

Pantheon Report

Generated at 2018-09-05 22:10:54 (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.

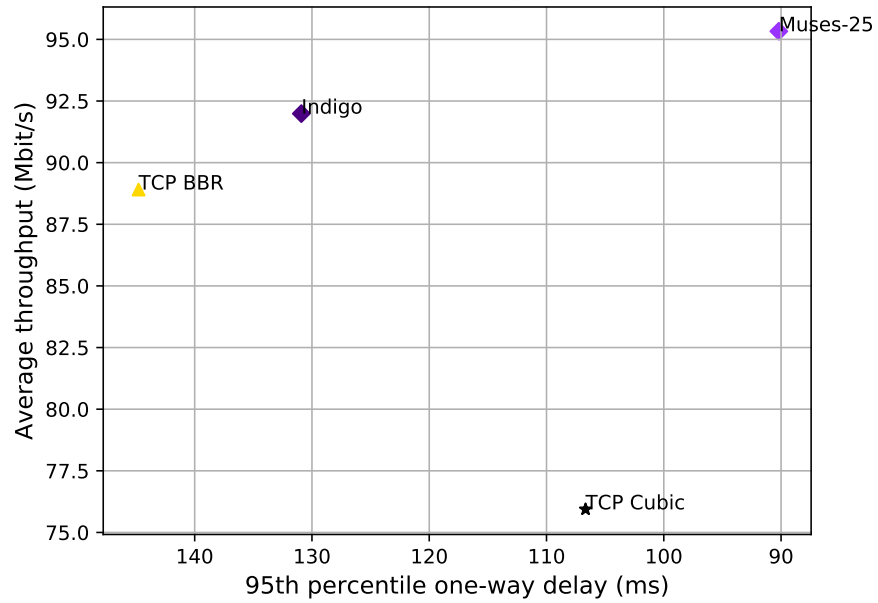
System info:

```
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
```

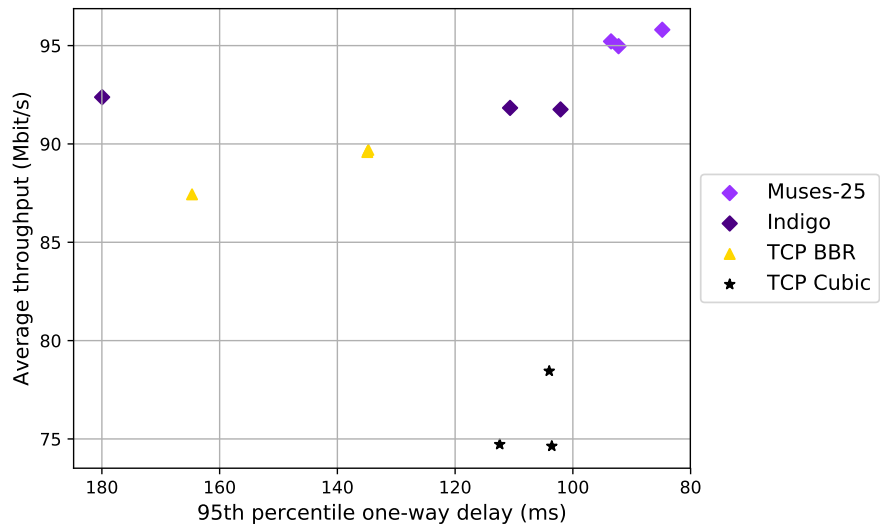
Git summary:

```
branch: muses @ 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 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



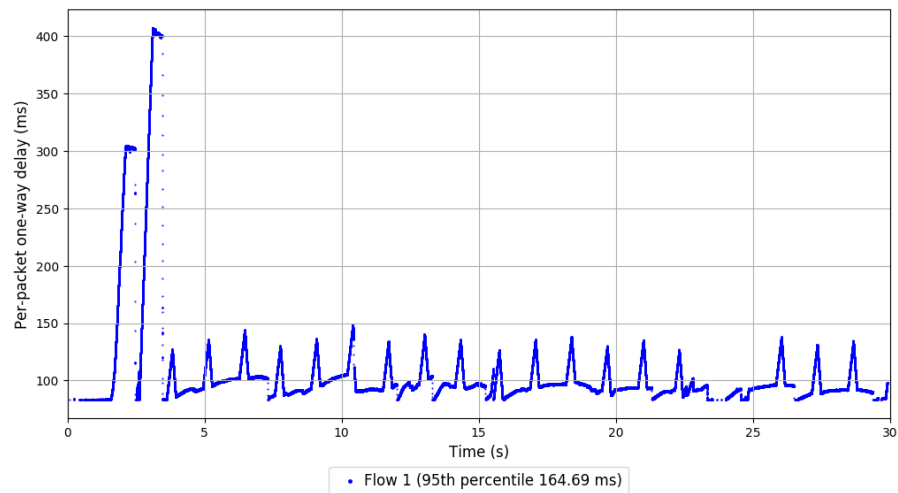
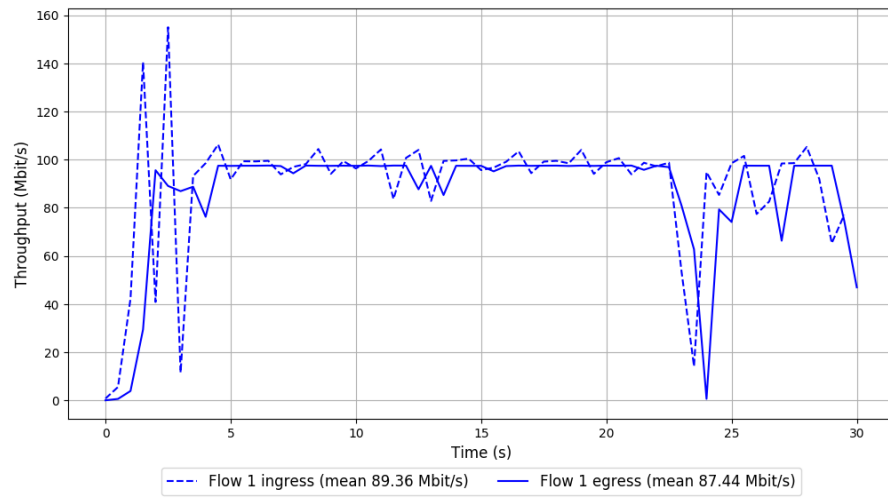
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	88.91	144.78	1.69
TCP Cubic	3	75.94	106.67	0.60
Indigo	3	91.99	130.91	2.12
Muses-25	3	95.33	90.19	0.58

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 21:58:17
End at: 2018-09-05 21:58:47
Local clock offset: 21.704 ms
Remote clock offset: -0.961 ms

Below is generated by plot.py at 2018-09-05 22:10:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 87.44 Mbit/s
95th percentile per-packet one-way delay: 164.689 ms
Loss rate: 2.70%
-- Flow 1:
Average throughput: 87.44 Mbit/s
95th percentile per-packet one-way delay: 164.689 ms
Loss rate: 2.70%

Run 1: Report of TCP BBR — Data Link

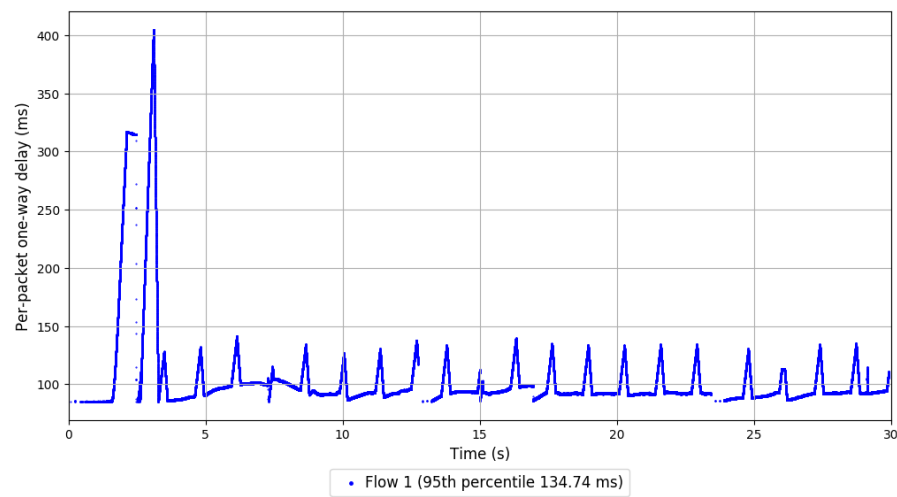
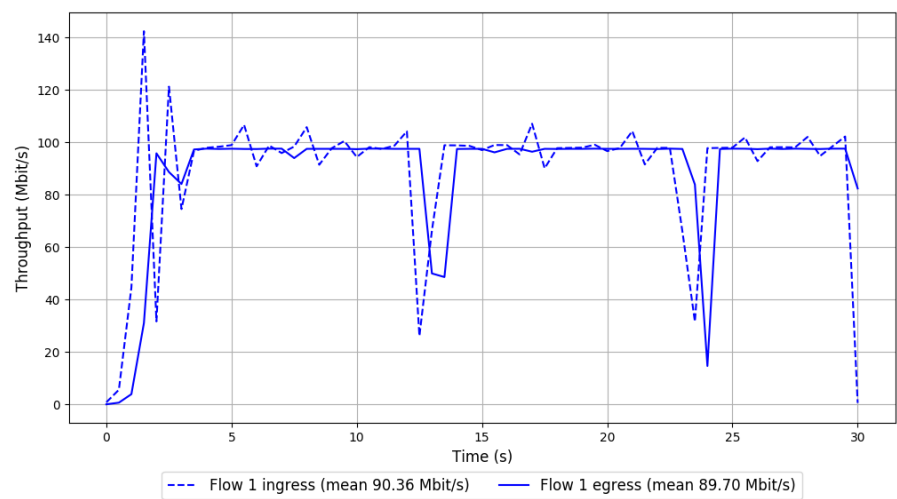


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 22:03:10
End at: 2018-09-05 22:03:40
Local clock offset: 19.204 ms
Remote clock offset: -1.862 ms

Below is generated by plot.py at 2018-09-05 22:10:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 89.70 Mbit/s
95th percentile per-packet one-way delay: 134.741 ms
Loss rate: 1.28%
-- Flow 1:
Average throughput: 89.70 Mbit/s
95th percentile per-packet one-way delay: 134.741 ms
Loss rate: 1.28%

Run 2: Report of TCP BBR — Data Link

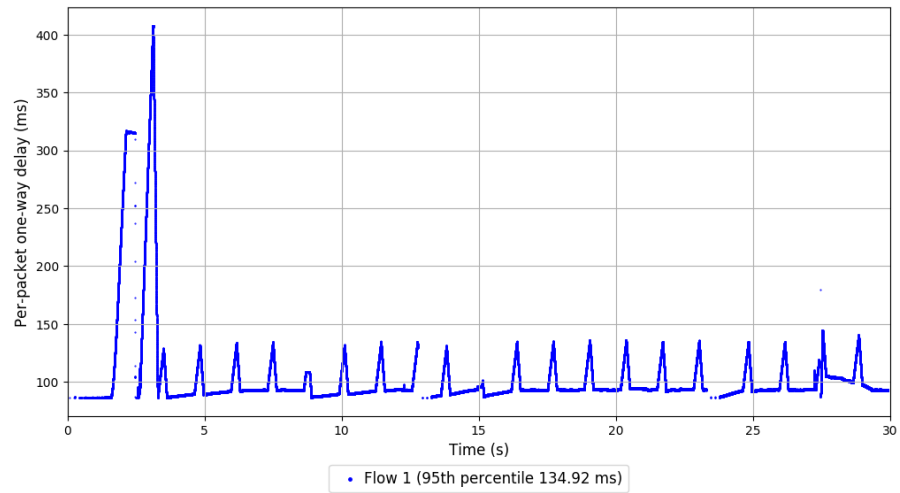
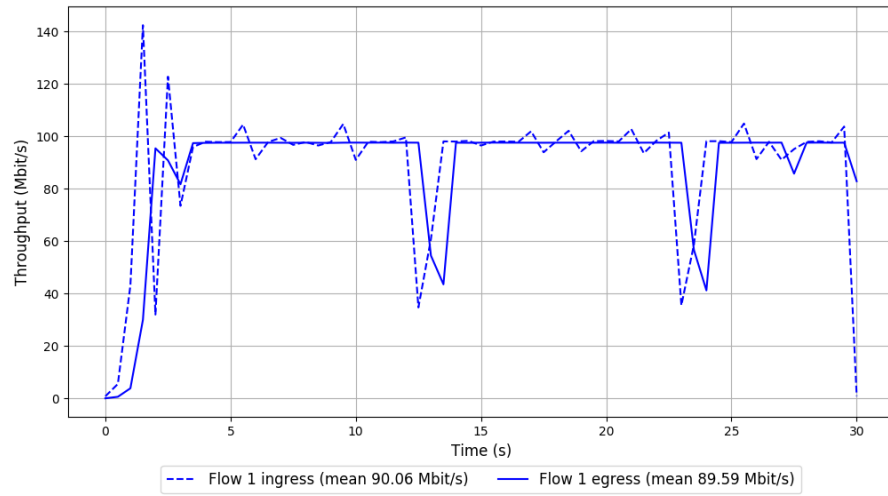


Run 3: Statistics of TCP BBR

Start at: 2018-09-05 22:08:10
End at: 2018-09-05 22:08:40
Local clock offset: 15.179 ms
Remote clock offset: -1.955 ms

Below is generated by plot.py at 2018-09-05 22:10:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 89.59 Mbit/s
95th percentile per-packet one-way delay: 134.917 ms
Loss rate: 1.08%
-- Flow 1:
Average throughput: 89.59 Mbit/s
95th percentile per-packet one-way delay: 134.917 ms
Loss rate: 1.08%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 21:55:46

End at: 2018-09-05 21:56:16

Local clock offset: 20.391 ms

Remote clock offset: -1.91 ms

Below is generated by plot.py at 2018-09-05 22:10:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 74.72 Mbit/s

95th percentile per-packet one-way delay: 112.426 ms

Loss rate: 0.61%

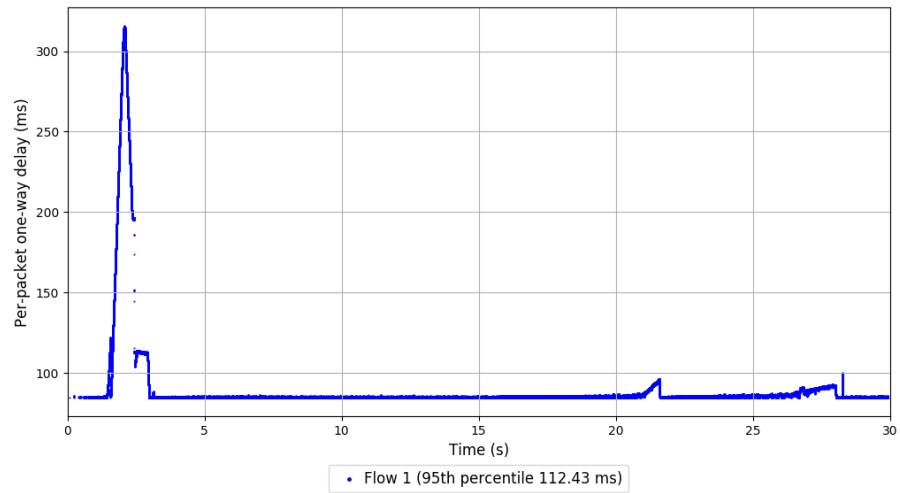
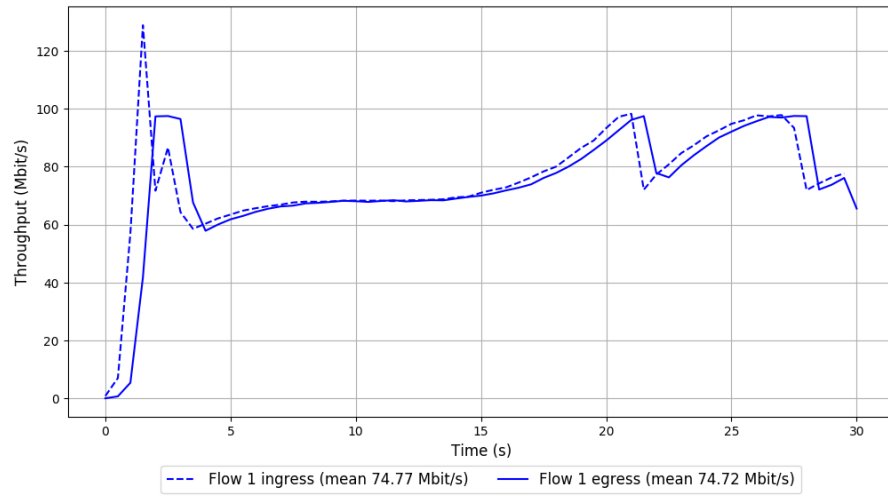
-- Flow 1:

Average throughput: 74.72 Mbit/s

95th percentile per-packet one-way delay: 112.426 ms

Loss rate: 0.61%

Run 1: Report of TCP Cubic — Data Link



Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 22:00:47

End at: 2018-09-05 22:01:17

Local clock offset: 23.155 ms

Remote clock offset: 3.145 ms

Below is generated by plot.py at 2018-09-05 22:10:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 78.45 Mbit/s

95th percentile per-packet one-way delay: 104.010 ms

Loss rate: 0.58%

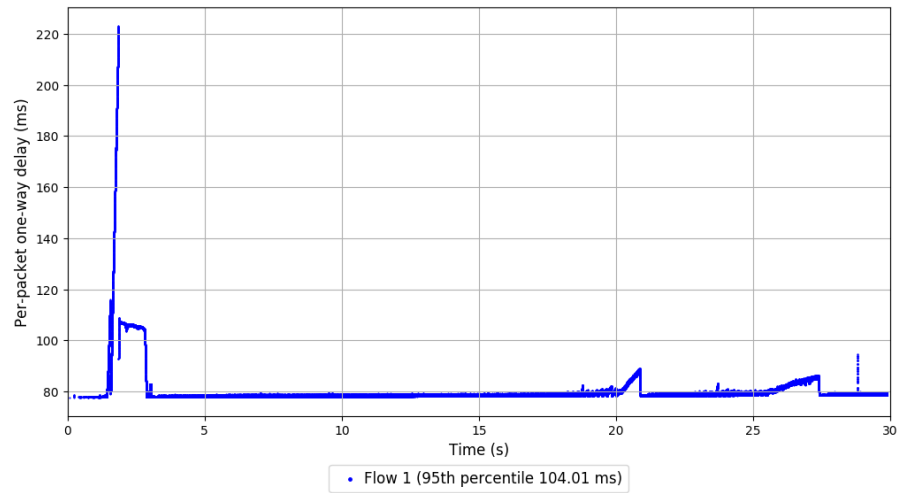
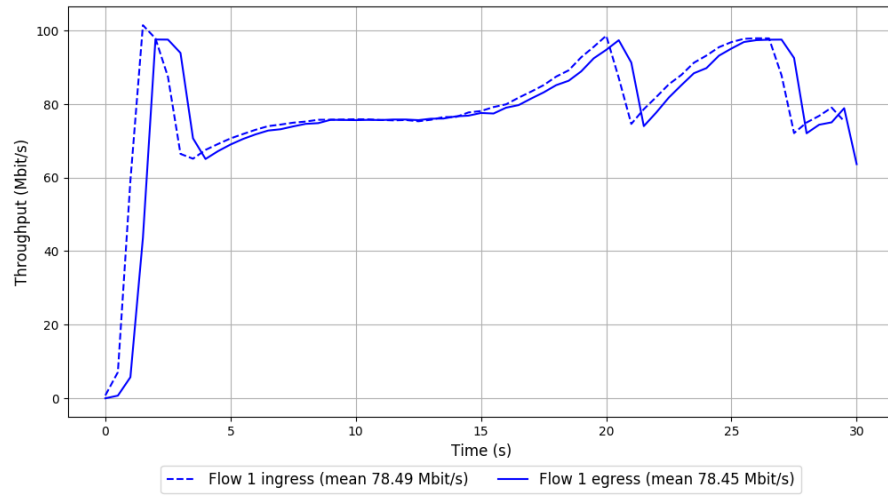
-- Flow 1:

Average throughput: 78.45 Mbit/s

95th percentile per-packet one-way delay: 104.010 ms

Loss rate: 0.58%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 22:05:47

End at: 2018-09-05 22:06:17

Local clock offset: 16.358 ms

Remote clock offset: 3.21 ms

Below is generated by plot.py at 2018-09-05 22:10:21

Datalink statistics

-- Total of 1 flow:

Average throughput: 74.64 Mbit/s

95th percentile per-packet one-way delay: 103.580 ms

Loss rate: 0.61%

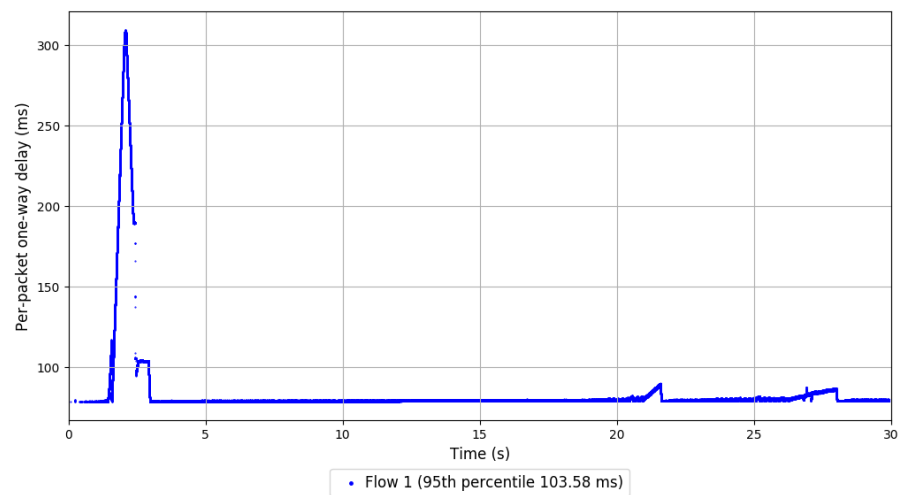
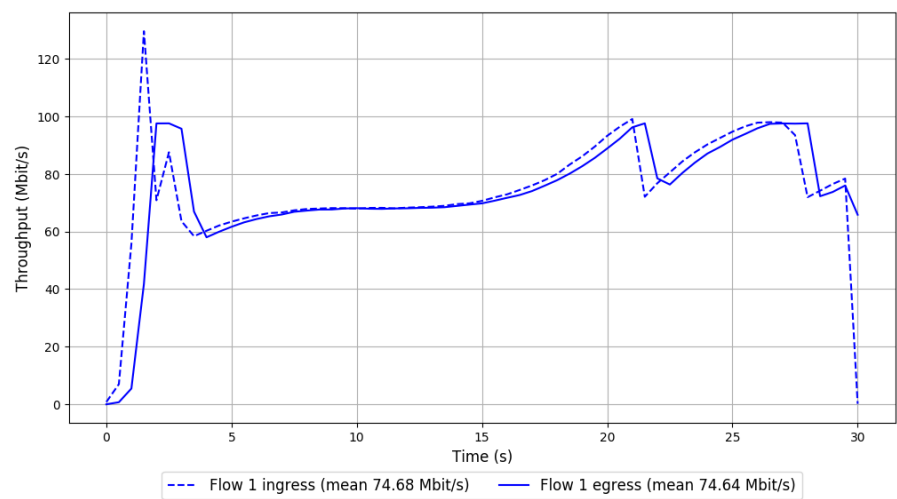
-- Flow 1:

Average throughput: 74.64 Mbit/s

95th percentile per-packet one-way delay: 103.580 ms

Loss rate: 0.61%

Run 3: Report of TCP Cubic — Data Link

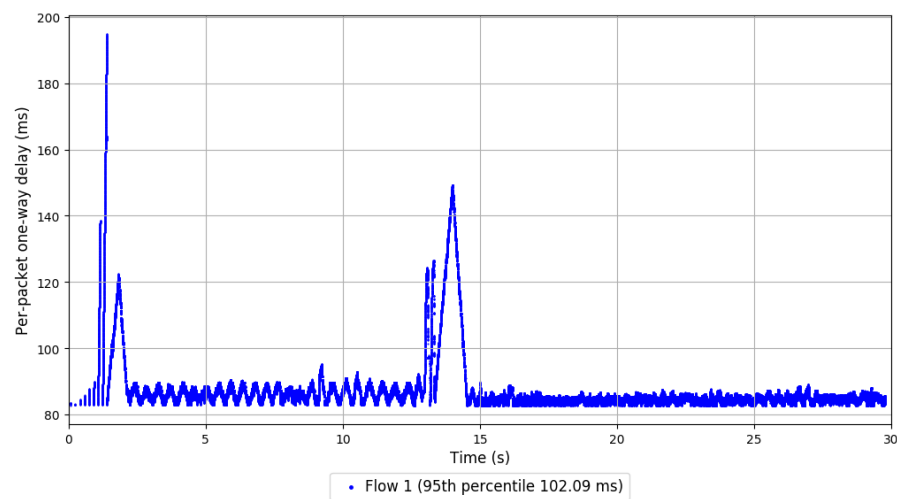
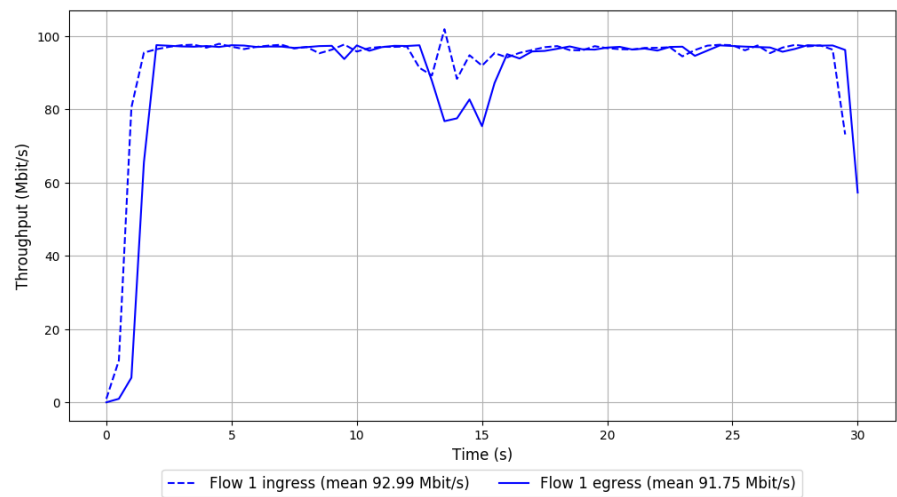


```
Run 1: Statistics of Indigo

Start at: 2018-09-05 21:54:27
End at: 2018-09-05 21:54:57
Local clock offset: 19.763 ms
Remote clock offset: -2.056 ms

# Below is generated by plot.py at 2018-09-05 22:10:22
# Datalink statistics
-- Total of 1 flow:
Average throughput: 91.75 Mbit/s
95th percentile per-packet one-way delay: 102.093 ms
Loss rate: 1.86%
-- Flow 1:
Average throughput: 91.75 Mbit/s
95th percentile per-packet one-way delay: 102.093 ms
Loss rate: 1.86%
```

Run 1: Report of Indigo — Data Link

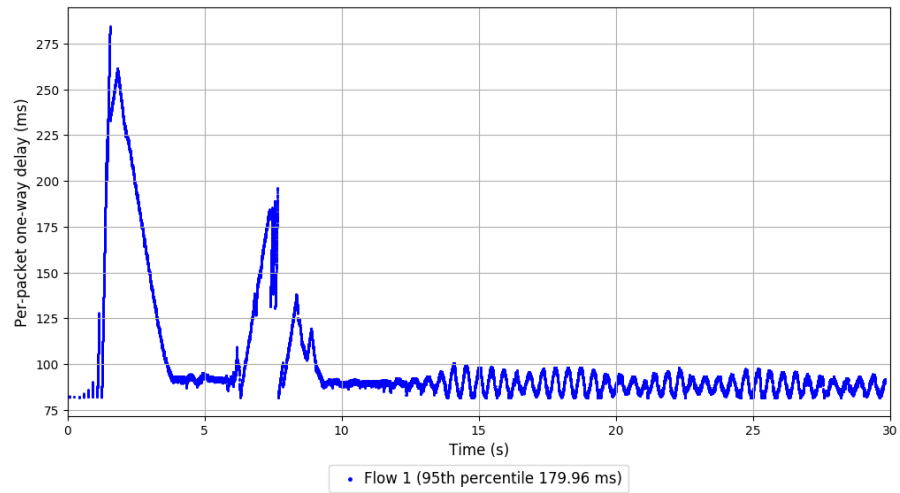
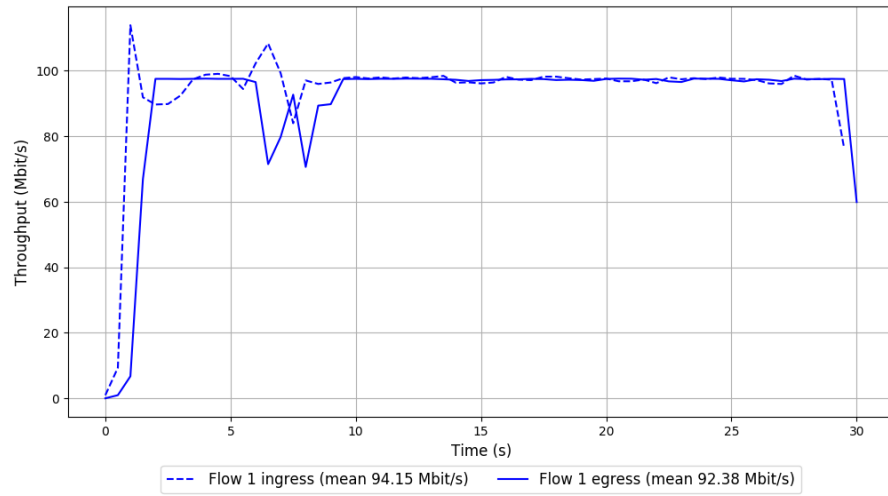


Run 2: Statistics of Indigo

Start at: 2018-09-05 21:59:34
End at: 2018-09-05 22:00:04
Local clock offset: 23.343 ms
Remote clock offset: -0.883 ms

Below is generated by plot.py at 2018-09-05 22:10:23
Datalink statistics
-- Total of 1 flow:
Average throughput: 92.38 Mbit/s
95th percentile per-packet one-way delay: 179.958 ms
Loss rate: 2.42%
-- Flow 1:
Average throughput: 92.38 Mbit/s
95th percentile per-packet one-way delay: 179.958 ms
Loss rate: 2.42%

Run 2: Report of Indigo — Data Link

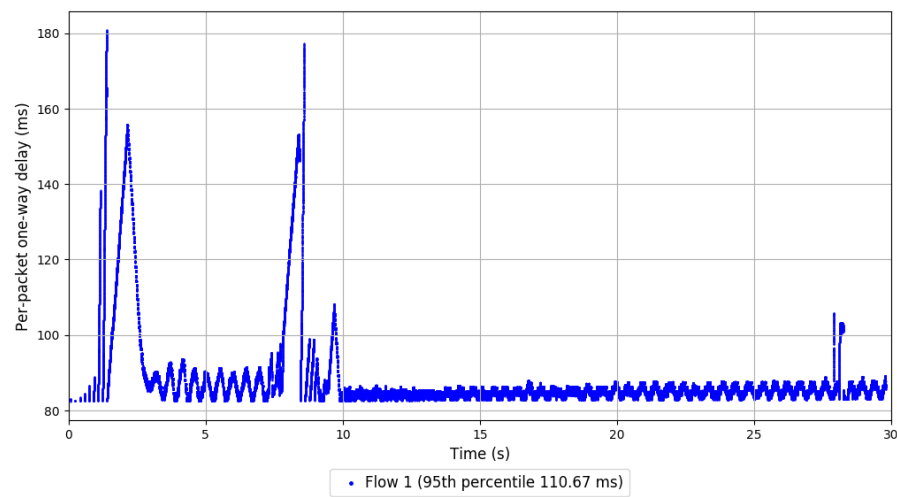
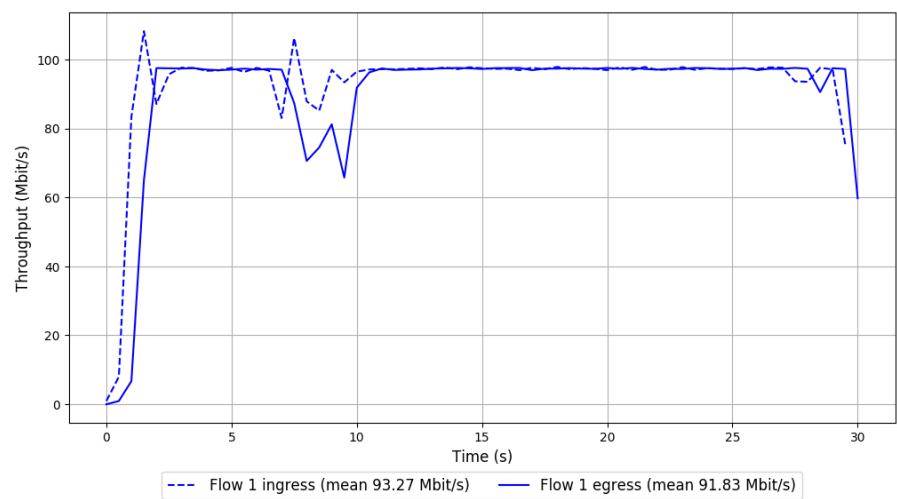


Run 3: Statistics of Indigo

Start at: 2018-09-05 22:04:33
End at: 2018-09-05 22:05:03
Local clock offset: 17.724 ms
Remote clock offset: -0.821 ms

Below is generated by plot.py at 2018-09-05 22:10:51
Datalink statistics
-- Total of 1 flow:
Average throughput: 91.83 Mbit/s
95th percentile per-packet one-way delay: 110.666 ms
Loss rate: 2.07%
-- Flow 1:
Average throughput: 91.83 Mbit/s
95th percentile per-packet one-way delay: 110.666 ms
Loss rate: 2.07%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

Start at: 2018-09-05 21:57:05

End at: 2018-09-05 21:57:35

Local clock offset: 21.8 ms

Remote clock offset: 3.15 ms

Below is generated by plot.py at 2018-09-05 22:10:53

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.81 Mbit/s

95th percentile per-packet one-way delay: 84.814 ms

Loss rate: 0.57%

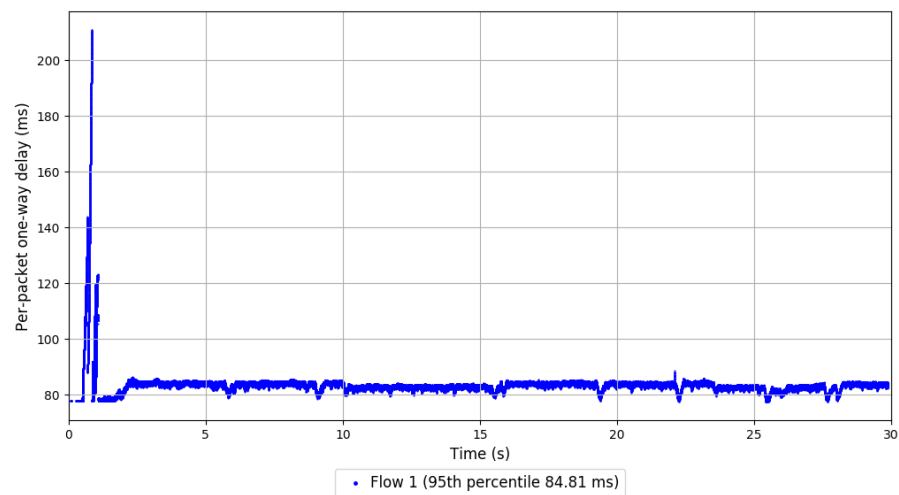
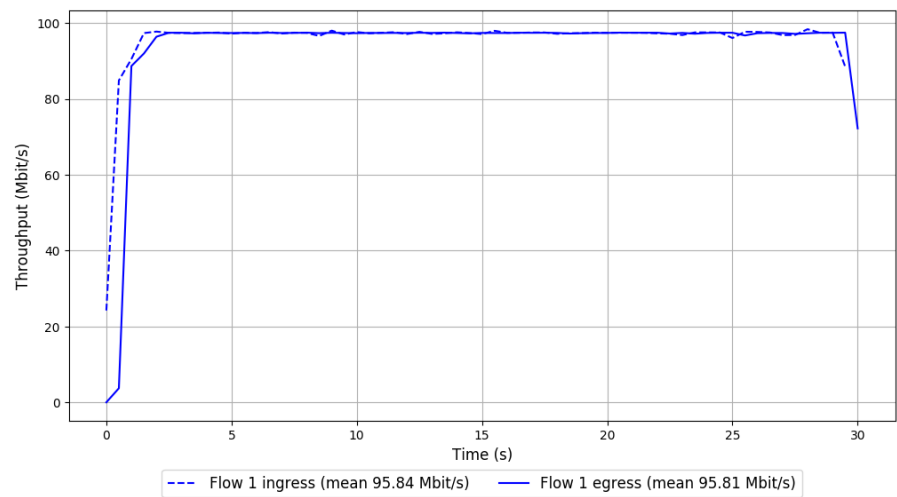
-- Flow 1:

Average throughput: 95.81 Mbit/s

95th percentile per-packet one-way delay: 84.814 ms

Loss rate: 0.57%

Run 1: Report of Muses-25 — Data Link

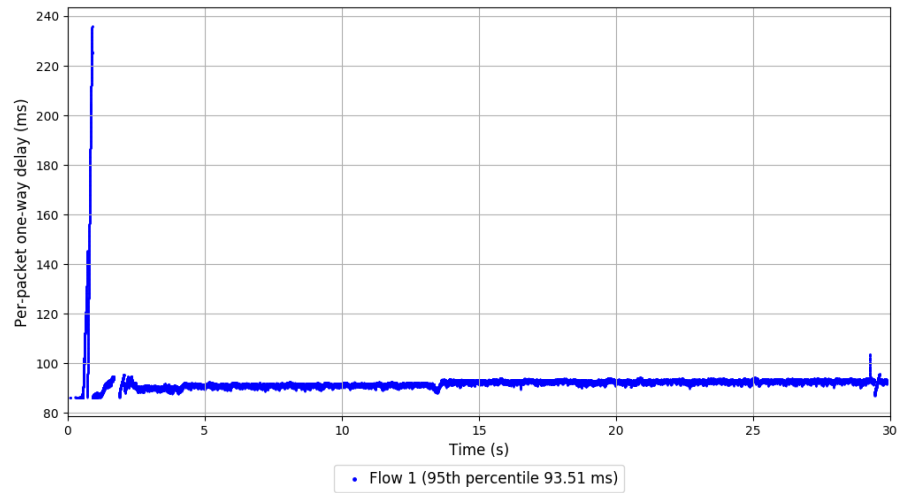
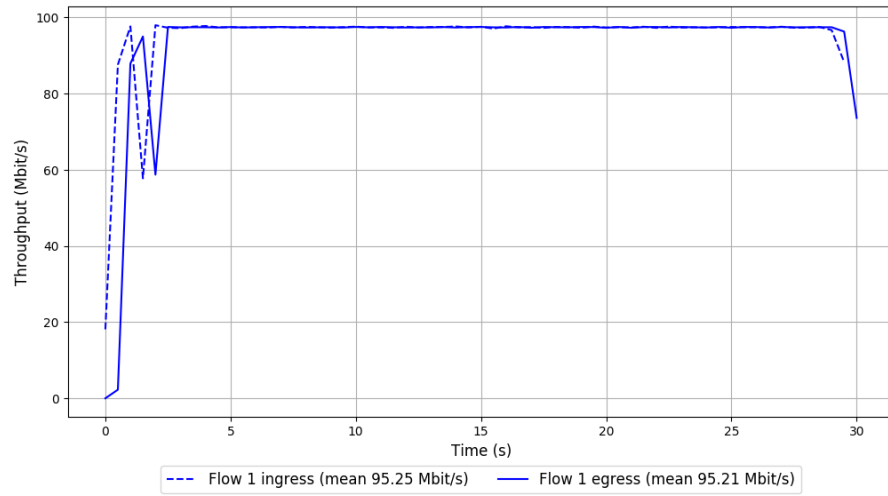


Run 2: Statistics of Muses-25

Start at: 2018-09-05 22:01:58
End at: 2018-09-05 22:02:28
Local clock offset: 21.895 ms
Remote clock offset: -1.854 ms

Below is generated by plot.py at 2018-09-05 22:10:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.21 Mbit/s
95th percentile per-packet one-way delay: 93.514 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 95.21 Mbit/s
95th percentile per-packet one-way delay: 93.514 ms
Loss rate: 0.58%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 22:06:58
End at: 2018-09-05 22:07:28
Local clock offset: 16.149 ms
Remote clock offset: -1.842 ms

Below is generated by plot.py at 2018-09-05 22:10:53
Datalink statistics
-- Total of 1 flow:
Average throughput: 94.97 Mbit/s
95th percentile per-packet one-way delay: 92.240 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 94.97 Mbit/s
95th percentile per-packet one-way delay: 92.240 ms
Loss rate: 0.59%

Run 3: Report of Muses-25 — Data Link

