

Pantheon Report

Generated at 2018-08-31 09:33:55 (UTC).

Data path: Colombia on **p4p1** (*remote*) → AWS Brazil 2 on **ens5** (*local*).

Repeated the test of 4 congestion control schemes 3 times.

Each test lasted for 30 seconds running 1 flow.

NTP offsets were measured against **gps.ntp.br** and have been applied to correct the timestamps in logs.

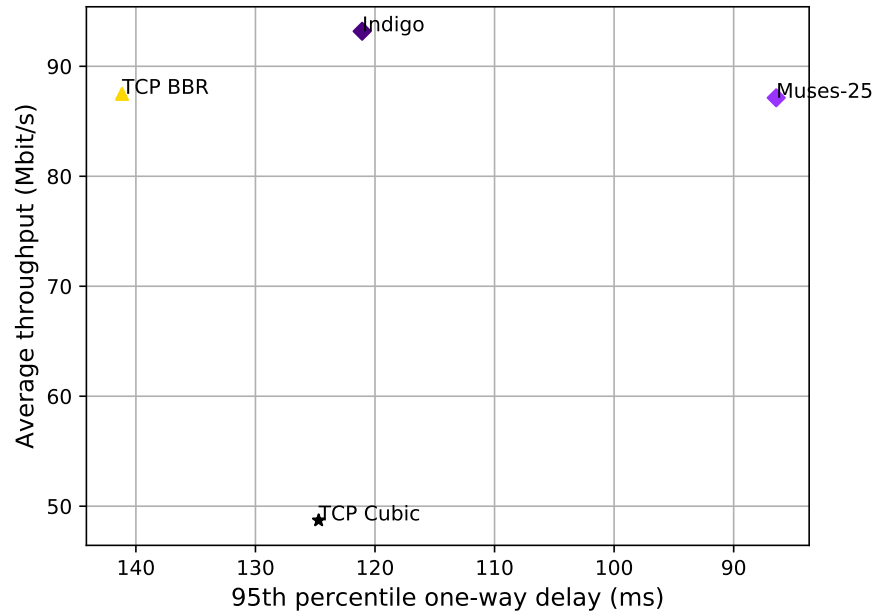
System info:

```
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
```

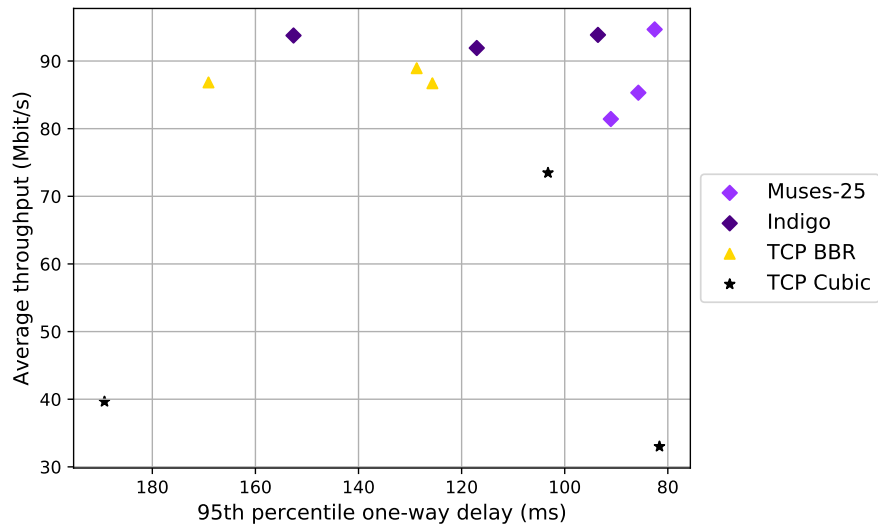
Git summary:

```
branch: muses @ e3c5aa19ca94c3066828fb83f16a8fb6b2731e7a
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b59e0d118c50af3579569c462d33045741c85981
third_party/pantheon-tunnel @ cbfce6db5ff5740dafa1771f813cd646339e1952
third_party/pcc @ 1afc958fa0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08fab92c4eb24f974ab
third_party/proto-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 Colombia to AWS Brazil 2, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Colombia to AWS Brazil 2, 3 runs of 30s each per scheme



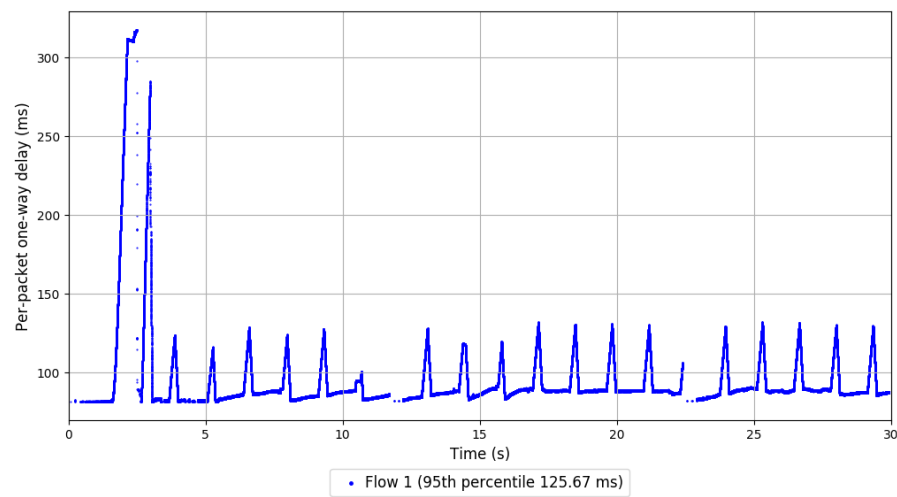
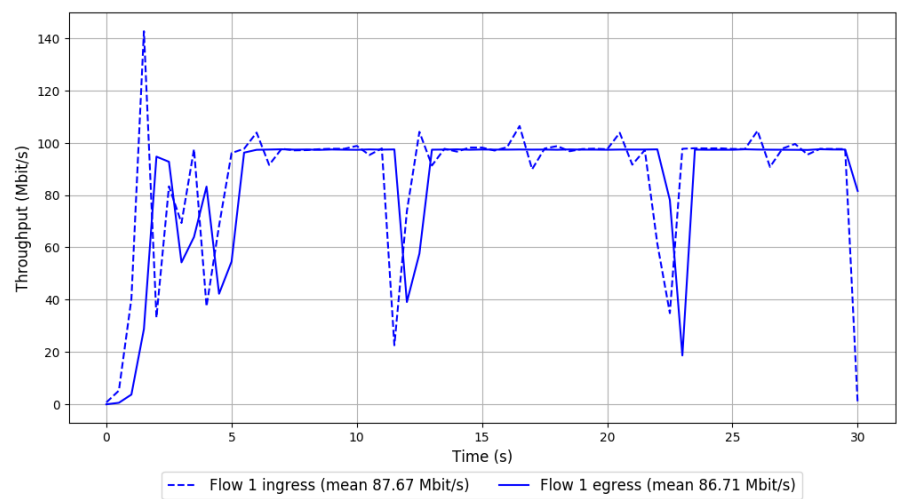
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	87.50	141.16	1.86
TCP Cubic	3	48.71	124.71	1.19
Indigo	3	93.18	121.08	1.51
Muses-25	3	87.14	86.44	0.95

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 09:20:37
End at: 2018-08-31 09:21:07
Local clock offset: -23.852 ms
Remote clock offset: -0.955 ms

Below is generated by plot.py at 2018-08-31 09:33:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 86.71 Mbit/s
95th percentile per-packet one-way delay: 125.669 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 86.71 Mbit/s
95th percentile per-packet one-way delay: 125.669 ms
Loss rate: 1.63%

Run 1: Report of TCP BBR — Data Link

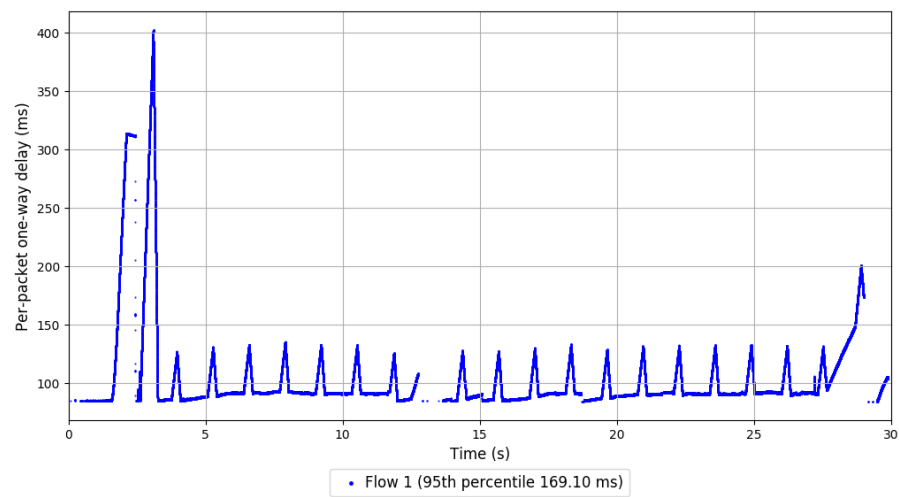
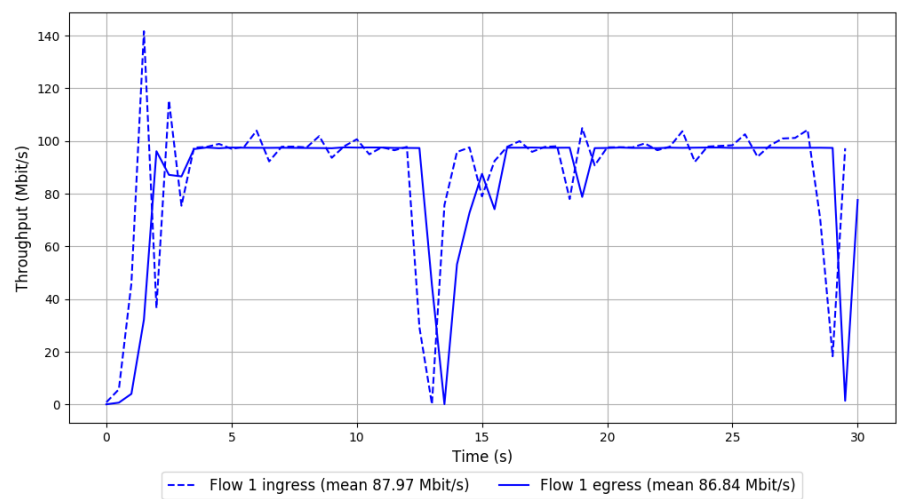


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 09:25:26
End at: 2018-08-31 09:25:56
Local clock offset: -23.27 ms
Remote clock offset: -1.974 ms

Below is generated by plot.py at 2018-08-31 09:33:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 86.84 Mbit/s
95th percentile per-packet one-way delay: 169.102 ms
Loss rate: 1.84%
-- Flow 1:
Average throughput: 86.84 Mbit/s
95th percentile per-packet one-way delay: 169.102 ms
Loss rate: 1.84%

Run 2: Report of TCP BBR — Data Link

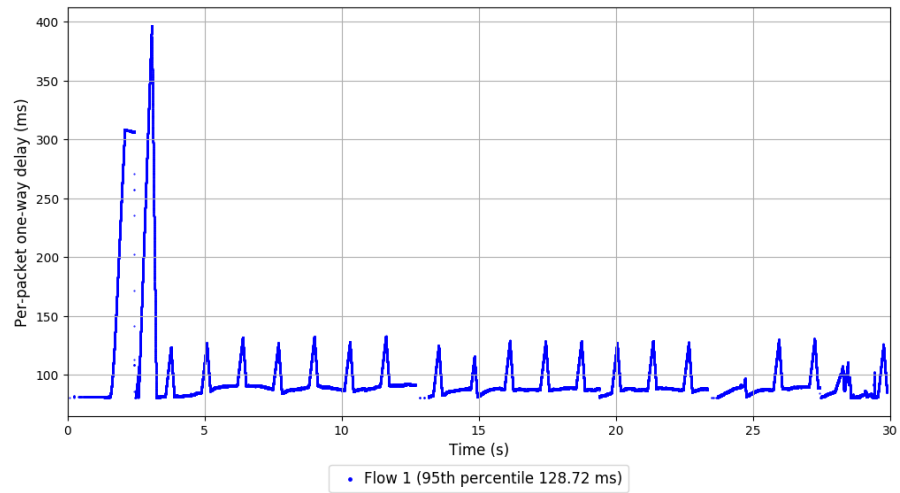
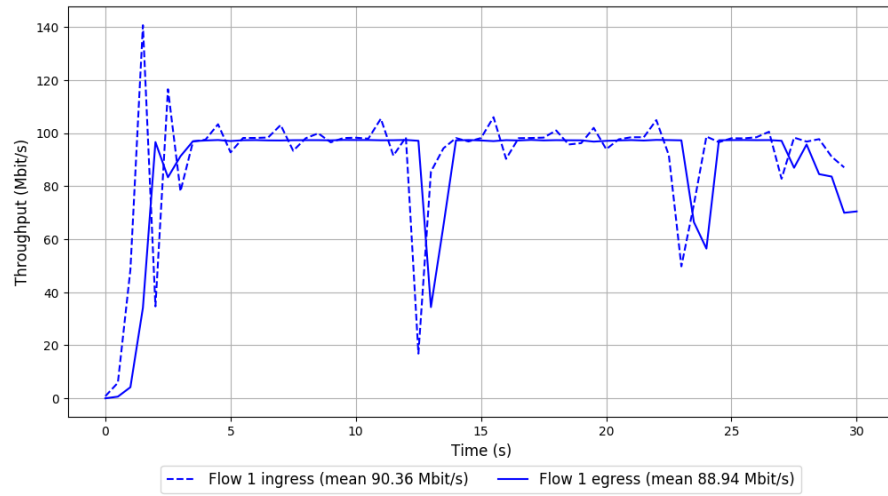


Run 3: Statistics of TCP BBR

Start at: 2018-08-31 09:30:11
End at: 2018-08-31 09:30:41
Local clock offset: -16.412 ms
Remote clock offset: -1.743 ms

Below is generated by plot.py at 2018-08-31 09:33:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 88.94 Mbit/s
95th percentile per-packet one-way delay: 128.717 ms
Loss rate: 2.11%
-- Flow 1:
Average throughput: 88.94 Mbit/s
95th percentile per-packet one-way delay: 128.717 ms
Loss rate: 2.11%

Run 3: Report of TCP BBR — Data Link

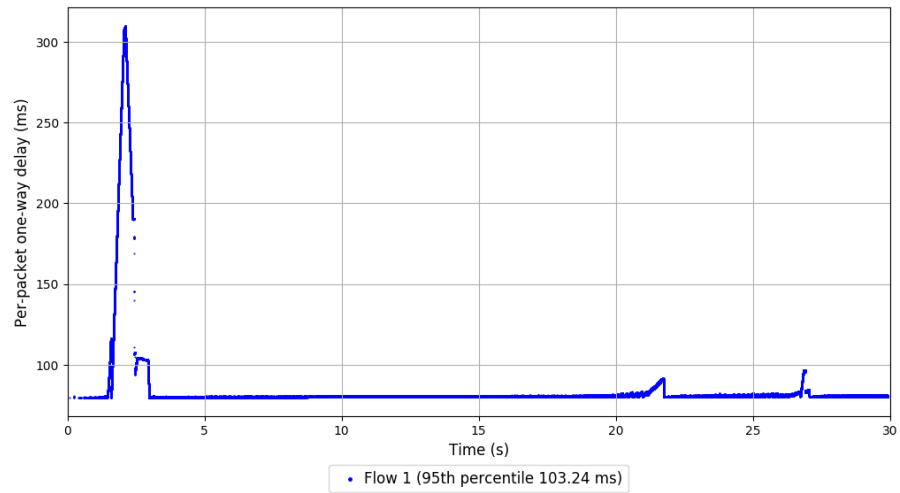
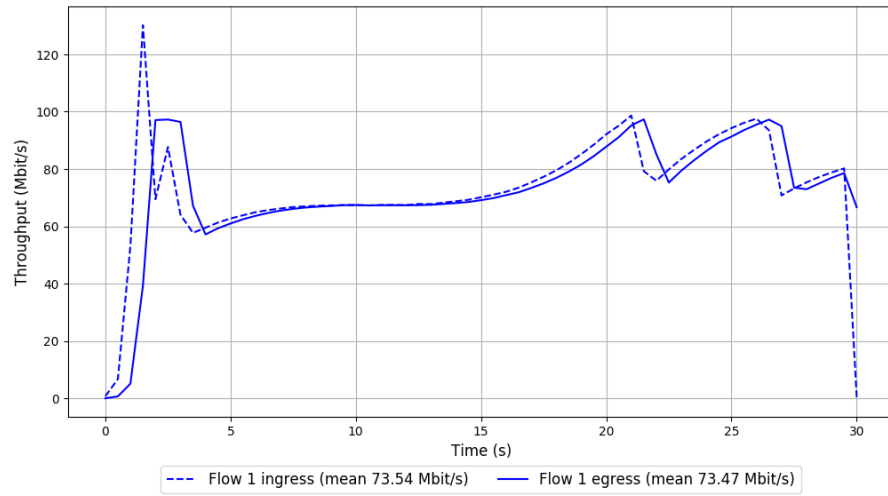


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 09:21:48
End at: 2018-08-31 09:22:18
Local clock offset: -25.038 ms
Remote clock offset: 3.031 ms

Below is generated by plot.py at 2018-08-31 09:33:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 73.47 Mbit/s
95th percentile per-packet one-way delay: 103.243 ms
Loss rate: 0.64%
-- Flow 1:
Average throughput: 73.47 Mbit/s
95th percentile per-packet one-way delay: 103.243 ms
Loss rate: 0.64%

Run 1: Report of TCP Cubic — Data Link

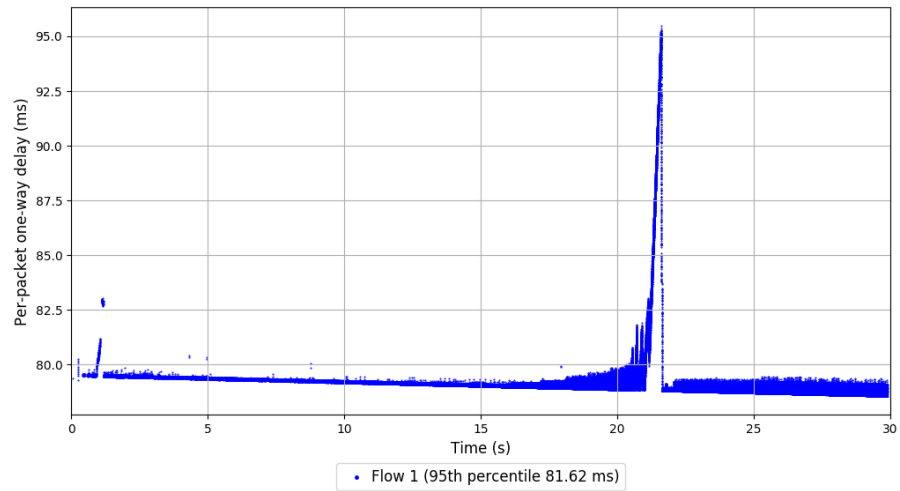
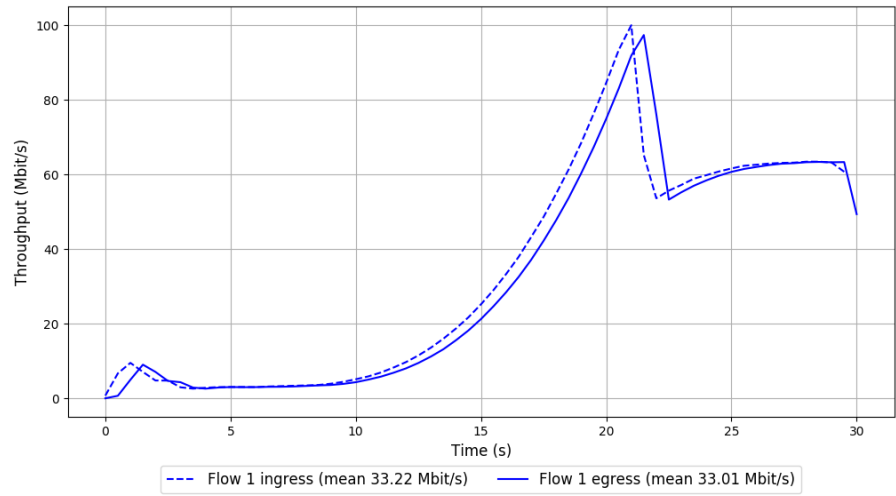


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 09:26:38
End at: 2018-08-31 09:27:08
Local clock offset: -21.315 ms
Remote clock offset: 3.131 ms

Below is generated by plot.py at 2018-08-31 09:33:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 33.01 Mbit/s
95th percentile per-packet one-way delay: 81.618 ms
Loss rate: 1.19%
-- Flow 1:
Average throughput: 33.01 Mbit/s
95th percentile per-packet one-way delay: 81.618 ms
Loss rate: 1.19%

Run 2: Report of TCP Cubic — Data Link

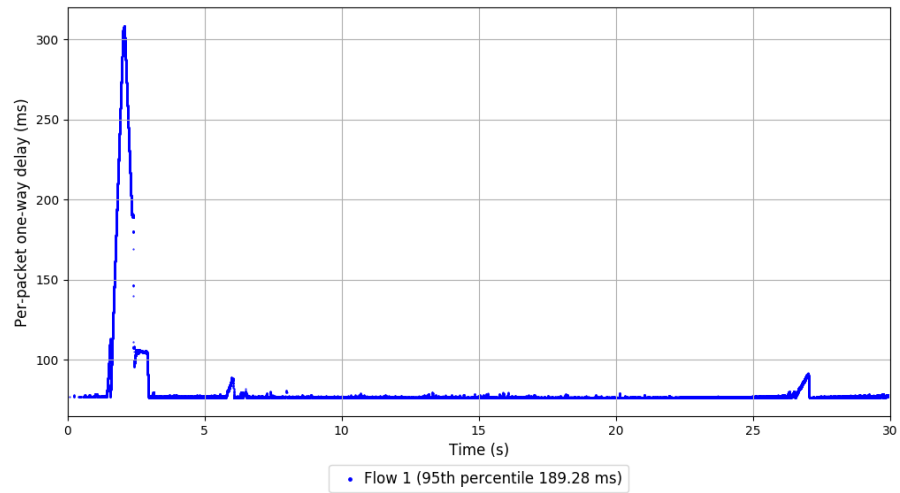
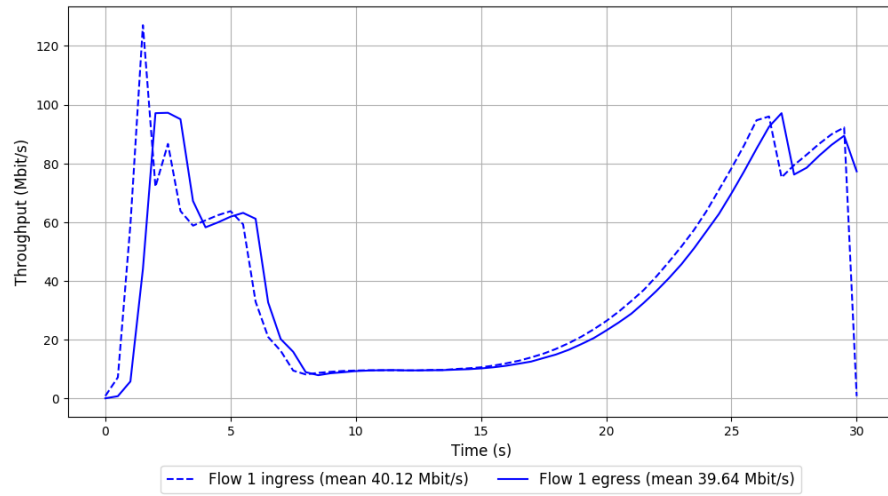


Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 09:31:33
End at: 2018-08-31 09:32:03
Local clock offset: -15.187 ms
Remote clock offset: 3.219 ms

Below is generated by plot.py at 2018-08-31 09:33:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 39.64 Mbit/s
95th percentile per-packet one-way delay: 189.280 ms
Loss rate: 1.73%
-- Flow 1:
Average throughput: 39.64 Mbit/s
95th percentile per-packet one-way delay: 189.280 ms
Loss rate: 1.73%

Run 3: Report of TCP Cubic — Data Link

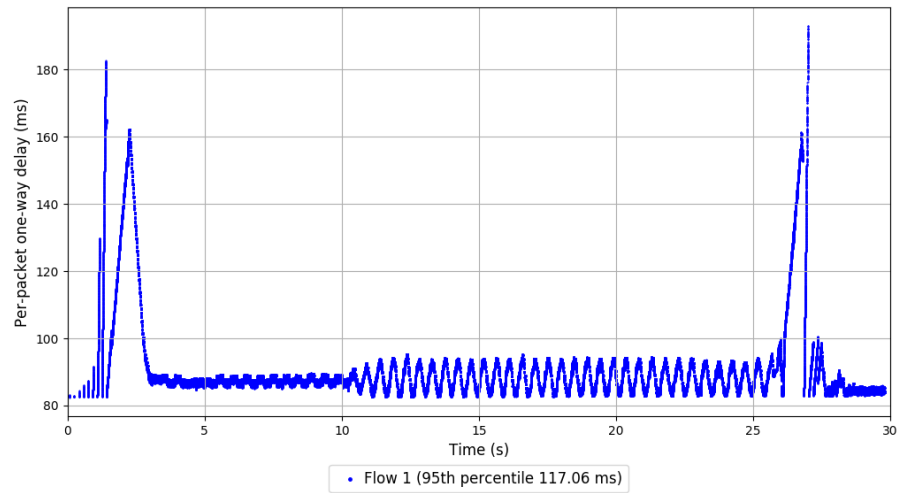
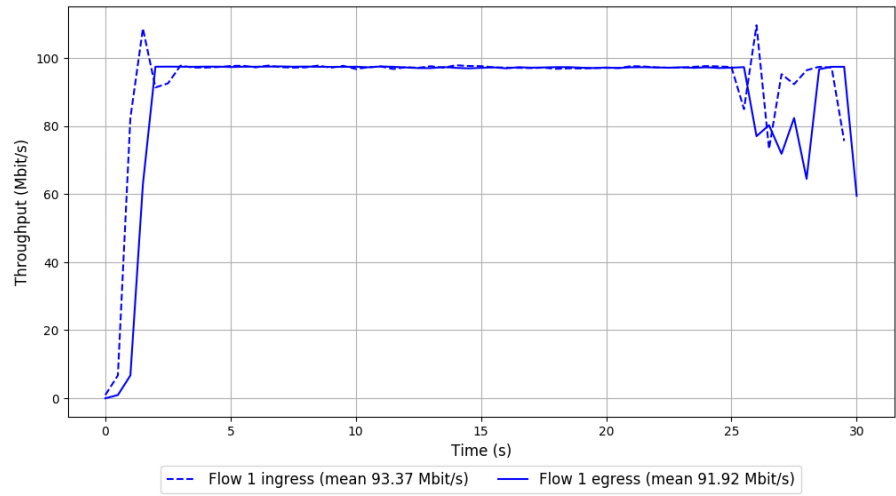


Run 1: Statistics of Indigo

Start at: 2018-08-31 09:18:13
End at: 2018-08-31 09:18:43
Local clock offset: -20.849 ms
Remote clock offset: -0.968 ms

Below is generated by plot.py at 2018-08-31 09:33:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 91.92 Mbit/s
95th percentile per-packet one-way delay: 117.063 ms
Loss rate: 2.09%
-- Flow 1:
Average throughput: 91.92 Mbit/s
95th percentile per-packet one-way delay: 117.063 ms
Loss rate: 2.09%

Run 1: Report of Indigo — Data Link

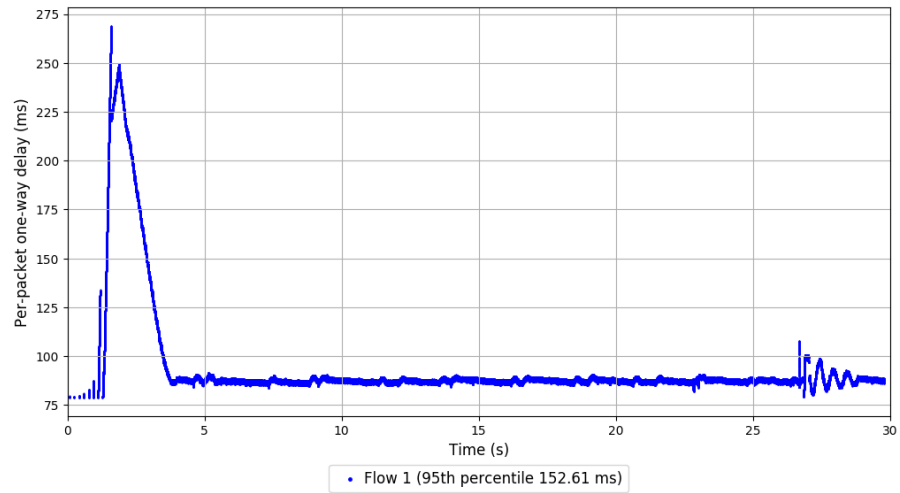
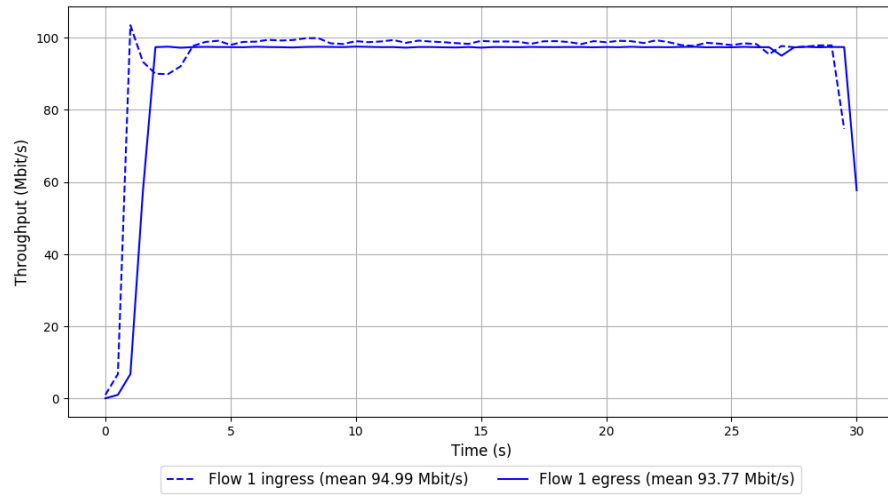


Run 2: Statistics of Indigo

Start at: 2018-08-31 09:23:03
End at: 2018-08-31 09:23:33
Local clock offset: -25.301 ms
Remote clock offset: 2.05 ms

Below is generated by plot.py at 2018-08-31 09:33:27
Datalink statistics
-- Total of 1 flow:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 152.610 ms
Loss rate: 1.82%
-- Flow 1:
Average throughput: 93.77 Mbit/s
95th percentile per-packet one-way delay: 152.610 ms
Loss rate: 1.82%

Run 2: Report of Indigo — Data Link

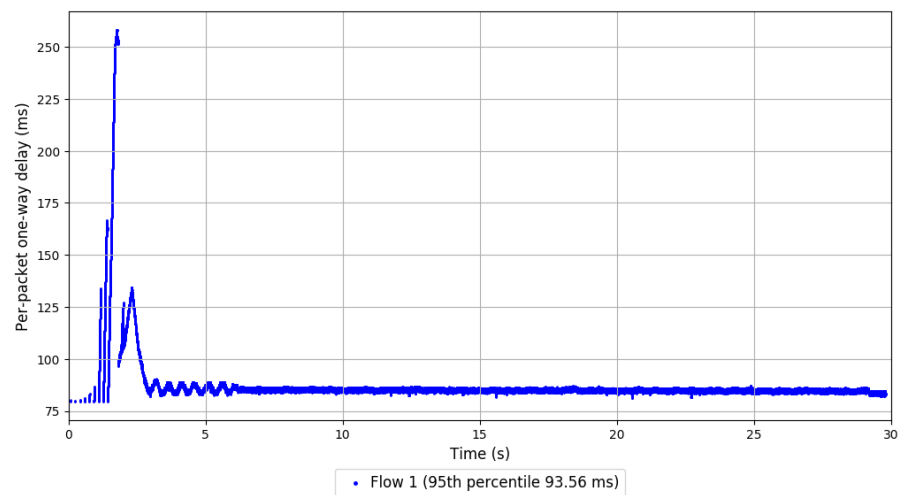
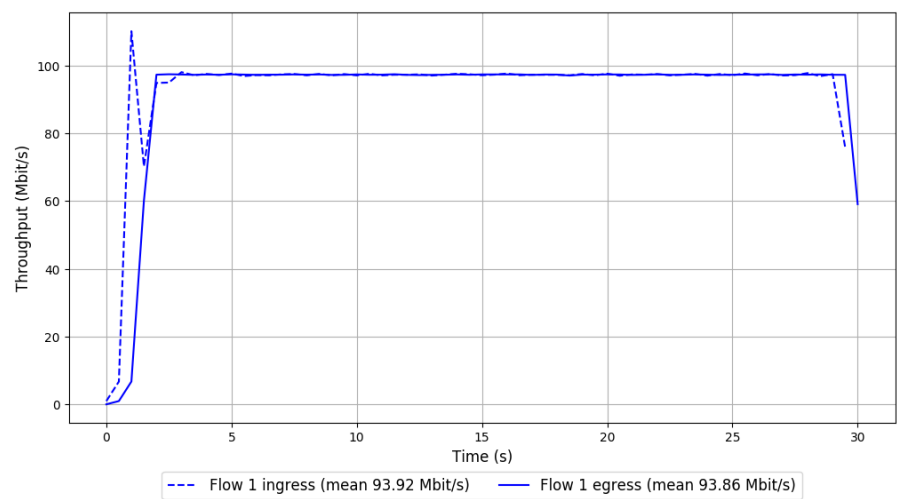


Run 3: Statistics of Indigo

Start at: 2018-08-31 09:27:46
End at: 2018-08-31 09:28:16
Local clock offset: -18.855 ms
Remote clock offset: 3.2 ms

Below is generated by plot.py at 2018-08-31 09:33:42
Datalink statistics
-- Total of 1 flow:
Average throughput: 93.86 Mbit/s
95th percentile per-packet one-way delay: 93.555 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 93.86 Mbit/s
95th percentile per-packet one-way delay: 93.555 ms
Loss rate: 0.62%

Run 3: Report of Indigo — Data Link

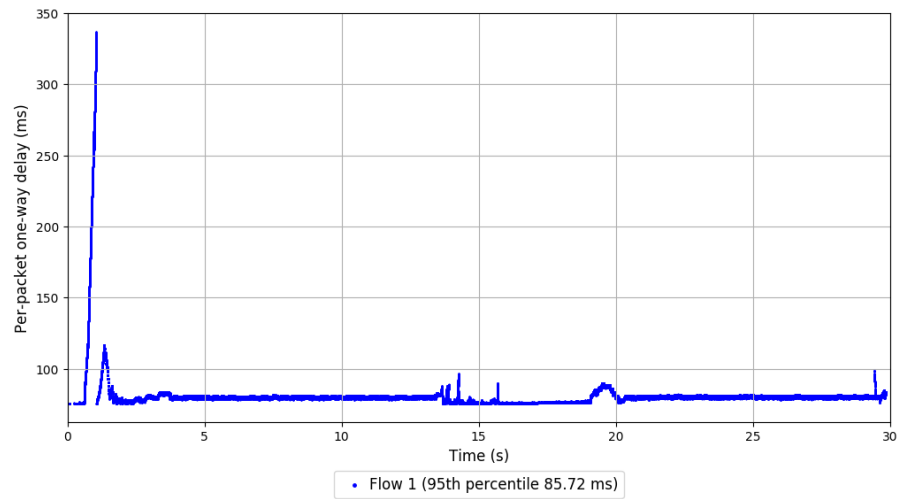
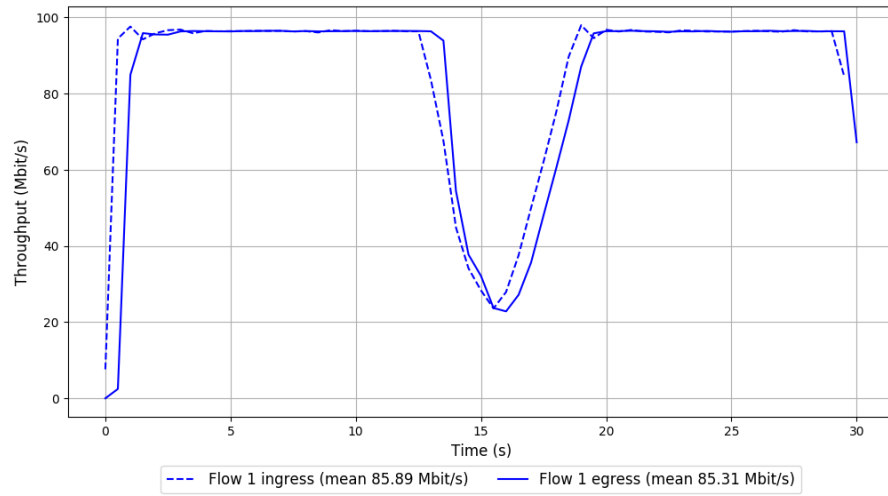


Run 1: Statistics of Muses-25

Start at: 2018-08-31 09:19:25
End at: 2018-08-31 09:19:55
Local clock offset: -22.706 ms
Remote clock offset: 4.181 ms

Below is generated by plot.py at 2018-08-31 09:33:45
Datalink statistics
-- Total of 1 flow:
Average throughput: 85.31 Mbit/s
95th percentile per-packet one-way delay: 85.717 ms
Loss rate: 1.21%
-- Flow 1:
Average throughput: 85.31 Mbit/s
95th percentile per-packet one-way delay: 85.717 ms
Loss rate: 1.21%

Run 1: Report of Muses-25 — Data Link

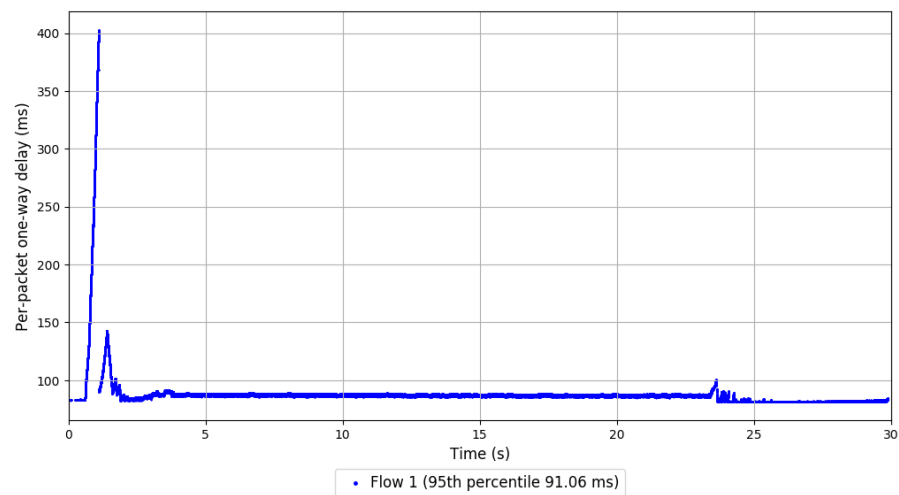
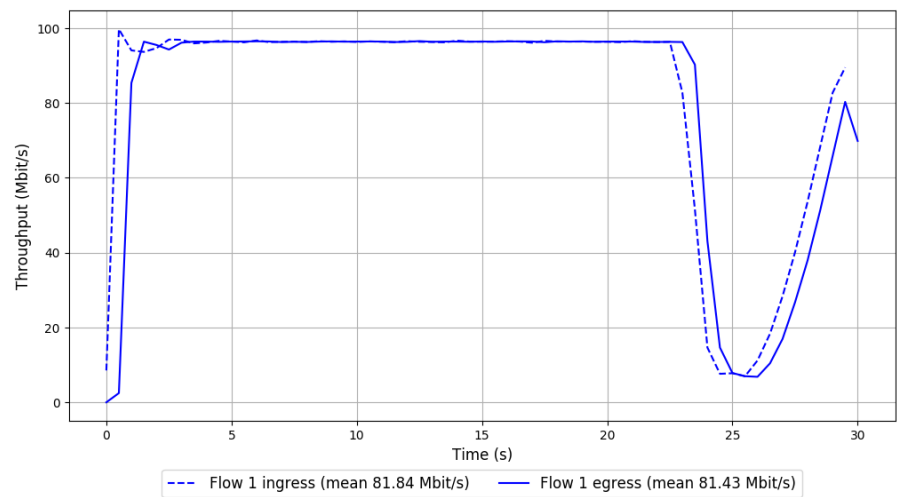


Run 2: Statistics of Muses-25

Start at: 2018-08-31 09:24:15
End at: 2018-08-31 09:24:46
Local clock offset: -26.649 ms
Remote clock offset: -0.838 ms

Below is generated by plot.py at 2018-08-31 09:33:54
Datalink statistics
-- Total of 1 flow:
Average throughput: 81.43 Mbit/s
95th percentile per-packet one-way delay: 91.055 ms
Loss rate: 1.06%
-- Flow 1:
Average throughput: 81.43 Mbit/s
95th percentile per-packet one-way delay: 91.055 ms
Loss rate: 1.06%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-08-31 09:28:59

End at: 2018-08-31 09:29:29

Local clock offset: -18.18 ms

Remote clock offset: 4.34 ms

Below is generated by plot.py at 2018-08-31 09:33:55

Datalink statistics

-- Total of 1 flow:

Average throughput: 94.67 Mbit/s

95th percentile per-packet one-way delay: 82.551 ms

Loss rate: 0.58%

-- Flow 1:

Average throughput: 94.67 Mbit/s

95th percentile per-packet one-way delay: 82.551 ms

Loss rate: 0.58%

Run 3: Report of Muses-25 — Data Link

