

## Pantheon Report

Generated at 2018-11-15 06:51:05 (UTC).

Data path: AWS Brazil 2 on `ens5` (*local*) → Colombia on `p4p1` (*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 `gps.ntp.br` and have been applied to correct the timestamps in logs.

### System info:

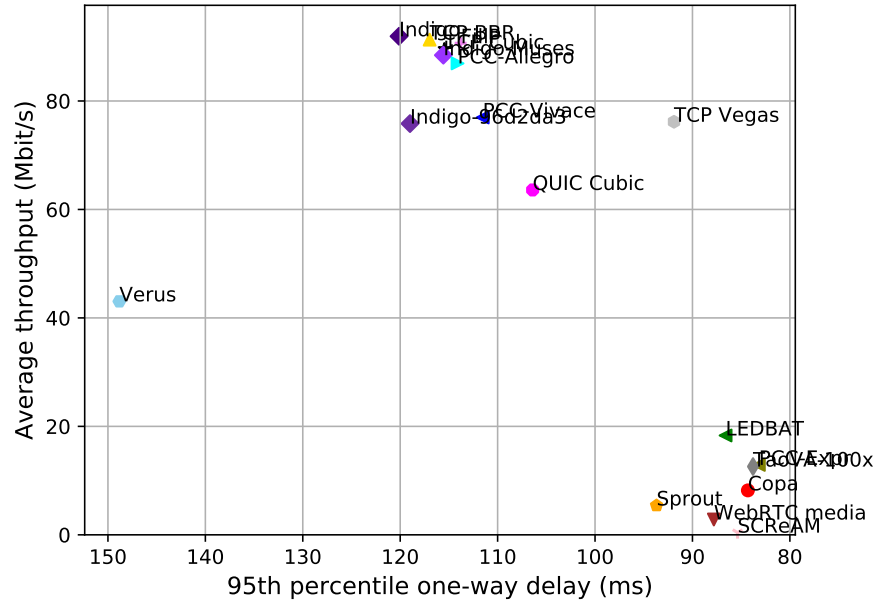
```
Linux 4.15.0-1023-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

### Git summary:

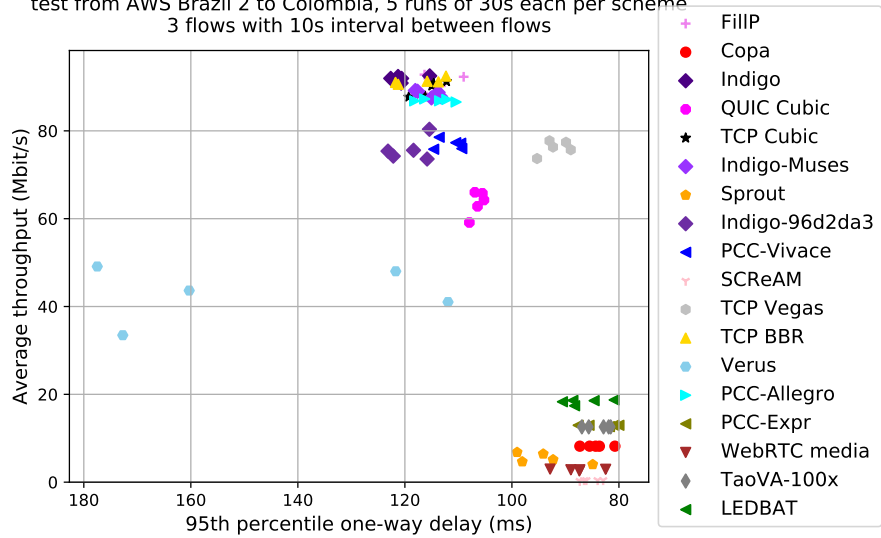
```
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecdbf90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

third\_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4  
third\_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851

test from AWS Brazil 2 to Colombia, 5 runs of 30s each per scheme  
3 flows with 10s interval between flows (mean of all runs by scheme)



test from AWS Brazil 2 to Colombia, 5 runs of 30s each per scheme  
3 flows with 10s interval between flows



scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	55.77	38.83	29.65	114.06	116.21	115.55	12.70	20.37	24.03
Copa	5	0.00	10.22	4.19	82.84	84.56	82.25	98.68	75.05	84.41
TCP Cubic	5	71.53	19.84	14.55	116.26	110.44	104.09	1.15	0.14	0.18
FillP	5	50.69	44.94	30.32	110.51	111.85	113.22	14.31	25.22	20.63
Indigo	5	63.72	26.03	34.62	117.68	116.93	117.18	13.54	33.42	68.79
Indigo-96d2da3	5	46.69	32.41	23.70	119.18	118.36	117.64	57.26	60.33	60.39
LEDBAT	5	11.90	7.79	3.76	84.77	84.99	86.23	0.03	0.00	0.08
Indigo-Muses	5	70.41	19.30	16.06	116.57	112.52	112.60	3.92	1.03	2.20
PCC-Allegro	5	79.84	8.06	5.23	114.08	115.17	114.31	2.36	3.17	3.70
PCC-Expr	5	7.47	6.48	3.37	82.52	82.54	82.21	56.59	27.10	36.74
QUIC Cubic	5	47.81	19.23	9.28	106.77	105.76	97.25	0.73	0.28	0.27
SCReAM	5	0.20	0.19	0.22	84.35	84.52	85.04	0.00	0.00	0.00
Sprout	5	2.69	2.70	2.82	91.21	92.80	92.99	0.00	0.01	0.00
TaoVA-100x	5	7.99	4.66	4.53	89.26	82.96	82.96	34.06	31.99	61.80
TCP Vegas	5	49.59	20.85	38.18	91.30	95.25	91.18	0.94	0.55	1.31
Verus	5	23.62	19.95	20.87	147.10	124.64	127.37	39.30	35.13	37.83
PCC-Vivace	5	64.12	15.59	7.49	111.54	111.42	109.51	0.28	0.53	0.17
WebRTC media	5	1.70	0.93	0.21	85.65	87.51	85.36	0.02	0.04	0.00



Run 1: Statistics of TCP BBR

Start at: 2018-11-15 05:05:32

End at: 2018-11-15 05:06:02

Local clock offset: -6.34 ms

Remote clock offset: 9.456 ms

# Below is generated by plot.py at 2018-11-15 06:43:49

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.04 Mbit/s

95th percentile per-packet one-way delay: 121.753 ms

Loss rate: 16.80%

-- Flow 1:

Average throughput: 57.27 Mbit/s

95th percentile per-packet one-way delay: 117.567 ms

Loss rate: 12.86%

-- Flow 2:

Average throughput: 34.12 Mbit/s

95th percentile per-packet one-way delay: 117.622 ms

Loss rate: 21.85%

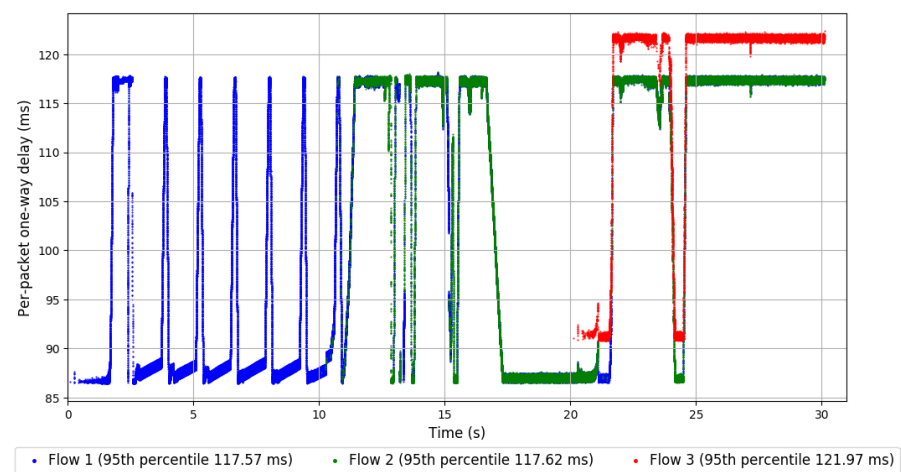
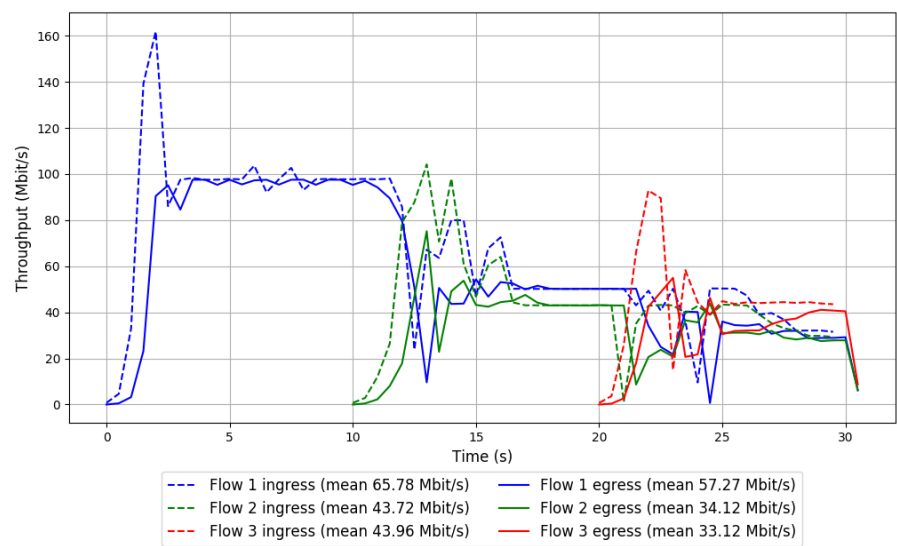
-- Flow 3:

Average throughput: 33.12 Mbit/s

95th percentile per-packet one-way delay: 121.970 ms

Loss rate: 24.46%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-11-15 05:28:30

End at: 2018-11-15 05:29:00

Local clock offset: -4.607 ms

Remote clock offset: 4.692 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.47 Mbit/s

95th percentile per-packet one-way delay: 112.322 ms

Loss rate: 17.29%

-- Flow 1:

Average throughput: 56.28 Mbit/s

95th percentile per-packet one-way delay: 110.521 ms

Loss rate: 13.20%

-- Flow 2:

Average throughput: 41.50 Mbit/s

95th percentile per-packet one-way delay: 112.401 ms

Loss rate: 21.30%

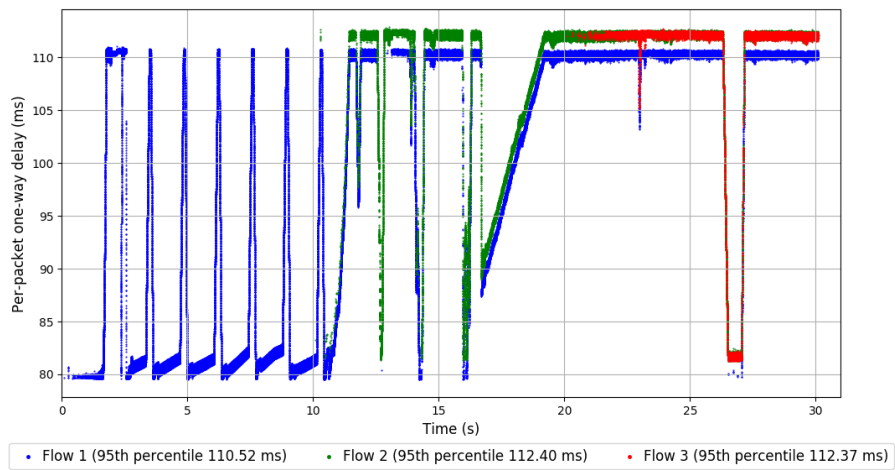
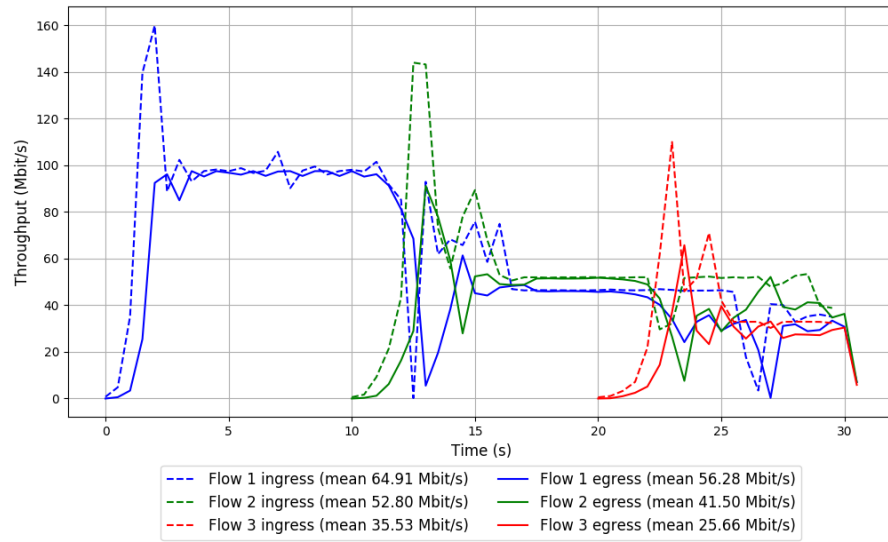
-- Flow 3:

Average throughput: 25.66 Mbit/s

95th percentile per-packet one-way delay: 112.366 ms

Loss rate: 27.81%

## Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-11-15 05:51:16

End at: 2018-11-15 05:51:46

Local clock offset: -7.615 ms

Remote clock offset: 8.501 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 90.61 Mbit/s

95th percentile per-packet one-way delay: 121.243 ms

Loss rate: 13.82%

-- Flow 1:

Average throughput: 53.62 Mbit/s

95th percentile per-packet one-way delay: 114.009 ms

Loss rate: 10.28%

-- Flow 2:

Average throughput: 42.57 Mbit/s

95th percentile per-packet one-way delay: 121.353 ms

Loss rate: 18.24%

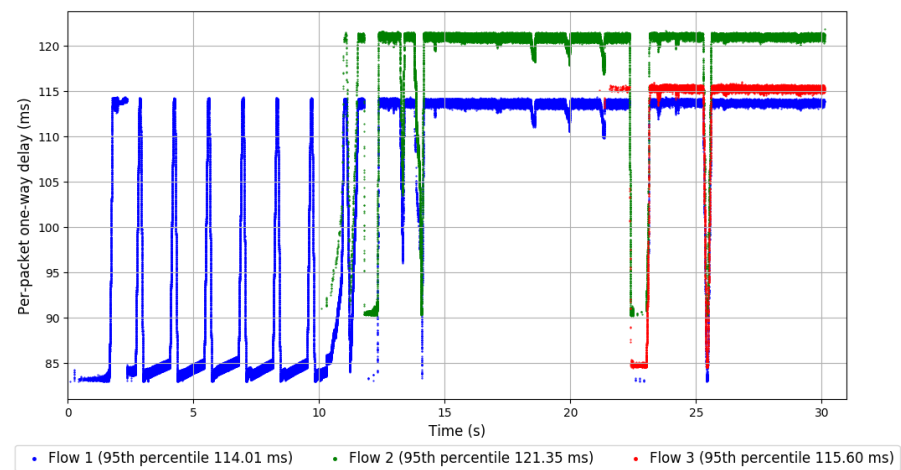
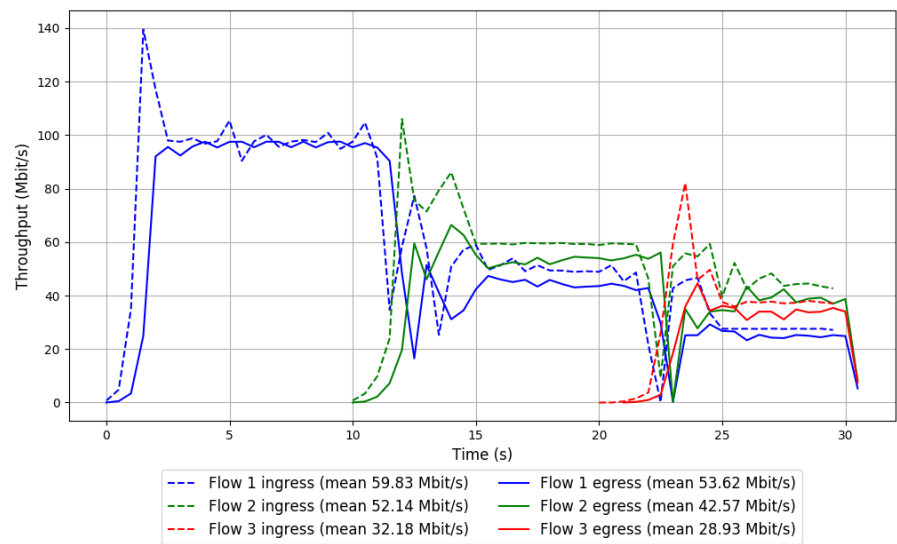
-- Flow 3:

Average throughput: 28.93 Mbit/s

95th percentile per-packet one-way delay: 115.597 ms

Loss rate: 19.29%

Run 3: Report of TCP BBR — Data Link



Run 4: Statistics of TCP BBR

Start at: 2018-11-15 06:14:05

End at: 2018-11-15 06:14:35

Local clock offset: -8.529 ms

Remote clock offset: 9.375 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.30 Mbit/s

95th percentile per-packet one-way delay: 115.835 ms

Loss rate: 16.79%

-- Flow 1:

Average throughput: 55.46 Mbit/s

95th percentile per-packet one-way delay: 115.861 ms

Loss rate: 13.60%

-- Flow 2:

Average throughput: 38.78 Mbit/s

95th percentile per-packet one-way delay: 115.810 ms

Loss rate: 21.01%

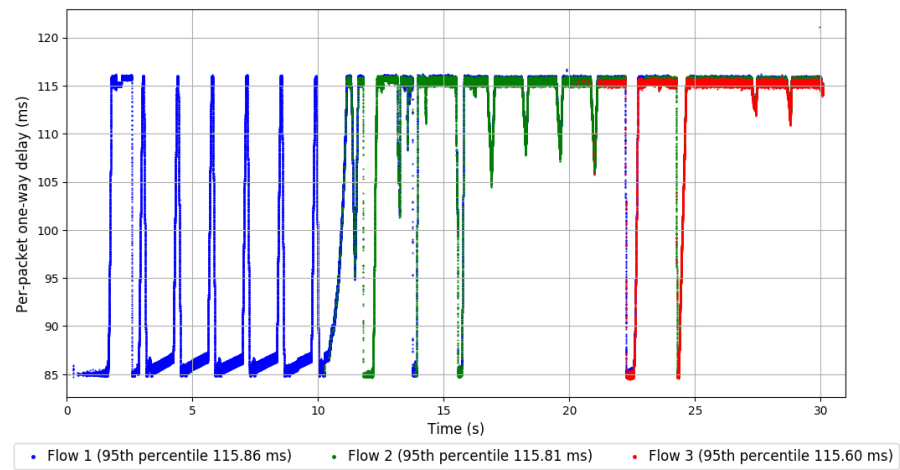
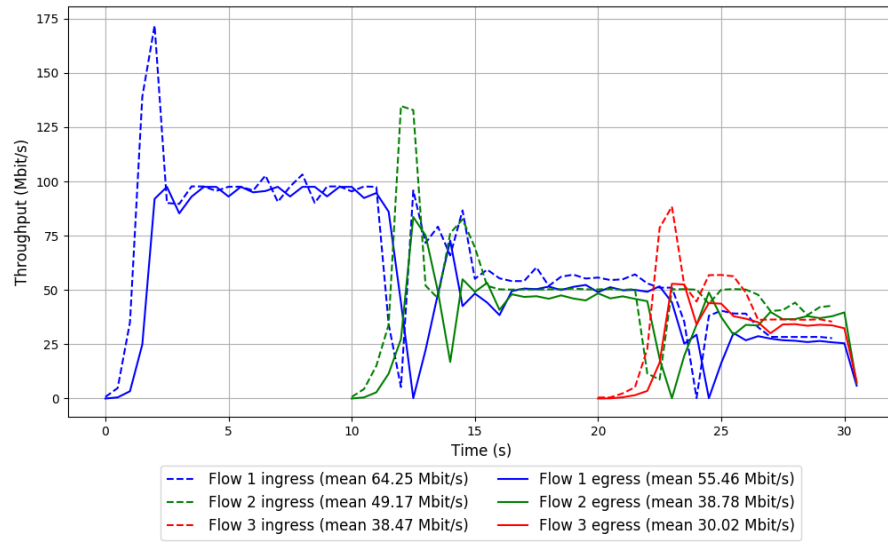
-- Flow 3:

Average throughput: 30.02 Mbit/s

95th percentile per-packet one-way delay: 115.596 ms

Loss rate: 21.98%

# Run 4: Report of TCP BBR — Data Link





Run 5: Statistics of TCP BBR

Start at: 2018-11-15 06:36:52

End at: 2018-11-15 06:37:22

Local clock offset: -3.219 ms

Remote clock offset: 5.464 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.17 Mbit/s

95th percentile per-packet one-way delay: 113.728 ms

Loss rate: 16.86%

-- Flow 1:

Average throughput: 56.22 Mbit/s

95th percentile per-packet one-way delay: 112.334 ms

Loss rate: 13.57%

-- Flow 2:

Average throughput: 37.18 Mbit/s

95th percentile per-packet one-way delay: 113.865 ms

Loss rate: 19.45%

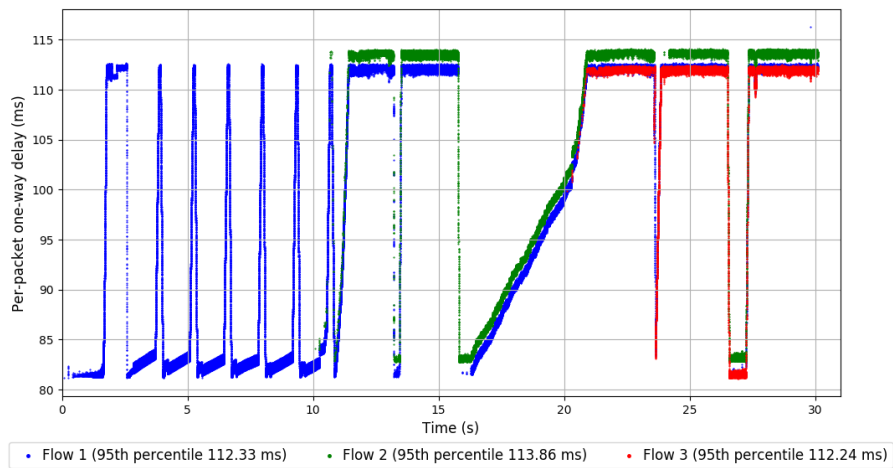
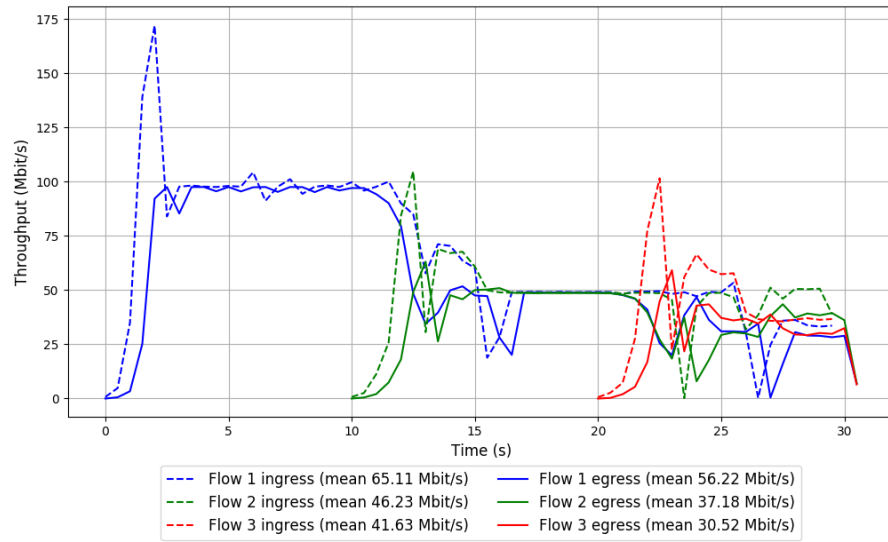
-- Flow 3:

Average throughput: 30.52 Mbit/s

95th percentile per-packet one-way delay: 112.237 ms

Loss rate: 26.59%

# Run 5: Report of TCP BBR — Data Link

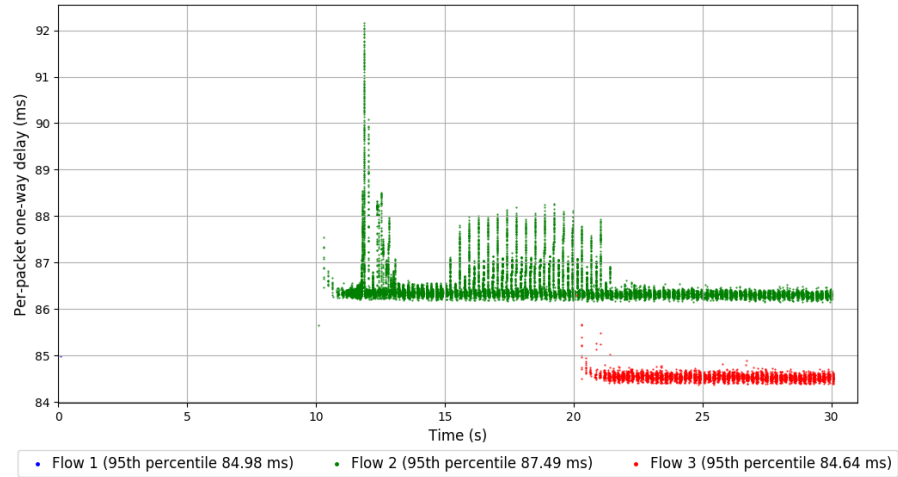
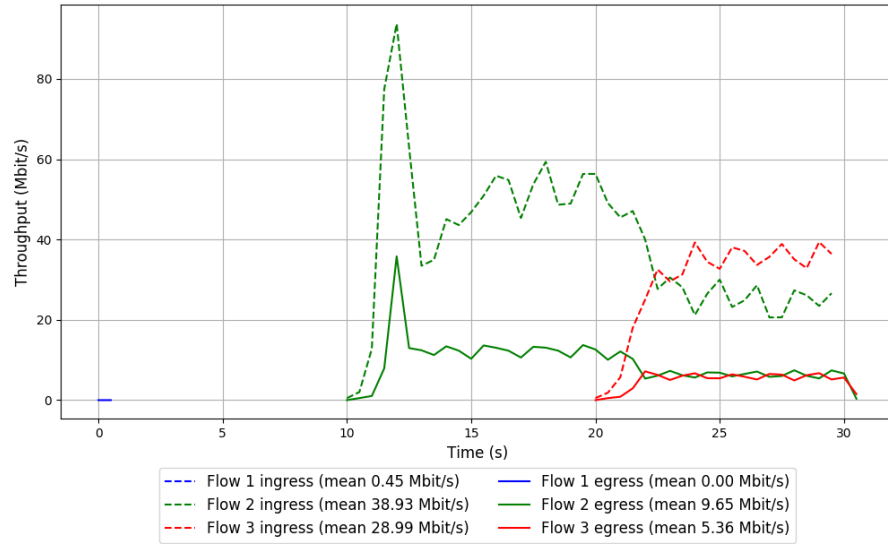


Run 1: Statistics of Copa

Start at: 2018-11-15 04:51:43  
End at: 2018-11-15 04:52:13  
Local clock offset: -11.449 ms  
Remote clock offset: 9.524 ms

# Below is generated by plot.py at 2018-11-15 06:43:51  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 8.19 Mbit/s  
95th percentile per-packet one-way delay: 87.307 ms  
Loss rate: 76.92%  
-- Flow 1:  
Average throughput: 0.00 Mbit/s  
95th percentile per-packet one-way delay: 84.981 ms  
Loss rate: 98.80%  
-- Flow 2:  
Average throughput: 9.65 Mbit/s  
95th percentile per-packet one-way delay: 87.486 ms  
Loss rate: 75.20%  
-- Flow 3:  
Average throughput: 5.36 Mbit/s  
95th percentile per-packet one-way delay: 84.642 ms  
Loss rate: 81.52%

## Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-11-15 05:14:29

End at: 2018-11-15 05:14:59

Local clock offset: -4.453 ms

Remote clock offset: 8.478 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.20 Mbit/s

95th percentile per-packet one-way delay: 85.482 ms

Loss rate: 76.51%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 85.524 ms

Loss rate: 98.60%

-- Flow 2:

Average throughput: 9.52 Mbit/s

95th percentile per-packet one-way delay: 85.966 ms

Loss rate: 74.55%

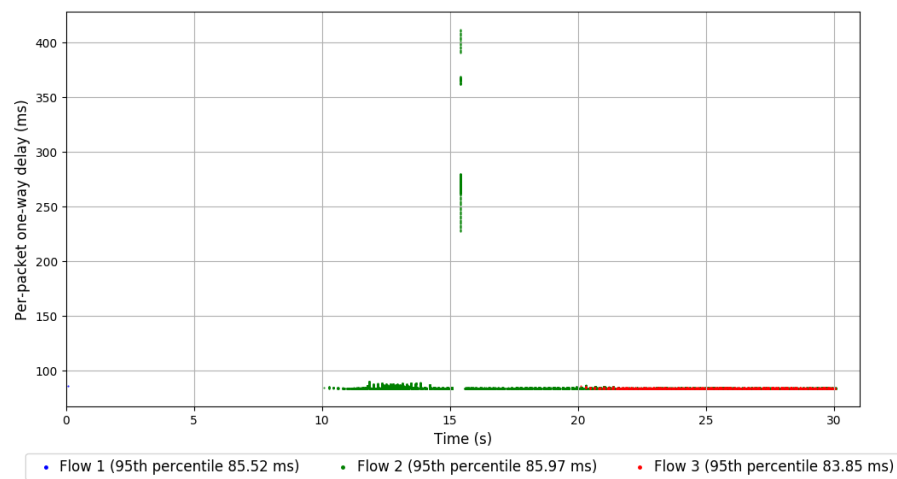
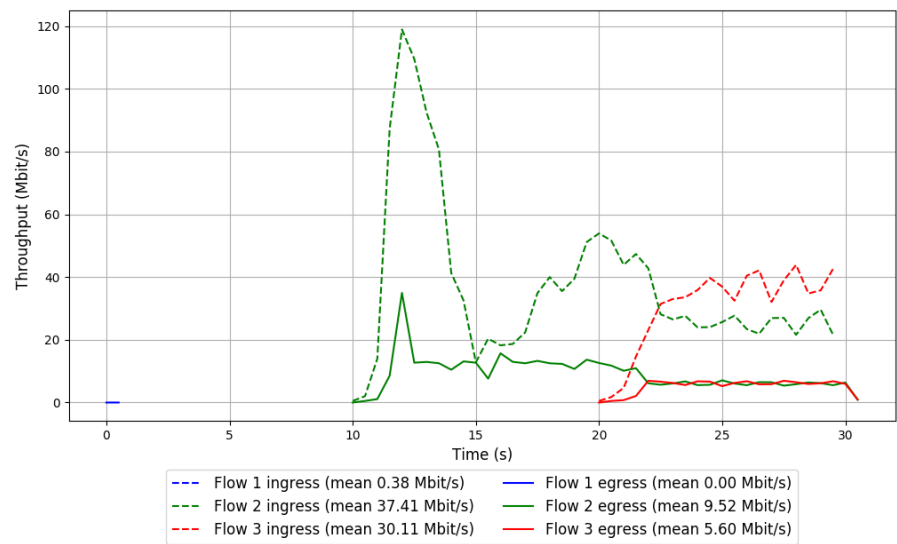
-- Flow 3:

Average throughput: 5.60 Mbit/s

95th percentile per-packet one-way delay: 83.850 ms

Loss rate: 81.40%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-11-15 05:37:28

End at: 2018-11-15 05:37:58

Local clock offset: -5.942 ms

Remote clock offset: 4.709 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.20 Mbit/s

95th percentile per-packet one-way delay: 80.751 ms

Loss rate: 74.03%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 79.064 ms

Loss rate: 98.80%

-- Flow 2:

Average throughput: 12.30 Mbit/s

95th percentile per-packet one-way delay: 80.752 ms

Loss rate: 74.01%

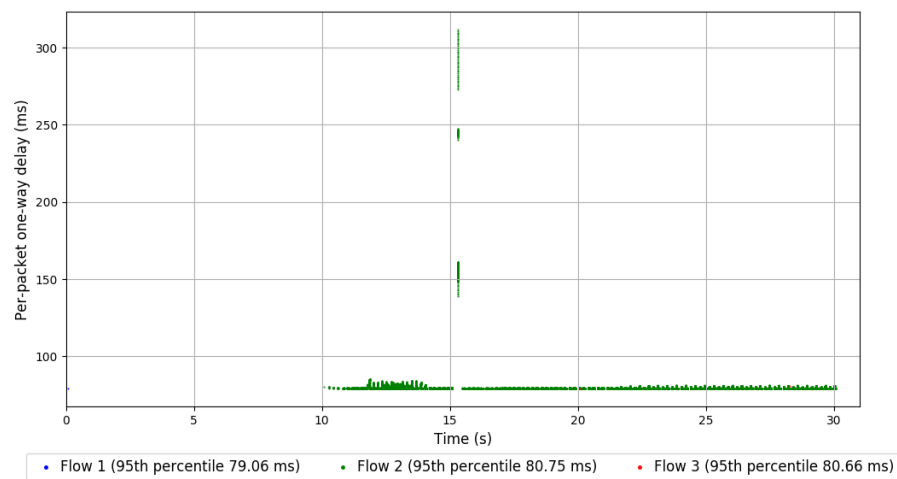
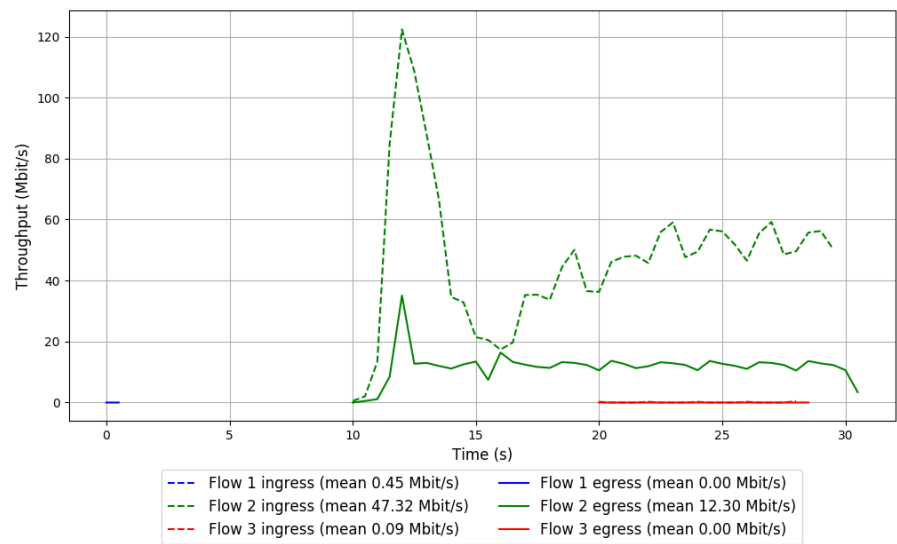
-- Flow 3:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 80.662 ms

Loss rate: 98.16%

Run 3: Report of Copa — Data Link





Run 4: Statistics of Copa

Start at: 2018-11-15 06:00:14

End at: 2018-11-15 06:00:44

Local clock offset: -8.566 ms

Remote clock offset: 5.761 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.19 Mbit/s

95th percentile per-packet one-way delay: 83.655 ms

Loss rate: 76.95%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 82.686 ms

Loss rate: 98.60%

-- Flow 2:

Average throughput: 9.68 Mbit/s

95th percentile per-packet one-way delay: 83.804 ms

Loss rate: 75.27%

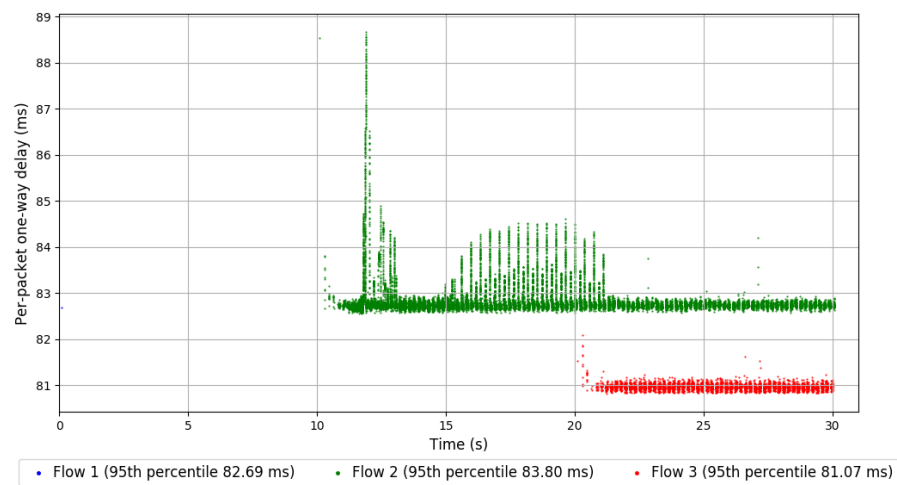
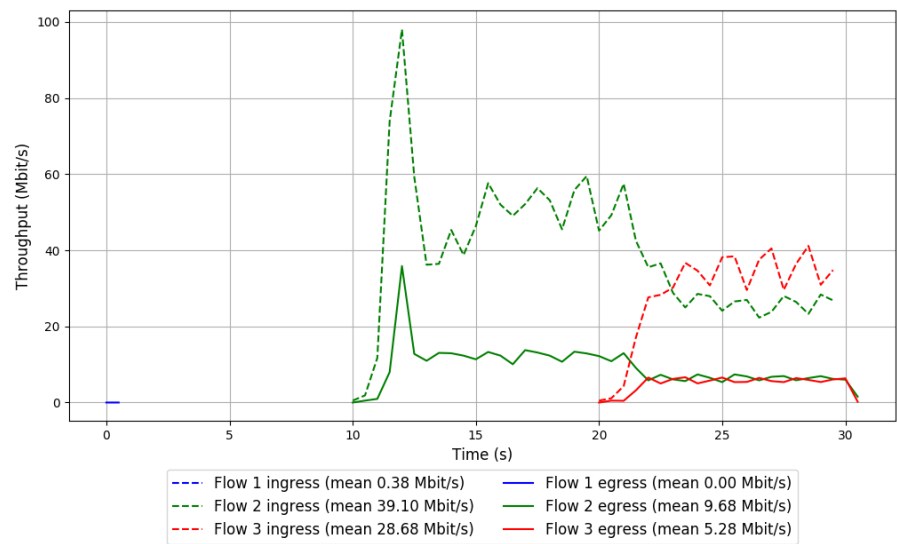
-- Flow 3:

Average throughput: 5.28 Mbit/s

95th percentile per-packet one-way delay: 81.068 ms

Loss rate: 81.59%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-11-15 06:23:02

End at: 2018-11-15 06:23:32

Local clock offset: -8.906 ms

Remote clock offset: 5.563 ms

# Below is generated by plot.py at 2018-11-15 06:43:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 8.19 Mbit/s

95th percentile per-packet one-way delay: 84.356 ms

Loss rate: 76.88%

-- Flow 1:

Average throughput: 0.00 Mbit/s

95th percentile per-packet one-way delay: 81.955 ms

Loss rate: 98.60%

-- Flow 2:

Average throughput: 9.96 Mbit/s

95th percentile per-packet one-way delay: 84.788 ms

Loss rate: 76.20%

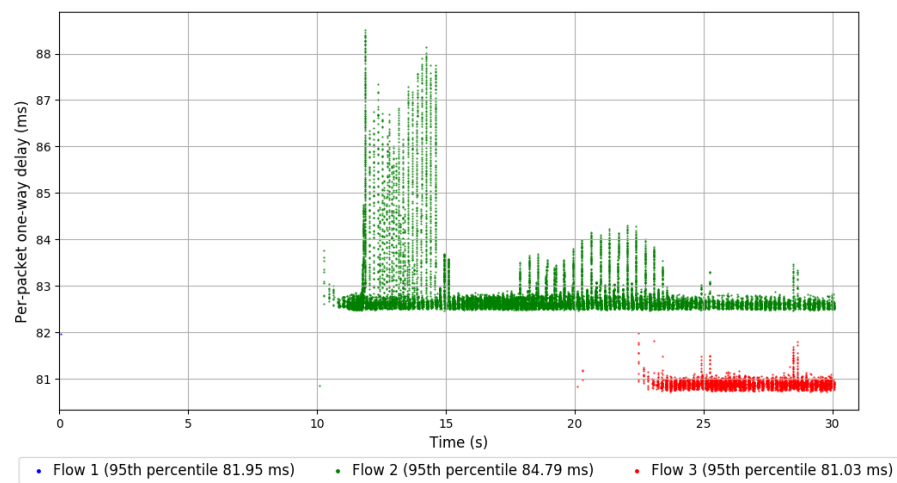
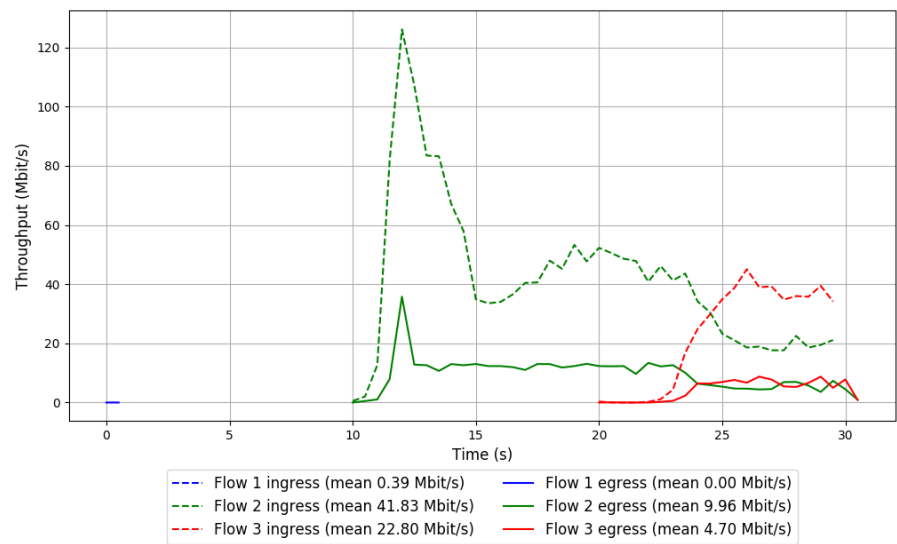
-- Flow 3:

Average throughput: 4.70 Mbit/s

95th percentile per-packet one-way delay: 81.025 ms

Loss rate: 79.39%

Run 5: Report of Copa — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-11-15 05:06:50

End at: 2018-11-15 05:07:20

Local clock offset: -5.918 ms

Remote clock offset: 5.72 ms

# Below is generated by plot.py at 2018-11-15 06:43:59

# Datalink statistics

-- Total of 3 flows:

Average throughput: 87.92 Mbit/s

95th percentile per-packet one-way delay: 116.267 ms

Loss rate: 1.03%

-- Flow 1:

Average throughput: 69.58 Mbit/s

95th percentile per-packet one-way delay: 117.938 ms

Loss rate: 1.26%

-- Flow 2:

Average throughput: 20.85 Mbit/s

95th percentile per-packet one-way delay: 104.057 ms

Loss rate: 0.16%

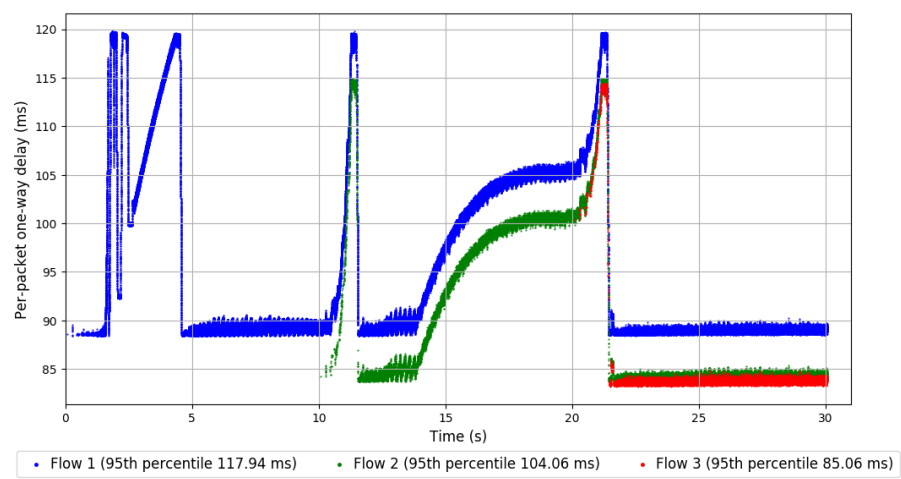
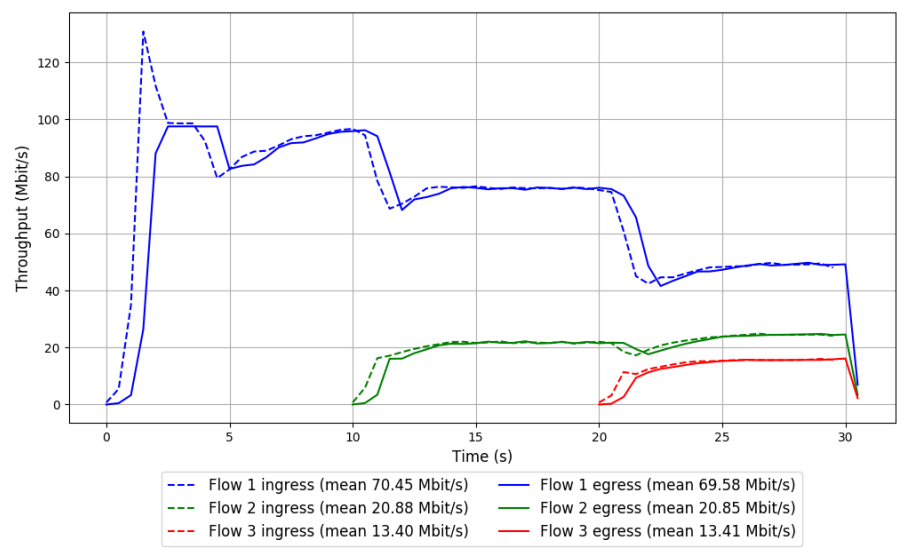
-- Flow 3:

Average throughput: 13.41 Mbit/s

95th percentile per-packet one-way delay: 85.059 ms

Loss rate: 0.14%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-11-15 05:29:48

End at: 2018-11-15 05:30:18

Local clock offset: -4.952 ms

Remote clock offset: 9.532 ms

# Below is generated by plot.py at 2018-11-15 06:44:10

# Datalink statistics

-- Total of 3 flows:

Average throughput: 91.26 Mbit/s

95th percentile per-packet one-way delay: 112.223 ms

Loss rate: 0.57%

-- Flow 1:

Average throughput: 73.92 Mbit/s

95th percentile per-packet one-way delay: 112.214 ms

Loss rate: 0.68%

-- Flow 2:

Average throughput: 16.69 Mbit/s

95th percentile per-packet one-way delay: 114.346 ms

Loss rate: 0.13%

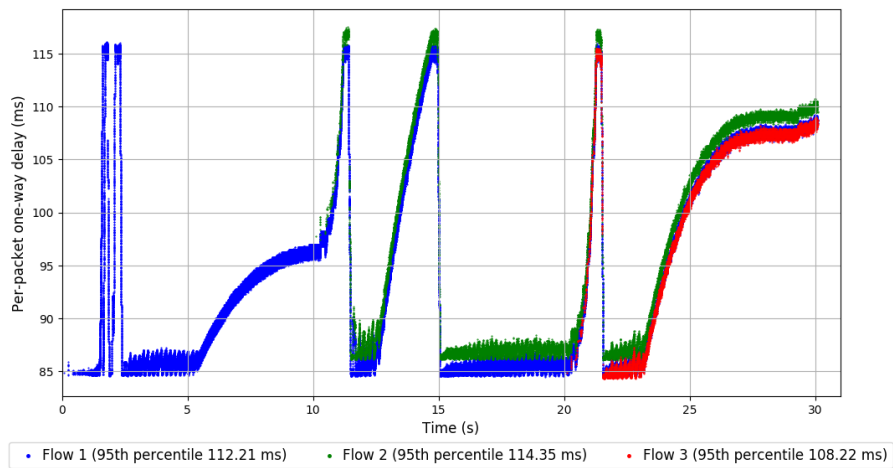
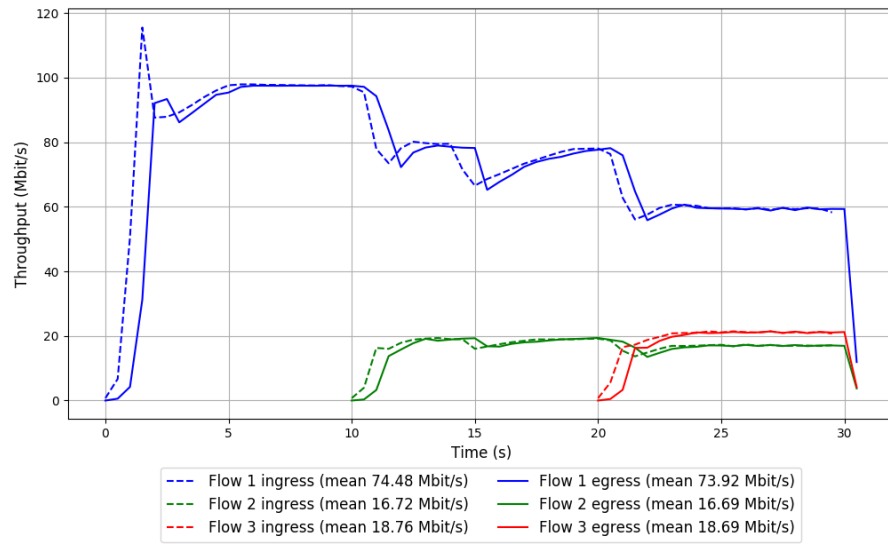
-- Flow 3:

Average throughput: 18.69 Mbit/s

95th percentile per-packet one-way delay: 108.225 ms

Loss rate: 0.11%

## Run 2: Report of TCP Cubic — Data Link





Run 3: Statistics of TCP Cubic

Start at: 2018-11-15 05:52:35

End at: 2018-11-15 05:53:05

Local clock offset: -7.788 ms

Remote clock offset: 5.832 ms

# Below is generated by plot.py at 2018-11-15 06:44:10

# Datalink statistics

-- Total of 3 flows:

Average throughput: 90.25 Mbit/s

95th percentile per-packet one-way delay: 114.958 ms

Loss rate: 1.02%

-- Flow 1:

Average throughput: 73.55 Mbit/s

95th percentile per-packet one-way delay: 115.778 ms

Loss rate: 1.21%

-- Flow 2:

Average throughput: 19.24 Mbit/s

95th percentile per-packet one-way delay: 110.222 ms

Loss rate: 0.16%

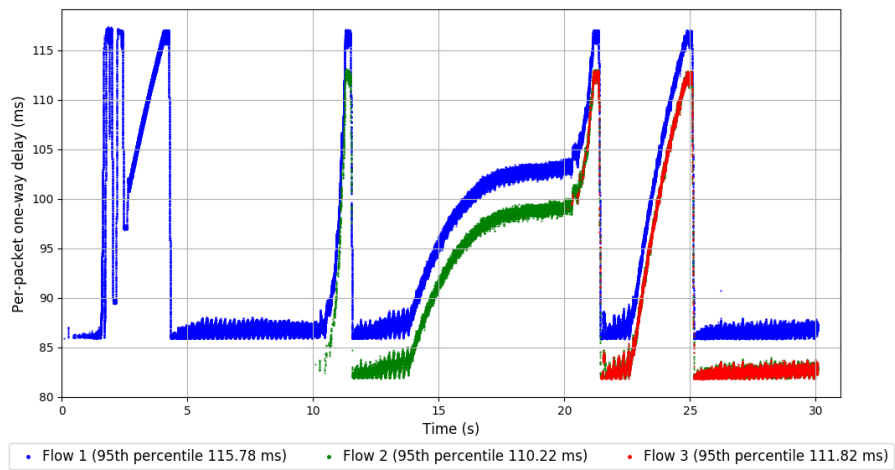
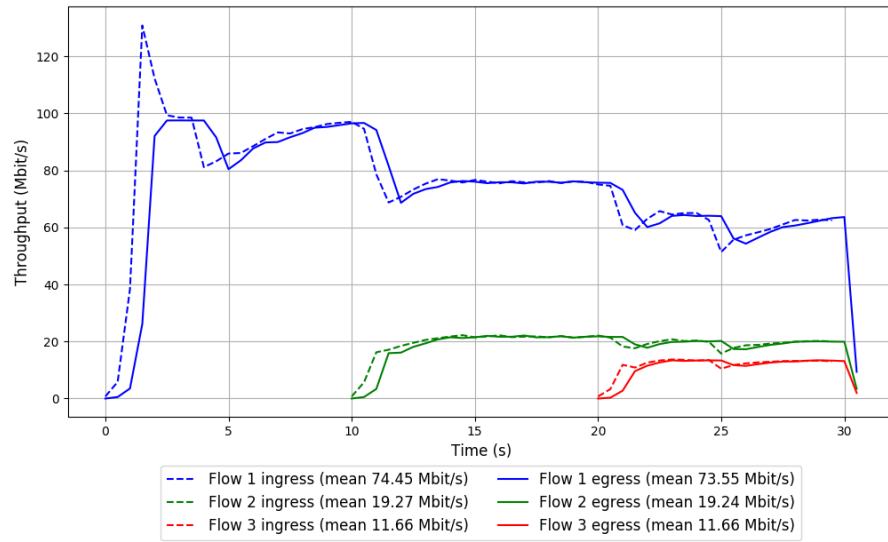
-- Flow 3:

Average throughput: 11.66 Mbit/s

95th percentile per-packet one-way delay: 111.823 ms

Loss rate: 0.19%

### Run 3: Report of TCP Cubic — Data Link



Run 4: Statistics of TCP Cubic

Start at: 2018-11-15 06:15:24

End at: 2018-11-15 06:15:54

Local clock offset: -7.802 ms

Remote clock offset: 9.245 ms

# Below is generated by plot.py at 2018-11-15 06:44:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 87.72 Mbit/s

95th percentile per-packet one-way delay: 119.277 ms

Loss rate: 1.09%

-- Flow 1:

Average throughput: 66.86 Mbit/s

95th percentile per-packet one-way delay: 119.897 ms

Loss rate: 1.37%

-- Flow 2:

Average throughput: 22.00 Mbit/s

95th percentile per-packet one-way delay: 113.363 ms

Loss rate: 0.13%

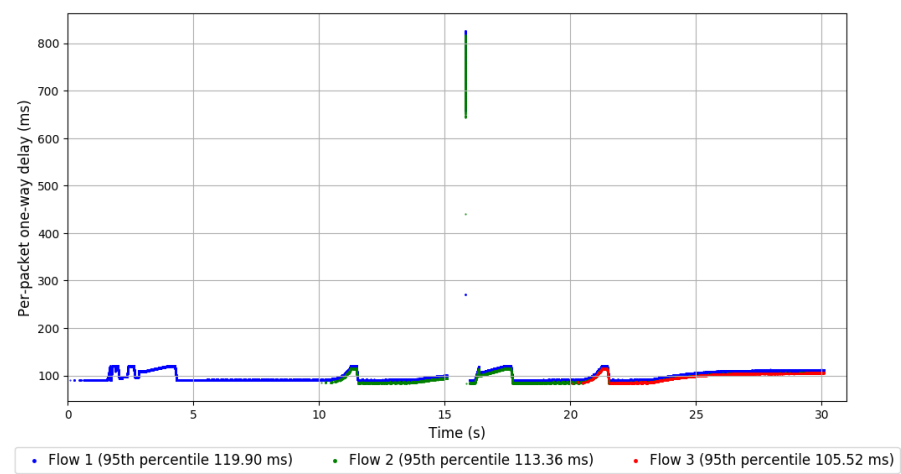
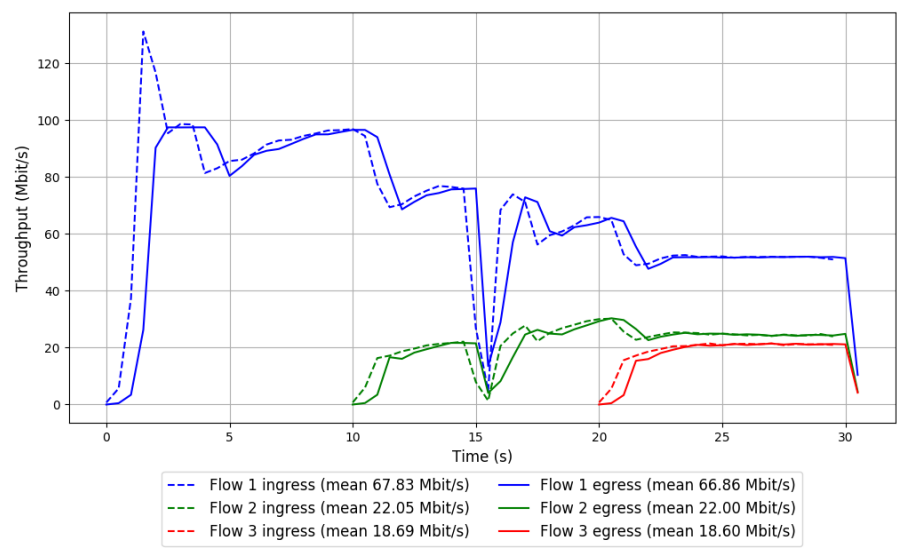
-- Flow 3:

Average throughput: 18.60 Mbit/s

95th percentile per-packet one-way delay: 105.520 ms

Loss rate: 0.25%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-11-15 06:38:10

End at: 2018-11-15 06:38:40

Local clock offset: -2.75 ms

Remote clock offset: 4.319 ms

# Below is generated by plot.py at 2018-11-15 06:44:52

# Datalink statistics

-- Total of 3 flows:

Average throughput: 90.79 Mbit/s

95th percentile per-packet one-way delay: 114.619 ms

Loss rate: 1.01%

-- Flow 1:

Average throughput: 73.73 Mbit/s

95th percentile per-packet one-way delay: 115.464 ms

Loss rate: 1.21%

-- Flow 2:

Average throughput: 20.42 Mbit/s

95th percentile per-packet one-way delay: 110.216 ms

Loss rate: 0.13%

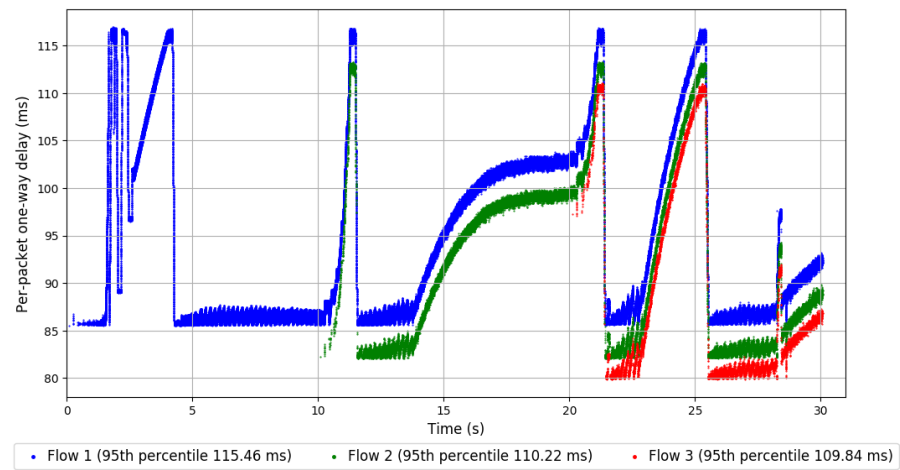
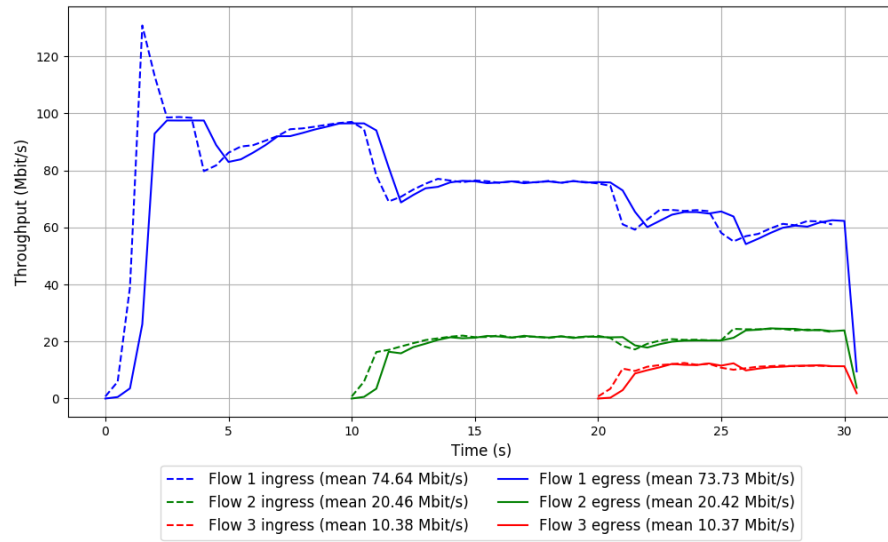
-- Flow 3:

Average throughput: 10.37 Mbit/s

95th percentile per-packet one-way delay: 109.836 ms

Loss rate: 0.21%

# Run 5: Report of TCP Cubic — Data Link



Run 1: Statistics of FillP

Start at: 2018-11-15 05:04:14

End at: 2018-11-15 05:04:44

Local clock offset: -6.848 ms

Remote clock offset: 9.573 ms

# Below is generated by plot.py at 2018-11-15 06:45:19

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.80 Mbit/s

95th percentile per-packet one-way delay: 116.334 ms

Loss rate: 17.74%

-- Flow 1:

Average throughput: 59.78 Mbit/s

95th percentile per-packet one-way delay: 113.211 ms

Loss rate: 13.75%

-- Flow 2:

Average throughput: 31.37 Mbit/s

95th percentile per-packet one-way delay: 113.509 ms

Loss rate: 28.54%

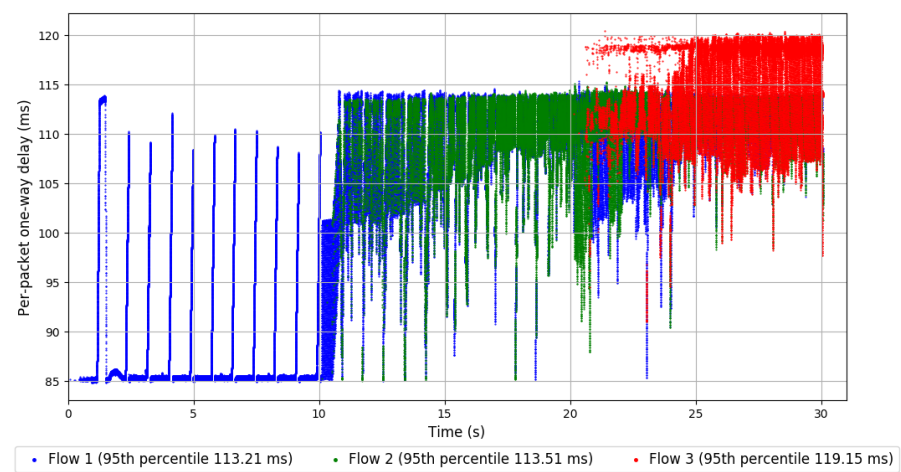
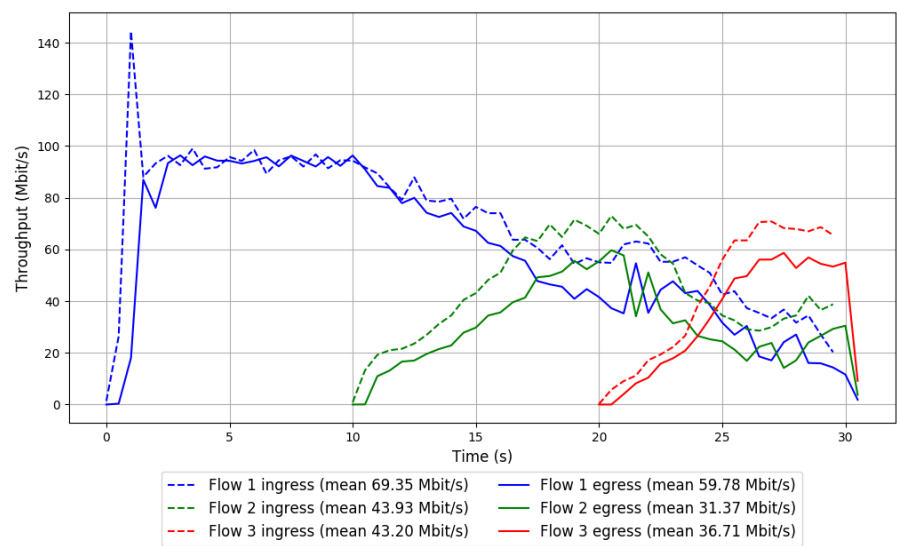
-- Flow 3:

Average throughput: 36.71 Mbit/s

95th percentile per-packet one-way delay: 119.146 ms

Loss rate: 15.01%

Run 1: Report of FillP — Data Link





Run 2: Statistics of FillP

Start at: 2018-11-15 05:27:11

End at: 2018-11-15 05:27:41

Local clock offset: -3.426 ms

Remote clock offset: 9.523 ms

# Below is generated by plot.py at 2018-11-15 06:45:19

# Datalink statistics

-- Total of 3 flows:

Average throughput: 90.24 Mbit/s

95th percentile per-packet one-way delay: 113.270 ms

Loss rate: 23.74%

-- Flow 1:

Average throughput: 55.37 Mbit/s

95th percentile per-packet one-way delay: 113.519 ms

Loss rate: 18.01%

-- Flow 2:

Average throughput: 41.39 Mbit/s

95th percentile per-packet one-way delay: 112.294 ms

Loss rate: 32.78%

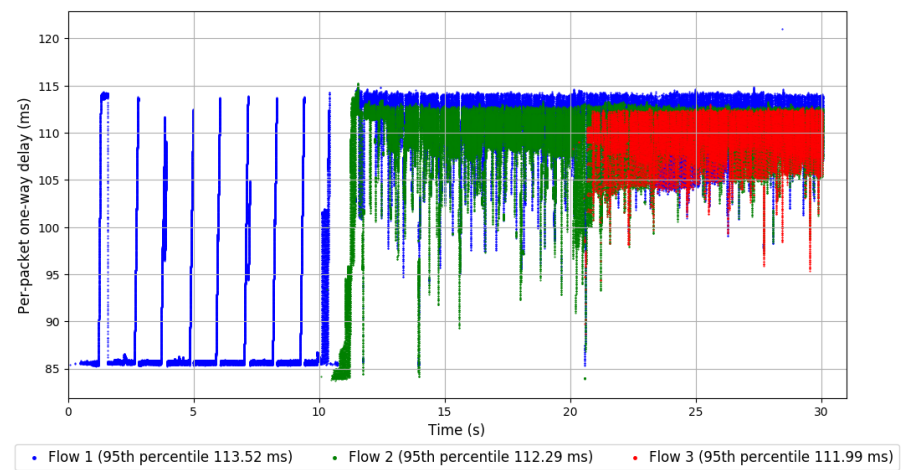
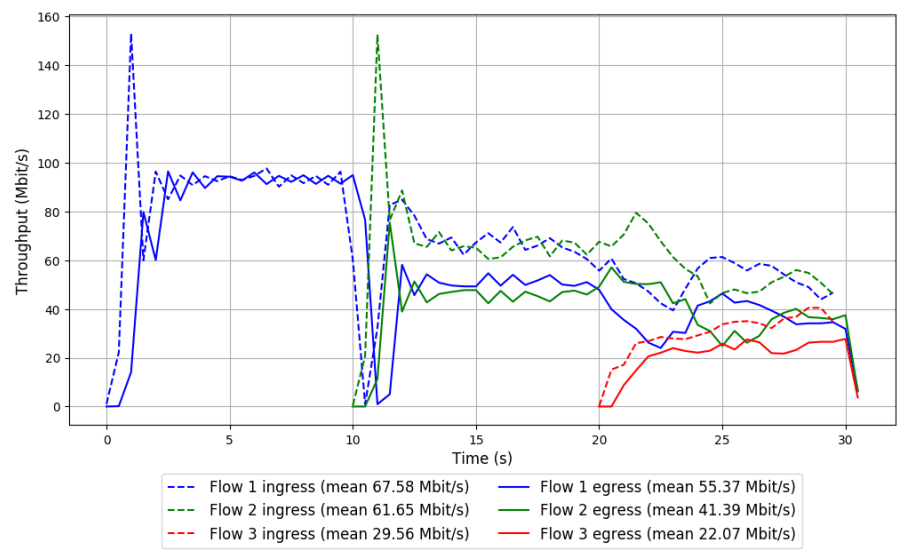
-- Flow 3:

Average throughput: 22.07 Mbit/s

95th percentile per-packet one-way delay: 111.986 ms

Loss rate: 25.35%

Run 2: Report of FillP — Data Link

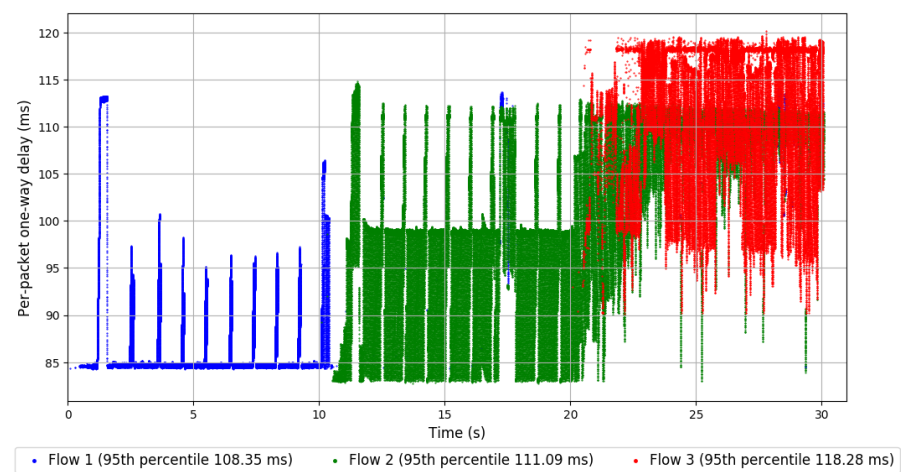
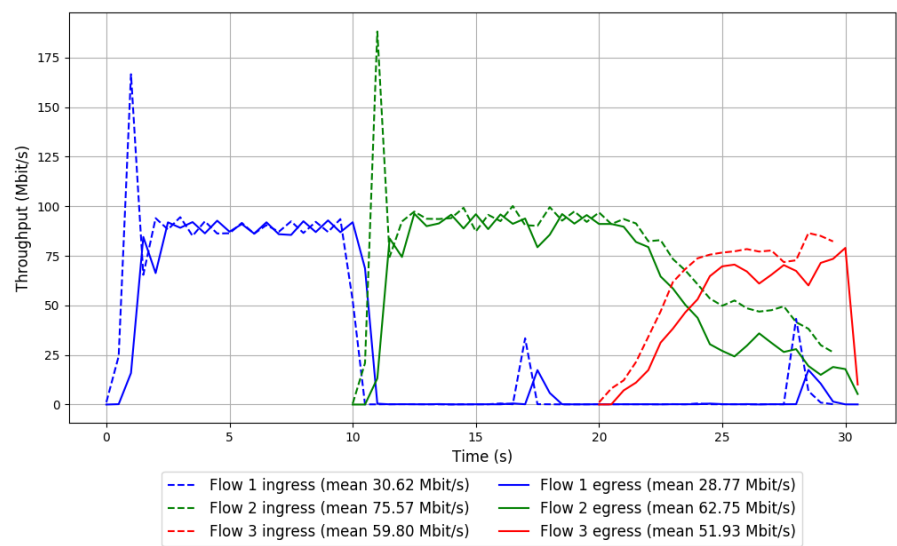


Run 3: Statistics of FillP

Start at: 2018-11-15 05:49:59  
End at: 2018-11-15 05:50:29  
Local clock offset: -7.481 ms  
Remote clock offset: 8.469 ms

# Below is generated by plot.py at 2018-11-15 06:45:19  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 87.80 Mbit/s  
95th percentile per-packet one-way delay: 115.961 ms  
Loss rate: 12.79%  
-- Flow 1:  
Average throughput: 28.77 Mbit/s  
95th percentile per-packet one-way delay: 108.352 ms  
Loss rate: 5.93%  
-- Flow 2:  
Average throughput: 62.75 Mbit/s  
95th percentile per-packet one-way delay: 111.093 ms  
Loss rate: 16.90%  
-- Flow 3:  
Average throughput: 51.93 Mbit/s  
95th percentile per-packet one-way delay: 118.282 ms  
Loss rate: 12.94%

Run 3: Report of FillP — Data Link



Run 4: Statistics of FillP

Start at: 2018-11-15 06:12:47

End at: 2018-11-15 06:13:17

Local clock offset: -7.723 ms

Remote clock offset: 4.571 ms

# Below is generated by plot.py at 2018-11-15 06:45:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 90.11 Mbit/s

95th percentile per-packet one-way delay: 114.392 ms

Loss rate: 20.01%

-- Flow 1:

Average throughput: 42.49 Mbit/s

95th percentile per-packet one-way delay: 108.345 ms

Loss rate: 21.45%

-- Flow 2:

Average throughput: 62.97 Mbit/s

95th percentile per-packet one-way delay: 114.568 ms

Loss rate: 17.83%

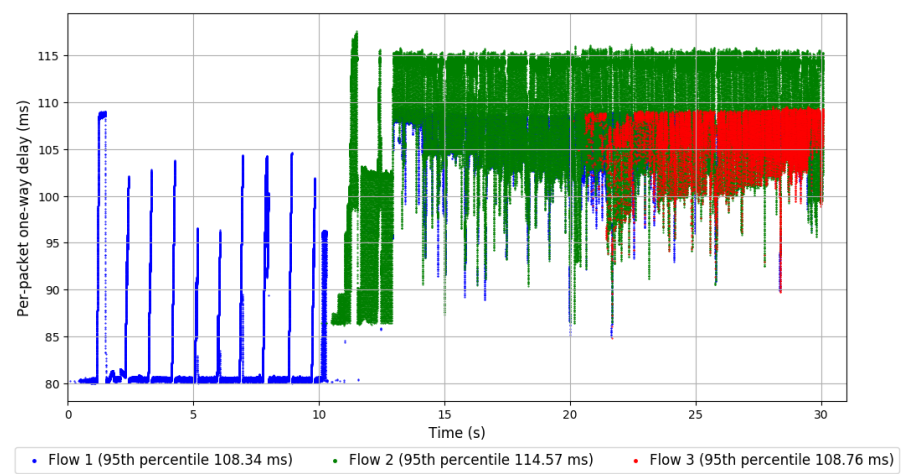
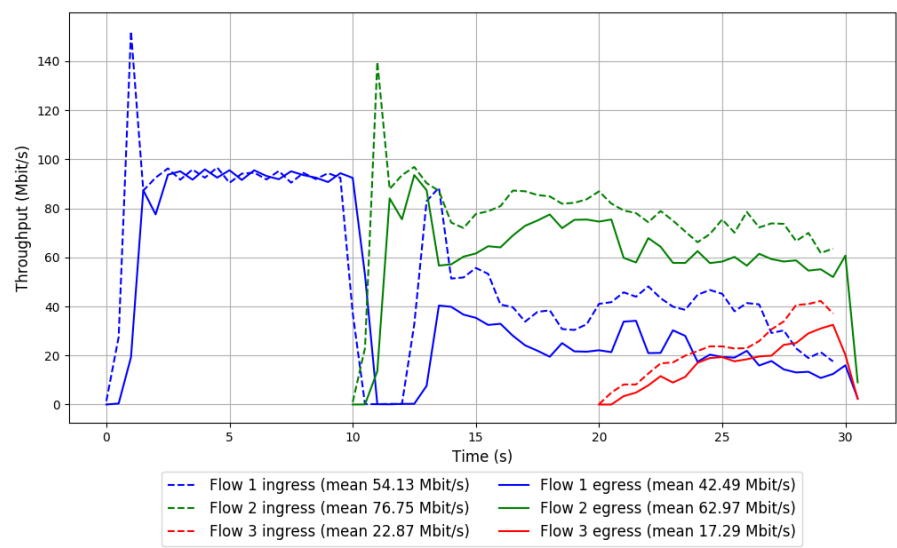
-- Flow 3:

Average throughput: 17.29 Mbit/s

95th percentile per-packet one-way delay: 108.763 ms

Loss rate: 24.41%

Run 4: Report of FillP — Data Link

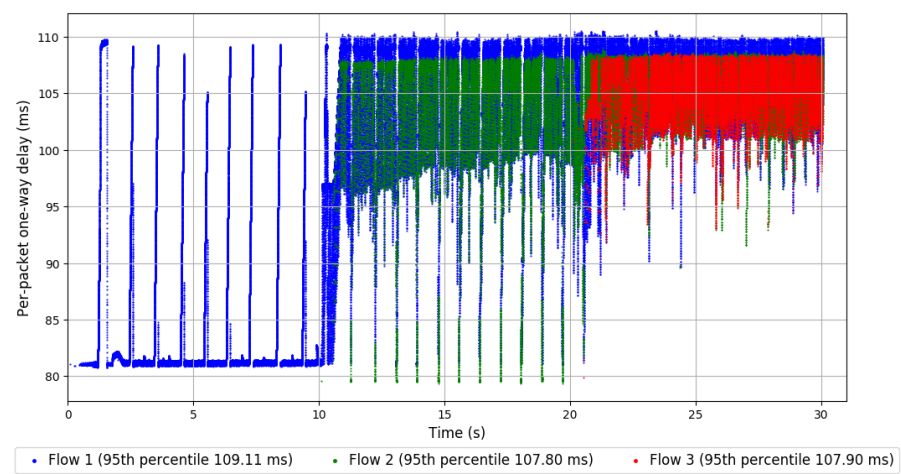
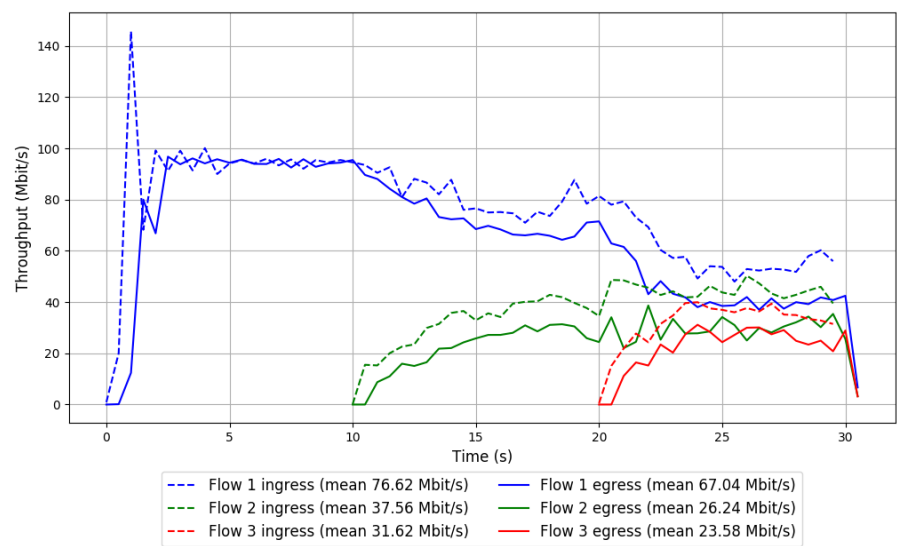


Run 5: Statistics of FillP

Start at: 2018-11-15 06:35:34  
End at: 2018-11-15 06:36:04  
Local clock offset: -2.886 ms  
Remote clock offset: 4.495 ms

# Below is generated by plot.py at 2018-11-15 06:45:35  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 92.31 Mbit/s  
95th percentile per-packet one-way delay: 109.014 ms  
Loss rate: 17.57%  
-- Flow 1:  
Average throughput: 67.04 Mbit/s  
95th percentile per-packet one-way delay: 109.114 ms  
Loss rate: 12.42%  
-- Flow 2:  
Average throughput: 26.24 Mbit/s  
95th percentile per-packet one-way delay: 107.796 ms  
Loss rate: 30.06%  
-- Flow 3:  
Average throughput: 23.58 Mbit/s  
95th percentile per-packet one-way delay: 107.899 ms  
Loss rate: 25.42%

Run 5: Report of FillP — Data Link



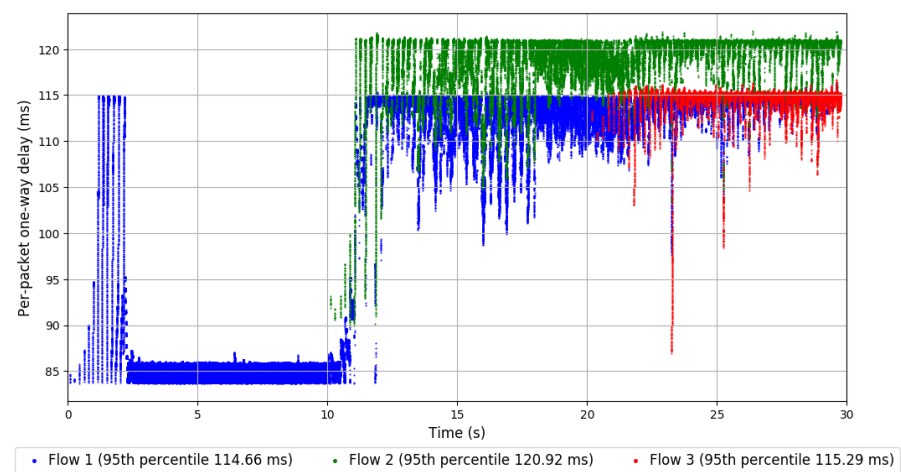
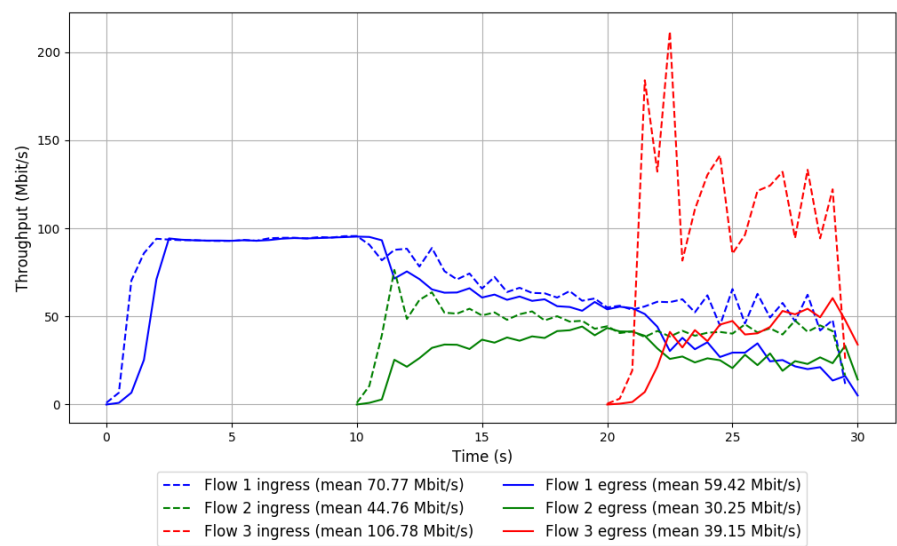


```
Run 1: Statistics of Indigo

Start at: 2018-11-15 04:47:56
End at: 2018-11-15 04:48:26
Local clock offset: -10.204 ms
Remote clock offset: 9.564 ms

# Below is generated by plot.py at 2018-11-15 06:45:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 91.94 Mbit/s
95th percentile per-packet one-way delay: 120.614 ms
Loss rate: 31.68%
-- Flow 1:
Average throughput: 59.42 Mbit/s
95th percentile per-packet one-way delay: 114.663 ms
Loss rate: 15.95%
-- Flow 2:
Average throughput: 30.25 Mbit/s
95th percentile per-packet one-way delay: 120.920 ms
Loss rate: 32.32%
-- Flow 3:
Average throughput: 39.15 Mbit/s
95th percentile per-packet one-way delay: 115.290 ms
Loss rate: 63.33%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-11-15 05:10:42

End at: 2018-11-15 05:11:12

Local clock offset: -4.225 ms

Remote clock offset: 8.454 ms

# Below is generated by plot.py at 2018-11-15 06:46:01

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.38 Mbit/s

95th percentile per-packet one-way delay: 121.274 ms

Loss rate: 31.95%

-- Flow 1:

Average throughput: 69.49 Mbit/s

95th percentile per-packet one-way delay: 121.374 ms

Loss rate: 10.22%

-- Flow 2:

Average throughput: 19.68 Mbit/s

95th percentile per-packet one-way delay: 114.030 ms

Loss rate: 44.45%

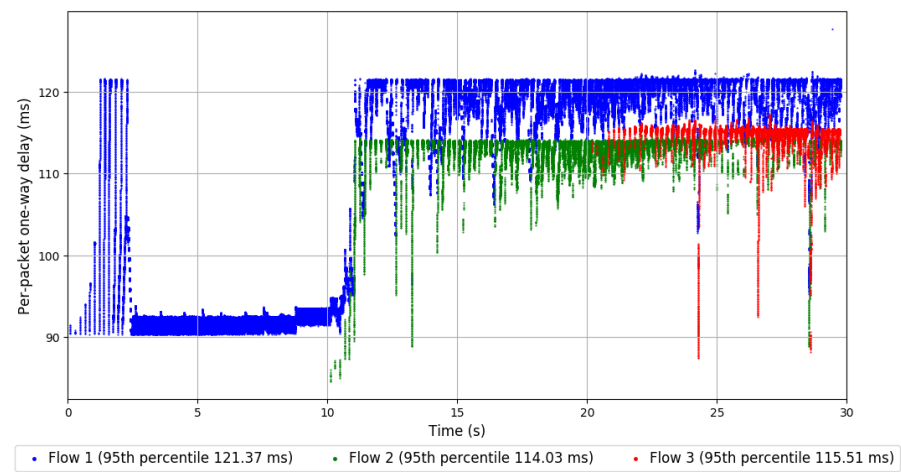
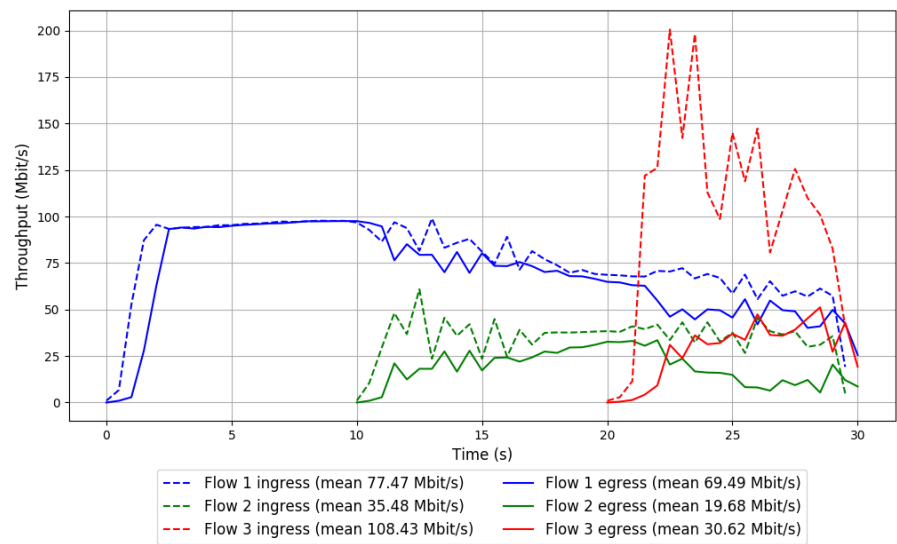
-- Flow 3:

Average throughput: 30.62 Mbit/s

95th percentile per-packet one-way delay: 115.511 ms

Loss rate: 71.75%

Run 2: Report of Indigo — Data Link

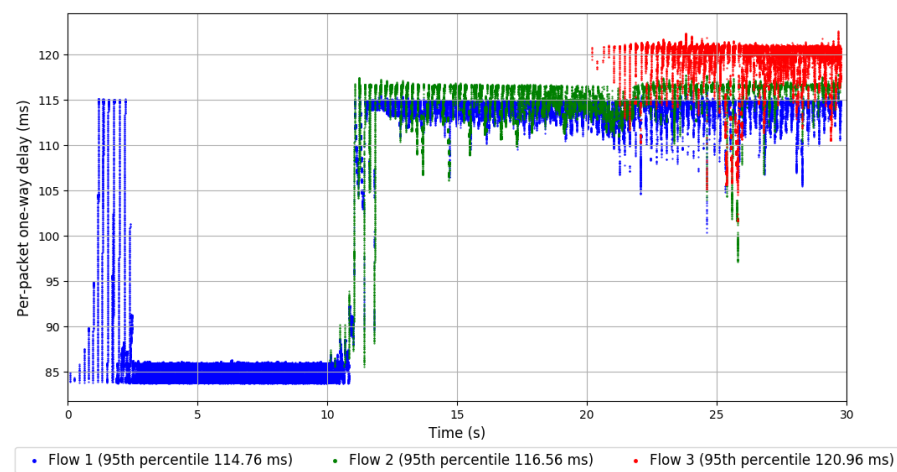
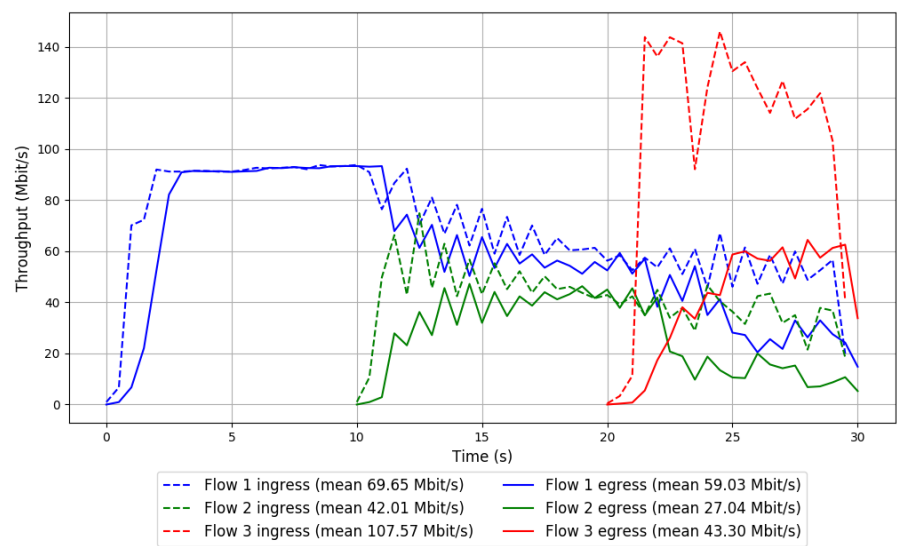


Run 3: Statistics of Indigo

Start at: 2018-11-15 05:33:41  
End at: 2018-11-15 05:34:11  
Local clock offset: -5.196 ms  
Remote clock offset: 9.604 ms

# Below is generated by plot.py at 2018-11-15 06:46:02  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 90.88 Mbit/s  
95th percentile per-packet one-way delay: 120.700 ms  
Loss rate: 31.18%  
-- Flow 1:  
Average throughput: 59.03 Mbit/s  
95th percentile per-packet one-way delay: 114.764 ms  
Loss rate: 15.16%  
-- Flow 2:  
Average throughput: 27.04 Mbit/s  
95th percentile per-packet one-way delay: 116.564 ms  
Loss rate: 35.54%  
-- Flow 3:  
Average throughput: 43.30 Mbit/s  
95th percentile per-packet one-way delay: 120.960 ms  
Loss rate: 59.77%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-11-15 05:56:27

End at: 2018-11-15 05:56:57

Local clock offset: -8.076 ms

Remote clock offset: 9.698 ms

# Below is generated by plot.py at 2018-11-15 06:46:24

# Datalink statistics

-- Total of 3 flows:

Average throughput: 92.52 Mbit/s

95th percentile per-packet one-way delay: 115.366 ms

Loss rate: 32.67%

-- Flow 1:

Average throughput: 65.42 Mbit/s

95th percentile per-packet one-way delay: 114.924 ms

Loss rate: 14.04%

-- Flow 2:

Average throughput: 27.31 Mbit/s

95th percentile per-packet one-way delay: 115.372 ms

Loss rate: 21.72%

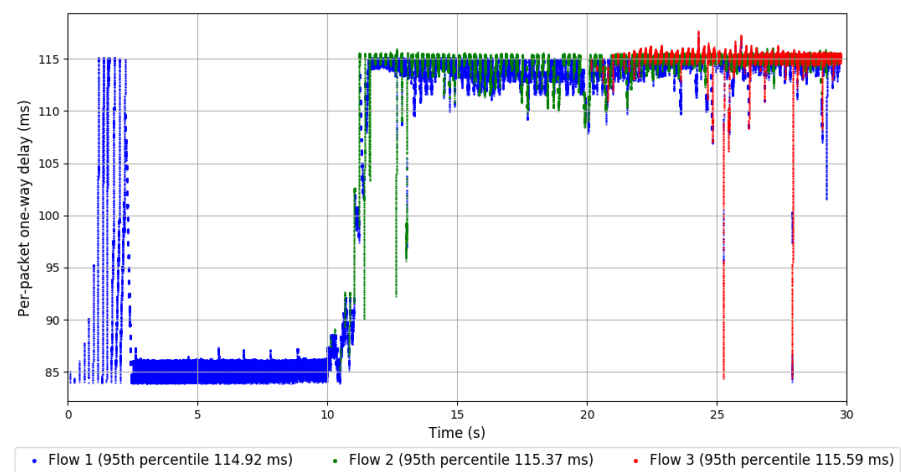
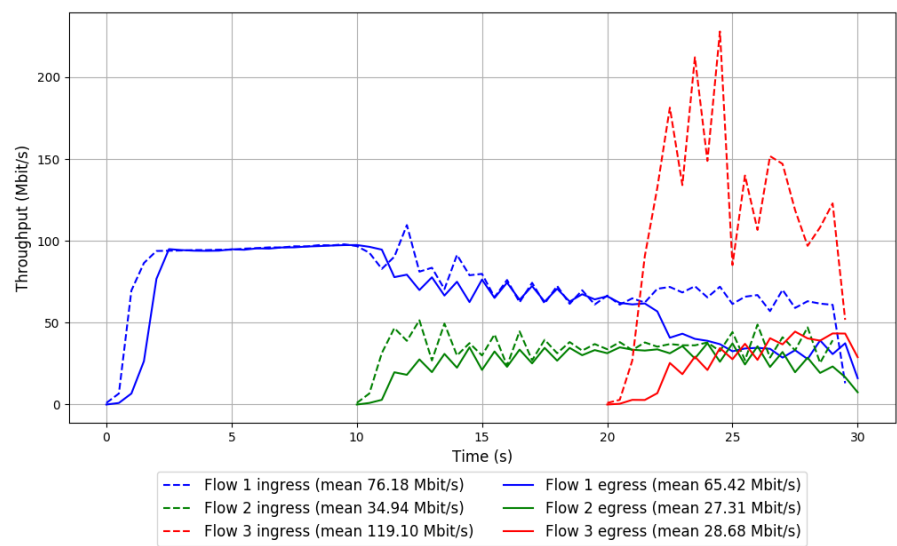
-- Flow 3:

Average throughput: 28.68 Mbit/s

95th percentile per-packet one-way delay: 115.586 ms

Loss rate: 75.92%

Run 4: Report of Indigo — Data Link



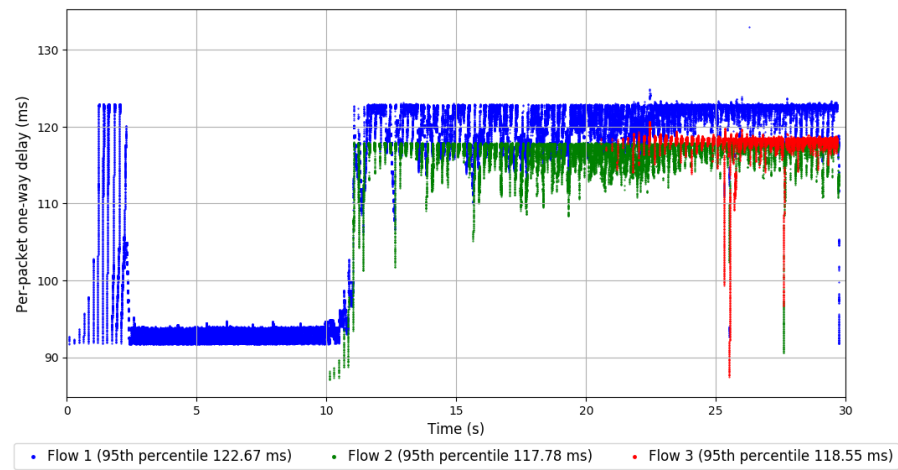
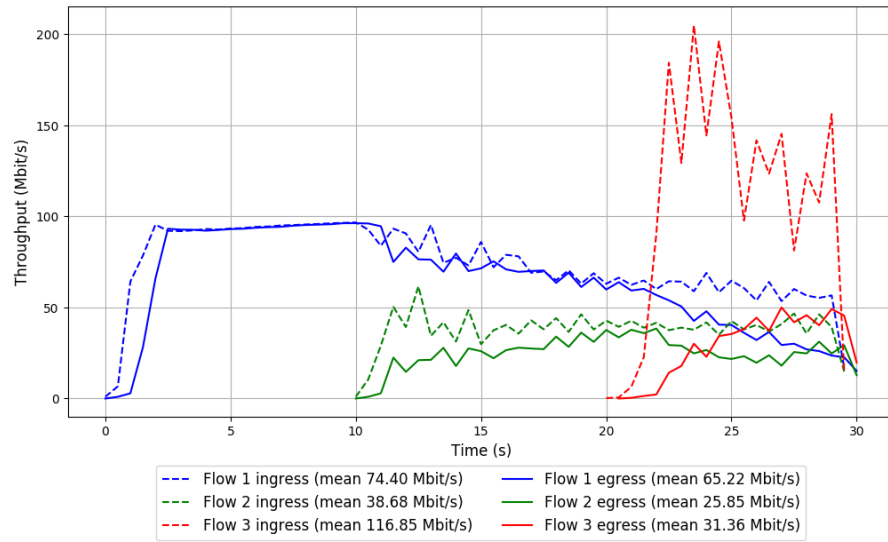


Run 5: Statistics of Indigo

Start at: 2018-11-15 06:19:16  
End at: 2018-11-15 06:19:46  
Local clock offset: -8.796 ms  
Remote clock offset: 10.443 ms

# Below is generated by plot.py at 2018-11-15 06:46:30  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 91.95 Mbit/s  
95th percentile per-packet one-way delay: 122.644 ms  
Loss rate: 32.30%  
-- Flow 1:  
Average throughput: 65.22 Mbit/s  
95th percentile per-packet one-way delay: 122.671 ms  
Loss rate: 12.34%  
-- Flow 2:  
Average throughput: 25.85 Mbit/s  
95th percentile per-packet one-way delay: 117.784 ms  
Loss rate: 33.07%  
-- Flow 3:  
Average throughput: 31.36 Mbit/s  
95th percentile per-packet one-way delay: 118.546 ms  
Loss rate: 73.16%

## Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-15 05:01:38

End at: 2018-11-15 05:02:08

Local clock offset: -8.3 ms

Remote clock offset: 4.694 ms

# Below is generated by plot.py at 2018-11-15 06:46:34

# Datalink statistics

-- Total of 3 flows:

Average throughput: 73.59 Mbit/s

95th percentile per-packet one-way delay: 115.847 ms

Loss rate: 59.61%

-- Flow 1:

Average throughput: 44.14 Mbit/s

95th percentile per-packet one-way delay: 114.773 ms

Loss rate: 58.33%

-- Flow 2:

Average throughput: 32.26 Mbit/s

95th percentile per-packet one-way delay: 117.129 ms

Loss rate: 61.01%

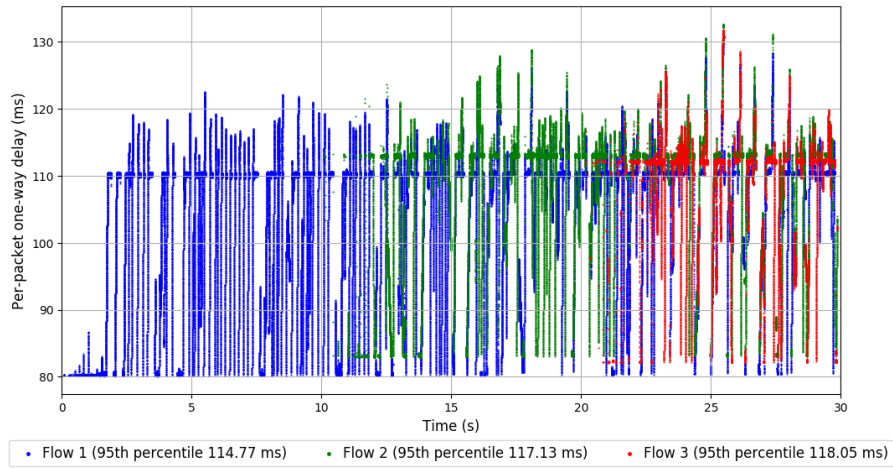
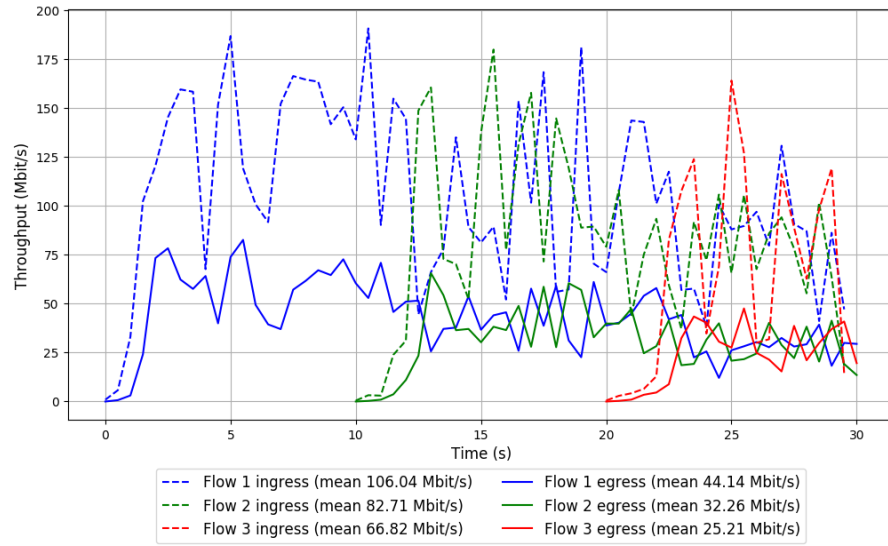
-- Flow 3:

Average throughput: 25.21 Mbit/s

95th percentile per-packet one-way delay: 118.049 ms

Loss rate: 62.31%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-15 05:24:34

End at: 2018-11-15 05:25:04

Local clock offset: -3.233 ms

Remote clock offset: 5.818 ms

# Below is generated by plot.py at 2018-11-15 06:46:44

# Datalink statistics

-- Total of 3 flows:

Average throughput: 80.36 Mbit/s

95th percentile per-packet one-way delay: 115.416 ms

Loss rate: 56.46%

-- Flow 1:

Average throughput: 49.75 Mbit/s

95th percentile per-packet one-way delay: 115.280 ms

Loss rate: 54.73%

-- Flow 2:

Average throughput: 34.60 Mbit/s

95th percentile per-packet one-way delay: 116.149 ms

Loss rate: 59.36%

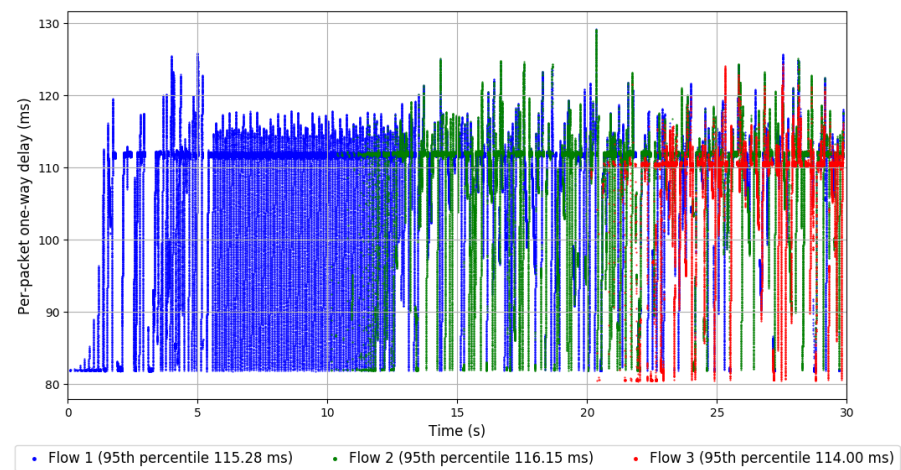
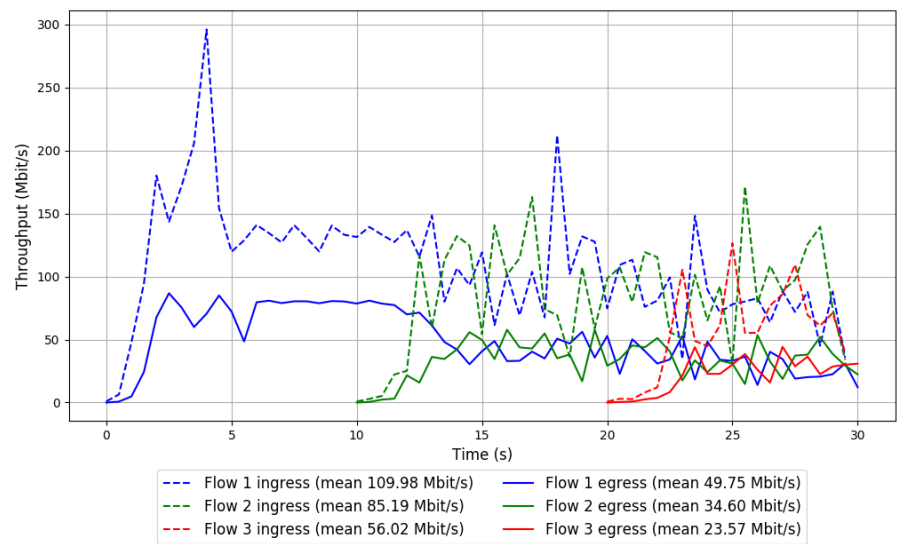
-- Flow 3:

Average throughput: 23.57 Mbit/s

95th percentile per-packet one-way delay: 113.997 ms

Loss rate: 57.92%

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



Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-15 05:47:23

End at: 2018-11-15 05:47:53

Local clock offset: -7.297 ms

Remote clock offset: 9.497 ms

# Below is generated by plot.py at 2018-11-15 06:46:46

# Datalink statistics

-- Total of 3 flows:

Average throughput: 75.39 Mbit/s

95th percentile per-packet one-way delay: 123.155 ms

Loss rate: 59.51%

-- Flow 1:

Average throughput: 47.33 Mbit/s

95th percentile per-packet one-way delay: 124.444 ms

Loss rate: 57.95%

-- Flow 2:

Average throughput: 31.96 Mbit/s

95th percentile per-packet one-way delay: 120.186 ms

Loss rate: 61.29%

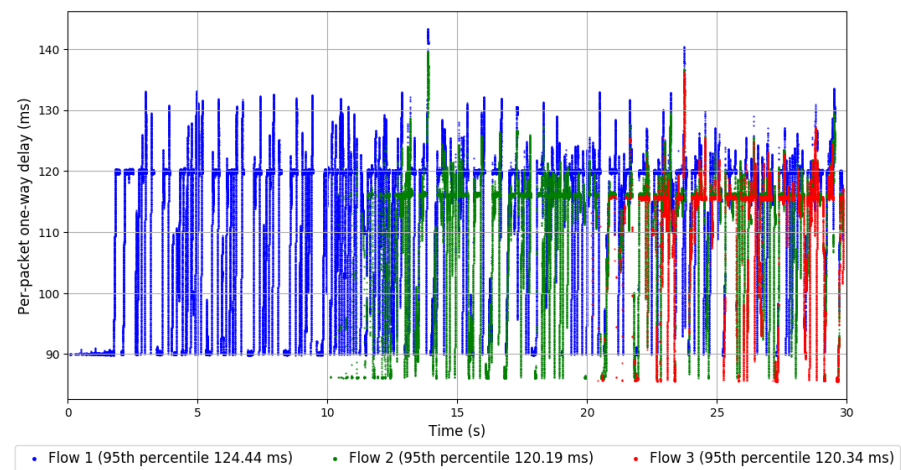
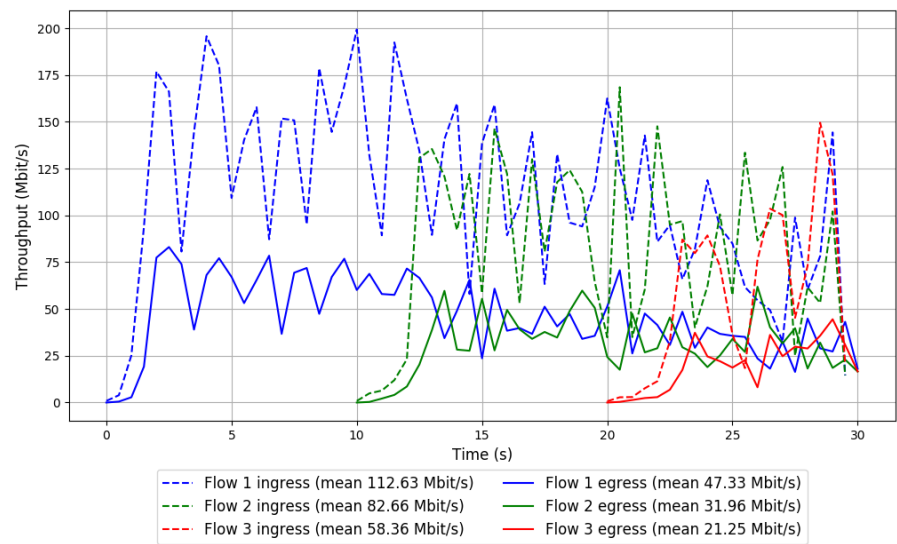
-- Flow 3:

Average throughput: 21.25 Mbit/s

95th percentile per-packet one-way delay: 120.340 ms

Loss rate: 63.61%

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





Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-15 06:10:11

End at: 2018-11-15 06:10:41

Local clock offset: -7.663 ms

Remote clock offset: 9.604 ms

# Below is generated by plot.py at 2018-11-15 06:46:54

# Datalink statistics

-- Total of 3 flows:

Average throughput: 74.24 Mbit/s

95th percentile per-packet one-way delay: 122.169 ms

Loss rate: 57.54%

-- Flow 1:

Average throughput: 45.50 Mbit/s

95th percentile per-packet one-way delay: 123.277 ms

Loss rate: 56.43%

-- Flow 2:

Average throughput: 31.40 Mbit/s

95th percentile per-packet one-way delay: 119.196 ms

Loss rate: 59.72%

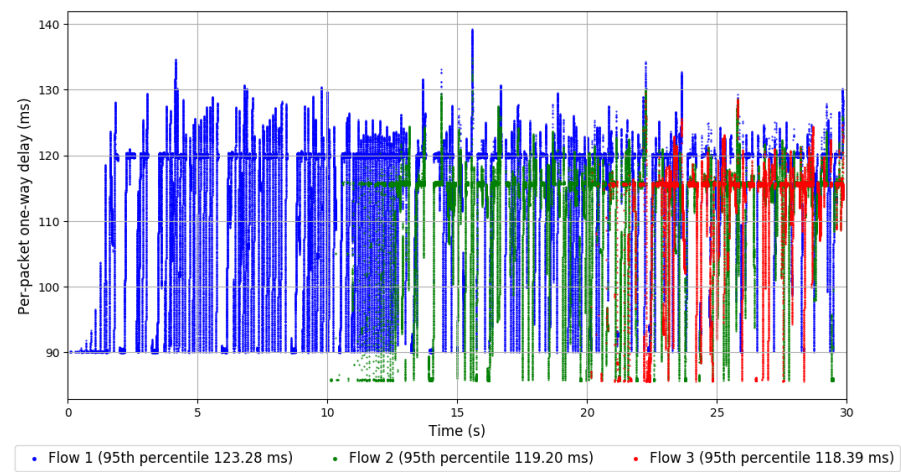
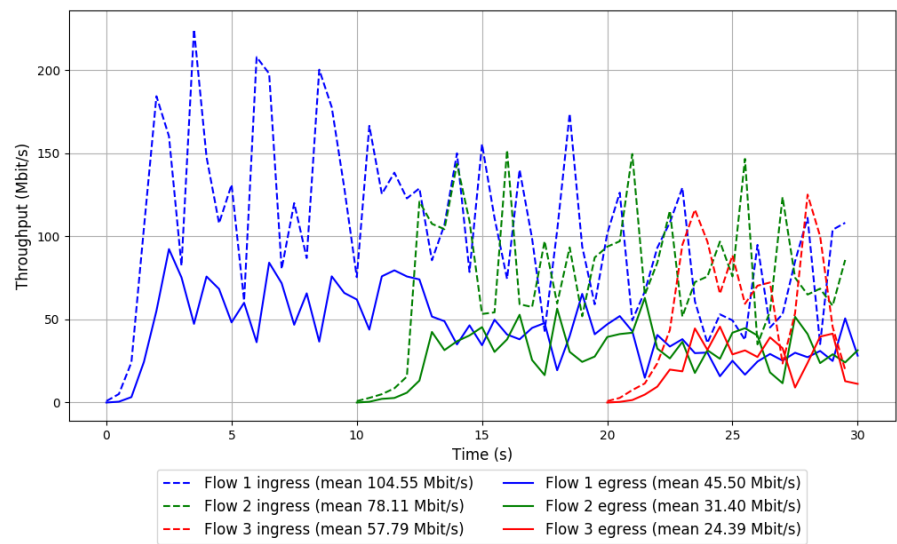
-- Flow 3:

Average throughput: 24.39 Mbit/s

95th percentile per-packet one-way delay: 118.385 ms

Loss rate: 57.68%

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



Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-15 06:32:59

End at: 2018-11-15 06:33:29

Local clock offset: -4.075 ms

Remote clock offset: 9.32 ms

# Below is generated by plot.py at 2018-11-15 06:47:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 75.58 Mbit/s

95th percentile per-packet one-way delay: 118.388 ms

Loss rate: 59.44%

-- Flow 1:

Average throughput: 46.74 Mbit/s

95th percentile per-packet one-way delay: 118.103 ms

Loss rate: 58.88%

-- Flow 2:

Average throughput: 31.85 Mbit/s

95th percentile per-packet one-way delay: 119.150 ms

Loss rate: 60.25%

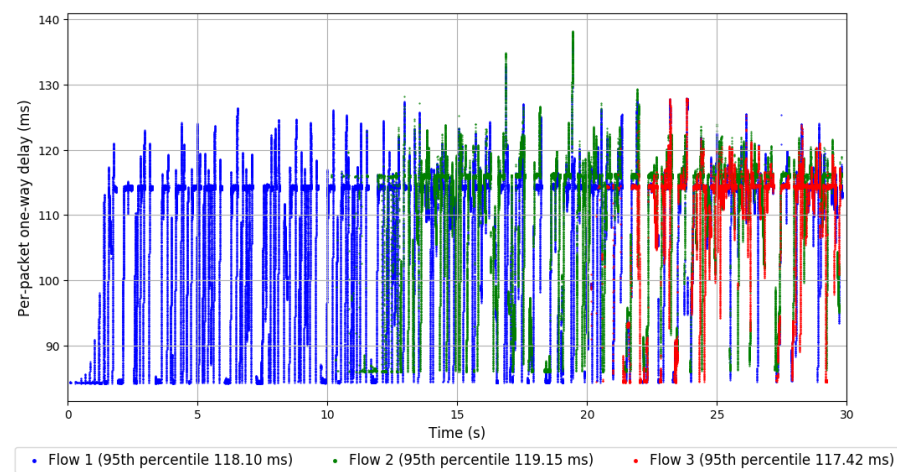
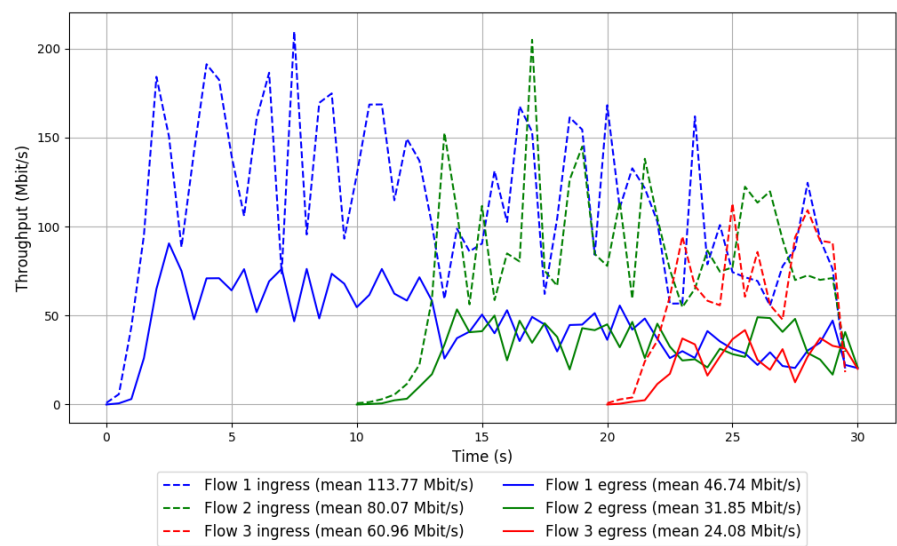
-- Flow 3:

Average throughput: 24.08 Mbit/s

95th percentile per-packet one-way delay: 117.418 ms

Loss rate: 60.44%

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

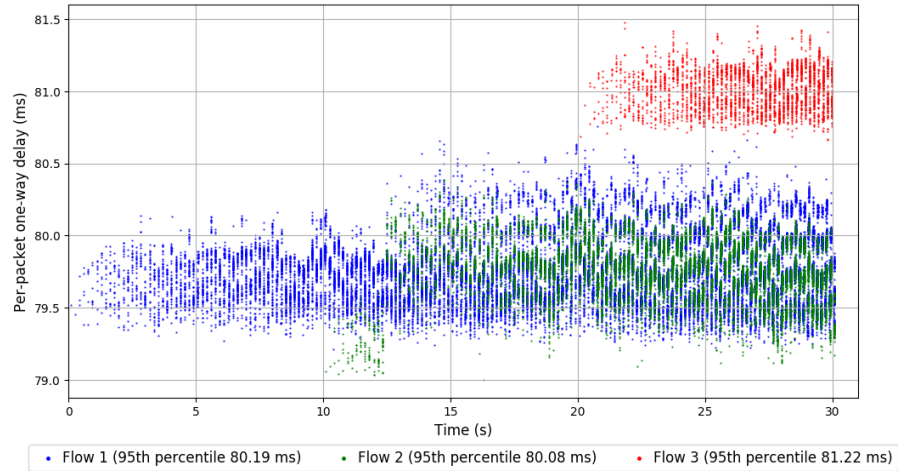
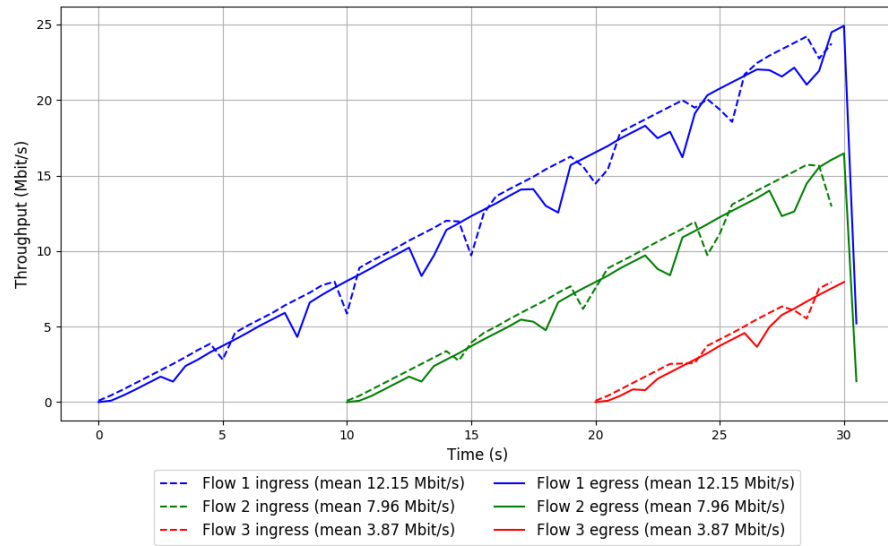


```
Run 1: Statistics of LEDBAT

Start at: 2018-11-15 04:50:29
End at: 2018-11-15 04:50:59
Local clock offset: -10.579 ms
Remote clock offset: 4.757 ms

# Below is generated by plot.py at 2018-11-15 06:47:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 18.73 Mbit/s
95th percentile per-packet one-way delay: 80.905 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 12.15 Mbit/s
95th percentile per-packet one-way delay: 80.191 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 7.96 Mbit/s
95th percentile per-packet one-way delay: 80.076 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 3.87 Mbit/s
95th percentile per-packet one-way delay: 81.216 ms
Loss rate: 0.00%
```

## Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-11-15 05:13:15

End at: 2018-11-15 05:13:45

Local clock offset: -4.602 ms

Remote clock offset: 5.879 ms

# Below is generated by plot.py at 2018-11-15 06:47:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 18.61 Mbit/s

95th percentile per-packet one-way delay: 88.613 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 12.06 Mbit/s

95th percentile per-packet one-way delay: 84.523 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 8.05 Mbit/s

95th percentile per-packet one-way delay: 84.360 ms

Loss rate: 0.01%

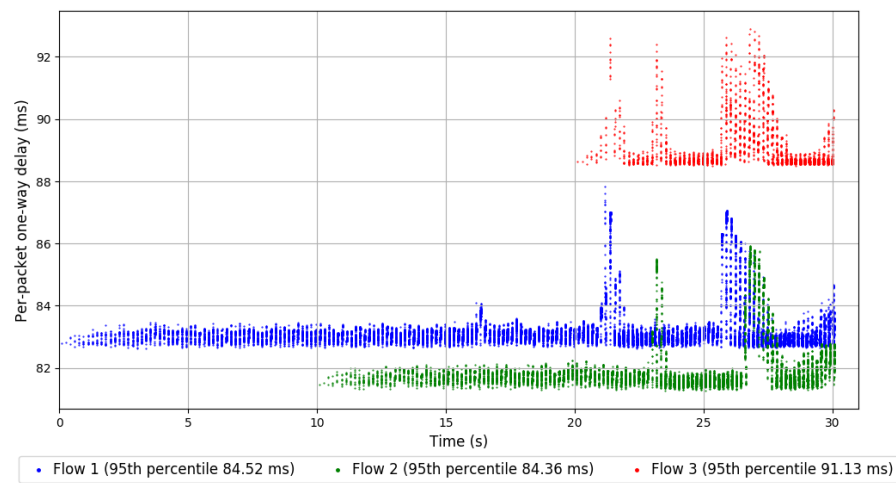
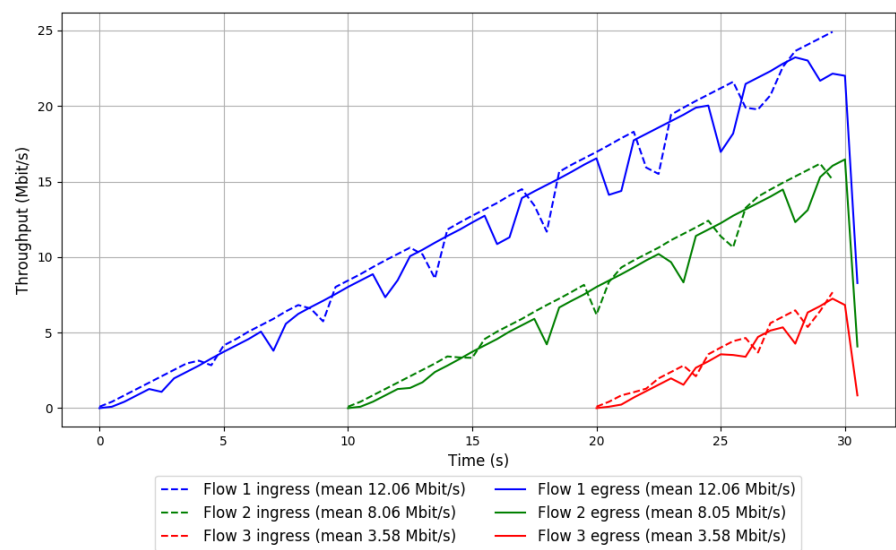
-- Flow 3:

Average throughput: 3.58 Mbit/s

95th percentile per-packet one-way delay: 91.126 ms

Loss rate: 0.00%

Run 2: Report of LEDBAT — Data Link



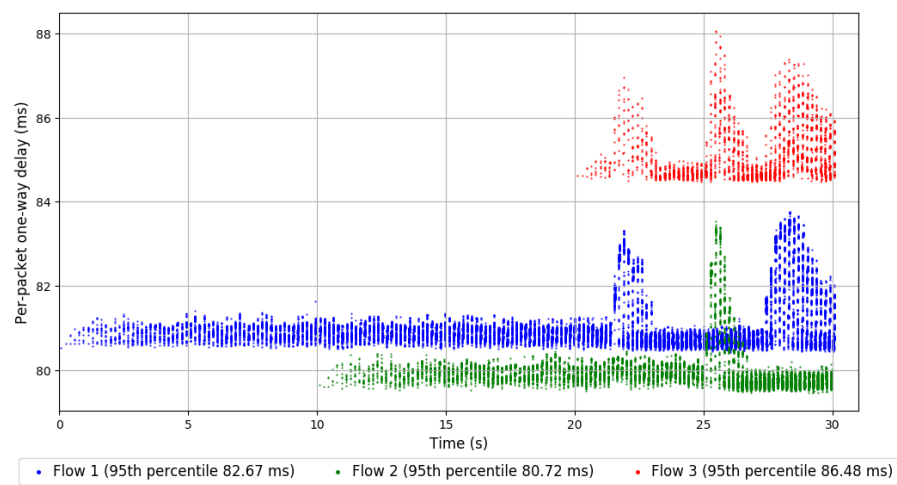
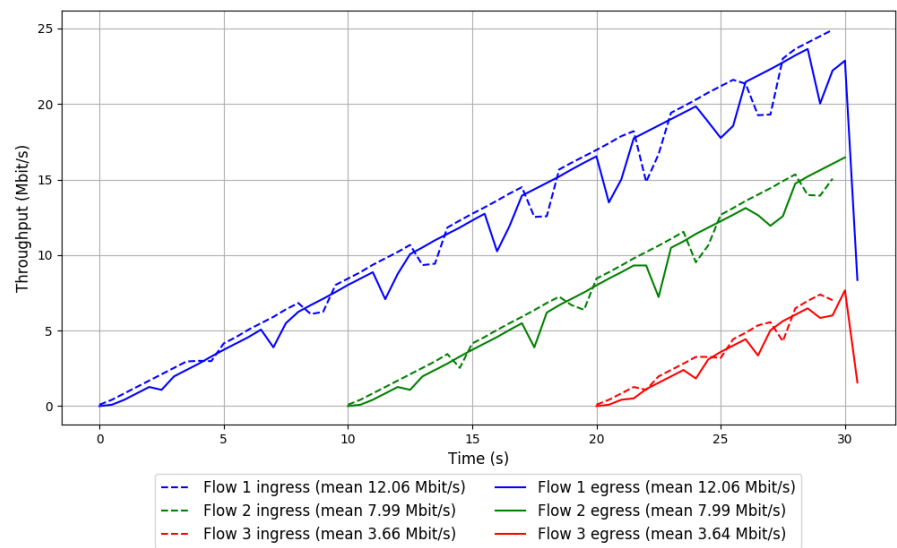


Run 3: Statistics of LEDBAT

Start at: 2018-11-15 05:36:13  
End at: 2018-11-15 05:36:43  
Local clock offset: -5.758 ms  
Remote clock offset: 4.559 ms

# Below is generated by plot.py at 2018-11-15 06:47:22  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 18.57 Mbit/s  
95th percentile per-packet one-way delay: 84.643 ms  
Loss rate: 0.03%  
-- Flow 1:  
Average throughput: 12.06 Mbit/s  
95th percentile per-packet one-way delay: 82.669 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 7.99 Mbit/s  
95th percentile per-packet one-way delay: 80.722 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 3.64 Mbit/s  
95th percentile per-packet one-way delay: 86.480 ms  
Loss rate: 0.39%

Run 3: Report of LEDBAT — Data Link



Run 4: Statistics of LEDBAT

Start at: 2018-11-15 05:59:00

End at: 2018-11-15 05:59:30

Local clock offset: -8.655 ms

Remote clock offset: 4.711 ms

# Below is generated by plot.py at 2018-11-15 06:47:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 17.40 Mbit/s

95th percentile per-packet one-way delay: 88.289 ms

Loss rate: 0.10%

-- Flow 1:

Average throughput: 11.19 Mbit/s

95th percentile per-packet one-way delay: 88.435 ms

Loss rate: 0.16%

-- Flow 2:

Average throughput: 7.43 Mbit/s

95th percentile per-packet one-way delay: 88.301 ms

Loss rate: 0.00%

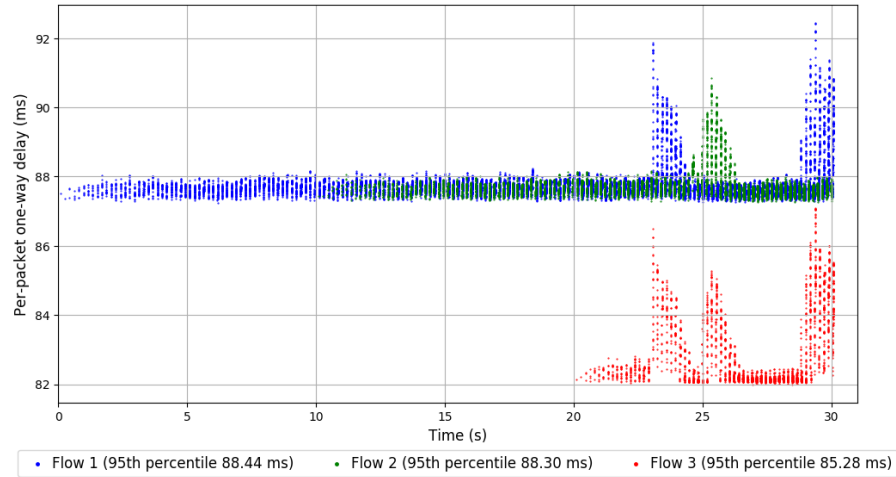
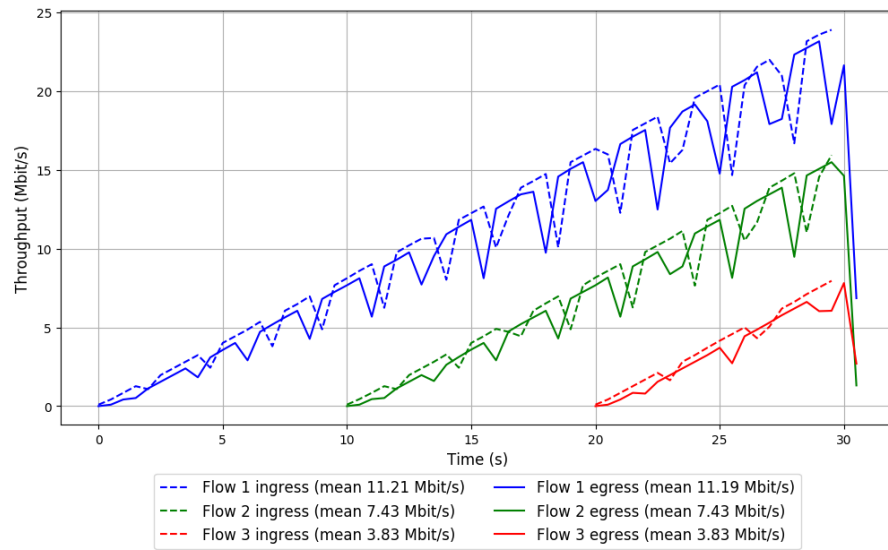
-- Flow 3:

Average throughput: 3.83 Mbit/s

95th percentile per-packet one-way delay: 85.285 ms

Loss rate: 0.00%

#### Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-11-15 06:21:48

End at: 2018-11-15 06:22:18

Local clock offset: -8.136 ms

Remote clock offset: 9.442 ms

# Below is generated by plot.py at 2018-11-15 06:47:22

# Datalink statistics

-- Total of 3 flows:

Average throughput: 18.31 Mbit/s

95th percentile per-packet one-way delay: 90.565 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 12.02 Mbit/s

95th percentile per-packet one-way delay: 88.015 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 7.54 Mbit/s

95th percentile per-packet one-way delay: 91.480 ms

Loss rate: 0.00%

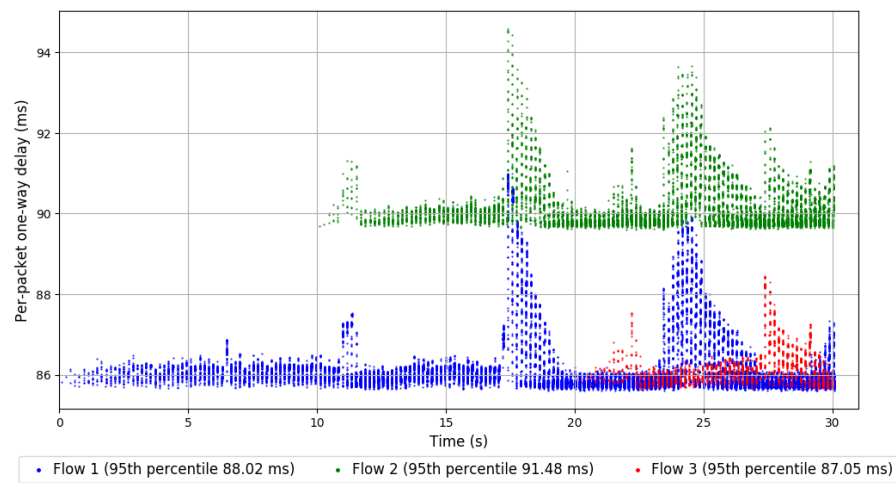
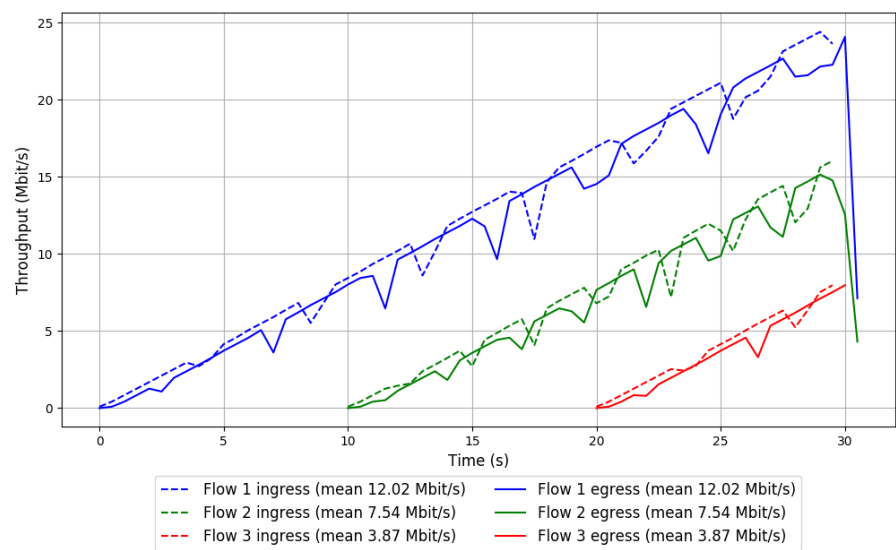
-- Flow 3:

Average throughput: 3.87 Mbit/s

95th percentile per-packet one-way delay: 87.050 ms

Loss rate: 0.00%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-11-15 05:02:56

End at: 2018-11-15 05:03:26

Local clock offset: -7.462 ms

Remote clock offset: 9.547 ms

# Below is generated by plot.py at 2018-11-15 06:47:45

# Datalink statistics

-- Total of 3 flows:

Average throughput: 89.18 Mbit/s

95th percentile per-packet one-way delay: 118.052 ms

Loss rate: 3.72%

-- Flow 1:

Average throughput: 71.63 Mbit/s

95th percentile per-packet one-way delay: 119.541 ms

Loss rate: 4.30%

-- Flow 2:

Average throughput: 18.08 Mbit/s

95th percentile per-packet one-way delay: 113.250 ms

Loss rate: 0.61%

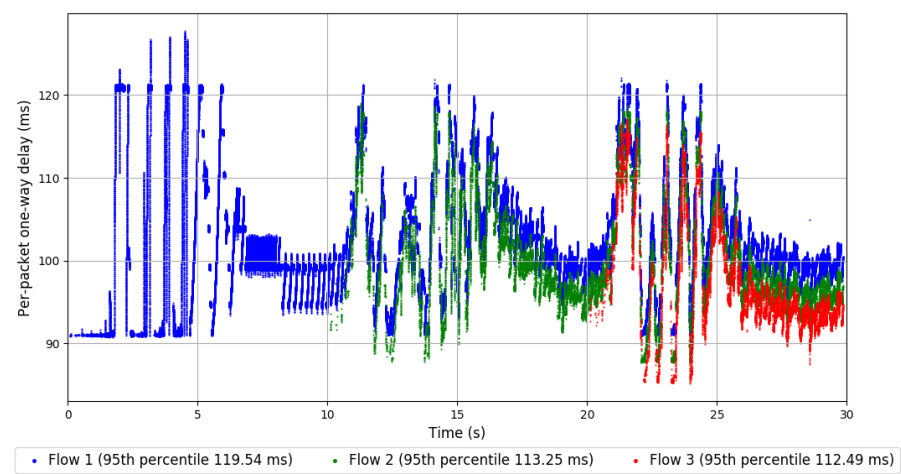
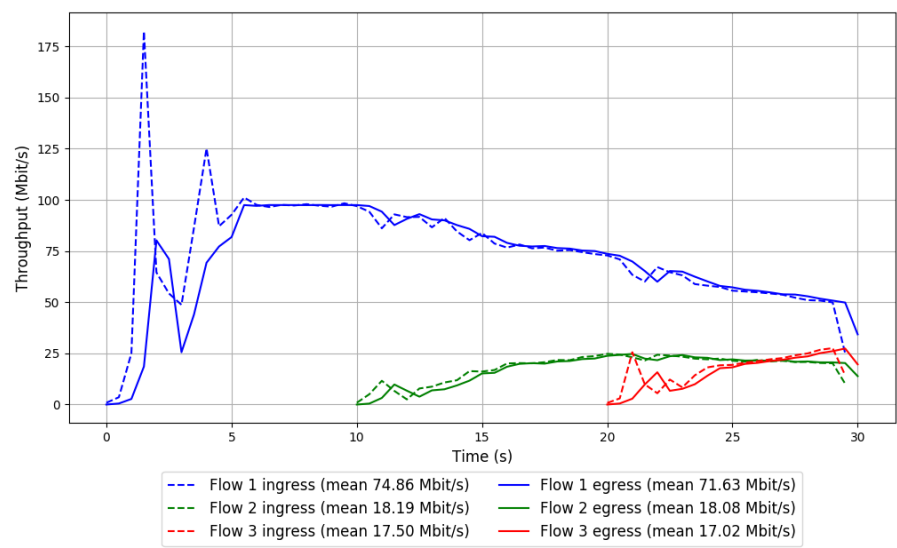
-- Flow 3:

Average throughput: 17.02 Mbit/s

95th percentile per-packet one-way delay: 112.493 ms

Loss rate: 2.70%

Run 1: Report of Indigo-Muses — Data Link





Run 2: Statistics of Indigo-Muses

Start at: 2018-11-15 05:25:54

End at: 2018-11-15 05:26:24

Local clock offset: -4.009 ms

Remote clock offset: 8.433 ms

# Below is generated by plot.py at 2018-11-15 06:47:50

# Datalink statistics

-- Total of 3 flows:

Average throughput: 89.01 Mbit/s

95th percentile per-packet one-way delay: 117.634 ms

Loss rate: 3.95%

-- Flow 1:

Average throughput: 74.63 Mbit/s

95th percentile per-packet one-way delay: 118.669 ms

Loss rate: 4.46%

-- Flow 2:

Average throughput: 15.58 Mbit/s

95th percentile per-packet one-way delay: 114.164 ms

Loss rate: 1.45%

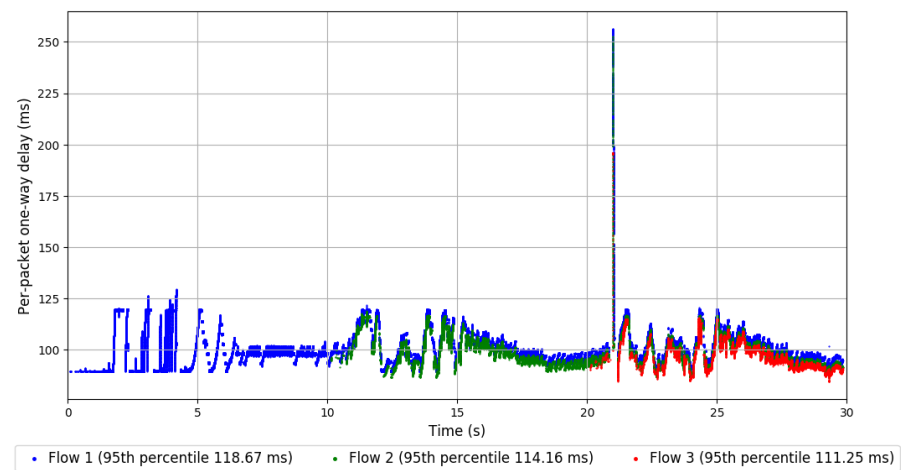
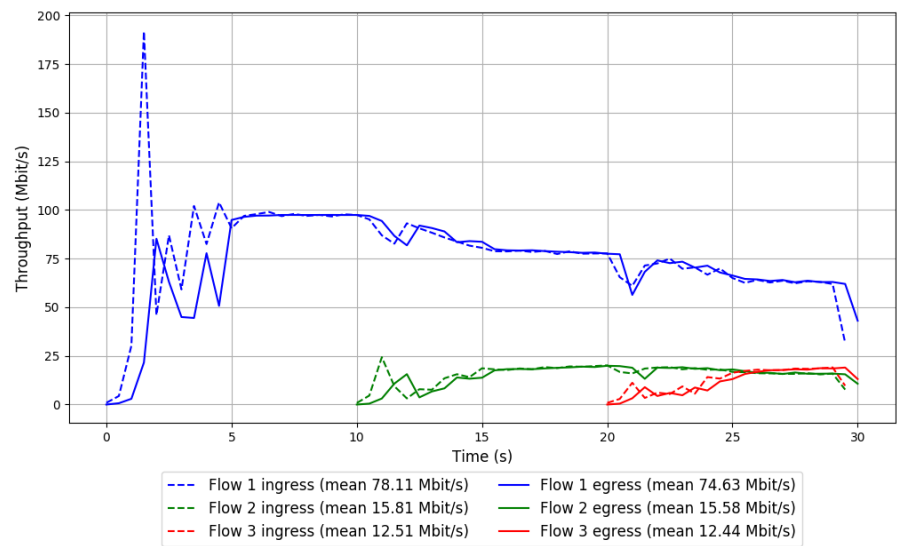
-- Flow 3:

Average throughput: 12.44 Mbit/s

95th percentile per-packet one-way delay: 111.252 ms

Loss rate: 0.52%

Run 2: Report of Indigo-Muses — Data Link



Run 3: Statistics of Indigo-Muses

Start at: 2018-11-15 05:48:42

End at: 2018-11-15 05:49:12

Local clock offset: -8.112 ms

Remote clock offset: 5.705 ms

# Below is generated by plot.py at 2018-11-15 06:47:51

# Datalink statistics

-- Total of 3 flows:

Average throughput: 87.51 Mbit/s

95th percentile per-packet one-way delay: 115.038 ms

Loss rate: 3.24%

-- Flow 1:

Average throughput: 70.08 Mbit/s

95th percentile per-packet one-way delay: 116.888 ms

Loss rate: 3.74%

-- Flow 2:

Average throughput: 19.13 Mbit/s

95th percentile per-packet one-way delay: 110.629 ms

Loss rate: 0.54%

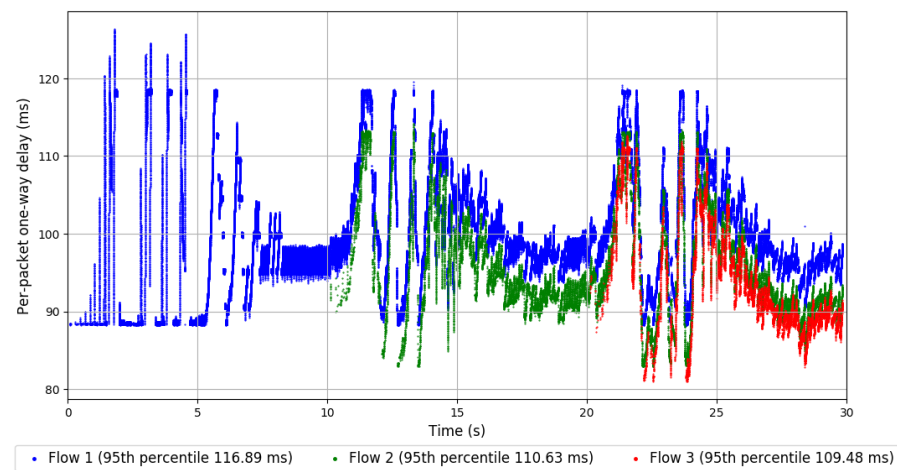
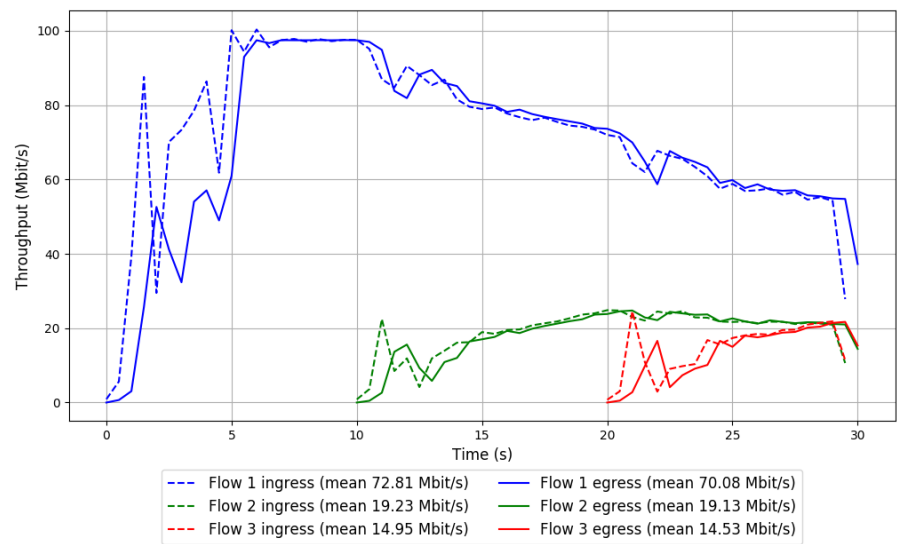
-- Flow 3:

Average throughput: 14.53 Mbit/s

95th percentile per-packet one-way delay: 109.476 ms

Loss rate: 2.85%

Run 3: Report of Indigo-Muses — Data Link



Run 4: Statistics of Indigo-Muses

Start at: 2018-11-15 06:11:30

End at: 2018-11-15 06:12:00

Local clock offset: -7.691 ms

Remote clock offset: 5.652 ms

# Below is generated by plot.py at 2018-11-15 06:47:54

# Datalink statistics

-- Total of 3 flows:

Average throughput: 88.75 Mbit/s

95th percentile per-packet one-way delay: 113.792 ms

Loss rate: 4.05%

-- Flow 1:

Average throughput: 69.14 Mbit/s

95th percentile per-packet one-way delay: 114.958 ms

Loss rate: 4.79%

-- Flow 2:

Average throughput: 20.82 Mbit/s

95th percentile per-packet one-way delay: 109.413 ms

Loss rate: 1.01%

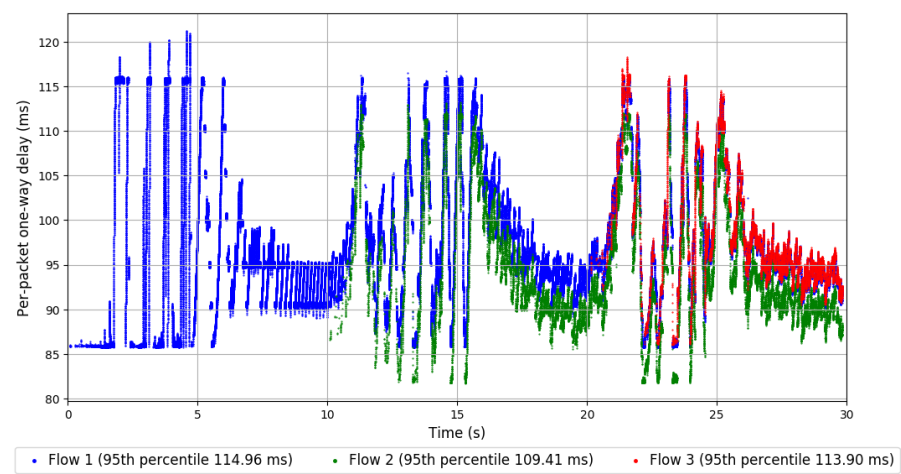
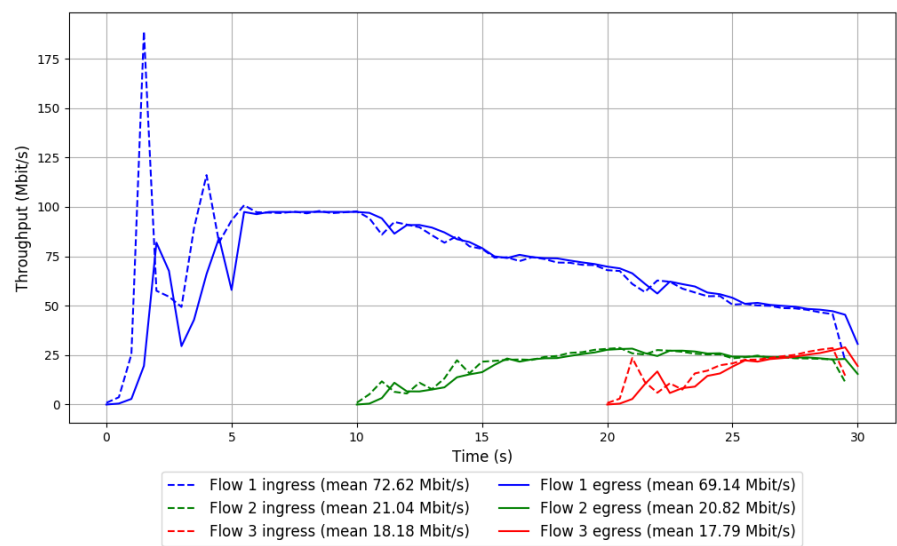
-- Flow 3:

Average throughput: 17.79 Mbit/s

95th percentile per-packet one-way delay: 113.898 ms

Loss rate: 2.25%

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-11-15 06:34:17

End at: 2018-11-15 06:34:47

Local clock offset: -4.213 ms

Remote clock offset: 9.293 ms

# Below is generated by plot.py at 2018-11-15 06:47:54

# Datalink statistics

-- Total of 3 flows:

Average throughput: 87.79 Mbit/s

95th percentile per-packet one-way delay: 113.337 ms

Loss rate: 2.21%

-- Flow 1:

Average throughput: 66.57 Mbit/s

95th percentile per-packet one-way delay: 112.811 ms

Loss rate: 2.32%

-- Flow 2:

Average throughput: 22.89 Mbit/s

95th percentile per-packet one-way delay: 115.151 ms

Loss rate: 1.55%

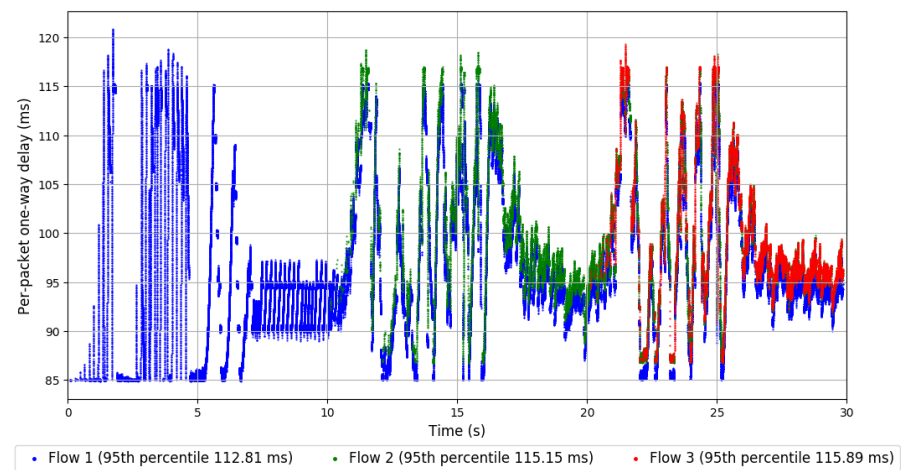
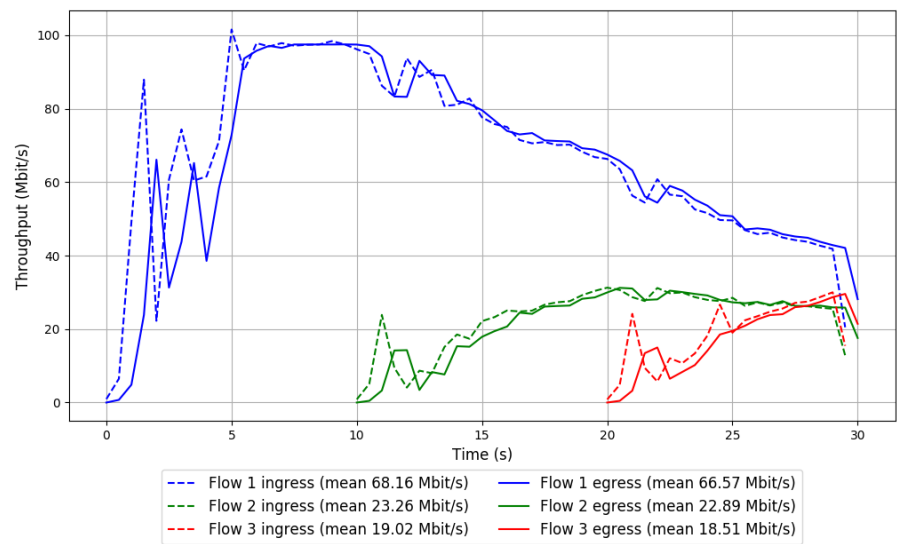
-- Flow 3:

Average throughput: 18.51 Mbit/s

95th percentile per-packet one-way delay: 115.895 ms

Loss rate: 2.69%

Run 5: Report of Indigo-Muses — Data Link



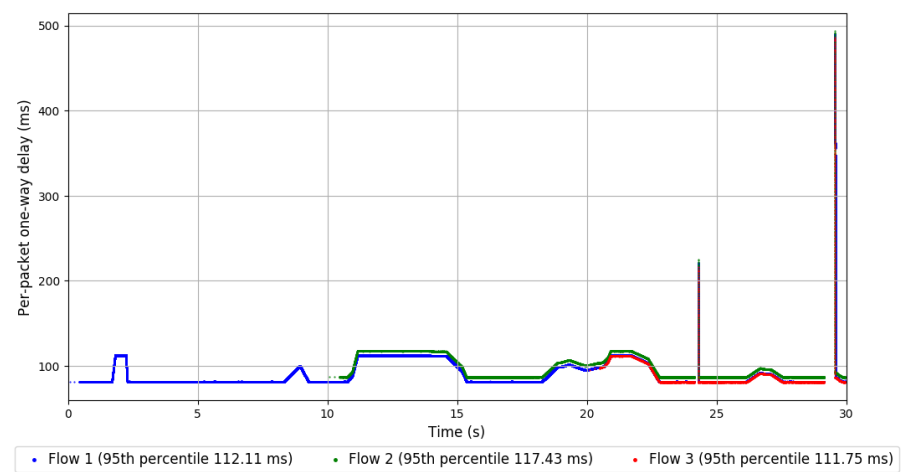
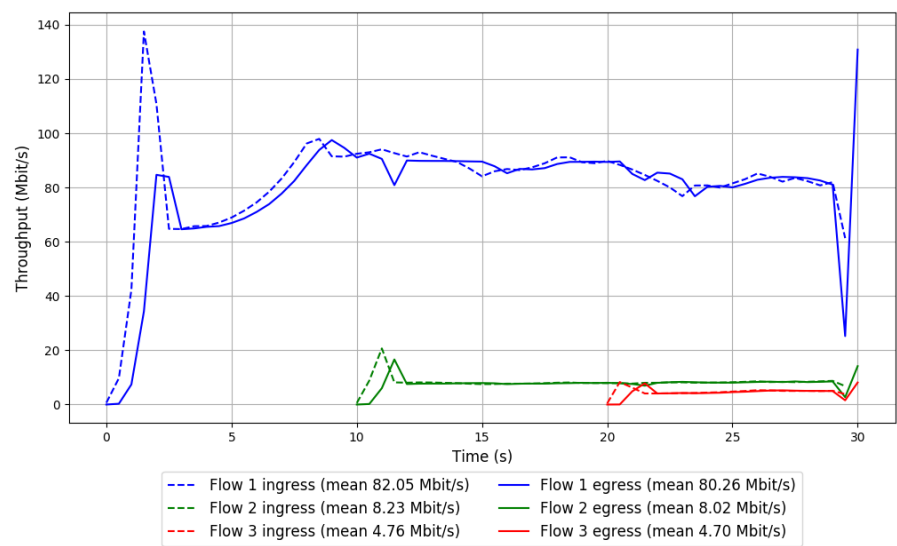


```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-15 04:52:57
End at: 2018-11-15 04:53:27
Local clock offset: -10.94 ms
Remote clock offset: 4.604 ms

# Below is generated by plot.py at 2018-11-15 06:47:57
# Datalink statistics
-- Total of 3 flows:
Average throughput: 87.14 Mbit/s
95th percentile per-packet one-way delay: 112.160 ms
Loss rate: 2.19%
-- Flow 1:
Average throughput: 80.26 Mbit/s
95th percentile per-packet one-way delay: 112.112 ms
Loss rate: 2.17%
-- Flow 2:
Average throughput: 8.02 Mbit/s
95th percentile per-packet one-way delay: 117.428 ms
Loss rate: 2.58%
-- Flow 3:
Average throughput: 4.70 Mbit/s
95th percentile per-packet one-way delay: 111.754 ms
Loss rate: 1.50%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-11-15 05:15:42

End at: 2018-11-15 05:16:12

Local clock offset: -3.569 ms

Remote clock offset: 4.593 ms

# Below is generated by plot.py at 2018-11-15 06:48:00

# Datalink statistics

-- Total of 3 flows:

Average throughput: 86.57 Mbit/s

95th percentile per-packet one-way delay: 110.426 ms

Loss rate: 2.27%

-- Flow 1:

Average throughput: 79.49 Mbit/s

95th percentile per-packet one-way delay: 110.434 ms

Loss rate: 2.24%

-- Flow 2:

Average throughput: 8.56 Mbit/s

95th percentile per-packet one-way delay: 109.988 ms

Loss rate: 2.59%

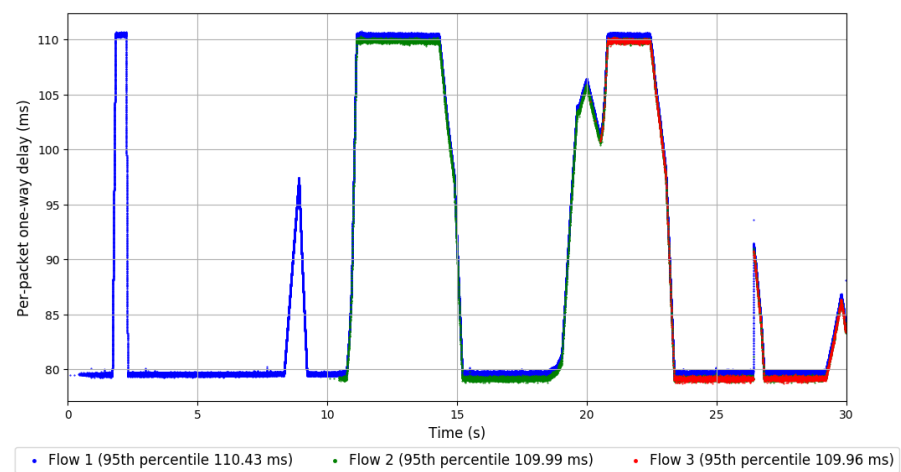
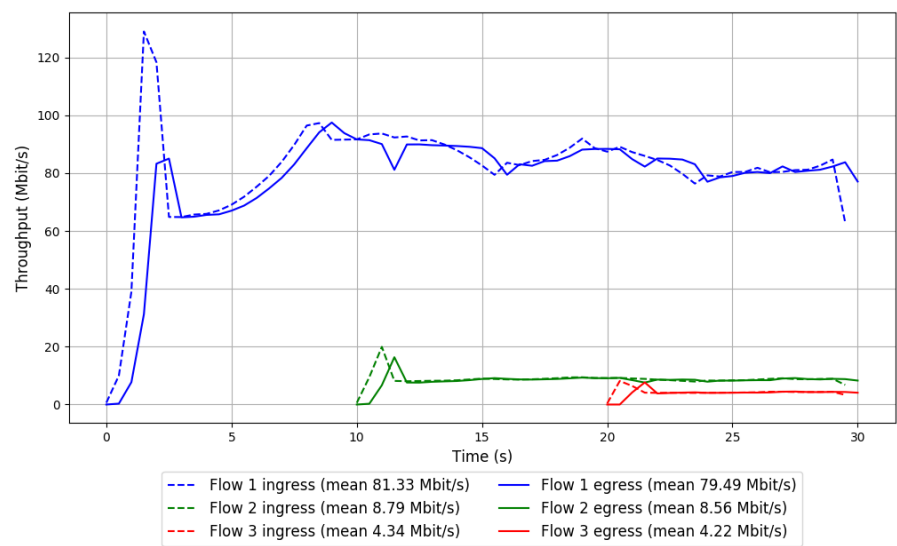
-- Flow 3:

Average throughput: 4.22 Mbit/s

95th percentile per-packet one-way delay: 109.960 ms

Loss rate: 2.90%

Run 2: Report of PCC-Allegro — Data Link

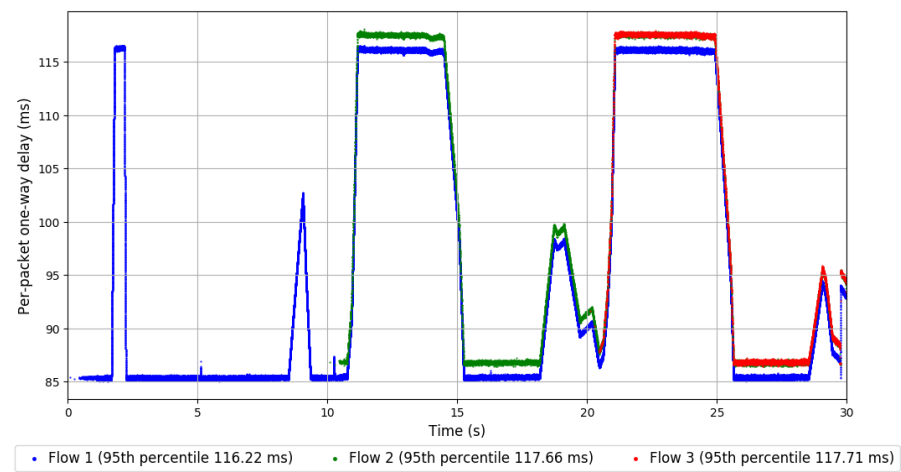
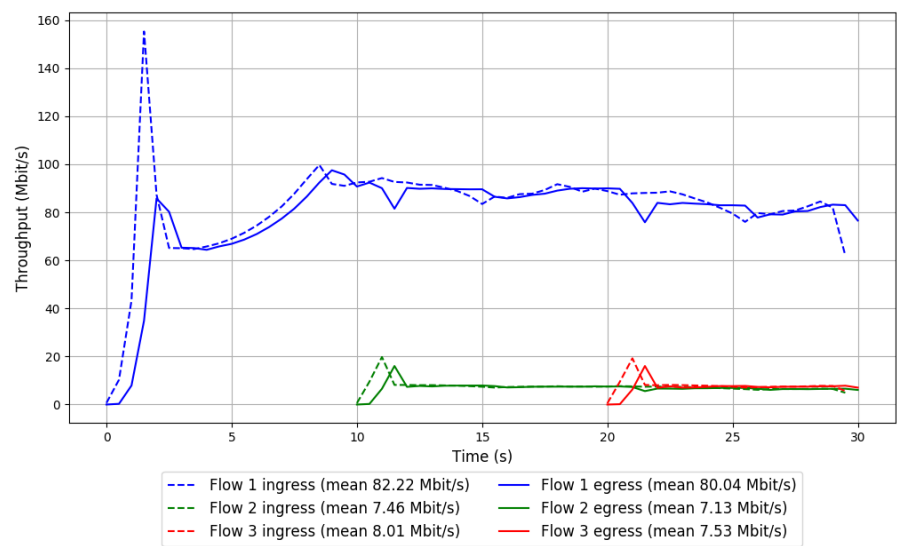


Run 3: Statistics of PCC-Allegro

Start at: 2018-11-15 05:38:41  
End at: 2018-11-15 05:39:11  
Local clock offset: -6.123 ms  
Remote clock offset: 10.708 ms

# Below is generated by plot.py at 2018-11-15 06:48:32  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 87.27 Mbit/s  
95th percentile per-packet one-way delay: 116.291 ms  
Loss rate: 2.82%  
-- Flow 1:  
Average throughput: 80.04 Mbit/s  
95th percentile per-packet one-way delay: 116.222 ms  
Loss rate: 2.62%  
-- Flow 2:  
Average throughput: 7.13 Mbit/s  
95th percentile per-packet one-way delay: 117.655 ms  
Loss rate: 4.37%  
-- Flow 3:  
Average throughput: 7.53 Mbit/s  
95th percentile per-packet one-way delay: 117.711 ms  
Loss rate: 5.99%

Run 3: Report of PCC-Allegro — Data Link



Run 4: Statistics of PCC-Allegro

Start at: 2018-11-15 06:01:28

End at: 2018-11-15 06:01:58

Local clock offset: -8.516 ms

Remote clock offset: 5.84 ms

# Below is generated by plot.py at 2018-11-15 06:48:58

# Datalink statistics

-- Total of 3 flows:

Average throughput: 86.84 Mbit/s

95th percentile per-packet one-way delay: 113.514 ms

Loss rate: 2.02%

-- Flow 1:

Average throughput: 80.31 Mbit/s

95th percentile per-packet one-way delay: 113.523 ms

Loss rate: 2.03%

-- Flow 2:

Average throughput: 8.73 Mbit/s

95th percentile per-packet one-way delay: 112.206 ms

Loss rate: 1.86%

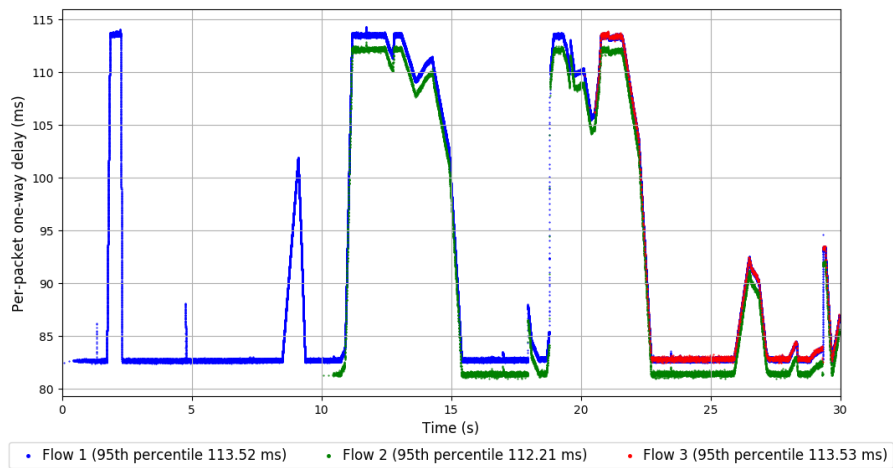
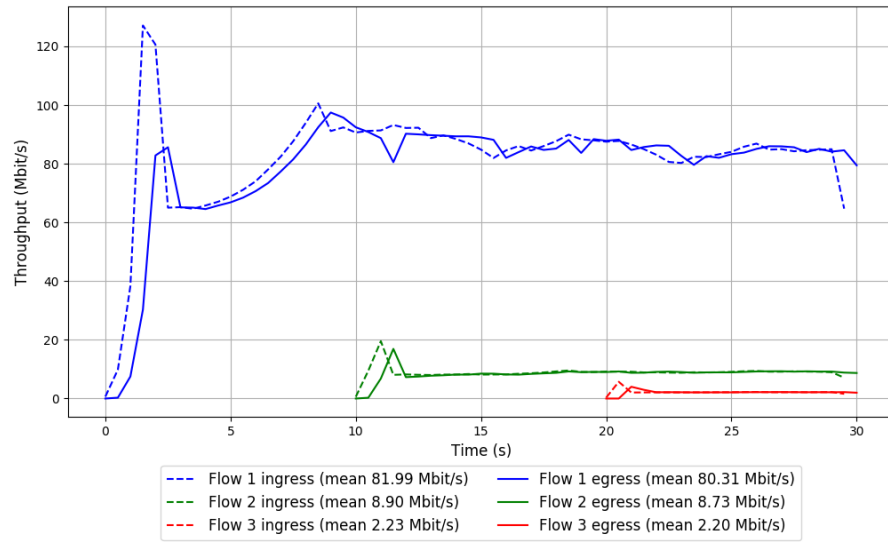
-- Flow 3:

Average throughput: 2.20 Mbit/s

95th percentile per-packet one-way delay: 113.535 ms

Loss rate: 1.40%

# Run 4: Report of PCC-Allegro — Data Link



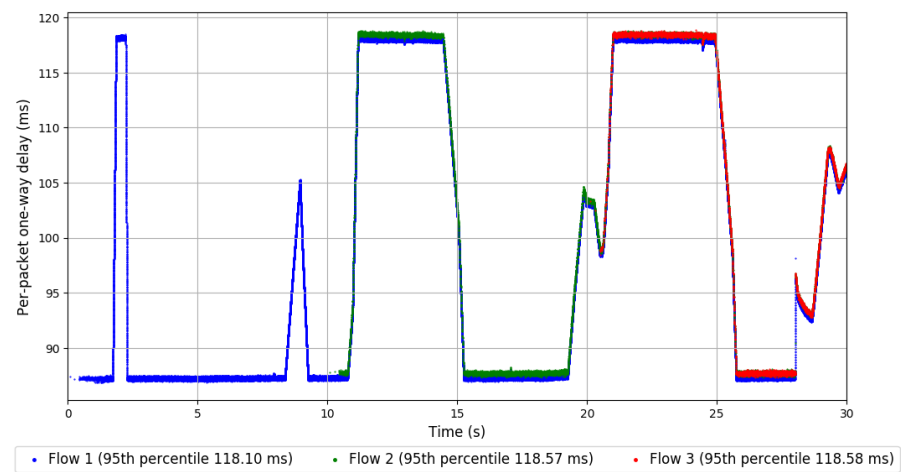
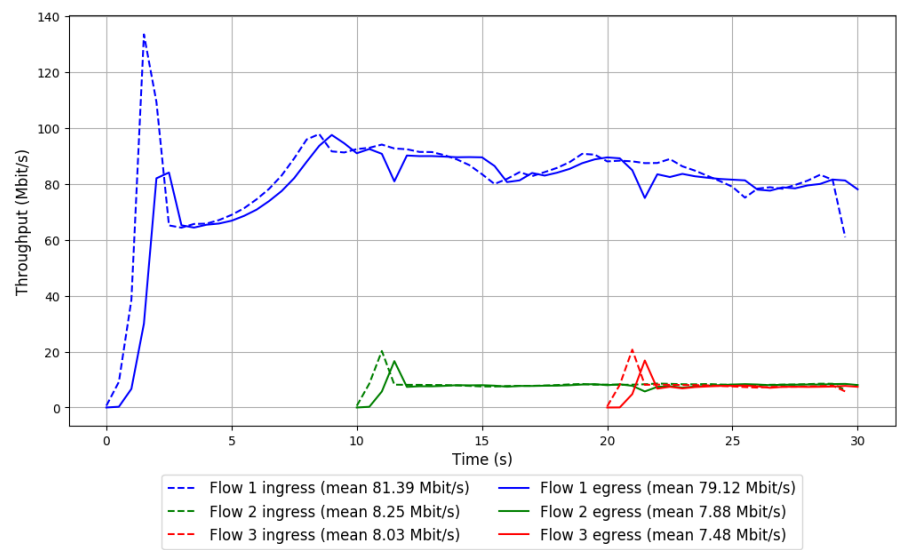


Run 5: Statistics of PCC-Allegro

Start at: 2018-11-15 06:24:16  
End at: 2018-11-15 06:24:46  
Local clock offset: -9.032 ms  
Remote clock offset: 10.501 ms

# Below is generated by plot.py at 2018-11-15 06:49:06  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 86.83 Mbit/s  
95th percentile per-packet one-way delay: 118.164 ms  
Loss rate: 2.95%  
-- Flow 1:  
Average throughput: 79.12 Mbit/s  
95th percentile per-packet one-way delay: 118.098 ms  
Loss rate: 2.72%  
-- Flow 2:  
Average throughput: 7.88 Mbit/s  
95th percentile per-packet one-way delay: 118.571 ms  
Loss rate: 4.45%  
-- Flow 3:  
Average throughput: 7.48 Mbit/s  
95th percentile per-packet one-way delay: 118.579 ms  
Loss rate: 6.72%

Run 5: Report of PCC-Allegro — Data Link

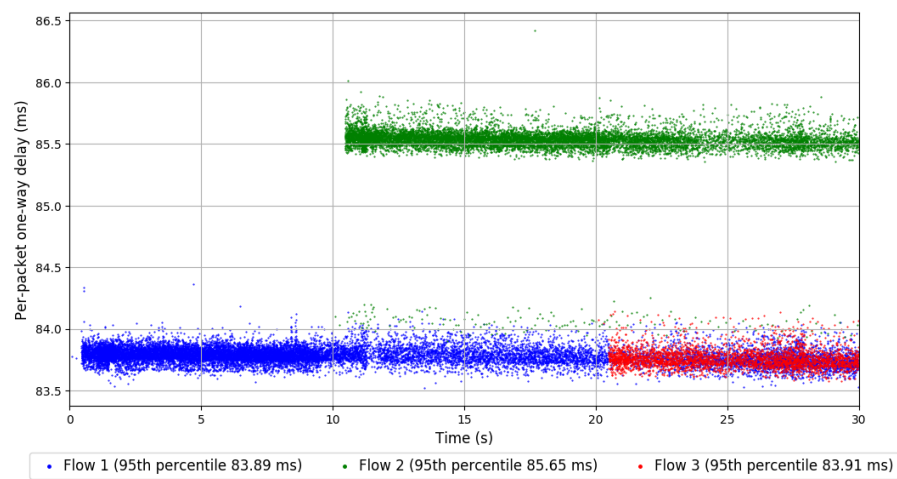
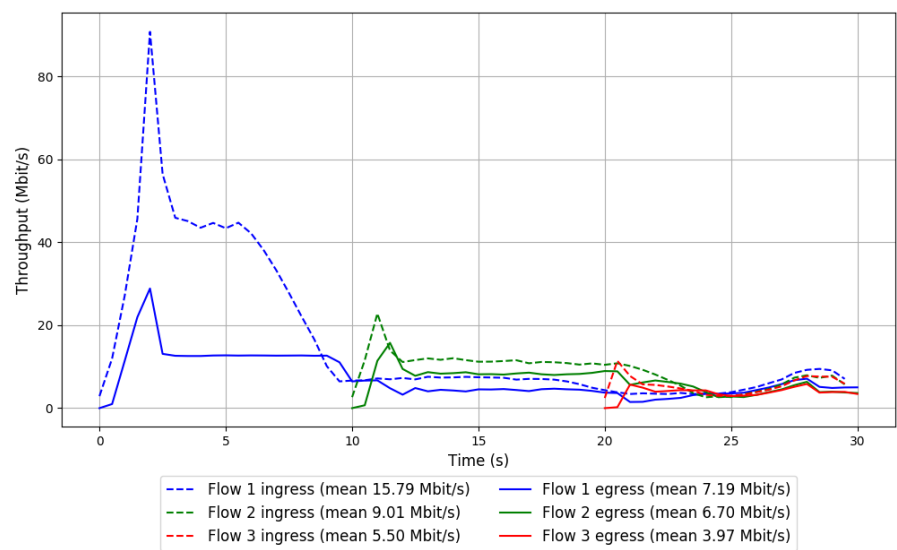


```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-15 04:55:26
End at: 2018-11-15 04:55:56
Local clock offset: -11.289 ms
Remote clock offset: 9.469 ms

# Below is generated by plot.py at 2018-11-15 06:49:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.95 Mbit/s
95th percentile per-packet one-way delay: 85.591 ms
Loss rate: 45.10%
-- Flow 1:
Average throughput: 7.19 Mbit/s
95th percentile per-packet one-way delay: 83.893 ms
Loss rate: 54.47%
-- Flow 2:
Average throughput: 6.70 Mbit/s
95th percentile per-packet one-way delay: 85.650 ms
Loss rate: 25.68%
-- Flow 3:
Average throughput: 3.97 Mbit/s
95th percentile per-packet one-way delay: 83.909 ms
Loss rate: 27.79%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-11-15 05:18:12

End at: 2018-11-15 05:18:42

Local clock offset: -3.388 ms

Remote clock offset: 4.671 ms

# Below is generated by plot.py at 2018-11-15 06:49:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.95 Mbit/s

95th percentile per-packet one-way delay: 80.945 ms

Loss rate: 43.12%

-- Flow 1:

Average throughput: 7.71 Mbit/s

95th percentile per-packet one-way delay: 79.254 ms

Loss rate: 51.86%

-- Flow 2:

Average throughput: 6.44 Mbit/s

95th percentile per-packet one-way delay: 81.011 ms

Loss rate: 19.73%

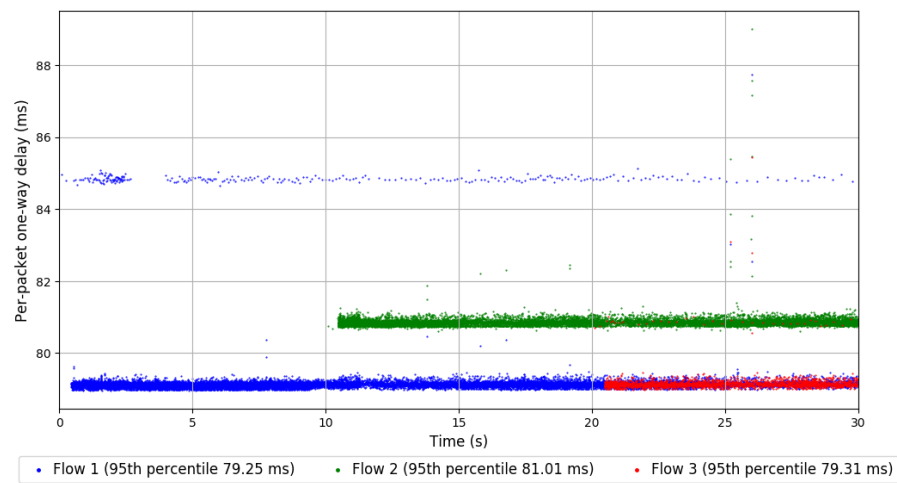
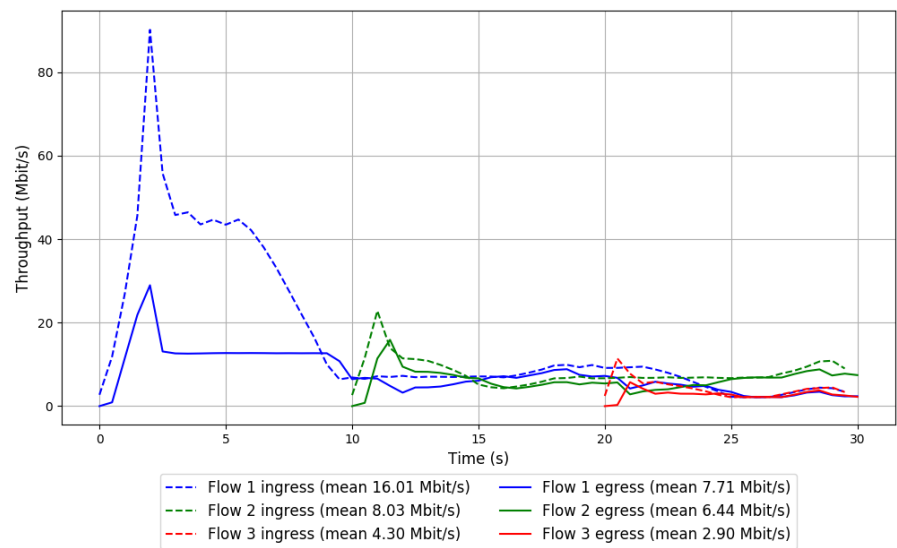
-- Flow 3:

Average throughput: 2.90 Mbit/s

95th percentile per-packet one-way delay: 79.305 ms

Loss rate: 32.56%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-11-15 05:41:10

End at: 2018-11-15 05:41:40

Local clock offset: -7.262 ms

Remote clock offset: 4.75 ms

# Below is generated by plot.py at 2018-11-15 06:49:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.95 Mbit/s

95th percentile per-packet one-way delay: 80.006 ms

Loss rate: 50.15%

-- Flow 1:

Average throughput: 7.50 Mbit/s

95th percentile per-packet one-way delay: 80.006 ms

Loss rate: 58.88%

-- Flow 2:

Average throughput: 6.80 Mbit/s

95th percentile per-packet one-way delay: 80.001 ms

Loss rate: 28.00%

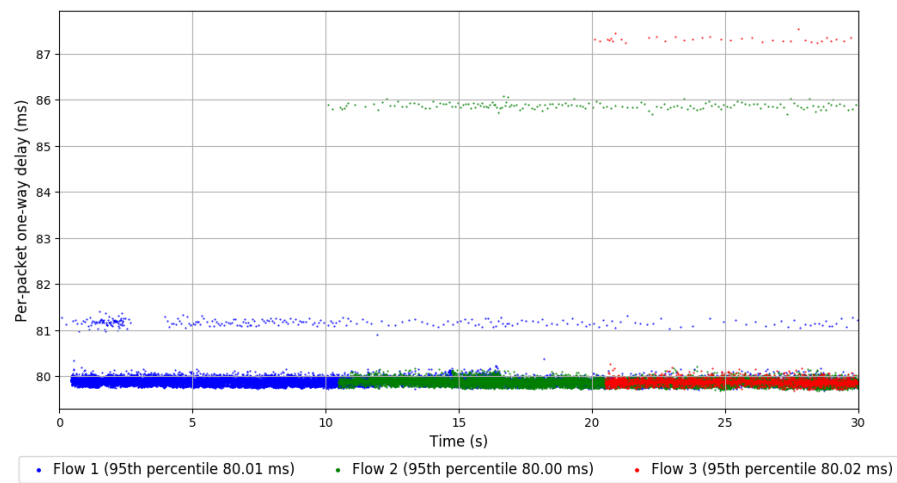
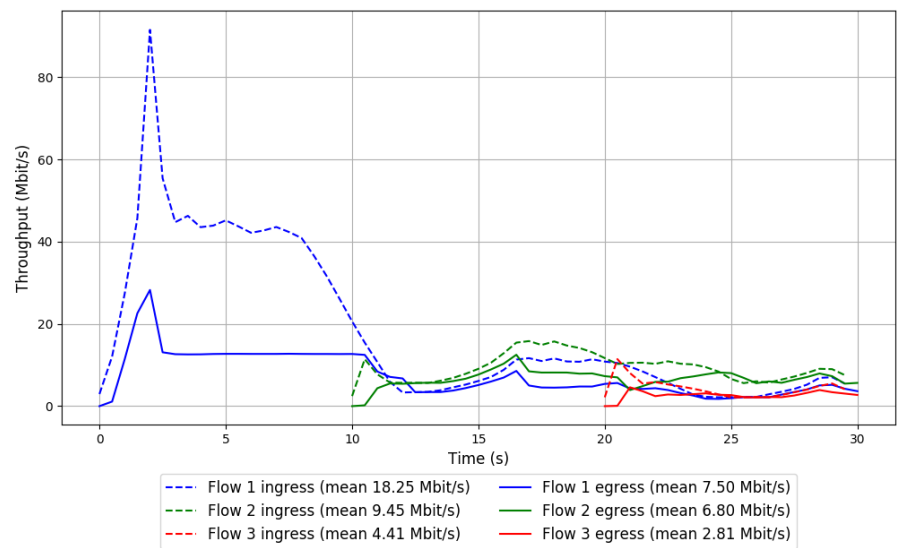
-- Flow 3:

Average throughput: 2.81 Mbit/s

95th percentile per-packet one-way delay: 80.023 ms

Loss rate: 36.41%

Run 3: Report of PCC-Expr — Data Link





Run 4: Statistics of PCC-Expr

Start at: 2018-11-15 06:03:57

End at: 2018-11-15 06:04:27

Local clock offset: -8.414 ms

Remote clock offset: 4.726 ms

# Below is generated by plot.py at 2018-11-15 06:49:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.65 Mbit/s

95th percentile per-packet one-way delay: 81.778 ms

Loss rate: 58.37%

-- Flow 1:

Average throughput: 8.46 Mbit/s

95th percentile per-packet one-way delay: 81.794 ms

Loss rate: 62.31%

-- Flow 2:

Average throughput: 5.71 Mbit/s

95th percentile per-packet one-way delay: 80.078 ms

Loss rate: 43.14%

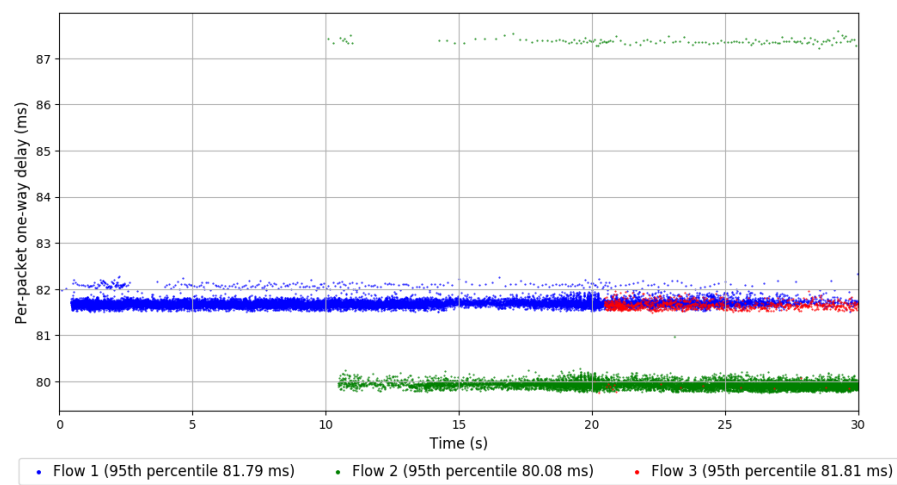
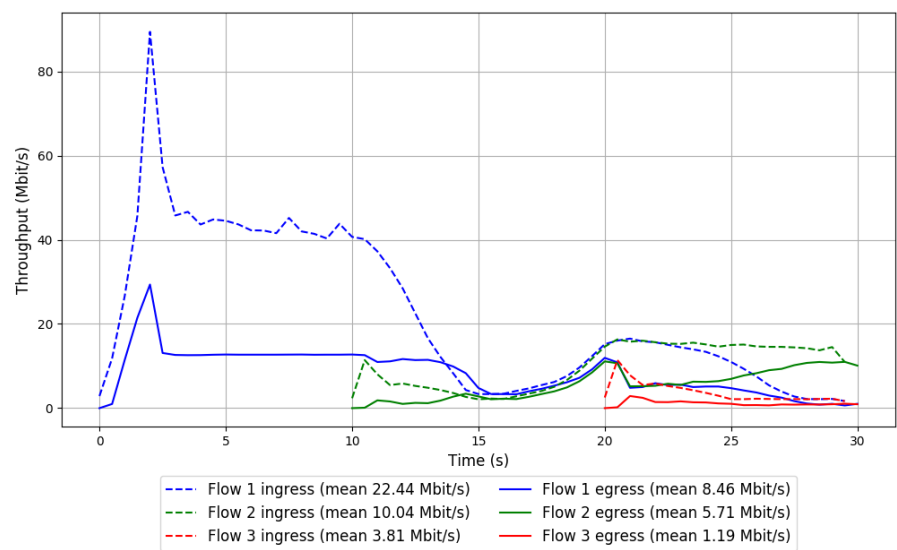
-- Flow 3:

Average throughput: 1.19 Mbit/s

95th percentile per-packet one-way delay: 81.805 ms

Loss rate: 68.88%

Run 4: Report of PCC-Expr — Data Link

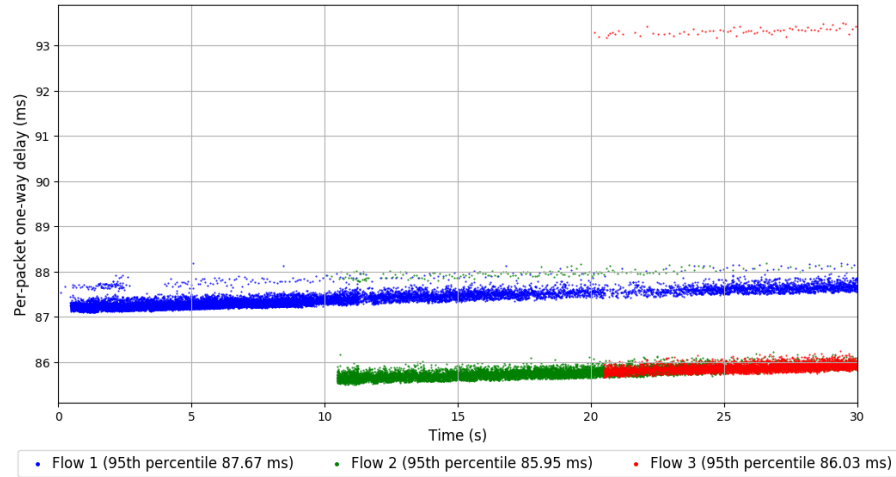
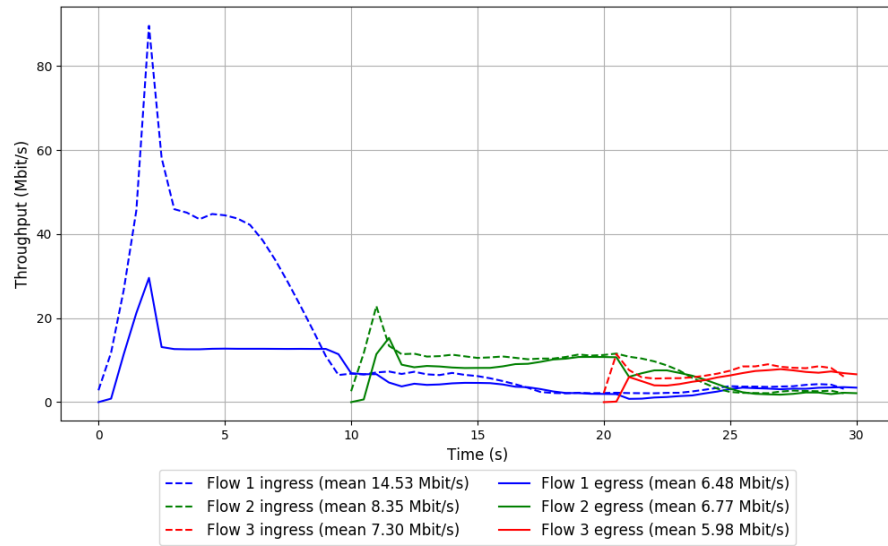


Run 5: Statistics of PCC-Expr

Start at: 2018-11-15 06:26:45  
End at: 2018-11-15 06:27:15  
Local clock offset: -8.334 ms  
Remote clock offset: 10.469 ms

# Below is generated by plot.py at 2018-11-15 06:49:06  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.95 Mbit/s  
95th percentile per-packet one-way delay: 87.625 ms  
Loss rate: 42.41%  
-- Flow 1:  
Average throughput: 6.48 Mbit/s  
95th percentile per-packet one-way delay: 87.673 ms  
Loss rate: 55.42%  
-- Flow 2:  
Average throughput: 6.77 Mbit/s  
95th percentile per-packet one-way delay: 85.948 ms  
Loss rate: 18.93%  
-- Flow 3:  
Average throughput: 5.98 Mbit/s  
95th percentile per-packet one-way delay: 86.030 ms  
Loss rate: 18.05%

# Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-11-15 05:08:07

End at: 2018-11-15 05:08:37

Local clock offset: -5.559 ms

Remote clock offset: 4.664 ms

# Below is generated by plot.py at 2018-11-15 06:49:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 66.01 Mbit/s

95th percentile per-packet one-way delay: 106.922 ms

Loss rate: 0.53%

-- Flow 1:

Average throughput: 51.45 Mbit/s

95th percentile per-packet one-way delay: 106.958 ms

Loss rate: 0.61%

-- Flow 2:

Average throughput: 19.71 Mbit/s

95th percentile per-packet one-way delay: 106.787 ms

Loss rate: 0.24%

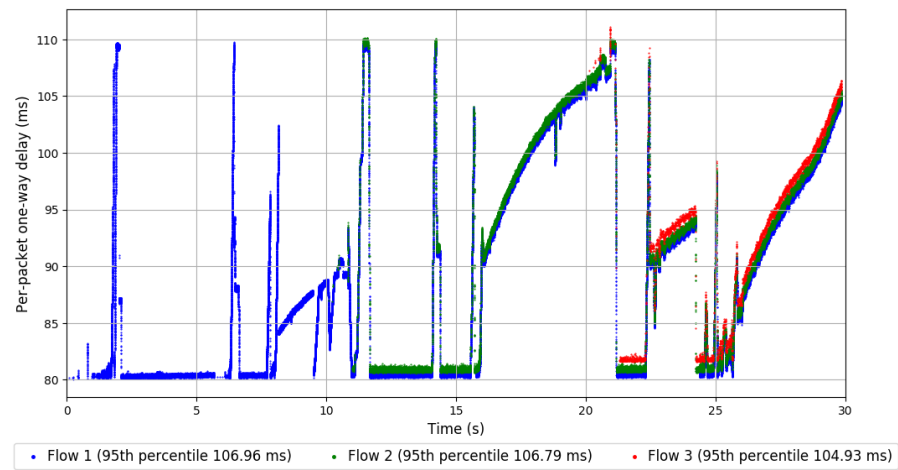
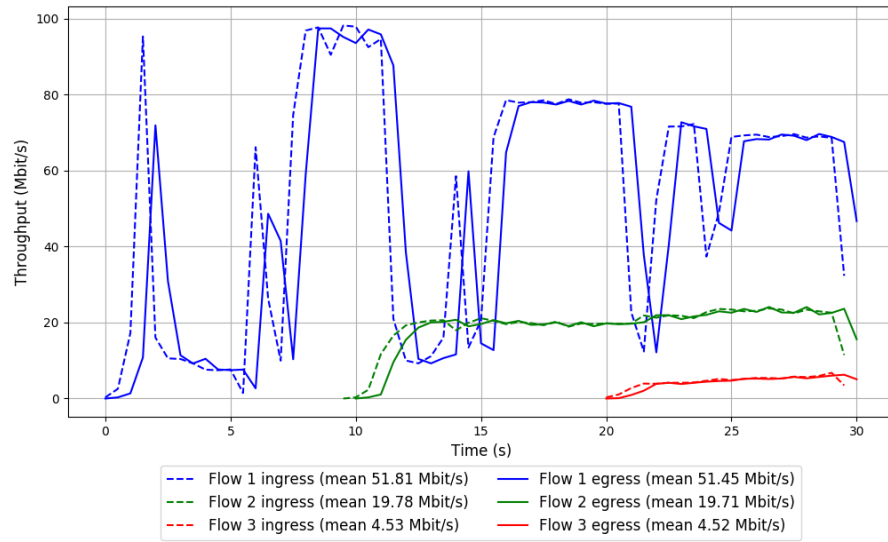
-- Flow 3:

Average throughput: 4.52 Mbit/s

95th percentile per-packet one-way delay: 104.929 ms

Loss rate: 0.39%

# Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-11-15 05:31:06

End at: 2018-11-15 05:31:36

Local clock offset: -4.563 ms

Remote clock offset: 5.765 ms

# Below is generated by plot.py at 2018-11-15 06:49:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 64.25 Mbit/s

95th percentile per-packet one-way delay: 105.224 ms

Loss rate: 0.68%

-- Flow 1:

Average throughput: 46.67 Mbit/s

95th percentile per-packet one-way delay: 105.646 ms

Loss rate: 0.81%

-- Flow 2:

Average throughput: 19.87 Mbit/s

95th percentile per-packet one-way delay: 101.922 ms

Loss rate: 0.30%

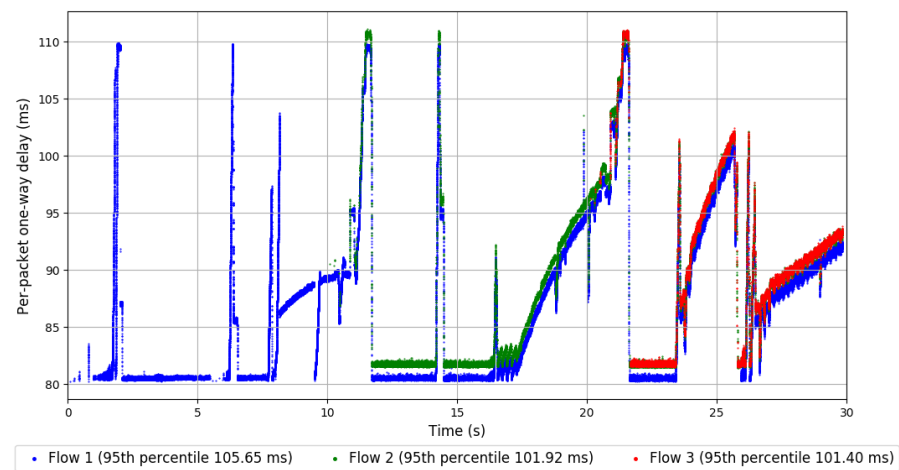
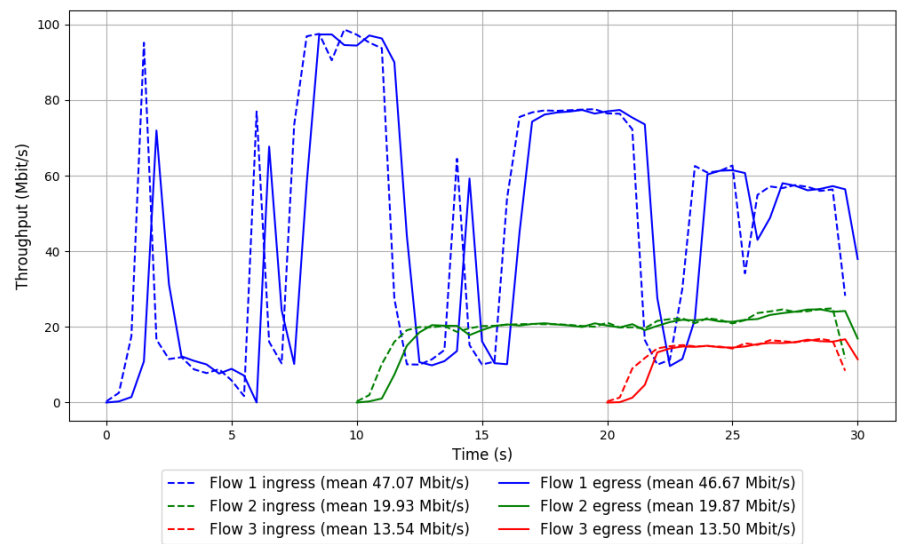
-- Flow 3:

Average throughput: 13.50 Mbit/s

95th percentile per-packet one-way delay: 101.399 ms

Loss rate: 0.35%

Run 2: Report of QUIC Cubic — Data Link





Run 3: Statistics of QUIC Cubic

Start at: 2018-11-15 05:53:52

End at: 2018-11-15 05:54:22

Local clock offset: -8.689 ms

Remote clock offset: 4.755 ms

# Below is generated by plot.py at 2018-11-15 06:49:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 62.81 Mbit/s

95th percentile per-packet one-way delay: 106.426 ms

Loss rate: 0.61%

-- Flow 1:

Average throughput: 46.96 Mbit/s

95th percentile per-packet one-way delay: 105.988 ms

Loss rate: 0.73%

-- Flow 2:

Average throughput: 19.53 Mbit/s

95th percentile per-packet one-way delay: 107.262 ms

Loss rate: 0.28%

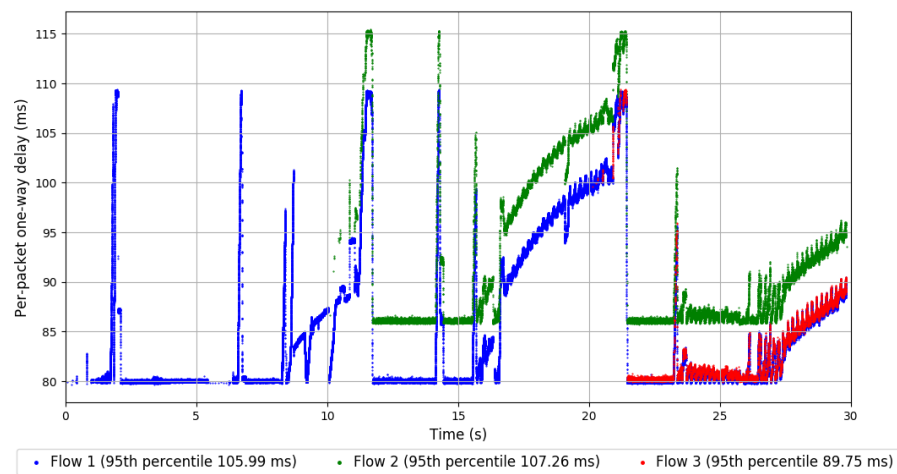
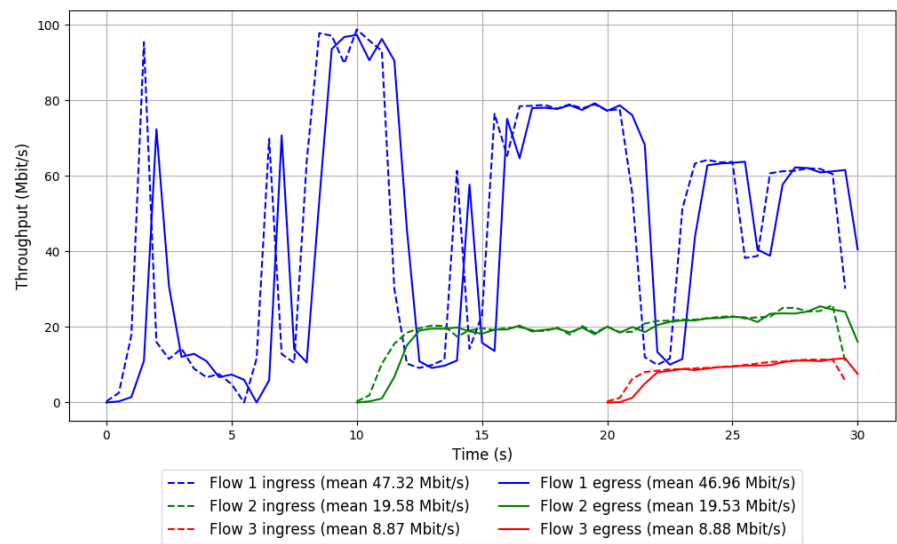
-- Flow 3:

Average throughput: 8.88 Mbit/s

95th percentile per-packet one-way delay: 89.746 ms

Loss rate: 0.04%

Run 3: Report of QUIC Cubic — Data Link



Run 4: Statistics of QUIC Cubic

Start at: 2018-11-15 06:16:41

End at: 2018-11-15 06:17:11

Local clock offset: -8.605 ms

Remote clock offset: 4.478 ms

# Below is generated by plot.py at 2018-11-15 06:49:06

# Datalink statistics

-- Total of 3 flows:

Average throughput: 59.13 Mbit/s

95th percentile per-packet one-way delay: 107.949 ms

Loss rate: 0.76%

-- Flow 1:

Average throughput: 44.47 Mbit/s

95th percentile per-packet one-way delay: 109.189 ms

Loss rate: 0.89%

-- Flow 2:

Average throughput: 16.55 Mbit/s

95th percentile per-packet one-way delay: 107.228 ms

Loss rate: 0.35%

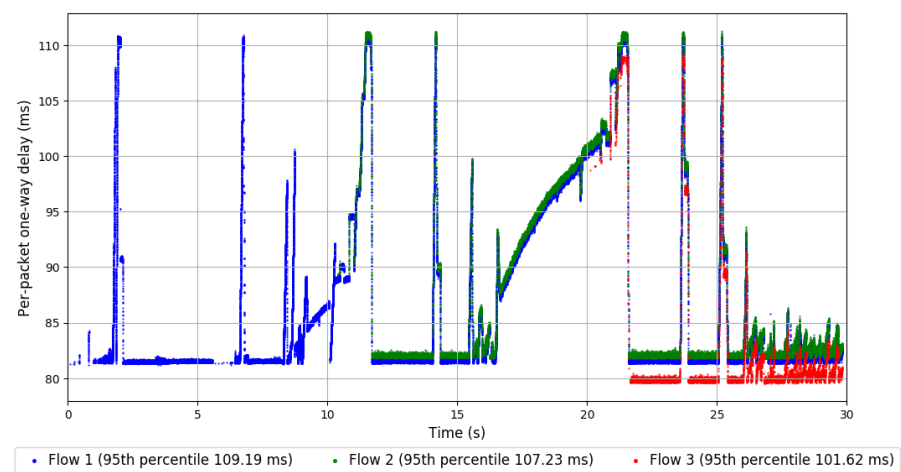
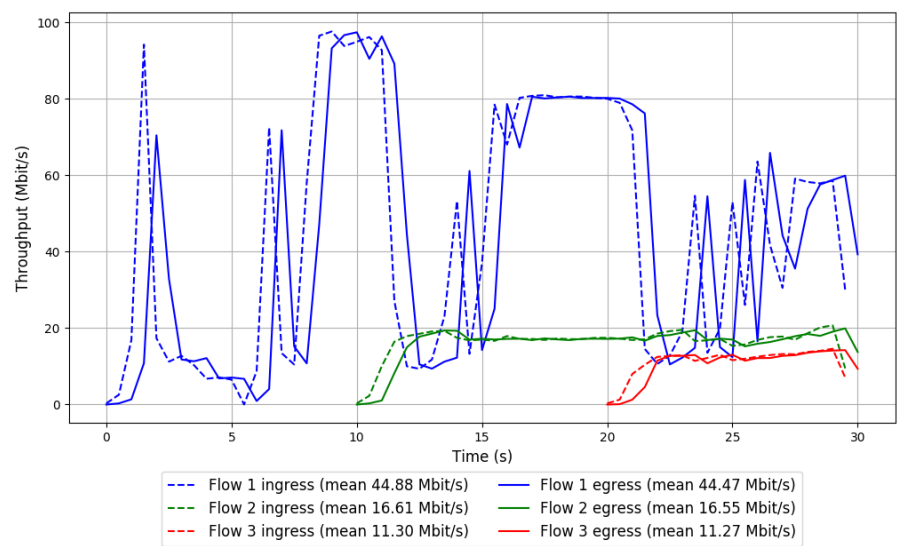
-- Flow 3:

Average throughput: 11.27 Mbit/s

95th percentile per-packet one-way delay: 101.624 ms

Loss rate: 0.42%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-11-15 06:39:28

End at: 2018-11-15 06:39:58

Local clock offset: -1.695 ms

Remote clock offset: 5.487 ms

# Below is generated by plot.py at 2018-11-15 06:49:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 65.77 Mbit/s

95th percentile per-packet one-way delay: 105.516 ms

Loss rate: 0.52%

-- Flow 1:

Average throughput: 49.50 Mbit/s

95th percentile per-packet one-way delay: 106.081 ms

Loss rate: 0.62%

-- Flow 2:

Average throughput: 20.47 Mbit/s

95th percentile per-packet one-way delay: 105.598 ms

Loss rate: 0.23%

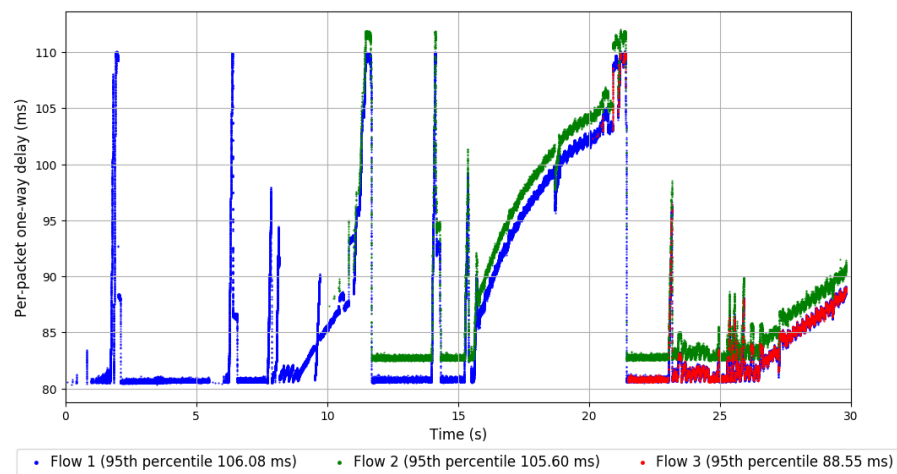
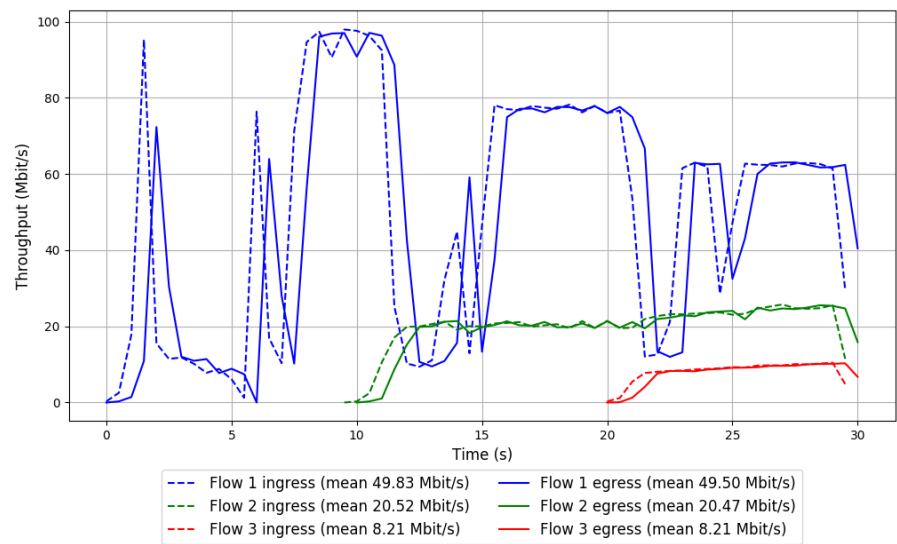
-- Flow 3:

Average throughput: 8.21 Mbit/s

95th percentile per-packet one-way delay: 88.545 ms

Loss rate: 0.13%

Run 5: Report of QUIC Cubic — Data Link

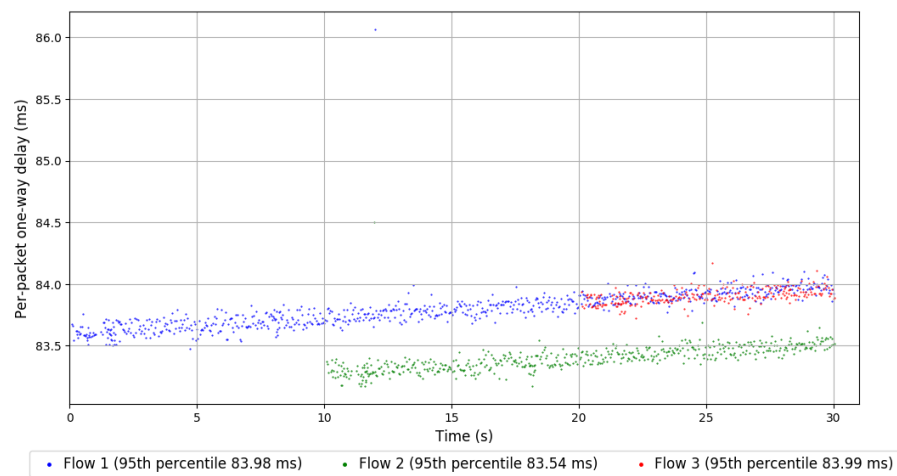
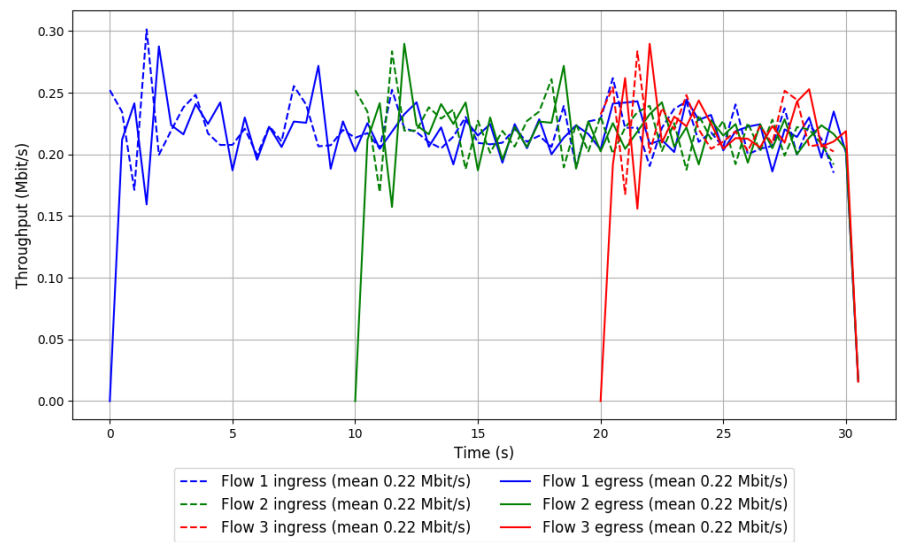


```
Run 1: Statistics of SReAM

Start at: 2018-11-15 04:59:12
End at: 2018-11-15 04:59:42
Local clock offset: -9.212 ms
Remote clock offset: 8.374 ms

# Below is generated by plot.py at 2018-11-15 06:49:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 83.975 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 83.984 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 83.537 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 83.994 ms
Loss rate: 0.00%
```

Run 1: Report of SReAM — Data Link





Run 2: Statistics of SReAM

Start at: 2018-11-15 05:22:08

End at: 2018-11-15 05:22:38

Local clock offset: -3.27 ms

Remote clock offset: 9.384 ms

# Below is generated by plot.py at 2018-11-15 06:49:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 86.086 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 84.240 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.127 ms

Loss rate: 0.00%

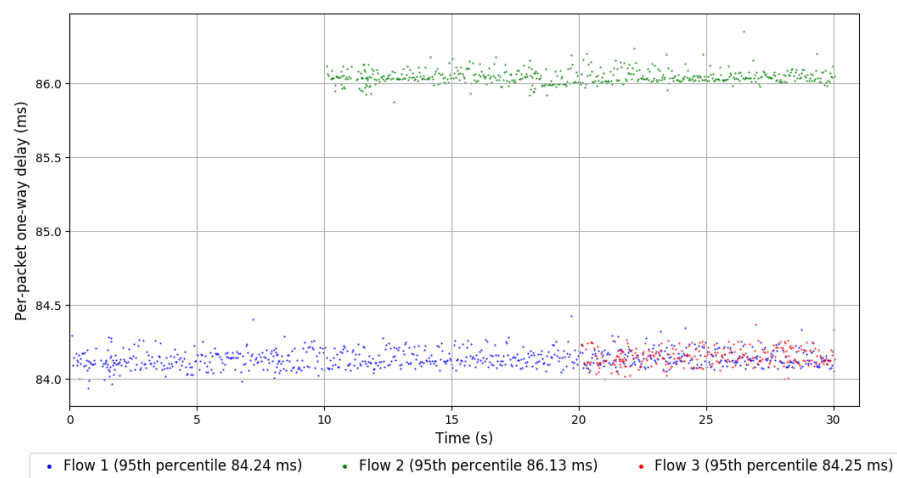
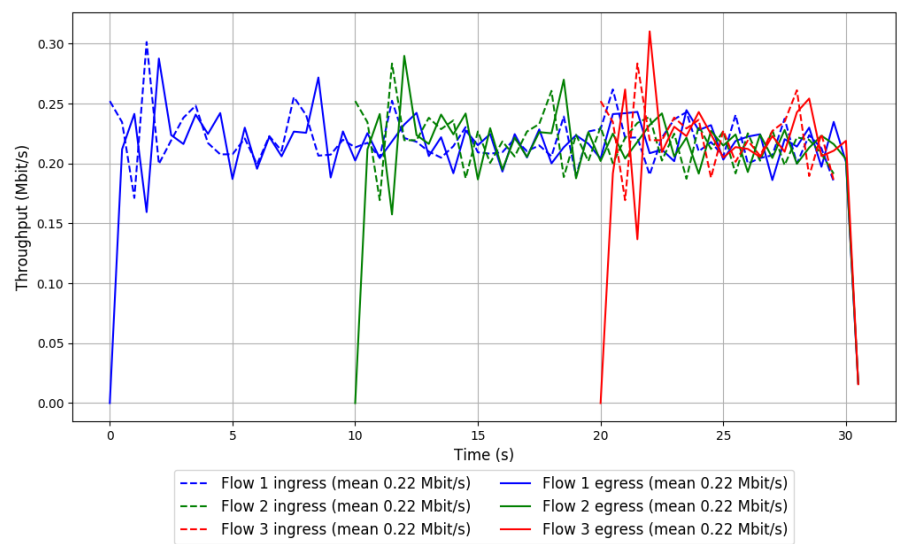
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 84.246 ms

Loss rate: 0.00%

Run 2: Report of SReAM — Data Link



Run 3: Statistics of SCReAM

Start at: 2018-11-15 05:44:57

End at: 2018-11-15 05:45:27

Local clock offset: -7.72 ms

Remote clock offset: 9.444 ms

# Below is generated by plot.py at 2018-11-15 06:49:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.27 Mbit/s

95th percentile per-packet one-way delay: 87.317 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.13 Mbit/s

95th percentile per-packet one-way delay: 85.453 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.09 Mbit/s

95th percentile per-packet one-way delay: 84.626 ms

Loss rate: 0.00%

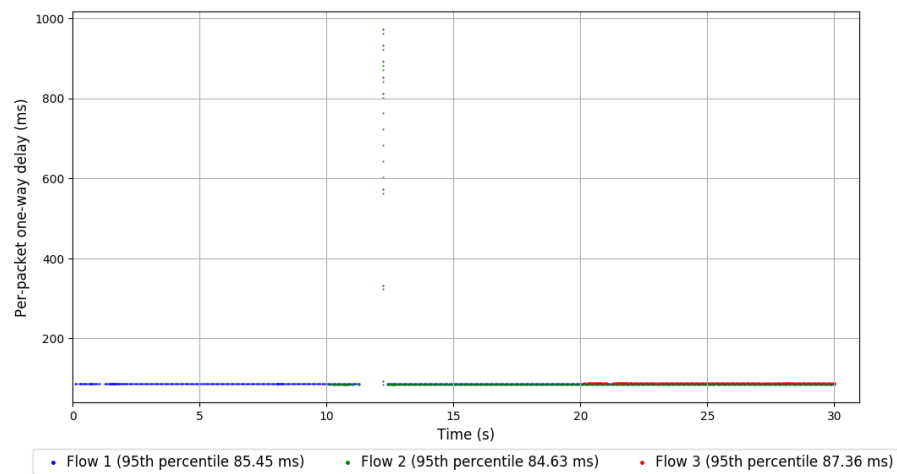
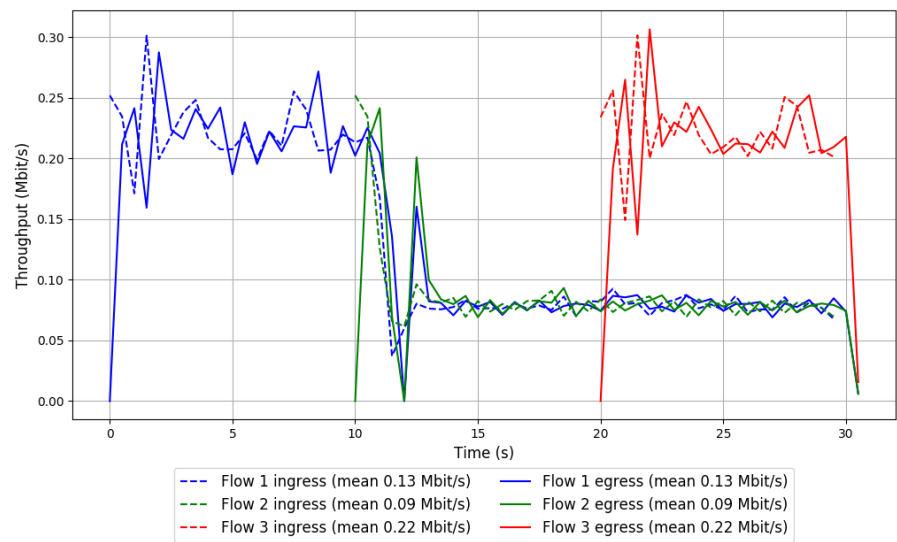
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 87.358 ms

Loss rate: 0.00%

Run 3: Report of SCRaM — Data Link



Run 4: Statistics of SReAM

Start at: 2018-11-15 06:07:45

End at: 2018-11-15 06:08:15

Local clock offset: -8.375 ms

Remote clock offset: 9.584 ms

# Below is generated by plot.py at 2018-11-15 06:49:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 86.525 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 85.602 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 85.814 ms

Loss rate: 0.00%

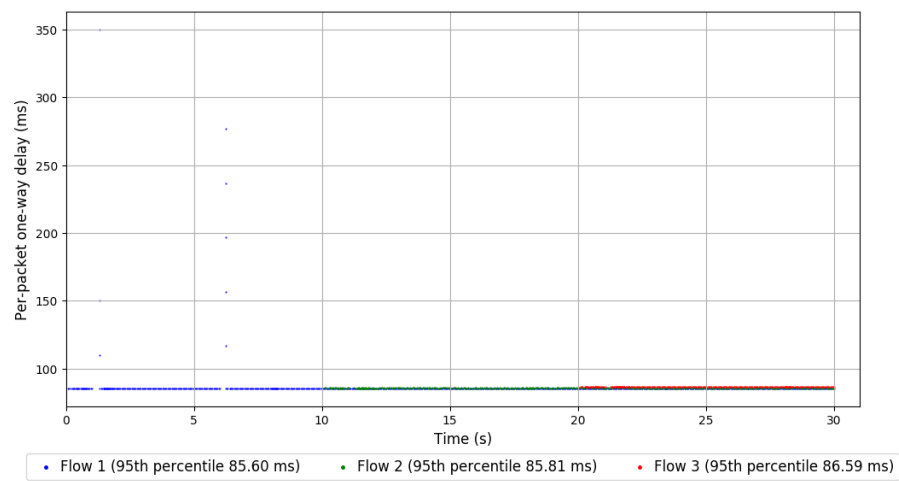
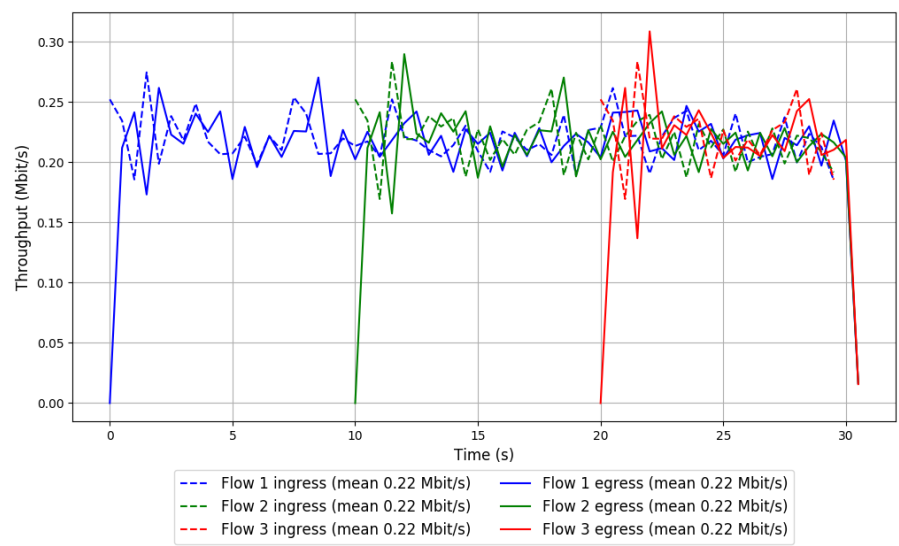
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.588 ms

Loss rate: 0.00%

Run 4: Report of SReAM — Data Link



Run 5: Statistics of SReAM

Start at: 2018-11-15 06:30:31

End at: 2018-11-15 06:31:01

Local clock offset: -5.376 ms

Remote clock offset: 5.526 ms

# Below is generated by plot.py at 2018-11-15 06:49:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 82.955 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 82.467 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 82.489 ms

Loss rate: 0.00%

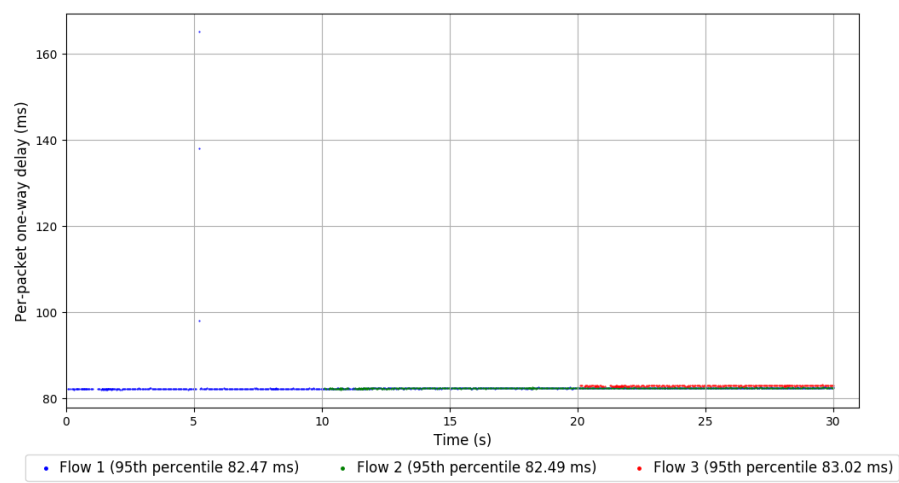
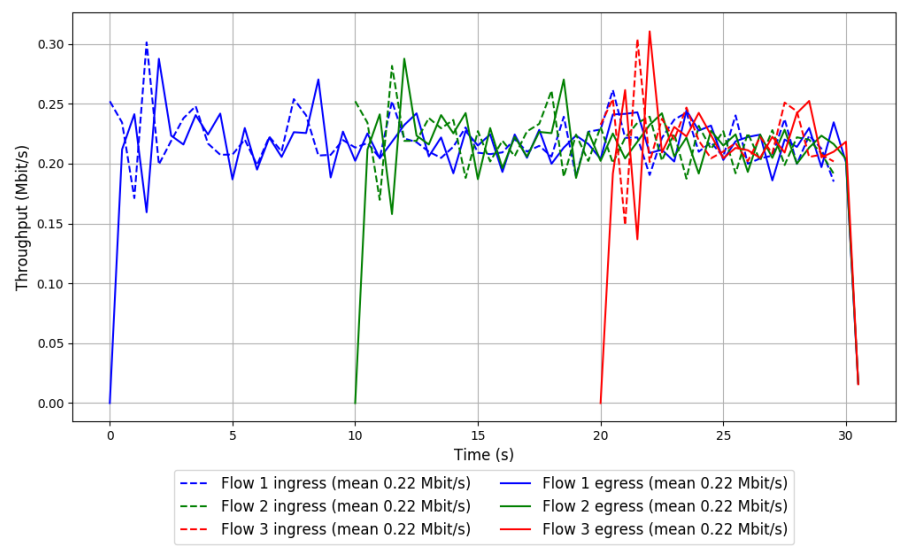
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 83.016 ms

Loss rate: 0.00%

Run 5: Report of SReAM — Data Link



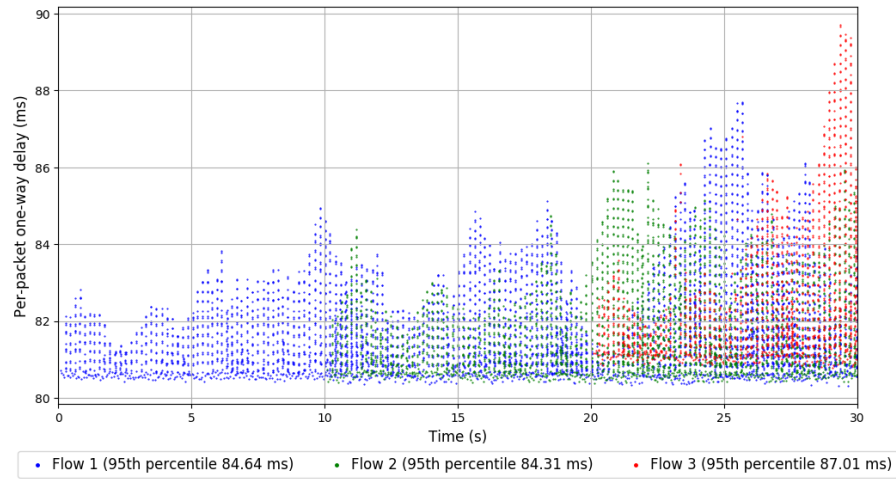
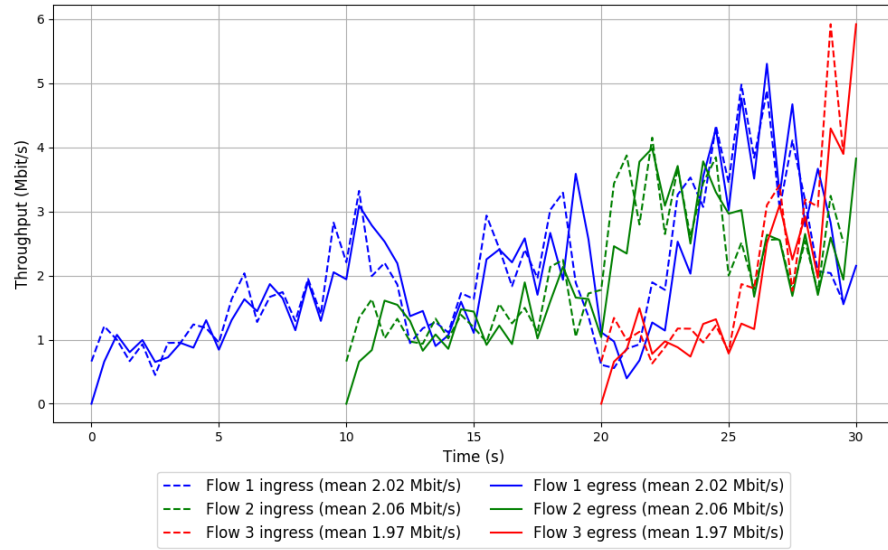


Run 1: Statistics of Sprout

Start at: 2018-11-15 04:49:16  
End at: 2018-11-15 04:49:46  
Local clock offset: -10.359 ms  
Remote clock offset: 4.629 ms

# Below is generated by plot.py at 2018-11-15 06:49:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 4.03 Mbit/s  
95th percentile per-packet one-way delay: 84.899 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 2.02 Mbit/s  
95th percentile per-packet one-way delay: 84.635 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 2.06 Mbit/s  
95th percentile per-packet one-way delay: 84.314 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 1.97 Mbit/s  
95th percentile per-packet one-way delay: 87.011 ms  
Loss rate: 0.00%

## Run 1: Report of Sprout — Data Link

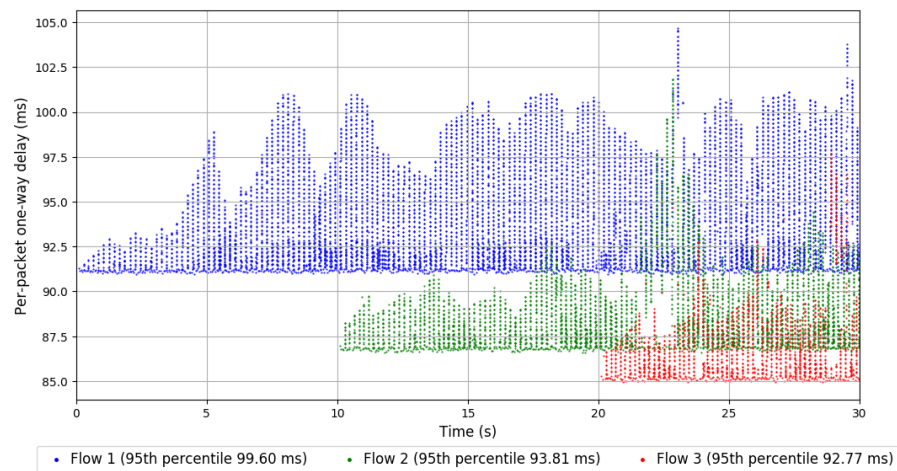
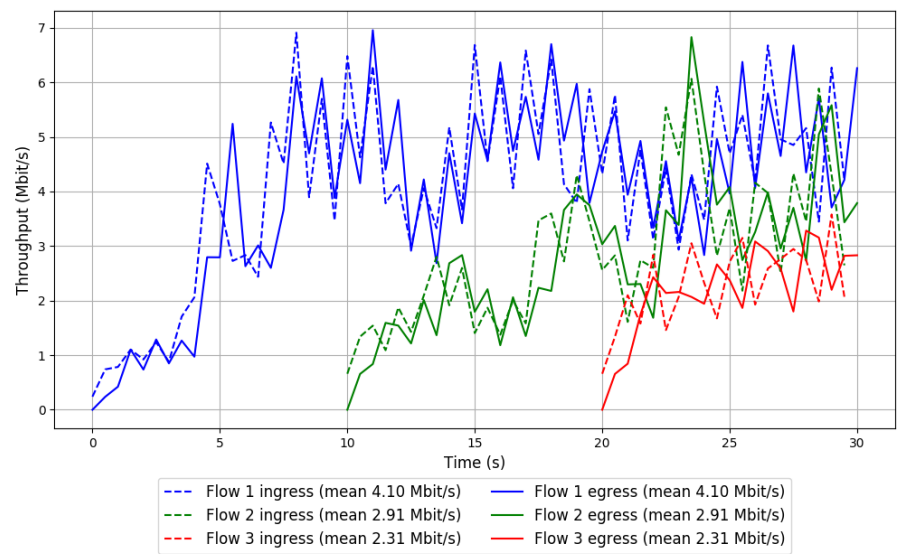


## Run 2: Statistics of Sprout

Start at: 2018-11-15 05:12:02  
End at: 2018-11-15 05:12:32  
Local clock offset: -4.018 ms  
Remote clock offset: 10.696 ms

```
# Below is generated by plot.py at 2018-11-15 06:49:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 6.81 Mbit/s
95th percentile per-packet one-way delay: 99.029 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 4.10 Mbit/s
95th percentile per-packet one-way delay: 99.601 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 2.91 Mbit/s
95th percentile per-packet one-way delay: 93.805 ms
Loss rate: 0.03%
-- Flow 3:
Average throughput: 2.31 Mbit/s
95th percentile per-packet one-way delay: 92.771 ms
Loss rate: 0.00%
```

Run 2: Report of Sprout — Data Link

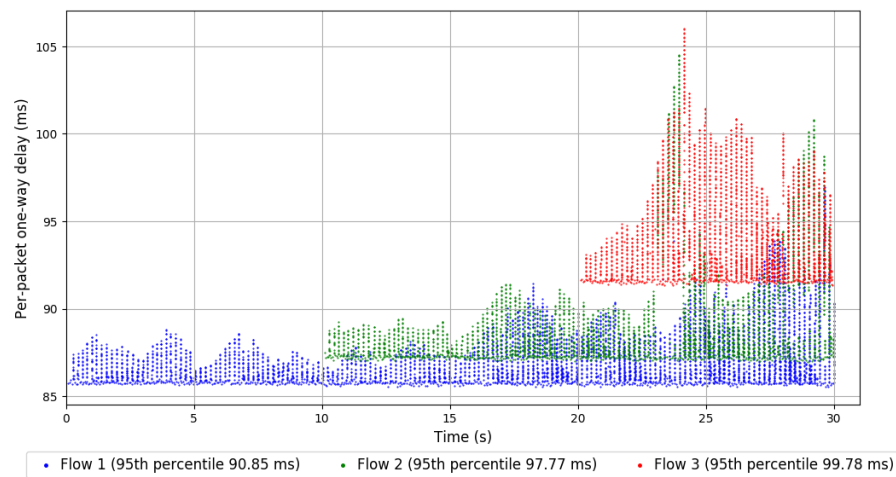
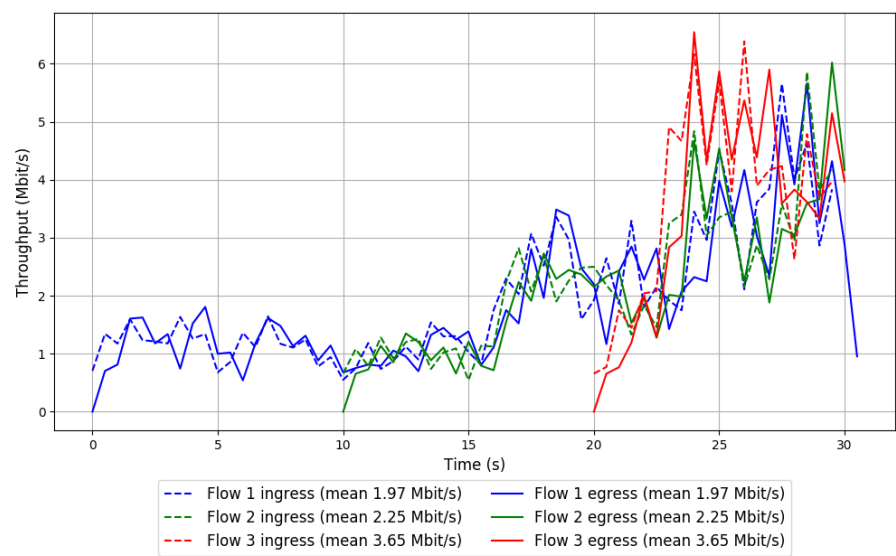


Run 3: Statistics of Sprout

Start at: 2018-11-15 05:35:00  
End at: 2018-11-15 05:35:30  
Local clock offset: -6.25 ms  
Remote clock offset: 10.624 ms

# Below is generated by plot.py at 2018-11-15 06:49:14  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 4.67 Mbit/s  
95th percentile per-packet one-way delay: 98.063 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.97 Mbit/s  
95th percentile per-packet one-way delay: 90.847 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 2.25 Mbit/s  
95th percentile per-packet one-way delay: 97.772 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 3.65 Mbit/s  
95th percentile per-packet one-way delay: 99.778 ms  
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link



#### Run 4: Statistics of Sprout

Start at: 2018-11-15 05:57:47

End at: 2018-11-15 05:58:17

Local clock offset: -8.825 ms

Remote clock offset: 9.593 ms

# Below is generated by plot.py at 2018-11-15 06:49:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 5.13 Mbit/s

95th percentile per-packet one-way delay: 92.302 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 2.47 Mbit/s

95th percentile per-packet one-way delay: 92.964 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 2.99 Mbit/s

95th percentile per-packet one-way delay: 92.047 ms

Loss rate: 0.00%

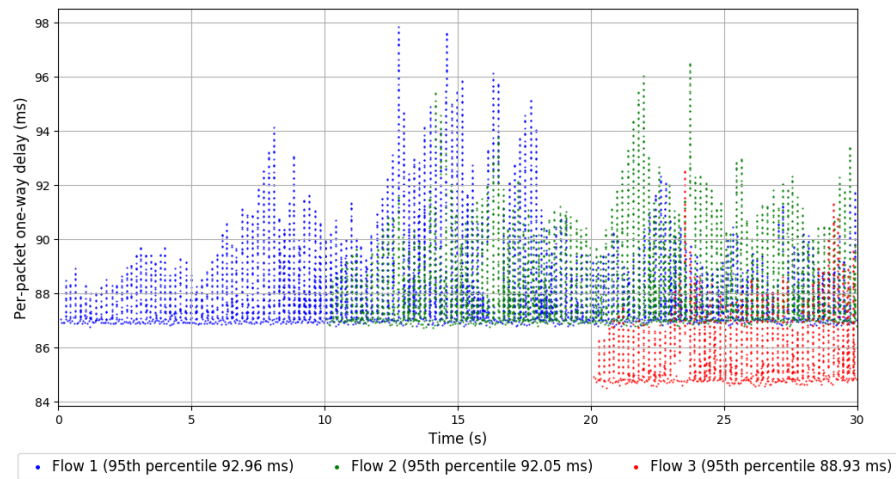
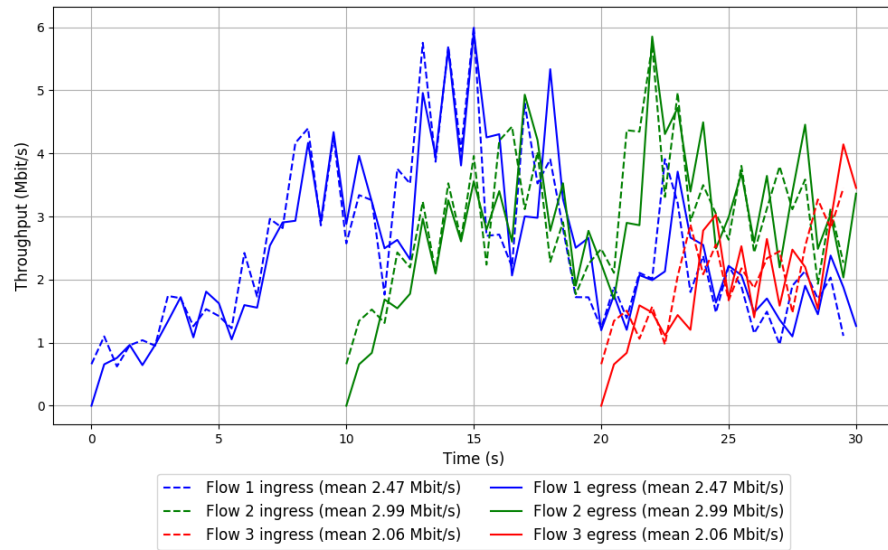
-- Flow 3:

Average throughput: 2.06 Mbit/s

95th percentile per-packet one-way delay: 88.928 ms

Loss rate: 0.00%

#### Run 4: Report of Sprout — Data Link





Run 5: Statistics of Sprout

Start at: 2018-11-15 06:20:35

End at: 2018-11-15 06:21:05

Local clock offset: -8.01 ms

Remote clock offset: 8.29 ms

# Below is generated by plot.py at 2018-11-15 06:49:14

# Datalink statistics

-- Total of 3 flows:

Average throughput: 6.43 Mbit/s

95th percentile per-packet one-way delay: 94.140 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 2.88 Mbit/s

95th percentile per-packet one-way delay: 88.004 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 3.30 Mbit/s

95th percentile per-packet one-way delay: 96.044 ms

Loss rate: 0.00%

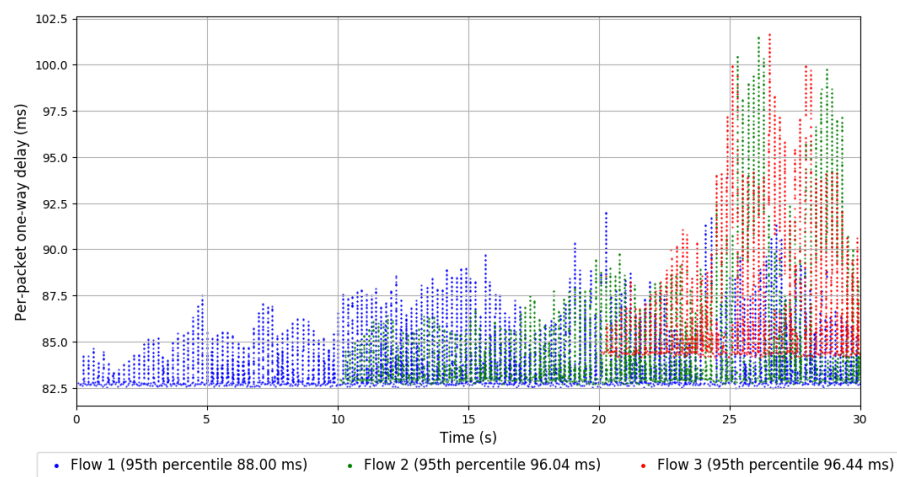
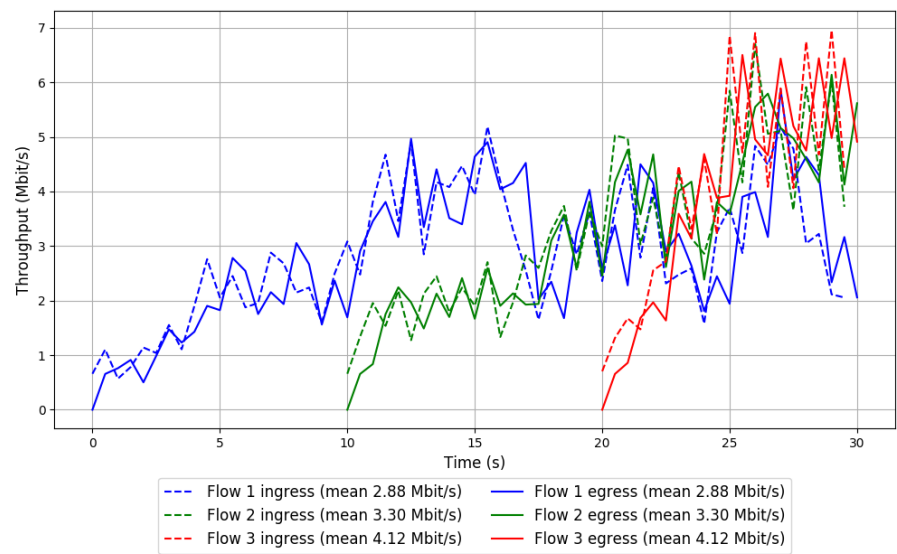
-- Flow 3:

Average throughput: 4.12 Mbit/s

95th percentile per-packet one-way delay: 96.439 ms

Loss rate: 0.00%

Run 5: Report of Sprout — Data Link

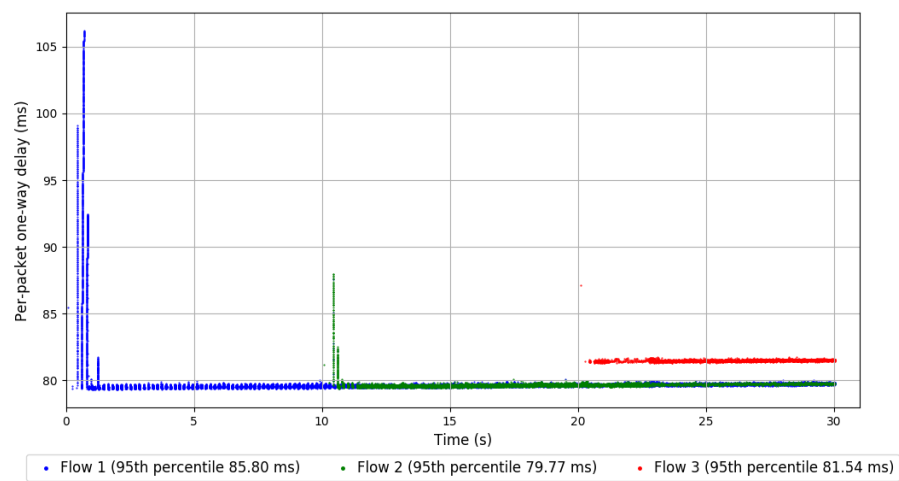
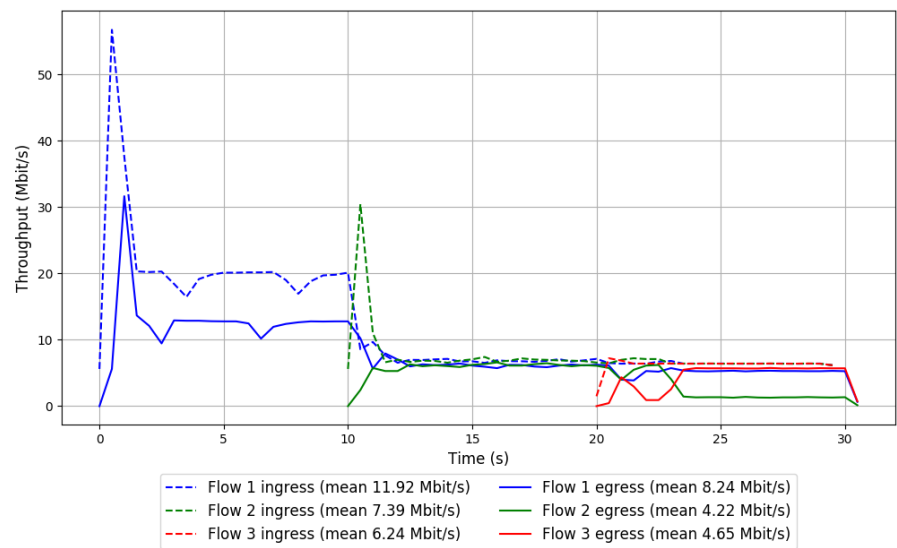


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-11-15 05:00:24
End at: 2018-11-15 05:00:54
Local clock offset: -8.35 ms
Remote clock offset: 4.612 ms

# Below is generated by plot.py at 2018-11-15 06:49:16
# Datalink statistics
-- Total of 3 flows:
Average throughput: 12.59 Mbit/s
95th percentile per-packet one-way delay: 81.548 ms
Loss rate: 33.42%
-- Flow 1:
Average throughput: 8.24 Mbit/s
95th percentile per-packet one-way delay: 85.801 ms
Loss rate: 30.85%
-- Flow 2:
Average throughput: 4.22 Mbit/s
95th percentile per-packet one-way delay: 79.766 ms
Loss rate: 42.95%
-- Flow 3:
Average throughput: 4.65 Mbit/s
95th percentile per-packet one-way delay: 81.543 ms
Loss rate: 25.58%
```

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

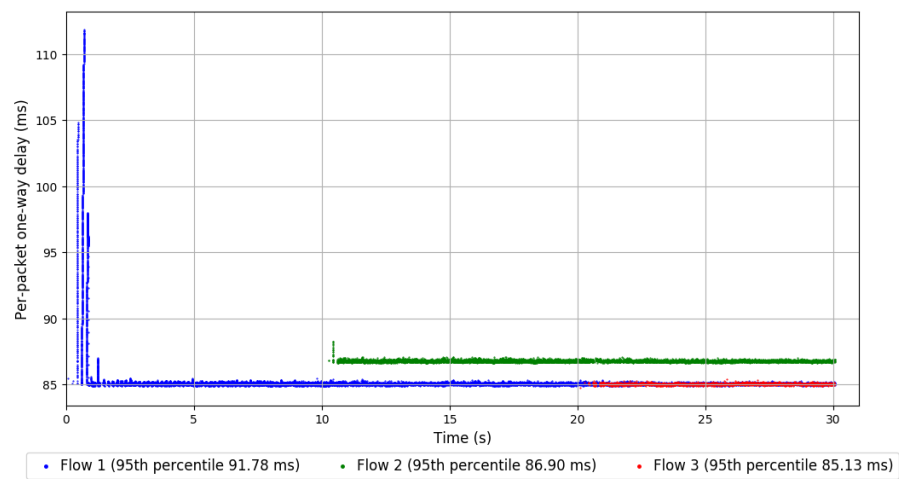
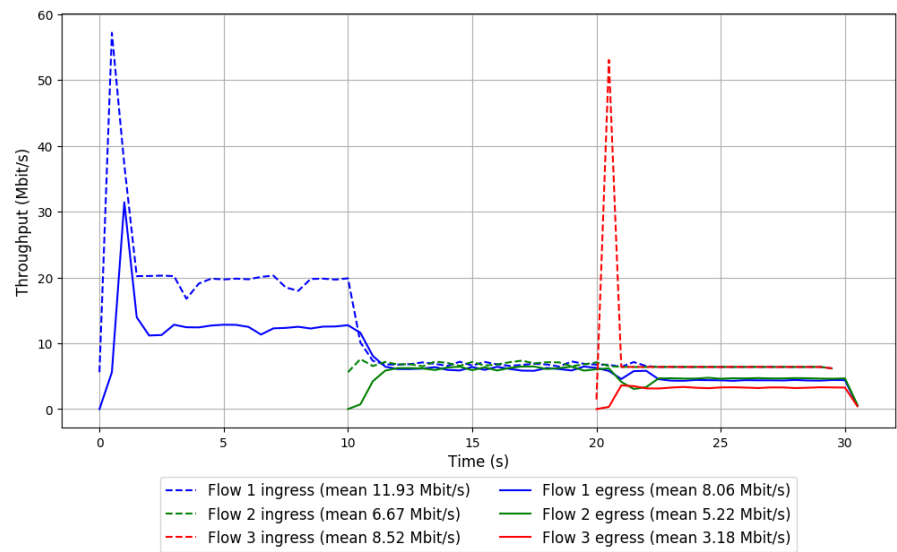


Run 2: Statistics of TaoVA-100x

Start at: 2018-11-15 05:23:21  
End at: 2018-11-15 05:23:51  
Local clock offset: -3.251 ms  
Remote clock offset: 10.581 ms

# Below is generated by plot.py at 2018-11-15 06:49:17  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 12.59 Mbit/s  
95th percentile per-packet one-way delay: 86.928 ms  
Loss rate: 34.40%  
-- Flow 1:  
Average throughput: 8.06 Mbit/s  
95th percentile per-packet one-way delay: 91.785 ms  
Loss rate: 32.40%  
-- Flow 2:  
Average throughput: 5.22 Mbit/s  
95th percentile per-packet one-way delay: 86.900 ms  
Loss rate: 21.73%  
-- Flow 3:  
Average throughput: 3.18 Mbit/s  
95th percentile per-packet one-way delay: 85.132 ms  
Loss rate: 62.73%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-11-15 05:46:10

End at: 2018-11-15 05:46:40

Local clock offset: -7.917 ms

Remote clock offset: 4.693 ms

# Below is generated by plot.py at 2018-11-15 06:49:17

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.59 Mbit/s

95th percentile per-packet one-way delay: 81.922 ms

Loss rate: 28.73%

-- Flow 1:

Average throughput: 8.89 Mbit/s

95th percentile per-packet one-way delay: 86.821 ms

Loss rate: 30.54%

-- Flow 2:

Average throughput: 5.00 Mbit/s

95th percentile per-packet one-way delay: 81.773 ms

Loss rate: 18.31%

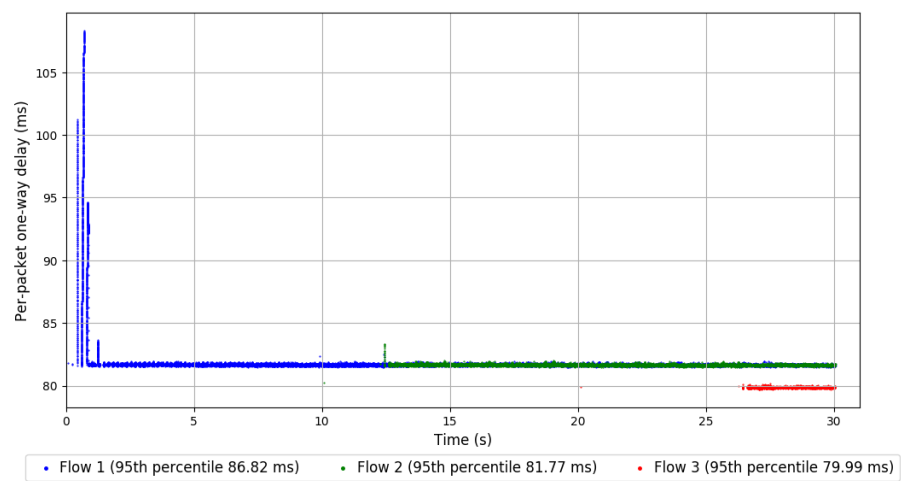
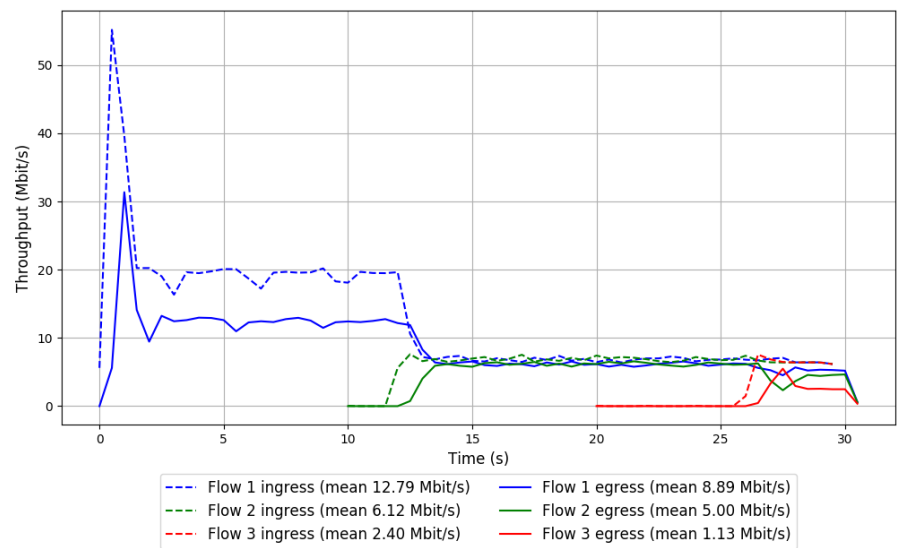
-- Flow 3:

Average throughput: 1.13 Mbit/s

95th percentile per-packet one-way delay: 79.988 ms

Loss rate: 52.81%

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





Run 4: Statistics of TaoVA-100x

Start at: 2018-11-15 06:08:58

End at: 2018-11-15 06:09:28

Local clock offset: -8.396 ms

Remote clock offset: 5.838 ms

# Below is generated by plot.py at 2018-11-15 06:49:18

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.59 Mbit/s

95th percentile per-packet one-way delay: 82.878 ms

Loss rate: 35.63%

-- Flow 1:

Average throughput: 8.07 Mbit/s

95th percentile per-packet one-way delay: 87.694 ms

Loss rate: 32.53%

-- Flow 2:

Average throughput: 5.62 Mbit/s

95th percentile per-packet one-way delay: 81.147 ms

Loss rate: 21.65%

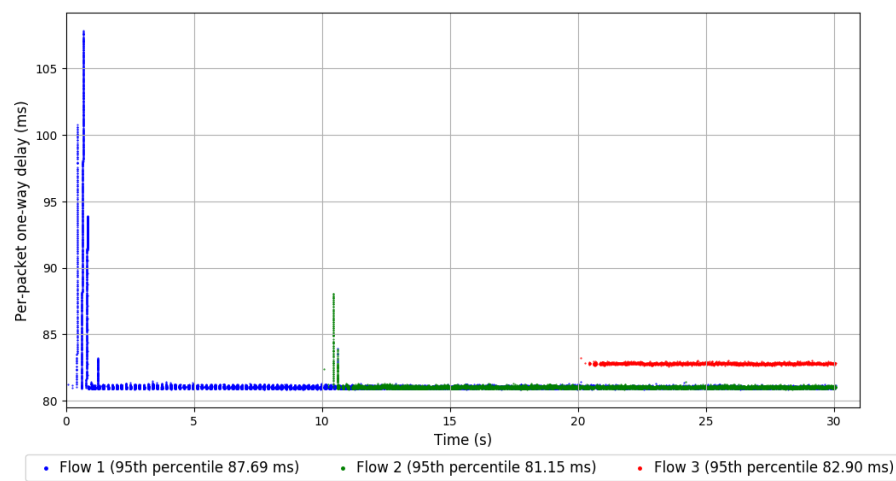
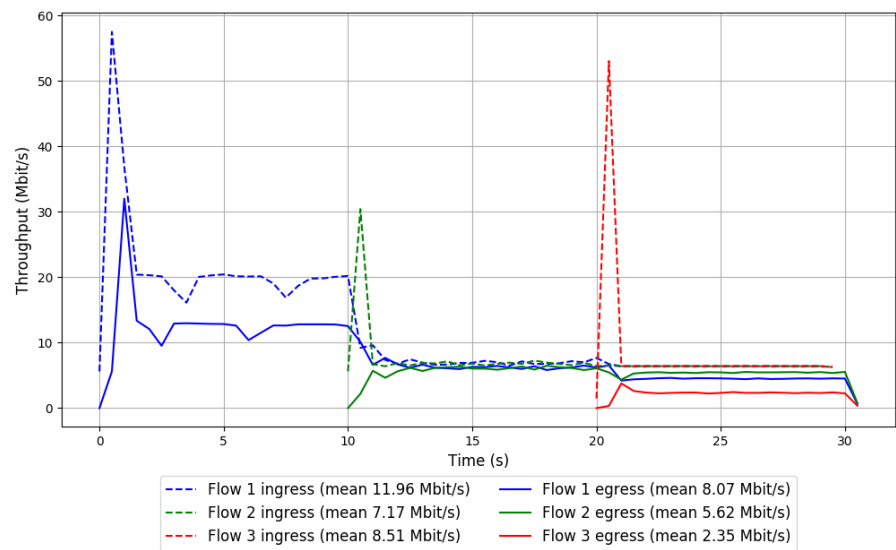
-- Flow 3:

Average throughput: 2.35 Mbit/s

95th percentile per-packet one-way delay: 82.899 ms

Loss rate: 72.36%

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



Run 5: Statistics of TaoVA-100x

Start at: 2018-11-15 06:31:44

End at: 2018-11-15 06:32:14

Local clock offset: -5.35 ms

Remote clock offset: 9.324 ms

# Below is generated by plot.py at 2018-11-15 06:49:31

# Datalink statistics

-- Total of 3 flows:

Average throughput: 12.59 Mbit/s

95th percentile per-packet one-way delay: 85.645 ms

Loss rate: 87.47%

-- Flow 1:

Average throughput: 6.69 Mbit/s

95th percentile per-packet one-way delay: 94.196 ms

Loss rate: 43.97%

-- Flow 2:

Average throughput: 3.22 Mbit/s

95th percentile per-packet one-way delay: 85.233 ms

Loss rate: 55.32%

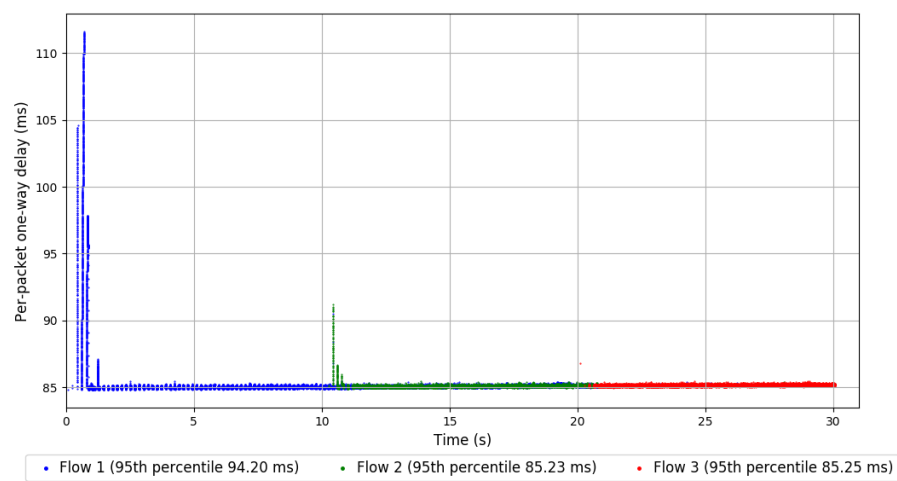
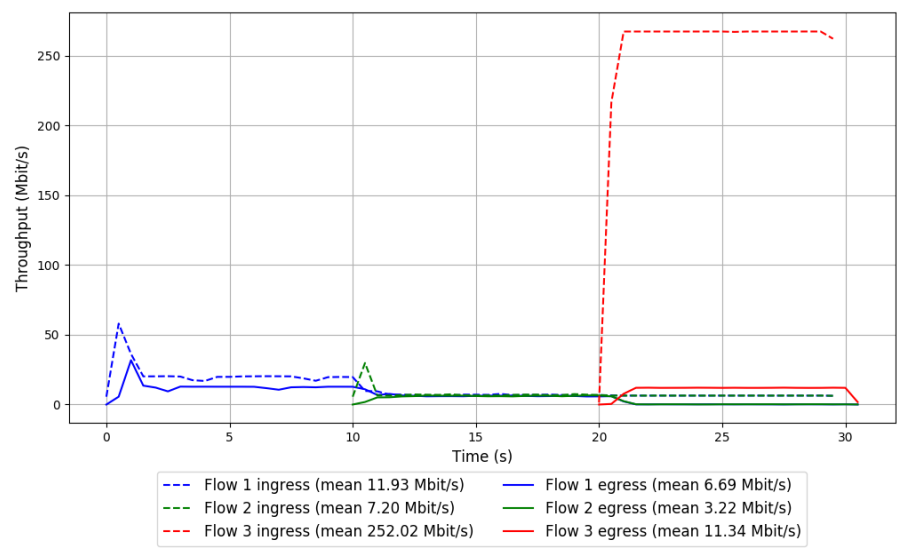
-- Flow 3:

Average throughput: 11.34 Mbit/s

95th percentile per-packet one-way delay: 85.247 ms

Loss rate: 95.50%

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

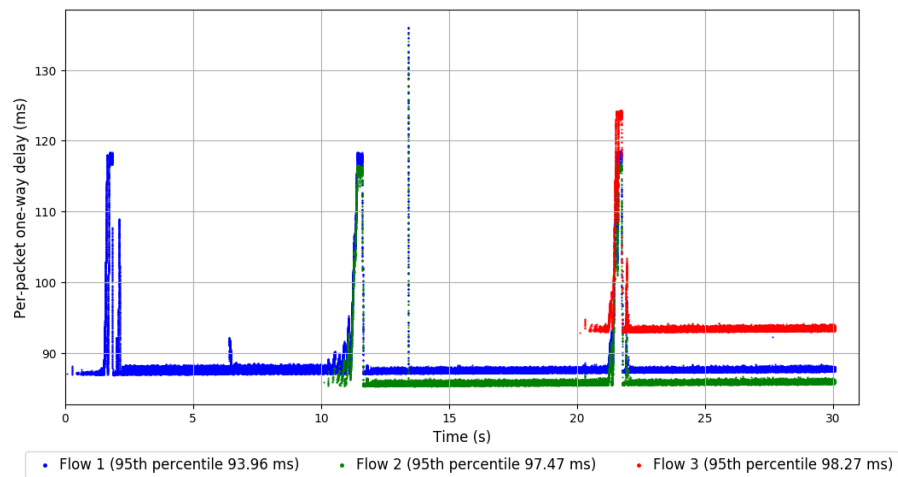
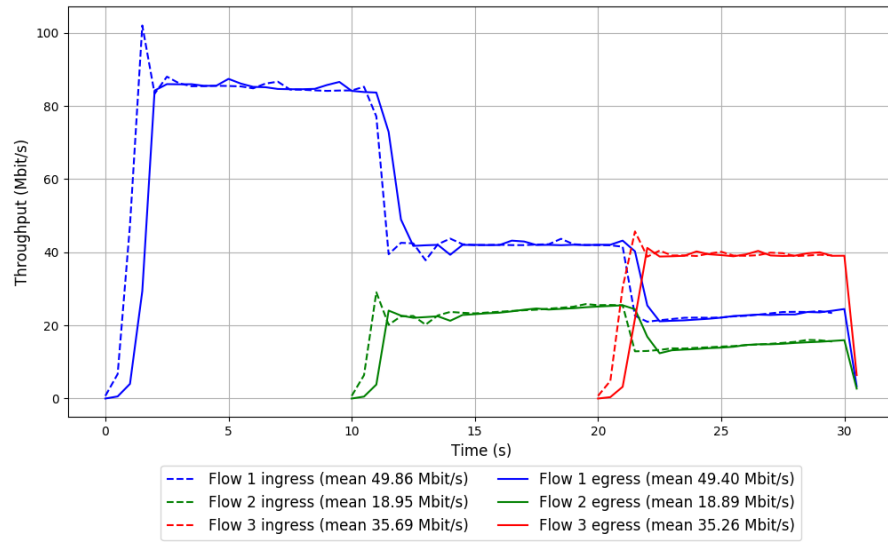


Run 1: Statistics of TCP Vegas

Start at: 2018-11-15 04:57:55  
End at: 2018-11-15 04:58:25  
Local clock offset: -10.315 ms  
Remote clock offset: 10.525 ms

# Below is generated by plot.py at 2018-11-15 06:49:58  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 73.69 Mbit/s  
95th percentile per-packet one-way delay: 95.299 ms  
Loss rate: 0.87%  
-- Flow 1:  
Average throughput: 49.40 Mbit/s  
95th percentile per-packet one-way delay: 93.961 ms  
Loss rate: 0.92%  
-- Flow 2:  
Average throughput: 18.89 Mbit/s  
95th percentile per-packet one-way delay: 97.471 ms  
Loss rate: 0.32%  
-- Flow 3:  
Average throughput: 35.26 Mbit/s  
95th percentile per-packet one-way delay: 98.272 ms  
Loss rate: 1.26%

# Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-11-15 05:20:50

End at: 2018-11-15 05:21:20

Local clock offset: -3.362 ms

Remote clock offset: 4.572 ms

# Below is generated by plot.py at 2018-11-15 06:50:03

# Datalink statistics

-- Total of 3 flows:

Average throughput: 75.70 Mbit/s

95th percentile per-packet one-way delay: 88.999 ms

Loss rate: 0.93%

-- Flow 1:

Average throughput: 48.87 Mbit/s

95th percentile per-packet one-way delay: 86.788 ms

Loss rate: 0.90%

-- Flow 2:

Average throughput: 17.89 Mbit/s

95th percentile per-packet one-way delay: 100.707 ms

Loss rate: 0.51%

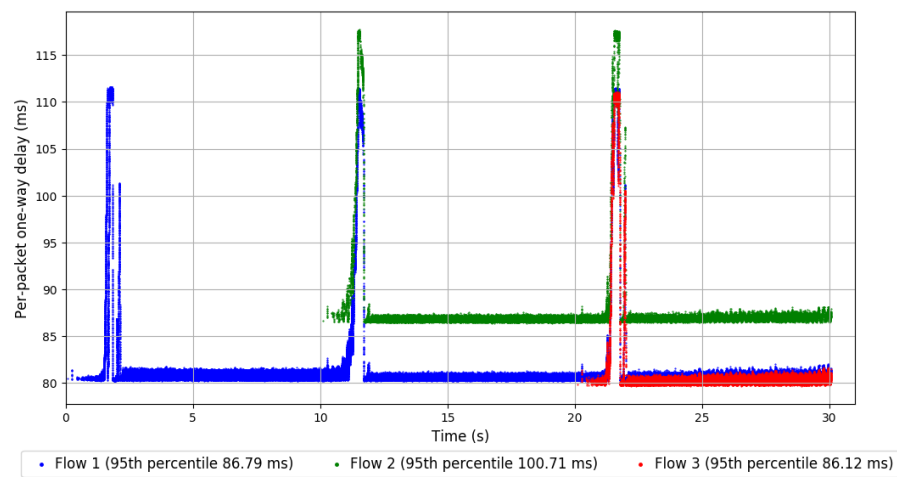
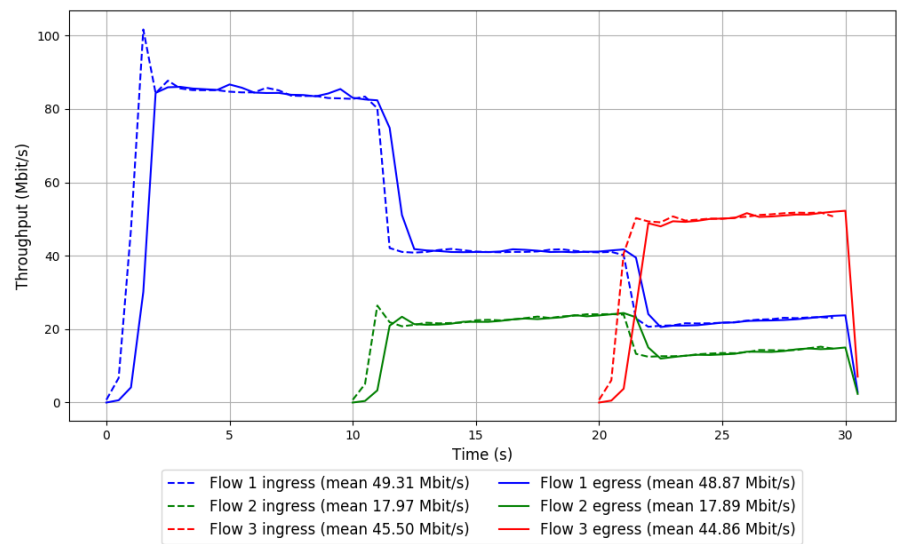
-- Flow 3:

Average throughput: 44.86 Mbit/s

95th percentile per-packet one-way delay: 86.124 ms

Loss rate: 1.38%

Run 2: Report of TCP Vegas — Data Link





Run 3: Statistics of TCP Vegas

Start at: 2018-11-15 05:43:40

End at: 2018-11-15 05:44:10

Local clock offset: -7.578 ms

Remote clock offset: 9.561 ms

# Below is generated by plot.py at 2018-11-15 06:50:09

# Datalink statistics

-- Total of 3 flows:

Average throughput: 77.73 Mbit/s

95th percentile per-packet one-way delay: 92.973 ms

Loss rate: 0.98%

-- Flow 1:

Average throughput: 50.05 Mbit/s

95th percentile per-packet one-way delay: 93.004 ms

Loss rate: 0.97%

-- Flow 2:

Average throughput: 23.46 Mbit/s

95th percentile per-packet one-way delay: 92.129 ms

Loss rate: 0.70%

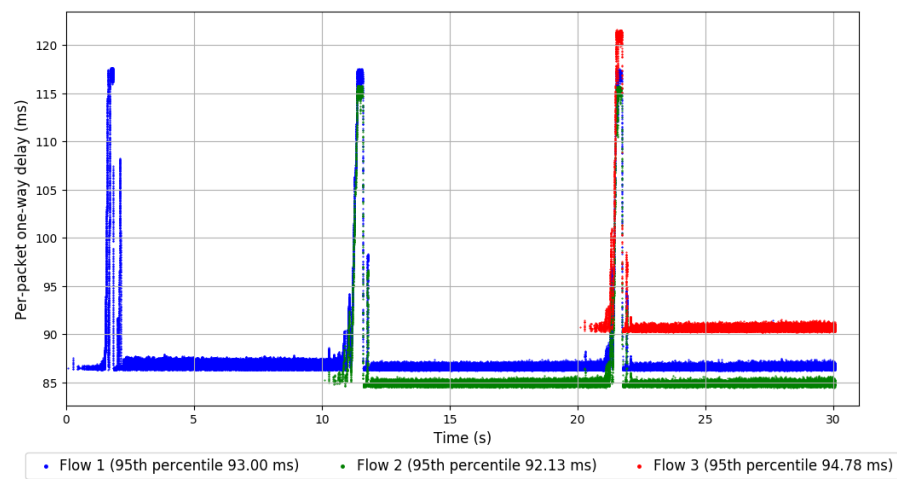
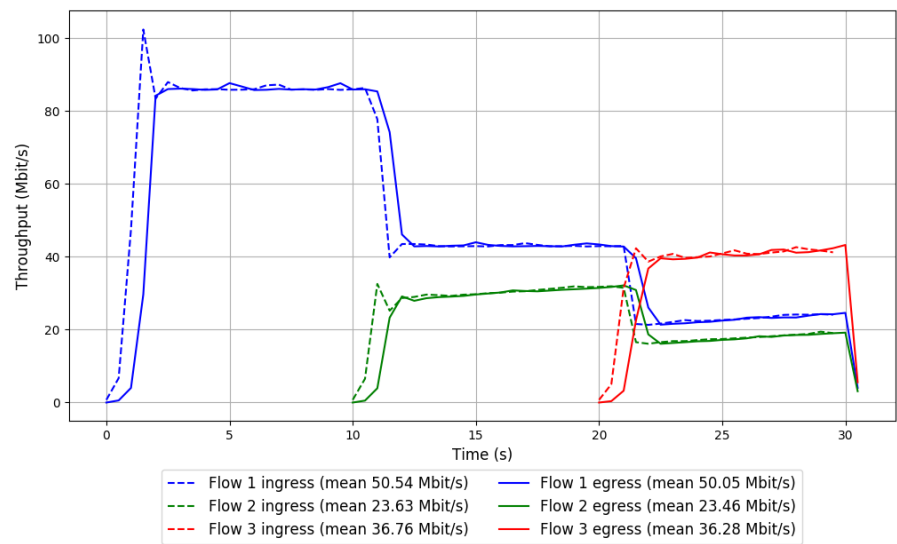
-- Flow 3:

Average throughput: 36.28 Mbit/s

95th percentile per-packet one-way delay: 94.776 ms

Loss rate: 1.34%

Run 3: Report of TCP Vegas — Data Link



Run 4: Statistics of TCP Vegas

Start at: 2018-11-15 06:06:28

End at: 2018-11-15 06:06:58

Local clock offset: -8.379 ms

Remote clock offset: 4.637 ms

# Below is generated by plot.py at 2018-11-15 06:50:11

# Datalink statistics

-- Total of 3 flows:

Average throughput: 77.40 Mbit/s

95th percentile per-packet one-way delay: 89.890 ms

Loss rate: 1.00%

-- Flow 1:

Average throughput: 48.33 Mbit/s

95th percentile per-packet one-way delay: 89.973 ms

Loss rate: 1.04%

-- Flow 2:

Average throughput: 25.35 Mbit/s

95th percentile per-packet one-way delay: 90.965 ms

Loss rate: 0.71%

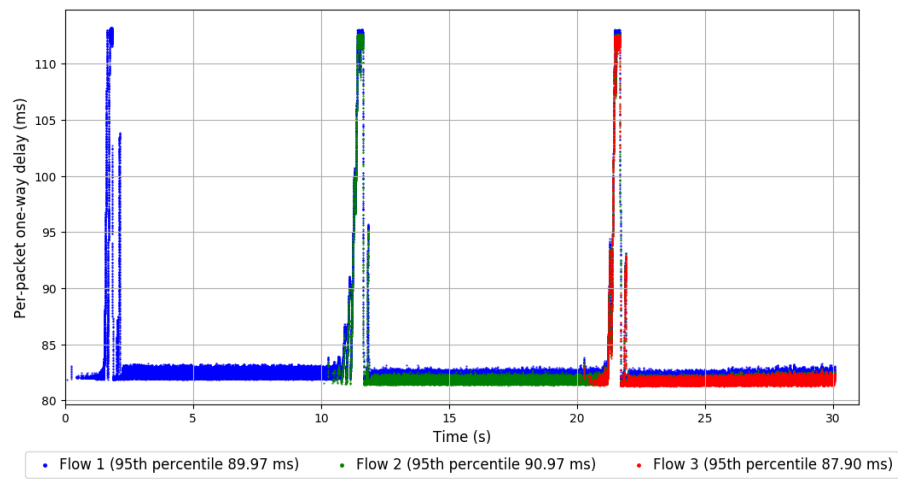
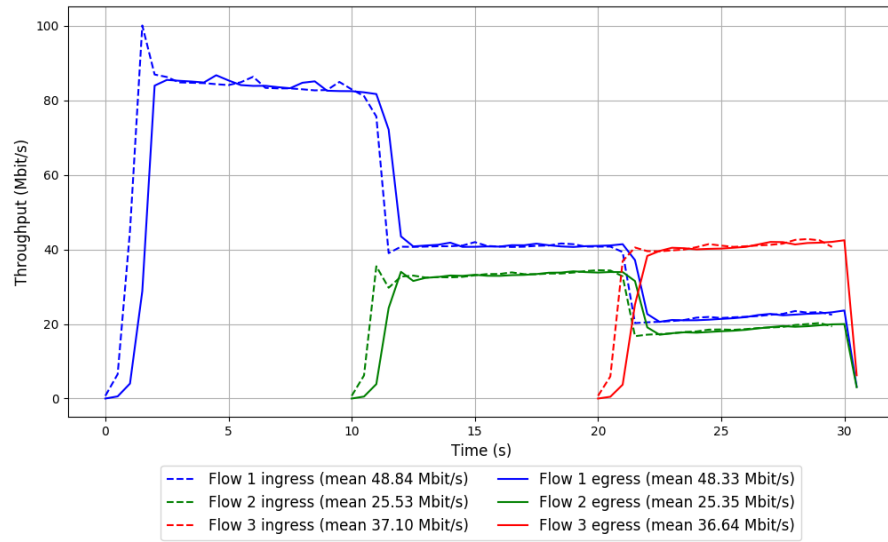
-- Flow 3:

Average throughput: 36.64 Mbit/s

95th percentile per-packet one-way delay: 87.897 ms

Loss rate: 1.24%

#### Run 4: Report of TCP Vegas — Data Link



Run 5: Statistics of TCP Vegas

Start at: 2018-11-15 06:29:15

End at: 2018-11-15 06:29:45

Local clock offset: -6.248 ms

Remote clock offset: 9.395 ms

# Below is generated by plot.py at 2018-11-15 06:50:11

# Datalink statistics

-- Total of 3 flows:

Average throughput: 76.31 Mbit/s

95th percentile per-packet one-way delay: 92.324 ms

Loss rate: 0.89%

-- Flow 1:

Average throughput: 51.30 Mbit/s

95th percentile per-packet one-way delay: 92.780 ms

Loss rate: 0.88%

-- Flow 2:

Average throughput: 18.64 Mbit/s

95th percentile per-packet one-way delay: 94.998 ms

Loss rate: 0.50%

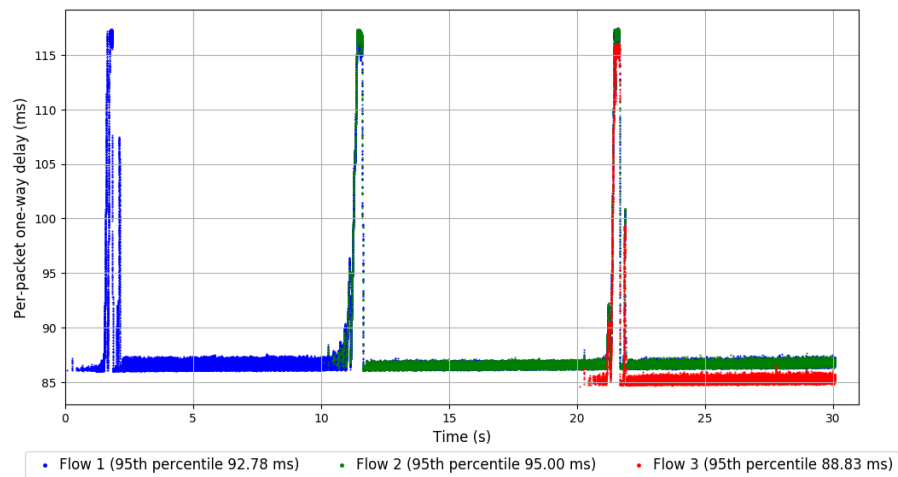
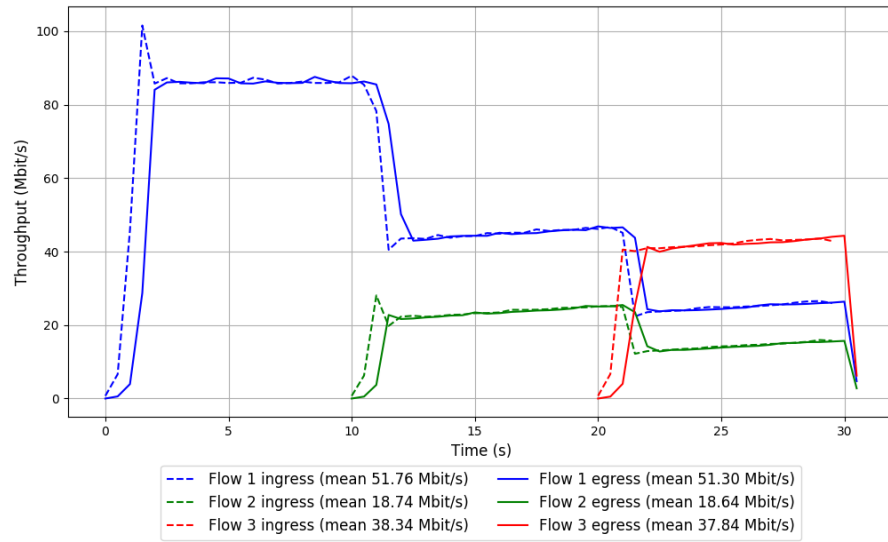
-- Flow 3:

Average throughput: 37.84 Mbit/s

95th percentile per-packet one-way delay: 88.830 ms

Loss rate: 1.31%

## Run 5: Report of TCP Vegas — Data Link

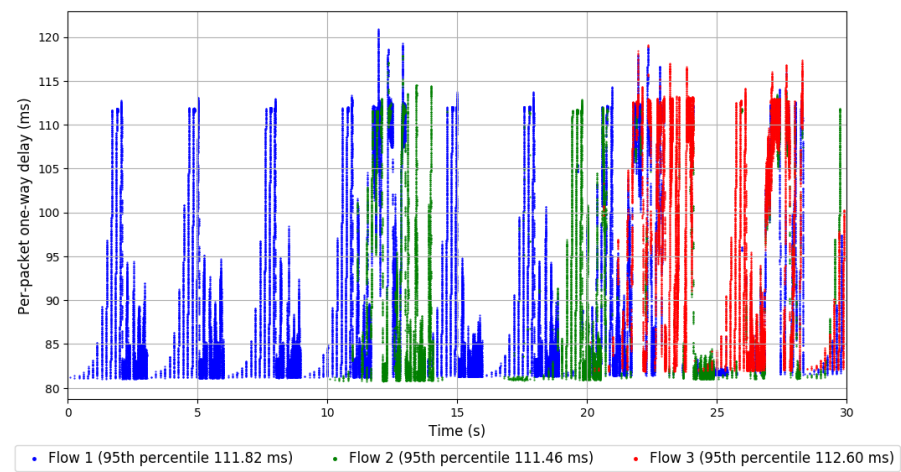
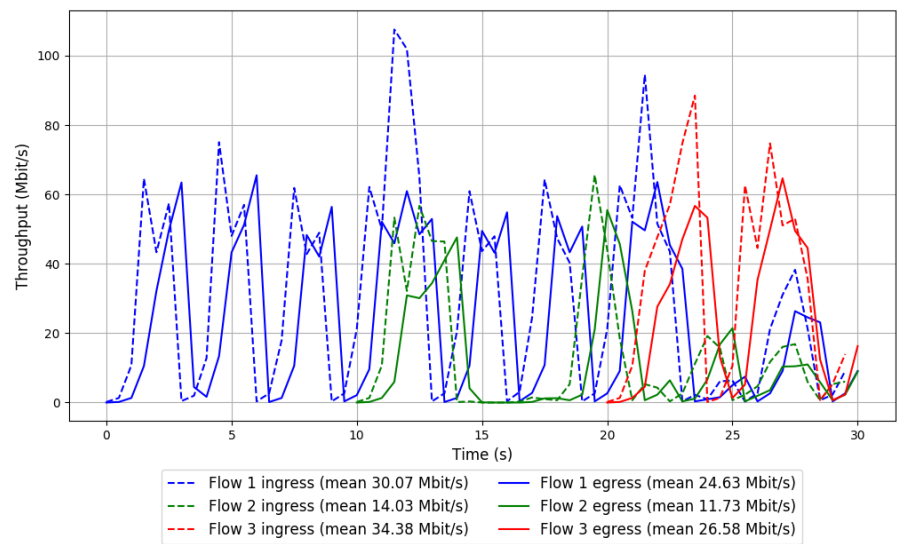


Run 1: Statistics of Verus

Start at: 2018-11-15 04:56:40  
End at: 2018-11-15 04:57:10  
Local clock offset: -11.535 ms  
Remote clock offset: 4.663 ms

# Below is generated by plot.py at 2018-11-15 06:50:11  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 41.01 Mbit/s  
95th percentile per-packet one-way delay: 111.938 ms  
Loss rate: 18.73%  
-- Flow 1:  
Average throughput: 24.63 Mbit/s  
95th percentile per-packet one-way delay: 111.824 ms  
Loss rate: 18.04%  
-- Flow 2:  
Average throughput: 11.73 Mbit/s  
95th percentile per-packet one-way delay: 111.464 ms  
Loss rate: 16.25%  
-- Flow 3:  
Average throughput: 26.58 Mbit/s  
95th percentile per-packet one-way delay: 112.599 ms  
Loss rate: 22.60%

Run 1: Report of Verus — Data Link





Run 2: Statistics of Verus

Start at: 2018-11-15 05:19:26

End at: 2018-11-15 05:19:56

Local clock offset: -3.349 ms

Remote clock offset: 9.539 ms

# Below is generated by plot.py at 2018-11-15 06:50:17

# Datalink statistics

-- Total of 3 flows:

Average throughput: 43.64 Mbit/s

95th percentile per-packet one-way delay: 160.305 ms

Loss rate: 73.69%

-- Flow 1:

Average throughput: 16.84 Mbit/s

95th percentile per-packet one-way delay: 114.774 ms

Loss rate: 18.54%

-- Flow 2:

Average throughput: 27.86 Mbit/s

95th percentile per-packet one-way delay: 162.623 ms

Loss rate: 79.19%

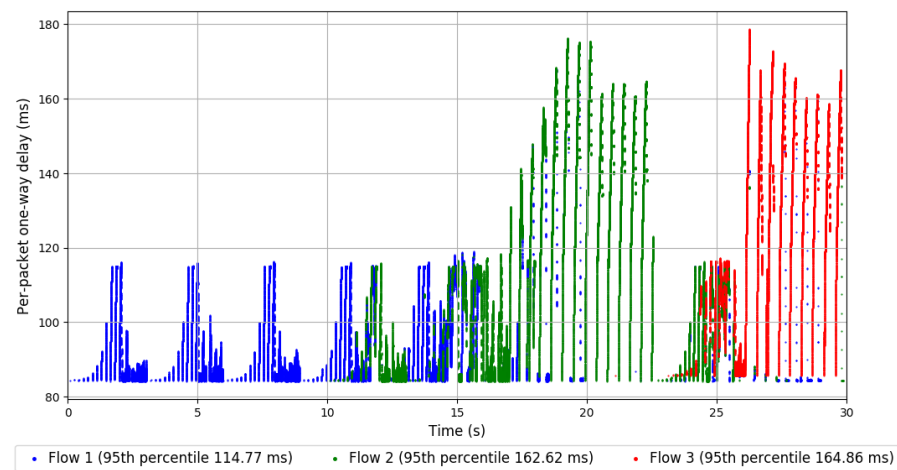
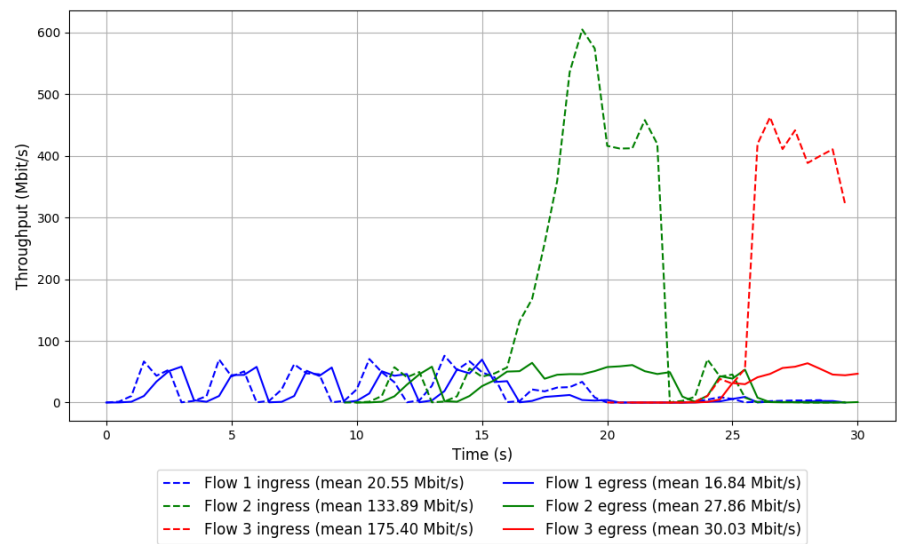
-- Flow 3:

Average throughput: 30.03 Mbit/s

95th percentile per-packet one-way delay: 164.862 ms

Loss rate: 84.56%

Run 2: Report of Verus — Data Link

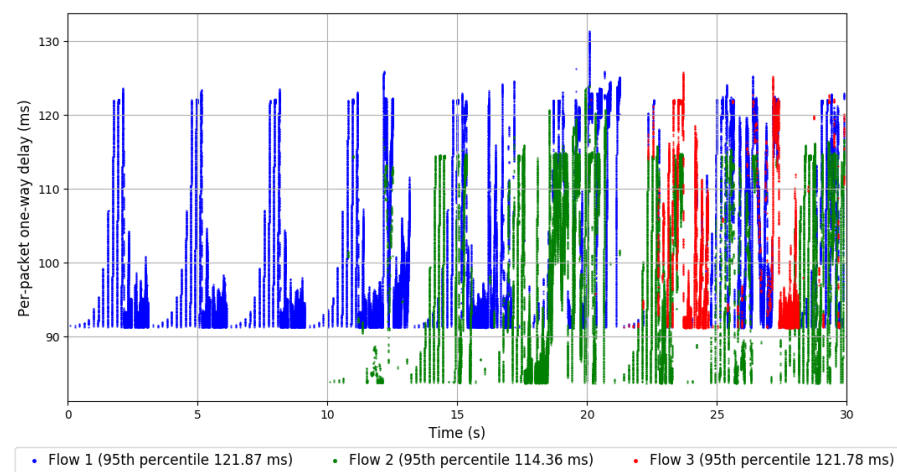
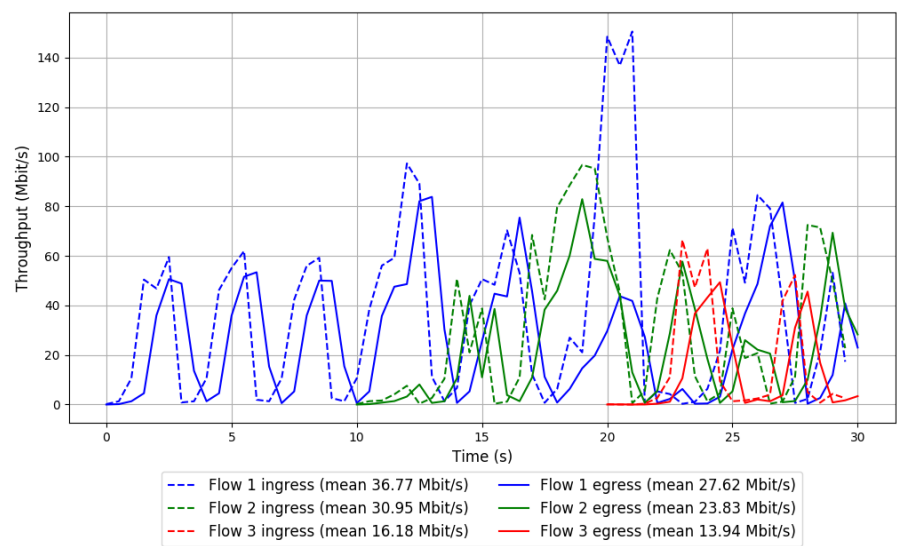


Run 3: Statistics of Verus

Start at: 2018-11-15 05:42:24  
End at: 2018-11-15 05:42:54  
Local clock offset: -6.636 ms  
Remote clock offset: 9.557 ms

```
# Below is generated by plot.py at 2018-11-15 06:50:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 48.03 Mbit/s
95th percentile per-packet one-way delay: 121.708 ms
Loss rate: 23.28%
-- Flow 1:
Average throughput: 27.62 Mbit/s
95th percentile per-packet one-way delay: 121.867 ms
Loss rate: 24.84%
-- Flow 2:
Average throughput: 23.83 Mbit/s
95th percentile per-packet one-way delay: 114.357 ms
Loss rate: 22.89%
-- Flow 3:
Average throughput: 13.94 Mbit/s
95th percentile per-packet one-way delay: 121.784 ms
Loss rate: 13.94%
```

Run 3: Report of Verus — Data Link



Run 4: Statistics of Verus

Start at: 2018-11-15 06:05:10

End at: 2018-11-15 06:05:40

Local clock offset: -7.634 ms

Remote clock offset: 8.566 ms

# Below is generated by plot.py at 2018-11-15 06:50:46

# Datalink statistics

-- Total of 3 flows:

Average throughput: 49.11 Mbit/s

95th percentile per-packet one-way delay: 177.487 ms

Loss rate: 71.19%

-- Flow 1:

Average throughput: 26.76 Mbit/s

95th percentile per-packet one-way delay: 184.996 ms

Loss rate: 78.97%

-- Flow 2:

Average throughput: 22.74 Mbit/s

95th percentile per-packet one-way delay: 117.176 ms

Loss rate: 44.34%

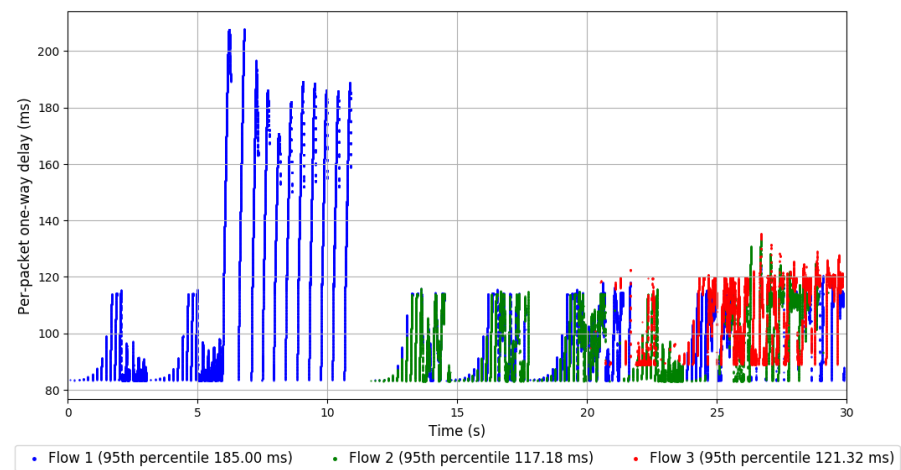
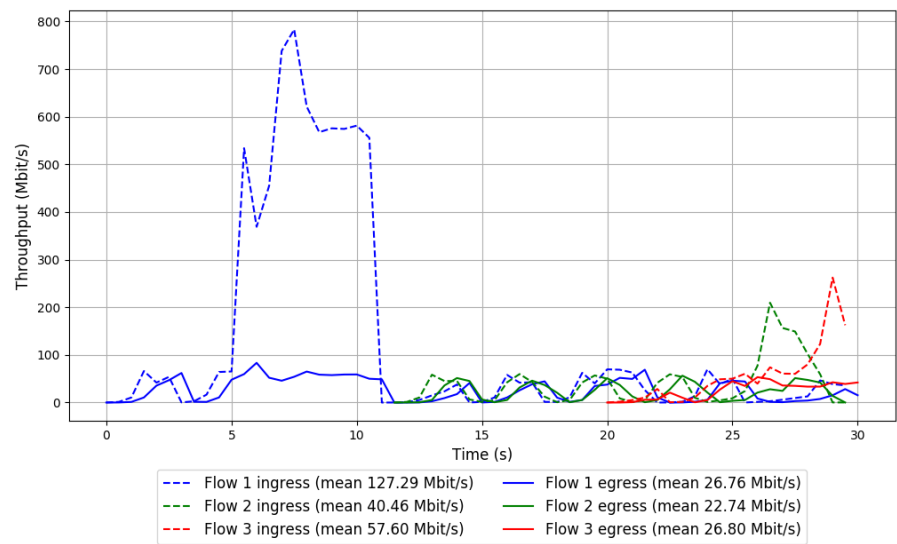
-- Flow 3:

Average throughput: 26.80 Mbit/s

95th percentile per-packet one-way delay: 121.317 ms

Loss rate: 53.34%

Run 4: Report of Verus — Data Link



Run 5: Statistics of Verus

Start at: 2018-11-15 06:27:59

End at: 2018-11-15 06:28:29

Local clock offset: -7.982 ms

Remote clock offset: 9.496 ms

# Below is generated by plot.py at 2018-11-15 06:50:46

# Datalink statistics

-- Total of 3 flows:

Average throughput: 33.47 Mbit/s

95th percentile per-packet one-way delay: 172.716 ms

Loss rate: 47.43%

-- Flow 1:

Average throughput: 22.25 Mbit/s

95th percentile per-packet one-way delay: 202.046 ms

Loss rate: 56.13%

-- Flow 2:

Average throughput: 13.57 Mbit/s

95th percentile per-packet one-way delay: 117.602 ms

Loss rate: 12.98%

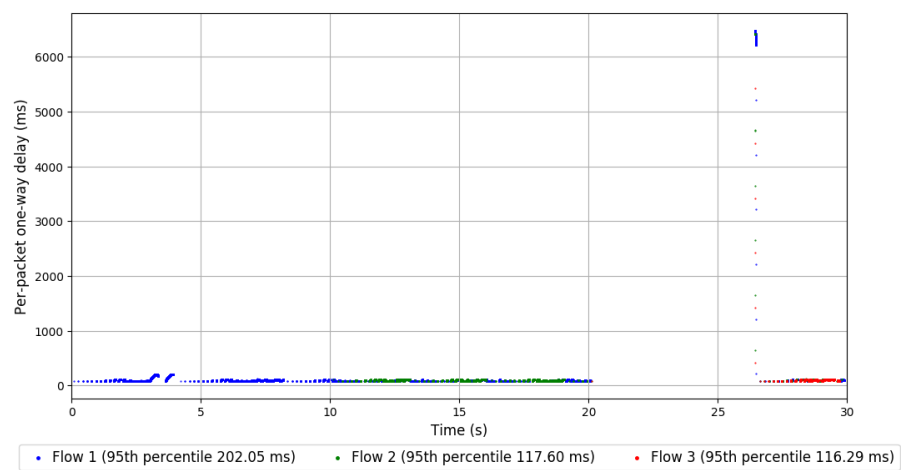
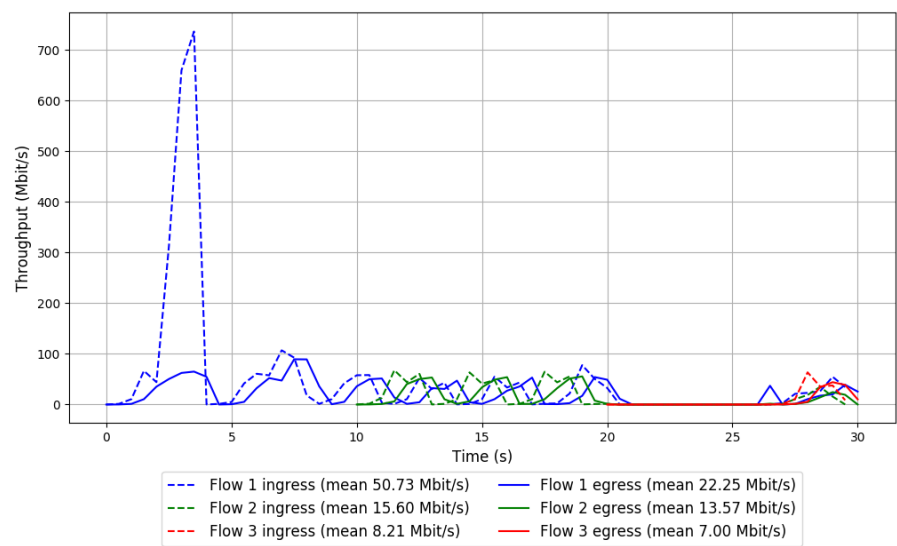
-- Flow 3:

Average throughput: 7.00 Mbit/s

95th percentile per-packet one-way delay: 116.291 ms

Loss rate: 14.70%

Run 5: Report of Verus — Data Link





Run 1: Statistics of PCC-Vivace

Start at: 2018-11-15 05:09:24

End at: 2018-11-15 05:09:54

Local clock offset: -4.541 ms

Remote clock offset: 9.449 ms

# Below is generated by plot.py at 2018-11-15 06:51:00

# Datalink statistics

-- Total of 3 flows:

Average throughput: 78.54 Mbit/s

95th percentile per-packet one-way delay: 113.598 ms

Loss rate: 0.39%

-- Flow 1:

Average throughput: 64.96 Mbit/s

95th percentile per-packet one-way delay: 113.564 ms

Loss rate: 0.38%

-- Flow 2:

Average throughput: 18.26 Mbit/s

95th percentile per-packet one-way delay: 114.822 ms

Loss rate: 0.48%

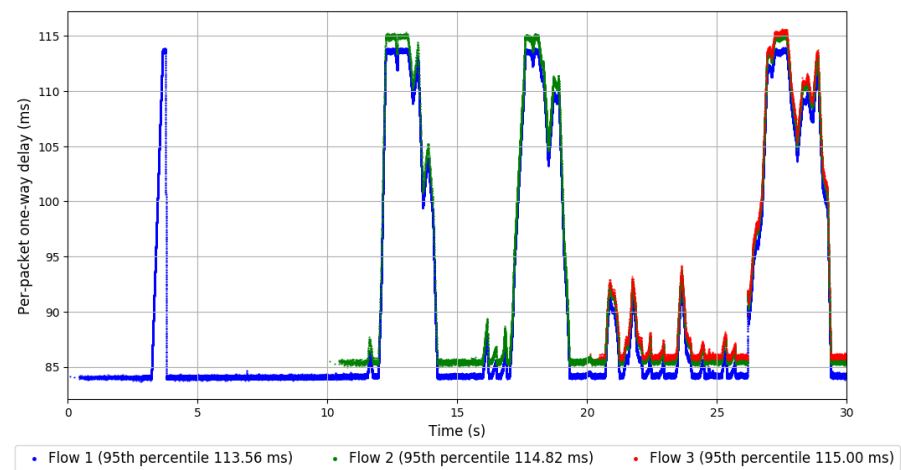
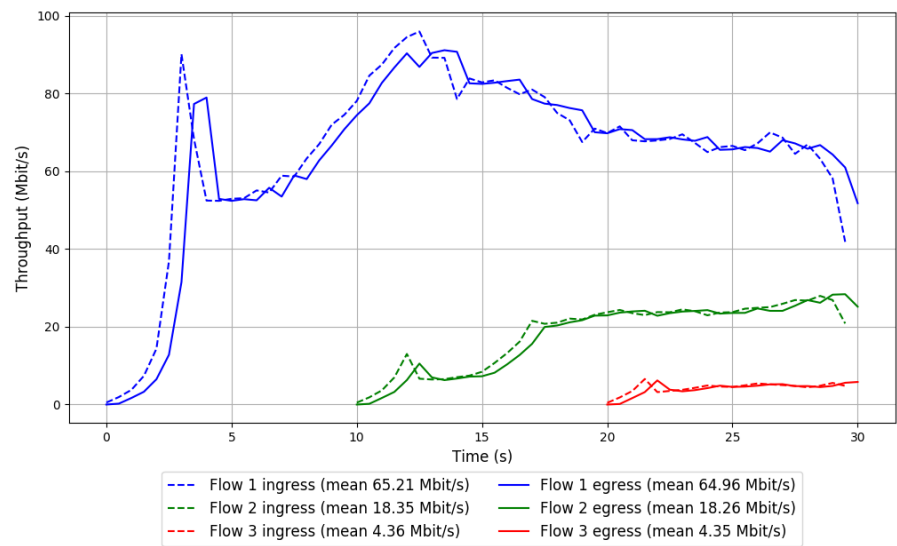
-- Flow 3:

Average throughput: 4.35 Mbit/s

95th percentile per-packet one-way delay: 114.997 ms

Loss rate: 0.35%

Run 1: Report of PCC-Vivace — Data Link

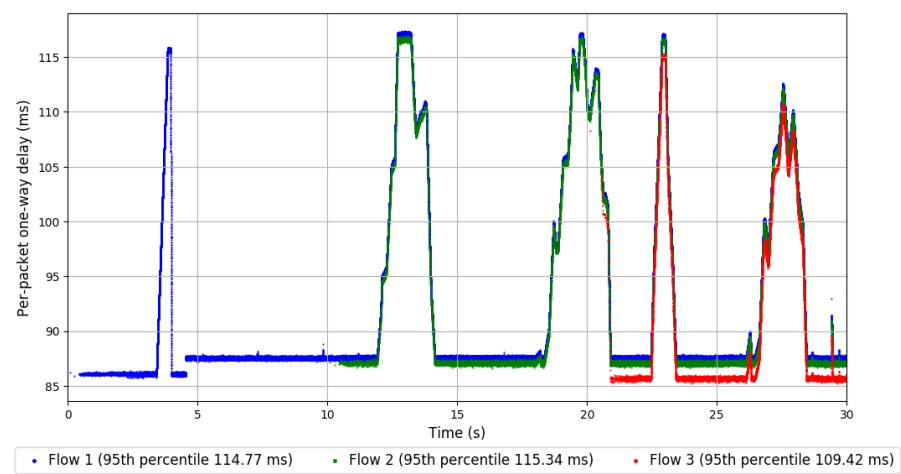
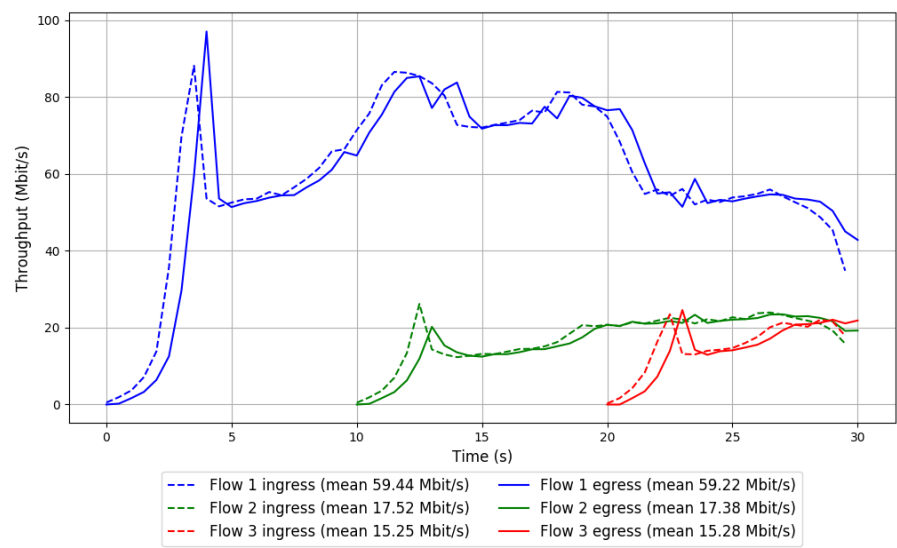


Run 2: Statistics of PCC-Vivace

Start at: 2018-11-15 05:32:23  
End at: 2018-11-15 05:32:53  
Local clock offset: -5.677 ms  
Remote clock offset: 10.705 ms

# Below is generated by plot.py at 2018-11-15 06:51:02  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 75.81 Mbit/s  
95th percentile per-packet one-way delay: 114.623 ms  
Loss rate: 0.41%  
-- Flow 1:  
Average throughput: 59.22 Mbit/s  
95th percentile per-packet one-way delay: 114.765 ms  
Loss rate: 0.37%  
-- Flow 2:  
Average throughput: 17.38 Mbit/s  
95th percentile per-packet one-way delay: 115.345 ms  
Loss rate: 0.79%  
-- Flow 3:  
Average throughput: 15.28 Mbit/s  
95th percentile per-packet one-way delay: 109.420 ms  
Loss rate: 0.08%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-11-15 05:55:09

End at: 2018-11-15 05:55:39

Local clock offset: -8.741 ms

Remote clock offset: 5.85 ms

# Below is generated by plot.py at 2018-11-15 06:51:04

# Datalink statistics

-- Total of 3 flows:

Average throughput: 77.18 Mbit/s

95th percentile per-packet one-way delay: 109.569 ms

Loss rate: 0.08%

-- Flow 1:

Average throughput: 65.84 Mbit/s

95th percentile per-packet one-way delay: 108.777 ms

Loss rate: 0.07%

-- Flow 2:

Average throughput: 13.08 Mbit/s

95th percentile per-packet one-way delay: 110.285 ms

Loss rate: 0.09%

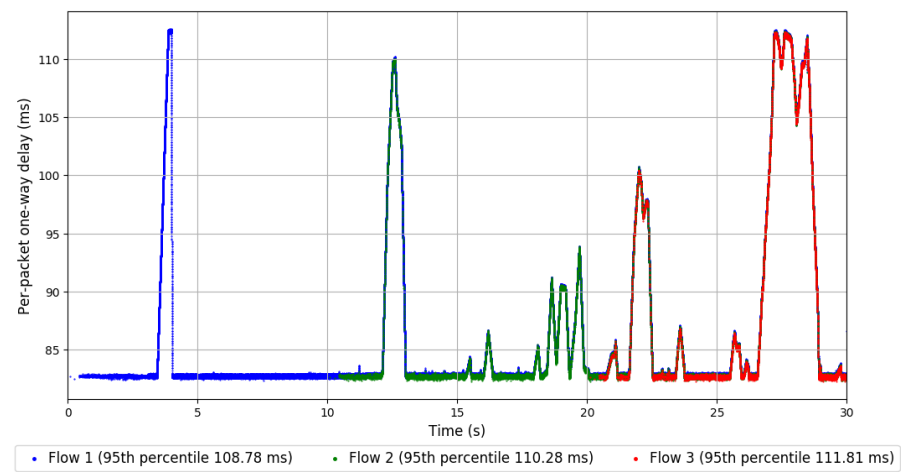
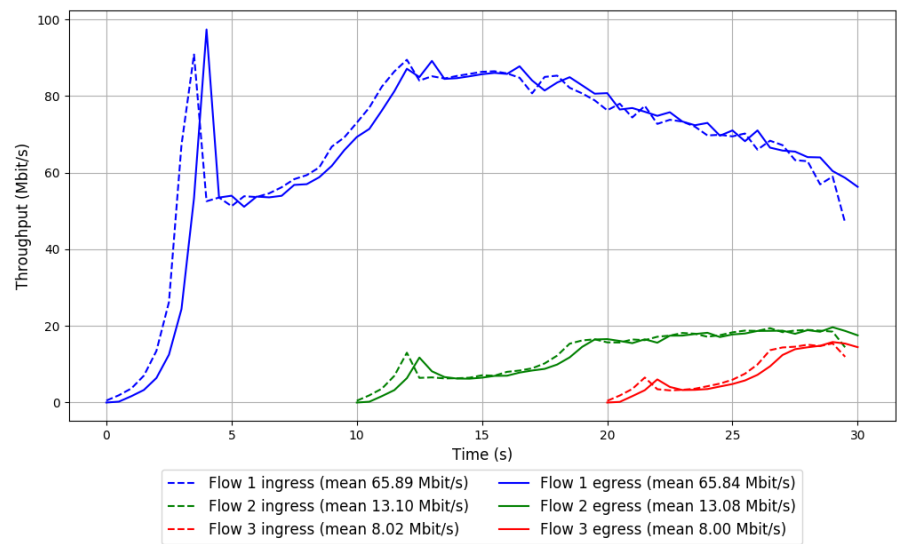
-- Flow 3:

Average throughput: 8.00 Mbit/s

95th percentile per-packet one-way delay: 111.809 ms

Loss rate: 0.27%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-11-15 06:17:57

End at: 2018-11-15 06:18:27

Local clock offset: -8.653 ms

Remote clock offset: 8.369 ms

# Below is generated by plot.py at 2018-11-15 06:51:04

# Datalink statistics

-- Total of 3 flows:

Average throughput: 77.31 Mbit/s

95th percentile per-packet one-way delay: 110.503 ms

Loss rate: 0.29%

-- Flow 1:

Average throughput: 67.98 Mbit/s

95th percentile per-packet one-way delay: 110.679 ms

Loss rate: 0.26%

-- Flow 2:

Average throughput: 11.79 Mbit/s

95th percentile per-packet one-way delay: 109.085 ms

Loss rate: 0.63%

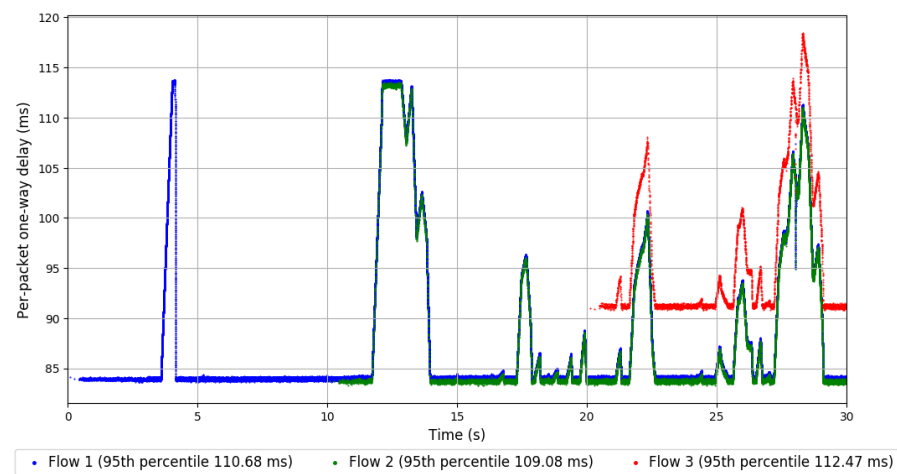
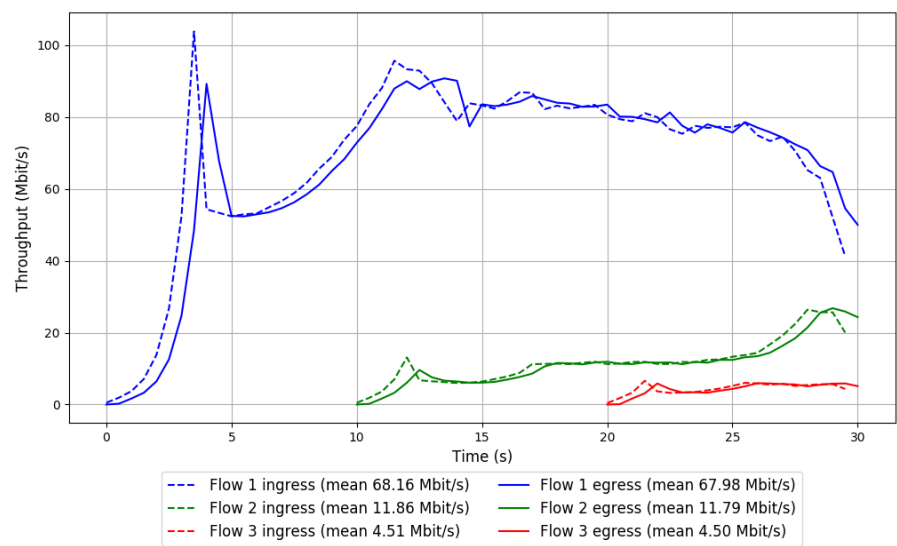
-- Flow 3:

Average throughput: 4.50 Mbit/s

95th percentile per-packet one-way delay: 112.475 ms

Loss rate: 0.08%

Run 4: Report of PCC-Vivace — Data Link





Run 5: Statistics of PCC-Vivace

Start at: 2018-11-15 06:40:44

End at: 2018-11-15 06:41:14

Local clock offset: -2.117 ms

Remote clock offset: 5.421 ms

# Below is generated by plot.py at 2018-11-15 06:51:04

# Datalink statistics

-- Total of 3 flows:

Average throughput: 75.96 Mbit/s

95th percentile per-packet one-way delay: 109.370 ms

Loss rate: 0.35%

-- Flow 1:

Average throughput: 62.60 Mbit/s

95th percentile per-packet one-way delay: 109.916 ms

Loss rate: 0.30%

-- Flow 2:

Average throughput: 17.45 Mbit/s

95th percentile per-packet one-way delay: 107.583 ms

Loss rate: 0.65%

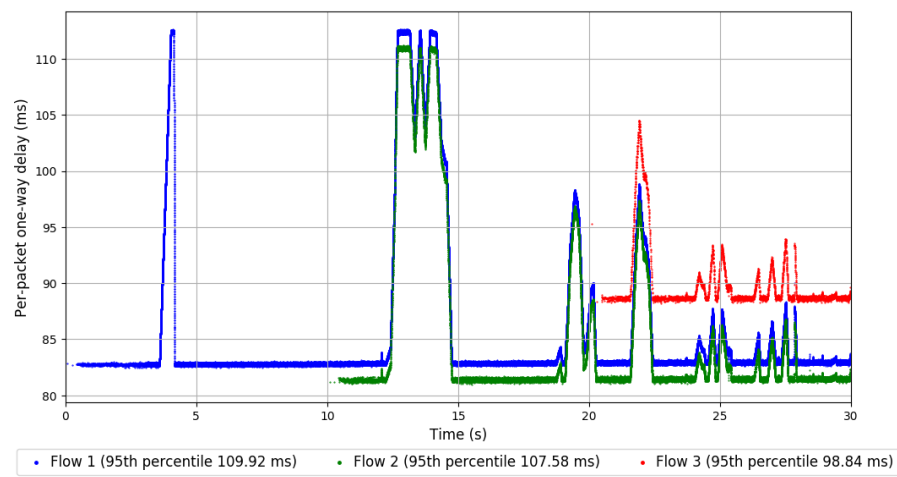
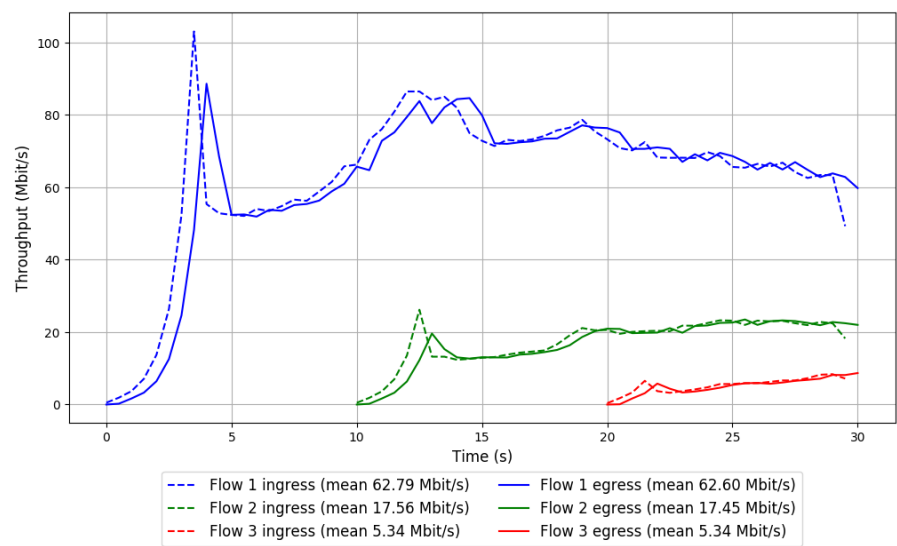
-- Flow 3:

Average throughput: 5.34 Mbit/s

95th percentile per-packet one-way delay: 98.843 ms

Loss rate: 0.09%

Run 5: Report of PCC-Vivace — Data Link

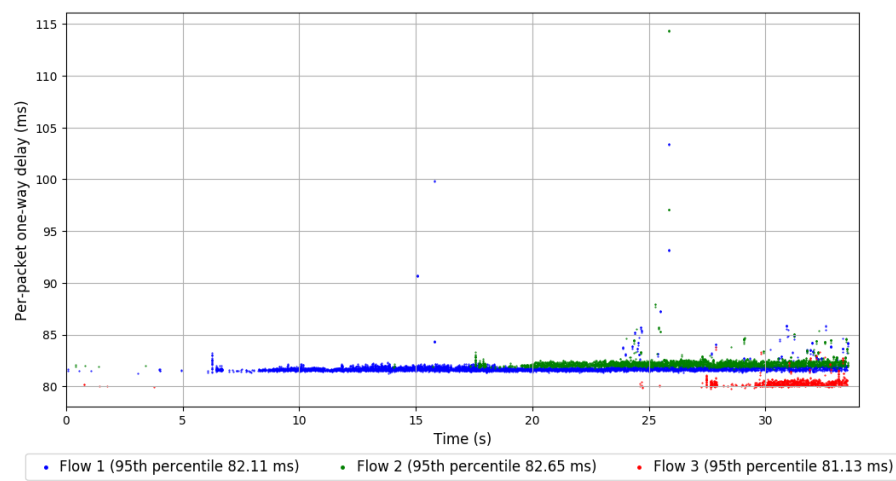
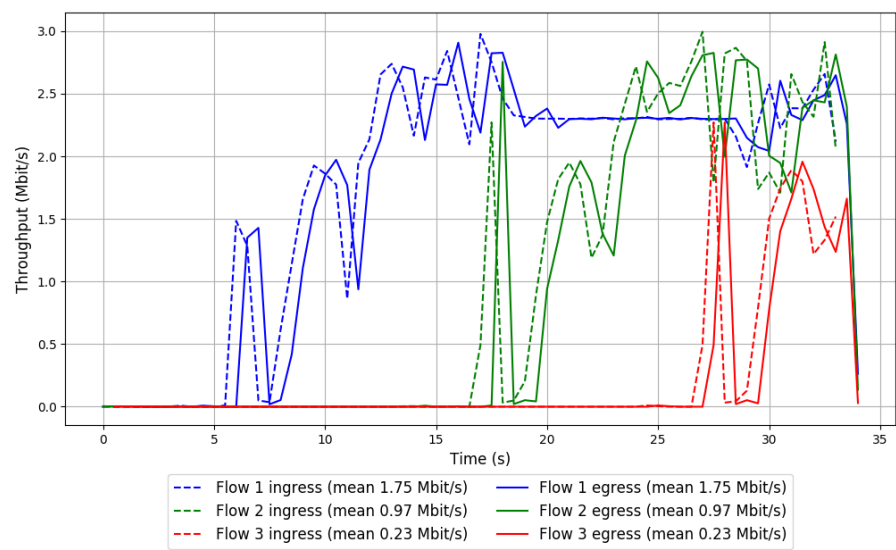


Run 1: Statistics of WebRTC media

Start at: 2018-11-15 04:54:13  
End at: 2018-11-15 04:54:43  
Local clock offset: -11.829 ms  
Remote clock offset: 4.701 ms

# Below is generated by plot.py at 2018-11-15 06:51:04  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.93 Mbit/s  
95th percentile per-packet one-way delay: 82.484 ms  
Loss rate: 0.00%  
-- Flow 1:  
Average throughput: 1.75 Mbit/s  
95th percentile per-packet one-way delay: 82.110 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.97 Mbit/s  
95th percentile per-packet one-way delay: 82.647 ms  
Loss rate: 0.00%  
-- Flow 3:  
Average throughput: 0.23 Mbit/s  
95th percentile per-packet one-way delay: 81.134 ms  
Loss rate: 0.00%

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-11-15 05:16:58

End at: 2018-11-15 05:17:28

Local clock offset: -4.229 ms

Remote clock offset: 9.58 ms

# Below is generated by plot.py at 2018-11-15 06:51:04

# Datalink statistics

-- Total of 3 flows:

Average throughput: 2.98 Mbit/s

95th percentile per-packet one-way delay: 92.860 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.71 Mbit/s

95th percentile per-packet one-way delay: 85.325 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 1.06 Mbit/s

95th percentile per-packet one-way delay: 93.137 ms

Loss rate: 0.00%

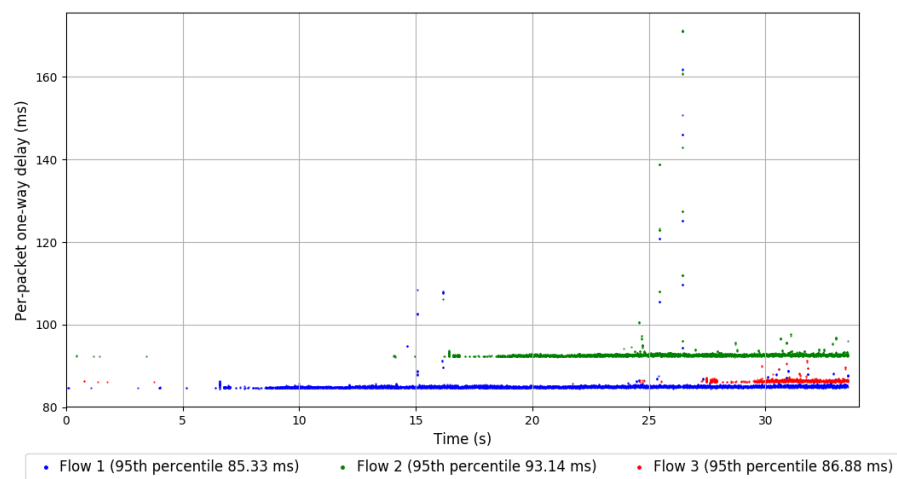
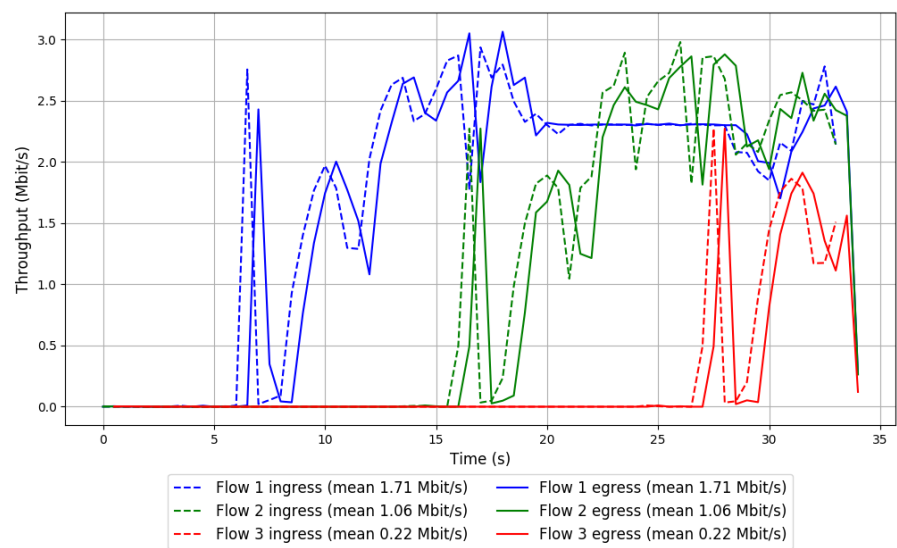
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.878 ms

Loss rate: 0.00%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-11-15 05:39:57

End at: 2018-11-15 05:40:27

Local clock offset: -7.063 ms

Remote clock offset: 9.49 ms

# Below is generated by plot.py at 2018-11-15 06:51:04

# Datalink statistics

-- Total of 3 flows:

Average throughput: 2.82 Mbit/s

95th percentile per-packet one-way delay: 87.304 ms

Loss rate: 0.00%

-- Flow 1:

Average throughput: 1.67 Mbit/s

95th percentile per-packet one-way delay: 85.971 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 0.97 Mbit/s

95th percentile per-packet one-way delay: 87.862 ms

Loss rate: 0.00%

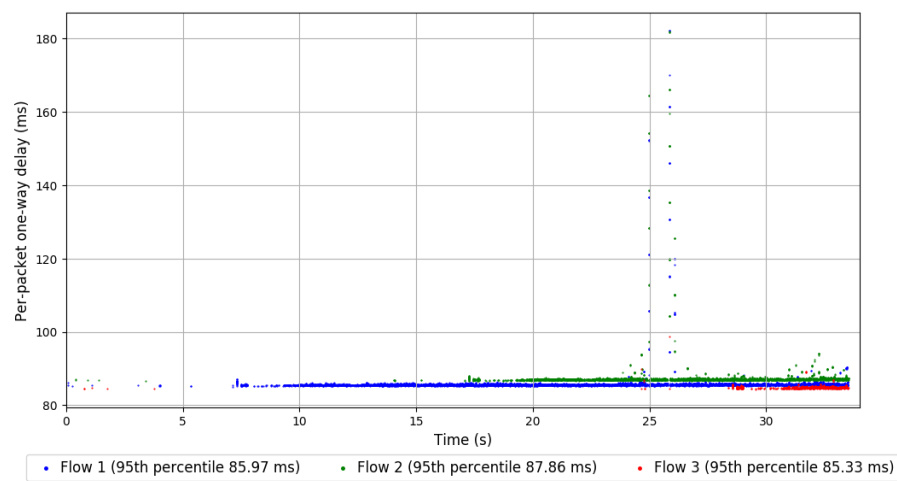
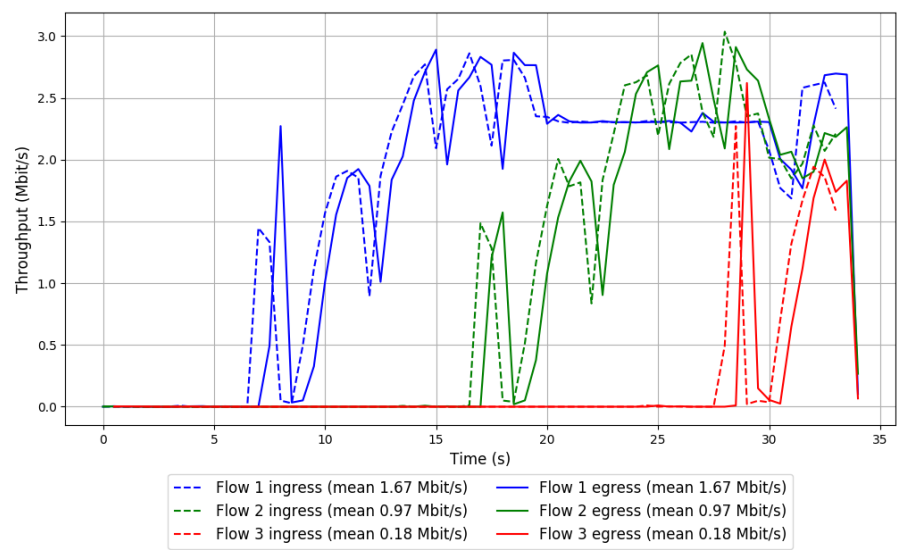
-- Flow 3:

Average throughput: 0.18 Mbit/s

95th percentile per-packet one-way delay: 85.328 ms

Loss rate: 0.00%

Run 3: Report of WebRTC media — Data Link





Run 4: Statistics of WebRTC media

Start at: 2018-11-15 06:02:44

End at: 2018-11-15 06:03:14

Local clock offset: -7.678 ms

Remote clock offset: 9.495 ms

# Below is generated by plot.py at 2018-11-15 06:51:04

# Datalink statistics

-- Total of 3 flows:

Average throughput: 2.56 Mbit/s

95th percentile per-packet one-way delay: 87.390 ms

Loss rate: 0.07%

-- Flow 1:

Average throughput: 1.67 Mbit/s

95th percentile per-packet one-way delay: 88.069 ms

Loss rate: 0.10%

-- Flow 2:

Average throughput: 0.67 Mbit/s

95th percentile per-packet one-way delay: 84.756 ms

Loss rate: 0.00%

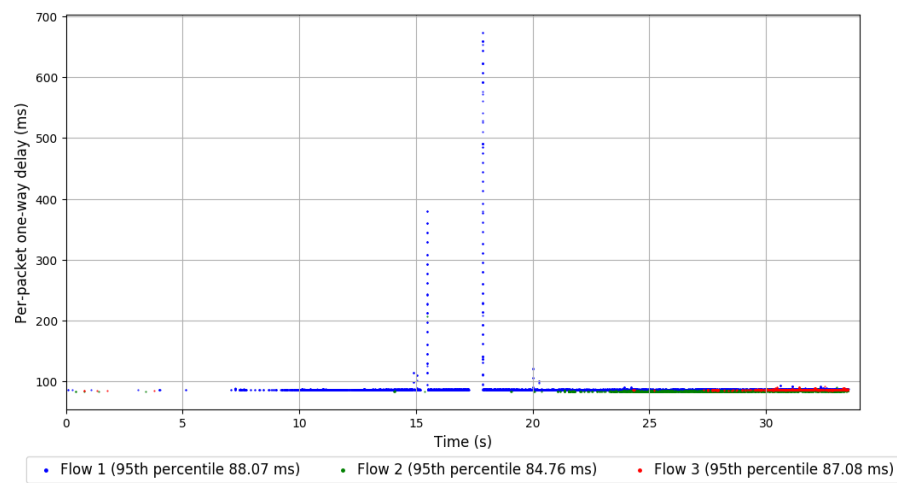
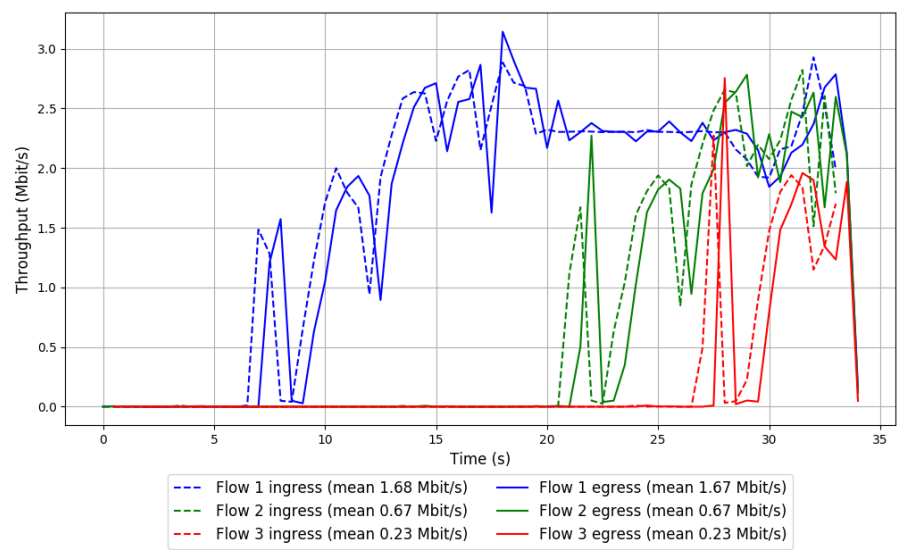
-- Flow 3:

Average throughput: 0.23 Mbit/s

95th percentile per-packet one-way delay: 87.085 ms

Loss rate: 0.00%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-11-15 06:25:32  
End at: 2018-11-15 06:26:02  
Local clock offset: -9.013 ms  
Remote clock offset: 10.413 ms

# Below is generated by plot.py at 2018-11-15 06:51:04  
# Datalink statistics  
-- Total of 3 flows:  
Average throughput: 2.82 Mbit/s  
95th percentile per-packet one-way delay: 88.983 ms  
Loss rate: 0.06%  
-- Flow 1:  
Average throughput: 1.70 Mbit/s  
95th percentile per-packet one-way delay: 86.778 ms  
Loss rate: 0.00%  
-- Flow 2:  
Average throughput: 0.97 Mbit/s  
95th percentile per-packet one-way delay: 89.139 ms  
Loss rate: 0.18%  
-- Flow 3:  
Average throughput: 0.17 Mbit/s  
95th percentile per-packet one-way delay: 86.357 ms  
Loss rate: 0.00%

Run 5: Report of WebRTC media — Data Link

