

Pantheon Report

Generated at 2018-09-03 08:36:25 (UTC).

Data path: AWS India 1 on `ens5` (*local*) → India 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 `nets.org.sg` and have been applied to correct the timestamps in logs.

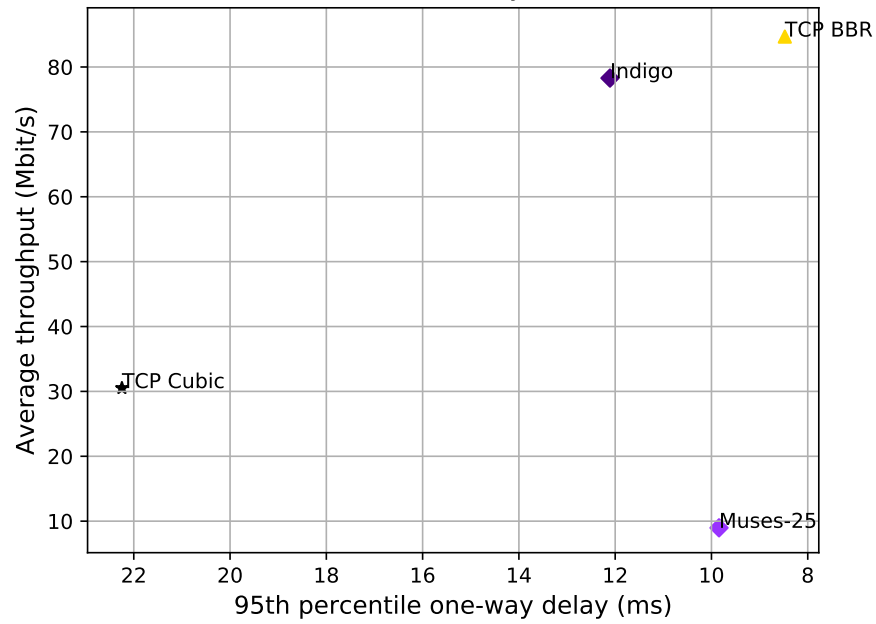
System info:

```
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
```

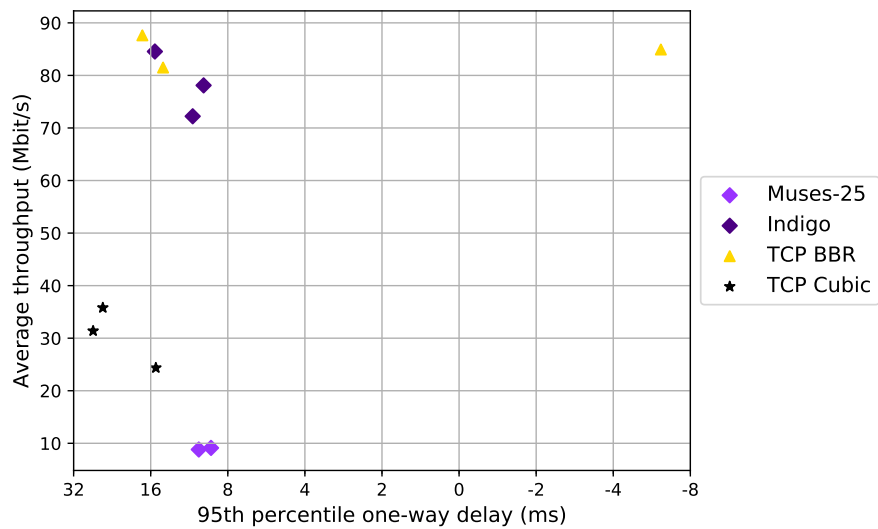
Git summary:

```
branch: muses @ f309f5459e2c5237279a184e52ece7a2b47ef1c9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf5e58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ b8d5019b83a3a678804d830fcfe1da7b3a63421b
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 1 to India, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from AWS India 1 to India, 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	84.69	8.48	8.19
TCP Cubic	3	30.51	22.25	0.65
Indigo	3	78.29	12.11	5.10
Muses-25	2	8.97	9.84	2.86

Run 1: Statistics of TCP BBR

Start at: 2018-09-03 08:22:24

End at: 2018-09-03 08:22:54

Local clock offset: 26.11 ms

Remote clock offset: -5.254 ms

Below is generated by plot.py at 2018-09-03 08:36:23

Datalink statistics

-- Total of 1 flow:

Average throughput: 84.93 Mbit/s

95th percentile per-packet one-way delay: -6.137 ms

Loss rate: 9.56%

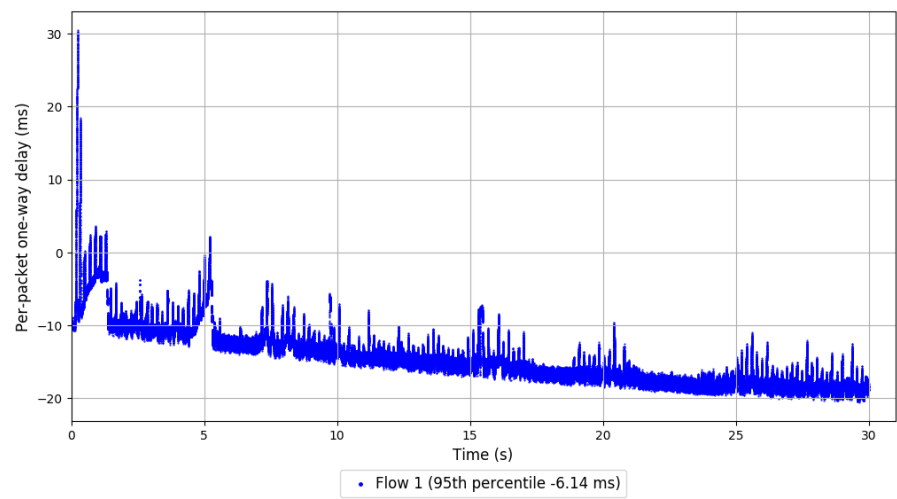
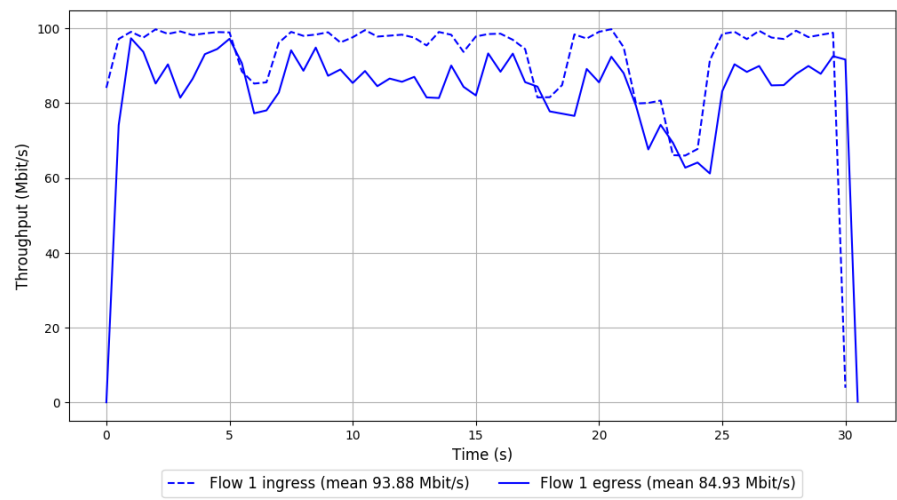
-- Flow 1:

Average throughput: 84.93 Mbit/s

95th percentile per-packet one-way delay: -6.137 ms

Loss rate: 9.56%

Run 1: Report of TCP BBR — Data Link

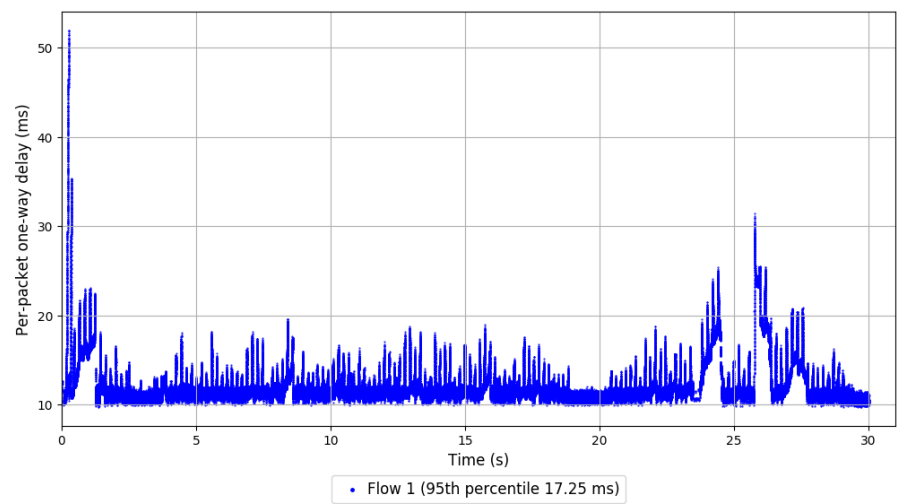
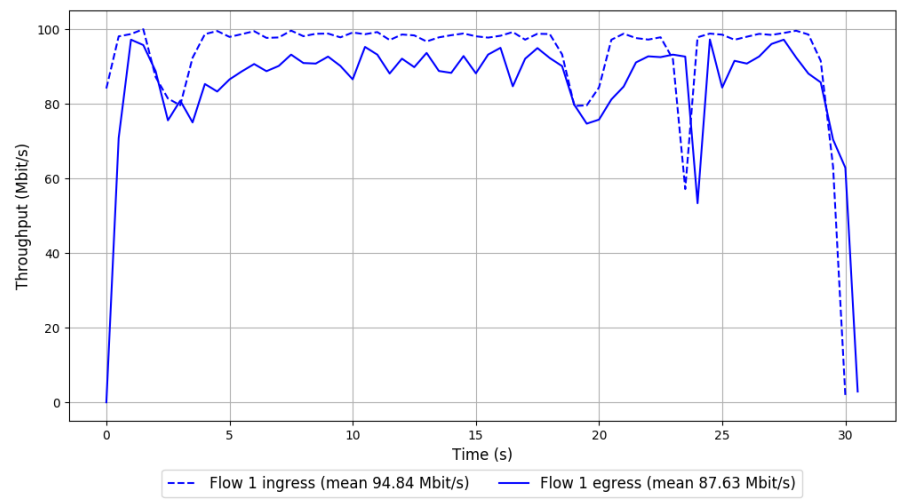


Run 2: Statistics of TCP BBR

Start at: 2018-09-03 08:26:50
End at: 2018-09-03 08:27:20
Local clock offset: -7.054 ms
Remote clock offset: -4.042 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 87.63 Mbit/s
95th percentile per-packet one-way delay: 17.247 ms
Loss rate: 7.61%
-- Flow 1:
Average throughput: 87.63 Mbit/s
95th percentile per-packet one-way delay: 17.247 ms
Loss rate: 7.61%

Run 2: Report of TCP BBR — Data Link

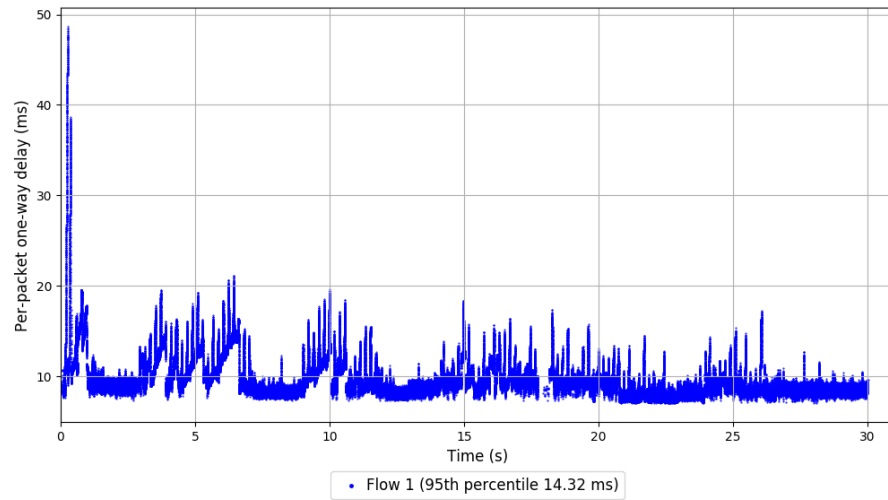
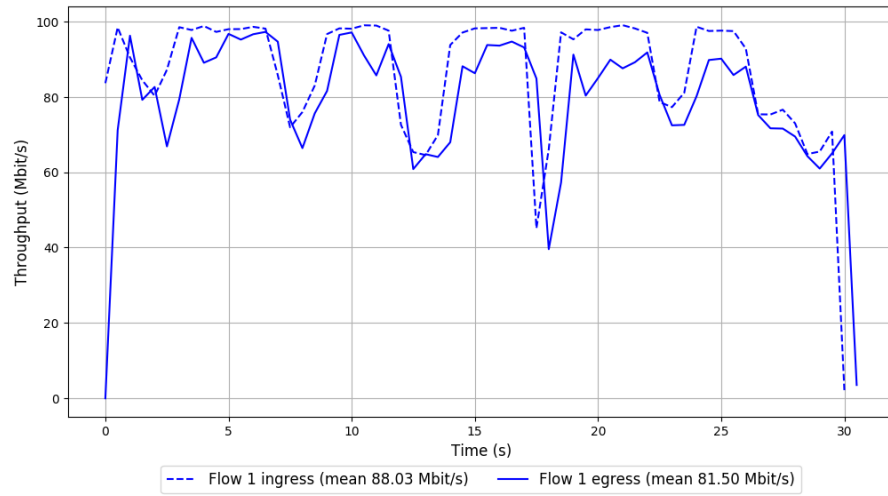


Run 3: Statistics of TCP BBR

Start at: 2018-09-03 08:31:21
End at: 2018-09-03 08:31:51
Local clock offset: -10.665 ms
Remote clock offset: -5.145 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 81.50 Mbit/s
95th percentile per-packet one-way delay: 14.318 ms
Loss rate: 7.41%
-- Flow 1:
Average throughput: 81.50 Mbit/s
95th percentile per-packet one-way delay: 14.318 ms
Loss rate: 7.41%

Run 3: Report of TCP BBR — Data Link

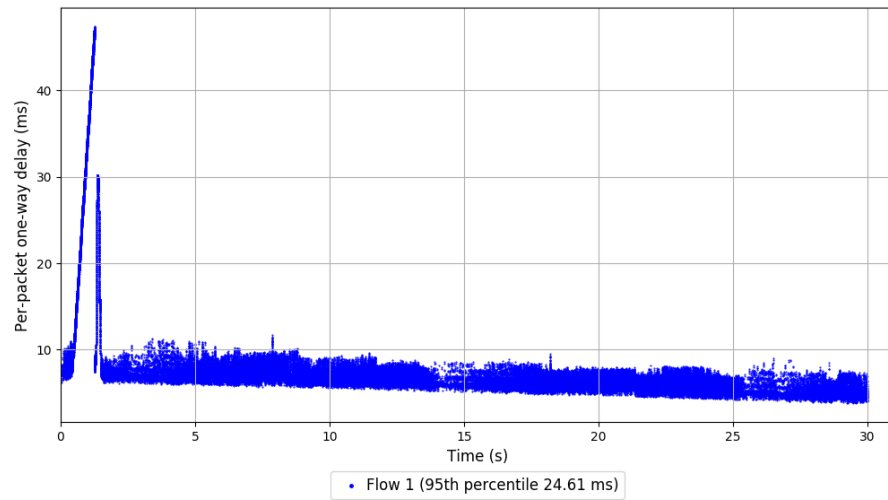
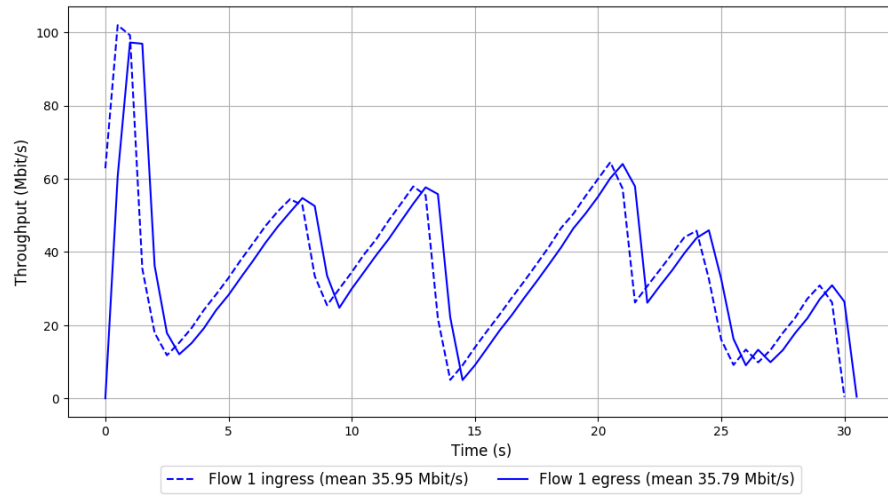


Run 1: Statistics of TCP Cubic

Start at: 2018-09-03 08:24:36
End at: 2018-09-03 08:25:06
Local clock offset: -7.978 ms
Remote clock offset: -5.579 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 35.79 Mbit/s
95th percentile per-packet one-way delay: 24.611 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 35.79 Mbit/s
95th percentile per-packet one-way delay: 24.611 ms
Loss rate: 0.45%

Run 1: Report of TCP Cubic — Data Link

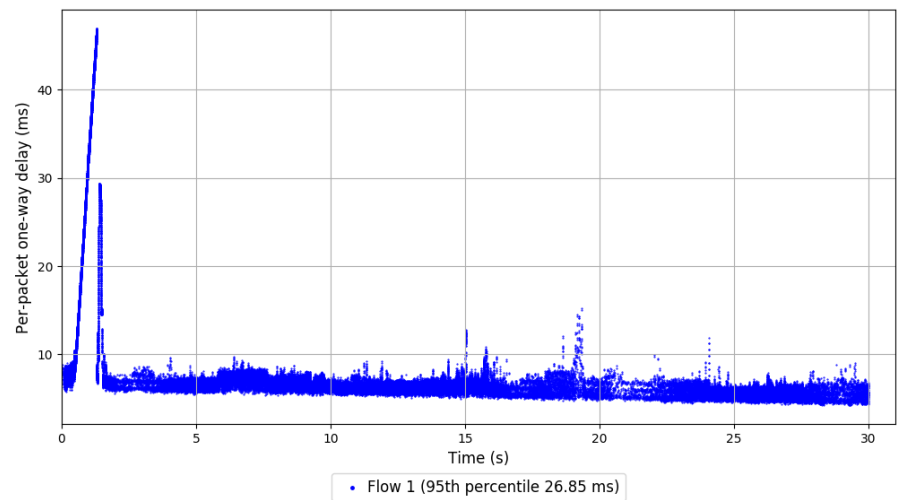
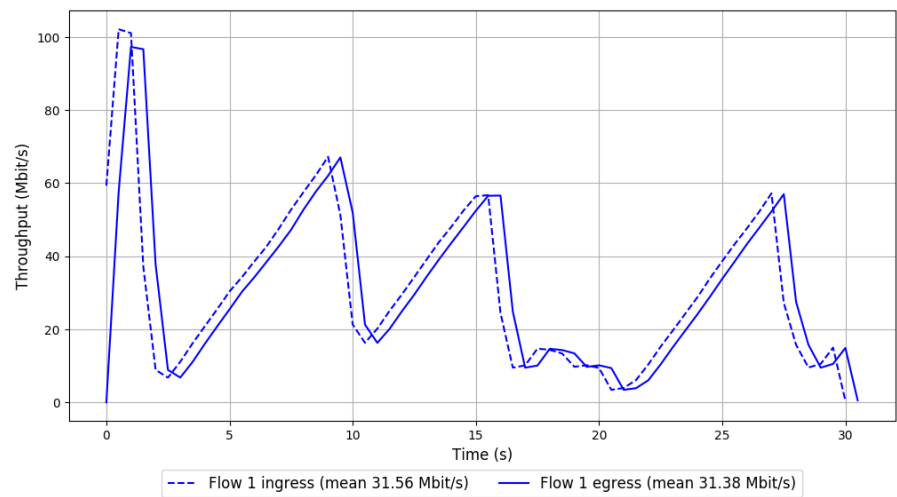


Run 2: Statistics of TCP Cubic

Start at: 2018-09-03 08:29:05
End at: 2018-09-03 08:29:35
Local clock offset: -8.534 ms
Remote clock offset: -5.494 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 31.38 Mbit/s
95th percentile per-packet one-way delay: 26.851 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 31.38 Mbit/s
95th percentile per-packet one-way delay: 26.851 ms
Loss rate: 0.59%

Run 2: Report of TCP Cubic — Data Link

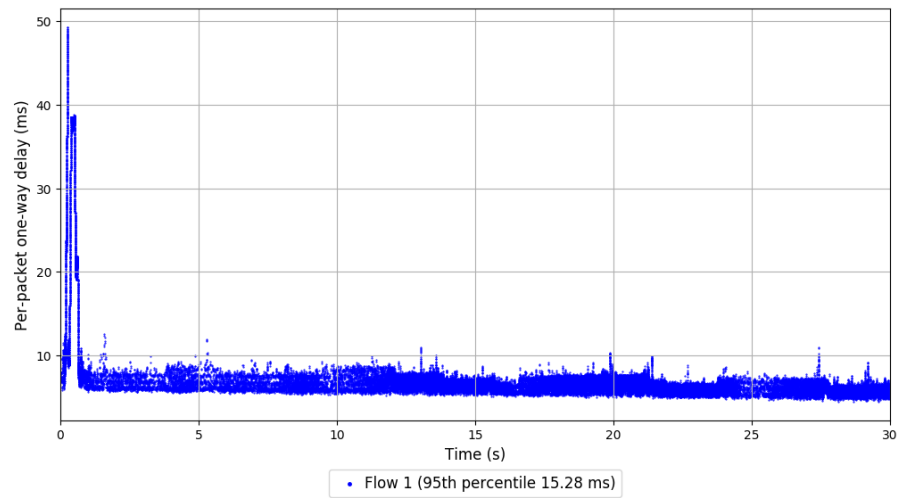
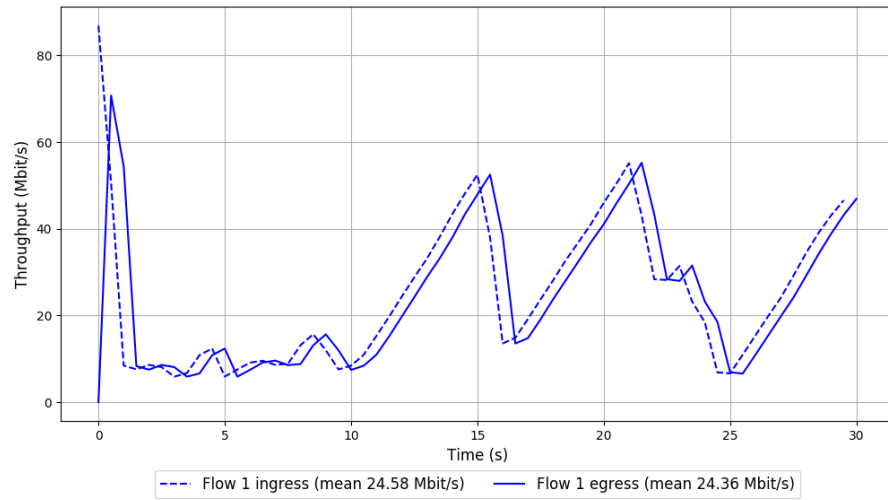


Run 3: Statistics of TCP Cubic

Start at: 2018-09-03 08:33:35
End at: 2018-09-03 08:34:05
Local clock offset: -11.377 ms
Remote clock offset: -4.342 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 24.36 Mbit/s
95th percentile per-packet one-way delay: 15.277 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 24.36 Mbit/s
95th percentile per-packet one-way delay: 15.277 ms
Loss rate: 0.92%

Run 3: Report of TCP Cubic — Data Link

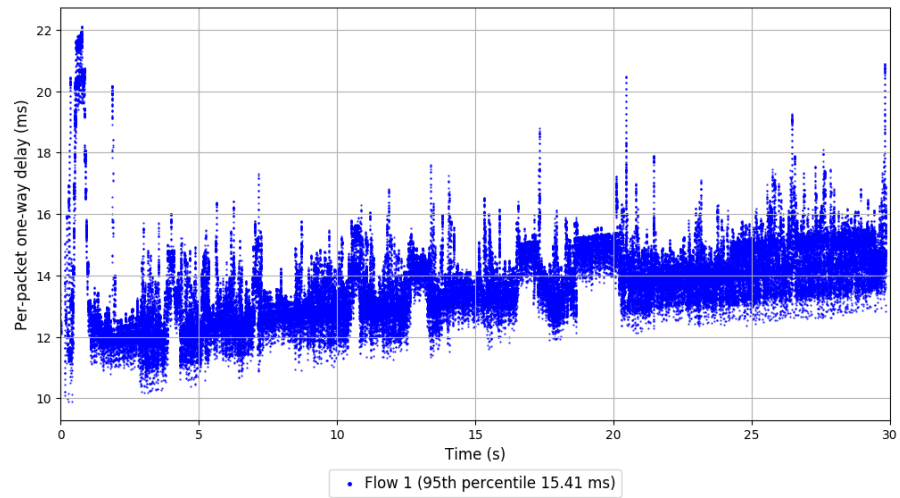
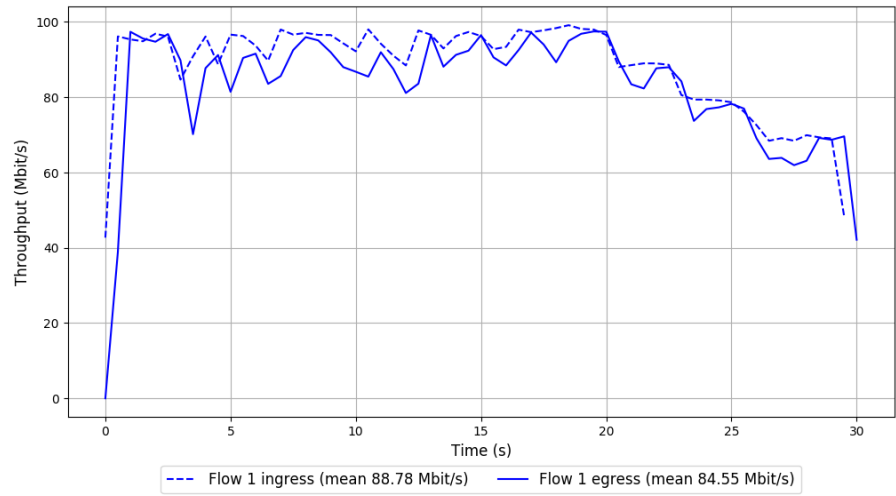


Run 1: Statistics of Indigo

Start at: 2018-09-03 08:25:41
End at: 2018-09-03 08:26:12
Local clock offset: -12.894 ms
Remote clock offset: -5.562 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 84.55 Mbit/s
95th percentile per-packet one-way delay: 15.411 ms
Loss rate: 4.75%
-- Flow 1:
Average throughput: 84.55 Mbit/s
95th percentile per-packet one-way delay: 15.411 ms
Loss rate: 4.75%

Run 1: Report of Indigo — Data Link

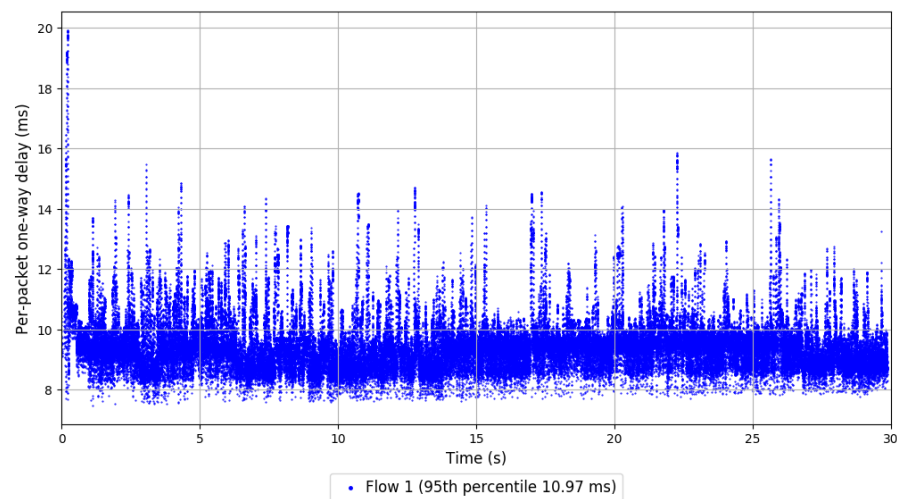
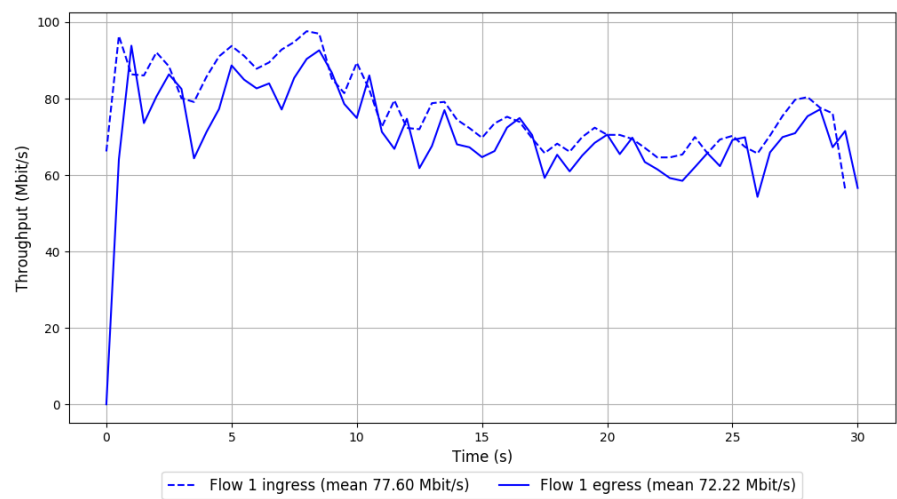


Run 2: Statistics of Indigo

Start at: 2018-09-03 08:30:11
End at: 2018-09-03 08:30:41
Local clock offset: -10.602 ms
Remote clock offset: -4.318 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 72.22 Mbit/s
95th percentile per-packet one-way delay: 10.969 ms
Loss rate: 6.93%
-- Flow 1:
Average throughput: 72.22 Mbit/s
95th percentile per-packet one-way delay: 10.969 ms
Loss rate: 6.93%

Run 2: Report of Indigo — Data Link

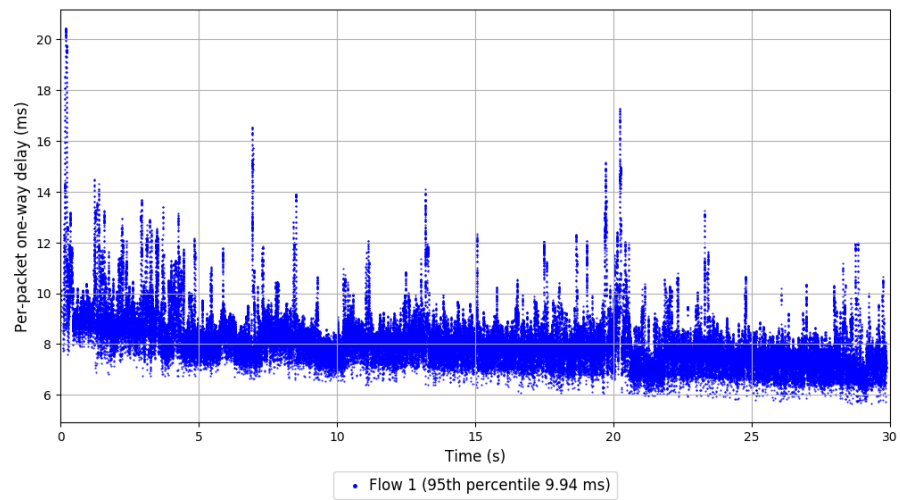
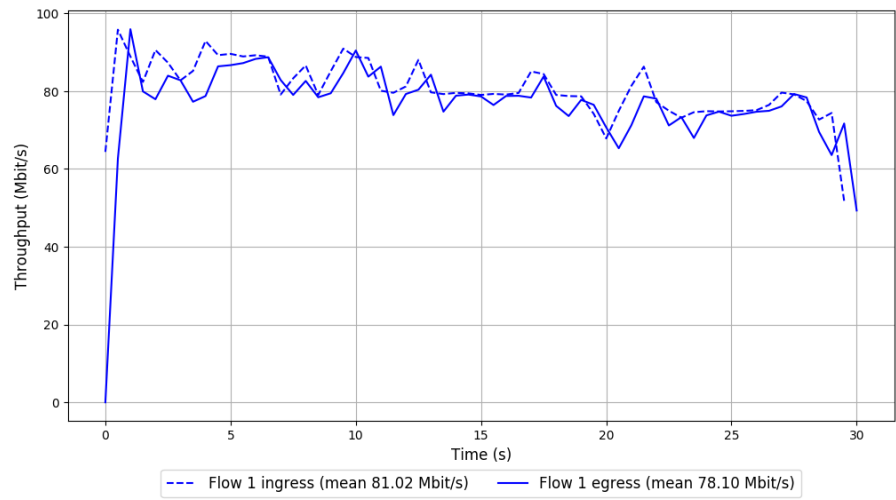


Run 3: Statistics of Indigo

Start at: 2018-09-03 08:34:40
End at: 2018-09-03 08:35:10
Local clock offset: -16.534 ms
Remote clock offset: -5.321 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 78.10 Mbit/s
95th percentile per-packet one-way delay: 9.944 ms
Loss rate: 3.61%
-- Flow 1:
Average throughput: 78.10 Mbit/s
95th percentile per-packet one-way delay: 9.944 ms
Loss rate: 3.61%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

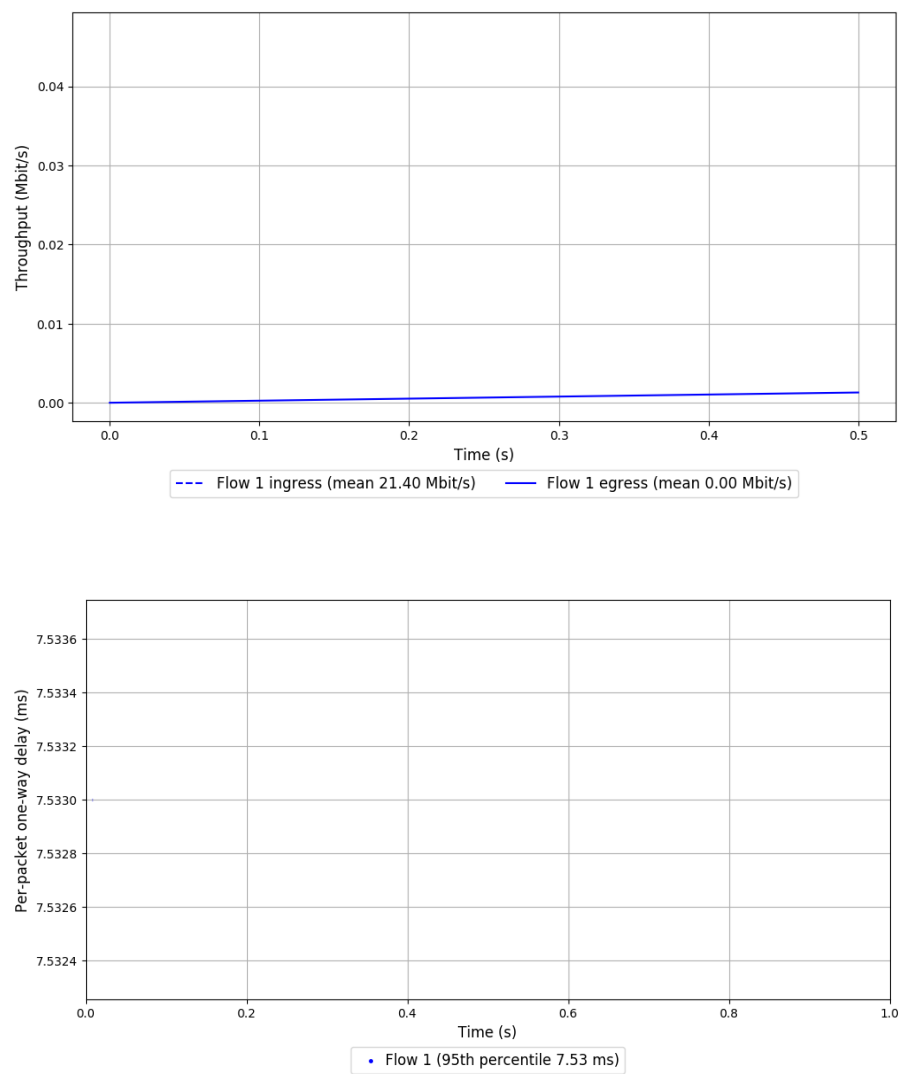
Start at: 2018-09-03 08:23:32

End at: 2018-09-03 08:24:02

Local clock offset: -3.653 ms

Remote clock offset: -4.98 ms

Run 1: Report of Muses-25 — Data Link

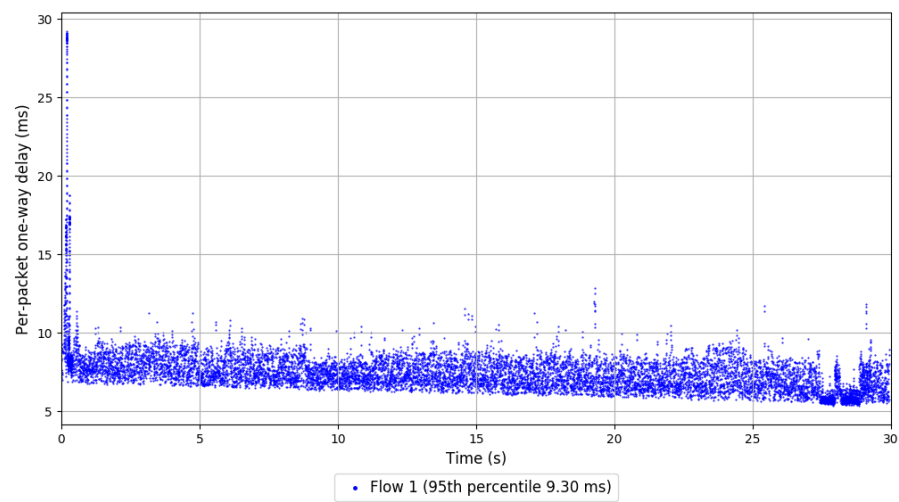
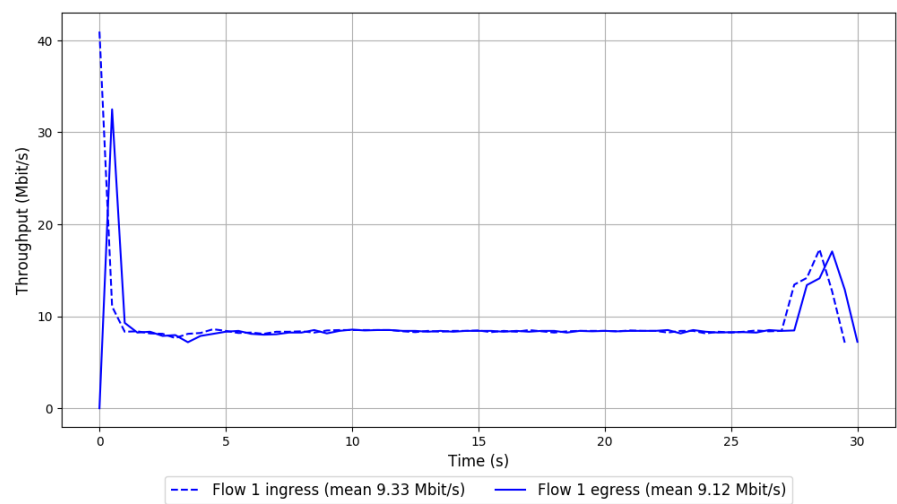


Run 2: Statistics of Muses-25

Start at: 2018-09-03 08:28:00
End at: 2018-09-03 08:28:30
Local clock offset: -6.347 ms
Remote clock offset: -5.599 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 9.12 Mbit/s
95th percentile per-packet one-way delay: 9.303 ms
Loss rate: 2.22%
-- Flow 1:
Average throughput: 9.12 Mbit/s
95th percentile per-packet one-way delay: 9.303 ms
Loss rate: 2.22%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-03 08:32:31
End at: 2018-09-03 08:33:01
Local clock offset: -11.303 ms
Remote clock offset: -5.201 ms

Below is generated by plot.py at 2018-09-03 08:36:24
Datalink statistics
-- Total of 1 flow:
Average throughput: 8.82 Mbit/s
95th percentile per-packet one-way delay: 10.383 ms
Loss rate: 3.49%
-- Flow 1:
Average throughput: 8.82 Mbit/s
95th percentile per-packet one-way delay: 10.383 ms
Loss rate: 3.49%

Run 3: Report of Muses-25 — Data Link

