

Pantheon Report

Generated at 2018-09-05 02:23:17 (UTC).

Data path: AWS California 2 on `ens5` (*local*) → Mexico on `em1` (*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 `time.stanford.edu` and have been applied to correct the timestamps in logs.

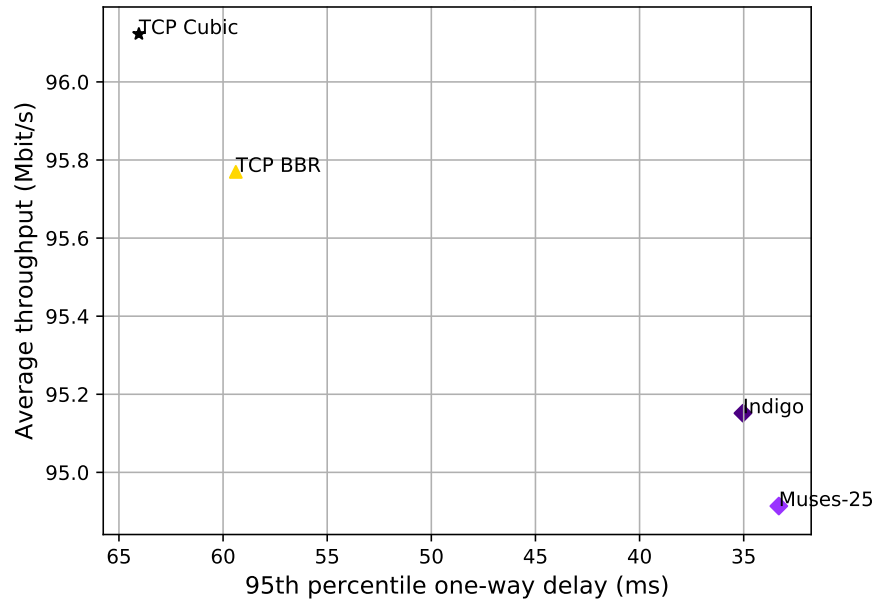
System info:

```
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
```

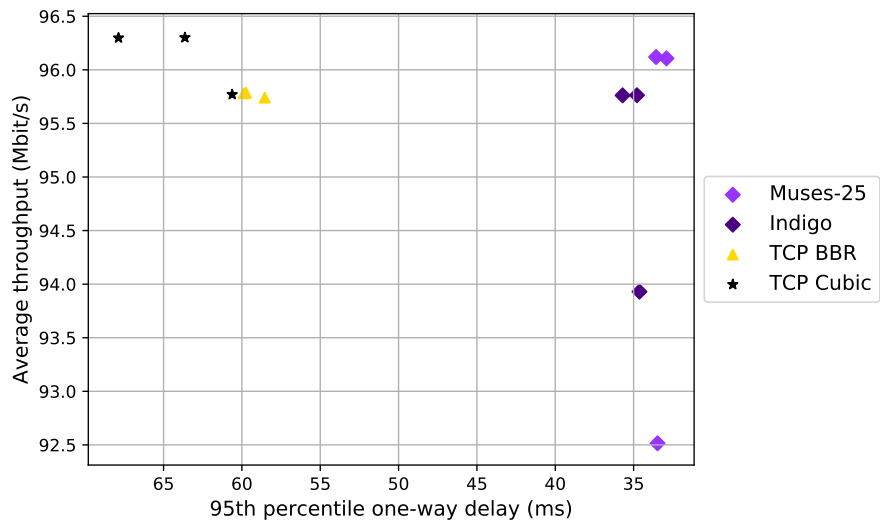
Git summary:

```
branch: muses @ 71e71e9a55b945431a7dea72180c1c9381097db9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e5e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd9c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 96fbc95fb38373d71fbc80c5a105e62e7636623b
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 AWS California 2 to Mexico, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS California 2 to Mexico, 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	95.77	59.39	1.07
TCP Cubic	3	96.12	64.04	0.45
Indigo	3	95.15	35.04	0.00
Muses-25	3	94.91	33.31	0.05

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 02:05:56

End at: 2018-09-05 02:06:26

Local clock offset: 7.583 ms

Remote clock offset: -4.398 ms

Below is generated by plot.py at 2018-09-05 02:22:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.78 Mbit/s

95th percentile per-packet one-way delay: 59.884 ms

Loss rate: 1.03%

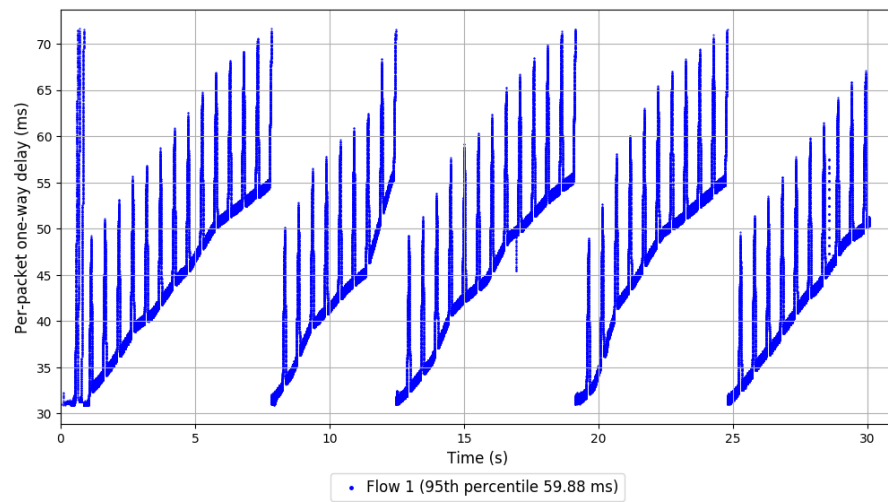
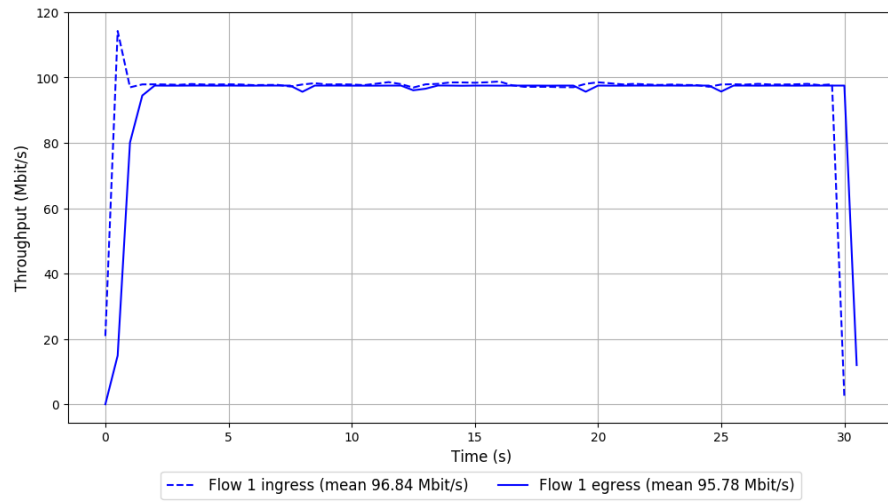
-- Flow 1:

Average throughput: 95.78 Mbit/s

95th percentile per-packet one-way delay: 59.884 ms

Loss rate: 1.03%

Run 1: Report of TCP BBR — Data Link

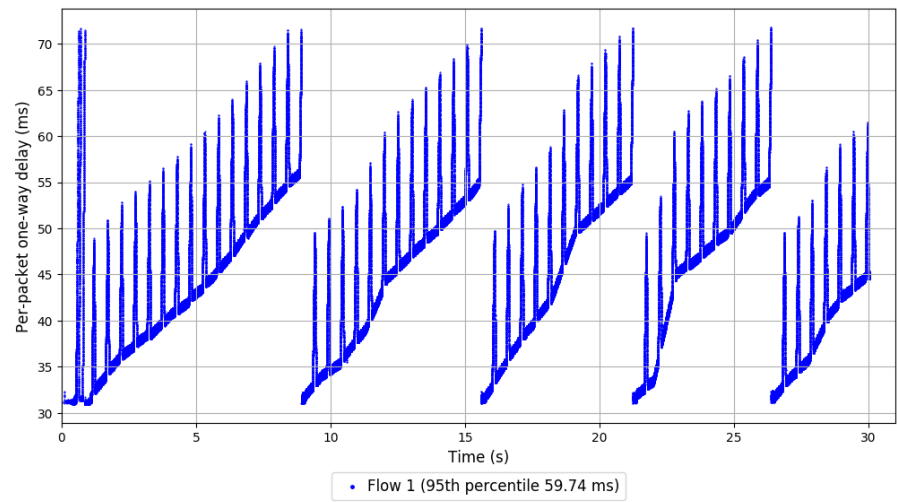
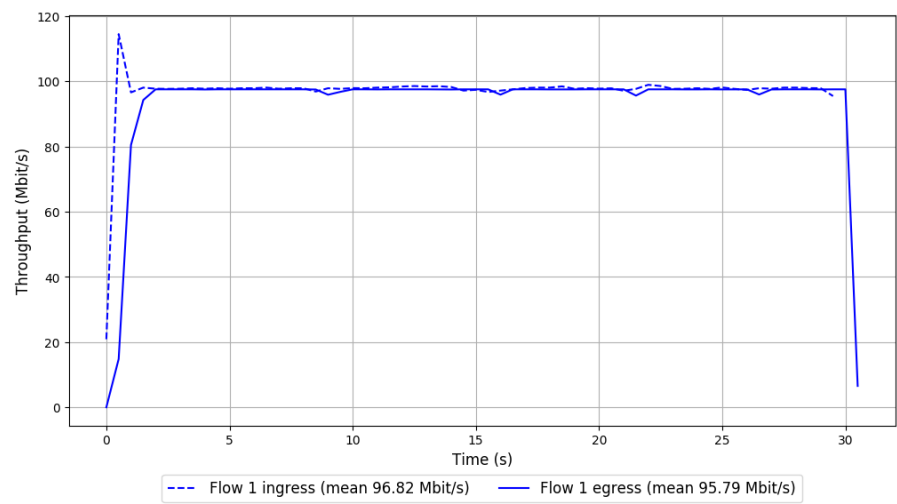


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 02:11:18
End at: 2018-09-05 02:11:48
Local clock offset: 9.196 ms
Remote clock offset: -4.098 ms

Below is generated by plot.py at 2018-09-05 02:22:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.79 Mbit/s
95th percentile per-packet one-way delay: 59.736 ms
Loss rate: 1.02%
-- Flow 1:
Average throughput: 95.79 Mbit/s
95th percentile per-packet one-way delay: 59.736 ms
Loss rate: 1.02%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-05 02:16:39

End at: 2018-09-05 02:17:09

Local clock offset: 8.576 ms

Remote clock offset: -4.176 ms

Below is generated by plot.py at 2018-09-05 02:22:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 95.74 Mbit/s

95th percentile per-packet one-way delay: 58.543 ms

Loss rate: 1.17%

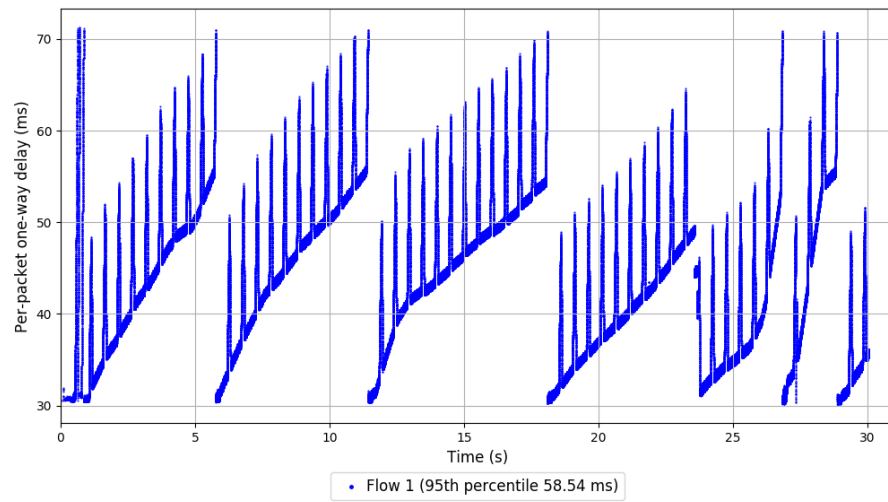
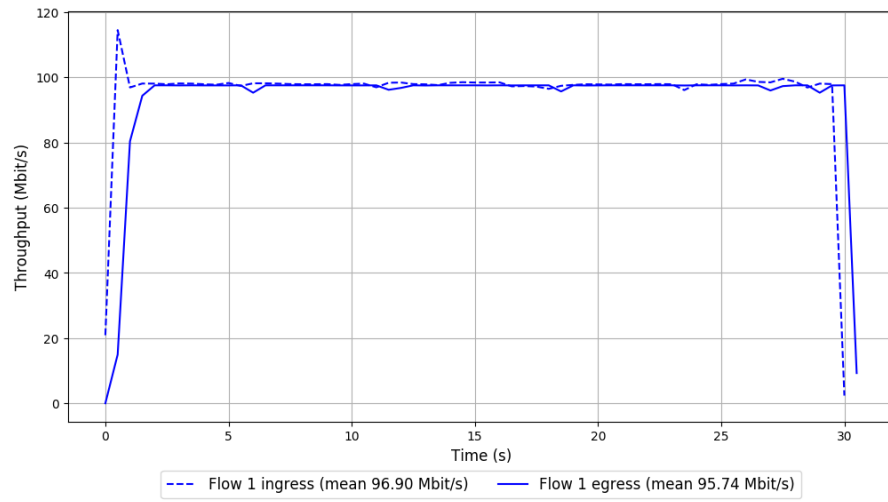
-- Flow 1:

Average throughput: 95.74 Mbit/s

95th percentile per-packet one-way delay: 58.543 ms

Loss rate: 1.17%

Run 3: Report of TCP BBR — Data Link

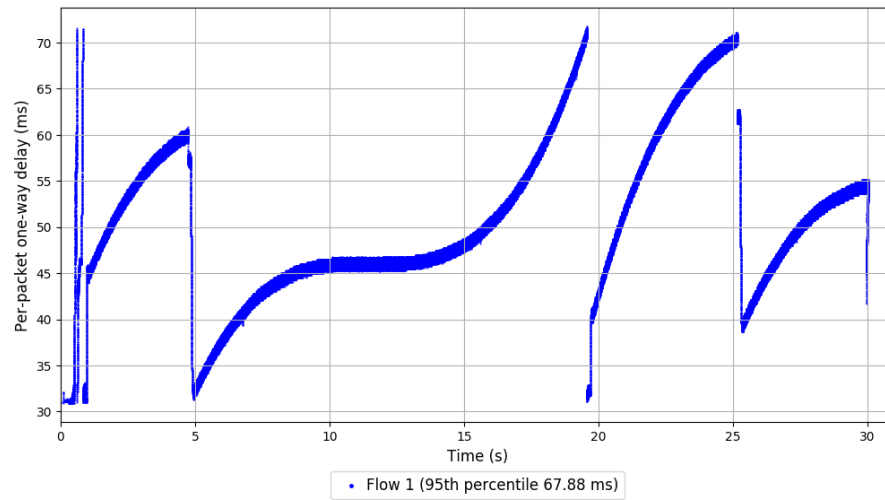
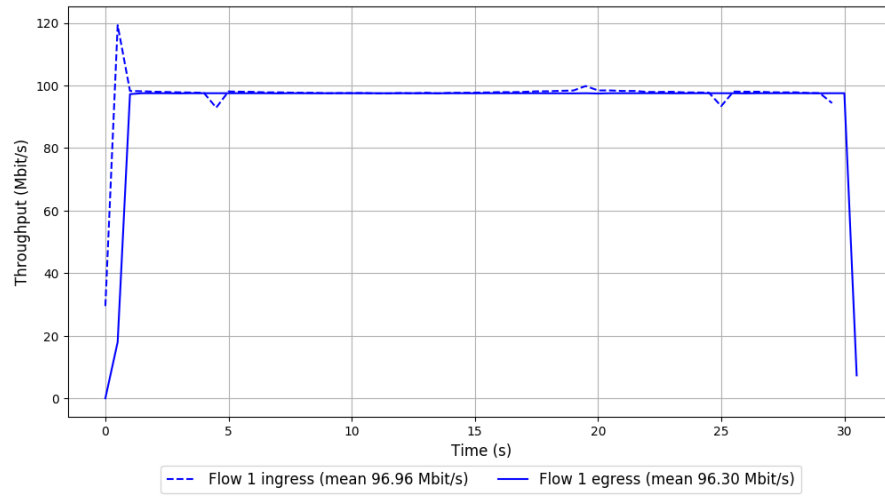


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 02:09:58
End at: 2018-09-05 02:10:28
Local clock offset: 8.855 ms
Remote clock offset: -4.159 ms

Below is generated by plot.py at 2018-09-05 02:22:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 67.875 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 67.875 ms
Loss rate: 0.60%

Run 1: Report of TCP Cubic — Data Link

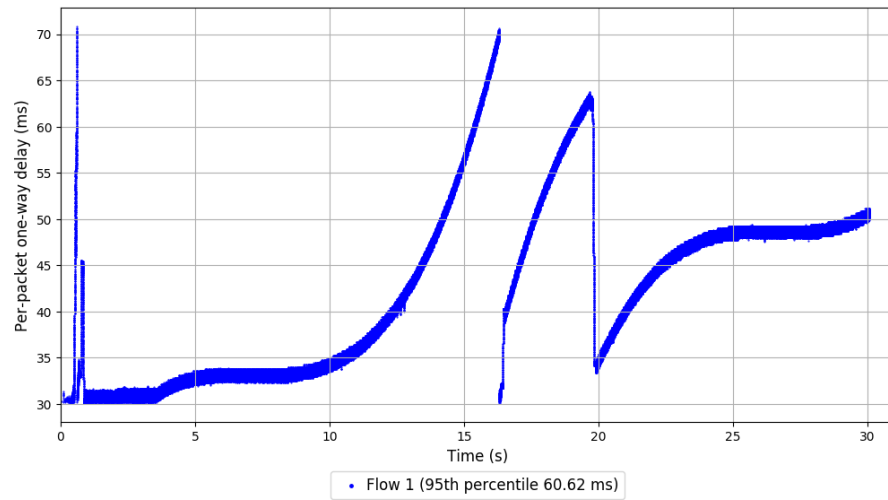
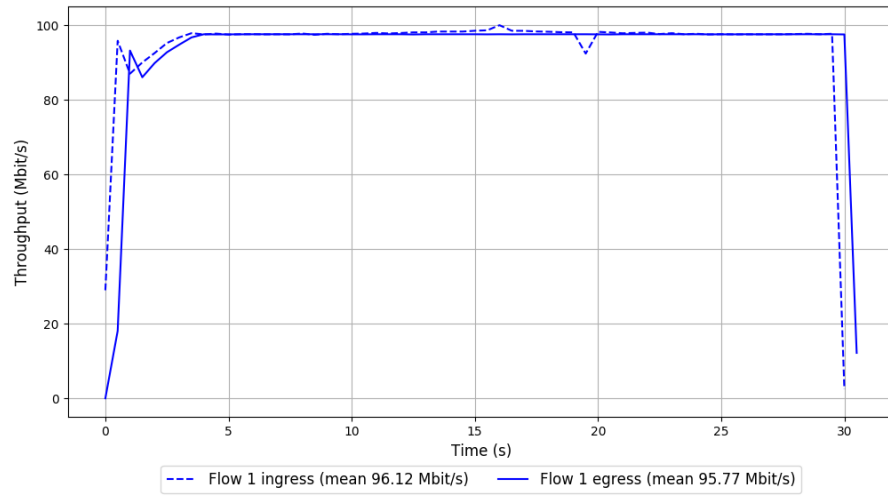


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 02:15:19
End at: 2018-09-05 02:15:49
Local clock offset: 9.809 ms
Remote clock offset: -4.342 ms

Below is generated by plot.py at 2018-09-05 02:22:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 60.619 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 95.77 Mbit/s
95th percentile per-packet one-way delay: 60.619 ms
Loss rate: 0.29%

Run 2: Report of TCP Cubic — Data Link

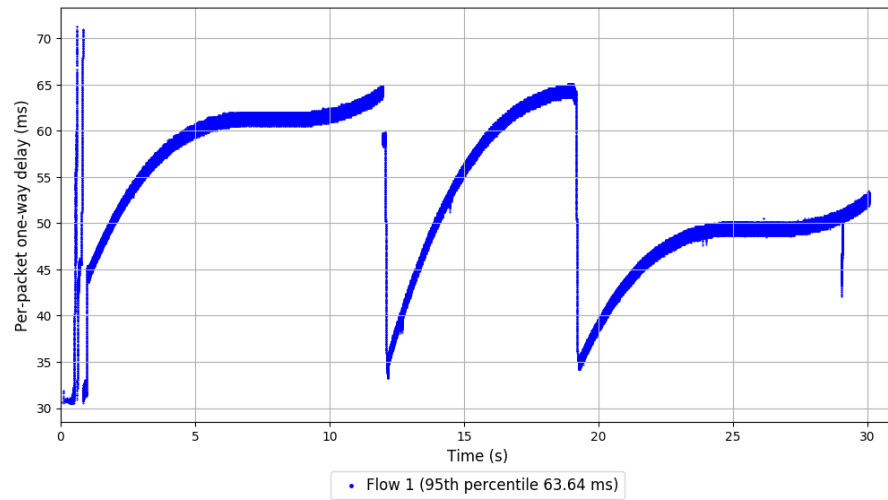
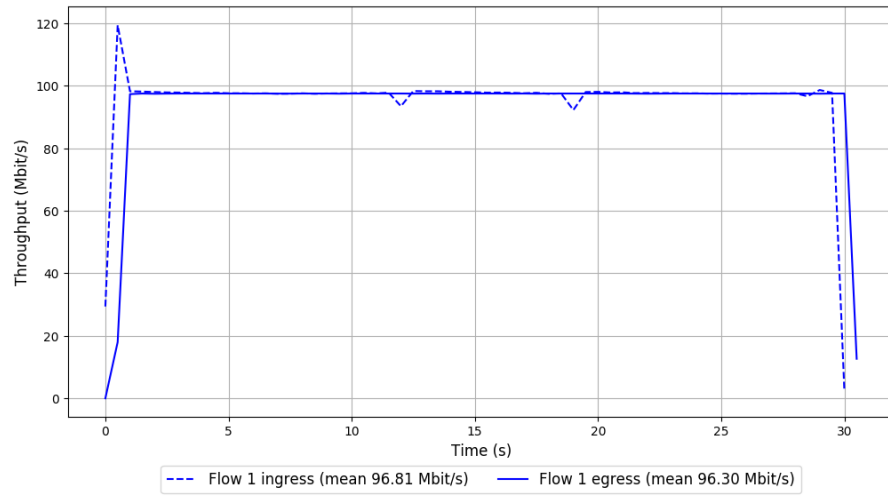


Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 02:20:41
End at: 2018-09-05 02:21:11
Local clock offset: 6.256 ms
Remote clock offset: -4.355 ms

Below is generated by plot.py at 2018-09-05 02:22:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 63.637 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 96.30 Mbit/s
95th percentile per-packet one-way delay: 63.637 ms
Loss rate: 0.45%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-05 02:07:16

End at: 2018-09-05 02:07:46

Local clock offset: 8.051 ms

Remote clock offset: -4.303 ms

Below is generated by plot.py at 2018-09-05 02:22:43

Datalink statistics

-- Total of 1 flow:

Average throughput: 93.93 Mbit/s

95th percentile per-packet one-way delay: 34.626 ms

Loss rate: 0.01%

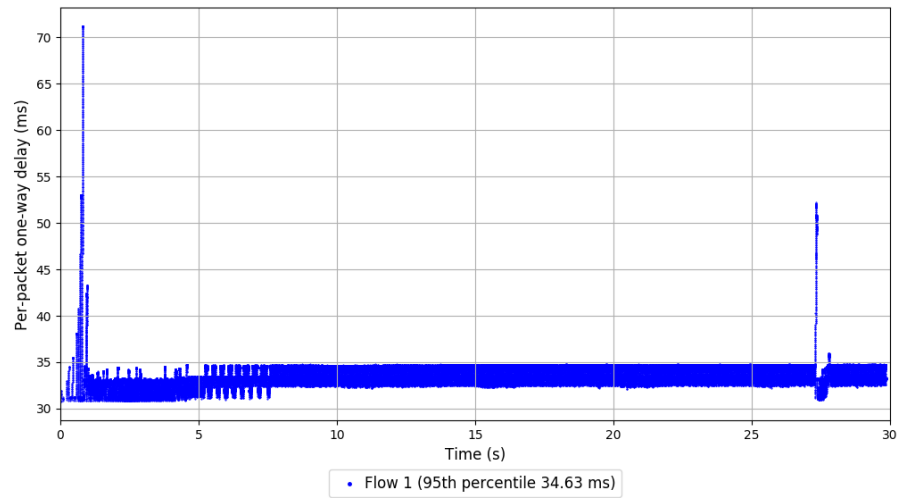
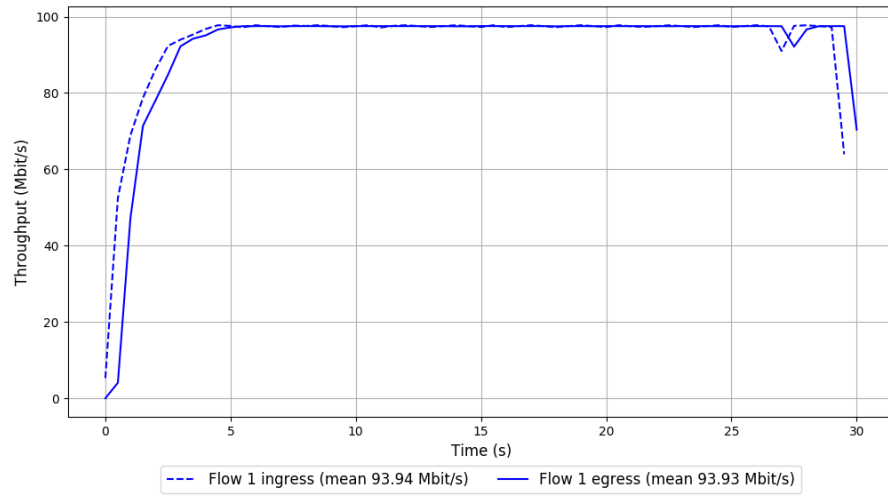
-- Flow 1:

Average throughput: 93.93 Mbit/s

95th percentile per-packet one-way delay: 34.626 ms

Loss rate: 0.01%

Run 1: Report of Indigo — Data Link

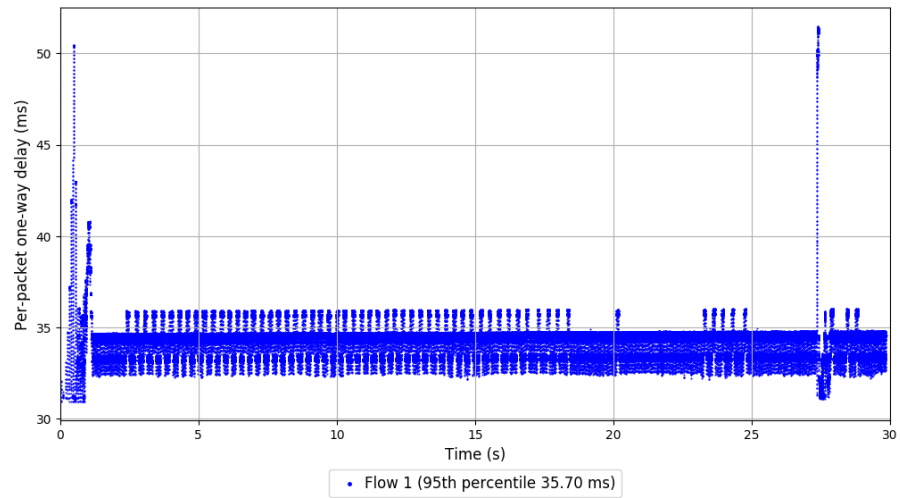
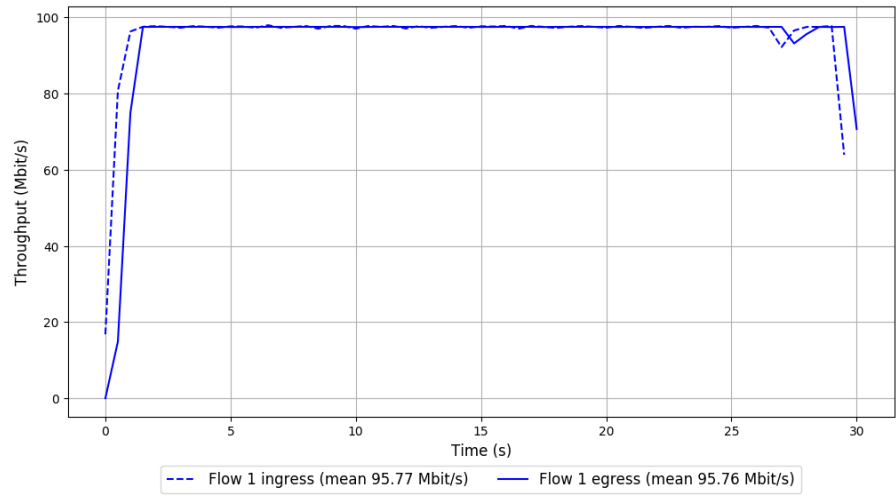


Run 2: Statistics of Indigo

Start at: 2018-09-05 02:12:37
End at: 2018-09-05 02:13:07
Local clock offset: 9.596 ms
Remote clock offset: -4.161 ms

Below is generated by plot.py at 2018-09-05 02:22:43
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 35.702 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 35.702 ms
Loss rate: 0.00%

Run 2: Report of Indigo — Data Link

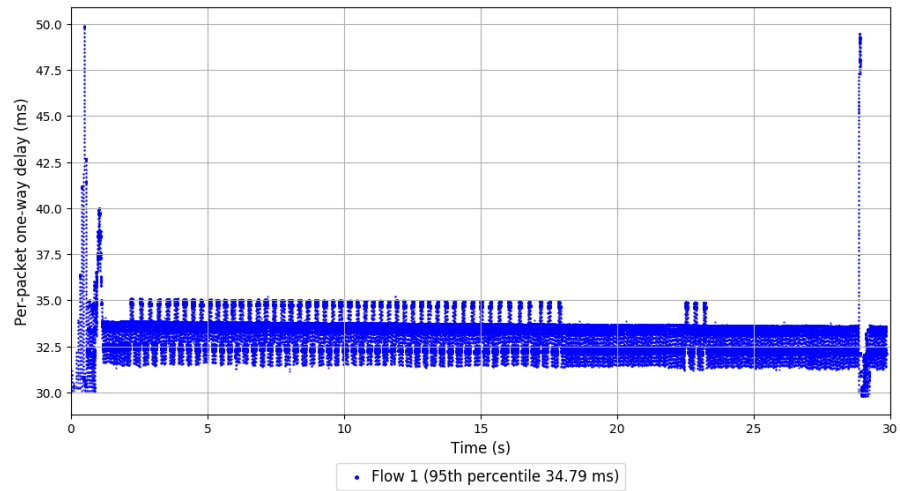
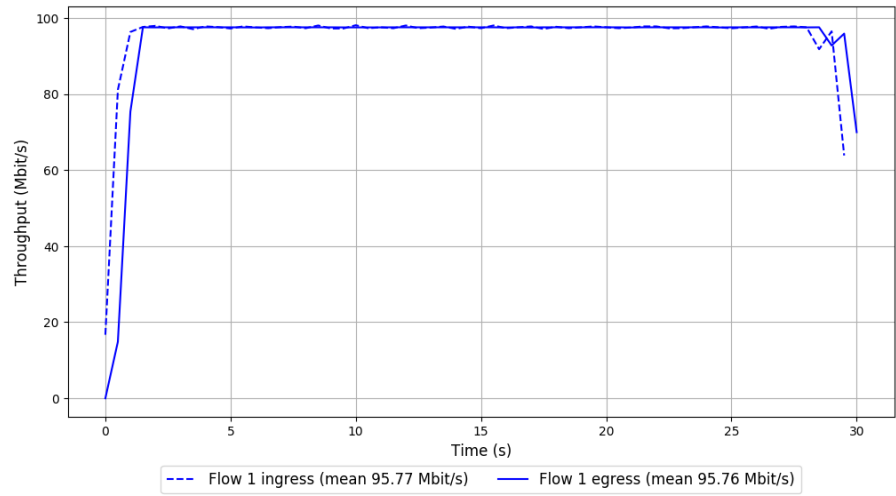


Run 3: Statistics of Indigo

Start at: 2018-09-05 02:17:59
End at: 2018-09-05 02:18:29
Local clock offset: 7.854 ms
Remote clock offset: -4.409 ms

Below is generated by plot.py at 2018-09-05 02:23:15
Datalink statistics
-- Total of 1 flow:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 34.786 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 95.76 Mbit/s
95th percentile per-packet one-way delay: 34.786 ms
Loss rate: 0.00%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

Start at: 2018-09-05 02:08:37

End at: 2018-09-05 02:09:07

Local clock offset: 8.4 ms

Remote clock offset: -4.19 ms

Below is generated by plot.py at 2018-09-05 02:23:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 96.12 Mbit/s

95th percentile per-packet one-way delay: 33.565 ms

Loss rate: 0.00%

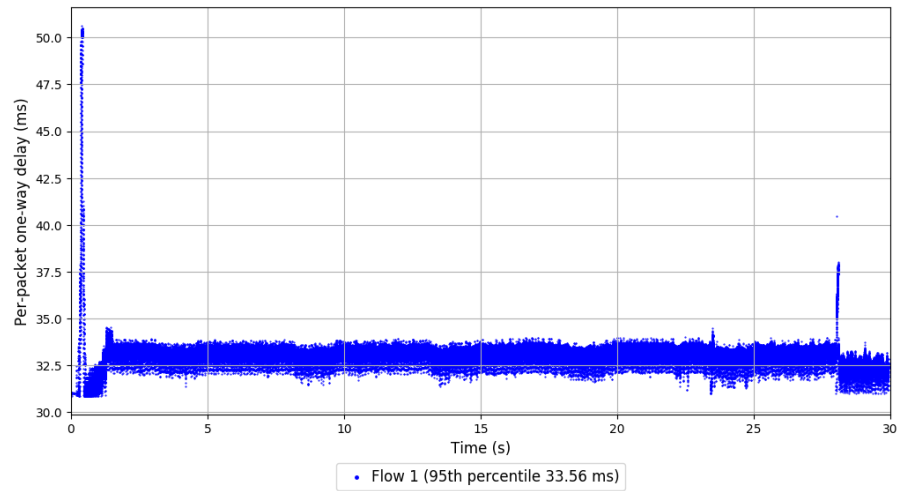
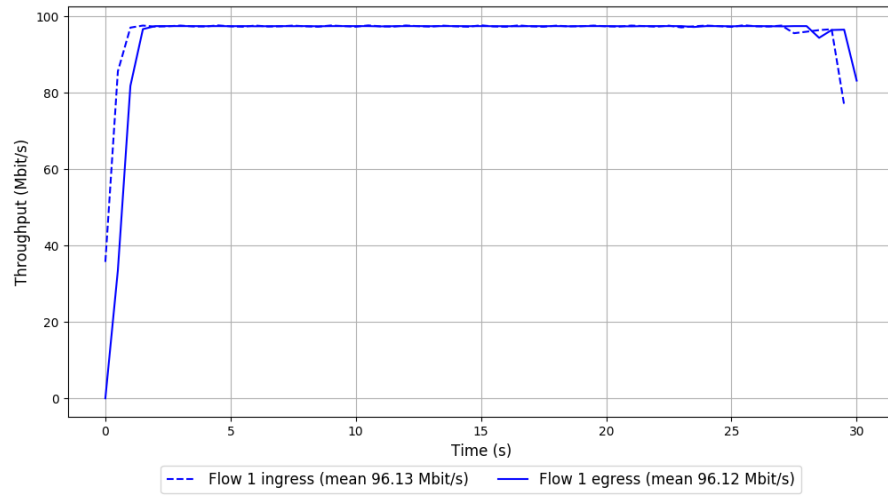
-- Flow 1:

Average throughput: 96.12 Mbit/s

95th percentile per-packet one-way delay: 33.565 ms

Loss rate: 0.00%

Run 1: Report of Muses-25 — Data Link



Run 2: Statistics of Muses-25

Start at: 2018-09-05 02:13:59

End at: 2018-09-05 02:14:29

Local clock offset: 9.925 ms

Remote clock offset: -4.36 ms

Below is generated by plot.py at 2018-09-05 02:23:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 92.51 Mbit/s

95th percentile per-packet one-way delay: 33.471 ms

Loss rate: 0.14%

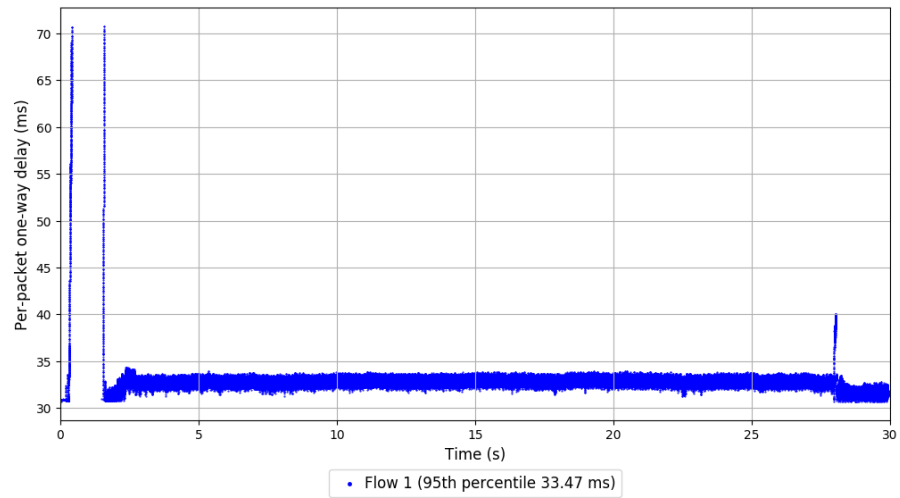
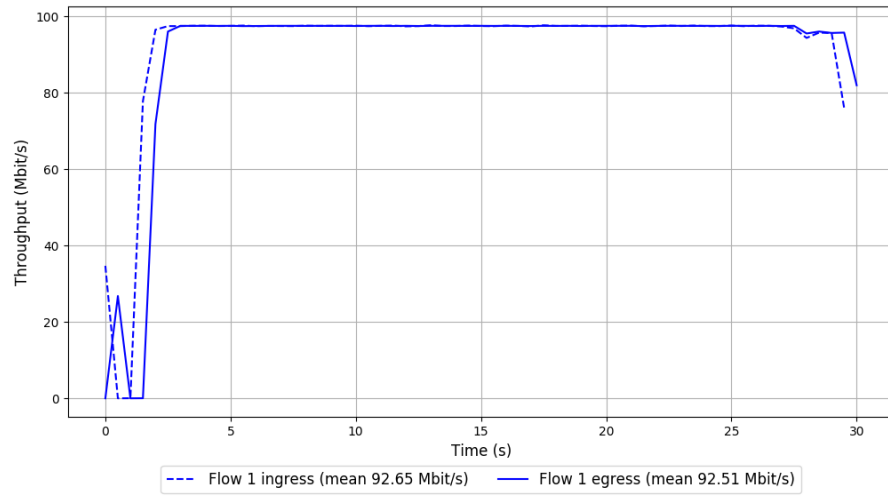
-- Flow 1:

Average throughput: 92.51 Mbit/s

95th percentile per-packet one-way delay: 33.471 ms

Loss rate: 0.14%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 02:19:20
End at: 2018-09-05 02:19:50
Local clock offset: 7.056 ms
Remote clock offset: -4.236 ms

Below is generated by plot.py at 2018-09-05 02:23:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 96.11 Mbit/s
95th percentile per-packet one-way delay: 32.904 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 96.11 Mbit/s
95th percentile per-packet one-way delay: 32.904 ms
Loss rate: 0.00%

Run 3: Report of Muses-25 — Data Link

