

Pantheon Report

Generated at 2018-09-07 17:45:18 (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 4.15.0-1020-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
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

Git summary:

```
branch: muses @ e0a9b05ad97d268013b7cc9a9c95637b593a1b4c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 7631aea3923a3598767c87765ae5103aca0678d3
third_party/pantheon-tunnel @ cbfce6db5ff5740dafa1771f813cd646339e1952
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
```

Scatter plot showing Average throughput (Mbit/s) vs 95th percentile one-way delay (ms) for various congestion control algorithms. The plot shows a trade-off between delay and throughput. Algorithms like PCC-Vivace and PCC-Allegro achieve high throughput with moderate delay, while others like TCP Vegas and QUIC Cubic achieve lower throughput with very low delay.

Algorithm	95th percentile one-way delay (ms)	Average throughput (Mbit/s)
FiLLP	~100	~850
PCC-Vivace	~55	~600
PCC-Allegro	~45	~850
Verus	~35	~400
Indigo	~25	~400
TCP Cubic	~25	~320
LEDBAT	~25	~280
Indigo-Muses	~25	~250
TCP Vegas	~25	~220
QUIC Cubic	~25	~120
Sprout	~25	~50
WCC	~25	~20
CC-100	~25	~10
SR	~25	~10
CC-100	~25	~10
SR	~25	~10



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	506.74	374.83	355.42	45.97	36.62	23.60	5.99	10.45	11.79
Copa	5	0.00	10.45	4.93	18.36	19.26	19.12	98.79	65.31	74.74
TCP Cubic	5	146.54	192.13	146.64	19.68	23.77	19.15	0.04	0.06	0.05
FillP	5	546.46	368.33	198.14	89.58	54.37	30.21	10.34	16.52	17.74
FillP-Sheep	5	552.28	340.36	340.32	43.07	32.69	54.47	14.89	24.49	25.83
Indigo	5	202.96	197.83	192.56	20.39	20.35	20.96	0.03	0.04	0.07
LEDBAT	5	159.84	145.73	101.22	19.42	19.21	19.13	0.03	0.03	0.05
Indigo-Muses	5	130.81	90.32	150.19	18.68	18.74	19.02	0.02	0.01	0.05
PCC-Allegro	5	762.05	143.05	71.96	36.35	20.19	20.24	0.95	0.77	0.93
PCC-Expr	5	0.10	9.99	6.65	19.14	18.97	18.40	85.71	37.35	23.20
QUIC Cubic	5	66.02	58.79	50.73	18.89	20.22	19.60	0.00	0.00	0.01
SCReAM	5	0.22	0.22	0.22	18.80	19.02	18.81	0.00	0.00	0.00
Sprout	5	24.53	24.50	24.32	21.07	21.74	21.76	0.09	0.11	0.04
TaoVA-100x	5	5.92	9.15	3.23	18.80	18.73	18.74	85.90	85.40	83.29
TCP Vegas	5	78.81	108.22	168.84	18.77	20.27	20.09	0.03	0.18	0.14
Verus	5	216.00	192.35	175.29	38.16	36.32	31.94	21.78	25.51	26.03
PCC-Vivace	5	362.63	322.27	109.08	60.63	40.20	19.82	0.38	0.60	0.66
WebRTC media	5	2.04	1.36	0.50	20.04	20.13	21.07	0.01	0.01	0.07

Run 1: Statistics of TCP BBR

Start at: 2018-09-07 14:55:08

End at: 2018-09-07 14:55:38

Local clock offset: 3.062 ms

Remote clock offset: 1.62 ms

Below is generated by plot.py at 2018-09-07 17:05:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 875.60 Mbit/s

95th percentile per-packet one-way delay: 44.488 ms

Loss rate: 8.06%

-- Flow 1:

Average throughput: 502.90 Mbit/s

95th percentile per-packet one-way delay: 46.052 ms

Loss rate: 5.46%

-- Flow 2:

Average throughput: 323.66 Mbit/s

95th percentile per-packet one-way delay: 25.770 ms

Loss rate: 12.92%

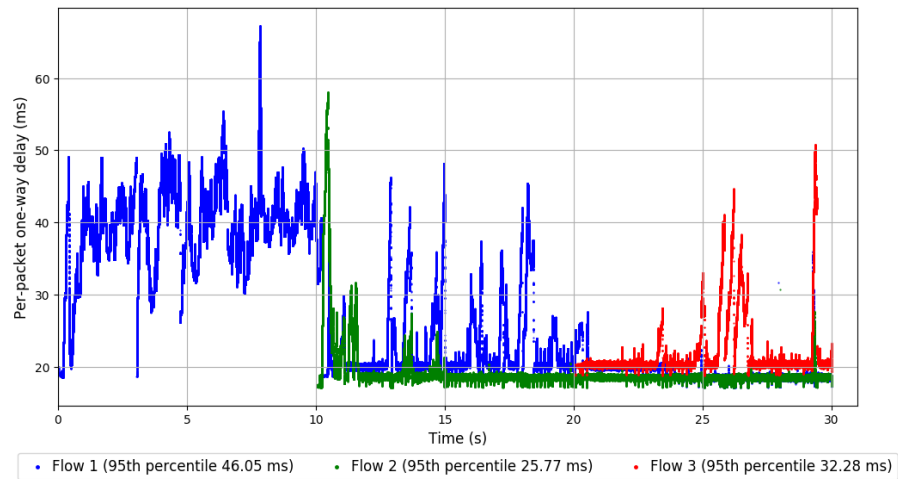
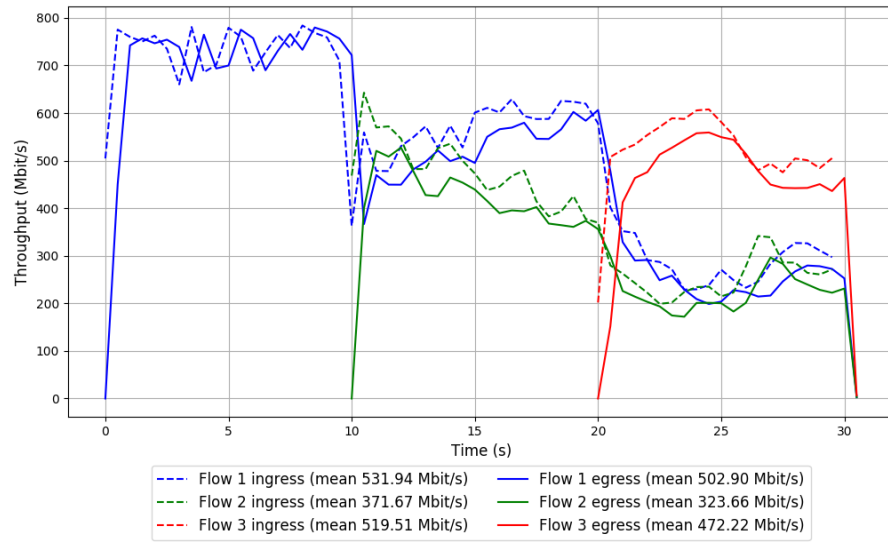
-- Flow 3:

Average throughput: 472.22 Mbit/s

95th percentile per-packet one-way delay: 32.284 ms

Loss rate: 9.10%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-07 15:23:05

End at: 2018-09-07 15:23:35

Local clock offset: 2.826 ms

Remote clock offset: 0.559 ms

Below is generated by plot.py at 2018-09-07 17:05:10

Datalink statistics

-- Total of 3 flows:

Average throughput: 881.59 Mbit/s

95th percentile per-packet one-way delay: 41.939 ms

Loss rate: 8.31%

-- Flow 1:

Average throughput: 532.61 Mbit/s

95th percentile per-packet one-way delay: 42.923 ms

Loss rate: 6.59%

-- Flow 2:

Average throughput: 359.93 Mbit/s

95th percentile per-packet one-way delay: 38.097 ms

Loss rate: 10.14%

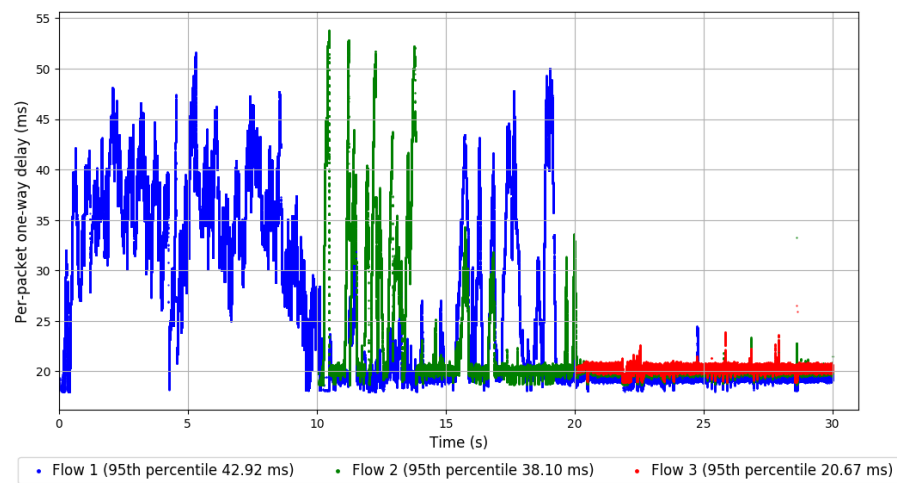
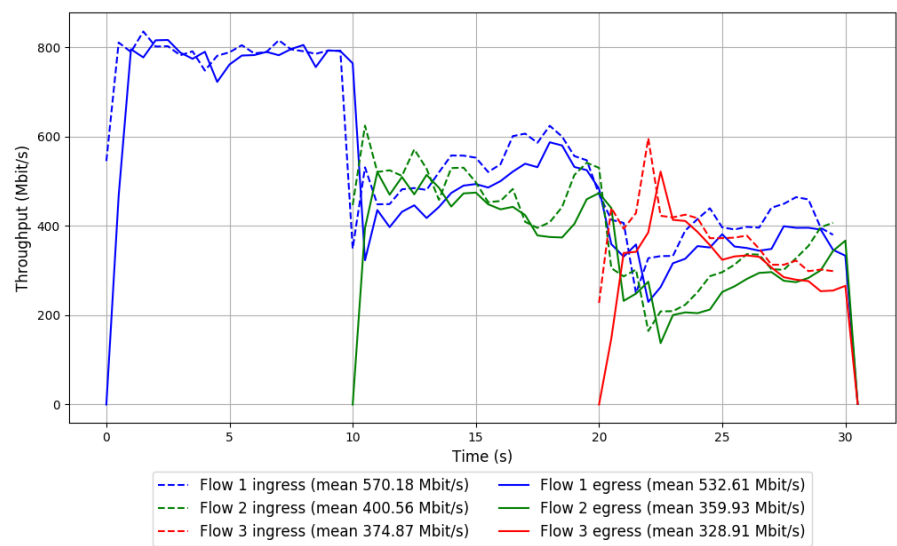
-- Flow 3:

Average throughput: 328.91 Mbit/s

95th percentile per-packet one-way delay: 20.674 ms

Loss rate: 12.26%

Run 2: Report of TCP BBR — Data Link

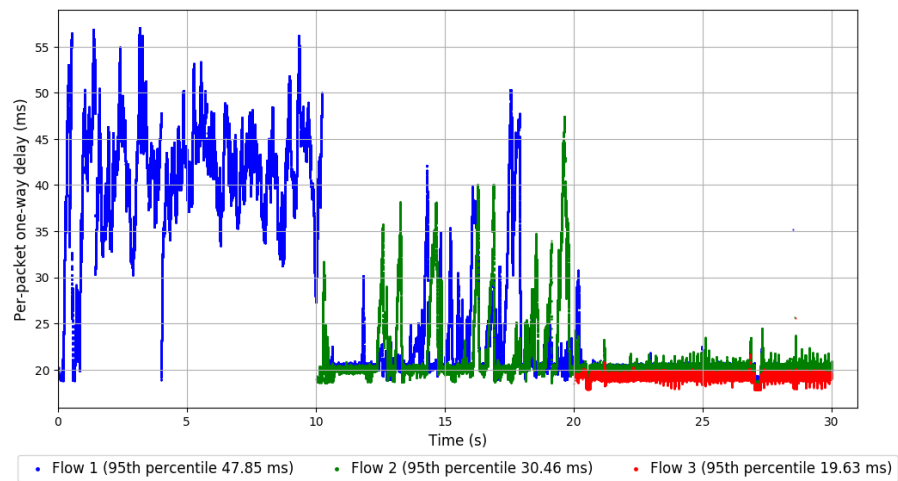
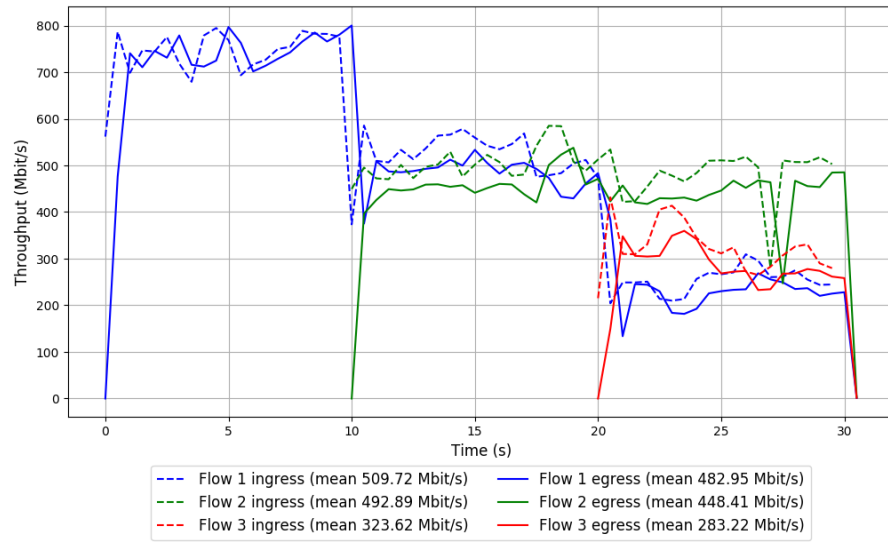


Run 3: Statistics of TCP BBR

Start at: 2018-09-07 15:51:02
End at: 2018-09-07 15:51:32
Local clock offset: 1.129 ms
Remote clock offset: -2.868 ms

Below is generated by plot.py at 2018-09-07 17:05:10
Datalink statistics
-- Total of 3 flows:
Average throughput: 876.05 Mbit/s
95th percentile per-packet one-way delay: 46.228 ms
Loss rate: 7.38%
-- Flow 1:
Average throughput: 482.95 Mbit/s
95th percentile per-packet one-way delay: 47.855 ms
Loss rate: 5.25%
-- Flow 2:
Average throughput: 448.41 Mbit/s
95th percentile per-packet one-way delay: 30.465 ms
Loss rate: 9.02%
-- Flow 3:
Average throughput: 283.22 Mbit/s
95th percentile per-packet one-way delay: 19.631 ms
Loss rate: 12.47%

Run 3: Report of TCP BBR — Data Link

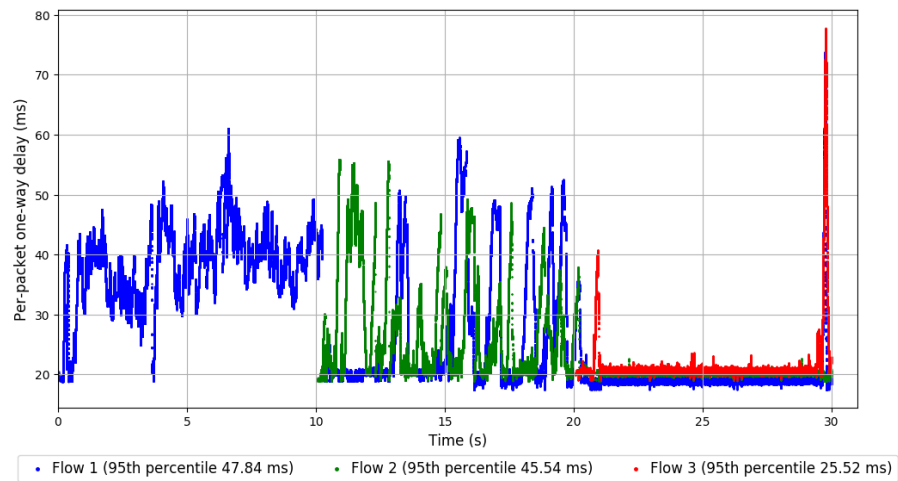
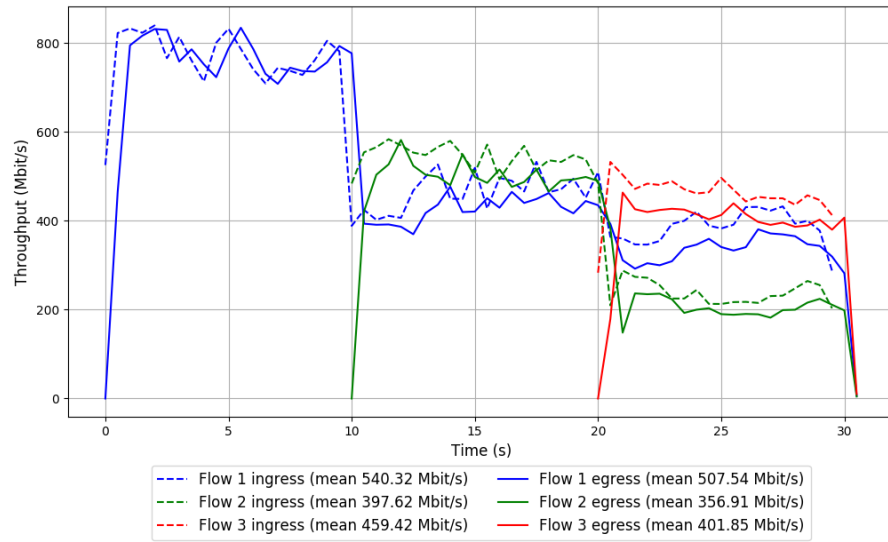


Run 4: Statistics of TCP BBR

Start at: 2018-09-07 16:18:46
End at: 2018-09-07 16:19:16
Local clock offset: 0.404 ms
Remote clock offset: -0.794 ms

Below is generated by plot.py at 2018-09-07 17:05:12
Datalink statistics
-- Total of 3 flows:
Average throughput: 878.88 Mbit/s
95th percentile per-packet one-way delay: 46.717 ms
Loss rate: 8.25%
-- Flow 1:
Average throughput: 507.54 Mbit/s
95th percentile per-packet one-way delay: 47.839 ms
Loss rate: 6.07%
-- Flow 2:
Average throughput: 356.91 Mbit/s
95th percentile per-packet one-way delay: 45.540 ms
Loss rate: 10.23%
-- Flow 3:
Average throughput: 401.85 Mbit/s
95th percentile per-packet one-way delay: 25.523 ms
Loss rate: 12.54%

Run 4: Report of TCP BBR — Data Link

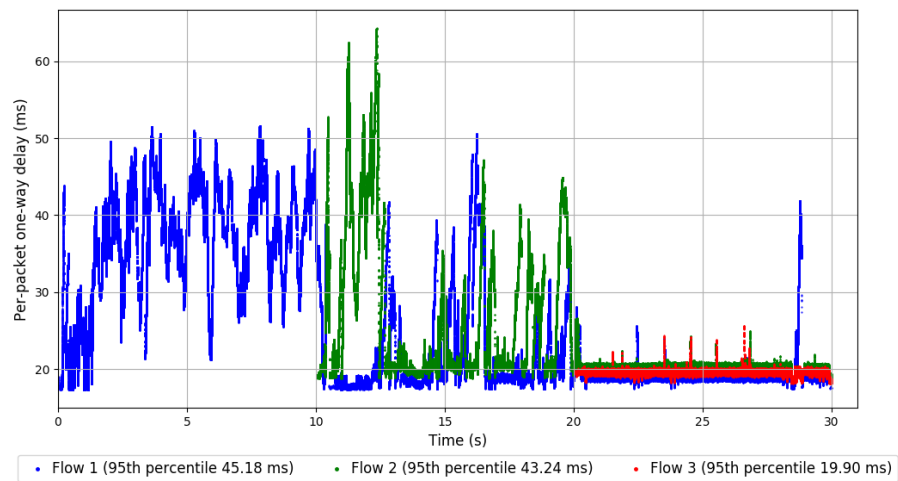
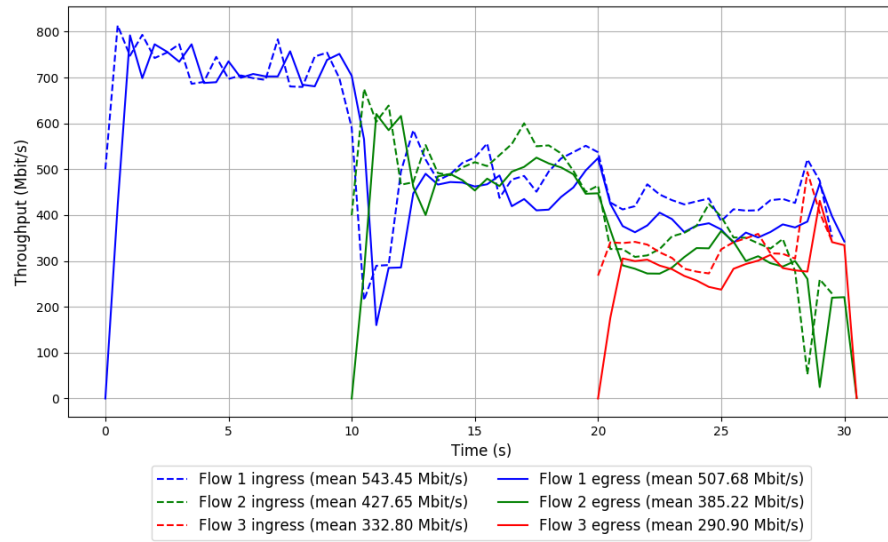


Run 5: Statistics of TCP BBR

Start at: 2018-09-07 16:46:45
End at: 2018-09-07 16:47:15
Local clock offset: 3.345 ms
Remote clock offset: -0.941 ms

Below is generated by plot.py at 2018-09-07 17:05:12
Datalink statistics
-- Total of 3 flows:
Average throughput: 860.98 Mbit/s
95th percentile per-packet one-way delay: 44.563 ms
Loss rate: 8.31%
-- Flow 1:
Average throughput: 507.68 Mbit/s
95th percentile per-packet one-way delay: 45.181 ms
Loss rate: 6.58%
-- Flow 2:
Average throughput: 385.22 Mbit/s
95th percentile per-packet one-way delay: 43.243 ms
Loss rate: 9.93%
-- Flow 3:
Average throughput: 290.90 Mbit/s
95th percentile per-packet one-way delay: 19.903 ms
Loss rate: 12.60%

Run 5: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-09-07 14:52:21

End at: 2018-09-07 14:52:51

Local clock offset: 3.066 ms

Remote clock offset: 1.529 ms

Below is generated by plot.py at 2018-09-07 17:05:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.59 Mbit/s

95th percentile per-packet one-way delay: 19.072 ms

Loss rate: 68.49%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 18.092 ms

Loss rate: 98.80%

-- Flow 2:

Average throughput: 12.30 Mbit/s

95th percentile per-packet one-way delay: 19.078 ms

Loss rate: 67.35%

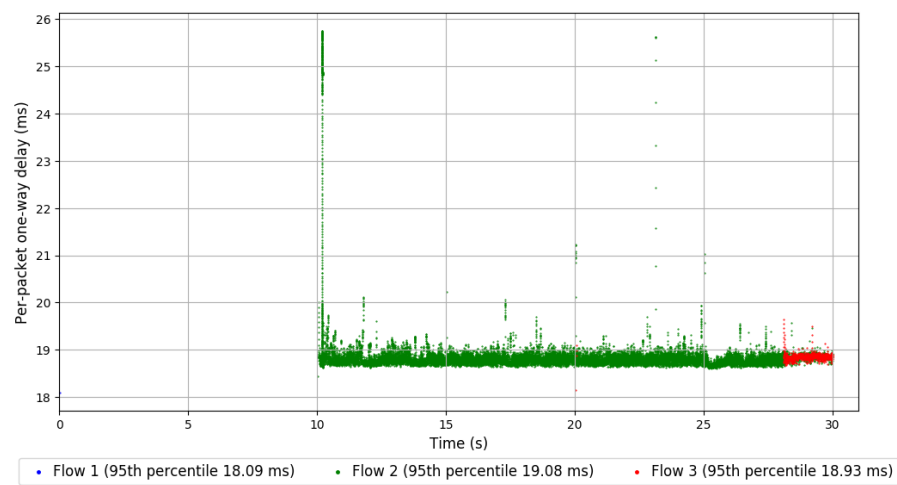
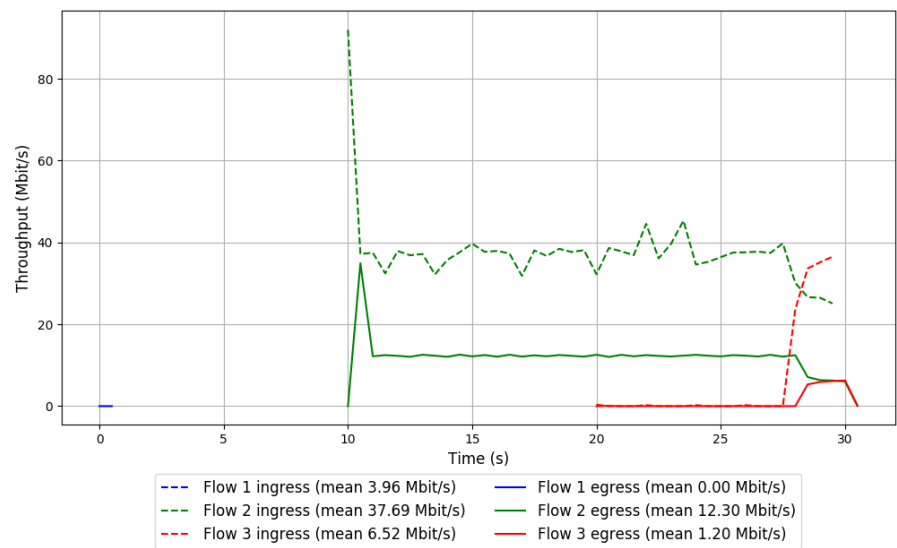
-- Flow 3:

Average throughput: 1.20 Mbit/s

95th percentile per-packet one-way delay: 18.930 ms

Loss rate: 81.68%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-09-07 15:20:18

End at: 2018-09-07 15:20:48

Local clock offset: 2.838 ms

Remote clock offset: 0.586 ms

Below is generated by plot.py at 2018-09-07 17:05:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.60 Mbit/s

95th percentile per-packet one-way delay: 19.293 ms

Loss rate: 66.38%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 17.742 ms

Loss rate: 98.60%

-- Flow 2:

Average throughput: 10.96 Mbit/s

95th percentile per-packet one-way delay: 19.286 ms

Loss rate: 65.05%

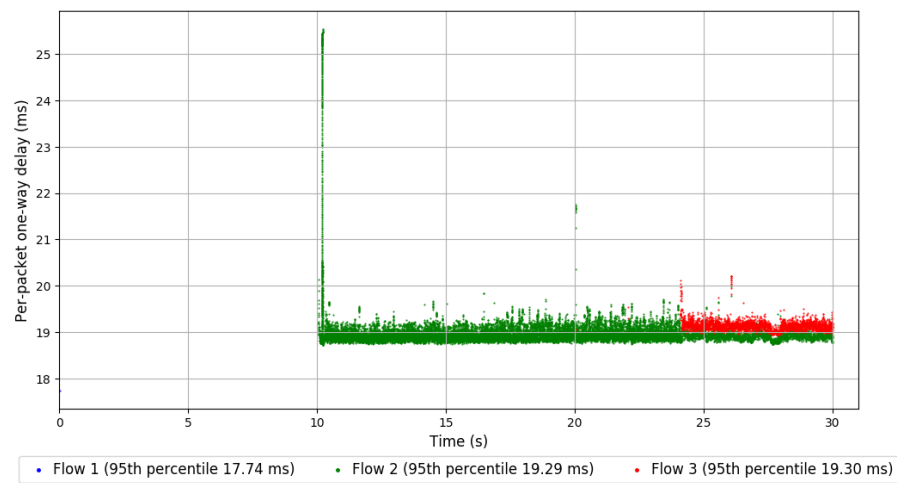
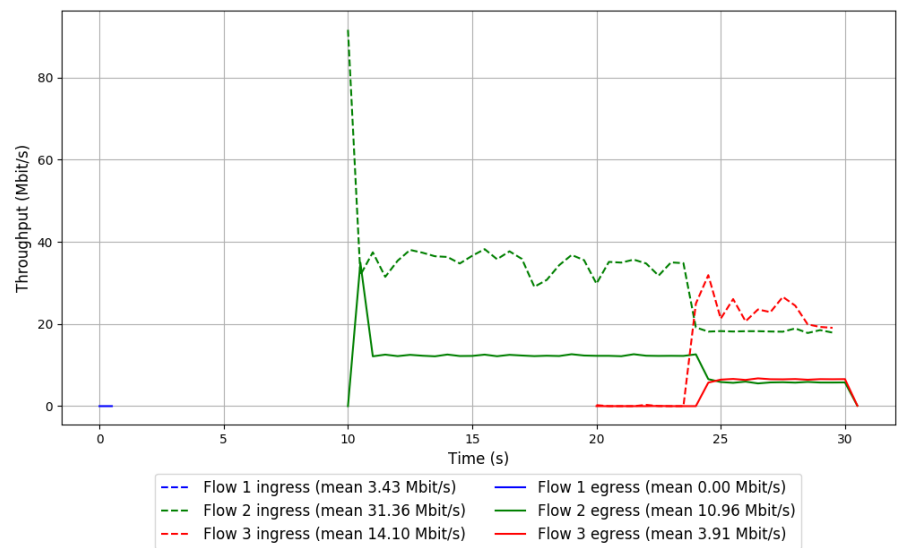
-- Flow 3:

Average throughput: 3.91 Mbit/s

95th percentile per-packet one-way delay: 19.299 ms

Loss rate: 72.30%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-09-07 15:48:13

End at: 2018-09-07 15:48:43

Local clock offset: 1.856 ms

Remote clock offset: -2.67 ms

Below is generated by plot.py at 2018-09-07 17:05:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.60 Mbit/s

95th percentile per-packet one-way delay: 18.779 ms

Loss rate: 67.63%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 17.379 ms

Loss rate: 98.80%

-- Flow 2:

Average throughput: 9.50 Mbit/s

95th percentile per-packet one-way delay: 18.822 ms

Loss rate: 65.41%

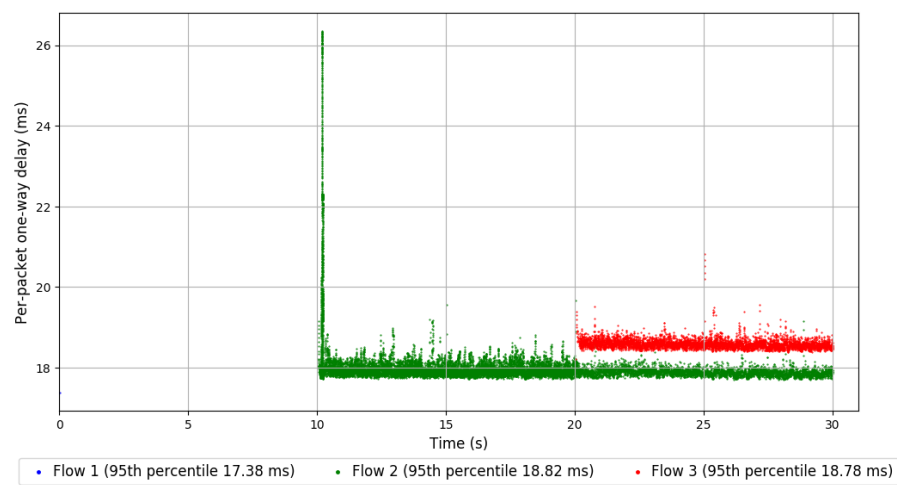
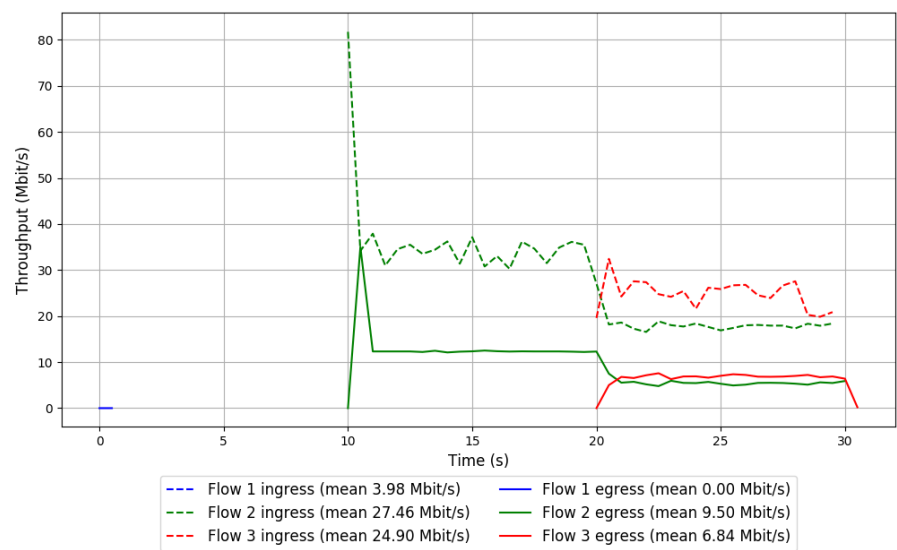
-- Flow 3:

Average throughput: 6.84 Mbit/s

95th percentile per-packet one-way delay: 18.776 ms

Loss rate: 72.54%

Run 3: Report of Copa — Data Link

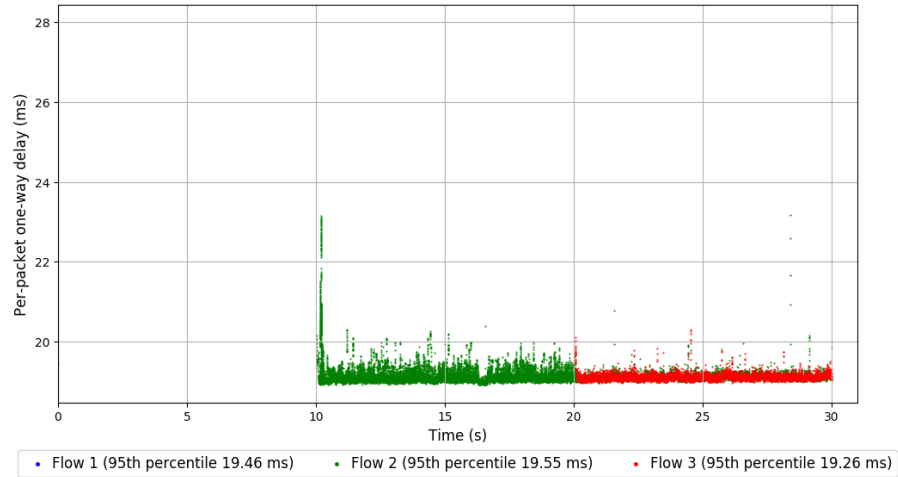
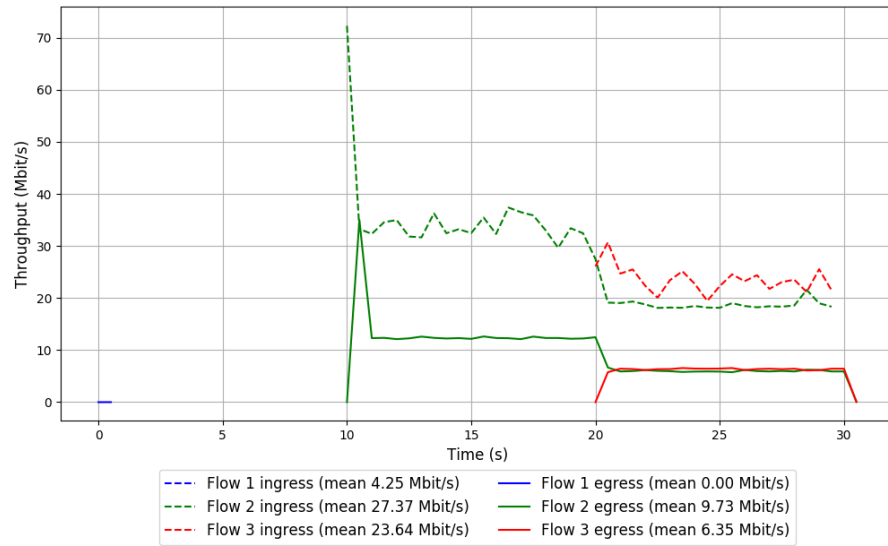


Run 4: Statistics of Copa

Start at: 2018-09-07 16:15:59
End at: 2018-09-07 16:16:29
Local clock offset: -0.554 ms
Remote clock offset: -1.171 ms

Below is generated by plot.py at 2018-09-07 17:05:12
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.60 Mbit/s
95th percentile per-packet one-way delay: 19.476 ms
Loss rate: 67.05%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 19.457 ms
Loss rate: 98.95%
-- Flow 2:
Average throughput: 9.73 Mbit/s
95th percentile per-packet one-way delay: 19.549 ms
Loss rate: 64.43%
-- Flow 3:
Average throughput: 6.35 Mbit/s
95th percentile per-packet one-way delay: 19.261 ms
Loss rate: 73.12%

Run 4: Report of Copa — Data Link

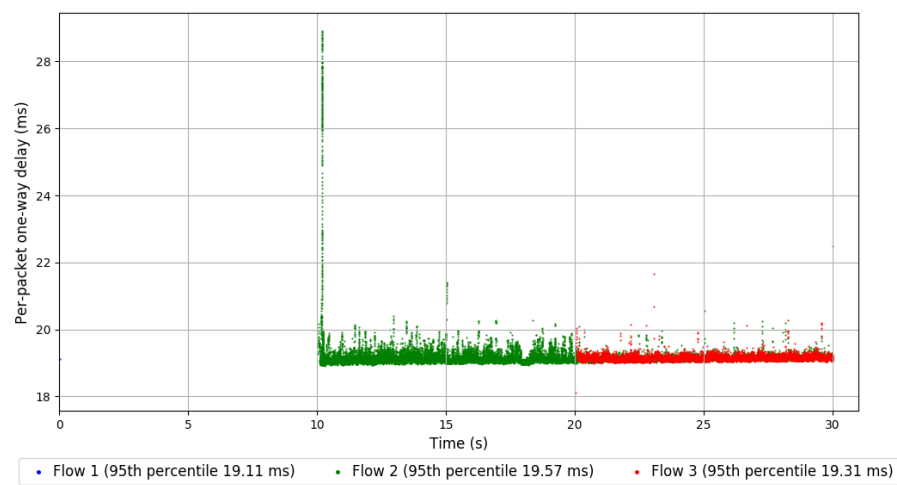
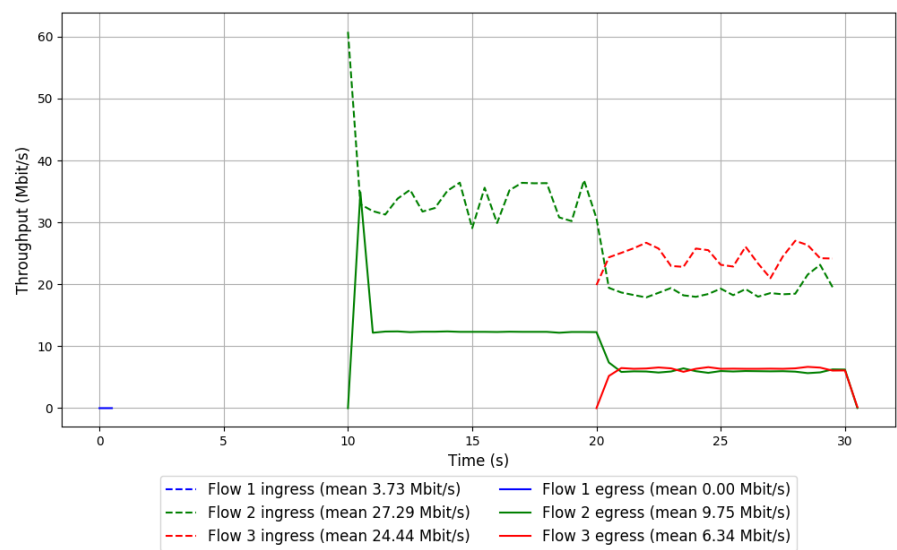


Run 5: Statistics of Copa

Start at: 2018-09-07 16:43:58
End at: 2018-09-07 16:44:28
Local clock offset: 3.357 ms
Remote clock offset: -0.257 ms

Below is generated by plot.py at 2018-09-07 17:05:12
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.60 Mbit/s
95th percentile per-packet one-way delay: 19.492 ms
Loss rate: 67.31%
-- Flow 1:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 19.110 ms
Loss rate: 98.80%
-- Flow 2:
Average throughput: 9.75 Mbit/s
95th percentile per-packet one-way delay: 19.568 ms
Loss rate: 64.29%
-- Flow 3:
Average throughput: 6.34 Mbit/s
95th percentile per-packet one-way delay: 19.313 ms
Loss rate: 74.06%

Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-09-07 14:33:59

End at: 2018-09-07 14:34:29

Local clock offset: 3.058 ms

Remote clock offset: 1.175 ms

Below is generated by plot.py at 2018-09-07 17:05:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 402.93 Mbit/s

95th percentile per-packet one-way delay: 19.090 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 182.13 Mbit/s

95th percentile per-packet one-way delay: 19.089 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 256.99 Mbit/s

95th percentile per-packet one-way delay: 18.424 ms

Loss rate: 0.02%

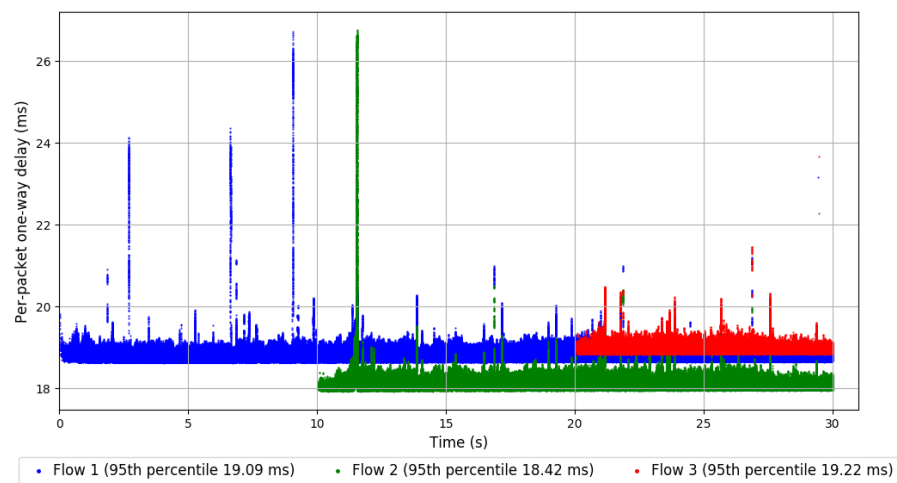
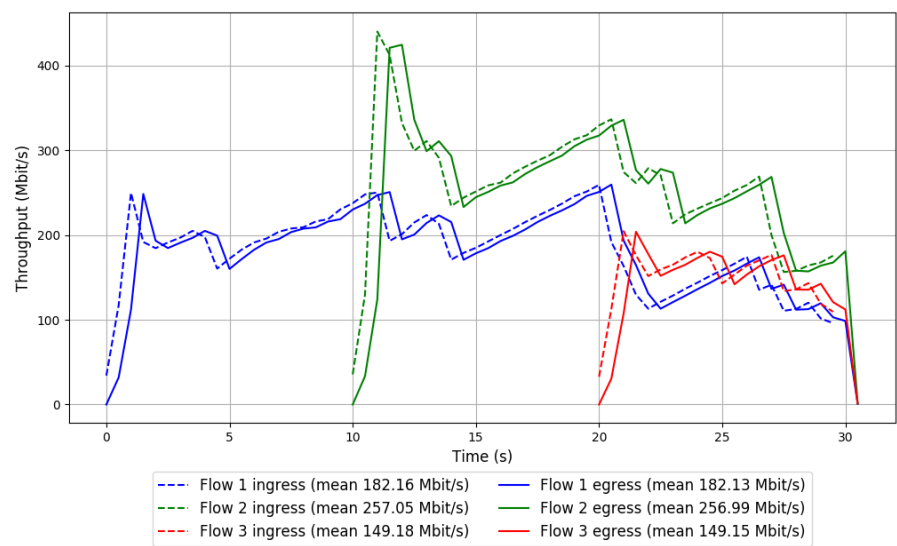
-- Flow 3:

Average throughput: 149.15 Mbit/s

95th percentile per-packet one-way delay: 19.224 ms

Loss rate: 0.02%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-07 15:02:02

End at: 2018-09-07 15:02:32

Local clock offset: 2.952 ms

Remote clock offset: 1.369 ms

Below is generated by plot.py at 2018-09-07 17:05:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 368.85 Mbit/s

95th percentile per-packet one-way delay: 38.557 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 145.61 Mbit/s

95th percentile per-packet one-way delay: 19.504 ms

Loss rate: 0.03%

-- Flow 2:

Average throughput: 225.11 Mbit/s

95th percentile per-packet one-way delay: 43.491 ms

Loss rate: 0.06%

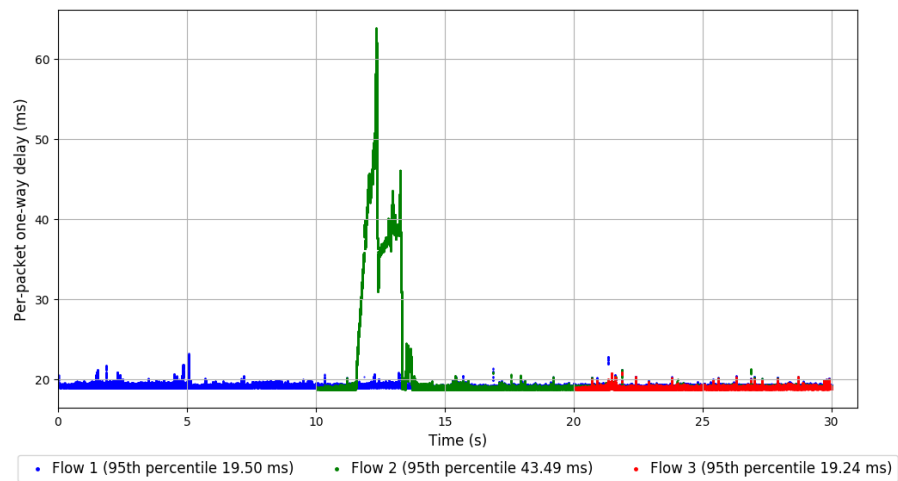
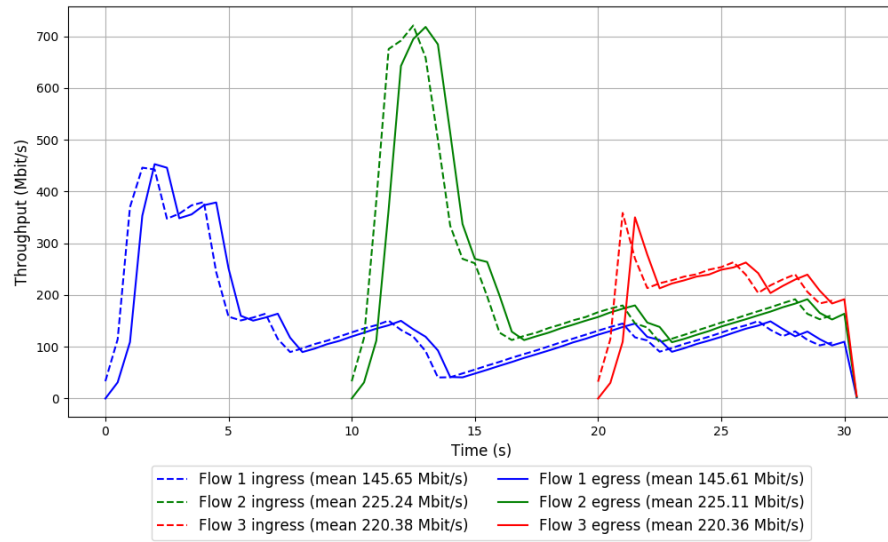
-- Flow 3:

Average throughput: 220.36 Mbit/s

95th percentile per-packet one-way delay: 19.239 ms

Loss rate: 0.01%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-09-07 15:29:59

End at: 2018-09-07 15:30:29

Local clock offset: 2.802 ms

Remote clock offset: 0.697 ms

Below is generated by plot.py at 2018-09-07 17:05:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 349.59 Mbit/s

95th percentile per-packet one-way delay: 19.236 ms

Loss rate: 0.10%

-- Flow 1:

Average throughput: 201.41 Mbit/s

95th percentile per-packet one-way delay: 22.867 ms

Loss rate: 0.08%

-- Flow 2:

Average throughput: 136.10 Mbit/s

95th percentile per-packet one-way delay: 18.572 ms

Loss rate: 0.13%

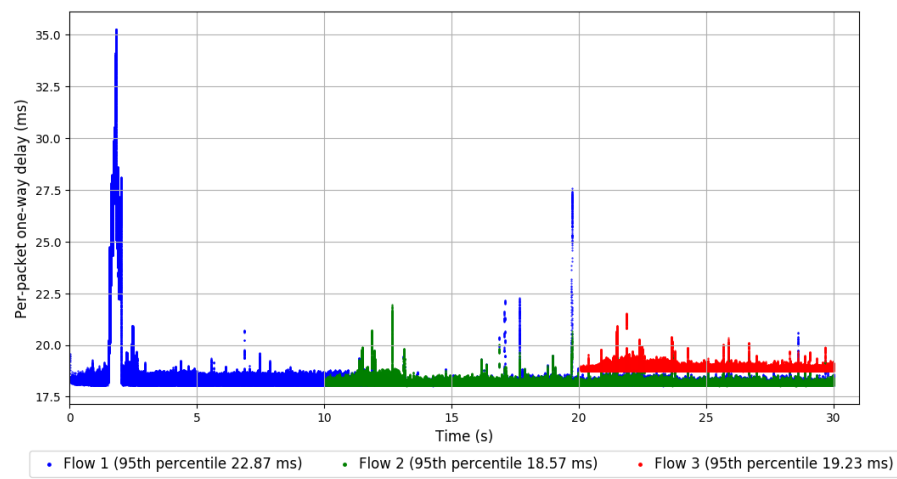
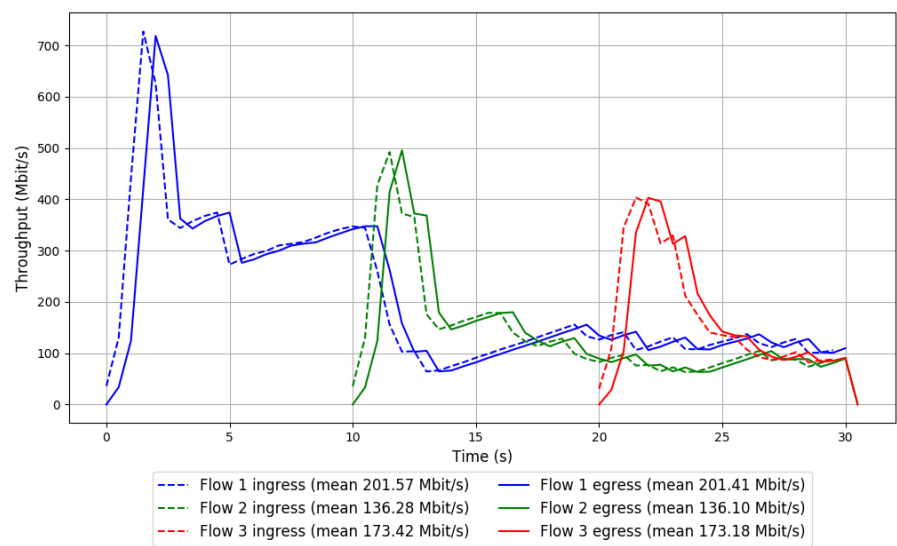
-- Flow 3:

Average throughput: 173.18 Mbit/s

95th percentile per-packet one-way delay: 19.227 ms

Loss rate: 0.14%

Run 3: Report of TCP Cubic — Data Link

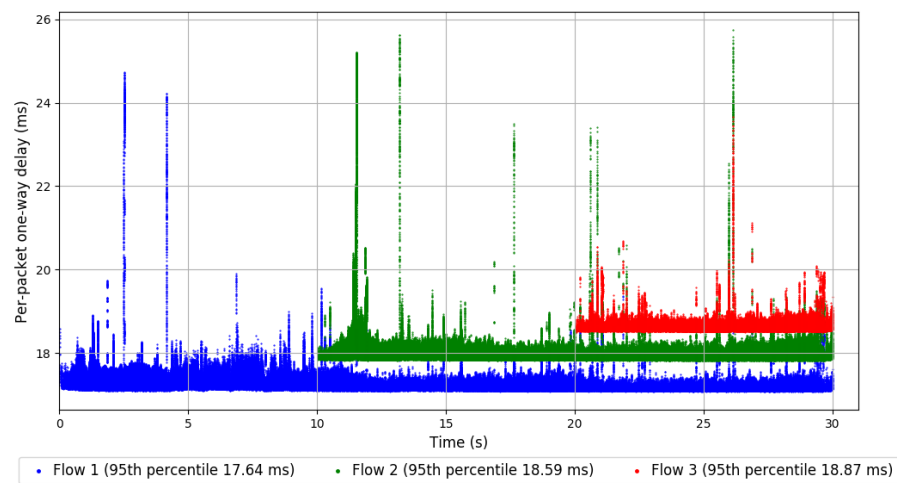
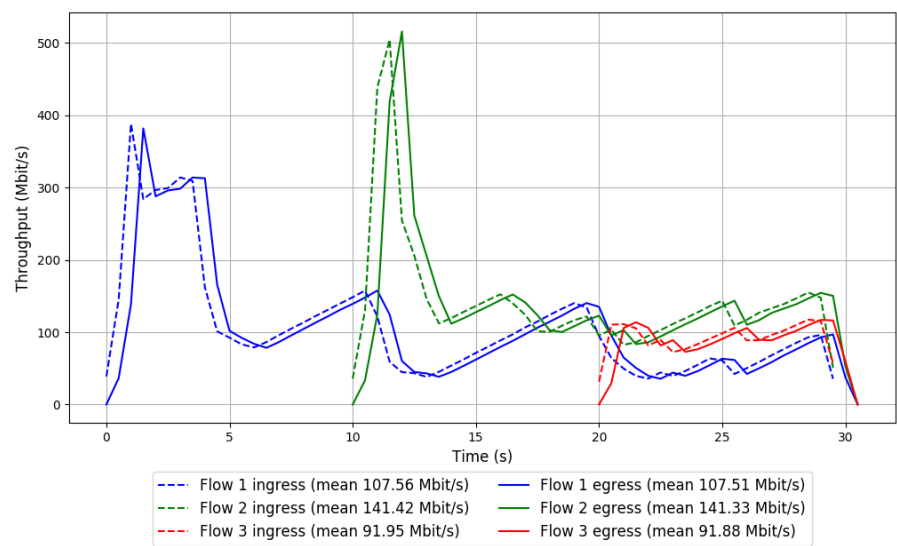


Run 4: Statistics of TCP Cubic

Start at: 2018-09-07 15:57:52
End at: 2018-09-07 15:58:22
Local clock offset: 0.167 ms
Remote clock offset: -3.333 ms

```
# Below is generated by plot.py at 2018-09-07 17:05:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 232.20 Mbit/s
95th percentile per-packet one-way delay: 18.715 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 107.51 Mbit/s
95th percentile per-packet one-way delay: 17.644 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 141.33 Mbit/s
95th percentile per-packet one-way delay: 18.589 ms
Loss rate: 0.06%
-- Flow 3:
Average throughput: 91.88 Mbit/s
95th percentile per-packet one-way delay: 18.872 ms
Loss rate: 0.07%
```

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-09-07 16:25:36

End at: 2018-09-07 16:26:06

Local clock offset: 1.849 ms

Remote clock offset: -0.09 ms

Below is generated by plot.py at 2018-09-07 17:05:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 262.83 Mbit/s

95th percentile per-packet one-way delay: 19.455 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 96.05 Mbit/s

95th percentile per-packet one-way delay: 19.309 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 201.12 Mbit/s

95th percentile per-packet one-way delay: 19.789 ms

Loss rate: 0.03%

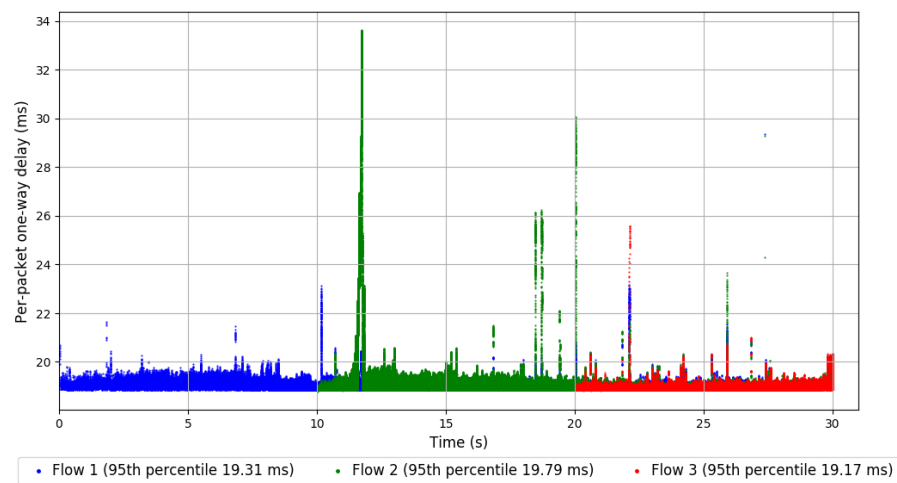
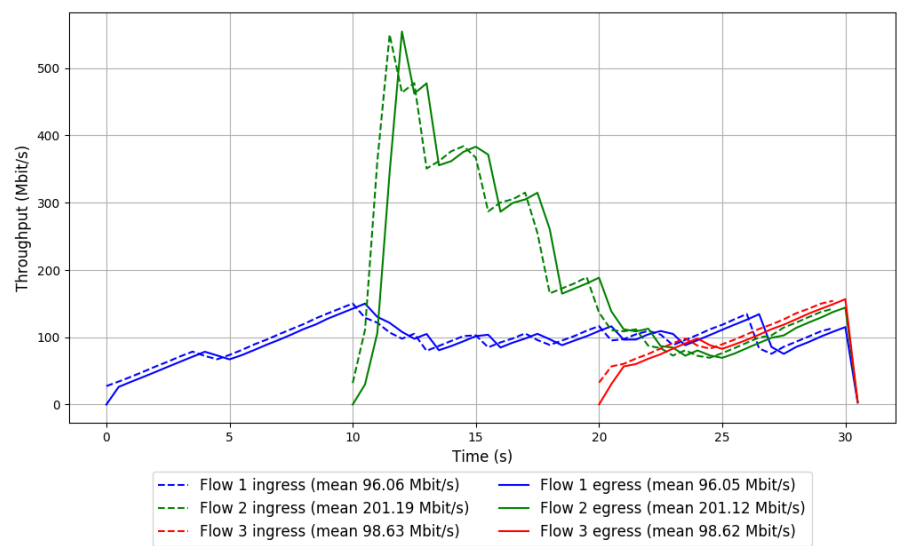
-- Flow 3:

Average throughput: 98.62 Mbit/s

95th percentile per-packet one-way delay: 19.174 ms

Loss rate: 0.01%

Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-09-07 14:35:33

End at: 2018-09-07 14:36:03

Local clock offset: 2.984 ms

Remote clock offset: 1.106 ms

Below is generated by plot.py at 2018-09-07 17:11:37

Datalink statistics

-- Total of 3 flows:

Average throughput: 873.19 Mbit/s

95th percentile per-packet one-way delay: 85.380 ms

Loss rate: 12.53%

-- Flow 1:

Average throughput: 577.91 Mbit/s

95th percentile per-packet one-way delay: 87.117 ms

Loss rate: 10.54%

-- Flow 2:

Average throughput: 369.63 Mbit/s

95th percentile per-packet one-way delay: 63.191 ms

Loss rate: 16.03%

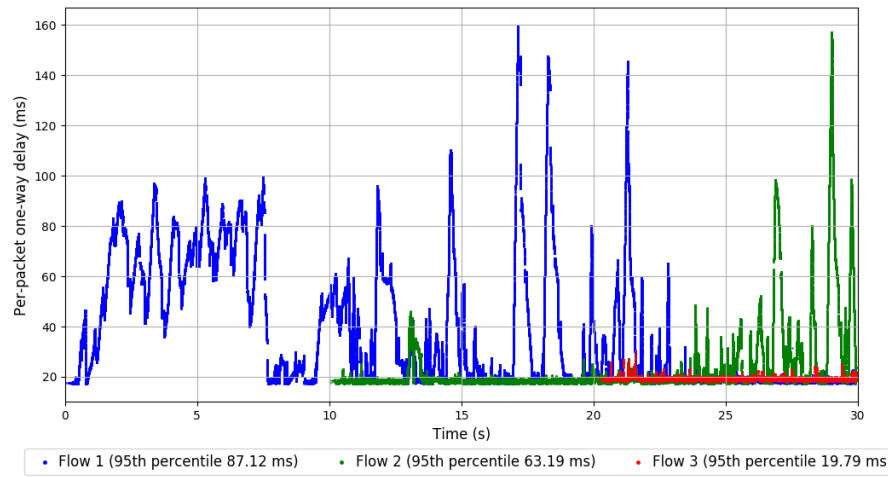
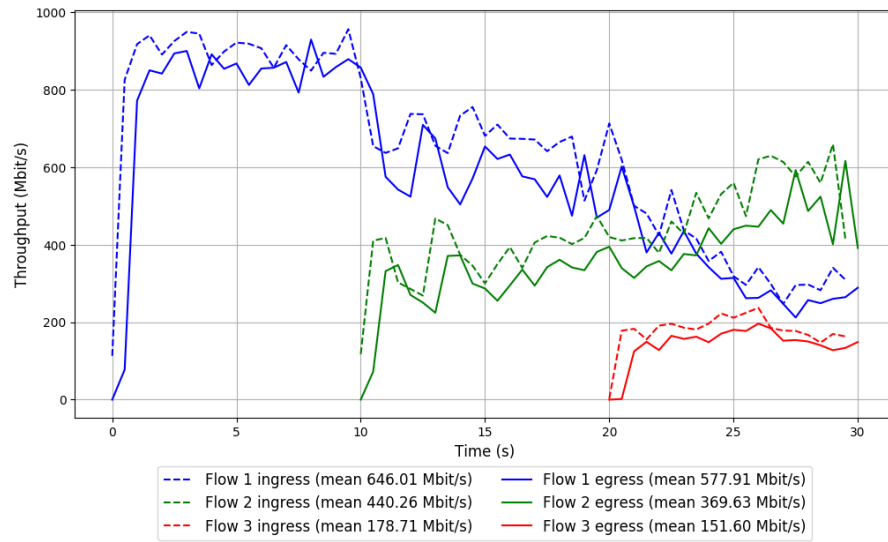
-- Flow 3:

Average throughput: 151.60 Mbit/s

95th percentile per-packet one-way delay: 19.791 ms

Loss rate: 16.93%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-09-07 15:03:35

End at: 2018-09-07 15:04:05

Local clock offset: 2.939 ms

Remote clock offset: 1.225 ms

Below is generated by plot.py at 2018-09-07 17:14:06

Datalink statistics

-- Total of 3 flows:

Average throughput: 873.54 Mbit/s

95th percentile per-packet one-way delay: 87.444 ms

Loss rate: 13.69%

-- Flow 1:

Average throughput: 480.02 Mbit/s

95th percentile per-packet one-way delay: 88.562 ms

Loss rate: 10.67%

-- Flow 2:

Average throughput: 394.81 Mbit/s

95th percentile per-packet one-way delay: 58.257 ms

Loss rate: 16.57%

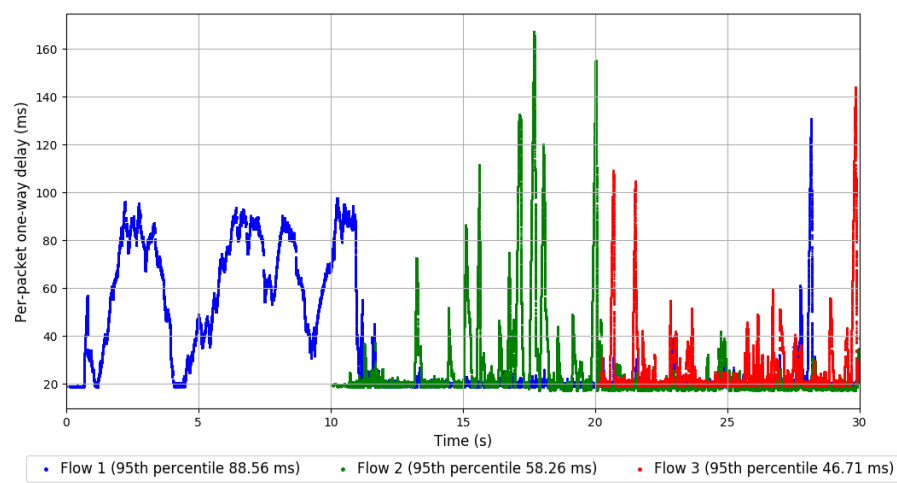
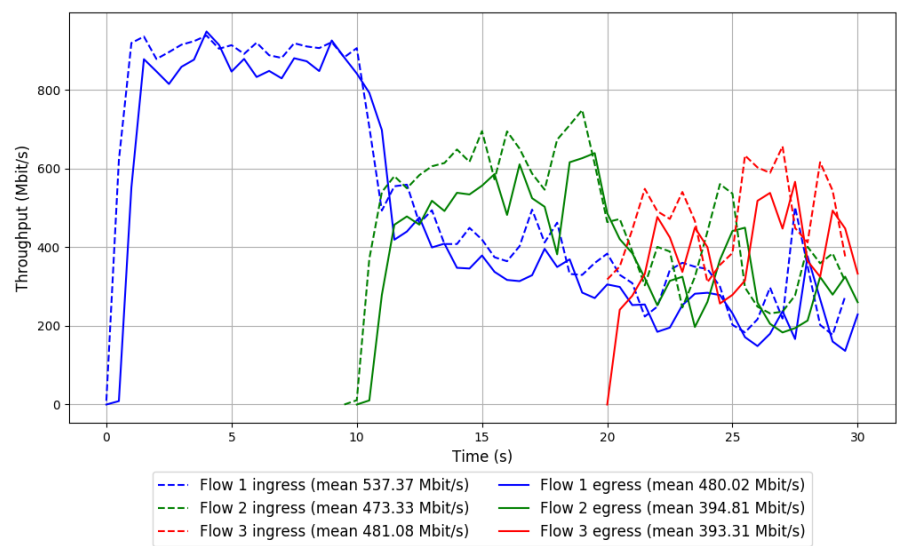
-- Flow 3:

Average throughput: 393.31 Mbit/s

95th percentile per-packet one-way delay: 46.707 ms

Loss rate: 18.20%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-09-07 15:31:31

End at: 2018-09-07 15:32:01

Local clock offset: 2.887 ms

Remote clock offset: 0.609 ms

Below is generated by plot.py at 2018-09-07 17:15:21

Datalink statistics

-- Total of 3 flows:

Average throughput: 870.99 Mbit/s

95th percentile per-packet one-way delay: 85.331 ms

Loss rate: 13.61%

-- Flow 1:

Average throughput: 562.57 Mbit/s

95th percentile per-packet one-way delay: 86.274 ms

Loss rate: 10.93%

-- Flow 2:

Average throughput: 361.08 Mbit/s

95th percentile per-packet one-way delay: 34.588 ms

Loss rate: 17.50%

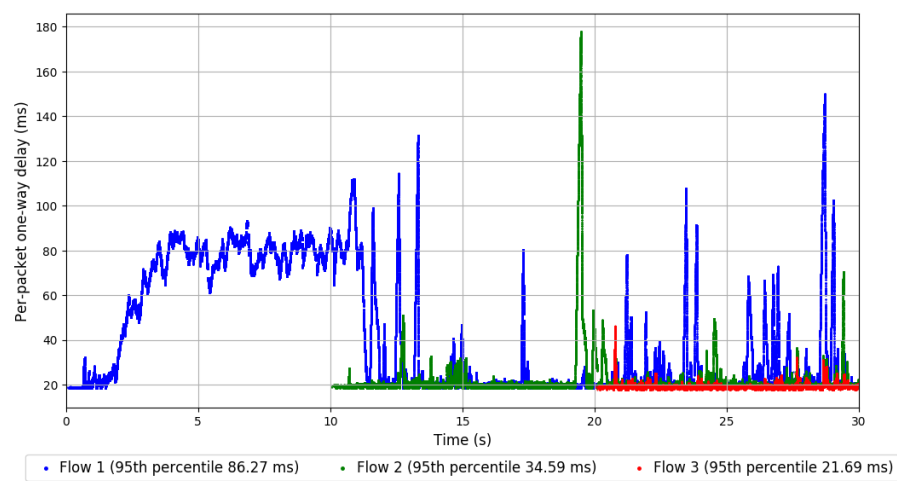
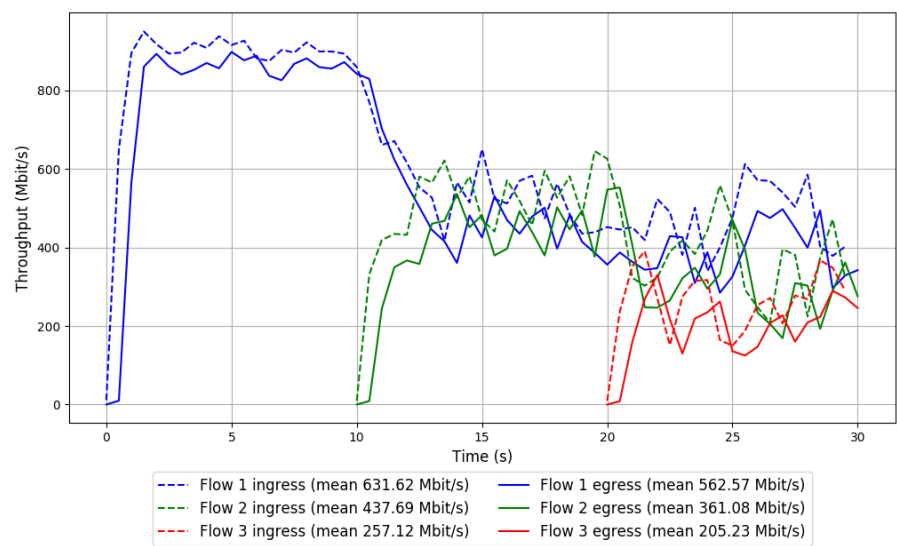
-- Flow 3:

Average throughput: 205.23 Mbit/s

95th percentile per-packet one-way delay: 21.693 ms

Loss rate: 20.18%

Run 3: Report of FillP — Data Link



Run 4: Statistics of FillP

Start at: 2018-09-07 15:59:19

End at: 2018-09-07 15:59:49

Local clock offset: 0.012 ms

Remote clock offset: -3.37 ms

Below is generated by plot.py at 2018-09-07 17:16:56

Datalink statistics

-- Total of 3 flows:

Average throughput: 835.17 Mbit/s

95th percentile per-packet one-way delay: 92.294 ms

Loss rate: 11.31%

-- Flow 1:

Average throughput: 609.53 Mbit/s

95th percentile per-packet one-way delay: 93.162 ms

Loss rate: 9.47%

-- Flow 2:

Average throughput: 257.25 Mbit/s

95th percentile per-packet one-way delay: 20.100 ms

Loss rate: 15.64%

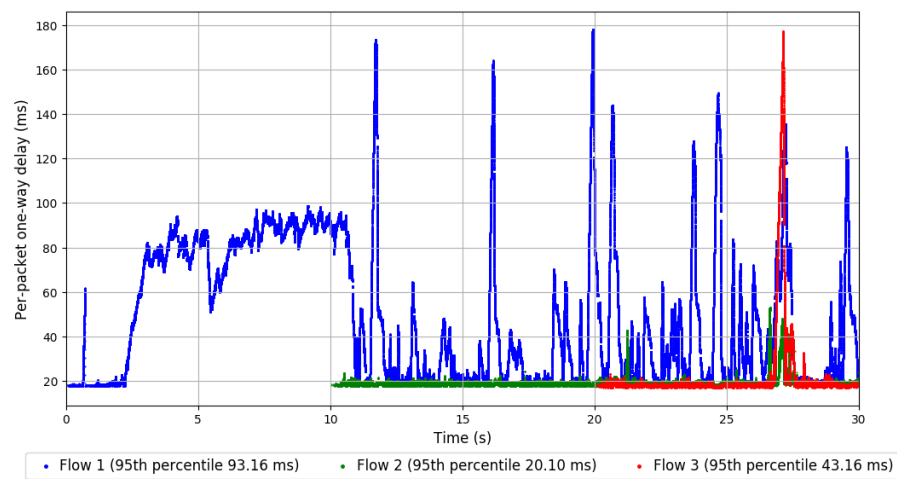
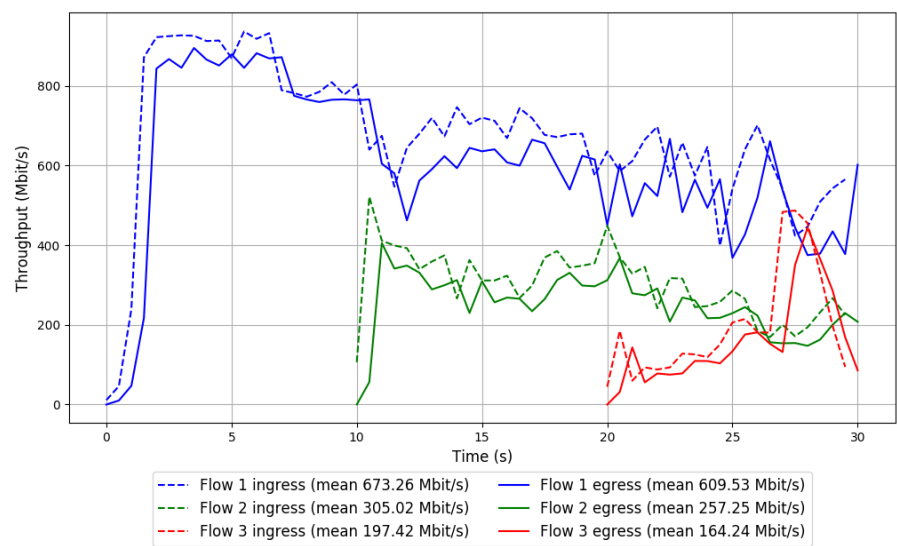
-- Flow 3:

Average throughput: 164.24 Mbit/s

95th percentile per-packet one-way delay: 43.155 ms

Loss rate: 16.80%

Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-09-07 16:27:05

End at: 2018-09-07 16:27:35

Local clock offset: 2.203 ms

Remote clock offset: 0.055 ms

Below is generated by plot.py at 2018-09-07 17:17:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 833.09 Mbit/s

95th percentile per-packet one-way delay: 92.767 ms

Loss rate: 12.90%

-- Flow 1:

Average throughput: 502.29 Mbit/s

95th percentile per-packet one-way delay: 92.778 ms

Loss rate: 10.09%

-- Flow 2:

Average throughput: 458.86 Mbit/s

95th percentile per-packet one-way delay: 95.735 ms

Loss rate: 16.88%

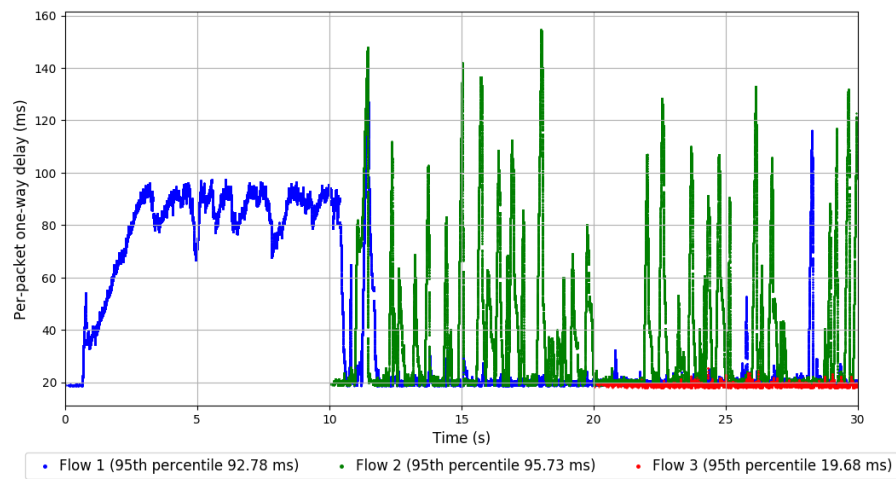
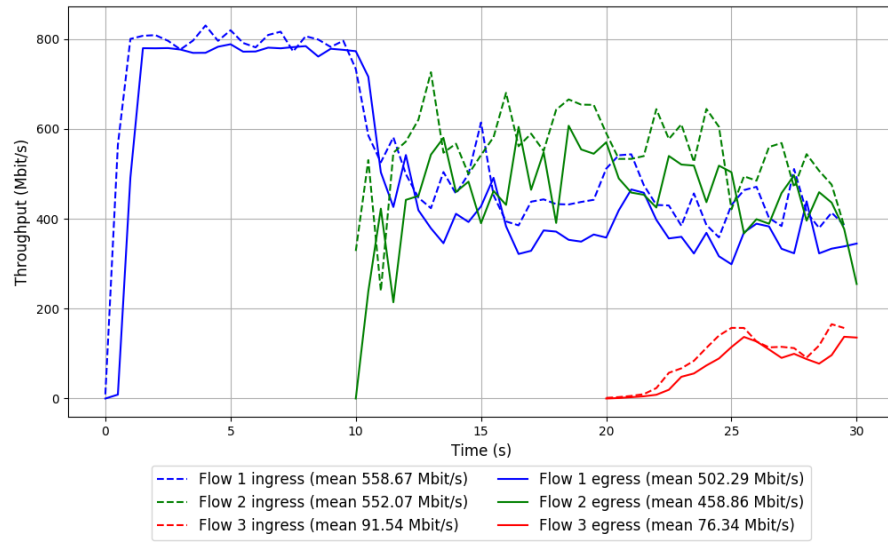
-- Flow 3:

Average throughput: 76.34 Mbit/s

95th percentile per-packet one-way delay: 19.682 ms

Loss rate: 16.60%

Run 5: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2018-09-07 14:29:02

End at: 2018-09-07 14:29:32

Local clock offset: 3.051 ms

Remote clock offset: 1.667 ms

Below is generated by plot.py at 2018-09-07 17:18:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 906.32 Mbit/s

95th percentile per-packet one-way delay: 41.225 ms

Loss rate: 18.13%

-- Flow 1:

Average throughput: 558.72 Mbit/s

95th percentile per-packet one-way delay: 40.598 ms

Loss rate: 13.56%

-- Flow 2:

Average throughput: 400.41 Mbit/s

95th percentile per-packet one-way delay: 41.512 ms

Loss rate: 23.37%

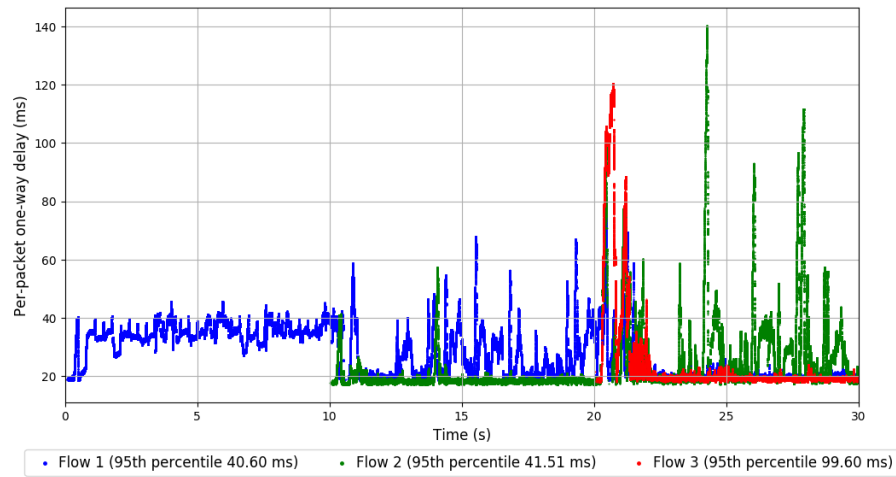
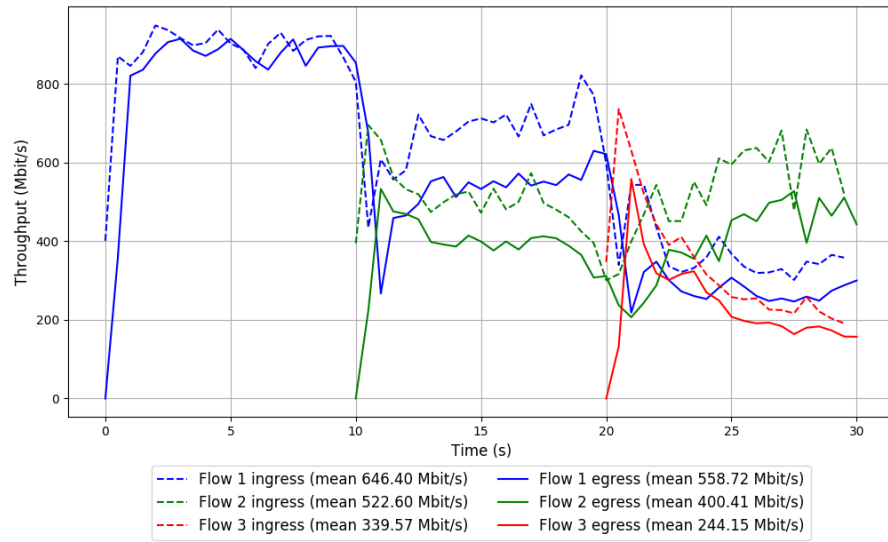
-- Flow 3:

Average throughput: 244.15 Mbit/s

95th percentile per-packet one-way delay: 99.598 ms

Loss rate: 28.12%

Run 1: Report of FillP-Sheep — Data Link



Run 2: Statistics of FillP-Sheep

Start at: 2018-09-07 14:57:06

End at: 2018-09-07 14:57:36

Local clock offset: 3.028 ms

Remote clock offset: 1.661 ms

Below is generated by plot.py at 2018-09-07 17:18:50

Datalink statistics

-- Total of 3 flows:

Average throughput: 906.17 Mbit/s

95th percentile per-packet one-way delay: 38.675 ms

Loss rate: 20.25%

-- Flow 1:

Average throughput: 554.58 Mbit/s

95th percentile per-packet one-way delay: 38.747 ms

Loss rate: 16.16%

-- Flow 2:

Average throughput: 346.03 Mbit/s

95th percentile per-packet one-way delay: 35.991 ms

Loss rate: 24.94%

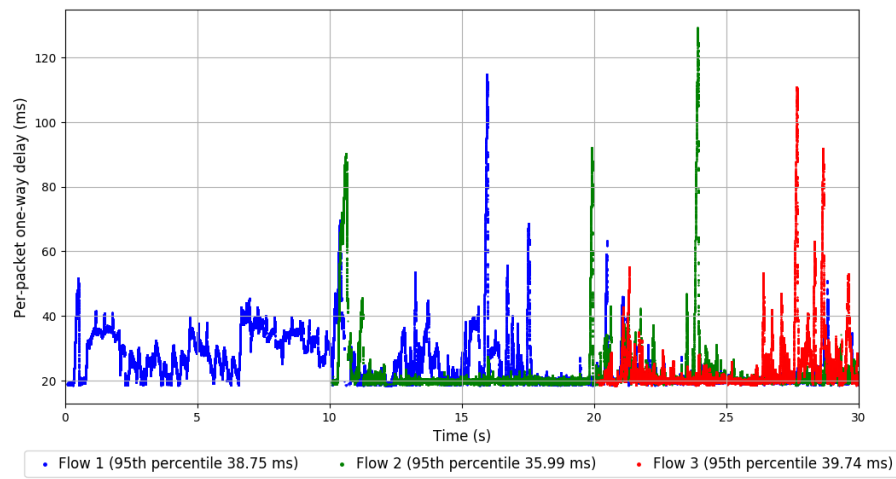
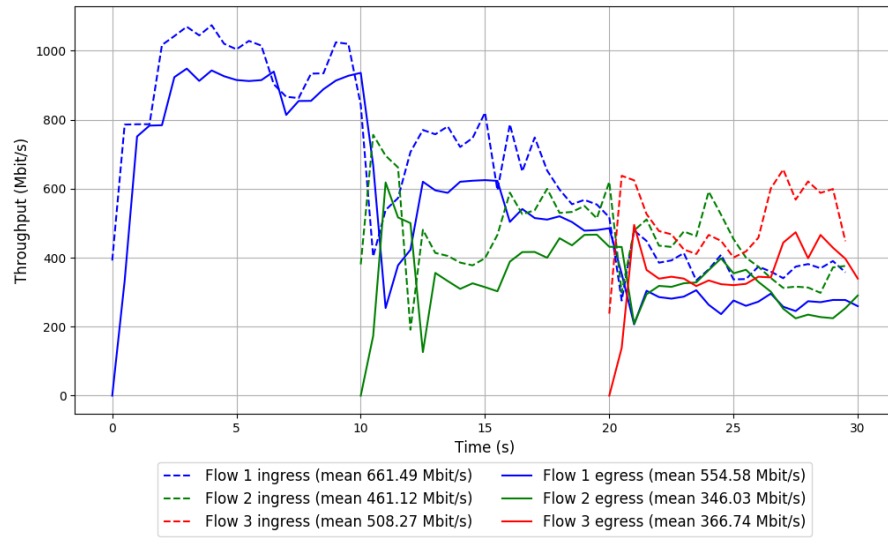
-- Flow 3:

Average throughput: 366.74 Mbit/s

95th percentile per-packet one-way delay: 39.738 ms

Loss rate: 27.81%

Run 2: Report of FillP-Sheep — Data Link



Run 3: Statistics of FillP-Sheep

Start at: 2018-09-07 15:25:03

End at: 2018-09-07 15:25:33

Local clock offset: 2.871 ms

Remote clock offset: 0.651 ms

Below is generated by plot.py at 2018-09-07 17:18:50

Datalink statistics

-- Total of 3 flows:

Average throughput: 896.65 Mbit/s

95th percentile per-packet one-way delay: 41.764 ms

Loss rate: 18.56%

-- Flow 1:

Average throughput: 501.80 Mbit/s

95th percentile per-packet one-way delay: 40.197 ms

Loss rate: 14.84%

-- Flow 2:

Average throughput: 368.12 Mbit/s

95th percentile per-packet one-way delay: 39.052 ms

Loss rate: 23.21%

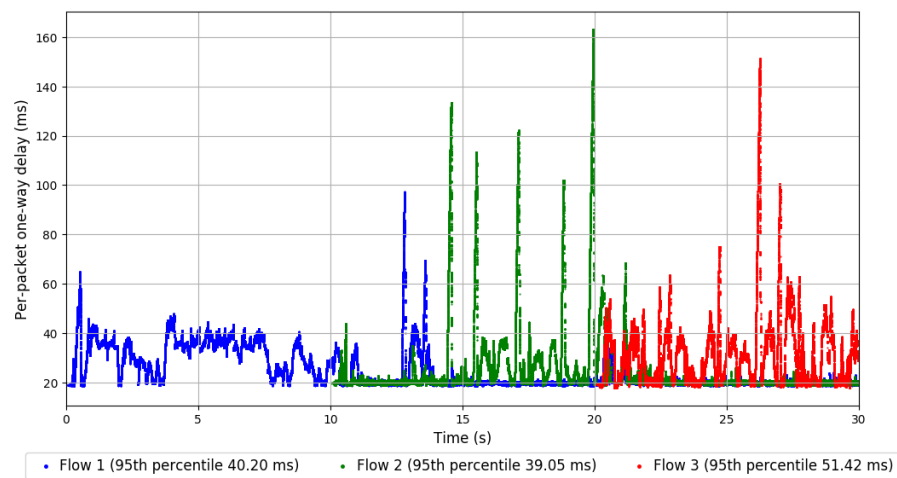
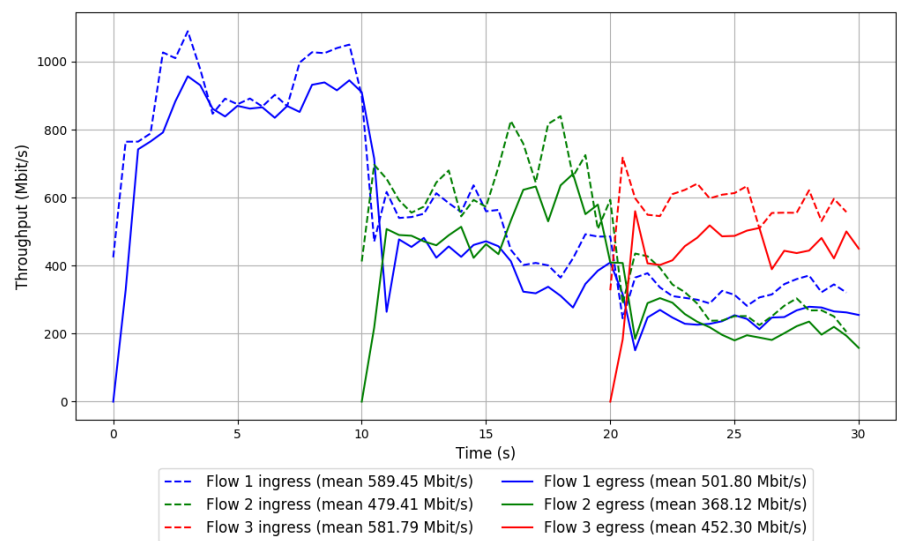
-- Flow 3:

Average throughput: 452.30 Mbit/s

95th percentile per-packet one-way delay: 51.420 ms

Loss rate: 22.24%

Run 3: Report of FillP-Sheep — Data Link

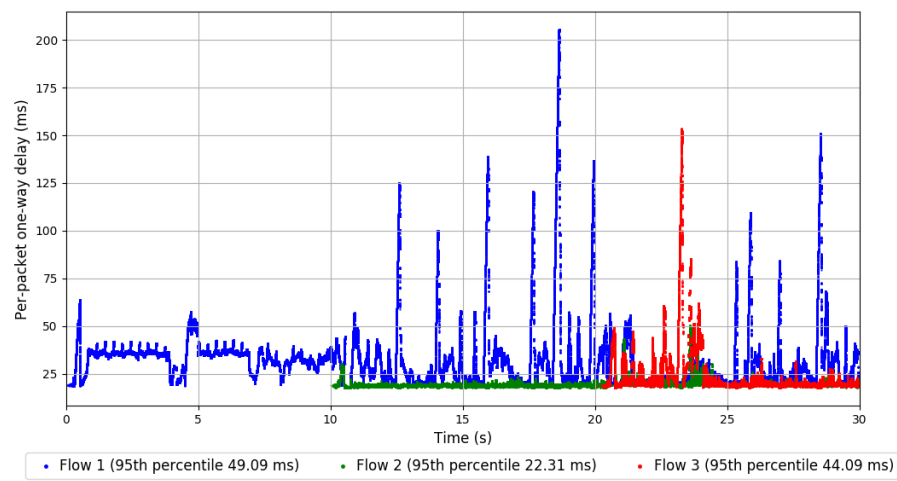
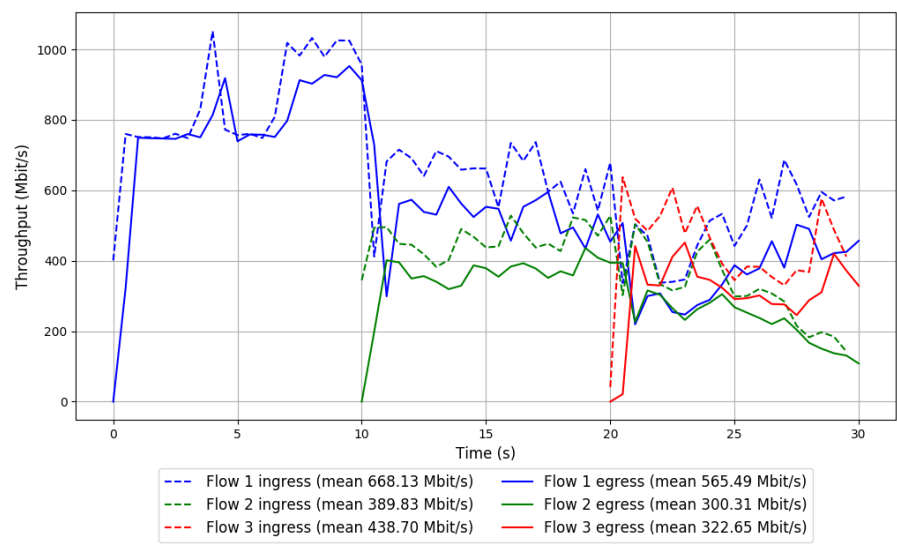


Run 4: Statistics of FillP-Sheep

Start at: 2018-09-07 15:52:59
End at: 2018-09-07 15:53:29
Local clock offset: 0.845 ms
Remote clock offset: -2.993 ms

Below is generated by plot.py at 2018-09-07 17:26:25
Datalink statistics
-- Total of 3 flows:
Average throughput: 872.53 Mbit/s
95th percentile per-packet one-way delay: 43.519 ms
Loss rate: 18.70%
-- Flow 1:
Average throughput: 565.49 Mbit/s
95th percentile per-packet one-way delay: 49.089 ms
Loss rate: 15.36%
-- Flow 2:
Average throughput: 300.31 Mbit/s
95th percentile per-packet one-way delay: 22.307 ms
Loss rate: 22.96%
-- Flow 3:
Average throughput: 322.65 Mbit/s
95th percentile per-packet one-way delay: 44.086 ms
Loss rate: 26.44%

Run 4: Report of FillP-Sheep — Data Link

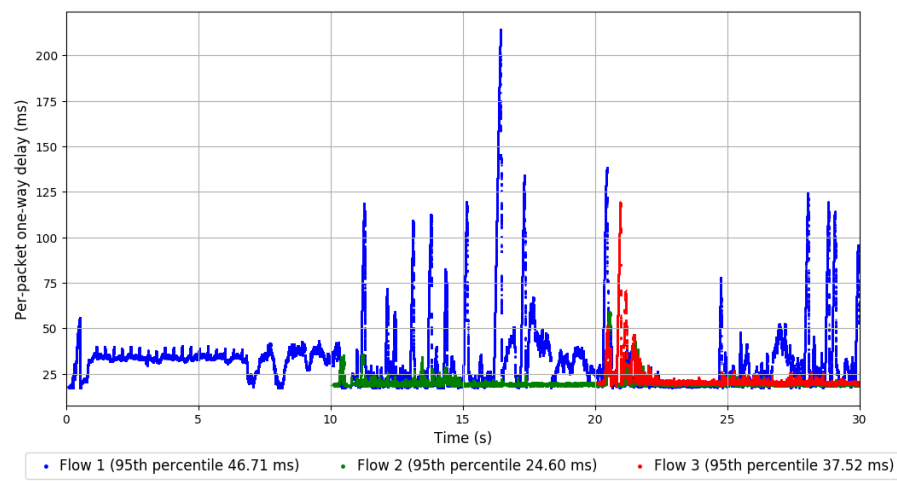
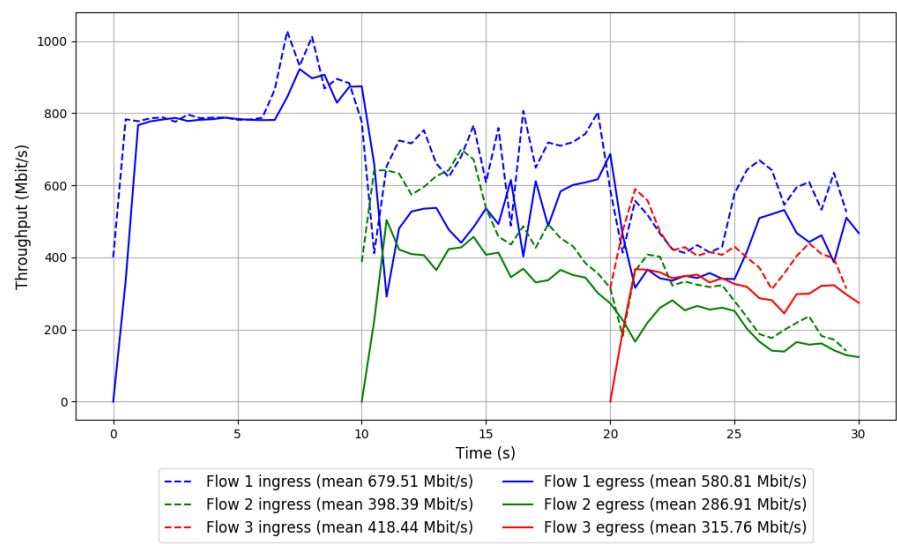


Run 5: Statistics of FillP-Sheep

Start at: 2018-09-07 16:20:44
End at: 2018-09-07 16:21:14
Local clock offset: 0.92 ms
Remote clock offset: -0.508 ms

Below is generated by plot.py at 2018-09-07 17:28:27
Datalink statistics
-- Total of 3 flows:
Average throughput: 876.55 Mbit/s
95th percentile per-packet one-way delay: 43.268 ms
Loss rate: 19.10%
-- Flow 1:
Average throughput: 580.81 Mbit/s
95th percentile per-packet one-way delay: 46.706 ms
Loss rate: 14.51%
-- Flow 2:
Average throughput: 286.91 Mbit/s
95th percentile per-packet one-way delay: 24.598 ms
Loss rate: 27.98%
-- Flow 3:
Average throughput: 315.76 Mbit/s
95th percentile per-packet one-way delay: 37.520 ms
Loss rate: 24.55%

Run 5: Report of FillP-Sheep — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-07 14:40:18

End at: 2018-09-07 14:40:48

Local clock offset: 3.1 ms

Remote clock offset: 1.042 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 399.75 Mbit/s

95th percentile per-packet one-way delay: 20.434 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 202.83 Mbit/s

95th percentile per-packet one-way delay: 20.673 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 201.03 Mbit/s

95th percentile per-packet one-way delay: 19.632 ms

Loss rate: 0.03%

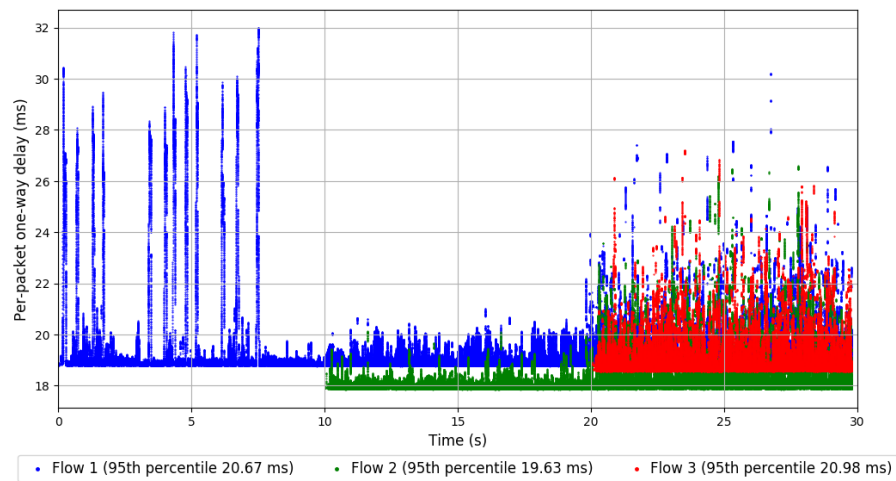
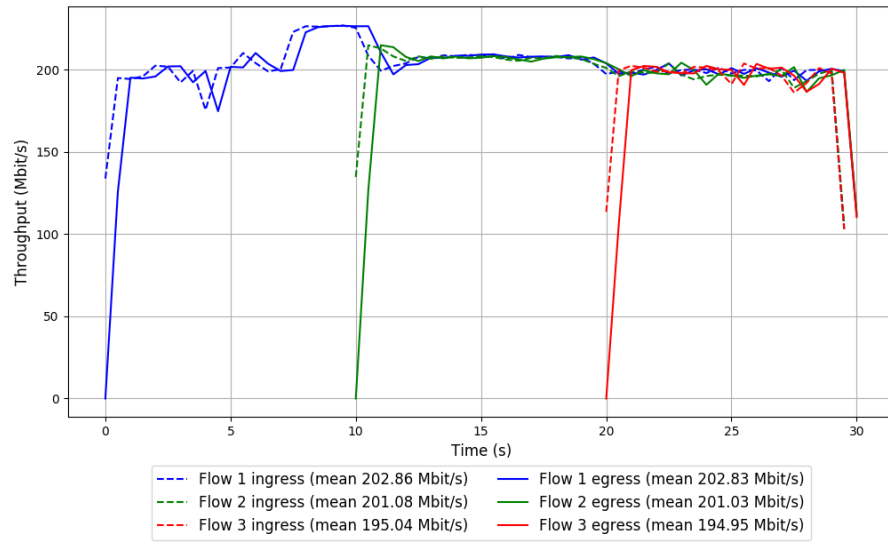
-- Flow 3:

Average throughput: 194.95 Mbit/s

95th percentile per-packet one-way delay: 20.976 ms

Loss rate: 0.05%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-09-07 15:08:19

End at: 2018-09-07 15:08:49

Local clock offset: 3.022 ms

Remote clock offset: 0.78 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 396.40 Mbit/s

95th percentile per-packet one-way delay: 20.370 ms

Loss rate: 0.05%

-- Flow 1:

Average throughput: 202.79 Mbit/s

95th percentile per-packet one-way delay: 20.232 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 199.99 Mbit/s

95th percentile per-packet one-way delay: 19.815 ms

Loss rate: 0.06%

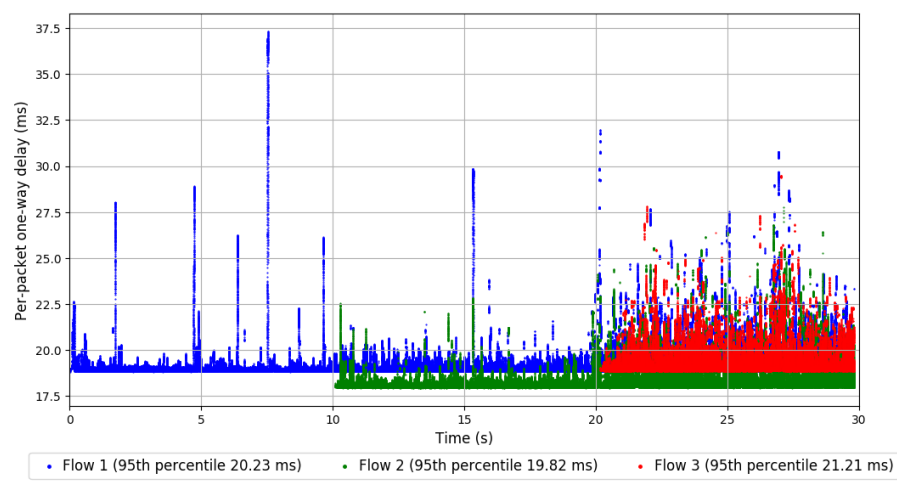
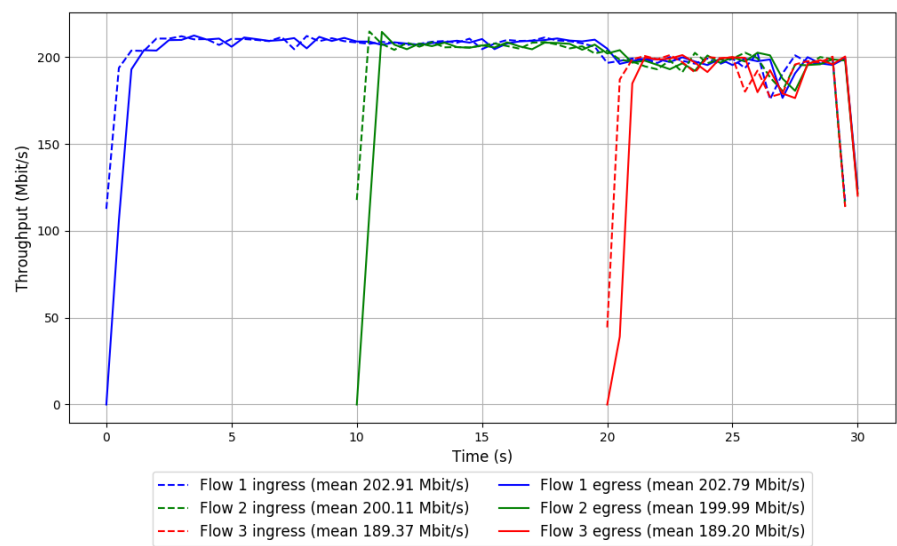
-- Flow 3:

Average throughput: 189.20 Mbit/s

95th percentile per-packet one-way delay: 21.214 ms

Loss rate: 0.09%

Run 2: Report of Indigo — Data Link

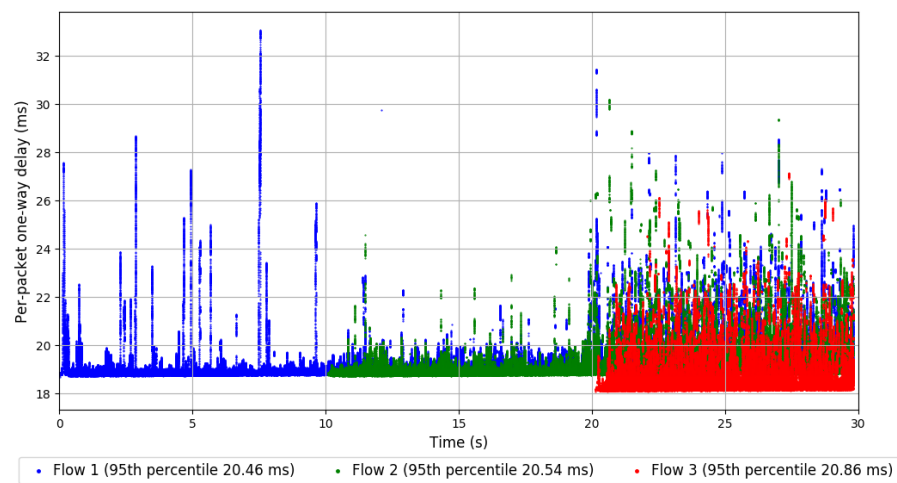
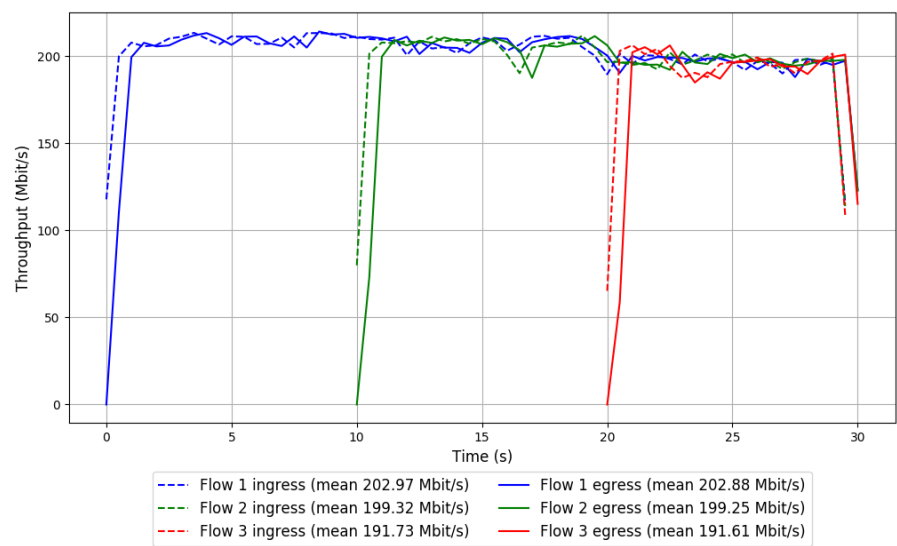


Run 3: Statistics of Indigo

Start at: 2018-09-07 15:36:14
End at: 2018-09-07 15:36:44
Local clock offset: 2.75 ms
Remote clock offset: -0.439 ms

Below is generated by plot.py at 2018-09-07 17:28:27
Datalink statistics
-- Total of 3 flows:
Average throughput: 397.08 Mbit/s
95th percentile per-packet one-way delay: 20.565 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 202.88 Mbit/s
95th percentile per-packet one-way delay: 20.457 ms
Loss rate: 0.04%
-- Flow 2:
Average throughput: 199.25 Mbit/s
95th percentile per-packet one-way delay: 20.544 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 191.61 Mbit/s
95th percentile per-packet one-way delay: 20.857 ms
Loss rate: 0.06%

Run 3: Report of Indigo — Data Link

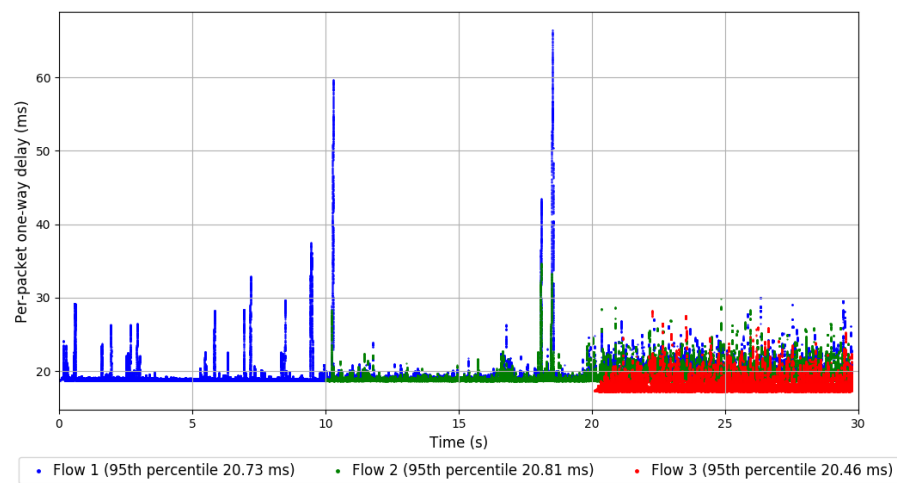
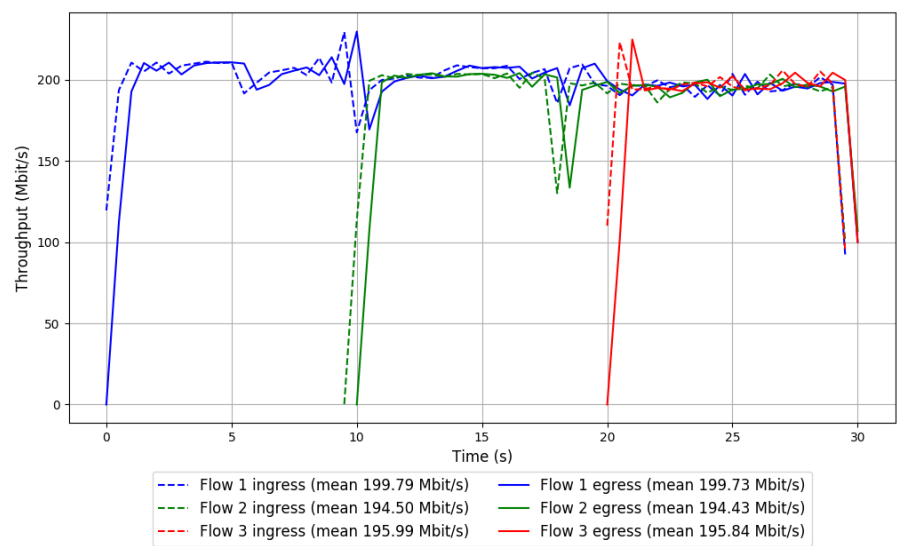


Run 4: Statistics of Indigo

Start at: 2018-09-07 16:03:59
End at: 2018-09-07 16:04:29
Local clock offset: -0.482 ms
Remote clock offset: -3.636 ms

Below is generated by plot.py at 2018-09-07 17:28:27
Datalink statistics
-- Total of 3 flows:
Average throughput: 392.34 Mbit/s
95th percentile per-packet one-way delay: 20.718 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 199.73 Mbit/s
95th percentile per-packet one-way delay: 20.730 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 194.43 Mbit/s
95th percentile per-packet one-way delay: 20.807 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 195.84 Mbit/s
95th percentile per-packet one-way delay: 20.462 ms
Loss rate: 0.06%

Run 4: Report of Indigo — Data Link



Run 5: Statistics of Indigo

Start at: 2018-09-07 16:31:45

End at: 2018-09-07 16:32:15

Local clock offset: 2.683 ms

Remote clock offset: 0.288 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 397.82 Mbit/s

95th percentile per-packet one-way delay: 20.635 ms

Loss rate: 0.04%

-- Flow 1:

Average throughput: 206.57 Mbit/s

95th percentile per-packet one-way delay: 19.865 ms

Loss rate: 0.03%

-- Flow 2:

Average throughput: 194.46 Mbit/s

95th percentile per-packet one-way delay: 20.928 ms

Loss rate: 0.05%

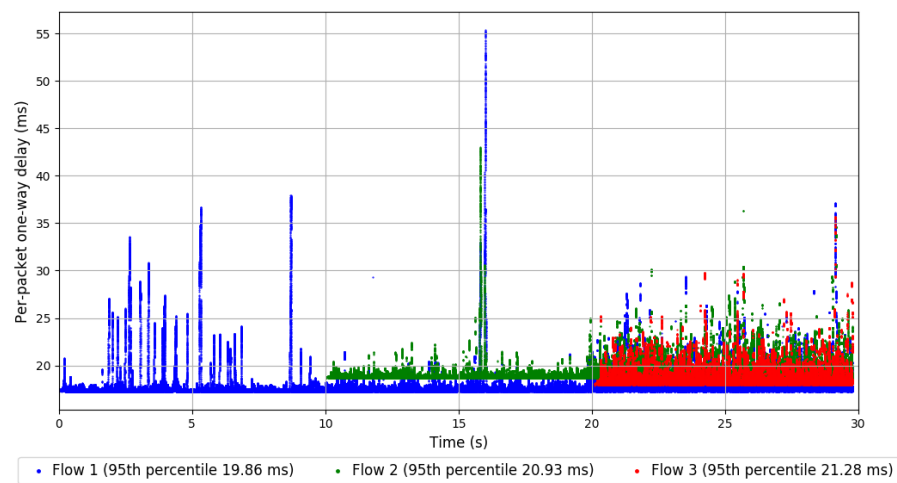
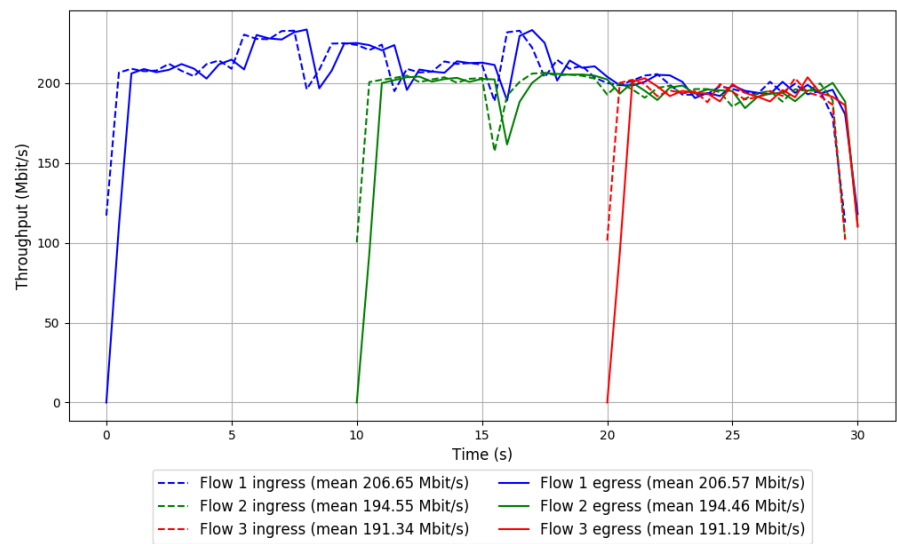
-- Flow 3:

Average throughput: 191.19 Mbit/s

95th percentile per-packet one-way delay: 21.281 ms

Loss rate: 0.07%

Run 5: Report of Indigo — Data Link

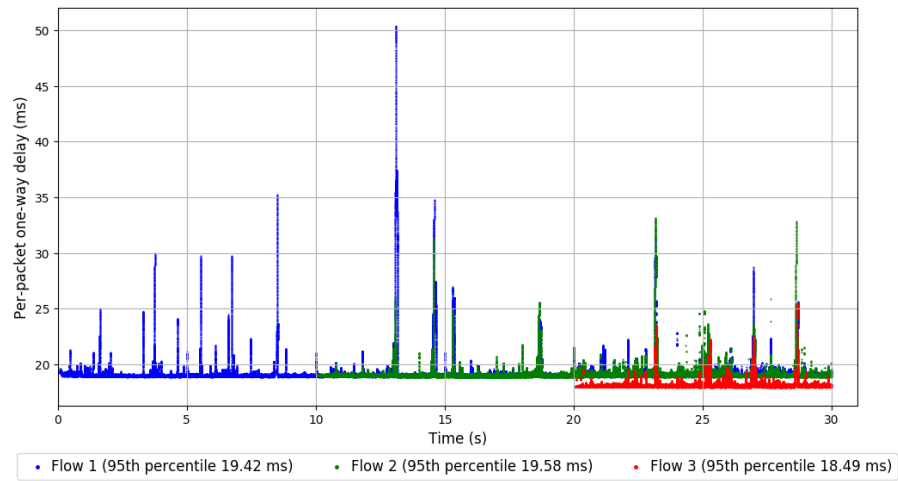
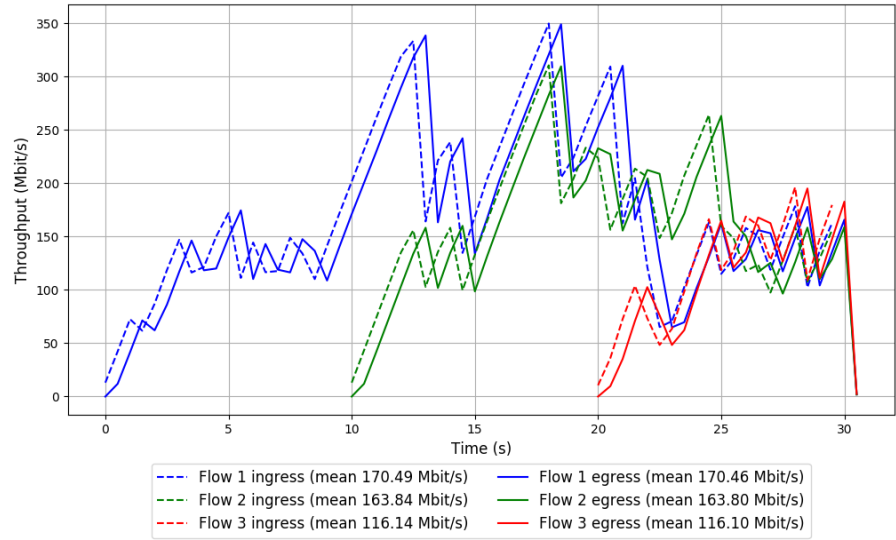


```
Run 1: Statistics of LEDBAT

Start at: 2018-09-07 14:38:43
End at: 2018-09-07 14:39:13
Local clock offset: 3.088 ms
Remote clock offset: 1.114 ms

# Below is generated by plot.py at 2018-09-07 17:28:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 318.14 Mbit/s
95th percentile per-packet one-way delay: 19.411 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 170.46 Mbit/s
95th percentile per-packet one-way delay: 19.417 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 163.80 Mbit/s
95th percentile per-packet one-way delay: 19.578 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 116.10 Mbit/s
95th percentile per-packet one-way delay: 18.494 ms
Loss rate: 0.04%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-09-07 15:06:45

End at: 2018-09-07 15:07:15

Local clock offset: 3.029 ms

Remote clock offset: 0.906 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 304.54 Mbit/s

95th percentile per-packet one-way delay: 19.343 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 182.19 Mbit/s

95th percentile per-packet one-way delay: 19.337 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 132.36 Mbit/s

95th percentile per-packet one-way delay: 19.423 ms

Loss rate: 0.03%

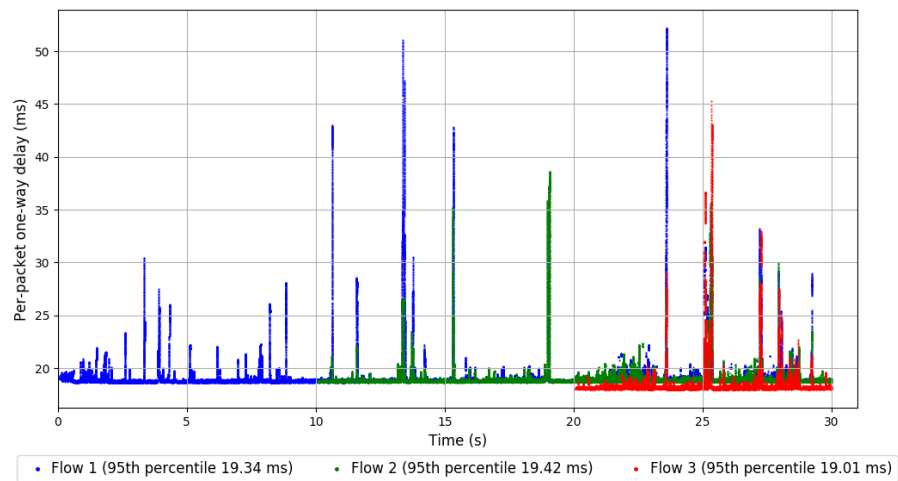
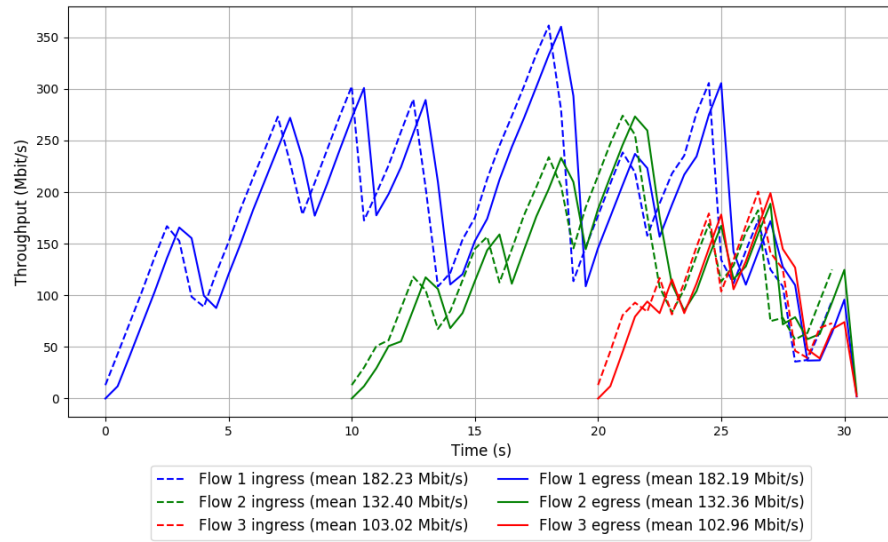
-- Flow 3:

Average throughput: 102.96 Mbit/s

95th percentile per-packet one-way delay: 19.007 ms

Loss rate: 0.06%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-09-07 15:34:41

End at: 2018-09-07 15:35:11

Local clock offset: 2.876 ms

Remote clock offset: 0.196 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 287.17 Mbit/s

95th percentile per-packet one-way delay: 19.426 ms

Loss rate: 0.05%

-- Flow 1:

Average throughput: 154.34 Mbit/s

95th percentile per-packet one-way delay: 19.446 ms

Loss rate: 0.06%

-- Flow 2:

Average throughput: 148.17 Mbit/s

95th percentile per-packet one-way delay: 19.364 ms

Loss rate: 0.04%

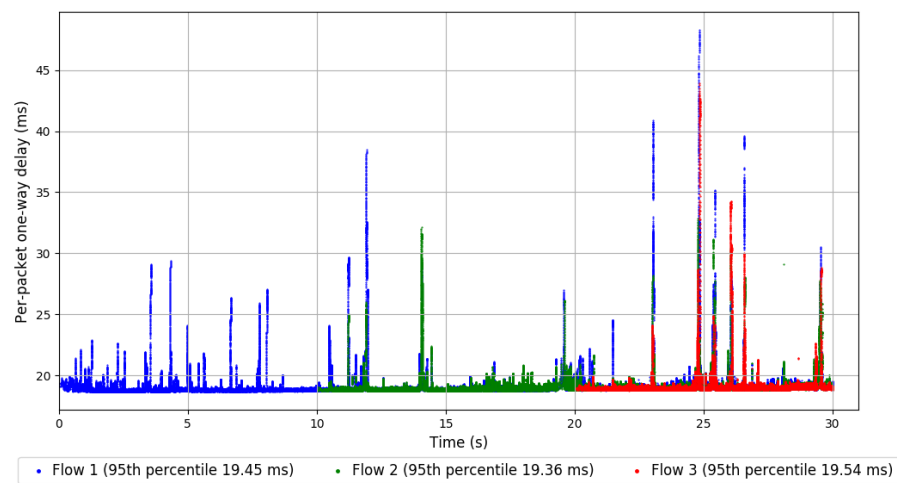
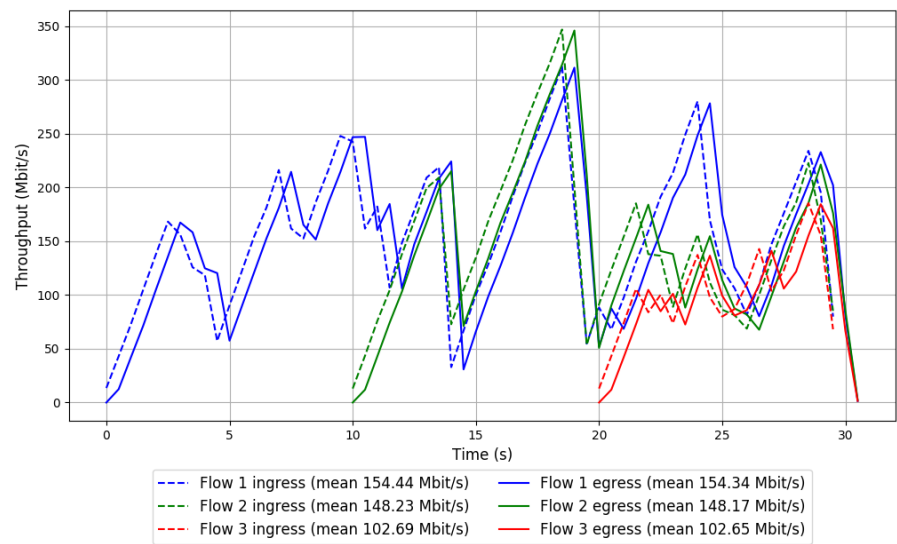
-- Flow 3:

Average throughput: 102.65 Mbit/s

95th percentile per-packet one-way delay: 19.544 ms

Loss rate: 0.05%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-09-07 16:02:27

End at: 2018-09-07 16:02:58

Local clock offset: -0.366 ms

Remote clock offset: -3.5 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 263.07 Mbit/s

95th percentile per-packet one-way delay: 19.589 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 146.08 Mbit/s

95th percentile per-packet one-way delay: 19.748 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 133.04 Mbit/s

95th percentile per-packet one-way delay: 18.271 ms

Loss rate: 0.03%

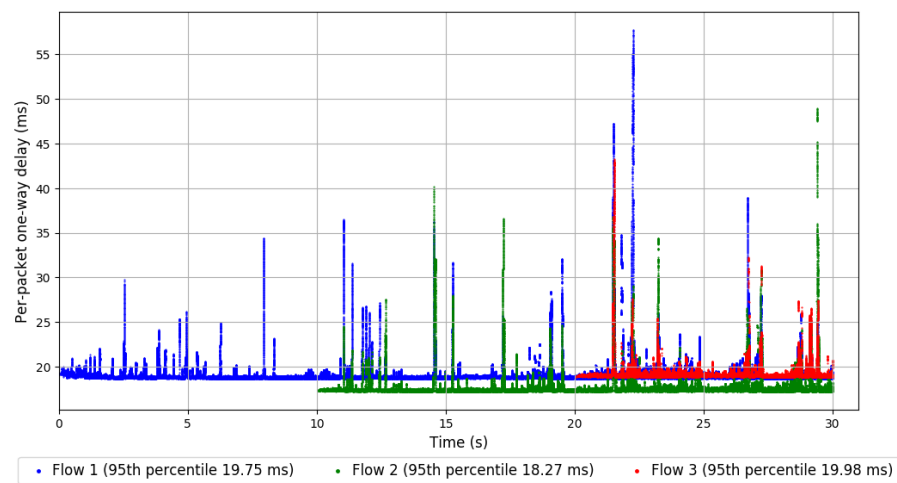
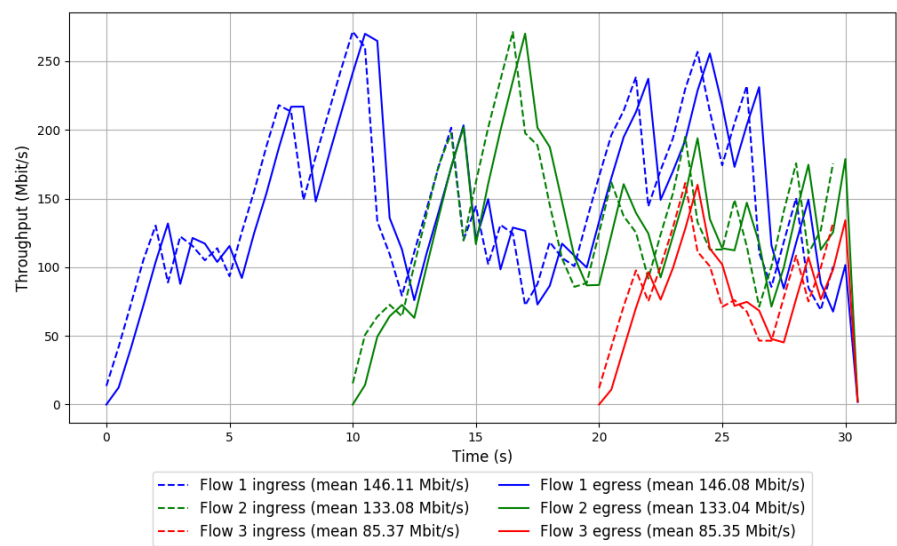
-- Flow 3:

Average throughput: 85.35 Mbit/s

95th percentile per-packet one-way delay: 19.982 ms

Loss rate: 0.05%

Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-09-07 16:30:13

End at: 2018-09-07 16:30:43

Local clock offset: 2.446 ms

Remote clock offset: 0.2 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 279.84 Mbit/s

95th percentile per-packet one-way delay: 19.204 ms

Loss rate: 0.04%

-- Flow 1:

Average throughput: 146.15 Mbit/s

95th percentile per-packet one-way delay: 19.141 ms

Loss rate: 0.03%

-- Flow 2:

Average throughput: 151.26 Mbit/s

95th percentile per-packet one-way delay: 19.390 ms

Loss rate: 0.05%

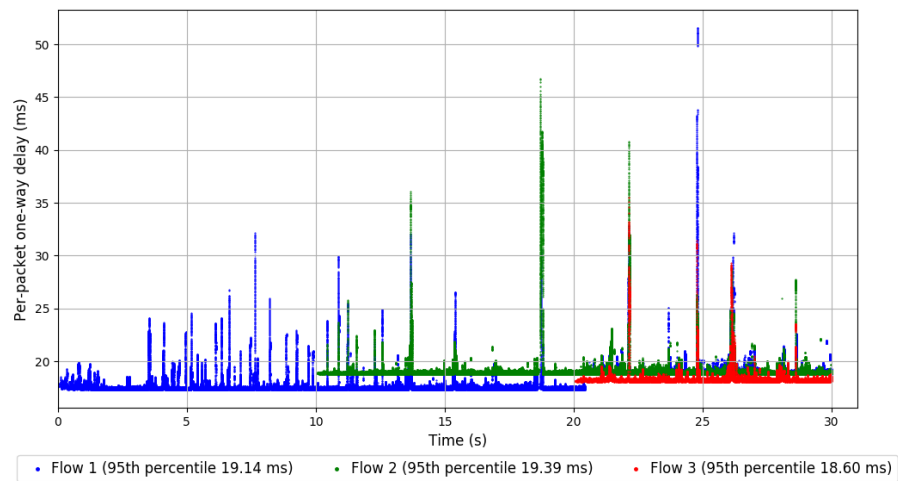
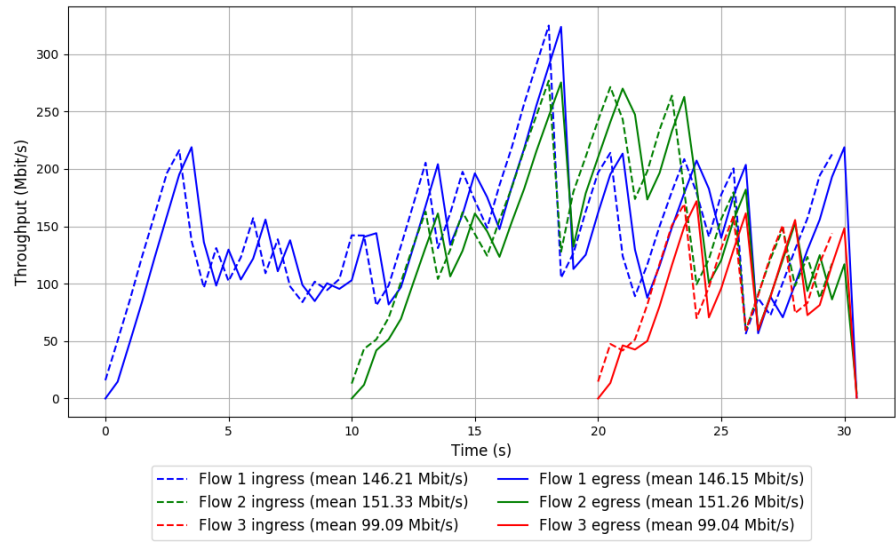
-- Flow 3:

Average throughput: 99.04 Mbit/s

95th percentile per-packet one-way delay: 18.602 ms

Loss rate: 0.04%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-09-07 14:47:40

End at: 2018-09-07 14:48:10

Local clock offset: 2.989 ms

Remote clock offset: 1.219 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 181.98 Mbit/s

95th percentile per-packet one-way delay: 19.088 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 59.56 Mbit/s

95th percentile per-packet one-way delay: 19.102 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 104.48 Mbit/s

95th percentile per-packet one-way delay: 18.487 ms

Loss rate: 0.01%

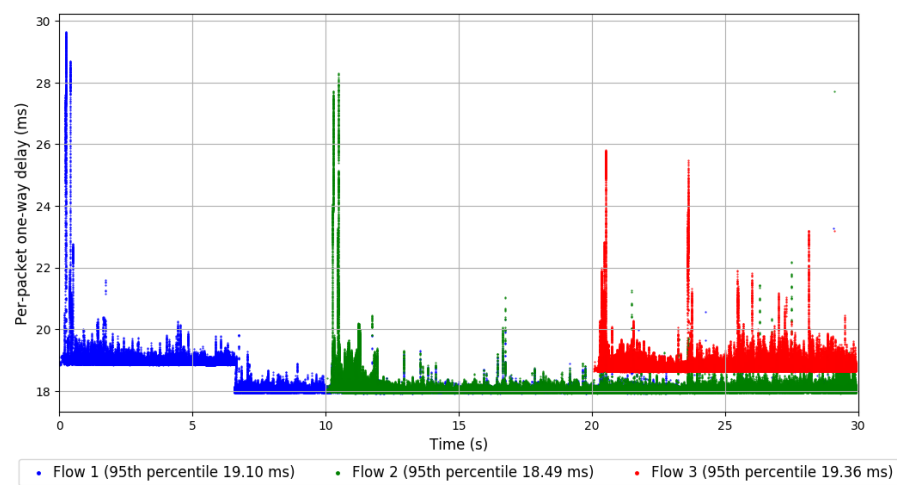
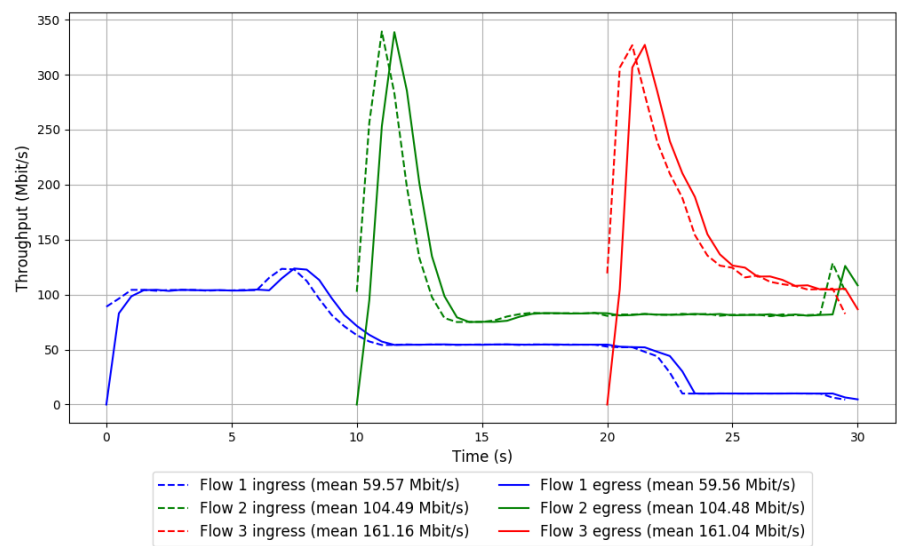
-- Flow 3:

Average throughput: 161.04 Mbit/s

95th percentile per-packet one-way delay: 19.356 ms

Loss rate: 0.08%

Run 1: Report of Indigo-Muses — Data Link



Run 2: Statistics of Indigo-Muses

Start at: 2018-09-07 15:15:40

End at: 2018-09-07 15:16:10

Local clock offset: 3.02 ms

Remote clock offset: 0.557 ms

Below is generated by plot.py at 2018-09-07 17:28:27

Datalink statistics

-- Total of 3 flows:

Average throughput: 127.74 Mbit/s

95th percentile per-packet one-way delay: 18.612 ms

Loss rate: 0.04%

-- Flow 1:

Average throughput: 76.14 Mbit/s

95th percentile per-packet one-way delay: 18.390 ms

Loss rate: 0.05%

-- Flow 2:

Average throughput: 32.72 Mbit/s

95th percentile per-packet one-way delay: 18.234 ms

Loss rate: 0.00%

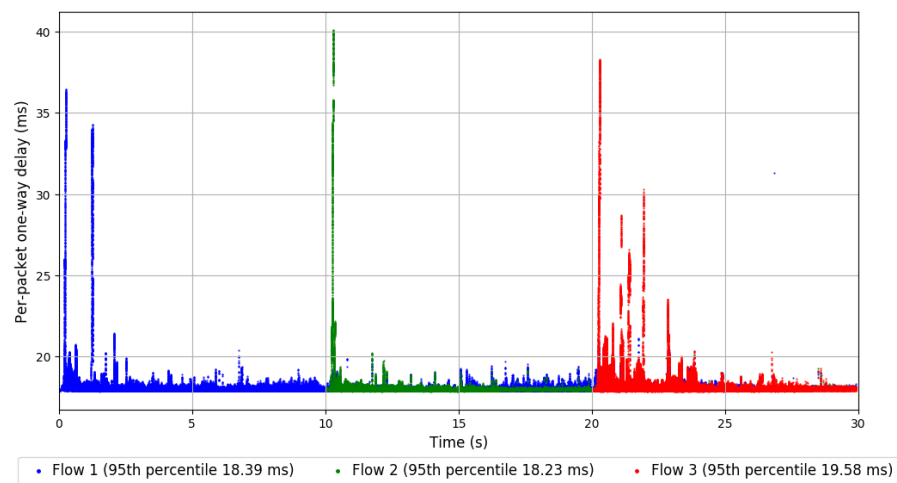
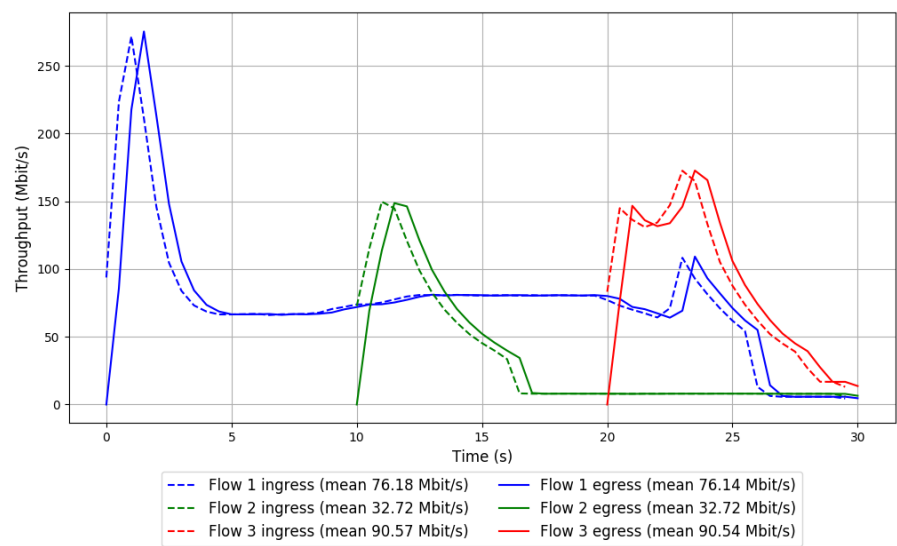
-- Flow 3:

Average throughput: 90.54 Mbit/s

95th percentile per-packet one-way delay: 19.583 ms

Loss rate: 0.03%

Run 2: Report of Indigo-Muses — Data Link

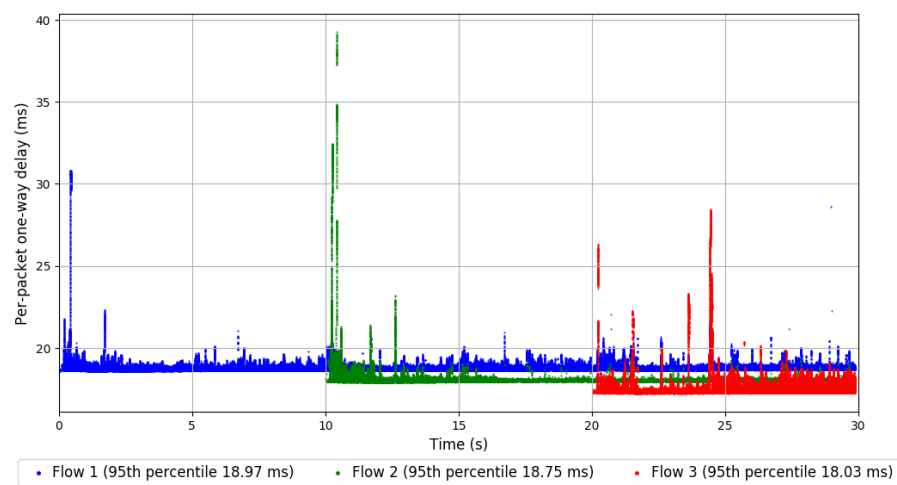
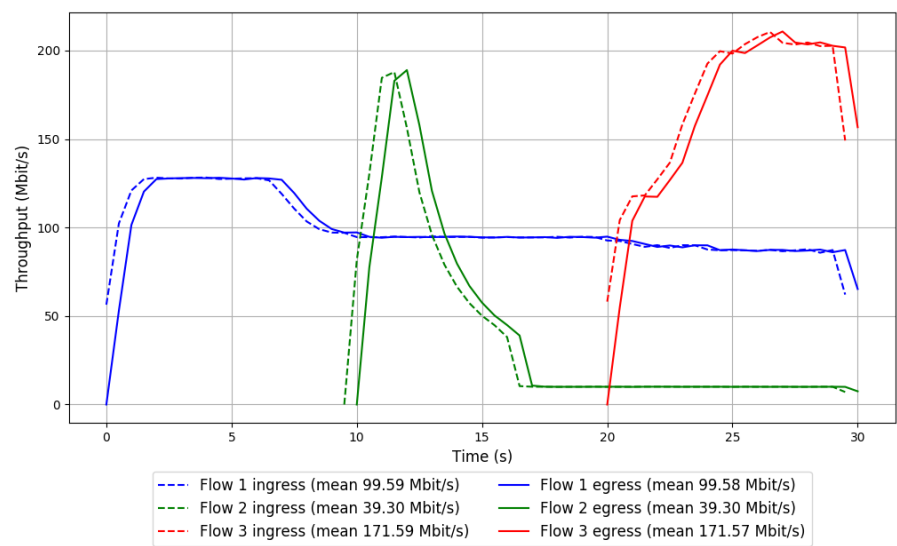


Run 3: Statistics of Indigo-Muses

Start at: 2018-09-07 15:43:34
End at: 2018-09-07 15:44:04
Local clock offset: 2.85 ms
Remote clock offset: -2.093 ms

Below is generated by plot.py at 2018-09-07 17:28:27
Datalink statistics
-- Total of 3 flows:
Average throughput: 182.23 Mbit/s
95th percentile per-packet one-way delay: 18.908 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 99.58 Mbit/s
95th percentile per-packet one-way delay: 18.969 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 39.30 Mbit/s
95th percentile per-packet one-way delay: 18.748 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 171.57 Mbit/s
95th percentile per-packet one-way delay: 18.034 ms
Loss rate: 0.01%

Run 3: Report of Indigo-Muses — Data Link

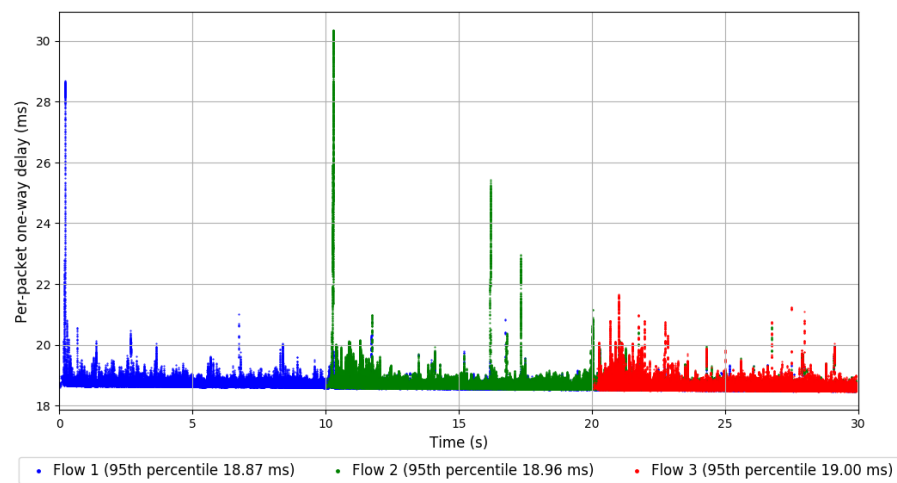
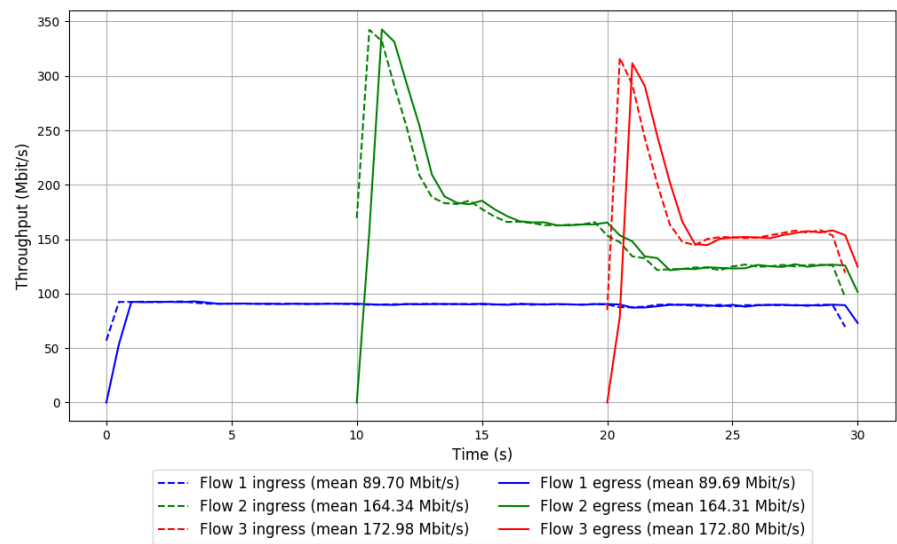


Run 4: Statistics of Indigo-Muses

Start at: 2018-09-07 16:11:19
End at: 2018-09-07 16:11:49
Local clock offset: -0.921 ms
Remote clock offset: -2.333 ms

Below is generated by plot.py at 2018-09-07 17:28:27
Datalink statistics
-- Total of 3 flows:
Average throughput: 255.83 Mbit/s
95th percentile per-packet one-way delay: 18.923 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 89.69 Mbit/s
95th percentile per-packet one-way delay: 18.869 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 164.31 Mbit/s
95th percentile per-packet one-way delay: 18.956 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 172.80 Mbit/s
95th percentile per-packet one-way delay: 19.000 ms
Loss rate: 0.10%

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-09-07 16:39:06

End at: 2018-09-07 16:39:37

Local clock offset: 3.16 ms

Remote clock offset: 0.608 ms

Below is generated by plot.py at 2018-09-07 17:30:17

Datalink statistics

-- Total of 3 flows:

Average throughput: 453.80 Mbit/s

95th percentile per-packet one-way delay: 19.081 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 329.07 Mbit/s

95th percentile per-packet one-way delay: 18.085 ms

Loss rate: 0.03%

-- Flow 2:

Average throughput: 110.79 Mbit/s

95th percentile per-packet one-way delay: 19.258 ms

Loss rate: 0.04%

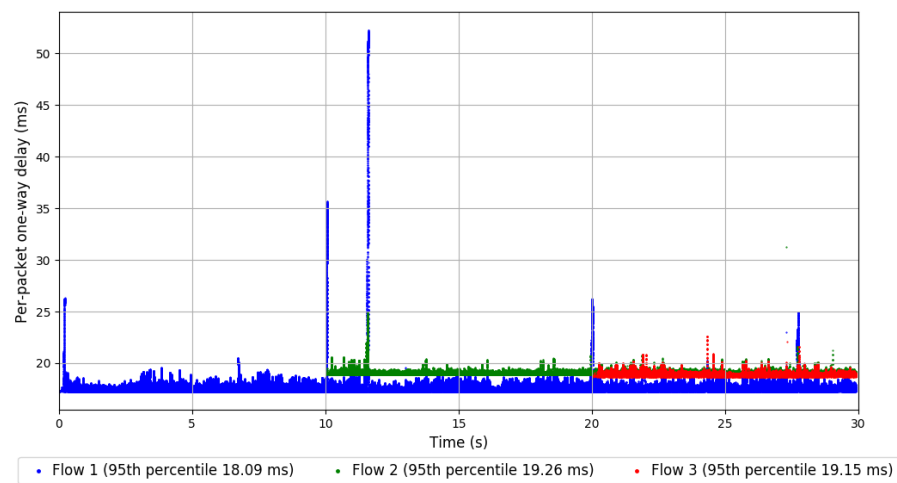
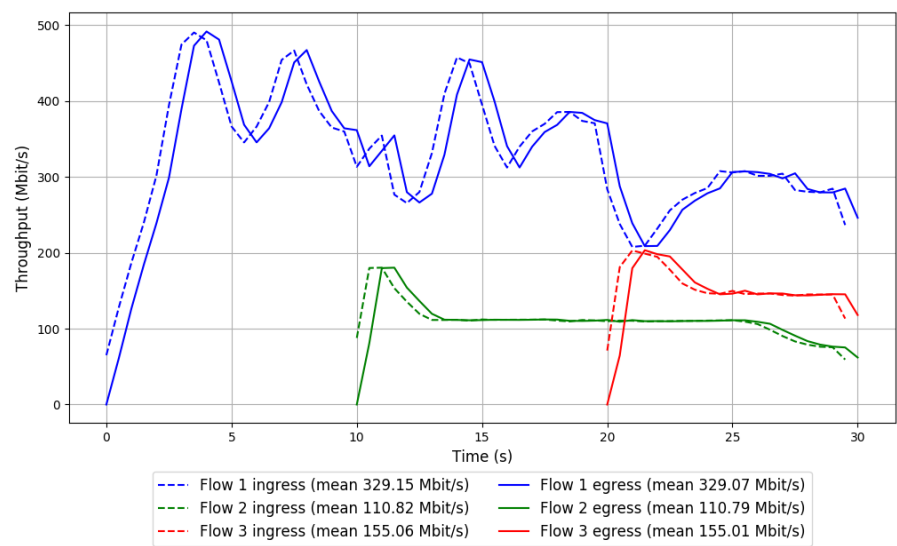
-- Flow 3:

Average throughput: 155.01 Mbit/s

95th percentile per-packet one-way delay: 19.147 ms

Loss rate: 0.05%

Run 5: Report of Indigo-Muses — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-09-07 14:45:58

End at: 2018-09-07 14:46:28

Local clock offset: 3.019 ms

Remote clock offset: 1.186 ms

Below is generated by plot.py at 2018-09-07 17:36:10

Datalink statistics

-- Total of 3 flows:

Average throughput: 880.34 Mbit/s

95th percentile per-packet one-way delay: 85.204 ms

Loss rate: 1.46%

-- Flow 1:

Average throughput: 741.49 Mbit/s

95th percentile per-packet one-way delay: 88.514 ms

Loss rate: 1.61%

-- Flow 2:

Average throughput: 168.61 Mbit/s

95th percentile per-packet one-way delay: 20.200 ms

Loss rate: 0.61%

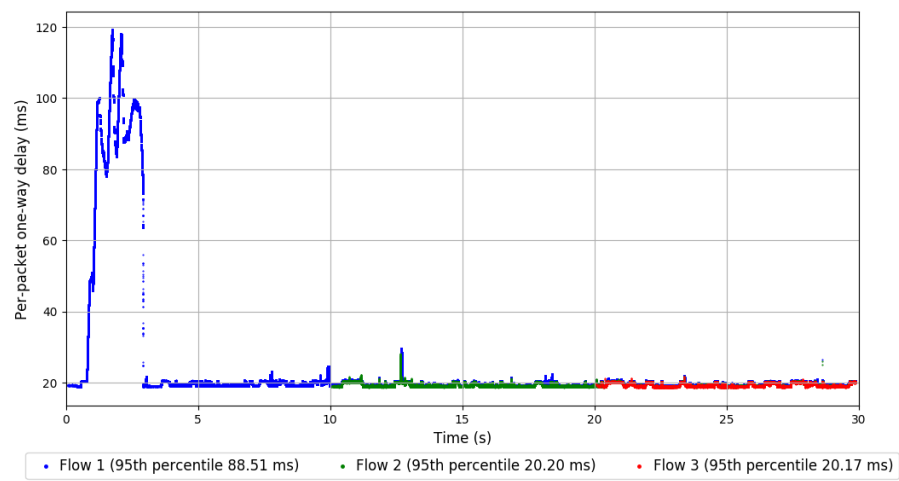
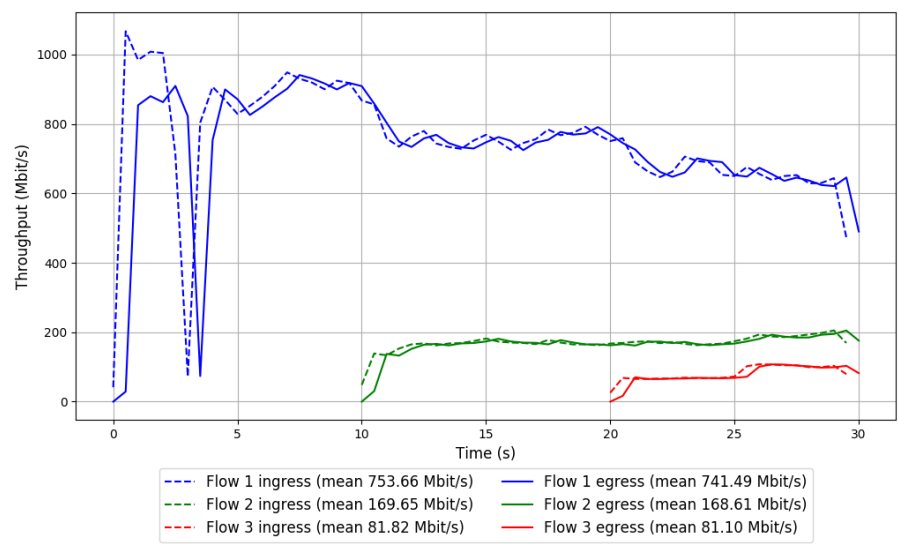
-- Flow 3:

Average throughput: 81.10 Mbit/s

95th percentile per-packet one-way delay: 20.168 ms

Loss rate: 0.87%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-09-07 15:13:57

End at: 2018-09-07 15:14:27

Local clock offset: 3.009 ms

Remote clock offset: 0.602 ms

Below is generated by plot.py at 2018-09-07 17:36:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 902.32 Mbit/s

95th percentile per-packet one-way delay: 27.339 ms

Loss rate: 0.93%

-- Flow 1:

Average throughput: 792.61 Mbit/s

95th percentile per-packet one-way delay: 29.750 ms

Loss rate: 0.94%

-- Flow 2:

Average throughput: 160.84 Mbit/s

95th percentile per-packet one-way delay: 20.372 ms

Loss rate: 0.81%

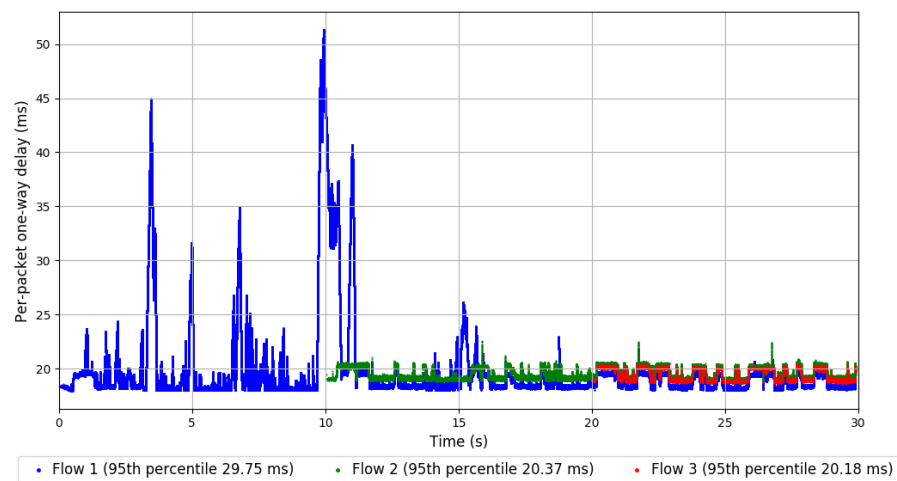
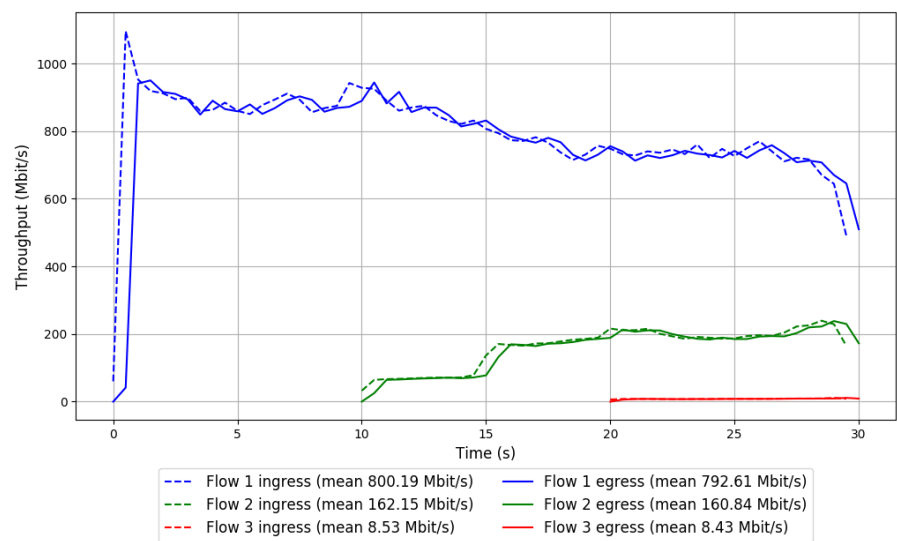
-- Flow 3:

Average throughput: 8.43 Mbit/s

95th percentile per-packet one-way delay: 20.176 ms

Loss rate: 1.15%

Run 2: Report of PCC-Allegro — Data Link

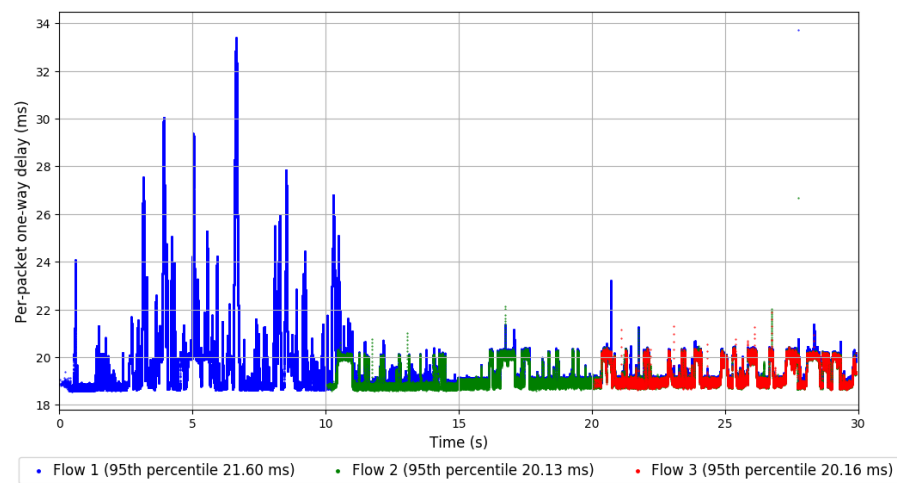
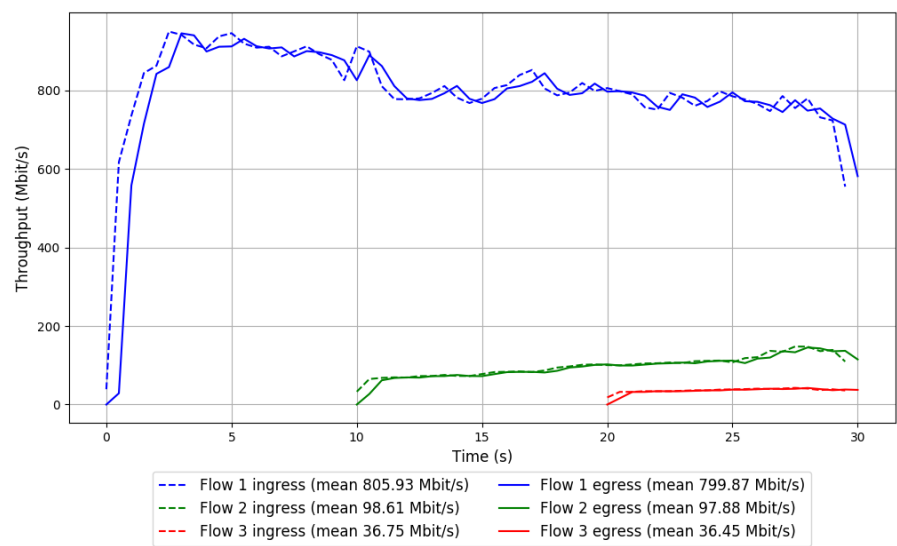


Run 3: Statistics of PCC-Allegro

Start at: 2018-09-07 15:41:52
End at: 2018-09-07 15:42:22
Local clock offset: 2.837 ms
Remote clock offset: -1.815 ms

Below is generated by plot.py at 2018-09-07 17:36:48
Datalink statistics
-- Total of 3 flows:
Average throughput: 876.95 Mbit/s
95th percentile per-packet one-way delay: 21.334 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 799.87 Mbit/s
95th percentile per-packet one-way delay: 21.601 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 97.88 Mbit/s
95th percentile per-packet one-way delay: 20.132 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 36.45 Mbit/s
95th percentile per-packet one-way delay: 20.157 ms
Loss rate: 0.82%

Run 3: Report of PCC-Allegro — Data Link

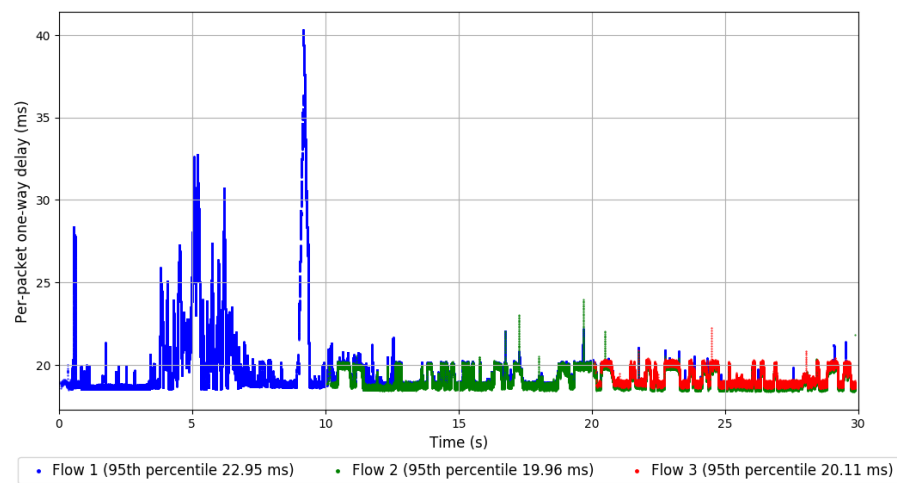
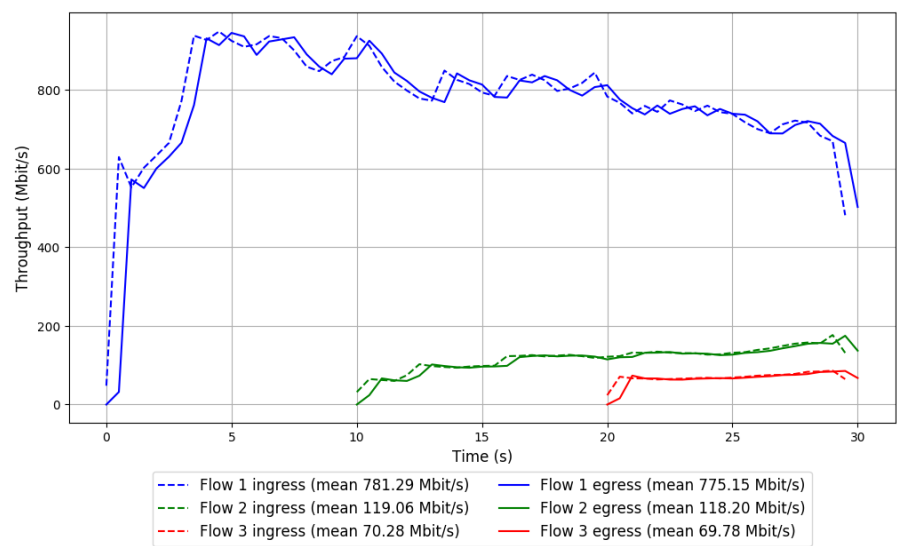


Run 4: Statistics of PCC-Allegro

Start at: 2018-09-07 16:09:37
End at: 2018-09-07 16:10:07
Local clock offset: -0.74 ms
Remote clock offset: -2.899 ms

```
# Below is generated by plot.py at 2018-09-07 17:37:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 876.65 Mbit/s
95th percentile per-packet one-way delay: 22.425 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 775.15 Mbit/s
95th percentile per-packet one-way delay: 22.952 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 118.20 Mbit/s
95th percentile per-packet one-way delay: 19.957 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 69.78 Mbit/s
95th percentile per-packet one-way delay: 20.112 ms
Loss rate: 0.71%
```

Run 4: Report of PCC-Allegro — Data Link



Run 5: Statistics of PCC-Allegro

Start at: 2018-09-07 16:37:24

End at: 2018-09-07 16:37:54

Local clock offset: 2.993 ms

Remote clock offset: 0.548 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 868.03 Mbit/s

95th percentile per-packet one-way delay: 20.311 ms

Loss rate: 0.75%

-- Flow 1:

Average throughput: 701.12 Mbit/s

95th percentile per-packet one-way delay: 18.957 ms

Loss rate: 0.68%

-- Flow 2:

Average throughput: 169.74 Mbit/s

95th percentile per-packet one-way delay: 20.295 ms

Loss rate: 0.99%

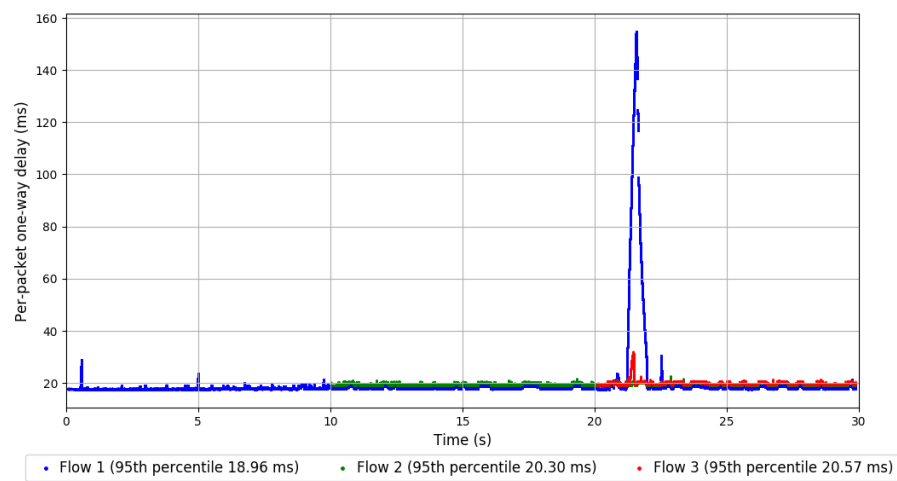
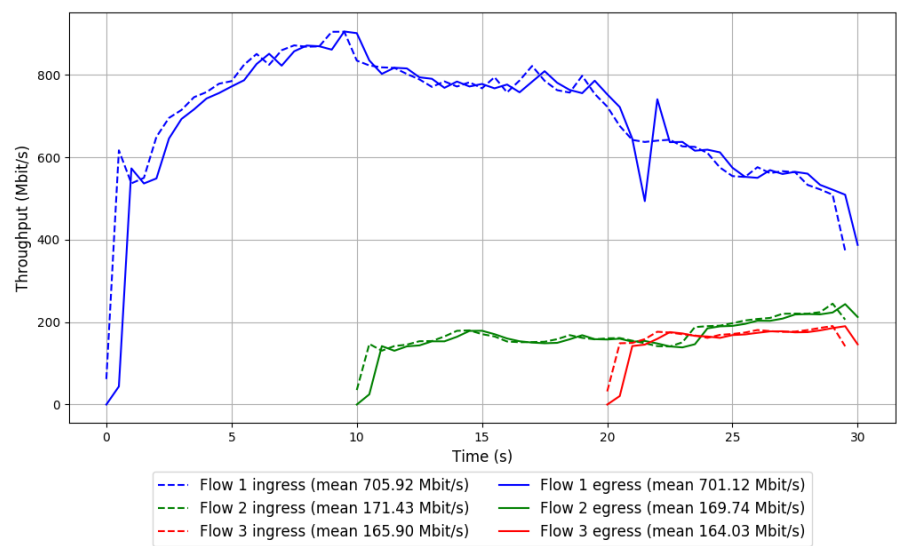
-- Flow 3:

Average throughput: 164.03 Mbit/s

95th percentile per-packet one-way delay: 20.571 ms

Loss rate: 1.12%

Run 5: Report of PCC-Allegro — Data Link

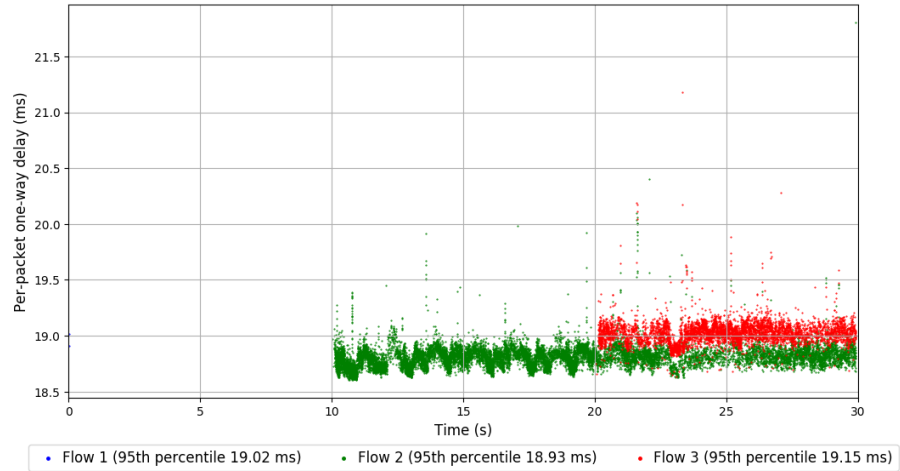
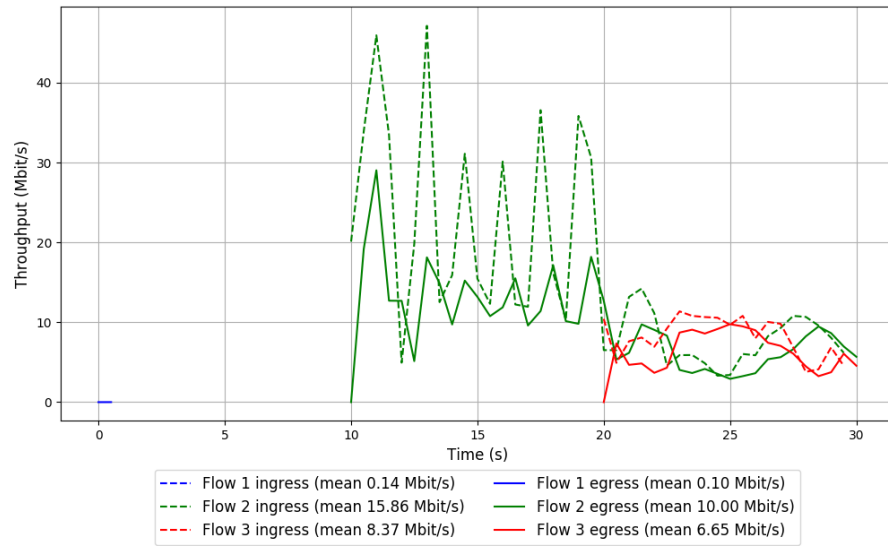


```
Run 1: Statistics of PCC-Expr

Start at: 2018-09-07 14:37:23
End at: 2018-09-07 14:37:53
Local clock offset: 3.082 ms
Remote clock offset: 1.075 ms

# Below is generated by plot.py at 2018-09-07 17:37:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.85 Mbit/s
95th percentile per-packet one-way delay: 19.092 ms
Loss rate: 33.55%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 19.016 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 10.00 Mbit/s
95th percentile per-packet one-way delay: 18.931 ms
Loss rate: 36.97%
-- Flow 3:
Average throughput: 6.65 Mbit/s
95th percentile per-packet one-way delay: 19.146 ms
Loss rate: 20.48%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-09-07 15:05:25

End at: 2018-09-07 15:05:55

Local clock offset: 3.027 ms

Remote clock offset: 1.065 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.85 Mbit/s

95th percentile per-packet one-way delay: 19.030 ms

Loss rate: 36.61%

-- Flow 1:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 19.105 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 9.82 Mbit/s

95th percentile per-packet one-way delay: 19.052 ms

Loss rate: 40.36%

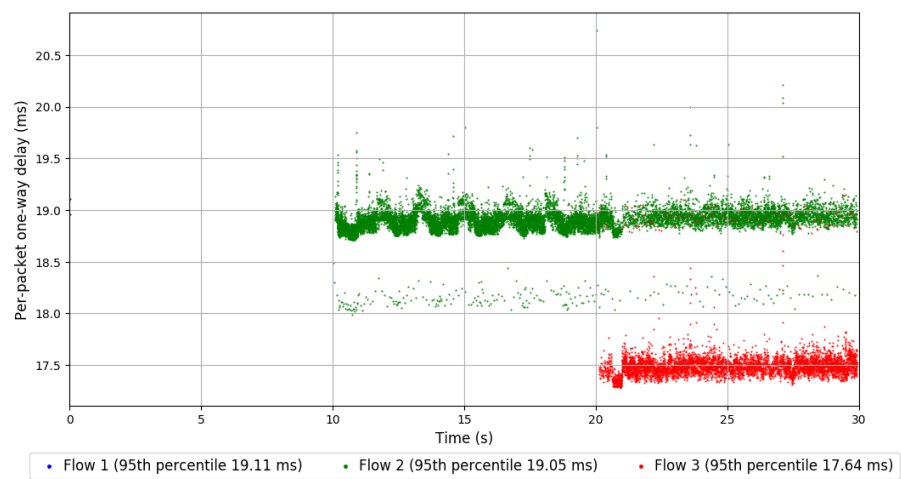
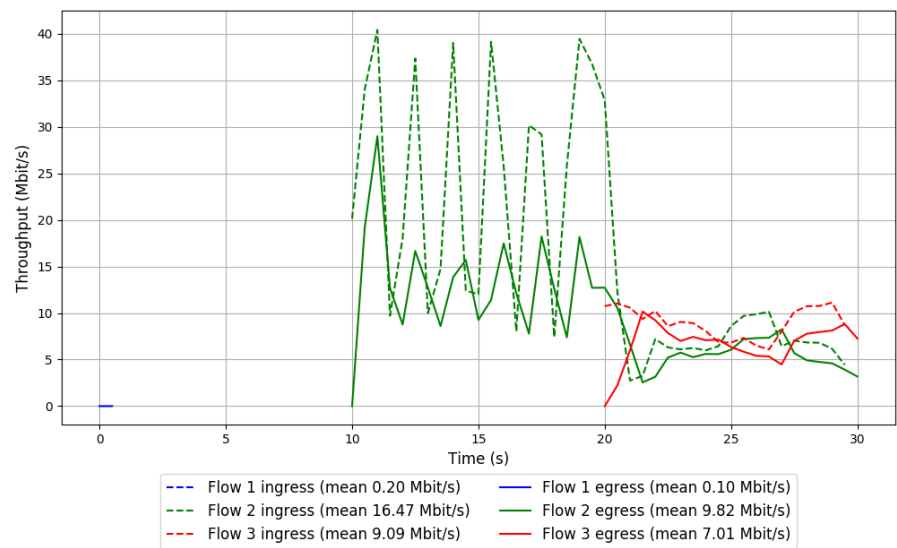
-- Flow 3:

Average throughput: 7.01 Mbit/s

95th percentile per-packet one-way delay: 17.636 ms

Loss rate: 22.89%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-09-07 15:33:21

End at: 2018-09-07 15:33:51

Local clock offset: 2.87 ms

Remote clock offset: 0.664 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.83 Mbit/s

95th percentile per-packet one-way delay: 19.310 ms

Loss rate: 35.29%

-- Flow 1:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 19.116 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 10.27 Mbit/s

95th percentile per-packet one-way delay: 19.324 ms

Loss rate: 38.11%

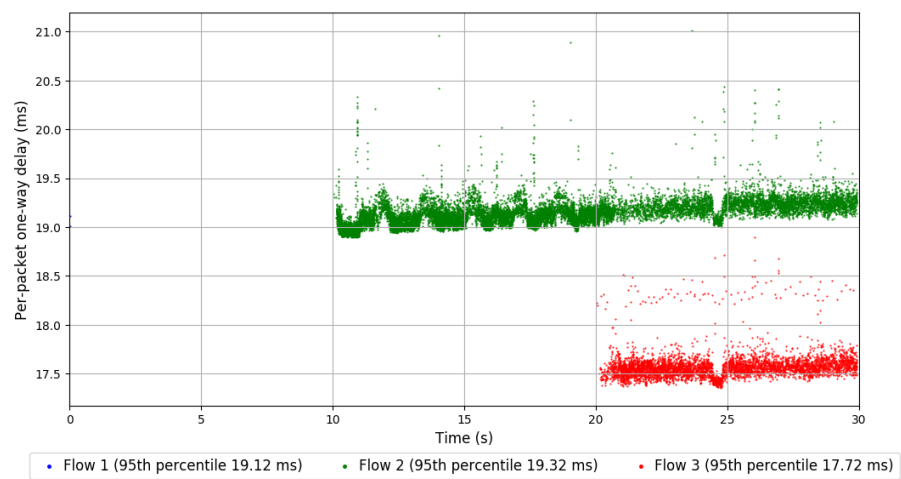
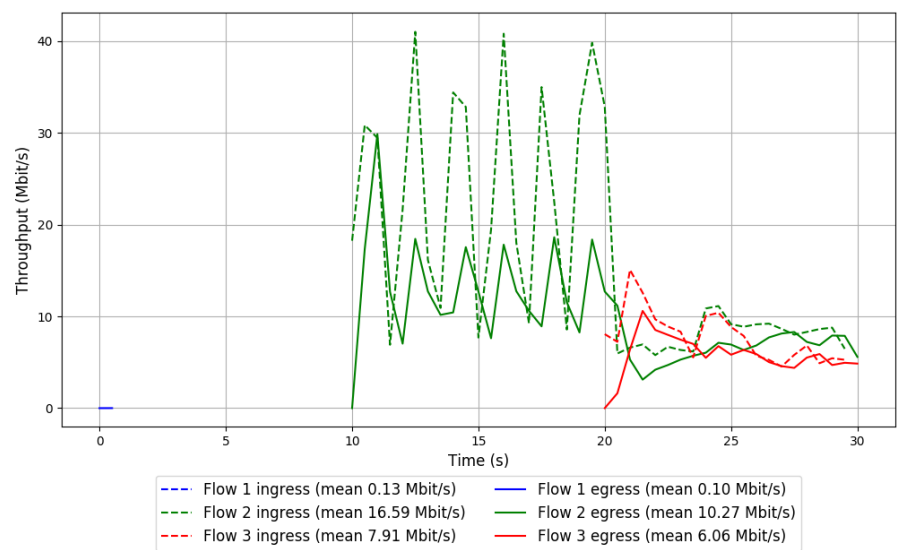
-- Flow 3:

Average throughput: 6.06 Mbit/s

95th percentile per-packet one-way delay: 17.718 ms

Loss rate: 23.36%

Run 3: Report of PCC-Expr — Data Link

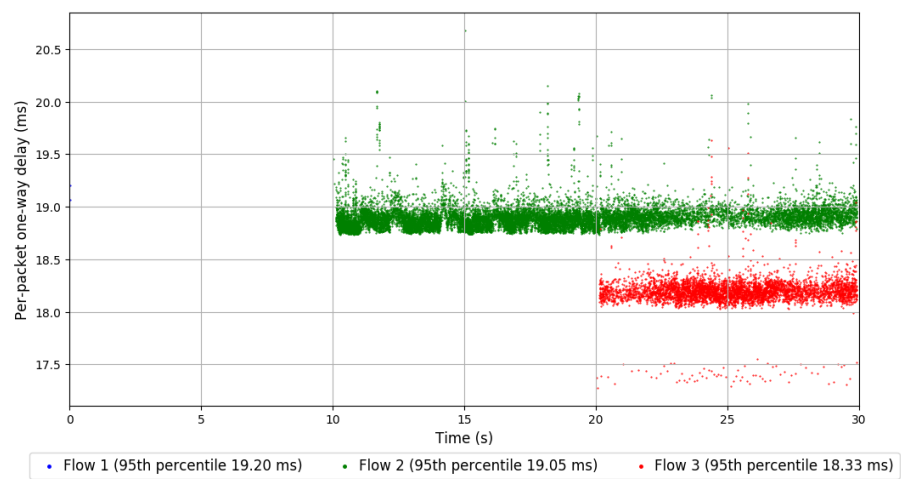
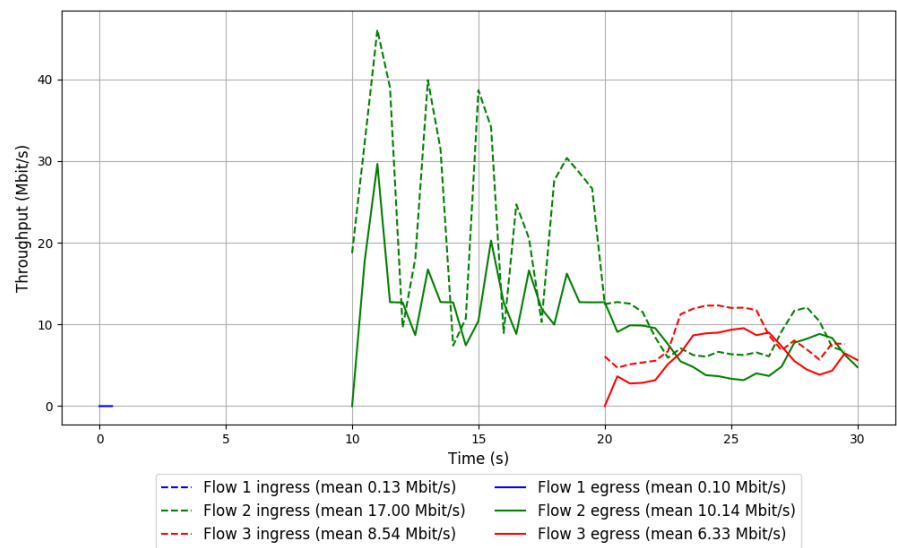


Run 4: Statistics of PCC-Expr

Start at: 2018-09-07 16:01:07
End at: 2018-09-07 16:01:37
Local clock offset: -0.244 ms
Remote clock offset: -3.412 ms

Below is generated by plot.py at 2018-09-07 17:37:07
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.84 Mbit/s
95th percentile per-packet one-way delay: 19.026 ms
Loss rate: 37.46%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 19.201 ms
Loss rate: 85.71%
-- Flow 2:
Average throughput: 10.14 Mbit/s
95th percentile per-packet one-way delay: 19.052 ms
Loss rate: 40.33%
-- Flow 3:
Average throughput: 6.33 Mbit/s
95th percentile per-packet one-way delay: 18.328 ms
Loss rate: 25.92%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-09-07 16:28:53

End at: 2018-09-07 16:29:23

Local clock offset: 2.311 ms

Remote clock offset: 0.181 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.83 Mbit/s

95th percentile per-packet one-way delay: 19.068 ms

Loss rate: 29.09%

-- Flow 1:

Average throughput: 0.10 Mbit/s

95th percentile per-packet one-way delay: 19.250 ms

Loss rate: 85.71%

-- Flow 2:

Average throughput: 9.71 Mbit/s

95th percentile per-packet one-way delay: 18.469 ms

Loss rate: 30.98%

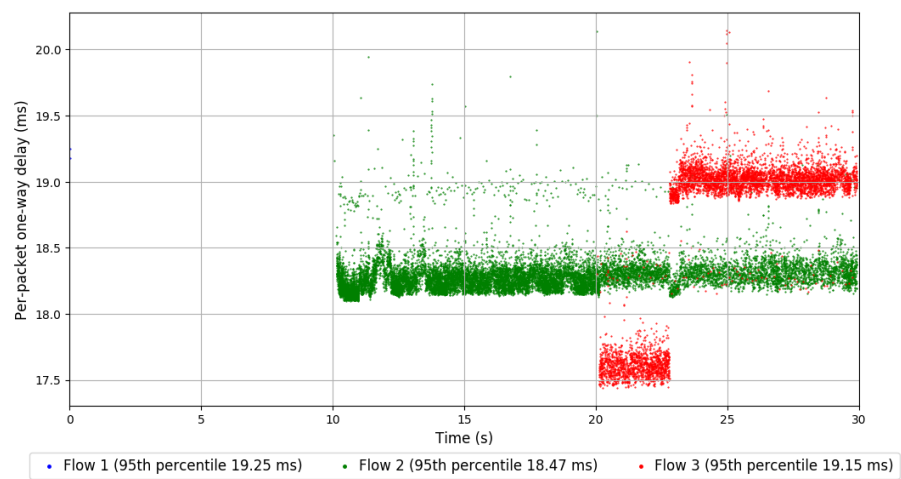
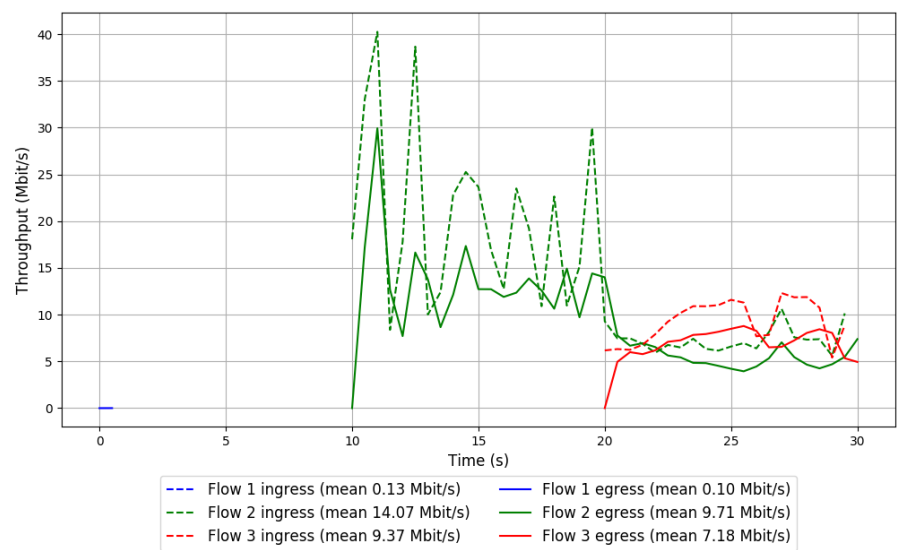
-- Flow 3:

Average throughput: 7.18 Mbit/s

95th percentile per-packet one-way delay: 19.152 ms

Loss rate: 23.37%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-09-07 14:49:07

End at: 2018-09-07 14:49:37

Local clock offset: 2.98 ms

Remote clock offset: 1.345 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 123.60 Mbit/s

95th percentile per-packet one-way delay: 19.615 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 65.02 Mbit/s

95th percentile per-packet one-way delay: 18.861 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 63.39 Mbit/s

95th percentile per-packet one-way delay: 22.078 ms

Loss rate: 0.00%

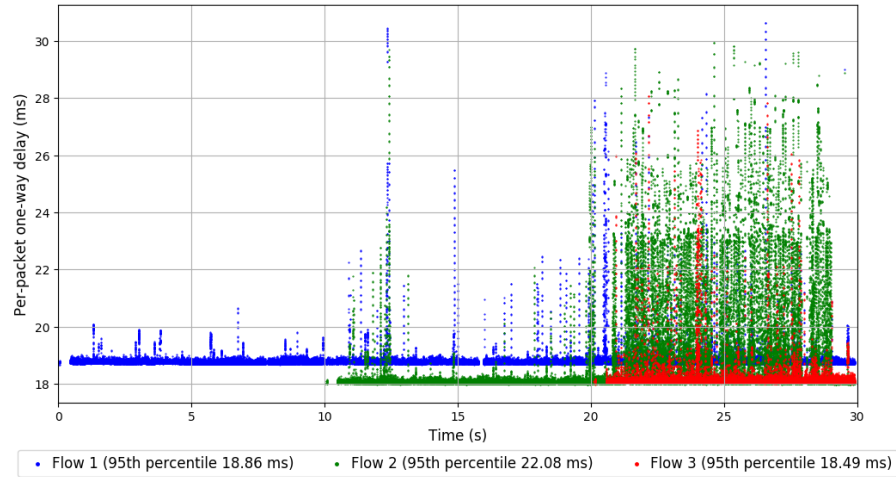
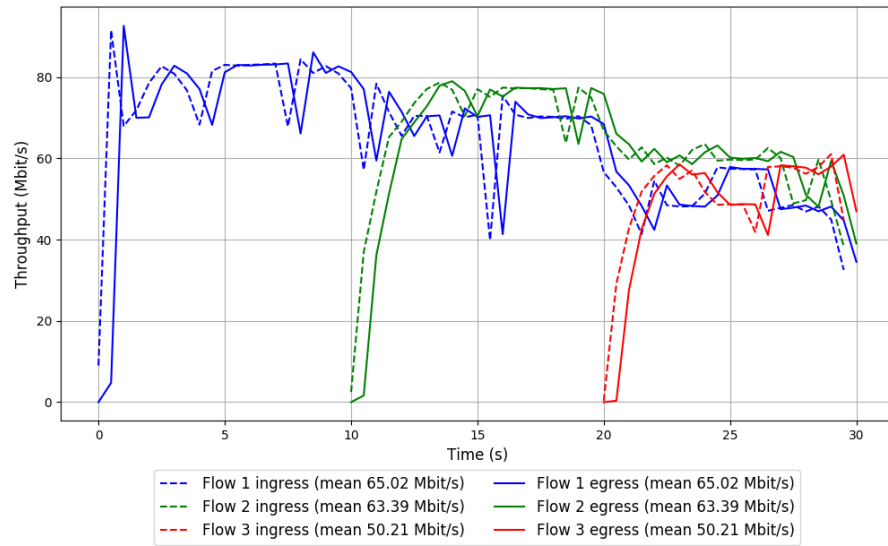
-- Flow 3:

Average throughput: 50.21 Mbit/s

95th percentile per-packet one-way delay: 18.492 ms

Loss rate: 0.00%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-09-07 15:17:04

End at: 2018-09-07 15:17:34

Local clock offset: 2.962 ms

Remote clock offset: 0.593 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 120.74 Mbit/s

95th percentile per-packet one-way delay: 20.569 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 64.91 Mbit/s

95th percentile per-packet one-way delay: 20.018 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 60.75 Mbit/s

95th percentile per-packet one-way delay: 21.367 ms

Loss rate: 0.01%

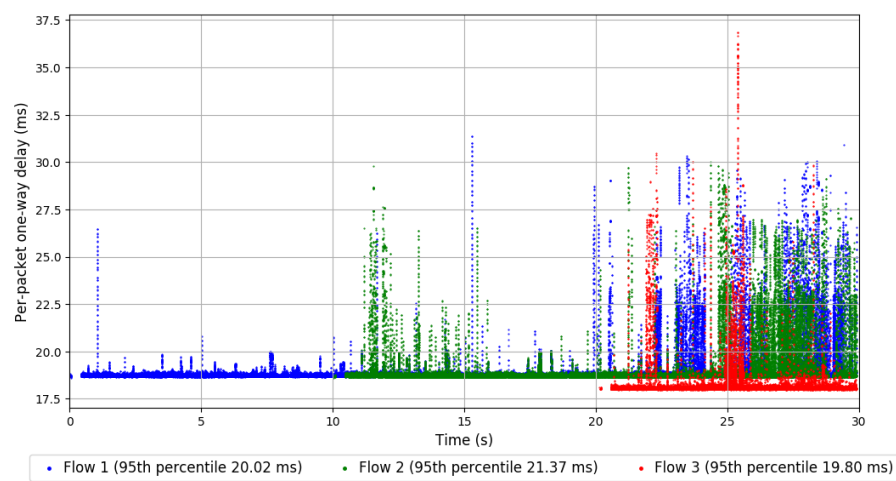
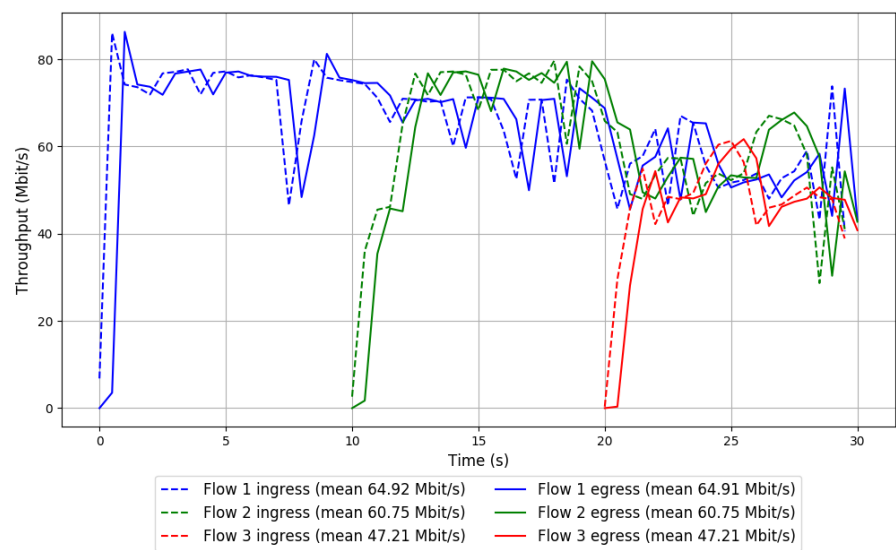
-- Flow 3:

Average throughput: 47.21 Mbit/s

95th percentile per-packet one-way delay: 19.796 ms

Loss rate: 0.00%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-09-07 15:45:00

End at: 2018-09-07 15:45:30

Local clock offset: 2.759 ms

Remote clock offset: -2.2 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 122.50 Mbit/s

95th percentile per-packet one-way delay: 20.675 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 67.79 Mbit/s

95th percentile per-packet one-way delay: 19.479 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 54.20 Mbit/s

95th percentile per-packet one-way delay: 18.738 ms

Loss rate: 0.00%

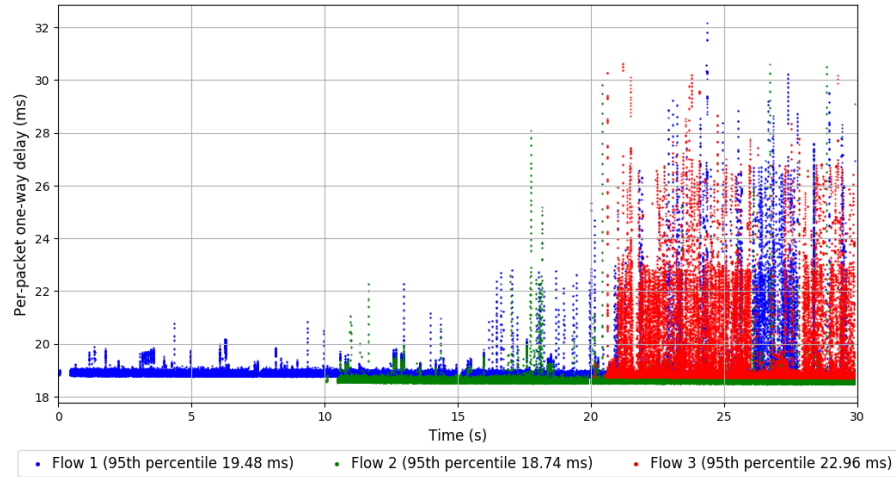
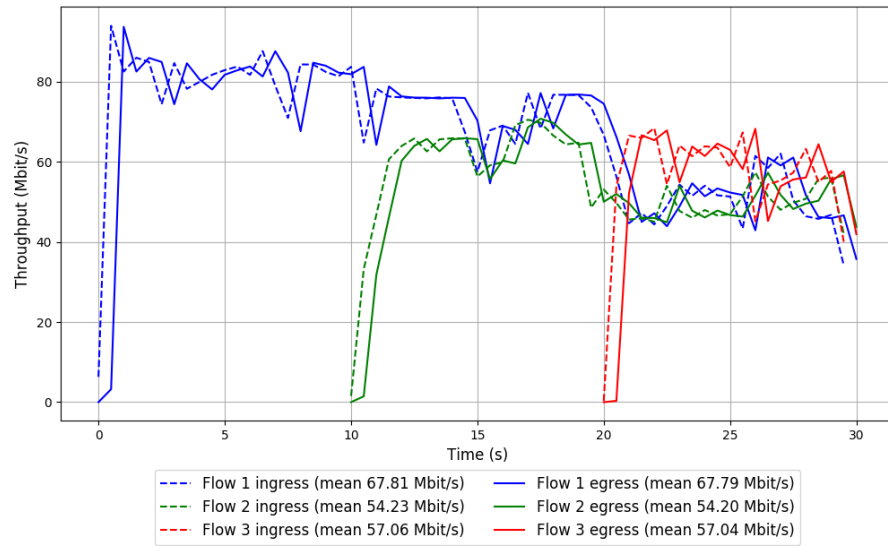
-- Flow 3:

Average throughput: 57.04 Mbit/s

95th percentile per-packet one-way delay: 22.957 ms

Loss rate: 0.03%

Run 3: Report of QUIC Cubic — Data Link

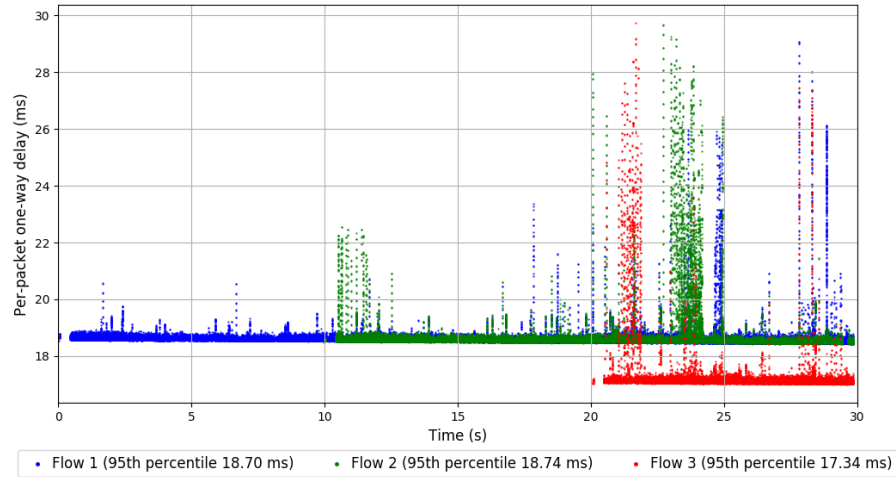
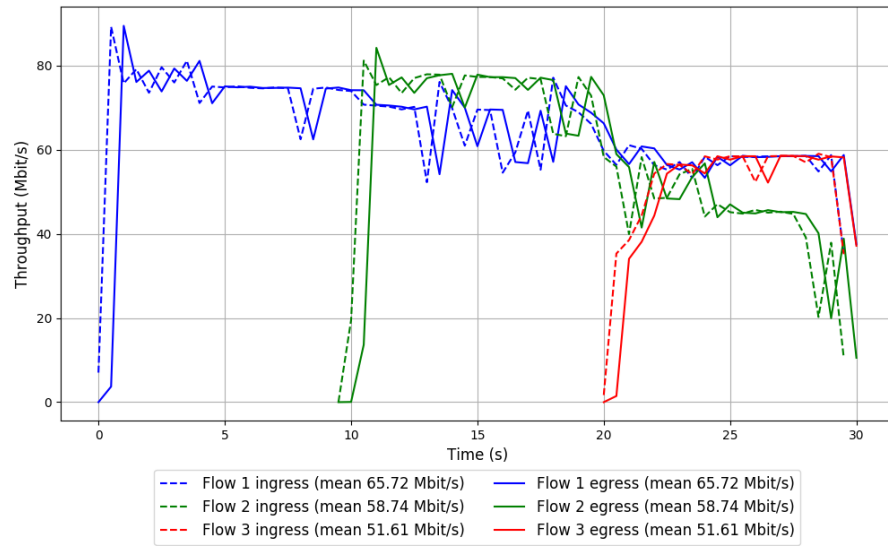


Run 4: Statistics of QUIC Cubic

Start at: 2018-09-07 16:12:47
End at: 2018-09-07 16:13:17
Local clock offset: -0.989 ms
Remote clock offset: -1.996 ms

Below is generated by plot.py at 2018-09-07 17:37:07
Datalink statistics
-- Total of 3 flows:
Average throughput: 121.81 Mbit/s
95th percentile per-packet one-way delay: 18.699 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 65.72 Mbit/s
95th percentile per-packet one-way delay: 18.700 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 58.74 Mbit/s
95th percentile per-packet one-way delay: 18.737 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 51.61 Mbit/s
95th percentile per-packet one-way delay: 17.337 ms
Loss rate: 0.01%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-09-07 16:40:43

End at: 2018-09-07 16:41:13

Local clock offset: 3.236 ms

Remote clock offset: 0.646 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 119.93 Mbit/s

95th percentile per-packet one-way delay: 18.805 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 66.66 Mbit/s

95th percentile per-packet one-way delay: 17.403 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 56.86 Mbit/s

95th percentile per-packet one-way delay: 20.194 ms

Loss rate: 0.01%

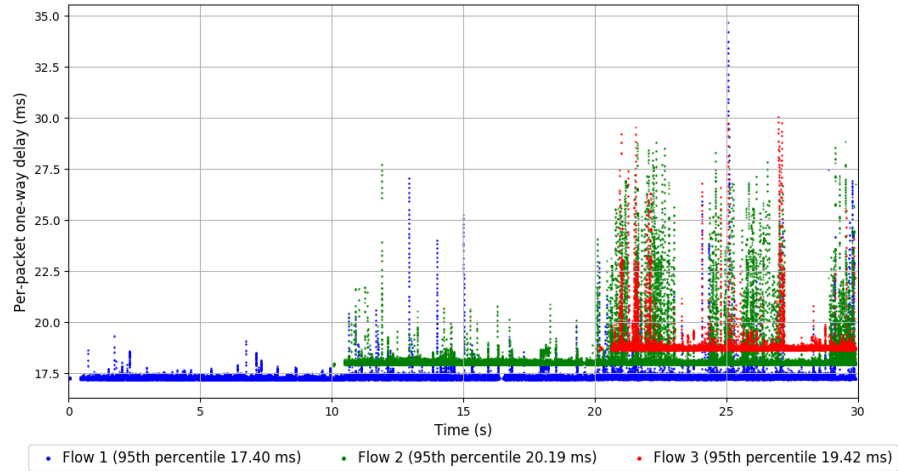
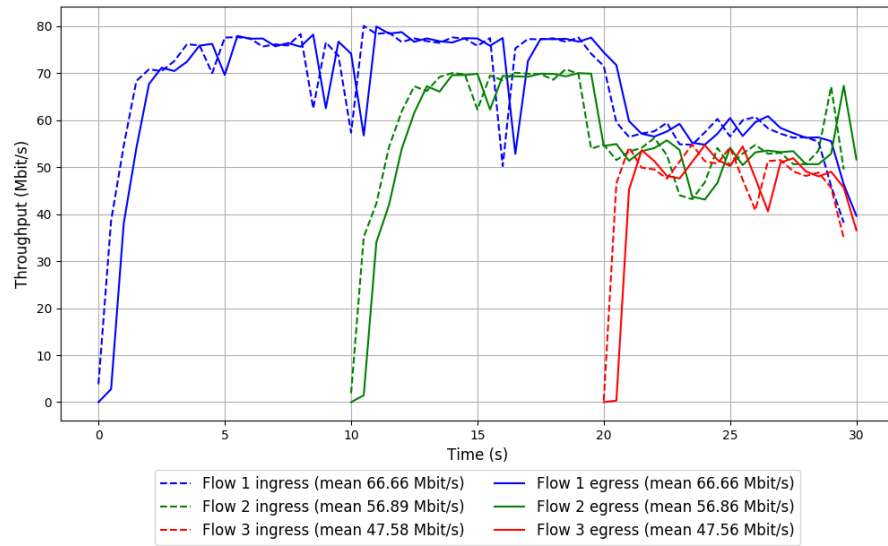
-- Flow 3:

Average throughput: 47.56 Mbit/s

95th percentile per-packet one-way delay: 19.416 ms

Loss rate: 0.01%

Run 5: Report of QUIC Cubic — Data Link

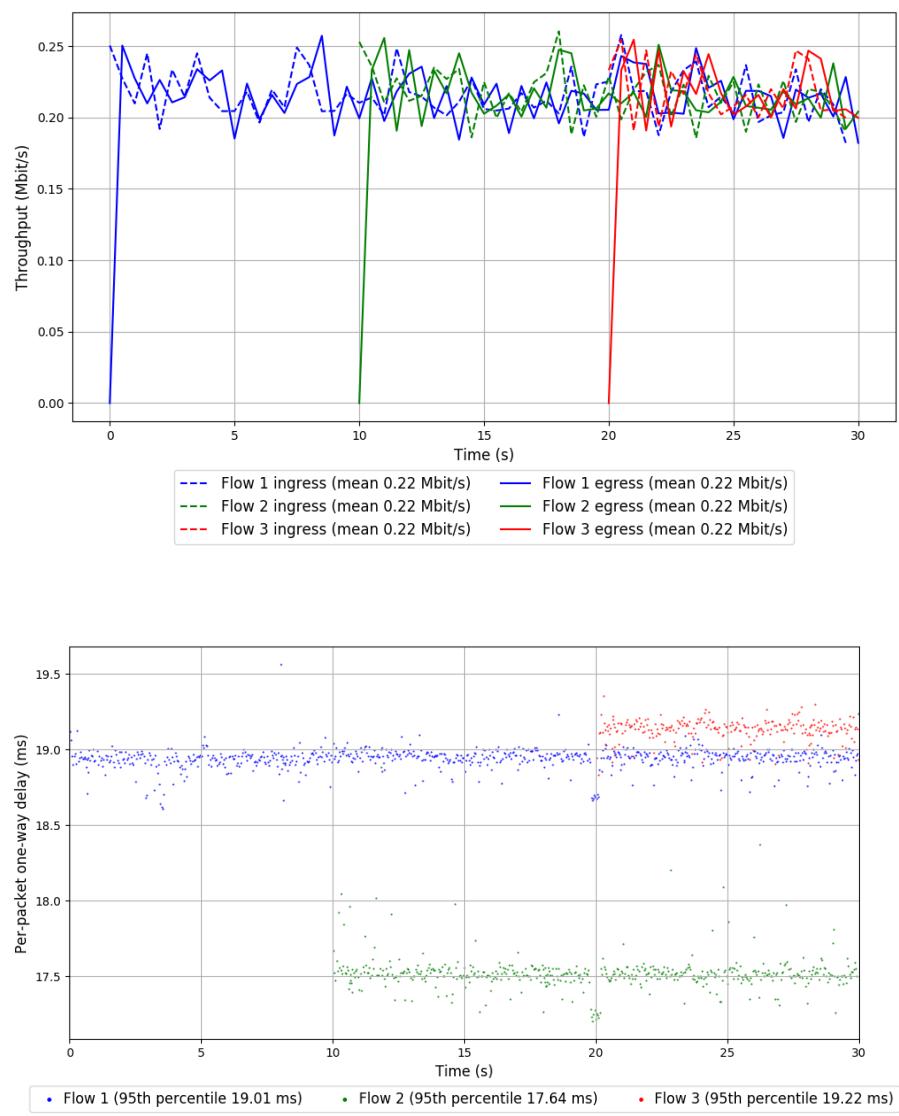


```
Run 1: Statistics of SReAM

Start at: 2018-09-07 14:41:56
End at: 2018-09-07 14:42:26
Local clock offset: 3.115 ms
Remote clock offset: 1.069 ms

# Below is generated by plot.py at 2018-09-07 17:37:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 19.167 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.013 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 17.639 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.221 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SReAM

Start at: 2018-09-07 15:09:57

End at: 2018-09-07 15:10:27

Local clock offset: 3.029 ms

Remote clock offset: 0.683 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 19.098 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 18.402 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 19.129 ms

Loss rate: 0.00%

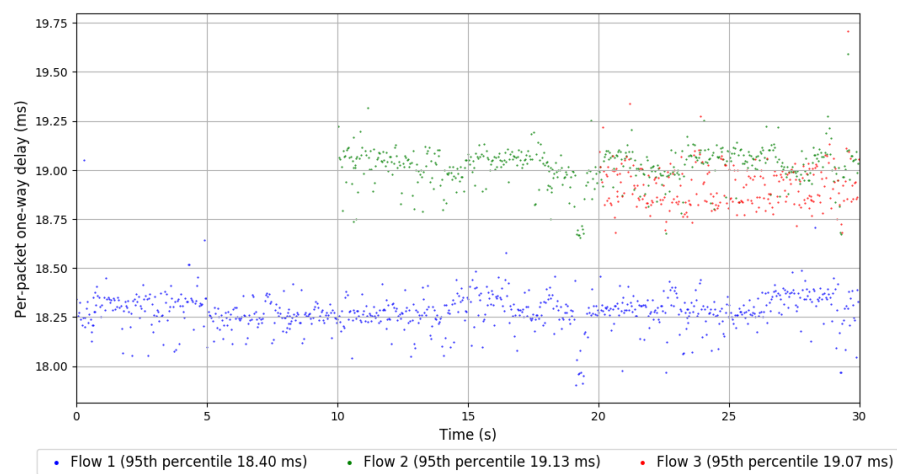
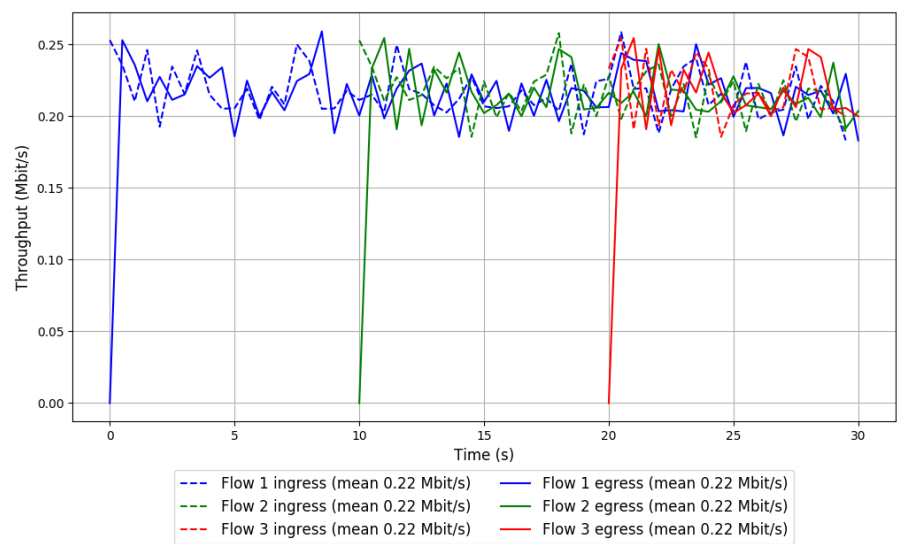
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 19.073 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link

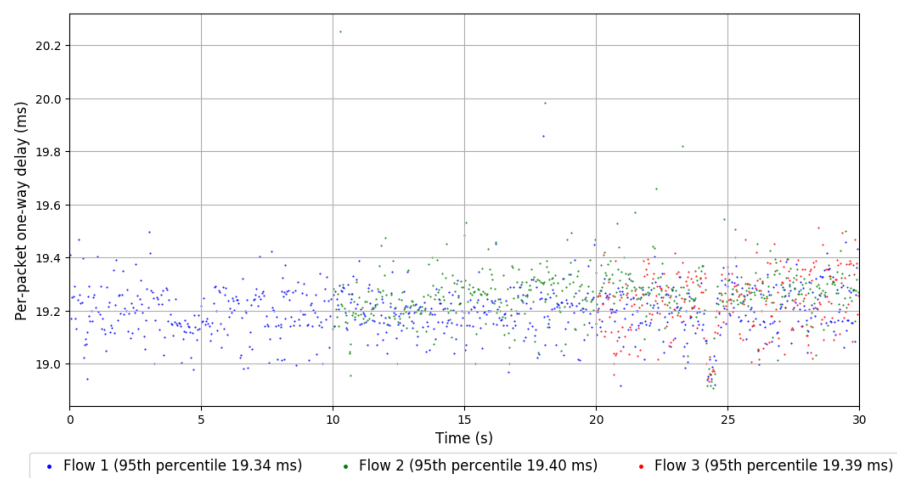
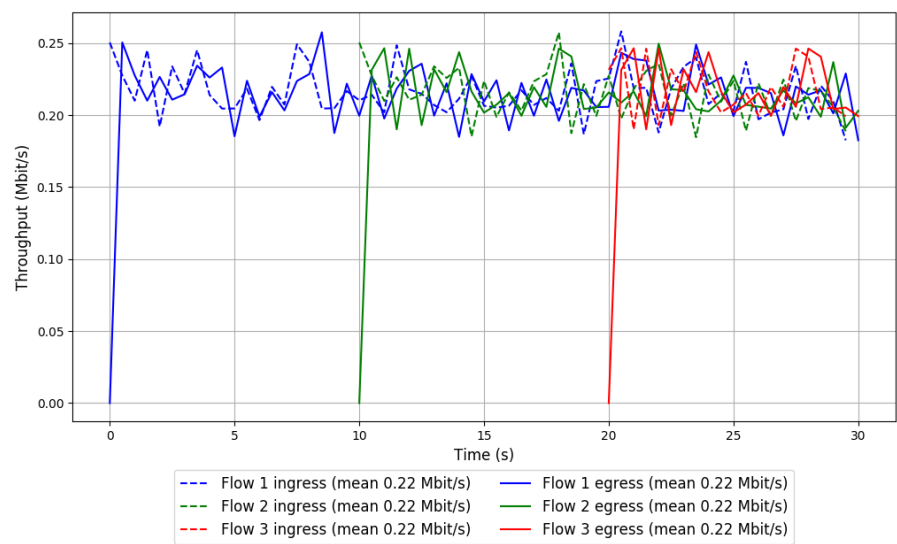


Run 3: Statistics of SReAM

Start at: 2018-09-07 15:37:52
End at: 2018-09-07 15:38:22
Local clock offset: 2.857 ms
Remote clock offset: -0.728 ms

Below is generated by plot.py at 2018-09-07 17:37:07
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 19.382 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.336 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.402 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.391 ms
Loss rate: 0.00%

Run 3: Report of SCReAM — Data Link

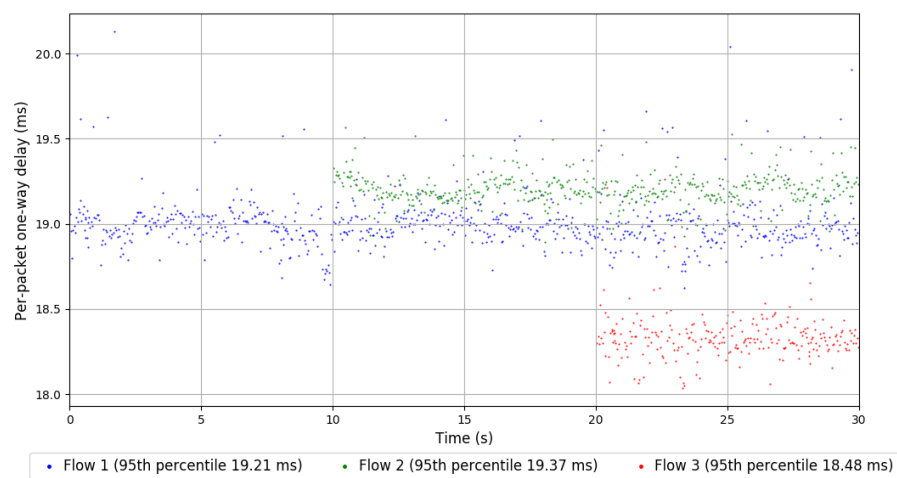
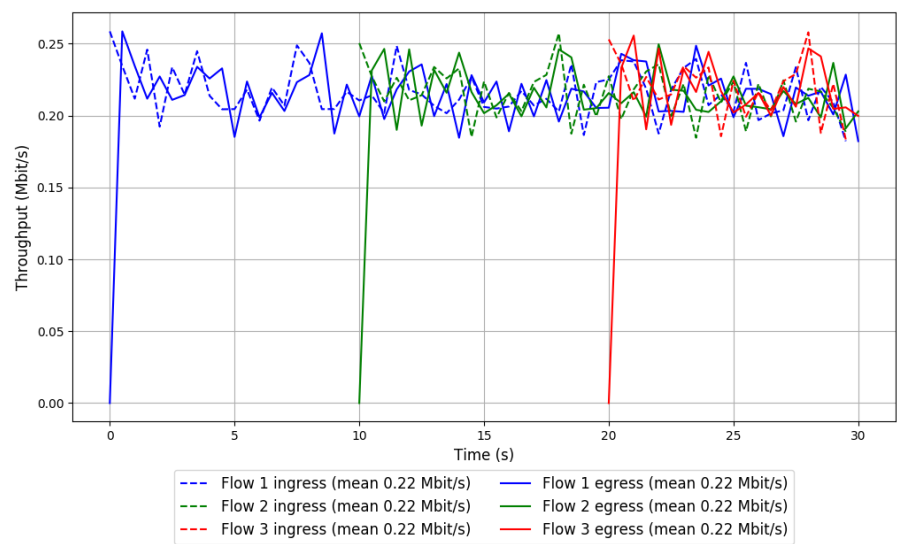


Run 4: Statistics of SReAM

Start at: 2018-09-07 16:05:36
End at: 2018-09-07 16:06:06
Local clock offset: -0.497 ms
Remote clock offset: -3.631 ms

Below is generated by plot.py at 2018-09-07 17:37:07
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 19.306 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.214 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 19.373 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 18.484 ms
Loss rate: 0.00%

Run 4: Report of SReAM — Data Link



Run 5: Statistics of SReAM

Start at: 2018-09-07 16:33:23

End at: 2018-09-07 16:33:53

Local clock offset: 2.728 ms

Remote clock offset: 0.41 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 19.474 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 18.044 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 19.540 ms

Loss rate: 0.00%

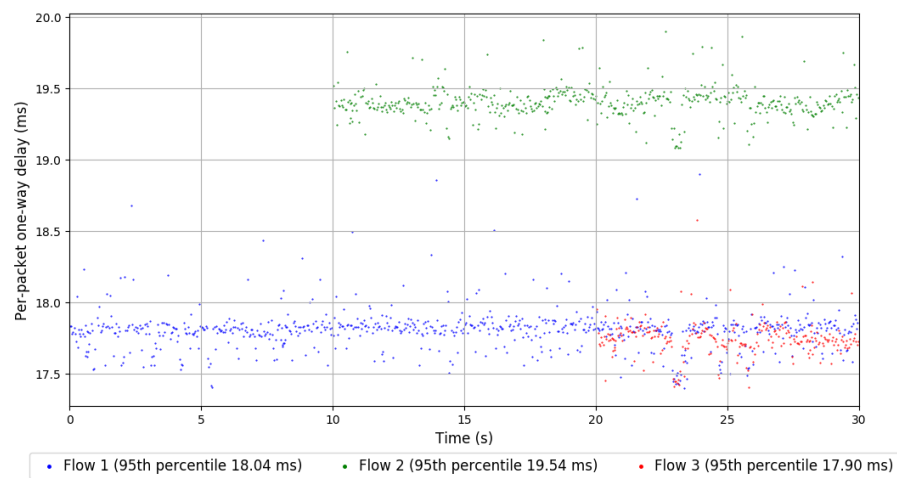
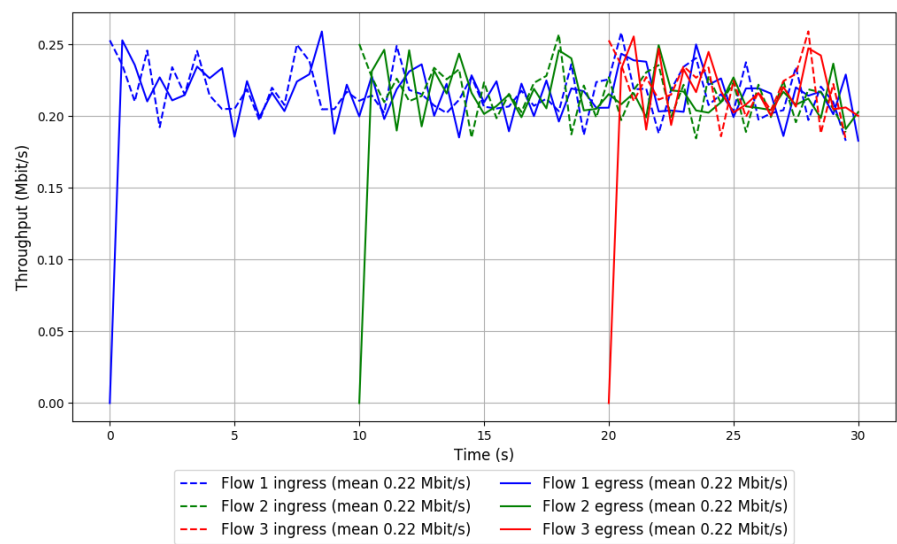
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 17.896 ms

Loss rate: 0.00%

Run 5: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-09-07 14:30:56

End at: 2018-09-07 14:31:26

Local clock offset: 3.064 ms

Remote clock offset: 1.385 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 49.03 Mbit/s

95th percentile per-packet one-way delay: 21.218 ms

Loss rate: 0.12%

-- Flow 1:

Average throughput: 24.63 Mbit/s

95th percentile per-packet one-way delay: 20.835 ms

Loss rate: 0.12%

-- Flow 2:

Average throughput: 24.56 Mbit/s

95th percentile per-packet one-way delay: 21.322 ms

Loss rate: 0.16%

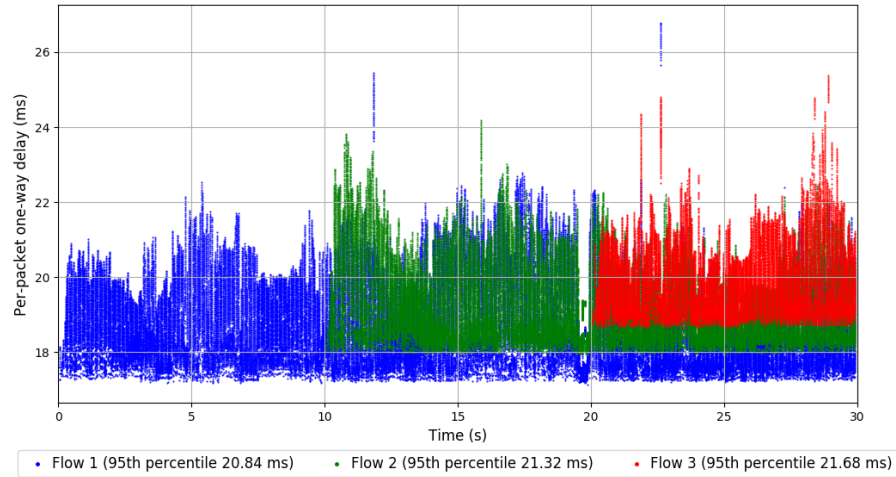
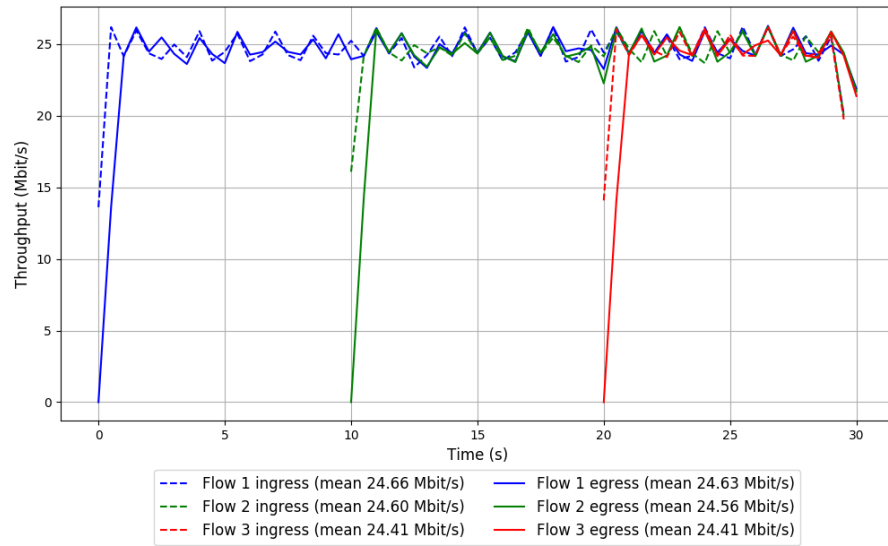
-- Flow 3:

Average throughput: 24.41 Mbit/s

95th percentile per-packet one-way delay: 21.681 ms

Loss rate: 0.01%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-09-07 14:59:01

End at: 2018-09-07 14:59:31

Local clock offset: 3.063 ms

Remote clock offset: 1.784 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 49.13 Mbit/s

95th percentile per-packet one-way delay: 21.905 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 24.71 Mbit/s

95th percentile per-packet one-way delay: 21.431 ms

Loss rate: 0.01%

-- Flow 2:

Average throughput: 24.64 Mbit/s

95th percentile per-packet one-way delay: 21.850 ms

Loss rate: 0.02%

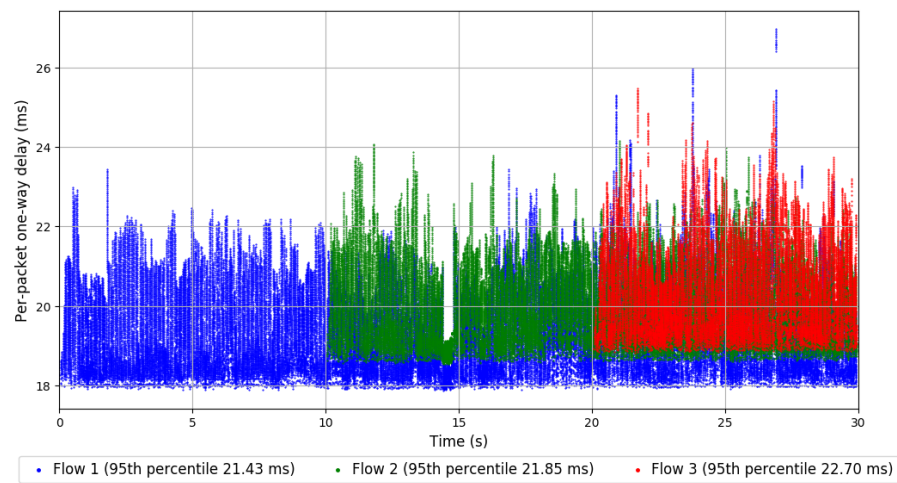
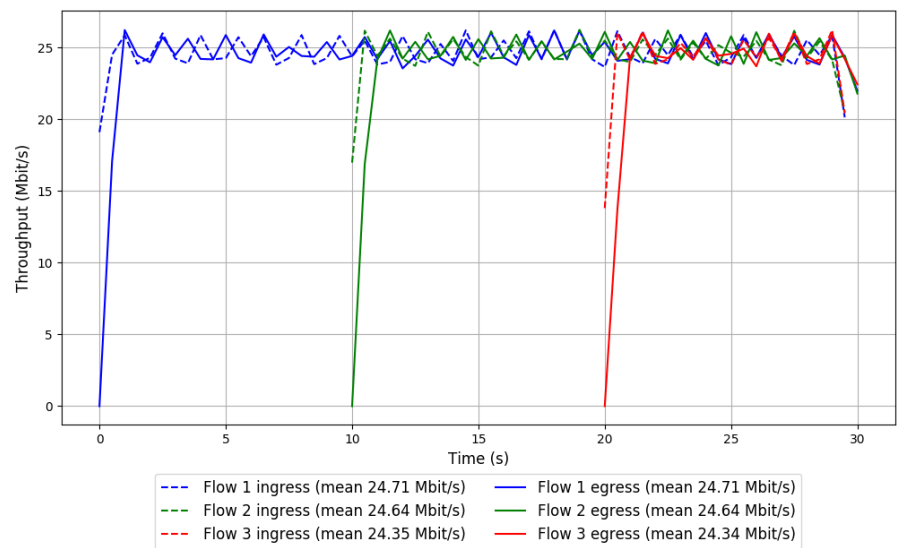
-- Flow 3:

Average throughput: 24.34 Mbit/s

95th percentile per-packet one-way delay: 22.701 ms

Loss rate: 0.02%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-09-07 15:26:57

End at: 2018-09-07 15:27:27

Local clock offset: 2.891 ms

Remote clock offset: 0.556 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 48.48 Mbit/s

95th percentile per-packet one-way delay: 21.156 ms

Loss rate: 0.17%

-- Flow 1:

Average throughput: 24.42 Mbit/s

95th percentile per-packet one-way delay: 21.137 ms

Loss rate: 0.19%

-- Flow 2:

Average throughput: 24.28 Mbit/s

95th percentile per-packet one-way delay: 21.364 ms

Loss rate: 0.23%

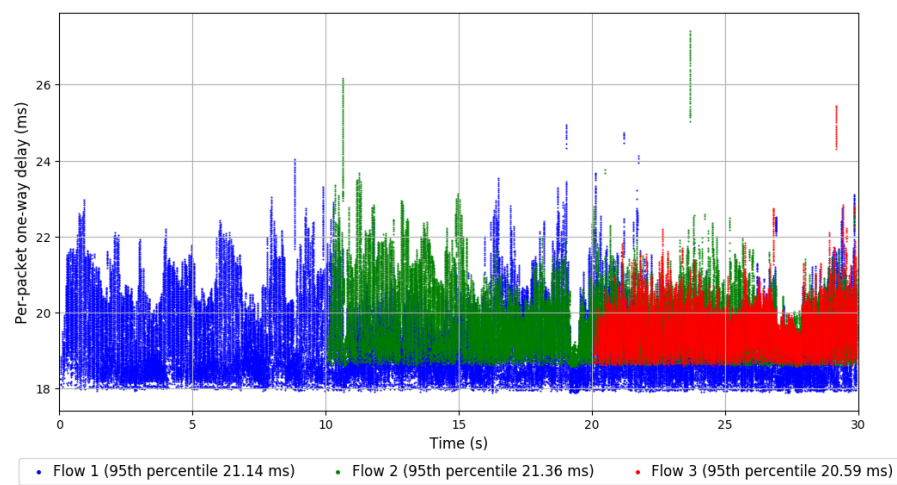
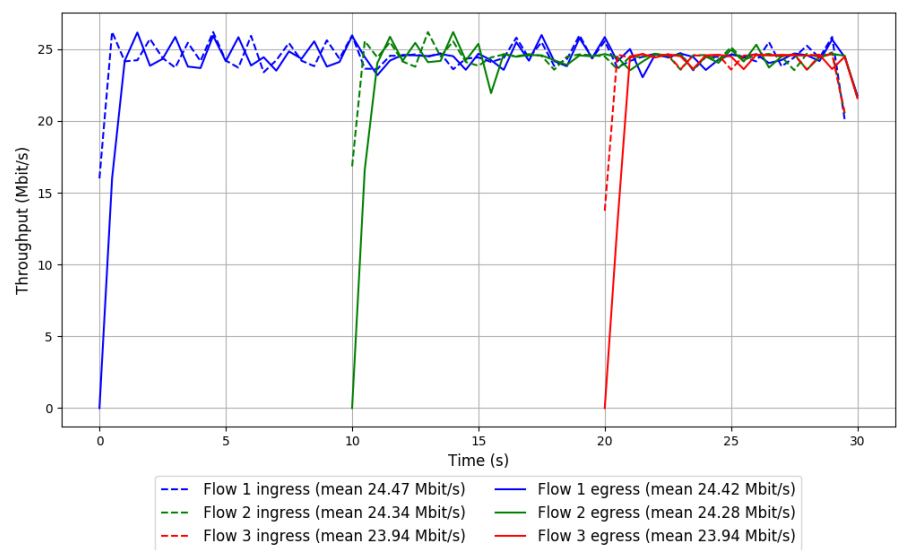
-- Flow 3:

Average throughput: 23.94 Mbit/s

95th percentile per-packet one-way delay: 20.587 ms

Loss rate: 0.00%

Run 3: Report of Sprout — Data Link

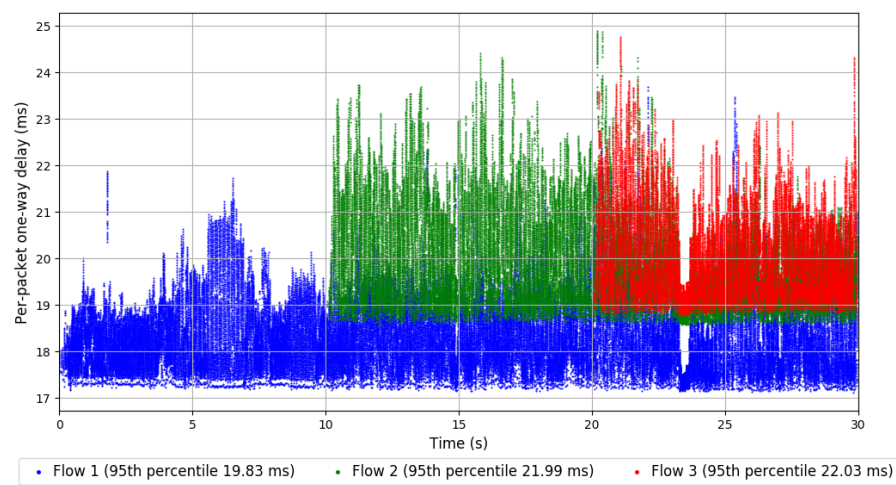
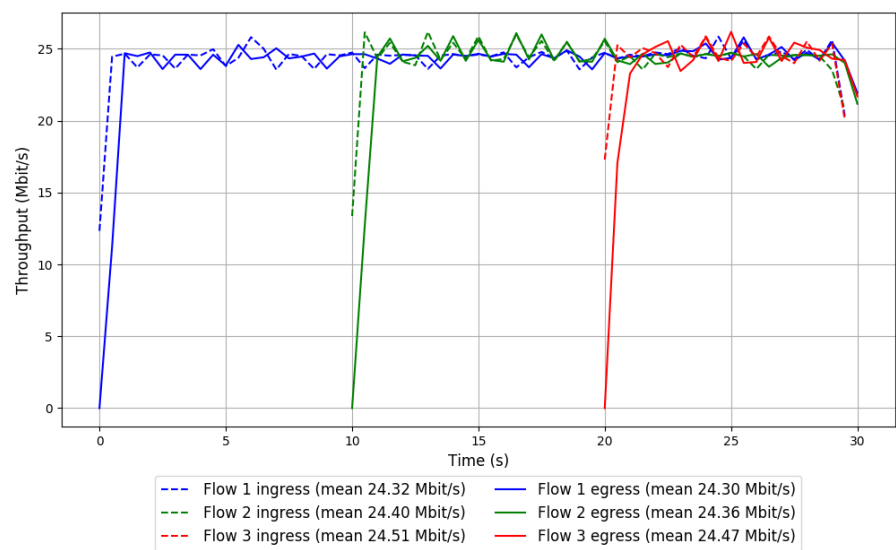


Run 4: Statistics of Sprout

Start at: 2018-09-07 15:54:52
End at: 2018-09-07 15:55:22
Local clock offset: 0.577 ms
Remote clock offset: -3.086 ms

```
# Below is generated by plot.py at 2018-09-07 17:37:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 48.58 Mbit/s
95th percentile per-packet one-way delay: 21.512 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 24.30 Mbit/s
95th percentile per-packet one-way delay: 19.829 ms
Loss rate: 0.05%
-- Flow 2:
Average throughput: 24.36 Mbit/s
95th percentile per-packet one-way delay: 21.994 ms
Loss rate: 0.14%
-- Flow 3:
Average throughput: 24.47 Mbit/s
95th percentile per-packet one-way delay: 22.028 ms
Loss rate: 0.16%
```

Run 4: Report of Sprout — Data Link

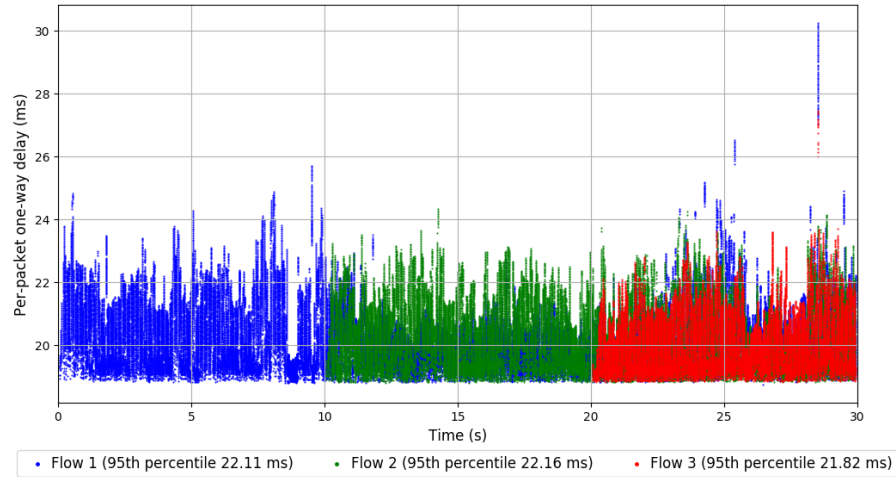
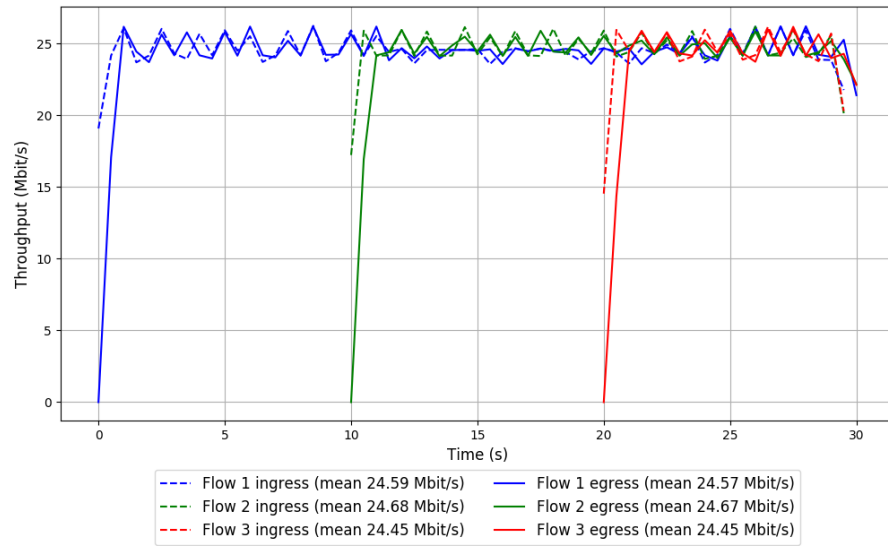


Run 5: Statistics of Sprout

Start at: 2018-09-07 16:22:37
End at: 2018-09-07 16:23:07
Local clock offset: 1.415 ms
Remote clock offset: -0.335 ms

```
# Below is generated by plot.py at 2018-09-07 17:37:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 49.06 Mbit/s
95th percentile per-packet one-way delay: 22.089 ms
Loss rate: 0.04%
-- Flow 1:
Average throughput: 24.57 Mbit/s
95th percentile per-packet one-way delay: 22.108 ms
Loss rate: 0.08%
-- Flow 2:
Average throughput: 24.67 Mbit/s
95th percentile per-packet one-way delay: 22.161 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 24.45 Mbit/s
95th percentile per-packet one-way delay: 21.818 ms
Loss rate: 0.00%
```

Run 5: Report of Sprout — Data Link

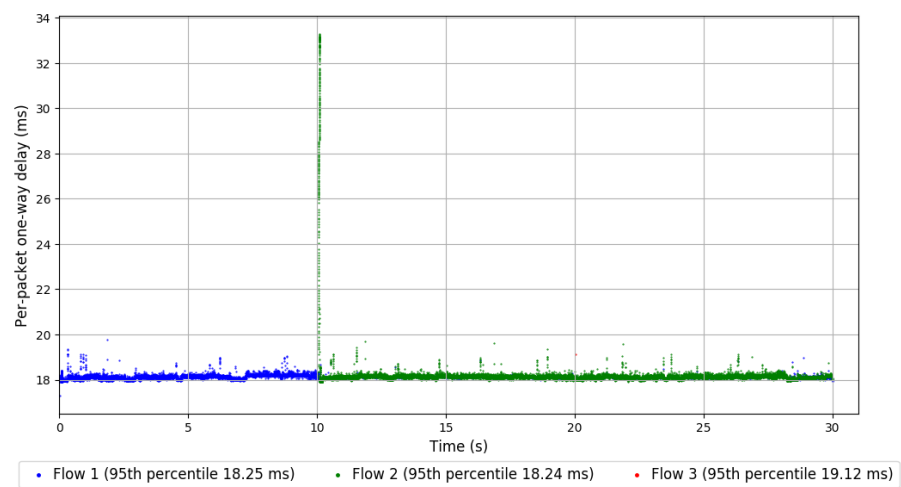
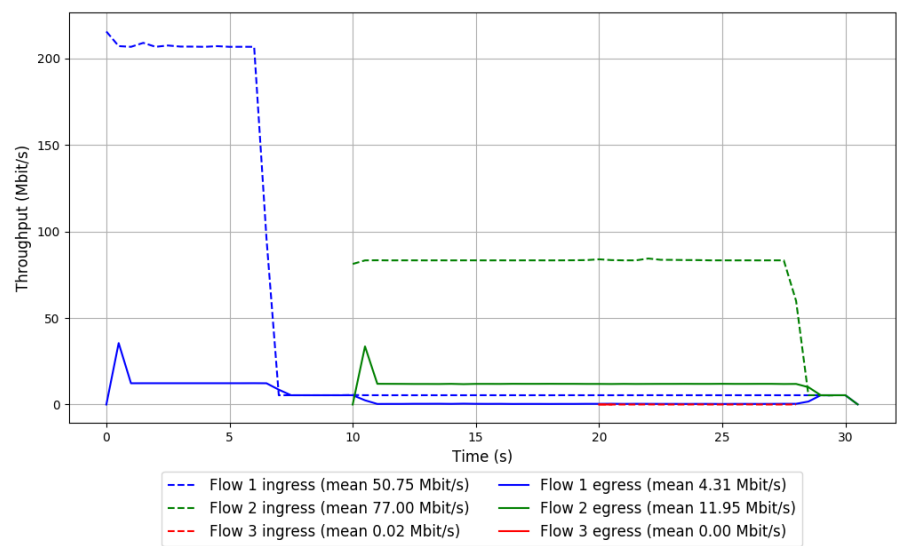


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-09-07 14:43:16
End at: 2018-09-07 14:43:46
Local clock offset: 3.116 ms
Remote clock offset: 1.121 ms

# Below is generated by plot.py at 2018-09-07 17:37:07
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.27 Mbit/s
95th percentile per-packet one-way delay: 18.245 ms
Loss rate: 87.98%
-- Flow 1:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 18.249 ms
Loss rate: 91.51%
-- Flow 2:
Average throughput: 11.95 Mbit/s
95th percentile per-packet one-way delay: 18.243 ms
Loss rate: 84.48%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 19.121 ms
Loss rate: 99.16%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-09-07 15:11:16

End at: 2018-09-07 15:11:46

Local clock offset: 3.039 ms

Remote clock offset: 0.702 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 12.65 Mbit/s

95th percentile per-packet one-way delay: 19.015 ms

Loss rate: 84.26%

-- Flow 1:

Average throughput: 4.89 Mbit/s

95th percentile per-packet one-way delay: 19.018 ms

Loss rate: 83.28%

-- Flow 2:

Average throughput: 11.64 Mbit/s

95th percentile per-packet one-way delay: 19.012 ms

Loss rate: 84.82%

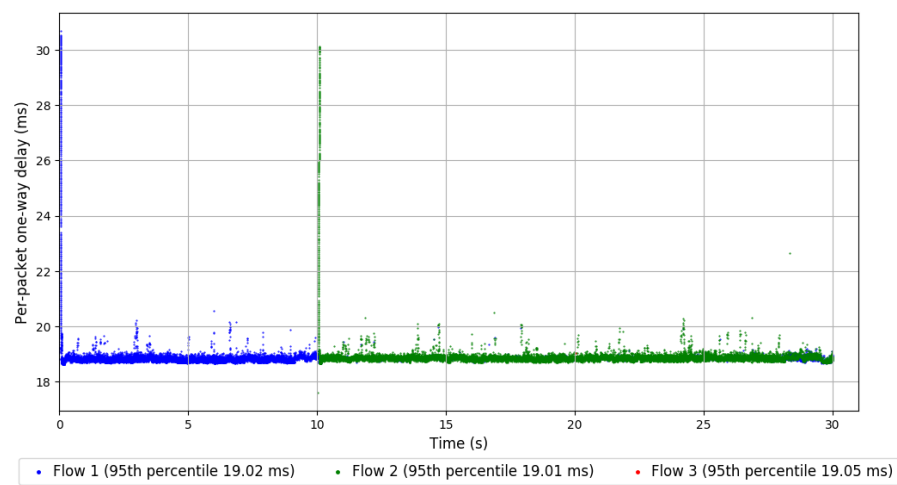
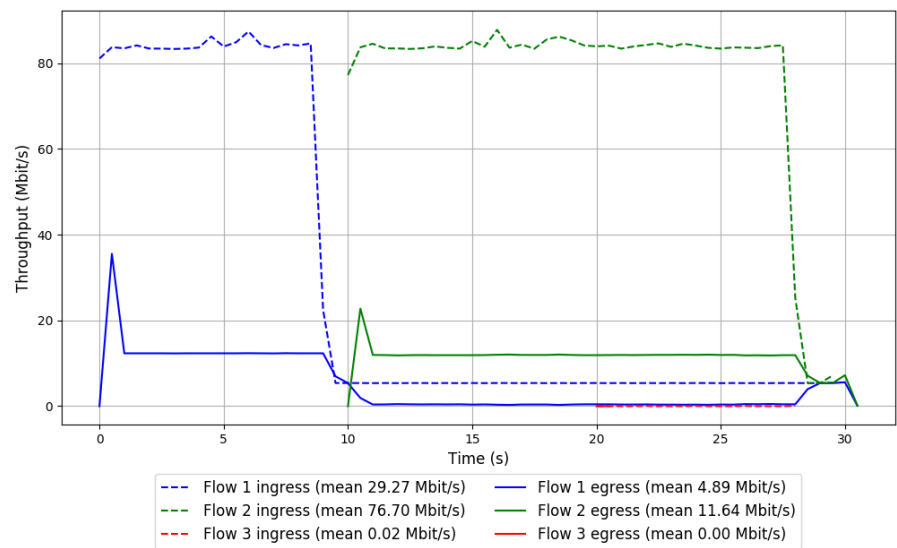
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 19.045 ms

Loss rate: 99.16%

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

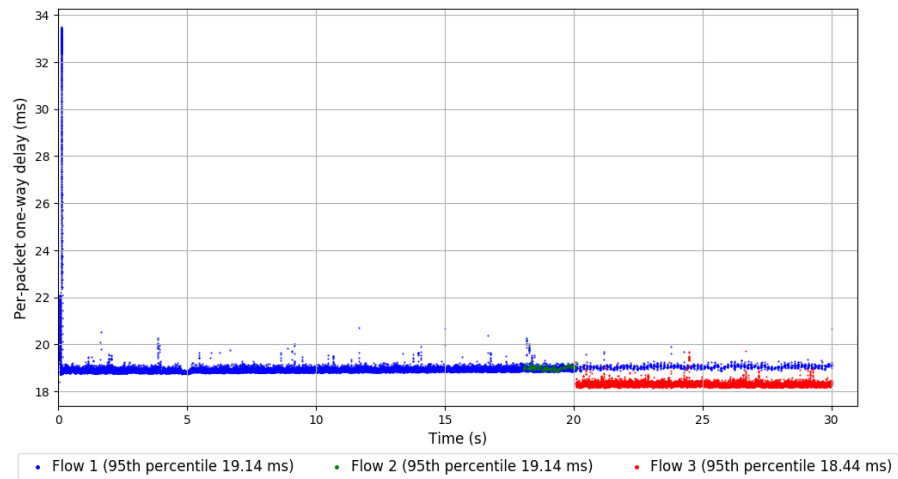
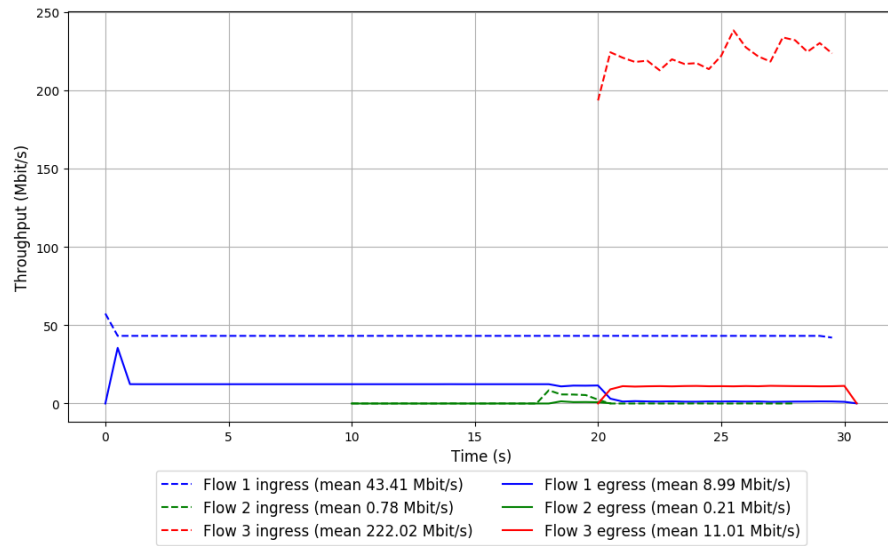


Run 3: Statistics of TaoVA-100x

Start at: 2018-09-07 15:39:11
End at: 2018-09-07 15:39:41
Local clock offset: 2.851 ms
Remote clock offset: -1.138 ms

Below is generated by plot.py at 2018-09-07 17:37:07
Datalink statistics
-- Total of 3 flows:
Average throughput: 12.72 Mbit/s
95th percentile per-packet one-way delay: 19.097 ms
Loss rate: 89.19%
-- Flow 1:
Average throughput: 8.99 Mbit/s
95th percentile per-packet one-way delay: 19.143 ms
Loss rate: 79.30%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 19.139 ms
Loss rate: 84.95%
-- Flow 3:
Average throughput: 11.01 Mbit/s
95th percentile per-packet one-way delay: 18.444 ms
Loss rate: 95.04%

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

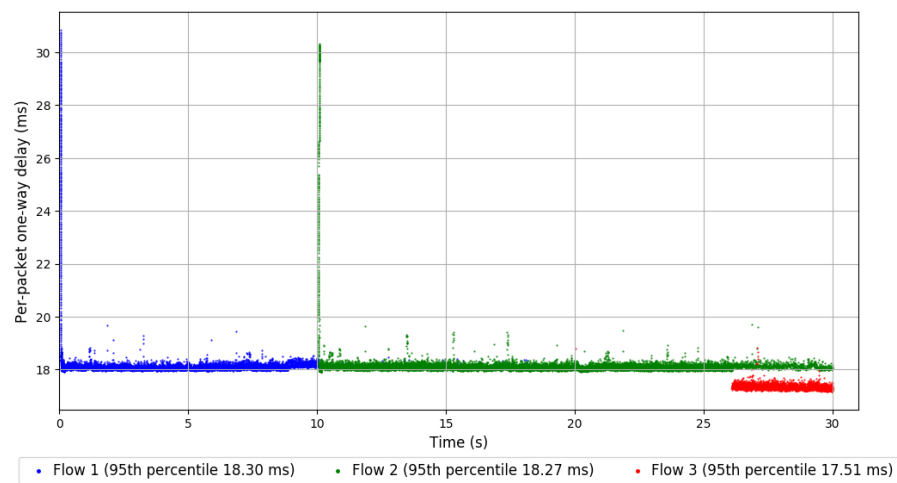
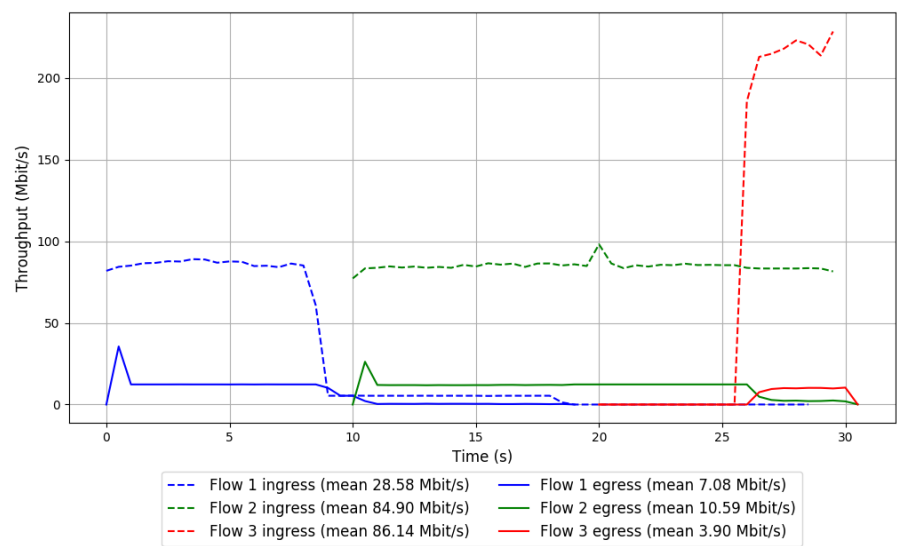


Run 4: Statistics of TaoVA-100x

Start at: 2018-09-07 16:06:56
End at: 2018-09-07 16:07:26
Local clock offset: -0.611 ms
Remote clock offset: -3.711 ms

Below is generated by plot.py at 2018-09-07 17:37:07
Datalink statistics
-- Total of 3 flows:
Average throughput: 12.72 Mbit/s
95th percentile per-packet one-way delay: 18.267 ms
Loss rate: 88.68%
-- Flow 1:
Average throughput: 7.08 Mbit/s
95th percentile per-packet one-way delay: 18.297 ms
Loss rate: 83.93%
-- Flow 2:
Average throughput: 10.59 Mbit/s
95th percentile per-packet one-way delay: 18.265 ms
Loss rate: 87.53%
-- Flow 3:
Average throughput: 3.90 Mbit/s
95th percentile per-packet one-way delay: 17.512 ms
Loss rate: 95.47%

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



Run 5: Statistics of TaoVA-100x

Start at: 2018-09-07 16:34:43

End at: 2018-09-07 16:35:13

Local clock offset: 2.914 ms

Remote clock offset: 0.45 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 12.28 Mbit/s

95th percentile per-packet one-way delay: 19.204 ms

Loss rate: 88.01%

-- Flow 1:

Average throughput: 4.32 Mbit/s

95th percentile per-packet one-way delay: 19.277 ms

Loss rate: 91.48%

-- Flow 2:

Average throughput: 11.34 Mbit/s

95th percentile per-packet one-way delay: 18.982 ms

Loss rate: 85.23%

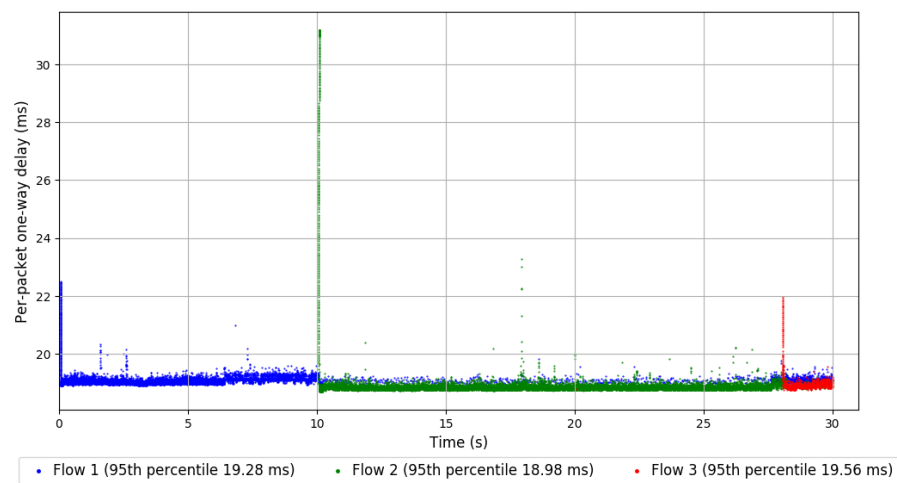
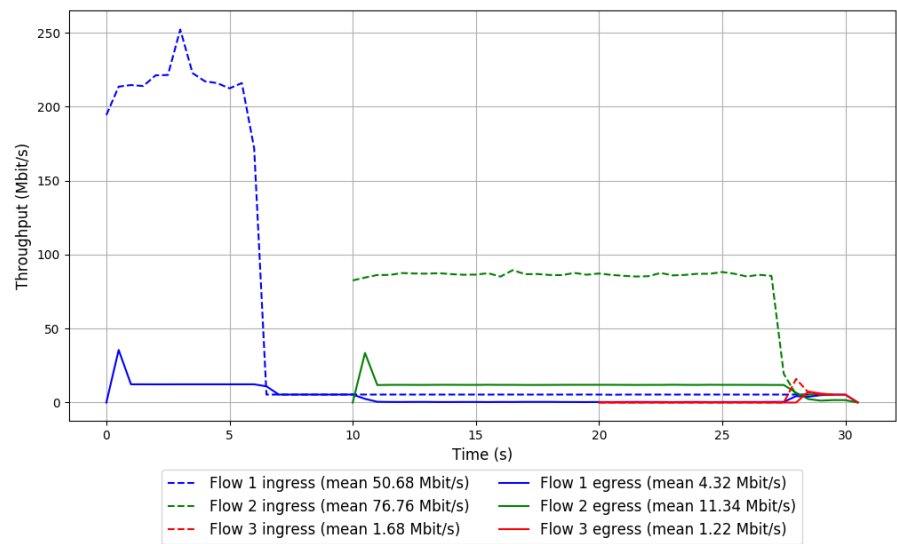
-- Flow 3:

Average throughput: 1.22 Mbit/s

95th percentile per-packet one-way delay: 19.559 ms

Loss rate: 27.60%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-09-07 14:53:41

End at: 2018-09-07 14:54:11

Local clock offset: 2.961 ms

Remote clock offset: 1.504 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 197.54 Mbit/s

95th percentile per-packet one-way delay: 20.293 ms

Loss rate: 0.03%

-- Flow 1:

Average throughput: 78.97 Mbit/s

95th percentile per-packet one-way delay: 19.093 ms

Loss rate: 0.02%

-- Flow 2:

Average throughput: 94.38 Mbit/s

95th percentile per-packet one-way delay: 18.395 ms

Loss rate: 0.01%

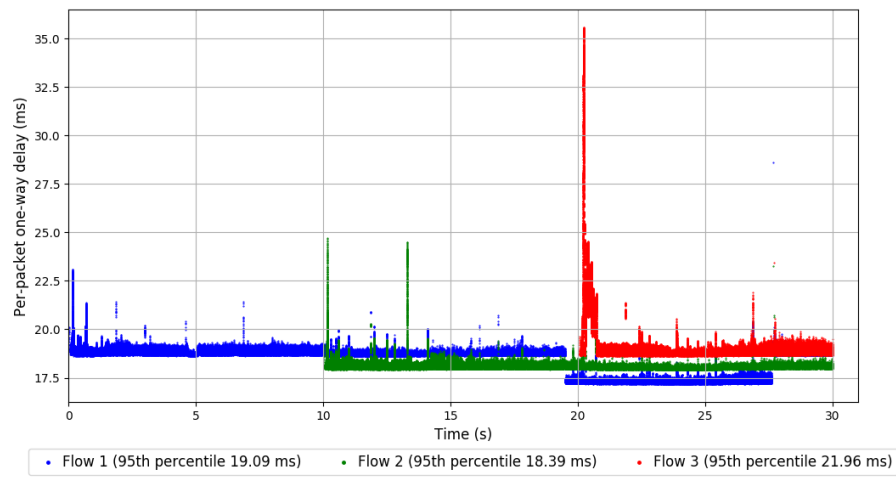
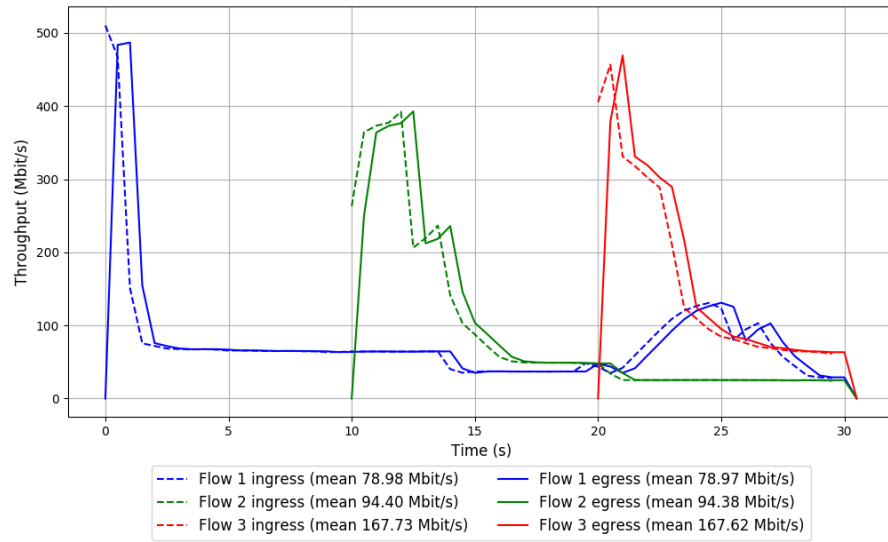
-- Flow 3:

Average throughput: 167.62 Mbit/s

95th percentile per-packet one-way delay: 21.962 ms

Loss rate: 0.06%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-09-07 15:21:38

End at: 2018-09-07 15:22:08

Local clock offset: 2.915 ms

Remote clock offset: 0.555 ms

Below is generated by plot.py at 2018-09-07 17:37:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 184.98 Mbit/s

95th percentile per-packet one-way delay: 19.457 ms

Loss rate: 0.17%

-- Flow 1:

Average throughput: 72.70 Mbit/s

95th percentile per-packet one-way delay: 19.218 ms

Loss rate: 0.04%

-- Flow 2:

Average throughput: 82.65 Mbit/s

95th percentile per-packet one-way delay: 20.323 ms

Loss rate: 0.48%

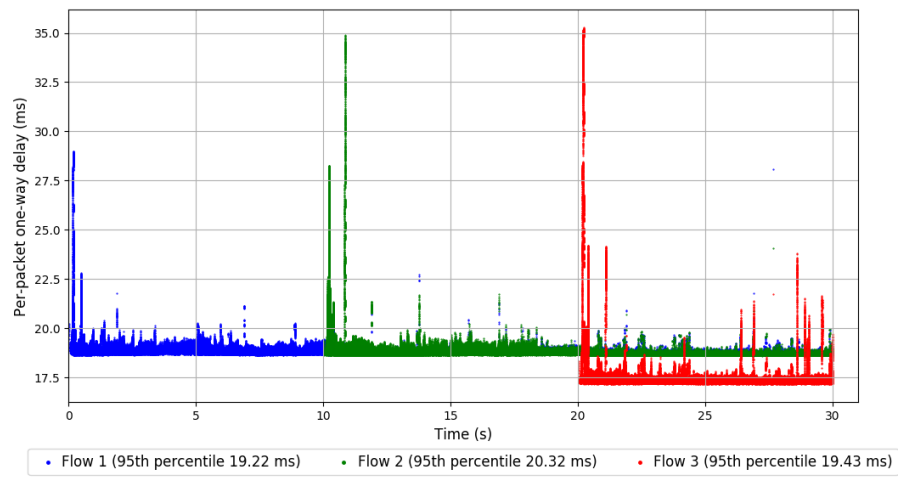
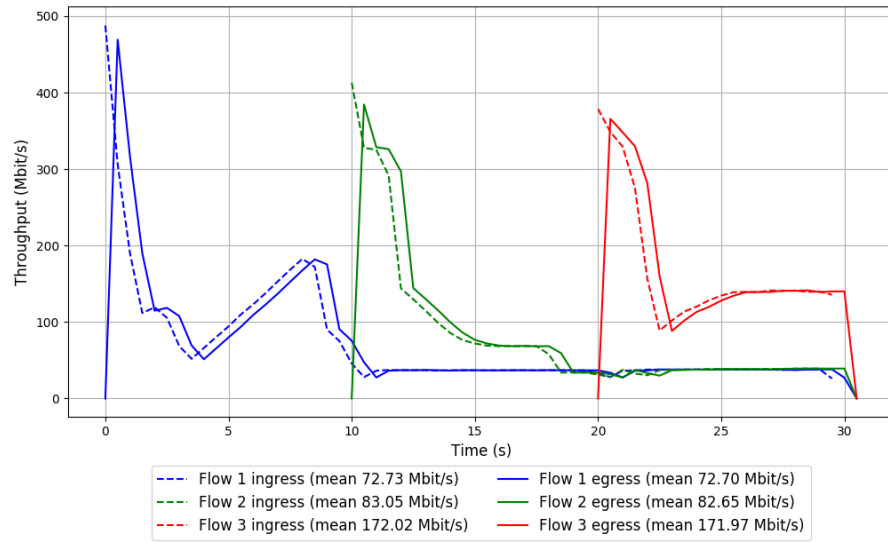
-- Flow 3:

Average throughput: 171.97 Mbit/s

95th percentile per-packet one-way delay: 19.432 ms

Loss rate: 0.02%

Run 2: Report of TCP Vegas — Data Link

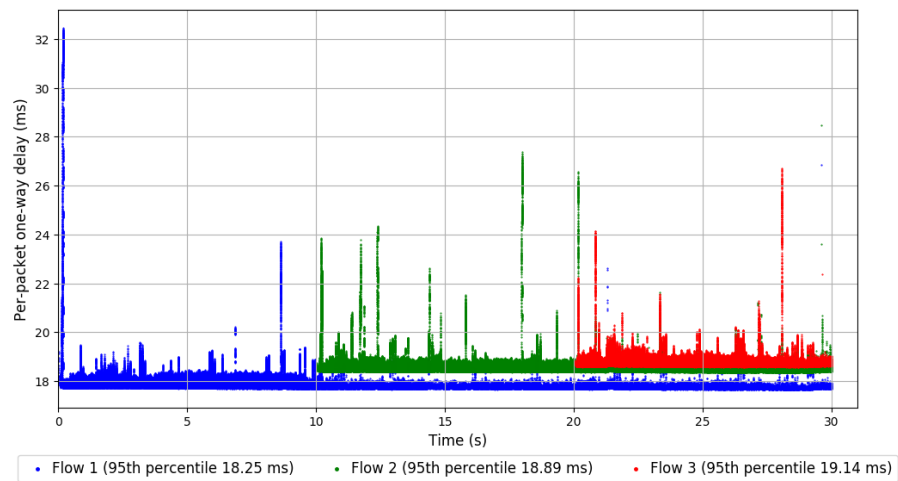
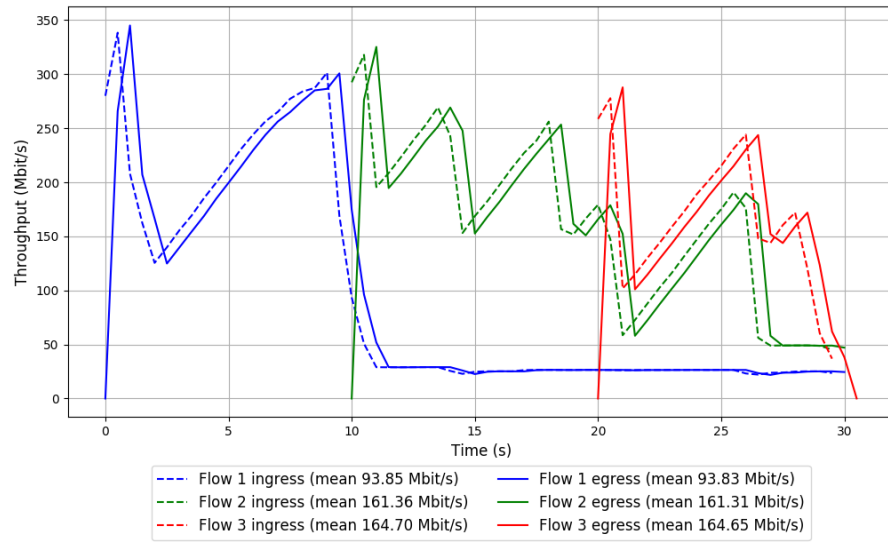


Run 3: Statistics of TCP Vegas

Start at: 2018-09-07 15:49:33
End at: 2018-09-07 15:50:03
Local clock offset: 1.544 ms
Remote clock offset: -2.805 ms

Below is generated by plot.py at 2018-09-07 17:37:26
Datalink statistics
-- Total of 3 flows:
Average throughput: 255.99 Mbit/s
95th percentile per-packet one-way delay: 18.961 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 93.83 Mbit/s
95th percentile per-packet one-way delay: 18.255 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 161.31 Mbit/s
95th percentile per-packet one-way delay: 18.889 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 164.65 Mbit/s
95th percentile per-packet one-way delay: 19.137 ms
Loss rate: 0.03%

Run 3: Report of TCP Vegas — Data Link

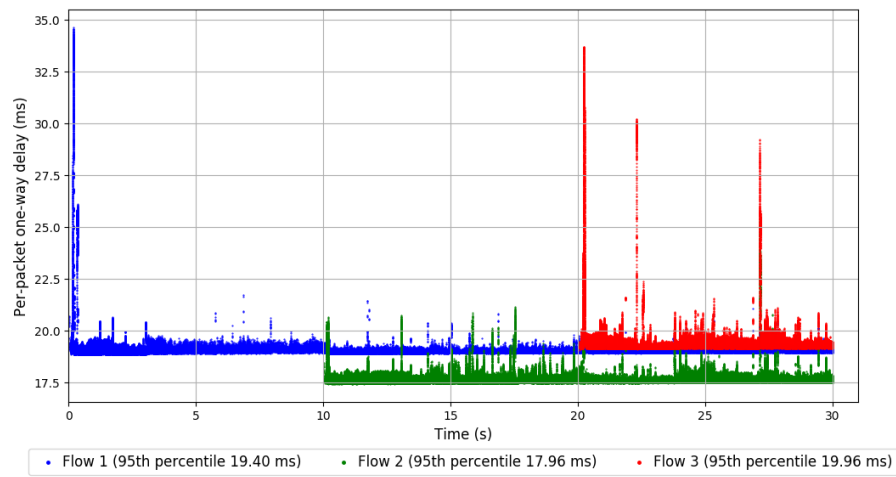
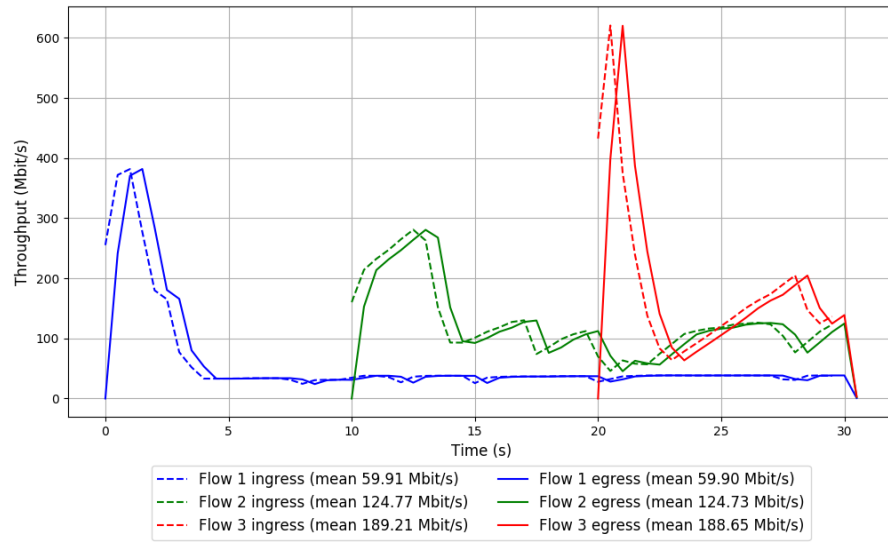


Run 4: Statistics of TCP Vegas

Start at: 2018-09-07 16:17:20
End at: 2018-09-07 16:17:50
Local clock offset: -0.019 ms
Remote clock offset: -0.933 ms

Below is generated by plot.py at 2018-09-07 17:38:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 205.81 Mbit/s
95th percentile per-packet one-way delay: 19.617 ms
Loss rate: 0.11%
-- Flow 1:
Average throughput: 59.90 Mbit/s
95th percentile per-packet one-way delay: 19.400 ms
Loss rate: 0.02%
-- Flow 2:
Average throughput: 124.73 Mbit/s
95th percentile per-packet one-way delay: 17.964 ms
Loss rate: 0.04%
-- Flow 3:
Average throughput: 188.65 Mbit/s
95th percentile per-packet one-way delay: 19.965 ms
Loss rate: 0.29%

Run 4: Report of TCP Vegas — Data Link

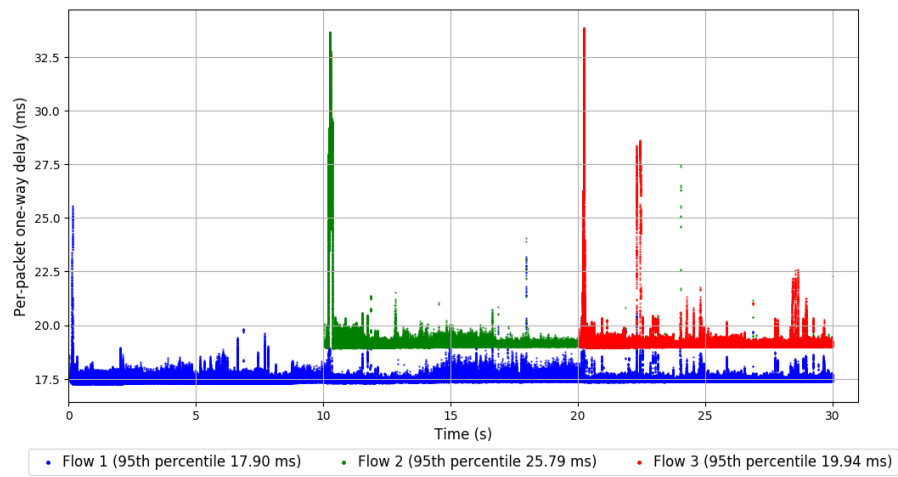
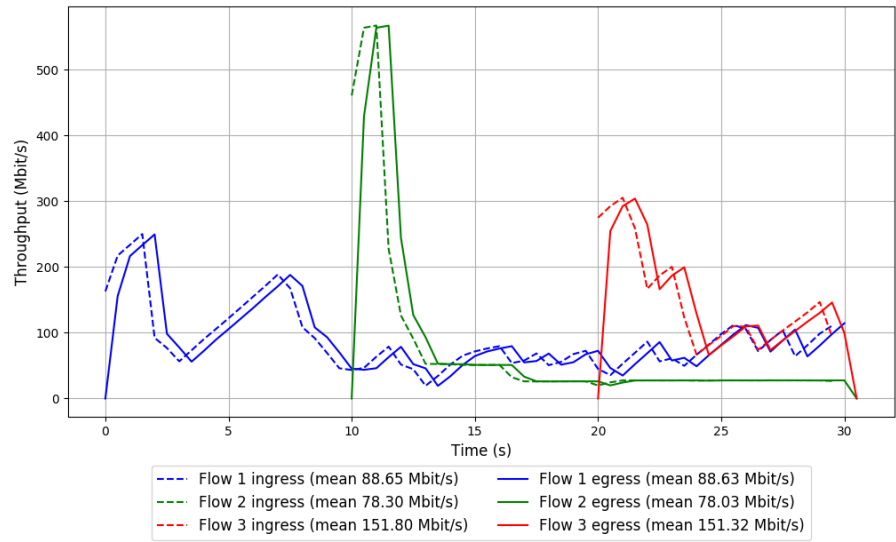


Run 5: Statistics of TCP Vegas

Start at: 2018-09-07 16:45:18
End at: 2018-09-07 16:45:48
Local clock offset: 3.301 ms
Remote clock offset: -0.679 ms

Below is generated by plot.py at 2018-09-07 17:38:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 190.96 Mbit/s
95th percentile per-packet one-way delay: 19.681 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 88.63 Mbit/s
95th percentile per-packet one-way delay: 17.899 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 78.03 Mbit/s
95th percentile per-packet one-way delay: 25.791 ms
Loss rate: 0.33%
-- Flow 3:
Average throughput: 151.32 Mbit/s
95th percentile per-packet one-way delay: 19.936 ms
Loss rate: 0.31%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-09-07 14:32:18

End at: 2018-09-07 14:32:48

Local clock offset: 3.042 ms

Remote clock offset: 1.287 ms

Below is generated by plot.py at 2018-09-07 17:41:50

Datalink statistics

-- Total of 3 flows:

Average throughput: 427.74 Mbit/s

95th percentile per-packet one-way delay: 35.431 ms

Loss rate: 25.16%

-- Flow 1:

Average throughput: 222.33 Mbit/s

95th percentile per-packet one-way delay: 36.047 ms

Loss rate: 19.47%

-- Flow 2:

Average throughput: 230.94 Mbit/s

95th percentile per-packet one-way delay: 35.551 ms

Loss rate: 31.87%

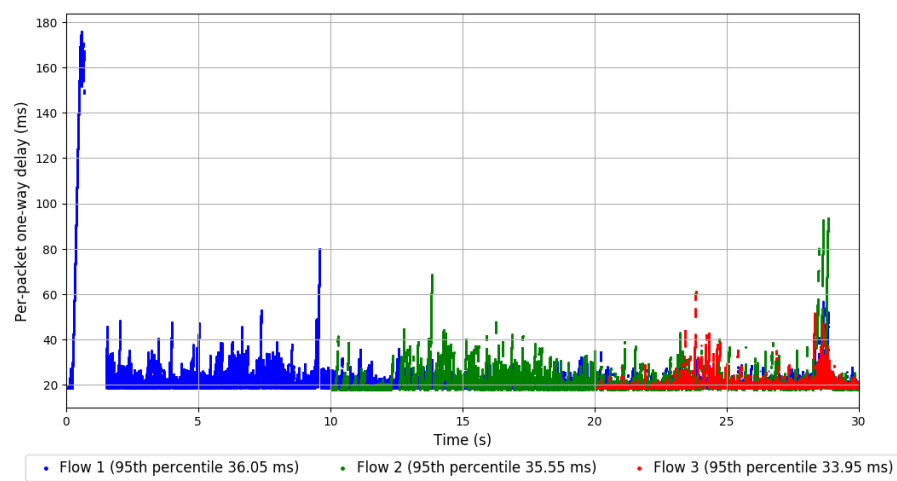
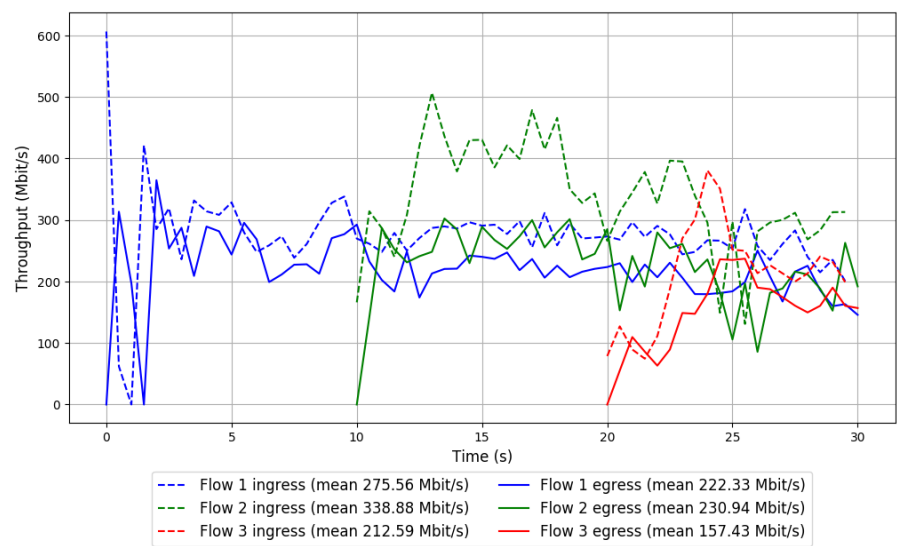
-- Flow 3:

Average throughput: 157.43 Mbit/s

95th percentile per-packet one-way delay: 33.949 ms

Loss rate: 25.95%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-09-07 15:00:22

End at: 2018-09-07 15:00:52

Local clock offset: 3.033 ms

Remote clock offset: 1.6 ms

Below is generated by plot.py at 2018-09-07 17:41:50

Datalink statistics

-- Total of 3 flows:

Average throughput: 396.66 Mbit/s

95th percentile per-packet one-way delay: 37.258 ms

Loss rate: 21.61%

-- Flow 1:

Average throughput: 208.43 Mbit/s

95th percentile per-packet one-way delay: 39.195 ms

Loss rate: 22.03%

-- Flow 2:

Average throughput: 198.74 Mbit/s

95th percentile per-packet one-way delay: 35.642 ms

Loss rate: 19.28%

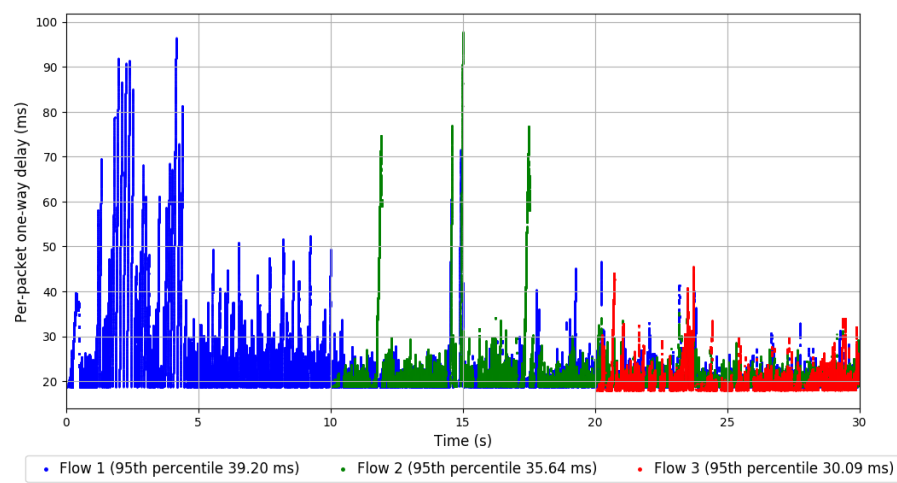
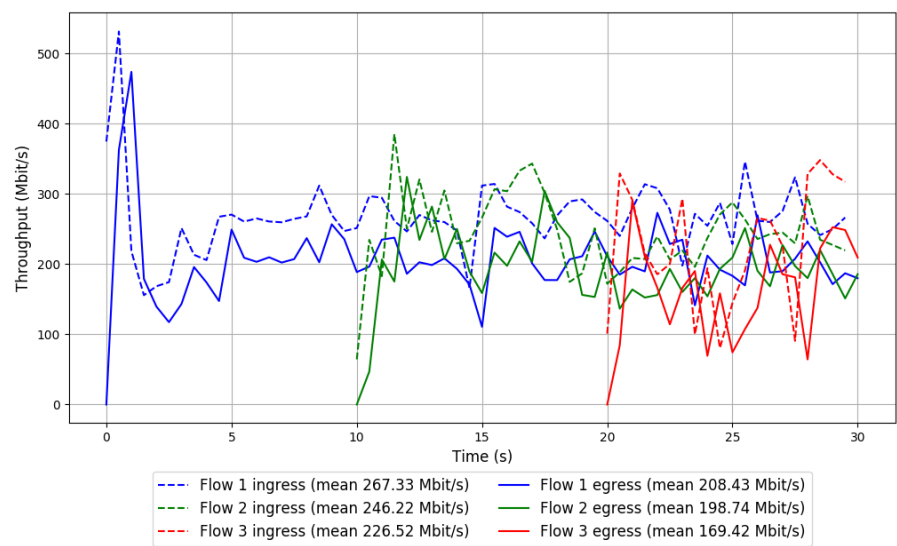
-- Flow 3:

Average throughput: 169.42 Mbit/s

95th percentile per-packet one-way delay: 30.090 ms

Loss rate: 25.19%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-09-07 15:28:18

End at: 2018-09-07 15:28:48

Local clock offset: 2.795 ms

Remote clock offset: 0.647 ms

Below is generated by plot.py at 2018-09-07 17:42:10

Datalink statistics

-- Total of 3 flows:

Average throughput: 433.44 Mbit/s

95th percentile per-packet one-way delay: 34.830 ms

Loss rate: 26.58%

-- Flow 1:

Average throughput: 227.70 Mbit/s

95th percentile per-packet one-way delay: 36.070 ms

Loss rate: 24.93%

-- Flow 2:

Average throughput: 216.05 Mbit/s

95th percentile per-packet one-way delay: 31.619 ms

Loss rate: 27.46%

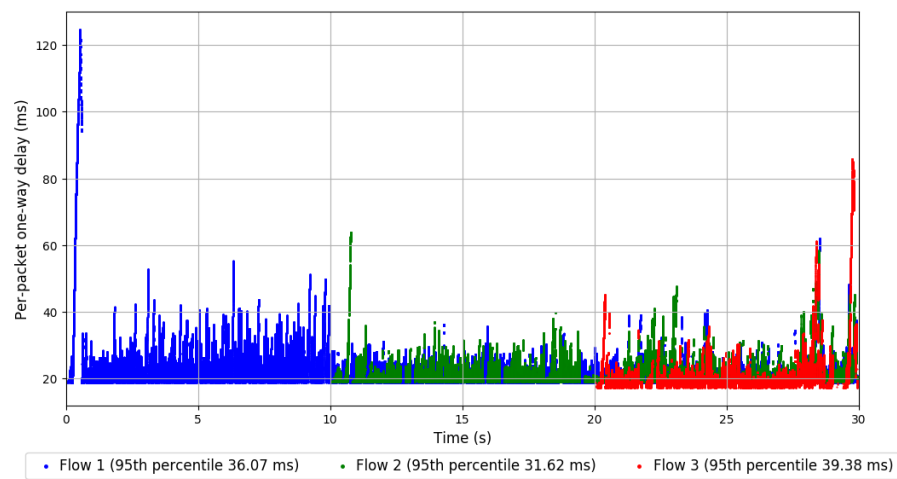
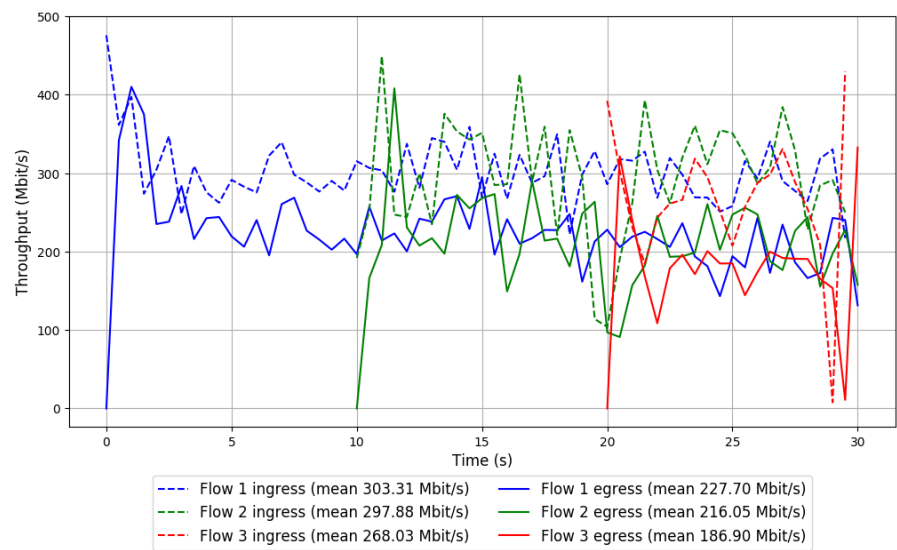
-- Flow 3:

Average throughput: 186.90 Mbit/s

95th percentile per-packet one-way delay: 39.378 ms

Loss rate: 30.25%

Run 3: Report of Verus — Data Link

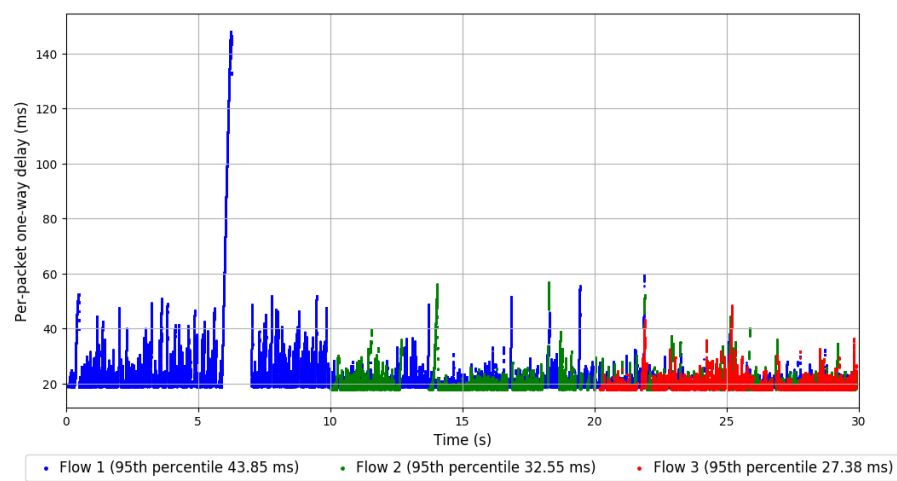
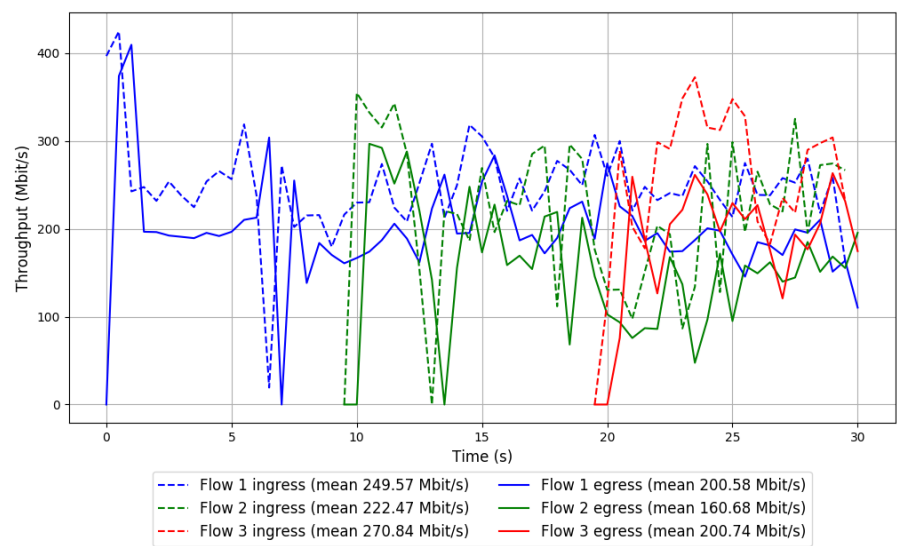


Run 4: Statistics of Verus

Start at: 2018-09-07 15:56:13
End at: 2018-09-07 15:56:43
Local clock offset: 0.363 ms
Remote clock offset: -3.179 ms

Below is generated by plot.py at 2018-09-07 17:42:10
Datalink statistics
-- Total of 3 flows:
Average throughput: 374.22 Mbit/s
95th percentile per-packet one-way delay: 35.548 ms
Loss rate: 23.24%
-- Flow 1:
Average throughput: 200.58 Mbit/s
95th percentile per-packet one-way delay: 43.854 ms
Loss rate: 19.63%
-- Flow 2:
Average throughput: 160.68 Mbit/s
95th percentile per-packet one-way delay: 32.546 ms
Loss rate: 27.77%
-- Flow 3:
Average throughput: 200.74 Mbit/s
95th percentile per-packet one-way delay: 27.382 ms
Loss rate: 25.82%

Run 4: Report of Verus — Data Link

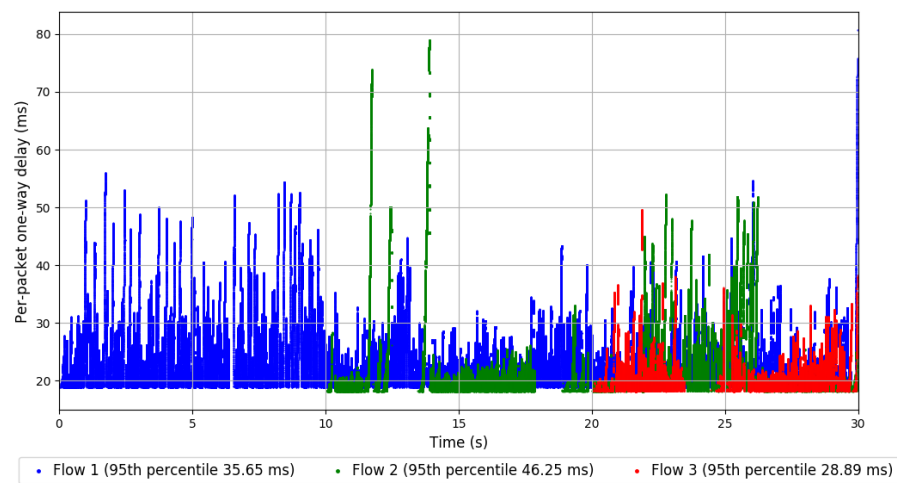
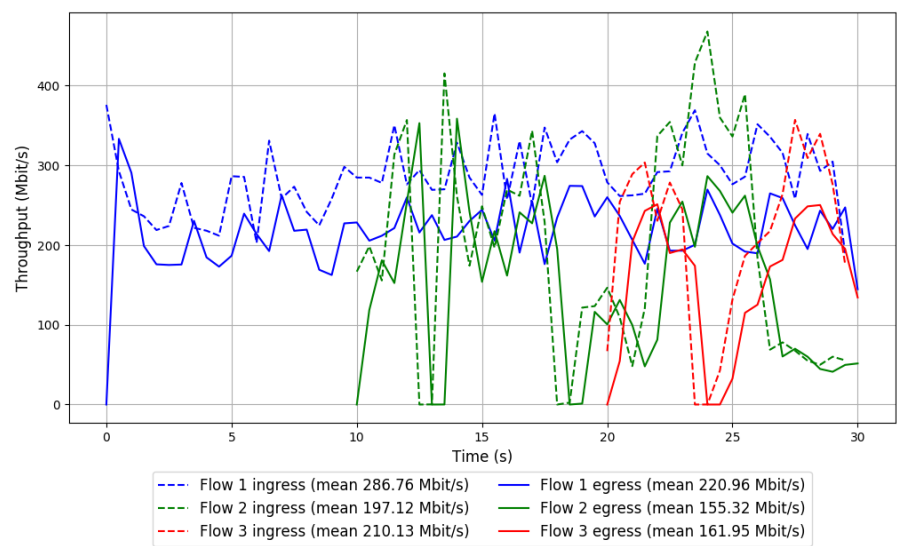


Run 5: Statistics of Verus

Start at: 2018-09-07 16:23:58
End at: 2018-09-07 16:24:28
Local clock offset: 1.68 ms
Remote clock offset: -0.192 ms

Below is generated by plot.py at 2018-09-07 17:42:10
Datalink statistics
-- Total of 3 flows:
Average throughput: 378.03 Mbit/s
95th percentile per-packet one-way delay: 37.804 ms
Loss rate: 22.41%
-- Flow 1:
Average throughput: 220.96 Mbit/s
95th percentile per-packet one-way delay: 35.654 ms
Loss rate: 22.85%
-- Flow 2:
Average throughput: 155.32 Mbit/s
95th percentile per-packet one-way delay: 46.248 ms
Loss rate: 21.18%
-- Flow 3:
Average throughput: 161.95 Mbit/s
95th percentile per-packet one-way delay: 28.895 ms
Loss rate: 22.93%

Run 5: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-09-07 14:50:31

End at: 2018-09-07 14:51:01

Local clock offset: 3.08 ms

Remote clock offset: 1.363 ms

Below is generated by plot.py at 2018-09-07 17:43:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 607.42 Mbit/s

95th percentile per-packet one-way delay: 155.436 ms

Loss rate: 0.81%

-- Flow 1:

Average throughput: 371.71 Mbit/s

95th percentile per-packet one-way delay: 206.313 ms

Loss rate: 1.07%

-- Flow 2:

Average throughput: 316.36 Mbit/s

95th percentile per-packet one-way delay: 20.248 ms

Loss rate: 0.33%

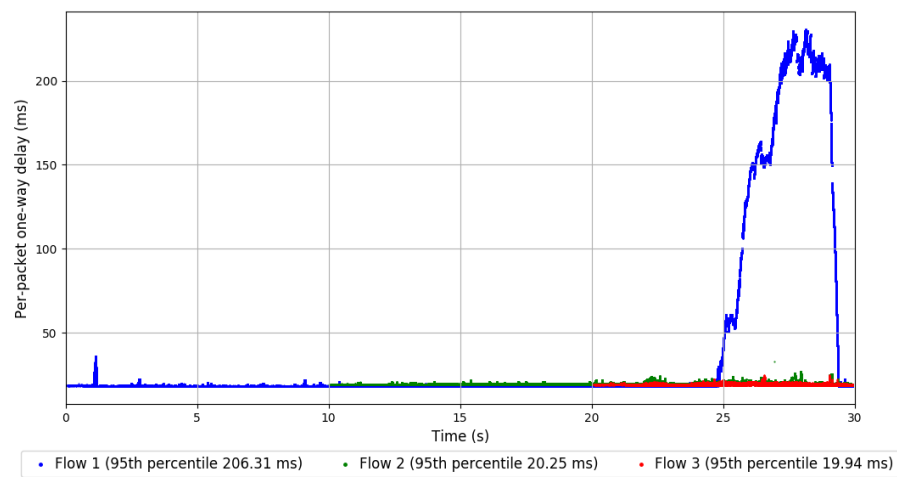
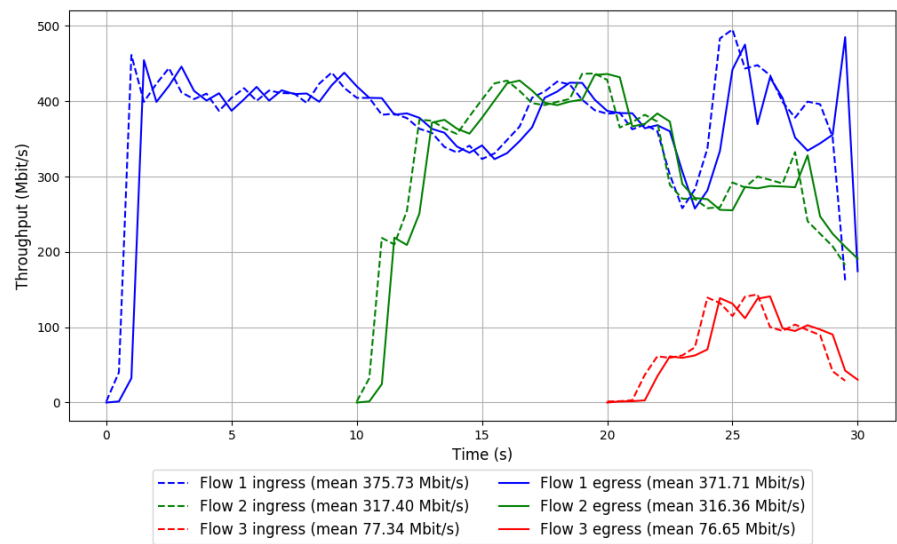
-- Flow 3:

Average throughput: 76.65 Mbit/s

95th percentile per-packet one-way delay: 19.941 ms

Loss rate: 0.90%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-09-07 15:18:28

End at: 2018-09-07 15:18:59

Local clock offset: 2.948 ms

Remote clock offset: 0.496 ms

Below is generated by plot.py at 2018-09-07 17:44:28

Datalink statistics

-- Total of 3 flows:

Average throughput: 616.88 Mbit/s

95th percentile per-packet one-way delay: 21.283 ms

Loss rate: 0.42%

-- Flow 1:

Average throughput: 371.51 Mbit/s

95th percentile per-packet one-way delay: 20.983 ms

Loss rate: 0.27%

-- Flow 2:

Average throughput: 301.35 Mbit/s

95th percentile per-packet one-way delay: 24.230 ms

Loss rate: 0.61%

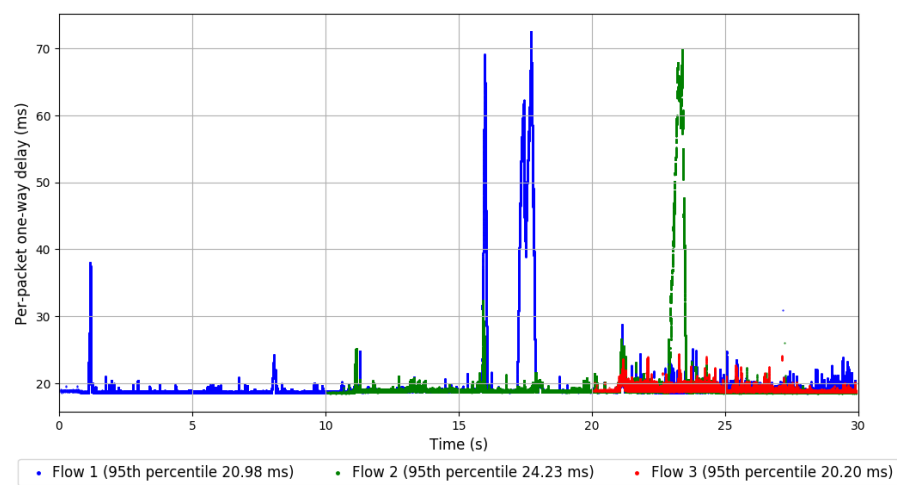
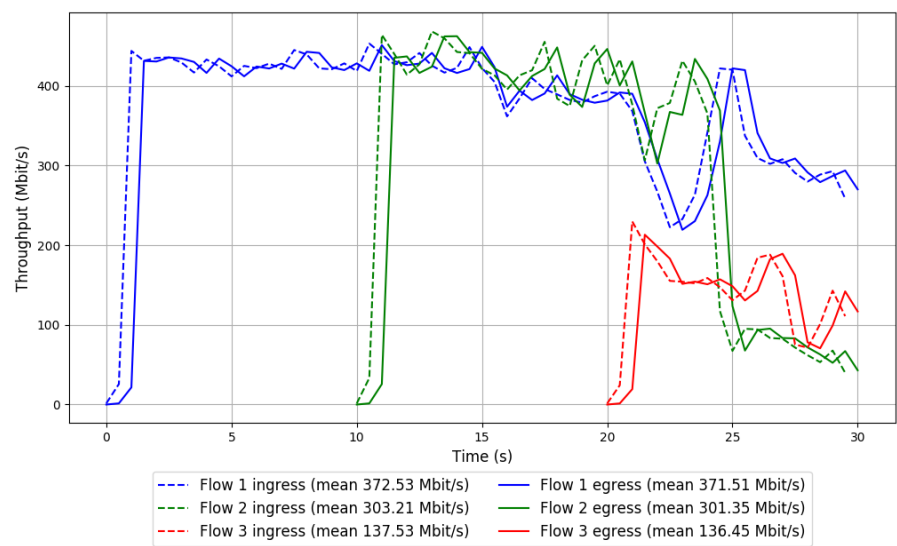
-- Flow 3:

Average throughput: 136.45 Mbit/s

95th percentile per-packet one-way delay: 20.197 ms

Loss rate: 0.79%

Run 2: Report of PCC-Vivace — Data Link

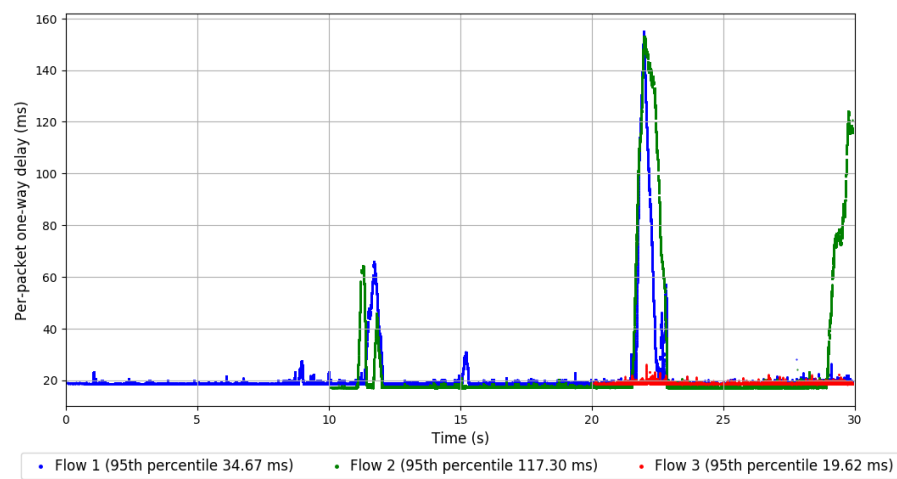
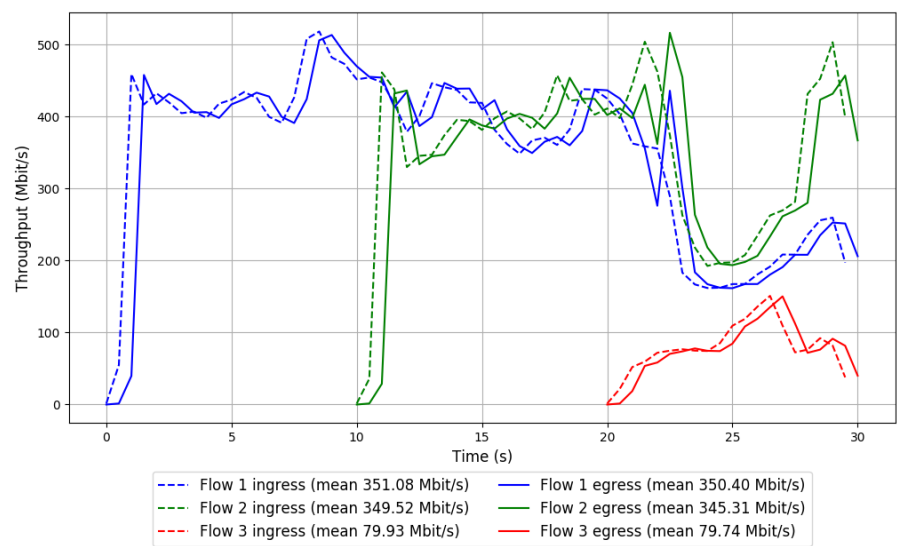


Run 3: Statistics of PCC-Vivace

Start at: 2018-09-07 15:46:24
End at: 2018-09-07 15:46:54
Local clock offset: 2.328 ms
Remote clock offset: -2.447 ms

Below is generated by plot.py at 2018-09-07 17:44:28
Datalink statistics
-- Total of 3 flows:
Average throughput: 606.39 Mbit/s
95th percentile per-packet one-way delay: 73.433 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 350.40 Mbit/s
95th percentile per-packet one-way delay: 34.667 ms
Loss rate: 0.20%
-- Flow 2:
Average throughput: 345.31 Mbit/s
95th percentile per-packet one-way delay: 117.303 ms
Loss rate: 1.18%
-- Flow 3:
Average throughput: 79.74 Mbit/s
95th percentile per-packet one-way delay: 19.625 ms
Loss rate: 0.25%

Run 3: Report of PCC-Vivace — Data Link

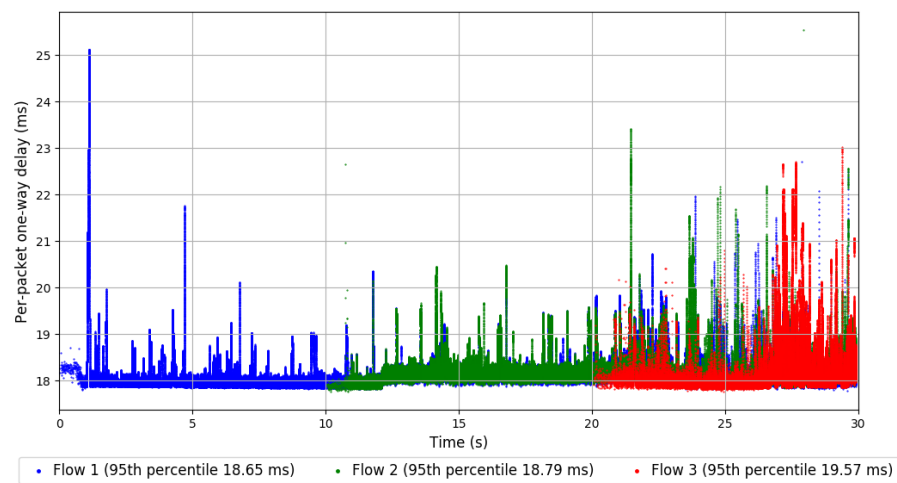
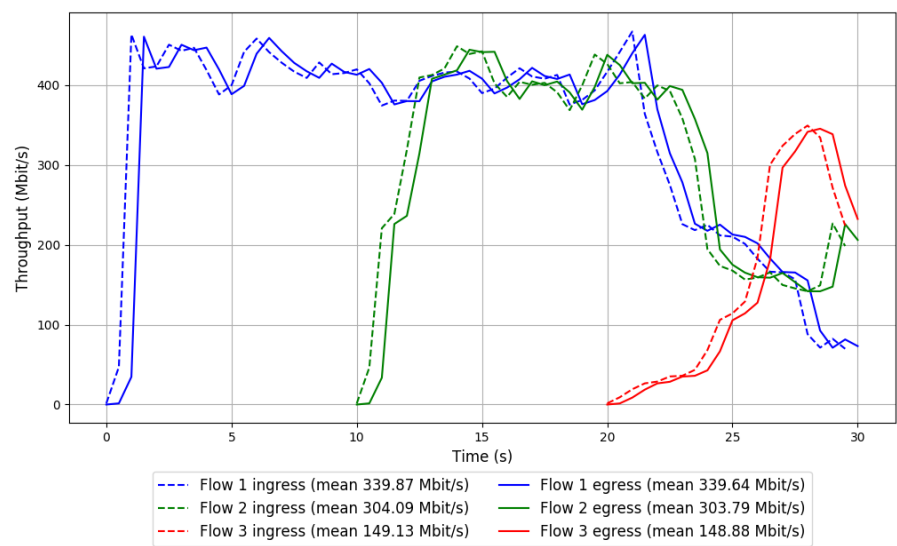


Run 4: Statistics of PCC-Vivace

Start at: 2018-09-07 16:14:11
End at: 2018-09-07 16:14:41
Local clock offset: -1.061 ms
Remote clock offset: -1.673 ms

Below is generated by plot.py at 2018-09-07 17:45:13
Datalink statistics
-- Total of 3 flows:
Average throughput: 590.80 Mbit/s
95th percentile per-packet one-way delay: 18.786 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 339.64 Mbit/s
95th percentile per-packet one-way delay: 18.650 ms
Loss rate: 0.07%
-- Flow 2:
Average throughput: 303.79 Mbit/s
95th percentile per-packet one-way delay: 18.791 ms
Loss rate: 0.09%
-- Flow 3:
Average throughput: 148.88 Mbit/s
95th percentile per-packet one-way delay: 19.567 ms
Loss rate: 0.17%

Run 4: Report of PCC-Vivace — Data Link



Run 5: Statistics of PCC-Vivace

Start at: 2018-09-07 16:42:07

End at: 2018-09-07 16:42:37

Local clock offset: 3.198 ms

Remote clock offset: 0.496 ms

Below is generated by plot.py at 2018-09-07 17:45:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 643.26 Mbit/s

95th percentile per-packet one-way delay: 21.126 ms

Loss rate: 0.52%

-- Flow 1:

Average throughput: 379.87 Mbit/s

95th percentile per-packet one-way delay: 22.520 ms

Loss rate: 0.28%

-- Flow 2:

Average throughput: 344.54 Mbit/s

95th percentile per-packet one-way delay: 20.445 ms

Loss rate: 0.81%

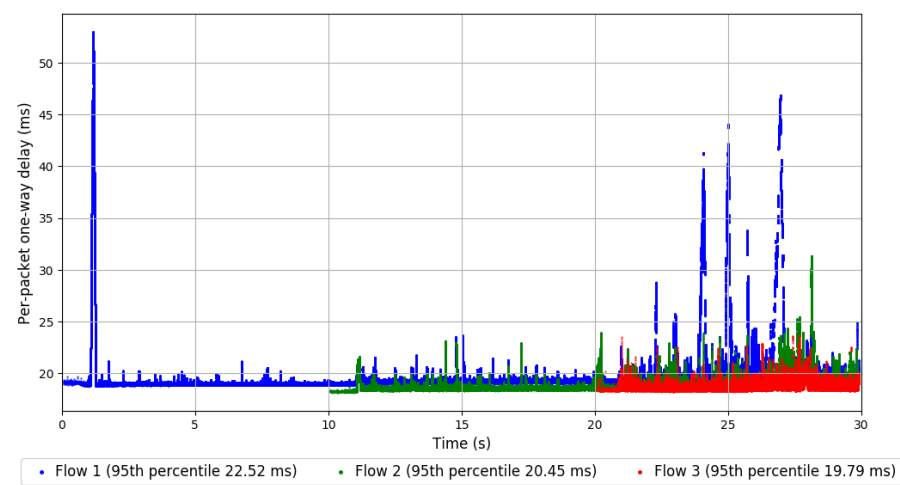
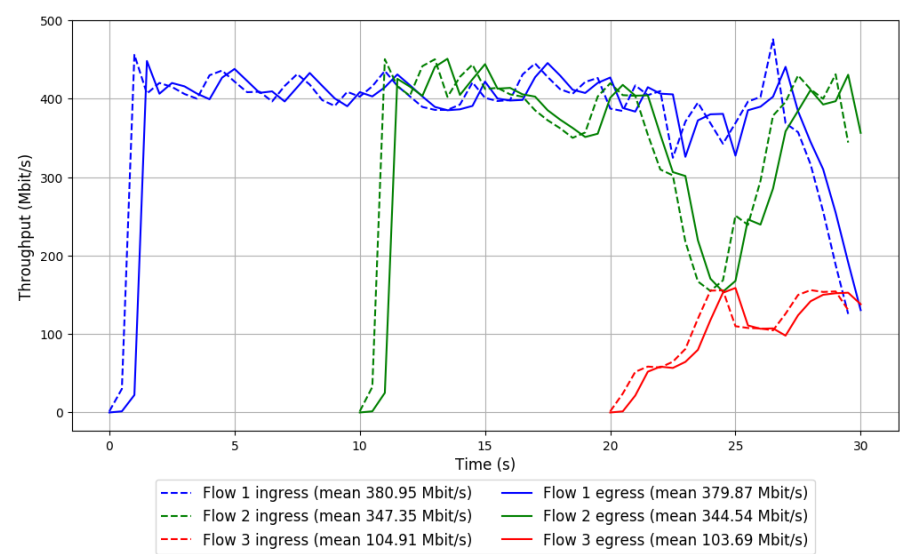
-- Flow 3:

Average throughput: 103.69 Mbit/s

95th percentile per-packet one-way delay: 19.792 ms

Loss rate: 1.18%

Run 5: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-09-07 14:44:37

End at: 2018-09-07 14:45:07

Local clock offset: 3.036 ms

Remote clock offset: 1.152 ms

Below is generated by plot.py at 2018-09-07 17:45:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.78 Mbit/s

95th percentile per-packet one-way delay: 19.740 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.95 Mbit/s

95th percentile per-packet one-way delay: 18.885 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 19.809 ms

Loss rate: 0.00%

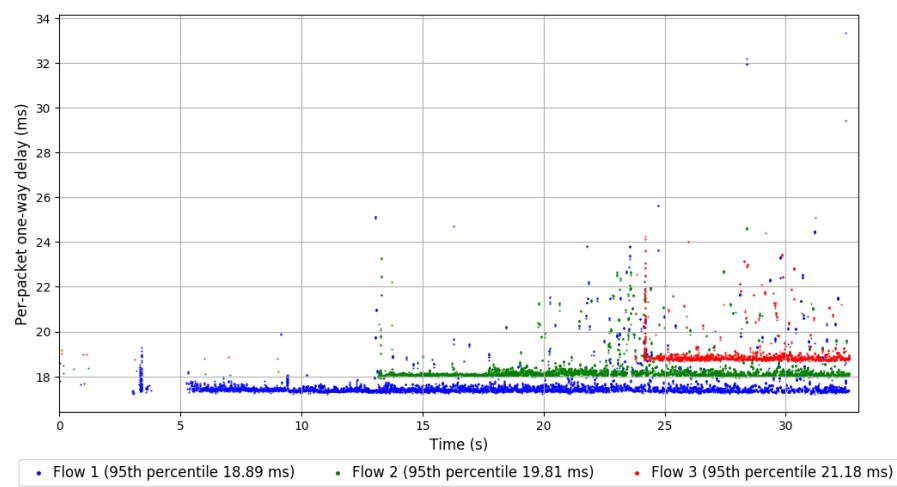
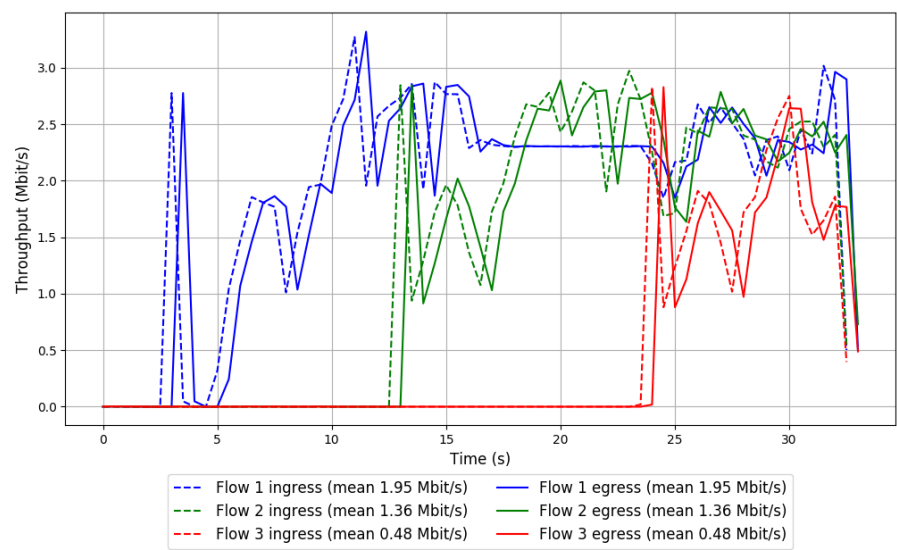
-- Flow 3:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 21.183 ms

Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-09-07 15:12:37

End at: 2018-09-07 15:13:07

Local clock offset: 3.025 ms

Remote clock offset: 0.578 ms

Below is generated by plot.py at 2018-09-07 17:45:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.80 Mbit/s

95th percentile per-packet one-way delay: 20.395 ms

Loss rate: 0.02%

-- Flow 1:

Average throughput: 1.97 Mbit/s

95th percentile per-packet one-way delay: 20.365 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.35 Mbit/s

95th percentile per-packet one-way delay: 20.370 ms

Loss rate: 0.04%

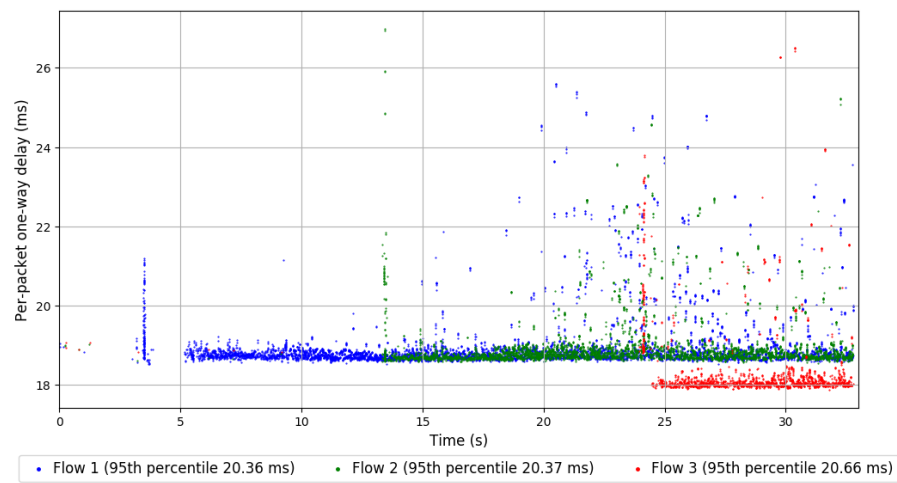
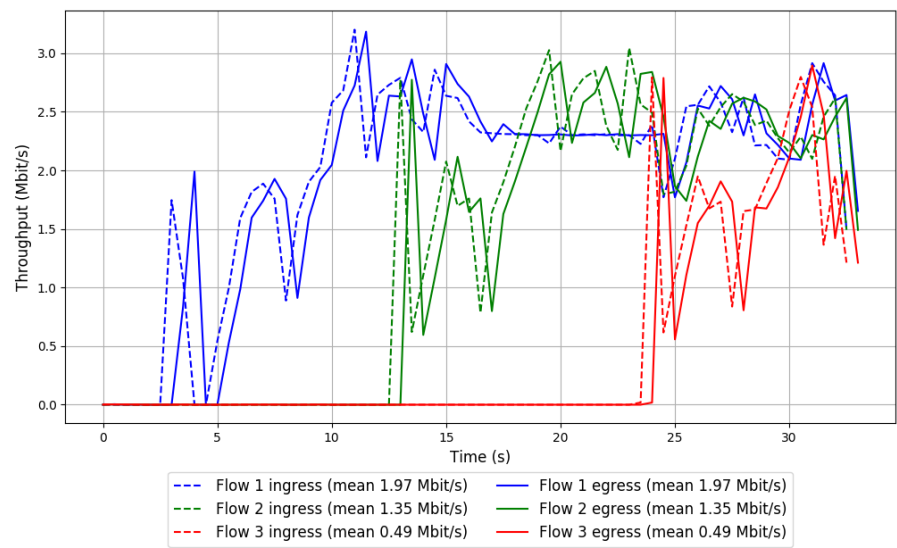
-- Flow 3:

Average throughput: 0.49 Mbit/s

95th percentile per-packet one-way delay: 20.657 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link

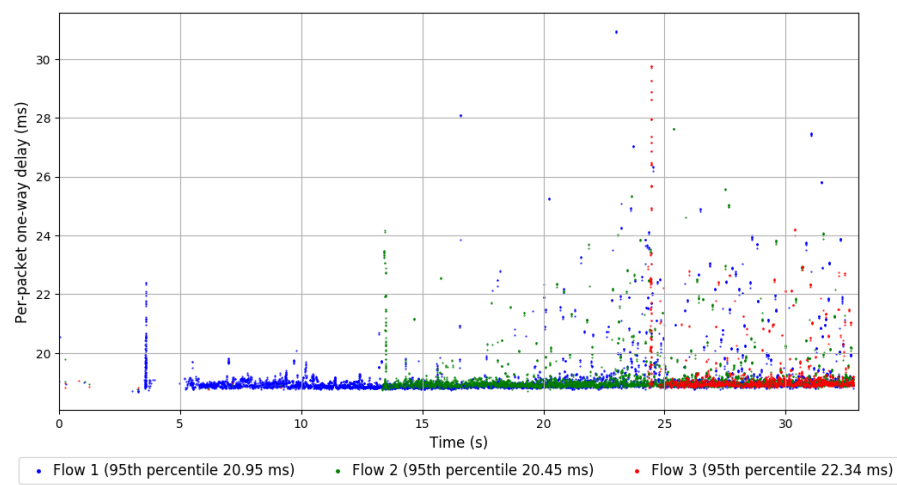
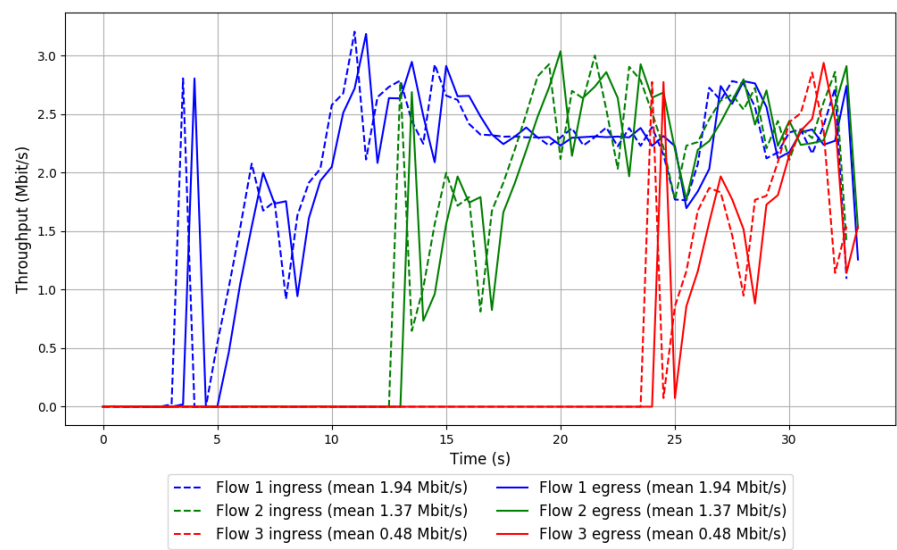


Run 3: Statistics of WebRTC media

Start at: 2018-09-07 15:40:32
End at: 2018-09-07 15:41:02
Local clock offset: 2.757 ms
Remote clock offset: -1.521 ms

Below is generated by plot.py at 2018-09-07 17:45:16
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.78 Mbit/s
95th percentile per-packet one-way delay: 21.064 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 1.94 Mbit/s
95th percentile per-packet one-way delay: 20.946 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 20.445 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.48 Mbit/s
95th percentile per-packet one-way delay: 22.340 ms
Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link

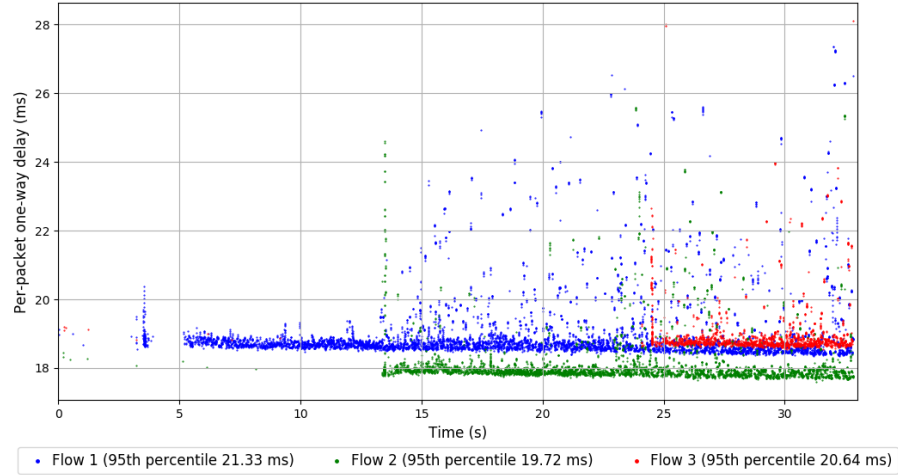
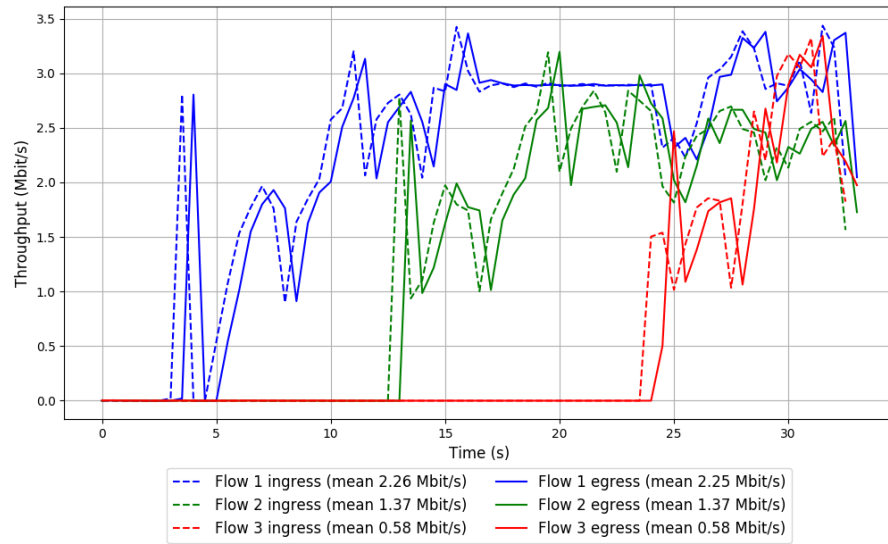


Run 4: Statistics of WebRTC media

Start at: 2018-09-07 16:08:17
End at: 2018-09-07 16:08:47
Local clock offset: -0.746 ms
Remote clock offset: -3.447 ms

Below is generated by plot.py at 2018-09-07 17:45:16
Datalink statistics
-- Total of 3 flows:
Average throughput: 4.19 Mbit/s
95th percentile per-packet one-way delay: 20.695 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 2.25 Mbit/s
95th percentile per-packet one-way delay: 21.330 ms
Loss rate: 0.03%
-- Flow 2:
Average throughput: 1.37 Mbit/s
95th percentile per-packet one-way delay: 19.718 ms
Loss rate: 0.02%
-- Flow 3:
Average throughput: 0.58 Mbit/s
95th percentile per-packet one-way delay: 20.639 ms
Loss rate: 0.31%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-09-07 16:36:04

End at: 2018-09-07 16:36:34

Local clock offset: 2.99 ms

Remote clock offset: 0.525 ms

Below is generated by plot.py at 2018-09-07 17:45:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.94 Mbit/s

95th percentile per-packet one-way delay: 19.753 ms

Loss rate: 0.01%

-- Flow 1:

Average throughput: 2.09 Mbit/s

95th percentile per-packet one-way delay: 18.678 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 20.291 ms

Loss rate: 0.00%

-- Flow 3:

Average throughput: 0.48 Mbit/s

95th percentile per-packet one-way delay: 20.539 ms

Loss rate: 0.06%

Run 5: Report of WebRTC media — Data Link

