

Pantheon Report

Generated at 2018-11-03 02:33:03 (UTC).

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

Repeated the test of 18 congestion control schemes 5 times.

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

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

System info:

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

Git summary:

```
branch: muses @ 794ca3866981572cb73700a276691acf79c60f2b
third_party/fillp @ d6da1459332fcee56963885d7eba17e6a32d4519
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/indigo-96d2da3 @ 8413272d46f8aa0bcb967ed7048b6a8f994abb95
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 65ac1b19bbefed0c6349ae986009b4fa8643c40a
third_party/pantheon-tunnel @ f866d3f58d27afd942717625ee3a354cc2e802bd
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
```

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

Network Configuration	95th percentile one-way delay (ms)	Throughput (Mbps)
Indigo-Muses	~135	~950
PCC-Allegro	~205	~620
PCC-Expr	~175	~500
Verus	~175	~210
Copa	~130	~550
FillP	~105	~600
PCC-Wireless	~115	~500
Indigo-2da3	~110	~500
TCP Cubic	~90	~750
RCVR	~90	~750
Indigo	~85	~400
TaoVA-100x	~85	~420
QUIC Cubic	~85	~100
FEDBAT	~85	~10
Stable	~85	~10
media	~85	~10



scheme	# runs	mean avg tput (Mbit/s)			mean 95th-%ile delay (ms)			mean loss rate (%)		
		flow 1	flow 2	flow 3	flow 1	flow 2	flow 3	flow 1	flow 2	flow 3
TCP BBR	5	381.92	369.88	337.33	88.08	88.92	88.75	0.61	0.95	2.00
Copa	3	310.61	261.89	207.86	114.38	143.82	123.45	0.58	1.02	1.99
TCP Cubic	3	389.01	376.52	343.66	87.91	88.33	89.14	0.61	0.84	1.82
FillP	4	282.73	358.11	243.16	110.03	90.15	87.97	0.49	0.72	2.06
Indigo	5	206.03	198.70	165.09	87.84	88.42	88.04	0.59	0.94	1.92
Indigo-96d2da3	5	253.96	251.47	218.97	110.44	112.22	111.36	0.67	0.83	2.34
LEDBAT	5	12.53	8.29	4.03	86.96	86.74	86.59	1.15	1.74	3.52
Indigo-Muses	5	544.62	458.39	359.47	135.26	137.57	133.07	0.75	1.19	2.35
PCC-Allegro	5	337.63	321.05	230.26	209.14	196.58	161.73	2.57	6.11	2.85
PCC-Expr	5	286.04	224.67	185.35	150.17	175.66	130.27	1.20	2.28	3.67
QUIC Cubic	5	54.42	38.40	30.27	86.17	86.09	86.14	0.89	1.10	1.55
SCReAM	4	0.22	0.22	0.22	86.11	85.89	85.92	0.51	0.93	1.85
Sprout	5	4.30	4.34	3.30	86.50	86.80	86.69	0.74	1.03	2.86
TaoVA-100x	5	220.07	207.36	206.79	86.16	86.36	86.74	0.61	0.87	1.93
TCP Vegas	5	384.99	368.93	332.95	89.33	92.12	91.35	0.60	0.93	2.06
Verus	5	112.42	97.82	98.25	141.62	143.26	173.97	0.95	1.07	3.06
PCC-Vivace	5	298.37	219.86	152.29	122.62	105.67	102.91	0.65	1.07	2.64
WebRTC media	5	1.81	1.12	0.41	86.34	86.20	86.22	0.66	1.14	2.92

Run 1: Statistics of TCP BBR

Start at: 2018-11-02 21:50:52

End at: 2018-11-02 21:51:22

Local clock offset: 0.174 ms

Remote clock offset: 0.327 ms

Below is generated by plot.py at 2018-11-03 00:47:53

Datalink statistics

-- Total of 3 flows:

Average throughput: 737.28 Mbit/s

95th percentile per-packet one-way delay: 88.228 ms

Loss rate: 0.96%

-- Flow 1:

Average throughput: 383.10 Mbit/s

95th percentile per-packet one-way delay: 88.382 ms

Loss rate: 0.62%

-- Flow 2:

Average throughput: 371.32 Mbit/s

95th percentile per-packet one-way delay: 88.248 ms

Loss rate: 0.96%

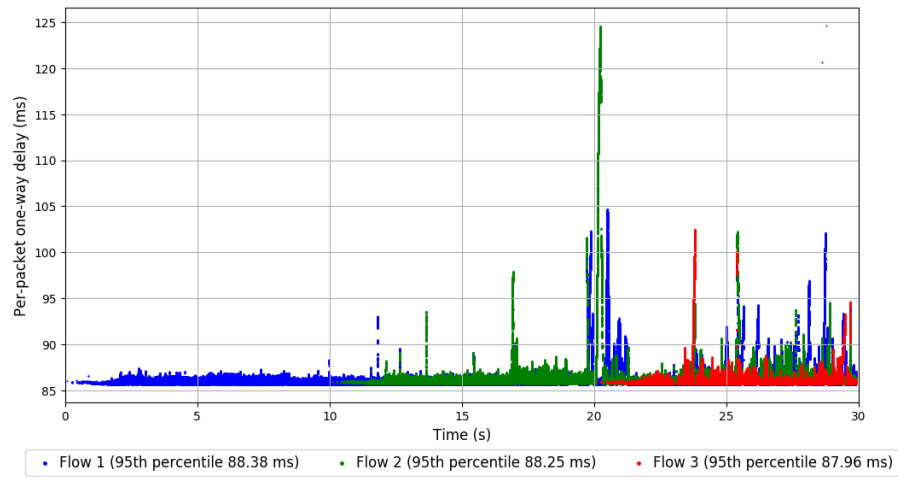
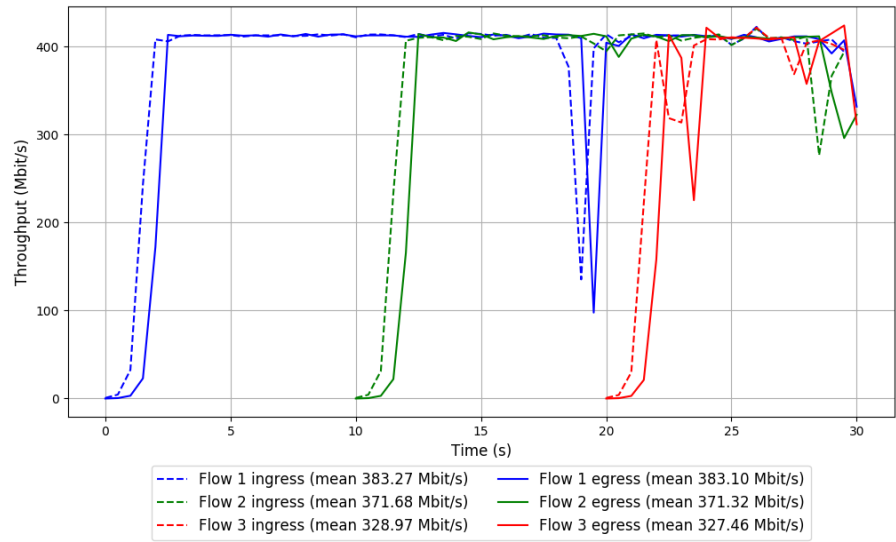
-- Flow 3:

Average throughput: 327.46 Mbit/s

95th percentile per-packet one-way delay: 87.963 ms

Loss rate: 2.17%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-11-02 22:21:53

End at: 2018-11-02 22:22:23

Local clock offset: 0.082 ms

Remote clock offset: 0.124 ms

Below is generated by plot.py at 2018-11-03 00:47:57

Datalink statistics

-- Total of 3 flows:

Average throughput: 738.80 Mbit/s

95th percentile per-packet one-way delay: 86.961 ms

Loss rate: 0.89%

-- Flow 1:

Average throughput: 382.26 Mbit/s

95th percentile per-packet one-way delay: 86.813 ms

Loss rate: 0.62%

-- Flow 2:

Average throughput: 368.15 Mbit/s

95th percentile per-packet one-way delay: 87.236 ms

Loss rate: 0.97%

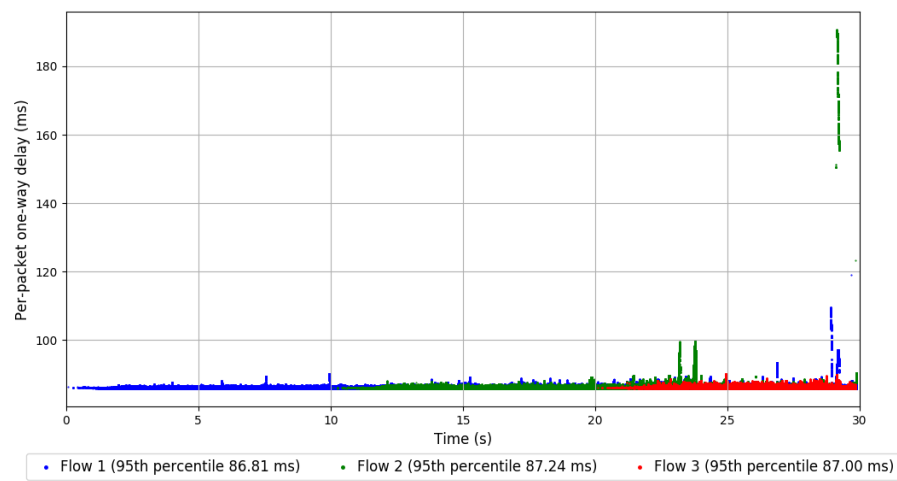
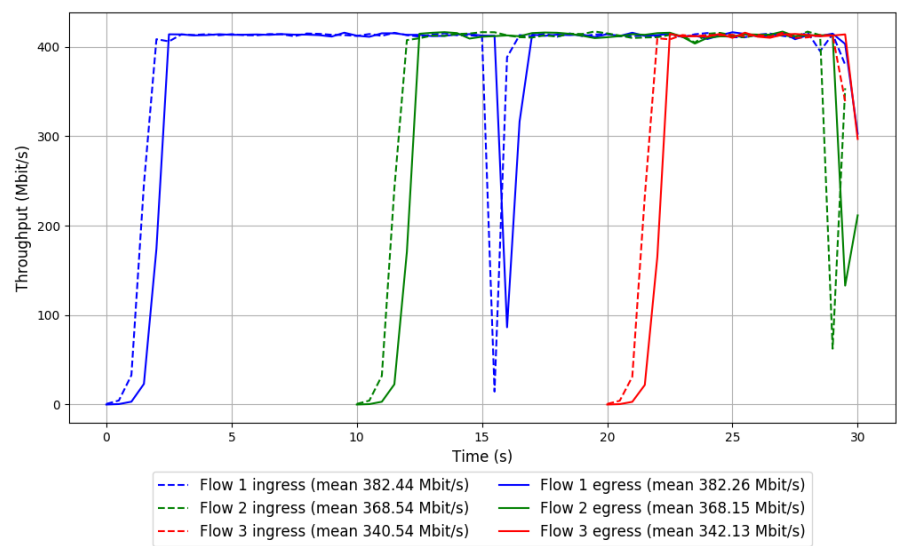
-- Flow 3:

Average throughput: 342.13 Mbit/s

95th percentile per-packet one-way delay: 86.997 ms

Loss rate: 1.63%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-11-02 22:52:45

End at: 2018-11-02 22:53:15

Local clock offset: -0.007 ms

Remote clock offset: 0.042 ms

Below is generated by plot.py at 2018-11-03 00:48:00

Datalink statistics

-- Total of 3 flows:

Average throughput: 740.50 Mbit/s

95th percentile per-packet one-way delay: 87.741 ms

Loss rate: 0.91%

-- Flow 1:

Average throughput: 380.57 Mbit/s

95th percentile per-packet one-way delay: 87.430 ms

Loss rate: 0.59%

-- Flow 2:

Average throughput: 374.76 Mbit/s

95th percentile per-packet one-way delay: 88.530 ms

Loss rate: 0.91%

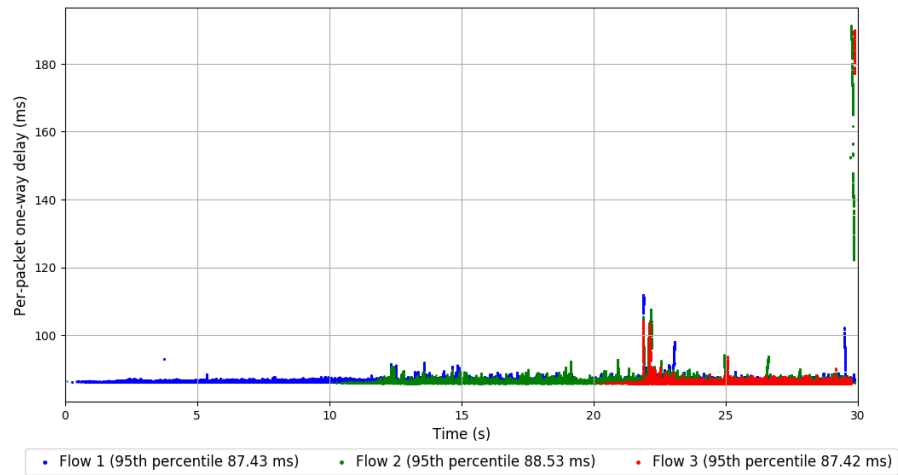
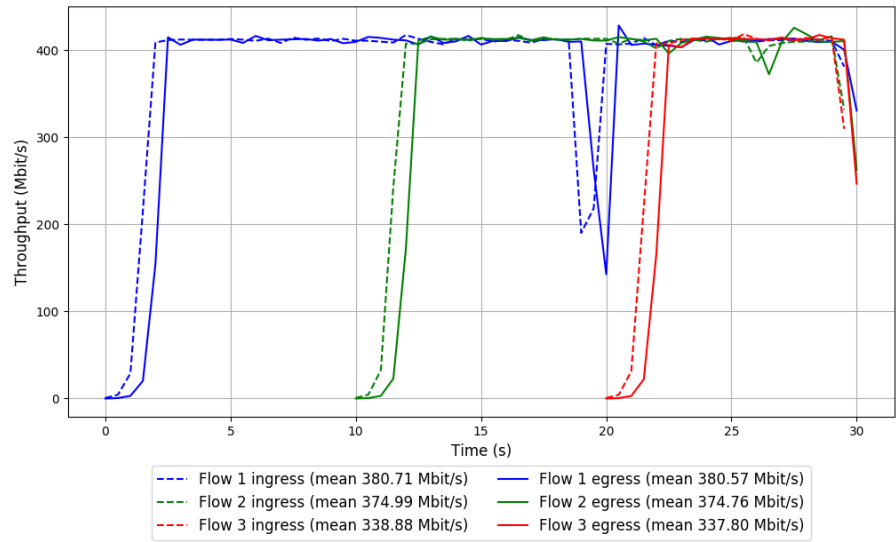
-- Flow 3:

Average throughput: 337.80 Mbit/s

95th percentile per-packet one-way delay: 87.416 ms

Loss rate: 1.99%

Run 3: Report of TCP BBR — Data Link

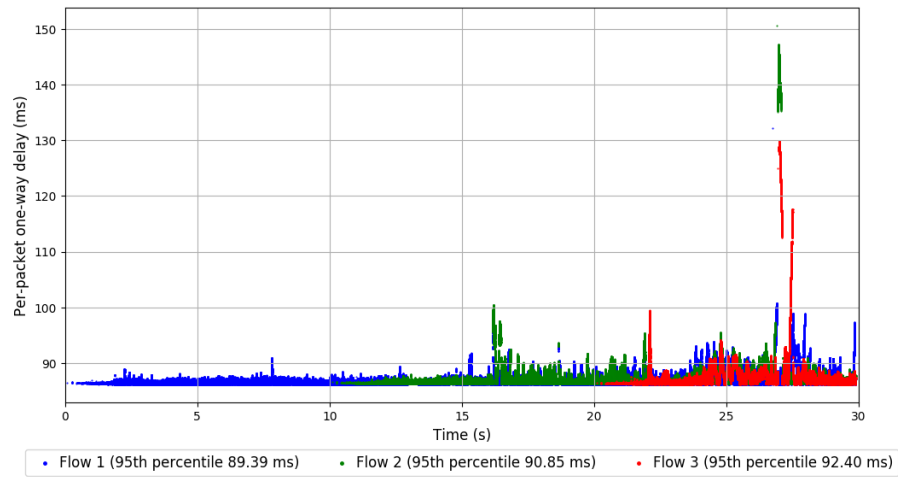
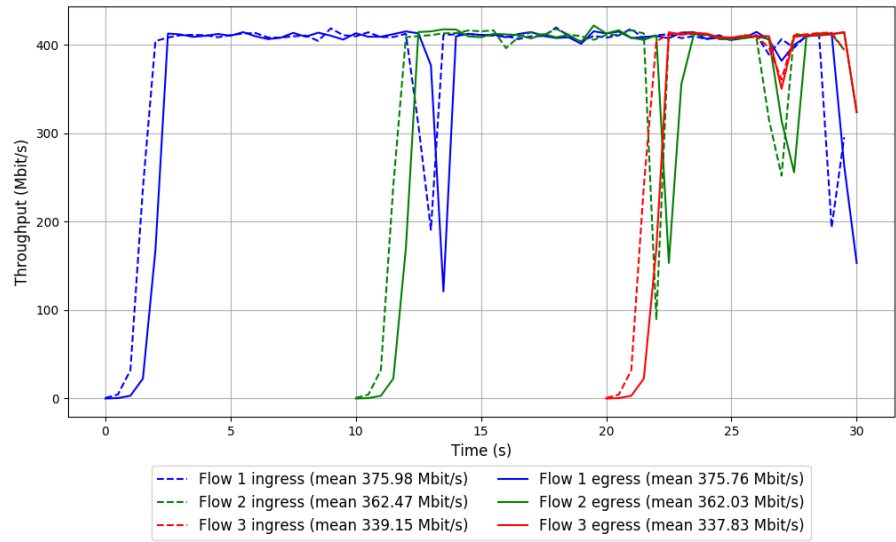


Run 4: Statistics of TCP BBR

Start at: 2018-11-02 23:23:29
End at: 2018-11-02 23:23:59
Local clock offset: 0.384 ms
Remote clock offset: -0.044 ms

Below is generated by plot.py at 2018-11-03 00:48:00
Datalink statistics
-- Total of 3 flows:
Average throughput: 727.33 Mbit/s
95th percentile per-packet one-way delay: 90.338 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 375.76 Mbit/s
95th percentile per-packet one-way delay: 89.392 ms
Loss rate: 0.63%
-- Flow 2:
Average throughput: 362.03 Mbit/s
95th percentile per-packet one-way delay: 90.850 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 337.83 Mbit/s
95th percentile per-packet one-way delay: 92.402 ms
Loss rate: 2.11%

Run 4: Report of TCP BBR — Data Link

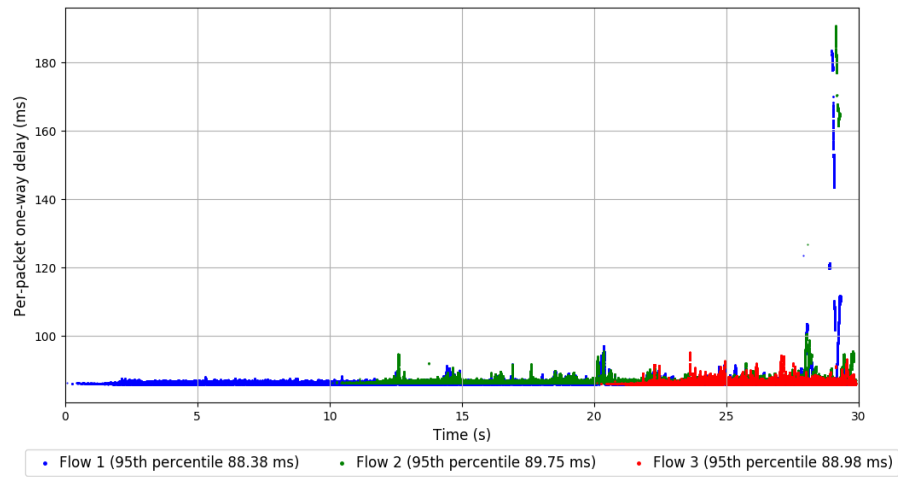
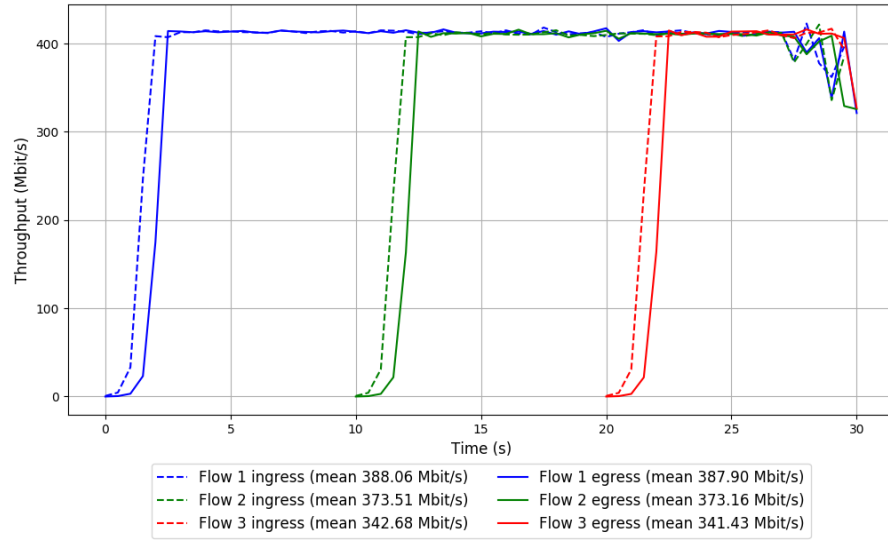


Run 5: Statistics of TCP BBR

Start at: 2018-11-02 23:55:35
End at: 2018-11-02 23:56:05
Local clock offset: -0.114 ms
Remote clock offset: -0.092 ms

Below is generated by plot.py at 2018-11-03 00:48:18
Datalink statistics
-- Total of 3 flows:
Average throughput: 747.88 Mbit/s
95th percentile per-packet one-way delay: 89.018 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 387.90 Mbit/s
95th percentile per-packet one-way delay: 88.376 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 373.16 Mbit/s
95th percentile per-packet one-way delay: 89.753 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 341.43 Mbit/s
95th percentile per-packet one-way delay: 88.983 ms
Loss rate: 2.09%

Run 5: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

Start at: 2018-11-02 22:01:03

End at: 2018-11-02 22:01:33

Local clock offset: 0.266 ms

Remote clock offset: 0.431 ms

Below is generated by plot.py at 2018-11-03 00:54:51

Datalink statistics

-- Total of 3 flows:

Average throughput: 580.19 Mbit/s

95th percentile per-packet one-way delay: 127.203 ms

Loss rate: 0.93%

-- Flow 1:

Average throughput: 318.67 Mbit/s

95th percentile per-packet one-way delay: 124.447 ms

Loss rate: 0.59%

-- Flow 2:

Average throughput: 290.99 Mbit/s

95th percentile per-packet one-way delay: 137.261 ms

Loss rate: 0.98%

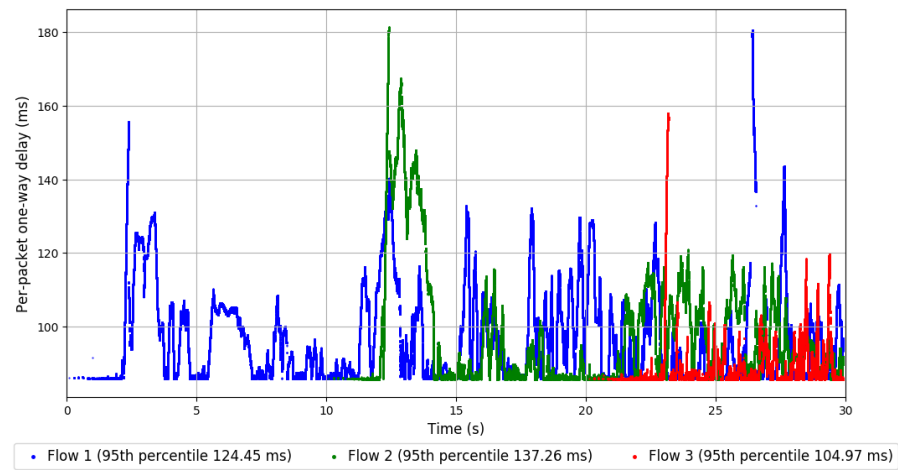
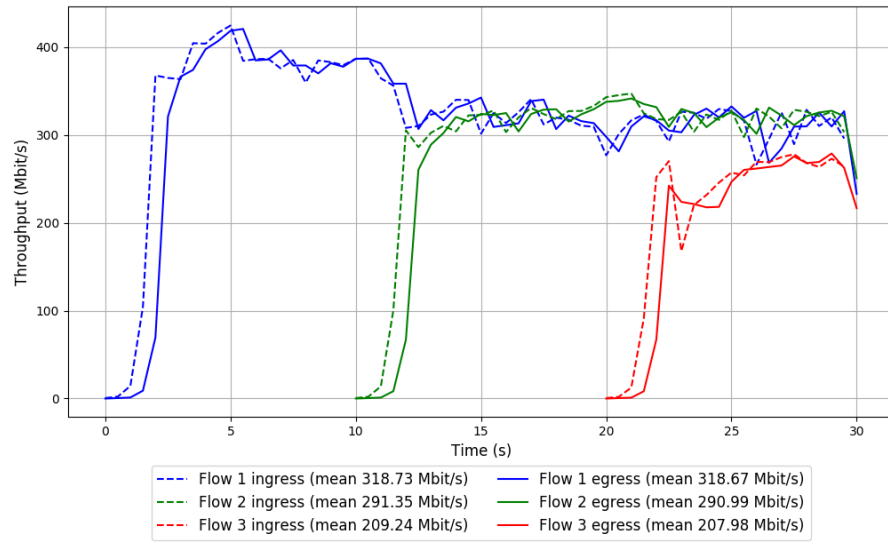
-- Flow 3:

Average throughput: 207.98 Mbit/s

95th percentile per-packet one-way delay: 104.975 ms

Loss rate: 2.31%

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

Start at: 2018-11-02 22:31:43

End at: 2018-11-02 22:32:13

Local clock offset: 0.111 ms

Remote clock offset: 0.102 ms

Below is generated by plot.py at 2018-11-03 00:54:51

Datalink statistics

-- Total of 3 flows:

Average throughput: 510.62 Mbit/s

95th percentile per-packet one-way delay: 141.624 ms

Loss rate: 0.86%

-- Flow 1:

Average throughput: 301.86 Mbit/s

95th percentile per-packet one-way delay: 110.802 ms

Loss rate: 0.54%

-- Flow 2:

Average throughput: 222.50 Mbit/s

95th percentile per-packet one-way delay: 156.100 ms

Loss rate: 1.08%

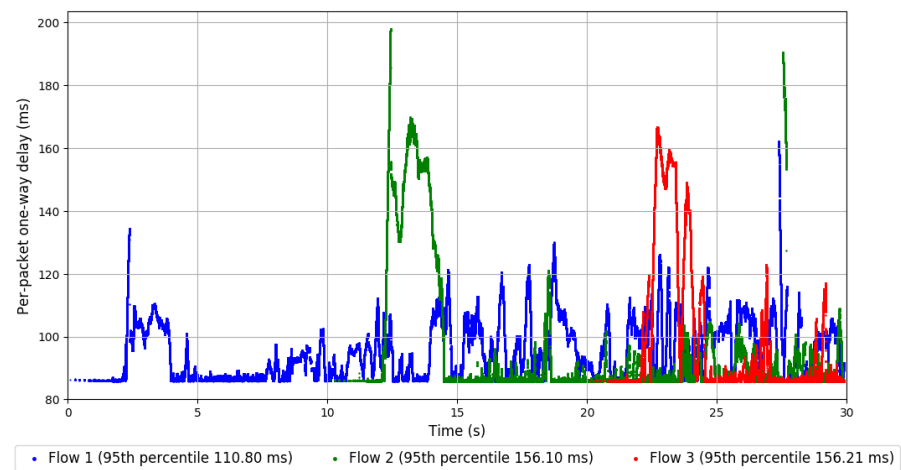
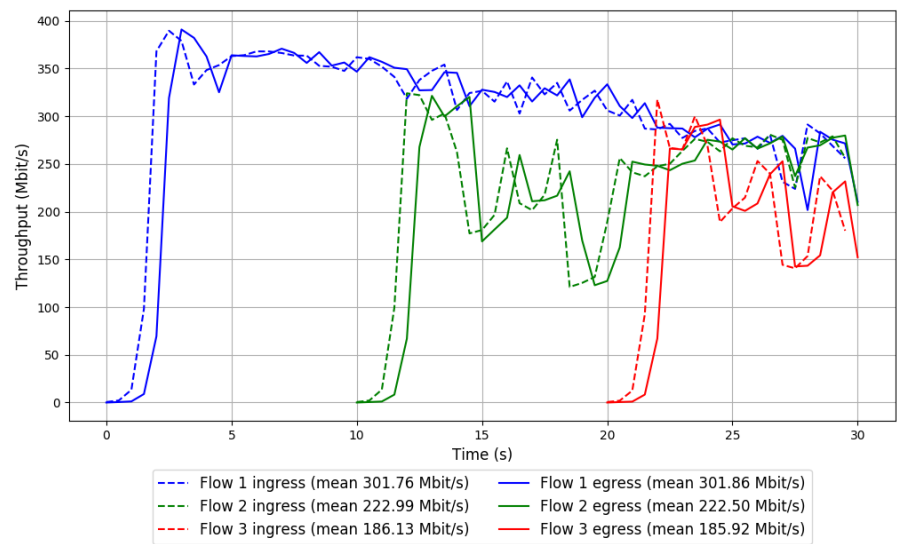
-- Flow 3:

Average throughput: 185.92 Mbit/s

95th percentile per-packet one-way delay: 156.207 ms

Loss rate: 1.84%

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

/home/ubuntu/pantheon/data/2018-11-02T21-46-GCE-Iowa-to-GCE-Sydney-5-runs-3-flows/copa_stats

Run 3: Report of Copa — Data Link

Figure is missing

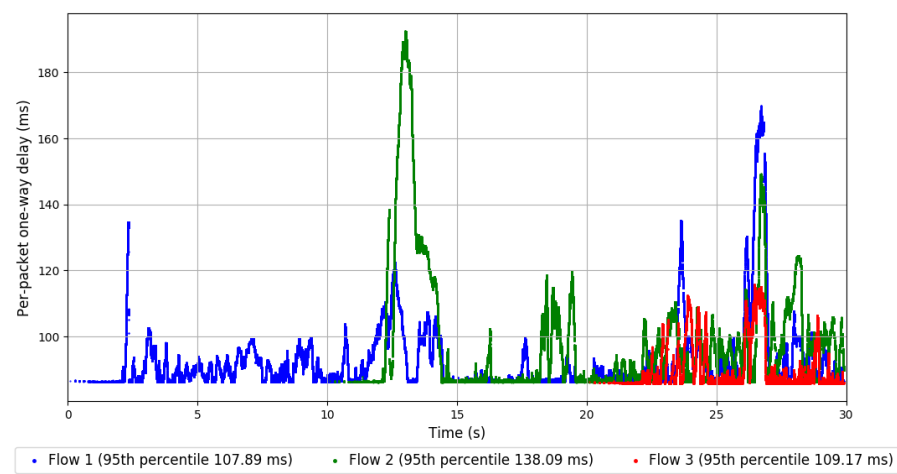
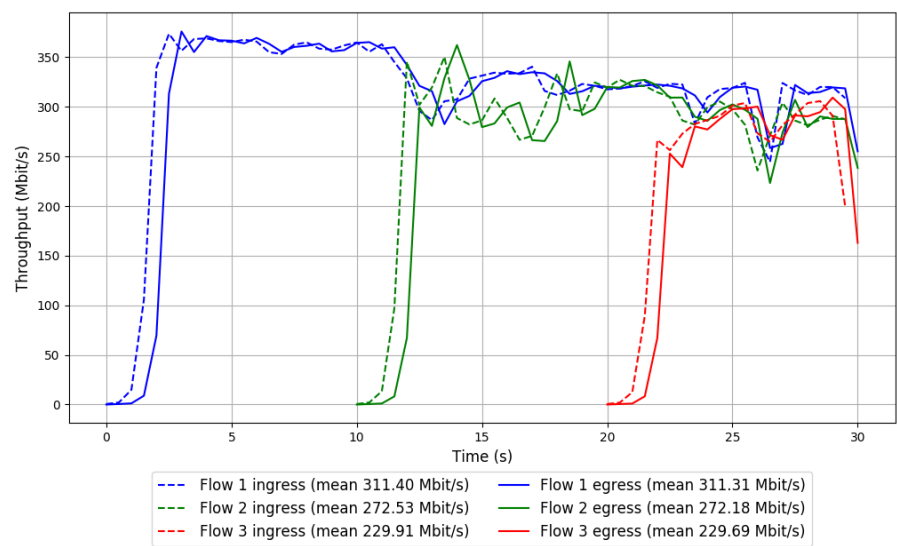
Figure is missing

Run 4: Statistics of Copa

Start at: 2018-11-02 23:33:51
End at: 2018-11-02 23:34:21
Local clock offset: -0.071 ms
Remote clock offset: -0.038 ms

Below is generated by plot.py at 2018-11-03 00:54:51
Datalink statistics
-- Total of 3 flows:
Average throughput: 567.48 Mbit/s
95th percentile per-packet one-way delay: 119.886 ms
Loss rate: 0.89%
-- Flow 1:
Average throughput: 311.31 Mbit/s
95th percentile per-packet one-way delay: 107.892 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 272.18 Mbit/s
95th percentile per-packet one-way delay: 138.086 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 229.69 Mbit/s
95th percentile per-packet one-way delay: 109.174 ms
Loss rate: 1.81%

Run 4: Report of Copa — Data Link



Run 5: Statistics of Copa

/home/ubuntu/pantheon/data/2018-11-02T21-46-GCE-Iowa-to-GCE-Sydney-5-runs-3-flows/copa_stats

Run 5: Report of Copa — Data Link

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Run 1: Statistics of TCP Cubic

Start at: 2018-11-02 21:57:13

End at: 2018-11-02 21:57:43

Local clock offset: -0.042 ms

Remote clock offset: 0.373 ms

Below is generated by plot.py at 2018-11-03 01:03:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 754.58 Mbit/s

95th percentile per-packet one-way delay: 87.624 ms

Loss rate: 0.94%

-- Flow 1:

Average throughput: 389.67 Mbit/s

95th percentile per-packet one-way delay: 87.633 ms

Loss rate: 0.61%

-- Flow 2:

Average throughput: 379.64 Mbit/s

95th percentile per-packet one-way delay: 87.052 ms

Loss rate: 0.94%

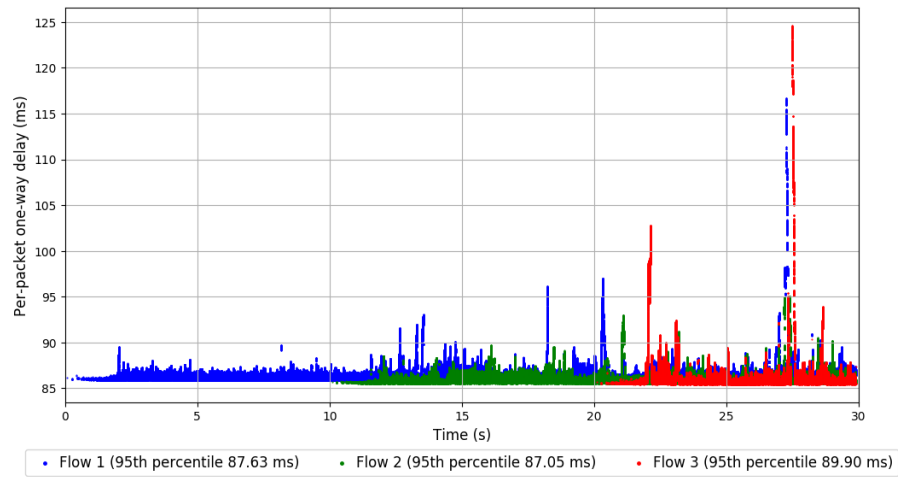
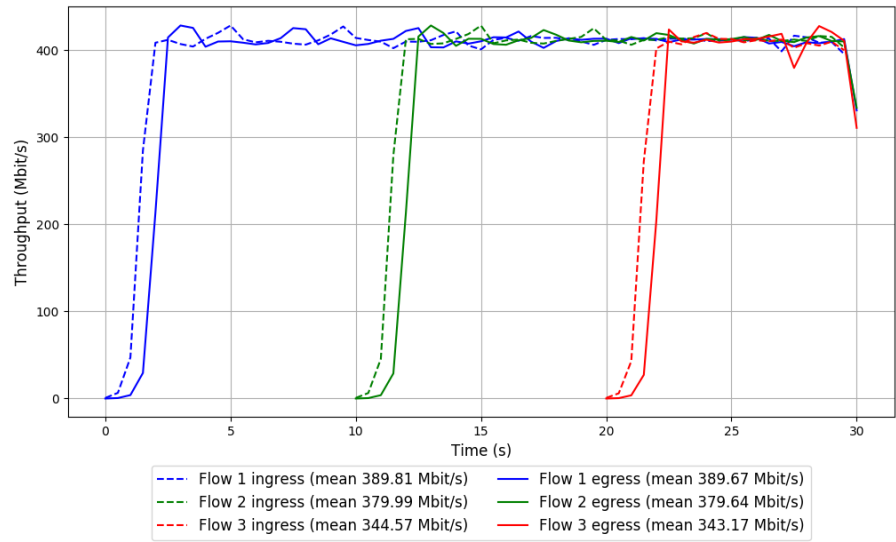
-- Flow 3:

Average throughput: 343.17 Mbit/s

95th percentile per-packet one-way delay: 89.904 ms

Loss rate: 2.08%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

/home/ubuntu/pantheon/data/2018-11-02T21-46-GCE-Iowa-to-GCE-Sydney-5-runs-3-flows/cubic_stat

Run 2: Report of TCP Cubic — Data Link

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Run 3: Statistics of TCP Cubic

Start at: 2018-11-02 22:59:07

End at: 2018-11-02 22:59:37

Local clock offset: -0.206 ms

Remote clock offset: 0.075 ms

Below is generated by plot.py at 2018-11-03 01:03:24

Datalink statistics

-- Total of 3 flows:

Average throughput: 751.48 Mbit/s

95th percentile per-packet one-way delay: 88.016 ms

Loss rate: 0.72%

-- Flow 1:

Average throughput: 389.62 Mbit/s

95th percentile per-packet one-way delay: 87.675 ms

Loss rate: 0.61%

-- Flow 2:

Average throughput: 375.64 Mbit/s

95th percentile per-packet one-way delay: 88.300 ms

Loss rate: 0.63%

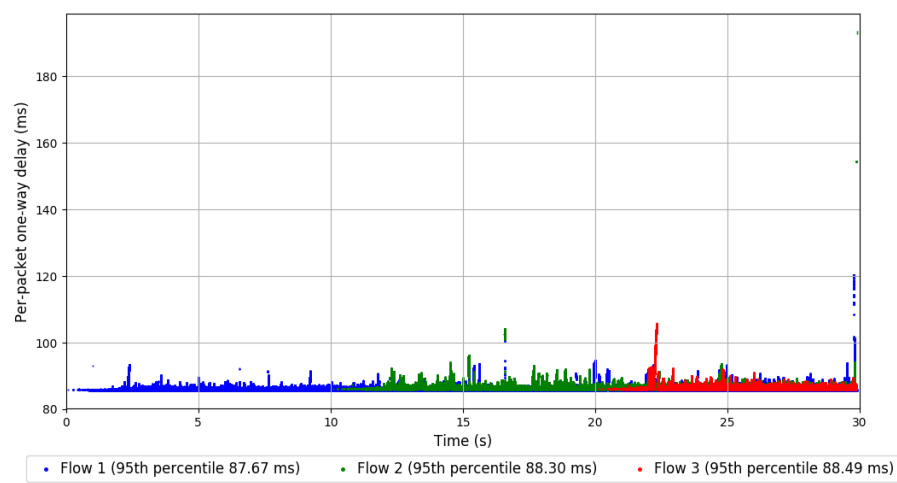
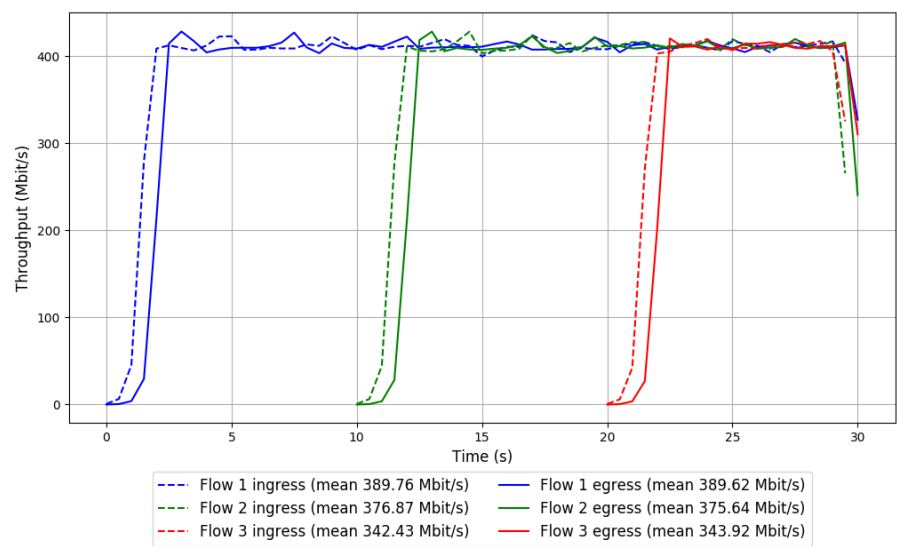
-- Flow 3:

Average throughput: 343.92 Mbit/s

95th percentile per-packet one-way delay: 88.487 ms

Loss rate: 1.31%

Run 3: Report of TCP Cubic — Data Link

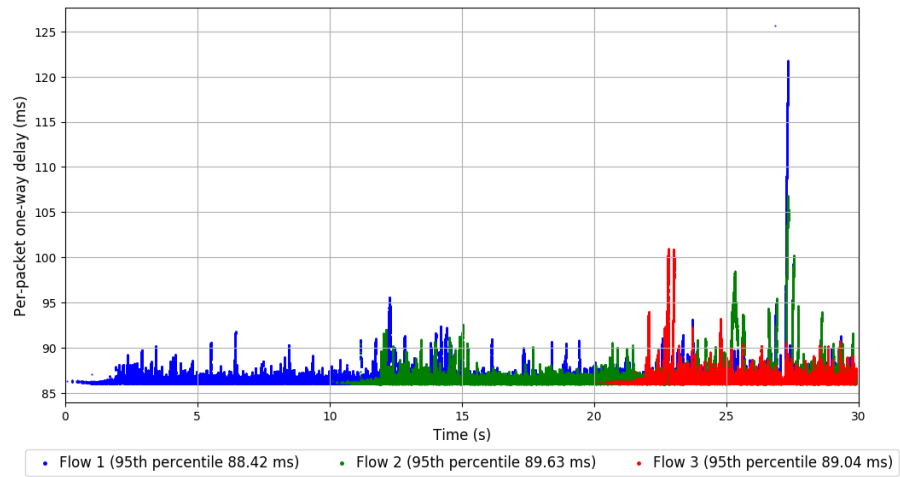
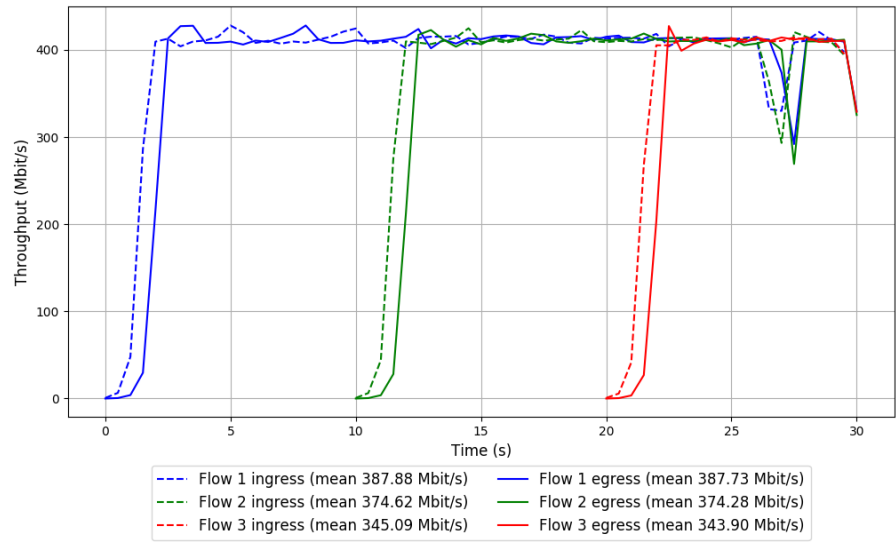


Run 4: Statistics of TCP Cubic

Start at: 2018-11-02 23:29:53
End at: 2018-11-02 23:30:23
Local clock offset: 0.178 ms
Remote clock offset: -0.032 ms

Below is generated by plot.py at 2018-11-03 01:03:24
Datalink statistics
-- Total of 3 flows:
Average throughput: 749.27 Mbit/s
95th percentile per-packet one-way delay: 88.874 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 387.73 Mbit/s
95th percentile per-packet one-way delay: 88.419 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 374.28 Mbit/s
95th percentile per-packet one-way delay: 89.631 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 343.90 Mbit/s
95th percentile per-packet one-way delay: 89.044 ms
Loss rate: 2.07%

Run 4: Report of TCP Cubic — Data Link



Run 5: Statistics of TCP Cubic

/home/ubuntu/pantheon/data/2018-11-02T21-46-GCE-Iowa-to-GCE-Sydney-5-runs-3-flows/cubic_stat

Run 5: Report of TCP Cubic — Data Link

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Run 1: Statistics of FillP

Start at: 2018-11-02 22:03:15

End at: 2018-11-02 22:03:45

Local clock offset: 0.553 ms

Remote clock offset: 0.435 ms

Below is generated by plot.py at 2018-11-03 01:03:24

Datalink statistics

-- Total of 3 flows:

Average throughput: 488.79 Mbit/s

95th percentile per-packet one-way delay: 96.111 ms

Loss rate: 0.65%

-- Flow 1:

Average throughput: 192.02 Mbit/s

95th percentile per-packet one-way delay: 108.188 ms

Loss rate: 0.00%

-- Flow 2:

Average throughput: 336.23 Mbit/s

95th percentile per-packet one-way delay: 88.526 ms

Loss rate: 0.74%

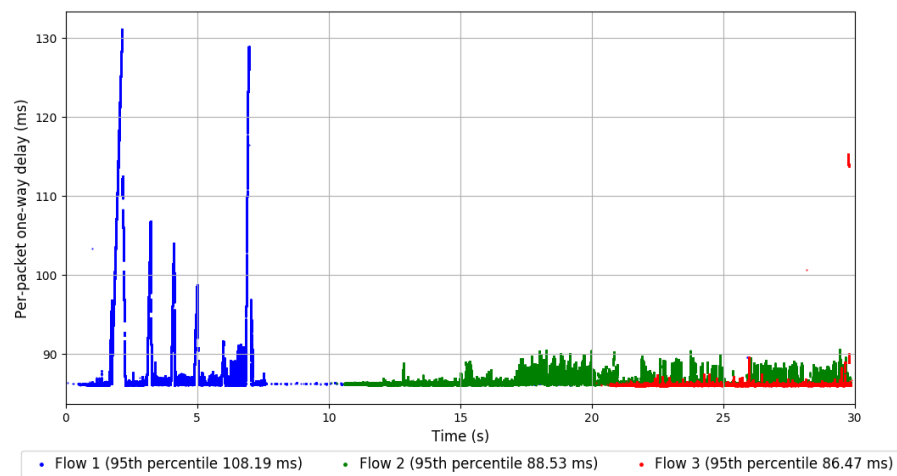
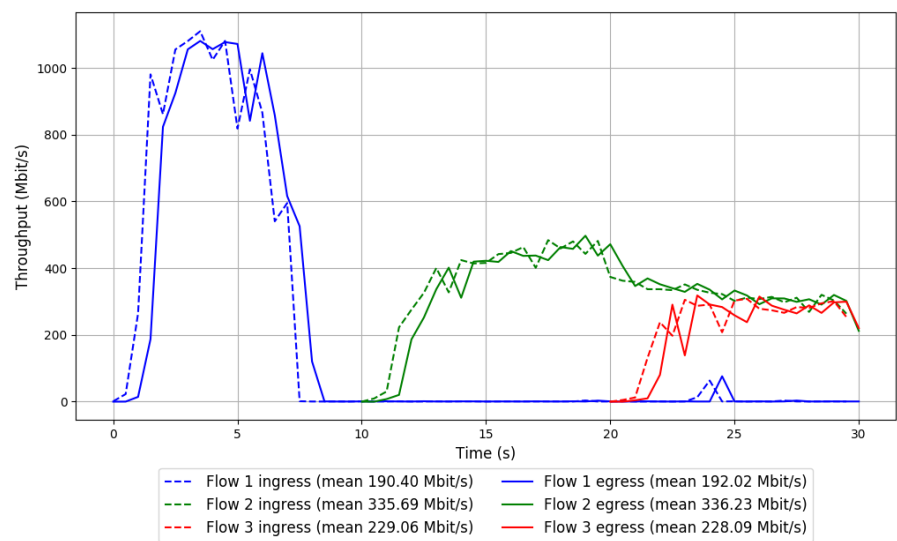
-- Flow 3:

Average throughput: 228.09 Mbit/s

95th percentile per-packet one-way delay: 86.469 ms

Loss rate: 2.01%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

/home/ubuntu/pantheon/data/2018-11-02T21-46-GCE-Iowa-to-GCE-Sydney-5-runs-3-flows/fillp_stat

Run 2: Report of FillP — Data Link

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Run 3: Statistics of FillP

Start at: 2018-11-02 23:04:32

End at: 2018-11-02 23:05:02

Local clock offset: 0.173 ms

Remote clock offset: 0.074 ms

Below is generated by plot.py at 2018-11-03 01:03:24

Datalink statistics

-- Total of 3 flows:

Average throughput: 526.19 Mbit/s

95th percentile per-packet one-way delay: 89.661 ms

Loss rate: 1.06%

-- Flow 1:

Average throughput: 203.81 Mbit/s

95th percentile per-packet one-way delay: 91.849 ms

Loss rate: 0.78%

-- Flow 2:

Average throughput: 361.91 Mbit/s

95th percentile per-packet one-way delay: 88.882 ms

Loss rate: 0.85%

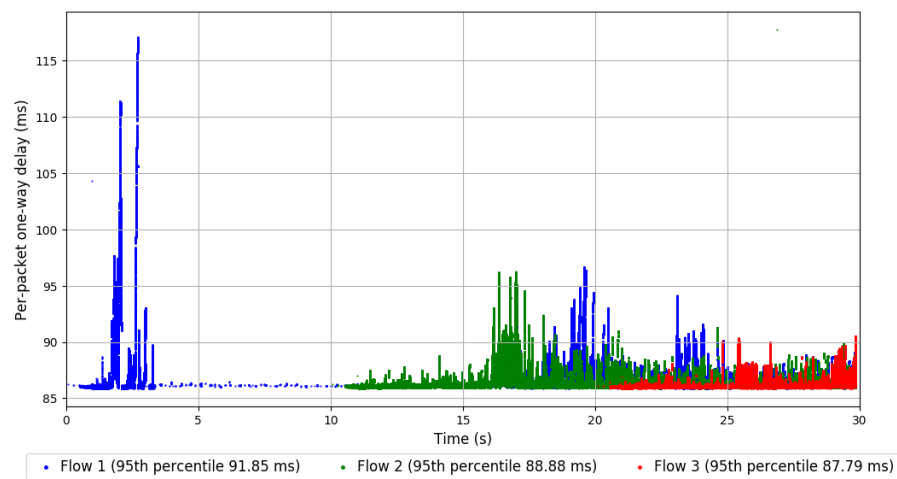
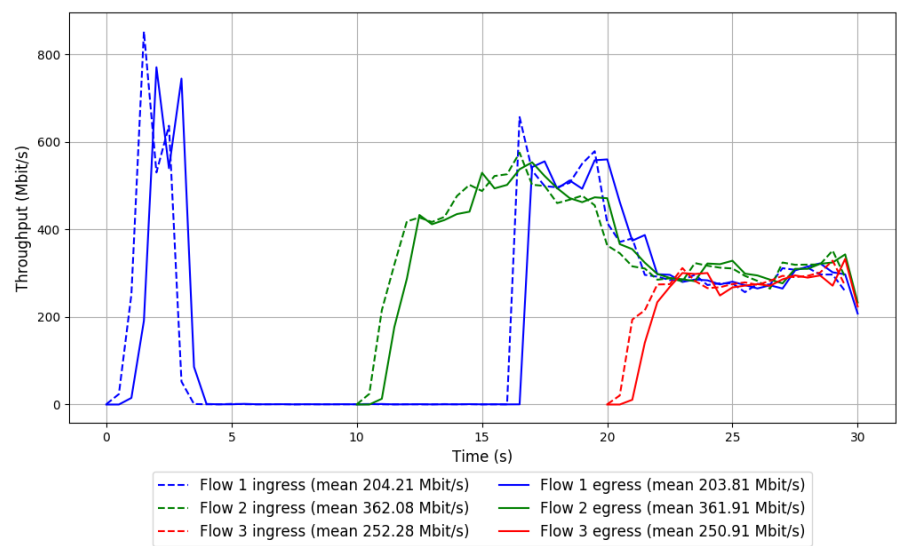
-- Flow 3:

Average throughput: 250.91 Mbit/s

95th percentile per-packet one-way delay: 87.789 ms

Loss rate: 2.32%

Run 3: Report of FillP — Data Link

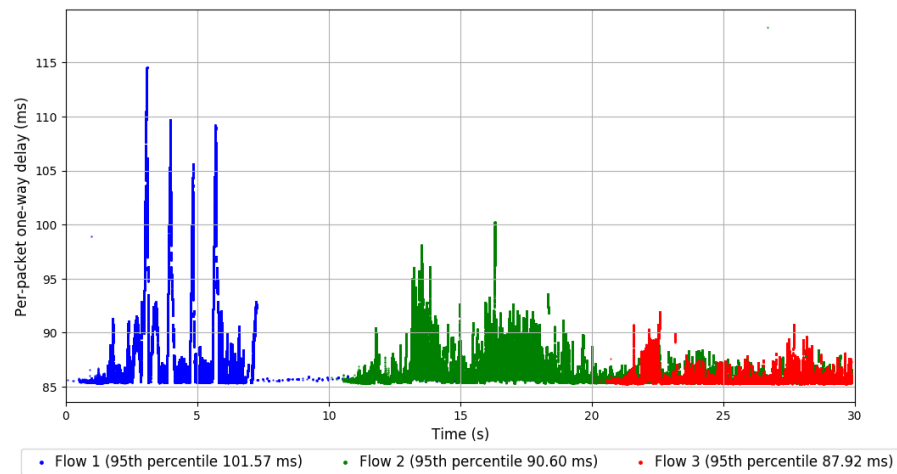
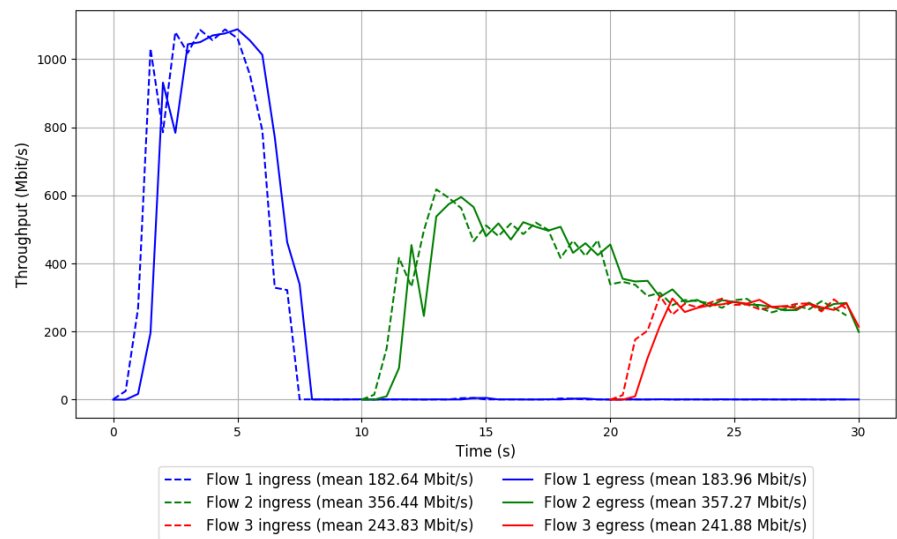


Run 4: Statistics of FillP

Start at: 2018-11-02 23:36:03
End at: 2018-11-02 23:36:33
Local clock offset: -0.467 ms
Remote clock offset: -0.022 ms

Below is generated by plot.py at 2018-11-03 01:04:28
Datalink statistics
-- Total of 3 flows:
Average throughput: 499.92 Mbit/s
95th percentile per-packet one-way delay: 92.961 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 183.96 Mbit/s
95th percentile per-packet one-way delay: 101.566 ms
Loss rate: 0.00%
-- Flow 2:
Average throughput: 357.27 Mbit/s
95th percentile per-packet one-way delay: 90.601 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 241.88 Mbit/s
95th percentile per-packet one-way delay: 87.918 ms
Loss rate: 2.32%

Run 4: Report of FillP — Data Link

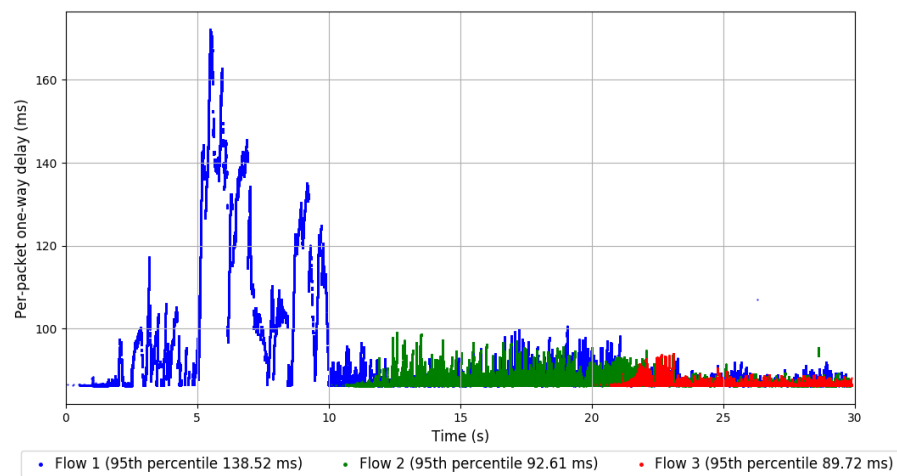
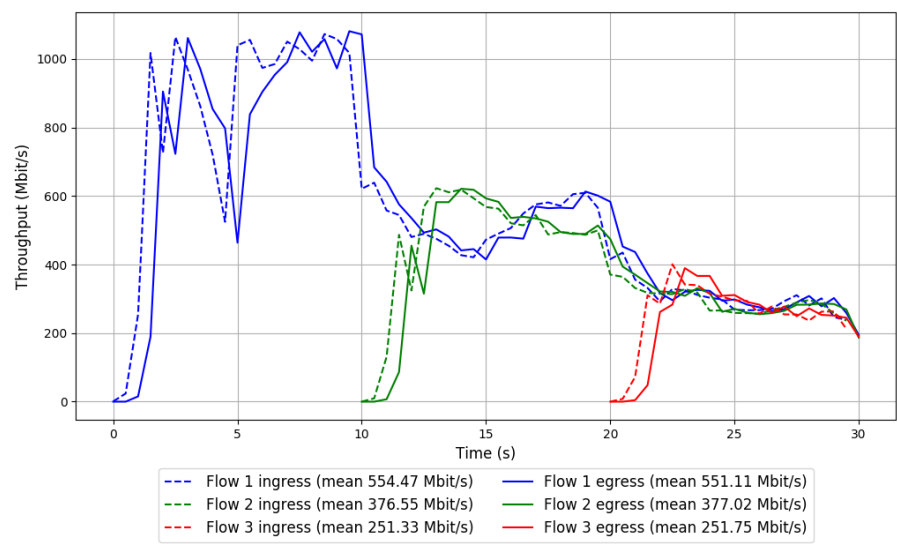


Run 5: Statistics of FillP

Start at: 2018-11-03 00:07:00
End at: 2018-11-03 00:07:30
Local clock offset: 0.37 ms
Remote clock offset: -0.066 ms

Below is generated by plot.py at 2018-11-03 01:16:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 883.65 Mbit/s
95th percentile per-packet one-way delay: 132.193 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 551.11 Mbit/s
95th percentile per-packet one-way delay: 138.519 ms
Loss rate: 1.20%
-- Flow 2:
Average throughput: 377.02 Mbit/s
95th percentile per-packet one-way delay: 92.609 ms
Loss rate: 0.66%
-- Flow 3:
Average throughput: 251.75 Mbit/s
95th percentile per-packet one-way delay: 89.717 ms
Loss rate: 1.57%

Run 5: Report of FillP — Data Link

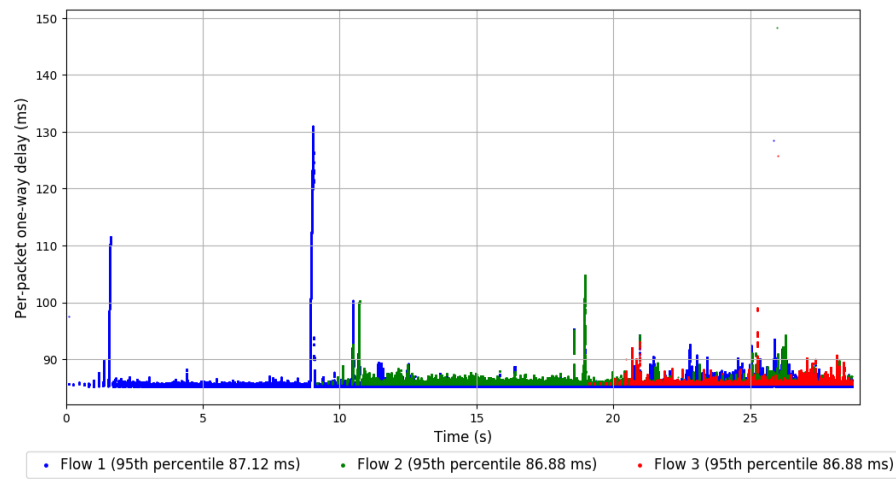
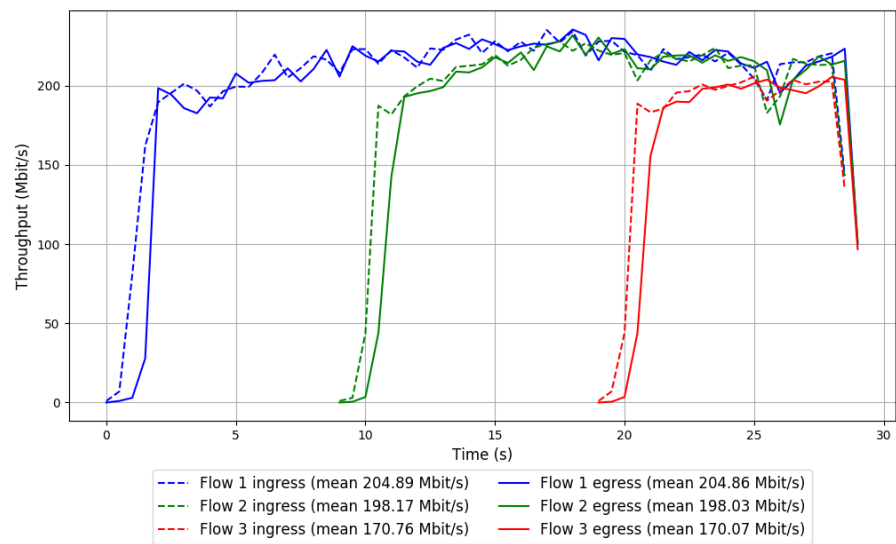



```
Run 1: Statistics of Indigo

Start at: 2018-11-02 21:52:47
End at: 2018-11-02 21:53:17
Local clock offset: -0.209 ms
Remote clock offset: 0.379 ms

# Below is generated by plot.py at 2018-11-03 01:16:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 397.11 Mbit/s
95th percentile per-packet one-way delay: 86.978 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 204.86 Mbit/s
95th percentile per-packet one-way delay: 87.119 ms
Loss rate: 0.65%
-- Flow 2:
Average throughput: 198.03 Mbit/s
95th percentile per-packet one-way delay: 86.878 ms
Loss rate: 0.94%
-- Flow 3:
Average throughput: 170.07 Mbit/s
95th percentile per-packet one-way delay: 86.879 ms
Loss rate: 2.16%
```

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-11-02 22:23:49

End at: 2018-11-02 22:24:19

Local clock offset: 0.451 ms

Remote clock offset: 0.087 ms

Below is generated by plot.py at 2018-11-03 01:16:47

Datalink statistics

-- Total of 3 flows:

Average throughput: 394.72 Mbit/s

95th percentile per-packet one-way delay: 88.532 ms

Loss rate: 0.91%

-- Flow 1:

Average throughput: 211.79 Mbit/s

95th percentile per-packet one-way delay: 88.186 ms

Loss rate: 0.53%

-- Flow 2:

Average throughput: 198.19 Mbit/s

95th percentile per-packet one-way delay: 88.731 ms

Loss rate: 0.99%

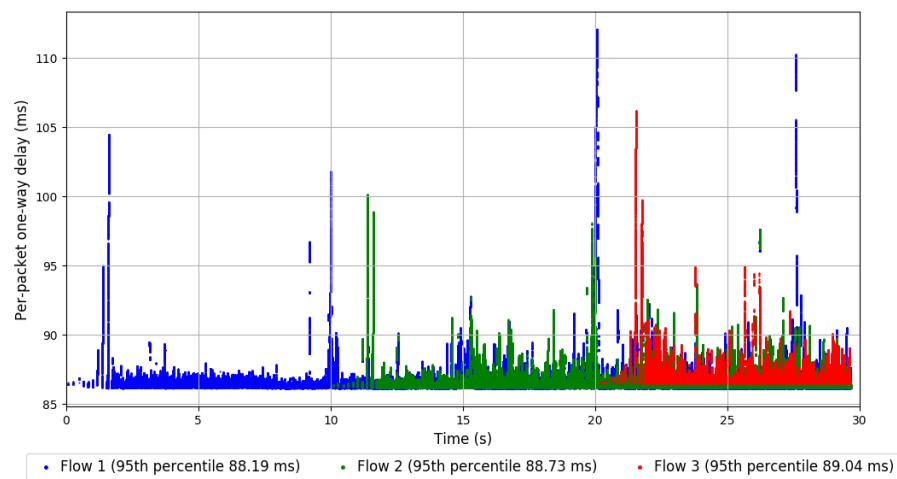
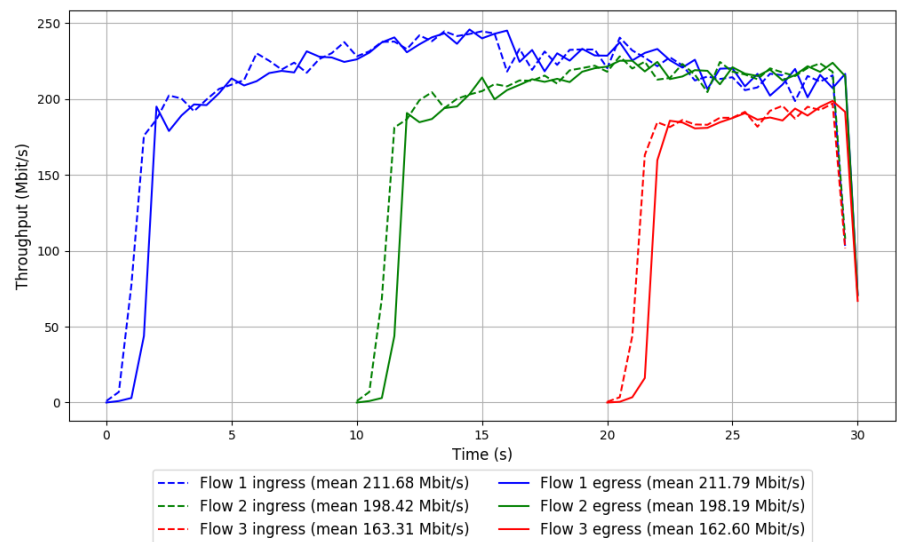
-- Flow 3:

Average throughput: 162.60 Mbit/s

95th percentile per-packet one-way delay: 89.043 ms

Loss rate: 2.22%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-11-02 22:54:39

End at: 2018-11-02 22:55:09

Local clock offset: -0.396 ms

Remote clock offset: 0.07 ms

Below is generated by plot.py at 2018-11-03 01:16:47

Datalink statistics

-- Total of 3 flows:

Average throughput: 391.13 Mbit/s

95th percentile per-packet one-way delay: 87.622 ms

Loss rate: 0.76%

-- Flow 1:

Average throughput: 203.70 Mbit/s

95th percentile per-packet one-way delay: 87.501 ms

Loss rate: 0.57%

-- Flow 2:

Average throughput: 200.14 Mbit/s

95th percentile per-packet one-way delay: 87.819 ms

Loss rate: 0.97%

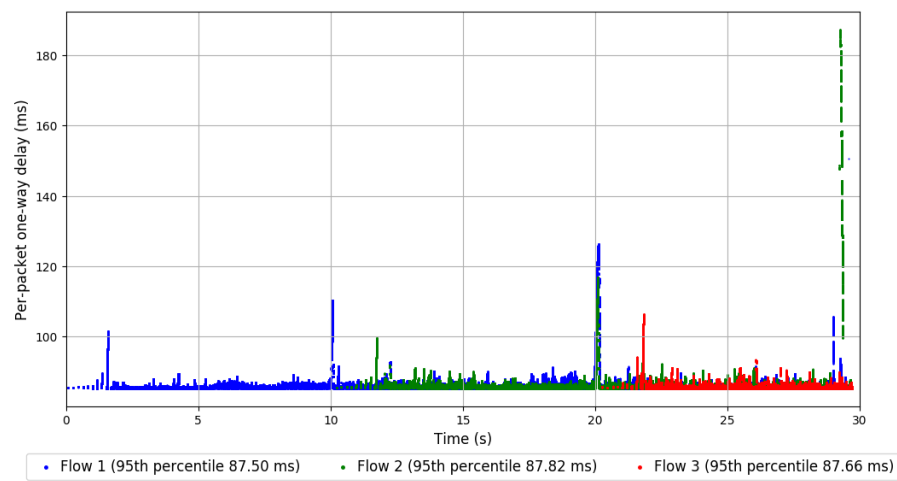
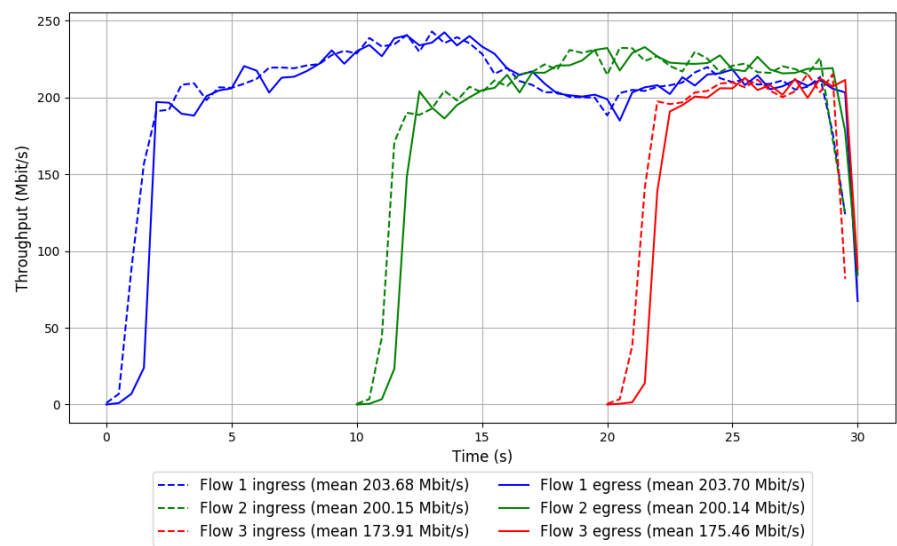
-- Flow 3:

Average throughput: 175.46 Mbit/s

95th percentile per-packet one-way delay: 87.656 ms

Loss rate: 0.92%

Run 3: Report of Indigo — Data Link

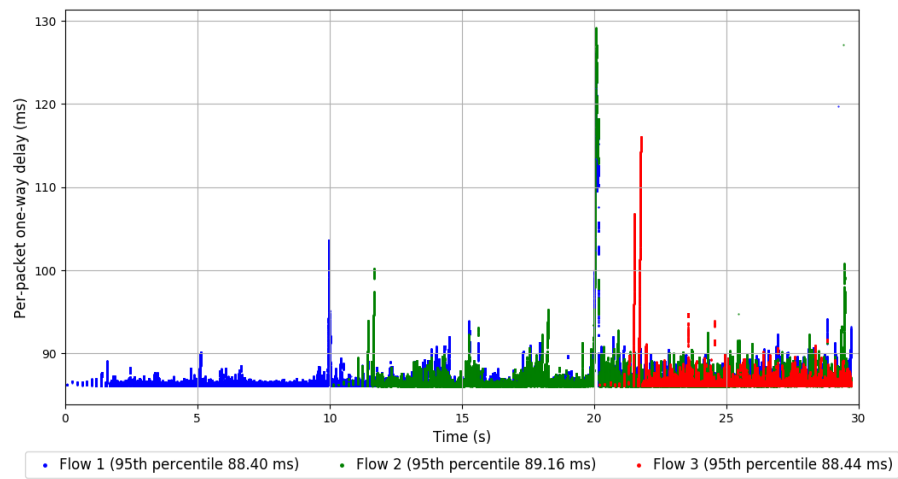
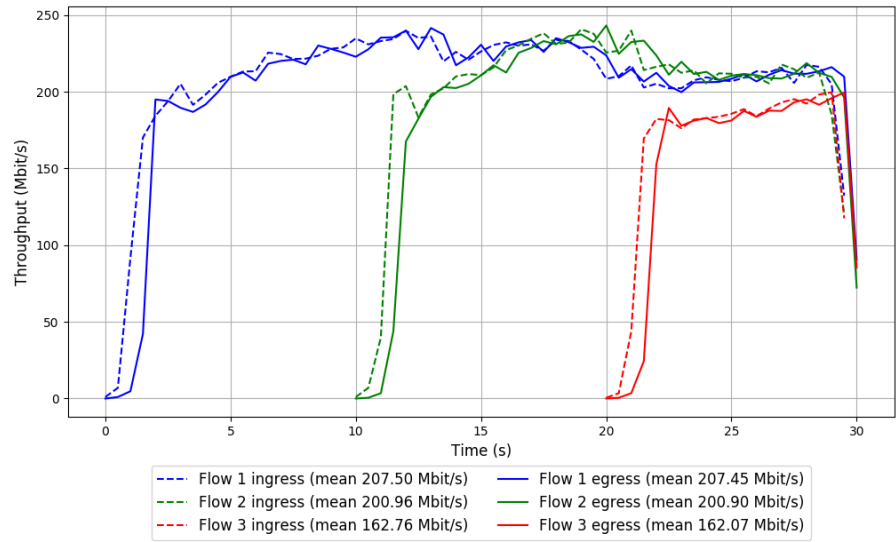


Run 4: Statistics of Indigo

Start at: 2018-11-02 23:25:25
End at: 2018-11-02 23:25:55
Local clock offset: 0.324 ms
Remote clock offset: -0.017 ms

Below is generated by plot.py at 2018-11-03 01:18:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 392.06 Mbit/s
95th percentile per-packet one-way delay: 88.700 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 207.45 Mbit/s
95th percentile per-packet one-way delay: 88.402 ms
Loss rate: 0.60%
-- Flow 2:
Average throughput: 200.90 Mbit/s
95th percentile per-packet one-way delay: 89.163 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 162.07 Mbit/s
95th percentile per-packet one-way delay: 88.435 ms
Loss rate: 2.19%

Run 4: Report of Indigo — Data Link

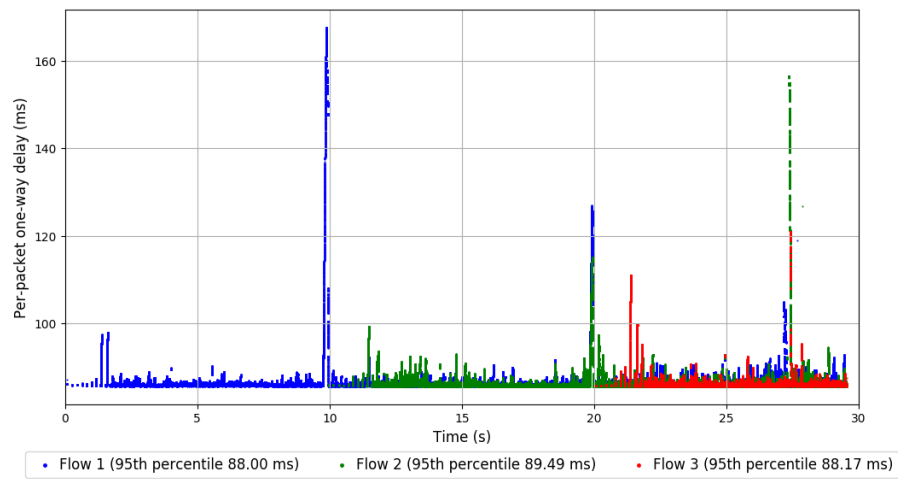
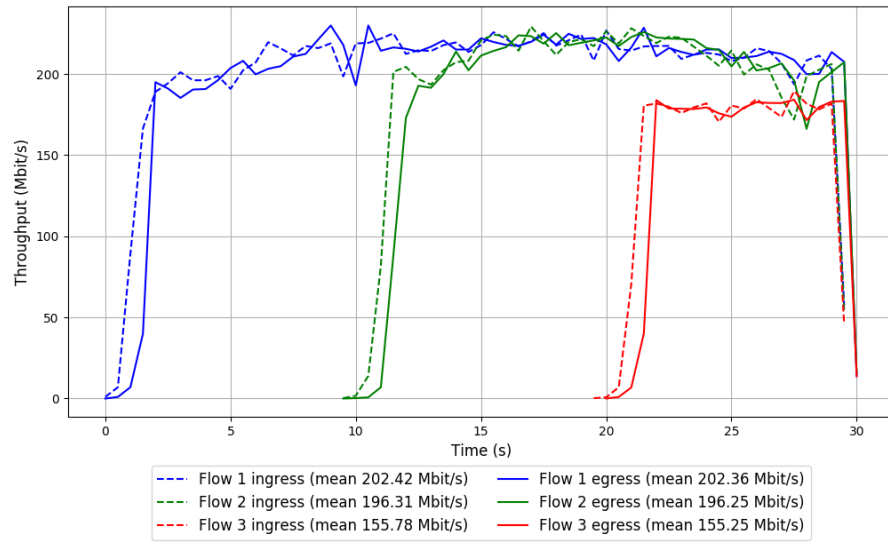


Run 5: Statistics of Indigo

Start at: 2018-11-02 23:57:31
End at: 2018-11-02 23:58:01
Local clock offset: -0.126 ms
Remote clock offset: -0.017 ms

Below is generated by plot.py at 2018-11-03 01:18:47
Datalink statistics
-- Total of 3 flows:
Average throughput: 382.56 Mbit/s
95th percentile per-packet one-way delay: 88.497 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 202.36 Mbit/s
95th percentile per-packet one-way delay: 88.001 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 196.25 Mbit/s
95th percentile per-packet one-way delay: 89.493 ms
Loss rate: 0.90%
-- Flow 3:
Average throughput: 155.25 Mbit/s
95th percentile per-packet one-way delay: 88.171 ms
Loss rate: 2.12%

Run 5: Report of Indigo — Data Link



Run 1: Statistics of Indigo-96d2da3

Start at: 2018-11-02 22:06:13

End at: 2018-11-02 22:06:43

Local clock offset: 0.176 ms

Remote clock offset: 0.33 ms

Below is generated by plot.py at 2018-11-03 01:18:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 508.88 Mbit/s

95th percentile per-packet one-way delay: 110.587 ms

Loss rate: 1.34%

-- Flow 1:

Average throughput: 266.44 Mbit/s

95th percentile per-packet one-way delay: 107.955 ms

Loss rate: 0.99%

-- Flow 2:

Average throughput: 257.15 Mbit/s

95th percentile per-packet one-way delay: 114.004 ms

Loss rate: 1.41%

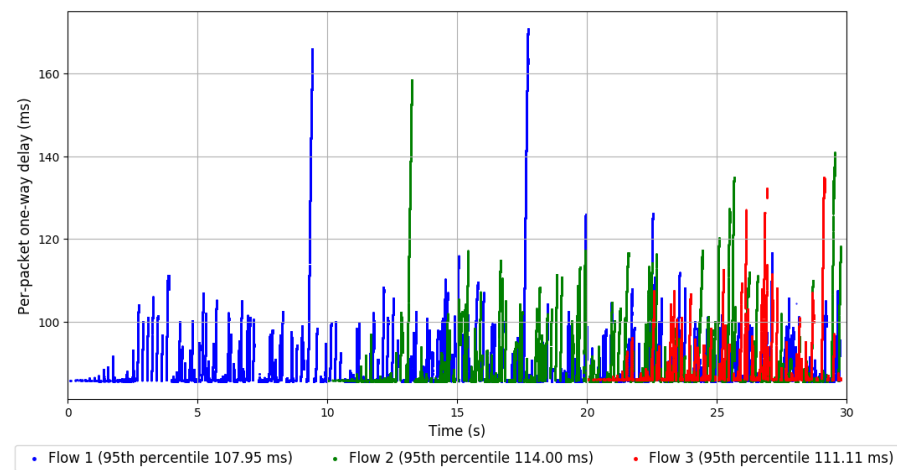
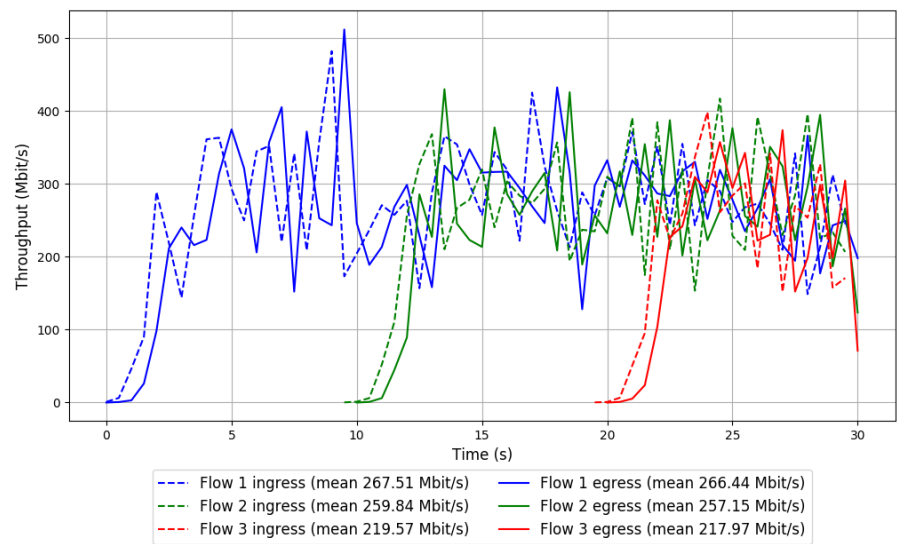
-- Flow 3:

Average throughput: 217.97 Mbit/s

95th percentile per-packet one-way delay: 111.108 ms

Loss rate: 2.47%

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



Run 2: Statistics of Indigo-96d2da3

Start at: 2018-11-02 22:36:43

End at: 2018-11-02 22:37:13

Local clock offset: -0.148 ms

Remote clock offset: 0.151 ms

Below is generated by plot.py at 2018-11-03 01:18:48

Datalink statistics

-- Total of 3 flows:

Average throughput: 501.59 Mbit/s

95th percentile per-packet one-way delay: 111.136 ms

Loss rate: 0.95%

-- Flow 1:

Average throughput: 265.66 Mbit/s

95th percentile per-packet one-way delay: 113.495 ms

Loss rate: 0.56%

-- Flow 2:

Average throughput: 250.35 Mbit/s

95th percentile per-packet one-way delay: 109.919 ms

Loss rate: 0.21%

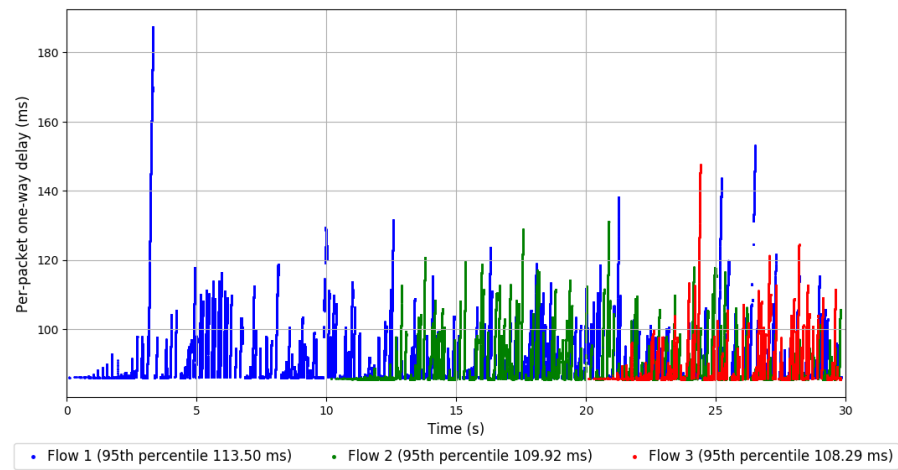
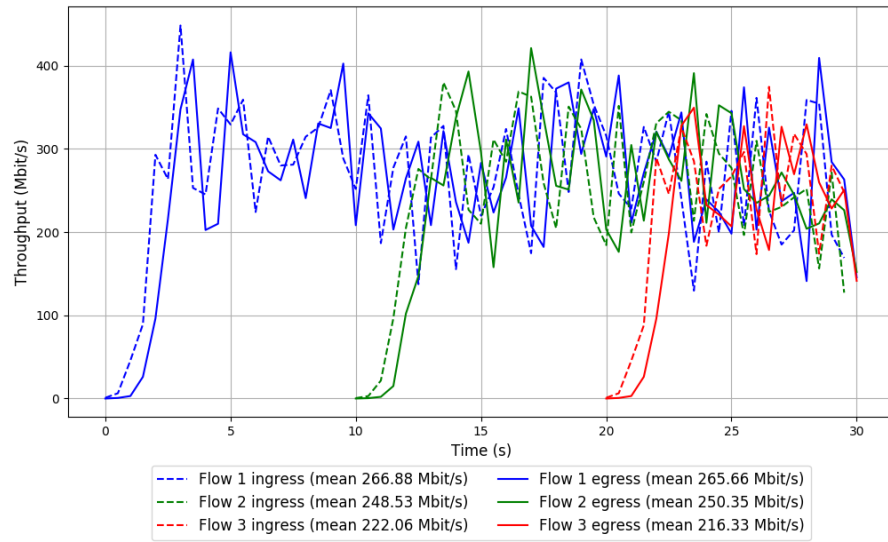
-- Flow 3:

Average throughput: 216.33 Mbit/s

95th percentile per-packet one-way delay: 108.294 ms

Loss rate: 4.07%

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



Run 3: Statistics of Indigo-96d2da3

Start at: 2018-11-02 23:07:33

End at: 2018-11-02 23:08:03

Local clock offset: 0.051 ms

Remote clock offset: 0.13 ms

Below is generated by plot.py at 2018-11-03 01:19:56

Datalink statistics

-- Total of 3 flows:

Average throughput: 466.78 Mbit/s

95th percentile per-packet one-way delay: 109.757 ms

Loss rate: 1.17%

-- Flow 1:

Average throughput: 239.35 Mbit/s

95th percentile per-packet one-way delay: 109.593 ms

Loss rate: 1.22%

-- Flow 2:

Average throughput: 240.54 Mbit/s

95th percentile per-packet one-way delay: 111.608 ms

Loss rate: 0.86%

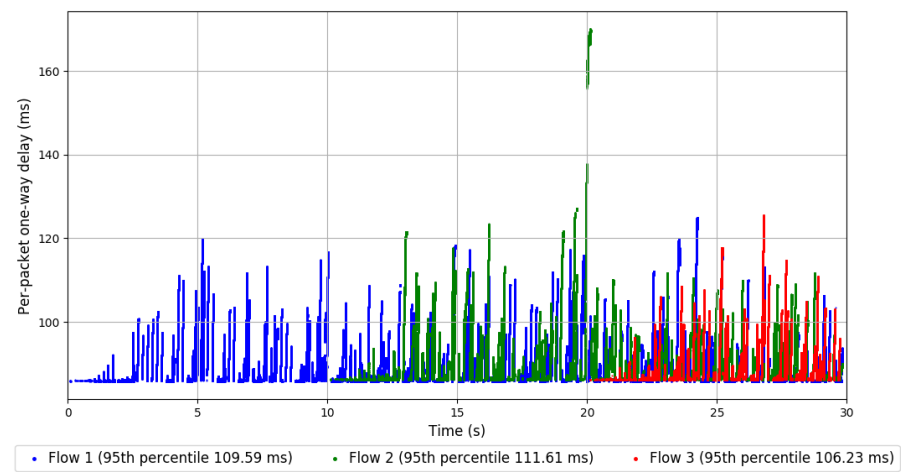
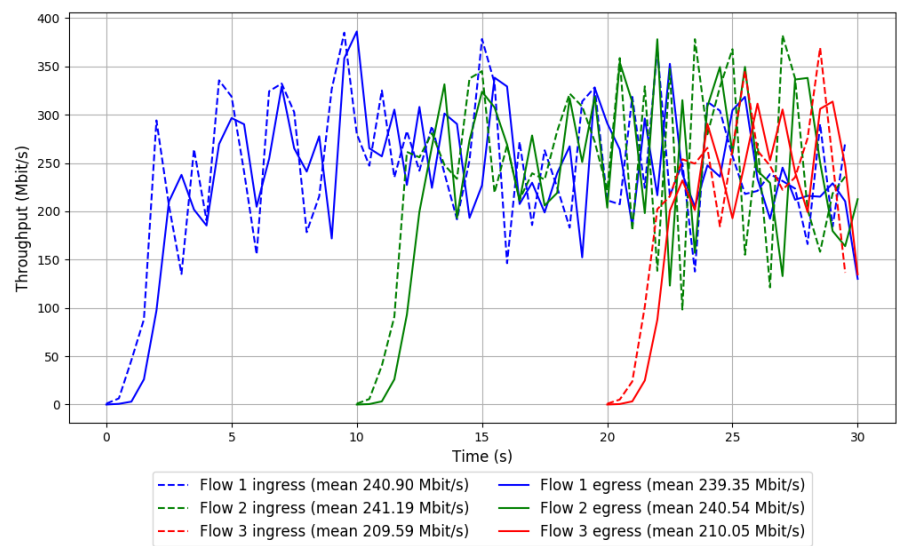
-- Flow 3:

Average throughput: 210.05 Mbit/s

95th percentile per-packet one-way delay: 106.234 ms

Loss rate: 1.72%

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

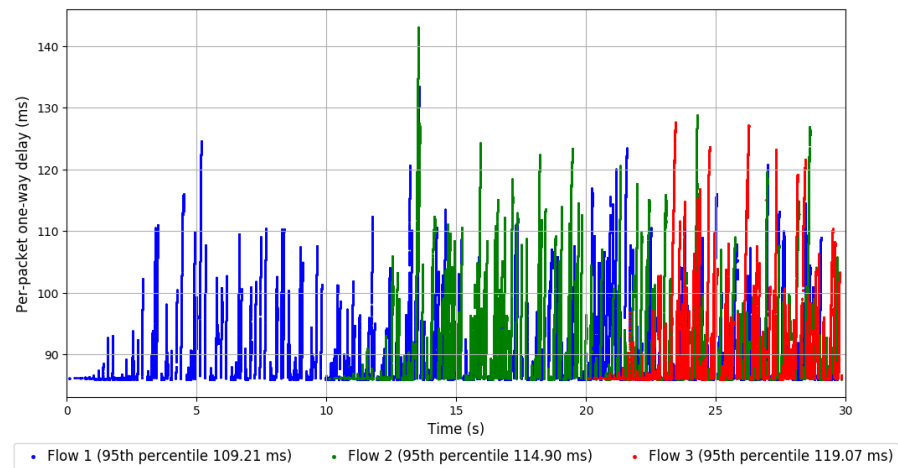
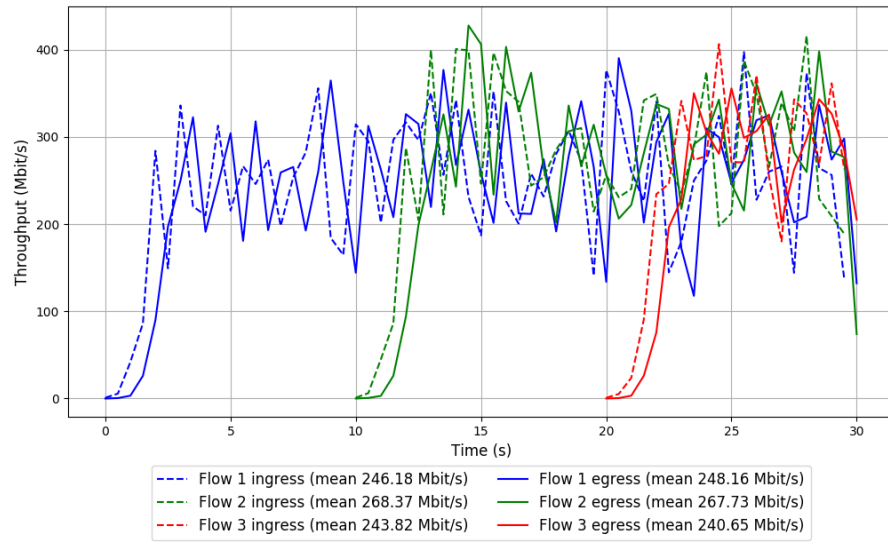


Run 4: Statistics of Indigo-96d2da3

Start at: 2018-11-02 23:39:03
End at: 2018-11-02 23:39:33
Local clock offset: 0.175 ms
Remote clock offset: -0.031 ms

Below is generated by plot.py at 2018-11-03 01:23:39
Datalink statistics
-- Total of 3 flows:
Average throughput: 503.51 Mbit/s
95th percentile per-packet one-way delay: 113.574 ms
Loss rate: 0.90%
-- Flow 1:
Average throughput: 248.16 Mbit/s
95th percentile per-packet one-way delay: 109.206 ms
Loss rate: 0.14%
-- Flow 2:
Average throughput: 267.73 Mbit/s
95th percentile per-packet one-way delay: 114.898 ms
Loss rate: 1.08%
-- Flow 3:
Average throughput: 240.65 Mbit/s
95th percentile per-packet one-way delay: 119.070 ms
Loss rate: 2.80%

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

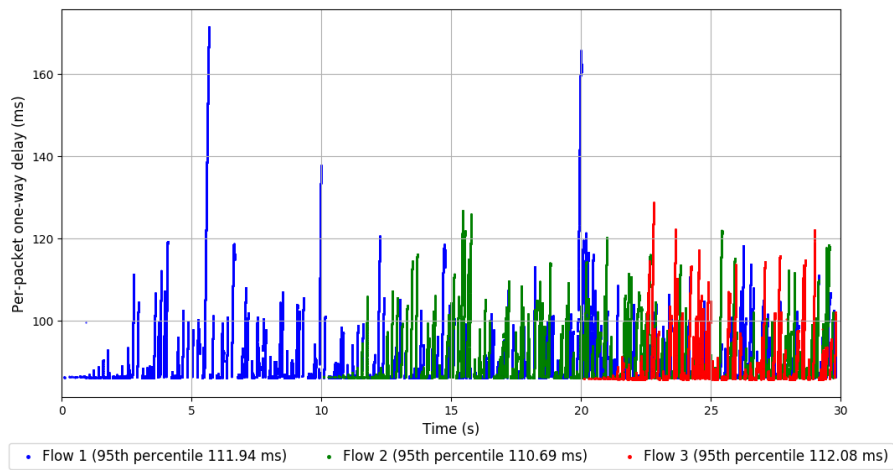
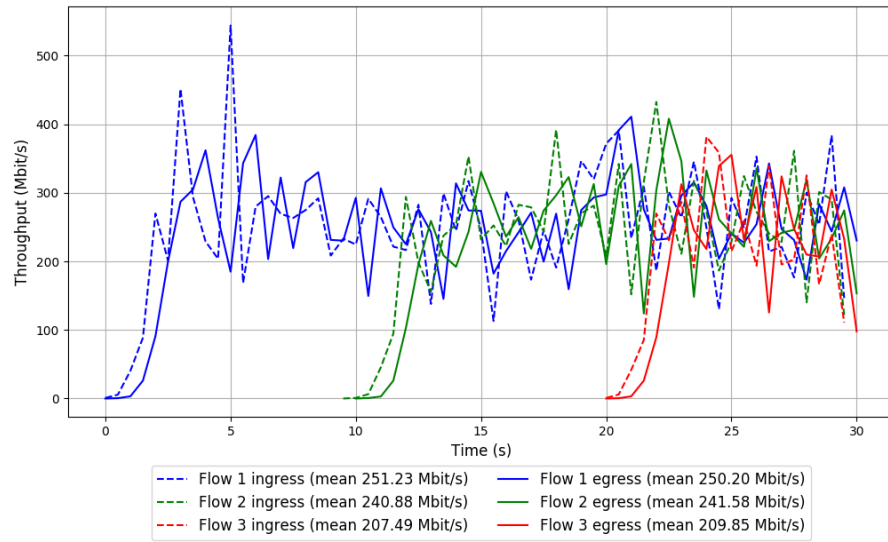


Run 5: Statistics of Indigo-96d2da3

Start at: 2018-11-03 00:10:16
End at: 2018-11-03 00:10:46
Local clock offset: -0.113 ms
Remote clock offset: -0.053 ms

Below is generated by plot.py at 2018-11-03 01:24:11
Datalink statistics
-- Total of 3 flows:
Average throughput: 478.40 Mbit/s
95th percentile per-packet one-way delay: 111.373 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 250.20 Mbit/s
95th percentile per-packet one-way delay: 111.939 ms
Loss rate: 0.46%
-- Flow 2:
Average throughput: 241.58 Mbit/s
95th percentile per-packet one-way delay: 110.688 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 209.85 Mbit/s
95th percentile per-packet one-way delay: 112.083 ms
Loss rate: 0.62%

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

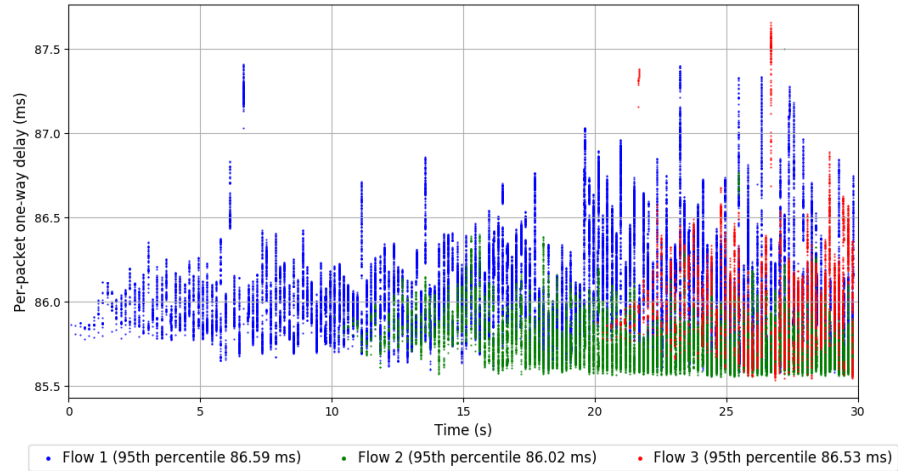
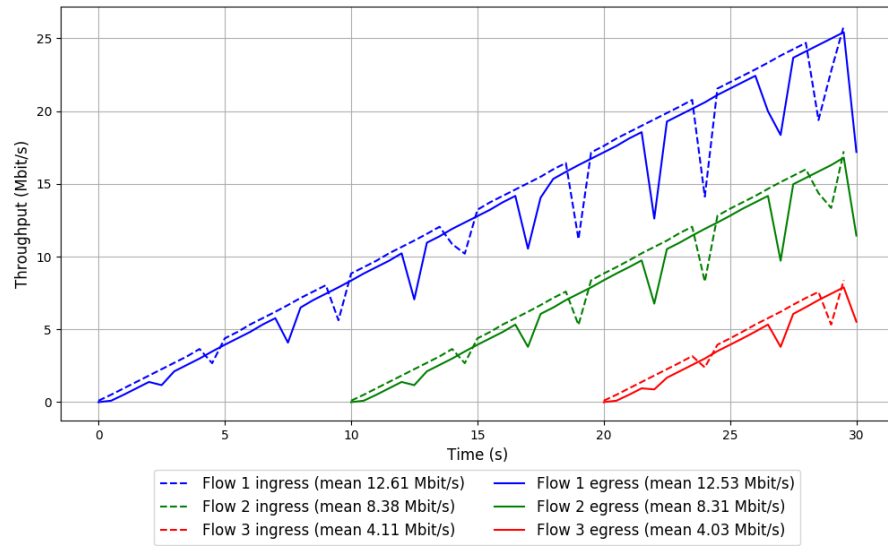


```
Run 1: Statistics of LEDBAT

Start at: 2018-11-02 21:55:56
End at: 2018-11-02 21:56:26
Local clock offset: 0.084 ms
Remote clock offset: 0.384 ms

# Below is generated by plot.py at 2018-11-03 01:24:12
# Datalink statistics
-- Total of 3 flows:
Average throughput: 19.35 Mbit/s
95th percentile per-packet one-way delay: 86.513 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 12.53 Mbit/s
95th percentile per-packet one-way delay: 86.593 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.31 Mbit/s
95th percentile per-packet one-way delay: 86.021 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 86.527 ms
Loss rate: 3.52%
```

Run 1: Report of LEDBAT — Data Link



Run 2: Statistics of LEDBAT

Start at: 2018-11-02 22:26:59

End at: 2018-11-02 22:27:29

Local clock offset: 0.09 ms

Remote clock offset: 0.055 ms

Below is generated by plot.py at 2018-11-03 01:24:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 19.29 Mbit/s

95th percentile per-packet one-way delay: 87.236 ms

Loss rate: 1.48%

-- Flow 1:

Average throughput: 12.50 Mbit/s

95th percentile per-packet one-way delay: 87.340 ms

Loss rate: 1.15%

-- Flow 2:

Average throughput: 8.28 Mbit/s

95th percentile per-packet one-way delay: 86.801 ms

Loss rate: 1.74%

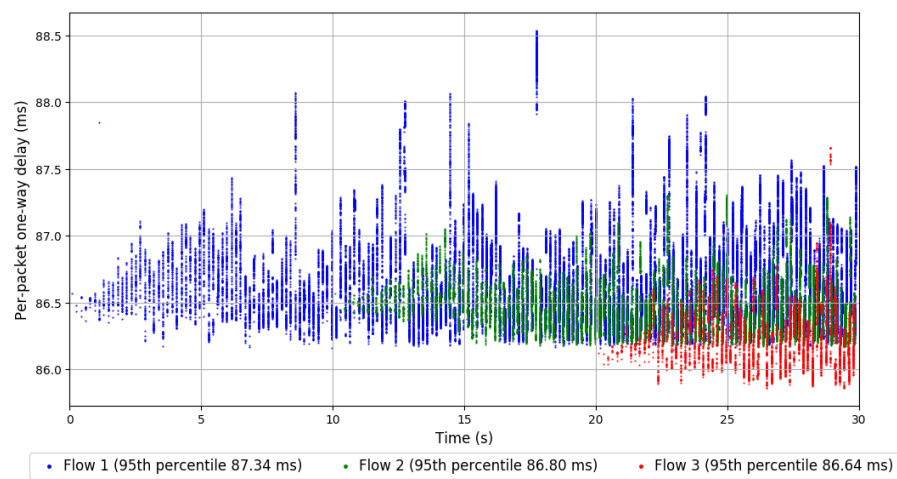
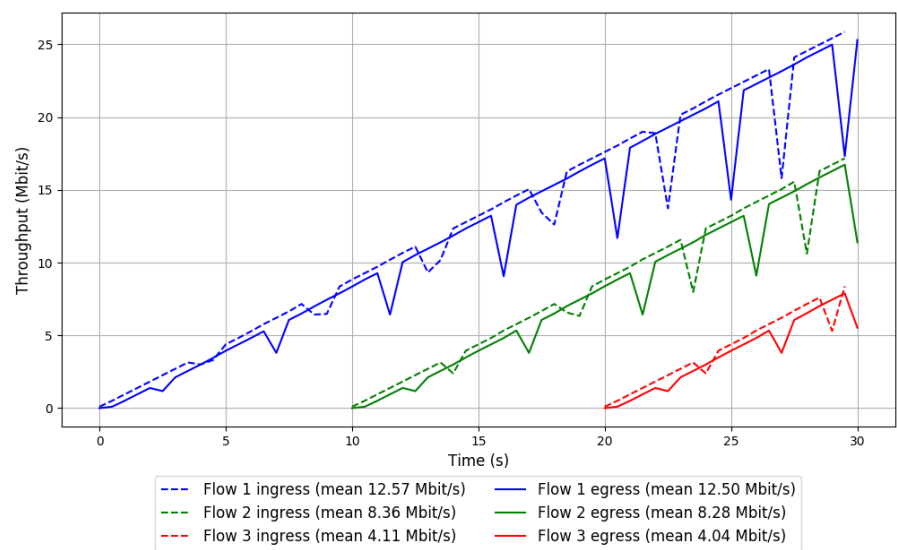
-- Flow 3:

Average throughput: 4.04 Mbit/s

95th percentile per-packet one-way delay: 86.639 ms

Loss rate: 3.52%

Run 2: Report of LEDBAT — Data Link



Run 3: Statistics of LEDBAT

Start at: 2018-11-02 22:57:50

End at: 2018-11-02 22:58:20

Local clock offset: 0.195 ms

Remote clock offset: 0.081 ms

Below is generated by plot.py at 2018-11-03 01:24:12

Datalink statistics

-- Total of 3 flows:

Average throughput: 19.36 Mbit/s

95th percentile per-packet one-way delay: 87.058 ms

Loss rate: 1.48%

-- Flow 1:

Average throughput: 12.55 Mbit/s

95th percentile per-packet one-way delay: 86.908 ms

Loss rate: 1.15%

-- Flow 2:

Average throughput: 8.29 Mbit/s

95th percentile per-packet one-way delay: 87.420 ms

Loss rate: 1.73%

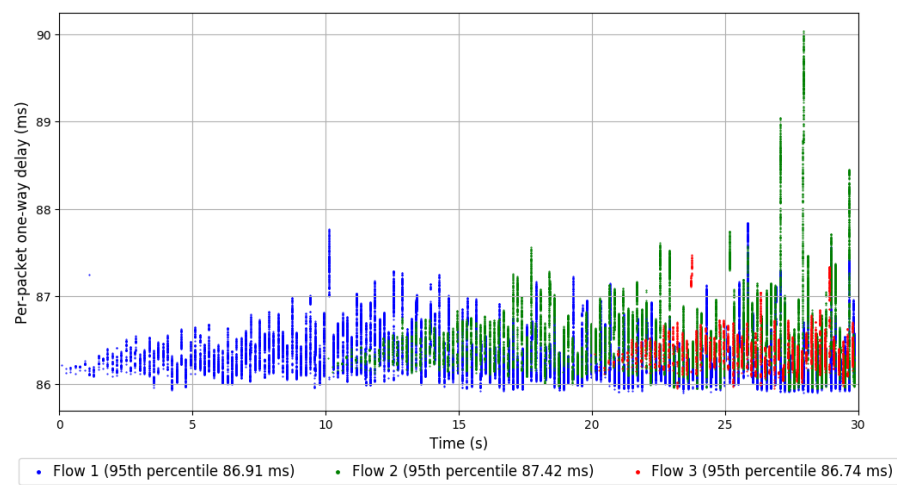
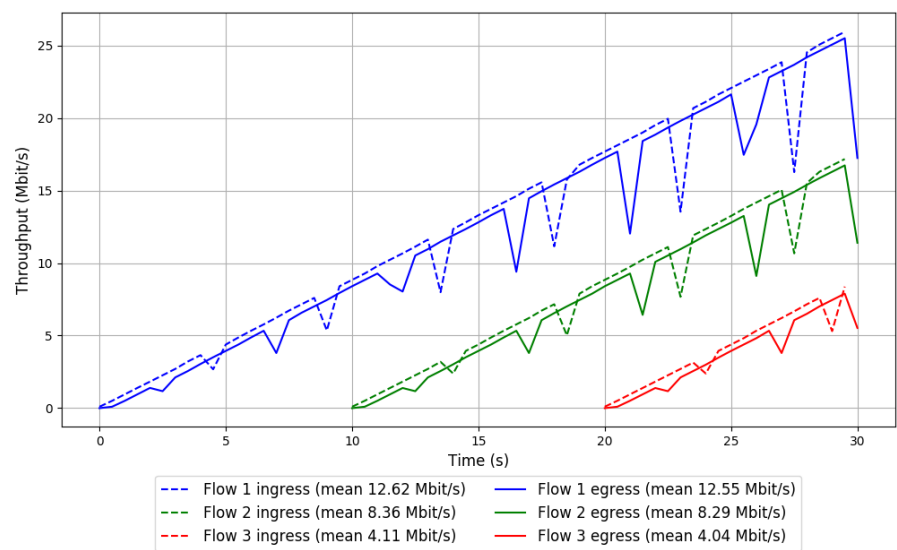
-- Flow 3:

Average throughput: 4.04 Mbit/s

95th percentile per-packet one-way delay: 86.740 ms

Loss rate: 3.52%

Run 3: Report of LEDBAT — Data Link

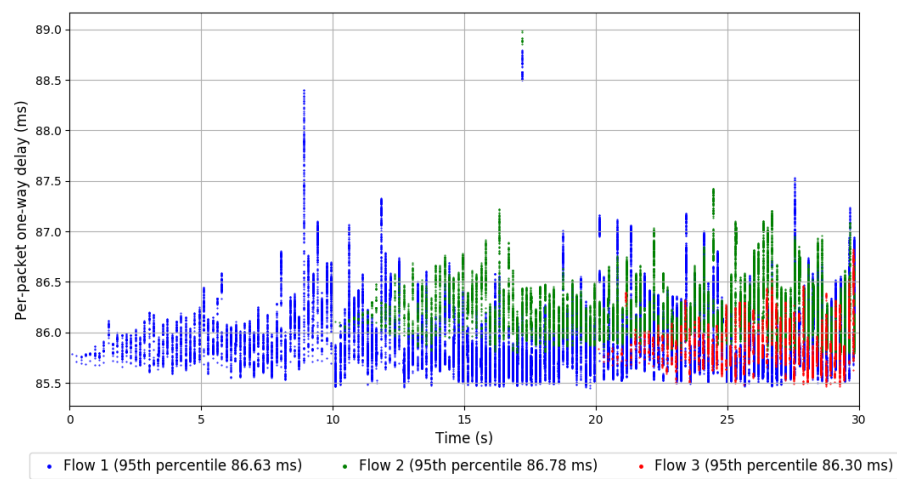
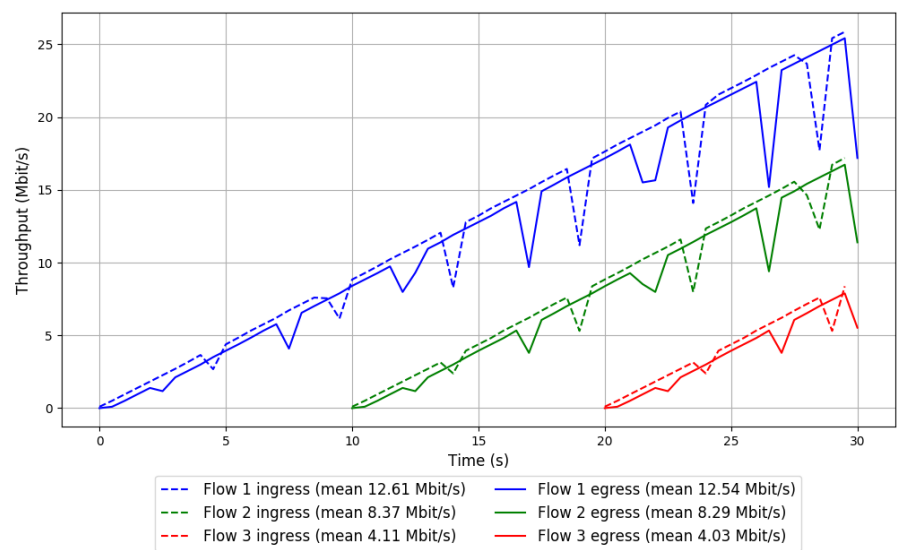


Run 4: Statistics of LEDBAT

Start at: 2018-11-02 23:28:36
End at: 2018-11-02 23:29:06
Local clock offset: -0.303 ms
Remote clock offset: 0.008 ms

Below is generated by plot.py at 2018-11-03 01:24:12
Datalink statistics
-- Total of 3 flows:
Average throughput: 19.35 Mbit/s
95th percentile per-packet one-way delay: 86.680 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 12.54 Mbit/s
95th percentile per-packet one-way delay: 86.634 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.29 Mbit/s
95th percentile per-packet one-way delay: 86.777 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 4.03 Mbit/s
95th percentile per-packet one-way delay: 86.297 ms
Loss rate: 3.52%

Run 4: Report of LEDBAT — Data Link

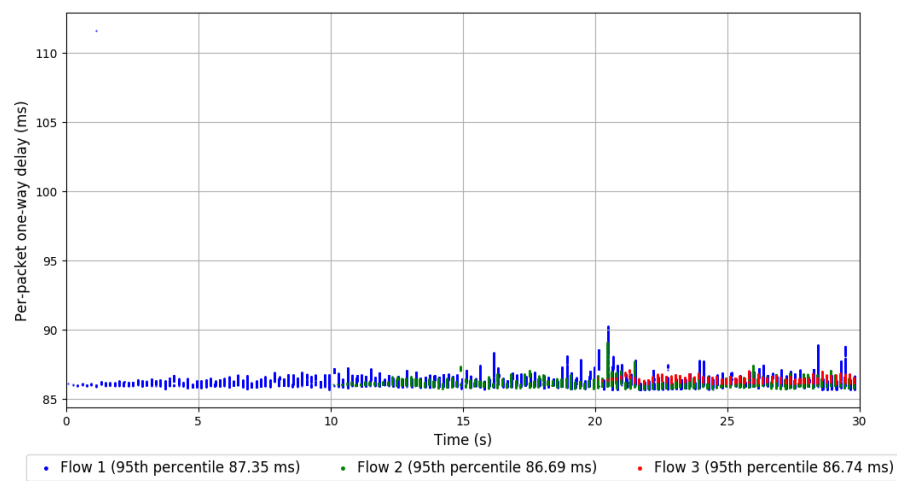
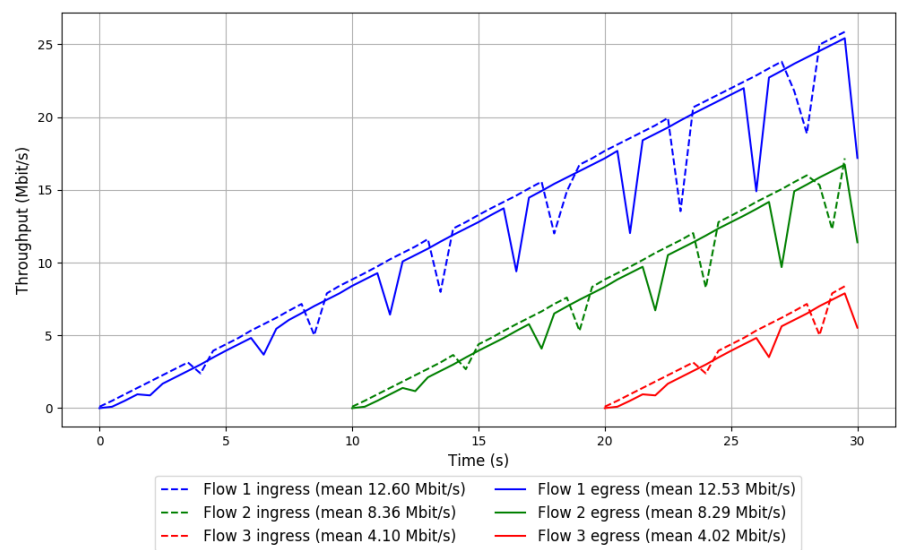


Run 5: Statistics of LEDBAT

Start at: 2018-11-03 00:00:40
End at: 2018-11-03 00:01:10
Local clock offset: -0.157 ms
Remote clock offset: -0.067 ms

Below is generated by plot.py at 2018-11-03 01:24:12
Datalink statistics
-- Total of 3 flows:
Average throughput: 19.33 Mbit/s
95th percentile per-packet one-way delay: 87.091 ms
Loss rate: 1.48%
-- Flow 1:
Average throughput: 12.53 Mbit/s
95th percentile per-packet one-way delay: 87.349 ms
Loss rate: 1.15%
-- Flow 2:
Average throughput: 8.29 Mbit/s
95th percentile per-packet one-way delay: 86.692 ms
Loss rate: 1.74%
-- Flow 3:
Average throughput: 4.02 Mbit/s
95th percentile per-packet one-way delay: 86.743 ms
Loss rate: 3.52%

Run 5: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-11-02 22:07:56

End at: 2018-11-02 22:08:26

Local clock offset: 0.129 ms

Remote clock offset: 0.218 ms

Below is generated by plot.py at 2018-11-03 01:36:17

Datalink statistics

-- Total of 3 flows:

Average throughput: 974.25 Mbit/s

95th percentile per-packet one-way delay: 133.326 ms

Loss rate: 1.13%

-- Flow 1:

Average throughput: 543.46 Mbit/s

95th percentile per-packet one-way delay: 134.126 ms

Loss rate: 0.69%

-- Flow 2:

Average throughput: 461.31 Mbit/s

95th percentile per-packet one-way delay: 140.618 ms

Loss rate: 1.33%

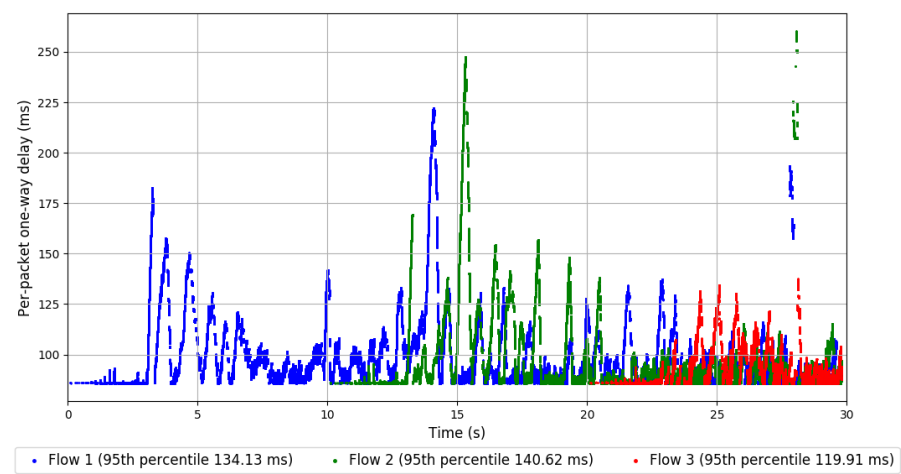
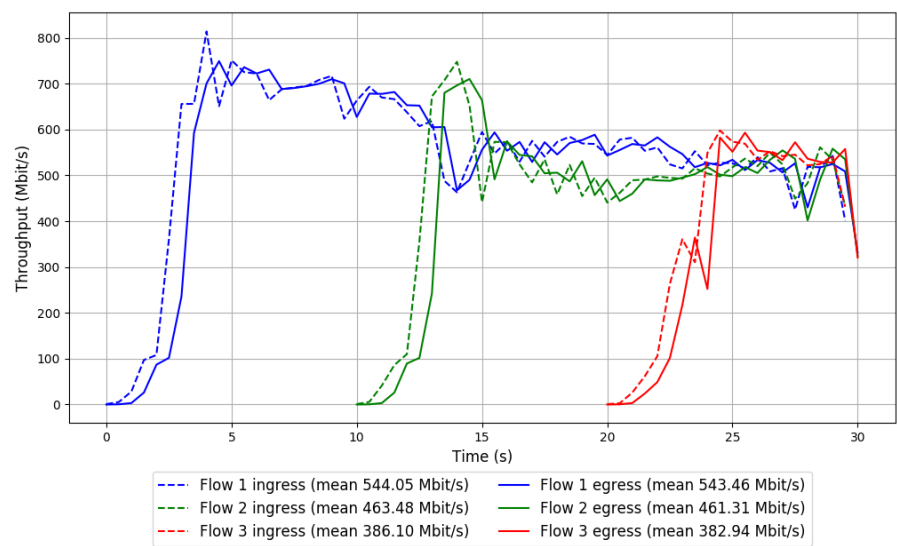
-- Flow 3:

Average throughput: 382.94 Mbit/s

95th percentile per-packet one-way delay: 119.908 ms

Loss rate: 2.55%

Run 1: Report of Indigo-Muses — Data Link



Run 2: Statistics of Indigo-Muses

Start at: 2018-11-02 22:38:26

End at: 2018-11-02 22:38:56

Local clock offset: 0.323 ms

Remote clock offset: 0.105 ms

Below is generated by plot.py at 2018-11-03 01:36:17

Datalink statistics

-- Total of 3 flows:

Average throughput: 917.71 Mbit/s

95th percentile per-packet one-way delay: 138.054 ms

Loss rate: 1.11%

-- Flow 1:

Average throughput: 522.15 Mbit/s

95th percentile per-packet one-way delay: 137.093 ms

Loss rate: 0.71%

-- Flow 2:

Average throughput: 437.15 Mbit/s

95th percentile per-packet one-way delay: 145.782 ms

Loss rate: 1.15%

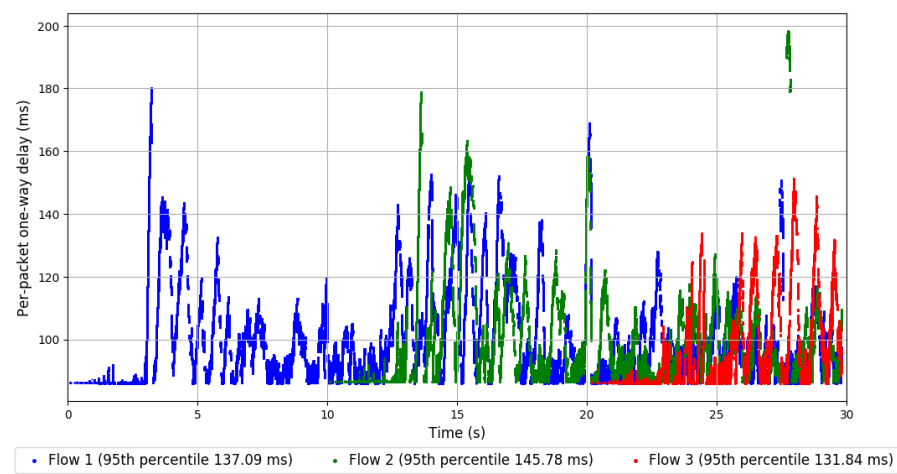
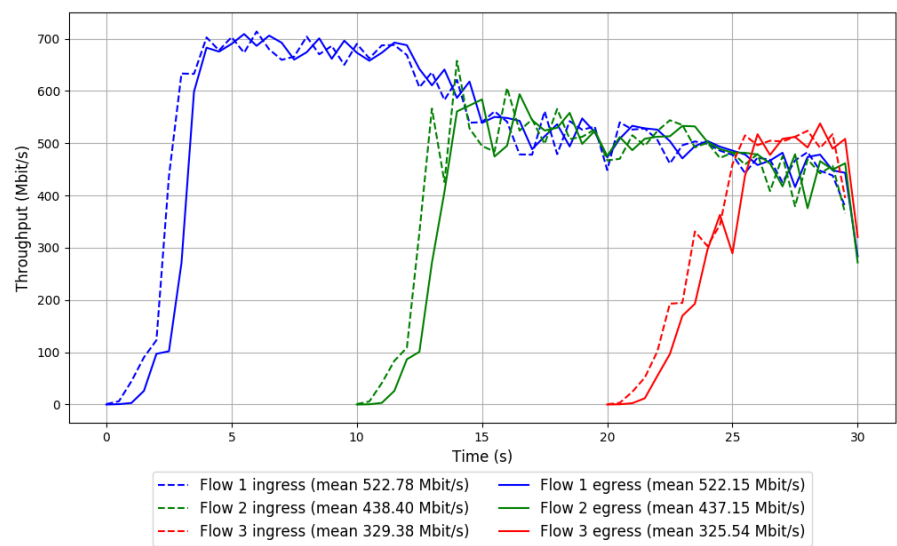
-- Flow 3:

Average throughput: 325.54 Mbit/s

95th percentile per-packet one-way delay: 131.837 ms

Loss rate: 2.91%

Run 2: Report of Indigo-Muses — Data Link



Run 3: Statistics of Indigo-Muses

Start at: 2018-11-02 23:09:13

End at: 2018-11-02 23:09:43

Local clock offset: -0.224 ms

Remote clock offset: 0.08 ms

Below is generated by plot.py at 2018-11-03 01:37:15

Datalink statistics

-- Total of 3 flows:

Average throughput: 994.50 Mbit/s

95th percentile per-packet one-way delay: 131.830 ms

Loss rate: 1.03%

-- Flow 1:

Average throughput: 549.38 Mbit/s

95th percentile per-packet one-way delay: 126.814 ms

Loss rate: 0.78%

-- Flow 2:

Average throughput: 466.17 Mbit/s

95th percentile per-packet one-way delay: 132.859 ms

Loss rate: 1.05%

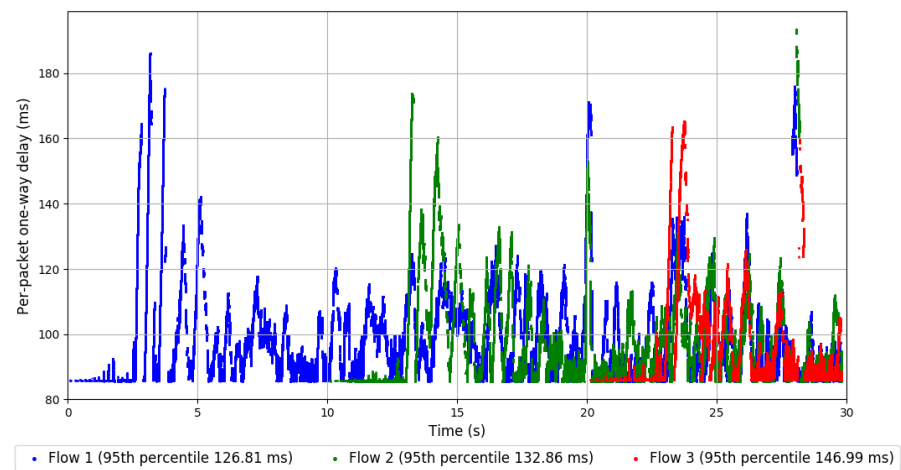
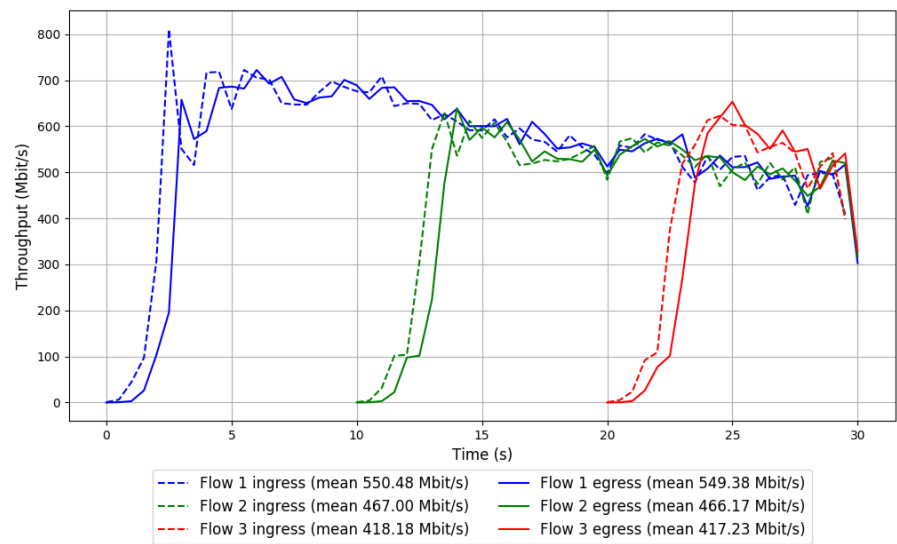
-- Flow 3:

Average throughput: 417.23 Mbit/s

95th percentile per-packet one-way delay: 146.987 ms

Loss rate: 2.00%

Run 3: Report of Indigo-Muses — Data Link



Run 4: Statistics of Indigo-Muses

Start at: 2018-11-02 23:40:46

End at: 2018-11-02 23:41:16

Local clock offset: 0.201 ms

Remote clock offset: -0.05 ms

Below is generated by plot.py at 2018-11-03 01:37:15

Datalink statistics

-- Total of 3 flows:

Average throughput: 958.52 Mbit/s

95th percentile per-packet one-way delay: 138.446 ms

Loss rate: 1.00%

-- Flow 1:

Average throughput: 549.97 Mbit/s

95th percentile per-packet one-way delay: 140.838 ms

Loss rate: 0.78%

-- Flow 2:

Average throughput: 466.14 Mbit/s

95th percentile per-packet one-way delay: 132.167 ms

Loss rate: 1.09%

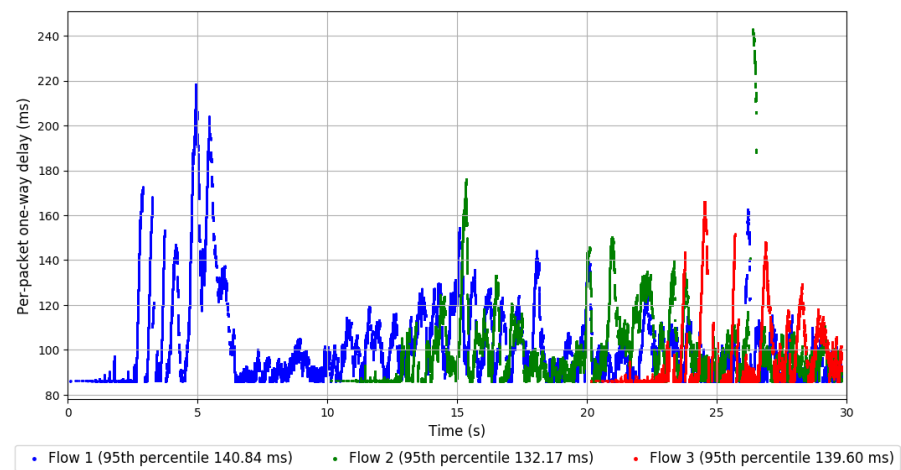
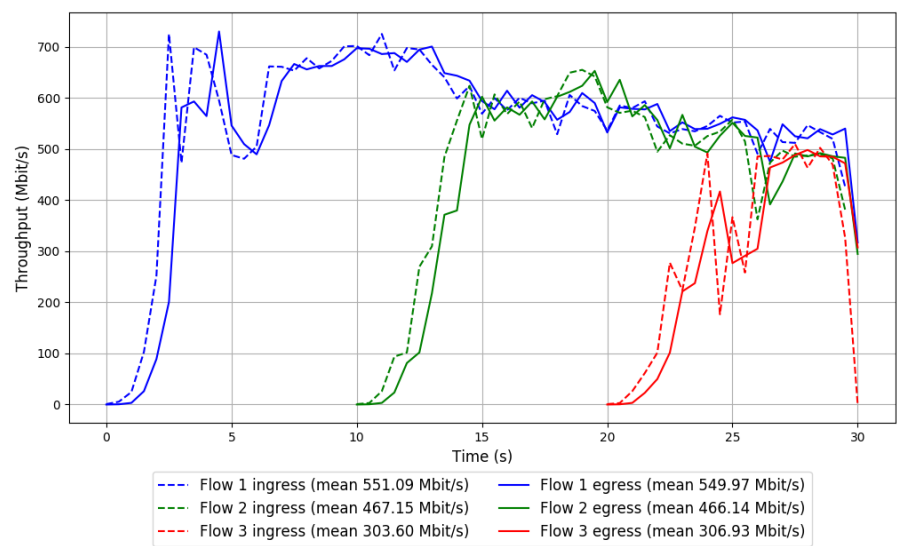
-- Flow 3:

Average throughput: 306.93 Mbit/s

95th percentile per-packet one-way delay: 139.597 ms

Loss rate: 1.93%

Run 4: Report of Indigo-Muses — Data Link



Run 5: Statistics of Indigo-Muses

Start at: 2018-11-03 00:11:57

End at: 2018-11-03 00:12:27

Local clock offset: 0.052 ms

Remote clock offset: -0.08 ms

Below is generated by plot.py at 2018-11-03 01:37:57

Datalink statistics

-- Total of 3 flows:

Average throughput: 983.30 Mbit/s

95th percentile per-packet one-way delay: 135.741 ms

Loss rate: 1.16%

-- Flow 1:

Average throughput: 558.12 Mbit/s

95th percentile per-packet one-way delay: 137.426 ms

Loss rate: 0.80%

-- Flow 2:

Average throughput: 461.16 Mbit/s

95th percentile per-packet one-way delay: 136.411 ms

Loss rate: 1.34%

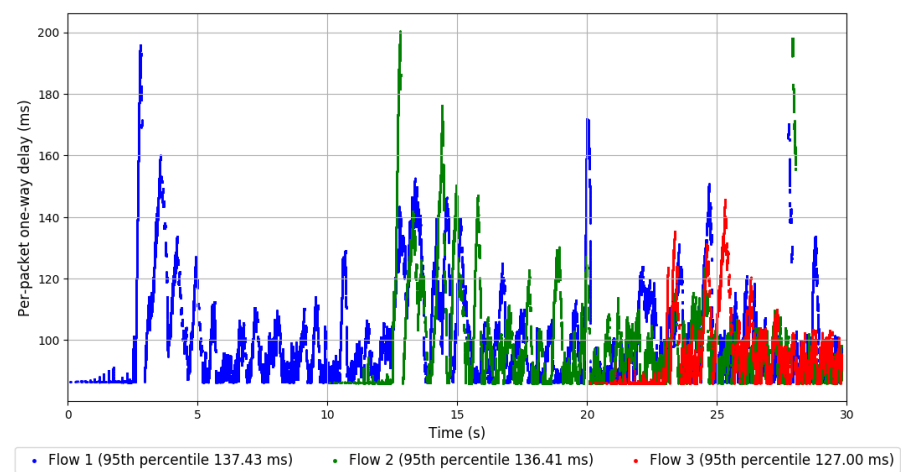
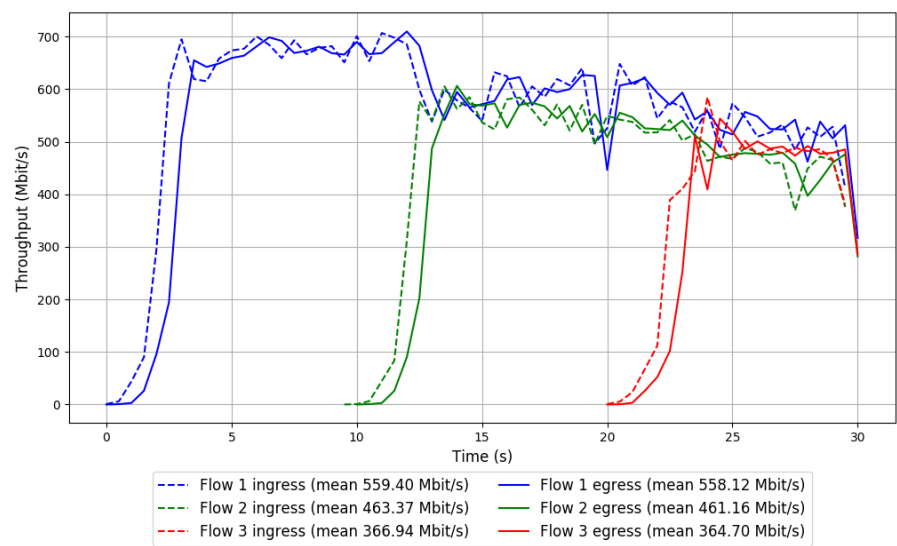
-- Flow 3:

Average throughput: 364.70 Mbit/s

95th percentile per-packet one-way delay: 127.003 ms

Loss rate: 2.35%

Run 5: Report of Indigo-Muses — Data Link

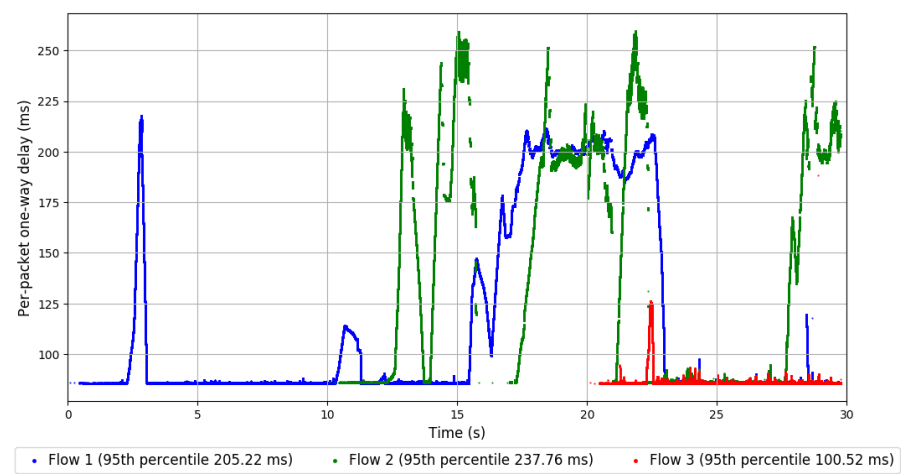
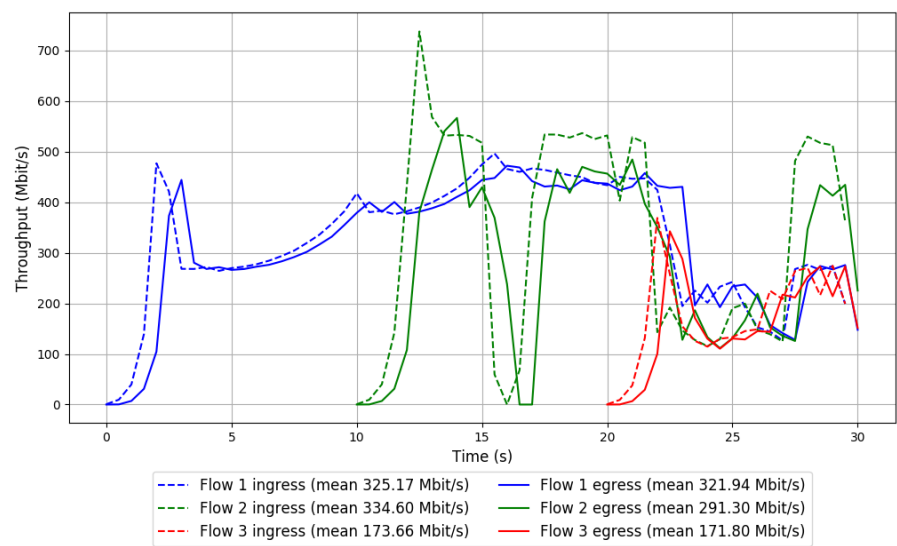



```
Run 1: Statistics of PCC-Allegro

Start at: 2018-11-02 22:11:17
End at: 2018-11-02 22:11:47
Local clock offset: -0.074 ms
Remote clock offset: 0.163 ms

# Below is generated by plot.py at 2018-11-03 01:41:58
# Datalink statistics
-- Total of 3 flows:
Average throughput: 570.91 Mbit/s
95th percentile per-packet one-way delay: 216.140 ms
Loss rate: 6.14%
-- Flow 1:
Average throughput: 321.94 Mbit/s
95th percentile per-packet one-way delay: 205.222 ms
Loss rate: 1.57%
-- Flow 2:
Average throughput: 291.30 Mbit/s
95th percentile per-packet one-way delay: 237.764 ms
Loss rate: 13.69%
-- Flow 3:
Average throughput: 171.80 Mbit/s
95th percentile per-packet one-way delay: 100.515 ms
Loss rate: 2.80%
```

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-11-02 22:41:52

End at: 2018-11-02 22:42:22

Local clock offset: 0.451 ms

Remote clock offset: 0.102 ms

Below is generated by plot.py at 2018-11-03 01:46:01

Datalink statistics

-- Total of 3 flows:

Average throughput: 595.29 Mbit/s

95th percentile per-packet one-way delay: 186.868 ms

Loss rate: 1.89%

-- Flow 1:

Average throughput: 337.76 Mbit/s

95th percentile per-packet one-way delay: 191.428 ms

Loss rate: 1.90%

-- Flow 2:

Average throughput: 274.43 Mbit/s

95th percentile per-packet one-way delay: 143.617 ms

Loss rate: 1.48%

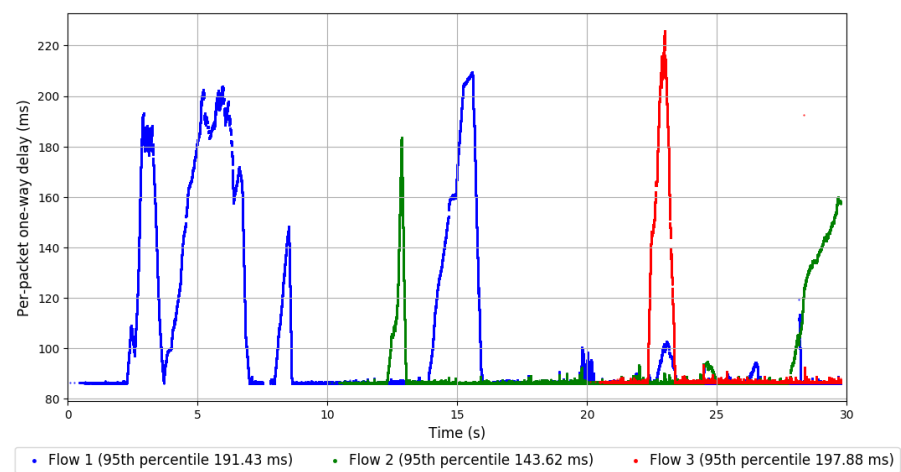
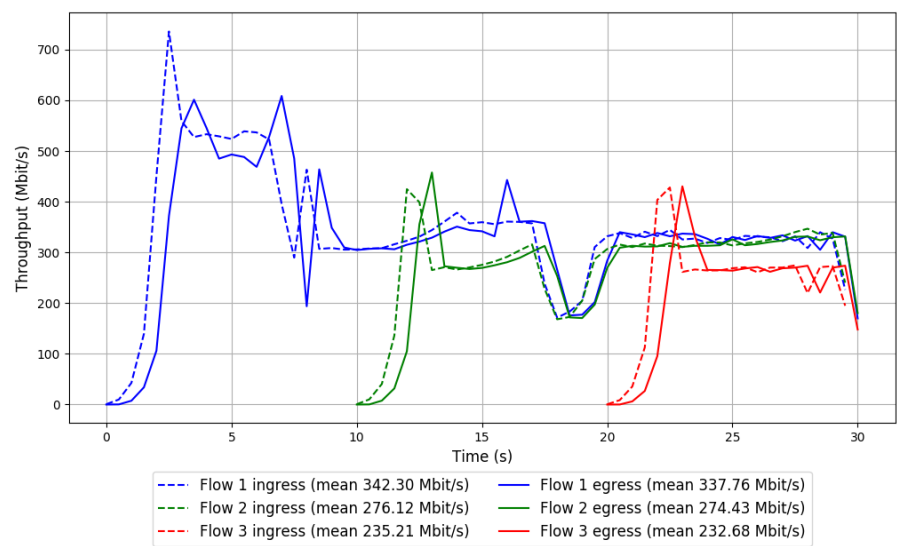
-- Flow 3:

Average throughput: 232.68 Mbit/s

95th percentile per-packet one-way delay: 197.882 ms

Loss rate: 2.81%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-11-02 23:12:37

End at: 2018-11-02 23:13:07

Local clock offset: 0.006 ms

Remote clock offset: 0.102 ms

Below is generated by plot.py at 2018-11-03 01:47:47

Datalink statistics

-- Total of 3 flows:

Average throughput: 626.67 Mbit/s

95th percentile per-packet one-way delay: 171.852 ms

Loss rate: 2.20%

-- Flow 1:

Average throughput: 333.95 Mbit/s

95th percentile per-packet one-way delay: 197.866 ms

Loss rate: 2.76%

-- Flow 2:

Average throughput: 326.63 Mbit/s

95th percentile per-packet one-way delay: 145.081 ms

Loss rate: 1.38%

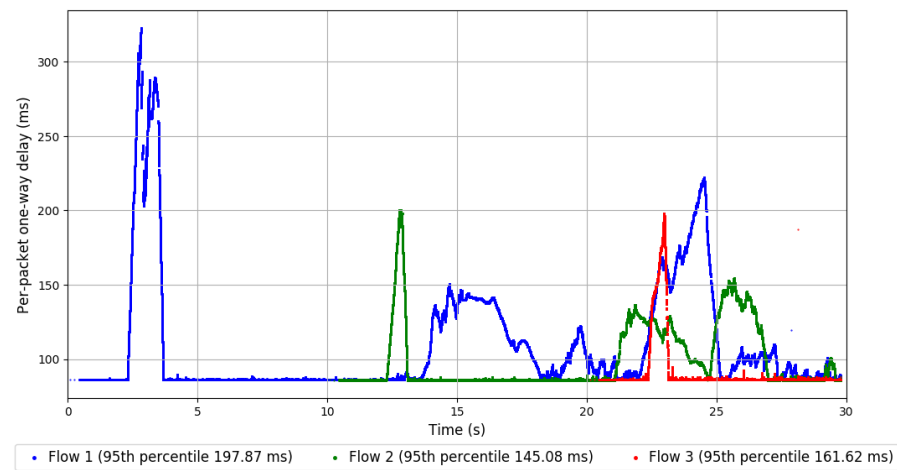
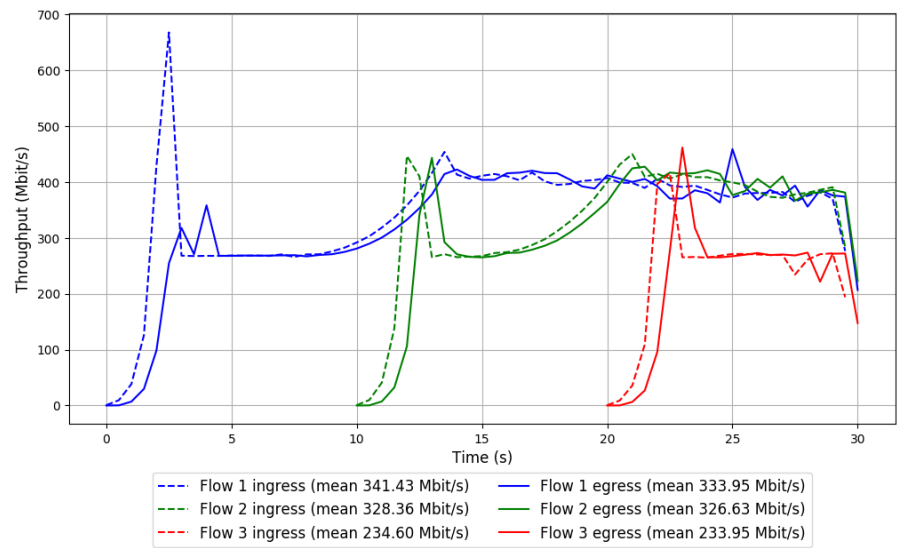
-- Flow 3:

Average throughput: 233.95 Mbit/s

95th percentile per-packet one-way delay: 161.622 ms

Loss rate: 2.01%

Run 3: Report of PCC-Allegro — Data Link

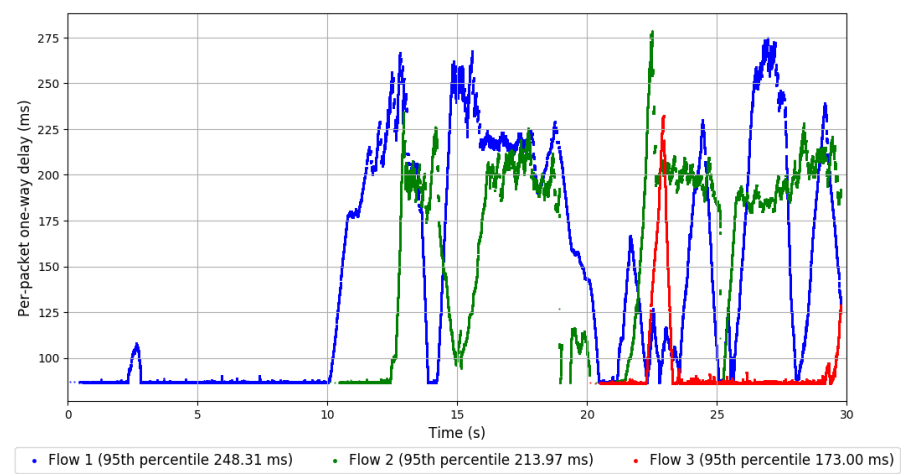
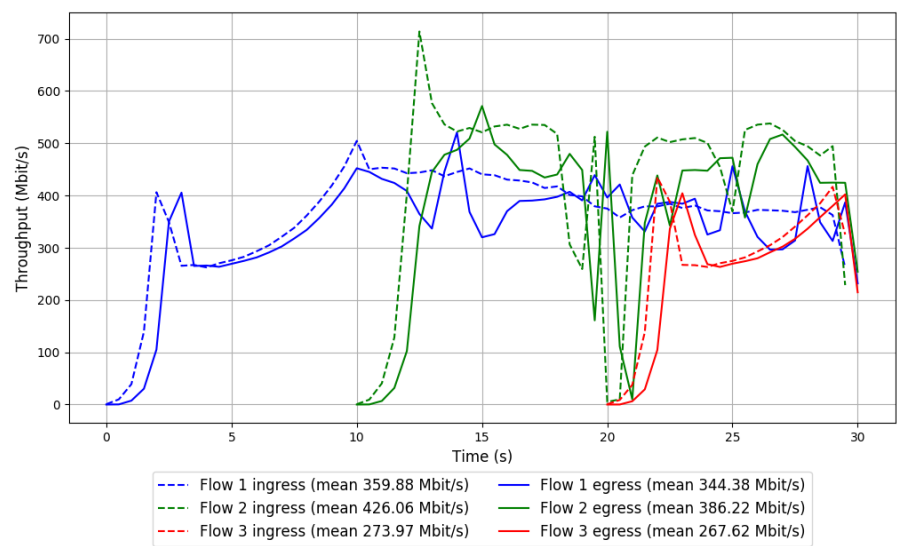


Run 4: Statistics of PCC-Allegro

Start at: 2018-11-02 23:44:09
End at: 2018-11-02 23:44:39
Local clock offset: 0.421 ms
Remote clock offset: -0.051 ms

Below is generated by plot.py at 2018-11-03 02:03:22
Datalink statistics
-- Total of 3 flows:
Average throughput: 687.35 Mbit/s
95th percentile per-packet one-way delay: 234.482 ms
Loss rate: 6.71%
-- Flow 1:
Average throughput: 344.38 Mbit/s
95th percentile per-packet one-way delay: 248.307 ms
Loss rate: 4.86%
-- Flow 2:
Average throughput: 386.22 Mbit/s
95th percentile per-packet one-way delay: 213.969 ms
Loss rate: 9.90%
-- Flow 3:
Average throughput: 267.62 Mbit/s
95th percentile per-packet one-way delay: 172.997 ms
Loss rate: 4.05%

Run 4: Report of PCC-Allegro — Data Link



Run 5: Statistics of PCC-Allegro

Start at: 2018-11-03 00:15:21

End at: 2018-11-03 00:15:51

Local clock offset: -0.382 ms

Remote clock offset: -0.09 ms

Below is generated by plot.py at 2018-11-03 02:03:22

Datalink statistics

-- Total of 3 flows:

Average throughput: 646.38 Mbit/s

95th percentile per-packet one-way delay: 206.609 ms

Loss rate: 2.67%

-- Flow 1:

Average throughput: 350.13 Mbit/s

95th percentile per-packet one-way delay: 202.866 ms

Loss rate: 1.78%

-- Flow 2:

Average throughput: 326.66 Mbit/s

95th percentile per-packet one-way delay: 242.492 ms

Loss rate: 4.11%

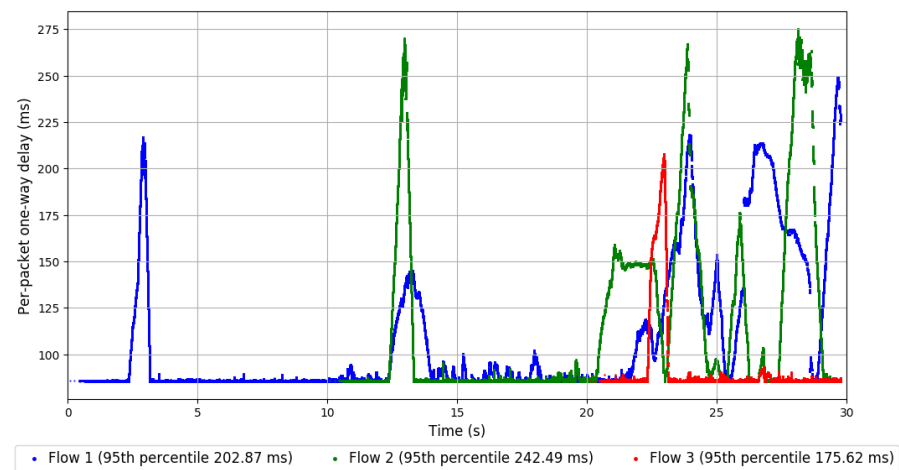
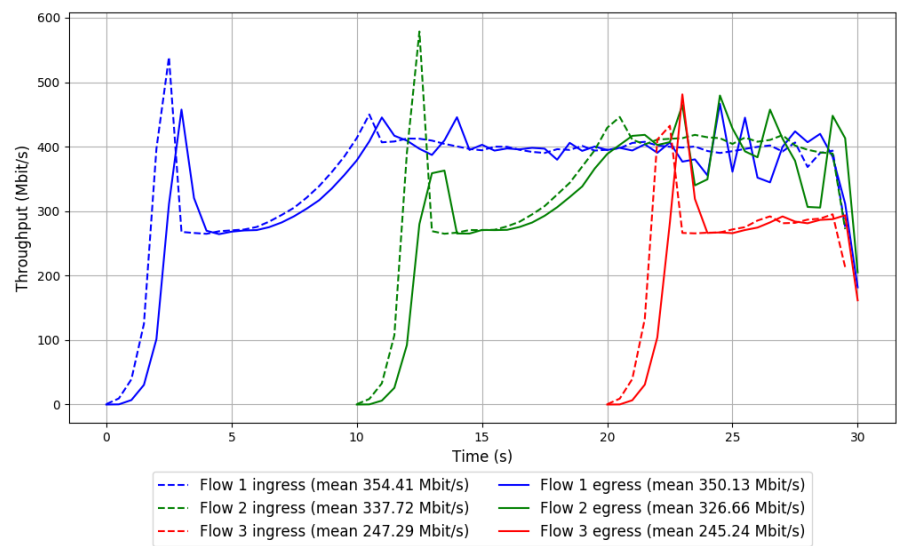
-- Flow 3:

Average throughput: 245.24 Mbit/s

95th percentile per-packet one-way delay: 175.624 ms

Loss rate: 2.57%

Run 5: Report of PCC-Allegro — Data Link

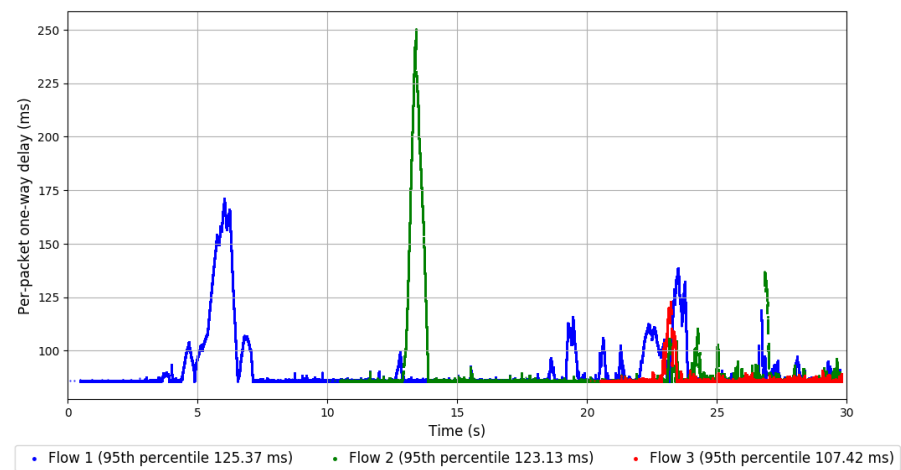
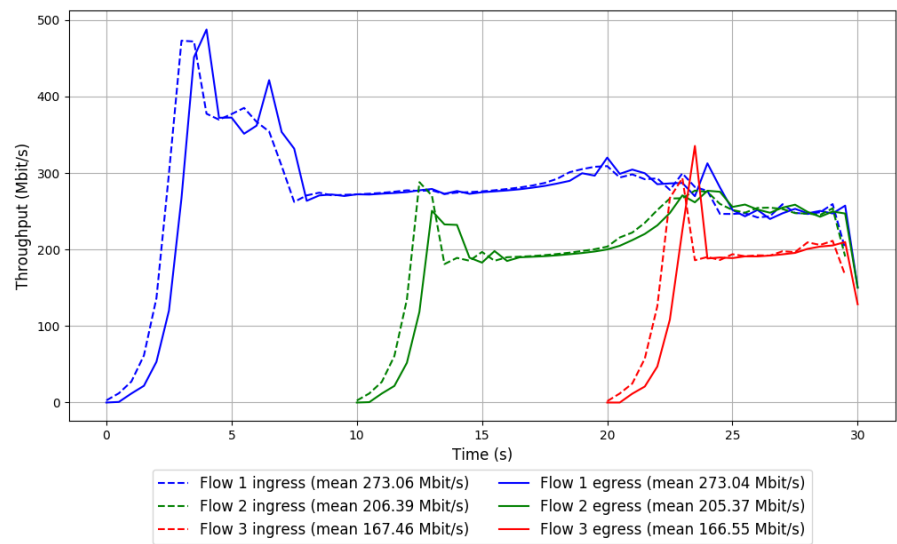


```
Run 1: Statistics of PCC-Expr

Start at: 2018-11-02 22:13:13
End at: 2018-11-02 22:13:44
Local clock offset: 0.033 ms
Remote clock offset: 0.143 ms

# Below is generated by plot.py at 2018-11-03 02:03:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 463.51 Mbit/s
95th percentile per-packet one-way delay: 119.724 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 273.04 Mbit/s
95th percentile per-packet one-way delay: 125.370 ms
Loss rate: 0.58%
-- Flow 2:
Average throughput: 205.37 Mbit/s
95th percentile per-packet one-way delay: 123.133 ms
Loss rate: 1.36%
-- Flow 3:
Average throughput: 166.55 Mbit/s
95th percentile per-packet one-way delay: 107.418 ms
Loss rate: 2.28%
```

Run 1: Report of PCC-Expr — Data Link



Run 2: Statistics of PCC-Expr

Start at: 2018-11-02 22:43:55

End at: 2018-11-02 22:44:25

Local clock offset: 0.043 ms

Remote clock offset: 0.113 ms

Below is generated by plot.py at 2018-11-03 02:03:22

Datalink statistics

-- Total of 3 flows:

Average throughput: 490.90 Mbit/s

95th percentile per-packet one-way delay: 192.644 ms

Loss rate: 2.80%

-- Flow 1:

Average throughput: 277.81 Mbit/s

95th percentile per-packet one-way delay: 125.566 ms

Loss rate: 1.02%

-- Flow 2:

Average throughput: 234.55 Mbit/s

95th percentile per-packet one-way delay: 211.181 ms

Loss rate: 6.00%

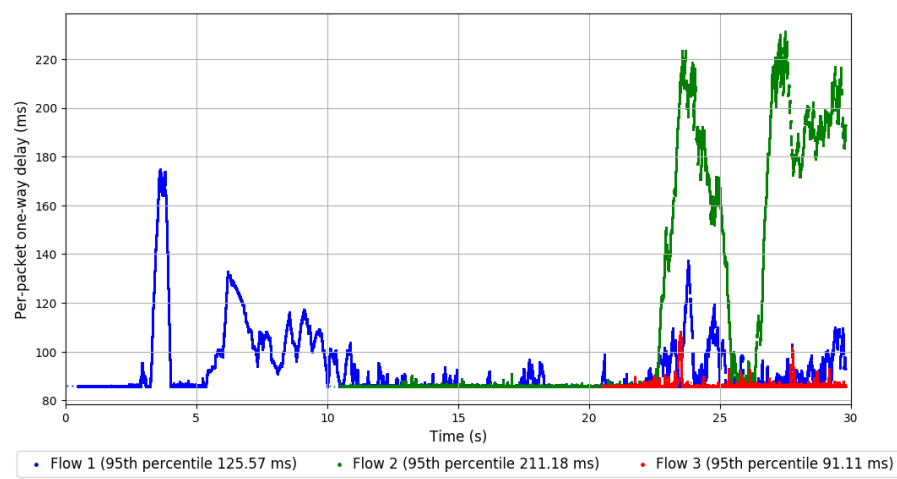
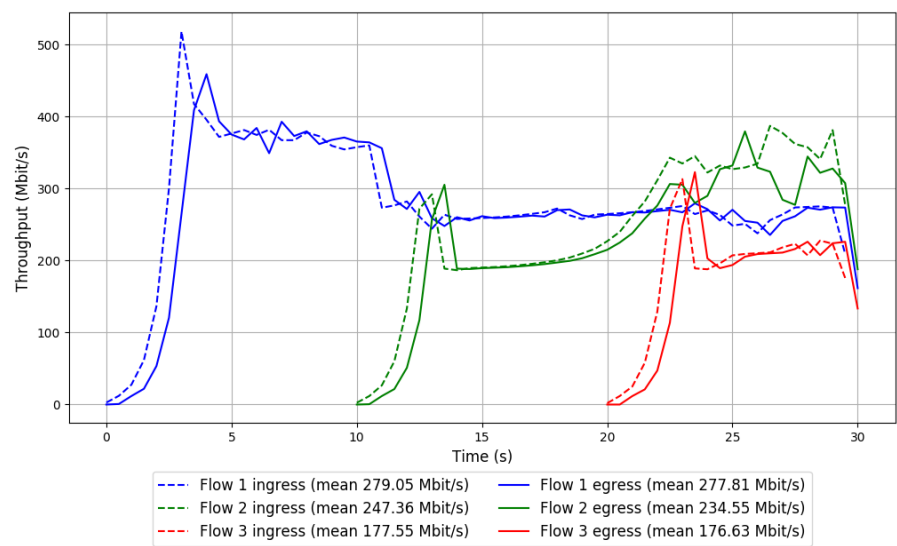
-- Flow 3:

Average throughput: 176.63 Mbit/s

95th percentile per-packet one-way delay: 91.115 ms

Loss rate: 2.26%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

Start at: 2018-11-02 23:14:37

End at: 2018-11-02 23:15:07

Local clock offset: -0.015 ms

Remote clock offset: 0.054 ms

Below is generated by plot.py at 2018-11-03 02:03:22

Datalink statistics

-- Total of 3 flows:

Average throughput: 513.06 Mbit/s

95th percentile per-packet one-way delay: 198.390 ms

Loss rate: 2.97%

-- Flow 1:

Average throughput: 277.47 Mbit/s

95th percentile per-packet one-way delay: 187.922 ms

Loss rate: 2.00%

-- Flow 2:

Average throughput: 231.90 Mbit/s

95th percentile per-packet one-way delay: 154.106 ms

Loss rate: 0.95%

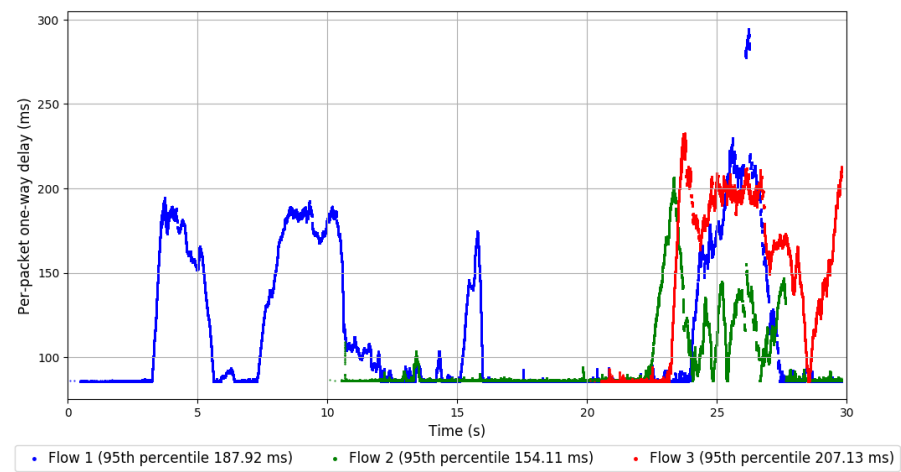
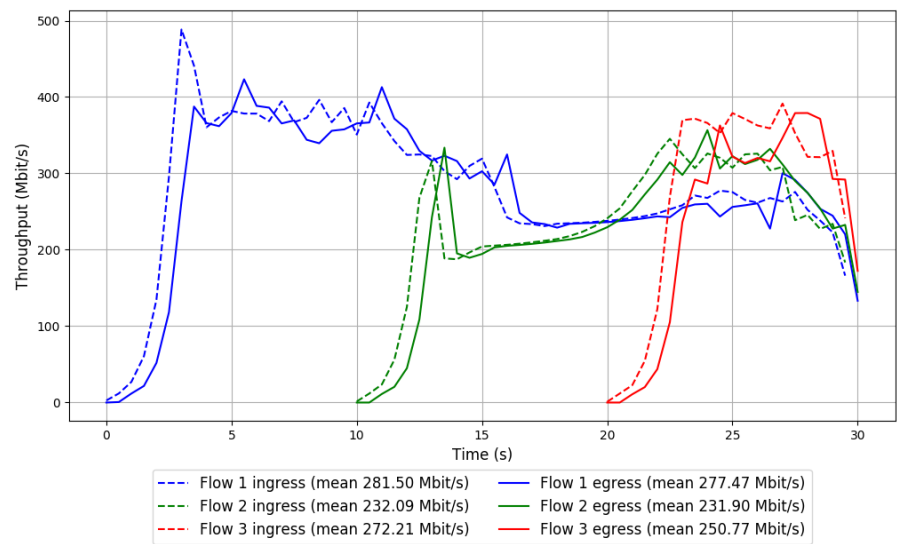
-- Flow 3:

Average throughput: 250.77 Mbit/s

95th percentile per-packet one-way delay: 207.126 ms

Loss rate: 9.48%

Run 3: Report of PCC-Expr — Data Link

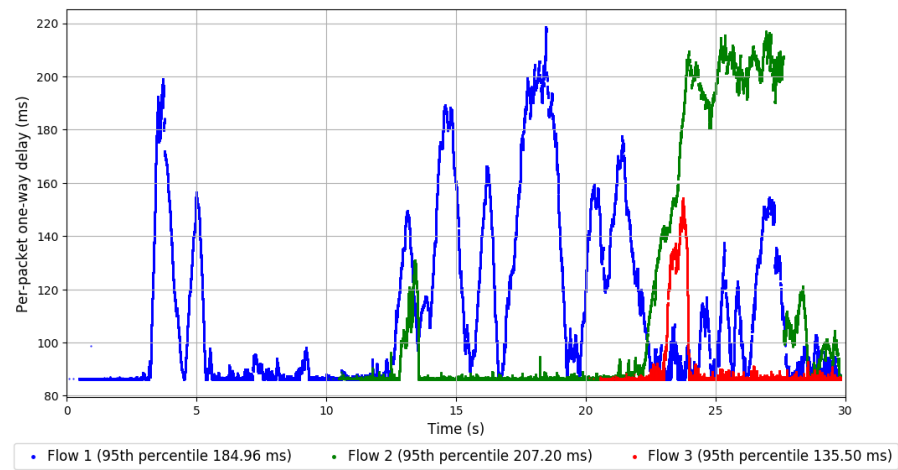
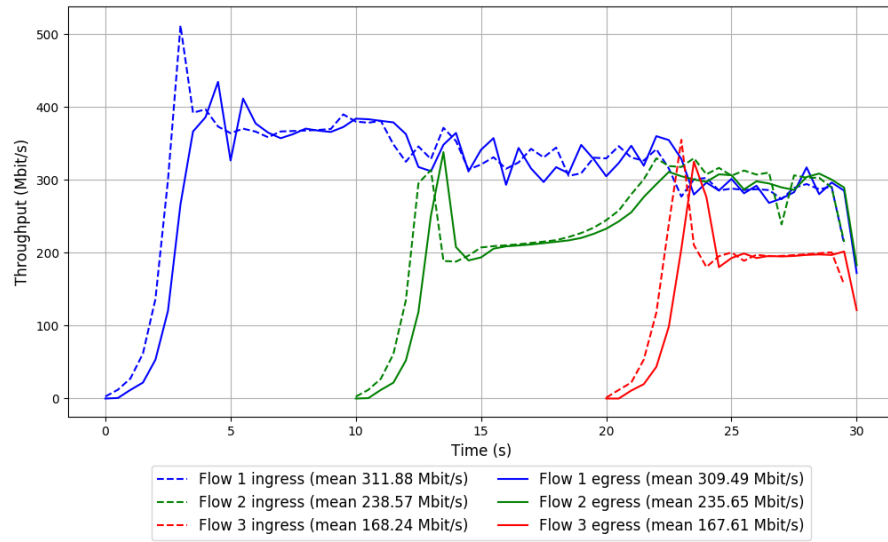


Run 4: Statistics of PCC-Expr

Start at: 2018-11-02 23:46:14
End at: 2018-11-02 23:46:44
Local clock offset: 0.4 ms
Remote clock offset: -0.063 ms

Below is generated by plot.py at 2018-11-03 02:03:22
Datalink statistics
-- Total of 3 flows:
Average throughput: 520.39 Mbit/s
95th percentile per-packet one-way delay: 200.234 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 309.49 Mbit/s
95th percentile per-packet one-way delay: 184.959 ms
Loss rate: 1.34%
-- Flow 2:
Average throughput: 235.65 Mbit/s
95th percentile per-packet one-way delay: 207.200 ms
Loss rate: 2.09%
-- Flow 3:
Average throughput: 167.61 Mbit/s
95th percentile per-packet one-way delay: 135.501 ms
Loss rate: 2.12%

Run 4: Report of PCC-Expr — Data Link



Run 5: Statistics of PCC-Expr

Start at: 2018-11-03 00:17:22

End at: 2018-11-03 00:17:52

Local clock offset: -0.192 ms

Remote clock offset: -0.08 ms

Below is generated by plot.py at 2018-11-03 02:05:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 489.38 Mbit/s

95th percentile per-packet one-way delay: 158.077 ms

Loss rate: 1.19%

-- Flow 1:

Average throughput: 292.40 Mbit/s

95th percentile per-packet one-way delay: 127.055 ms

Loss rate: 1.08%

-- Flow 2:

Average throughput: 215.86 Mbit/s

95th percentile per-packet one-way delay: 182.699 ms

Loss rate: 1.02%

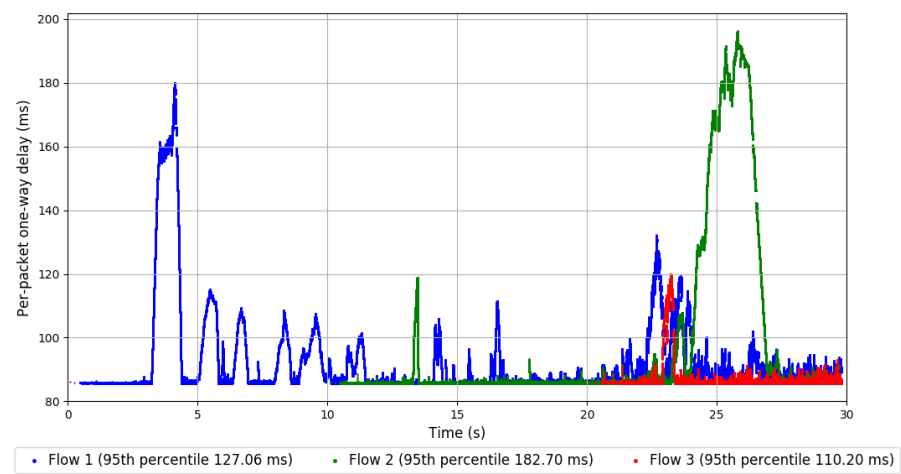
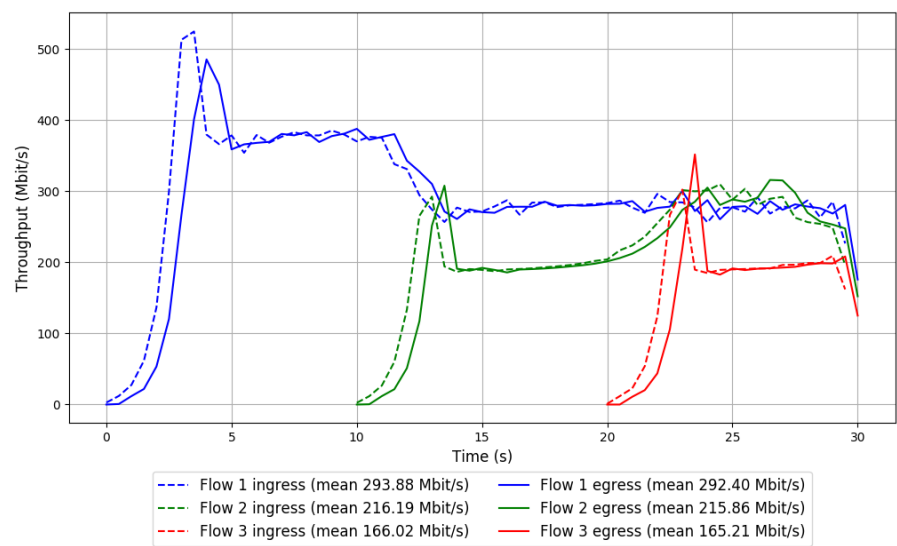
-- Flow 3:

Average throughput: 165.21 Mbit/s

95th percentile per-packet one-way delay: 110.204 ms

Loss rate: 2.22%

Run 5: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-11-02 22:04:52

End at: 2018-11-02 22:05:22

Local clock offset: 0.171 ms

Remote clock offset: 0.339 ms

Below is generated by plot.py at 2018-11-03 02:05:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 95.46 Mbit/s

95th percentile per-packet one-way delay: 86.200 ms

Loss rate: 1.40%

-- Flow 1:

Average throughput: 51.22 Mbit/s

95th percentile per-packet one-way delay: 86.224 ms

Loss rate: 0.96%

-- Flow 2:

Average throughput: 51.62 Mbit/s

95th percentile per-packet one-way delay: 85.759 ms

Loss rate: 1.19%

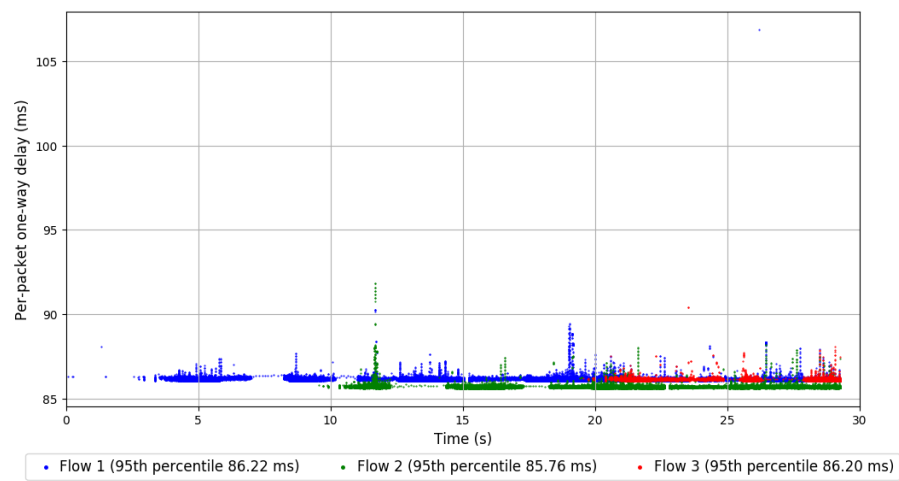
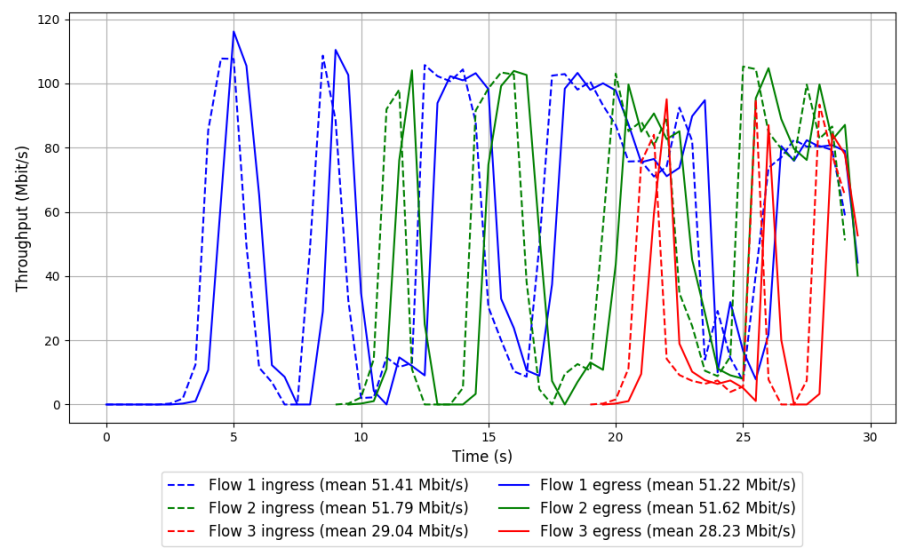
-- Flow 3:

Average throughput: 28.23 Mbit/s

95th percentile per-packet one-way delay: 86.198 ms

Loss rate: 4.47%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-11-02 22:35:23

End at: 2018-11-02 22:35:53

Local clock offset: -0.335 ms

Remote clock offset: 0.114 ms

Below is generated by plot.py at 2018-11-03 02:05:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 85.06 Mbit/s

95th percentile per-packet one-way delay: 85.846 ms

Loss rate: 0.99%

-- Flow 1:

Average throughput: 54.25 Mbit/s

95th percentile per-packet one-way delay: 85.536 ms

Loss rate: 0.85%

-- Flow 2:

Average throughput: 31.06 Mbit/s

95th percentile per-packet one-way delay: 85.944 ms

Loss rate: 0.62%

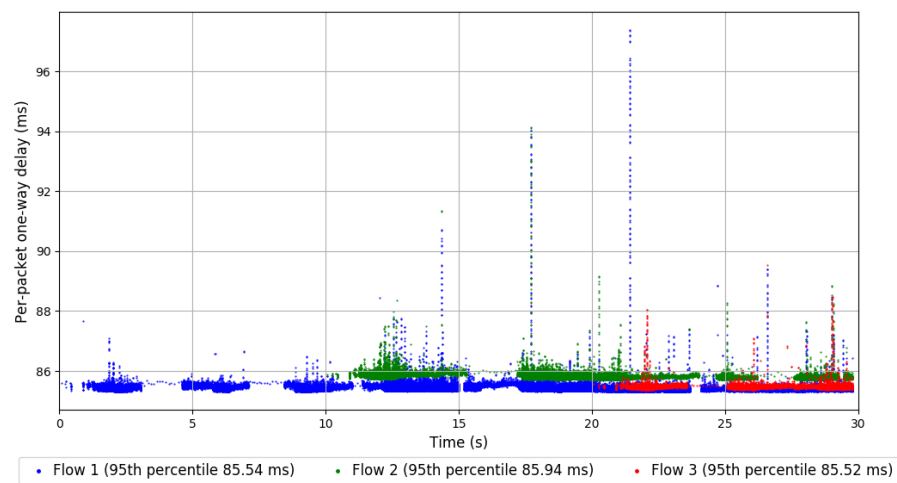
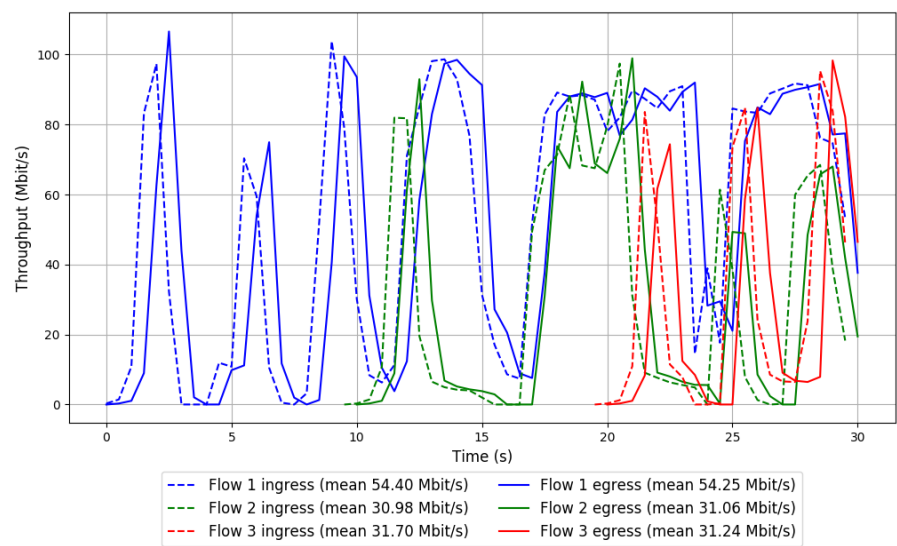
-- Flow 3:

Average throughput: 31.24 Mbit/s

95th percentile per-packet one-way delay: 85.523 ms

Loss rate: 2.47%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-11-02 23:06:12

End at: 2018-11-02 23:06:42

Local clock offset: 0.395 ms

Remote clock offset: 0.123 ms

Below is generated by plot.py at 2018-11-03 02:05:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 88.98 Mbit/s

95th percentile per-packet one-way delay: 86.581 ms

Loss rate: 0.97%

-- Flow 1:

Average throughput: 51.37 Mbit/s

95th percentile per-packet one-way delay: 86.607 ms

Loss rate: 0.83%

-- Flow 2:

Average throughput: 40.04 Mbit/s

95th percentile per-packet one-way delay: 86.252 ms

Loss rate: 1.64%

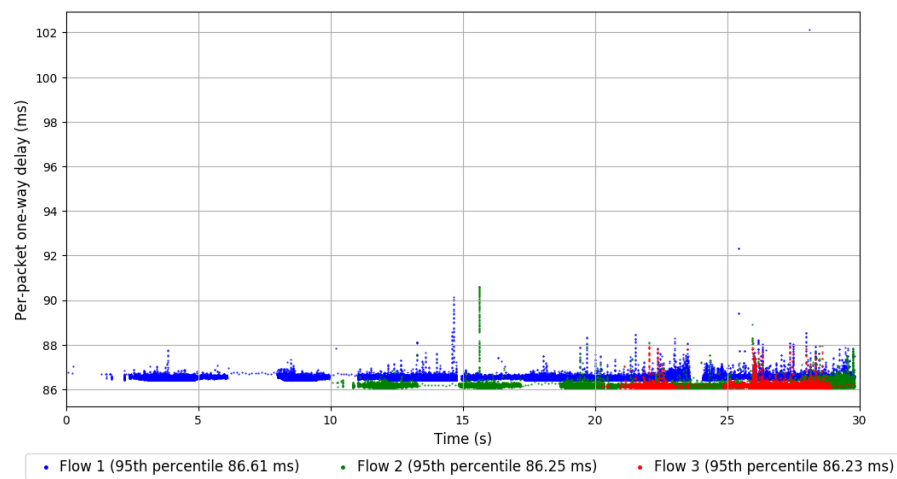
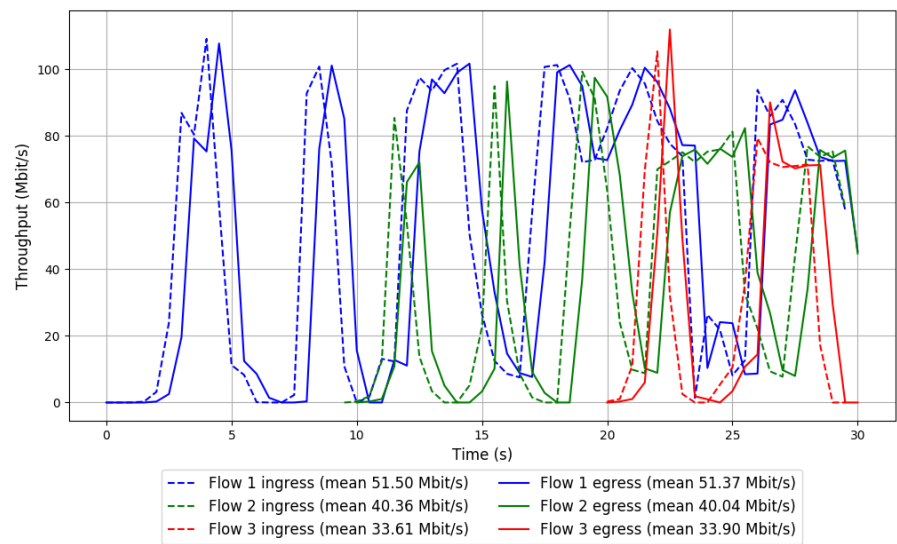
-- Flow 3:

Average throughput: 33.90 Mbit/s

95th percentile per-packet one-way delay: 86.234 ms

Loss rate: 0.00%

Run 3: Report of QUIC Cubic — Data Link



Run 4: Statistics of QUIC Cubic

Start at: 2018-11-02 23:37:42

End at: 2018-11-02 23:38:12

Local clock offset: 0.203 ms

Remote clock offset: -0.06 ms

Below is generated by plot.py at 2018-11-03 02:05:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 91.07 Mbit/s

95th percentile per-packet one-way delay: 86.181 ms

Loss rate: 0.75%

-- Flow 1:

Average throughput: 62.05 Mbit/s

95th percentile per-packet one-way delay: 86.192 ms

Loss rate: 0.92%

-- Flow 2:

Average throughput: 32.19 Mbit/s

95th percentile per-packet one-way delay: 86.154 ms

Loss rate: 0.21%

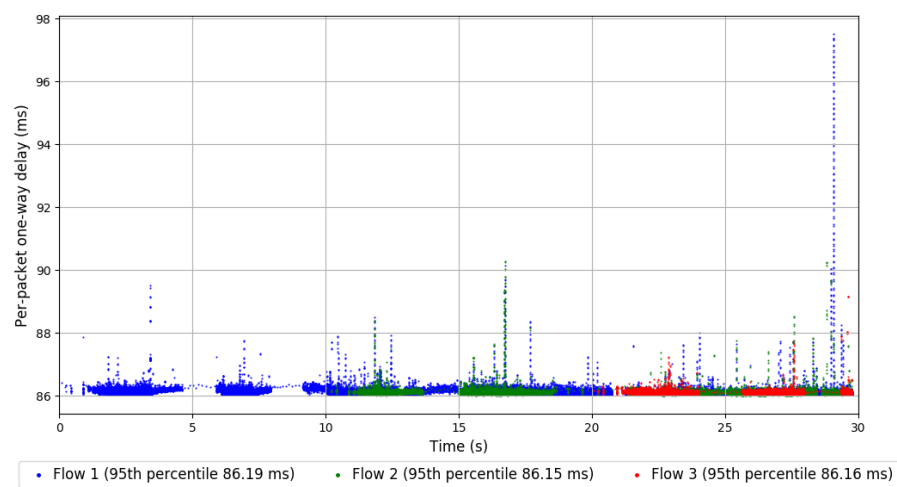
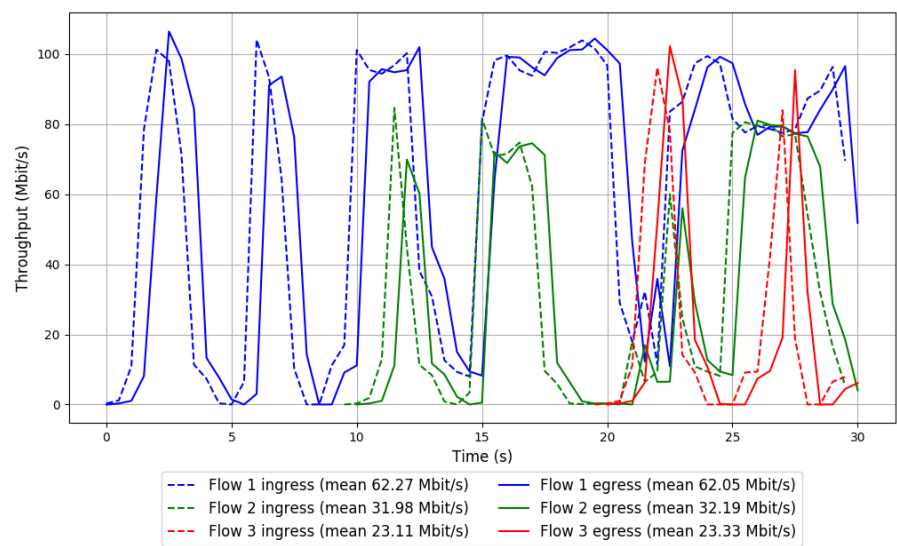
-- Flow 3:

Average throughput: 23.33 Mbit/s

95th percentile per-packet one-way delay: 86.157 ms

Loss rate: 0.83%

Run 4: Report of QUIC Cubic — Data Link

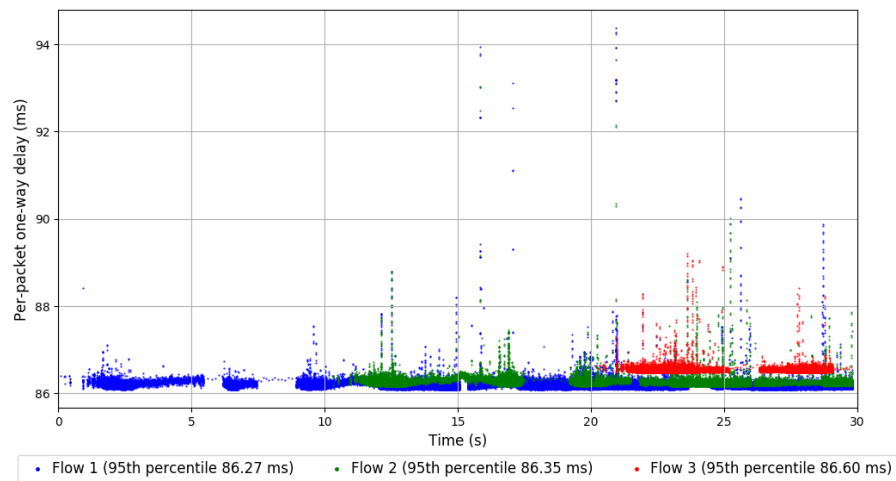
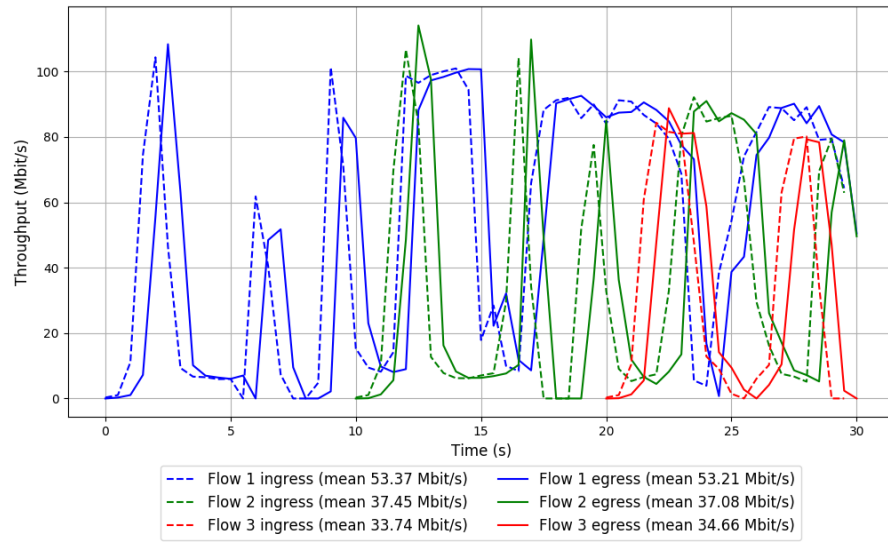


Run 5: Statistics of QUIC Cubic

Start at: 2018-11-03 00:08:55
End at: 2018-11-03 00:09:25
Local clock offset: 0.268 ms
Remote clock offset: -0.084 ms

Below is generated by plot.py at 2018-11-03 02:05:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 88.90 Mbit/s
95th percentile per-packet one-way delay: 86.538 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 53.21 Mbit/s
95th percentile per-packet one-way delay: 86.272 ms
Loss rate: 0.88%
-- Flow 2:
Average throughput: 37.08 Mbit/s
95th percentile per-packet one-way delay: 86.351 ms
Loss rate: 1.84%
-- Flow 3:
Average throughput: 34.66 Mbit/s
95th percentile per-packet one-way delay: 86.604 ms
Loss rate: 0.00%

Run 5: Report of QUIC Cubic — Data Link

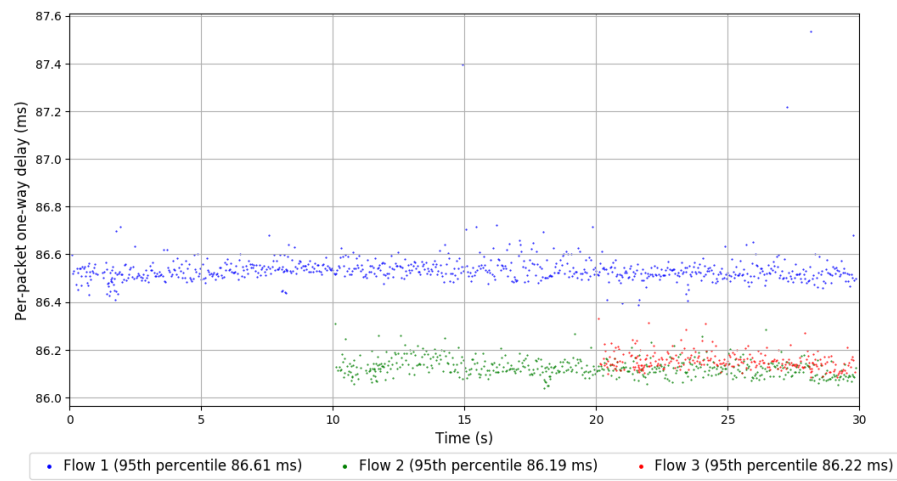
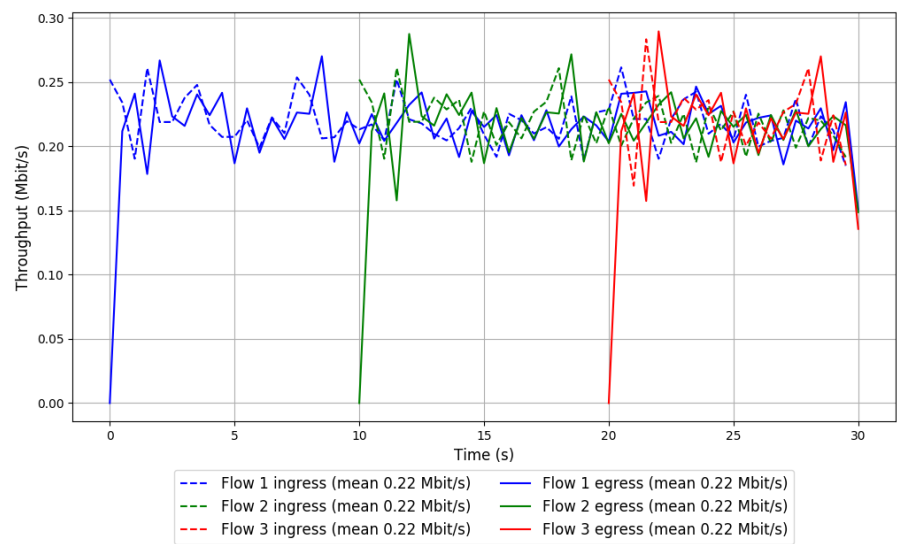


```
Run 1: Statistics of SReAM

Start at: 2018-11-02 22:16:48
End at: 2018-11-02 22:17:18
Local clock offset: 0.215 ms
Remote clock offset: 0.103 ms

# Below is generated by plot.py at 2018-11-03 02:05:40
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.579 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.608 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.191 ms
Loss rate: 0.82%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.220 ms
Loss rate: 1.85%
```

Run 1: Report of SReAM — Data Link



Run 2: Statistics of SReAM

Start at: 2018-11-02 22:47:38

End at: 2018-11-02 22:48:08

Local clock offset: 0.017 ms

Remote clock offset: 0.096 ms

Below is generated by plot.py at 2018-11-03 02:05:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 0.44 Mbit/s

95th percentile per-packet one-way delay: 86.049 ms

Loss rate: 0.84%

-- Flow 1:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 85.980 ms

Loss rate: 0.51%

-- Flow 2:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 85.951 ms

Loss rate: 0.82%

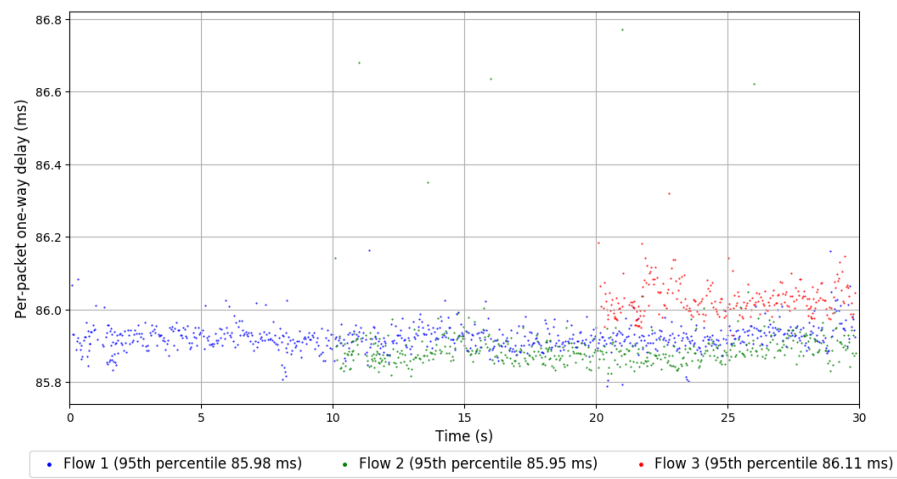
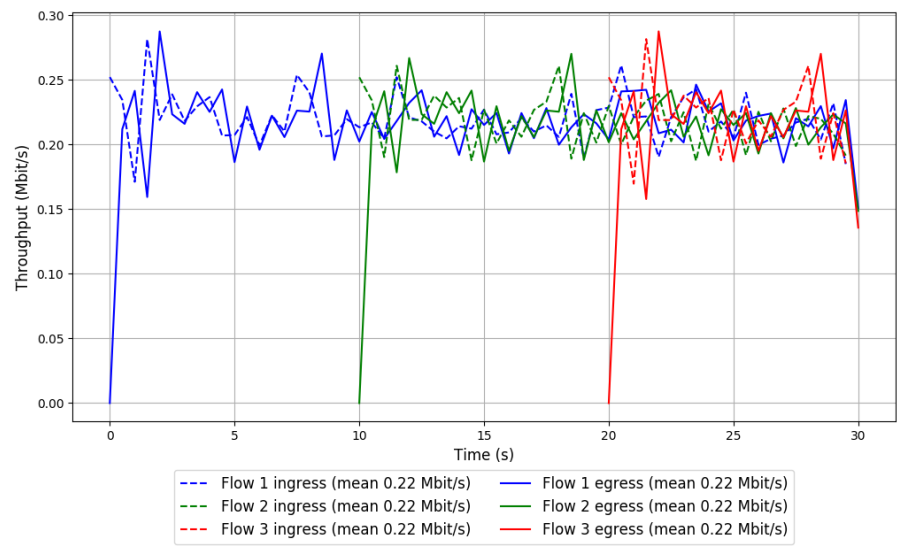
-- Flow 3:

Average throughput: 0.22 Mbit/s

95th percentile per-packet one-way delay: 86.106 ms

Loss rate: 1.85%

Run 2: Report of SReAM — Data Link

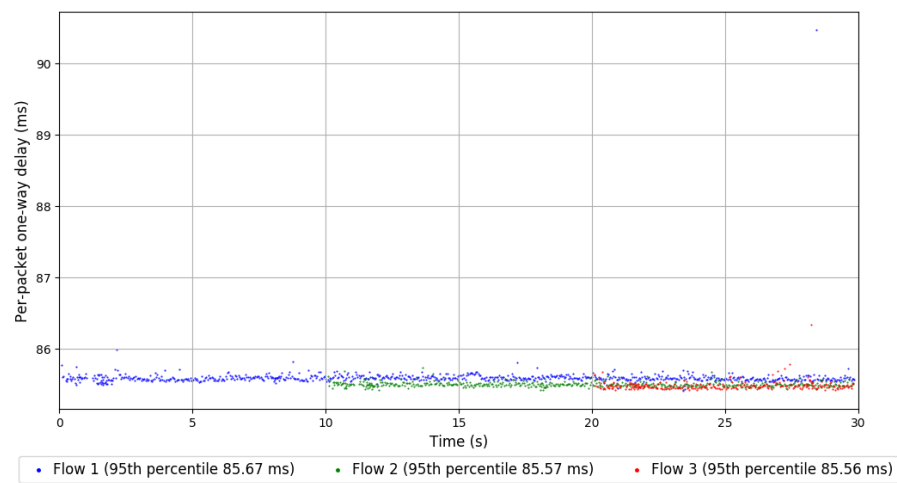
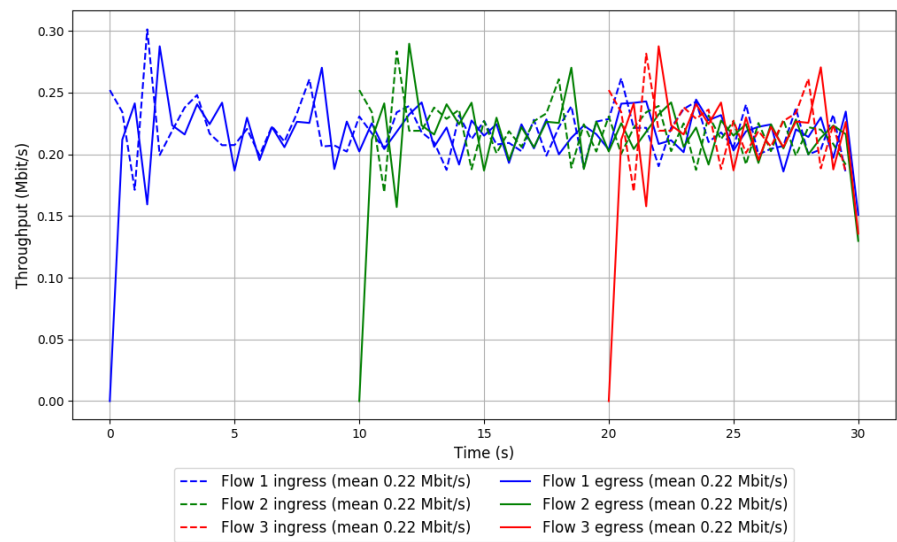


Run 3: Statistics of SReAM

Start at: 2018-11-02 23:18:27
End at: 2018-11-02 23:18:57
Local clock offset: -0.397 ms
Remote clock offset: 0.044 ms

Below is generated by plot.py at 2018-11-03 02:05:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 85.650 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.673 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.569 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.565 ms
Loss rate: 1.85%

Run 3: Report of SReAM — Data Link



Run 4: Statistics of SCReAM

/home/ubuntu/pantheon/data/2018-11-02T21-46-GCE-Iowa-to-GCE-Sydney-5-runs-3-flows/scream_sta

Run 4: Report of SReAM — Data Link

Figure is missing

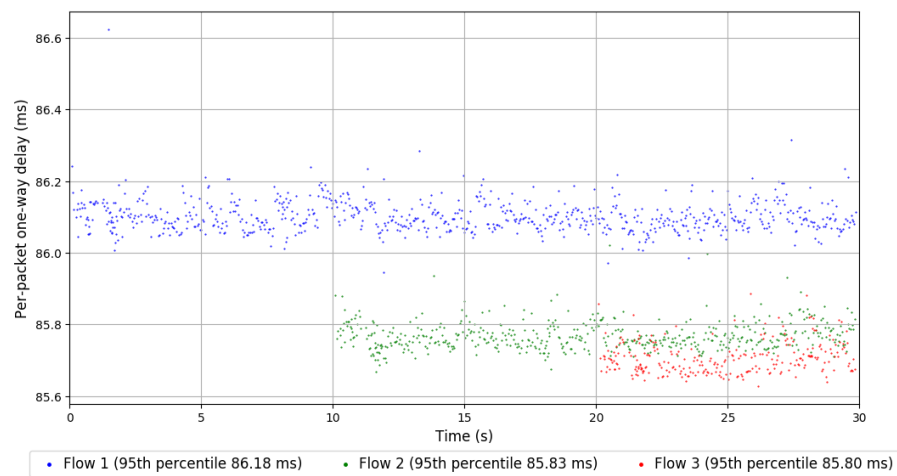
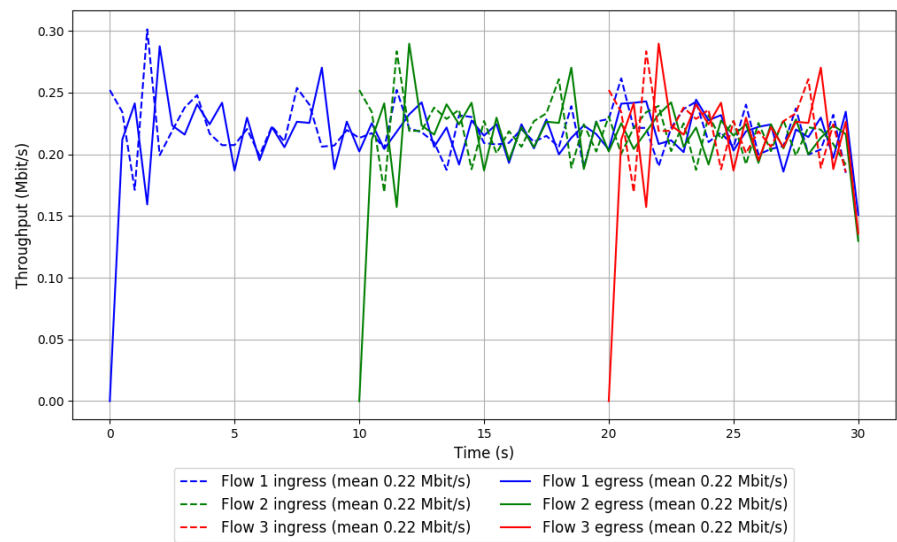
Figure is missing

Run 5: Statistics of SReAM

Start at: 2018-11-03 00:20:59
End at: 2018-11-03 00:21:29
Local clock offset: -0.388 ms
Remote clock offset: -0.08 ms

Below is generated by plot.py at 2018-11-03 02:05:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 86.157 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 86.177 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.835 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 85.795 ms
Loss rate: 1.85%

Run 5: Report of SReAM — Data Link

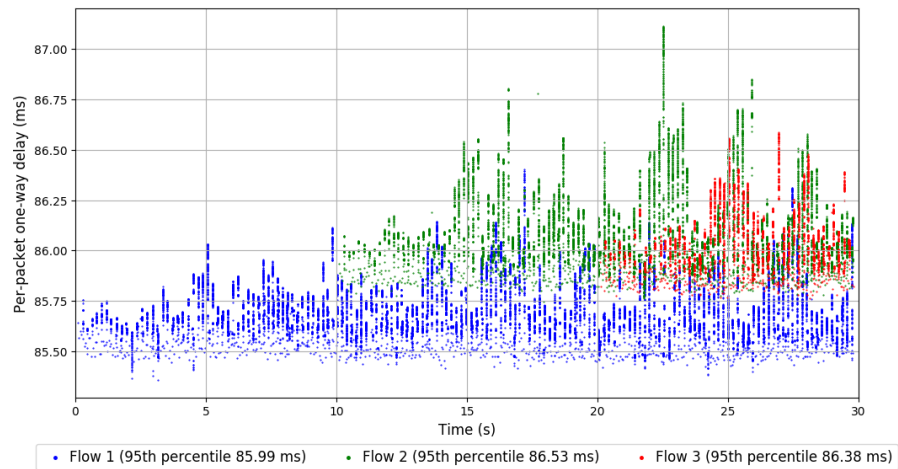
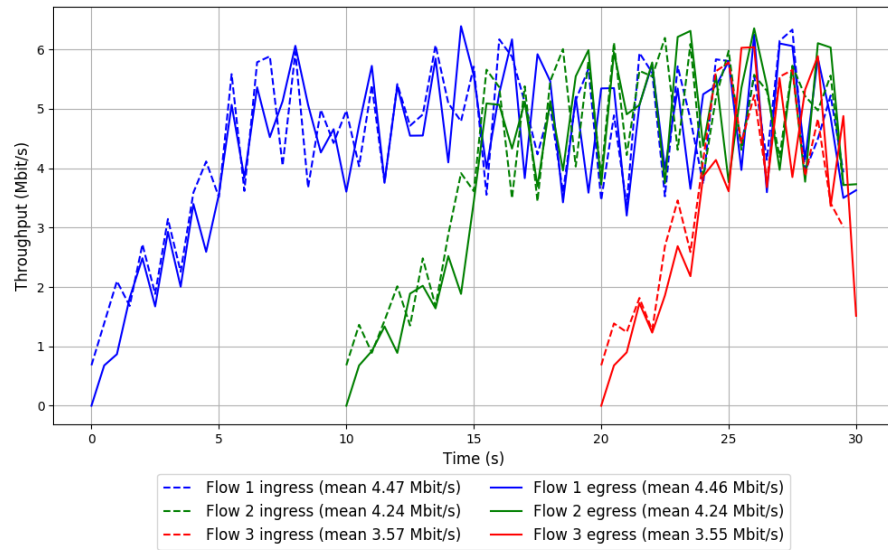


Run 1: Statistics of Sprout

Start at: 2018-11-02 21:54:40
End at: 2018-11-02 21:55:10
Local clock offset: -0.201 ms
Remote clock offset: 0.36 ms

Below is generated by plot.py at 2018-11-03 02:05:40
Datalink statistics
-- Total of 3 flows:
Average throughput: 8.43 Mbit/s
95th percentile per-packet one-way delay: 86.371 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 4.46 Mbit/s
95th percentile per-packet one-way delay: 85.989 ms
Loss rate: 0.76%
-- Flow 2:
Average throughput: 4.24 Mbit/s
95th percentile per-packet one-way delay: 86.526 ms
Loss rate: 1.08%
-- Flow 3:
Average throughput: 3.55 Mbit/s
95th percentile per-packet one-way delay: 86.377 ms
Loss rate: 2.12%

Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2018-11-02 22:25:43

End at: 2018-11-02 22:26:13

Local clock offset: 0.101 ms

Remote clock offset: 0.099 ms

Below is generated by plot.py at 2018-11-03 02:05:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 7.32 Mbit/s

95th percentile per-packet one-way delay: 86.782 ms

Loss rate: 1.13%

-- Flow 1:

Average throughput: 3.76 Mbit/s

95th percentile per-packet one-way delay: 86.614 ms

Loss rate: 0.57%

-- Flow 2:

Average throughput: 4.02 Mbit/s

95th percentile per-packet one-way delay: 86.943 ms

Loss rate: 1.28%

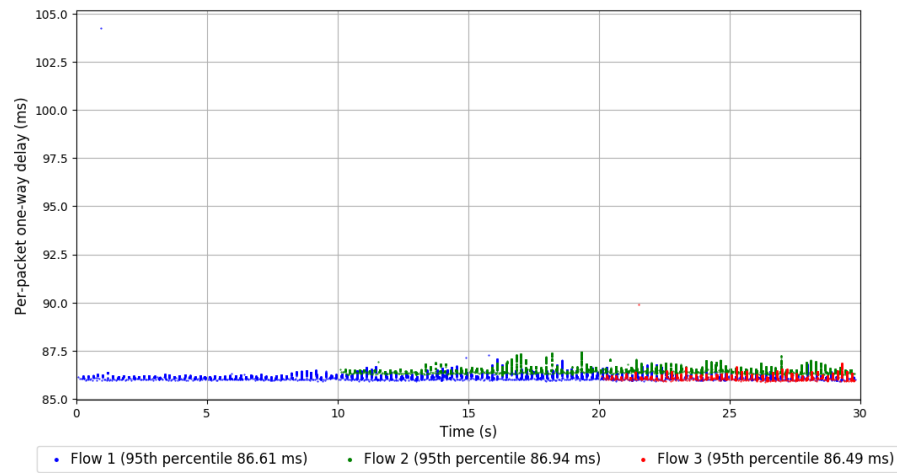
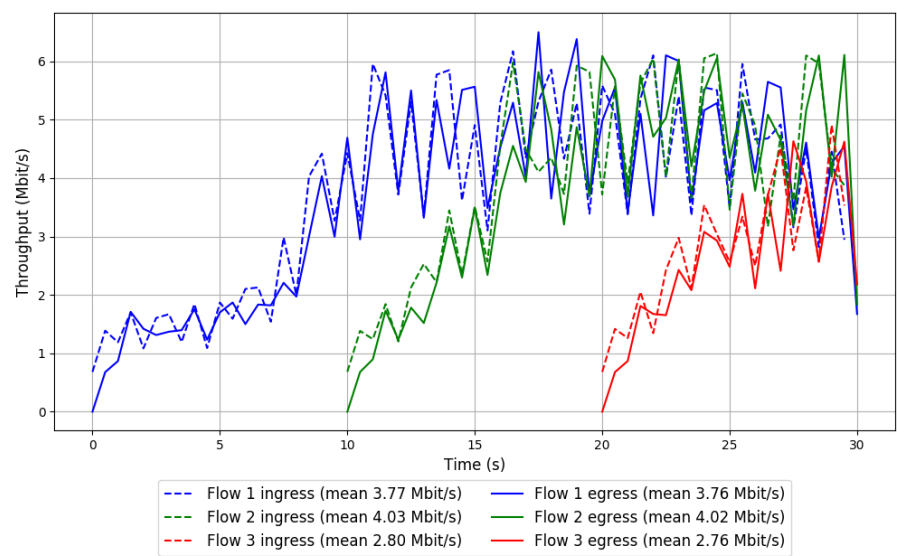
-- Flow 3:

Average throughput: 2.76 Mbit/s

95th percentile per-packet one-way delay: 86.488 ms

Loss rate: 2.97%

Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2018-11-02 22:56:34

End at: 2018-11-02 22:57:04

Local clock offset: 0.184 ms

Remote clock offset: 0.055 ms

Below is generated by plot.py at 2018-11-03 02:05:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 8.84 Mbit/s

95th percentile per-packet one-way delay: 86.949 ms

Loss rate: 1.10%

-- Flow 1:

Average throughput: 4.60 Mbit/s

95th percentile per-packet one-way delay: 86.624 ms

Loss rate: 0.71%

-- Flow 2:

Average throughput: 4.58 Mbit/s

95th percentile per-packet one-way delay: 87.125 ms

Loss rate: 1.00%

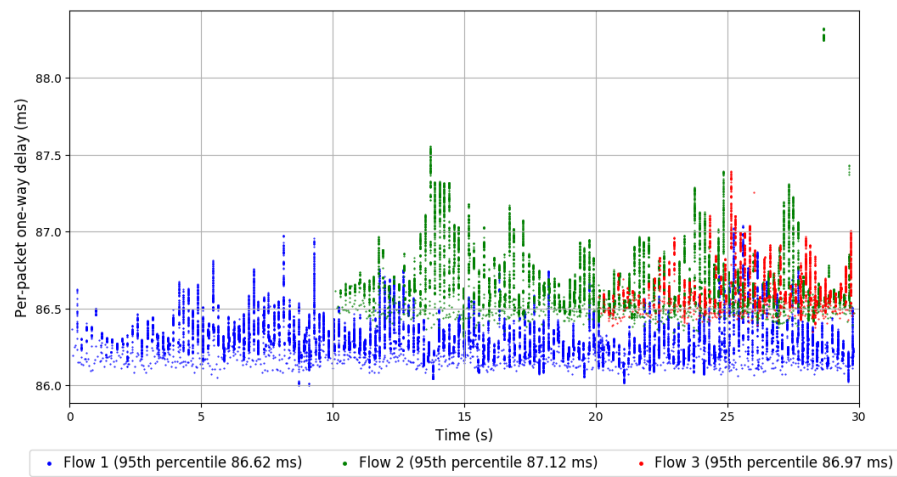
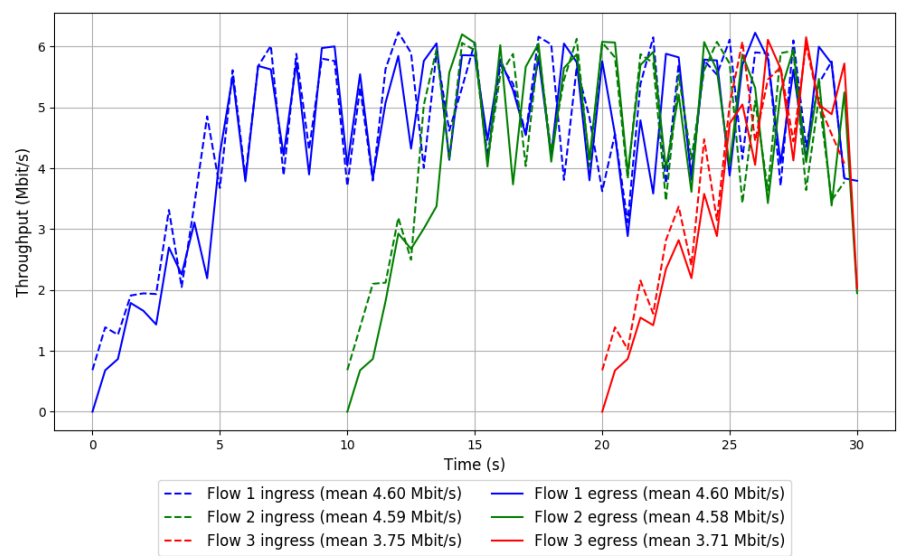
-- Flow 3:

Average throughput: 3.71 Mbit/s

95th percentile per-packet one-way delay: 86.975 ms

Loss rate: 2.77%

Run 3: Report of Sprout — Data Link

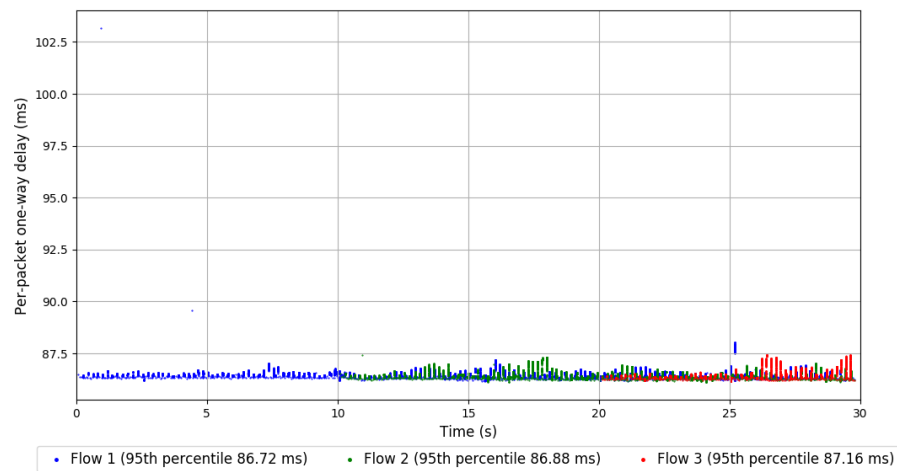
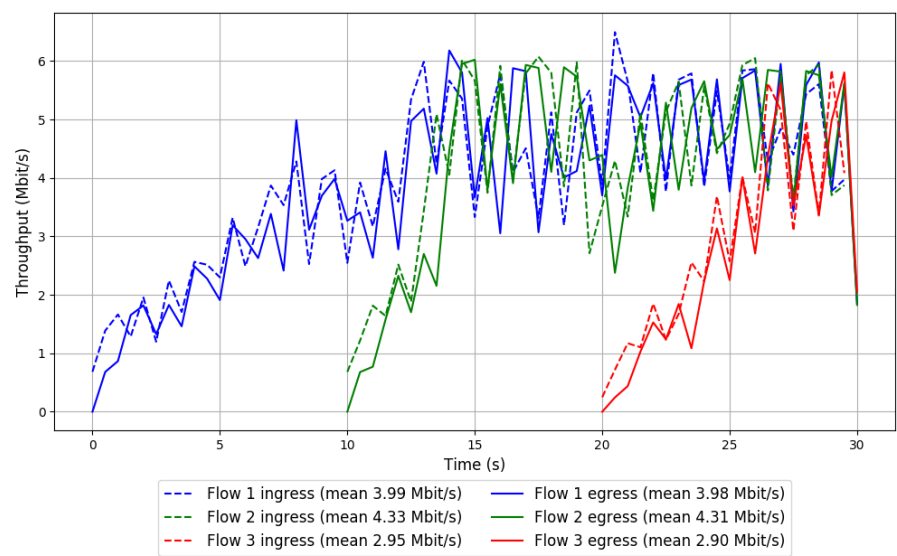


Run 4: Statistics of Sprout

Start at: 2018-11-02 23:27:20
End at: 2018-11-02 23:27:50
Local clock offset: -0.048 ms
Remote clock offset: 0.02 ms

```
# Below is generated by plot.py at 2018-11-03 02:05:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 7.78 Mbit/s
95th percentile per-packet one-way delay: 86.858 ms
Loss rate: 1.33%
-- Flow 1:
Average throughput: 3.98 Mbit/s
95th percentile per-packet one-way delay: 86.717 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 4.31 Mbit/s
95th percentile per-packet one-way delay: 86.880 ms
Loss rate: 1.19%
-- Flow 3:
Average throughput: 2.90 Mbit/s
95th percentile per-packet one-way delay: 87.161 ms
Loss rate: 3.56%
```

Run 4: Report of Sprout — Data Link

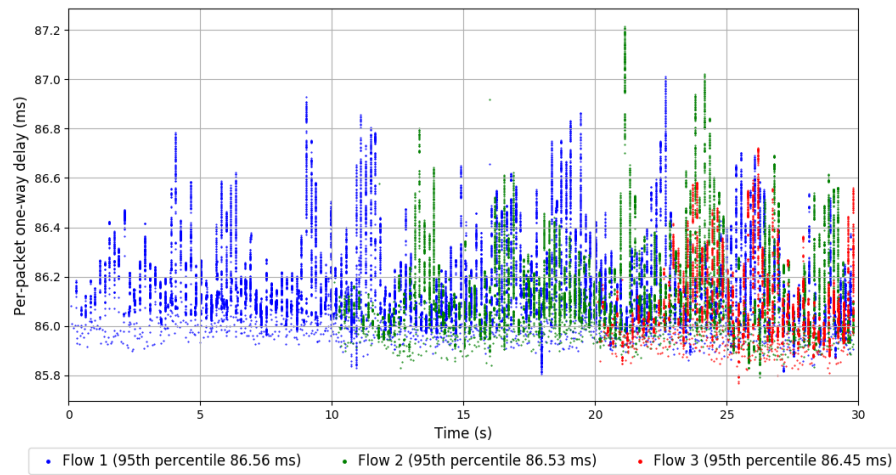
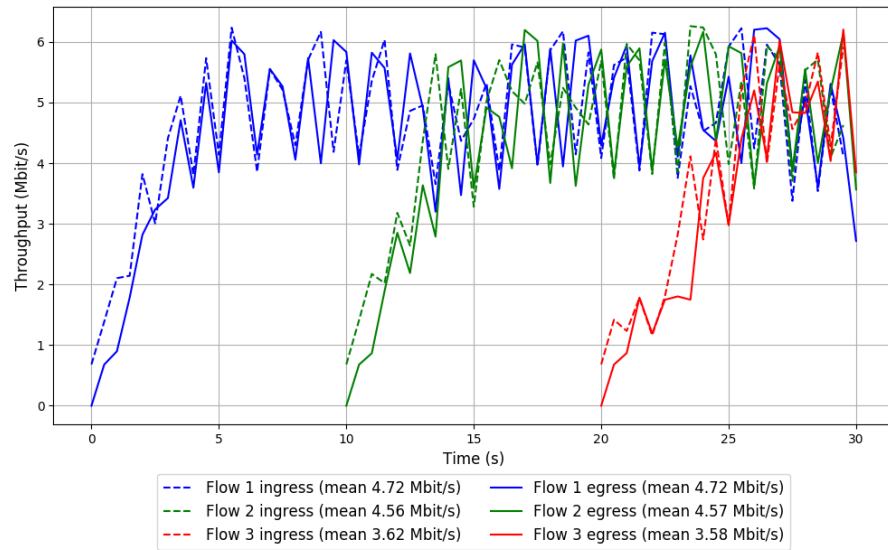


Run 5: Statistics of Sprout

Start at: 2018-11-02 23:59:25
End at: 2018-11-02 23:59:55
Local clock offset: -0.156 ms
Remote clock offset: -0.076 ms

```
# Below is generated by plot.py at 2018-11-03 02:05:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 8.92 Mbit/s
95th percentile per-packet one-way delay: 86.540 ms
Loss rate: 1.00%
-- Flow 1:
Average throughput: 4.72 Mbit/s
95th percentile per-packet one-way delay: 86.562 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 4.57 Mbit/s
95th percentile per-packet one-way delay: 86.532 ms
Loss rate: 0.59%
-- Flow 3:
Average throughput: 3.58 Mbit/s
95th percentile per-packet one-way delay: 86.454 ms
Loss rate: 2.89%
```

Run 5: Report of Sprout — Data Link

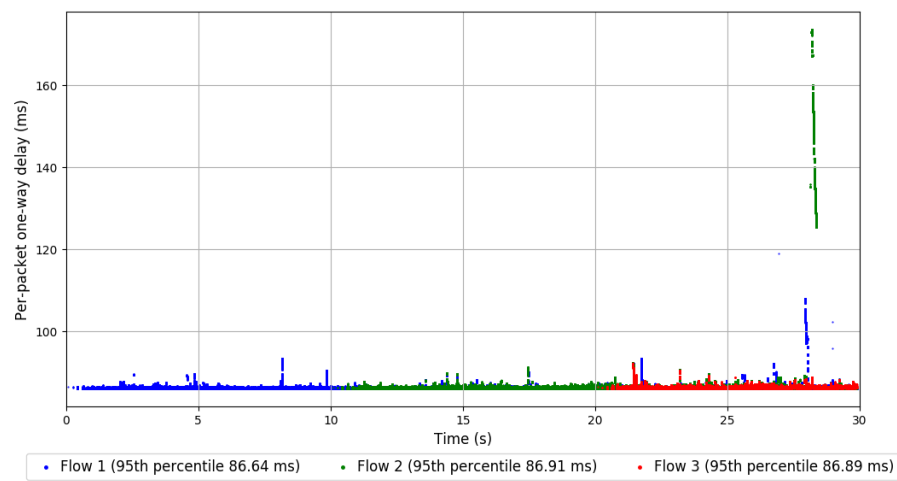
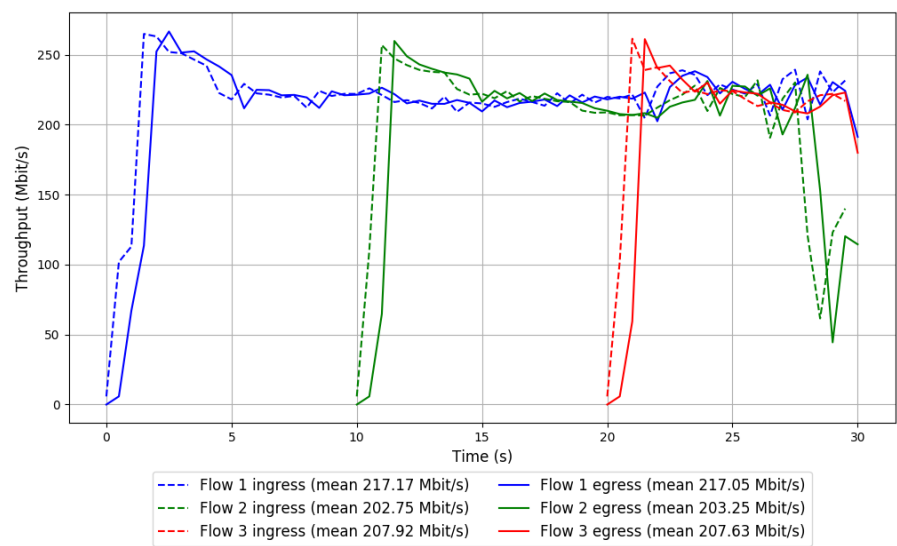


```
Run 1: Statistics of TaoVA-100x

Start at: 2018-11-02 21:48:56
End at: 2018-11-02 21:49:26
Local clock offset: 0.579 ms
Remote clock offset: 0.335 ms

# Below is generated by plot.py at 2018-11-03 02:13:41
# Datalink statistics
-- Total of 3 flows:
Average throughput: 420.24 Mbit/s
95th percentile per-packet one-way delay: 86.773 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 217.05 Mbit/s
95th percentile per-packet one-way delay: 86.637 ms
Loss rate: 0.63%
-- Flow 2:
Average throughput: 203.25 Mbit/s
95th percentile per-packet one-way delay: 86.909 ms
Loss rate: 0.63%
-- Flow 3:
Average throughput: 207.63 Mbit/s
95th percentile per-packet one-way delay: 86.886 ms
Loss rate: 1.86%
```

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



Run 2: Statistics of TaoVA-100x

Start at: 2018-11-02 22:19:56

End at: 2018-11-02 22:20:26

Local clock offset: -0.39 ms

Remote clock offset: 0.092 ms

Below is generated by plot.py at 2018-11-03 02:14:10

Datalink statistics

-- Total of 3 flows:

Average throughput: 422.16 Mbit/s

95th percentile per-packet one-way delay: 86.324 ms

Loss rate: 0.93%

-- Flow 1:

Average throughput: 217.21 Mbit/s

95th percentile per-packet one-way delay: 86.334 ms

Loss rate: 0.61%

-- Flow 2:

Average throughput: 212.28 Mbit/s

95th percentile per-packet one-way delay: 85.894 ms

Loss rate: 0.90%

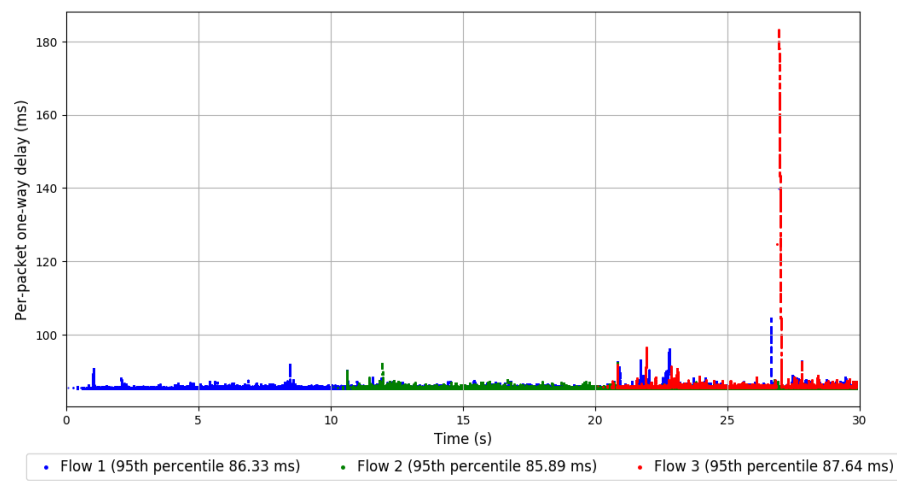
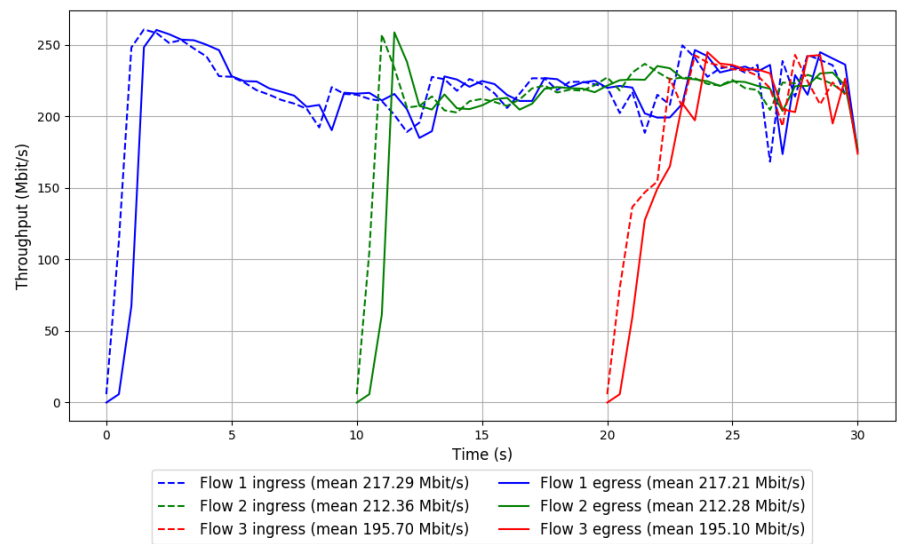
-- Flow 3:

Average throughput: 195.10 Mbit/s

95th percentile per-packet one-way delay: 87.643 ms

Loss rate: 2.03%

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



Run 3: Statistics of TaoVA-100x

Start at: 2018-11-02 22:50:46

End at: 2018-11-02 22:51:16

Local clock offset: 0.001 ms

Remote clock offset: 0.092 ms

Below is generated by plot.py at 2018-11-03 02:14:57

Datalink statistics

-- Total of 3 flows:

Average throughput: 428.03 Mbit/s

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

Loss rate: 0.86%

-- Flow 1:

Average throughput: 224.43 Mbit/s

95th percentile per-packet one-way delay: 86.148 ms

Loss rate: 0.60%

-- Flow 2:

Average throughput: 205.12 Mbit/s

95th percentile per-packet one-way delay: 86.767 ms

Loss rate: 0.81%

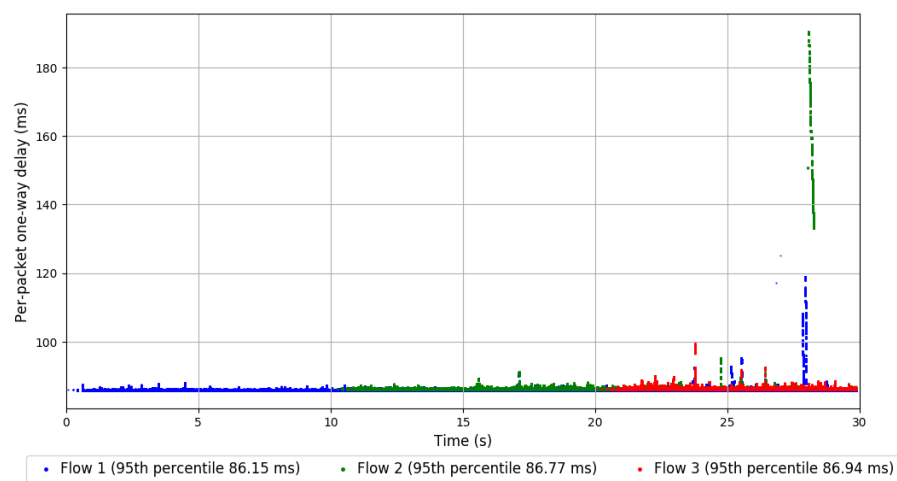
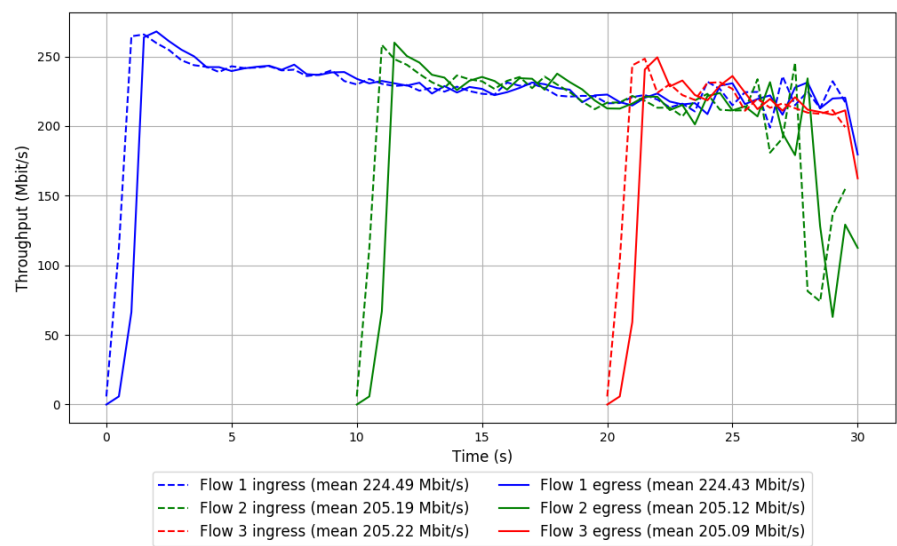
-- Flow 3:

Average throughput: 205.09 Mbit/s

95th percentile per-packet one-way delay: 86.938 ms

Loss rate: 1.80%

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



Run 4: Statistics of TaoVA-100x

Start at: 2018-11-02 23:21:31

End at: 2018-11-02 23:22:01

Local clock offset: -0.447 ms

Remote clock offset: 0.025 ms

Below is generated by plot.py at 2018-11-03 02:15:16

Datalink statistics

-- Total of 3 flows:

Average throughput: 421.13 Mbit/s

95th percentile per-packet one-way delay: 86.008 ms

Loss rate: 0.94%

-- Flow 1:

Average throughput: 220.22 Mbit/s

95th percentile per-packet one-way delay: 85.788 ms

Loss rate: 0.61%

-- Flow 2:

Average throughput: 197.62 Mbit/s

95th percentile per-packet one-way delay: 86.221 ms

Loss rate: 0.99%

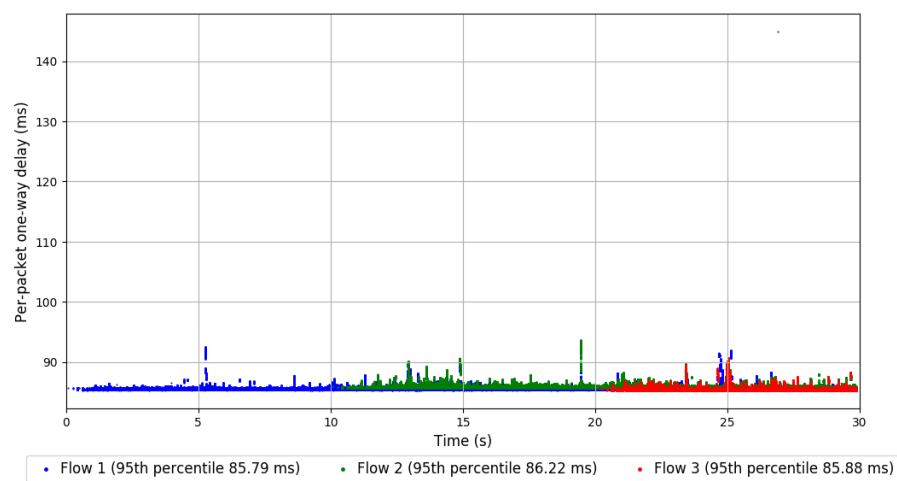
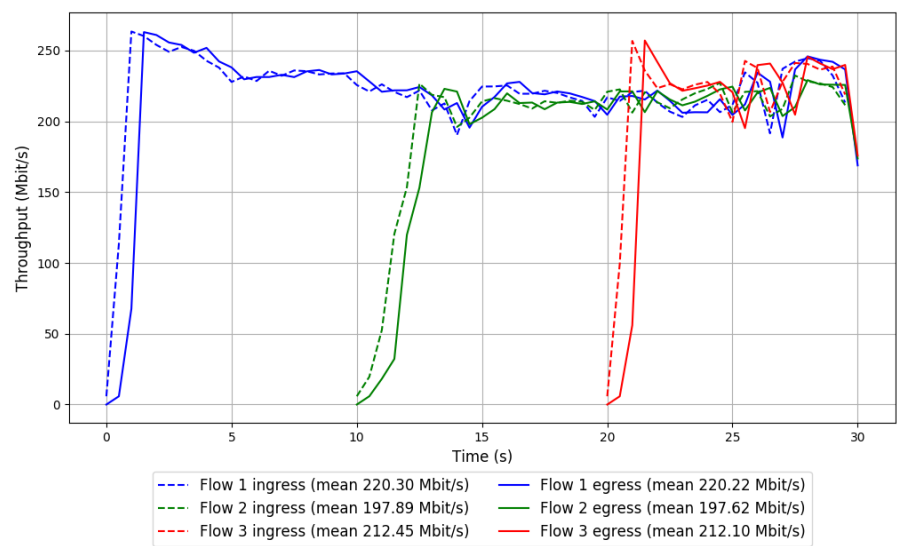
-- Flow 3:

Average throughput: 212.10 Mbit/s

95th percentile per-packet one-way delay: 85.877 ms

Loss rate: 1.90%

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

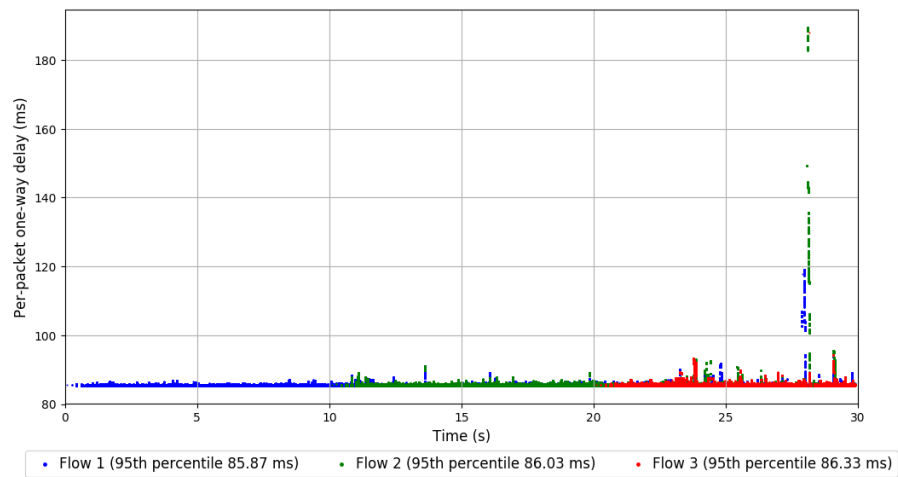
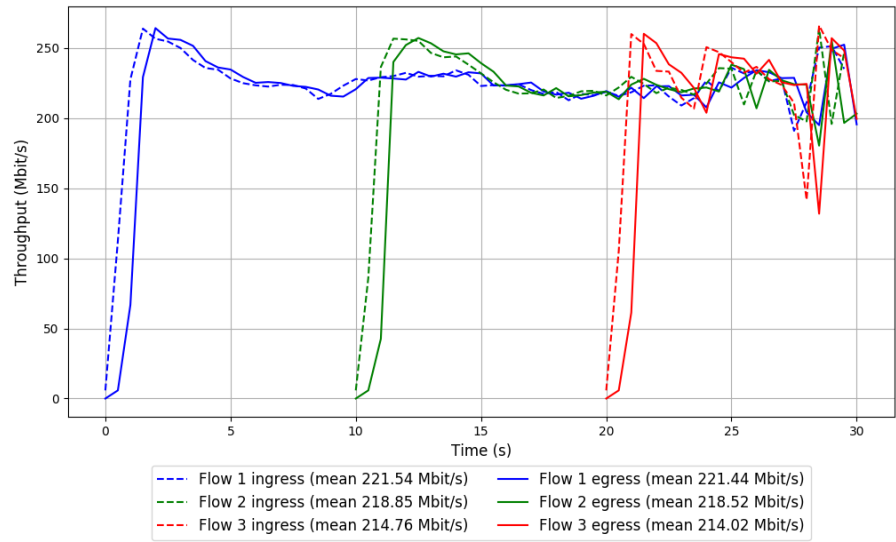


Run 5: Statistics of TaoVA-100x

Start at: 2018-11-02 23:53:36
End at: 2018-11-02 23:54:06
Local clock offset: -0.477 ms
Remote clock offset: -0.084 ms

Below is generated by plot.py at 2018-11-03 02:19:36
Datalink statistics
-- Total of 3 flows:
Average throughput: 436.86 Mbit/s
95th percentile per-packet one-way delay: 85.994 ms
Loss rate: 0.99%
-- Flow 1:
Average throughput: 221.44 Mbit/s
95th percentile per-packet one-way delay: 85.870 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 218.52 Mbit/s
95th percentile per-packet one-way delay: 86.030 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 214.02 Mbit/s
95th percentile per-packet one-way delay: 86.335 ms
Loss rate: 2.07%

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



Run 1: Statistics of TCP Vegas

Start at: 2018-11-02 21:59:09

End at: 2018-11-02 21:59:39

Local clock offset: 0.089 ms

Remote clock offset: 0.393 ms

Below is generated by plot.py at 2018-11-03 02:19:36

Datalink statistics

-- Total of 3 flows:

Average throughput: 740.52 Mbit/s

95th percentile per-packet one-way delay: 91.337 ms

Loss rate: 0.93%

-- Flow 1:

Average throughput: 382.28 Mbit/s

95th percentile per-packet one-way delay: 88.684 ms

Loss rate: 0.56%

-- Flow 2:

Average throughput: 369.34 Mbit/s

95th percentile per-packet one-way delay: 95.809 ms

Loss rate: 0.97%

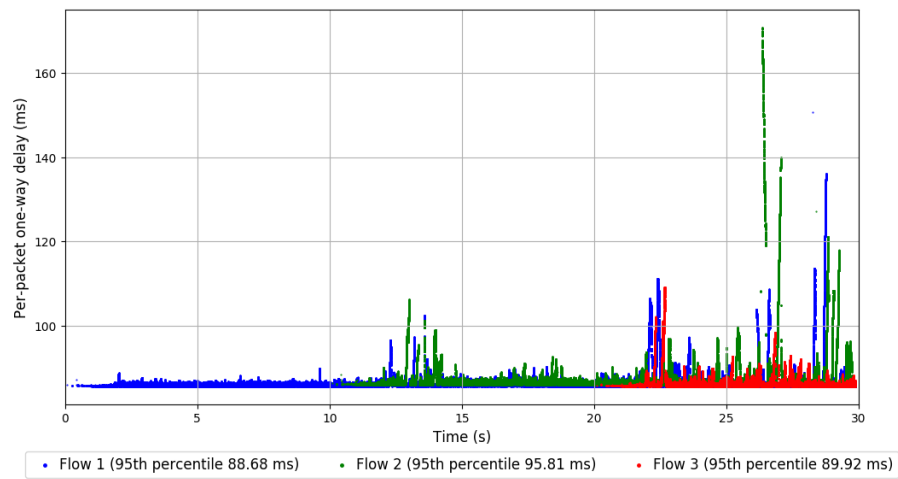
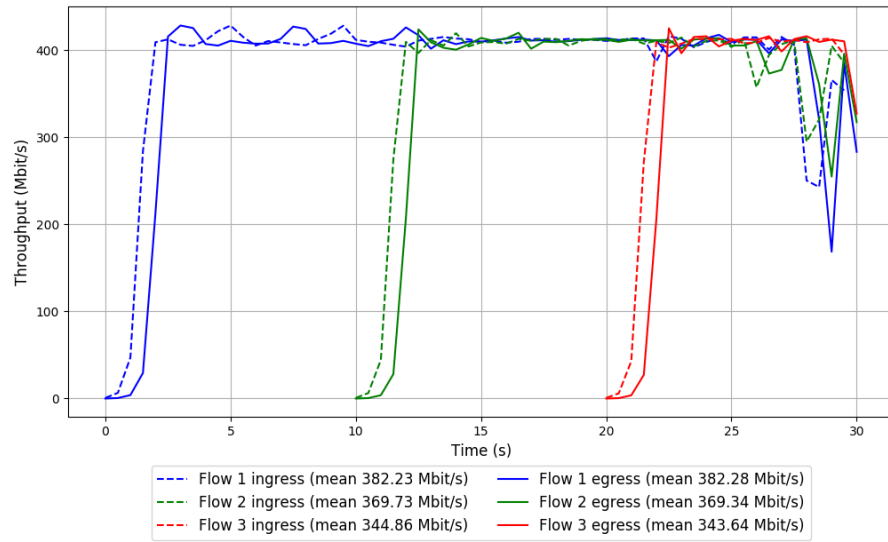
-- Flow 3:

Average throughput: 343.64 Mbit/s

95th percentile per-packet one-way delay: 89.917 ms

Loss rate: 2.07%

Run 1: Report of TCP Vegas — Data Link



Run 2: Statistics of TCP Vegas

Start at: 2018-11-02 22:29:49

End at: 2018-11-02 22:30:19

Local clock offset: 0.02 ms

Remote clock offset: 0.062 ms

Below is generated by plot.py at 2018-11-03 02:19:36

Datalink statistics

-- Total of 3 flows:

Average throughput: 721.14 Mbit/s

95th percentile per-packet one-way delay: 89.094 ms

Loss rate: 0.87%

-- Flow 1:

Average throughput: 385.94 Mbit/s

95th percentile per-packet one-way delay: 88.854 ms

Loss rate: 0.62%

-- Flow 2:

Average throughput: 355.68 Mbit/s

95th percentile per-packet one-way delay: 89.267 ms

Loss rate: 0.83%

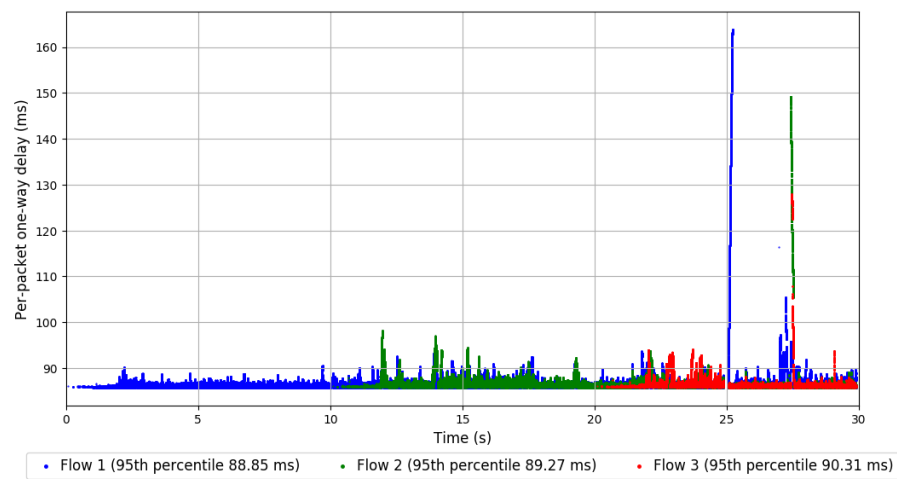
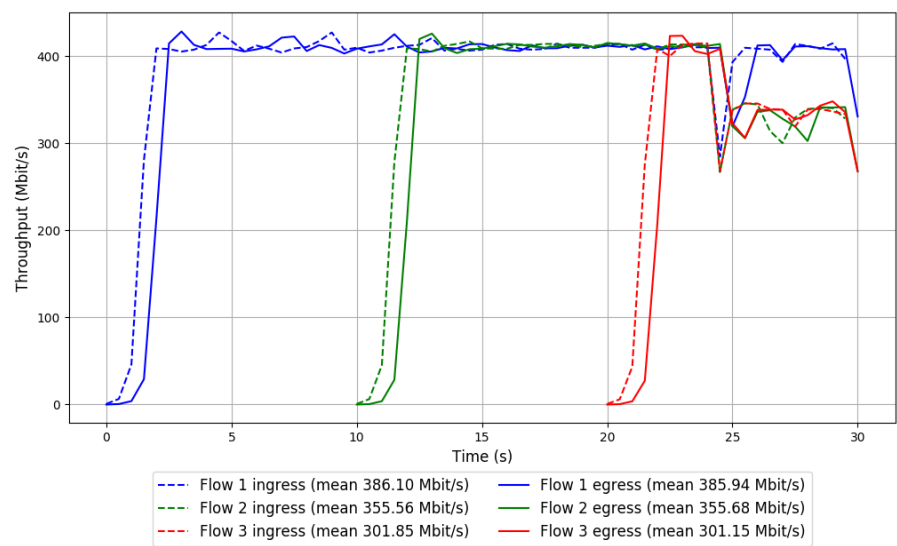
-- Flow 3:

Average throughput: 301.15 Mbit/s

95th percentile per-packet one-way delay: 90.306 ms

Loss rate: 1.95%

Run 2: Report of TCP Vegas — Data Link



Run 3: Statistics of TCP Vegas

Start at: 2018-11-02 23:01:03

End at: 2018-11-02 23:01:33

Local clock offset: 0.201 ms

Remote clock offset: 0.098 ms

Below is generated by plot.py at 2018-11-03 02:22:07

Datalink statistics

-- Total of 3 flows:

Average throughput: 745.27 Mbit/s

95th percentile per-packet one-way delay: 90.966 ms

Loss rate: 0.95%

-- Flow 1:

Average throughput: 386.49 Mbit/s

95th percentile per-packet one-way delay: 89.462 ms

Loss rate: 0.61%

-- Flow 2:

Average throughput: 375.30 Mbit/s

95th percentile per-packet one-way delay: 92.572 ms

Loss rate: 0.95%

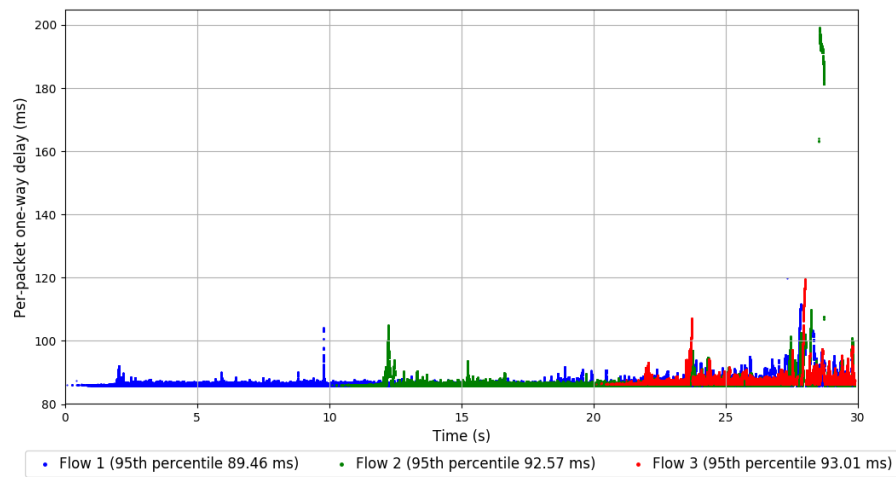
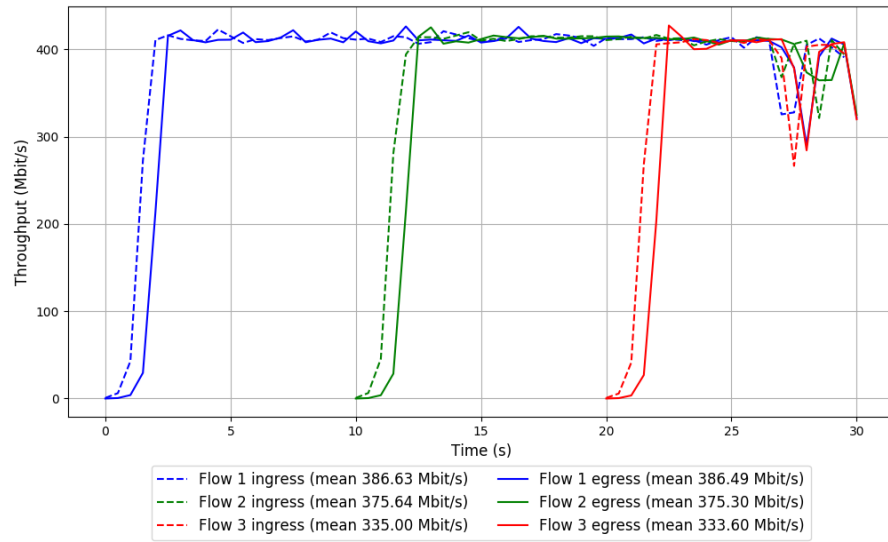
-- Flow 3:

Average throughput: 333.60 Mbit/s

95th percentile per-packet one-way delay: 93.013 ms

Loss rate: 2.14%

Run 3: Report of TCP Vegas — Data Link

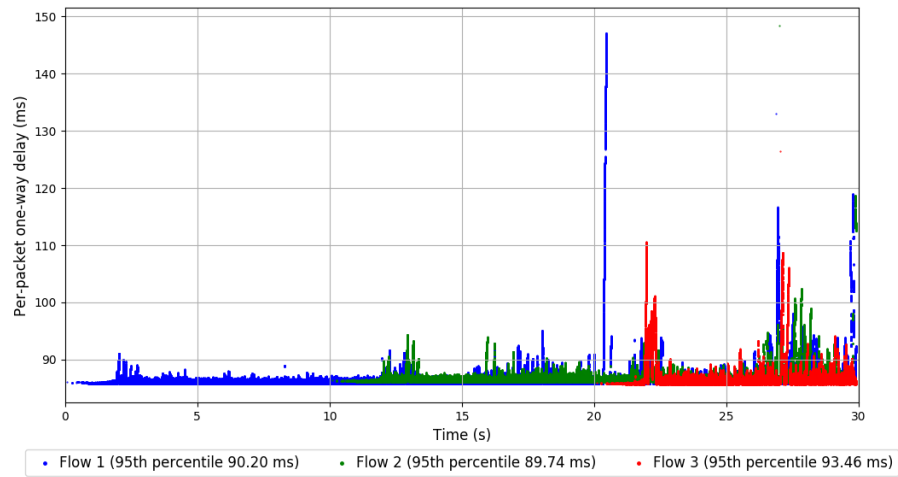
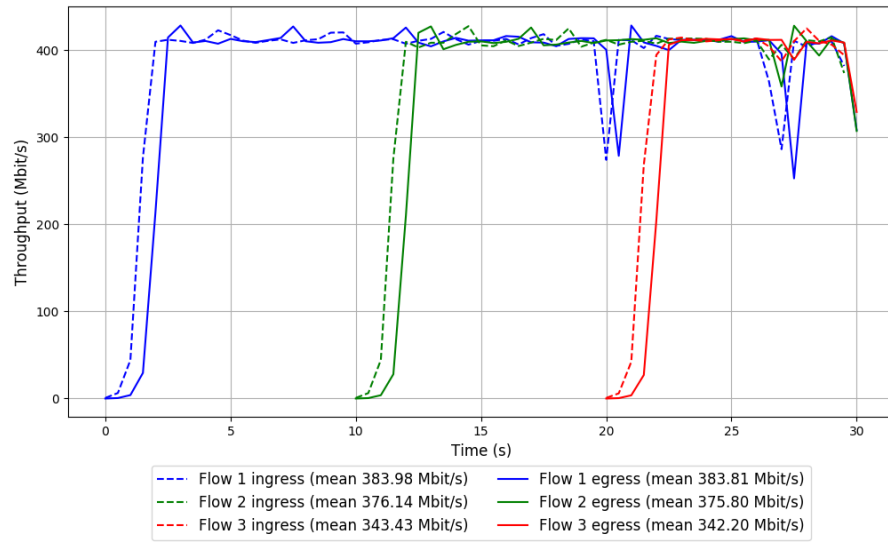


Run 4: Statistics of TCP Vegas

Start at: 2018-11-02 23:31:53
End at: 2018-11-02 23:32:23
Local clock offset: -0.081 ms
Remote clock offset: -0.005 ms

Below is generated by plot.py at 2018-11-03 02:29:48
Datalink statistics
-- Total of 3 flows:
Average throughput: 745.87 Mbit/s
95th percentile per-packet one-way delay: 90.457 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 383.81 Mbit/s
95th percentile per-packet one-way delay: 90.198 ms
Loss rate: 0.62%
-- Flow 2:
Average throughput: 375.80 Mbit/s
95th percentile per-packet one-way delay: 89.736 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 342.20 Mbit/s
95th percentile per-packet one-way delay: 93.461 ms
Loss rate: 2.08%

Run 4: Report of TCP Vegas — Data Link

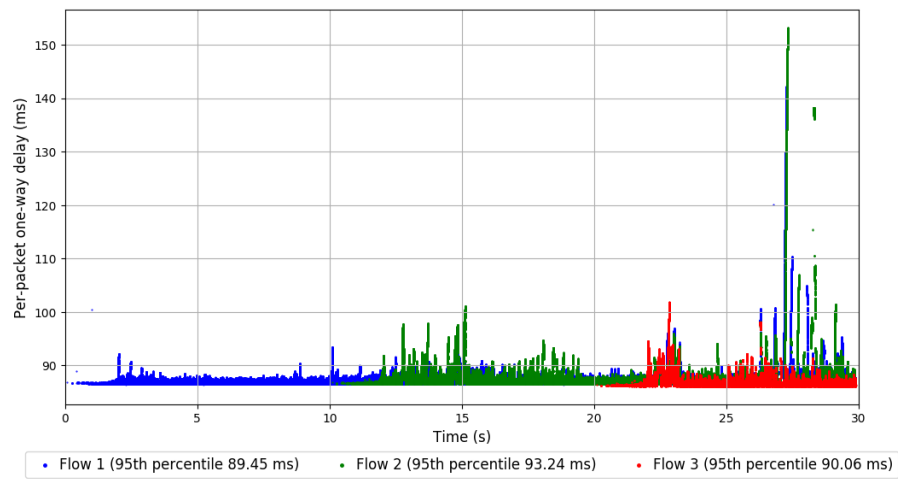
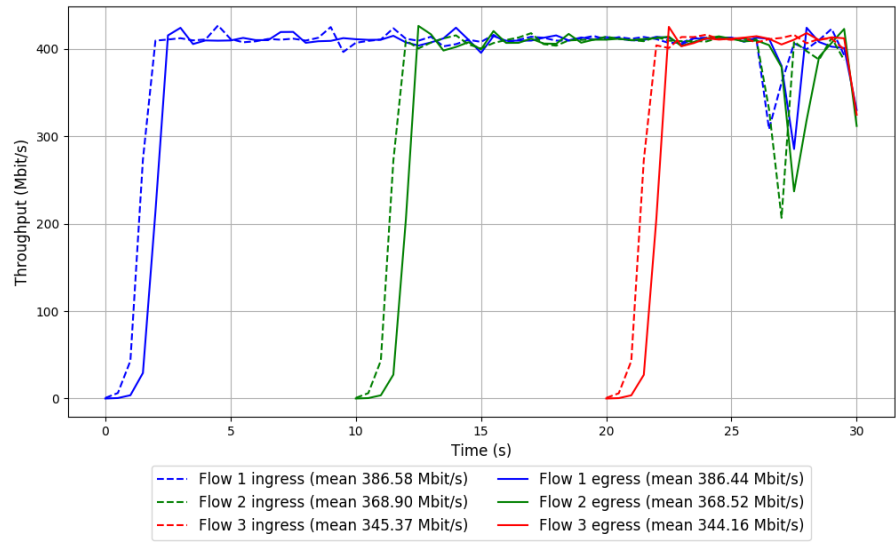


Run 5: Statistics of TCP Vegas

Start at: 2018-11-03 00:03:30
End at: 2018-11-03 00:04:00
Local clock offset: 0.232 ms
Remote clock offset: -0.055 ms

Below is generated by plot.py at 2018-11-03 02:29:54
Datalink statistics
-- Total of 3 flows:
Average throughput: 744.26 Mbit/s
95th percentile per-packet one-way delay: 90.828 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 386.44 Mbit/s
95th percentile per-packet one-way delay: 89.454 ms
Loss rate: 0.61%
-- Flow 2:
Average throughput: 368.52 Mbit/s
95th percentile per-packet one-way delay: 93.237 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 344.16 Mbit/s
95th percentile per-packet one-way delay: 90.065 ms
Loss rate: 2.07%

Run 5: Report of TCP Vegas — Data Link



Run 1: Statistics of Verus

Start at: 2018-11-02 22:15:13

End at: 2018-11-02 22:15:43

Local clock offset: -0.084 ms

Remote clock offset: 0.139 ms

Below is generated by plot.py at 2018-11-03 02:29:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 184.80 Mbit/s

95th percentile per-packet one-way delay: 112.659 ms

Loss rate: 1.25%

-- Flow 1:

Average throughput: 123.34 Mbit/s

95th percentile per-packet one-way delay: 119.279 ms

Loss rate: 0.84%

-- Flow 2:

Average throughput: 51.64 Mbit/s

95th percentile per-packet one-way delay: 90.795 ms

Loss rate: 0.46%

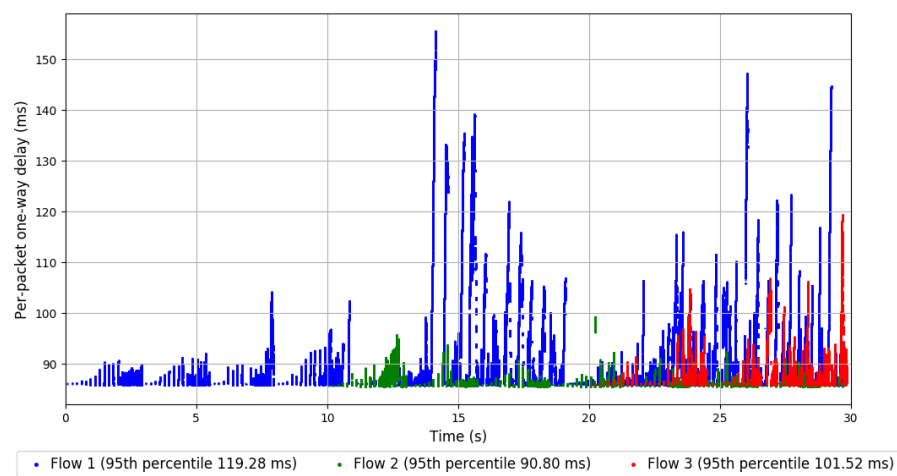
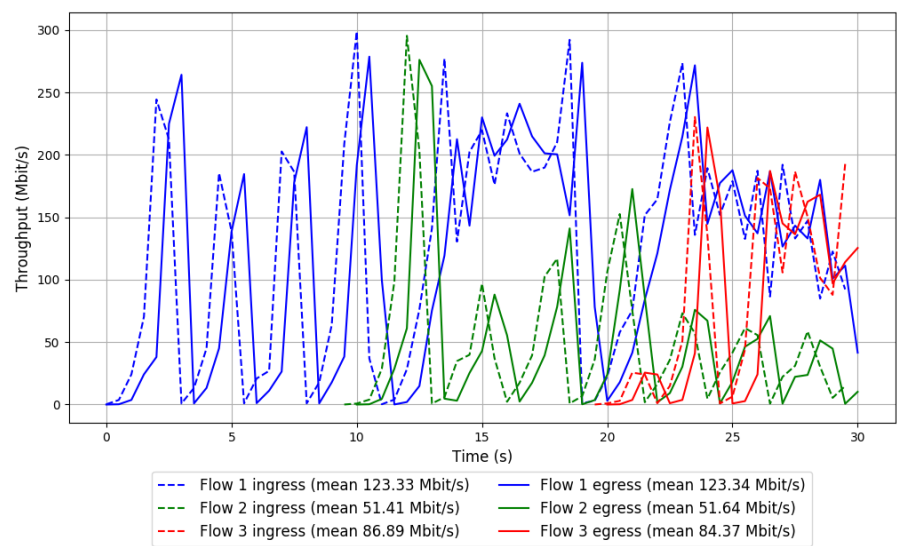
-- Flow 3:

Average throughput: 84.37 Mbit/s

95th percentile per-packet one-way delay: 101.524 ms

Loss rate: 3.92%

Run 1: Report of Verus — Data Link



Run 2: Statistics of Verus

Start at: 2018-11-02 22:45:58

End at: 2018-11-02 22:46:28

Local clock offset: 0.276 ms

Remote clock offset: 0.083 ms

Below is generated by plot.py at 2018-11-03 02:29:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 206.51 Mbit/s

95th percentile per-packet one-way delay: 176.580 ms

Loss rate: 2.23%

-- Flow 1:

Average throughput: 82.44 Mbit/s

95th percentile per-packet one-way delay: 136.698 ms

Loss rate: 2.74%

-- Flow 2:

Average throughput: 139.67 Mbit/s

95th percentile per-packet one-way delay: 178.967 ms

Loss rate: 0.89%

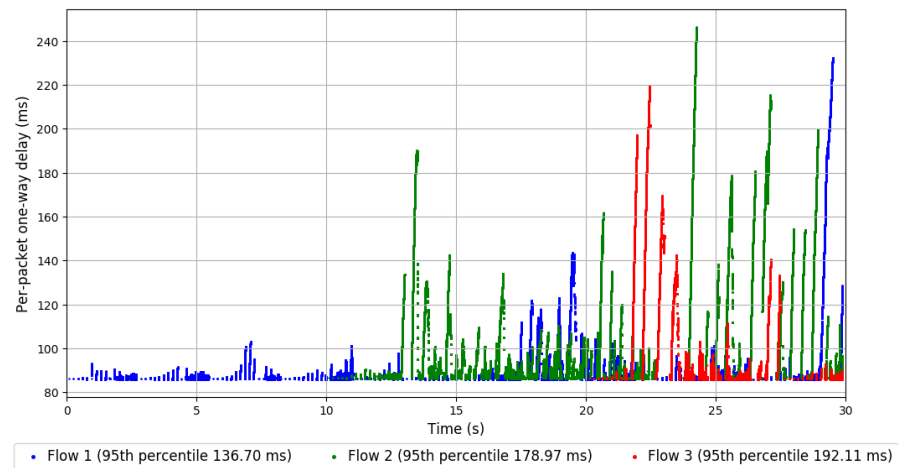
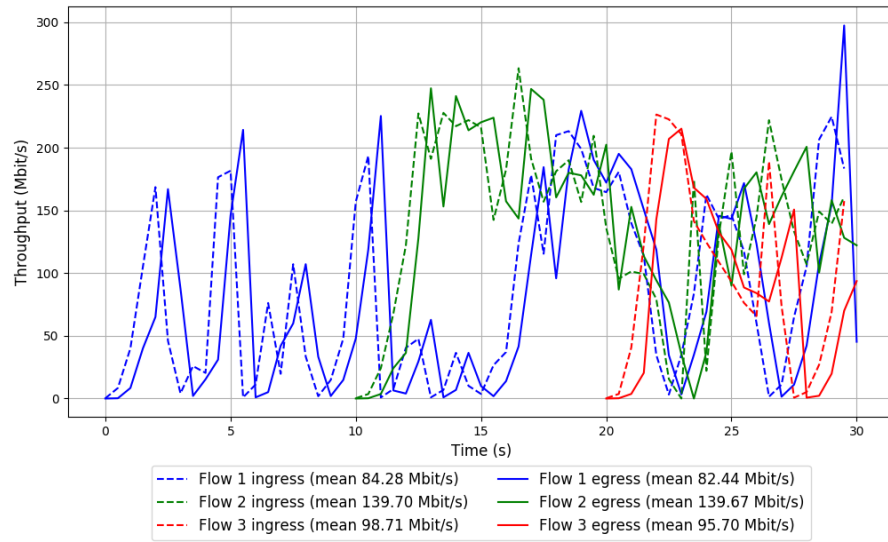
-- Flow 3:

Average throughput: 95.70 Mbit/s

95th percentile per-packet one-way delay: 192.110 ms

Loss rate: 4.72%

Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

Start at: 2018-11-02 23:16:46

End at: 2018-11-02 23:17:16

Local clock offset: 0.039 ms

Remote clock offset: 0.008 ms

Below is generated by plot.py at 2018-11-03 02:29:54

Datalink statistics

-- Total of 3 flows:

Average throughput: 196.95 Mbit/s

95th percentile per-packet one-way delay: 184.975 ms

Loss rate: 0.44%

-- Flow 1:

Average throughput: 112.34 Mbit/s

95th percentile per-packet one-way delay: 124.197 ms

Loss rate: 0.18%

-- Flow 2:

Average throughput: 58.36 Mbit/s

95th percentile per-packet one-way delay: 128.016 ms

Loss rate: 0.66%

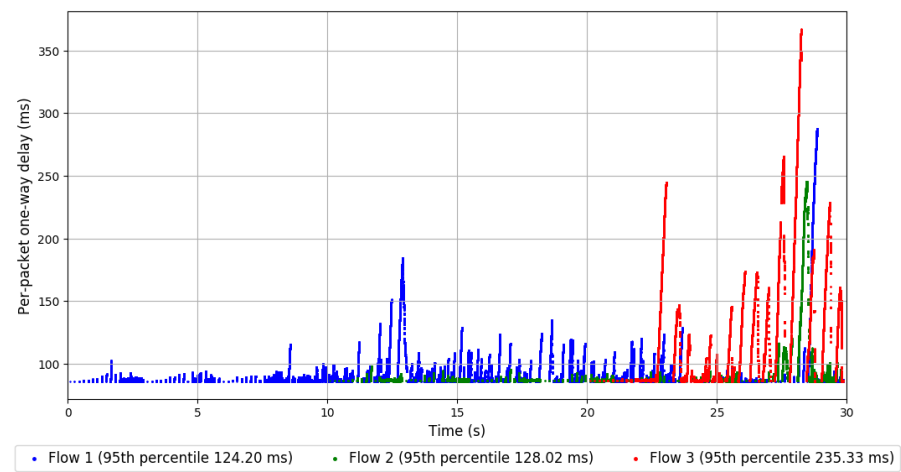
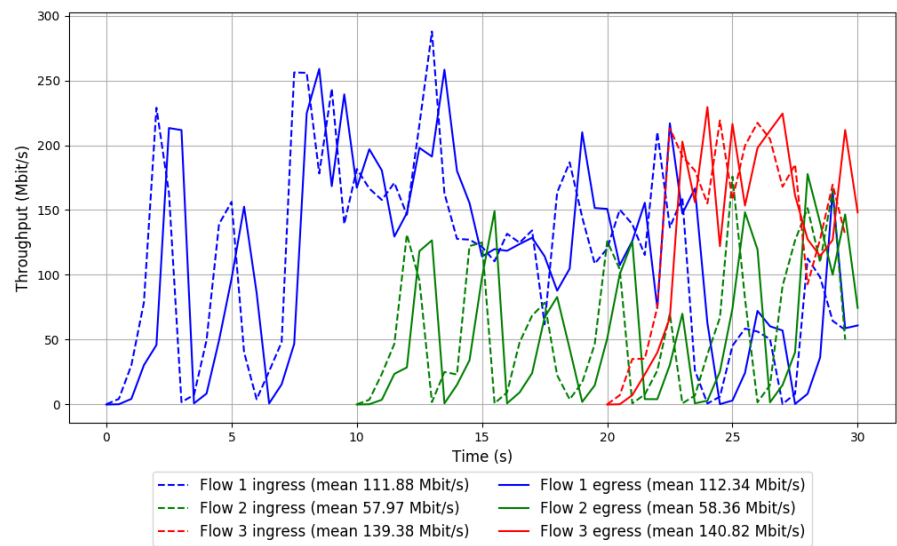
-- Flow 3:

Average throughput: 140.82 Mbit/s

95th percentile per-packet one-way delay: 235.326 ms

Loss rate: 0.87%

Run 3: Report of Verus — Data Link

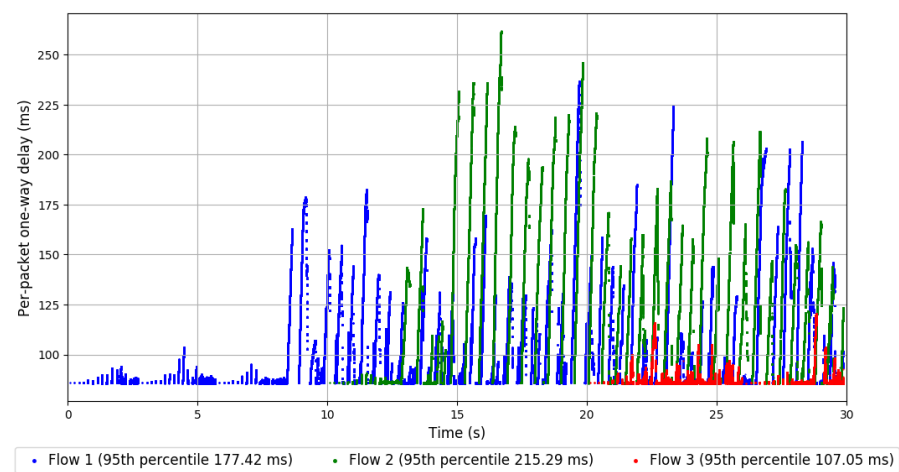
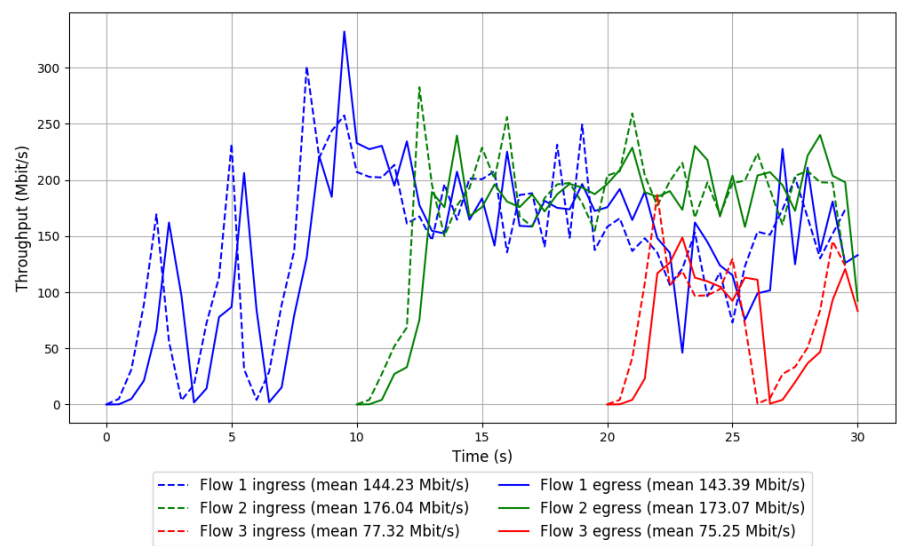


Run 4: Statistics of Verus

Start at: 2018-11-02 23:48:20
End at: 2018-11-02 23:48:50
Local clock offset: -0.224 ms
Remote clock offset: -0.068 ms

Below is generated by plot.py at 2018-11-03 02:30:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 282.96 Mbit/s
95th percentile per-packet one-way delay: 200.783 ms
Loss rate: 1.62%
-- Flow 1:
Average throughput: 143.39 Mbit/s
95th percentile per-packet one-way delay: 177.416 ms
Loss rate: 1.00%
-- Flow 2:
Average throughput: 173.07 Mbit/s
95th percentile per-packet one-way delay: 215.287 ms
Loss rate: 1.82%
-- Flow 3:
Average throughput: 75.25 Mbit/s
95th percentile per-packet one-way delay: 107.051 ms
Loss rate: 4.24%

Run 4: Report of Verus — Data Link

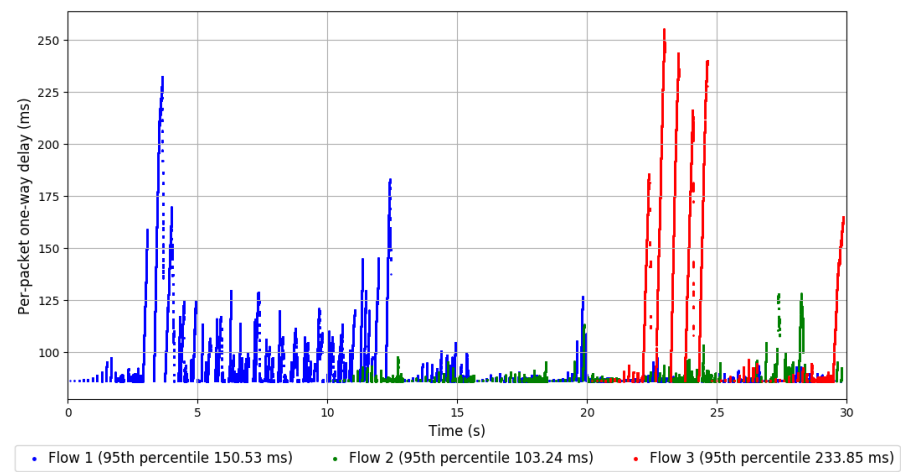
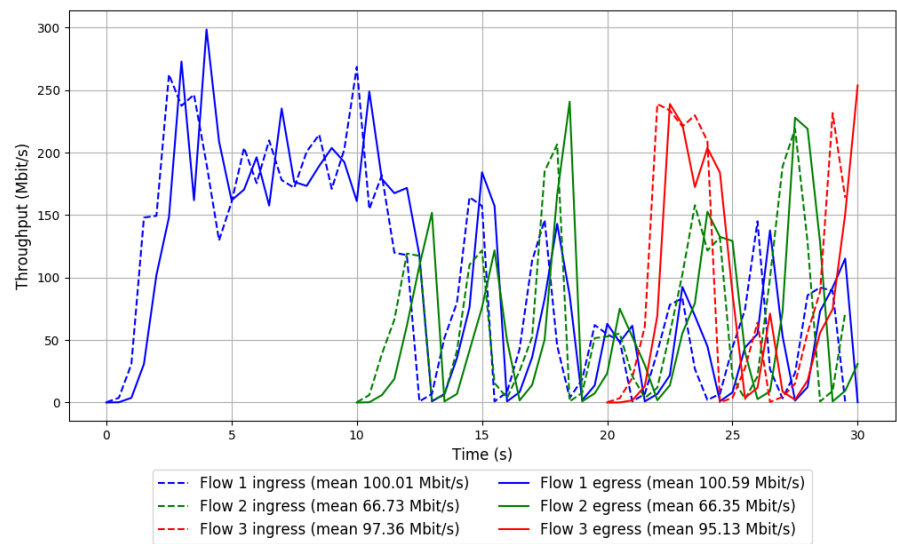


Run 5: Statistics of Verus

Start at: 2018-11-03 00:19:25
End at: 2018-11-03 00:19:55
Local clock offset: 0.098 ms
Remote clock offset: -0.078 ms

Below is generated by plot.py at 2018-11-03 02:30:32
Datalink statistics
-- Total of 3 flows:
Average throughput: 175.02 Mbit/s
95th percentile per-packet one-way delay: 183.616 ms
Loss rate: 0.67%
-- Flow 1:
Average throughput: 100.59 Mbit/s
95th percentile per-packet one-way delay: 150.528 ms
Loss rate: 0.01%
-- Flow 2:
Average throughput: 66.35 Mbit/s
95th percentile per-packet one-way delay: 103.244 ms
Loss rate: 1.53%
-- Flow 3:
Average throughput: 95.13 Mbit/s
95th percentile per-packet one-way delay: 233.850 ms
Loss rate: 1.56%

Run 5: Report of Verus — Data Link



Run 1: Statistics of PCC-Vivace

Start at: 2018-11-02 21:47:07

End at: 2018-11-02 21:47:37

Local clock offset: 0.595 ms

Remote clock offset: 0.345 ms

Below is generated by plot.py at 2018-11-03 02:31:41

Datalink statistics

-- Total of 3 flows:

Average throughput: 465.89 Mbit/s

95th percentile per-packet one-way delay: 93.233 ms

Loss rate: 0.95%

-- Flow 1:

Average throughput: 285.30 Mbit/s

95th percentile per-packet one-way delay: 90.208 ms

Loss rate: 0.67%

-- Flow 2:

Average throughput: 195.89 Mbit/s

95th percentile per-packet one-way delay: 94.353 ms

Loss rate: 1.04%

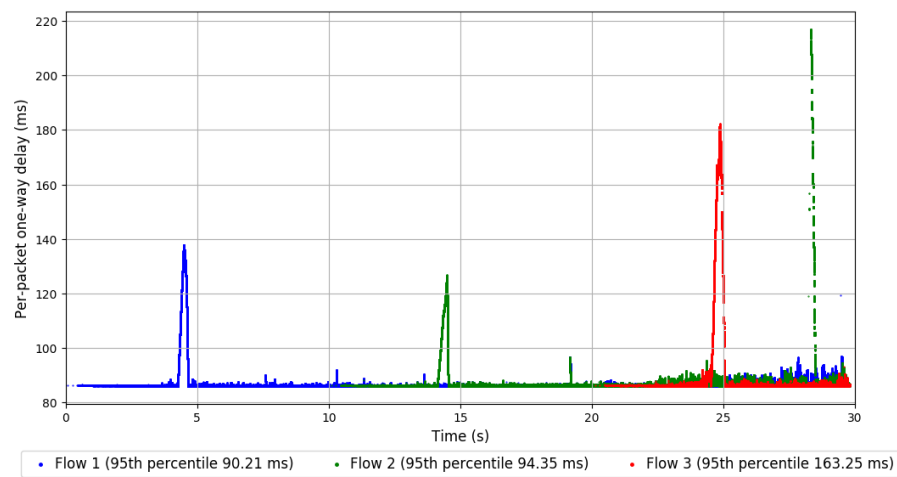
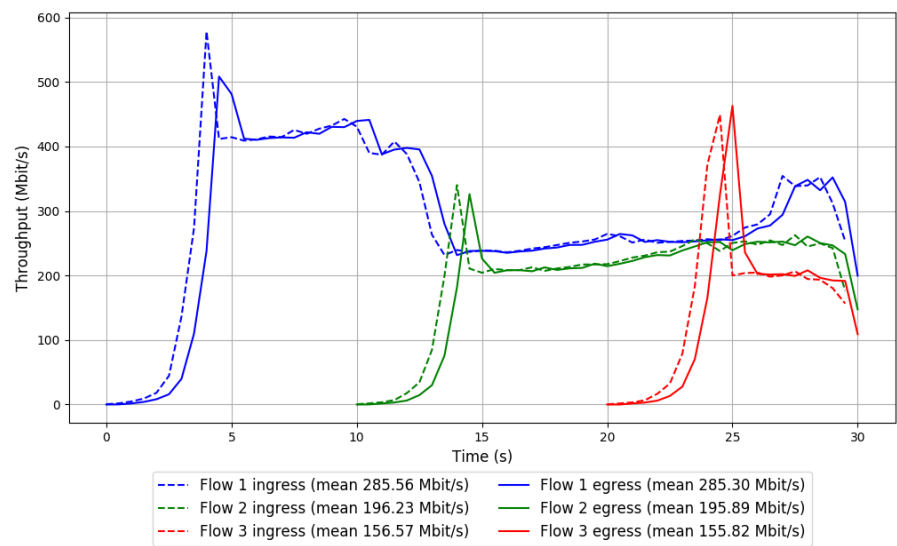
-- Flow 3:

Average throughput: 155.82 Mbit/s

95th percentile per-packet one-way delay: 163.250 ms

Loss rate: 2.23%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-11-02 22:18:02

End at: 2018-11-02 22:18:32

Local clock offset: 0.194 ms

Remote clock offset: 0.116 ms

Below is generated by plot.py at 2018-11-03 02:32:09

Datalink statistics

-- Total of 3 flows:

Average throughput: 514.43 Mbit/s

95th percentile per-packet one-way delay: 128.540 ms

Loss rate: 0.92%

-- Flow 1:

Average throughput: 335.78 Mbit/s

95th percentile per-packet one-way delay: 143.435 ms

Loss rate: 0.68%

-- Flow 2:

Average throughput: 197.45 Mbit/s

95th percentile per-packet one-way delay: 106.377 ms

Loss rate: 0.90%

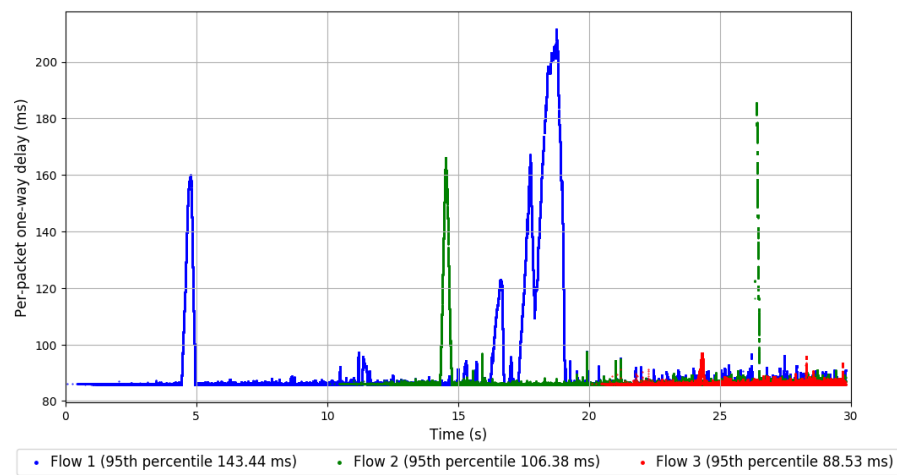
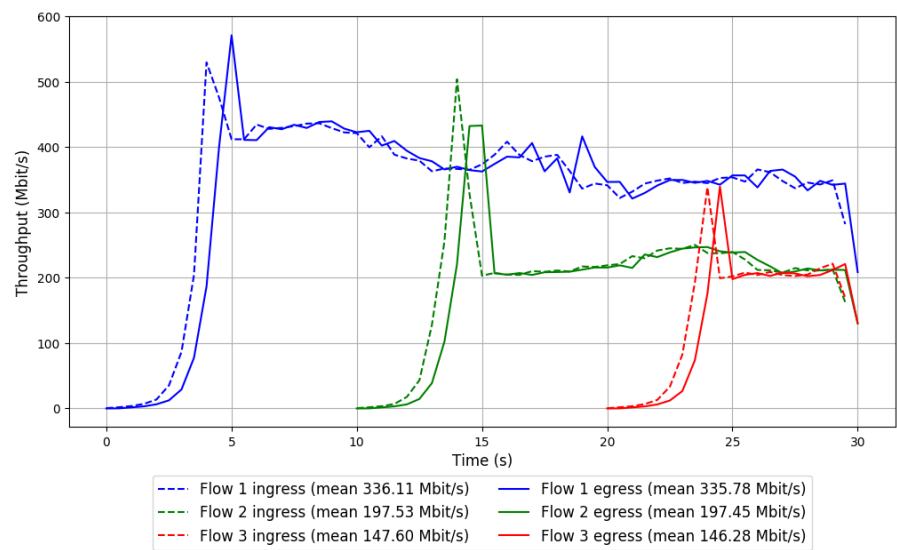
-- Flow 3:

Average throughput: 146.28 Mbit/s

95th percentile per-packet one-way delay: 88.530 ms

Loss rate: 2.63%

Run 2: Report of PCC-Vivace — Data Link



Run 3: Statistics of PCC-Vivace

Start at: 2018-11-02 22:48:53

End at: 2018-11-02 22:49:23

Local clock offset: 0.232 ms

Remote clock offset: 0.059 ms

Below is generated by plot.py at 2018-11-03 02:32:34

Datalink statistics

-- Total of 3 flows:

Average throughput: 511.04 Mbit/s

95th percentile per-packet one-way delay: 88.597 ms

Loss rate: 1.06%

-- Flow 1:

Average throughput: 316.78 Mbit/s

95th percentile per-packet one-way delay: 88.730 ms

Loss rate: 0.63%

-- Flow 2:

Average throughput: 212.92 Mbit/s

95th percentile per-packet one-way delay: 88.921 ms

Loss rate: 1.17%

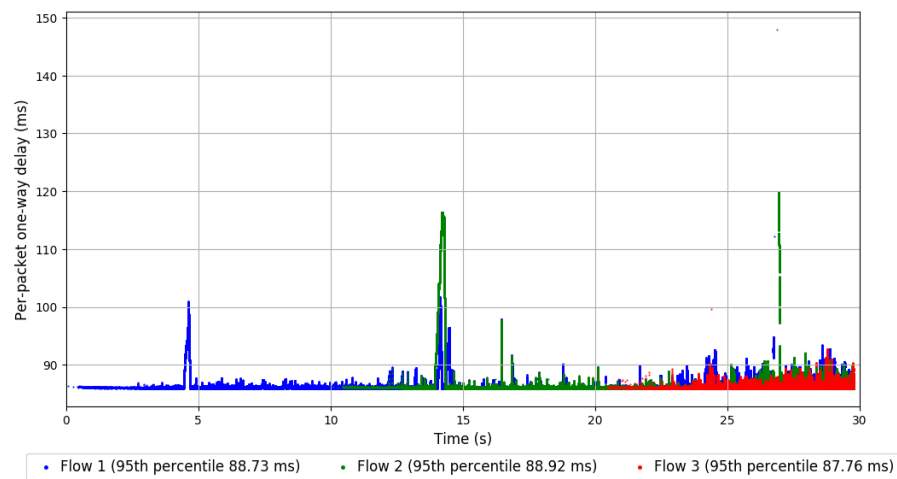
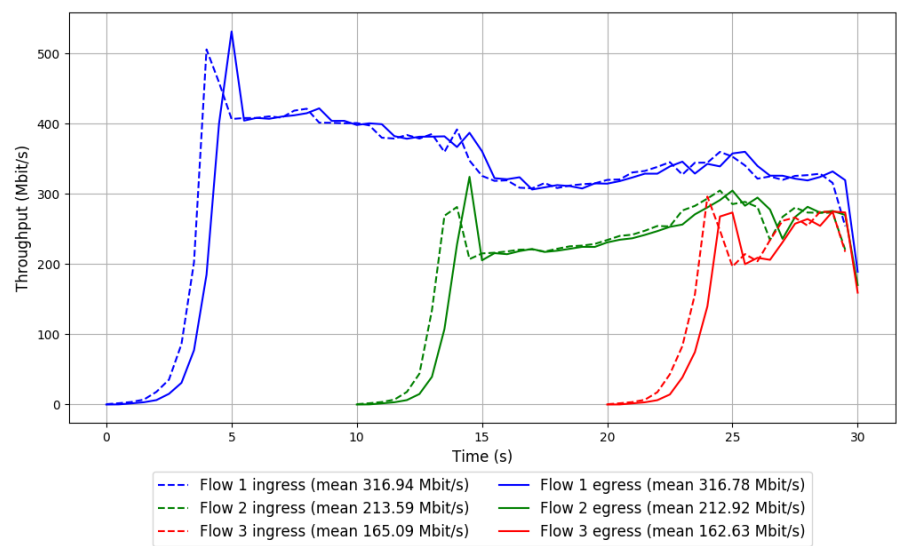
-- Flow 3:

Average throughput: 162.63 Mbit/s

95th percentile per-packet one-way delay: 87.764 ms

Loss rate: 3.24%

Run 3: Report of PCC-Vivace — Data Link



Run 4: Statistics of PCC-Vivace

Start at: 2018-11-02 23:19:41

End at: 2018-11-02 23:20:11

Local clock offset: -0.03 ms

Remote clock offset: -0.01 ms

Below is generated by plot.py at 2018-11-03 02:32:40

Datalink statistics

-- Total of 3 flows:

Average throughput: 423.99 Mbit/s

95th percentile per-packet one-way delay: 87.165 ms

Loss rate: 0.87%

-- Flow 1:

Average throughput: 251.33 Mbit/s

95th percentile per-packet one-way delay: 87.116 ms

Loss rate: 0.58%

-- Flow 2:

Average throughput: 188.47 Mbit/s

95th percentile per-packet one-way delay: 87.020 ms

Loss rate: 0.93%

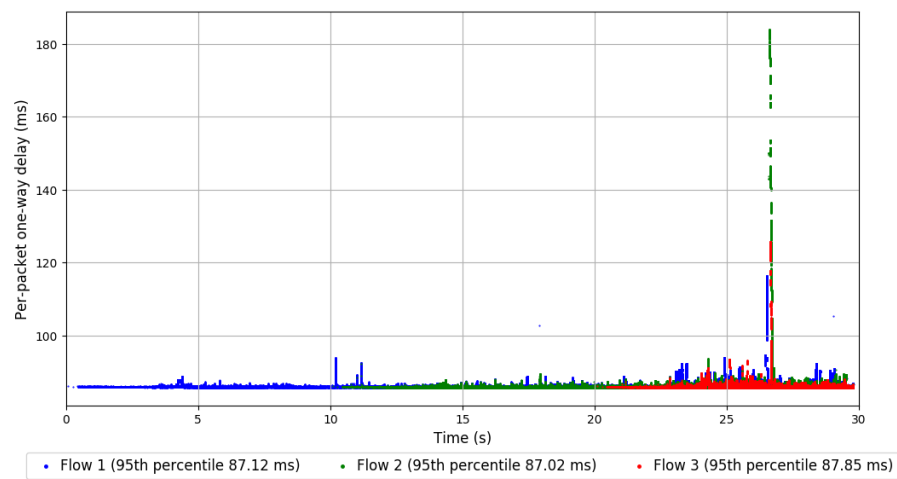
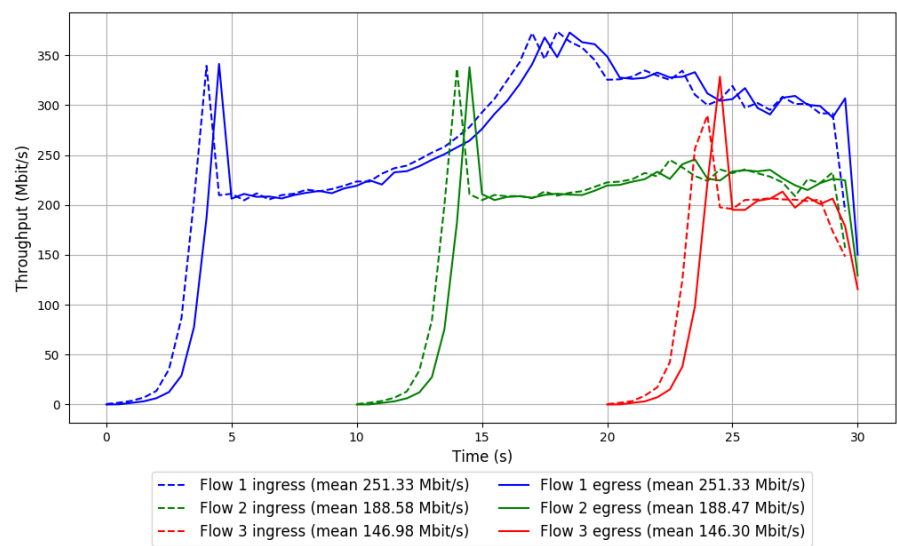
-- Flow 3:

Average throughput: 146.30 Mbit/s

95th percentile per-packet one-way delay: 87.850 ms

Loss rate: 2.20%

Run 4: Report of PCC-Vivace — Data Link

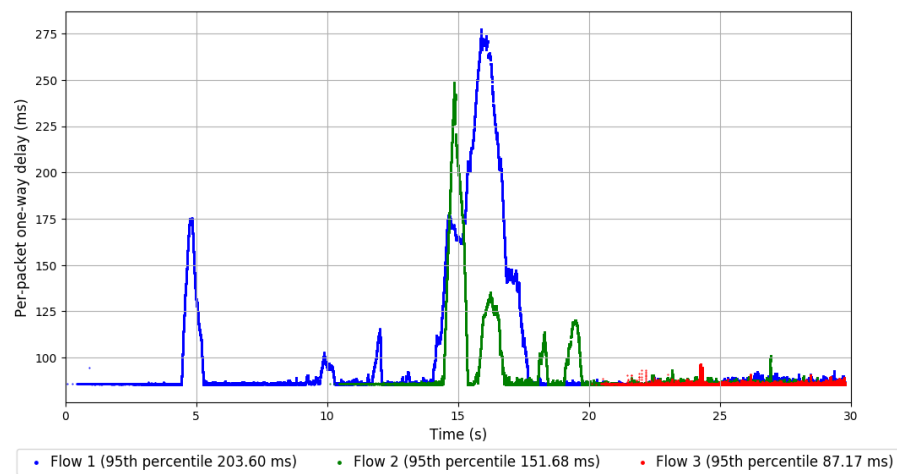
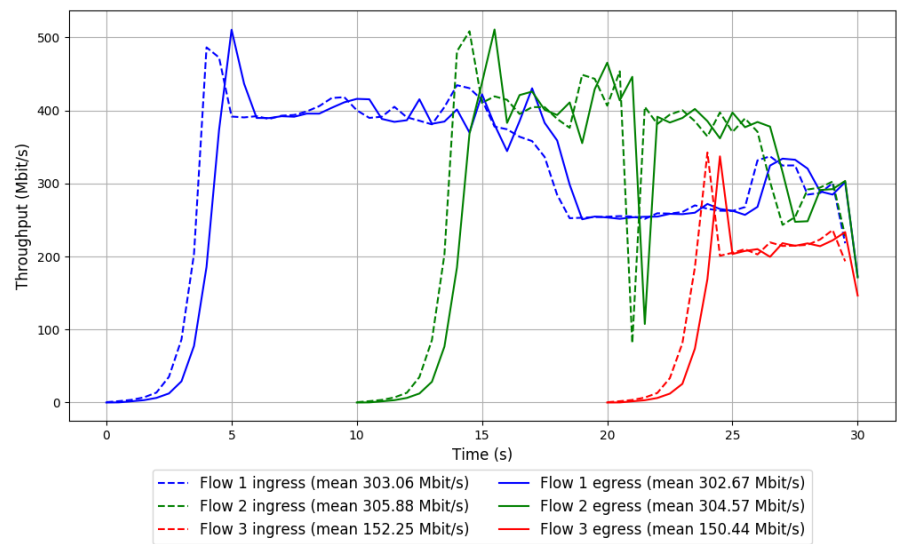


Run 5: Statistics of PCC-Vivace

Start at: 2018-11-02 23:51:39
End at: 2018-11-02 23:52:09
Local clock offset: -0.245 ms
Remote clock offset: -0.057 ms

Below is generated by plot.py at 2018-11-03 02:33:00
Datalink statistics
-- Total of 3 flows:
Average throughput: 553.74 Mbit/s
95th percentile per-packet one-way delay: 174.841 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 302.67 Mbit/s
95th percentile per-packet one-way delay: 203.600 ms
Loss rate: 0.70%
-- Flow 2:
Average throughput: 304.57 Mbit/s
95th percentile per-packet one-way delay: 151.682 ms
Loss rate: 1.29%
-- Flow 3:
Average throughput: 150.44 Mbit/s
95th percentile per-packet one-way delay: 87.171 ms
Loss rate: 2.92%

Run 5: Report of PCC-Vivace — Data Link

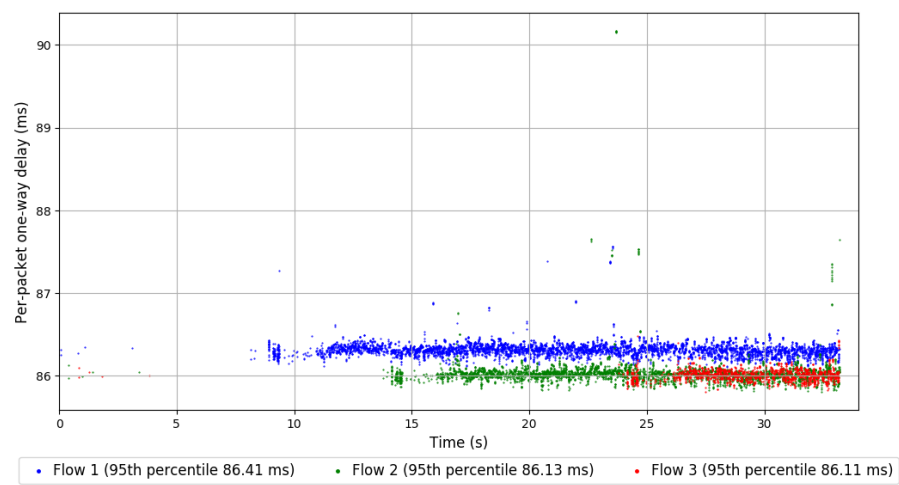
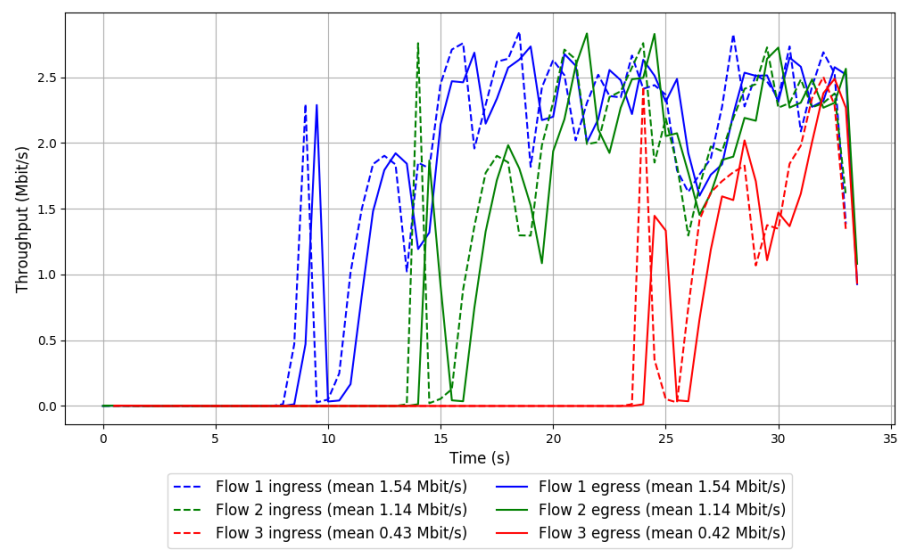


```
Run 1: Statistics of WebRTC media

Start at: 2018-11-02 22:10:02
End at: 2018-11-02 22:10:32
Local clock offset: 0.127 ms
Remote clock offset: 0.196 ms

# Below is generated by plot.py at 2018-11-03 02:33:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.07 Mbit/s
95th percentile per-packet one-way delay: 86.389 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 1.54 Mbit/s
95th percentile per-packet one-way delay: 86.414 ms
Loss rate: 0.90%
-- Flow 2:
Average throughput: 1.14 Mbit/s
95th percentile per-packet one-way delay: 86.129 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 0.42 Mbit/s
95th percentile per-packet one-way delay: 86.111 ms
Loss rate: 2.87%
```

Run 1: Report of WebRTC media — Data Link



Run 2: Statistics of WebRTC media

Start at: 2018-11-02 22:40:36

End at: 2018-11-02 22:41:06

Local clock offset: 0.068 ms

Remote clock offset: 0.104 ms

Below is generated by plot.py at 2018-11-03 02:33:00

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.43 Mbit/s

95th percentile per-packet one-way delay: 86.128 ms

Loss rate: 1.15%

-- Flow 1:

Average throughput: 1.90 Mbit/s

95th percentile per-packet one-way delay: 86.134 ms

Loss rate: 0.54%

-- Flow 2:

Average throughput: 1.13 Mbit/s

95th percentile per-packet one-way delay: 86.134 ms

Loss rate: 1.50%

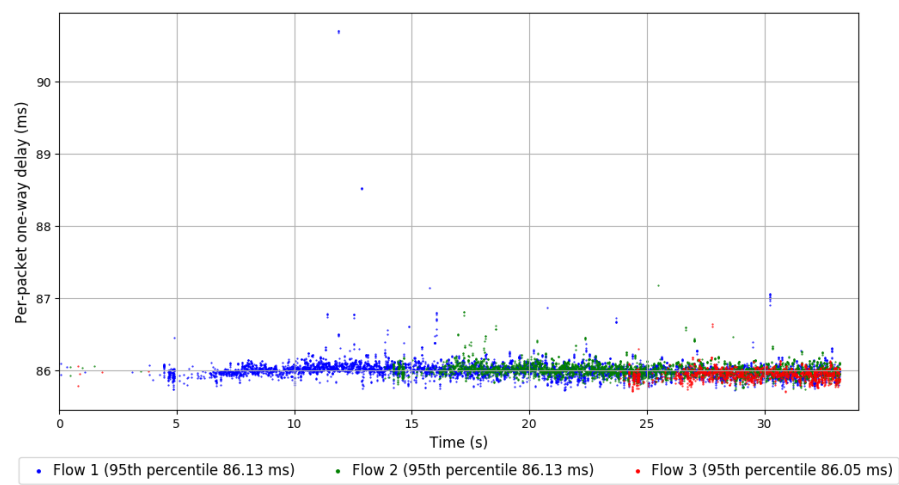
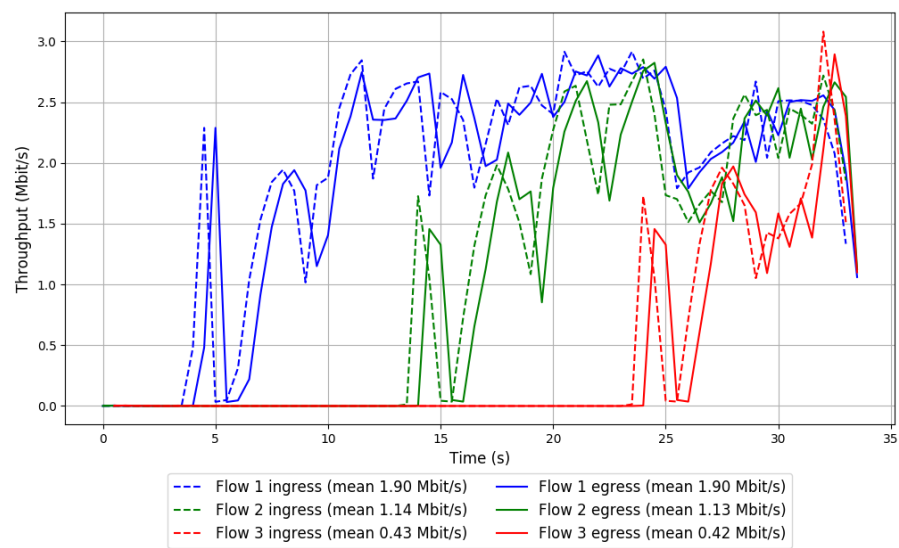
-- Flow 3:

Average throughput: 0.42 Mbit/s

95th percentile per-packet one-way delay: 86.051 ms

Loss rate: 2.93%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-11-02 23:11:22

End at: 2018-11-02 23:11:52

Local clock offset: 0.055 ms

Remote clock offset: 0.117 ms

Below is generated by plot.py at 2018-11-03 02:33:00

Datalink statistics

-- Total of 3 flows:

Average throughput: 3.32 Mbit/s

95th percentile per-packet one-way delay: 86.189 ms

Loss rate: 1.07%

-- Flow 1:

Average throughput: 1.86 Mbit/s

95th percentile per-packet one-way delay: 86.212 ms

Loss rate: 0.55%

-- Flow 2:

Average throughput: 1.10 Mbit/s

95th percentile per-packet one-way delay: 86.128 ms

Loss rate: 1.28%

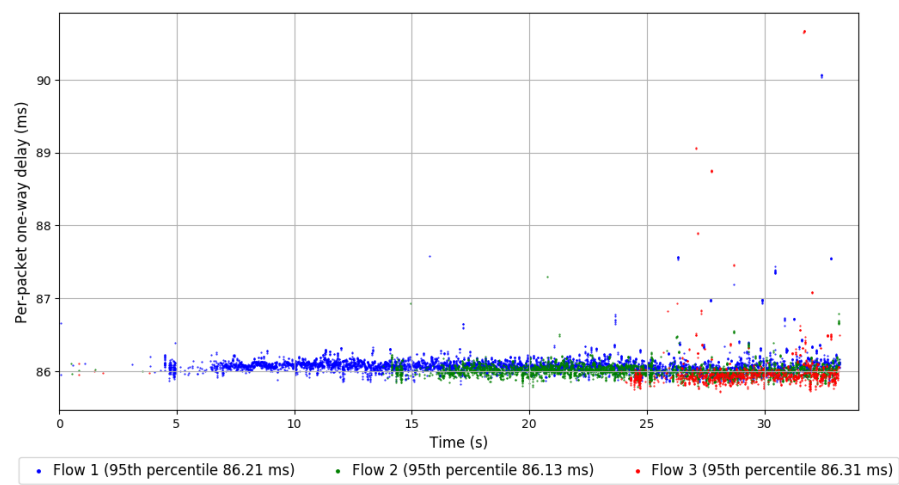
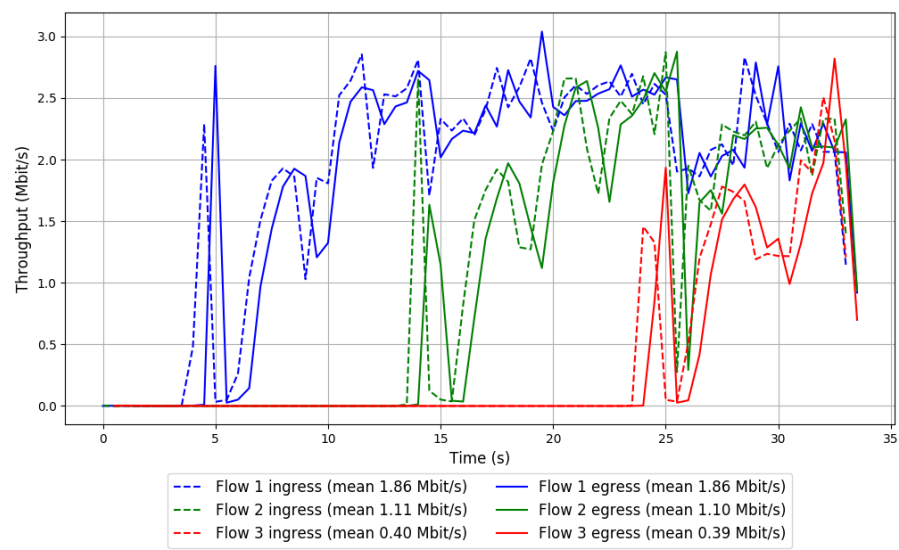
-- Flow 3:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 86.313 ms

Loss rate: 2.99%

Run 3: Report of WebRTC media — Data Link

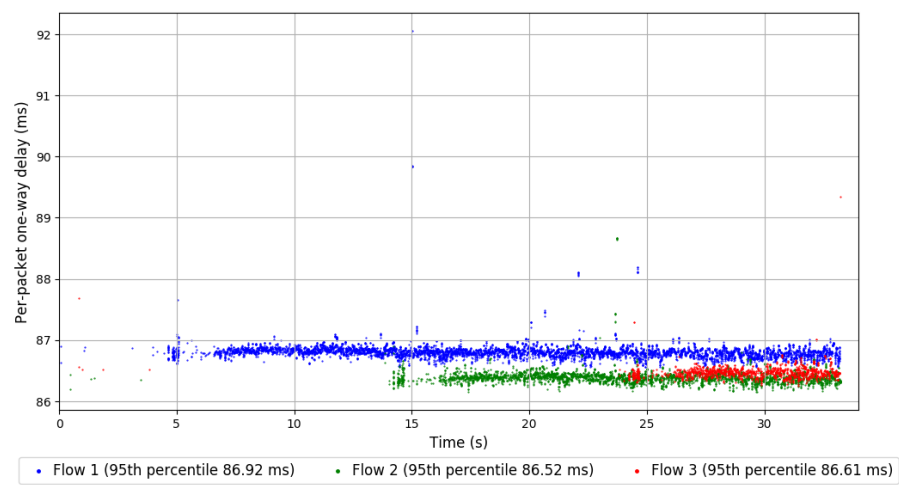
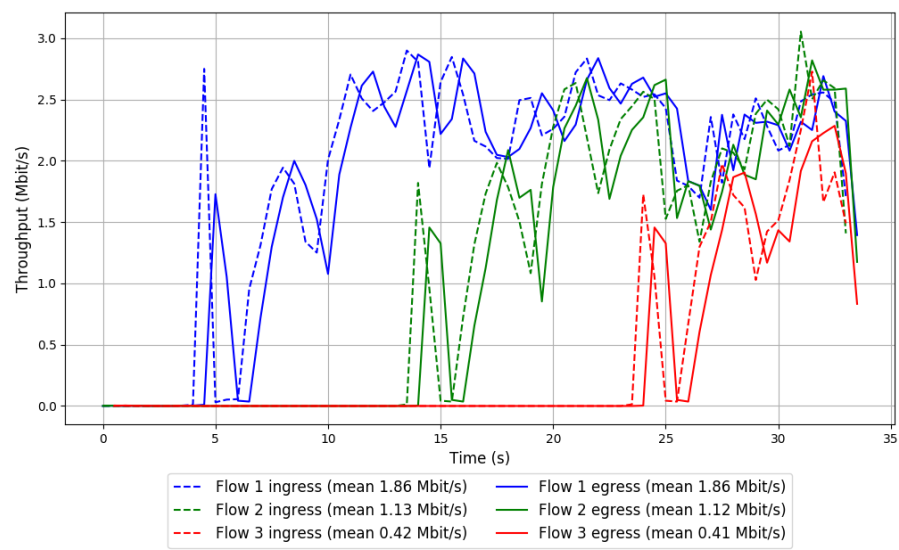


Run 4: Statistics of WebRTC media

Start at: 2018-11-02 23:42:54
End at: 2018-11-02 23:43:24
Local clock offset: 0.41 ms
Remote clock offset: -0.029 ms

```
# Below is generated by plot.py at 2018-11-03 02:33:00
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.37 Mbit/s
95th percentile per-packet one-way delay: 86.895 ms
Loss rate: 1.14%
-- Flow 1:
Average throughput: 1.86 Mbit/s
95th percentile per-packet one-way delay: 86.923 ms
Loss rate: 0.75%
-- Flow 2:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 86.515 ms
Loss rate: 0.95%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 86.605 ms
Loss rate: 3.38%
```

Run 4: Report of WebRTC media — Data Link



Run 5: Statistics of WebRTC media

Start at: 2018-11-03 00:14:06
End at: 2018-11-03 00:14:36
Local clock offset: -0.161 ms
Remote clock offset: -0.056 ms

Below is generated by plot.py at 2018-11-03 02:33:00
Datalink statistics
-- Total of 3 flows:
Average throughput: 3.39 Mbit/s
95th percentile per-packet one-way delay: 86.055 ms
Loss rate: 0.93%
-- Flow 1:
Average throughput: 1.88 Mbit/s
95th percentile per-packet one-way delay: 86.033 ms
Loss rate: 0.55%
-- Flow 2:
Average throughput: 1.12 Mbit/s
95th percentile per-packet one-way delay: 86.082 ms
Loss rate: 1.00%
-- Flow 3:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 86.022 ms
Loss rate: 2.43%

Run 5: Report of WebRTC media — Data Link

