

Pantheon Report

Generated at 2018-08-31 09:35:38 (UTC).

Data path: Mexico on **em1** (*remote*) → AWS California 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 **time.stanford.edu** and have been applied to correct the timestamps in logs.

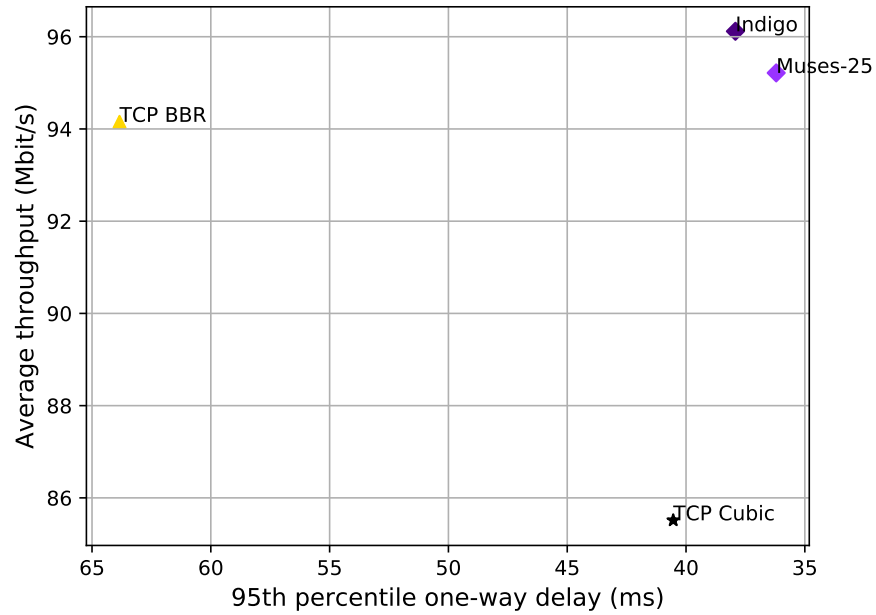
System info:

```
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
```

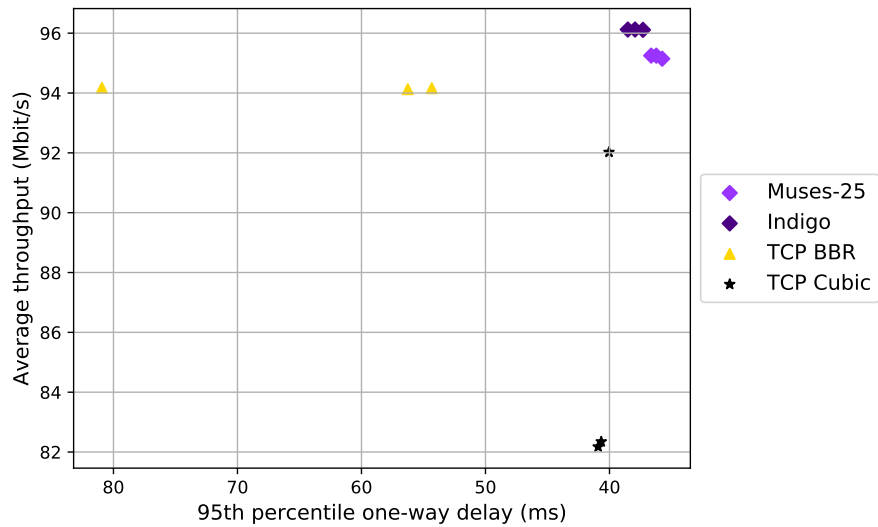
Git summary:

```
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 Mexico to AWS California 2, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Mexico to AWS California 2, 3 runs of 30s each per scheme



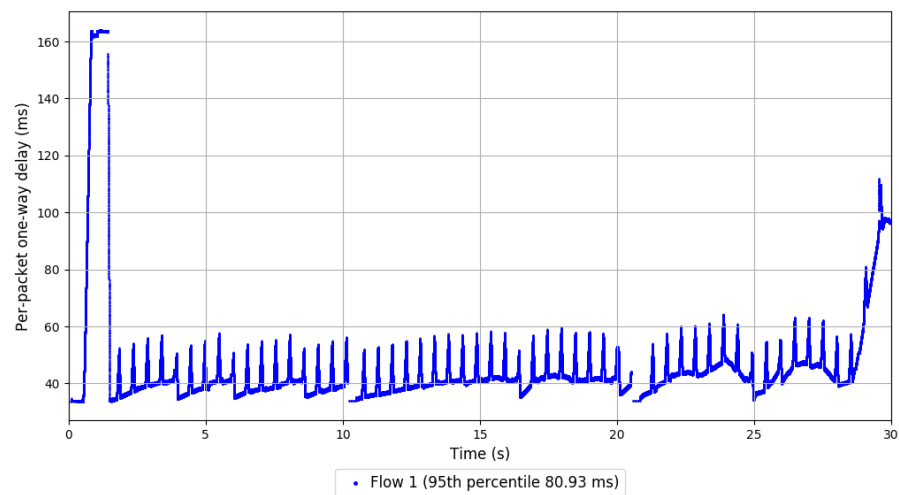
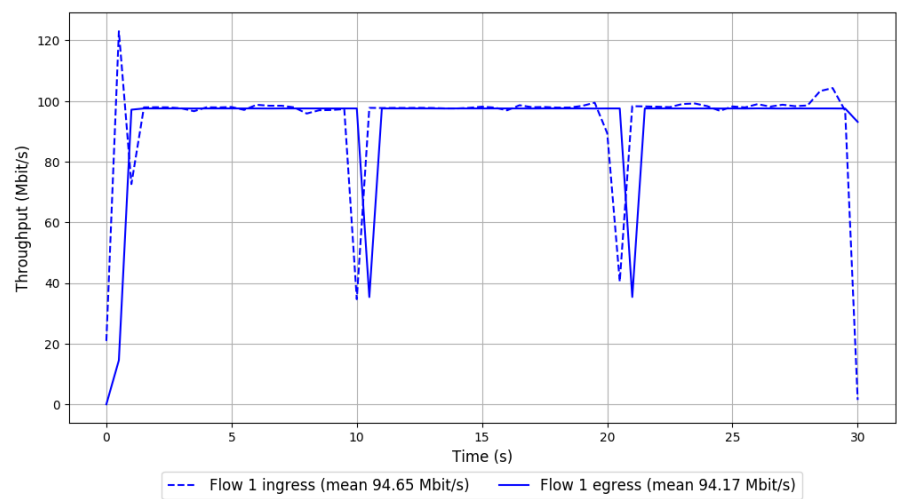
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	94.15	63.84	0.53
TCP Cubic	3	85.51	40.54	0.24
Indigo	3	96.12	37.92	0.23
Muses-25	3	95.22	36.20	0.22

Run 1: Statistics of TCP BBR

Start at: 2018-08-31 09:22:20
End at: 2018-08-31 09:22:50
Local clock offset: -13.794 ms
Remote clock offset: -1.14 ms

Below is generated by plot.py at 2018-08-31 09:34:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 94.17 Mbit/s
95th percentile per-packet one-way delay: 80.933 ms
Loss rate: 0.72%
-- Flow 1:
Average throughput: 94.17 Mbit/s
95th percentile per-packet one-way delay: 80.933 ms
Loss rate: 0.72%

Run 1: Report of TCP BBR — Data Link

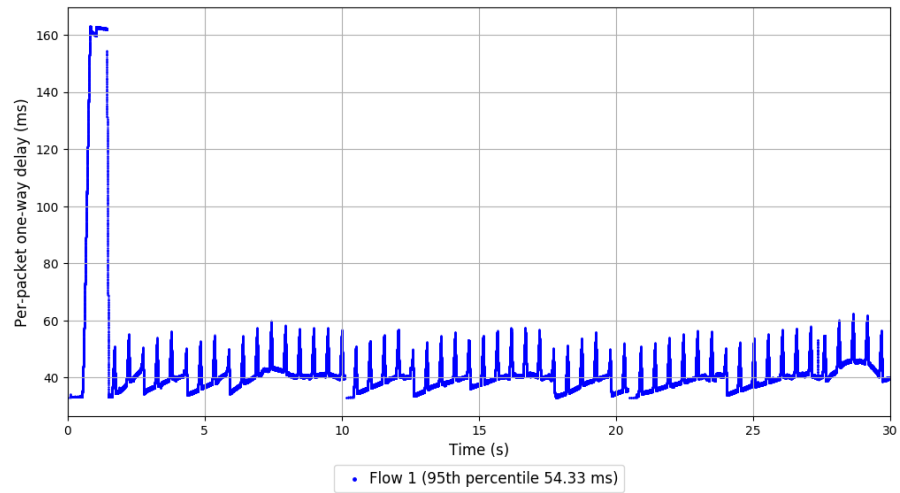
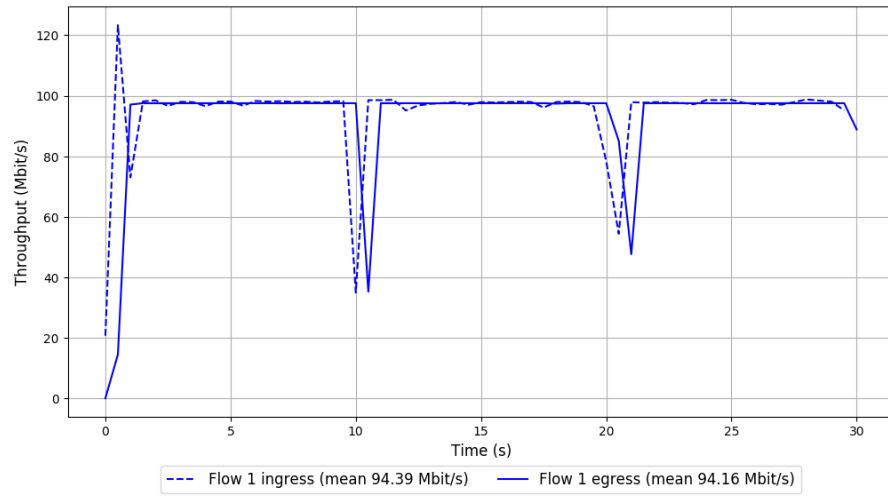


Run 2: Statistics of TCP BBR

Start at: 2018-08-31 09:27:38
End at: 2018-08-31 09:28:08
Local clock offset: -11.358 ms
Remote clock offset: -1.238 ms

Below is generated by plot.py at 2018-08-31 09:34:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 94.16 Mbit/s
95th percentile per-packet one-way delay: 54.332 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 94.16 Mbit/s
95th percentile per-packet one-way delay: 54.332 ms
Loss rate: 0.45%

Run 2: Report of TCP BBR — Data Link

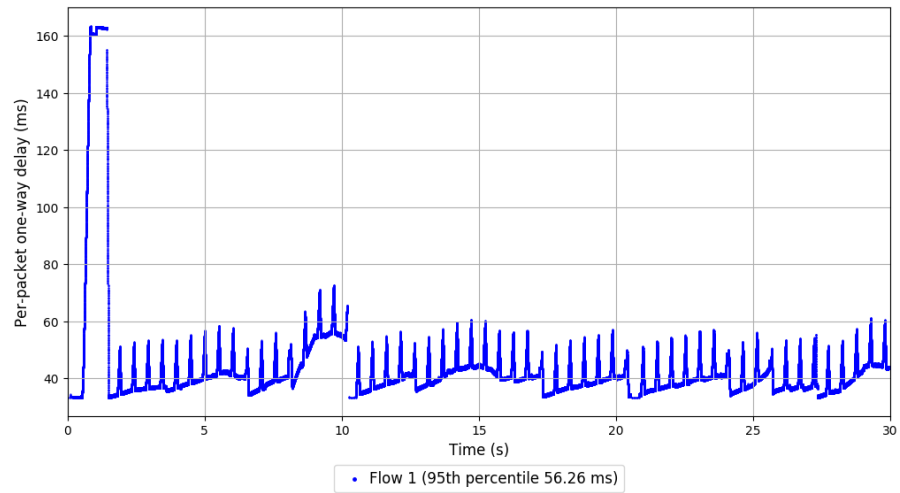
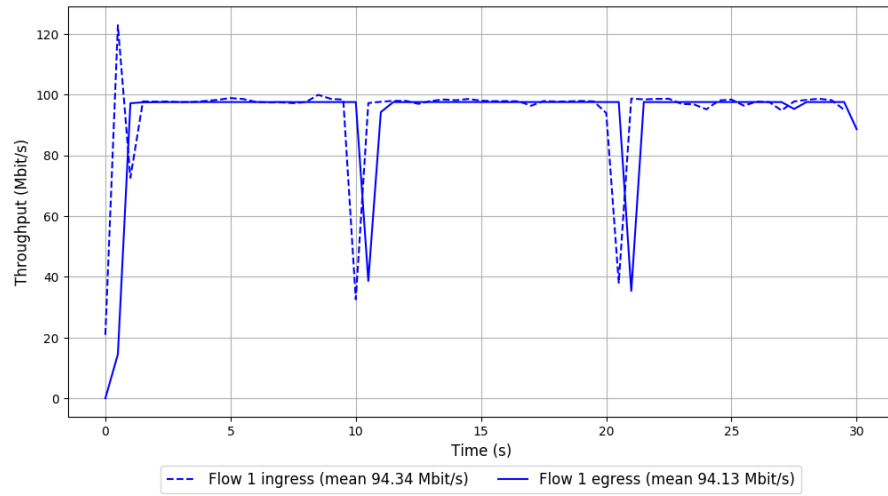


Run 3: Statistics of TCP BBR

Start at: 2018-08-31 09:32:56
End at: 2018-08-31 09:33:26
Local clock offset: -8.425 ms
Remote clock offset: -1.021 ms

Below is generated by plot.py at 2018-08-31 09:34:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 94.13 Mbit/s
95th percentile per-packet one-way delay: 56.261 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 94.13 Mbit/s
95th percentile per-packet one-way delay: 56.261 ms
Loss rate: 0.43%

Run 3: Report of TCP BBR — Data Link

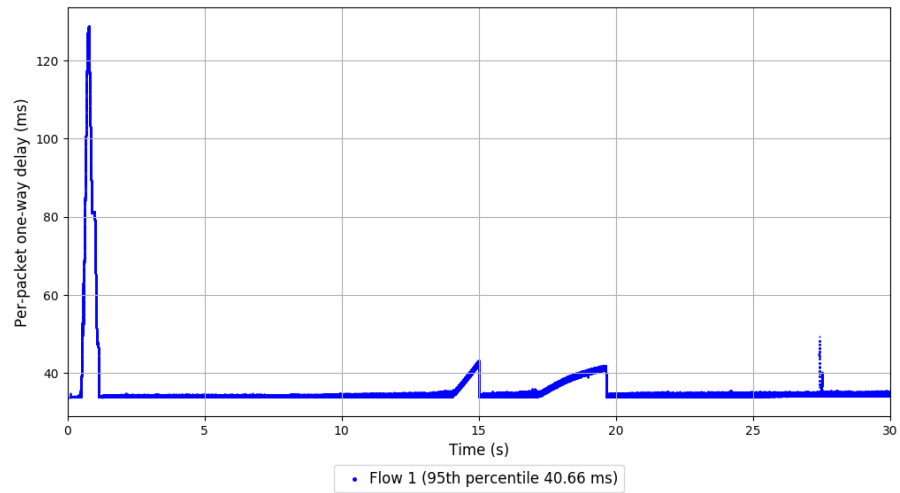
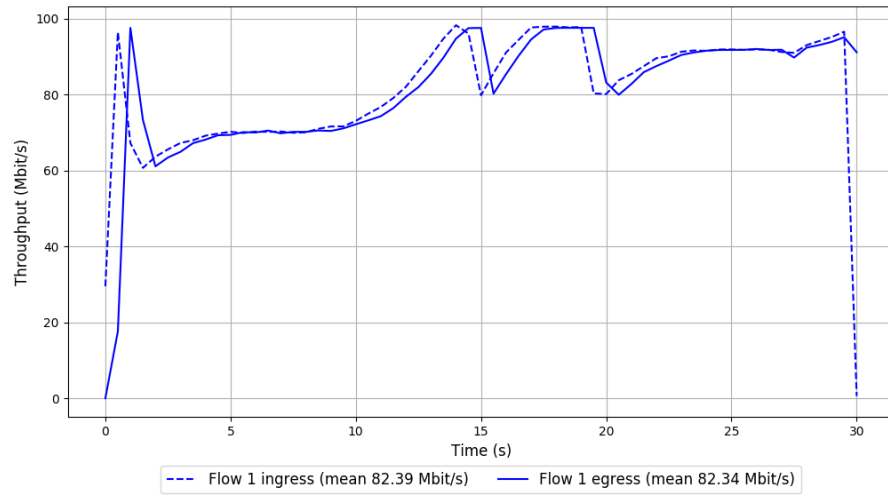


Run 1: Statistics of TCP Cubic

Start at: 2018-08-31 09:18:22
End at: 2018-08-31 09:18:52
Local clock offset: -11.839 ms
Remote clock offset: -1.283 ms

Below is generated by plot.py at 2018-08-31 09:34:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 82.34 Mbit/s
95th percentile per-packet one-way delay: 40.662 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 82.34 Mbit/s
95th percentile per-packet one-way delay: 40.662 ms
Loss rate: 0.26%

Run 1: Report of TCP Cubic — Data Link

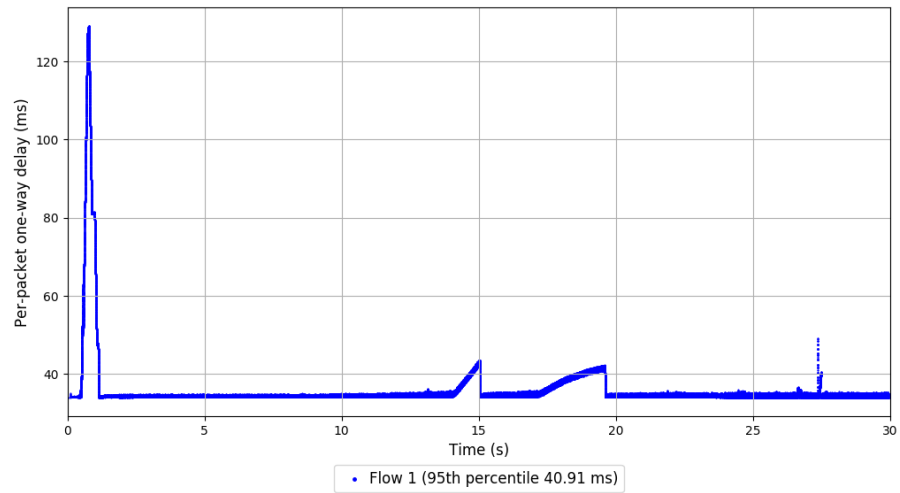
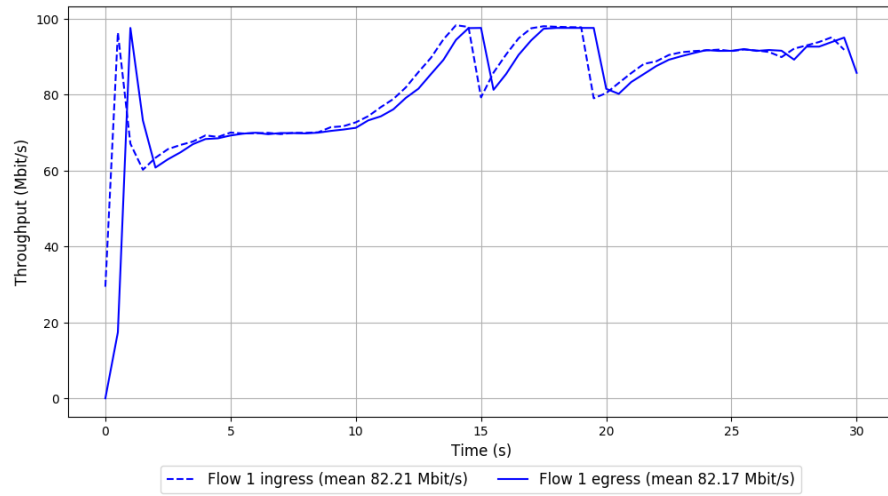


Run 2: Statistics of TCP Cubic

Start at: 2018-08-31 09:23:40
End at: 2018-08-31 09:24:10
Local clock offset: -14.528 ms
Remote clock offset: -1.341 ms

Below is generated by plot.py at 2018-08-31 09:34:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 82.17 Mbit/s
95th percentile per-packet one-way delay: 40.915 ms
Loss rate: 0.26%
-- Flow 1:
Average throughput: 82.17 Mbit/s
95th percentile per-packet one-way delay: 40.915 ms
Loss rate: 0.26%

Run 2: Report of TCP Cubic — Data Link

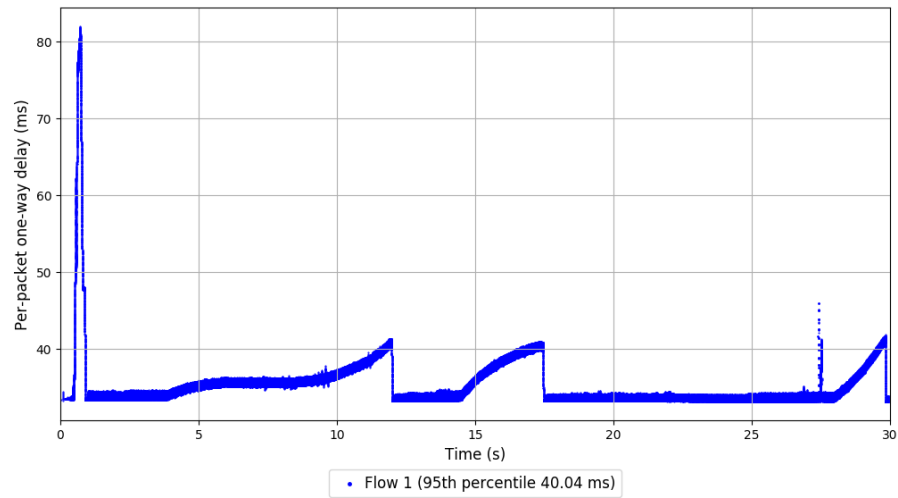
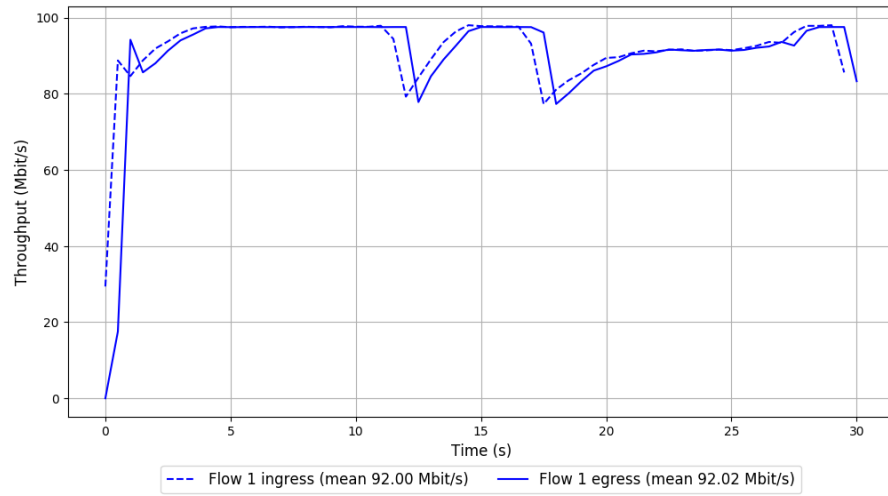


Run 3: Statistics of TCP Cubic

Start at: 2018-08-31 09:28:57
End at: 2018-08-31 09:29:27
Local clock offset: -10.294 ms
Remote clock offset: -1.318 ms

Below is generated by plot.py at 2018-08-31 09:34:55
Datalink statistics
-- Total of 1 flow:
Average throughput: 92.02 Mbit/s
95th percentile per-packet one-way delay: 40.040 ms
Loss rate: 0.19%
-- Flow 1:
Average throughput: 92.02 Mbit/s
95th percentile per-packet one-way delay: 40.040 ms
Loss rate: 0.19%

Run 3: Report of TCP Cubic — Data Link

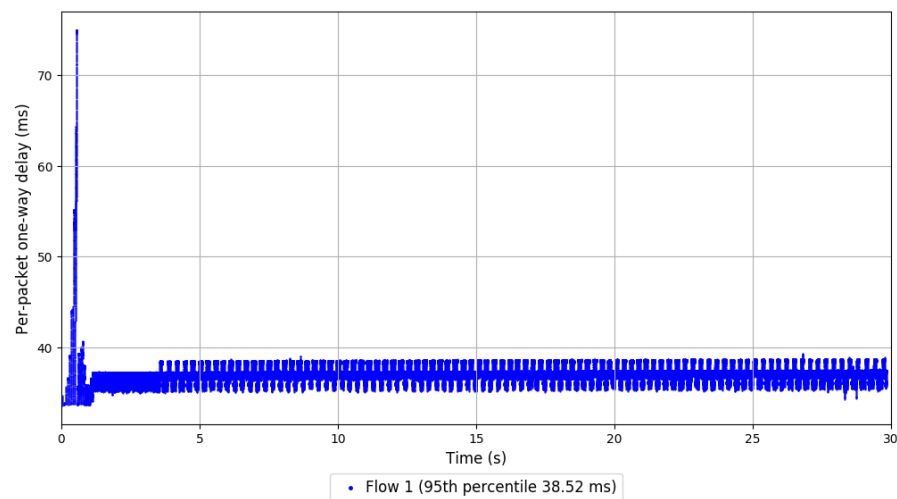
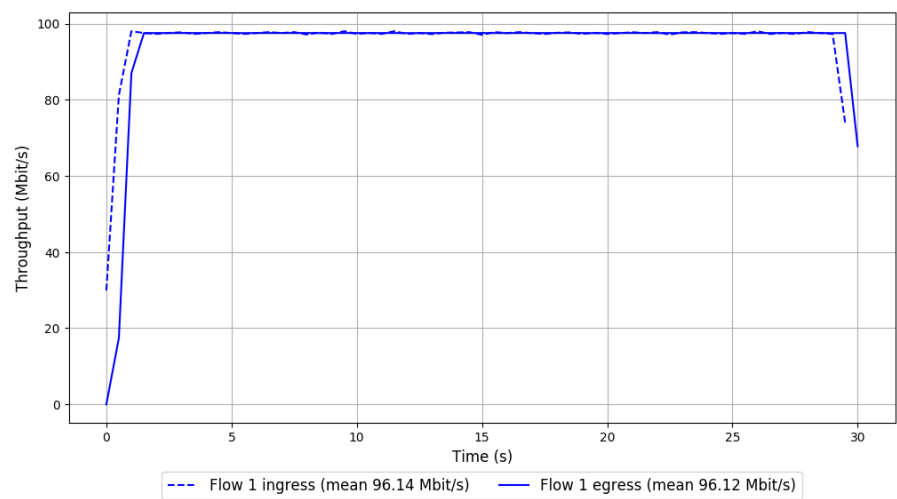


Run 1: Statistics of Indigo

Start at: 2018-08-31 09:19:40
End at: 2018-08-31 09:20:10
Local clock offset: -12.532 ms
Remote clock offset: -1.251 ms

Below is generated by plot.py at 2018-08-31 09:34:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.12 Mbit/s
95th percentile per-packet one-way delay: 38.523 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 96.12 Mbit/s
95th percentile per-packet one-way delay: 38.523 ms
Loss rate: 0.23%

Run 1: Report of Indigo — Data Link

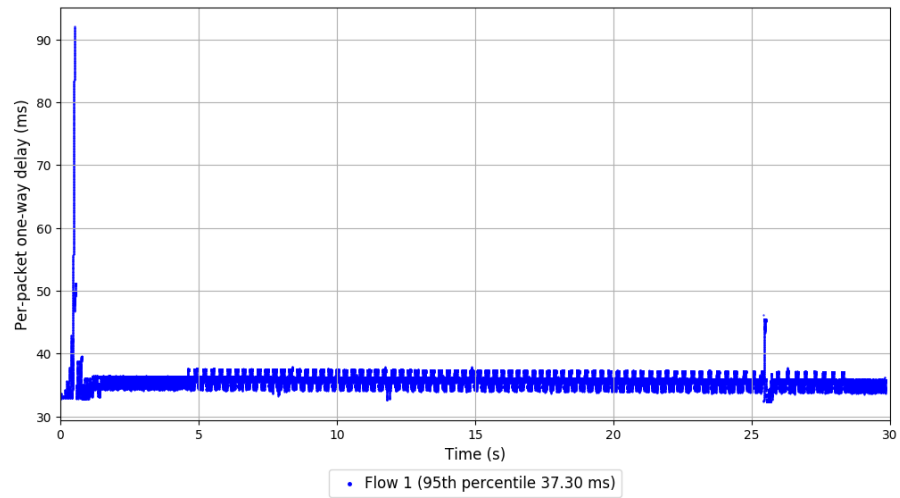
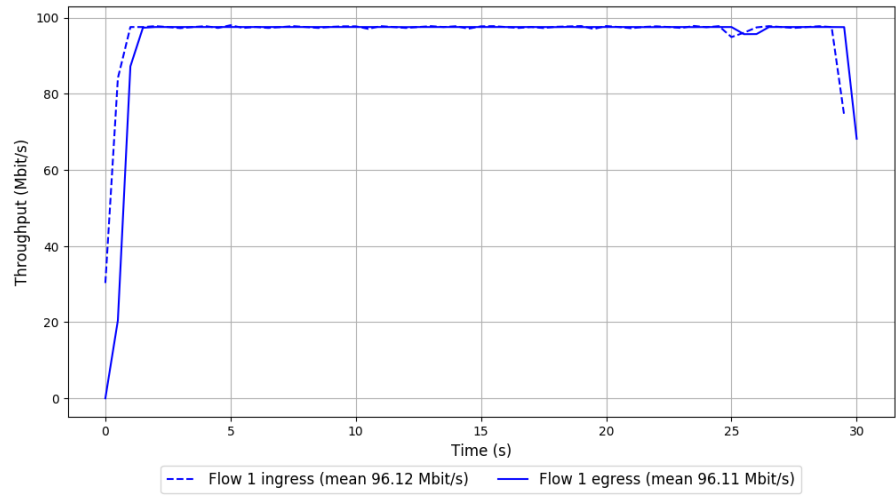


Run 2: Statistics of Indigo

Start at: 2018-08-31 09:24:58
End at: 2018-08-31 09:25:28
Local clock offset: -14.545 ms
Remote clock offset: -1.499 ms

Below is generated by plot.py at 2018-08-31 09:34:57
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.11 Mbit/s
95th percentile per-packet one-way delay: 37.303 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 96.11 Mbit/s
95th percentile per-packet one-way delay: 37.303 ms
Loss rate: 0.23%

Run 2: Report of Indigo — Data Link

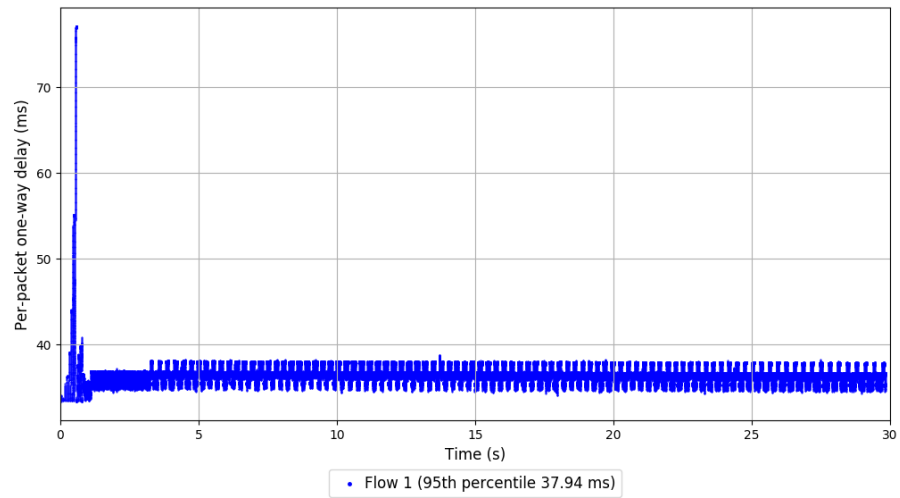
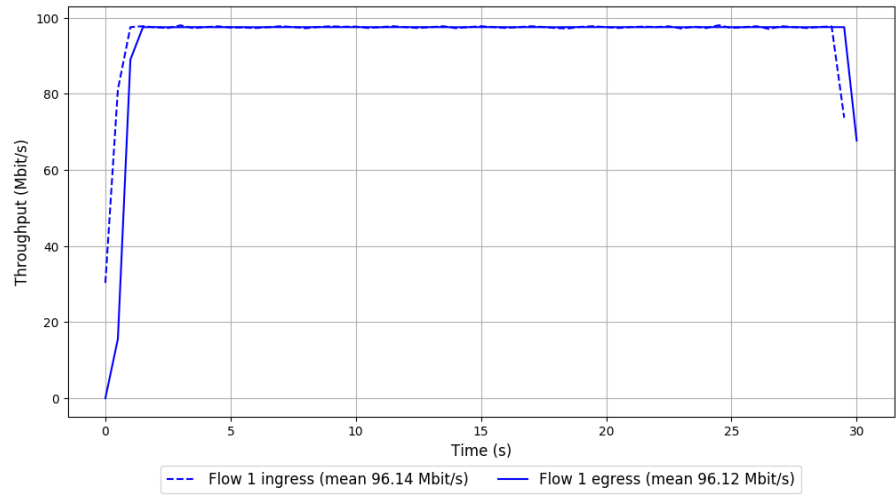


Run 3: Statistics of Indigo

Start at: 2018-08-31 09:30:16
End at: 2018-08-31 09:30:46
Local clock offset: -9.552 ms
Remote clock offset: -1.272 ms

Below is generated by plot.py at 2018-08-31 09:35:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.12 Mbit/s
95th percentile per-packet one-way delay: 37.940 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 96.12 Mbit/s
95th percentile per-packet one-way delay: 37.940 ms
Loss rate: 0.23%

Run 3: Report of Indigo — Data Link

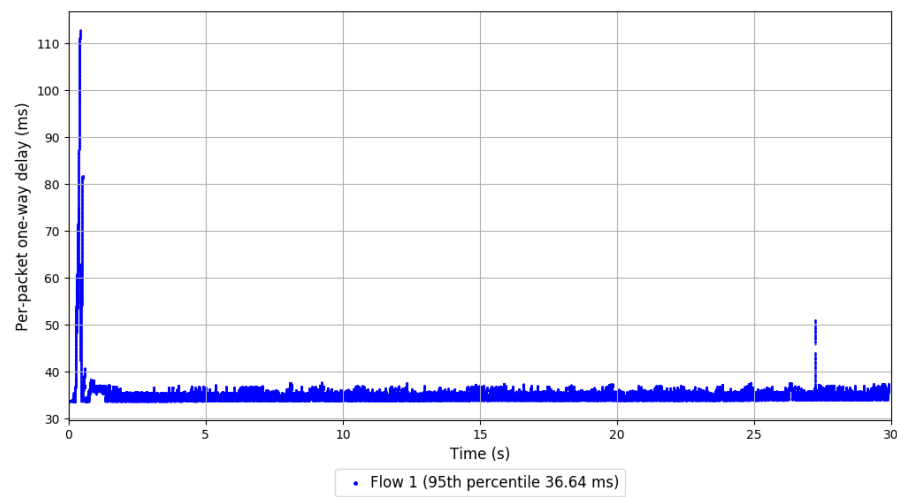
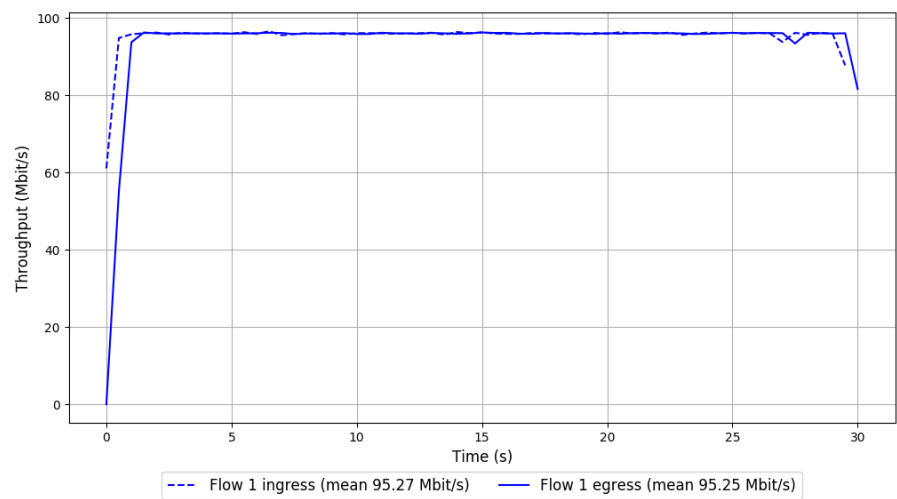


Run 1: Statistics of Muses-25

Start at: 2018-08-31 09:21:00
End at: 2018-08-31 09:21:30
Local clock offset: -13.225 ms
Remote clock offset: -1.284 ms

Below is generated by plot.py at 2018-08-31 09:35:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.25 Mbit/s
95th percentile per-packet one-way delay: 36.638 ms
Loss rate: 0.23%
-- Flow 1:
Average throughput: 95.25 Mbit/s
95th percentile per-packet one-way delay: 36.638 ms
Loss rate: 0.23%

Run 1: Report of Muses-25 — Data Link

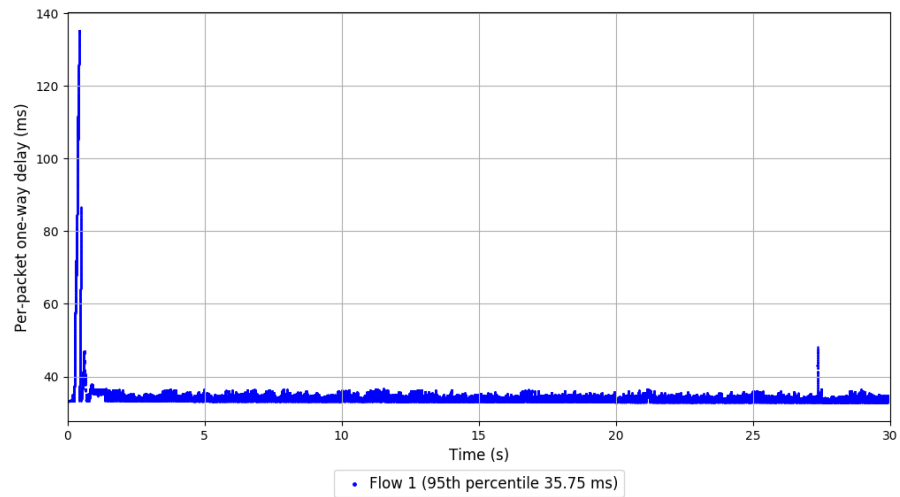
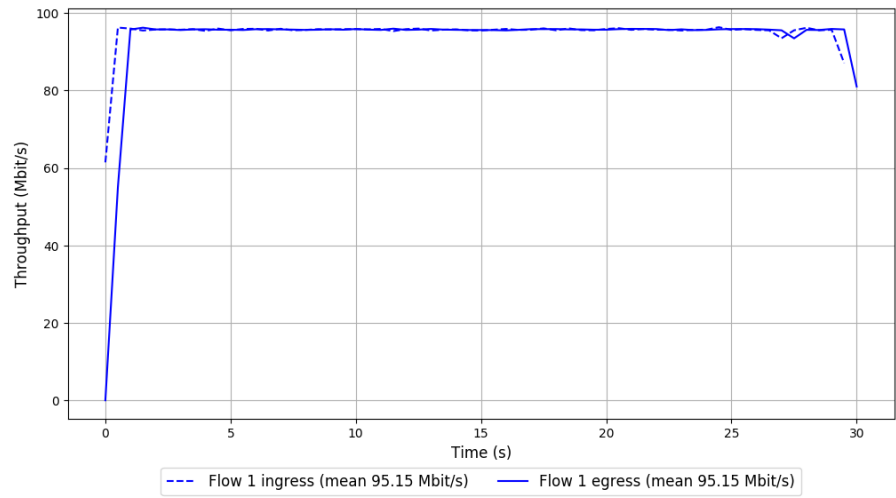


Run 2: Statistics of Muses-25

Start at: 2018-08-31 09:26:18
End at: 2018-08-31 09:26:48
Local clock offset: -12.671 ms
Remote clock offset: -1.456 ms

Below is generated by plot.py at 2018-08-31 09:35:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.15 Mbit/s
95th percentile per-packet one-way delay: 35.749 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 95.15 Mbit/s
95th percentile per-packet one-way delay: 35.749 ms
Loss rate: 0.22%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-08-31 09:31:36
End at: 2018-08-31 09:32:06
Local clock offset: -8.826 ms
Remote clock offset: -1.286 ms

Below is generated by plot.py at 2018-08-31 09:35:37
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.25 Mbit/s
95th percentile per-packet one-way delay: 36.227 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 95.25 Mbit/s
95th percentile per-packet one-way delay: 36.227 ms
Loss rate: 0.22%

Run 3: Report of Muses-25 — Data Link

