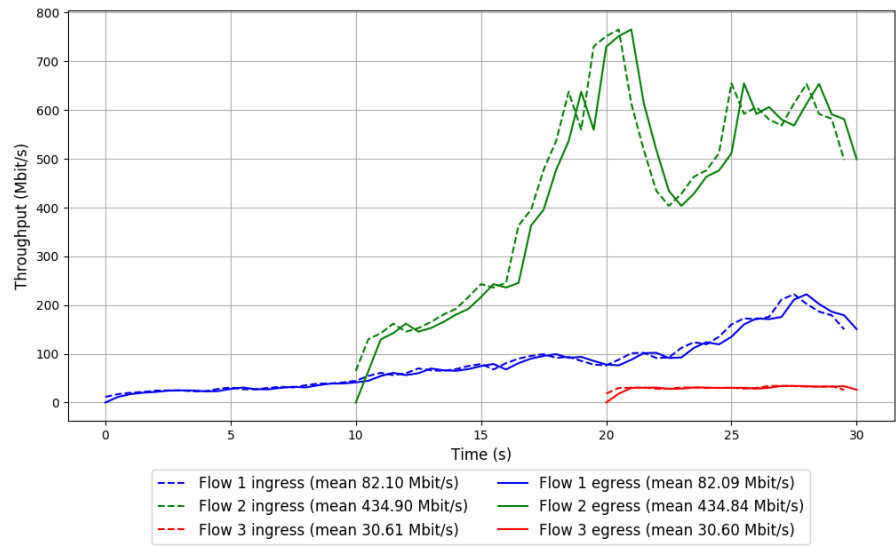
-- Flow 3:

Average throughput: 30.60 Mbit/s

95th percentile per-packet one-way delay: 1.041 ms

Loss rate: 0.02%

Run 4: Report of PCC-Allegro — Data Link



Run 5: Statistics of PCC-Allegro

Start at: 2018-11-30 01:50:04

End at: 2018-11-30 01:50:34

Local clock offset: 5.657 ms

Remote clock offset: 3.232 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 490.22 Mbit/s

95th percentile per-packet one-way delay: 1.686 ms

Loss rate: 0.04%

-- Flow 1:

Average throughput: 416.17 Mbit/s

95th percentile per-packet one-way delay: 1.658 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 4.95 Mbit/s

95th percentile per-packet one-way delay: 1.479 ms

Loss rate: 0.03%

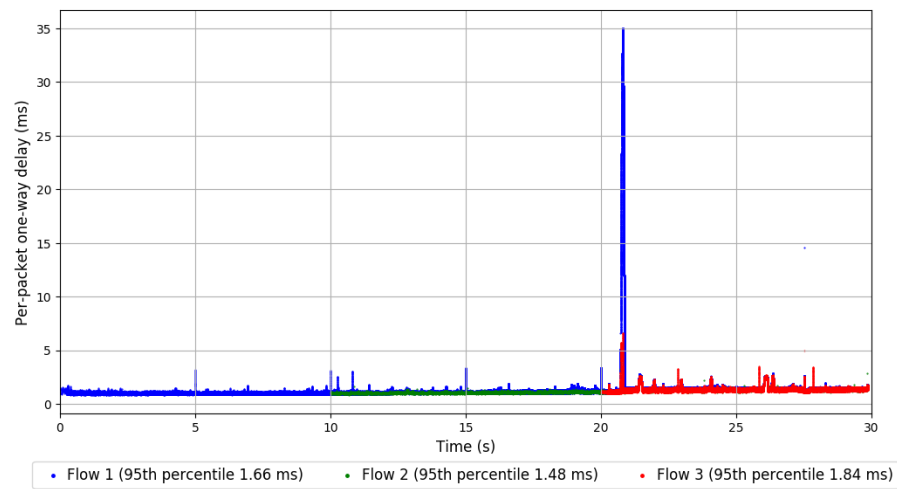
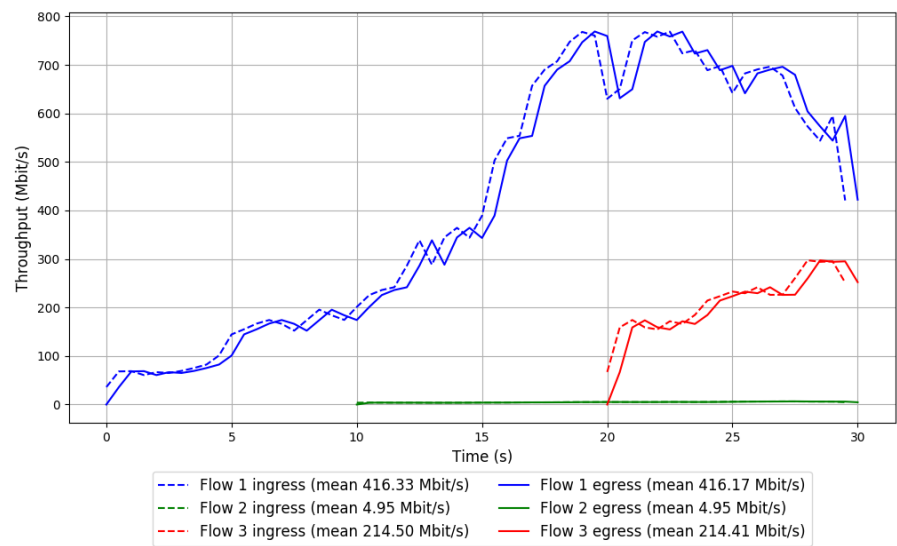
-- Flow 3:

Average throughput: 214.41 Mbit/s

95th percentile per-packet one-way delay: 1.843 ms

Loss rate: 0.04%

Run 5: Report of PCC-Allegro — Data Link

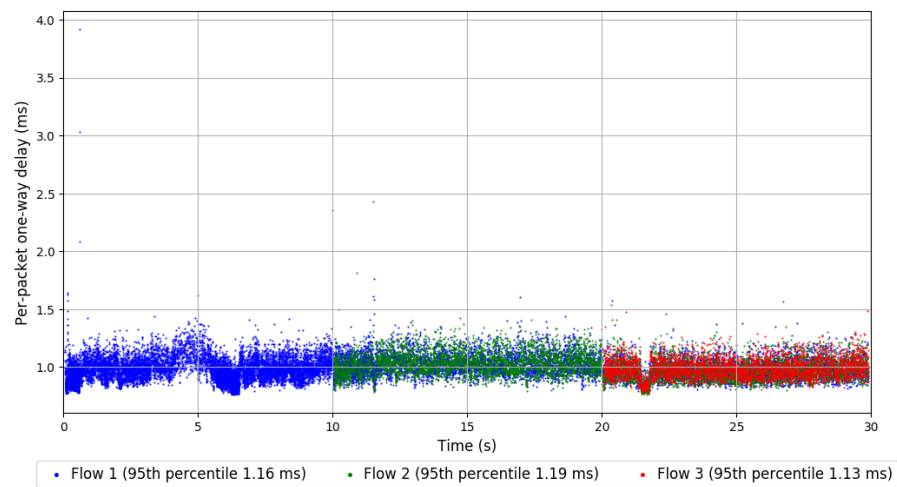
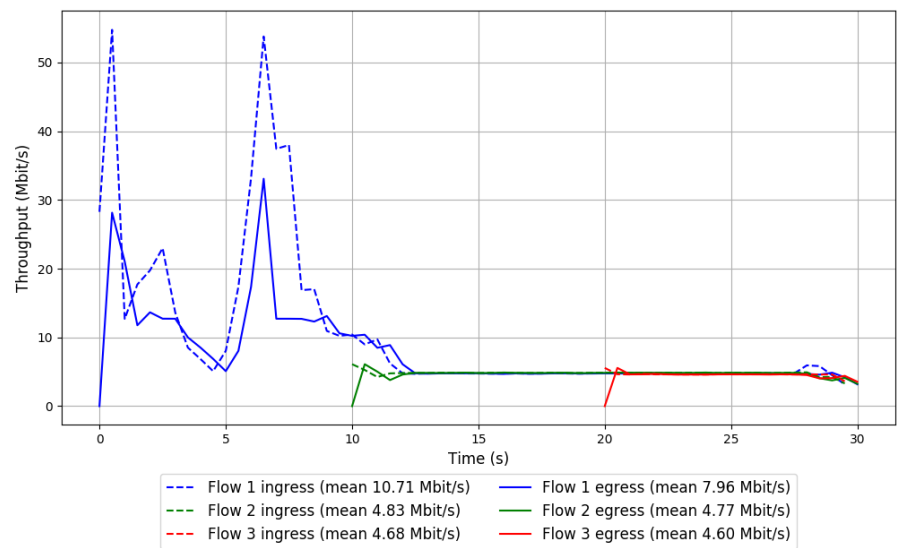


```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-29 23:57:54
End at: 2018-11-29 23:58:24
Local clock offset: 5.006 ms
Remote clock offset: 3.527 ms

# Below is generated by plot.py at 2018-11-30 02:38:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.66 Mbit/s
95th percentile per-packet one-way delay: 1.165 ms
Loss rate: 18.16%
-- Flow 1:
Average throughput: 7.96 Mbit/s
95th percentile per-packet one-way delay: 1.159 ms
Loss rate: 25.61%
-- Flow 2:
Average throughput: 4.77 Mbit/s
95th percentile per-packet one-way delay: 1.187 ms
Loss rate: 1.32%
-- Flow 3:
Average throughput: 4.60 Mbit/s
95th percentile per-packet one-way delay: 1.133 ms
Loss rate: 1.60%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-11-30 00:23:19

End at: 2018-11-30 00:23:49

Local clock offset: 5.602 ms

Remote clock offset: 3.325 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 12.43 Mbit/s

95th percentile per-packet one-way delay: 1.139 ms

Loss rate: 97.73%

-- Flow 1:

Average throughput: 6.39 Mbit/s

95th percentile per-packet one-way delay: 1.166 ms

Loss rate: 96.64%

-- Flow 2:

Average throughput: 7.07 Mbit/s

95th percentile per-packet one-way delay: 1.105 ms

Loss rate: 97.58%

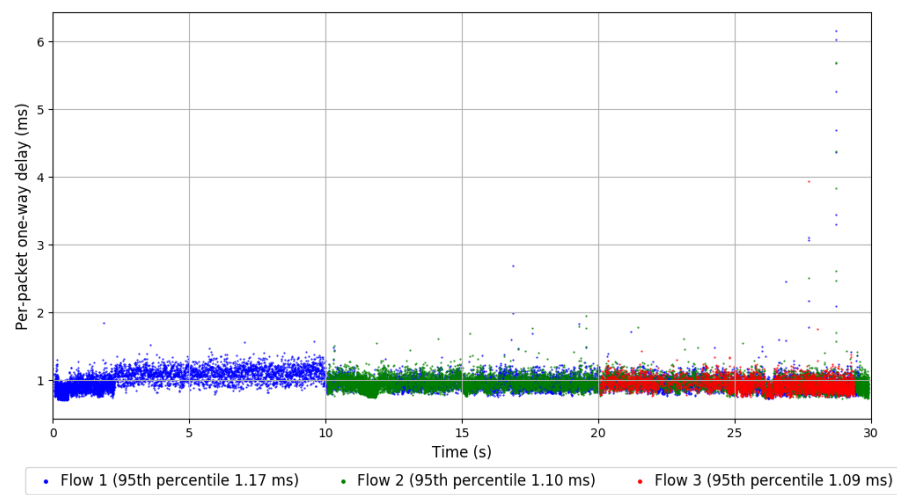
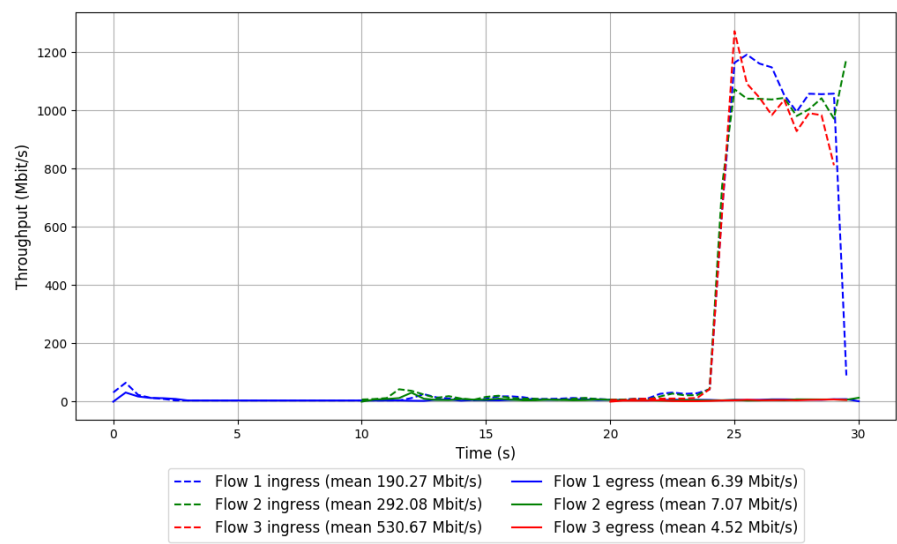
-- Flow 3:

Average throughput: 4.52 Mbit/s

95th percentile per-packet one-way delay: 1.095 ms

Loss rate: 99.15%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-11-30 00:49:00

End at: 2018-11-30 00:49:30

Local clock offset: 5.774 ms

Remote clock offset: 1.188 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 12.17 Mbit/s

95th percentile per-packet one-way delay: 1.242 ms

Loss rate: 98.16%

-- Flow 1:

Average throughput: 6.45 Mbit/s

95th percentile per-packet one-way delay: 1.239 ms

Loss rate: 97.14%

-- Flow 2:

Average throughput: 5.24 Mbit/s

95th percentile per-packet one-way delay: 1.265 ms

Loss rate: 98.40%

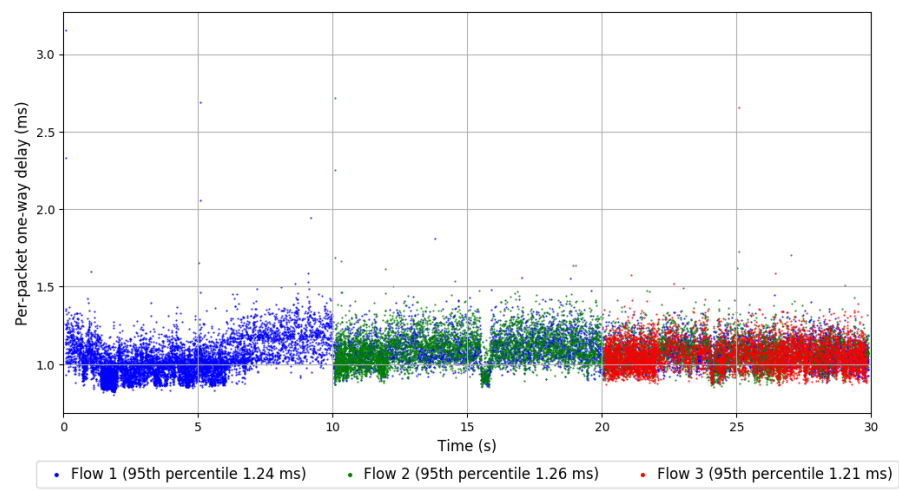
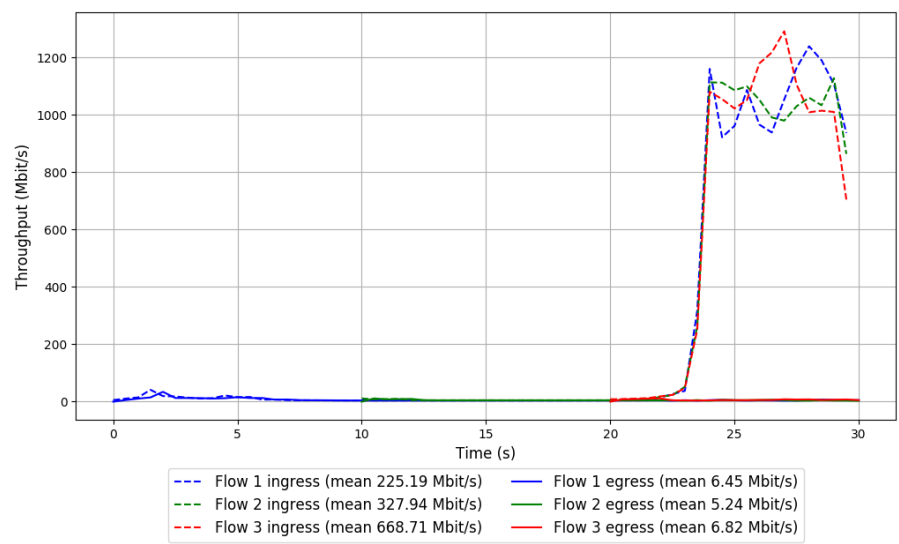
-- Flow 3:

Average throughput: 6.82 Mbit/s

95th percentile per-packet one-way delay: 1.209 ms

Loss rate: 98.98%

Run 3: Report of PCC-Expr — Data Link

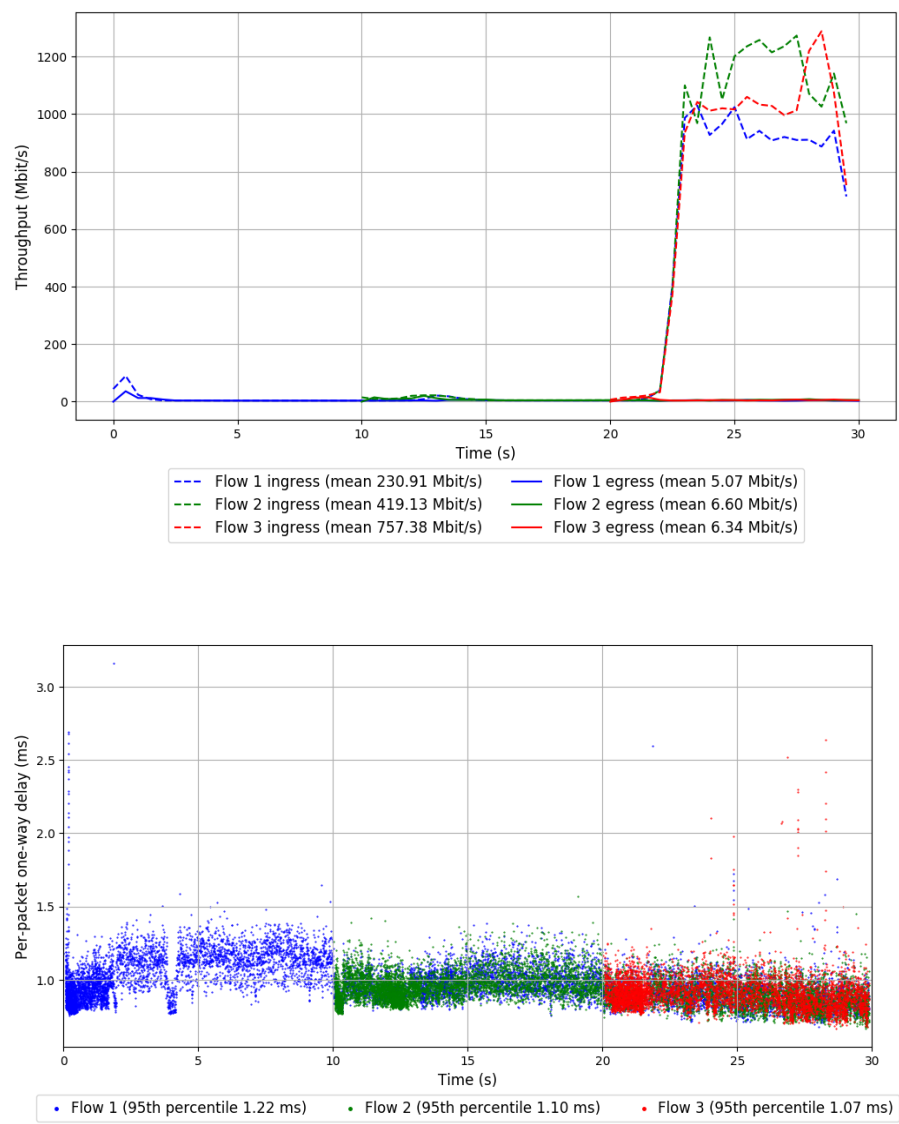


Run 4: Statistics of PCC-Expr

Start at: 2018-11-30 01:14:41
End at: 2018-11-30 01:15:11
Local clock offset: 5.495 ms
Remote clock offset: -0.908 ms

Below is generated by plot.py at 2018-11-30 02:38:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 11.55 Mbit/s
95th percentile per-packet one-way delay: 1.172 ms
Loss rate: 98.48%
-- Flow 1:
Average throughput: 5.07 Mbit/s
95th percentile per-packet one-way delay: 1.224 ms
Loss rate: 97.80%
-- Flow 2:
Average throughput: 6.60 Mbit/s
95th percentile per-packet one-way delay: 1.104 ms
Loss rate: 98.43%
-- Flow 3:
Average throughput: 6.34 Mbit/s
95th percentile per-packet one-way delay: 1.072 ms
Loss rate: 99.16%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-11-30 01:40:22

End at: 2018-11-30 01:40:52

Local clock offset: 5.619 ms

Remote clock offset: 3.27 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 11.66 Mbit/s

95th percentile per-packet one-way delay: 1.178 ms

Loss rate: 98.21%

-- Flow 1:

Average throughput: 6.56 Mbit/s

95th percentile per-packet one-way delay: 1.183 ms

Loss rate: 97.24%

-- Flow 2:

Average throughput: 5.00 Mbit/s

95th percentile per-packet one-way delay: 1.192 ms

Loss rate: 98.57%

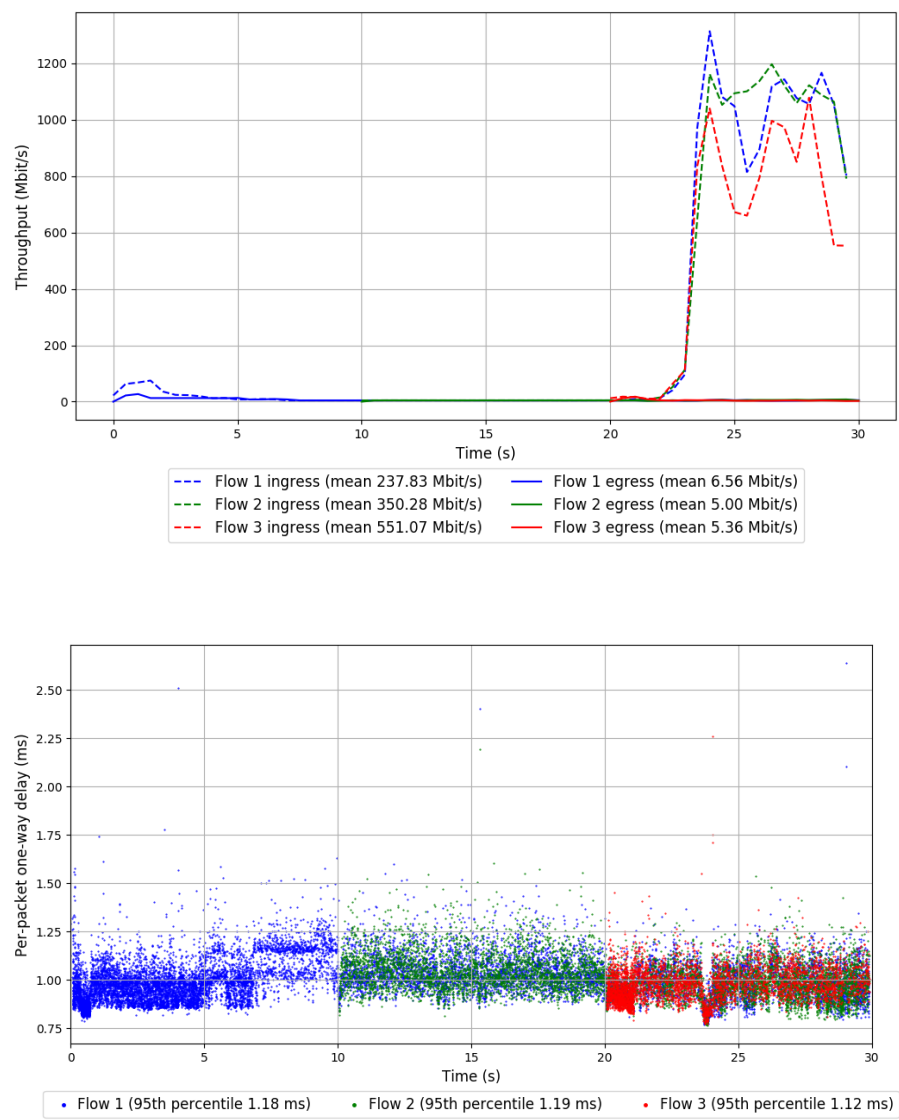
-- Flow 3:

Average throughput: 5.36 Mbit/s

95th percentile per-packet one-way delay: 1.119 ms

Loss rate: 99.03%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-11-29 23:56:36

End at: 2018-11-29 23:57:06

Local clock offset: 4.954 ms

Remote clock offset: 3.318 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 119.33 Mbit/s

95th percentile per-packet one-way delay: 2.148 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 61.14 Mbit/s

95th percentile per-packet one-way delay: 1.225 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 60.48 Mbit/s

95th percentile per-packet one-way delay: 0.943 ms

Loss rate: 0.00%

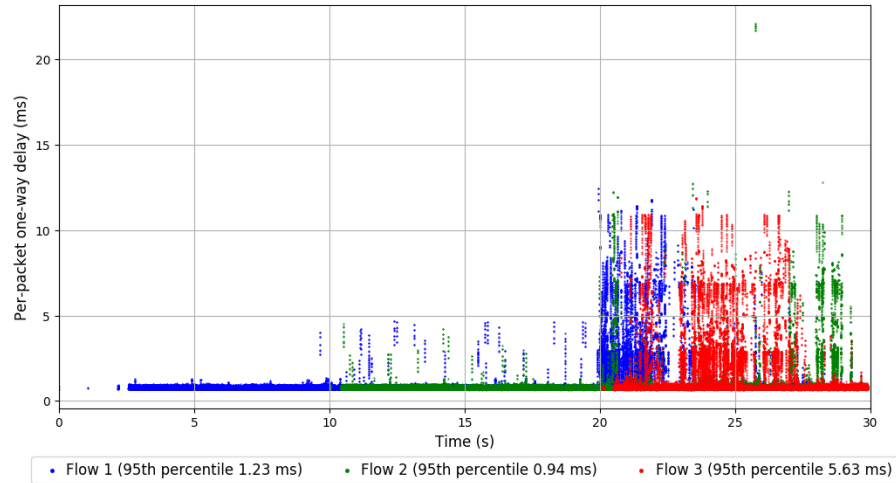
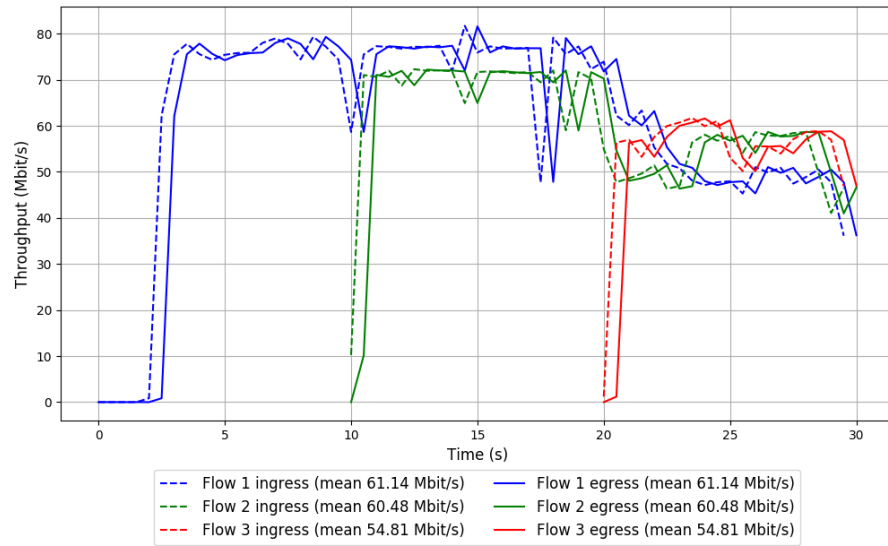
-- Flow 3:

Average throughput: 54.81 Mbit/s

95th percentile per-packet one-way delay: 5.627 ms

Loss rate: 0.01%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-11-30 00:22:01

End at: 2018-11-30 00:22:31

Local clock offset: 5.547 ms

Remote clock offset: 3.388 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 125.20 Mbit/s

95th percentile per-packet one-way delay: 3.054 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 64.88 Mbit/s

95th percentile per-packet one-way delay: 1.035 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 64.05 Mbit/s

95th percentile per-packet one-way delay: 4.445 ms

Loss rate: 0.00%

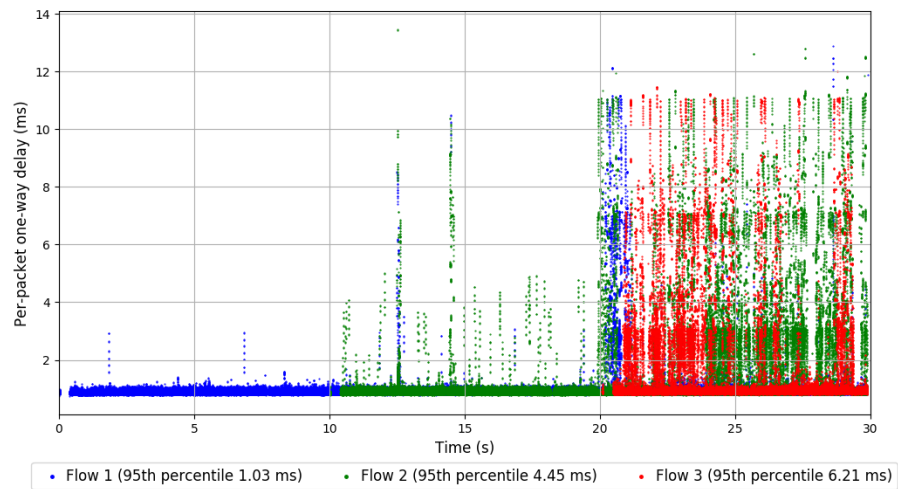
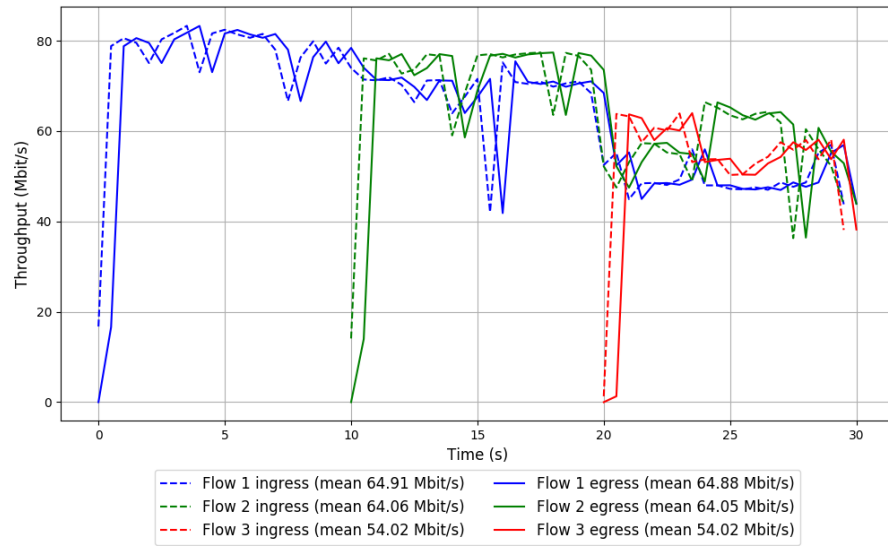
-- Flow 3:

Average throughput: 54.02 Mbit/s

95th percentile per-packet one-way delay: 6.215 ms

Loss rate: 0.00%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-11-30 00:47:42

End at: 2018-11-30 00:48:12

Local clock offset: 5.824 ms

Remote clock offset: 1.446 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 122.48 Mbit/s

95th percentile per-packet one-way delay: 2.011 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 64.02 Mbit/s

95th percentile per-packet one-way delay: 2.948 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 64.16 Mbit/s

95th percentile per-packet one-way delay: 1.089 ms

Loss rate: 0.00%

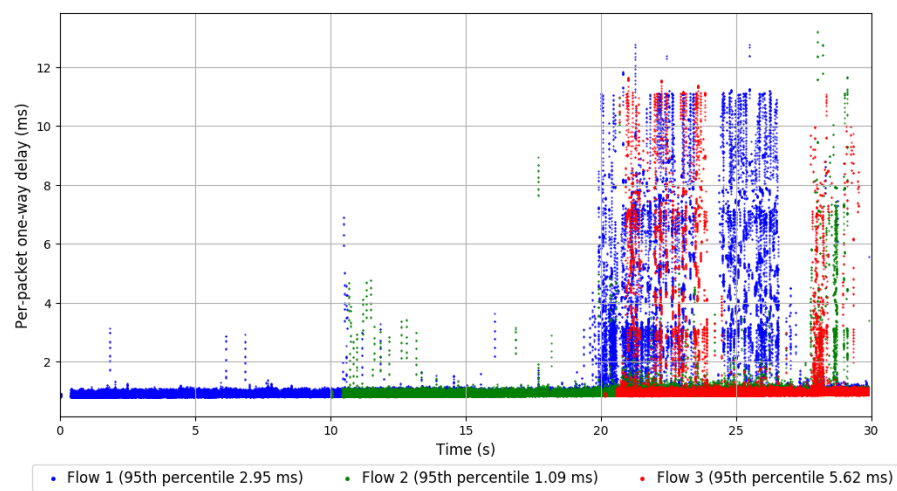
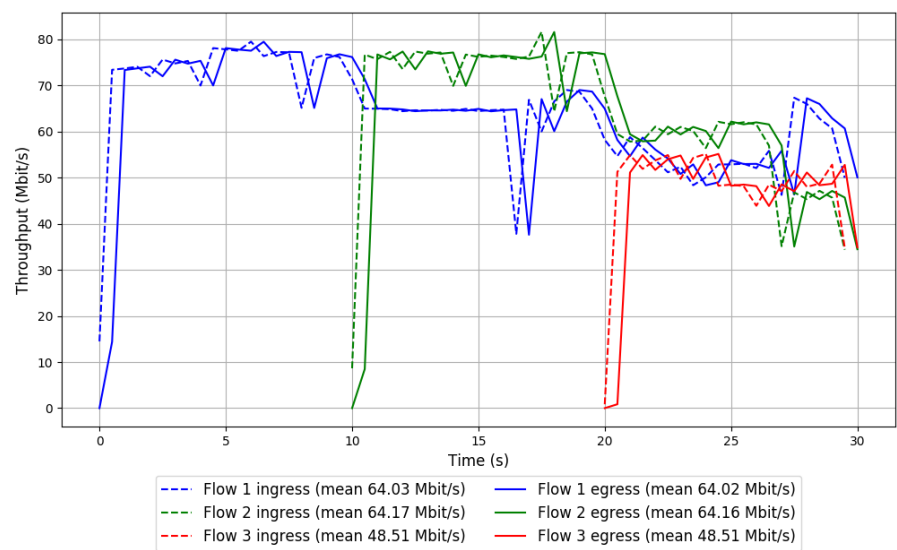
-- Flow 3:

Average throughput: 48.51 Mbit/s

95th percentile per-packet one-way delay: 5.618 ms

Loss rate: 0.00%

Run 3: Report of QUIC Cubic — Data Link

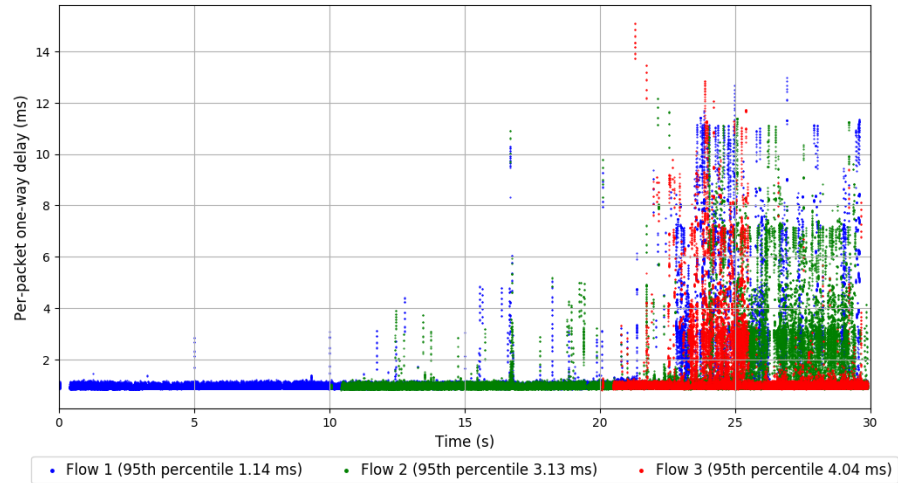
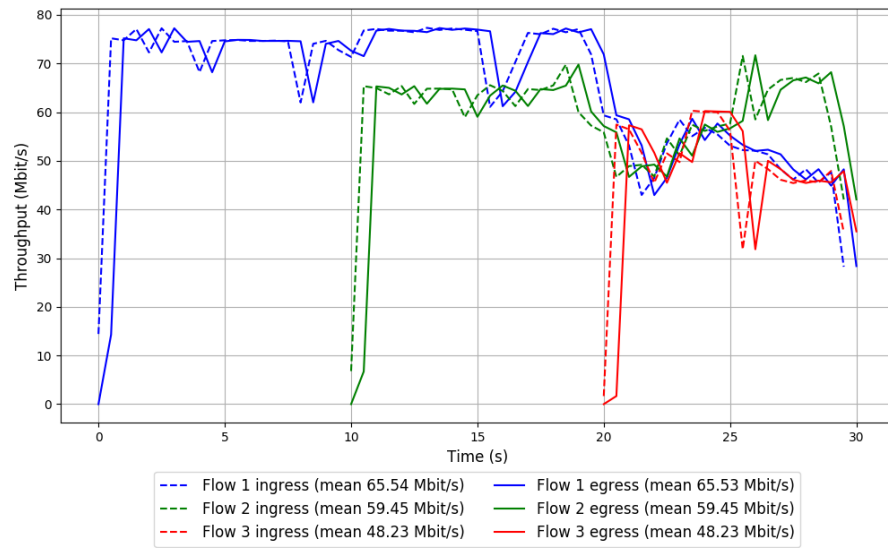


Run 4: Statistics of QUIC Cubic

Start at: 2018-11-30 01:13:23
End at: 2018-11-30 01:13:53
Local clock offset: 5.485 ms
Remote clock offset: -0.794 ms

Below is generated by plot.py at 2018-11-30 02:38:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 120.86 Mbit/s
95th percentile per-packet one-way delay: 2.808 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 65.53 Mbit/s
95th percentile per-packet one-way delay: 1.142 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 59.45 Mbit/s
95th percentile per-packet one-way delay: 3.131 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 48.23 Mbit/s
95th percentile per-packet one-way delay: 4.040 ms
Loss rate: 0.00%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-11-30 01:39:03

End at: 2018-11-30 01:39:33

Local clock offset: 5.621 ms

Remote clock offset: 3.094 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 123.67 Mbit/s

95th percentile per-packet one-way delay: 2.670 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 68.22 Mbit/s

95th percentile per-packet one-way delay: 0.968 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 58.98 Mbit/s

95th percentile per-packet one-way delay: 2.939 ms

Loss rate: 0.00%

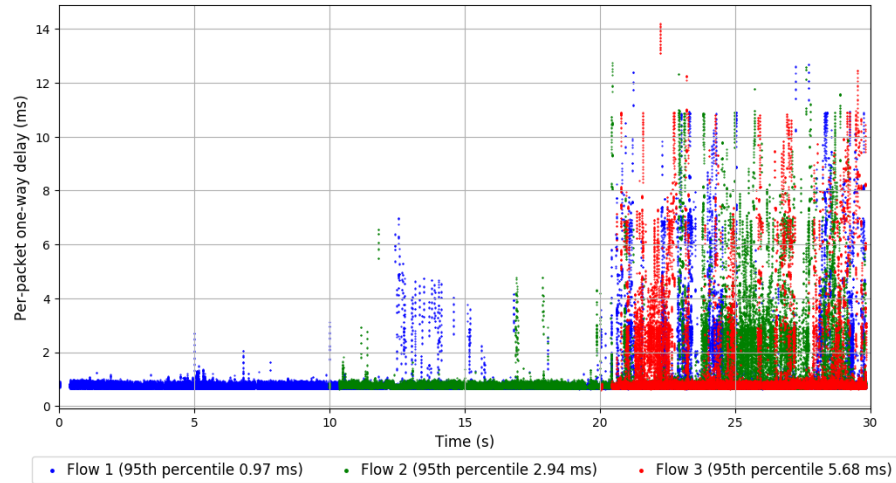
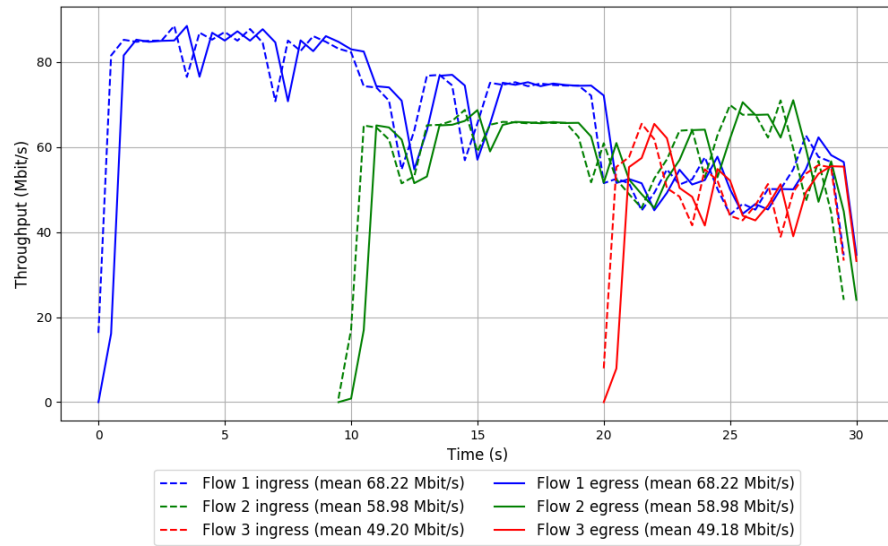
-- Flow 3:

Average throughput: 49.18 Mbit/s

95th percentile per-packet one-way delay: 5.681 ms

Loss rate: 0.04%

Run 5: Report of QUIC Cubic — Data Link

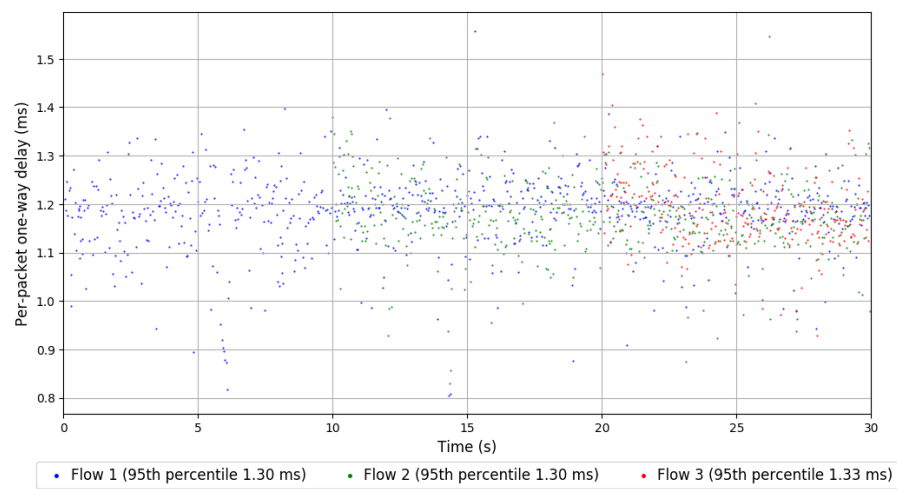
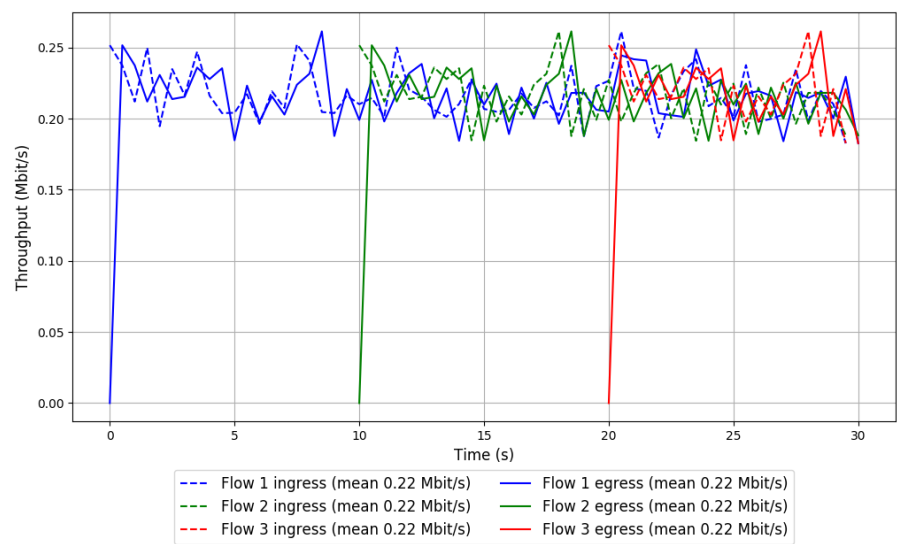


```
Run 1: Statistics of SReAM

Start at: 2018-11-29 23:49:10
End at: 2018-11-29 23:49:40
Local clock offset: 4.622 ms
Remote clock offset: 2.801 ms

# Below is generated by plot.py at 2018-11-30 02:38:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.305 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.303 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.302 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.326 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SReAM

Start at: 2018-11-30 00:14:42

End at: 2018-11-30 00:15:12

Local clock offset: 5.298 ms

Remote clock offset: 3.461 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 1.335 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.332 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.339 ms

Loss rate: 0.00%

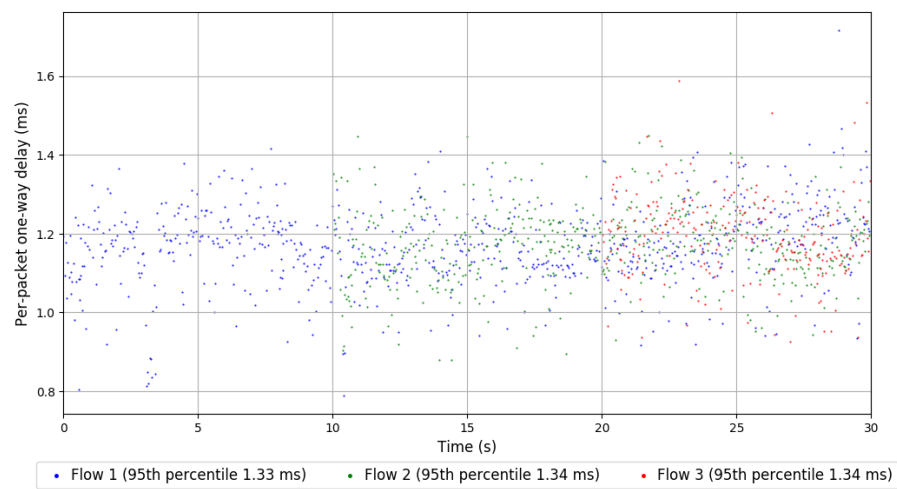
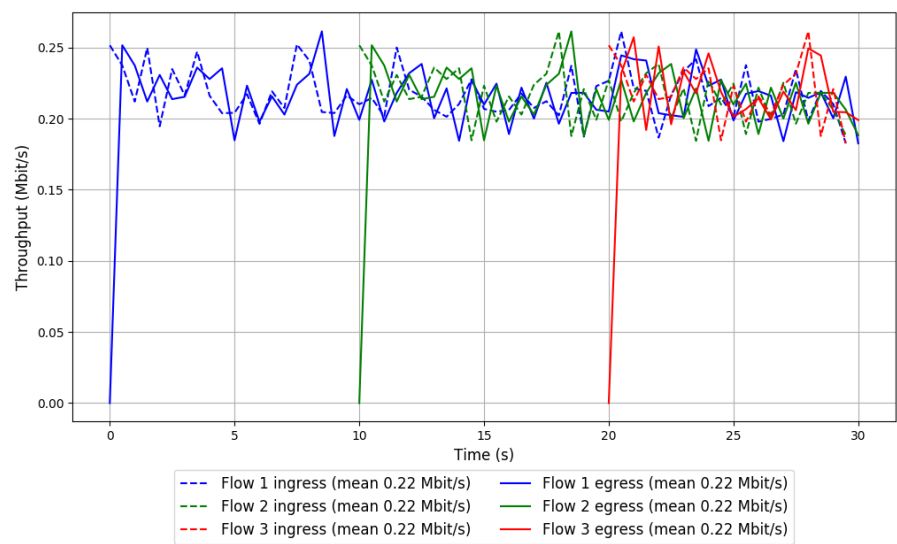
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.343 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SReAM

Start at: 2018-11-30 00:40:26

End at: 2018-11-30 00:40:56

Local clock offset: 5.928 ms

Remote clock offset: 3.675 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 1.343 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.355 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.315 ms

Loss rate: 0.00%

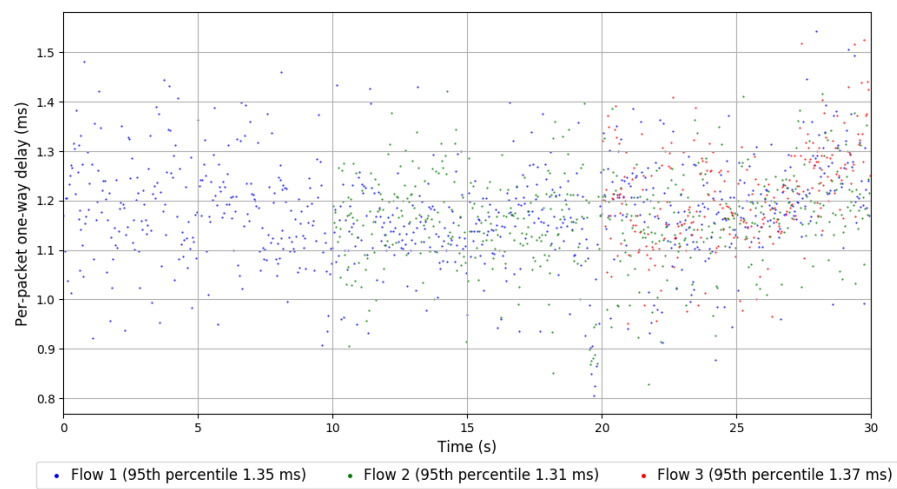
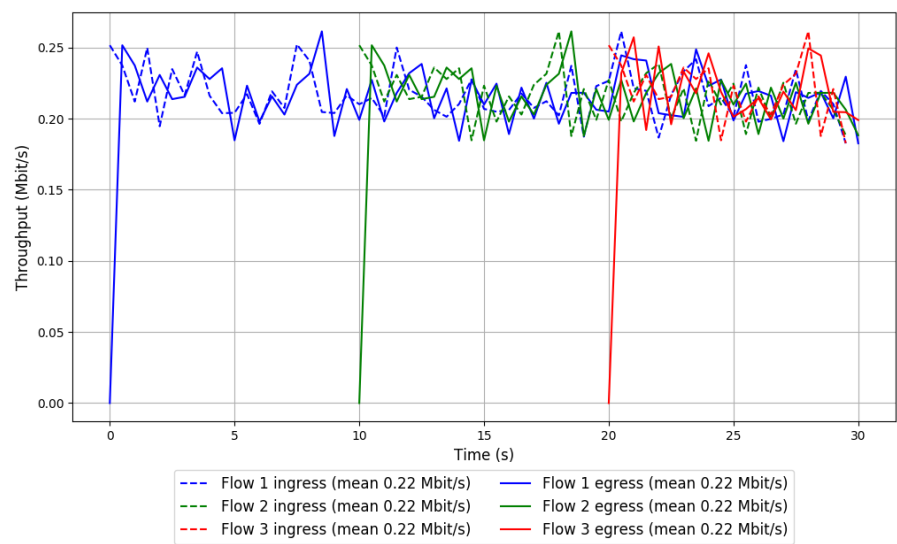
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.372 ms

Loss rate: 0.00%

Run 3: Report of SReAM — Data Link

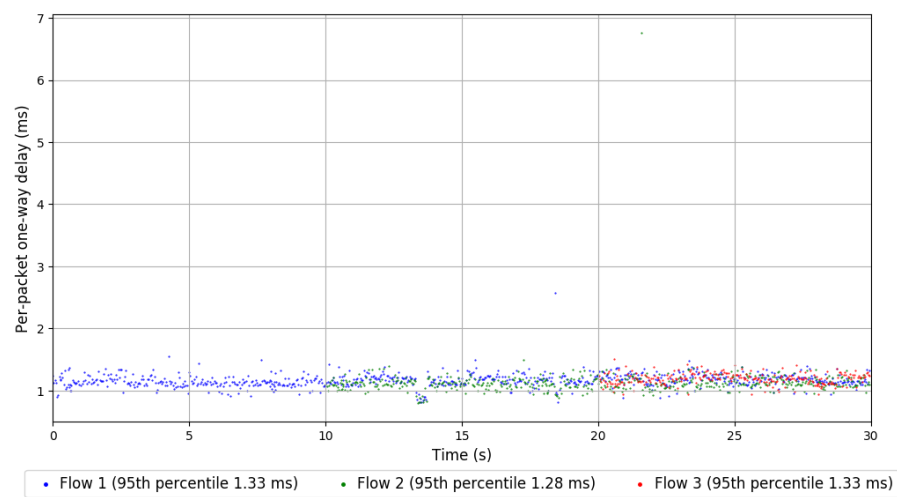
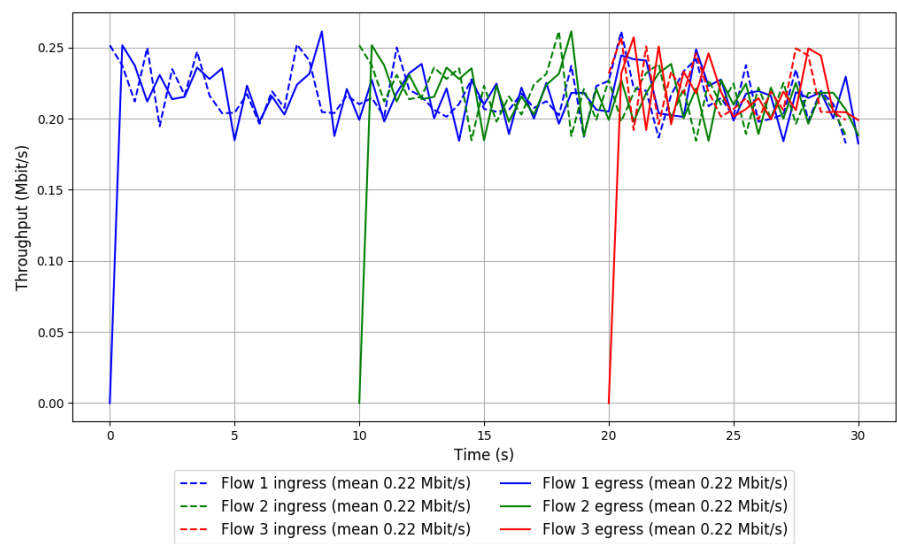


Run 4: Statistics of SReAM

Start at: 2018-11-30 01:06:02
End at: 2018-11-30 01:06:32
Local clock offset: 5.482 ms
Remote clock offset: -0.559 ms

Below is generated by plot.py at 2018-11-30 02:38:49
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 1.324 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.328 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.285 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1.334 ms
Loss rate: 0.00%

Run 4: Report of SCRaM — Data Link



Run 5: Statistics of SReAM

Start at: 2018-11-30 01:31:36

End at: 2018-11-30 01:32:06

Local clock offset: 5.575 ms

Remote clock offset: 2.642 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 1.243 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.233 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.287 ms

Loss rate: 0.00%

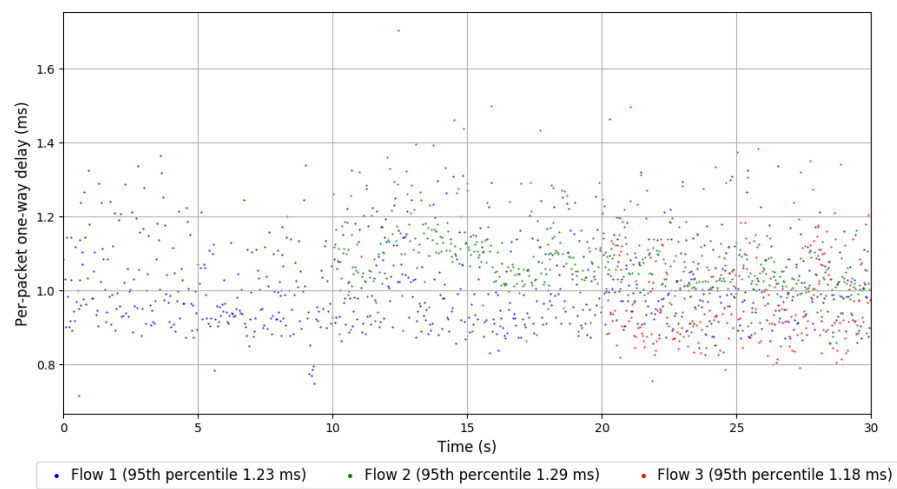
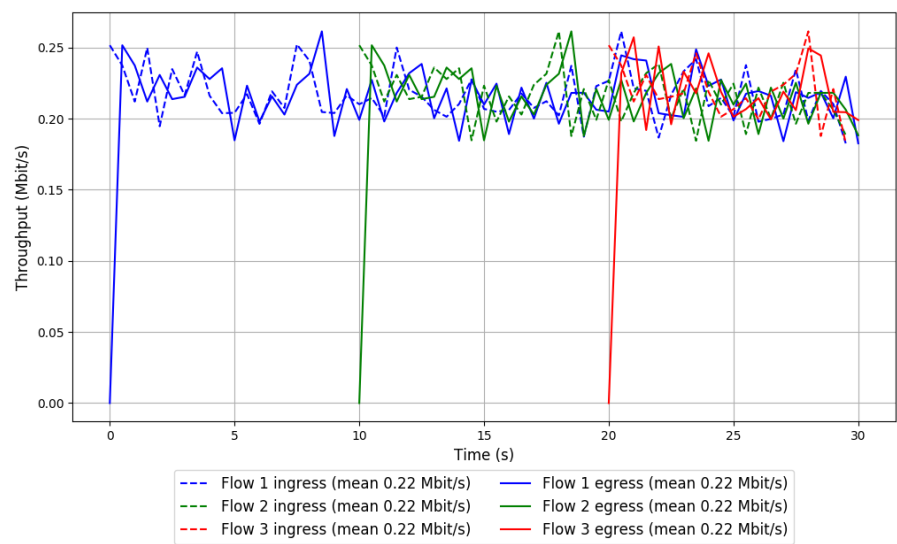
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 1.182 ms

Loss rate: 0.00%

Run 5: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-11-30 00:01:54

End at: 2018-11-30 00:02:24

Local clock offset: 5.111 ms

Remote clock offset: 3.709 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 99.68 Mbit/s

95th percentile per-packet one-way delay: 4.188 ms

Loss rate: 0.05%

-- Flow 1:

Average throughput: 50.03 Mbit/s

95th percentile per-packet one-way delay: 4.114 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 49.97 Mbit/s

95th percentile per-packet one-way delay: 4.297 ms

Loss rate: 0.08%

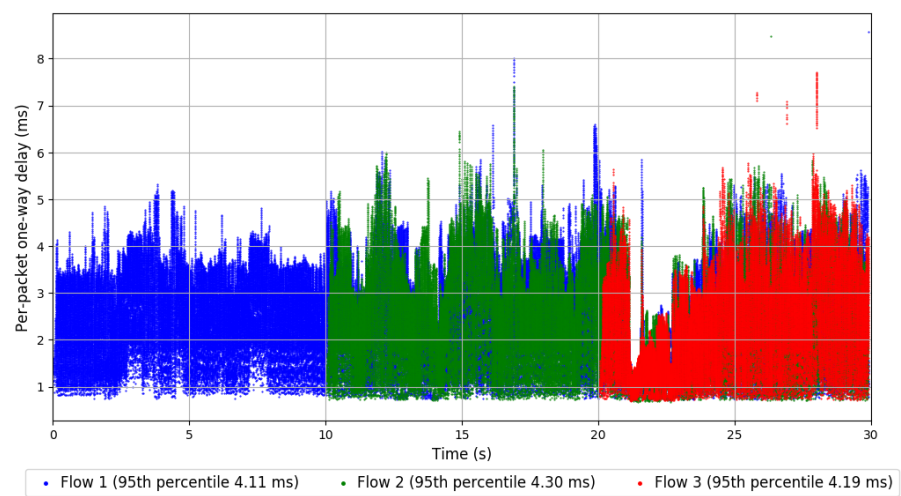
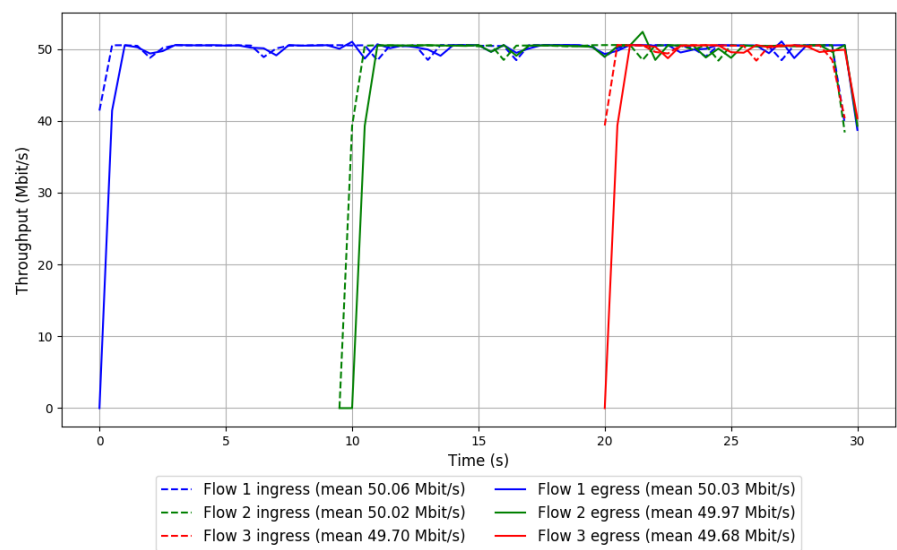
-- Flow 3:

Average throughput: 49.68 Mbit/s

95th percentile per-packet one-way delay: 4.186 ms

Loss rate: 0.02%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-11-30 00:27:25

End at: 2018-11-30 00:27:55

Local clock offset: 5.722 ms

Remote clock offset: 3.352 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 99.60 Mbit/s

95th percentile per-packet one-way delay: 4.557 ms

Loss rate: 0.05%

-- Flow 1:

Average throughput: 49.99 Mbit/s

95th percentile per-packet one-way delay: 4.548 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 49.92 Mbit/s

95th percentile per-packet one-way delay: 4.626 ms

Loss rate: 0.05%

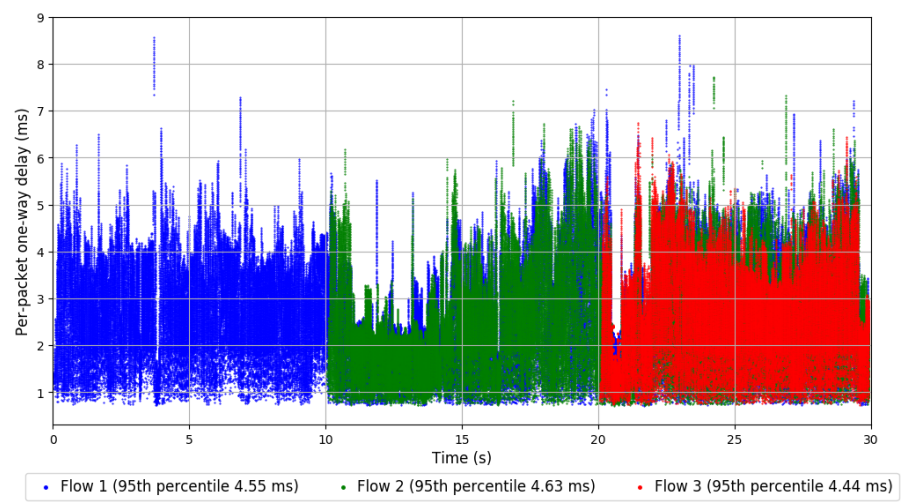
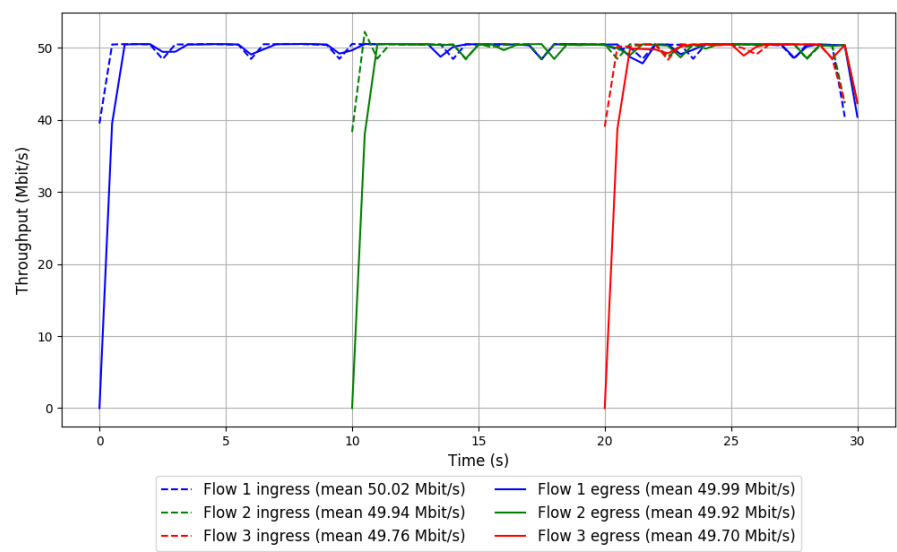
-- Flow 3:

Average throughput: 49.70 Mbit/s

95th percentile per-packet one-way delay: 4.439 ms

Loss rate: 0.10%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-11-30 00:53:06

End at: 2018-11-30 00:53:36

Local clock offset: 5.63 ms

Remote clock offset: 0.473 ms

Below is generated by plot.py at 2018-11-30 02:38:49

Datalink statistics

-- Total of 3 flows:

Average throughput: 98.94 Mbit/s

95th percentile per-packet one-way delay: 5.044 ms

Loss rate: 0.33%

-- Flow 1:

Average throughput: 49.75 Mbit/s

95th percentile per-packet one-way delay: 4.941 ms

Loss rate: 0.26%

-- Flow 2:

Average throughput: 49.62 Mbit/s

95th percentile per-packet one-way delay: 5.088 ms

Loss rate: 0.23%

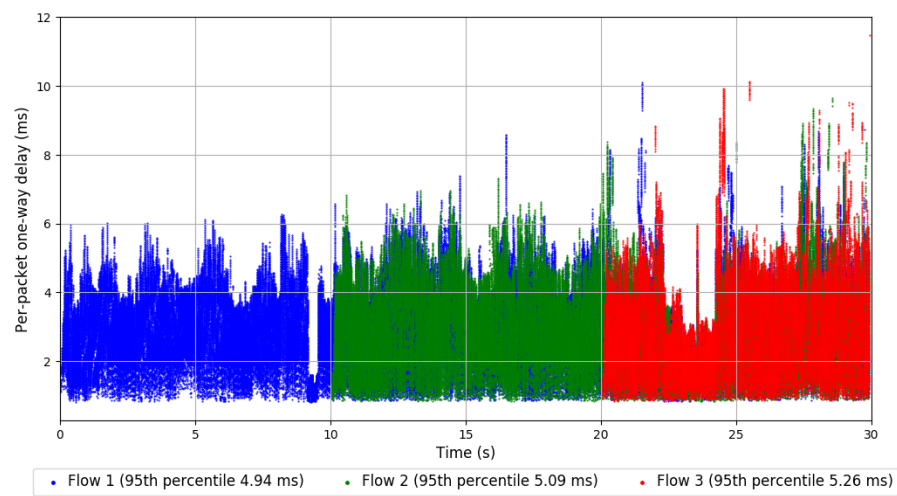
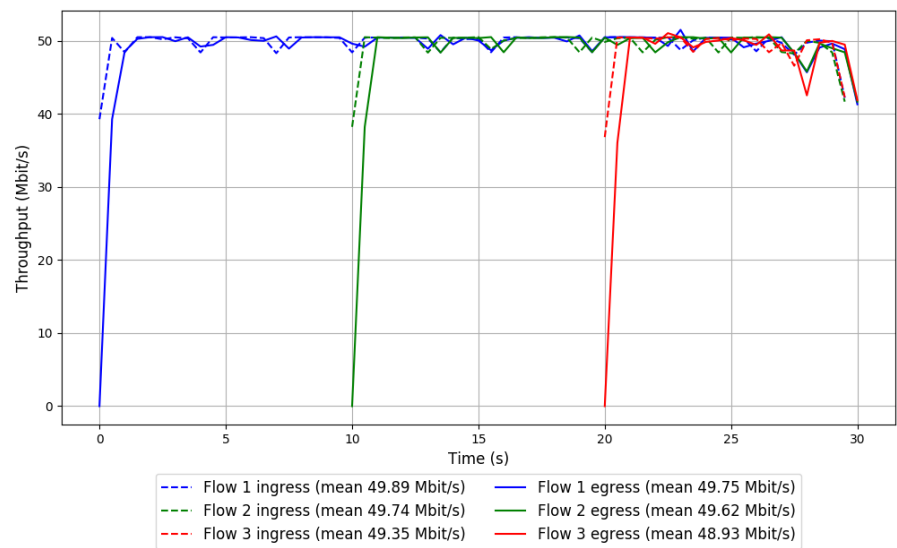
-- Flow 3:

Average throughput: 48.93 Mbit/s

95th percentile per-packet one-way delay: 5.257 ms

Loss rate: 0.75%

Run 3: Report of Sprout — Data Link

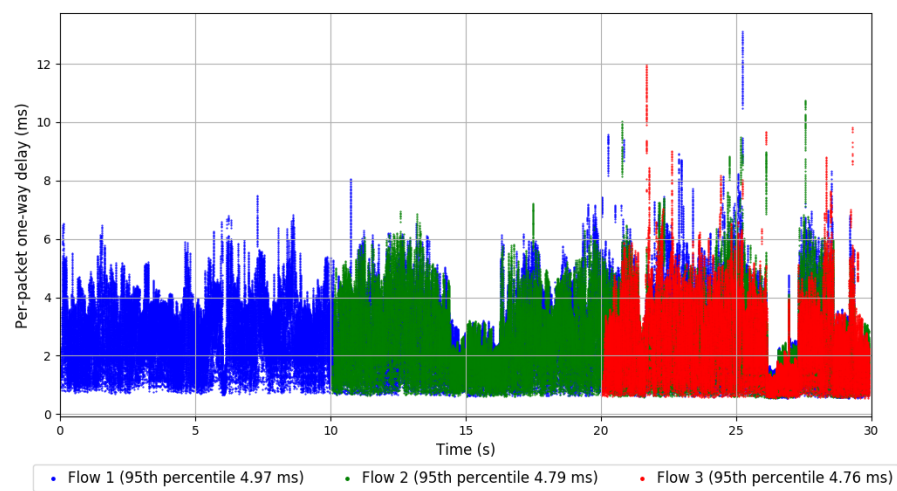
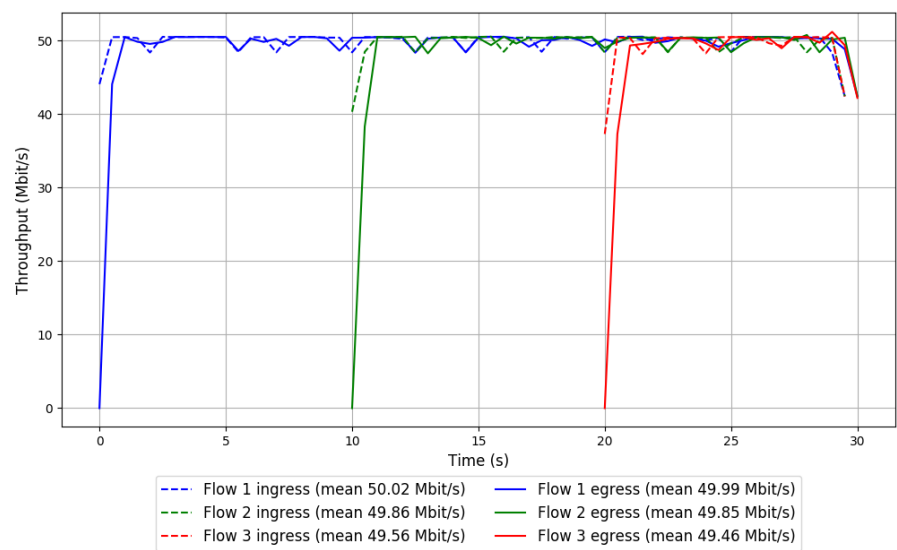


Run 4: Statistics of Sprout

Start at: 2018-11-30 01:18:49
End at: 2018-11-30 01:19:19
Local clock offset: 5.532 ms
Remote clock offset: 0.435 ms

```
# Below is generated by plot.py at 2018-11-30 02:38:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 99.49 Mbit/s
95th percentile per-packet one-way delay: 4.880 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 49.99 Mbit/s
95th percentile per-packet one-way delay: 4.969 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 49.85 Mbit/s
95th percentile per-packet one-way delay: 4.793 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 49.46 Mbit/s
95th percentile per-packet one-way delay: 4.764 ms
Loss rate: 0.18%
```

Run 4: Report of Sprout — Data Link



Run 5: Statistics of Sprout

Start at: 2018-11-30 01:44:28

End at: 2018-11-30 01:44:58

Local clock offset: 5.642 ms

Remote clock offset: 3.326 ms

Below is generated by plot.py at 2018-11-30 02:38:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 99.04 Mbit/s

95th percentile per-packet one-way delay: 5.649 ms

Loss rate: 0.24%

-- Flow 1:

Average throughput: 49.75 Mbit/s

95th percentile per-packet one-way delay: 5.404 ms

Loss rate: 0.20%

-- Flow 2:

Average throughput: 49.65 Mbit/s

95th percentile per-packet one-way delay: 5.891 ms

Loss rate: 0.20%

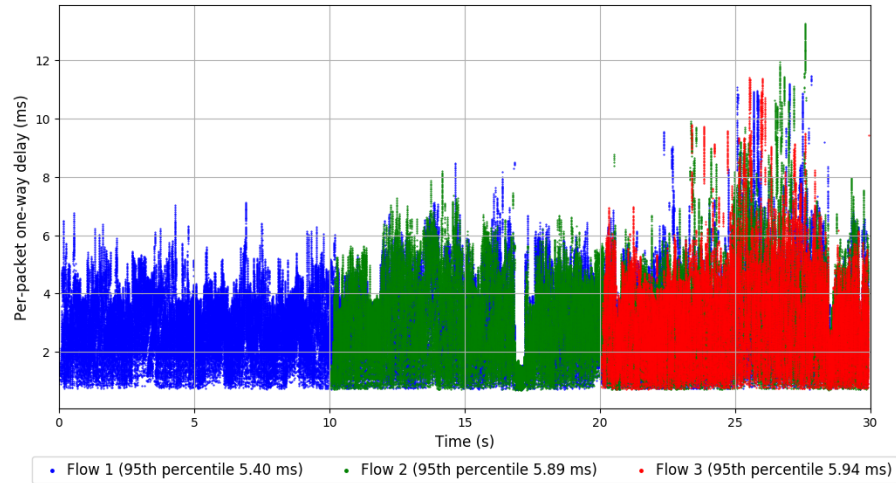
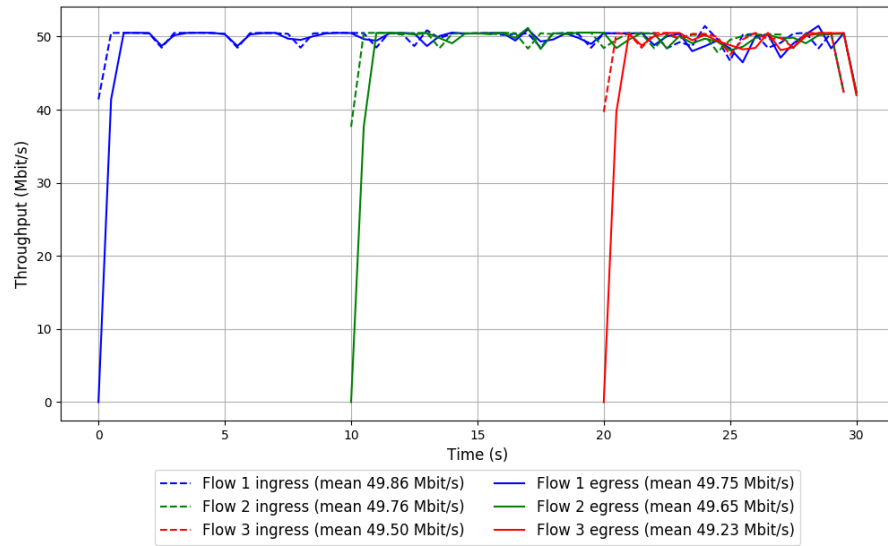
-- Flow 3:

Average throughput: 49.23 Mbit/s

95th percentile per-packet one-way delay: 5.939 ms

Loss rate: 0.45%

Run 5: Report of Sprout — Data Link

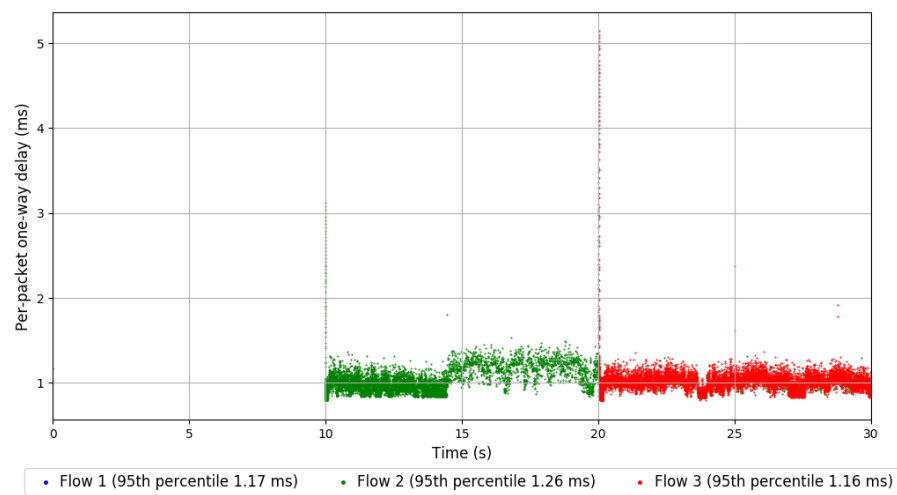
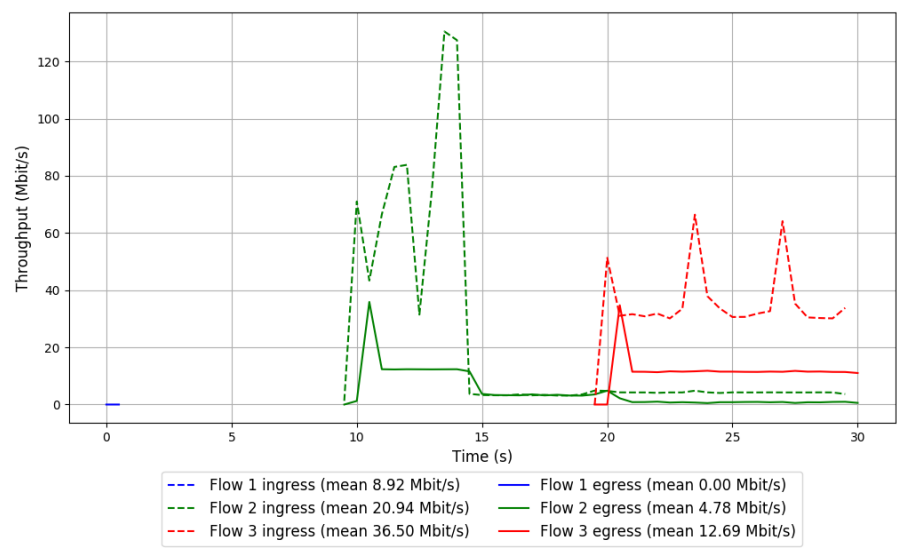


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-11-29 23:55:22
End at: 2018-11-29 23:55:52
Local clock offset: 4.913 ms
Remote clock offset: 3.341 ms

# Below is generated by plot.py at 2018-11-30 02:38:55
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.40 Mbit/s
95th percentile per-packet one-way delay: 1.216 ms
Loss rate: 71.65%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1.168 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 4.78 Mbit/s
95th percentile per-packet one-way delay: 1.262 ms
Loss rate: 77.22%
-- Flow 3:
Average throughput: 12.69 Mbit/s
95th percentile per-packet one-way delay: 1.161 ms
Loss rate: 65.24%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-11-30 00:20:47

End at: 2018-11-30 00:21:17

Local clock offset: 5.518 ms

Remote clock offset: 3.342 ms

Below is generated by plot.py at 2018-11-30 02:38:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 6.24 Mbit/s

95th percentile per-packet one-way delay: 1.254 ms

Loss rate: 63.64%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1.200 ms

Loss rate: 95.92%

-- Flow 2:

Average throughput: 3.00 Mbit/s

95th percentile per-packet one-way delay: 1.318 ms

Loss rate: 37.05%

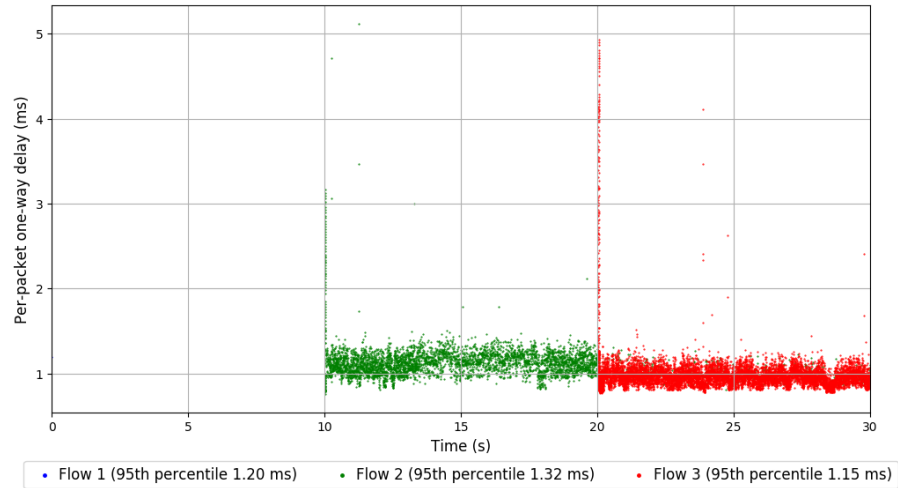
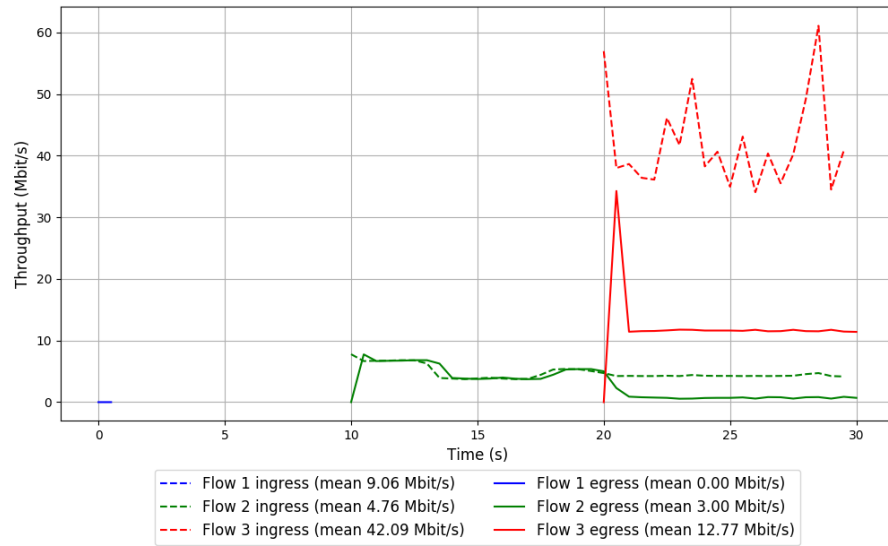
-- Flow 3:

Average throughput: 12.77 Mbit/s

95th percentile per-packet one-way delay: 1.147 ms

Loss rate: 69.67%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-11-30 00:46:27

End at: 2018-11-30 00:46:58

Local clock offset: 5.892 ms

Remote clock offset: 1.642 ms

Below is generated by plot.py at 2018-11-30 02:38:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.04 Mbit/s

95th percentile per-packet one-way delay: 1.136 ms

Loss rate: 69.54%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1.036 ms

Loss rate: 95.92%

-- Flow 2:

Average throughput: 5.76 Mbit/s

95th percentile per-packet one-way delay: 1.147 ms

Loss rate: 70.80%

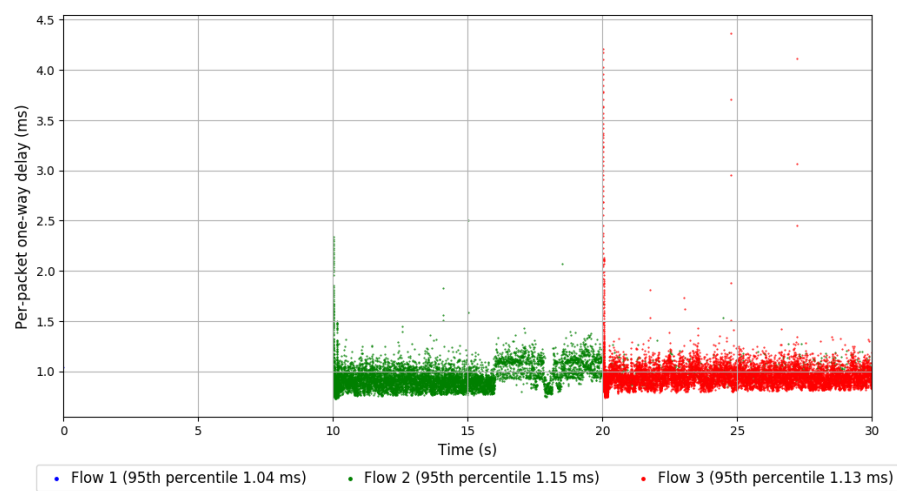
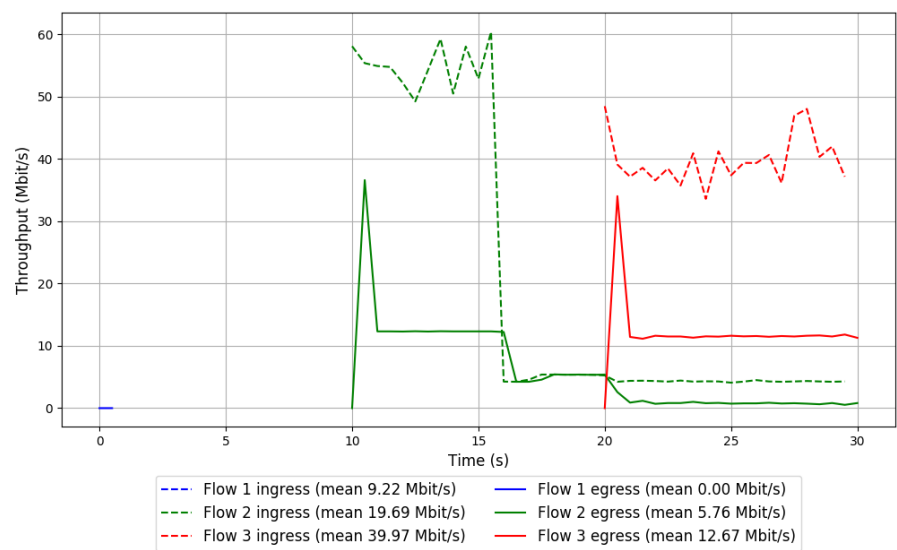
-- Flow 3:

Average throughput: 12.67 Mbit/s

95th percentile per-packet one-way delay: 1.126 ms

Loss rate: 68.30%

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

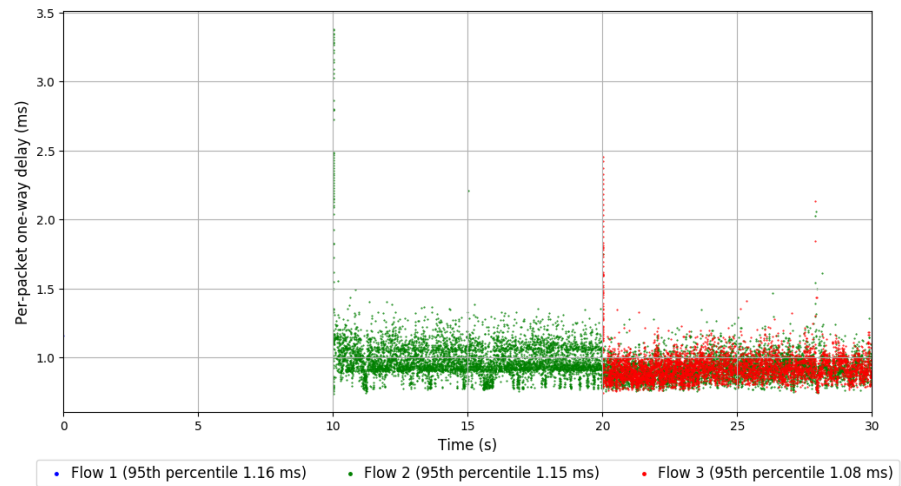
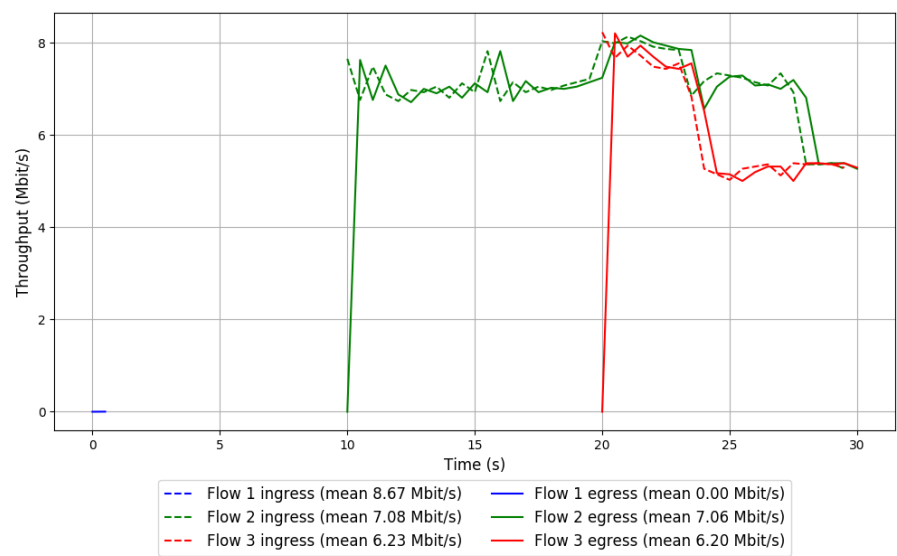


Run 4: Statistics of TaoVA-100x

Start at: 2018-11-30 01:12:09
End at: 2018-11-30 01:12:39
Local clock offset: 5.487 ms
Remote clock offset: -0.864 ms

Below is generated by plot.py at 2018-11-30 02:38:55
Datalink statistics
-- Total of 3 flows:
Average throughput: 6.76 Mbit/s
95th percentile per-packet one-way delay: 1.136 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 1.160 ms
Loss rate: 95.92%
-- Flow 2:
Average throughput: 7.06 Mbit/s
95th percentile per-packet one-way delay: 1.146 ms
Loss rate: 0.36%
-- Flow 3:
Average throughput: 6.20 Mbit/s
95th percentile per-packet one-way delay: 1.076 ms
Loss rate: 0.54%

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



Run 5: Statistics of TaoVA-100x

Start at: 2018-11-30 01:37:49

End at: 2018-11-30 01:38:19

Local clock offset: 5.601 ms

Remote clock offset: 3.115 ms

Below is generated by plot.py at 2018-11-30 02:38:55

Datalink statistics

-- Total of 3 flows:

Average throughput: 6.18 Mbit/s

95th percentile per-packet one-way delay: 1.212 ms

Loss rate: 61.04%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 1.195 ms

Loss rate: 95.92%

-- Flow 2:

Average throughput: 3.76 Mbit/s

95th percentile per-packet one-way delay: 1.261 ms

Loss rate: 26.52%

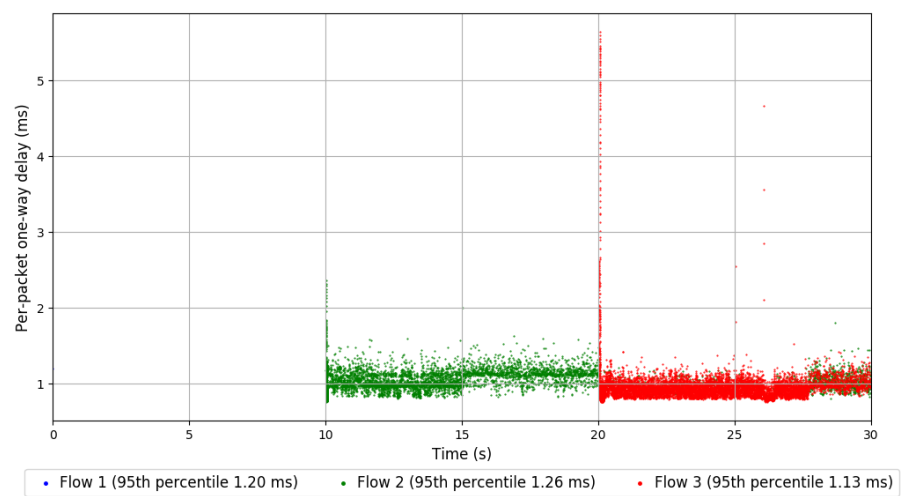
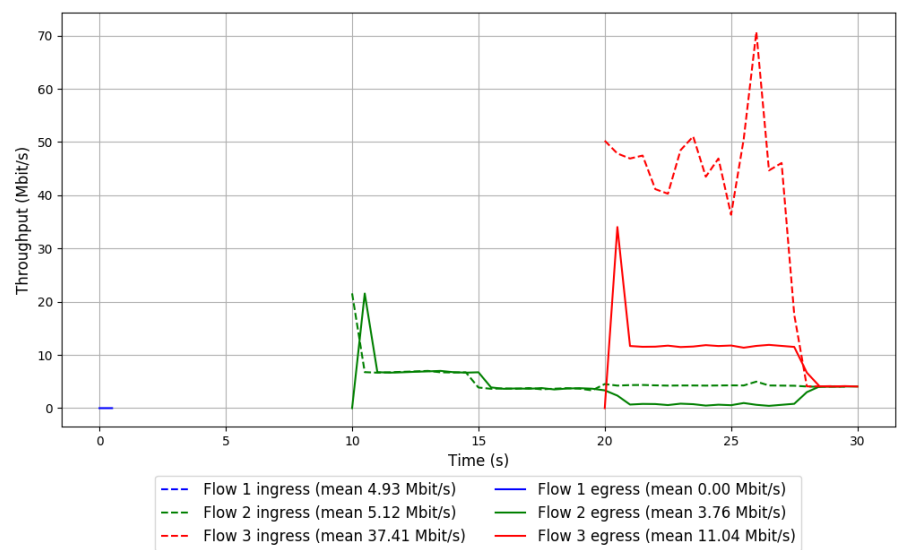
-- Flow 3:

Average throughput: 11.04 Mbit/s

95th percentile per-packet one-way delay: 1.133 ms

Loss rate: 70.50%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-11-29 23:51:59

End at: 2018-11-29 23:52:29

Local clock offset: 4.787 ms

Remote clock offset: 2.992 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 546.34 Mbit/s

95th percentile per-packet one-way delay: 1.166 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 289.41 Mbit/s

95th percentile per-packet one-way delay: 1.169 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 262.73 Mbit/s

95th percentile per-packet one-way delay: 1.163 ms

Loss rate: 0.00%

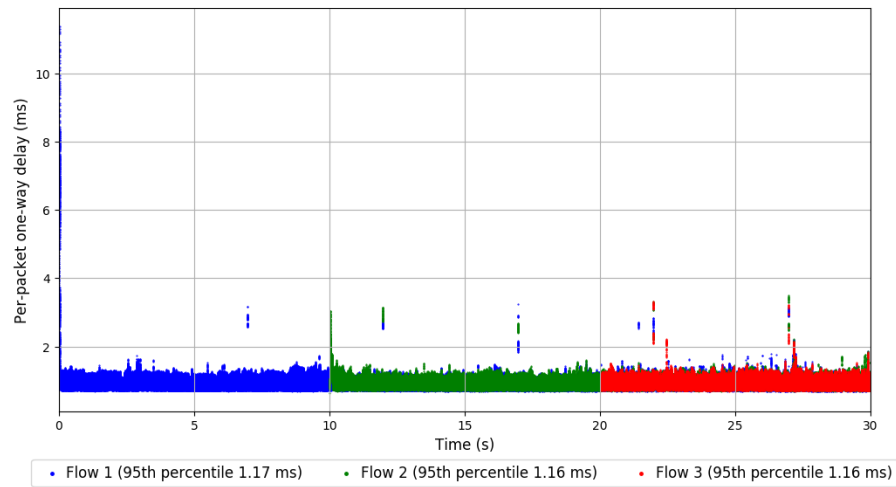
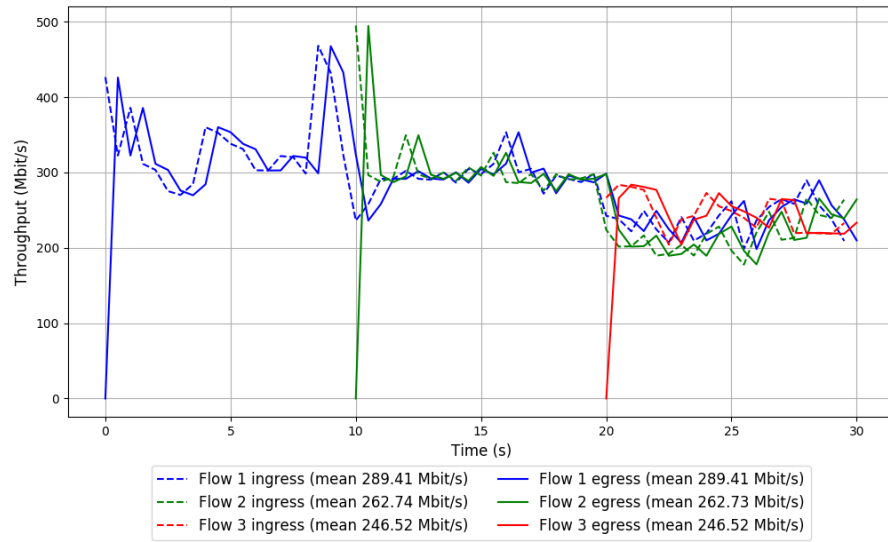
-- Flow 3:

Average throughput: 246.52 Mbit/s

95th percentile per-packet one-way delay: 1.160 ms

Loss rate: 0.00%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-11-30 00:17:33

End at: 2018-11-30 00:18:03

Local clock offset: 5.395 ms

Remote clock offset: 3.341 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 336.82 Mbit/s

95th percentile per-packet one-way delay: 1.240 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 134.83 Mbit/s

95th percentile per-packet one-way delay: 1.231 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 122.18 Mbit/s

95th percentile per-packet one-way delay: 1.177 ms

Loss rate: 0.00%

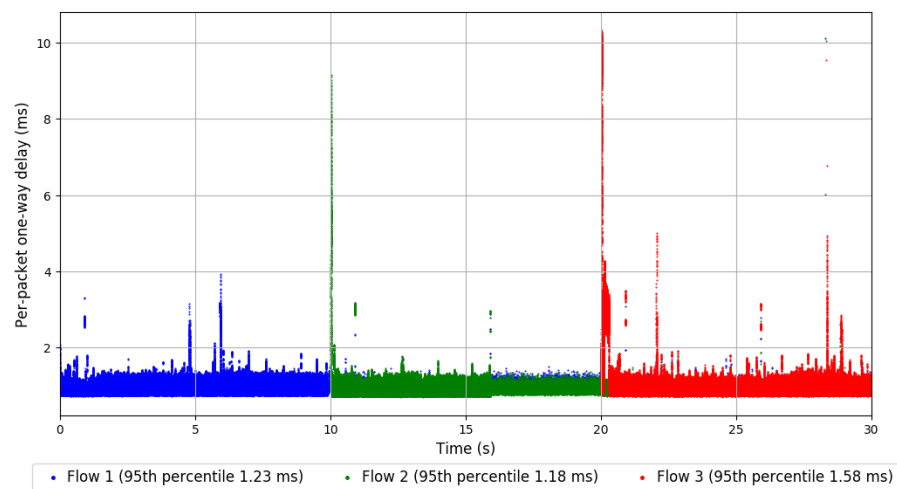
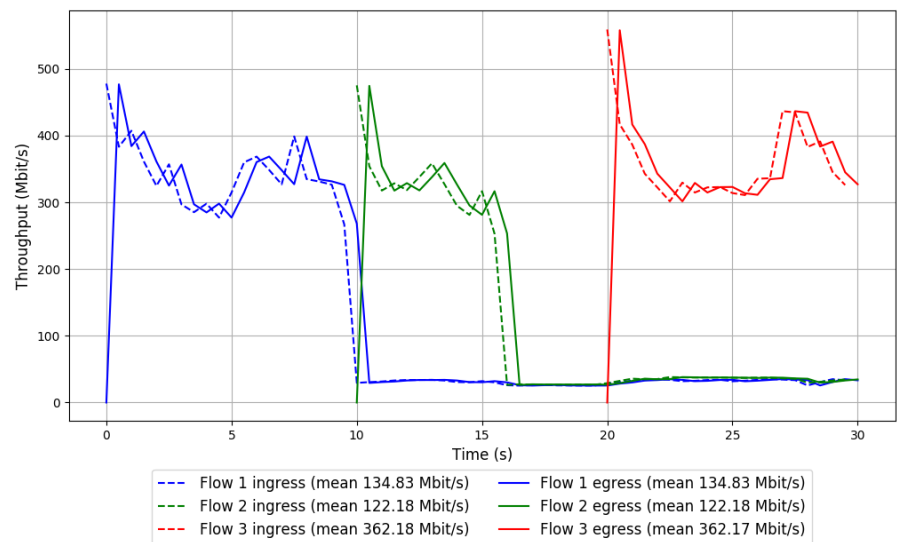
-- Flow 3:

Average throughput: 362.17 Mbit/s

95th percentile per-packet one-way delay: 1.581 ms

Loss rate: 0.00%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-11-30 00:43:16

End at: 2018-11-30 00:43:46

Local clock offset: 5.965 ms

Remote clock offset: 2.685 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 240.28 Mbit/s

95th percentile per-packet one-way delay: 1.338 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 72.19 Mbit/s

95th percentile per-packet one-way delay: 1.292 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 95.56 Mbit/s

95th percentile per-packet one-way delay: 1.303 ms

Loss rate: 0.00%

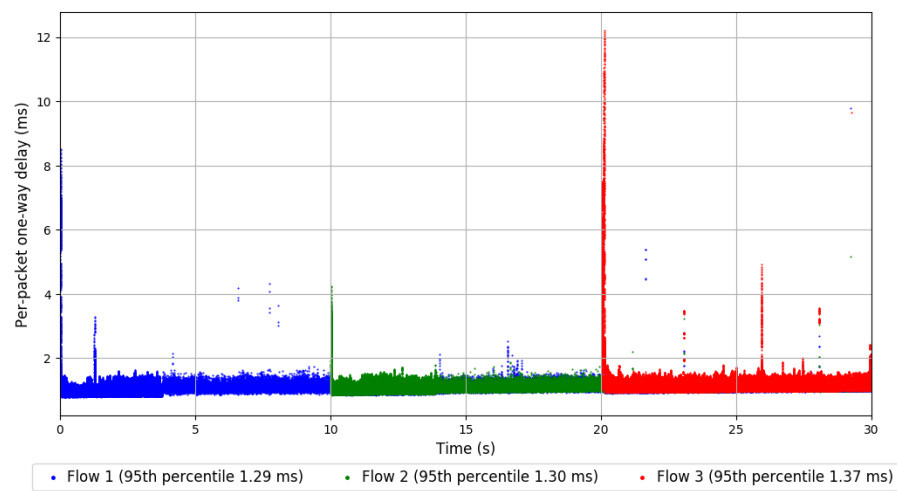
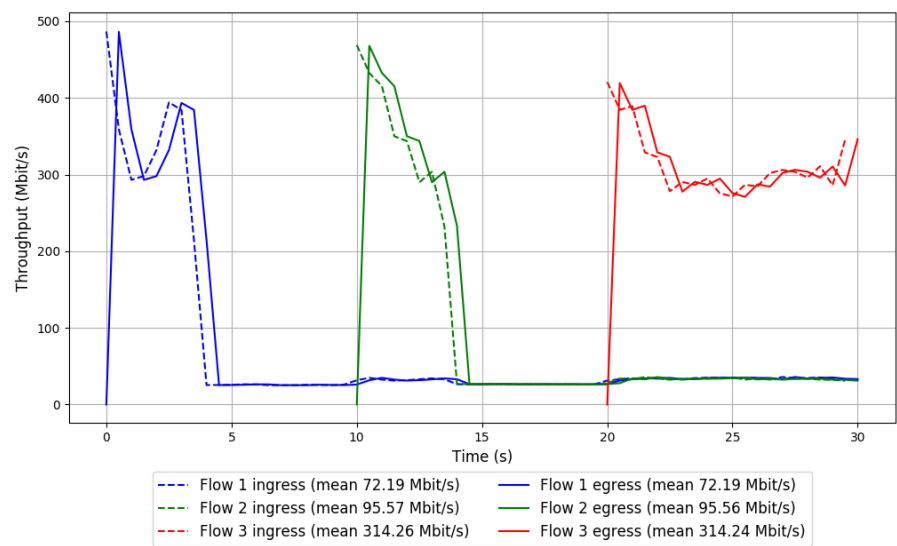
-- Flow 3:

Average throughput: 314.24 Mbit/s

95th percentile per-packet one-way delay: 1.370 ms

Loss rate: 0.00%

Run 3: Report of TCP Vegas — Data Link

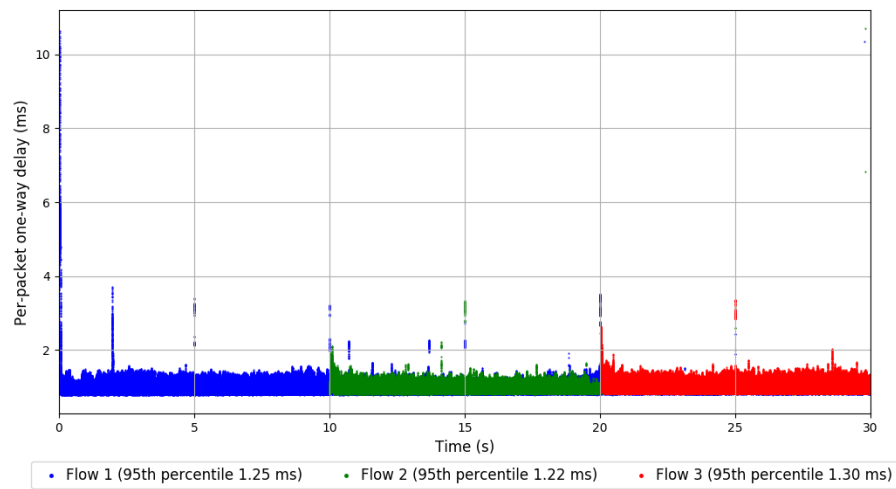
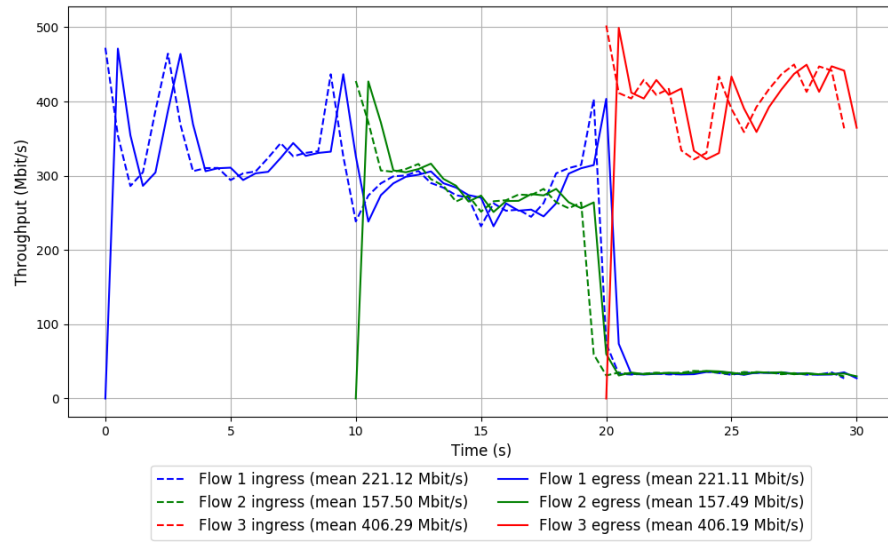


Run 4: Statistics of TCP Vegas

Start at: 2018-11-30 01:08:51
End at: 2018-11-30 01:09:21
Local clock offset: 5.483 ms
Remote clock offset: -0.663 ms

Below is generated by plot.py at 2018-11-30 02:44:43
Datalink statistics
-- Total of 3 flows:
Average throughput: 461.09 Mbit/s
95th percentile per-packet one-way delay: 1.263 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 221.11 Mbit/s
95th percentile per-packet one-way delay: 1.248 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 157.49 Mbit/s
95th percentile per-packet one-way delay: 1.219 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 406.19 Mbit/s
95th percentile per-packet one-way delay: 1.301 ms
Loss rate: 0.02%

Run 4: Report of TCP Vegas — Data Link



Run 5: Statistics of TCP Vegas

Start at: 2018-11-30 01:34:29

End at: 2018-11-30 01:34:59

Local clock offset: 5.6 ms

Remote clock offset: 2.9 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 530.71 Mbit/s

95th percentile per-packet one-way delay: 1.221 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 269.03 Mbit/s

95th percentile per-packet one-way delay: 1.206 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 269.58 Mbit/s

95th percentile per-packet one-way delay: 1.229 ms

Loss rate: 0.01%

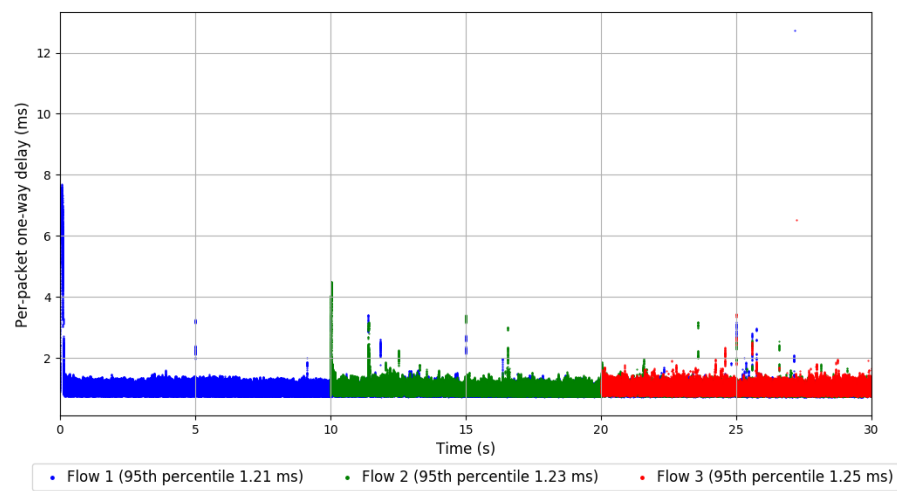
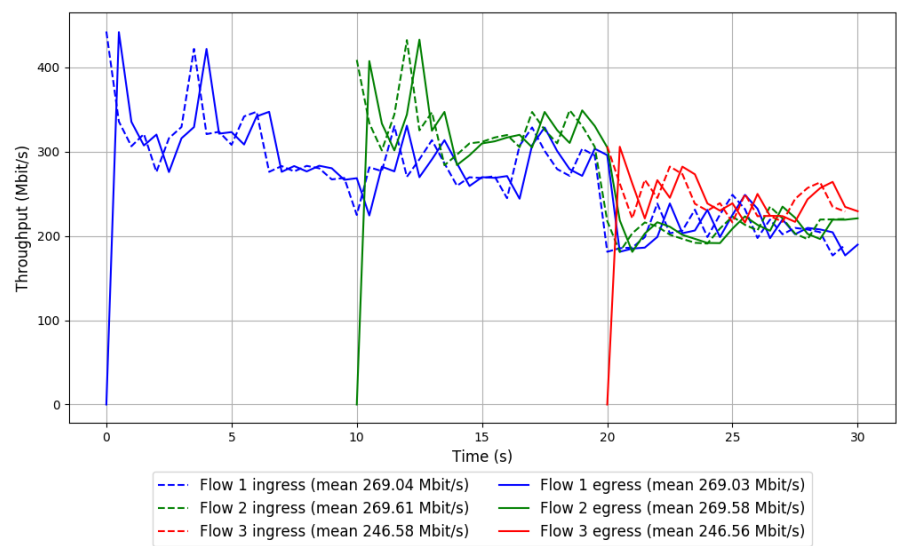
-- Flow 3:

Average throughput: 246.56 Mbit/s

95th percentile per-packet one-way delay: 1.246 ms

Loss rate: 0.00%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-11-29 23:47:45

End at: 2018-11-29 23:48:15

Local clock offset: 4.526 ms

Remote clock offset: 2.599 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 243.36 Mbit/s

95th percentile per-packet one-way delay: 42.331 ms

Loss rate: 5.32%

-- Flow 1:

Average throughput: 128.56 Mbit/s

95th percentile per-packet one-way delay: 118.427 ms

Loss rate: 6.44%

-- Flow 2:

Average throughput: 114.52 Mbit/s

95th percentile per-packet one-way delay: 7.362 ms

Loss rate: 3.95%

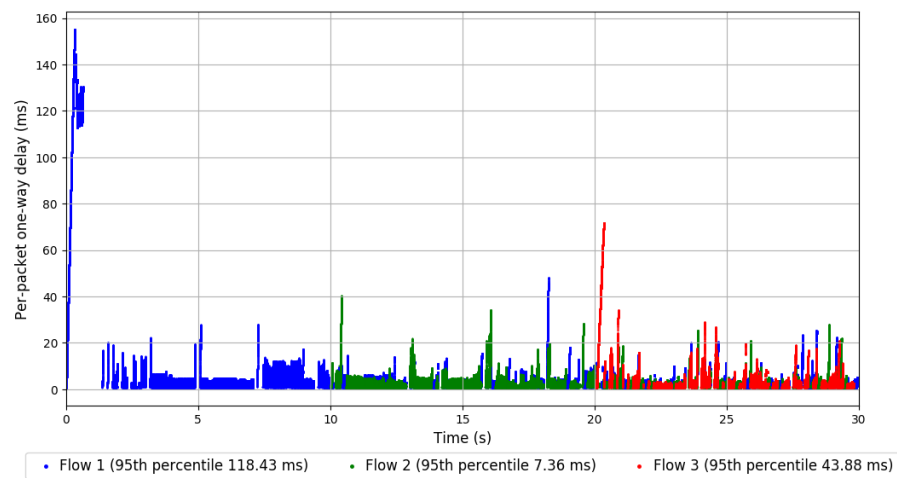
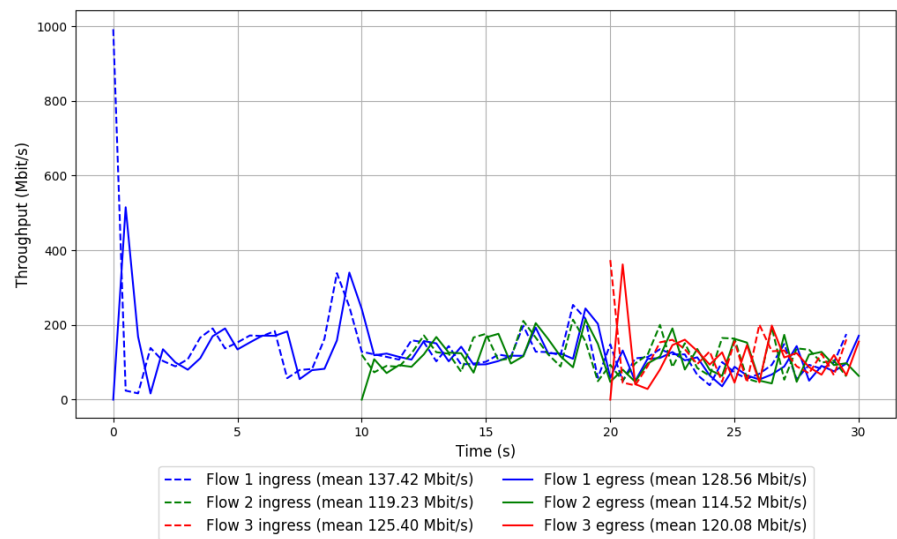
-- Flow 3:

Average throughput: 120.08 Mbit/s

95th percentile per-packet one-way delay: 43.876 ms

Loss rate: 4.23%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-11-30 00:13:17

End at: 2018-11-30 00:13:47

Local clock offset: 5.276 ms

Remote clock offset: 3.486 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 252.53 Mbit/s

95th percentile per-packet one-way delay: 105.048 ms

Loss rate: 9.87%

-- Flow 1:

Average throughput: 137.31 Mbit/s

95th percentile per-packet one-way delay: 20.277 ms

Loss rate: 4.79%

-- Flow 2:

Average throughput: 105.41 Mbit/s

95th percentile per-packet one-way delay: 35.244 ms

Loss rate: 7.53%

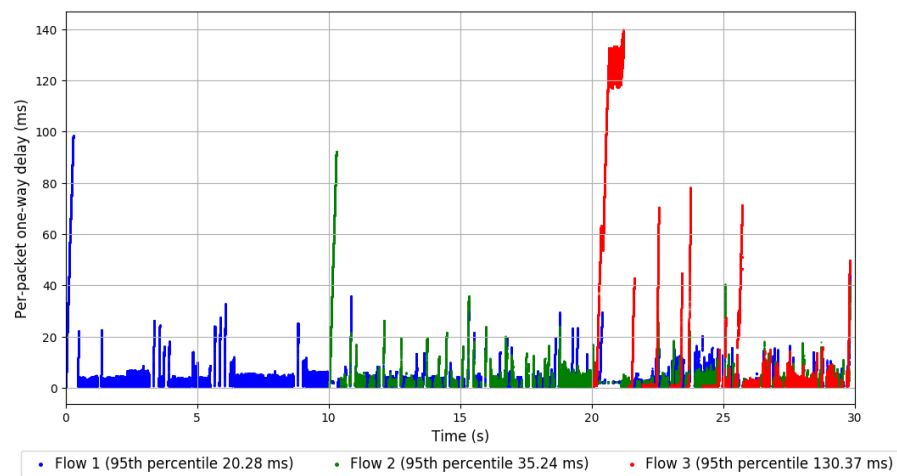
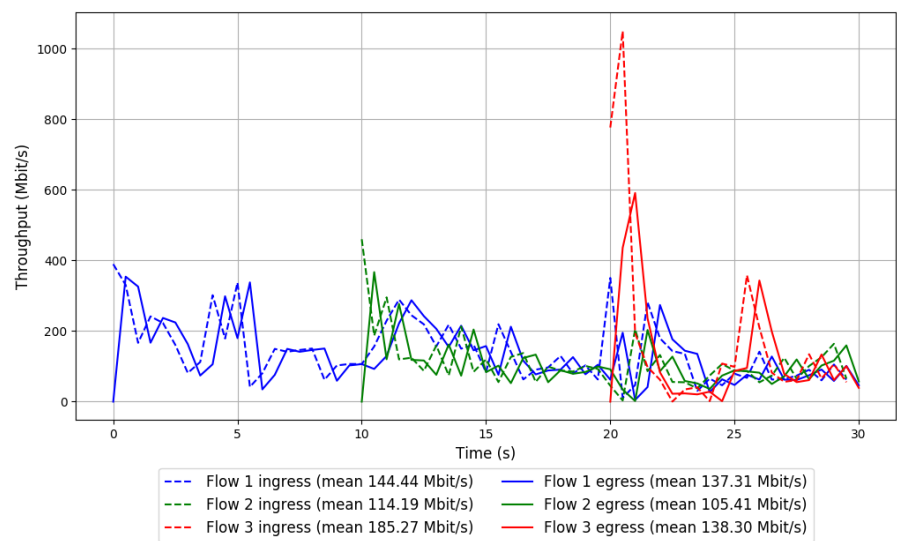
-- Flow 3:

Average throughput: 138.30 Mbit/s

95th percentile per-packet one-way delay: 130.372 ms

Loss rate: 24.97%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-11-30 00:39:01

End at: 2018-11-30 00:39:31

Local clock offset: 5.896 ms

Remote clock offset: 3.619 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 238.55 Mbit/s

95th percentile per-packet one-way delay: 21.845 ms

Loss rate: 5.43%

-- Flow 1:

Average throughput: 113.46 Mbit/s

95th percentile per-packet one-way delay: 17.106 ms

Loss rate: 5.61%

-- Flow 2:

Average throughput: 122.75 Mbit/s

95th percentile per-packet one-way delay: 16.717 ms

Loss rate: 4.58%

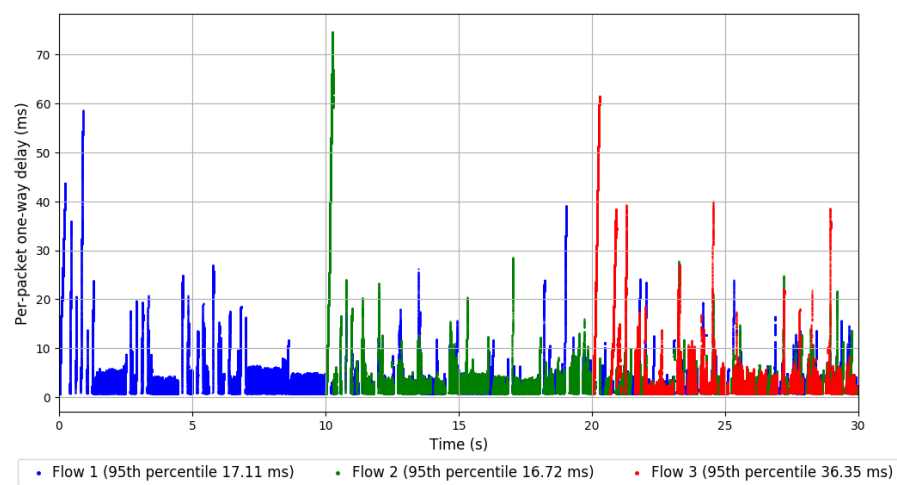
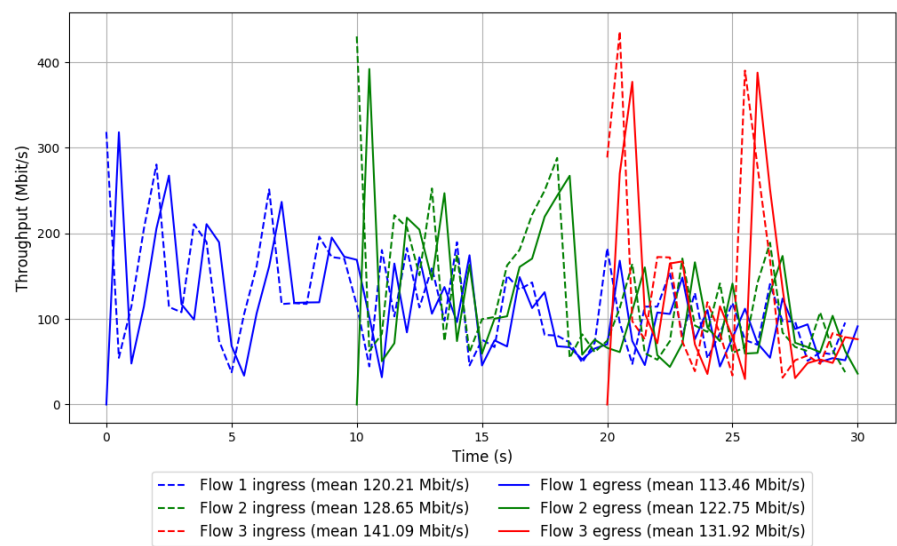
-- Flow 3:

Average throughput: 131.92 Mbit/s

95th percentile per-packet one-way delay: 36.348 ms

Loss rate: 6.49%

Run 3: Report of Verus — Data Link

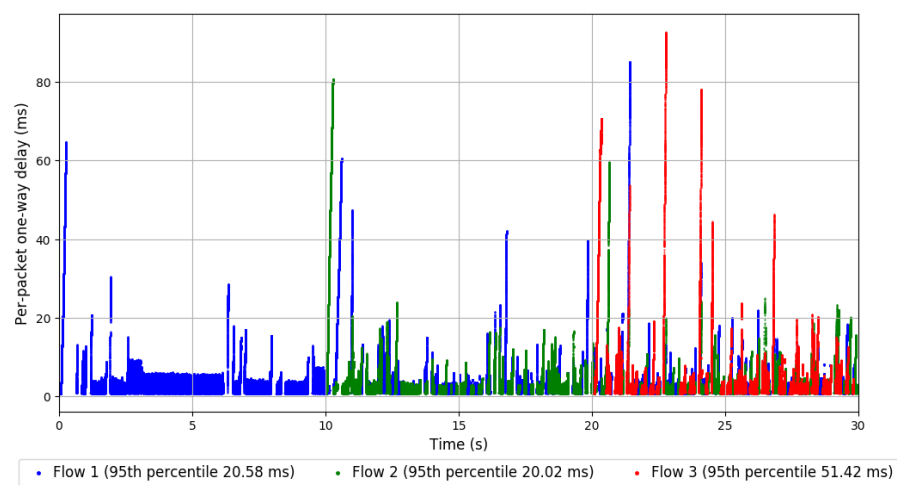
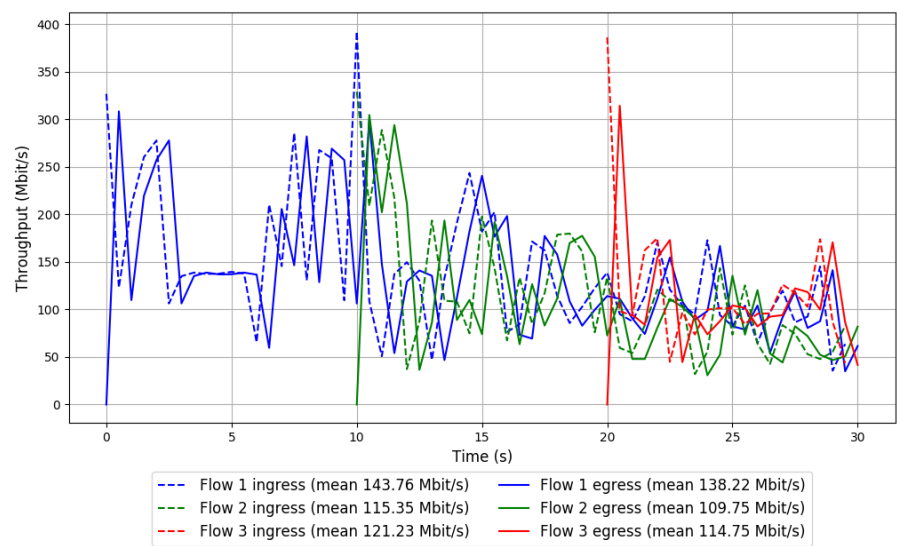


Run 4: Statistics of Verus

Start at: 2018-11-30 01:04:37
End at: 2018-11-30 01:05:07
Local clock offset: 5.503 ms
Remote clock offset: -0.502 ms

Below is generated by plot.py at 2018-11-30 02:44:43
Datalink statistics
-- Total of 3 flows:
Average throughput: 247.99 Mbit/s
95th percentile per-packet one-way delay: 25.766 ms
Loss rate: 4.37%
-- Flow 1:
Average throughput: 138.22 Mbit/s
95th percentile per-packet one-way delay: 20.579 ms
Loss rate: 3.85%
-- Flow 2:
Average throughput: 109.75 Mbit/s
95th percentile per-packet one-way delay: 20.024 ms
Loss rate: 4.85%
-- Flow 3:
Average throughput: 114.75 Mbit/s
95th percentile per-packet one-way delay: 51.421 ms
Loss rate: 5.33%

Run 4: Report of Verus — Data Link



Run 5: Statistics of Verus

Start at: 2018-11-30 01:30:11

End at: 2018-11-30 01:30:41

Local clock offset: 5.592 ms

Remote clock offset: 2.497 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 259.02 Mbit/s

95th percentile per-packet one-way delay: 26.856 ms

Loss rate: 3.67%

-- Flow 1:

Average throughput: 159.85 Mbit/s

95th percentile per-packet one-way delay: 23.519 ms

Loss rate: 2.80%

-- Flow 2:

Average throughput: 102.23 Mbit/s

95th percentile per-packet one-way delay: 28.814 ms

Loss rate: 5.31%

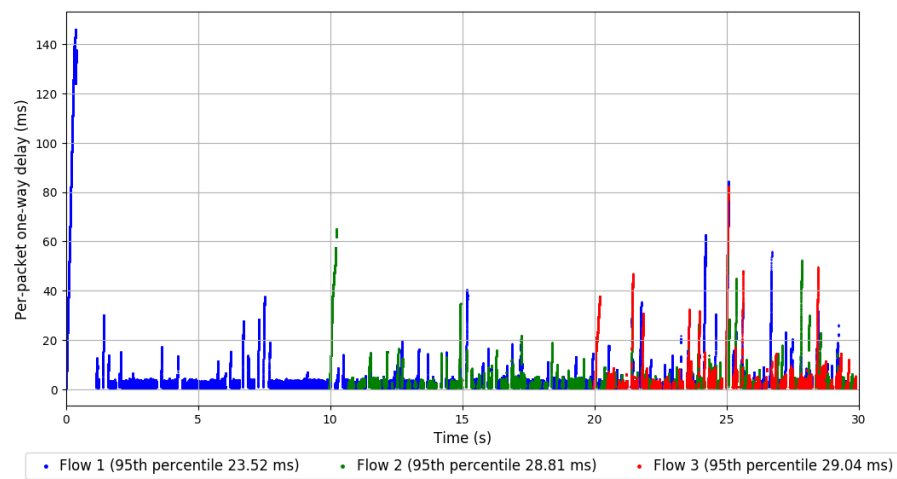
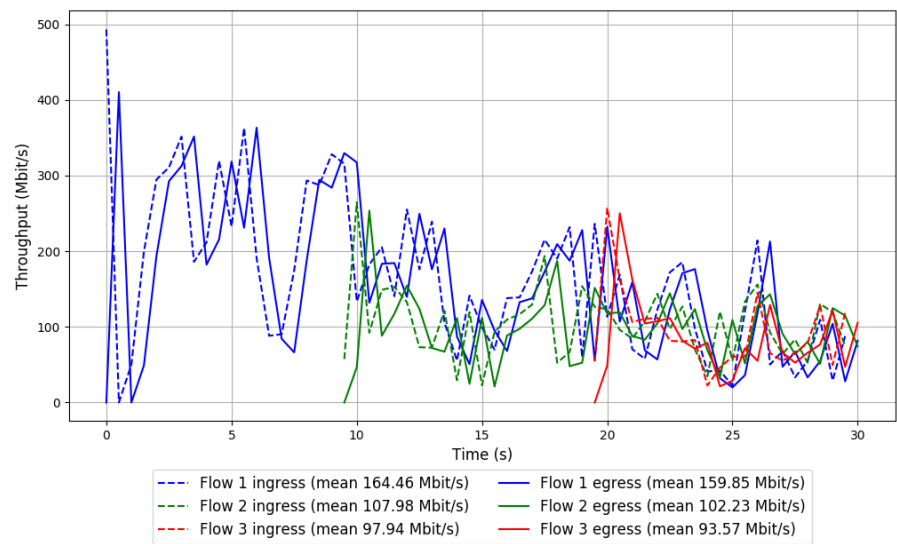
-- Flow 3:

Average throughput: 93.57 Mbit/s

95th percentile per-packet one-way delay: 29.044 ms

Loss rate: 4.42%

Run 5: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-11-30 00:10:35

End at: 2018-11-30 00:11:05

Local clock offset: 5.208 ms

Remote clock offset: 3.707 ms

Below is generated by plot.py at 2018-11-30 02:44:43

Datalink statistics

-- Total of 3 flows:

Average throughput: 229.06 Mbit/s

95th percentile per-packet one-way delay: 1.246 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 121.67 Mbit/s

95th percentile per-packet one-way delay: 1.234 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 89.74 Mbit/s

95th percentile per-packet one-way delay: 1.091 ms

Loss rate: 0.00%

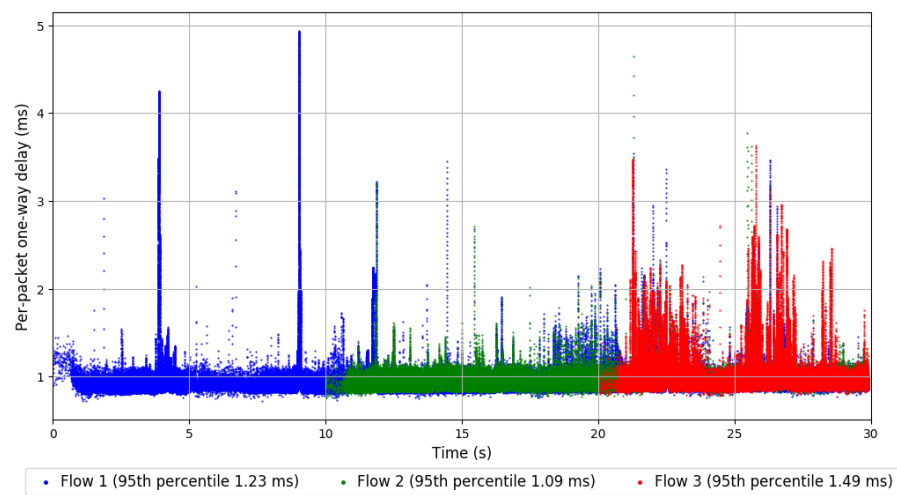
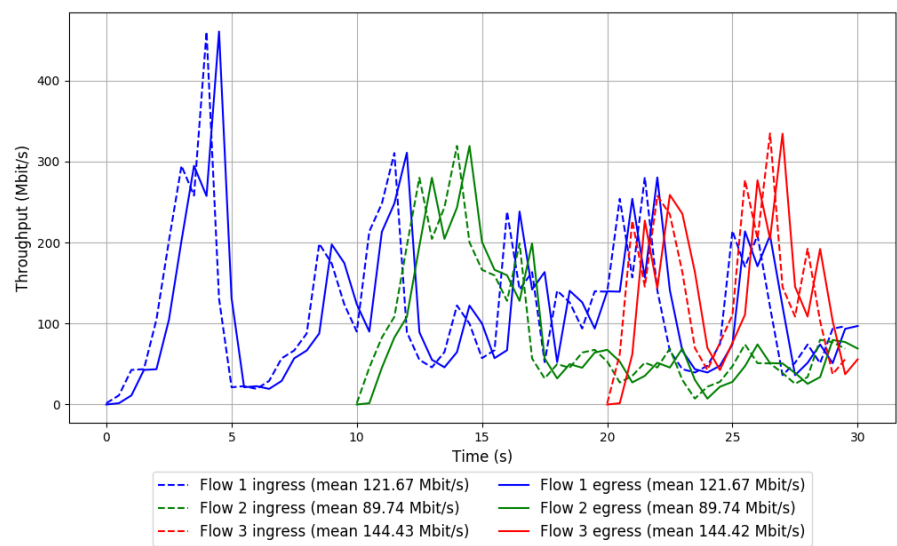
-- Flow 3:

Average throughput: 144.42 Mbit/s

95th percentile per-packet one-way delay: 1.491 ms

Loss rate: 0.01%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-11-30 00:36:15

End at: 2018-11-30 00:36:45

Local clock offset: 5.876 ms

Remote clock offset: 3.541 ms

Below is generated by plot.py at 2018-11-30 02:45:10

Datalink statistics

-- Total of 3 flows:

Average throughput: 337.16 Mbit/s

95th percentile per-packet one-way delay: 1.353 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 160.98 Mbit/s

95th percentile per-packet one-way delay: 1.074 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 211.84 Mbit/s

95th percentile per-packet one-way delay: 13.529 ms

Loss rate: 0.00%

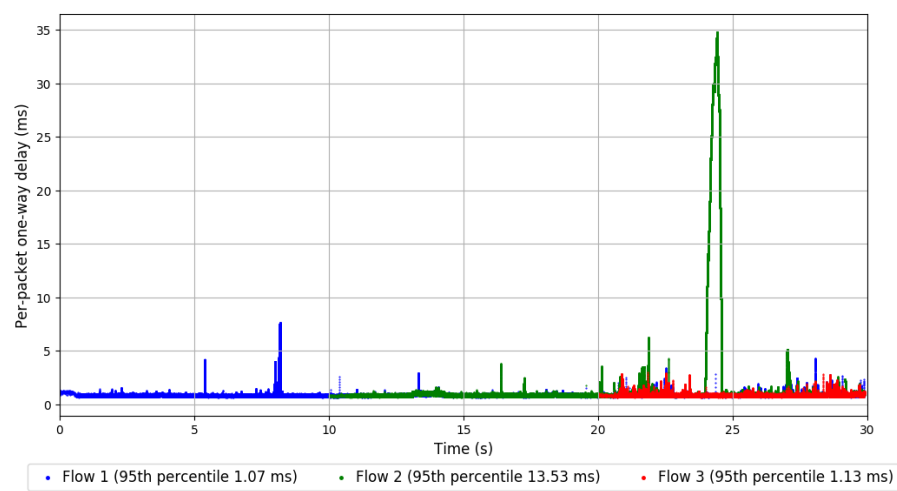
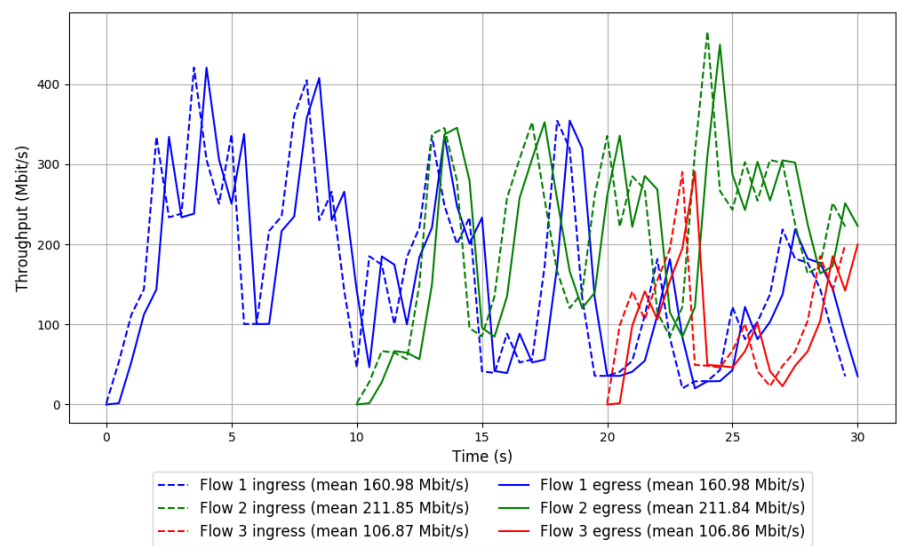
-- Flow 3:

Average throughput: 106.86 Mbit/s

95th percentile per-packet one-way delay: 1.132 ms

Loss rate: 0.00%

Run 2: Report of PCC-Vivace — Data Link

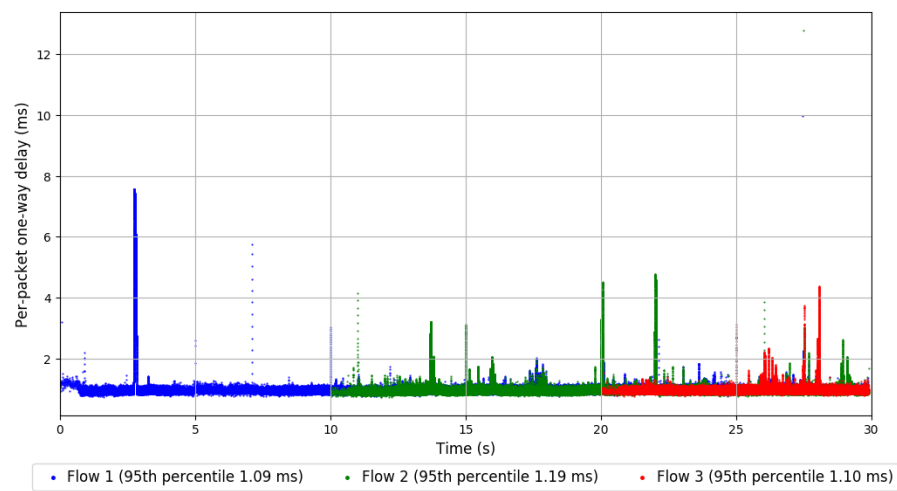
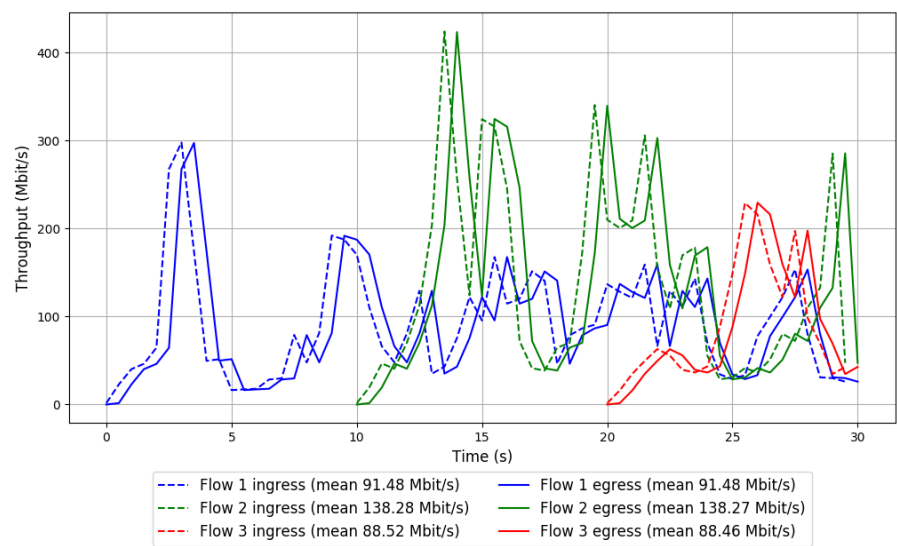


Run 3: Statistics of PCC-Vivace

Start at: 2018-11-30 01:01:56
End at: 2018-11-30 01:02:26
Local clock offset: 5.494 ms
Remote clock offset: -0.271 ms

Below is generated by plot.py at 2018-11-30 02:45:10
Datalink statistics
-- Total of 3 flows:
Average throughput: 212.63 Mbit/s
95th percentile per-packet one-way delay: 1.120 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 91.48 Mbit/s
95th percentile per-packet one-way delay: 1.093 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 138.27 Mbit/s
95th percentile per-packet one-way delay: 1.189 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 88.46 Mbit/s
95th percentile per-packet one-way delay: 1.097 ms
Loss rate: 0.06%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-11-30 01:27:27

End at: 2018-11-30 01:27:57

Local clock offset: 5.563 ms

Remote clock offset: 2.237 ms

Below is generated by plot.py at 2018-11-30 02:45:34

Datalink statistics

-- Total of 3 flows:

Average throughput: 274.55 Mbit/s

95th percentile per-packet one-way delay: 12.853 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 159.44 Mbit/s

95th percentile per-packet one-way delay: 2.591 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 109.00 Mbit/s

95th percentile per-packet one-way delay: 47.449 ms

Loss rate: 0.00%

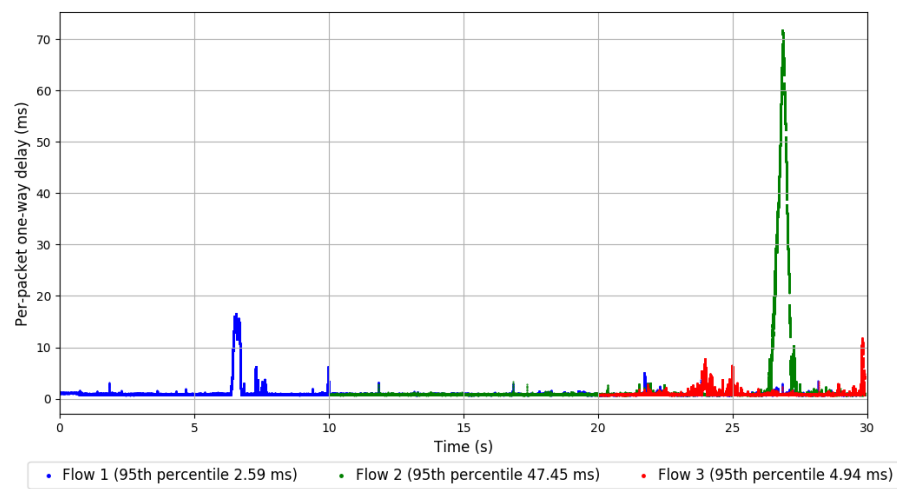
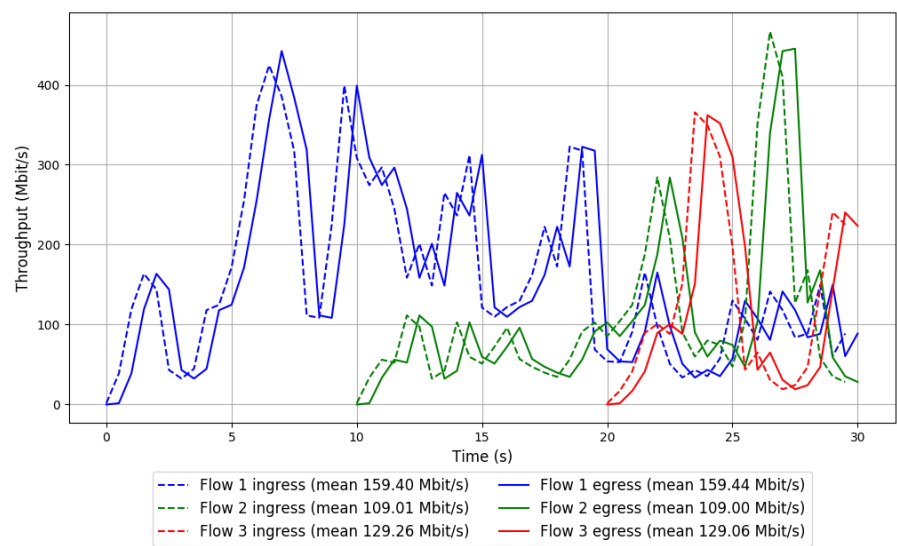
-- Flow 3:

Average throughput: 129.06 Mbit/s

95th percentile per-packet one-way delay: 4.939 ms

Loss rate: 0.14%

Run 4: Report of PCC-Vivace — Data Link



Run 5: Statistics of PCC-Vivace

Start at: 2018-11-30 01:53:11

End at: 2018-11-30 01:53:41

Local clock offset: 5.682 ms

Remote clock offset: 2.089 ms

Below is generated by plot.py at 2018-11-30 02:45:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 269.06 Mbit/s

95th percentile per-packet one-way delay: 1.309 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 161.45 Mbit/s

95th percentile per-packet one-way delay: 1.310 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 121.93 Mbit/s

95th percentile per-packet one-way delay: 1.298 ms

Loss rate: 0.03%

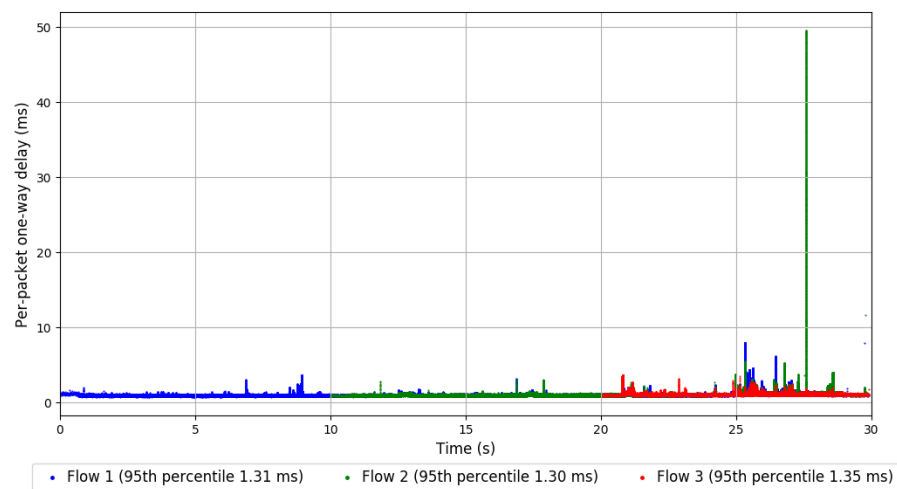
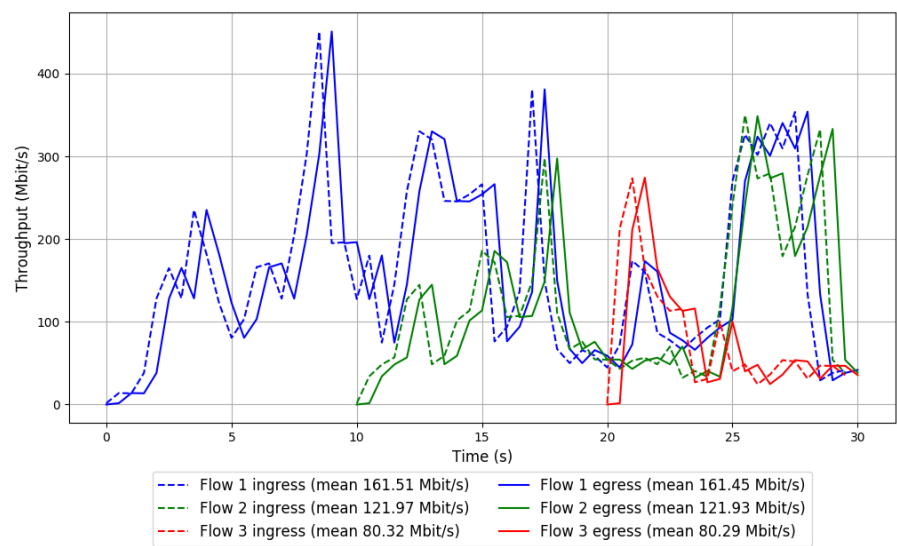
-- Flow 3:

Average throughput: 80.29 Mbit/s

95th percentile per-packet one-way delay: 1.349 ms

Loss rate: 0.02%

Run 5: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-11-30 00:03:10

End at: 2018-11-30 00:03:40

Local clock offset: 5.117 ms

Remote clock offset: 3.779 ms

Below is generated by plot.py at 2018-11-30 02:45:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.99 Mbit/s

95th percentile per-packet one-way delay: 2.975 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 2.13 Mbit/s

95th percentile per-packet one-way delay: 2.988 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 2.905 ms

Loss rate: 0.00%

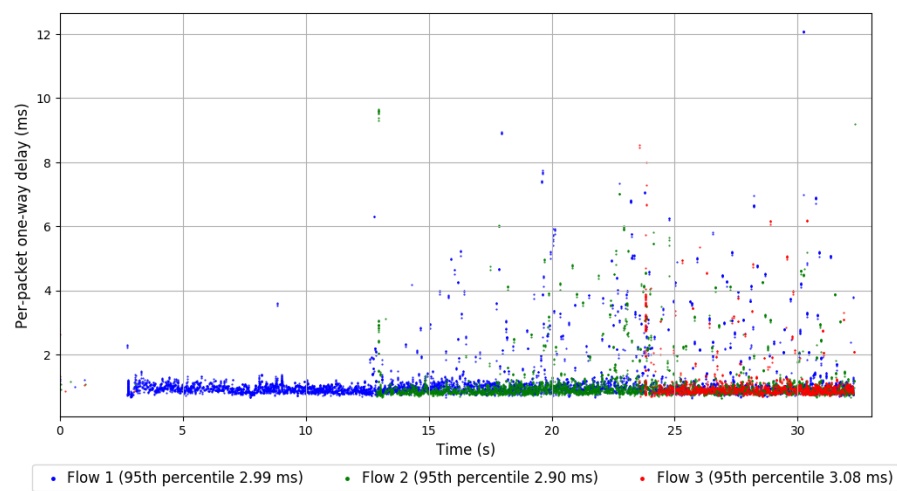
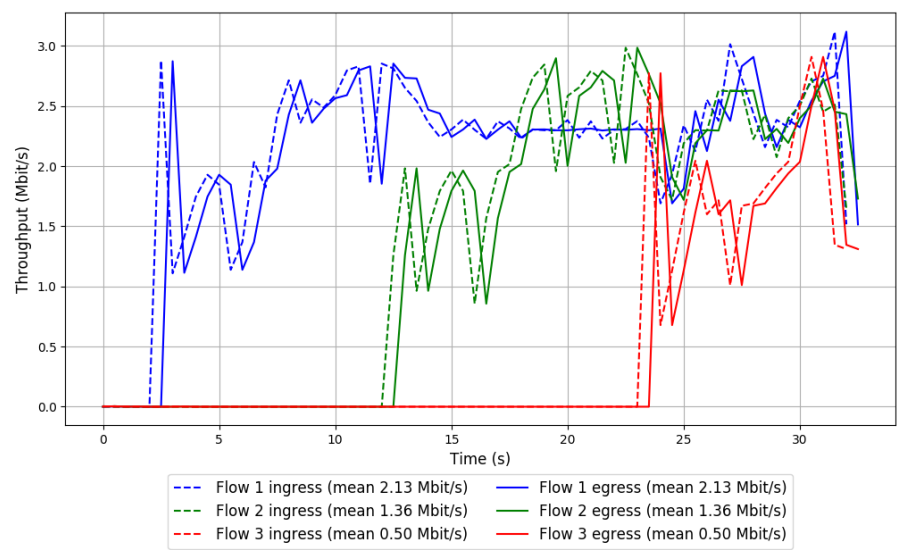
-- Flow 3:

Average throughput: 0.50 Mbit/s

95th percentile per-packet one-way delay: 3.079 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-11-30 00:28:41

End at: 2018-11-30 00:29:11

Local clock offset: 5.735 ms

Remote clock offset: 3.31 ms

Below is generated by plot.py at 2018-11-30 02:45:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.81 Mbit/s

95th percentile per-packet one-way delay: 2.146 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 1.759 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.37 Mbit/s

95th percentile per-packet one-way delay: 2.240 ms

Loss rate: 0.00%

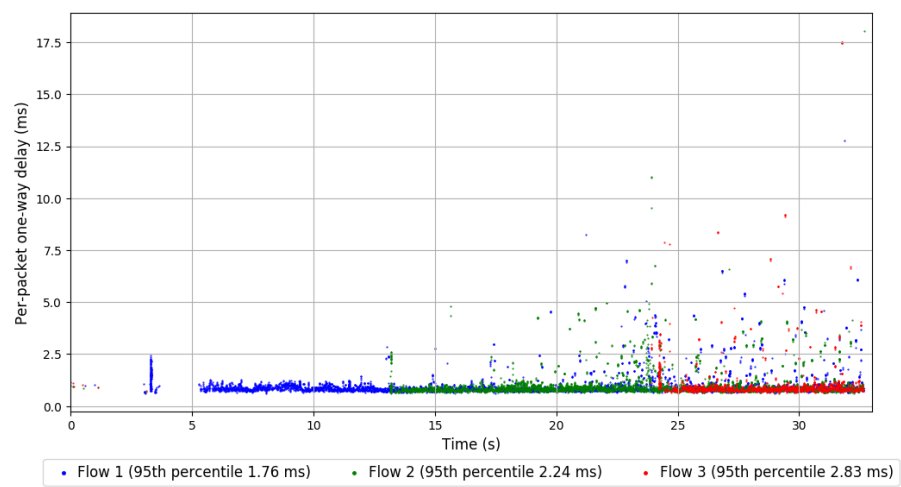
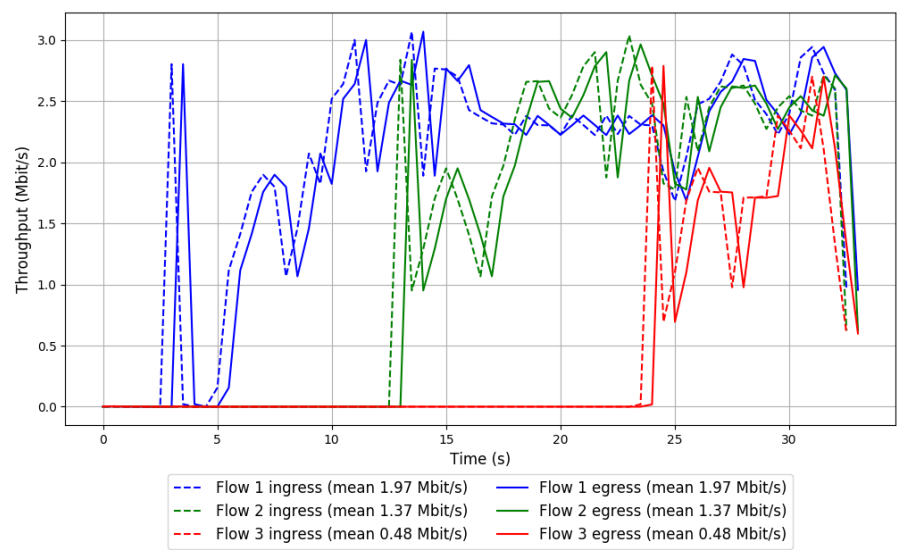
-- Flow 3:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 2.832 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-11-30 00:54:22

End at: 2018-11-30 00:54:52

Local clock offset: 5.591 ms

Remote clock offset: 0.258 ms

Below is generated by plot.py at 2018-11-30 02:45:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.79 Mbit/s

95th percentile per-packet one-way delay: 2.728 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.94 Mbit/s

95th percentile per-packet one-way delay: 2.261 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.38 Mbit/s

95th percentile per-packet one-way delay: 2.863 ms

Loss rate: 0.00%

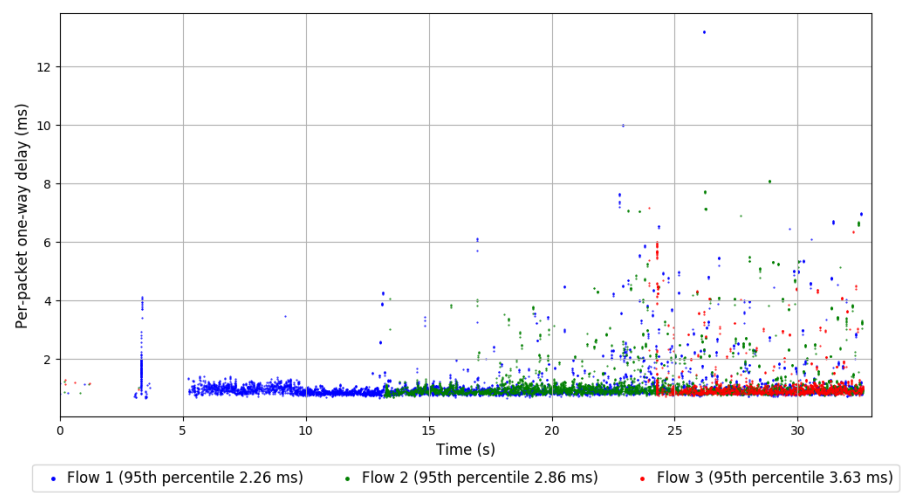
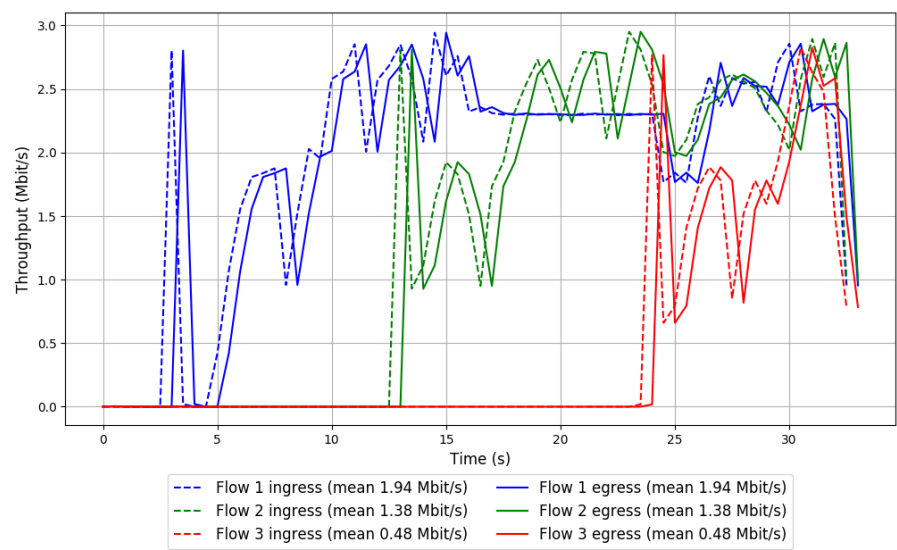
-- Flow 3:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 3.635 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link



Run 4: Statistics of WebRTC media

Start at: 2018-11-30 01:20:05

End at: 2018-11-30 01:20:35

Local clock offset: 5.532 ms

Remote clock offset: 0.855 ms

Below is generated by plot.py at 2018-11-30 02:45:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.80 Mbit/s

95th percentile per-packet one-way delay: 2.579 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.96 Mbit/s

95th percentile per-packet one-way delay: 2.852 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 2.184 ms

Loss rate: 0.00%

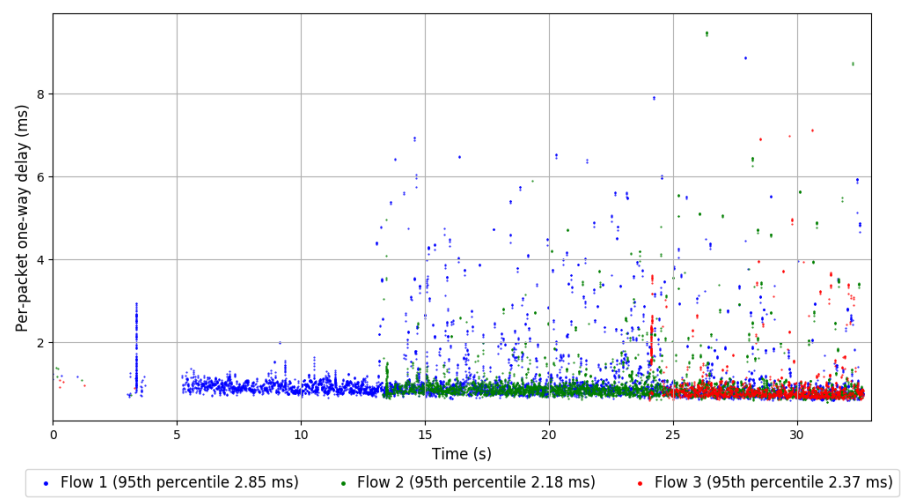
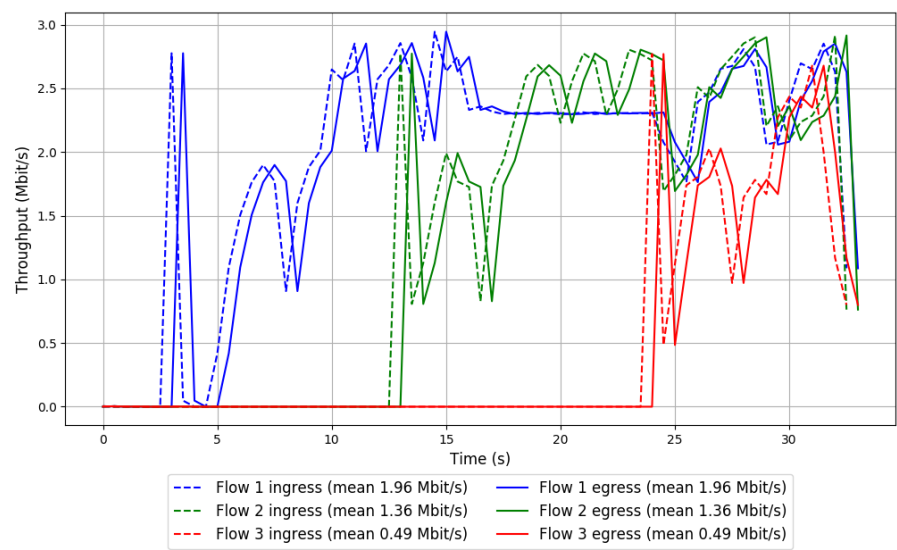
-- Flow 3:

Average throughput: 0.49 Mbit/s

95th percentile per-packet one-way delay: 2.367 ms

Loss rate: 0.00%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-11-30 01:45:44

End at: 2018-11-30 01:46:14

Local clock offset: 5.644 ms

Remote clock offset: 3.444 ms

Below is generated by plot.py at 2018-11-30 02:45:35

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.96 Mbit/s

95th percentile per-packet one-way delay: 2.239 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 2.11 Mbit/s

95th percentile per-packet one-way delay: 2.299 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.35 Mbit/s

95th percentile per-packet one-way delay: 1.856 ms

Loss rate: 0.00%

-- Flow 3:

Average throughput: 0.49 Mbit/s

95th percentile per-packet one-way delay: 3.338 ms

Loss rate: 0.00%

Run 5: Report of WebRTC media — Data Link

