

Pantheon Report

Generated at 2018-09-05 21:22:02 (UTC).

Data path: AWS India 2 on **ens5** (*local*) → Saudi Arabia on **enp2s0** (*remote*).

Repeated the test of 4 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against **nets.org.sg** and have been applied to correct the timestamps in logs.

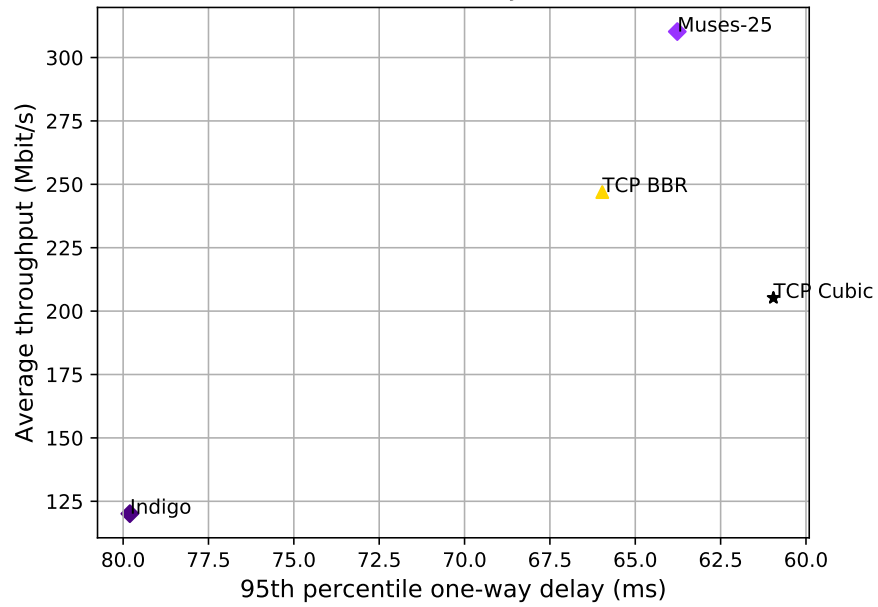
System info:

```
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

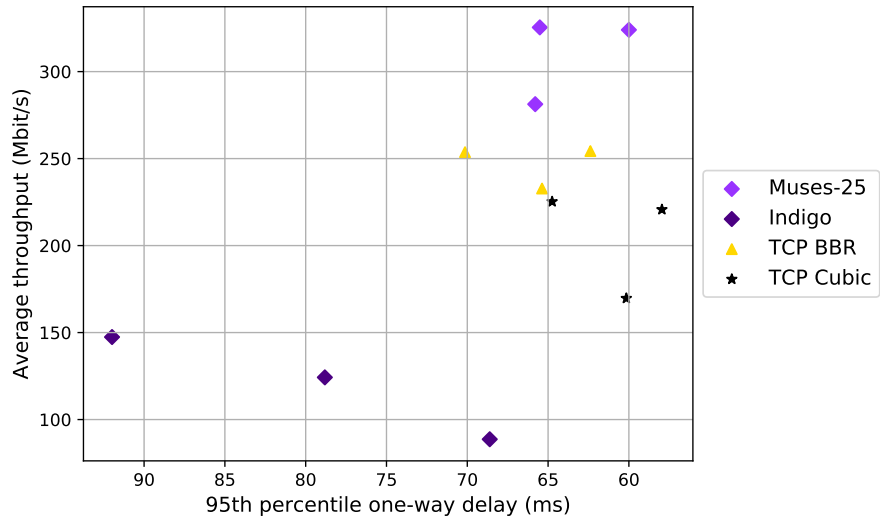
Git summary:

```
branch: muses @ 18b9165265c8ba2915c862e8713fd9ad82c1ac21
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ a28d20fb82a95a965a3da65fd1eb71b8994e9b84
third_party/pantheon-tunnel @ cbfce6db5ff5740d4fe1771f813cd646339e1952
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-quic @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
M tools/plot.py
third_party/vivace @ 2baf86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0cc2a9061a41b6f9dde4735770d143a1fa2851
```

test from AWS India 2 to Saudi Arabia, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS India 2 to Saudi Arabia, 3 runs of 30s each per scheme



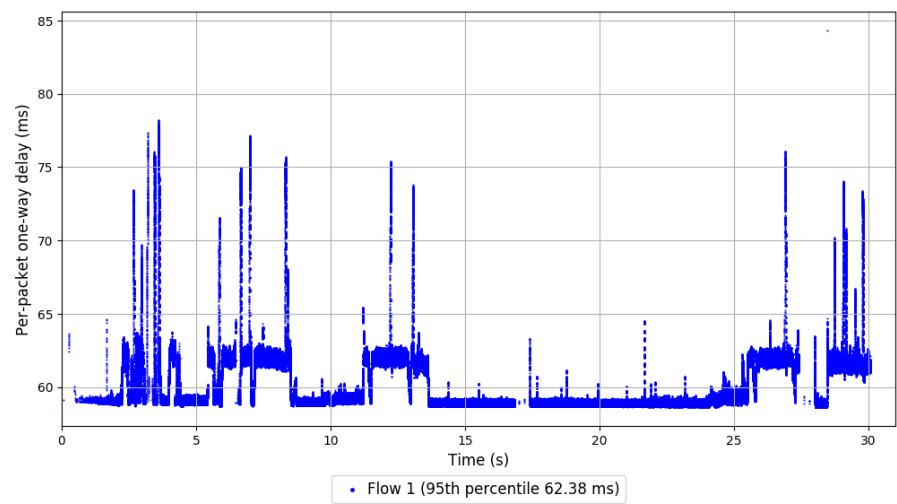
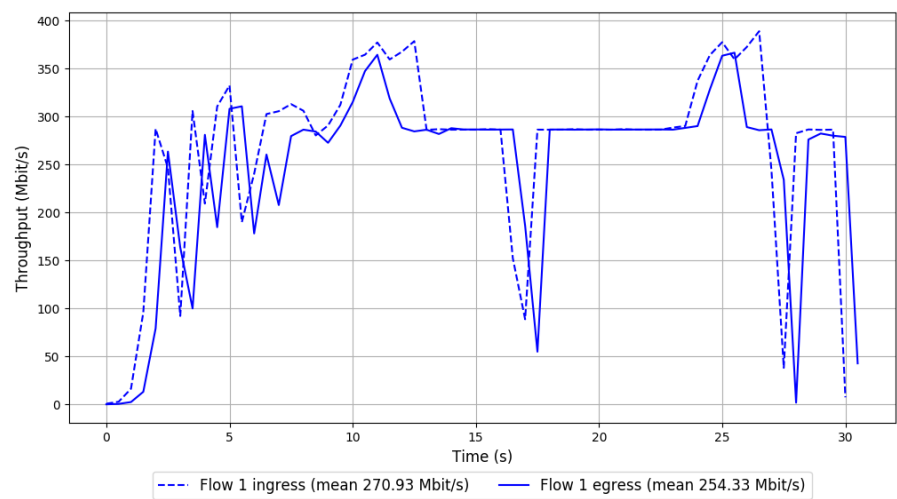
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	246.95	65.97	6.23
TCP Cubic	3	205.21	60.95	0.56
Indigo	3	120.11	79.80	1.10
Muses-25	3	310.23	63.77	6.42

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 21:06:05
End at: 2018-09-05 21:06:35
Local clock offset: 1.673 ms
Remote clock offset: -37.612 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 254.33 Mbit/s
95th percentile per-packet one-way delay: 62.382 ms
Loss rate: 6.12%
-- Flow 1:
Average throughput: 254.33 Mbit/s
95th percentile per-packet one-way delay: 62.382 ms
Loss rate: 6.12%

Run 1: Report of TCP BBR — Data Link

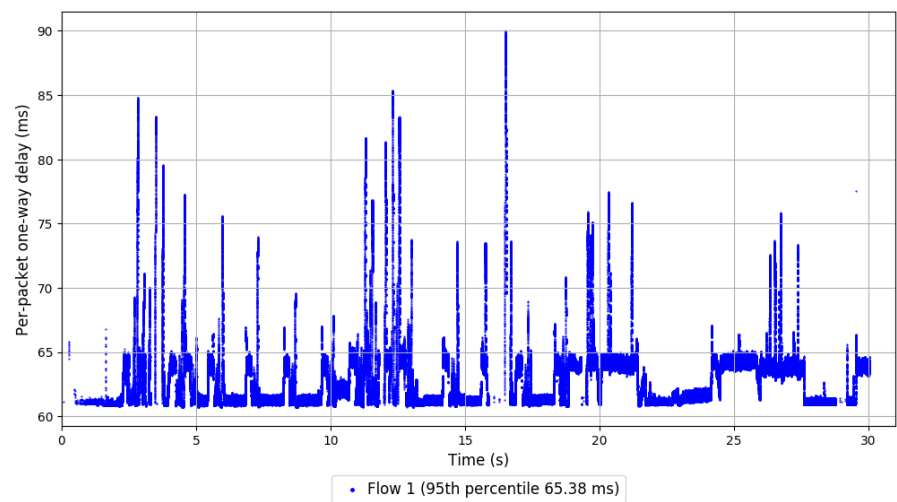
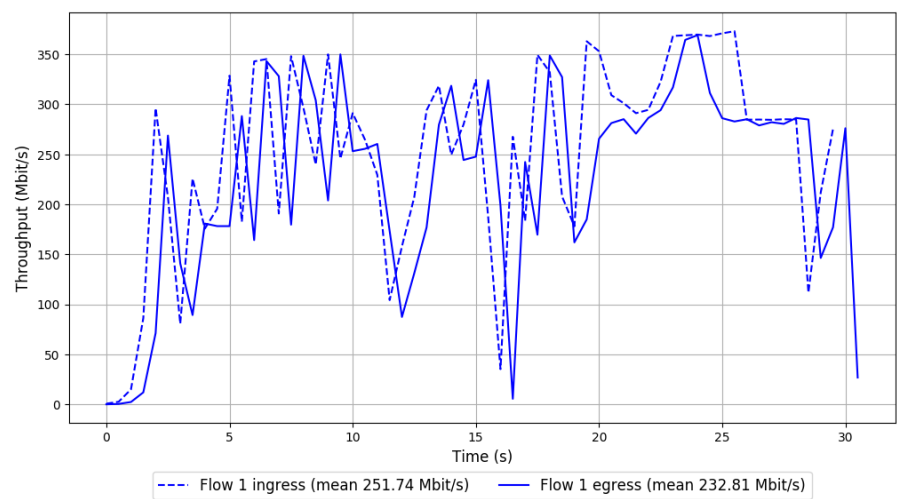


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 21:11:33
End at: 2018-09-05 21:12:03
Local clock offset: 1.319 ms
Remote clock offset: -38.797 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 232.81 Mbit/s
95th percentile per-packet one-way delay: 65.375 ms
Loss rate: 7.51%
-- Flow 1:
Average throughput: 232.81 Mbit/s
95th percentile per-packet one-way delay: 65.375 ms
Loss rate: 7.51%

Run 2: Report of TCP BBR — Data Link

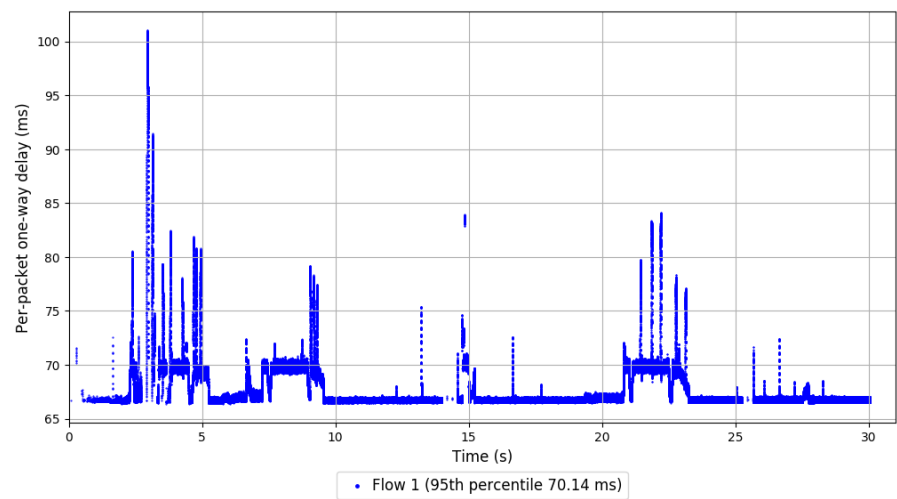
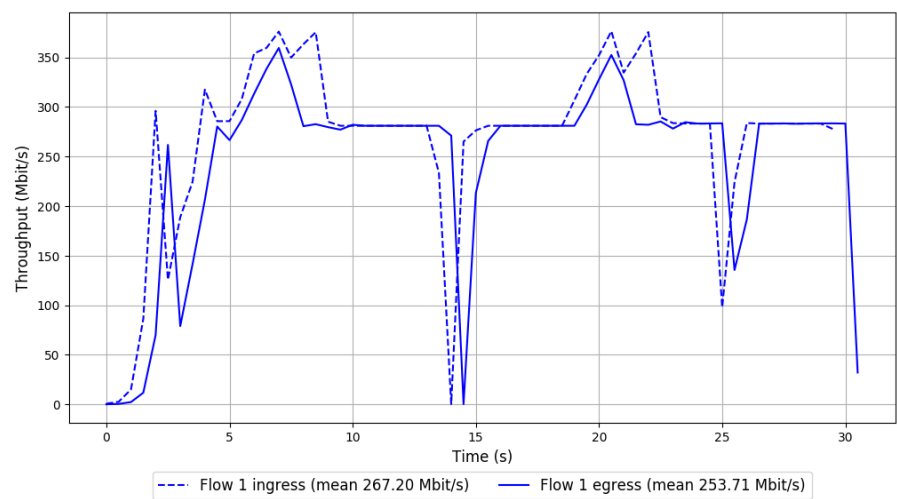


Run 3: Statistics of TCP BBR

Start at: 2018-09-05 21:17:00
End at: 2018-09-05 21:17:30
Local clock offset: 1.75 ms
Remote clock offset: -33.624 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 253.71 Mbit/s
95th percentile per-packet one-way delay: 70.140 ms
Loss rate: 5.05%
-- Flow 1:
Average throughput: 253.71 Mbit/s
95th percentile per-packet one-way delay: 70.140 ms
Loss rate: 5.05%

Run 3: Report of TCP BBR — Data Link

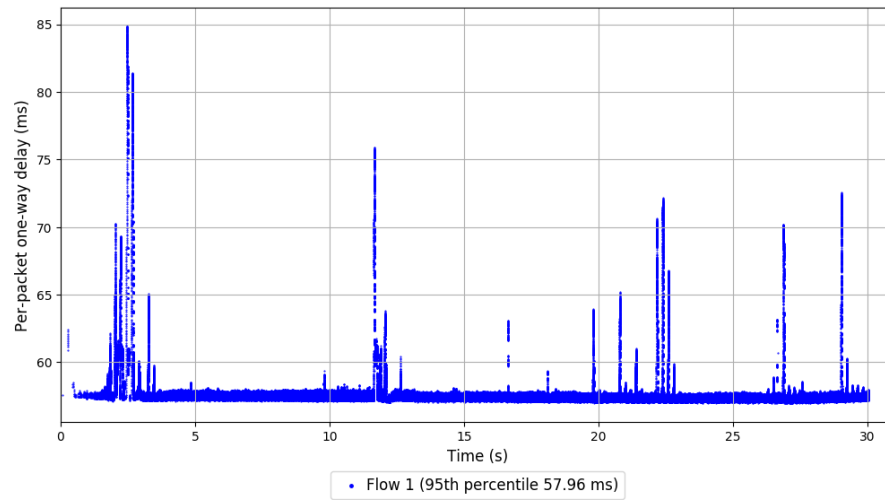
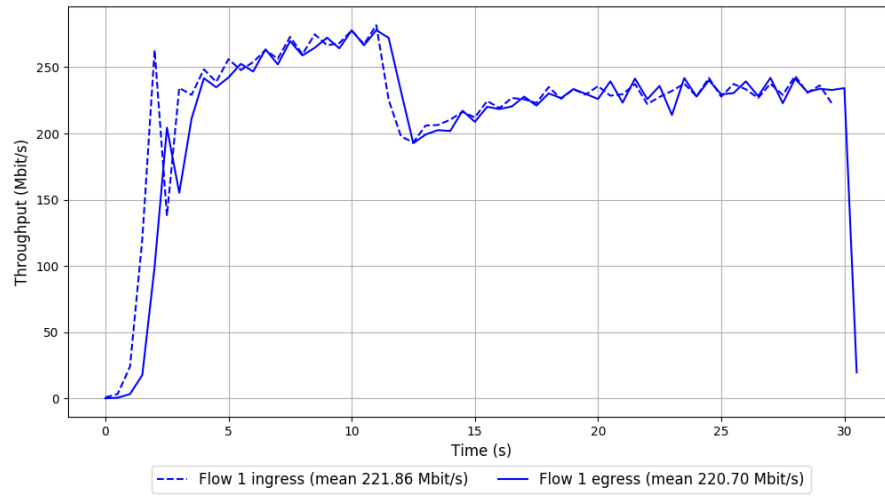


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 21:02:03
End at: 2018-09-05 21:02:33
Local clock offset: 0.775 ms
Remote clock offset: -38.565 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 220.70 Mbit/s
95th percentile per-packet one-way delay: 57.956 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 220.70 Mbit/s
95th percentile per-packet one-way delay: 57.956 ms
Loss rate: 0.52%

Run 1: Report of TCP Cubic — Data Link

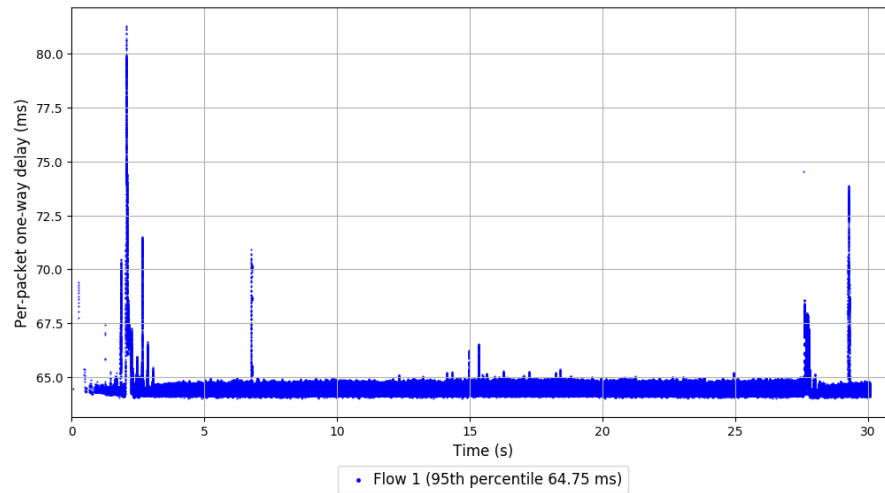
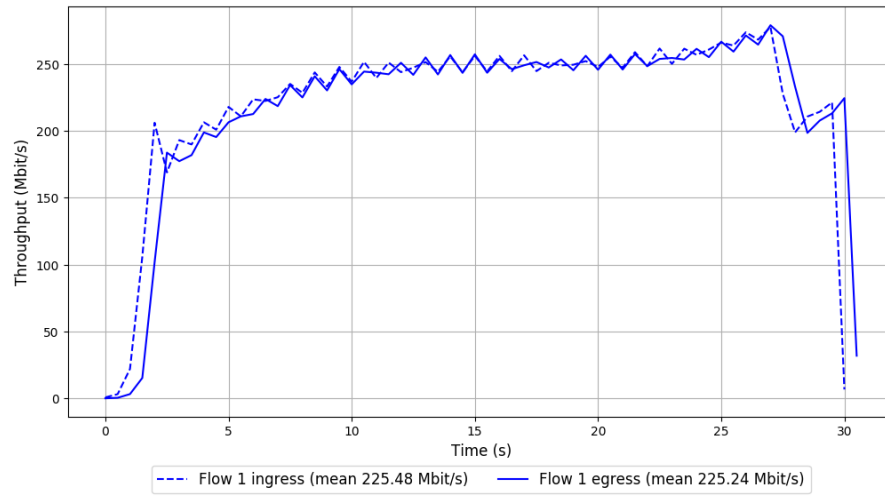


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 21:07:28
End at: 2018-09-05 21:07:58
Local clock offset: -0.057 ms
Remote clock offset: -35.921 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 225.24 Mbit/s
95th percentile per-packet one-way delay: 64.749 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 225.24 Mbit/s
95th percentile per-packet one-way delay: 64.749 ms
Loss rate: 0.10%

Run 2: Report of TCP Cubic — Data Link

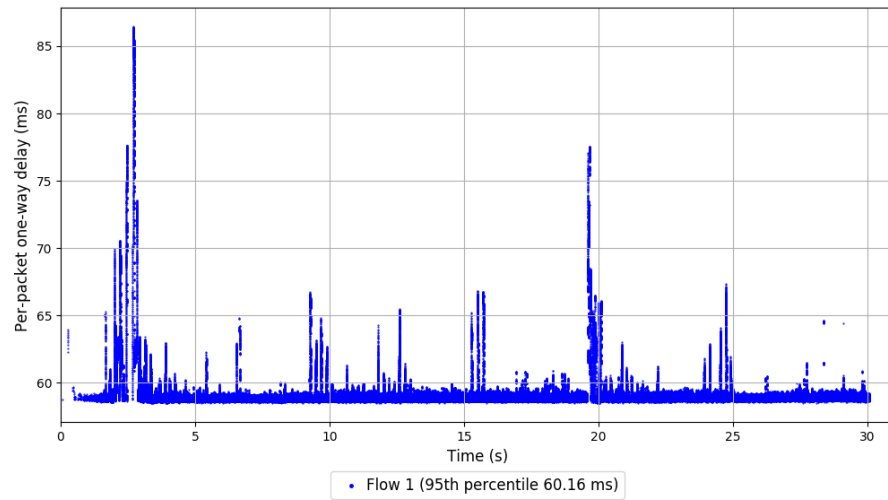
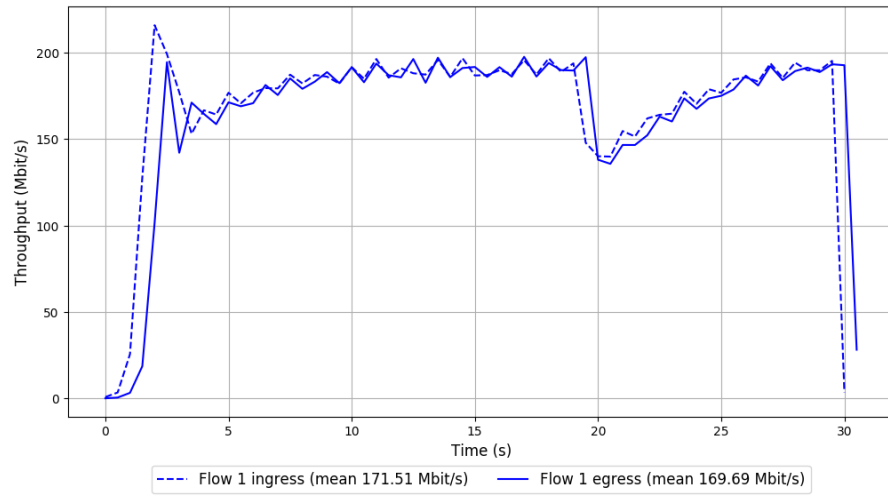


Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 21:12:55
End at: 2018-09-05 21:13:26
Local clock offset: 2.323 ms
Remote clock offset: -37.975 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 169.69 Mbit/s
95th percentile per-packet one-way delay: 60.157 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 169.69 Mbit/s
95th percentile per-packet one-way delay: 60.157 ms
Loss rate: 1.06%

Run 3: Report of TCP Cubic — Data Link

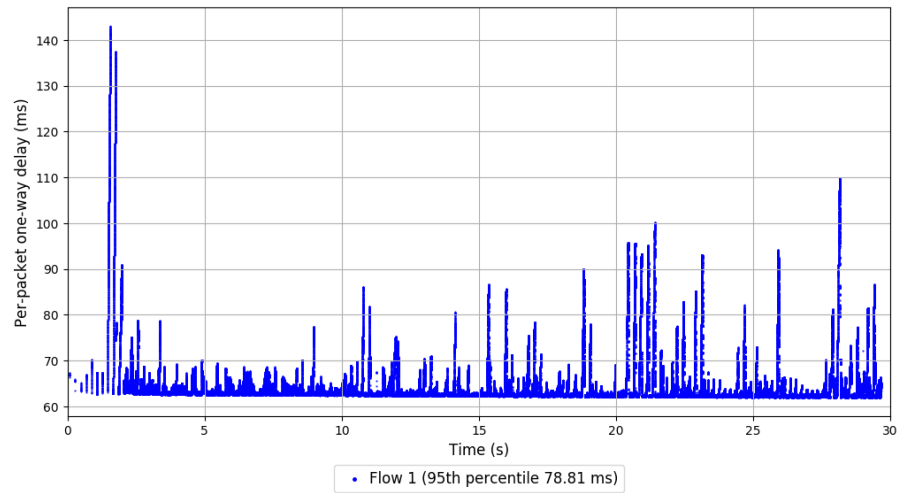
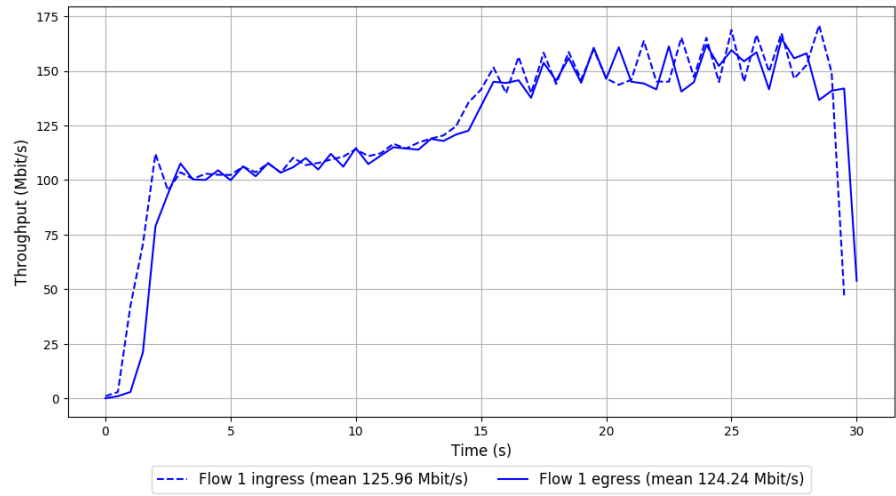


Run 1: Statistics of Indigo

Start at: 2018-09-05 21:04:47
End at: 2018-09-05 21:05:17
Local clock offset: 3.334 ms
Remote clock offset: -33.352 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 124.24 Mbit/s
95th percentile per-packet one-way delay: 78.814 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 124.24 Mbit/s
95th percentile per-packet one-way delay: 78.814 ms
Loss rate: 1.37%

Run 1: Report of Indigo — Data Link

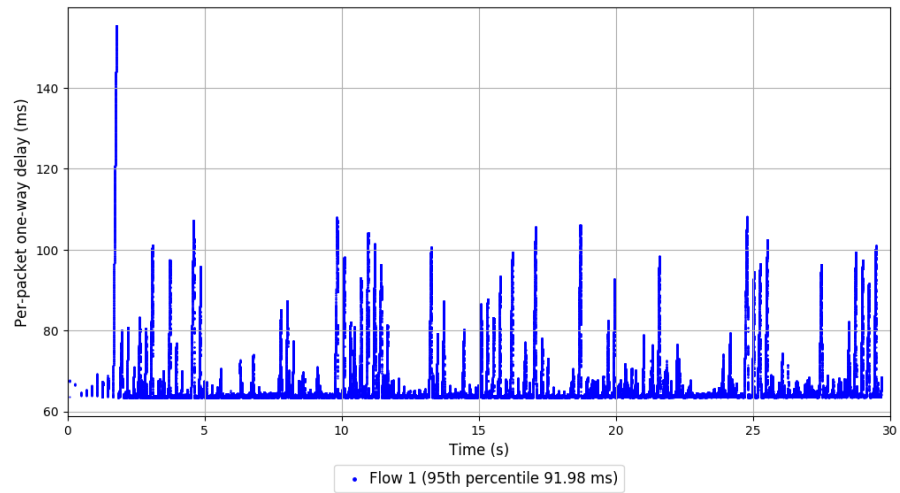
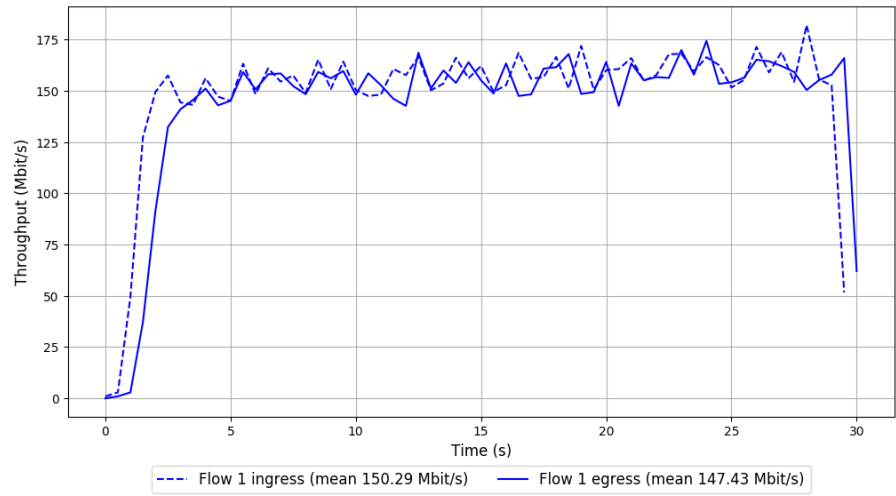


Run 2: Statistics of Indigo

Start at: 2018-09-05 21:10:14
End at: 2018-09-05 21:10:44
Local clock offset: 0.82 ms
Remote clock offset: -33.89 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 147.43 Mbit/s
95th percentile per-packet one-way delay: 91.983 ms
Loss rate: 1.90%
-- Flow 1:
Average throughput: 147.43 Mbit/s
95th percentile per-packet one-way delay: 91.983 ms
Loss rate: 1.90%

Run 2: Report of Indigo — Data Link

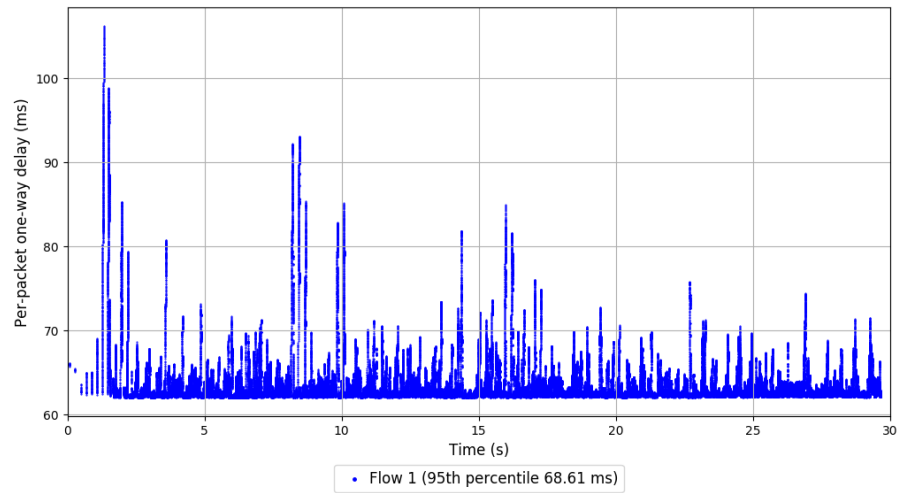
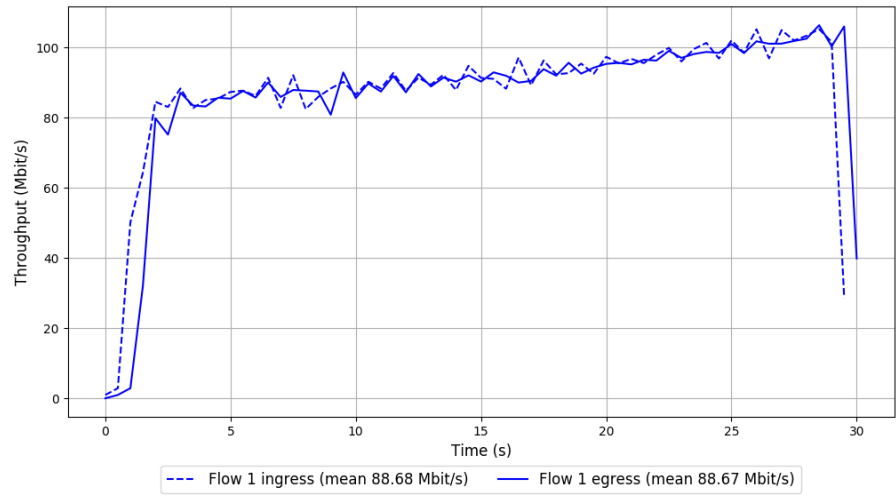


Run 3: Statistics of Indigo

Start at: 2018-09-05 21:15:39
End at: 2018-09-05 21:16:09
Local clock offset: 2.88 ms
Remote clock offset: -34.146 ms

Below is generated by plot.py at 2018-09-05 21:21:07
Datalink statistics
-- Total of 1 flow:
Average throughput: 88.67 Mbit/s
95th percentile per-packet one-way delay: 68.610 ms
Loss rate: 0.02%
-- Flow 1:
Average throughput: 88.67 Mbit/s
95th percentile per-packet one-way delay: 68.610 ms
Loss rate: 0.02%

Run 3: Report of Indigo — Data Link

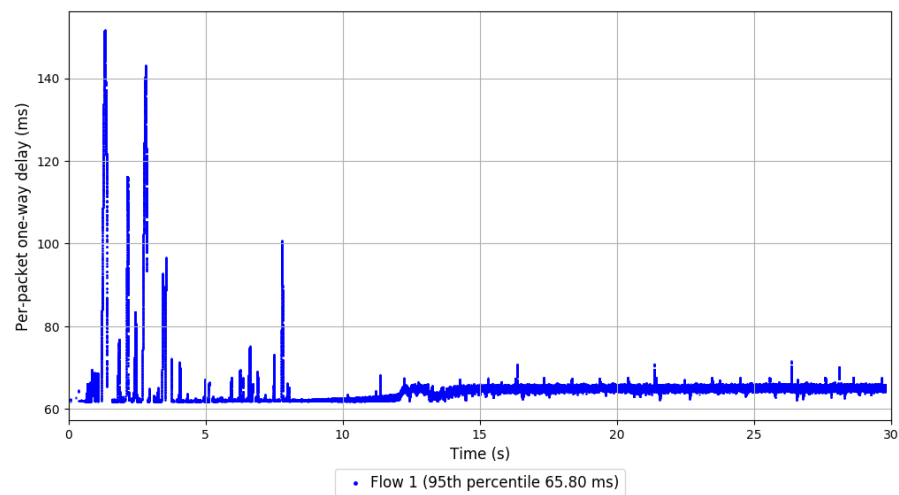
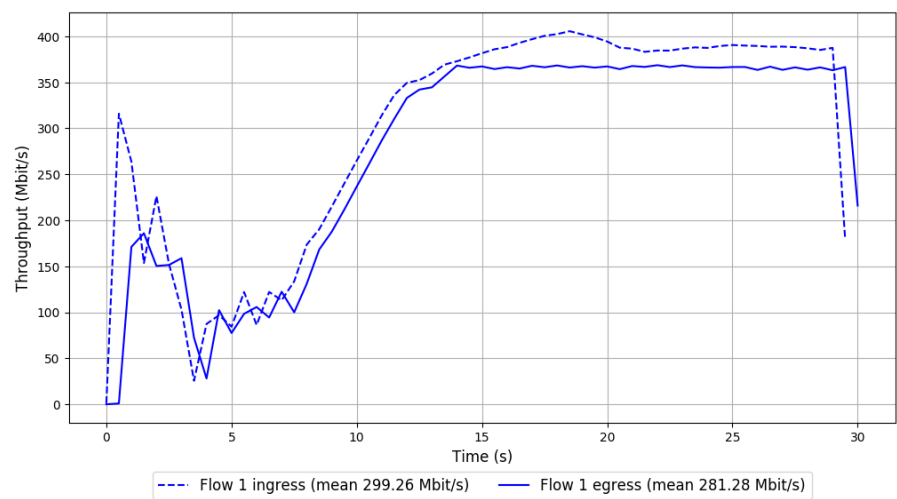


Run 1: Statistics of Muses-25

Start at: 2018-09-05 21:03:24
End at: 2018-09-05 21:03:54
Local clock offset: 0.616 ms
Remote clock offset: -38.897 ms

Below is generated by plot.py at 2018-09-05 21:21:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 281.28 Mbit/s
95th percentile per-packet one-way delay: 65.796 ms
Loss rate: 6.00%
-- Flow 1:
Average throughput: 281.28 Mbit/s
95th percentile per-packet one-way delay: 65.796 ms
Loss rate: 6.00%

Run 1: Report of Muses-25 — Data Link

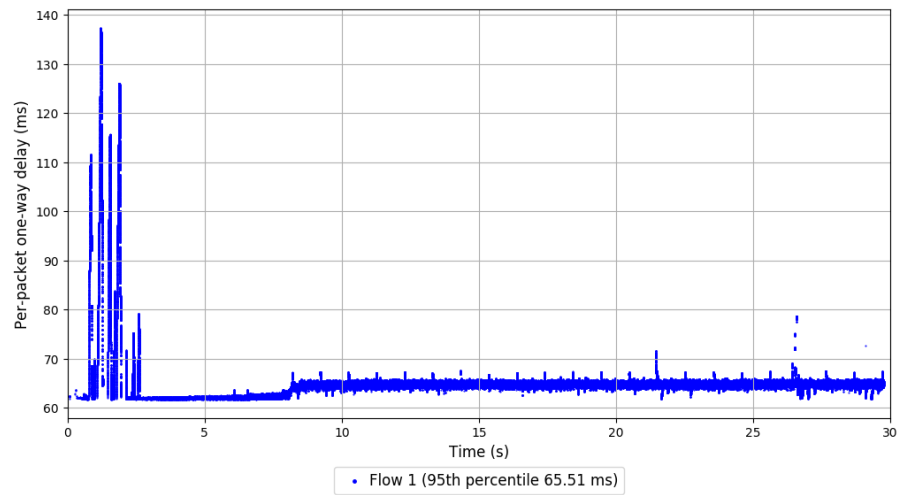
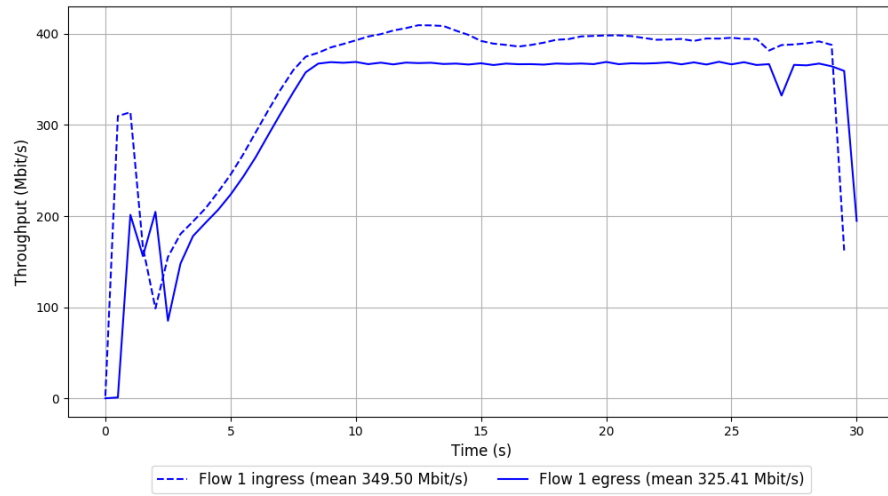


Run 2: Statistics of Muses-25

Start at: 2018-09-05 21:08:48
End at: 2018-09-05 21:09:18
Local clock offset: 0.639 ms
Remote clock offset: -35.59 ms

Below is generated by plot.py at 2018-09-05 21:22:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 325.41 Mbit/s
95th percentile per-packet one-way delay: 65.512 ms
Loss rate: 6.88%
-- Flow 1:
Average throughput: 325.41 Mbit/s
95th percentile per-packet one-way delay: 65.512 ms
Loss rate: 6.88%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 21:14:14
End at: 2018-09-05 21:14:44
Local clock offset: 3.961 ms
Remote clock offset: -38.668 ms

Below is generated by plot.py at 2018-09-05 21:22:02
Datalink statistics
-- Total of 1 flow:
Average throughput: 323.99 Mbit/s
95th percentile per-packet one-way delay: 60.000 ms
Loss rate: 6.38%
-- Flow 1:
Average throughput: 323.99 Mbit/s
95th percentile per-packet one-way delay: 60.000 ms
Loss rate: 6.38%

Run 3: Report of Muses-25 — Data Link

