

Pantheon Report

Generated at 2018-10-26 17:26:17 (UTC).

Data path: GCE Tokyo on `ens4` (*remote*) → GCE Iowa on `ens4` (*local*).

Repeated the test of 18 congestion control schemes 5 times.

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

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

System info:

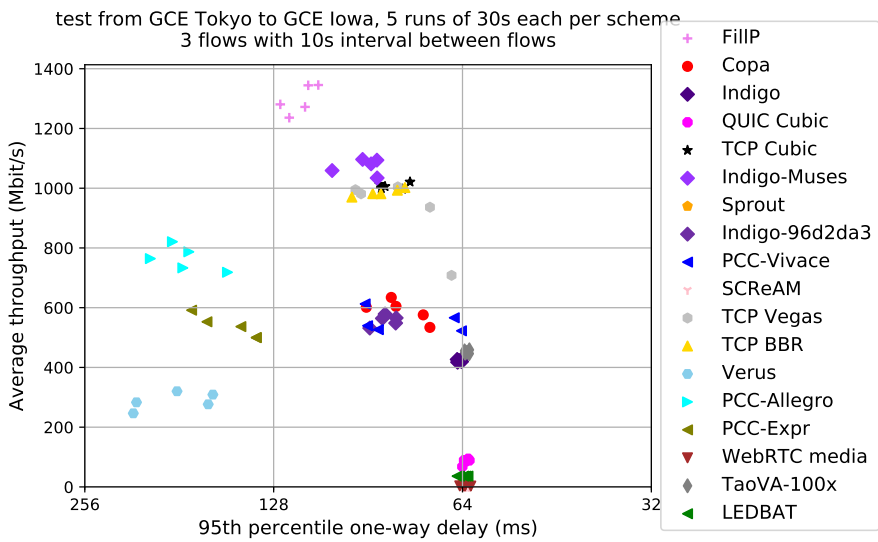
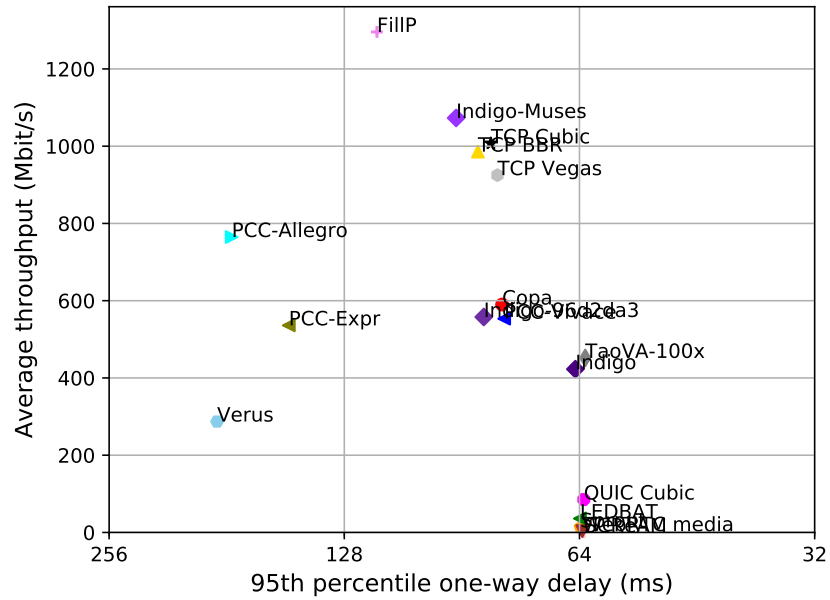
```
Linux 4.15.0-1021-gcp
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
```

Git summary:

```
branch: muses @ 2e19c0464530faa92c63f8217c9971438a26a3be
third_party/fillp @ 5332fc9127c63565e13f4933b336c02d1aabdac6
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

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

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



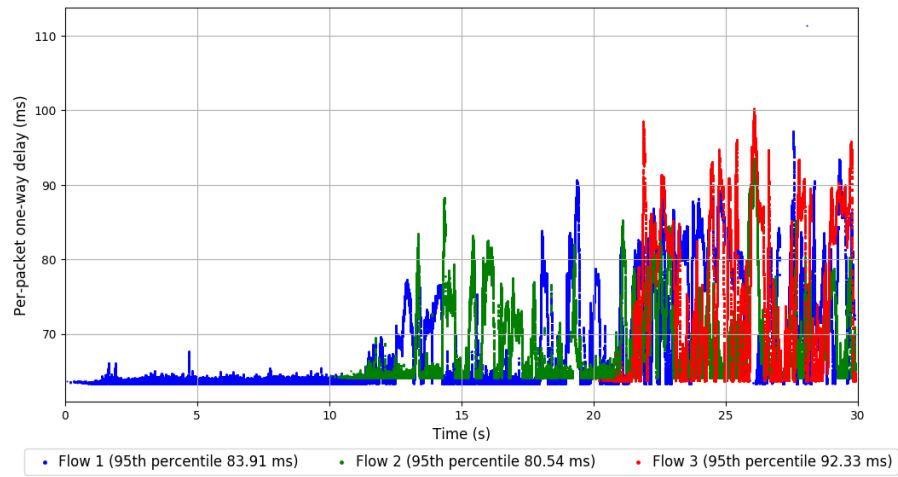
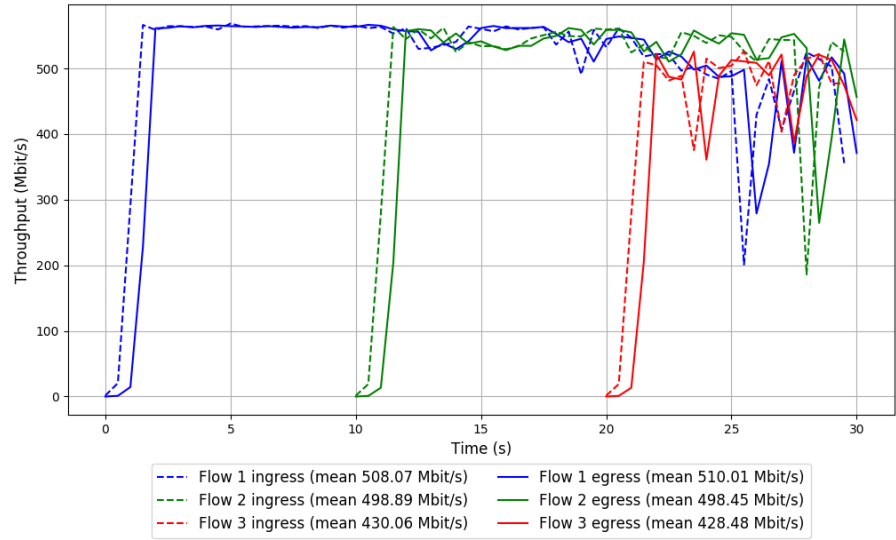
scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	509.07	498.97	442.47	84.06	81.20	92.09	0.32	0.65	1.60
Copa	5	319.93	284.31	246.09	78.68	81.29	90.84	0.39	0.60	1.48
TCP Cubic	5	522.75	504.84	451.79	79.38	84.08	83.64	0.43	0.71	1.49
FillP	5	705.03	641.27	501.83	117.62	115.65	80.85	0.72	0.79	1.45
Indigo	5	220.66	209.16	189.30	64.42	64.87	65.53	0.42	0.63	1.50
Indigo-96d2da3	5	295.68	276.30	244.24	83.25	87.87	85.23	0.32	0.66	1.61
LEDBAT	5	23.33	15.49	7.60	63.92	64.01	63.63	0.84	1.27	2.56
Indigo-Muses	5	606.55	512.03	390.72	92.12	95.41	90.66	0.39	0.65	1.73
PCC-Allegro	5	447.08	335.24	292.15	184.18	145.89	147.35	3.76	2.09	4.68
PCC-Expr	5	310.66	252.39	177.31	168.61	109.45	79.57	2.81	0.91	1.55
QUIC Cubic	5	50.27	40.66	22.51	63.16	62.84	63.29	0.55	1.27	2.00
SCReAM	5	0.22	0.22	0.22	62.96	62.91	63.00	0.38	0.61	1.38
Sprout	5	6.76	6.69	6.44	63.87	63.69	63.78	0.45	0.79	1.58
TaoVA-100x	5	227.37	229.31	218.80	62.76	62.92	63.19	0.44	0.66	1.32
TCP Vegas	5	487.97	449.90	418.82	80.17	82.86	84.29	0.36	0.57	1.42
Verus	5	166.17	139.70	87.19	185.20	142.61	108.85	2.25	1.14	3.56
PCC-Vivace	5	339.16	257.45	132.94	77.36	88.72	79.83	0.35	0.82	1.58
WebRTC media	5	1.77	1.17	0.43	63.43	63.38	63.36	0.55	0.79	1.73

Run 1: Statistics of TCP BBR

Start at: 2018-10-26 12:34:20
End at: 2018-10-26 12:34:50
Local clock offset: -0.106 ms
Remote clock offset: -0.671 ms

Below is generated by plot.py at 2018-10-26 15:20:51
Datalink statistics
-- Total of 3 flows:
Average throughput: 981.65 Mbit/s
95th percentile per-packet one-way delay: 86.354 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 510.01 Mbit/s
95th percentile per-packet one-way delay: 83.912 ms
Loss rate: 0.22%
-- Flow 2:
Average throughput: 498.45 Mbit/s
95th percentile per-packet one-way delay: 80.542 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 428.48 Mbit/s
95th percentile per-packet one-way delay: 92.325 ms
Loss rate: 1.63%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-10-26 13:05:48

End at: 2018-10-26 13:06:18

Local clock offset: -0.046 ms

Remote clock offset: 1.138 ms

Below is generated by plot.py at 2018-10-26 15:21:26

Datalink statistics

-- Total of 3 flows:

Average throughput: 993.35 Mbit/s

95th percentile per-packet one-way delay: 81.280 ms

Loss rate: 0.64%

-- Flow 1:

Average throughput: 515.29 Mbit/s

95th percentile per-packet one-way delay: 75.320 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 496.70 Mbit/s

95th percentile per-packet one-way delay: 81.524 ms

Loss rate: 0.43%

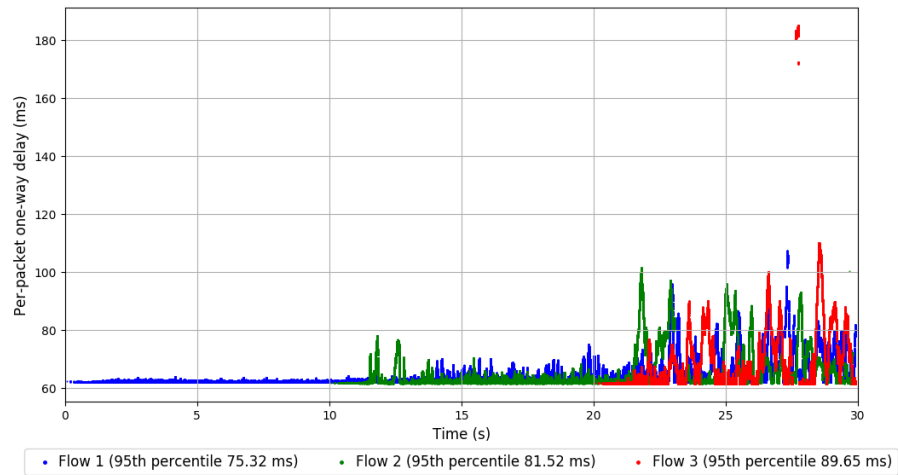
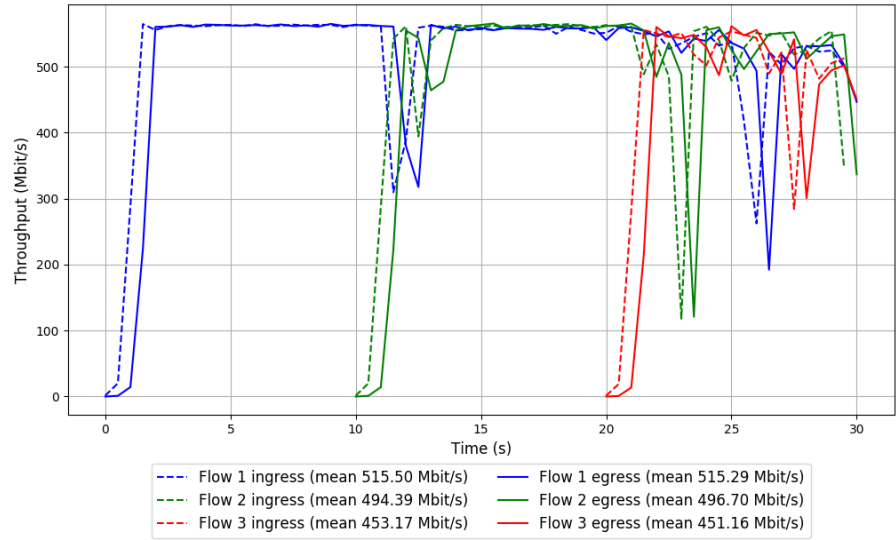
-- Flow 3:

Average throughput: 451.16 Mbit/s

95th percentile per-packet one-way delay: 89.649 ms

Loss rate: 1.70%

Run 2: Report of TCP BBR — Data Link

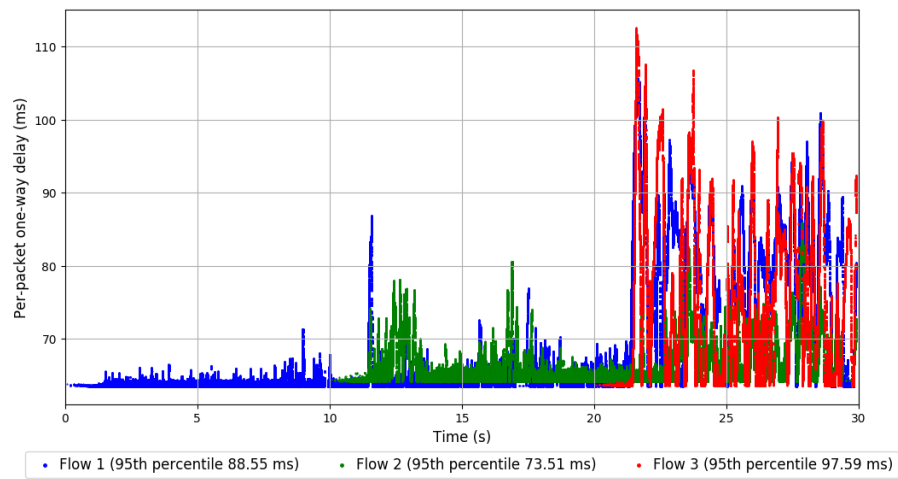
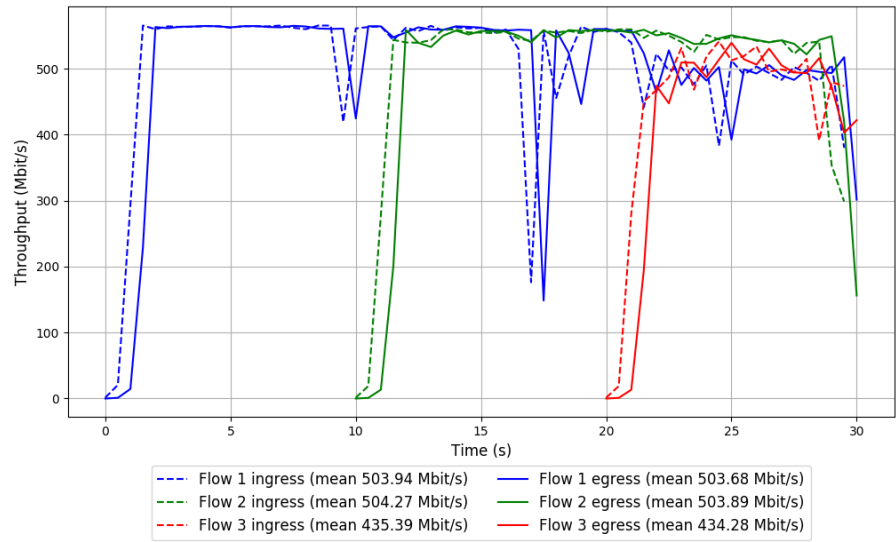


Run 3: Statistics of TCP BBR

Start at: 2018-10-26 13:37:24
End at: 2018-10-26 13:37:54
Local clock offset: 0.061 ms
Remote clock offset: -0.673 ms

Below is generated by plot.py at 2018-10-26 15:21:26
Datalink statistics
-- Total of 3 flows:
Average throughput: 981.77 Mbit/s
95th percentile per-packet one-way delay: 88.962 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 503.68 Mbit/s
95th percentile per-packet one-way delay: 88.551 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 503.89 Mbit/s
95th percentile per-packet one-way delay: 73.511 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 434.28 Mbit/s
95th percentile per-packet one-way delay: 97.591 ms
Loss rate: 1.52%

Run 3: Report of TCP BBR — Data Link

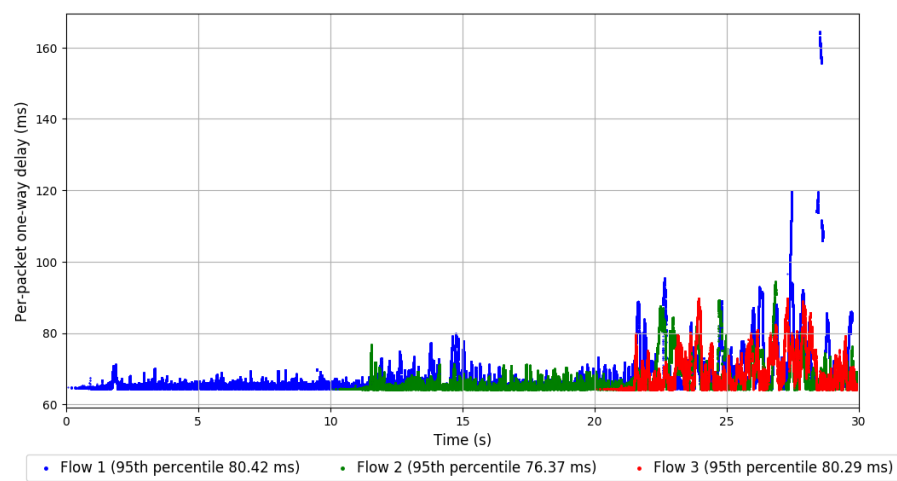
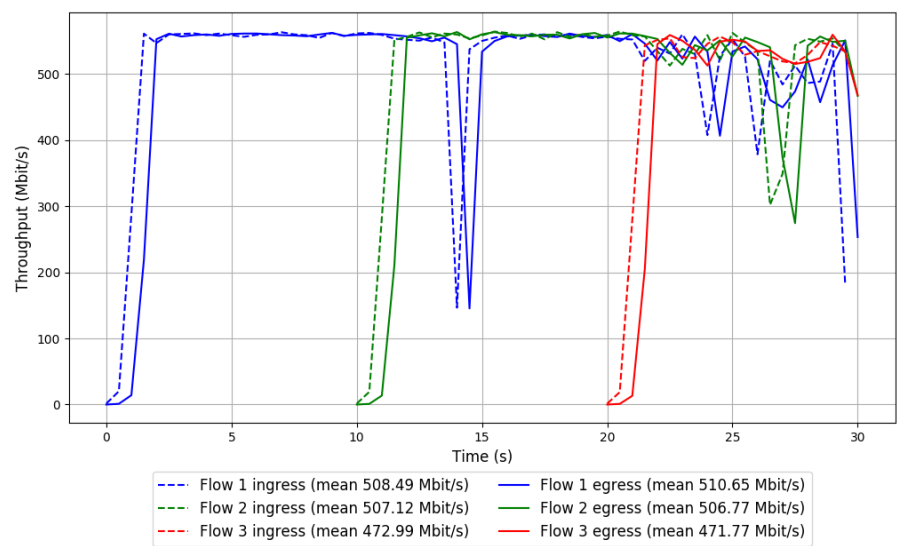


Run 4: Statistics of TCP BBR

Start at: 2018-10-26 14:08:48
End at: 2018-10-26 14:09:18
Local clock offset: -0.036 ms
Remote clock offset: -1.383 ms

Below is generated by plot.py at 2018-10-26 15:21:41
Datalink statistics
-- Total of 3 flows:
Average throughput: 1002.33 Mbit/s
95th percentile per-packet one-way delay: 79.069 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 510.65 Mbit/s
95th percentile per-packet one-way delay: 80.418 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 506.77 Mbit/s
95th percentile per-packet one-way delay: 76.367 ms
Loss rate: 0.70%
-- Flow 3:
Average throughput: 471.77 Mbit/s
95th percentile per-packet one-way delay: 80.289 ms
Loss rate: 1.51%

Run 4: Report of TCP BBR — Data Link

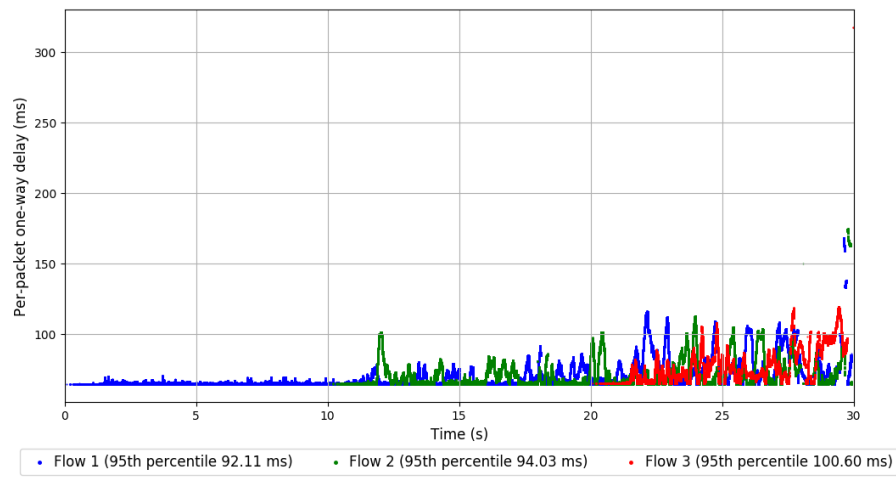
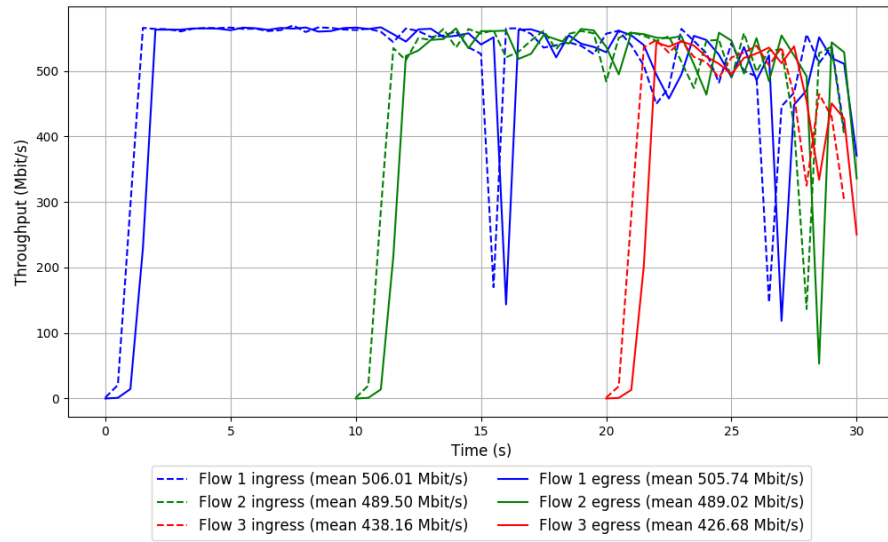


Run 5: Statistics of TCP BBR

Start at: 2018-10-26 14:40:32
End at: 2018-10-26 14:41:02
Local clock offset: 0.015 ms
Remote clock offset: -1.546 ms

Below is generated by plot.py at 2018-10-26 15:21:41
Datalink statistics
-- Total of 3 flows:
Average throughput: 970.28 Mbit/s
95th percentile per-packet one-way delay: 96.058 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 505.74 Mbit/s
95th percentile per-packet one-way delay: 92.106 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 489.02 Mbit/s
95th percentile per-packet one-way delay: 94.035 ms
Loss rate: 0.72%
-- Flow 3:
Average throughput: 426.68 Mbit/s
95th percentile per-packet one-way delay: 100.602 ms
Loss rate: 1.65%

Run 5: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-10-26 12:20:31

End at: 2018-10-26 12:21:01

Local clock offset: -0.098 ms

Remote clock offset: 0.546 ms

Below is generated by plot.py at 2018-10-26 15:22:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 575.95 Mbit/s

95th percentile per-packet one-way delay: 73.915 ms

Loss rate: 0.54%

-- Flow 1:

Average throughput: 318.11 Mbit/s

95th percentile per-packet one-way delay: 71.460 ms

Loss rate: 0.35%

-- Flow 2:

Average throughput: 263.96 Mbit/s

95th percentile per-packet one-way delay: 81.161 ms

Loss rate: 0.47%

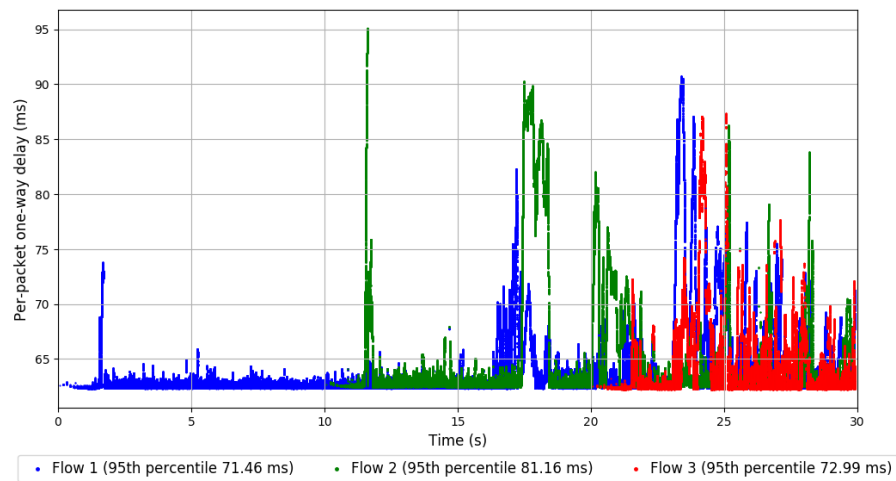
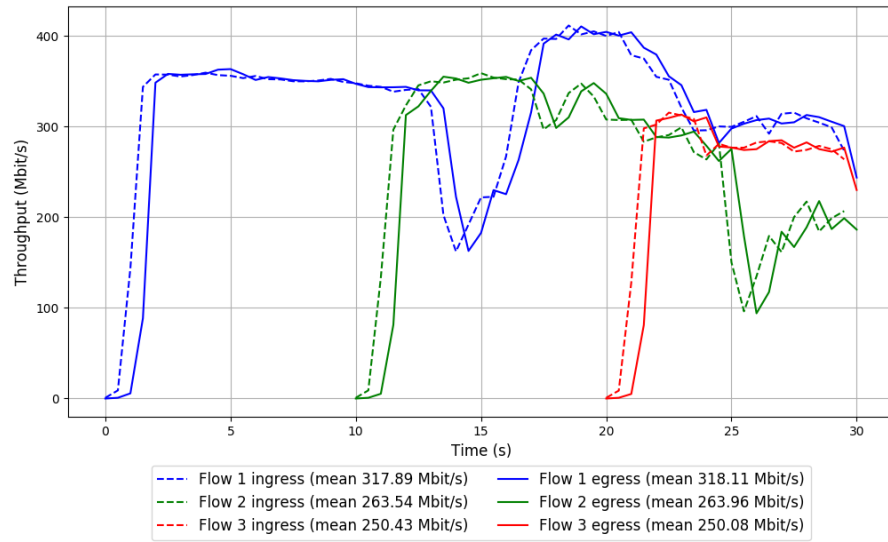
-- Flow 3:

Average throughput: 250.08 Mbit/s

95th percentile per-packet one-way delay: 72.990 ms

Loss rate: 1.40%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-10-26 12:51:48

End at: 2018-10-26 12:52:18

Local clock offset: -0.069 ms

Remote clock offset: 0.184 ms

Below is generated by plot.py at 2018-10-26 15:23:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 604.35 Mbit/s

95th percentile per-packet one-way delay: 81.692 ms

Loss rate: 0.57%

-- Flow 1:

Average throughput: 346.42 Mbit/s

95th percentile per-packet one-way delay: 80.792 ms

Loss rate: 0.37%

-- Flow 2:

Average throughput: 280.21 Mbit/s

95th percentile per-packet one-way delay: 75.467 ms

Loss rate: 0.52%

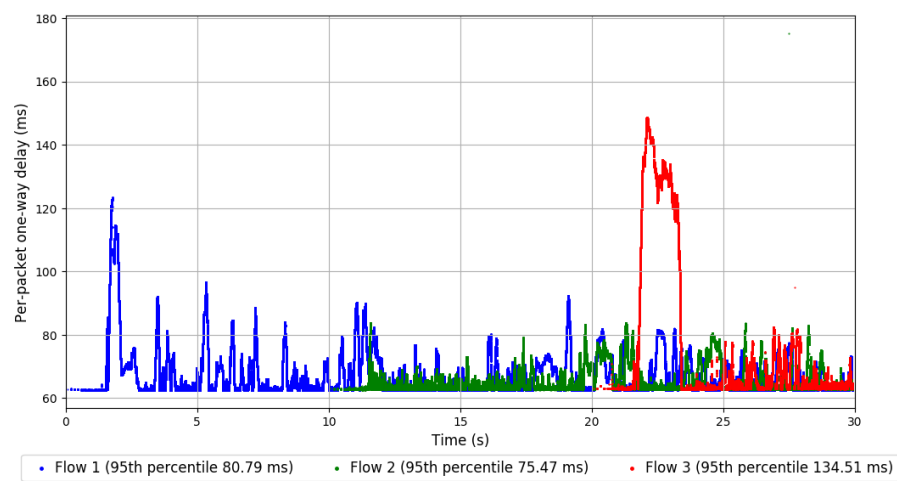
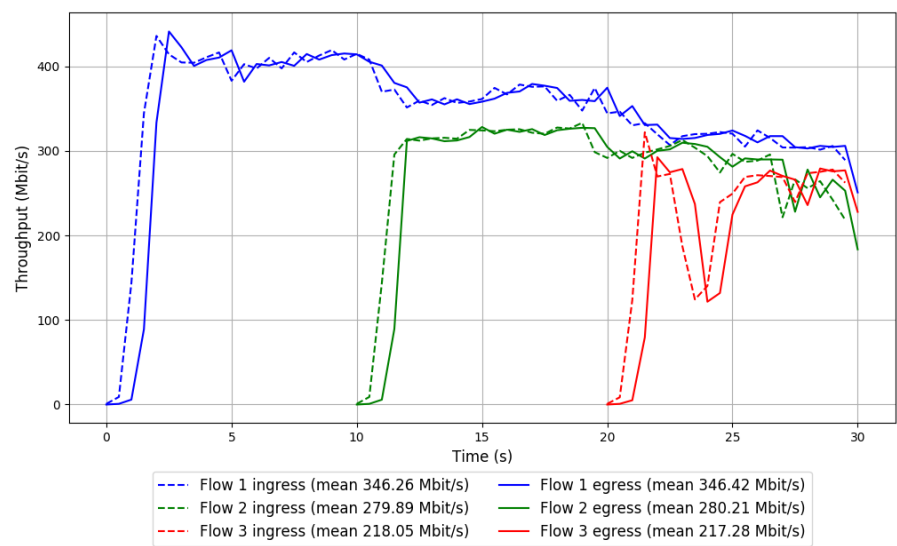
-- Flow 3:

Average throughput: 217.28 Mbit/s

95th percentile per-packet one-way delay: 134.509 ms

Loss rate: 1.62%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

Start at: 2018-10-26 13:23:29

End at: 2018-10-26 13:23:59

Local clock offset: -0.014 ms

Remote clock offset: 1.25 ms

Below is generated by plot.py at 2018-10-26 15:23:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 601.40 Mbit/s

95th percentile per-packet one-way delay: 91.095 ms

Loss rate: 0.63%

-- Flow 1:

Average throughput: 335.70 Mbit/s

95th percentile per-packet one-way delay: 91.101 ms

Loss rate: 0.36%

-- Flow 2:

Average throughput: 279.64 Mbit/s

95th percentile per-packet one-way delay: 92.253 ms

Loss rate: 0.76%

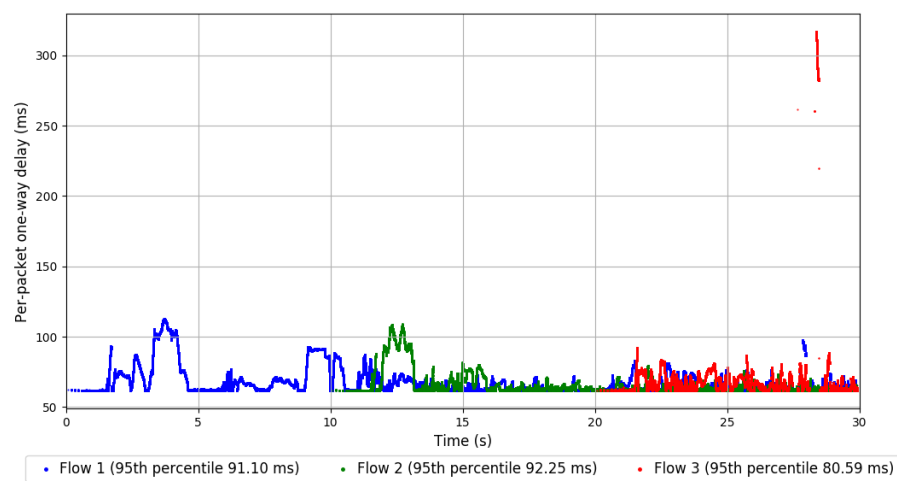
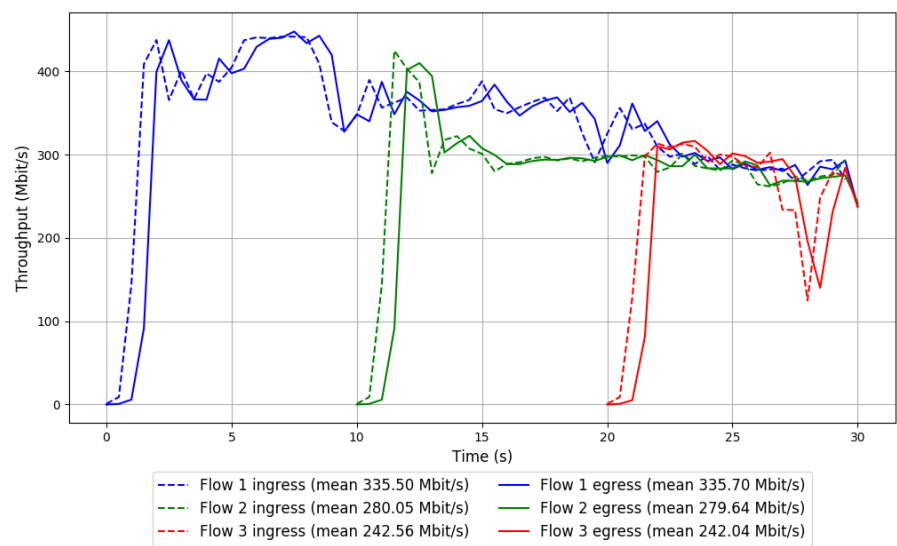
-- Flow 3:

Average throughput: 242.04 Mbit/s

95th percentile per-packet one-way delay: 80.588 ms

Loss rate: 1.48%

Run 3: Report of Copa — Data Link



Run 4: Statistics of Copa

Start at: 2018-10-26 13:55:04

End at: 2018-10-26 13:55:34

Local clock offset: -0.033 ms

Remote clock offset: 0.609 ms

Below is generated by plot.py at 2018-10-26 15:41:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 634.36 Mbit/s

95th percentile per-packet one-way delay: 83.121 ms

Loss rate: 0.64%

-- Flow 1:

Average throughput: 342.86 Mbit/s

95th percentile per-packet one-way delay: 78.848 ms

Loss rate: 0.42%

-- Flow 2:

Average throughput: 305.78 Mbit/s

95th percentile per-packet one-way delay: 86.637 ms

Loss rate: 0.65%

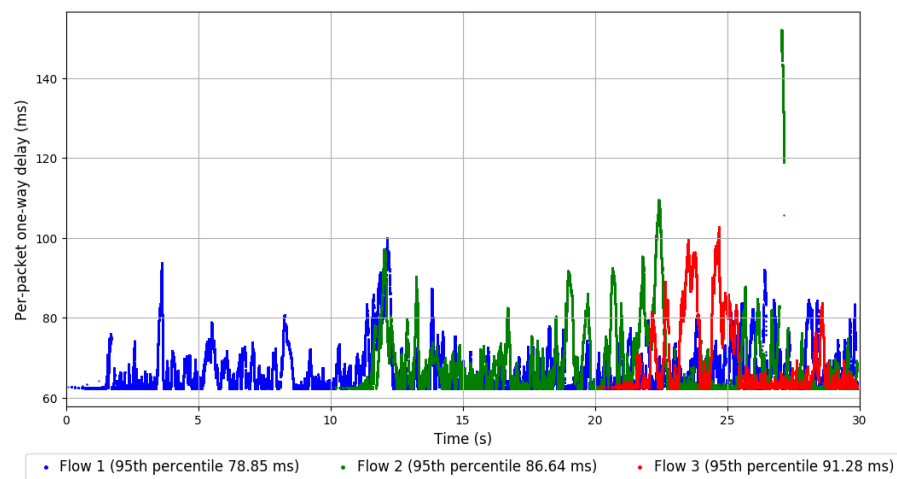
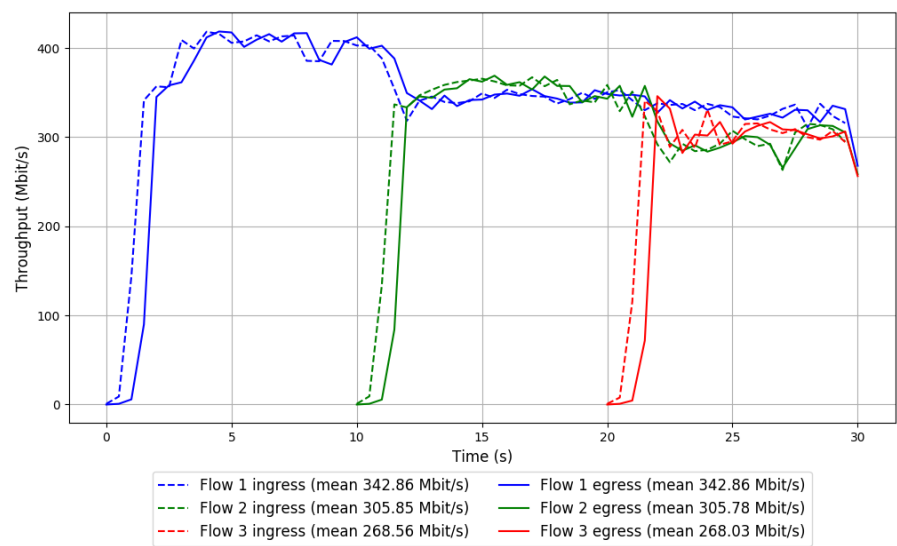
-- Flow 3:

Average throughput: 268.03 Mbit/s

95th percentile per-packet one-way delay: 91.275 ms

Loss rate: 1.46%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

Start at: 2018-10-26 14:26:42

End at: 2018-10-26 14:27:12

Local clock offset: -0.043 ms

Remote clock offset: 0.989 ms

Below is generated by plot.py at 2018-10-26 15:41:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 534.03 Mbit/s

95th percentile per-packet one-way delay: 72.138 ms

Loss rate: 0.67%

-- Flow 1:

Average throughput: 256.58 Mbit/s

95th percentile per-packet one-way delay: 71.209 ms

Loss rate: 0.45%

-- Flow 2:

Average throughput: 291.94 Mbit/s

95th percentile per-packet one-way delay: 70.954 ms

Loss rate: 0.62%

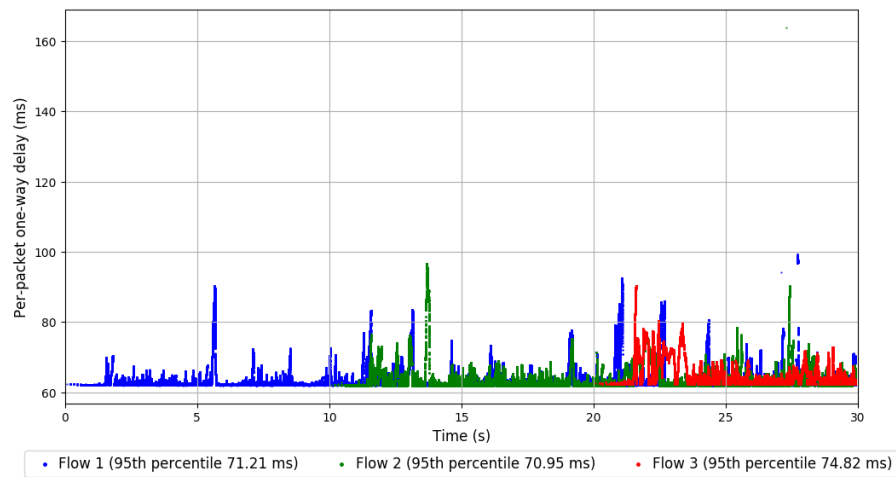
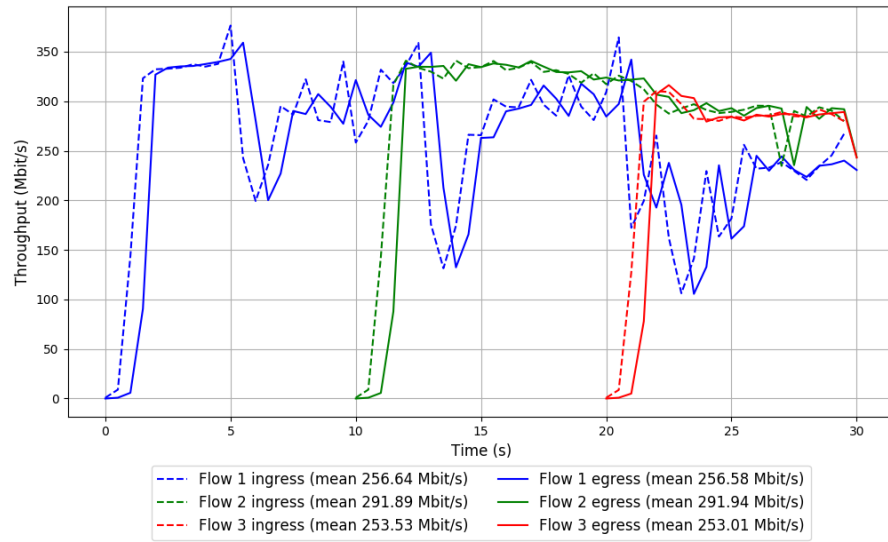
-- Flow 3:

Average throughput: 253.01 Mbit/s

95th percentile per-packet one-way delay: 74.820 ms

Loss rate: 1.46%

Run 5: Report of Copa — Data Link

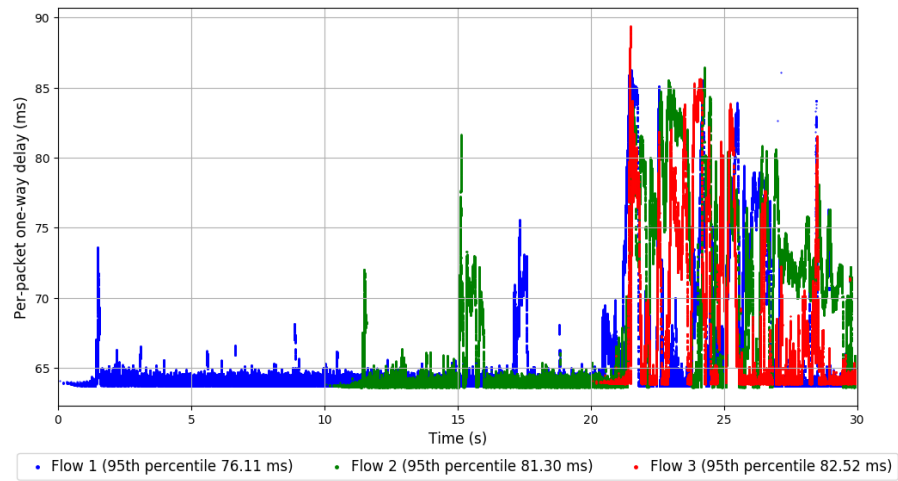
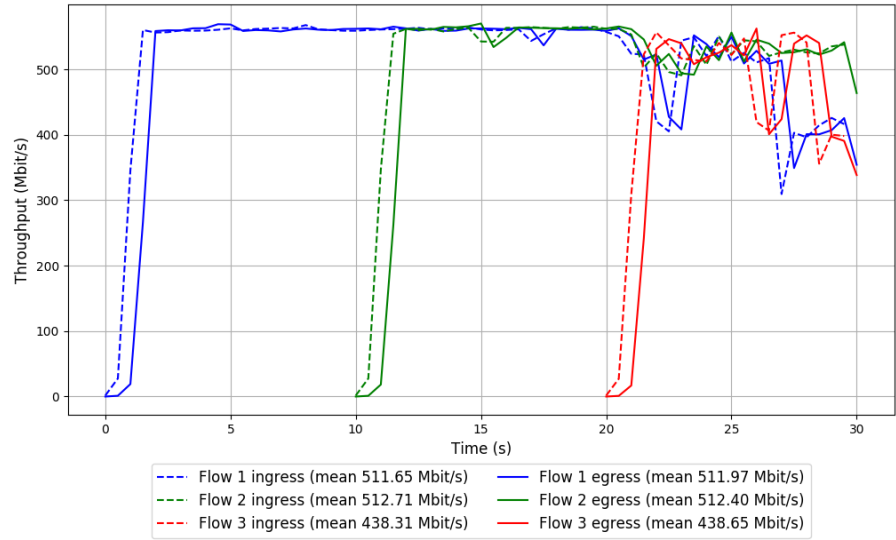


Run 1: Statistics of TCP Cubic

Start at: 2018-10-26 12:27:48
End at: 2018-10-26 12:28:18
Local clock offset: -0.085 ms
Remote clock offset: -0.718 ms

Below is generated by plot.py at 2018-10-26 15:41:03
Datalink statistics
-- Total of 3 flows:
Average throughput: 997.10 Mbit/s
95th percentile per-packet one-way delay: 79.770 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 511.97 Mbit/s
95th percentile per-packet one-way delay: 76.105 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 512.40 Mbit/s
95th percentile per-packet one-way delay: 81.295 ms
Loss rate: 0.70%
-- Flow 3:
Average throughput: 438.65 Mbit/s
95th percentile per-packet one-way delay: 82.516 ms
Loss rate: 1.20%

Run 1: Report of TCP Cubic — Data Link

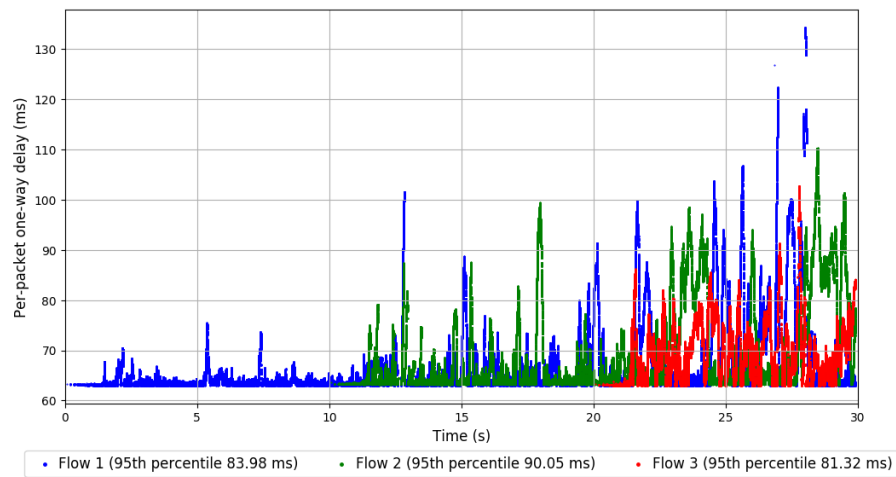
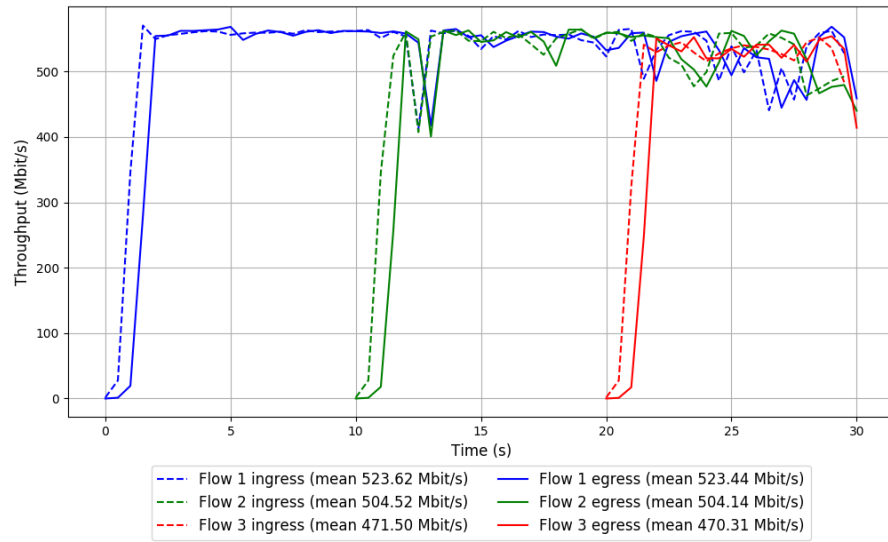


Run 2: Statistics of TCP Cubic

Start at: 2018-10-26 12:59:18
End at: 2018-10-26 12:59:48
Local clock offset: -0.044 ms
Remote clock offset: -0.354 ms

Below is generated by plot.py at 2018-10-26 15:41:03
Datalink statistics
-- Total of 3 flows:
Average throughput: 1013.36 Mbit/s
95th percentile per-packet one-way delay: 86.808 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 523.44 Mbit/s
95th percentile per-packet one-way delay: 83.976 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 504.14 Mbit/s
95th percentile per-packet one-way delay: 90.052 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 470.31 Mbit/s
95th percentile per-packet one-way delay: 81.318 ms
Loss rate: 1.51%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-10-26 13:30:52

End at: 2018-10-26 13:31:22

Local clock offset: 0.021 ms

Remote clock offset: 0.557 ms

Below is generated by plot.py at 2018-10-26 15:41:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 1005.82 Mbit/s

95th percentile per-packet one-way delay: 85.051 ms

Loss rate: 0.70%

-- Flow 1:

Average throughput: 522.16 Mbit/s

95th percentile per-packet one-way delay: 80.708 ms

Loss rate: 0.45%

-- Flow 2:

Average throughput: 501.67 Mbit/s

95th percentile per-packet one-way delay: 88.536 ms

Loss rate: 0.71%

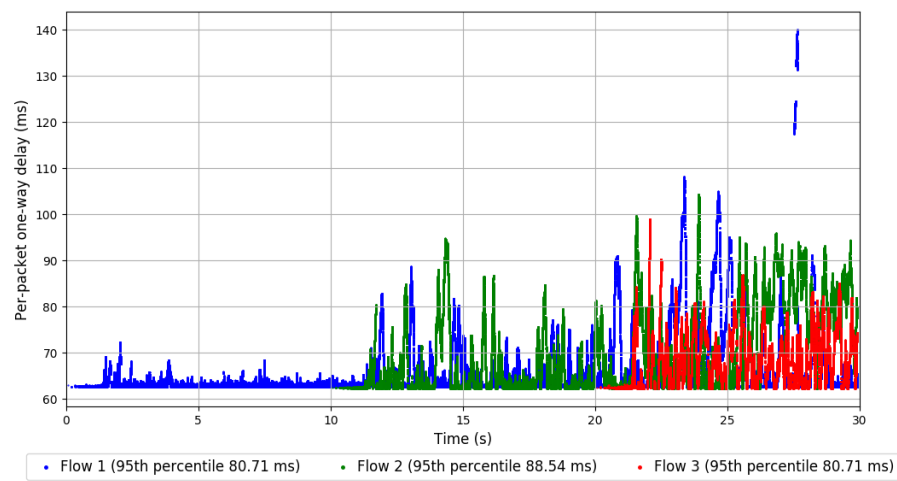
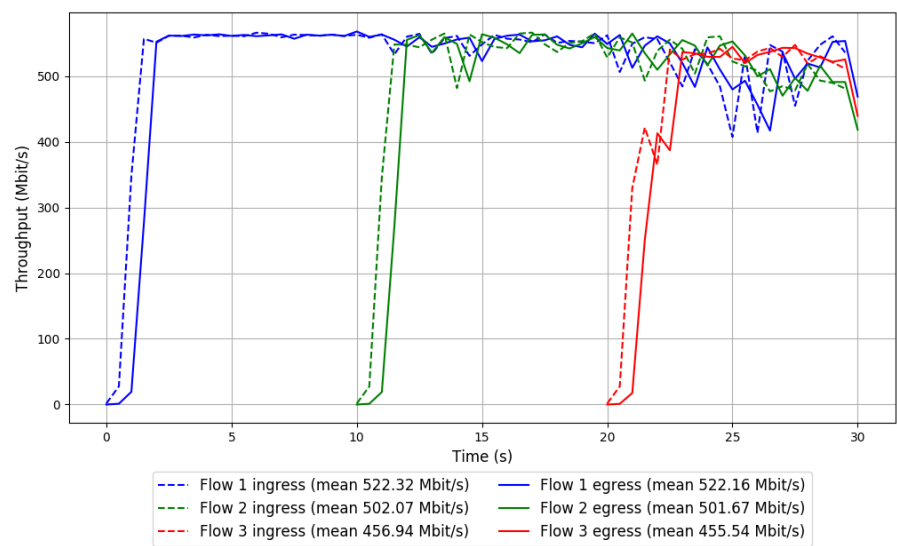
-- Flow 3:

Average throughput: 455.54 Mbit/s

95th percentile per-packet one-way delay: 80.707 ms

Loss rate: 1.56%

Run 3: Report of TCP Cubic — Data Link



Run 4: Statistics of TCP Cubic

Start at: 2018-10-26 14:02:30

End at: 2018-10-26 14:03:00

Local clock offset: -0.089 ms

Remote clock offset: 1.38 ms

Below is generated by plot.py at 2018-10-26 15:41:03

Datalink statistics

-- Total of 3 flows:

Average throughput: 998.76 Mbit/s

95th percentile per-packet one-way delay: 86.233 ms

Loss rate: 0.71%

-- Flow 1:

Average throughput: 521.14 Mbit/s

95th percentile per-packet one-way delay: 85.845 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 504.34 Mbit/s

95th percentile per-packet one-way delay: 78.758 ms

Loss rate: 0.71%

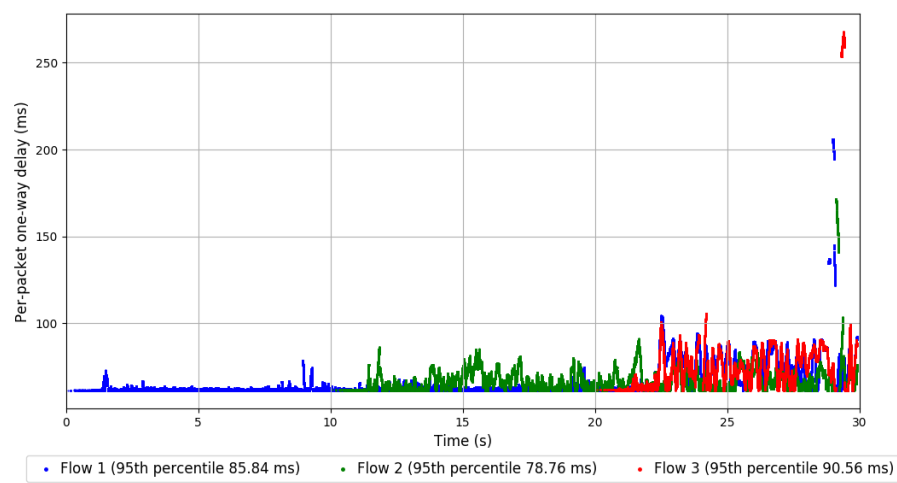
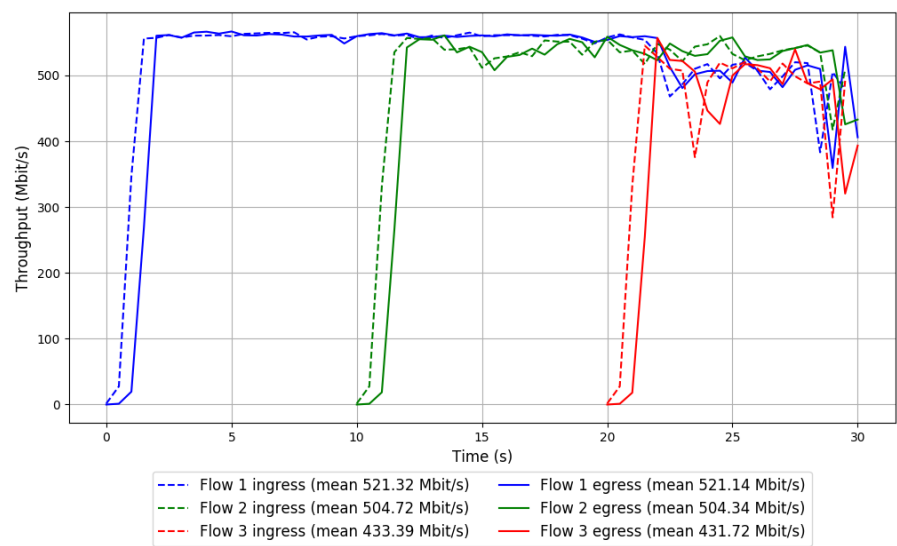
-- Flow 3:

Average throughput: 431.72 Mbit/s

95th percentile per-packet one-way delay: 90.559 ms

Loss rate: 1.64%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

Start at: 2018-10-26 14:33:59

End at: 2018-10-26 14:34:29

Local clock offset: -0.034 ms

Remote clock offset: -0.15 ms

Below is generated by plot.py at 2018-10-26 15:41:06

Datalink statistics

-- Total of 3 flows:

Average throughput: 1021.10 Mbit/s

95th percentile per-packet one-way delay: 77.596 ms

Loss rate: 0.70%

-- Flow 1:

Average throughput: 535.06 Mbit/s

95th percentile per-packet one-way delay: 70.269 ms

Loss rate: 0.44%

-- Flow 2:

Average throughput: 501.64 Mbit/s

95th percentile per-packet one-way delay: 81.764 ms

Loss rate: 0.71%

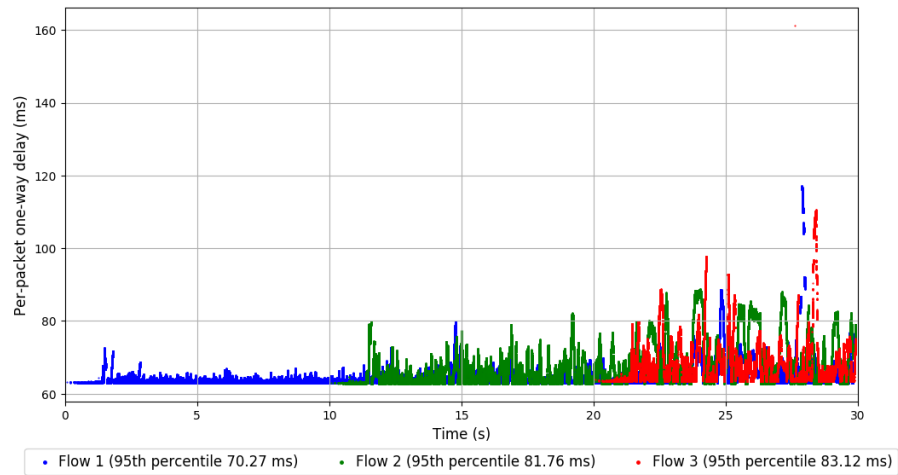
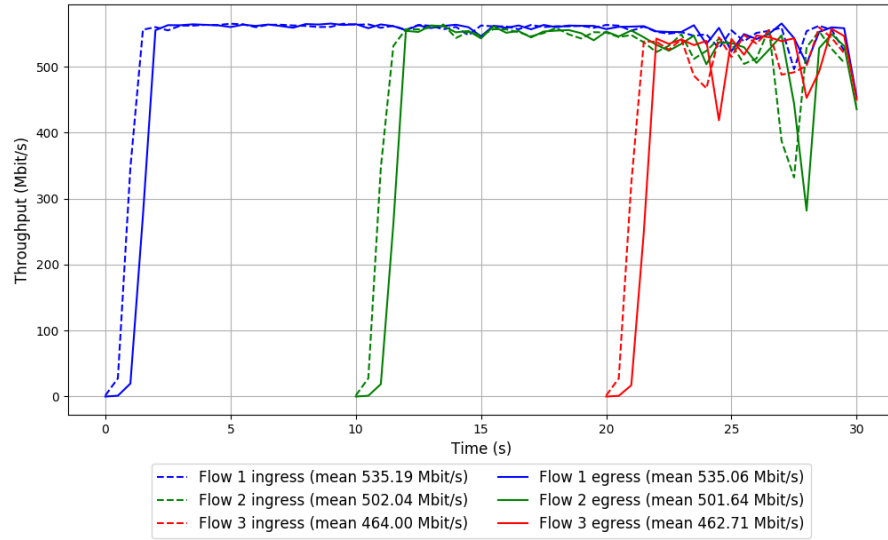
-- Flow 3:

Average throughput: 462.71 Mbit/s

95th percentile per-packet one-way delay: 83.118 ms

Loss rate: 1.53%

Run 5: Report of TCP Cubic — Data Link

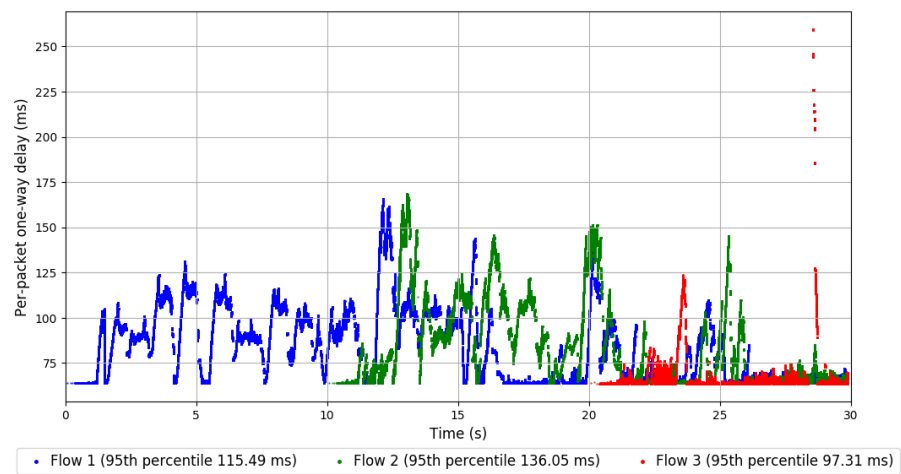
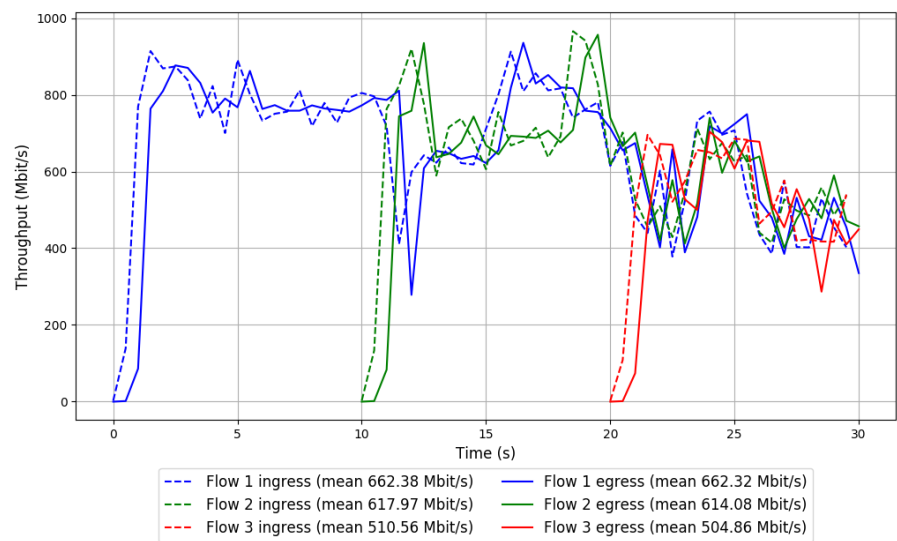


Run 1: Statistics of FillP

Start at: 2018-10-26 12:09:59
End at: 2018-10-26 12:10:29
Local clock offset: -0.114 ms
Remote clock offset: -0.678 ms

Below is generated by plot.py at 2018-10-26 15:48:55
Datalink statistics
-- Total of 3 flows:
Average throughput: 1236.09 Mbit/s
95th percentile per-packet one-way delay: 120.870 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 662.32 Mbit/s
95th percentile per-packet one-way delay: 115.494 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 614.08 Mbit/s
95th percentile per-packet one-way delay: 136.048 ms
Loss rate: 1.26%
-- Flow 3:
Average throughput: 504.86 Mbit/s
95th percentile per-packet one-way delay: 97.307 ms
Loss rate: 2.29%

Run 1: Report of FillP — Data Link

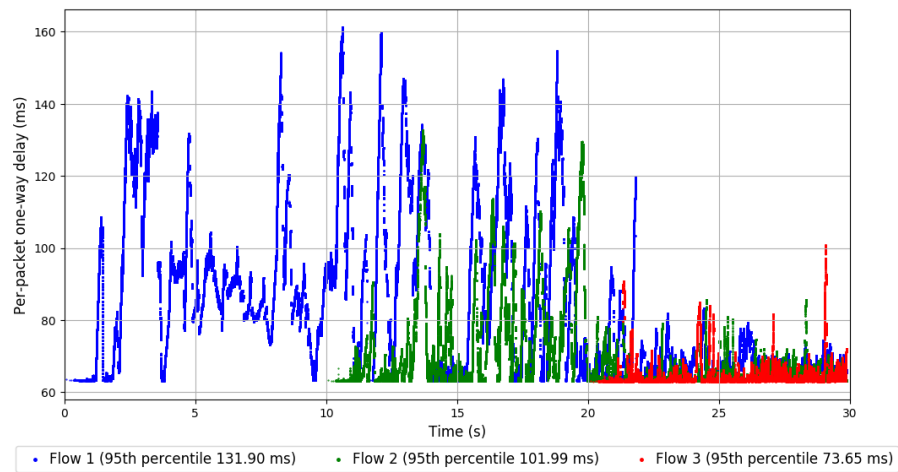
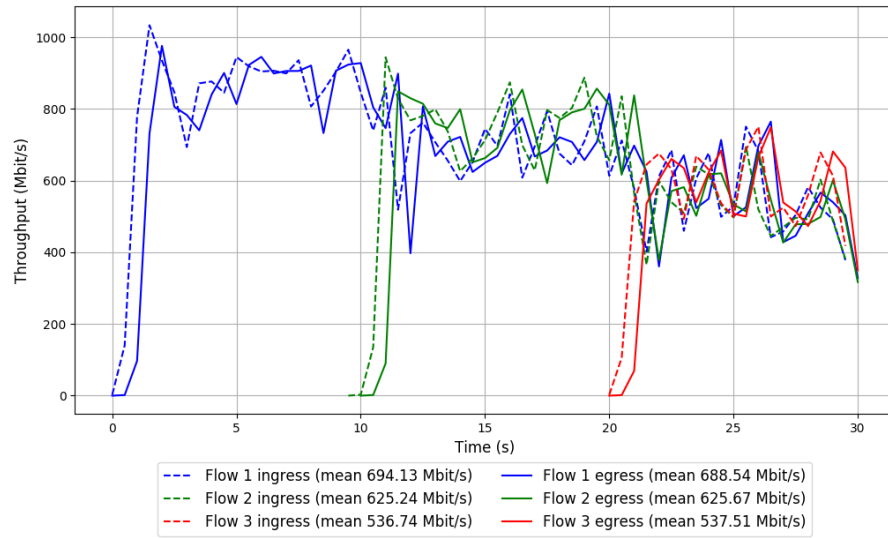


Run 2: Statistics of FillP

Start at: 2018-10-26 12:41:23
End at: 2018-10-26 12:41:53
Local clock offset: -0.086 ms
Remote clock offset: -0.307 ms

Below is generated by plot.py at 2018-10-26 16:05:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 1280.67 Mbit/s
95th percentile per-packet one-way delay: 124.921 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 688.54 Mbit/s
95th percentile per-packet one-way delay: 131.900 ms
Loss rate: 1.17%
-- Flow 2:
Average throughput: 625.67 Mbit/s
95th percentile per-packet one-way delay: 101.988 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 537.51 Mbit/s
95th percentile per-packet one-way delay: 73.649 ms
Loss rate: 1.19%

Run 2: Report of FillP — Data Link

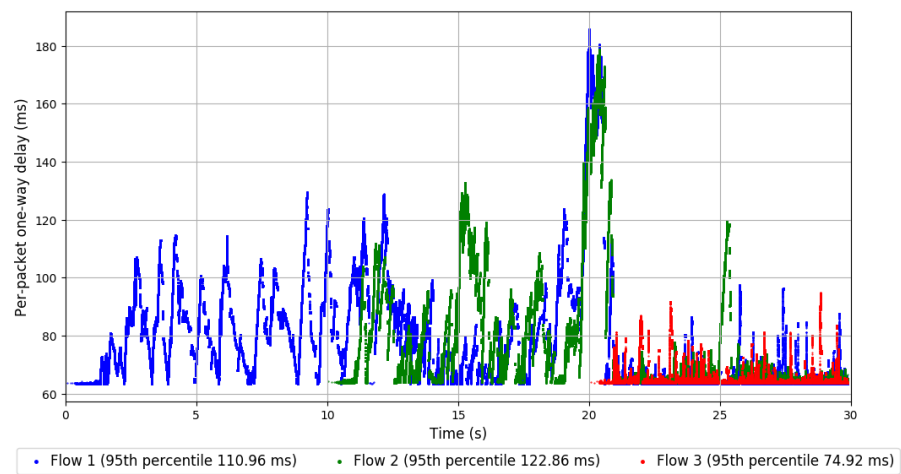
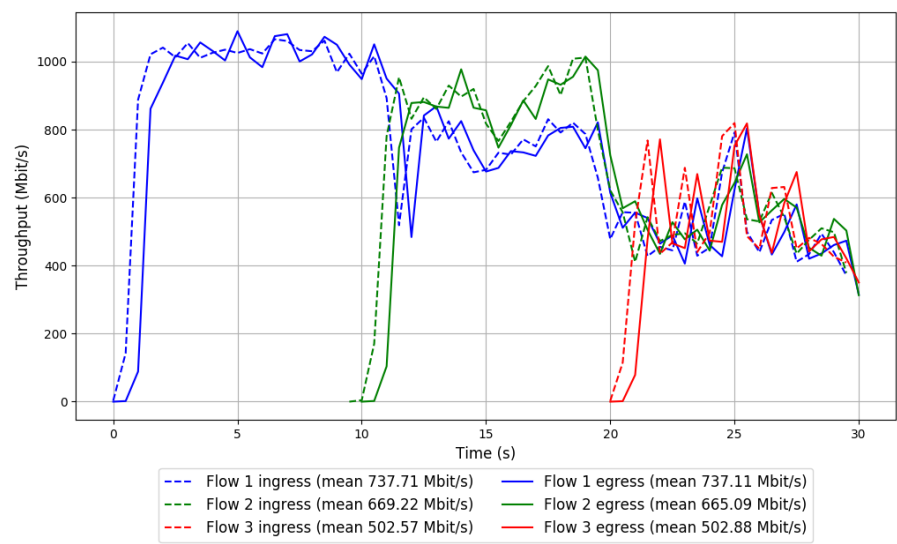


Run 3: Statistics of FillP

Start at: 2018-10-26 13:12:50
End at: 2018-10-26 13:13:20
Local clock offset: -0.049 ms
Remote clock offset: -0.52 ms

Below is generated by plot.py at 2018-10-26 16:07:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 1344.43 Mbit/s
95th percentile per-packet one-way delay: 112.746 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 737.11 Mbit/s
95th percentile per-packet one-way delay: 110.964 ms
Loss rate: 0.50%
-- Flow 2:
Average throughput: 665.09 Mbit/s
95th percentile per-packet one-way delay: 122.855 ms
Loss rate: 1.24%
-- Flow 3:
Average throughput: 502.88 Mbit/s
95th percentile per-packet one-way delay: 74.923 ms
Loss rate: 1.16%

Run 3: Report of FillP — Data Link

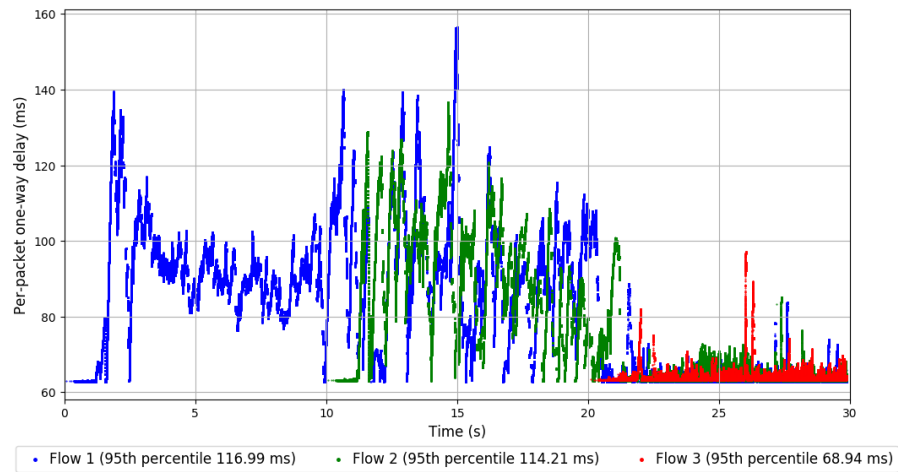
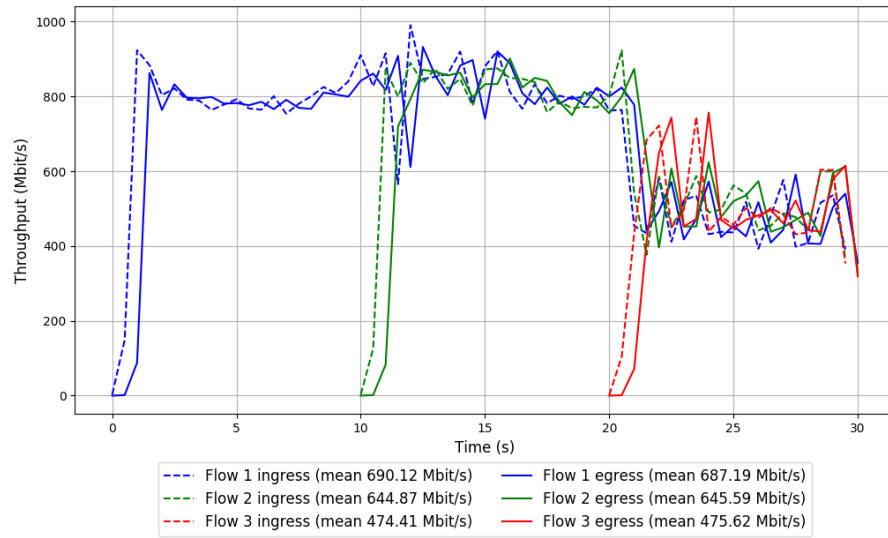


Run 4: Statistics of FillP

Start at: 2018-10-26 13:44:31
End at: 2018-10-26 13:45:01
Local clock offset: -0.058 ms
Remote clock offset: -0.065 ms

Below is generated by plot.py at 2018-10-26 16:07:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 1272.13 Mbit/s
95th percentile per-packet one-way delay: 114.064 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 687.19 Mbit/s
95th percentile per-packet one-way delay: 116.990 ms
Loss rate: 0.81%
-- Flow 2:
Average throughput: 645.59 Mbit/s
95th percentile per-packet one-way delay: 114.208 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 475.62 Mbit/s
95th percentile per-packet one-way delay: 68.944 ms
Loss rate: 1.07%

Run 4: Report of FillP — Data Link



Run 5: Statistics of FillP

Start at: 2018-10-26 14:16:03

End at: 2018-10-26 14:16:33

Local clock offset: -0.058 ms

Remote clock offset: 0.021 ms

Below is generated by plot.py at 2018-10-26 16:08:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 1345.47 Mbit/s

95th percentile per-packet one-way delay: 108.659 ms

Loss rate: 0.70%

-- Flow 1:

Average throughput: 749.97 Mbit/s

95th percentile per-packet one-way delay: 112.756 ms

Loss rate: 0.69%

-- Flow 2:

Average throughput: 655.90 Mbit/s

95th percentile per-packet one-way delay: 103.131 ms

Loss rate: 0.41%

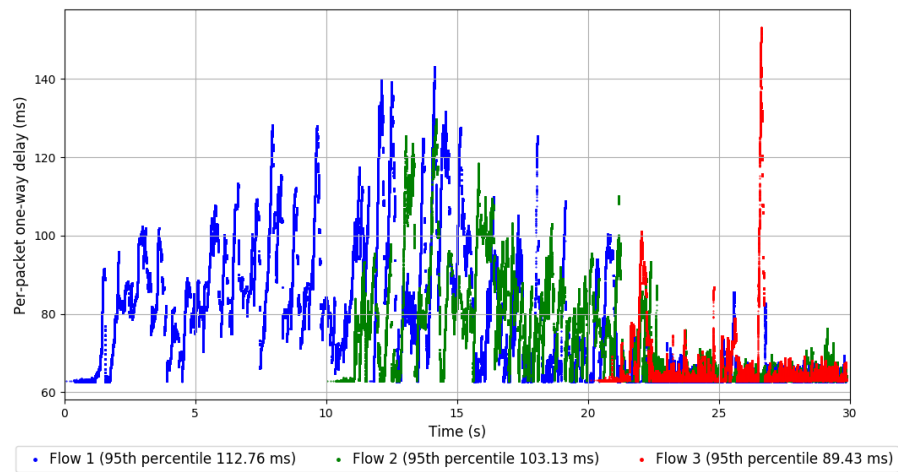
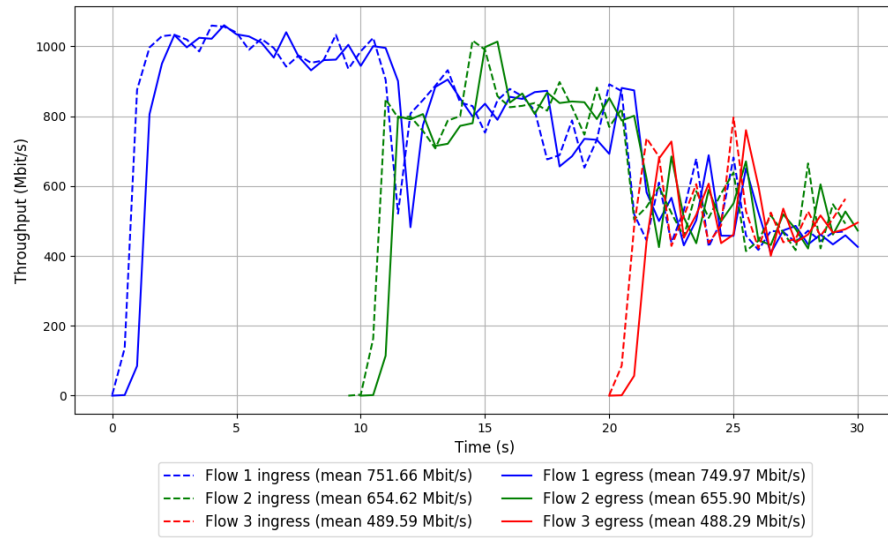
-- Flow 3:

Average throughput: 488.29 Mbit/s

95th percentile per-packet one-way delay: 89.430 ms

Loss rate: 1.55%

Run 5: Report of FillP — Data Link

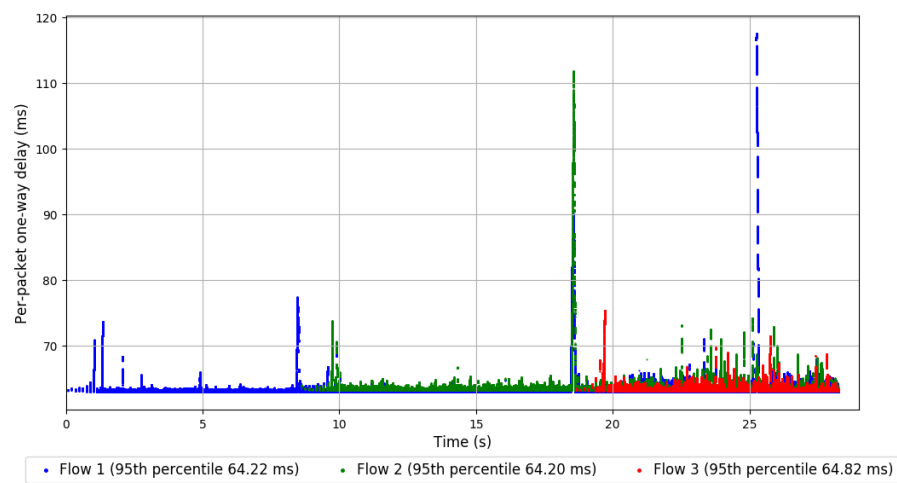
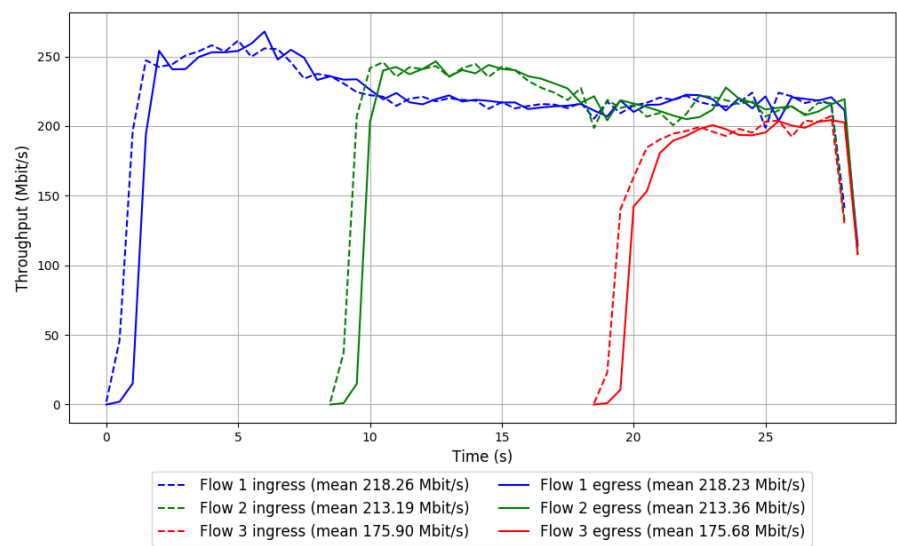



```
Run 1: Statistics of Indigo

Start at: 2018-10-26 12:23:52
End at: 2018-10-26 12:24:22
Local clock offset: -0.099 ms
Remote clock offset: -0.378 ms

# Below is generated by plot.py at 2018-10-26 16:08:04
# Datalink statistics
-- Total of 3 flows:
Average throughput: 426.73 Mbit/s
95th percentile per-packet one-way delay: 64.315 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 218.23 Mbit/s
95th percentile per-packet one-way delay: 64.216 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 213.36 Mbit/s
95th percentile per-packet one-way delay: 64.196 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 175.68 Mbit/s
95th percentile per-packet one-way delay: 64.821 ms
Loss rate: 1.42%
```

Run 1: Report of Indigo — Data Link

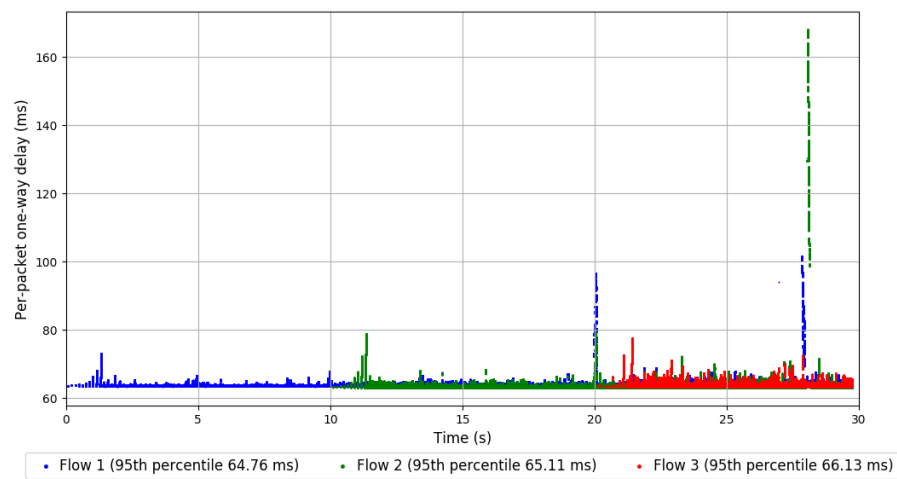
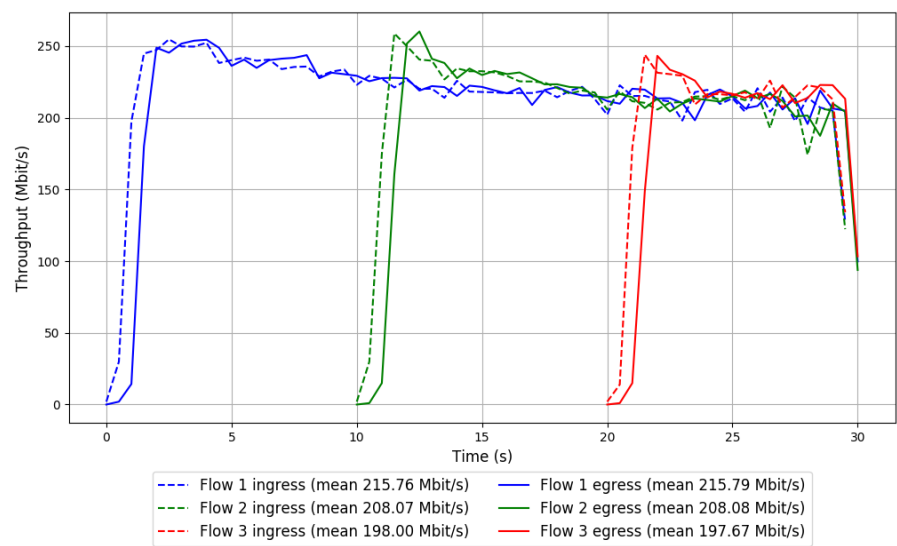


Run 2: Statistics of Indigo

Start at: 2018-10-26 12:55:13
End at: 2018-10-26 12:55:43
Local clock offset: -0.052 ms
Remote clock offset: -0.315 ms

Below is generated by plot.py at 2018-10-26 16:08:04
Datalink statistics
-- Total of 3 flows:
Average throughput: 417.58 Mbit/s
95th percentile per-packet one-way delay: 65.161 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 215.79 Mbit/s
95th percentile per-packet one-way delay: 64.764 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 208.08 Mbit/s
95th percentile per-packet one-way delay: 65.108 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 197.67 Mbit/s
95th percentile per-packet one-way delay: 66.133 ms
Loss rate: 1.47%

Run 2: Report of Indigo — Data Link

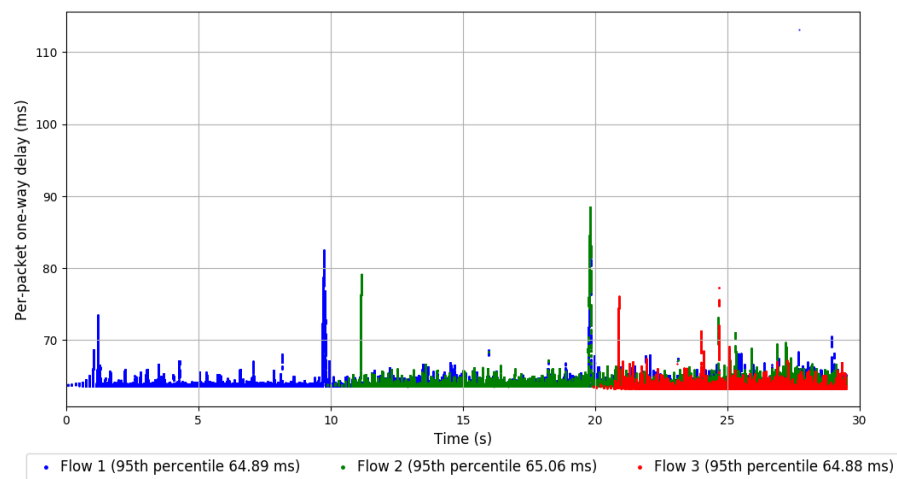
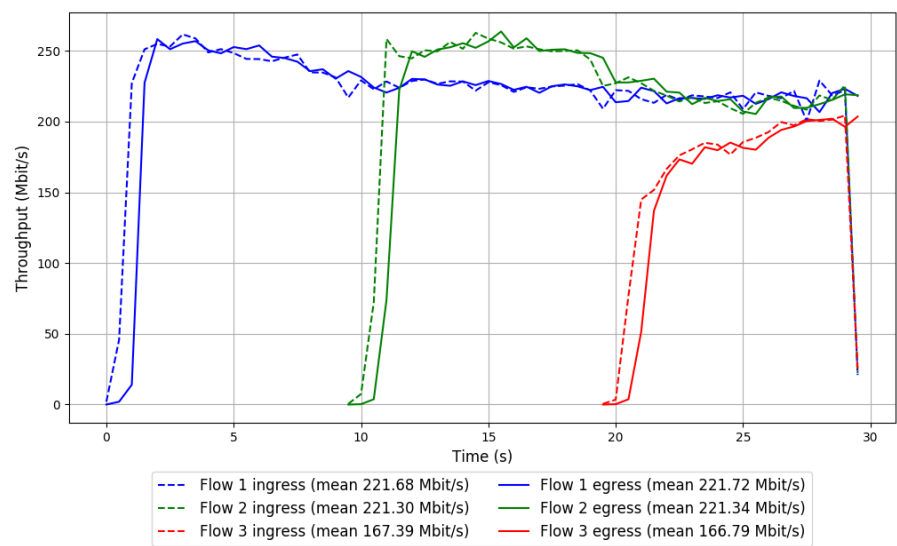


Run 3: Statistics of Indigo

Start at: 2018-10-26 13:26:55
End at: 2018-10-26 13:27:25
Local clock offset: -0.06 ms
Remote clock offset: -0.751 ms

Below is generated by plot.py at 2018-10-26 16:08:04
Datalink statistics
-- Total of 3 flows:
Average throughput: 423.43 Mbit/s
95th percentile per-packet one-way delay: 64.955 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 221.72 Mbit/s
95th percentile per-packet one-way delay: 64.888 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 221.34 Mbit/s
95th percentile per-packet one-way delay: 65.061 ms
Loss rate: 0.63%
-- Flow 3:
Average throughput: 166.79 Mbit/s
95th percentile per-packet one-way delay: 64.882 ms
Loss rate: 1.66%

Run 3: Report of Indigo — Data Link



Run 4: Statistics of Indigo

Start at: 2018-10-26 13:58:32

End at: 2018-10-26 13:59:02

Local clock offset: -0.046 ms

Remote clock offset: 0.59 ms

Below is generated by plot.py at 2018-10-26 16:08:04

Datalink statistics

-- Total of 3 flows:

Average throughput: 419.45 Mbit/s

95th percentile per-packet one-way delay: 64.213 ms

Loss rate: 0.67%

-- Flow 1:

Average throughput: 223.59 Mbit/s

95th percentile per-packet one-way delay: 63.565 ms

Loss rate: 0.43%

-- Flow 2:

Average throughput: 196.89 Mbit/s

95th percentile per-packet one-way delay: 64.554 ms

Loss rate: 0.67%

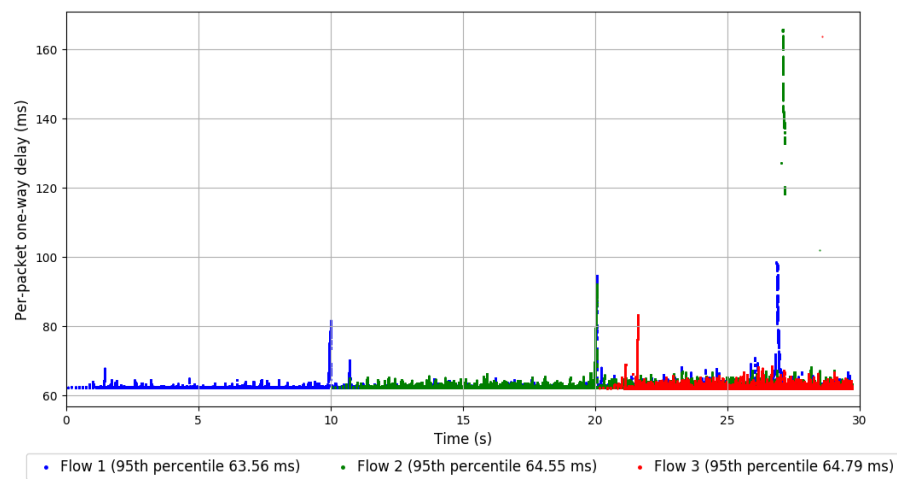
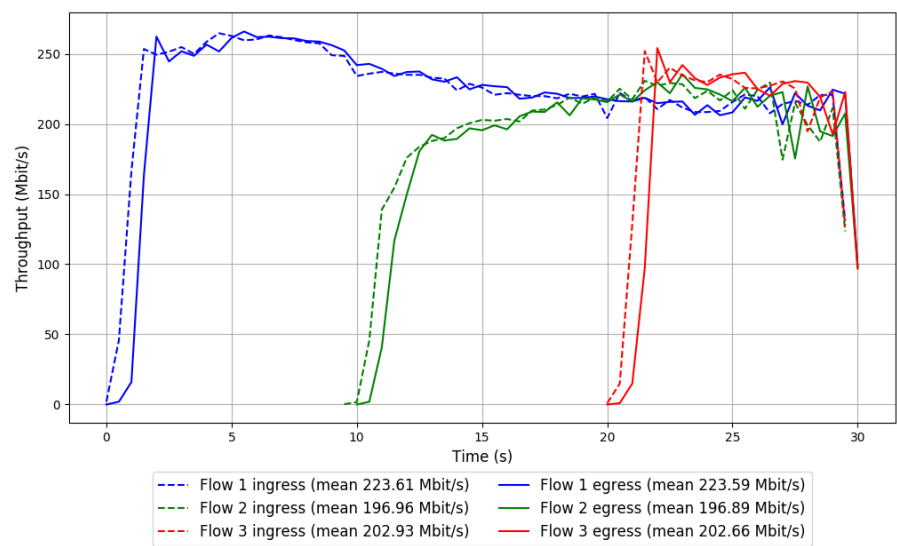
-- Flow 3:

Average throughput: 202.66 Mbit/s

95th percentile per-packet one-way delay: 64.794 ms

Loss rate: 1.44%

Run 4: Report of Indigo — Data Link

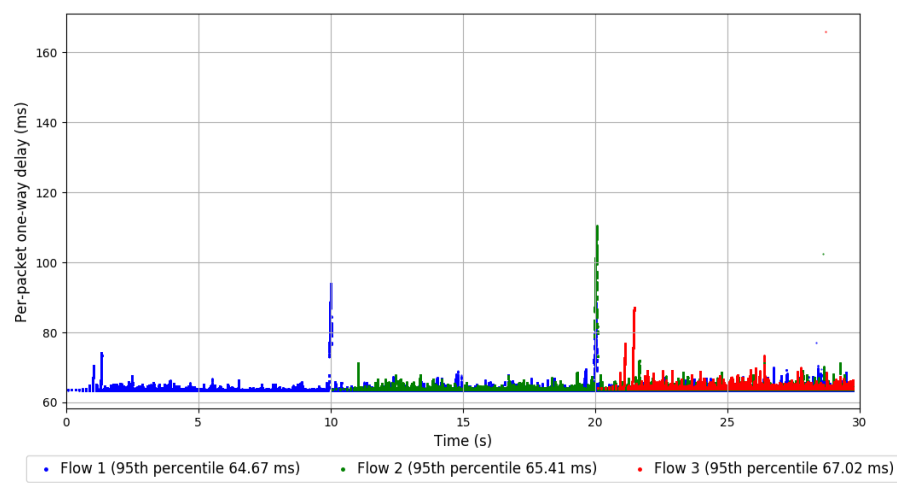
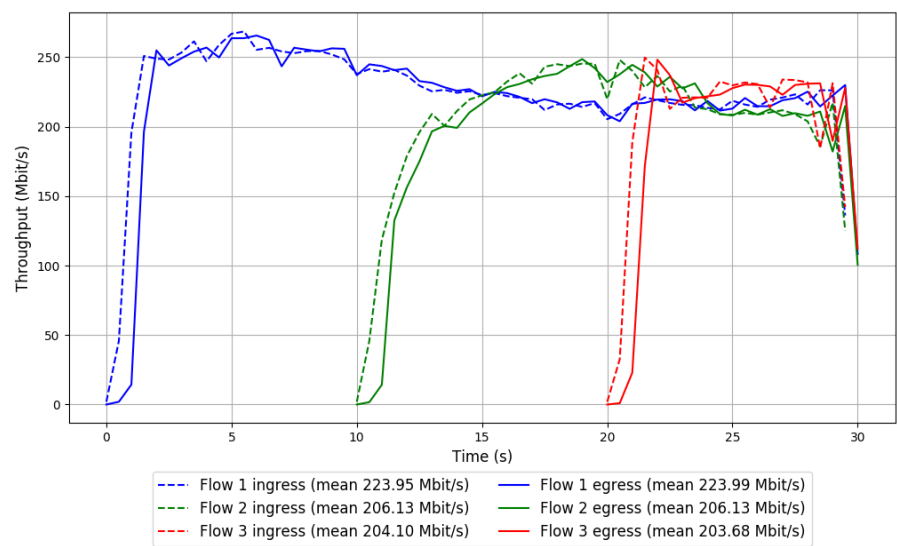


Run 5: Statistics of Indigo

Start at: 2018-10-26 14:30:01
End at: 2018-10-26 14:30:31
Local clock offset: 0.001 ms
Remote clock offset: -0.616 ms

Below is generated by plot.py at 2018-10-26 16:08:22
Datalink statistics
-- Total of 3 flows:
Average throughput: 426.67 Mbit/s
95th percentile per-packet one-way delay: 65.262 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 223.99 Mbit/s
95th percentile per-packet one-way delay: 64.668 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 206.13 Mbit/s
95th percentile per-packet one-way delay: 65.407 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 203.68 Mbit/s
95th percentile per-packet one-way delay: 67.020 ms
Loss rate: 1.49%

Run 5: Report of Indigo — Data Link

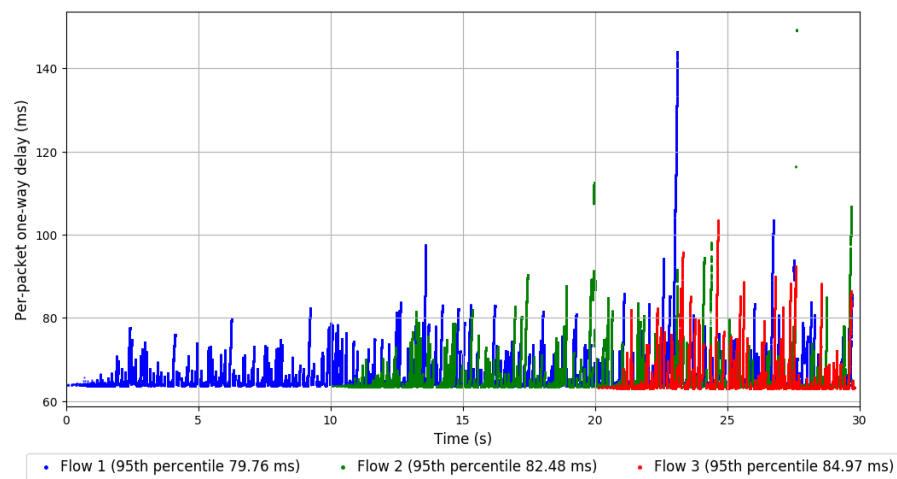
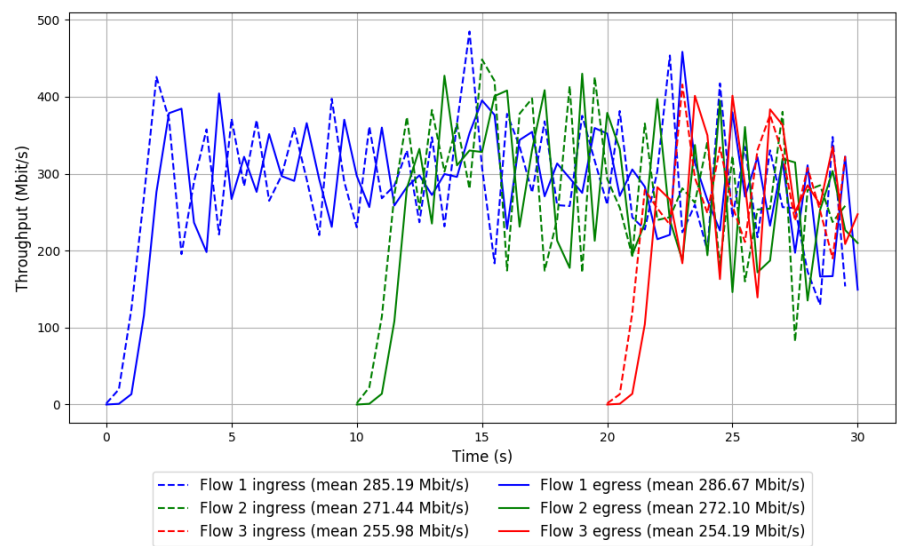


Run 1: Statistics of Indigo-96d2da3

Start at: 2018-10-26 12:18:51
End at: 2018-10-26 12:19:21
Local clock offset: -0.103 ms
Remote clock offset: -0.455 ms

Below is generated by plot.py at 2018-10-26 16:08:22
Datalink statistics
-- Total of 3 flows:
Average throughput: 548.49 Mbit/s
95th percentile per-packet one-way delay: 81.795 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 286.67 Mbit/s
95th percentile per-packet one-way delay: 79.763 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 272.10 Mbit/s
95th percentile per-packet one-way delay: 82.478 ms
Loss rate: 0.74%
-- Flow 3:
Average throughput: 254.19 Mbit/s
95th percentile per-packet one-way delay: 84.969 ms
Loss rate: 1.67%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-10-26 12:50:08

End at: 2018-10-26 12:50:38

Local clock offset: -0.08 ms

Remote clock offset: -0.06 ms

Below is generated by plot.py at 2018-10-26 16:08:22

Datalink statistics

-- Total of 3 flows:

Average throughput: 565.73 Mbit/s

95th percentile per-packet one-way delay: 81.637 ms

Loss rate: 0.65%

-- Flow 1:

Average throughput: 303.44 Mbit/s

95th percentile per-packet one-way delay: 81.700 ms

Loss rate: 0.42%

-- Flow 2:

Average throughput: 281.07 Mbit/s

95th percentile per-packet one-way delay: 83.398 ms

Loss rate: 0.38%

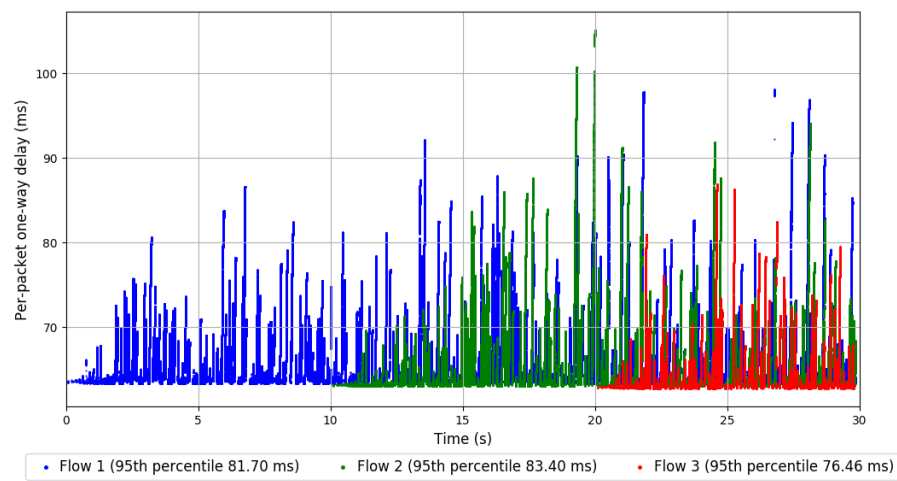
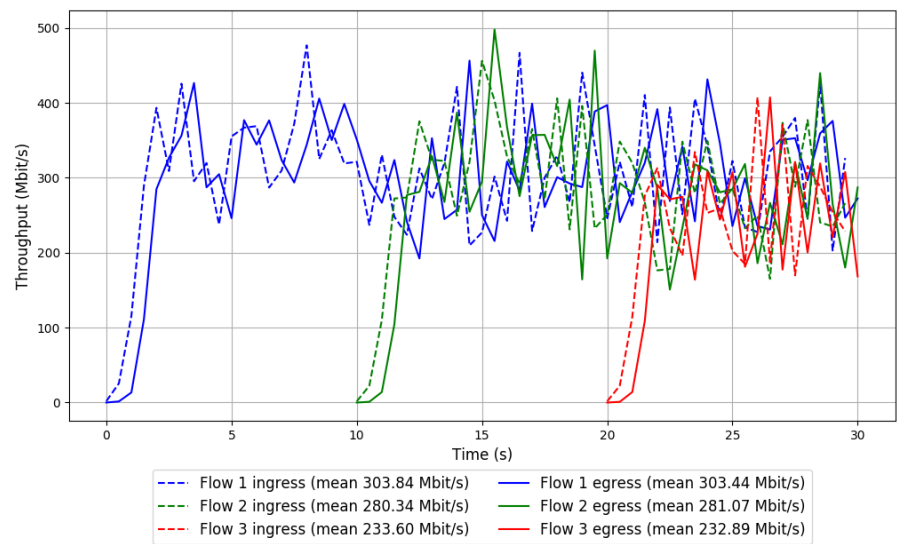
-- Flow 3:

Average throughput: 232.89 Mbit/s

95th percentile per-packet one-way delay: 76.456 ms

Loss rate: 2.17%

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



Run 3: Statistics of Indigo-96d2da3

Start at: 2018-10-26 13:21:48

End at: 2018-10-26 13:22:18

Local clock offset: -0.041 ms

Remote clock offset: 0.709 ms

Below is generated by plot.py at 2018-10-26 16:14:45

Datalink statistics

-- Total of 3 flows:

Average throughput: 578.73 Mbit/s

95th percentile per-packet one-way delay: 85.030 ms

Loss rate: 0.59%

-- Flow 1:

Average throughput: 307.79 Mbit/s

95th percentile per-packet one-way delay: 82.242 ms

Loss rate: 0.48%

-- Flow 2:

Average throughput: 282.87 Mbit/s

95th percentile per-packet one-way delay: 92.474 ms

Loss rate: 0.46%

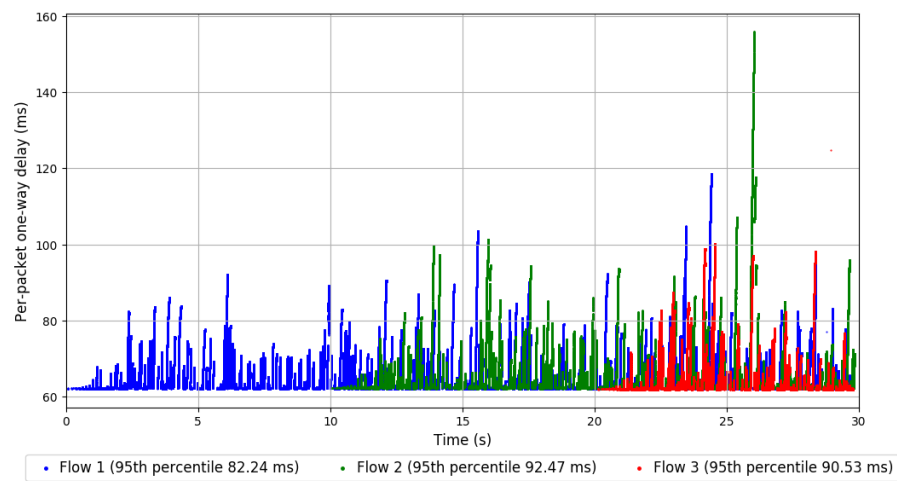
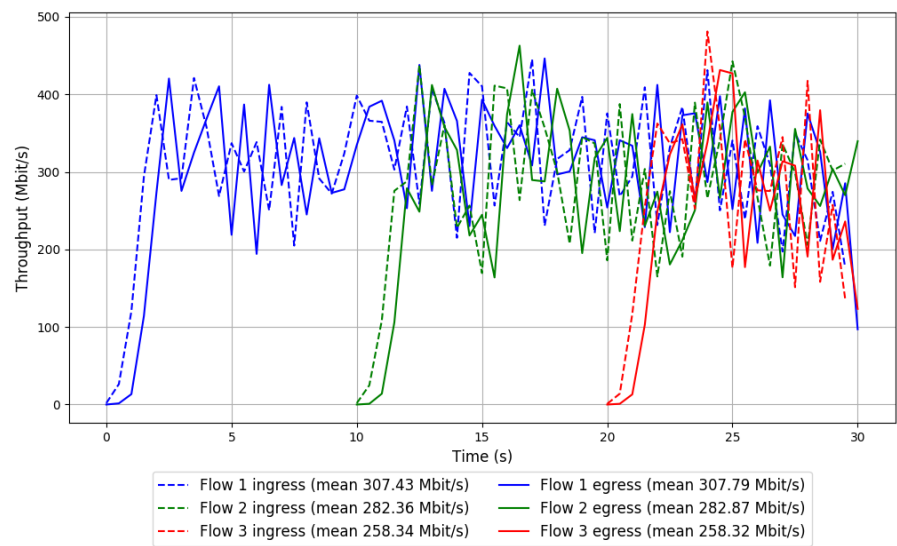
-- Flow 3:

Average throughput: 258.32 Mbit/s

95th percentile per-packet one-way delay: 90.525 ms

Loss rate: 1.26%

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



Run 4: Statistics of Indigo-96d2da3

Start at: 2018-10-26 13:53:25

End at: 2018-10-26 13:53:55

Local clock offset: -0.018 ms

Remote clock offset: 1.289 ms

Below is generated by plot.py at 2018-10-26 16:14:45

Datalink statistics

-- Total of 3 flows:

Average throughput: 531.77 Mbit/s

95th percentile per-packet one-way delay: 89.952 ms

Loss rate: 0.37%

-- Flow 1:

Average throughput: 275.98 Mbit/s

95th percentile per-packet one-way delay: 86.865 ms

Loss rate: 0.19%

-- Flow 2:

Average throughput: 264.66 Mbit/s

95th percentile per-packet one-way delay: 93.403 ms

Loss rate: 0.53%

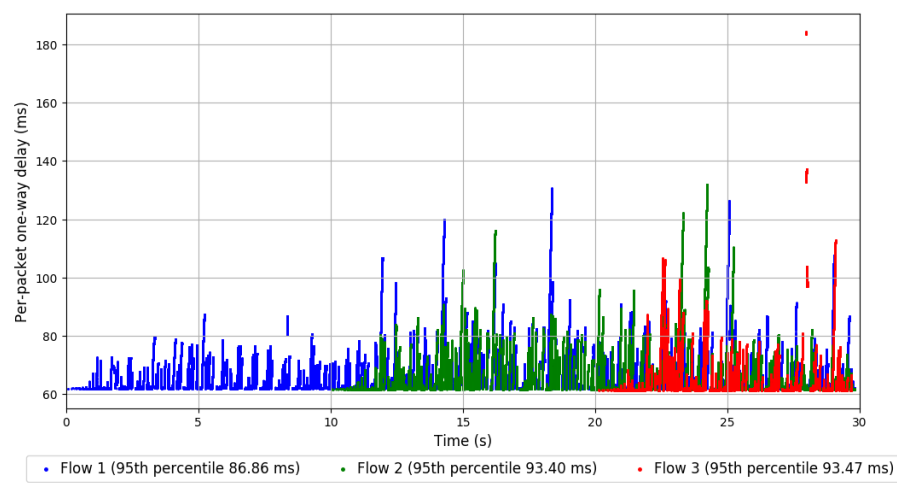
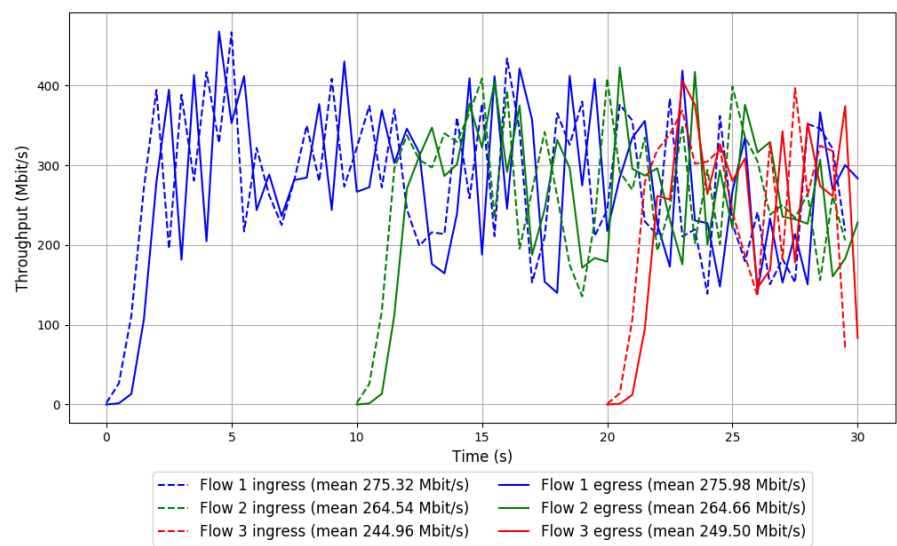
-- Flow 3:

Average throughput: 249.50 Mbit/s

95th percentile per-packet one-way delay: 93.471 ms

Loss rate: 0.62%

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

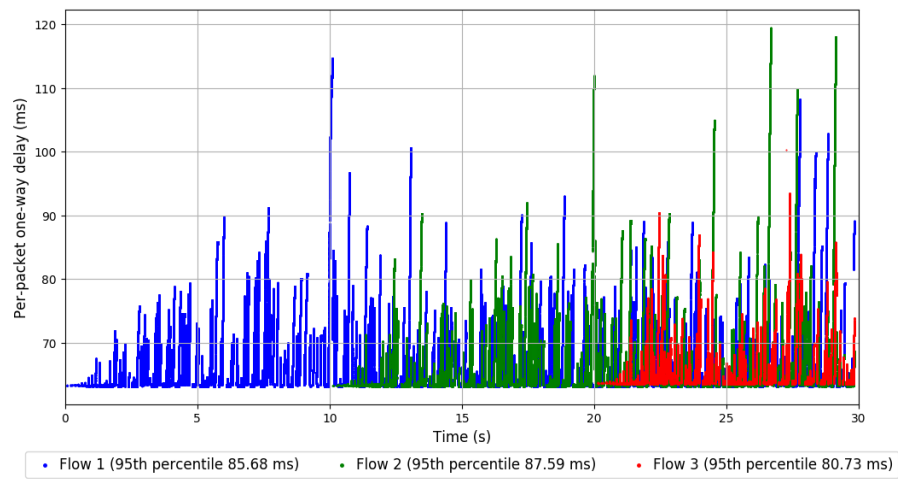
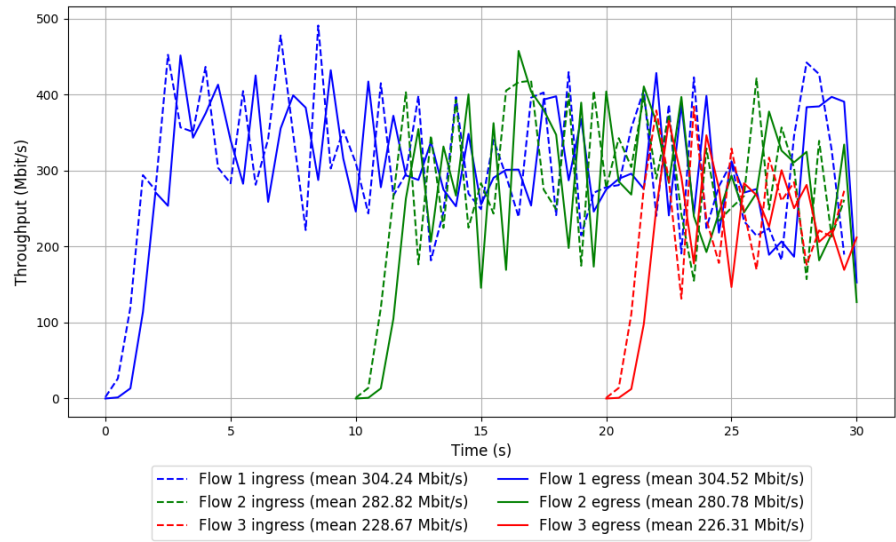


Run 5: Statistics of Indigo-96d2da3

Start at: 2018-10-26 14:25:01
End at: 2018-10-26 14:25:31
Local clock offset: -0.019 ms
Remote clock offset: -0.457 ms

Below is generated by plot.py at 2018-10-26 16:15:17
Datalink statistics
-- Total of 3 flows:
Average throughput: 564.16 Mbit/s
95th percentile per-packet one-way delay: 85.884 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 304.52 Mbit/s
95th percentile per-packet one-way delay: 85.679 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 280.78 Mbit/s
95th percentile per-packet one-way delay: 87.592 ms
Loss rate: 1.21%
-- Flow 3:
Average throughput: 226.31 Mbit/s
95th percentile per-packet one-way delay: 80.728 ms
Loss rate: 2.34%

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

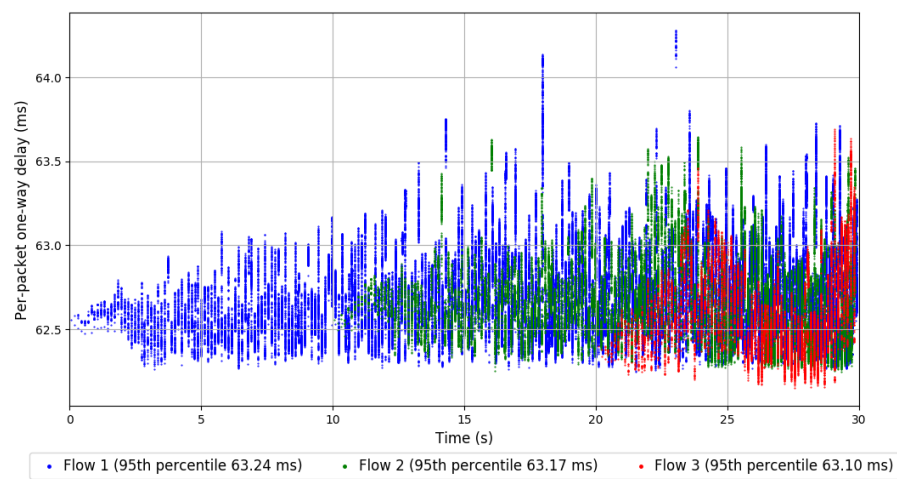
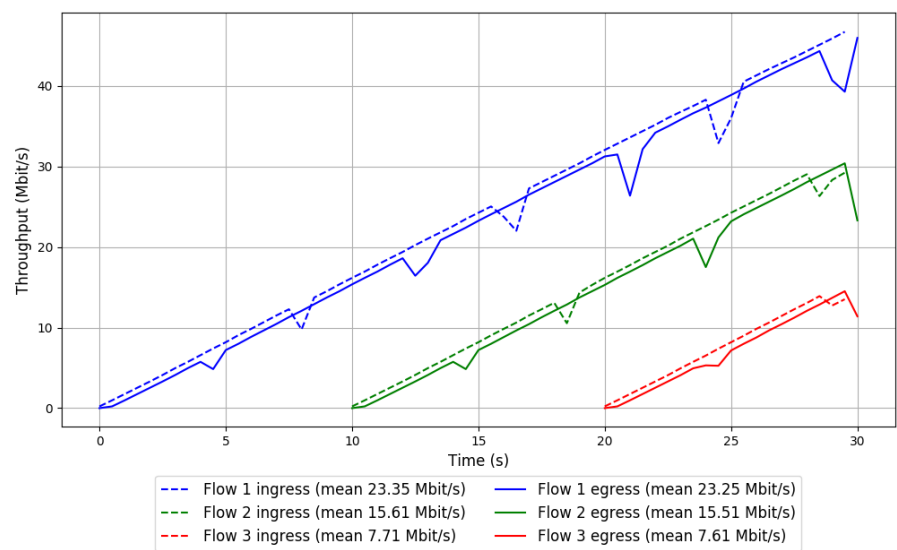


```
Run 1: Statistics of LEDBAT

Start at: 2018-10-26 12:22:36
End at: 2018-10-26 12:23:06
Local clock offset: -0.033 ms
Remote clock offset: 0.563 ms

# Below is generated by plot.py at 2018-10-26 16:15:17
# Datalink statistics
-- Total of 3 flows:
Average throughput: 36.00 Mbit/s
95th percentile per-packet one-way delay: 63.211 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 23.25 Mbit/s
95th percentile per-packet one-way delay: 63.237 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 15.51 Mbit/s
95th percentile per-packet one-way delay: 63.167 ms
Loss rate: 1.27%
-- Flow 3:
Average throughput: 7.61 Mbit/s
95th percentile per-packet one-way delay: 63.099 ms
Loss rate: 2.56%
```

Run 1: Report of LEDBAT — Data Link

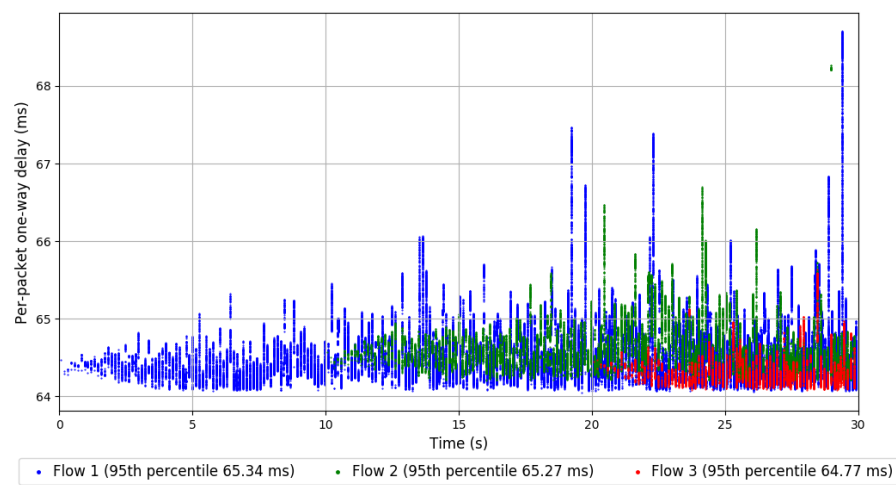
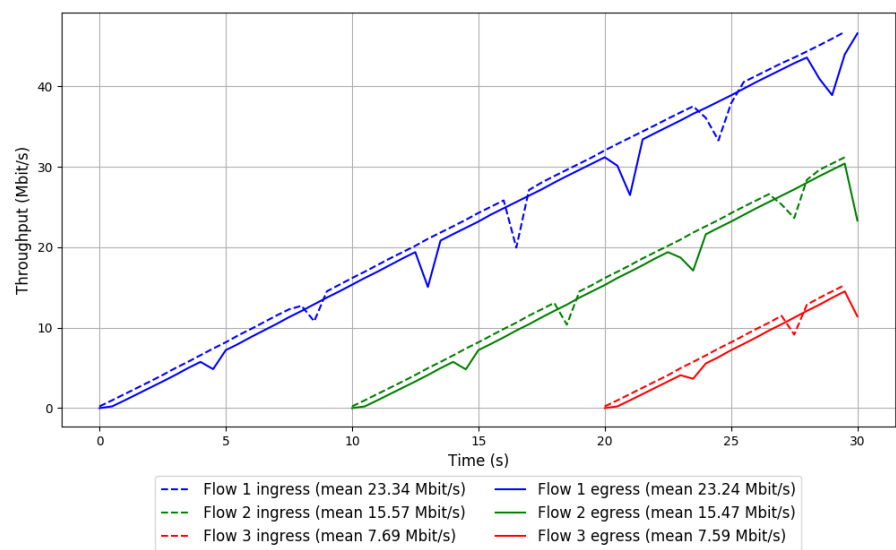


Run 2: Statistics of LEDBAT

Start at: 2018-10-26 12:53:58
End at: 2018-10-26 12:54:28
Local clock offset: -0.09 ms
Remote clock offset: -1.367 ms

Below is generated by plot.py at 2018-10-26 16:15:17
Datalink statistics
-- Total of 3 flows:
Average throughput: 35.98 Mbit/s
95th percentile per-packet one-way delay: 65.290 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 23.24 Mbit/s
95th percentile per-packet one-way delay: 65.337 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 15.47 Mbit/s
95th percentile per-packet one-way delay: 65.265 ms
Loss rate: 1.27%
-- Flow 3:
Average throughput: 7.59 Mbit/s
95th percentile per-packet one-way delay: 64.767 ms
Loss rate: 2.56%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-10-26 13:25:39

End at: 2018-10-26 13:26:09

Local clock offset: -0.04 ms

Remote clock offset: 0.014 ms

Below is generated by plot.py at 2018-10-26 16:15:17

Datalink statistics

-- Total of 3 flows:

Average throughput: 36.01 Mbit/s

95th percentile per-packet one-way delay: 63.718 ms

Loss rate: 1.08%

-- Flow 1:

Average throughput: 23.30 Mbit/s

95th percentile per-packet one-way delay: 63.735 ms

Loss rate: 0.84%

-- Flow 2:

Average throughput: 15.49 Mbit/s

95th percentile per-packet one-way delay: 63.633 ms

Loss rate: 1.27%

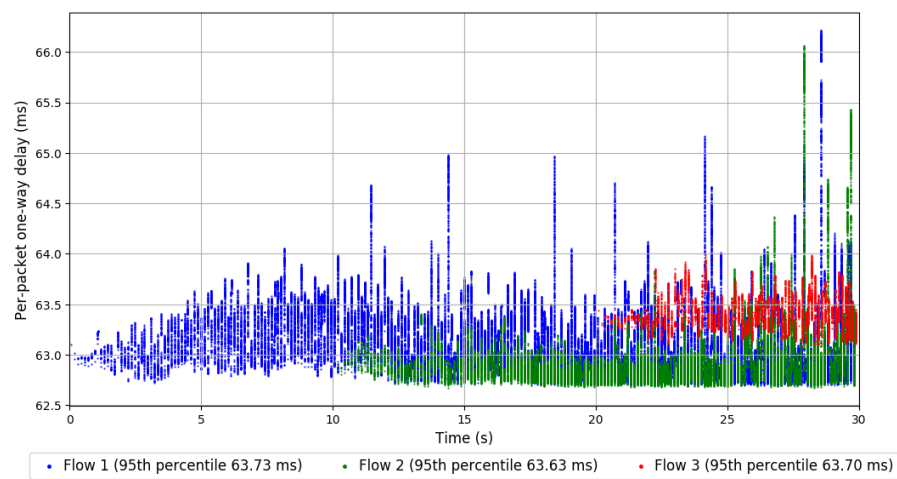
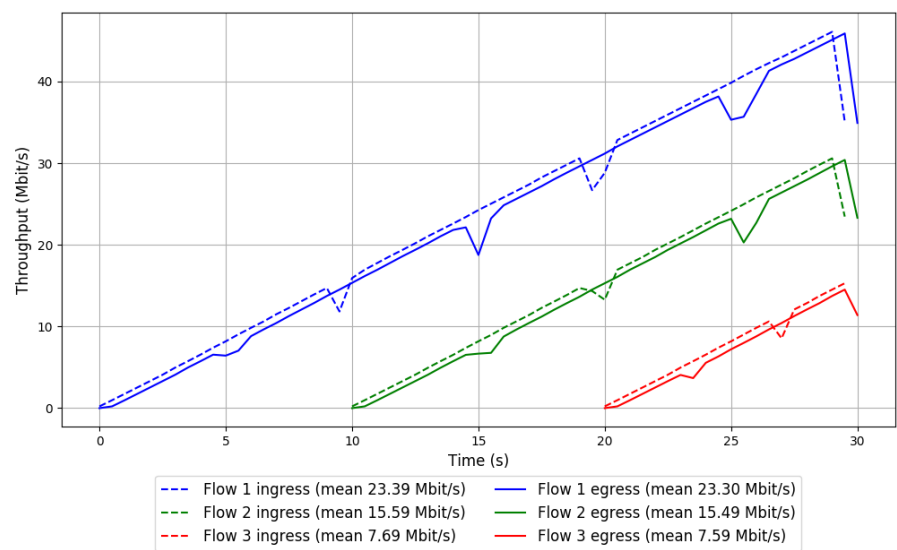
-- Flow 3:

Average throughput: 7.59 Mbit/s

95th percentile per-packet one-way delay: 63.696 ms

Loss rate: 2.56%

Run 3: Report of LEDBAT — Data Link

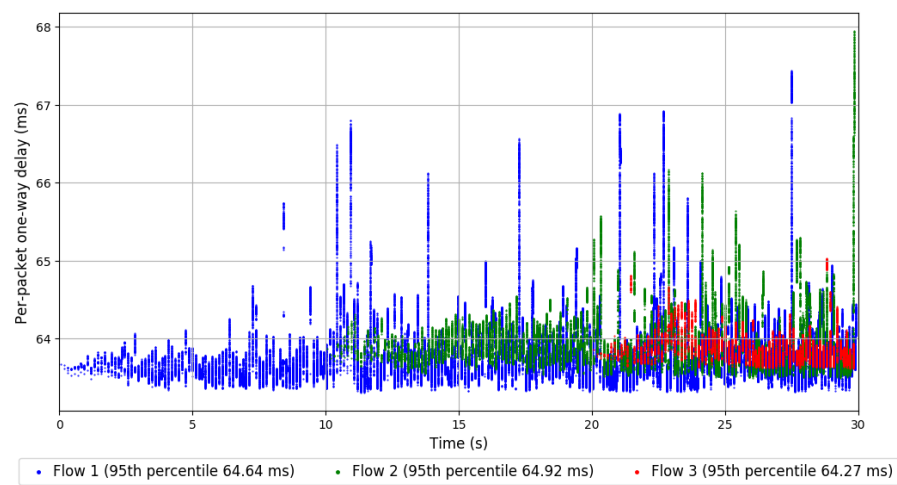
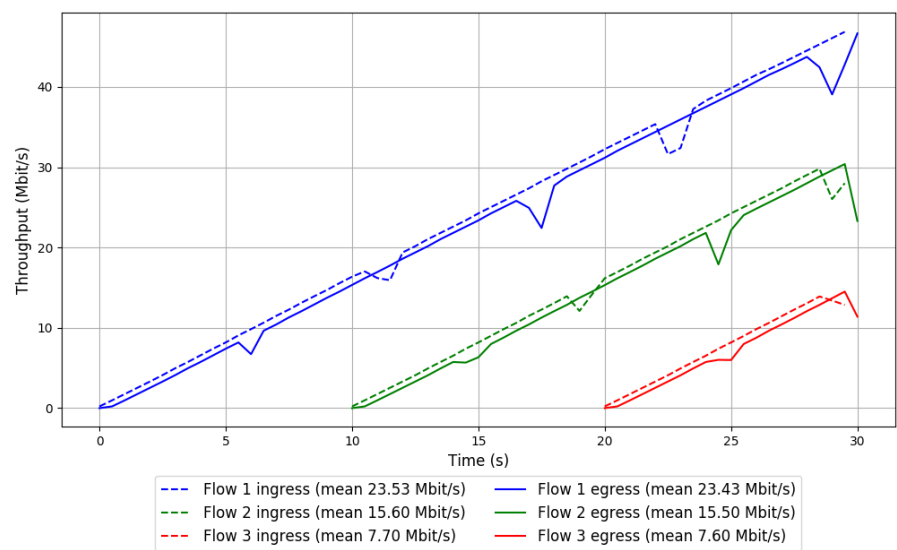


Run 4: Statistics of LEDBAT

Start at: 2018-10-26 13:57:16
End at: 2018-10-26 13:57:46
Local clock offset: -0.025 ms
Remote clock offset: -0.686 ms

Below is generated by plot.py at 2018-10-26 16:15:17
Datalink statistics
-- Total of 3 flows:
Average throughput: 36.18 Mbit/s
95th percentile per-packet one-way delay: 64.688 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 23.43 Mbit/s
95th percentile per-packet one-way delay: 64.642 ms
Loss rate: 0.84%
-- Flow 2:
Average throughput: 15.50 Mbit/s
95th percentile per-packet one-way delay: 64.915 ms
Loss rate: 1.27%
-- Flow 3:
Average throughput: 7.60 Mbit/s
95th percentile per-packet one-way delay: 64.273 ms
Loss rate: 2.56%

Run 4: Report of LEDBAT — Data Link



Run 5: Statistics of LEDBAT

Start at: 2018-10-26 14:28:46

End at: 2018-10-26 14:29:16

Local clock offset: -0.048 ms

Remote clock offset: 1.379 ms

Below is generated by plot.py at 2018-10-26 16:15:17

Datalink statistics

-- Total of 3 flows:

Average throughput: 36.16 Mbit/s

95th percentile per-packet one-way delay: 62.733 ms

Loss rate: 1.08%

-- Flow 1:

Average throughput: 23.41 Mbit/s

95th percentile per-packet one-way delay: 62.632 ms

Loss rate: 0.84%

-- Flow 2:

Average throughput: 15.47 Mbit/s

95th percentile per-packet one-way delay: 63.059 ms

Loss rate: 1.27%

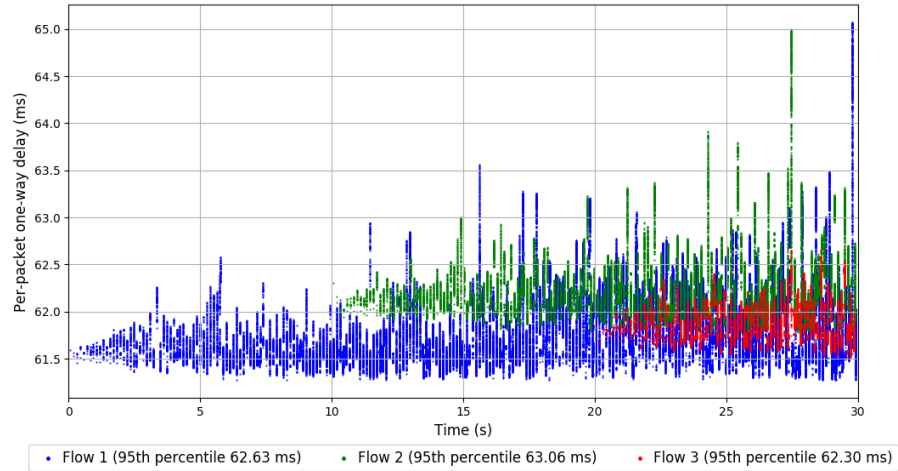
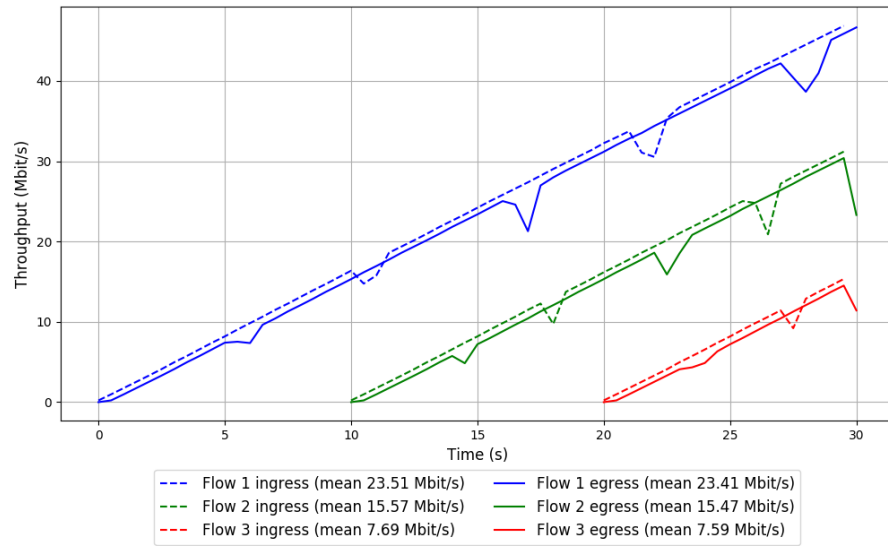
-- Flow 3:

Average throughput: 7.59 Mbit/s

95th percentile per-packet one-way delay: 62.295 ms

Loss rate: 2.57%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-10-26 12:25:42

End at: 2018-10-26 12:26:12

Local clock offset: -0.103 ms

Remote clock offset: -0.18 ms

Below is generated by plot.py at 2018-10-26 16:26:46

Datalink statistics

-- Total of 3 flows:

Average throughput: 1096.41 Mbit/s

95th percentile per-packet one-way delay: 92.344 ms

Loss rate: 0.64%

-- Flow 1:

Average throughput: 645.92 Mbit/s

95th percentile per-packet one-way delay: 85.468 ms

Loss rate: 0.39%

-- Flow 2:

Average throughput: 482.79 Mbit/s

95th percentile per-packet one-way delay: 115.902 ms

Loss rate: 0.70%

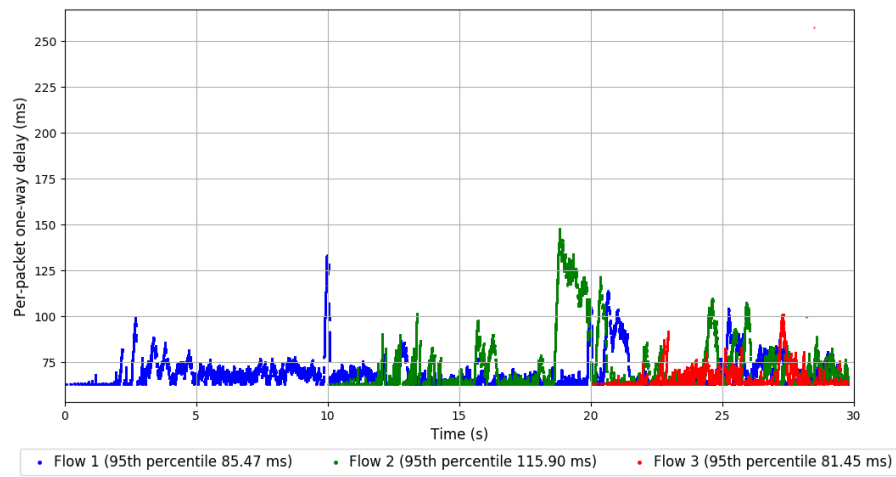
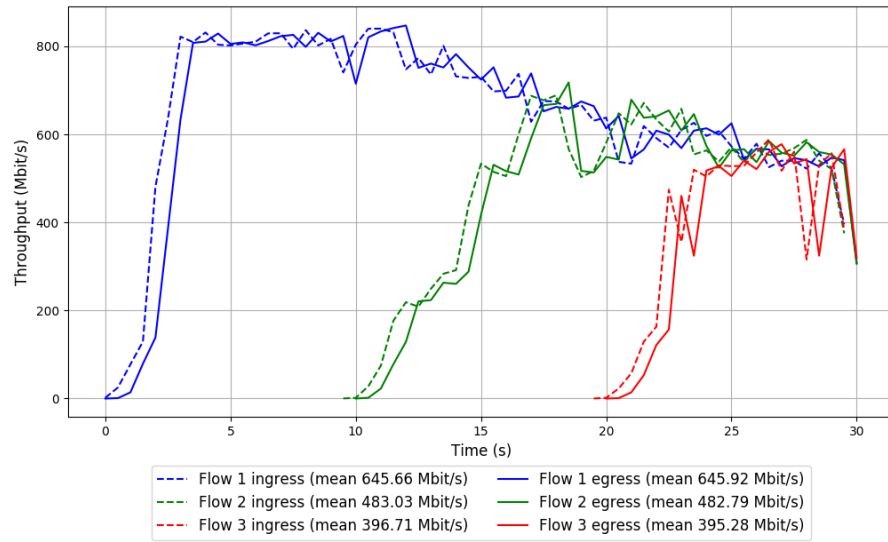
-- Flow 3:

Average throughput: 395.28 Mbit/s

95th percentile per-packet one-way delay: 81.452 ms

Loss rate: 1.70%

Run 1: Report of Indigo-Muses — Data Link



Run 2: Statistics of Indigo-Muses

Start at: 2018-10-26 12:57:04

End at: 2018-10-26 12:57:34

Local clock offset: -0.05 ms

Remote clock offset: 0.493 ms

Below is generated by plot.py at 2018-10-26 16:26:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 1081.53 Mbit/s

95th percentile per-packet one-way delay: 89.515 ms

Loss rate: 0.65%

-- Flow 1:

Average throughput: 620.30 Mbit/s

95th percentile per-packet one-way delay: 90.192 ms

Loss rate: 0.43%

-- Flow 2:

Average throughput: 515.36 Mbit/s

95th percentile per-packet one-way delay: 88.902 ms

Loss rate: 0.64%

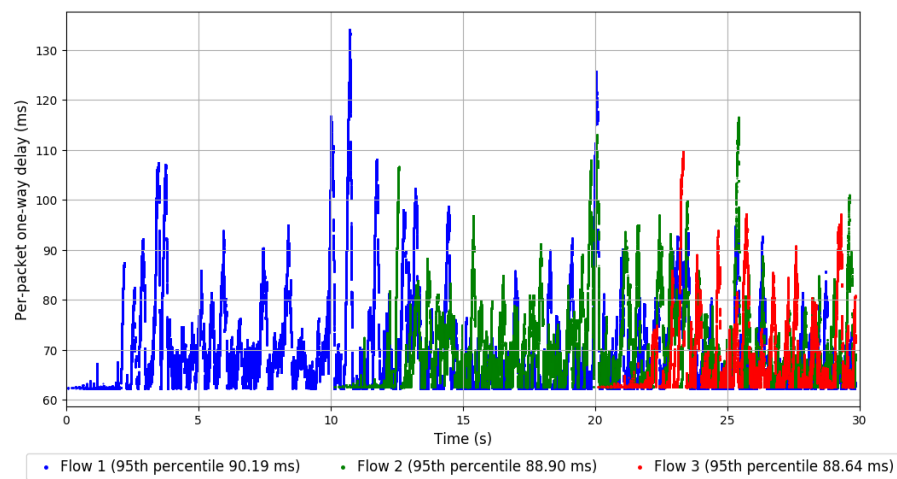
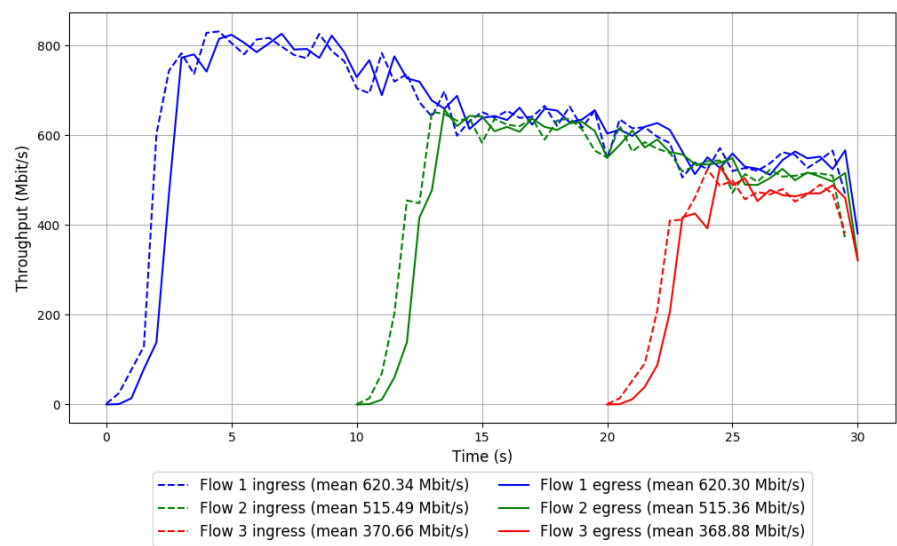
-- Flow 3:

Average throughput: 368.88 Mbit/s

95th percentile per-packet one-way delay: 88.637 ms

Loss rate: 1.76%

Run 2: Report of Indigo-Muses — Data Link

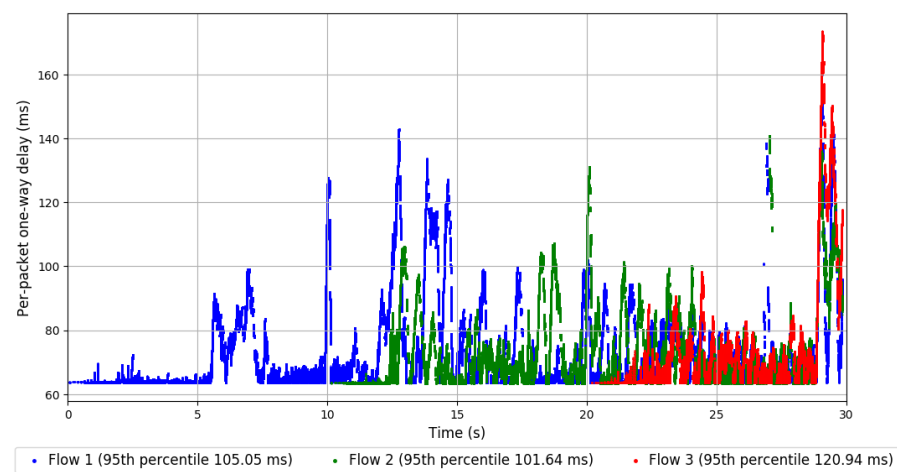
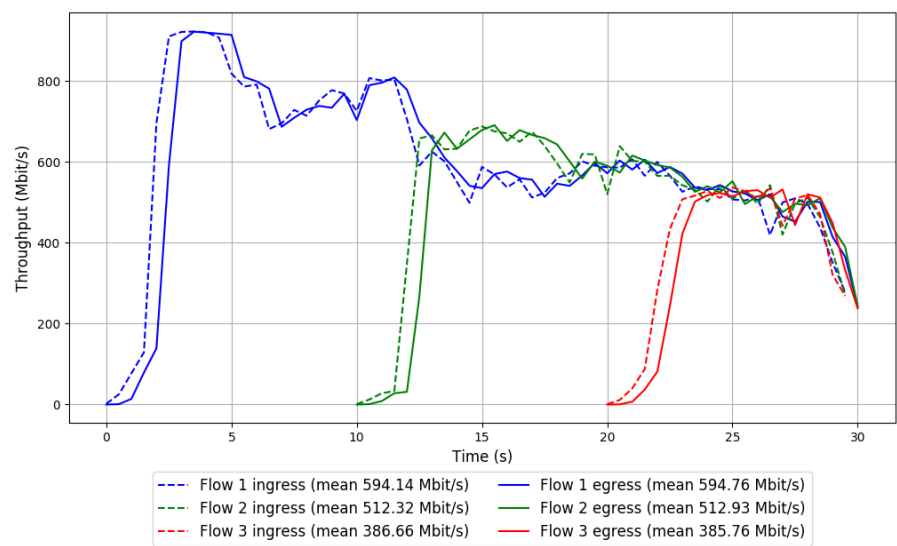


Run 3: Statistics of Indigo-Muses

Start at: 2018-10-26 13:28:47
End at: 2018-10-26 13:29:17
Local clock offset: 0.003 ms
Remote clock offset: -0.649 ms

Below is generated by plot.py at 2018-10-26 16:26:48
Datalink statistics
-- Total of 3 flows:
Average throughput: 1059.20 Mbit/s
95th percentile per-packet one-way delay: 103.280 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 594.76 Mbit/s
95th percentile per-packet one-way delay: 105.046 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 512.93 Mbit/s
95th percentile per-packet one-way delay: 101.636 ms
Loss rate: 0.52%
-- Flow 3:
Average throughput: 385.76 Mbit/s
95th percentile per-packet one-way delay: 120.937 ms
Loss rate: 1.51%

Run 3: Report of Indigo-Muses — Data Link

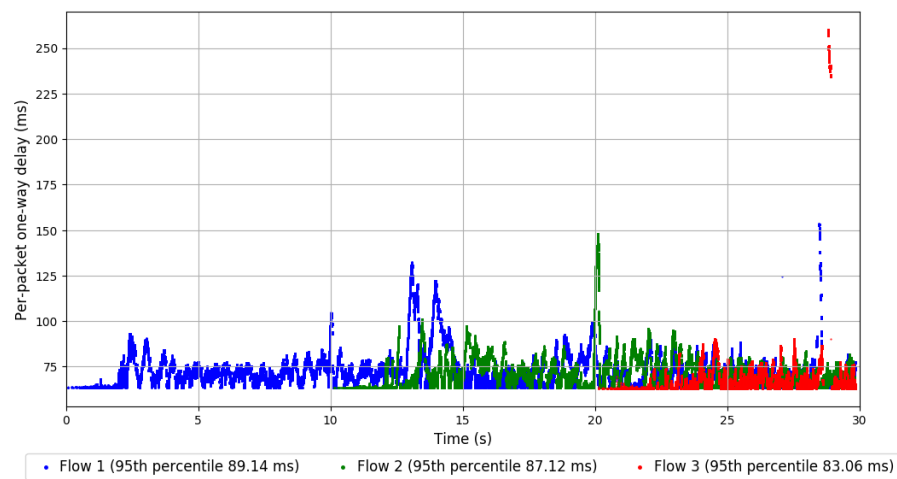
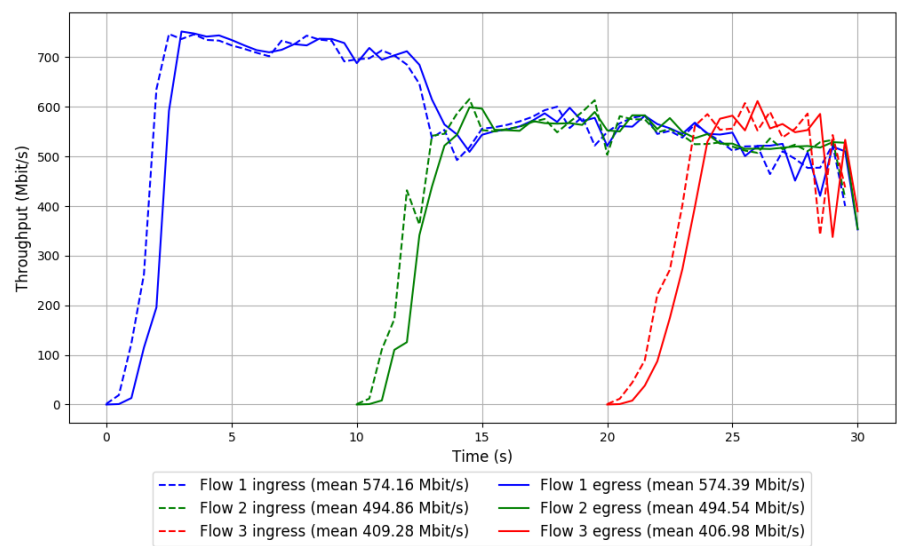


Run 4: Statistics of Indigo-Muses

Start at: 2018-10-26 14:00:24
End at: 2018-10-26 14:00:54
Local clock offset: -0.027 ms
Remote clock offset: -0.222 ms

```
# Below is generated by plot.py at 2018-10-26 16:26:48
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1034.37 Mbit/s
95th percentile per-packet one-way delay: 87.542 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 574.39 Mbit/s
95th percentile per-packet one-way delay: 89.145 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 494.54 Mbit/s
95th percentile per-packet one-way delay: 87.120 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 406.98 Mbit/s
95th percentile per-packet one-way delay: 83.060 ms
Loss rate: 1.85%
```

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-10-26 14:31:53

End at: 2018-10-26 14:32:23

Local clock offset: -0.009 ms

Remote clock offset: 0.029 ms

Below is generated by plot.py at 2018-10-26 16:27:52

Datalink statistics

-- Total of 3 flows:

Average throughput: 1093.96 Mbit/s

95th percentile per-packet one-way delay: 87.616 ms

Loss rate: 0.69%

-- Flow 1:

Average throughput: 597.36 Mbit/s

95th percentile per-packet one-way delay: 90.750 ms

Loss rate: 0.43%

-- Flow 2:

Average throughput: 554.54 Mbit/s

95th percentile per-packet one-way delay: 83.476 ms

Loss rate: 0.70%

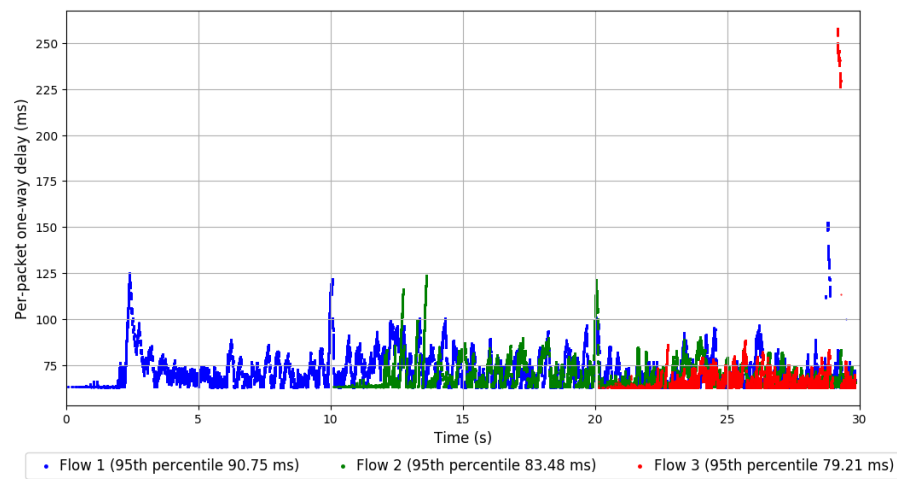
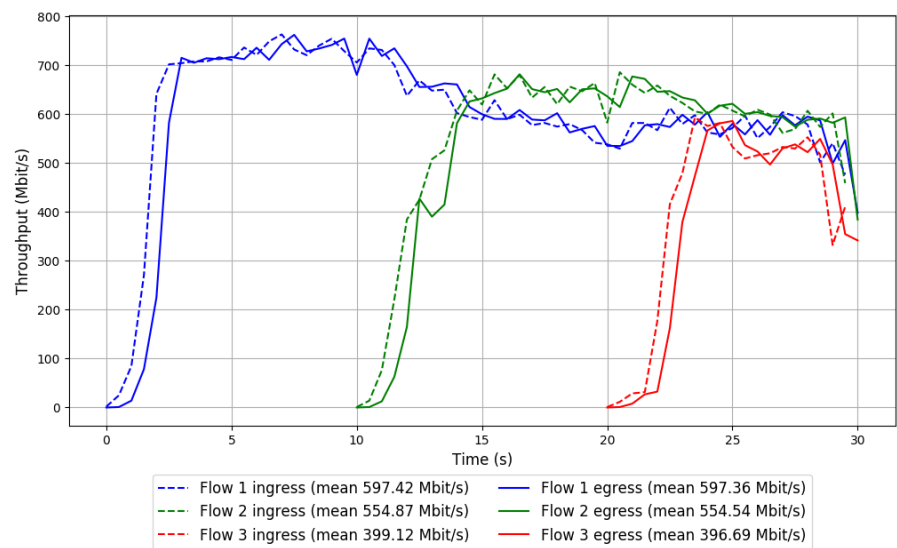
-- Flow 3:

Average throughput: 396.69 Mbit/s

95th percentile per-packet one-way delay: 79.212 ms

Loss rate: 1.81%

Run 5: Report of Indigo-Muses — Data Link

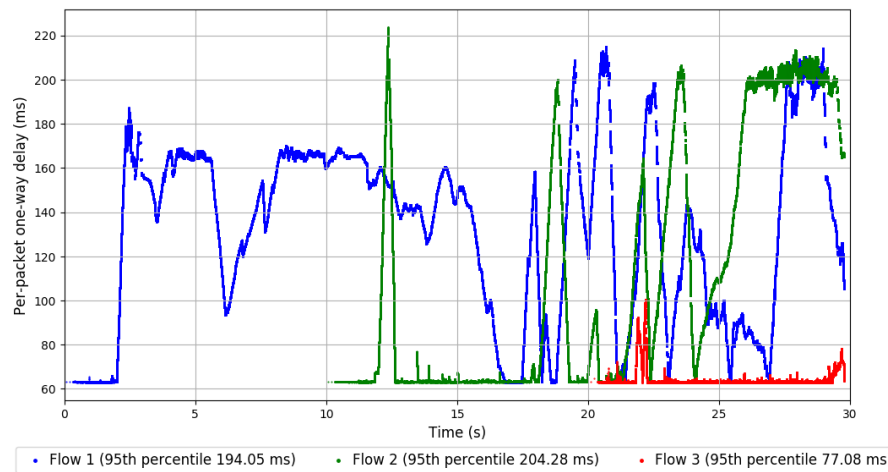
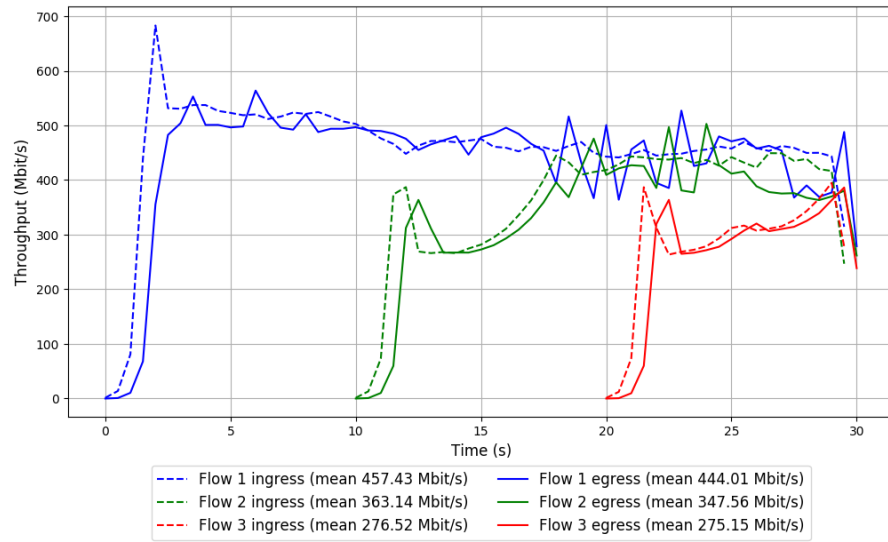



```
Run 1: Statistics of PCC-Allegro

Start at: 2018-10-26 12:38:08
End at: 2018-10-26 12:38:38
Local clock offset: -0.095 ms
Remote clock offset: -0.142 ms

# Below is generated by plot.py at 2018-10-26 16:40:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 764.36 Mbit/s
95th percentile per-packet one-way delay: 201.252 ms
Loss rate: 3.55%
-- Flow 1:
Average throughput: 444.01 Mbit/s
95th percentile per-packet one-way delay: 194.046 ms
Loss rate: 3.34%
-- Flow 2:
Average throughput: 347.56 Mbit/s
95th percentile per-packet one-way delay: 204.284 ms
Loss rate: 4.62%
-- Flow 3:
Average throughput: 275.15 Mbit/s
95th percentile per-packet one-way delay: 77.079 ms
Loss rate: 1.78%
```

Run 1: Report of PCC-Allegro — Data Link

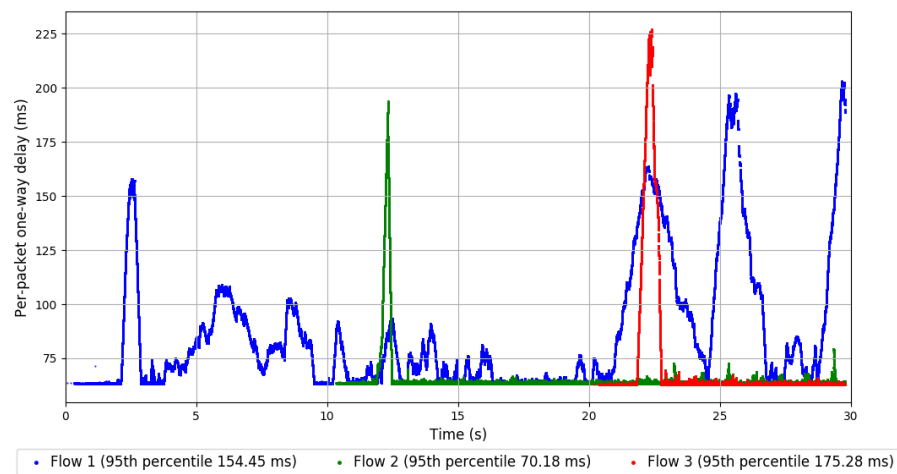
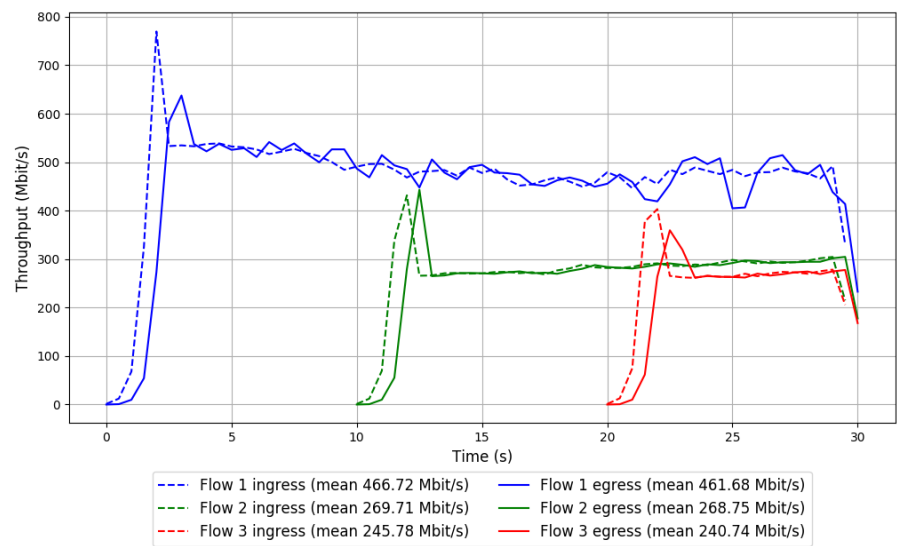


Run 2: Statistics of PCC-Allegro

Start at: 2018-10-26 13:09:38
End at: 2018-10-26 13:10:08
Local clock offset: -0.046 ms
Remote clock offset: -0.056 ms

Below is generated by plot.py at 2018-10-26 16:40:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 718.54 Mbit/s
95th percentile per-packet one-way delay: 151.620 ms
Loss rate: 1.58%
-- Flow 1:
Average throughput: 461.68 Mbit/s
95th percentile per-packet one-way delay: 154.448 ms
Loss rate: 1.50%
-- Flow 2:
Average throughput: 268.75 Mbit/s
95th percentile per-packet one-way delay: 70.184 ms
Loss rate: 1.00%
-- Flow 3:
Average throughput: 240.74 Mbit/s
95th percentile per-packet one-way delay: 175.281 ms
Loss rate: 3.31%

Run 2: Report of PCC-Allegro — Data Link

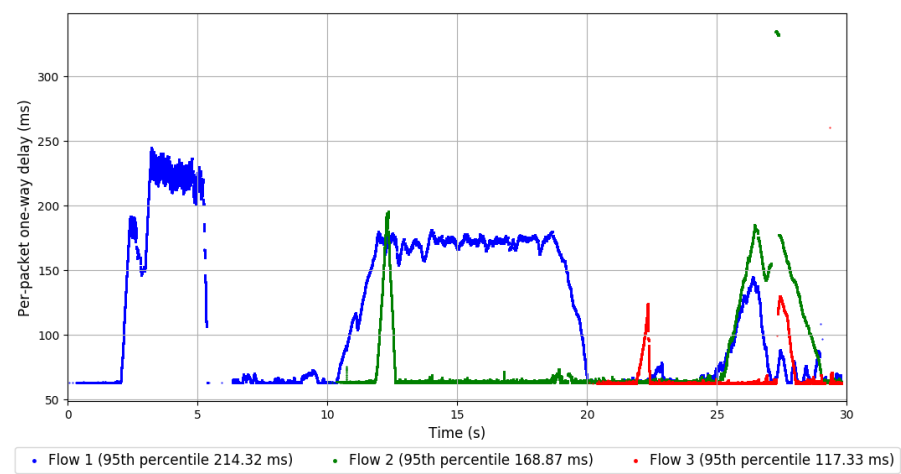
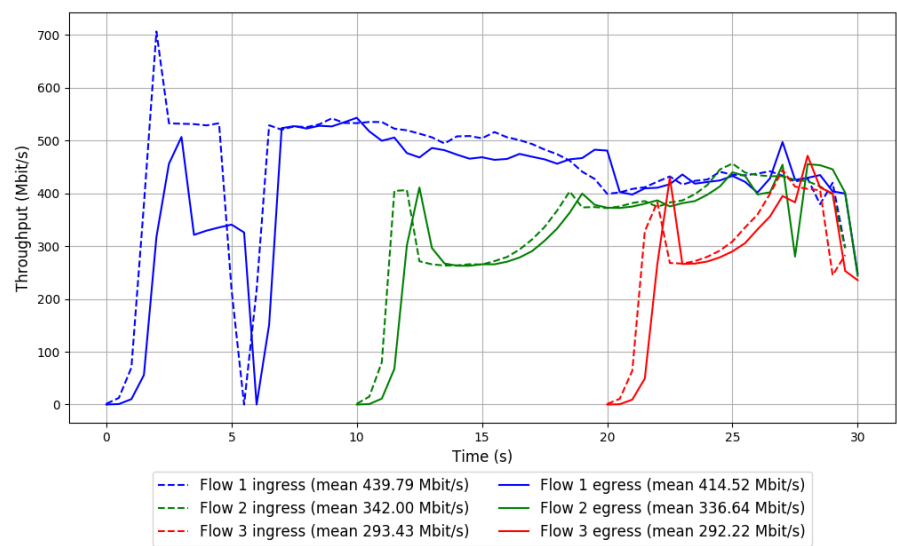


Run 3: Statistics of PCC-Allegro

Start at: 2018-10-26 13:41:17
End at: 2018-10-26 13:41:47
Local clock offset: -0.002 ms
Remote clock offset: -0.043 ms

Below is generated by plot.py at 2018-10-26 16:40:46
Datalink statistics
-- Total of 3 flows:
Average throughput: 733.26 Mbit/s
95th percentile per-packet one-way delay: 178.621 ms
Loss rate: 4.41%
-- Flow 1:
Average throughput: 414.52 Mbit/s
95th percentile per-packet one-way delay: 214.324 ms
Loss rate: 6.14%
-- Flow 2:
Average throughput: 336.64 Mbit/s
95th percentile per-packet one-way delay: 168.873 ms
Loss rate: 2.20%
-- Flow 3:
Average throughput: 292.22 Mbit/s
95th percentile per-packet one-way delay: 117.333 ms
Loss rate: 1.69%

Run 3: Report of PCC-Allegro — Data Link



Run 4: Statistics of PCC-Allegro

Start at: 2018-10-26 14:12:46

End at: 2018-10-26 14:13:16

Local clock offset: -0.02 ms

Remote clock offset: 0.173 ms

Below is generated by plot.py at 2018-10-26 16:54:23

Datalink statistics

-- Total of 3 flows:

Average throughput: 787.06 Mbit/s

95th percentile per-packet one-way delay: 174.745 ms

Loss rate: 2.66%

-- Flow 1:

Average throughput: 450.29 Mbit/s

95th percentile per-packet one-way delay: 174.939 ms

Loss rate: 3.07%

-- Flow 2:

Average throughput: 364.88 Mbit/s

95th percentile per-packet one-way delay: 187.246 ms

Loss rate: 1.81%

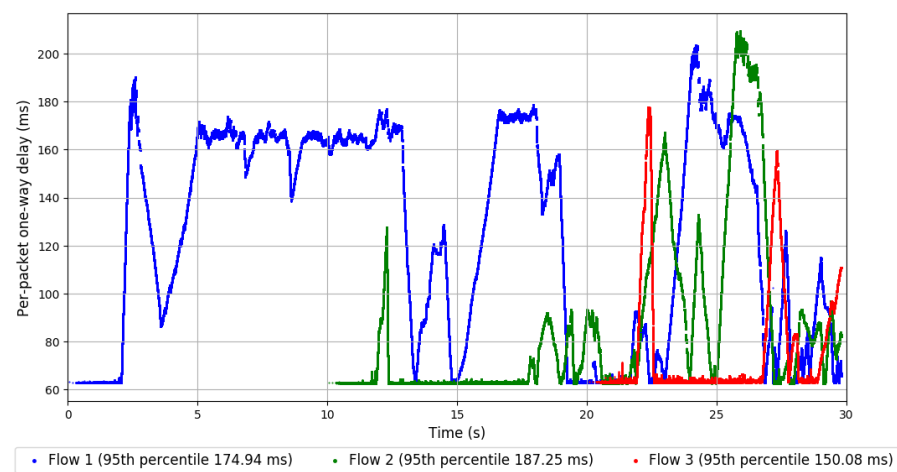
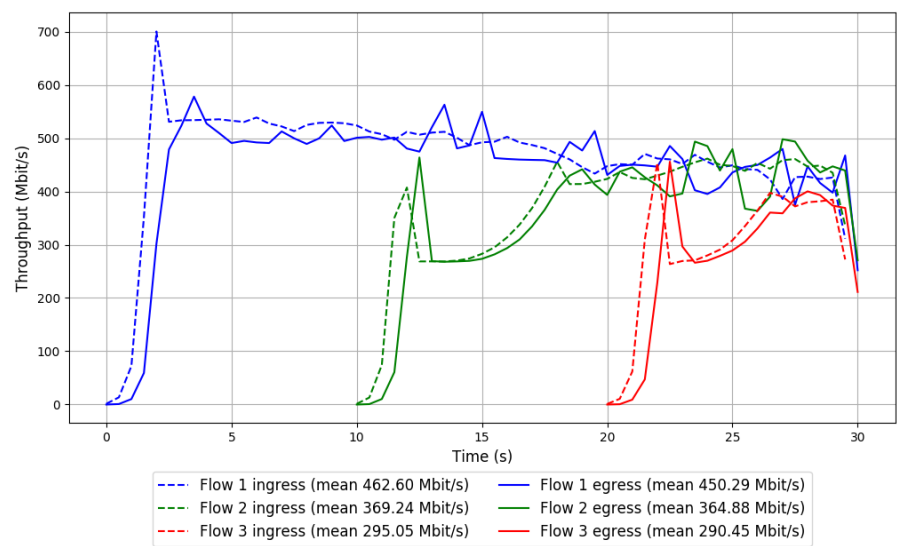
-- Flow 3:

Average throughput: 290.45 Mbit/s

95th percentile per-packet one-way delay: 150.082 ms

Loss rate: 2.83%

Run 4: Report of PCC-Allegro — Data Link

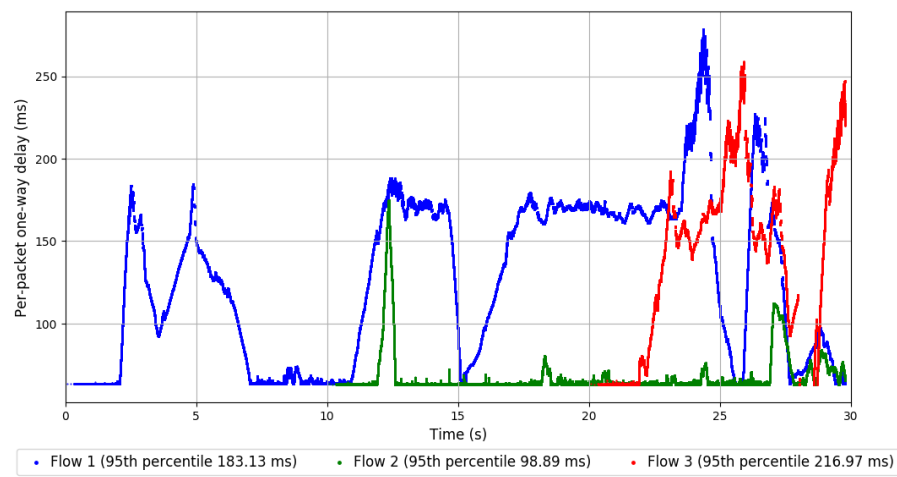
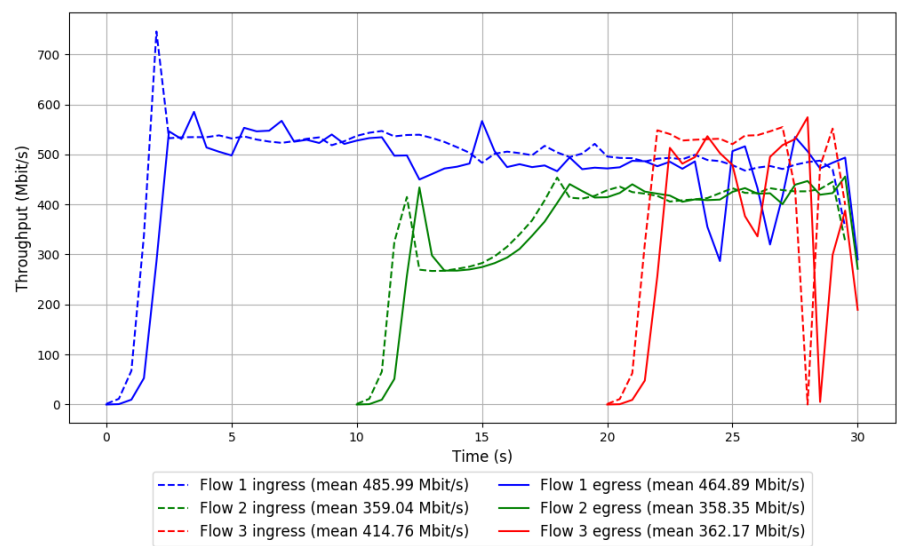


Run 5: Statistics of PCC-Allegro

Start at: 2018-10-26 14:44:24
End at: 2018-10-26 14:44:54
Local clock offset: -0.006 ms
Remote clock offset: -0.115 ms

Below is generated by plot.py at 2018-10-26 16:55:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 820.86 Mbit/s
95th percentile per-packet one-way delay: 185.580 ms
Loss rate: 5.10%
-- Flow 1:
Average throughput: 464.89 Mbit/s
95th percentile per-packet one-way delay: 183.127 ms
Loss rate: 4.75%
-- Flow 2:
Average throughput: 358.35 Mbit/s
95th percentile per-packet one-way delay: 98.885 ms
Loss rate: 0.83%
-- Flow 3:
Average throughput: 362.17 Mbit/s
95th percentile per-packet one-way delay: 216.975 ms
Loss rate: 13.79%

Run 5: Report of PCC-Allegro — Data Link

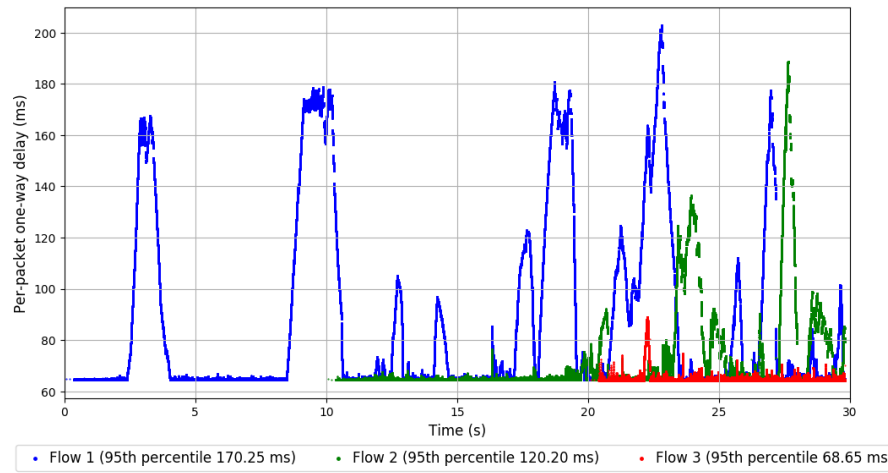
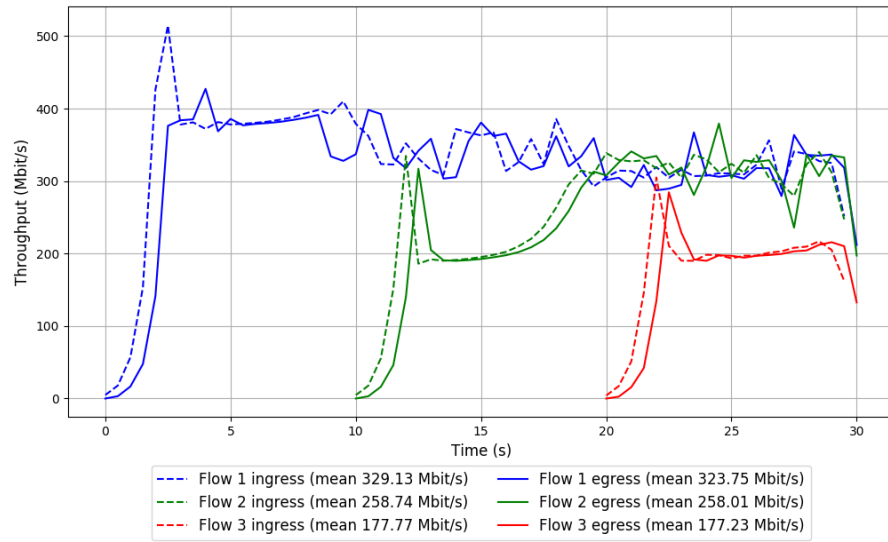


Run 1: Statistics of PCC-Expr

Start at: 2018-10-26 12:15:09
End at: 2018-10-26 12:15:39
Local clock offset: -0.13 ms
Remote clock offset: -1.447 ms

Below is generated by plot.py at 2018-10-26 16:55:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 552.84 Mbit/s
95th percentile per-packet one-way delay: 163.515 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 323.75 Mbit/s
95th percentile per-packet one-way delay: 170.255 ms
Loss rate: 2.05%
-- Flow 2:
Average throughput: 258.01 Mbit/s
95th percentile per-packet one-way delay: 120.200 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 177.23 Mbit/s
95th percentile per-packet one-way delay: 68.649 ms
Loss rate: 1.52%

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-10-26 12:46:34

End at: 2018-10-26 12:47:04

Local clock offset: -0.082 ms

Remote clock offset: 1.165 ms

Below is generated by plot.py at 2018-10-26 16:55:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 499.74 Mbit/s

95th percentile per-packet one-way delay: 136.423 ms

Loss rate: 1.43%

-- Flow 1:

Average throughput: 292.97 Mbit/s

95th percentile per-packet one-way delay: 147.679 ms

Loss rate: 1.77%

-- Flow 2:

Average throughput: 225.77 Mbit/s

95th percentile per-packet one-way delay: 79.506 ms

Loss rate: 0.74%

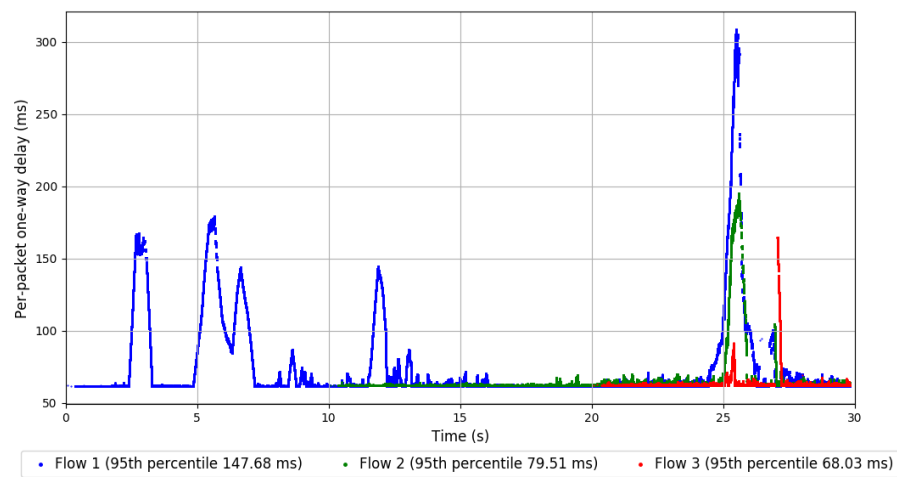
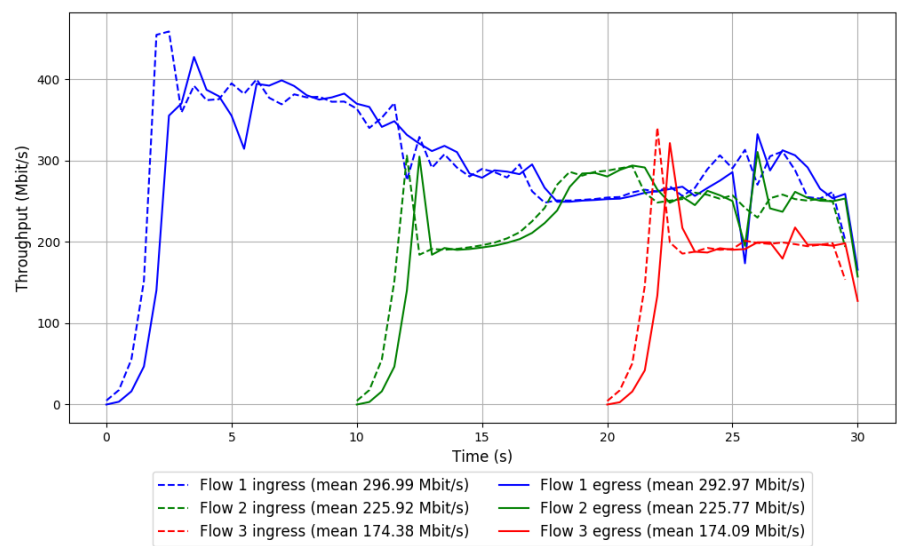
-- Flow 3:

Average throughput: 174.09 Mbit/s

95th percentile per-packet one-way delay: 68.032 ms

Loss rate: 1.48%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-10-26 13:18:03

End at: 2018-10-26 13:18:33

Local clock offset: -0.053 ms

Remote clock offset: 0.003 ms

Below is generated by plot.py at 2018-10-26 16:55:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 591.56 Mbit/s

95th percentile per-packet one-way delay: 173.001 ms

Loss rate: 3.59%

-- Flow 1:

Average throughput: 328.79 Mbit/s

95th percentile per-packet one-way delay: 176.453 ms

Loss rate: 5.23%

-- Flow 2:

Average throughput: 312.59 Mbit/s

95th percentile per-packet one-way delay: 155.791 ms

Loss rate: 1.46%

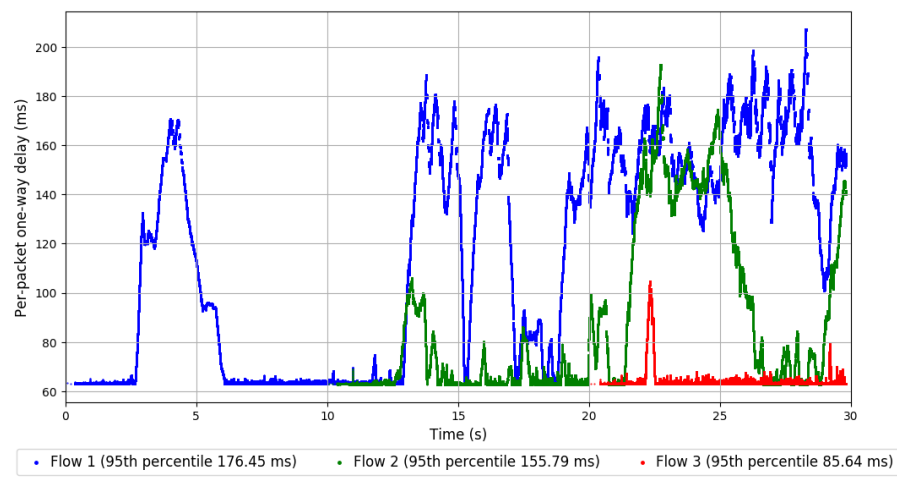
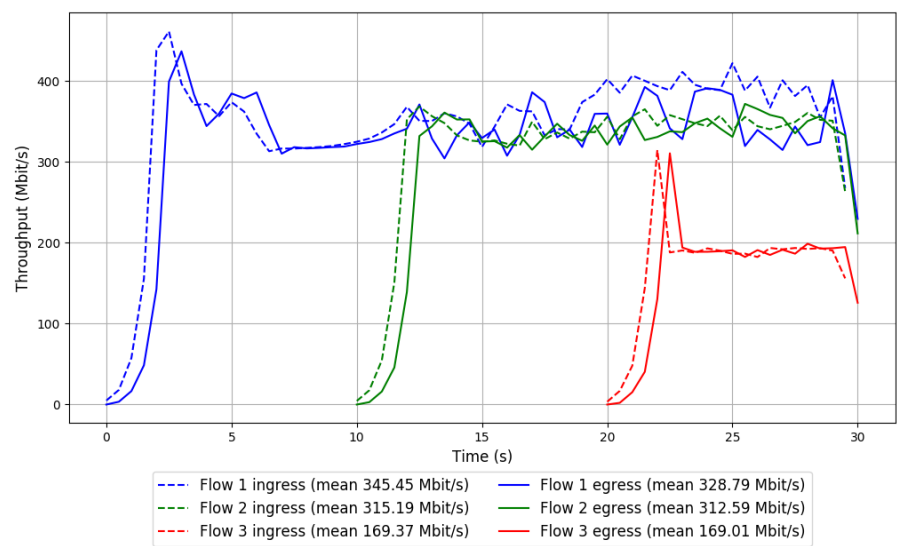
-- Flow 3:

Average throughput: 169.01 Mbit/s

95th percentile per-packet one-way delay: 85.643 ms

Loss rate: 1.50%

Run 3: Report of PCC-Expr — Data Link

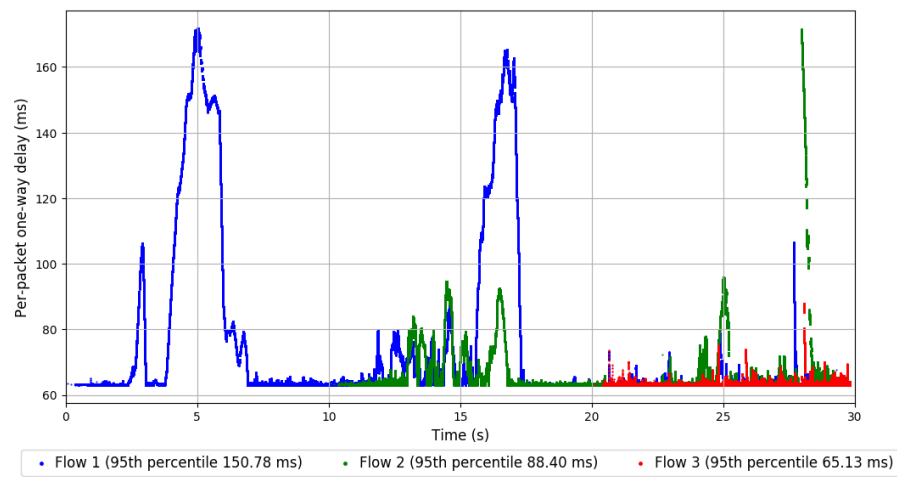
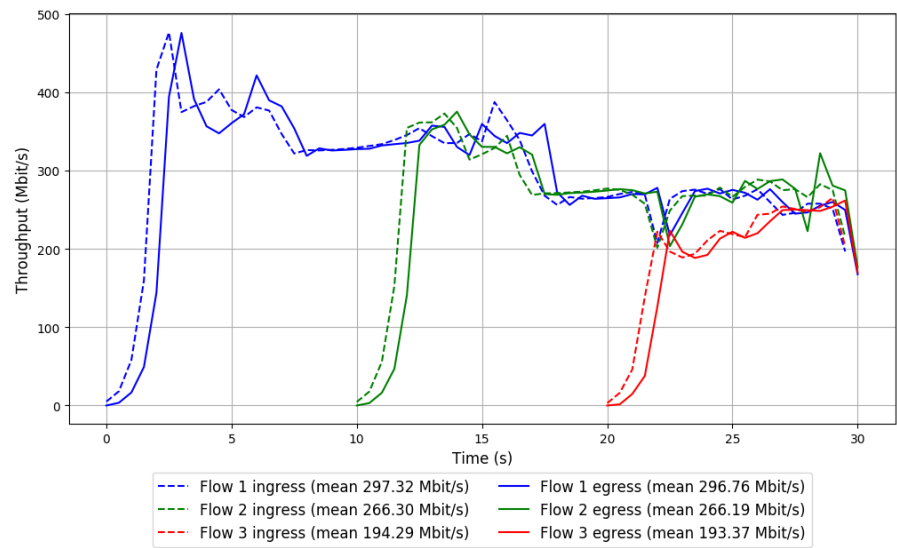


Run 4: Statistics of PCC-Expr

Start at: 2018-10-26 13:49:41
End at: 2018-10-26 13:50:11
Local clock offset: -0.039 ms
Remote clock offset: -0.362 ms

Below is generated by plot.py at 2018-10-26 16:58:06
Datalink statistics
-- Total of 3 flows:
Average throughput: 536.71 Mbit/s
95th percentile per-packet one-way delay: 144.371 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 296.76 Mbit/s
95th percentile per-packet one-way delay: 150.778 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 266.19 Mbit/s
95th percentile per-packet one-way delay: 88.402 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 193.37 Mbit/s
95th percentile per-packet one-way delay: 65.132 ms
Loss rate: 1.75%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-10-26 14:21:20

End at: 2018-10-26 14:21:50

Local clock offset: -0.029 ms

Remote clock offset: 0.309 ms

Below is generated by plot.py at 2018-10-26 16:58:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 499.86 Mbit/s

95th percentile per-packet one-way delay: 136.467 ms

Loss rate: 3.12%

-- Flow 1:

Average throughput: 311.02 Mbit/s

95th percentile per-packet one-way delay: 197.909 ms

Loss rate: 4.39%

-- Flow 2:

Average throughput: 199.38 Mbit/s

95th percentile per-packet one-way delay: 103.357 ms

Loss rate: 0.74%

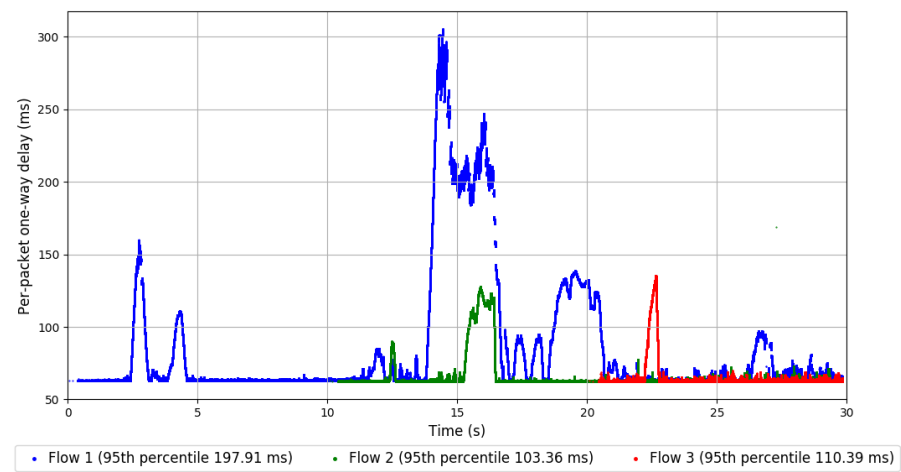
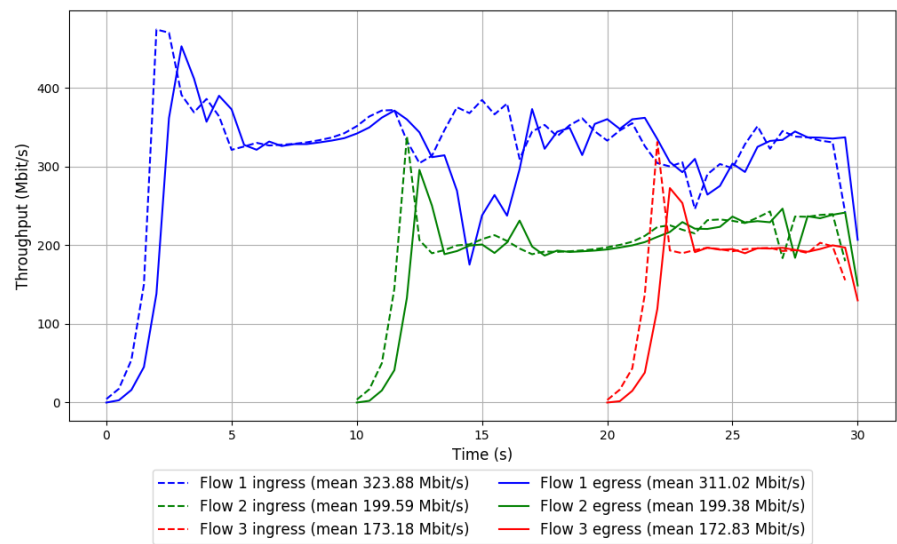
-- Flow 3:

Average throughput: 172.83 Mbit/s

95th percentile per-packet one-way delay: 110.390 ms

Loss rate: 1.49%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-10-26 12:29:50

End at: 2018-10-26 12:30:20

Local clock offset: -0.07 ms

Remote clock offset: 0.221 ms

Below is generated by plot.py at 2018-10-26 16:58:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 85.65 Mbit/s

95th percentile per-packet one-way delay: 63.204 ms

Loss rate: 1.00%

-- Flow 1:

Average throughput: 48.52 Mbit/s

95th percentile per-packet one-way delay: 63.198 ms

Loss rate: 0.71%

-- Flow 2:

Average throughput: 41.11 Mbit/s

95th percentile per-packet one-way delay: 62.665 ms

Loss rate: 1.60%

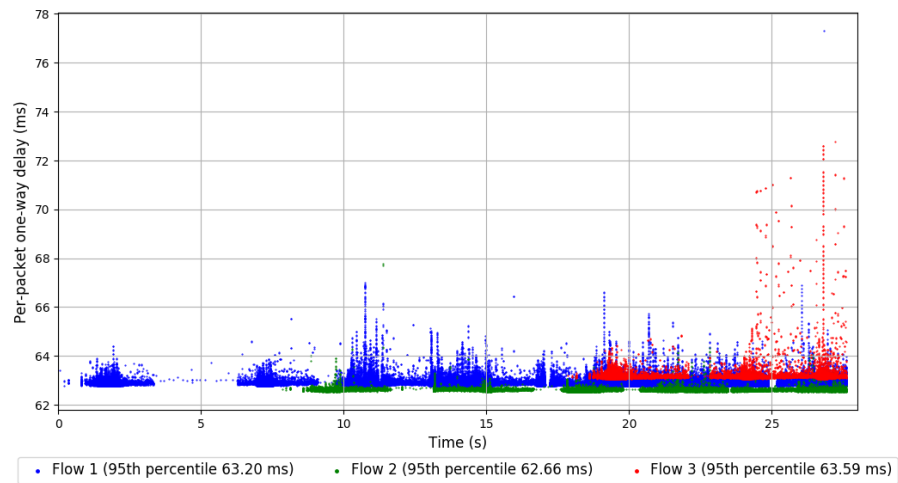
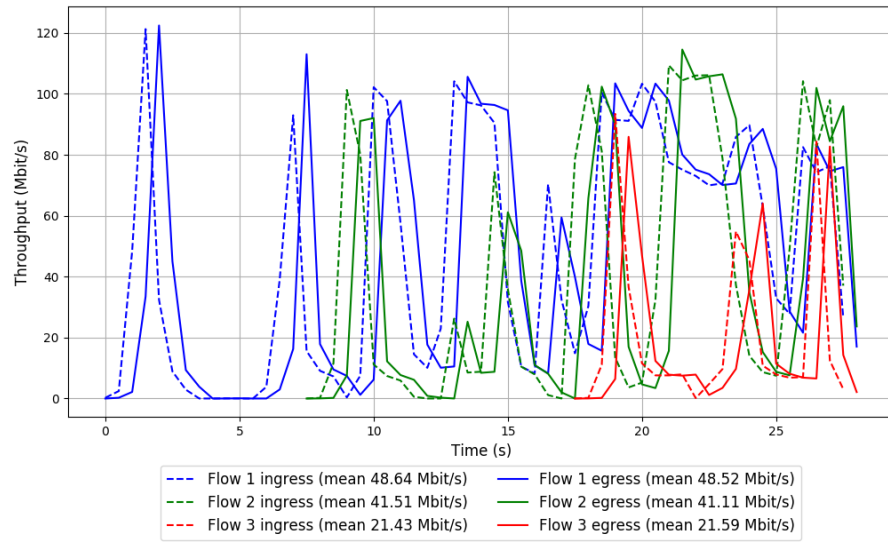
-- Flow 3:

Average throughput: 21.59 Mbit/s

95th percentile per-packet one-way delay: 63.589 ms

Loss rate: 0.50%

Run 1: Report of QUIC Cubic — Data Link

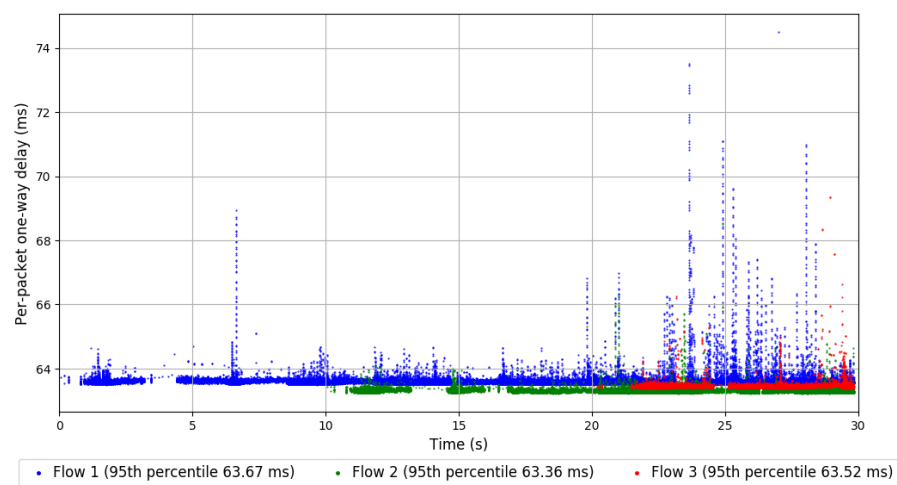
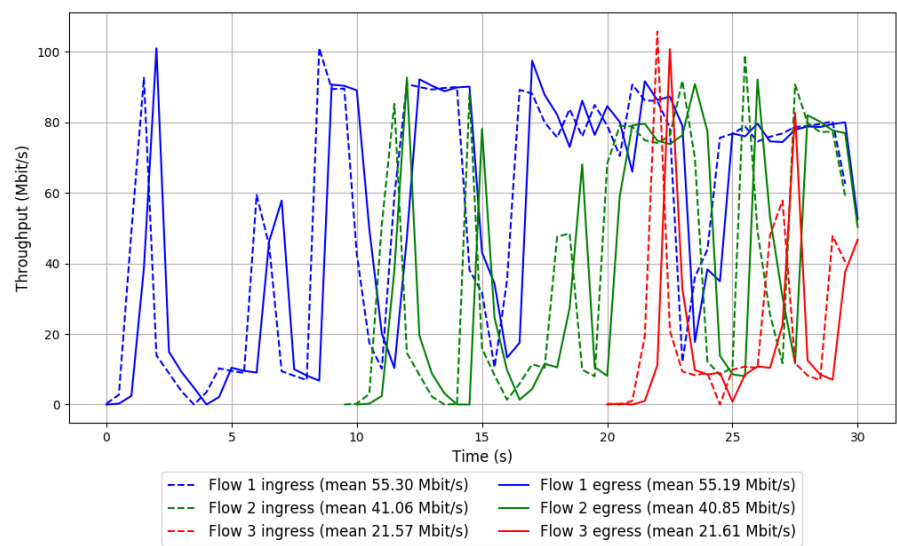


Run 2: Statistics of QUIC Cubic

Start at: 2018-10-26 13:01:22
End at: 2018-10-26 13:01:52
Local clock offset: -0.059 ms
Remote clock offset: -0.657 ms

Below is generated by plot.py at 2018-10-26 16:58:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 89.40 Mbit/s
95th percentile per-packet one-way delay: 63.640 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 55.19 Mbit/s
95th percentile per-packet one-way delay: 63.666 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 40.85 Mbit/s
95th percentile per-packet one-way delay: 63.360 ms
Loss rate: 1.16%
-- Flow 3:
Average throughput: 21.61 Mbit/s
95th percentile per-packet one-way delay: 63.524 ms
Loss rate: 1.11%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-10-26 13:32:54

End at: 2018-10-26 13:33:24

Local clock offset: -0.002 ms

Remote clock offset: 0.187 ms

Below is generated by plot.py at 2018-10-26 16:58:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 94.24 Mbit/s

95th percentile per-packet one-way delay: 62.669 ms

Loss rate: 1.03%

-- Flow 1:

Average throughput: 60.76 Mbit/s

95th percentile per-packet one-way delay: 62.550 ms

Loss rate: 0.60%

-- Flow 2:

Average throughput: 36.41 Mbit/s

95th percentile per-packet one-way delay: 62.696 ms

Loss rate: 1.15%

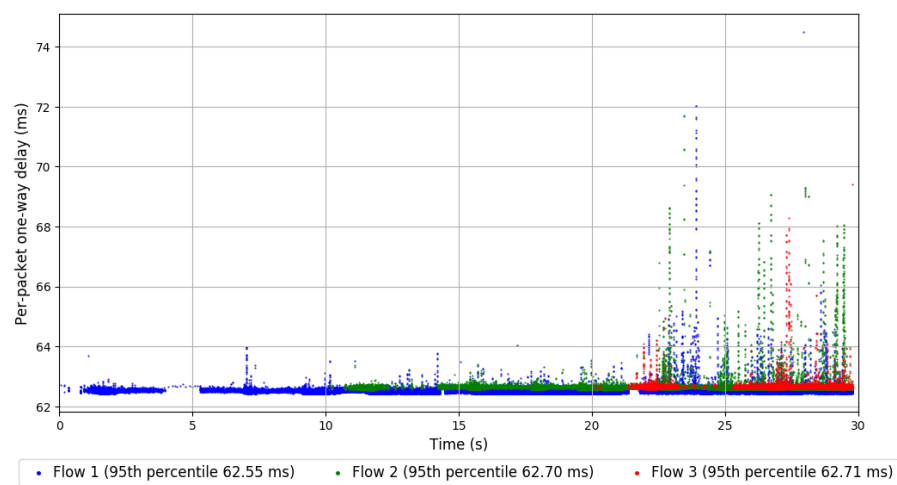
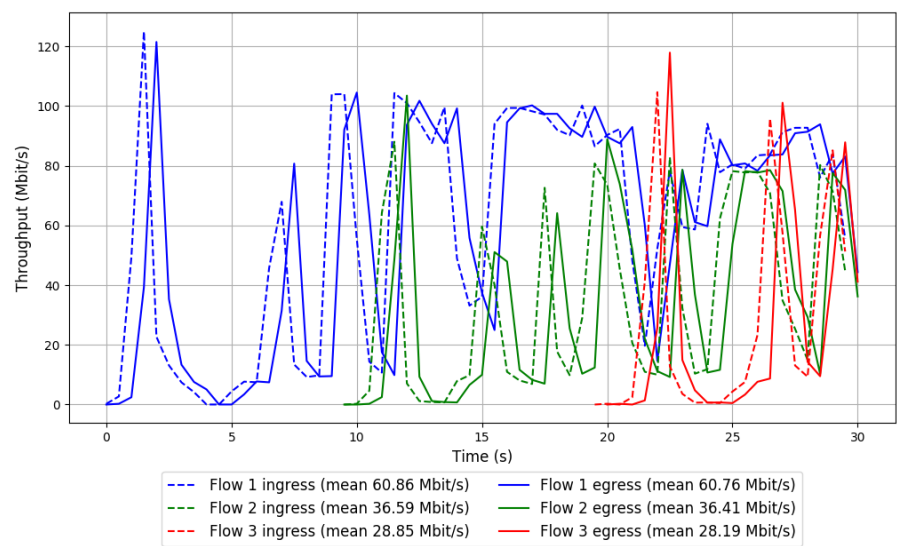
-- Flow 3:

Average throughput: 28.19 Mbit/s

95th percentile per-packet one-way delay: 62.714 ms

Loss rate: 3.48%

Run 3: Report of QUIC Cubic — Data Link



Run 4: Statistics of QUIC Cubic

Start at: 2018-10-26 14:04:32

End at: 2018-10-26 14:05:02

Local clock offset: -0.014 ms

Remote clock offset: 1.011 ms

Below is generated by plot.py at 2018-10-26 16:58:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 88.81 Mbit/s

95th percentile per-packet one-way delay: 62.385 ms

Loss rate: 0.84%

-- Flow 1:

Average throughput: 55.50 Mbit/s

95th percentile per-packet one-way delay: 62.416 ms

Loss rate: 0.68%

-- Flow 2:

Average throughput: 42.10 Mbit/s

95th percentile per-packet one-way delay: 61.958 ms

Loss rate: 1.25%

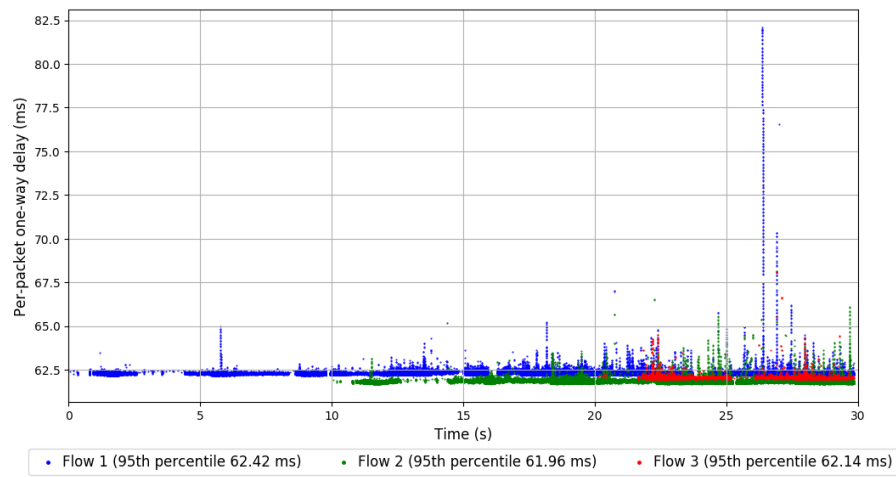
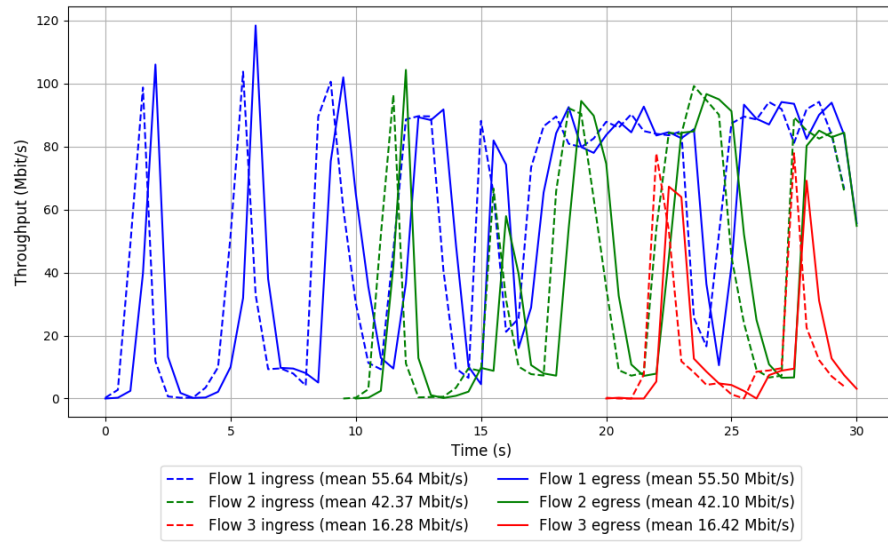
-- Flow 3:

Average throughput: 16.42 Mbit/s

95th percentile per-packet one-way delay: 62.144 ms

Loss rate: 0.42%

Run 4: Report of QUIC Cubic — Data Link



Run 5: Statistics of QUIC Cubic

Start at: 2018-10-26 14:36:03

End at: 2018-10-26 14:36:33

Local clock offset: -0.032 ms

Remote clock offset: -0.67 ms

Below is generated by plot.py at 2018-10-26 16:58:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 67.87 Mbit/s

95th percentile per-packet one-way delay: 64.040 ms

Loss rate: 1.14%

-- Flow 1:

Average throughput: 31.36 Mbit/s

95th percentile per-packet one-way delay: 63.948 ms

Loss rate: 0.16%

-- Flow 2:

Average throughput: 42.82 Mbit/s

95th percentile per-packet one-way delay: 63.542 ms

Loss rate: 1.21%

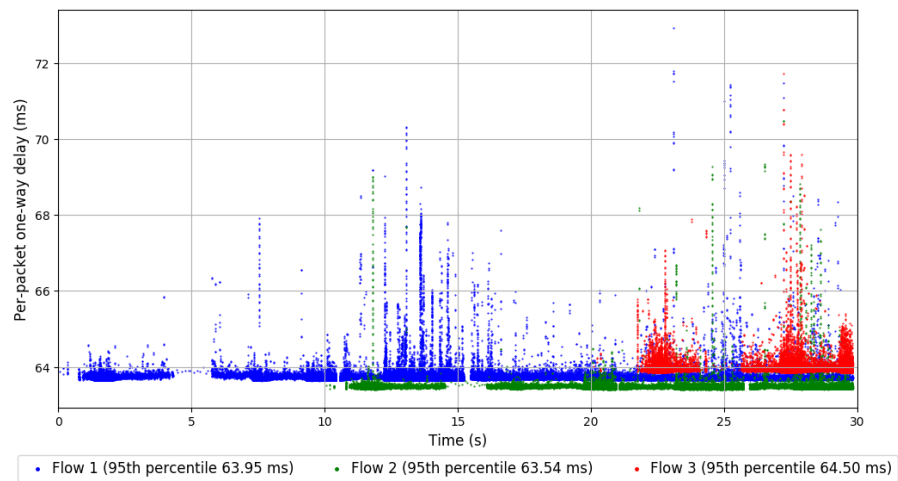
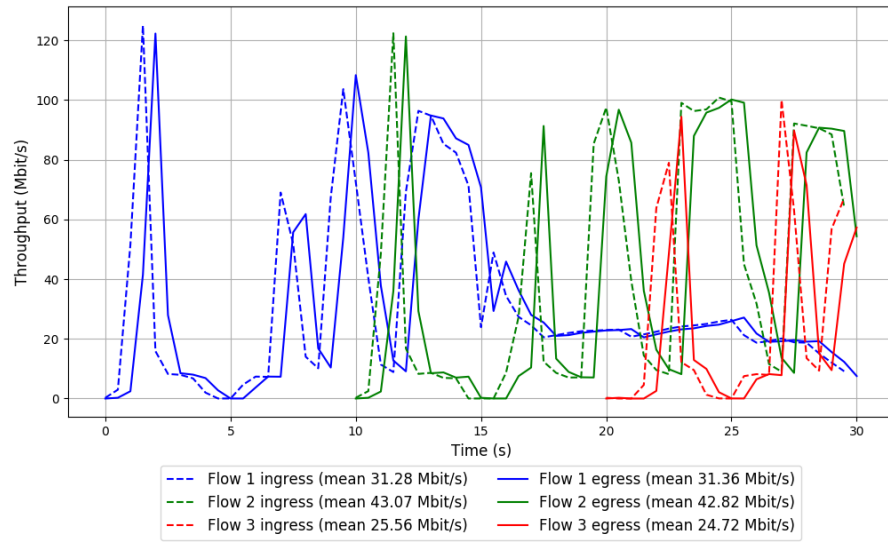
-- Flow 3:

Average throughput: 24.72 Mbit/s

95th percentile per-packet one-way delay: 64.500 ms

Loss rate: 4.51%

Run 5: Report of QUIC Cubic — Data Link

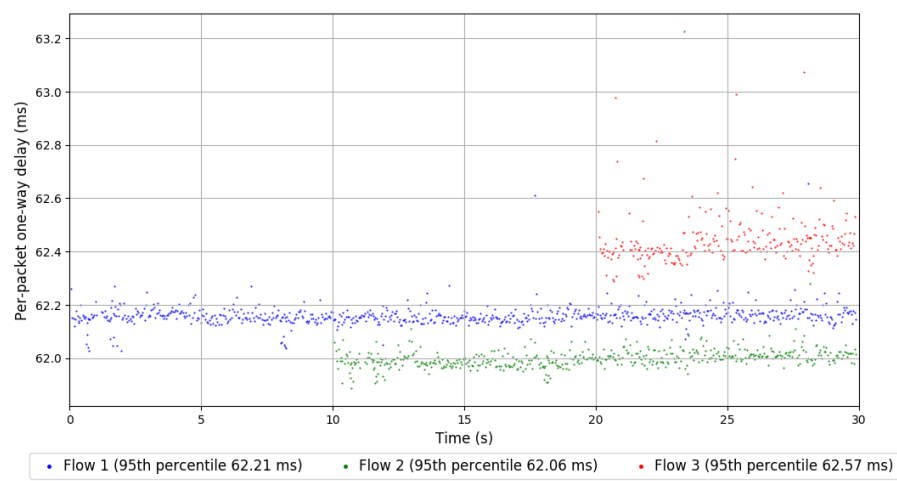
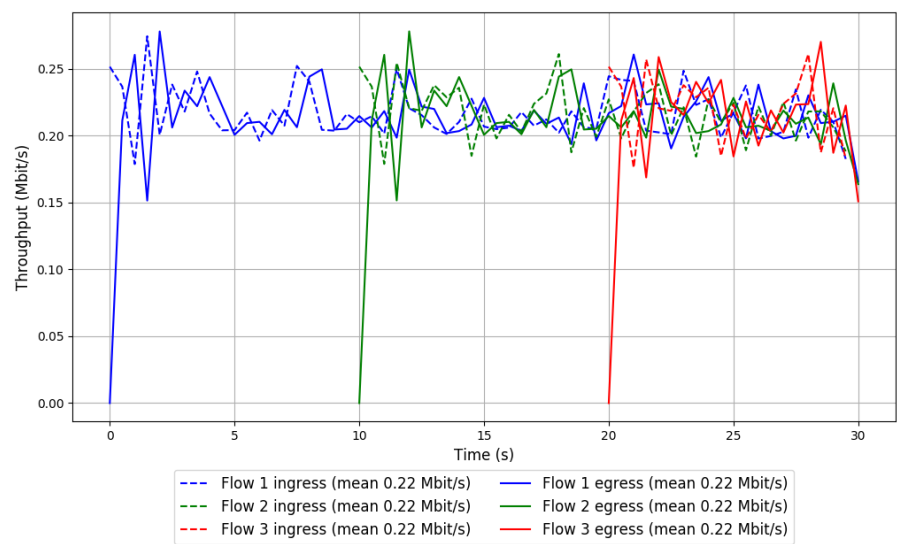


```
Run 1: Statistics of SReAM

Start at: 2018-10-26 12:33:09
End at: 2018-10-26 12:33:39
Local clock offset: -0.064 ms
Remote clock offset: 0.887 ms

# Below is generated by plot.py at 2018-10-26 16:58:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 62.452 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 62.207 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 62.058 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 62.566 ms
Loss rate: 1.45%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SReAM

Start at: 2018-10-26 13:04:37

End at: 2018-10-26 13:05:07

Local clock offset: -0.05 ms

Remote clock offset: 0.695 ms

Below is generated by plot.py at 2018-10-26 16:58:58

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.43 Mbit/s

95th percentile per-packet one-way delay: 62.616 ms

Loss rate: 0.64%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 62.267 ms

Loss rate: 0.38%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 62.467 ms

Loss rate: 0.61%

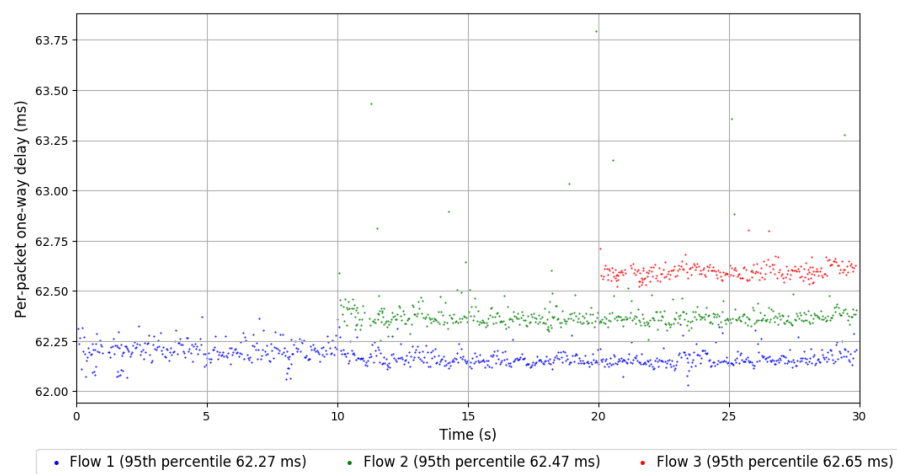
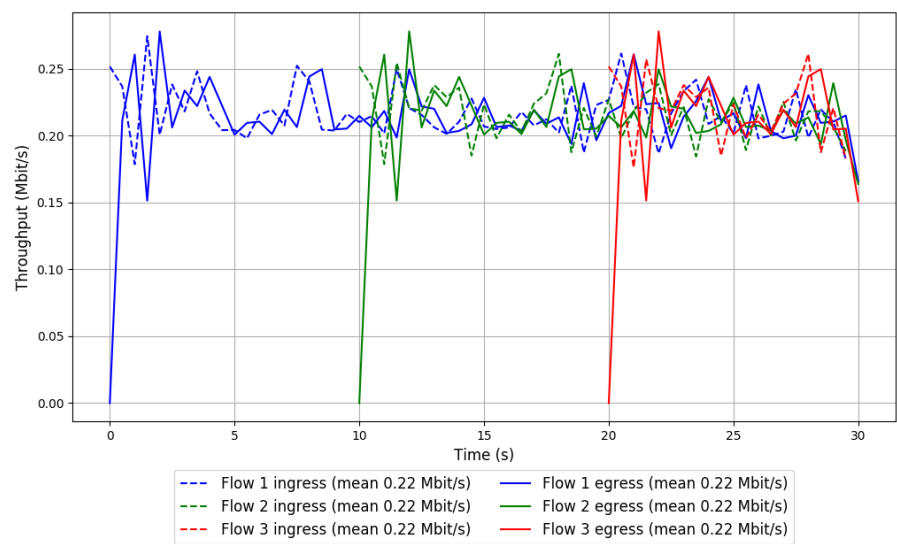
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 62.648 ms

Loss rate: 1.45%

Run 2: Report of SReAM — Data Link

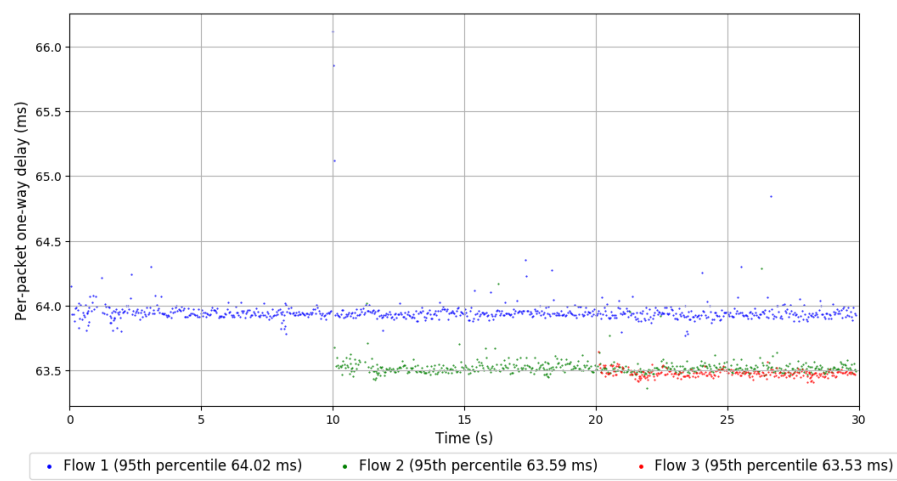
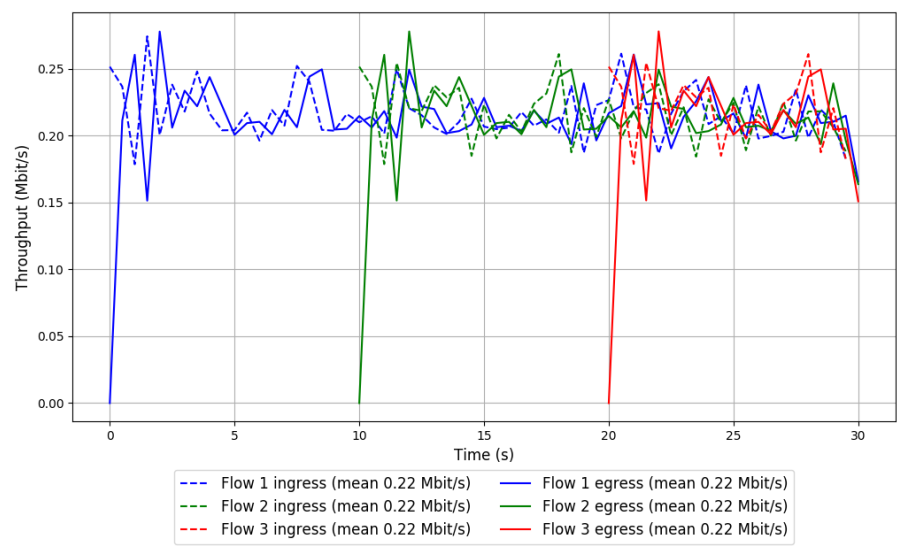


Run 3: Statistics of SReAM

Start at: 2018-10-26 13:36:13
End at: 2018-10-26 13:36:43
Local clock offset: -0.006 ms
Remote clock offset: -0.696 ms

Below is generated by plot.py at 2018-10-26 16:58:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 63.992 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 64.017 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.592 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.532 ms
Loss rate: 1.45%

Run 3: Report of SCReAM — Data Link

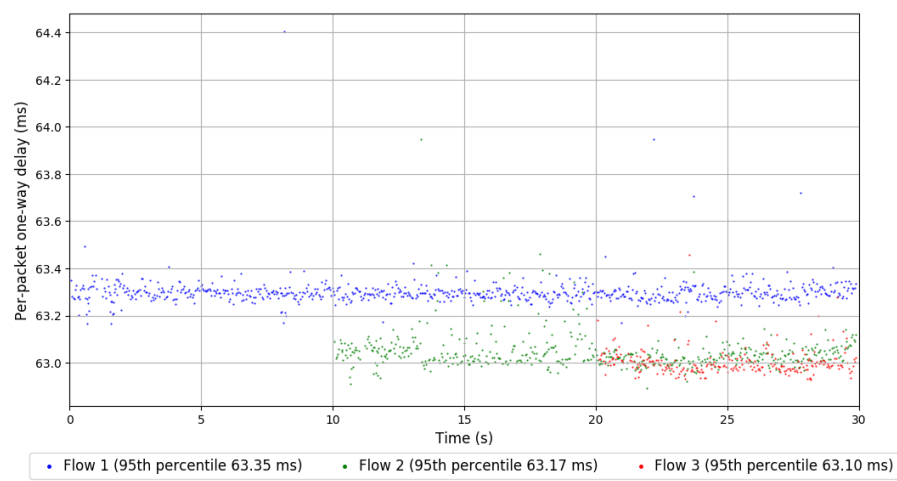
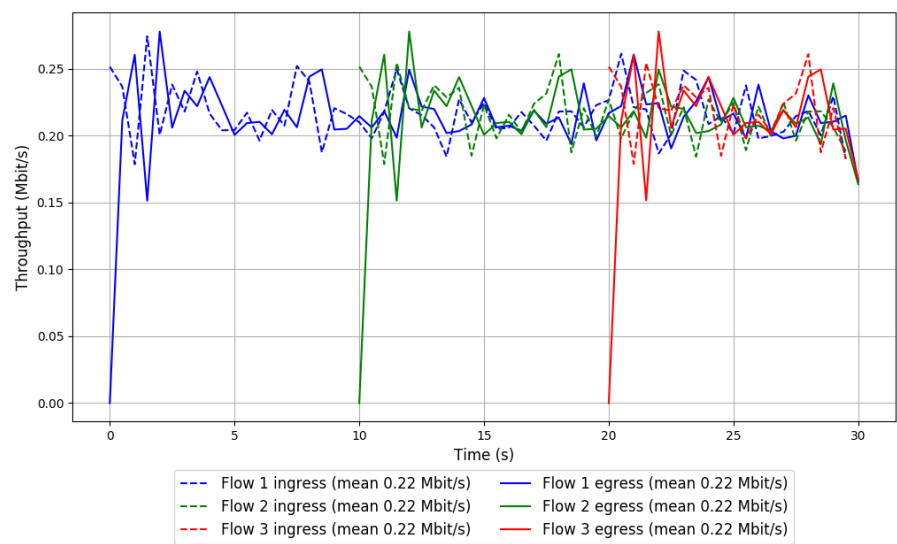


Run 4: Statistics of SReAM

Start at: 2018-10-26 14:07:36
End at: 2018-10-26 14:08:06
Local clock offset: -0.035 ms
Remote clock offset: -0.132 ms

Below is generated by plot.py at 2018-10-26 16:58:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 63.341 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.353 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.169 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.097 ms
Loss rate: 1.08%

Run 4: Report of SCReAM — Data Link

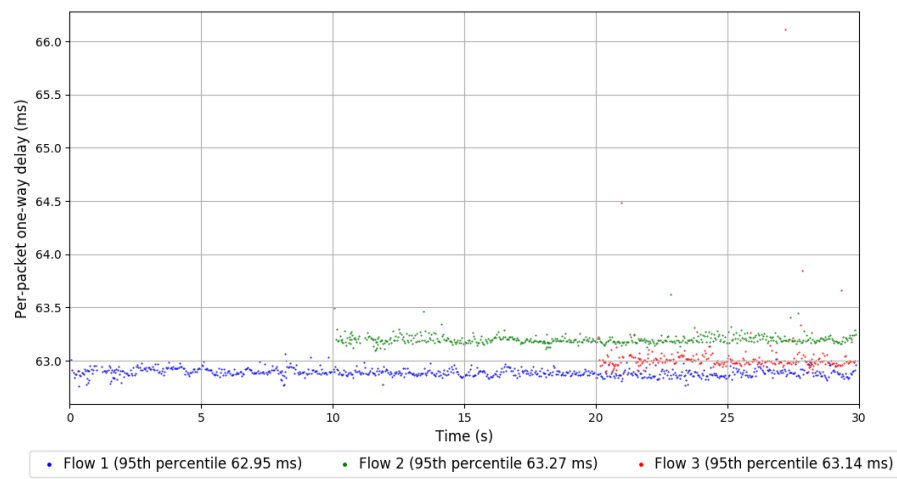
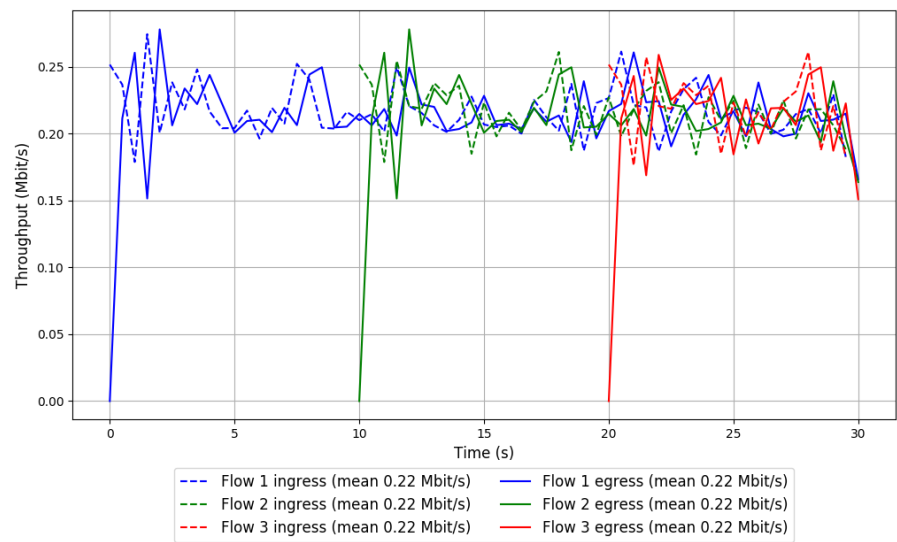


Run 5: Statistics of SReAM

Start at: 2018-10-26 14:39:21
End at: 2018-10-26 14:39:51
Local clock offset: -0.056 ms
Remote clock offset: -0.056 ms

Below is generated by plot.py at 2018-10-26 16:58:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 63.237 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 62.955 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.265 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.136 ms
Loss rate: 1.45%

Run 5: Report of SReAM — Data Link

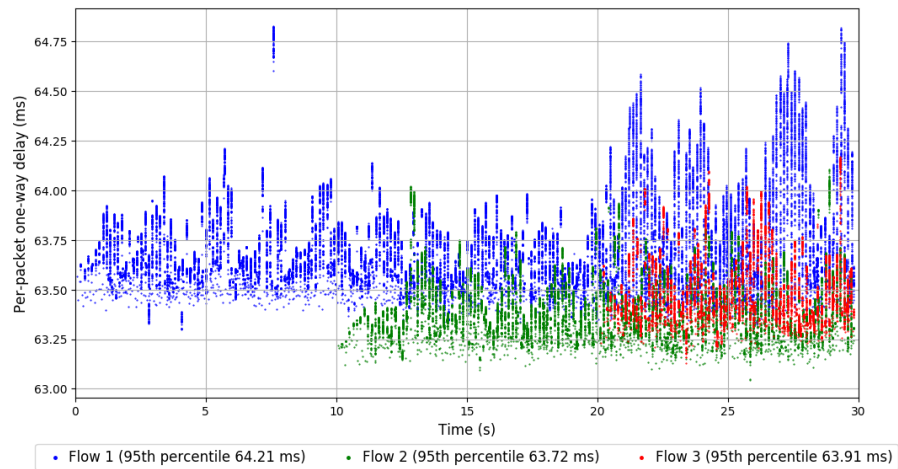
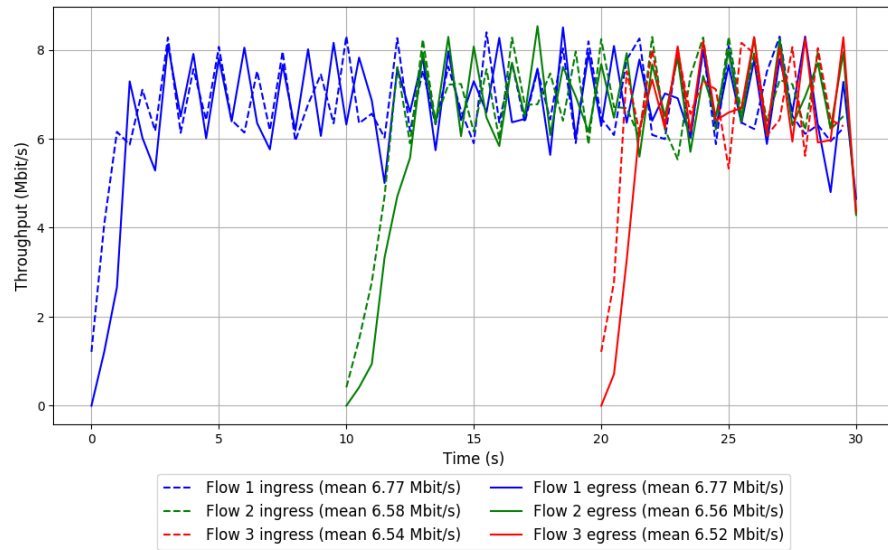


Run 1: Statistics of Sprout

Start at: 2018-10-26 12:12:02
End at: 2018-10-26 12:12:32
Local clock offset: -0.1 ms
Remote clock offset: -0.197 ms

Below is generated by plot.py at 2018-10-26 16:58:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 13.25 Mbit/s
95th percentile per-packet one-way delay: 64.058 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 6.77 Mbit/s
95th percentile per-packet one-way delay: 64.210 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 6.56 Mbit/s
95th percentile per-packet one-way delay: 63.715 ms
Loss rate: 0.85%
-- Flow 3:
Average throughput: 6.52 Mbit/s
95th percentile per-packet one-way delay: 63.911 ms
Loss rate: 1.66%

Run 1: Report of Sprout — Data Link

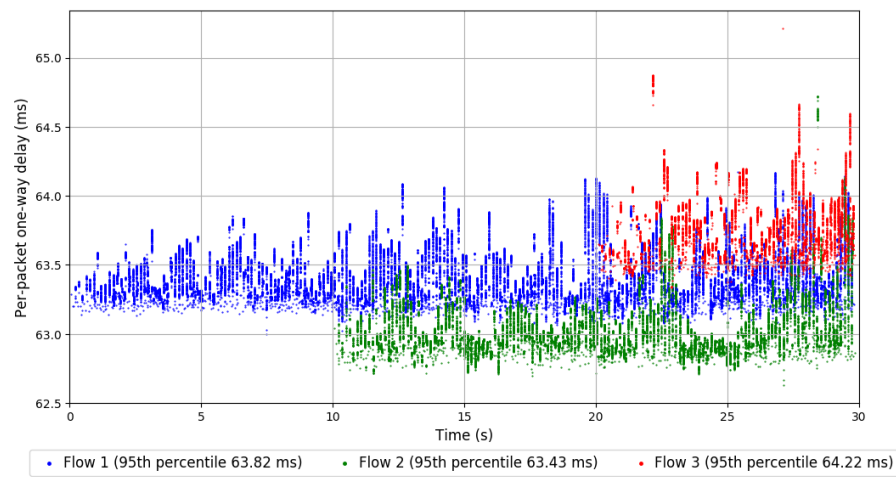
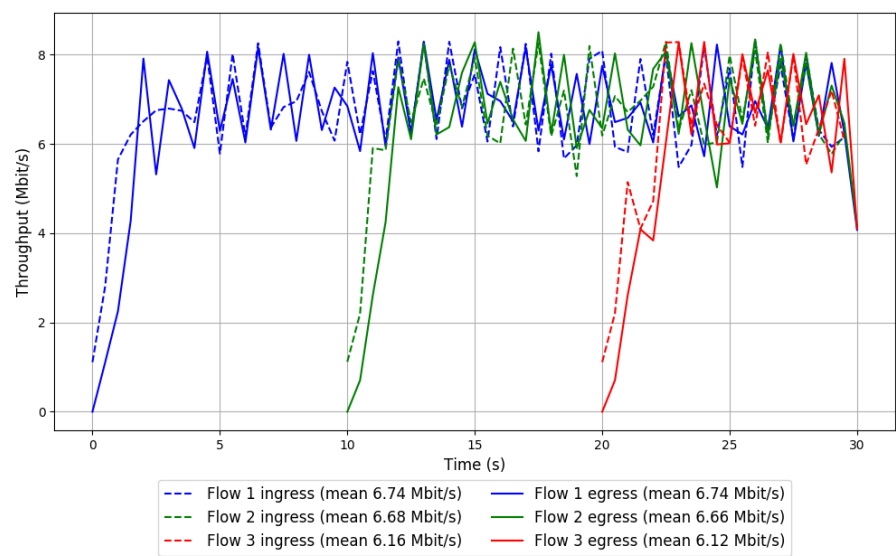


Run 2: Statistics of Sprout

Start at: 2018-10-26 12:43:28
End at: 2018-10-26 12:43:58
Local clock offset: -0.065 ms
Remote clock offset: 0.142 ms

Below is generated by plot.py at 2018-10-26 16:58:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 13.16 Mbit/s
95th percentile per-packet one-way delay: 63.915 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 6.74 Mbit/s
95th percentile per-packet one-way delay: 63.822 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 6.66 Mbit/s
95th percentile per-packet one-way delay: 63.426 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 6.12 Mbit/s
95th percentile per-packet one-way delay: 64.216 ms
Loss rate: 1.85%

Run 2: Report of Sprout — Data Link

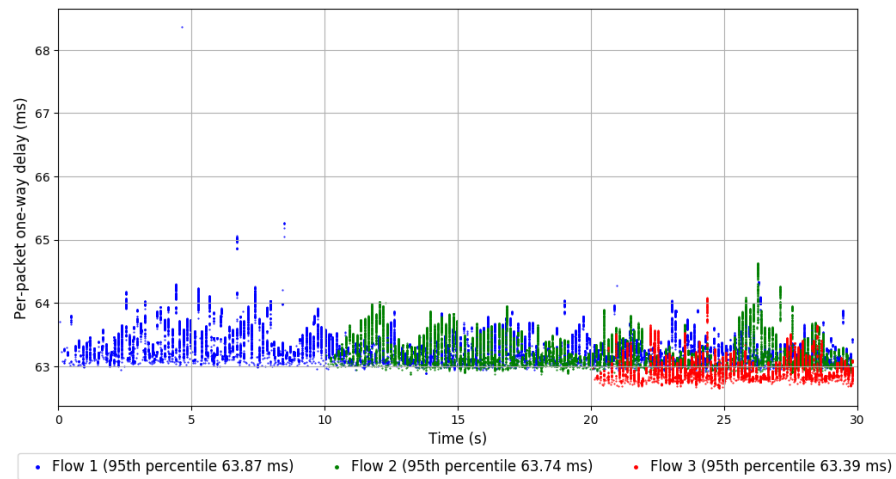
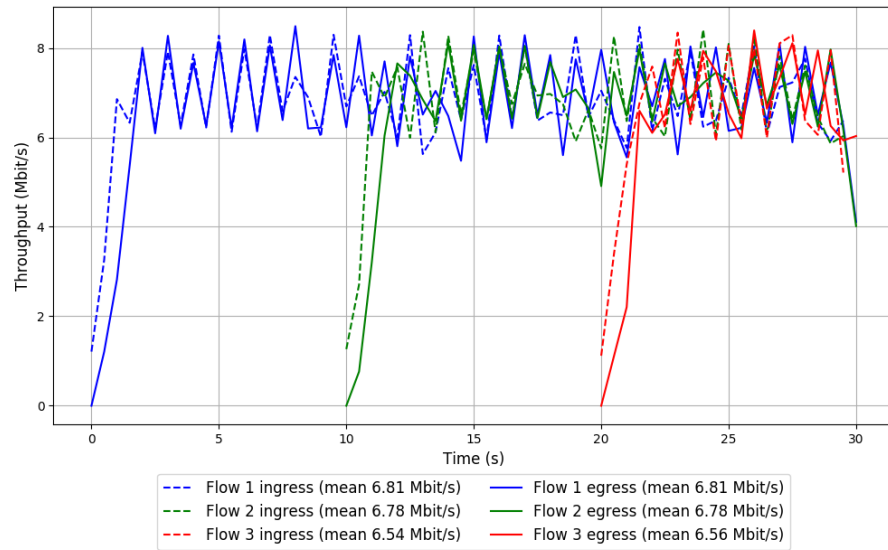


Run 3: Statistics of Sprout

Start at: 2018-10-26 13:14:56
End at: 2018-10-26 13:15:26
Local clock offset: -0.066 ms
Remote clock offset: 0.117 ms

```
# Below is generated by plot.py at 2018-10-26 16:58:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.45 Mbit/s
95th percentile per-packet one-way delay: 63.772 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 6.81 Mbit/s
95th percentile per-packet one-way delay: 63.865 ms
Loss rate: 0.56%
-- Flow 2:
Average throughput: 6.78 Mbit/s
95th percentile per-packet one-way delay: 63.737 ms
Loss rate: 0.75%
-- Flow 3:
Average throughput: 6.56 Mbit/s
95th percentile per-packet one-way delay: 63.387 ms
Loss rate: 0.93%
```

Run 3: Report of Sprout — Data Link

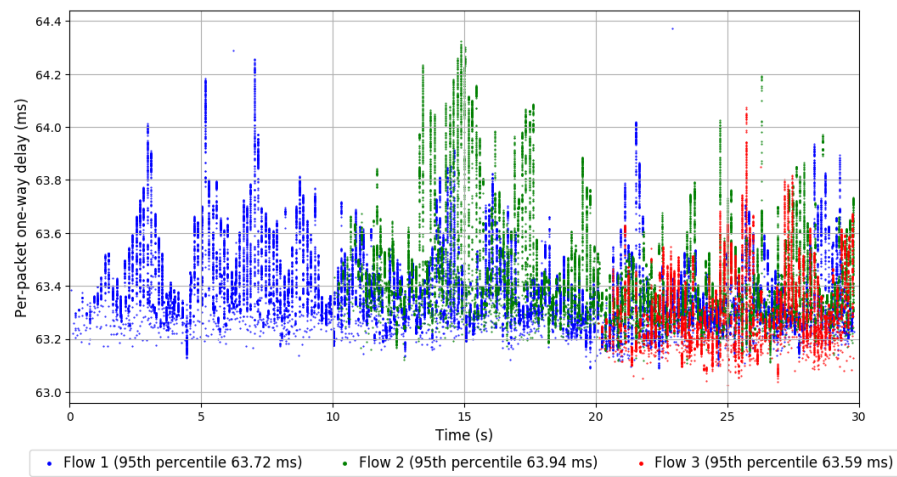
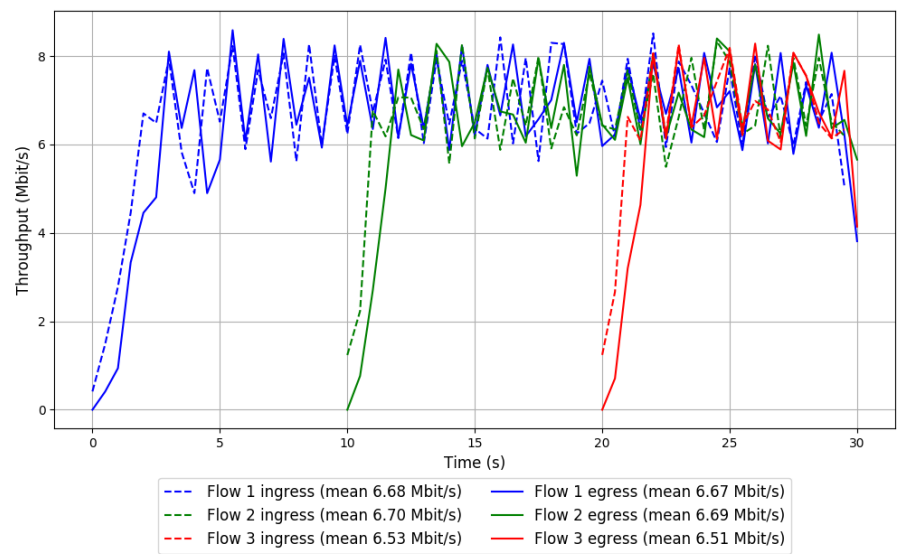


Run 4: Statistics of Sprout

Start at: 2018-10-26 13:46:34
End at: 2018-10-26 13:47:04
Local clock offset: -0.014 ms
Remote clock offset: -0.199 ms

```
# Below is generated by plot.py at 2018-10-26 16:58:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 13.23 Mbit/s
95th percentile per-packet one-way delay: 63.778 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 6.67 Mbit/s
95th percentile per-packet one-way delay: 63.722 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 6.69 Mbit/s
95th percentile per-packet one-way delay: 63.941 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 6.51 Mbit/s
95th percentile per-packet one-way delay: 63.592 ms
Loss rate: 1.83%
```

Run 4: Report of Sprout — Data Link

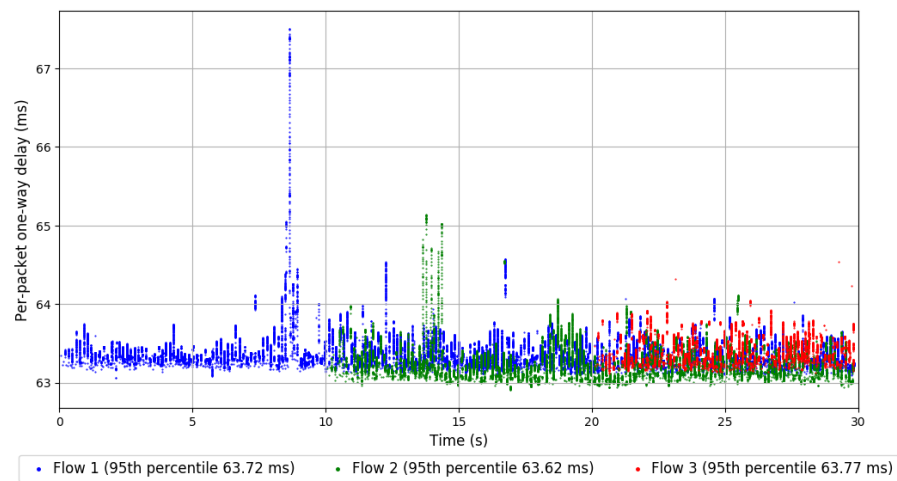
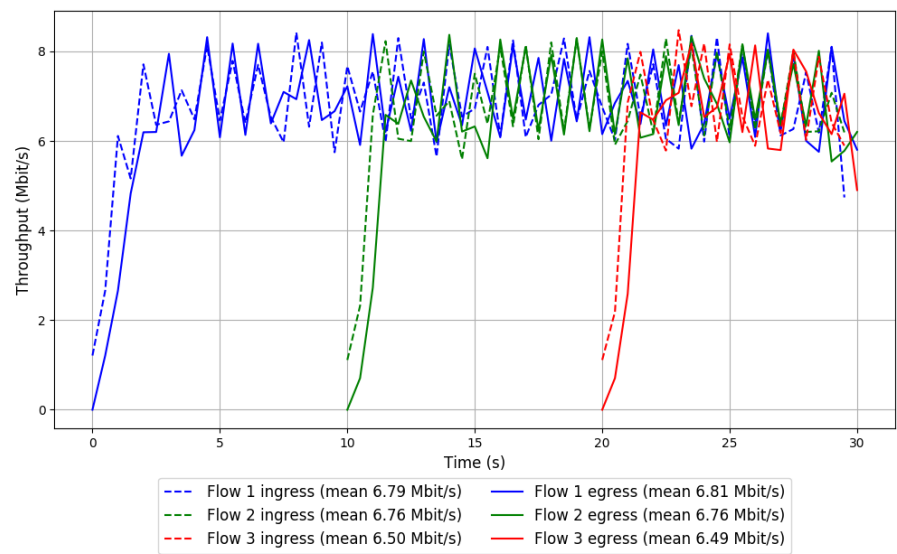


Run 5: Statistics of Sprout

Start at: 2018-10-26 14:18:11
End at: 2018-10-26 14:18:41
Local clock offset: -0.055 ms
Remote clock offset: 0.068 ms

Below is generated by plot.py at 2018-10-26 16:58:58
Datalink statistics
-- Total of 3 flows:
Average throughput: 13.40 Mbit/s
95th percentile per-packet one-way delay: 63.718 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 6.81 Mbit/s
95th percentile per-packet one-way delay: 63.717 ms
Loss rate: 0.17%
-- Flow 2:
Average throughput: 6.76 Mbit/s
95th percentile per-packet one-way delay: 63.615 ms
Loss rate: 0.77%
-- Flow 3:
Average throughput: 6.49 Mbit/s
95th percentile per-packet one-way delay: 63.773 ms
Loss rate: 1.62%

Run 5: Report of Sprout — Data Link

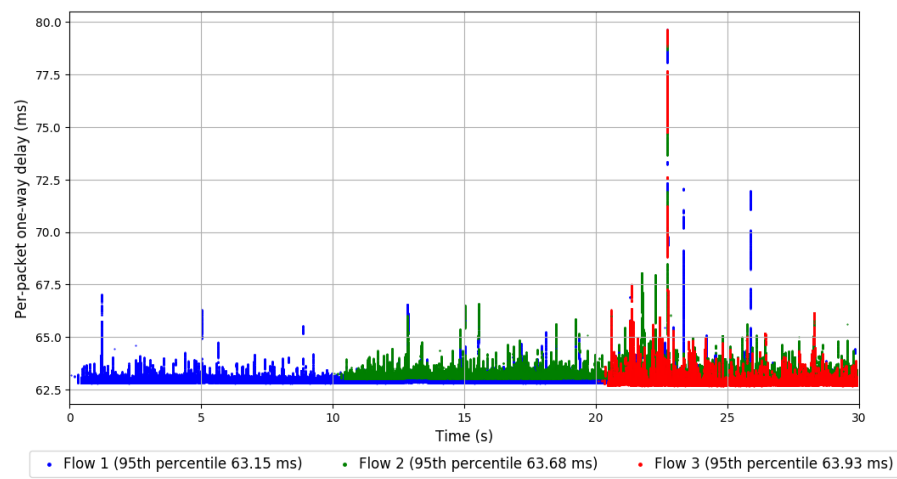
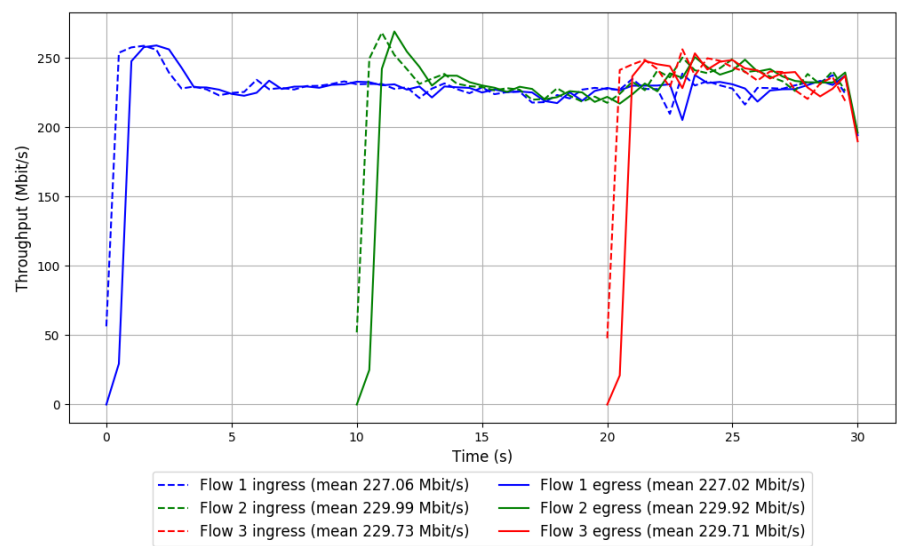


Run 1: Statistics of TaoVA-100x

Start at: 2018-10-26 12:13:15
End at: 2018-10-26 12:13:45
Local clock offset: -0.104 ms
Remote clock offset: -0.052 ms

Below is generated by plot.py at 2018-10-26 17:03:01
Datalink statistics
-- Total of 3 flows:
Average throughput: 455.50 Mbit/s
95th percentile per-packet one-way delay: 63.512 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 227.02 Mbit/s
95th percentile per-packet one-way delay: 63.148 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 229.92 Mbit/s
95th percentile per-packet one-way delay: 63.683 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 229.71 Mbit/s
95th percentile per-packet one-way delay: 63.926 ms
Loss rate: 1.29%

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-10-26 12:44:41

End at: 2018-10-26 12:45:11

Local clock offset: -0.107 ms

Remote clock offset: 1.258 ms

Below is generated by plot.py at 2018-10-26 17:03:06

Datalink statistics

-- Total of 3 flows:

Average throughput: 446.25 Mbit/s

95th percentile per-packet one-way delay: 62.430 ms

Loss rate: 0.64%

-- Flow 1:

Average throughput: 218.38 Mbit/s

95th percentile per-packet one-way delay: 62.527 ms

Loss rate: 0.42%

-- Flow 2:

Average throughput: 230.91 Mbit/s

95th percentile per-packet one-way delay: 62.290 ms

Loss rate: 0.63%

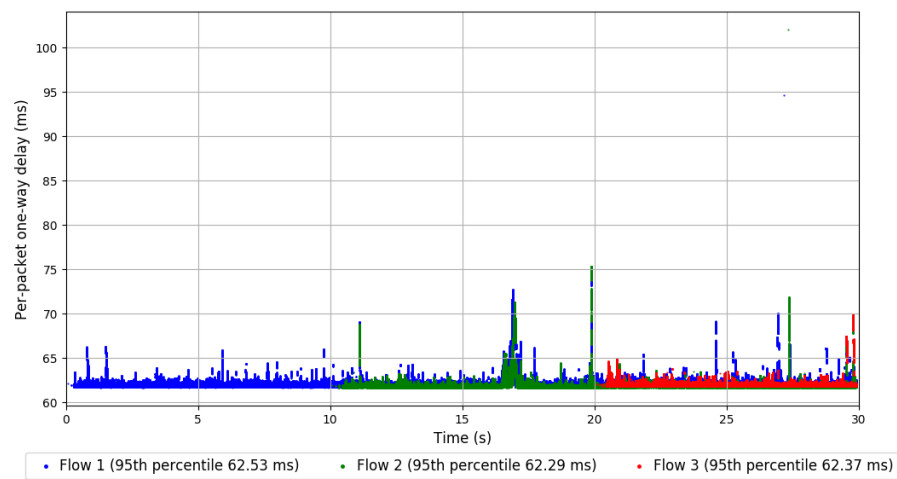
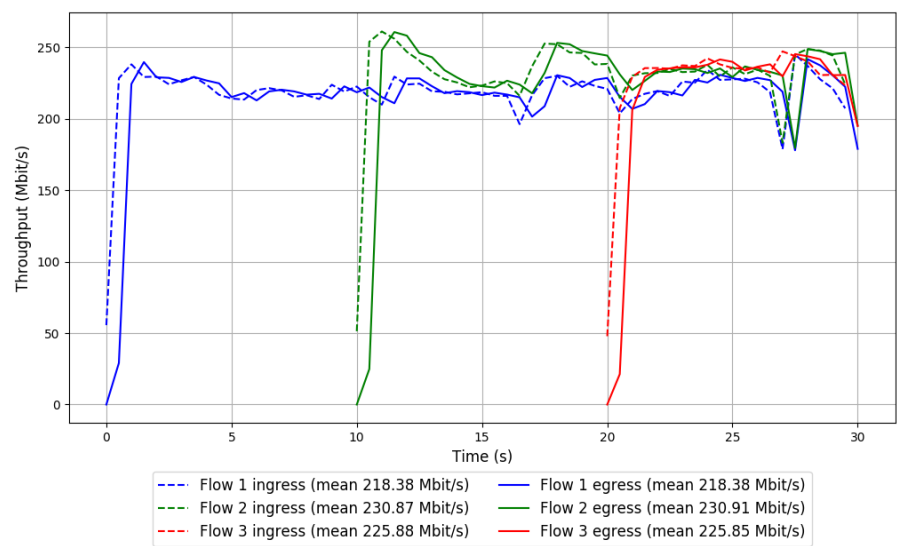
-- Flow 3:

Average throughput: 225.85 Mbit/s

95th percentile per-packet one-way delay: 62.365 ms

Loss rate: 1.28%

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

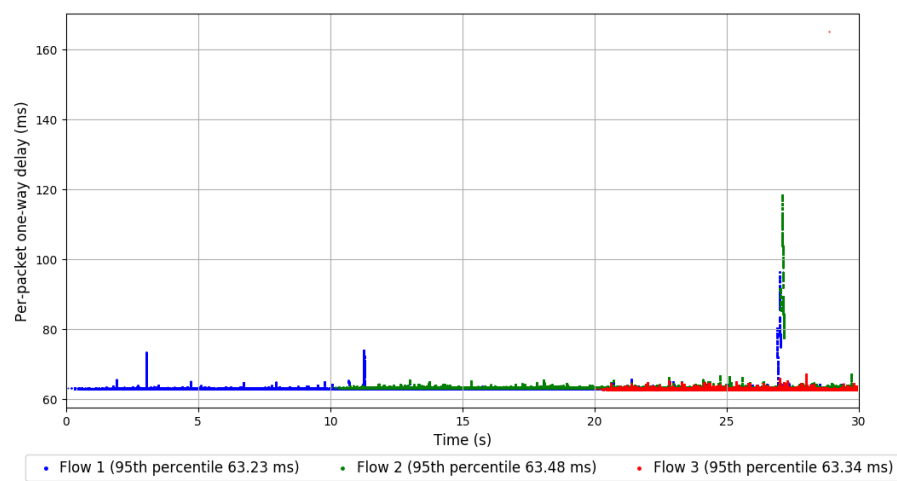
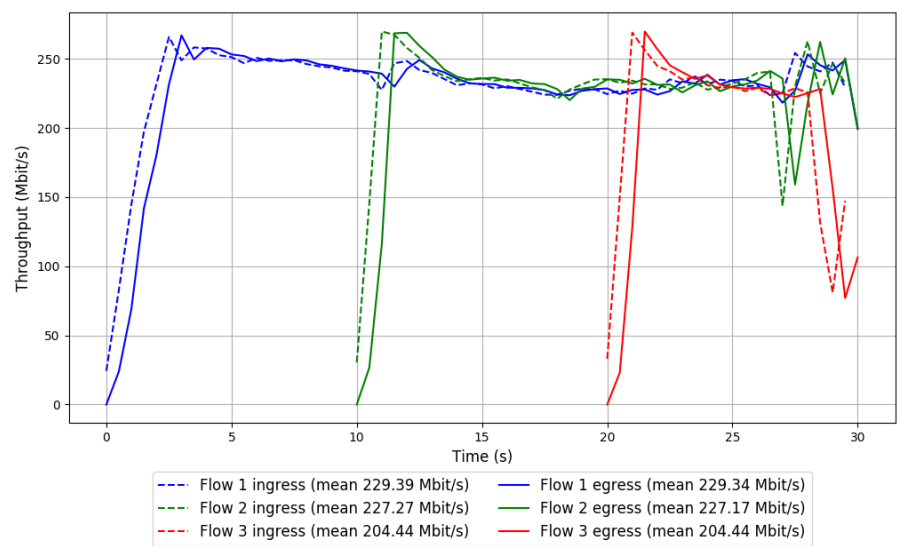


Run 3: Statistics of TaoVA-100x

Start at: 2018-10-26 13:16:08
End at: 2018-10-26 13:16:38
Local clock offset: -0.063 ms
Remote clock offset: -0.078 ms

Below is generated by plot.py at 2018-10-26 17:03:11
Datalink statistics
-- Total of 3 flows:
Average throughput: 447.74 Mbit/s
95th percentile per-packet one-way delay: 63.374 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 229.34 Mbit/s
95th percentile per-packet one-way delay: 63.226 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 227.17 Mbit/s
95th percentile per-packet one-way delay: 63.480 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 204.44 Mbit/s
95th percentile per-packet one-way delay: 63.341 ms
Loss rate: 1.26%

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



Run 4: Statistics of TaoVA-100x

Start at: 2018-10-26 13:47:47

End at: 2018-10-26 13:48:17

Local clock offset: -0.007 ms

Remote clock offset: 0.677 ms

Below is generated by plot.py at 2018-10-26 17:04:25

Datalink statistics

-- Total of 3 flows:

Average throughput: 450.88 Mbit/s

95th percentile per-packet one-way delay: 62.934 ms

Loss rate: 0.67%

-- Flow 1:

Average throughput: 229.93 Mbit/s

95th percentile per-packet one-way delay: 62.949 ms

Loss rate: 0.42%

-- Flow 2:

Average throughput: 223.25 Mbit/s

95th percentile per-packet one-way delay: 62.800 ms

Loss rate: 0.69%

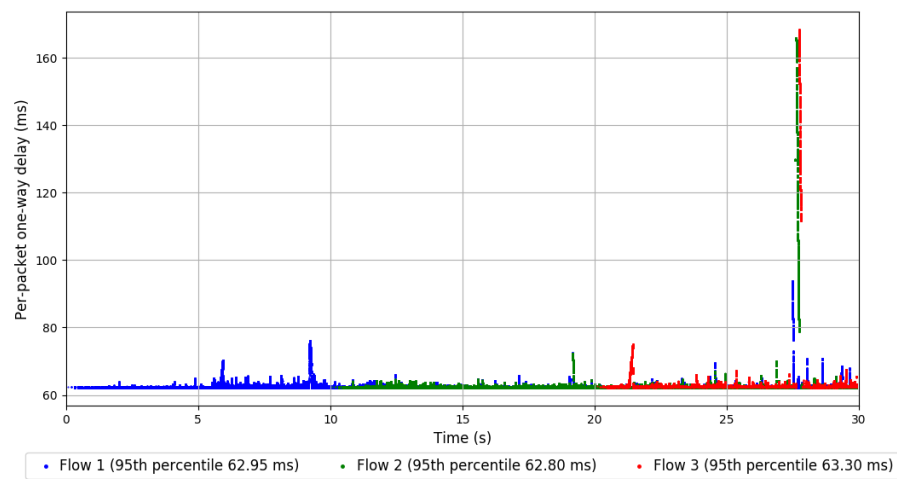
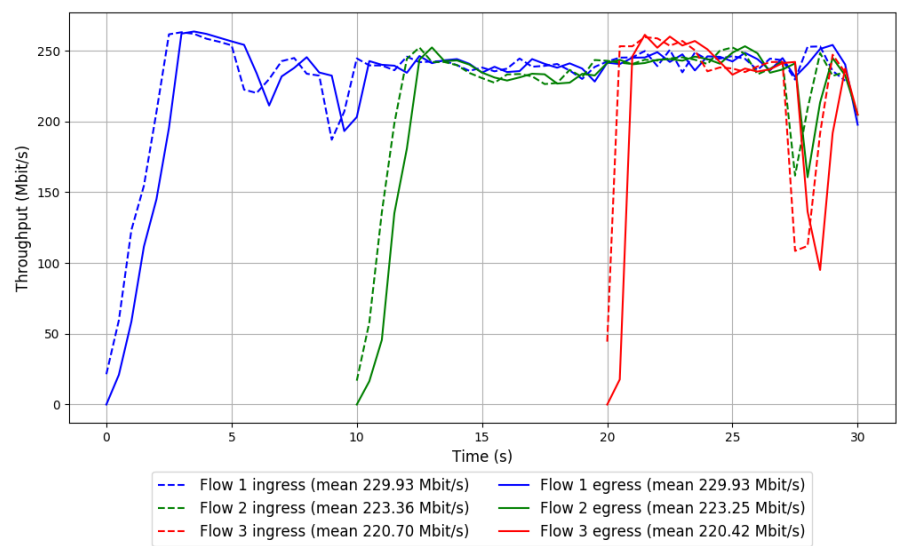
-- Flow 3:

Average throughput: 220.42 Mbit/s

95th percentile per-packet one-way delay: 63.296 ms

Loss rate: 1.39%

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



Run 5: Statistics of TaoVA-100x

Start at: 2018-10-26 14:19:23

End at: 2018-10-26 14:19:53

Local clock offset: -0.018 ms

Remote clock offset: 1.134 ms

Below is generated by plot.py at 2018-10-26 17:10:39

Datalink statistics

-- Total of 3 flows:

Average throughput: 458.93 Mbit/s

95th percentile per-packet one-way delay: 62.400 ms

Loss rate: 0.67%

-- Flow 1:

Average throughput: 232.18 Mbit/s

95th percentile per-packet one-way delay: 61.931 ms

Loss rate: 0.46%

-- Flow 2:

Average throughput: 235.28 Mbit/s

95th percentile per-packet one-way delay: 62.350 ms

Loss rate: 0.65%

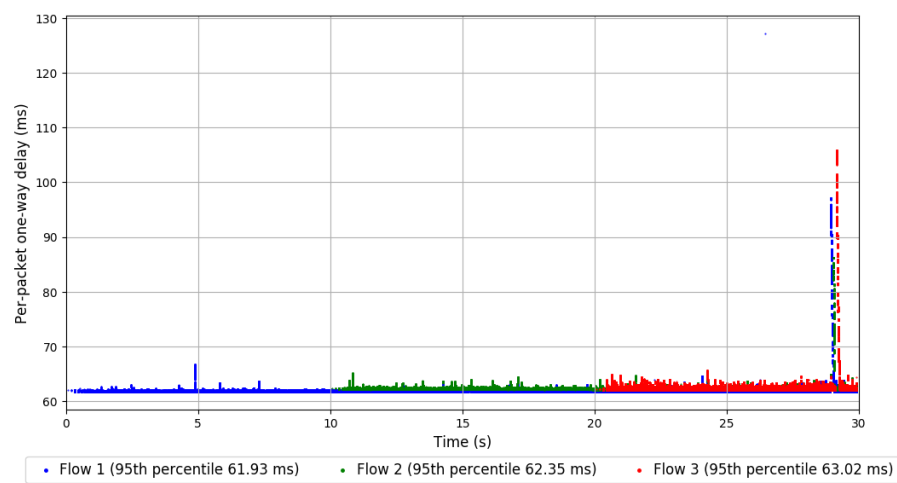
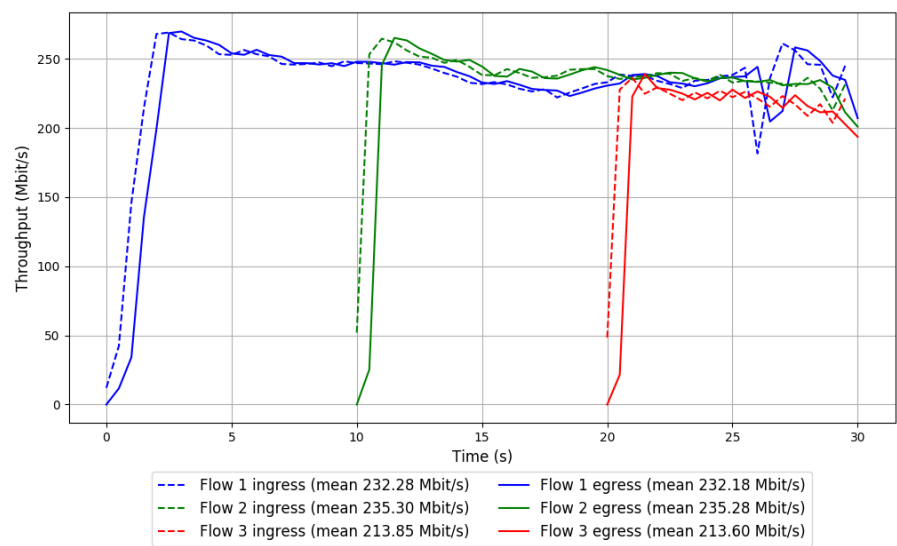
-- Flow 3:

Average throughput: 213.60 Mbit/s

95th percentile per-packet one-way delay: 63.017 ms

Loss rate: 1.38%

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

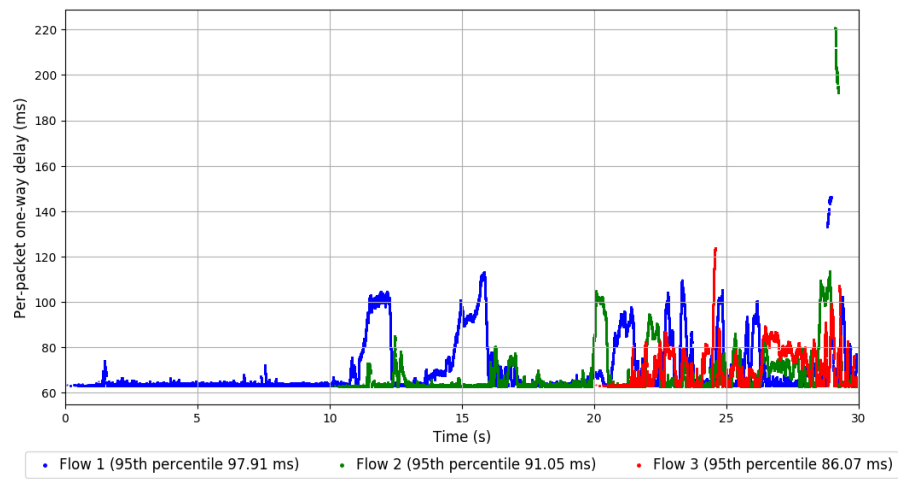
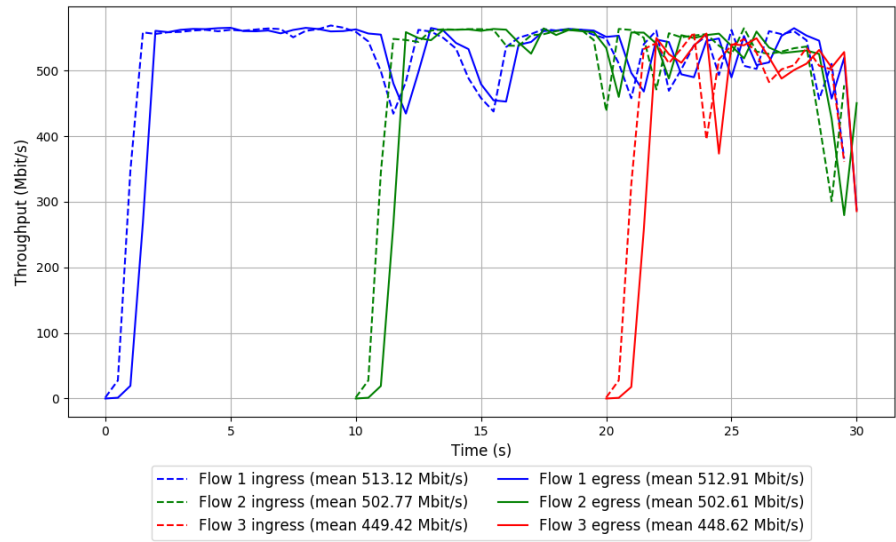


Run 1: Statistics of TCP Vegas

Start at: 2018-10-26 12:31:07
End at: 2018-10-26 12:31:37
Local clock offset: -0.107 ms
Remote clock offset: -0.075 ms

Below is generated by plot.py at 2018-10-26 17:14:57
Datalink statistics
-- Total of 3 flows:
Average throughput: 994.95 Mbit/s
95th percentile per-packet one-way delay: 94.810 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 512.91 Mbit/s
95th percentile per-packet one-way delay: 97.912 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 502.61 Mbit/s
95th percentile per-packet one-way delay: 91.054 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 448.62 Mbit/s
95th percentile per-packet one-way delay: 86.073 ms
Loss rate: 1.44%

Run 1: Report of TCP Vegas — Data Link

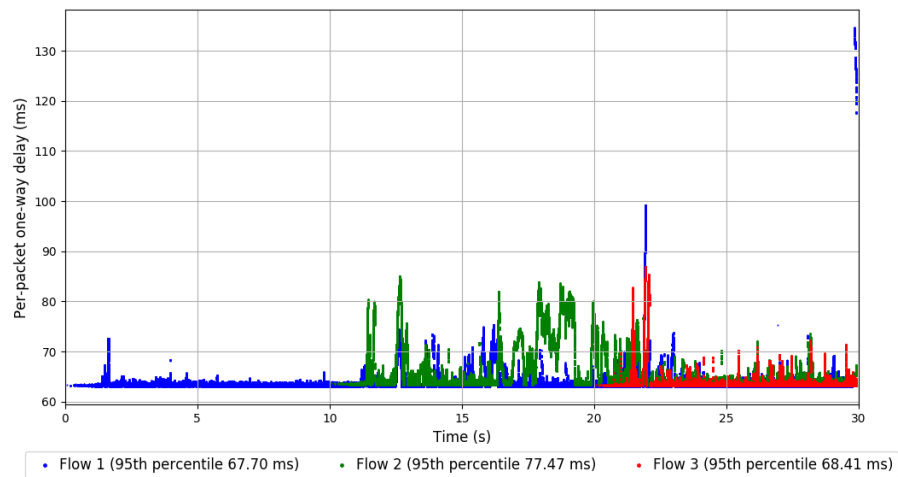
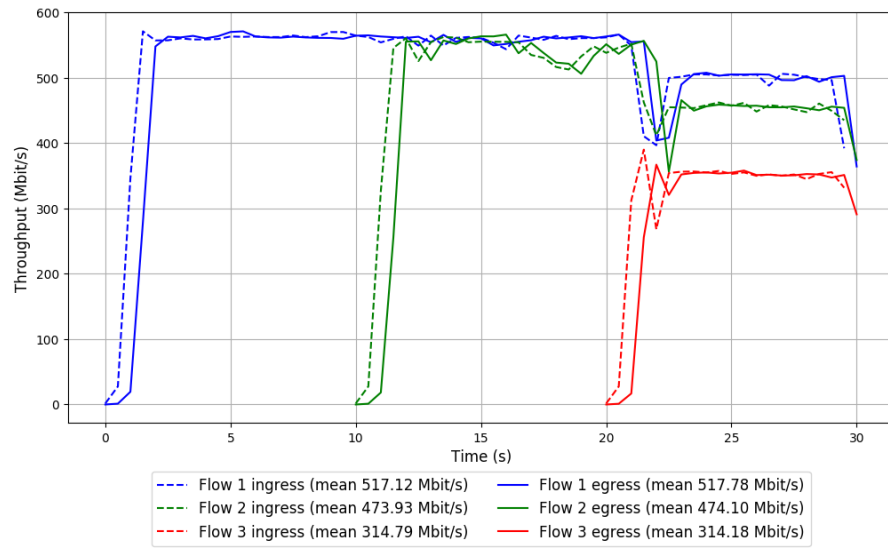


Run 2: Statistics of TCP Vegas

Start at: 2018-10-26 13:02:39
End at: 2018-10-26 13:03:09
Local clock offset: -0.021 ms
Remote clock offset: -0.333 ms

Below is generated by plot.py at 2018-10-26 17:16:09
Datalink statistics
-- Total of 3 flows:
Average throughput: 936.35 Mbit/s
95th percentile per-packet one-way delay: 72.123 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 517.78 Mbit/s
95th percentile per-packet one-way delay: 67.696 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 474.10 Mbit/s
95th percentile per-packet one-way delay: 77.472 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 314.18 Mbit/s
95th percentile per-packet one-way delay: 68.414 ms
Loss rate: 1.42%

Run 2: Report of TCP Vegas — Data Link

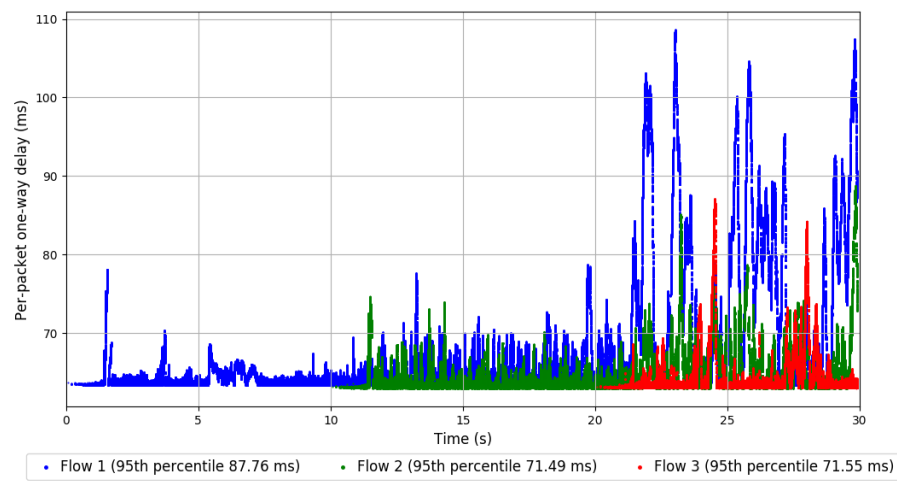
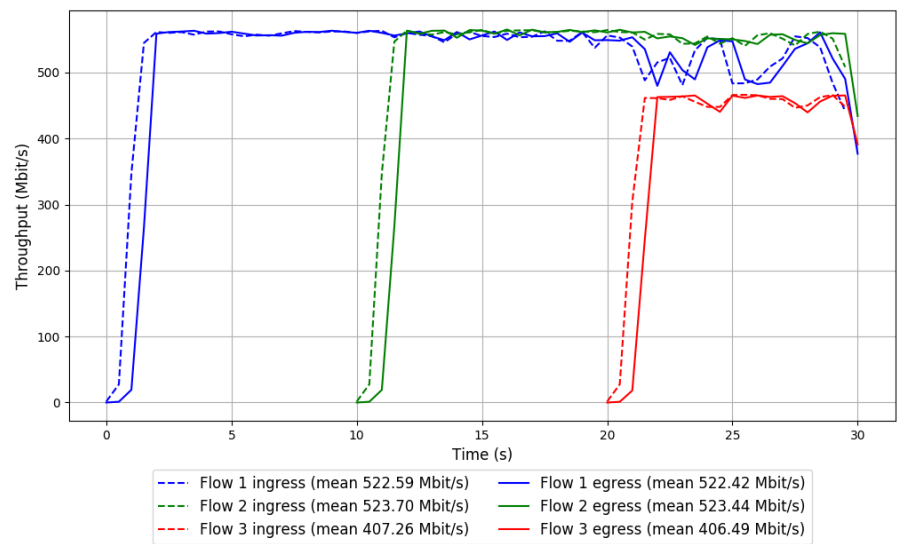


Run 3: Statistics of TCP Vegas

Start at: 2018-10-26 13:34:11
End at: 2018-10-26 13:34:41
Local clock offset: -0.028 ms
Remote clock offset: -0.242 ms

Below is generated by plot.py at 2018-10-26 17:17:31
Datalink statistics
-- Total of 3 flows:
Average throughput: 1004.47 Mbit/s
95th percentile per-packet one-way delay: 81.143 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 522.42 Mbit/s
95th percentile per-packet one-way delay: 87.762 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 523.44 Mbit/s
95th percentile per-packet one-way delay: 71.487 ms
Loss rate: 0.68%
-- Flow 3:
Average throughput: 406.49 Mbit/s
95th percentile per-packet one-way delay: 71.550 ms
Loss rate: 1.45%

Run 3: Report of TCP Vegas — Data Link



Run 4: Statistics of TCP Vegas

Start at: 2018-10-26 14:05:49

End at: 2018-10-26 14:06:19

Local clock offset: -0.054 ms

Remote clock offset: 0.023 ms

Below is generated by plot.py at 2018-10-26 17:17:31

Datalink statistics

-- Total of 3 flows:

Average throughput: 708.25 Mbit/s

95th percentile per-packet one-way delay: 66.623 ms

Loss rate: 0.51%

-- Flow 1:

Average throughput: 382.06 Mbit/s

95th percentile per-packet one-way delay: 65.735 ms

Loss rate: 0.25%

-- Flow 2:

Average throughput: 262.30 Mbit/s

95th percentile per-packet one-way delay: 68.617 ms

Loss rate: 0.42%

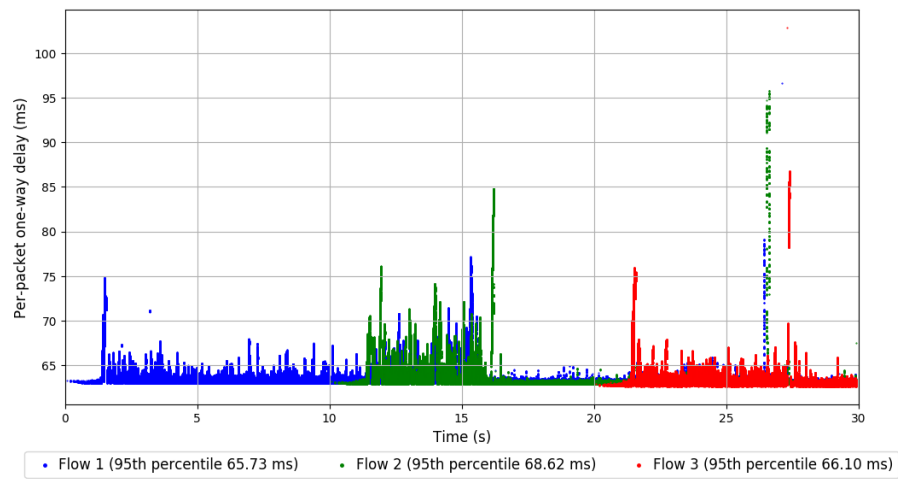
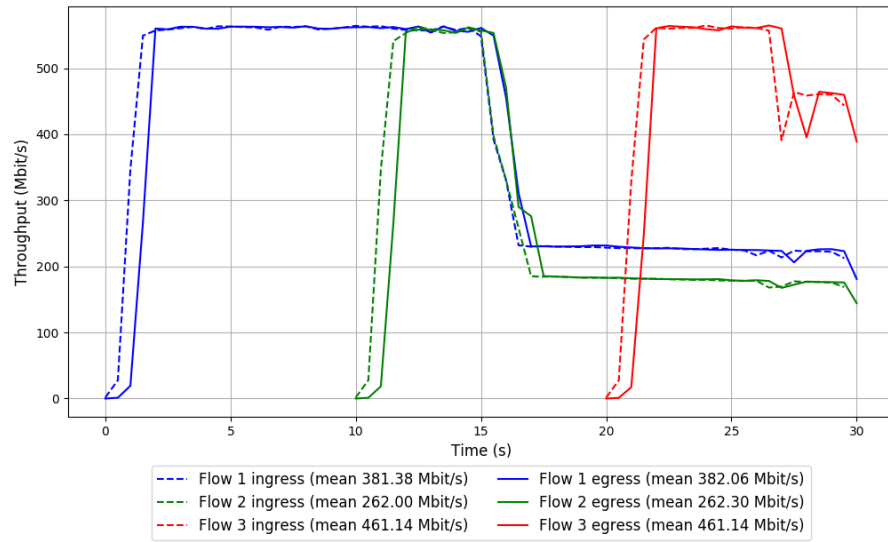
-- Flow 3:

Average throughput: 461.14 Mbit/s

95th percentile per-packet one-way delay: 66.101 ms

Loss rate: 1.27%

Run 4: Report of TCP Vegas — Data Link

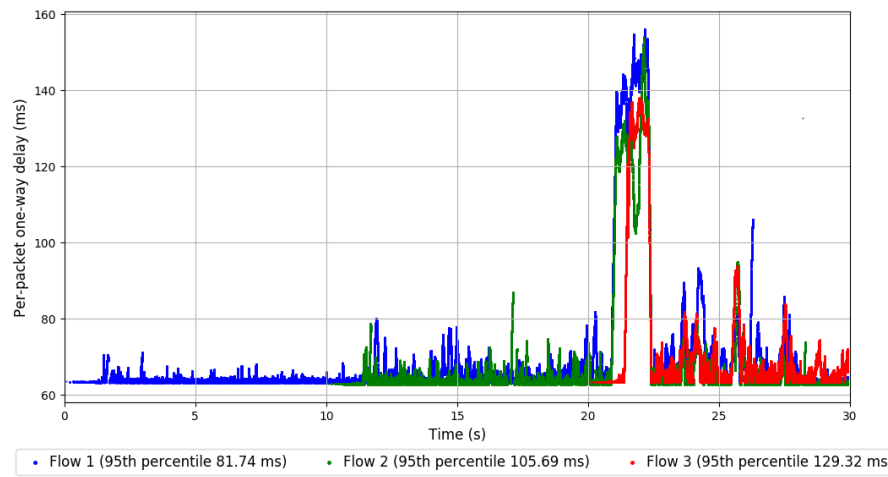
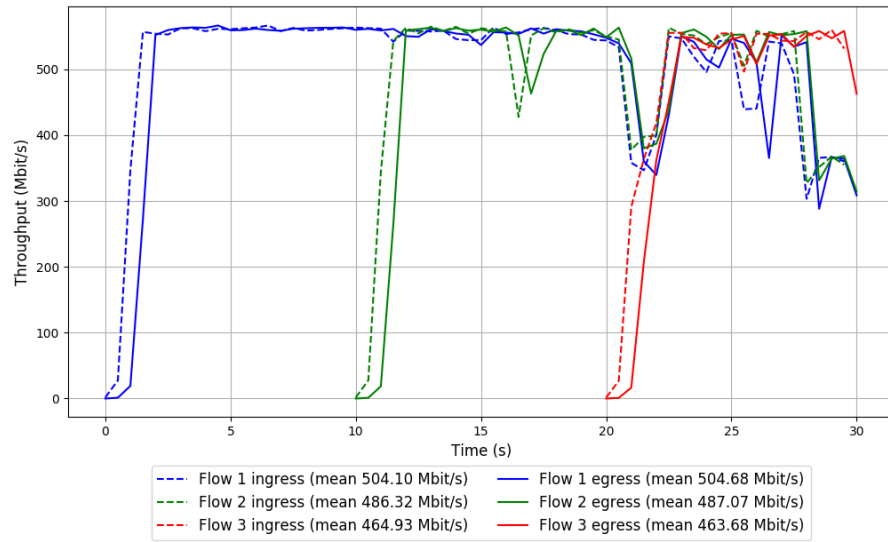


Run 5: Statistics of TCP Vegas

Start at: 2018-10-26 14:37:19
End at: 2018-10-26 14:37:49
Local clock offset: -0.029 ms
Remote clock offset: -0.084 ms

Below is generated by plot.py at 2018-10-26 17:21:33
Datalink statistics
-- Total of 3 flows:
Average throughput: 981.18 Mbit/s
95th percentile per-packet one-way delay: 92.876 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 504.68 Mbit/s
95th percentile per-packet one-way delay: 81.741 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 487.07 Mbit/s
95th percentile per-packet one-way delay: 105.686 ms
Loss rate: 0.48%
-- Flow 3:
Average throughput: 463.68 Mbit/s
95th percentile per-packet one-way delay: 129.325 ms
Loss rate: 1.53%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-10-26 12:17:12

End at: 2018-10-26 12:17:42

Local clock offset: -0.1 ms

Remote clock offset: 0.093 ms

Below is generated by plot.py at 2018-10-26 17:21:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 283.20 Mbit/s

95th percentile per-packet one-way delay: 211.758 ms

Loss rate: 2.42%

-- Flow 1:

Average throughput: 186.42 Mbit/s

95th percentile per-packet one-way delay: 220.167 ms

Loss rate: 3.36%

-- Flow 2:

Average throughput: 117.57 Mbit/s

95th percentile per-packet one-way delay: 82.243 ms

Loss rate: 0.02%

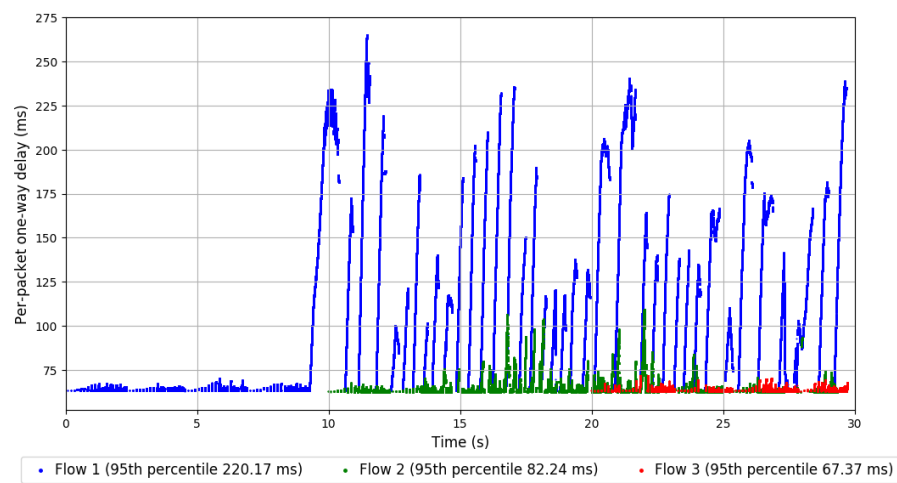
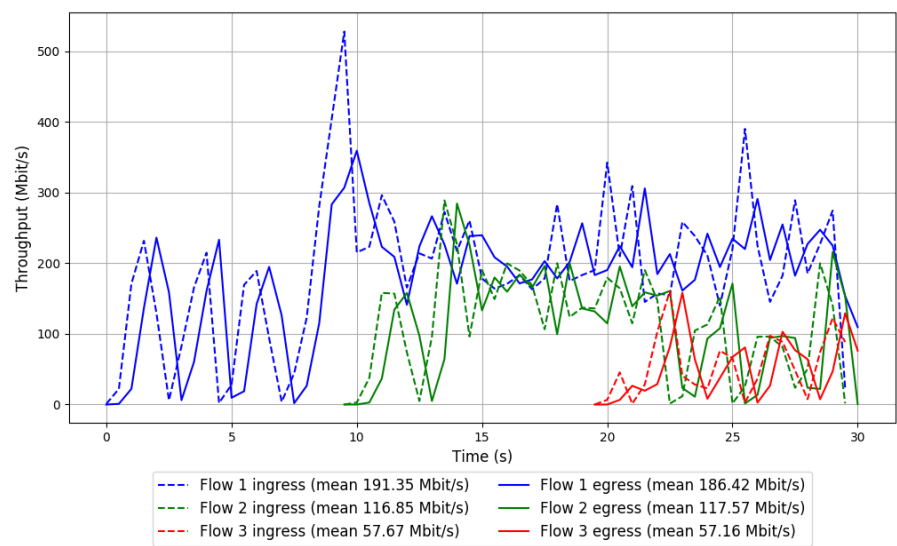
-- Flow 3:

Average throughput: 57.16 Mbit/s

95th percentile per-packet one-way delay: 67.372 ms

Loss rate: 2.84%

Run 1: Report of Verus — Data Link

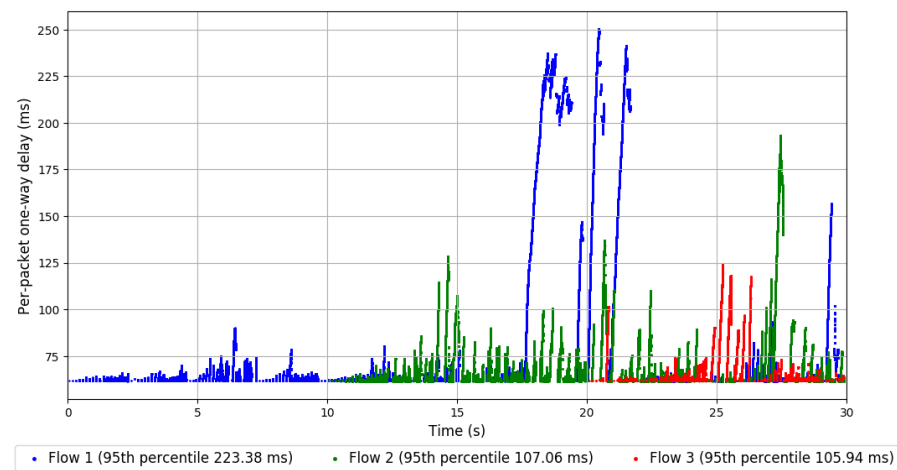
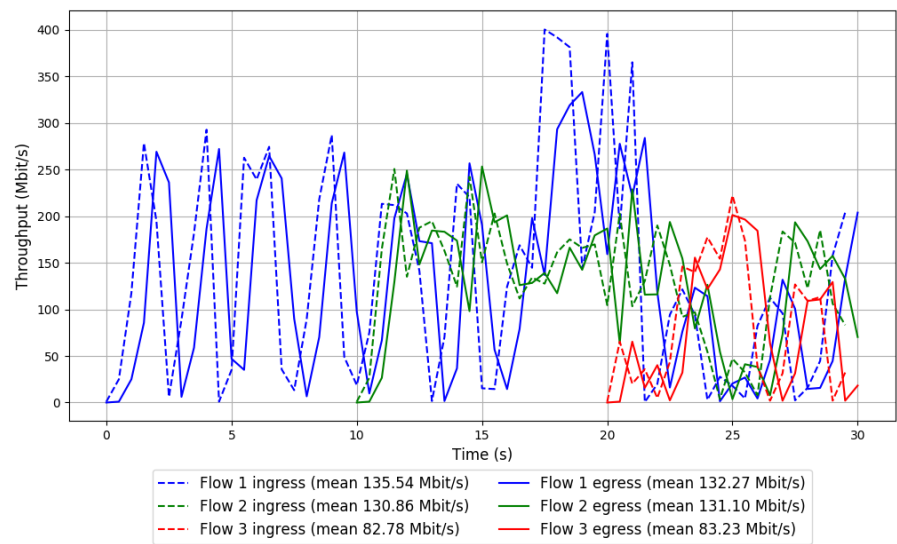


Run 2: Statistics of Verus

Start at: 2018-10-26 12:48:32
End at: 2018-10-26 12:49:02
Local clock offset: -0.038 ms
Remote clock offset: 1.175 ms

Below is generated by plot.py at 2018-10-26 17:21:33
Datalink statistics
-- Total of 3 flows:
Average throughput: 246.38 Mbit/s
95th percentile per-packet one-way delay: 214.248 ms
Loss rate: 1.88%
-- Flow 1:
Average throughput: 132.27 Mbit/s
95th percentile per-packet one-way delay: 223.384 ms
Loss rate: 3.03%
-- Flow 2:
Average throughput: 131.10 Mbit/s
95th percentile per-packet one-way delay: 107.057 ms
Loss rate: 0.41%
-- Flow 3:
Average throughput: 83.23 Mbit/s
95th percentile per-packet one-way delay: 105.937 ms
Loss rate: 0.85%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-10-26 13:20:09

End at: 2018-10-26 13:20:39

Local clock offset: -0.047 ms

Remote clock offset: 0.458 ms

Below is generated by plot.py at 2018-10-26 17:21:33

Datalink statistics

-- Total of 3 flows:

Average throughput: 276.57 Mbit/s

95th percentile per-packet one-way delay: 162.748 ms

Loss rate: 1.31%

-- Flow 1:

Average throughput: 174.61 Mbit/s

95th percentile per-packet one-way delay: 136.973 ms

Loss rate: 0.33%

-- Flow 2:

Average throughput: 110.52 Mbit/s

95th percentile per-packet one-way delay: 224.383 ms

Loss rate: 3.42%

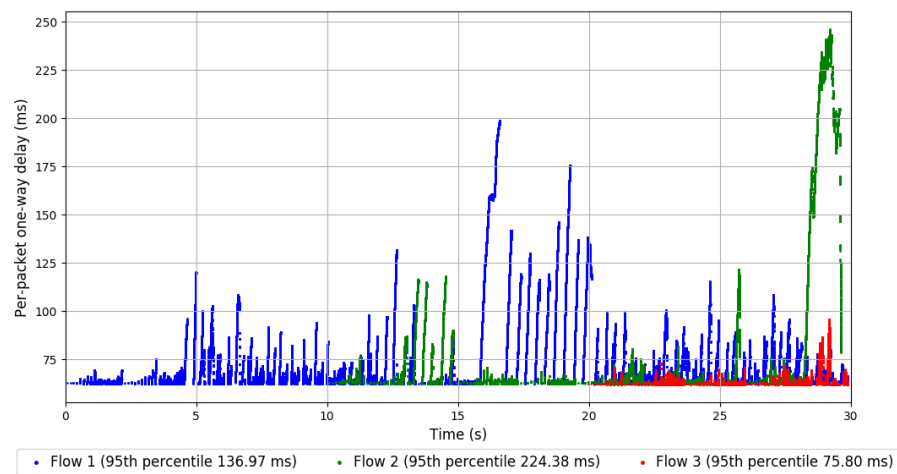
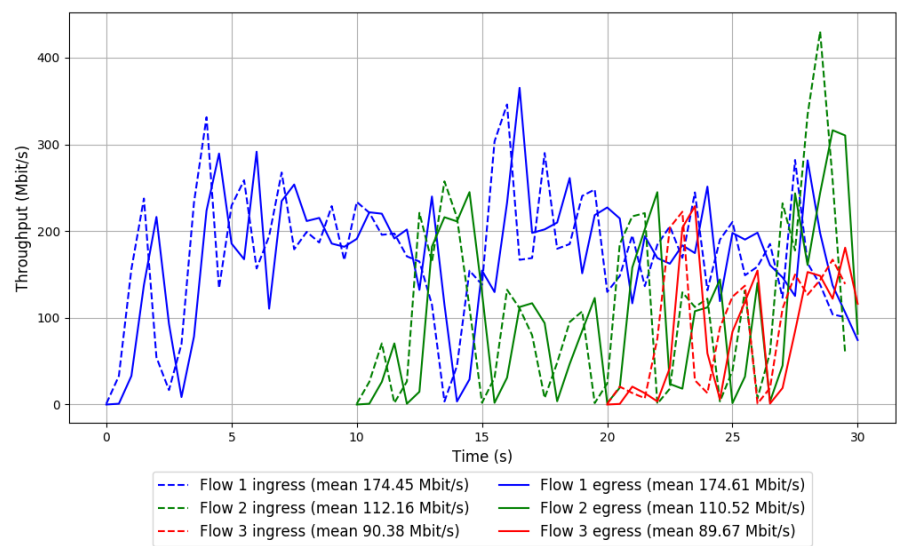
-- Flow 3:

Average throughput: 89.67 Mbit/s

95th percentile per-packet one-way delay: 75.798 ms

Loss rate: 1.78%

Run 3: Report of Verus — Data Link

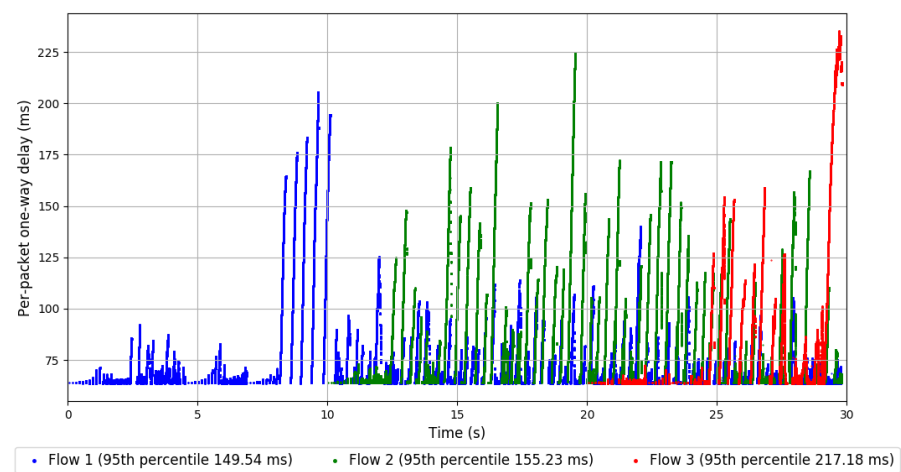
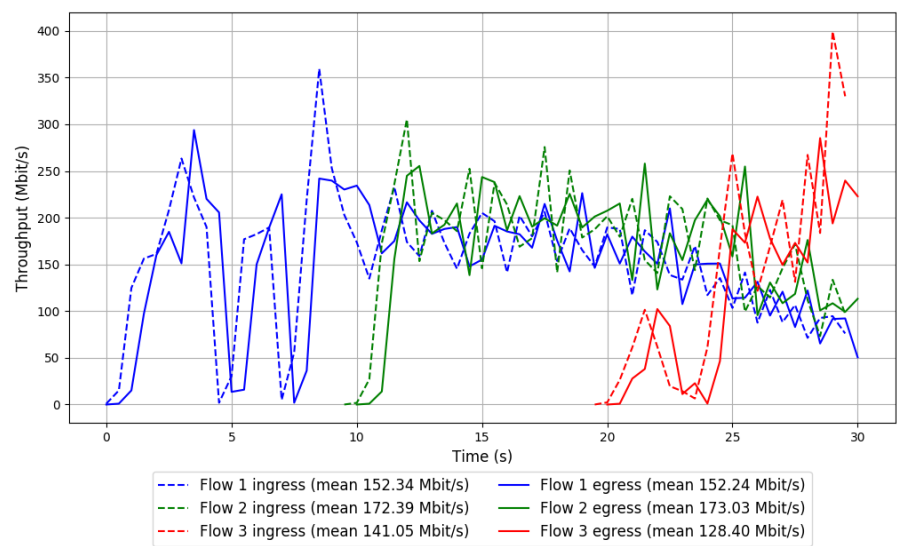


Run 4: Statistics of Verus

Start at: 2018-10-26 13:51:43
End at: 2018-10-26 13:52:13
Local clock offset: -0.011 ms
Remote clock offset: -0.709 ms

Below is generated by plot.py at 2018-10-26 17:24:16
Datalink statistics
-- Total of 3 flows:
Average throughput: 309.08 Mbit/s
95th percentile per-packet one-way delay: 159.984 ms
Loss rate: 2.00%
-- Flow 1:
Average throughput: 152.24 Mbit/s
95th percentile per-packet one-way delay: 149.538 ms
Loss rate: 0.72%
-- Flow 2:
Average throughput: 173.03 Mbit/s
95th percentile per-packet one-way delay: 155.230 ms
Loss rate: 0.38%
-- Flow 3:
Average throughput: 128.40 Mbit/s
95th percentile per-packet one-way delay: 217.184 ms
Loss rate: 10.14%

Run 4: Report of Verus — Data Link



Run 5: Statistics of Verus

Start at: 2018-10-26 14:23:18

End at: 2018-10-26 14:23:48

Local clock offset: -0.027 ms

Remote clock offset: -0.26 ms

Below is generated by plot.py at 2018-10-26 17:24:47

Datalink statistics

-- Total of 3 flows:

Average throughput: 320.24 Mbit/s

95th percentile per-packet one-way delay: 182.478 ms

Loss rate: 2.89%

-- Flow 1:

Average throughput: 185.32 Mbit/s

95th percentile per-packet one-way delay: 195.936 ms

Loss rate: 3.80%

-- Flow 2:

Average throughput: 166.30 Mbit/s

95th percentile per-packet one-way delay: 144.161 ms

Loss rate: 1.48%

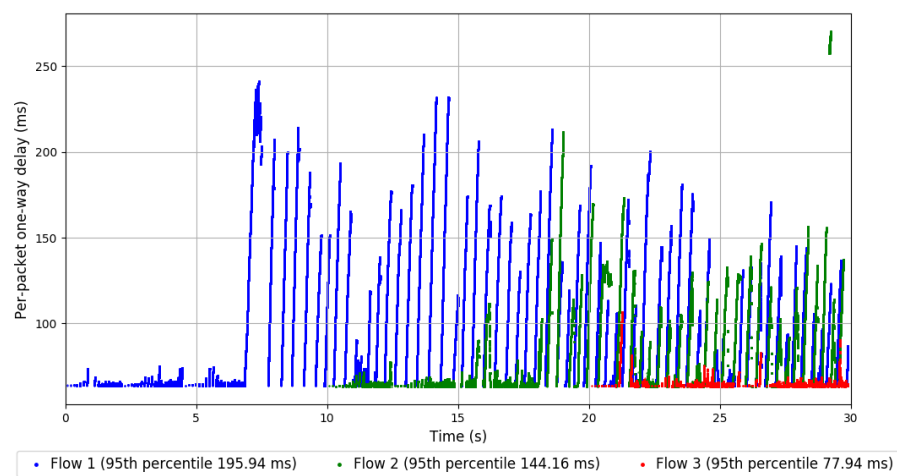
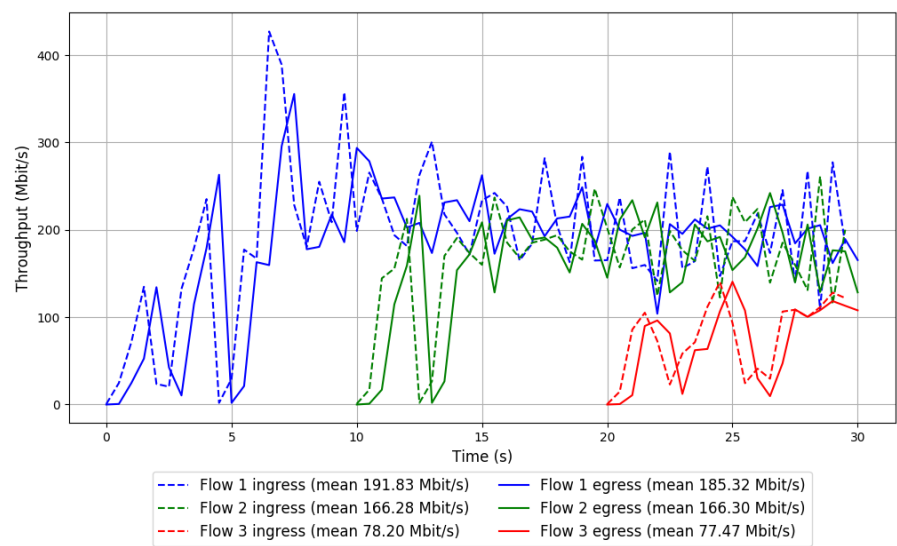
-- Flow 3:

Average throughput: 77.47 Mbit/s

95th percentile per-packet one-way delay: 77.940 ms

Loss rate: 2.20%

Run 5: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-10-26 12:36:21

End at: 2018-10-26 12:36:51

Local clock offset: -0.122 ms

Remote clock offset: -0.07 ms

Below is generated by plot.py at 2018-10-26 17:24:47

Datalink statistics

-- Total of 3 flows:

Average throughput: 522.52 Mbit/s

95th percentile per-packet one-way delay: 64.246 ms

Loss rate: 0.44%

-- Flow 1:

Average throughput: 340.81 Mbit/s

95th percentile per-packet one-way delay: 64.068 ms

Loss rate: 0.30%

-- Flow 2:

Average throughput: 255.87 Mbit/s

95th percentile per-packet one-way delay: 65.056 ms

Loss rate: 0.60%

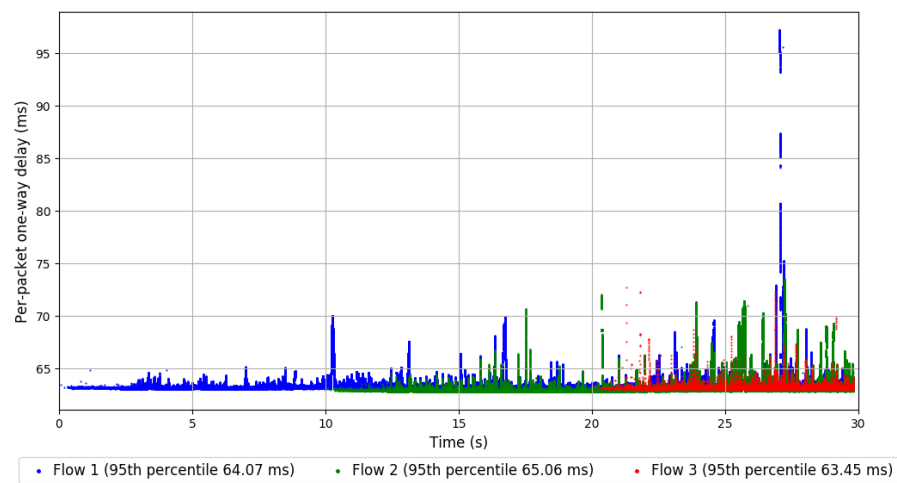
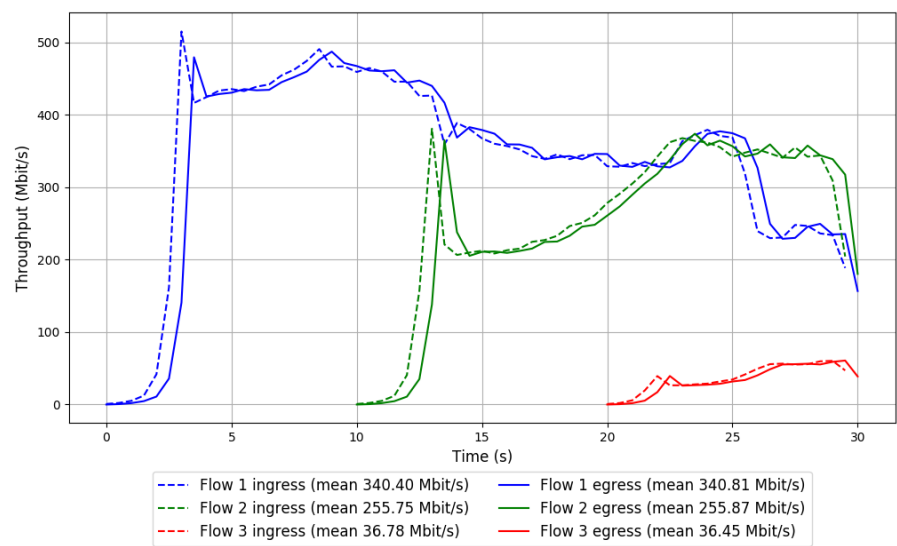
-- Flow 3:

Average throughput: 36.45 Mbit/s

95th percentile per-packet one-way delay: 63.449 ms

Loss rate: 2.18%

Run 1: Report of PCC-Vivace — Data Link

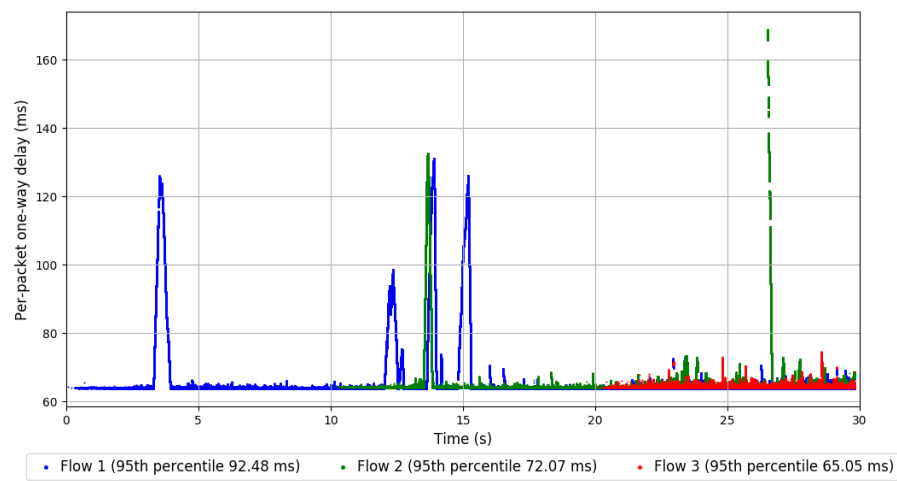
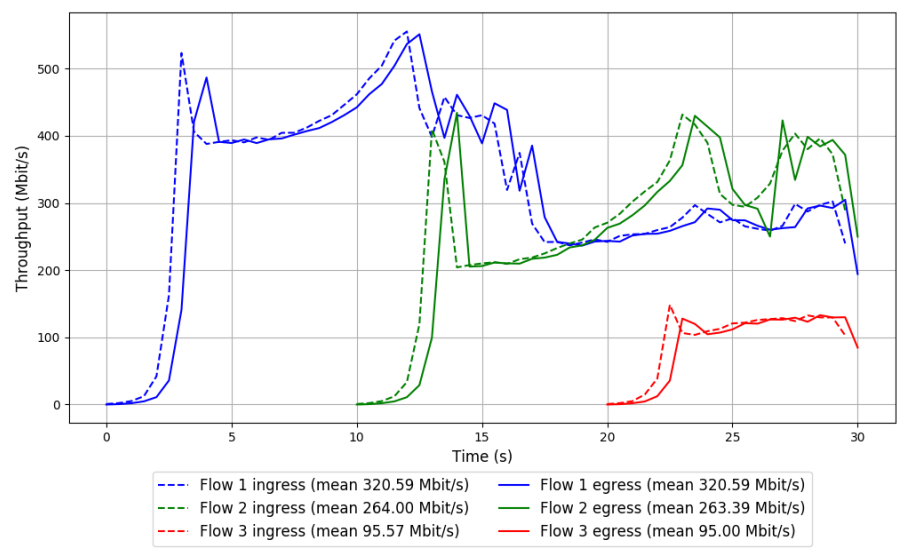


Run 2: Statistics of PCC-Vivace

Start at: 2018-10-26 13:07:50
End at: 2018-10-26 13:08:20
Local clock offset: -0.06 ms
Remote clock offset: -0.879 ms

Below is generated by plot.py at 2018-10-26 17:25:12
Datalink statistics
-- Total of 3 flows:
Average throughput: 526.44 Mbit/s
95th percentile per-packet one-way delay: 87.167 ms
Loss rate: 0.65%
-- Flow 1:
Average throughput: 320.59 Mbit/s
95th percentile per-packet one-way delay: 92.482 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 263.39 Mbit/s
95th percentile per-packet one-way delay: 72.074 ms
Loss rate: 0.87%
-- Flow 3:
Average throughput: 95.00 Mbit/s
95th percentile per-packet one-way delay: 65.045 ms
Loss rate: 1.82%

Run 2: Report of PCC-Vivace — Data Link

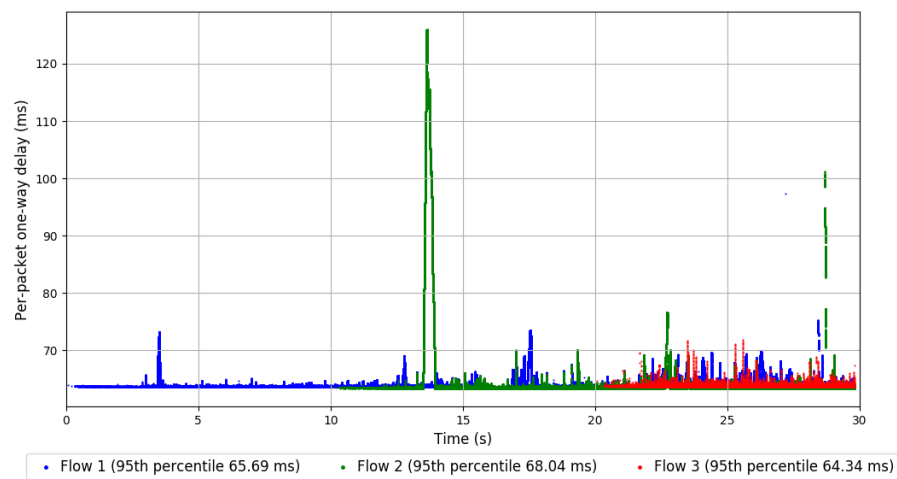
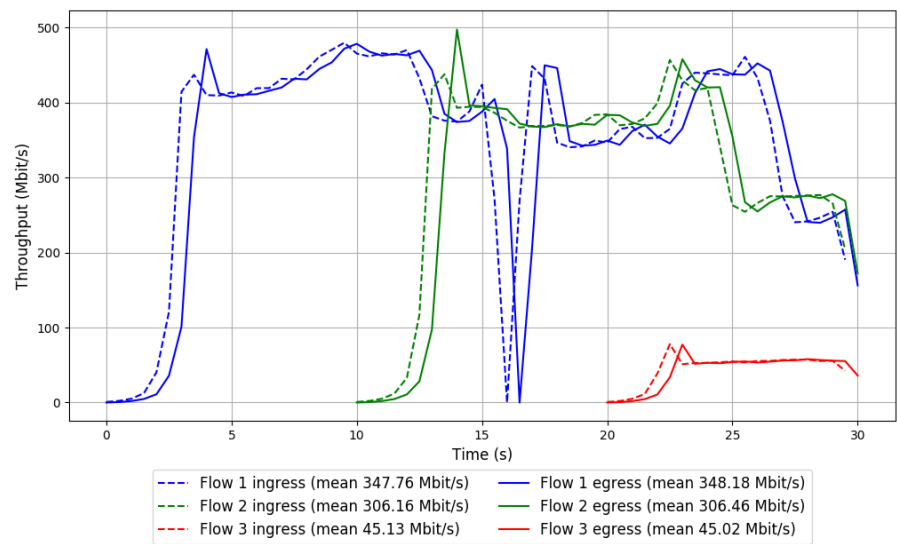


Run 3: Statistics of PCC-Vivace

Start at: 2018-10-26 13:39:26
End at: 2018-10-26 13:39:56
Local clock offset: -0.027 ms
Remote clock offset: -0.511 ms

Below is generated by plot.py at 2018-10-26 17:25:37
Datalink statistics
-- Total of 3 flows:
Average throughput: 566.24 Mbit/s
95th percentile per-packet one-way delay: 65.972 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 348.18 Mbit/s
95th percentile per-packet one-way delay: 65.688 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 306.46 Mbit/s
95th percentile per-packet one-way delay: 68.041 ms
Loss rate: 0.54%
-- Flow 3:
Average throughput: 45.02 Mbit/s
95th percentile per-packet one-way delay: 64.338 ms
Loss rate: 1.54%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-10-26 14:10:52

End at: 2018-10-26 14:11:22

Local clock offset: -0.04 ms

Remote clock offset: 0.179 ms

Below is generated by plot.py at 2018-10-26 17:25:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 612.59 Mbit/s

95th percentile per-packet one-way delay: 91.494 ms

Loss rate: 0.78%

-- Flow 1:

Average throughput: 344.30 Mbit/s

95th percentile per-packet one-way delay: 77.204 ms

Loss rate: 0.37%

-- Flow 2:

Average throughput: 290.15 Mbit/s

95th percentile per-packet one-way delay: 173.282 ms

Loss rate: 1.20%

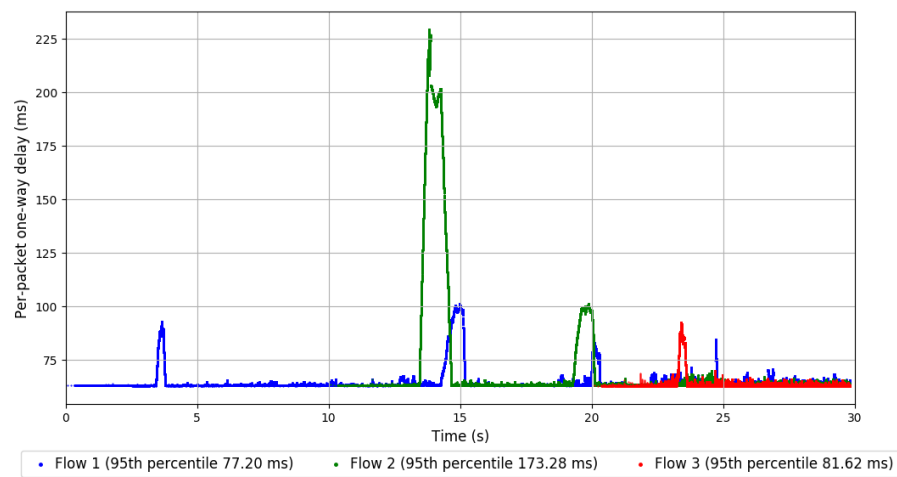
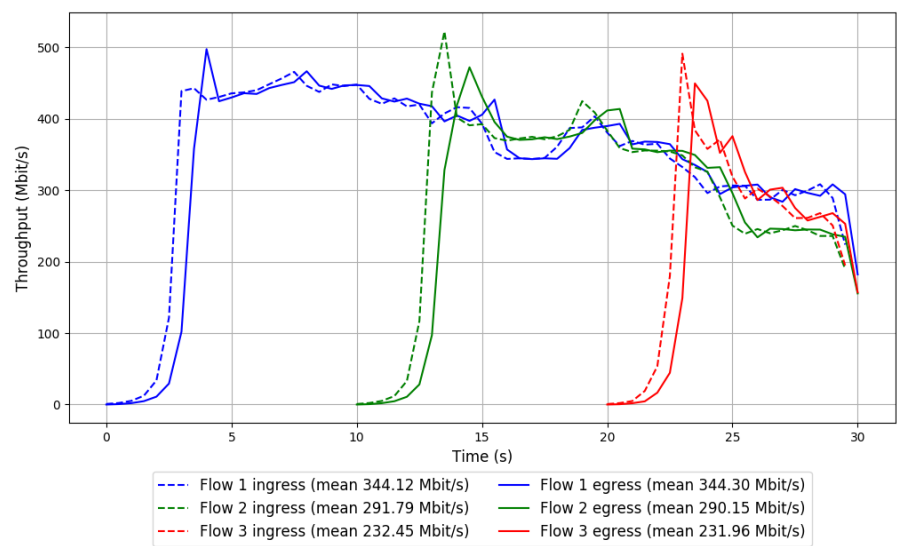
-- Flow 3:

Average throughput: 231.96 Mbit/s

95th percentile per-packet one-way delay: 81.616 ms

Loss rate: 1.52%

Run 4: Report of PCC-Vivace — Data Link

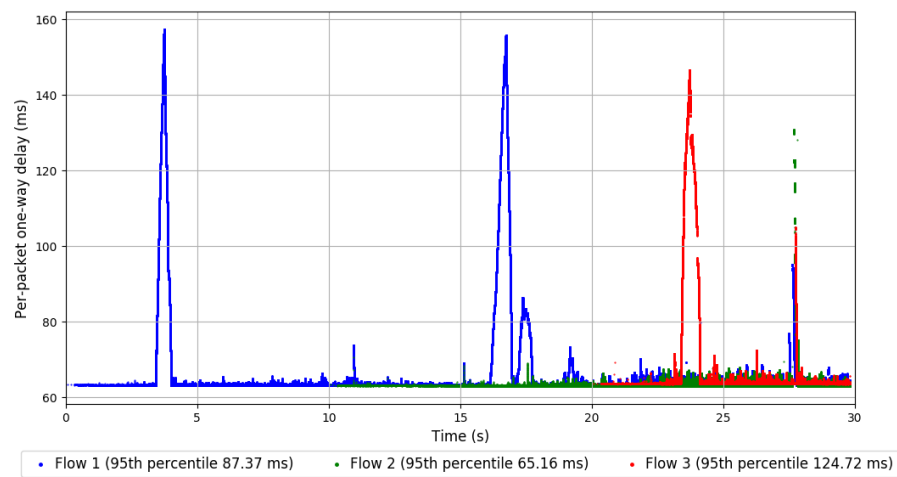
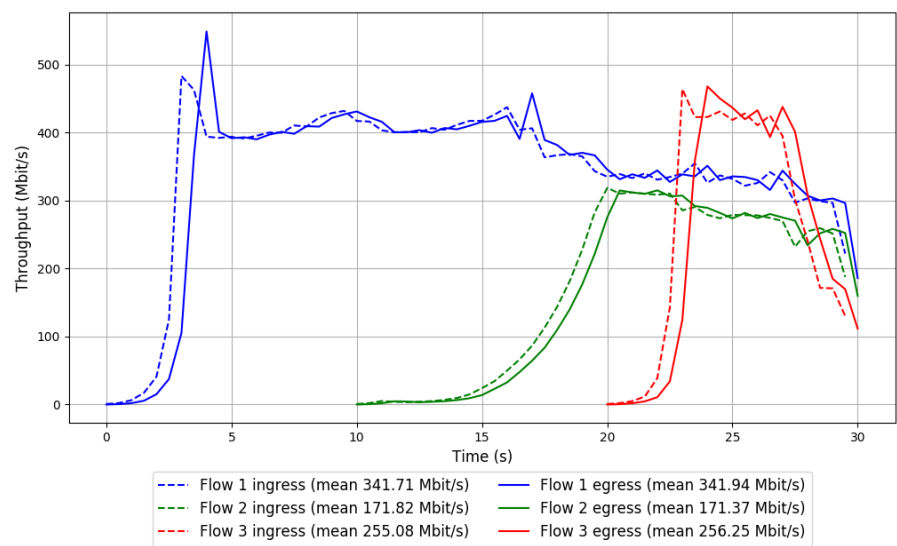


Run 5: Statistics of PCC-Vivace

Start at: 2018-10-26 14:42:34
End at: 2018-10-26 14:43:04
Local clock offset: -0.032 ms
Remote clock offset: -0.485 ms

Below is generated by plot.py at 2018-10-26 17:26:13
Datalink statistics
-- Total of 3 flows:
Average throughput: 539.55 Mbit/s
95th percentile per-packet one-way delay: 90.685 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 341.94 Mbit/s
95th percentile per-packet one-way delay: 87.372 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 171.37 Mbit/s
95th percentile per-packet one-way delay: 65.160 ms
Loss rate: 0.90%
-- Flow 3:
Average throughput: 256.25 Mbit/s
95th percentile per-packet one-way delay: 124.725 ms
Loss rate: 0.82%

Run 5: Report of PCC-Vivace — Data Link



Run 1: Statistics of WebRTC media

Start at: 2018-10-26 12:08:48

End at: 2018-10-26 12:09:18

Local clock offset: -0.107 ms

Remote clock offset: 1.142 ms

Below is generated by plot.py at 2018-10-26 17:26:13

Datalink statistics

-- Total of 3 flows:

Average throughput: 2.82 Mbit/s

95th percentile per-packet one-way delay: 62.082 ms

Loss rate: 1.06%

-- Flow 1:

Average throughput: 1.25 Mbit/s

95th percentile per-packet one-way delay: 62.102 ms

Loss rate: 0.84%

-- Flow 2:

Average throughput: 1.15 Mbit/s

95th percentile per-packet one-way delay: 62.085 ms

Loss rate: 0.86%

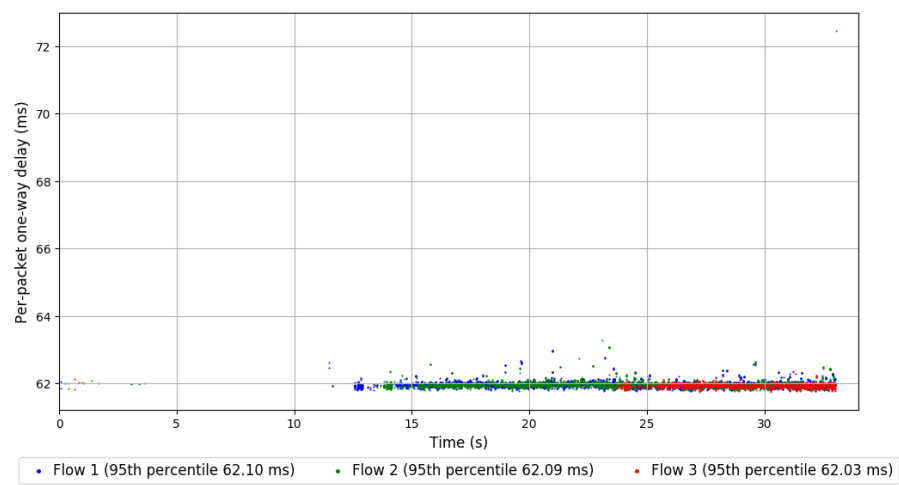
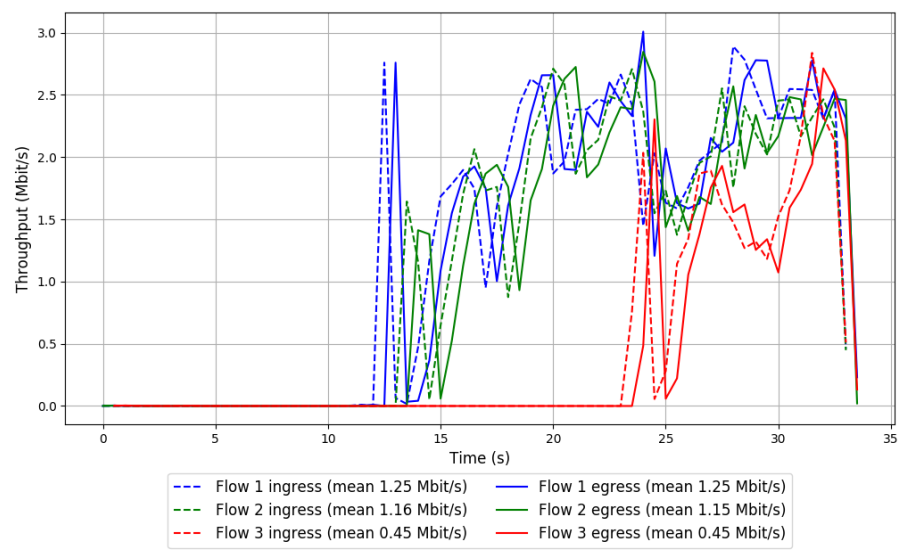
-- Flow 3:

Average throughput: 0.45 Mbit/s

95th percentile per-packet one-way delay: 62.030 ms

Loss rate: 2.18%

Run 1: Report of WebRTC media — Data Link

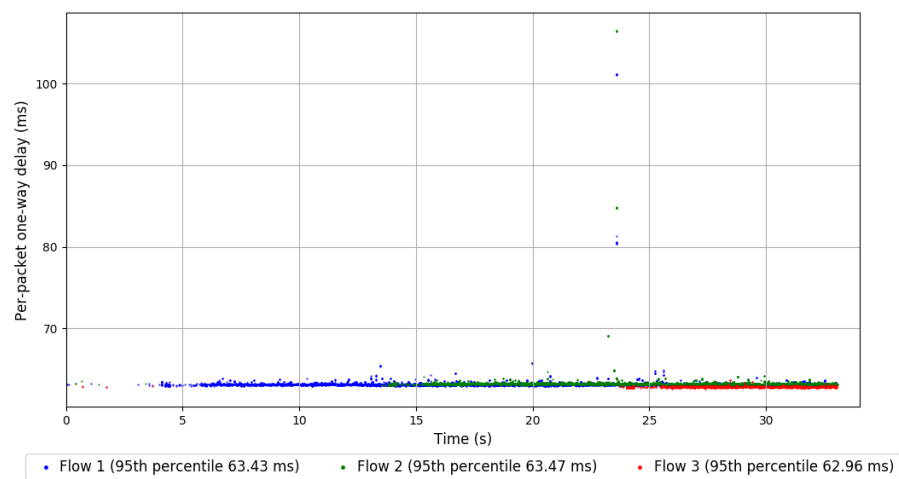
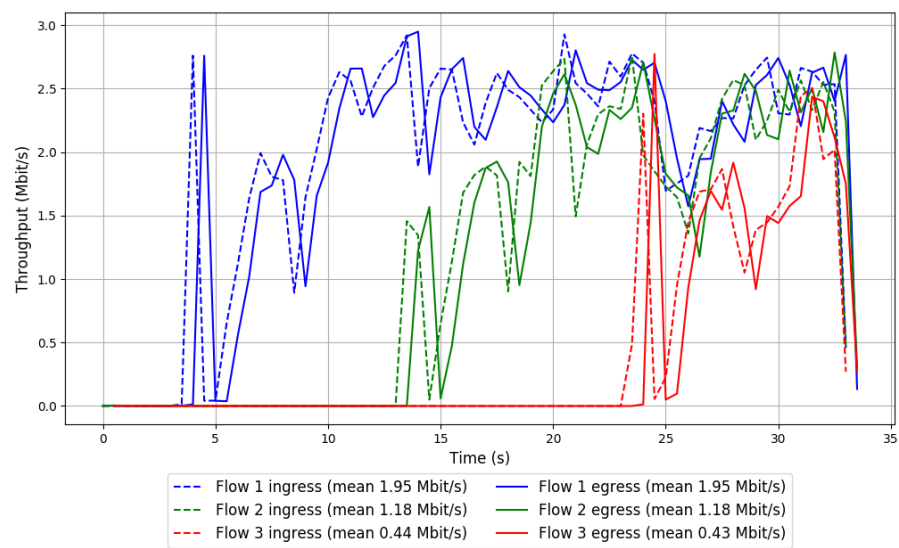


Run 2: Statistics of WebRTC media

Start at: 2018-10-26 12:40:11
End at: 2018-10-26 12:40:41
Local clock offset: -0.122 ms
Remote clock offset: -0.034 ms

Below is generated by plot.py at 2018-10-26 17:26:13
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.54 Mbit/s
95th percentile per-packet one-way delay: 63.432 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 63.434 ms
Loss rate: 0.43%
-- Flow 2:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 63.470 ms
Loss rate: 0.60%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 62.958 ms
Loss rate: 1.41%

Run 2: Report of WebRTC media — Data Link

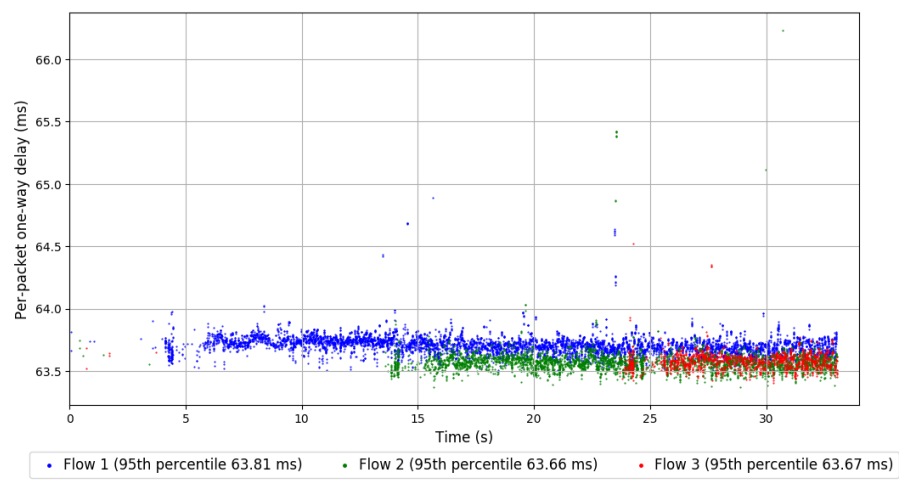
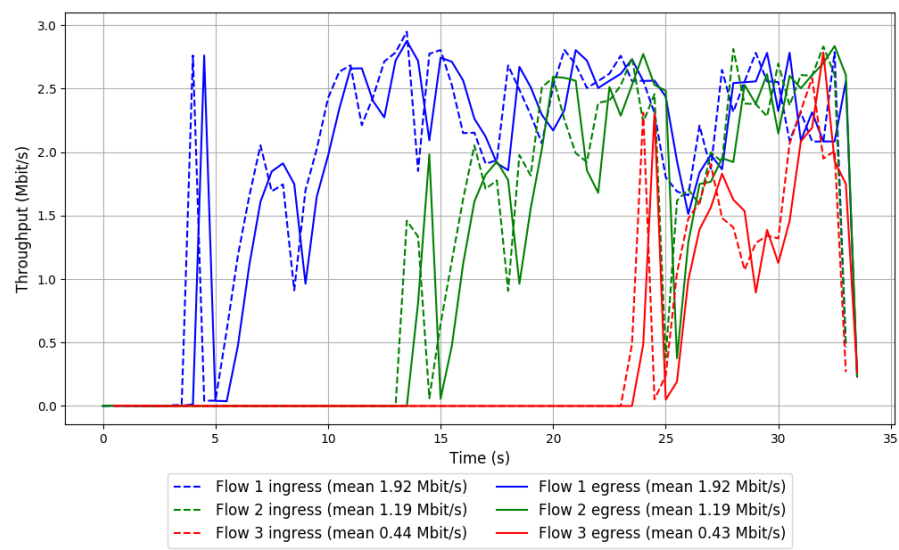


Run 3: Statistics of WebRTC media

Start at: 2018-10-26 13:11:38
End at: 2018-10-26 13:12:08
Local clock offset: -0.045 ms
Remote clock offset: -0.625 ms

Below is generated by plot.py at 2018-10-26 17:26:13
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.51 Mbit/s
95th percentile per-packet one-way delay: 63.785 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 1.92 Mbit/s
95th percentile per-packet one-way delay: 63.807 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 1.19 Mbit/s
95th percentile per-packet one-way delay: 63.662 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 63.674 ms
Loss rate: 1.42%

Run 3: Report of WebRTC media — Data Link

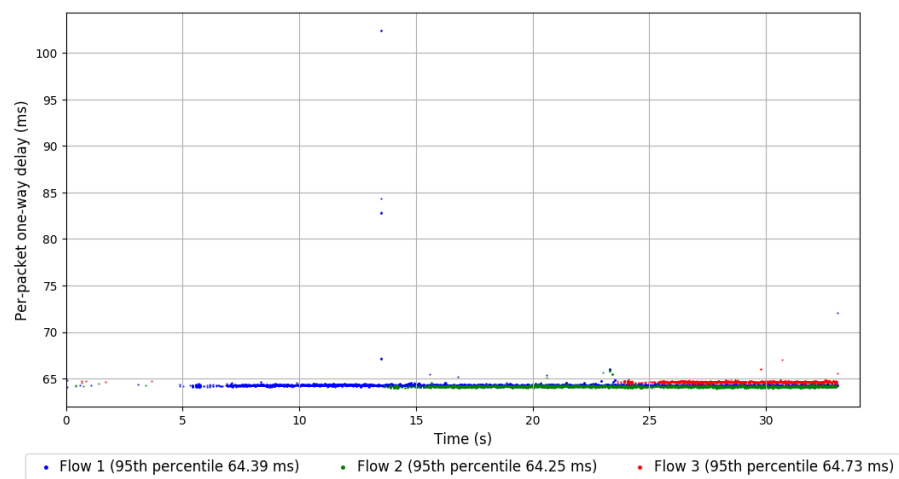
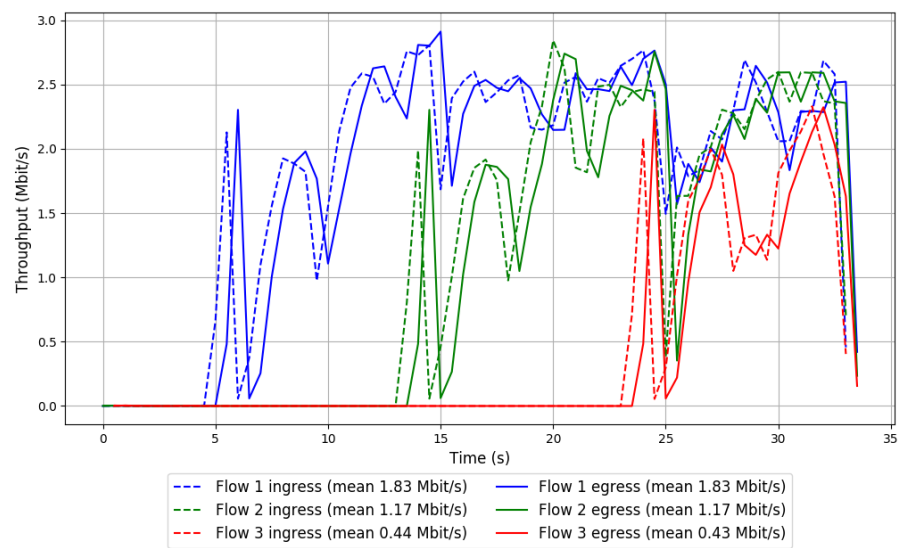


Run 4: Statistics of WebRTC media

Start at: 2018-10-26 13:43:19
End at: 2018-10-26 13:43:49
Local clock offset: -0.011 ms
Remote clock offset: -1.316 ms

Below is generated by plot.py at 2018-10-26 17:26:13
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.40 Mbit/s
95th percentile per-packet one-way delay: 64.647 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 1.83 Mbit/s
95th percentile per-packet one-way delay: 64.386 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 64.247 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 64.732 ms
Loss rate: 1.83%

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-10-26 14:14:51
End at: 2018-10-26 14:15:21
Local clock offset: -0.006 ms
Remote clock offset: -0.032 ms

Below is generated by plot.py at 2018-10-26 17:26:13
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.46 Mbit/s
95th percentile per-packet one-way delay: 63.417 ms
Loss rate: 0.82%
-- Flow 1:
Average throughput: 1.91 Mbit/s
95th percentile per-packet one-way delay: 63.397 ms
Loss rate: 0.54%
-- Flow 2:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 63.450 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 63.397 ms
Loss rate: 1.80%

Run 5: Report of WebRTC media — Data Link

