

Pantheon Report

Generated at 2018-09-05 22:26:40 (UTC).

Data path: Saudi Arabia on `enp2s0` (*remote*) → AWS India 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 `nets.org.sg` and have been applied to correct the timestamps in logs.

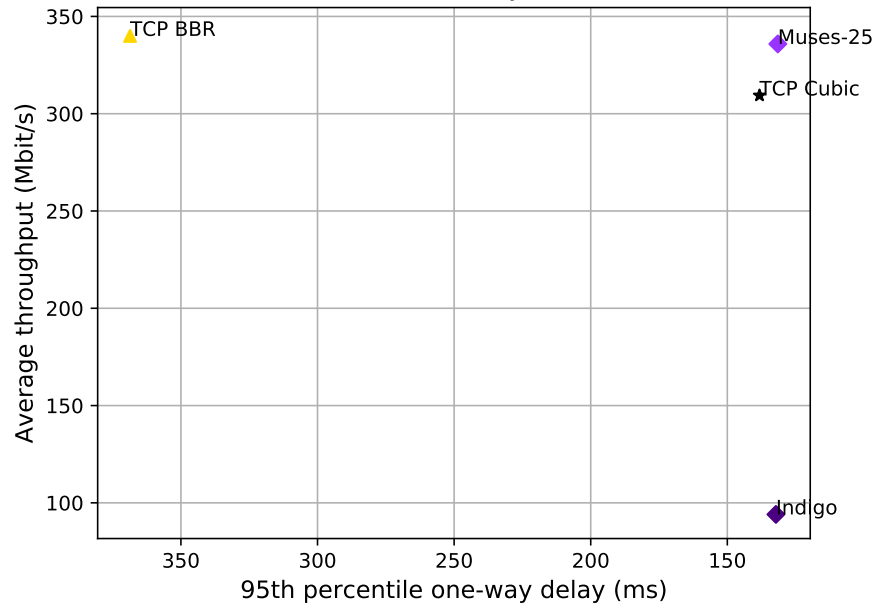
System info:

```
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
```

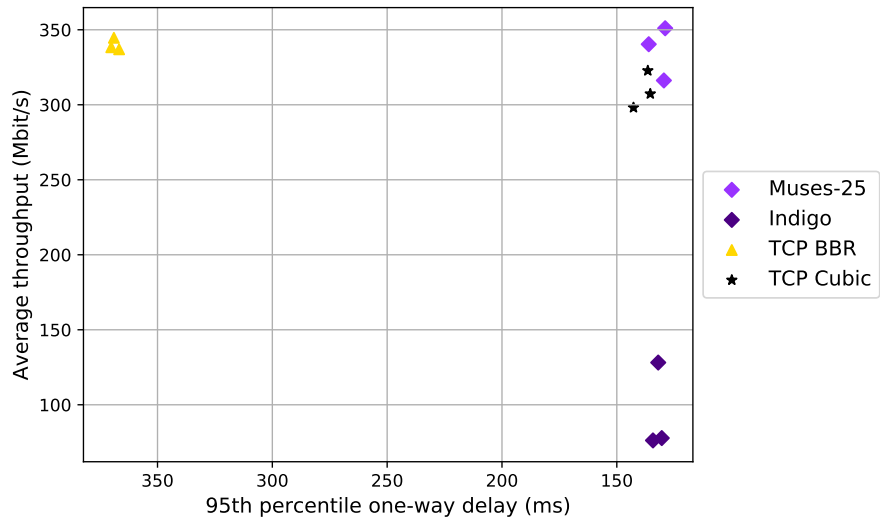
Git summary:

```
branch: muses @ 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 Saudi Arabia to AWS India 2, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from Saudi Arabia to AWS India 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	340.00	368.62	2.15
TCP Cubic	3	309.37	138.22	0.67
Indigo	3	94.06	132.21	0.61
Muses-25	3	335.86	131.51	0.74

Run 1: Statistics of TCP BBR

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

End at: 2018-09-05 21:56:25

Local clock offset: 2.115 ms

Remote clock offset: -37.206 ms

Below is generated by plot.py at 2018-09-05 22:25:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 344.66 Mbit/s

95th percentile per-packet one-way delay: 368.992 ms

Loss rate: 2.12%

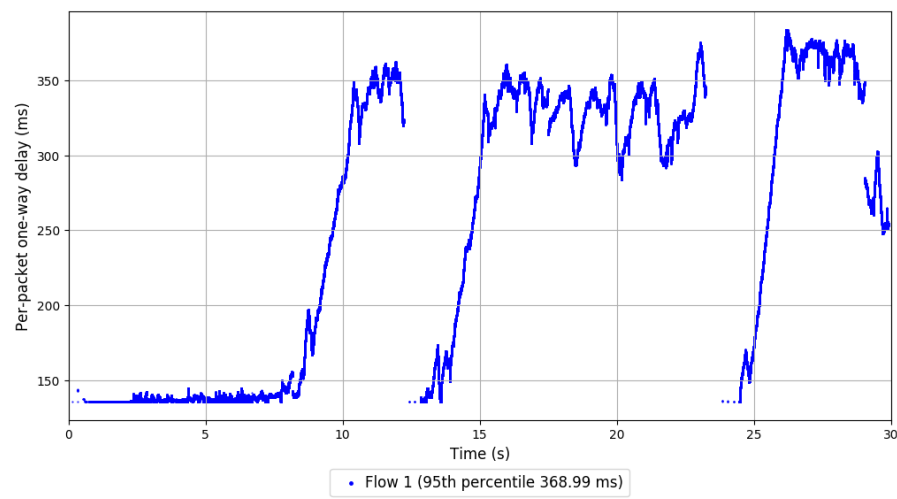
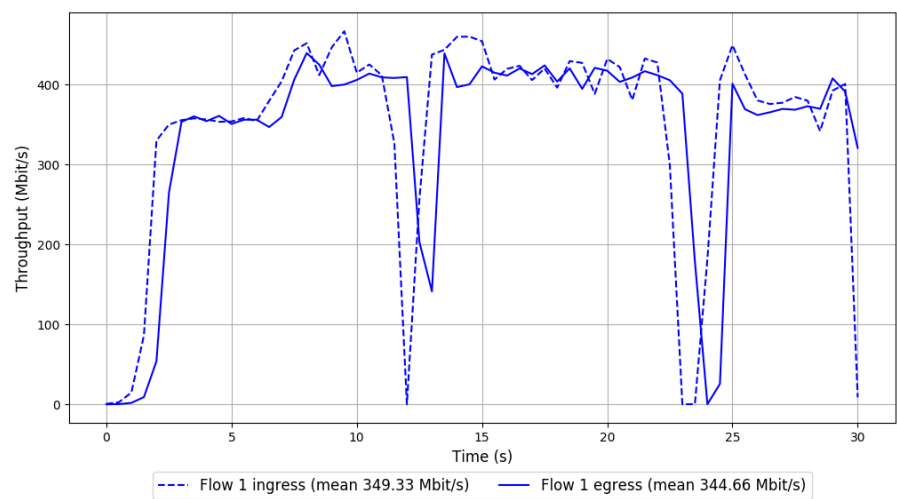
-- Flow 1:

Average throughput: 344.66 Mbit/s

95th percentile per-packet one-way delay: 368.992 ms

Loss rate: 2.12%

Run 1: Report of TCP BBR — Data Link

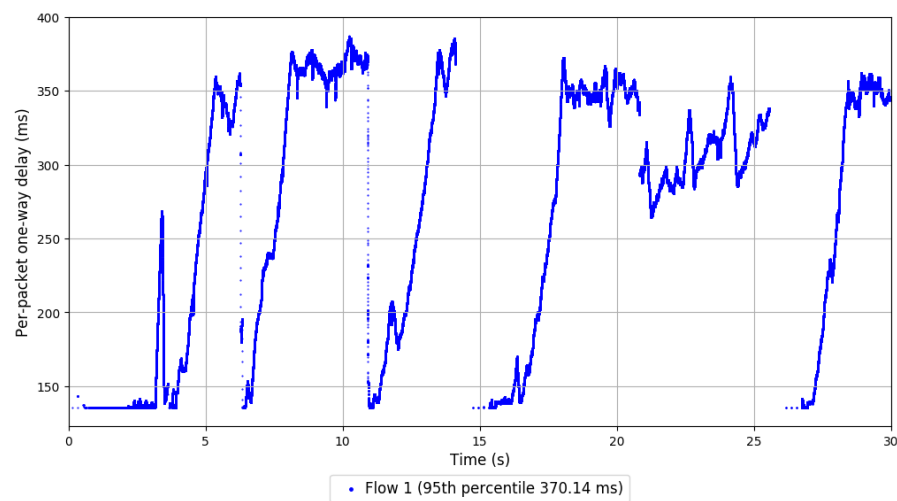
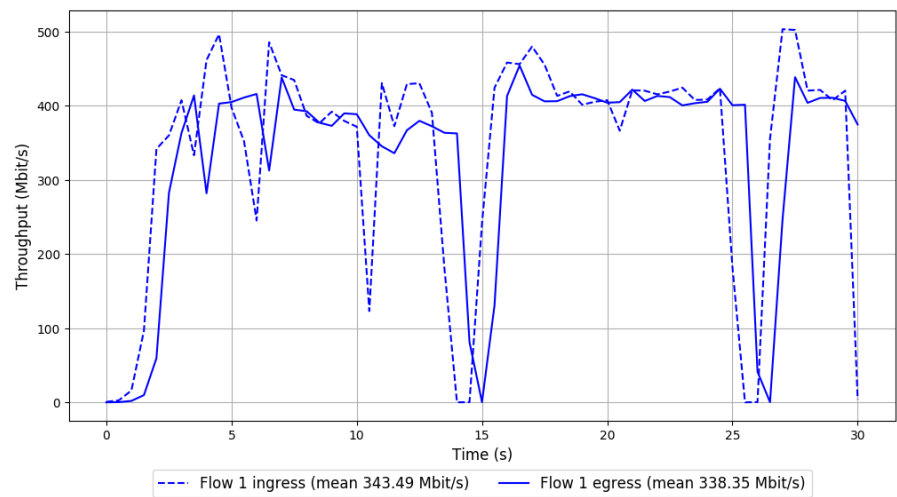


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 22:01:30
End at: 2018-09-05 22:02:00
Local clock offset: 0.769 ms
Remote clock offset: -38.612 ms

Below is generated by plot.py at 2018-09-05 22:25:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 338.35 Mbit/s
95th percentile per-packet one-way delay: 370.136 ms
Loss rate: 2.15%
-- Flow 1:
Average throughput: 338.35 Mbit/s
95th percentile per-packet one-way delay: 370.136 ms
Loss rate: 2.15%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-05 22:12:30

End at: 2018-09-05 22:13:00

Local clock offset: 3.4 ms

Remote clock offset: -32.432 ms

Below is generated by plot.py at 2018-09-05 22:25:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 336.98 Mbit/s

95th percentile per-packet one-way delay: 366.718 ms

Loss rate: 2.18%

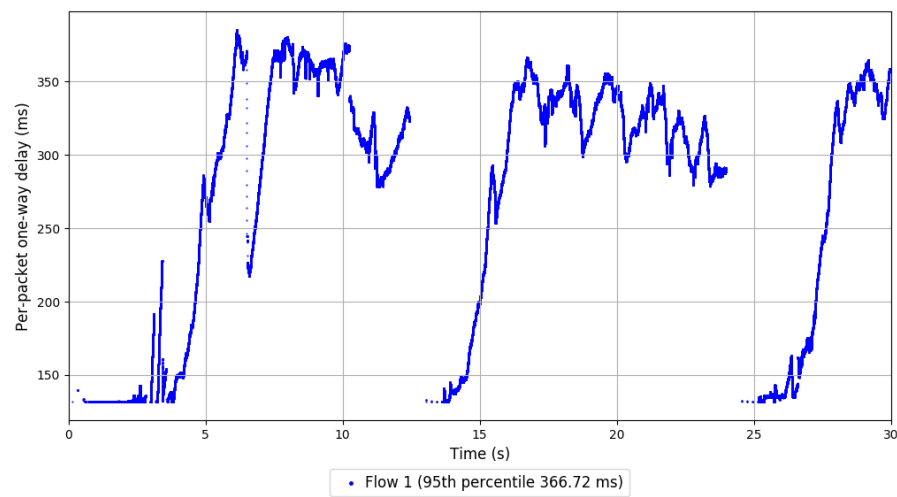
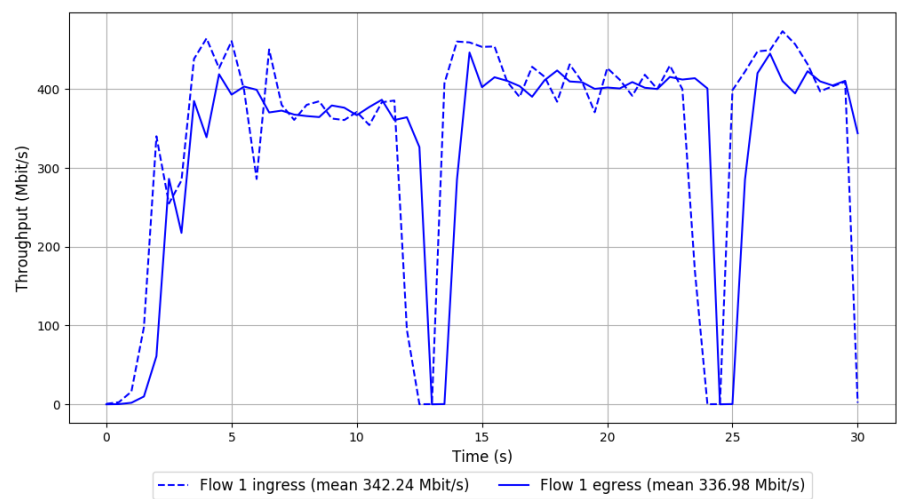
-- Flow 1:

Average throughput: 336.98 Mbit/s

95th percentile per-packet one-way delay: 366.718 ms

Loss rate: 2.18%

Run 3: Report of TCP BBR — Data Link

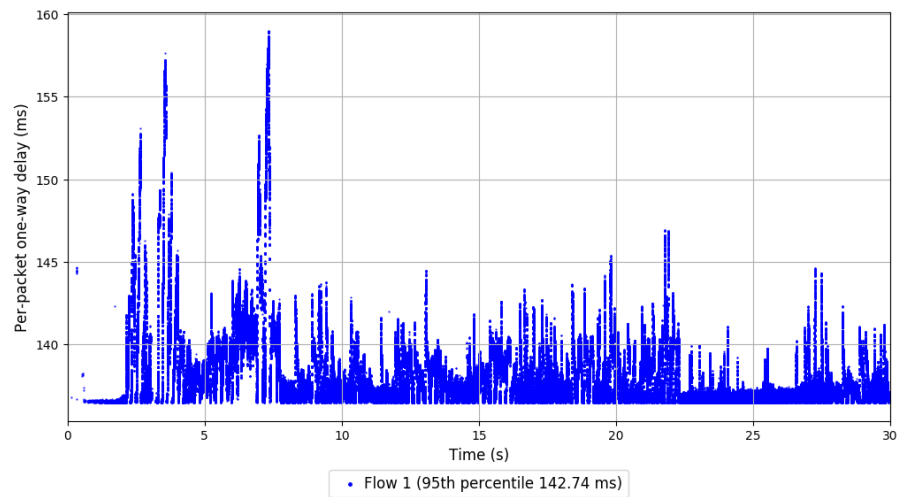
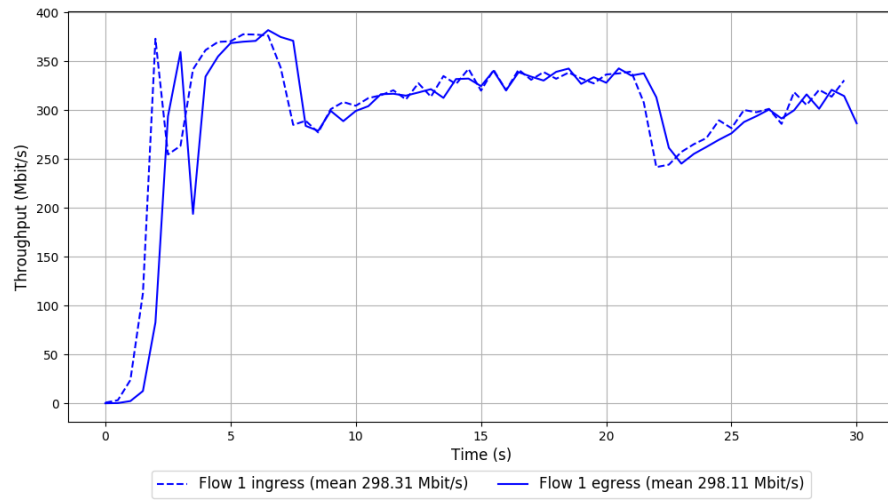


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 21:57:22
End at: 2018-09-05 21:57:52
Local clock offset: 0.568 ms
Remote clock offset: -39.695 ms

Below is generated by plot.py at 2018-09-05 22:25:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 298.11 Mbit/s
95th percentile per-packet one-way delay: 142.739 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 298.11 Mbit/s
95th percentile per-packet one-way delay: 142.739 ms
Loss rate: 0.71%

Run 1: Report of TCP Cubic — Data Link

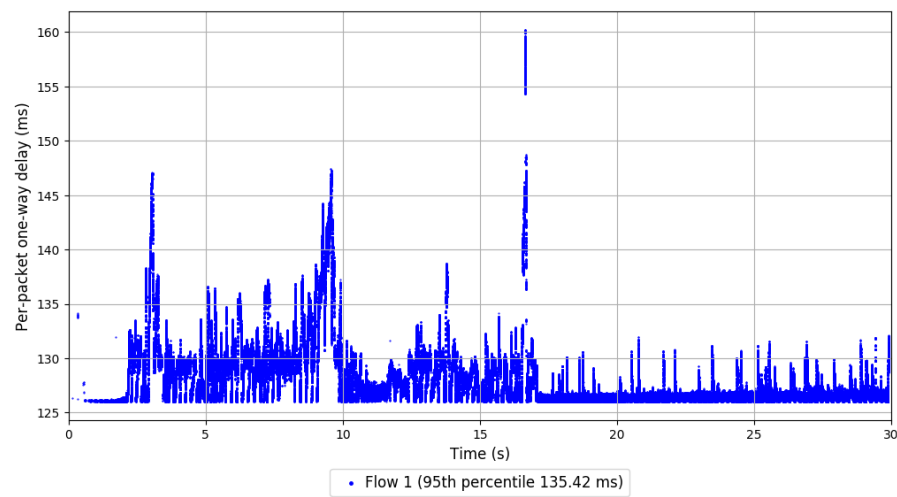
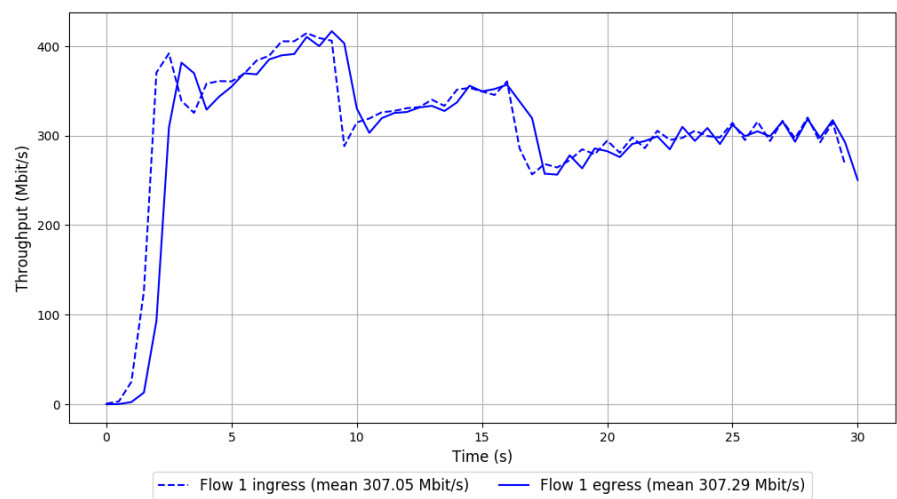


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 22:02:56
End at: 2018-09-05 22:03:26
Local clock offset: -2.546 ms
Remote clock offset: -33.927 ms

Below is generated by plot.py at 2018-09-05 22:25:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 307.29 Mbit/s
95th percentile per-packet one-way delay: 135.421 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 307.29 Mbit/s
95th percentile per-packet one-way delay: 135.421 ms
Loss rate: 0.58%

Run 2: Report of TCP Cubic — Data Link

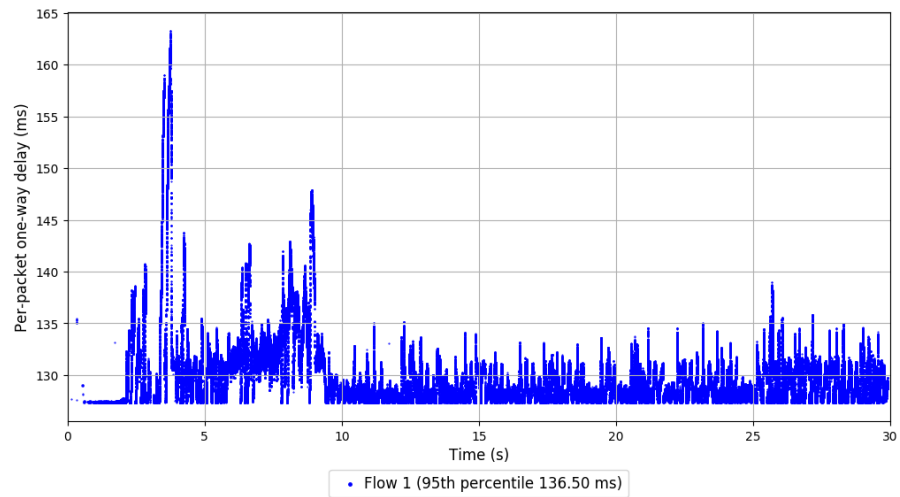
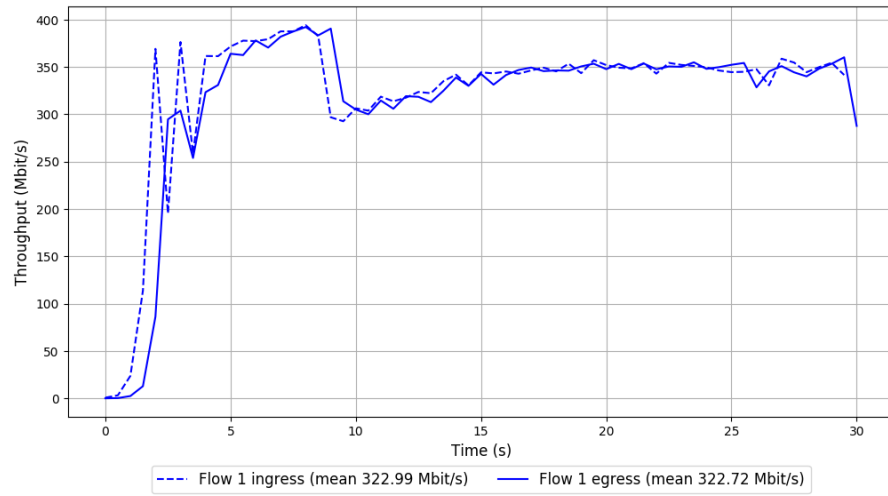


Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 22:13:57
End at: 2018-09-05 22:14:27
Local clock offset: -3.078 ms
Remote clock offset: -34.531 ms

Below is generated by plot.py at 2018-09-05 22:25:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 322.72 Mbit/s
95th percentile per-packet one-way delay: 136.501 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 322.72 Mbit/s
95th percentile per-packet one-way delay: 136.501 ms
Loss rate: 0.73%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

Start at: 2018-09-05 21:58:46

End at: 2018-09-05 21:59:16

Local clock offset: 0.486 ms

Remote clock offset: -34.097 ms

Below is generated by plot.py at 2018-09-05 22:25:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 128.15 Mbit/s

95th percentile per-packet one-way delay: 131.966 ms

Loss rate: 0.48%

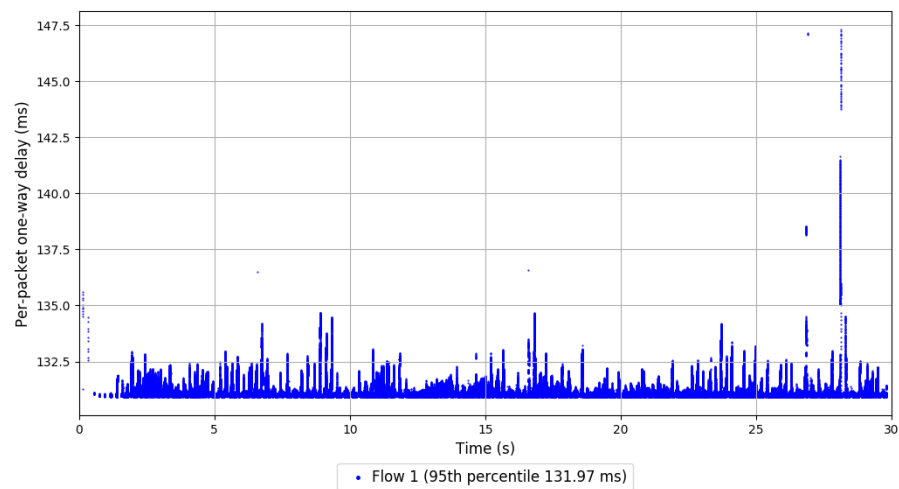
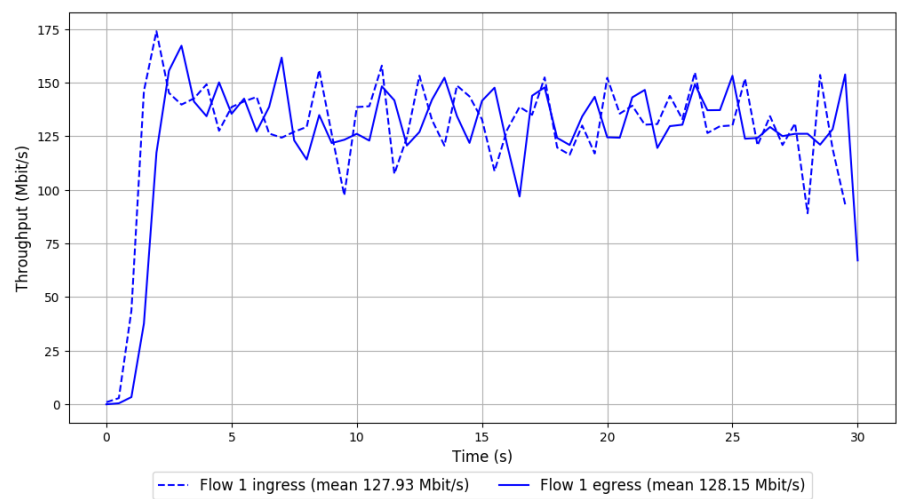
-- Flow 1:

Average throughput: 128.15 Mbit/s

95th percentile per-packet one-way delay: 131.966 ms

Loss rate: 0.48%

Run 1: Report of Indigo — Data Link



Run 2: Statistics of Indigo

Start at: 2018-09-05 22:04:20

End at: 2018-09-05 22:04:50

Local clock offset: 0.082 ms

Remote clock offset: -37.76 ms

Below is generated by plot.py at 2018-09-05 22:25:52

Datalink statistics

-- Total of 1 flow:

Average throughput: 76.23 Mbit/s

95th percentile per-packet one-way delay: 134.250 ms

Loss rate: 0.65%

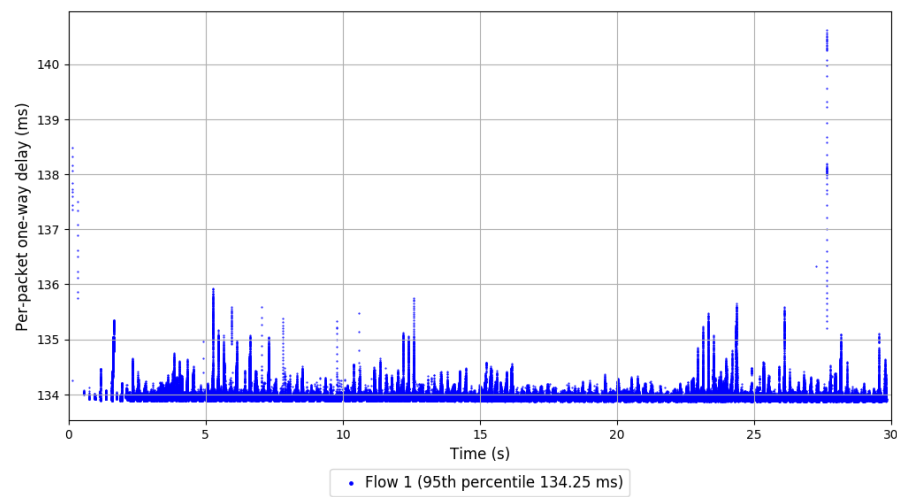
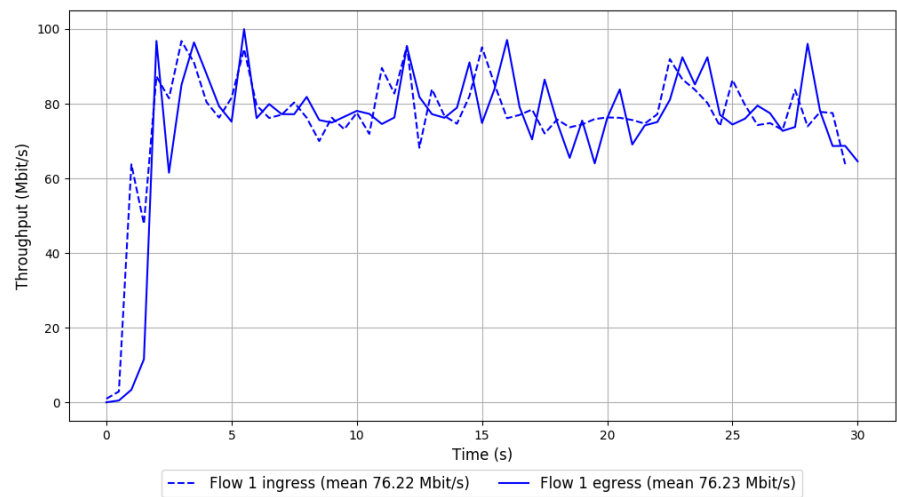
-- Flow 1:

Average throughput: 76.23 Mbit/s

95th percentile per-packet one-way delay: 134.250 ms

Loss rate: 0.65%

Run 2: Report of Indigo — Data Link

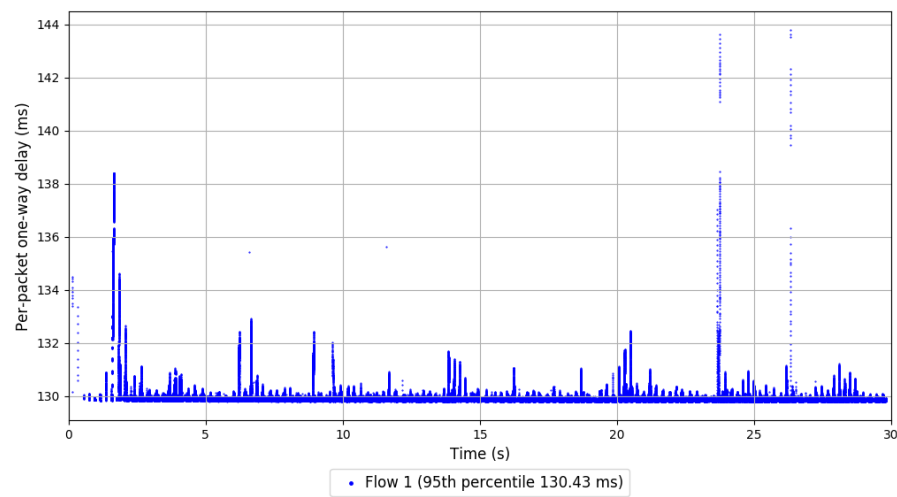
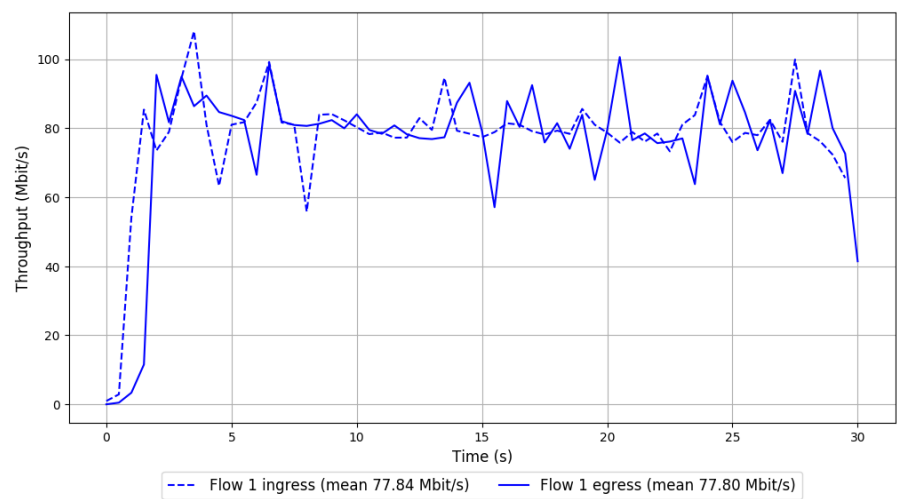


Run 3: Statistics of Indigo

Start at: 2018-09-05 22:20:48
End at: 2018-09-05 22:21:18
Local clock offset: -3.144 ms
Remote clock offset: -37.426 ms

Below is generated by plot.py at 2018-09-05 22:25:52
Datalink statistics
-- Total of 1 flow:
Average throughput: 77.80 Mbit/s
95th percentile per-packet one-way delay: 130.425 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 77.80 Mbit/s
95th percentile per-packet one-way delay: 130.425 ms
Loss rate: 0.70%

Run 3: Report of Indigo — Data Link

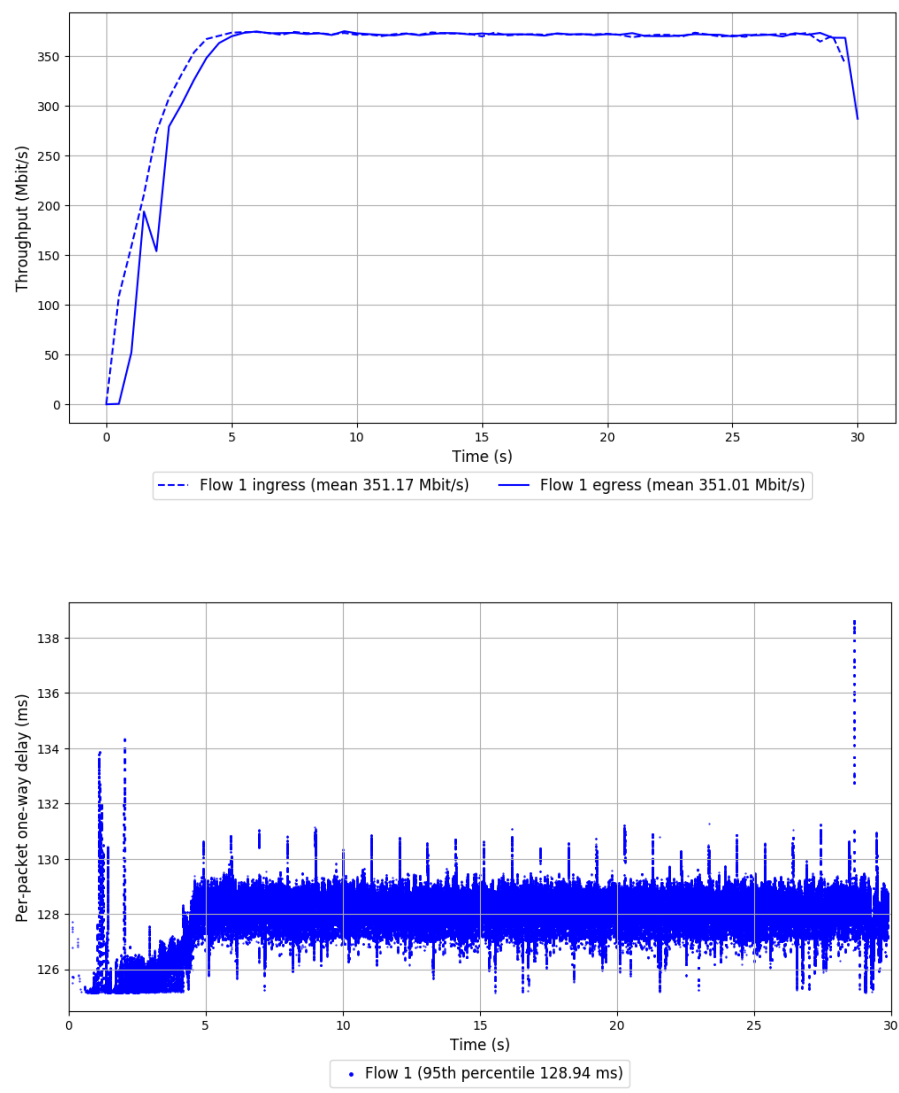


Run 1: Statistics of Muses-25

Start at: 2018-09-05 21:54:29
End at: 2018-09-05 21:54:59
Local clock offset: -4.46 ms
Remote clock offset: -33.333 ms

Below is generated by plot.py at 2018-09-05 22:26:30
Datalink statistics
-- Total of 1 flow:
Average throughput: 351.01 Mbit/s
95th percentile per-packet one-way delay: 128.941 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 351.01 Mbit/s
95th percentile per-packet one-way delay: 128.941 ms
Loss rate: 0.71%

Run 1: Report of Muses-25 — Data Link

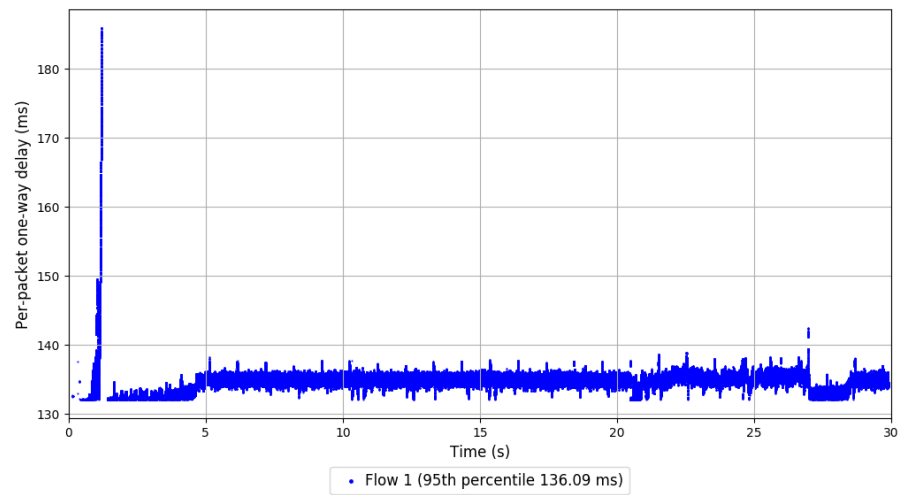
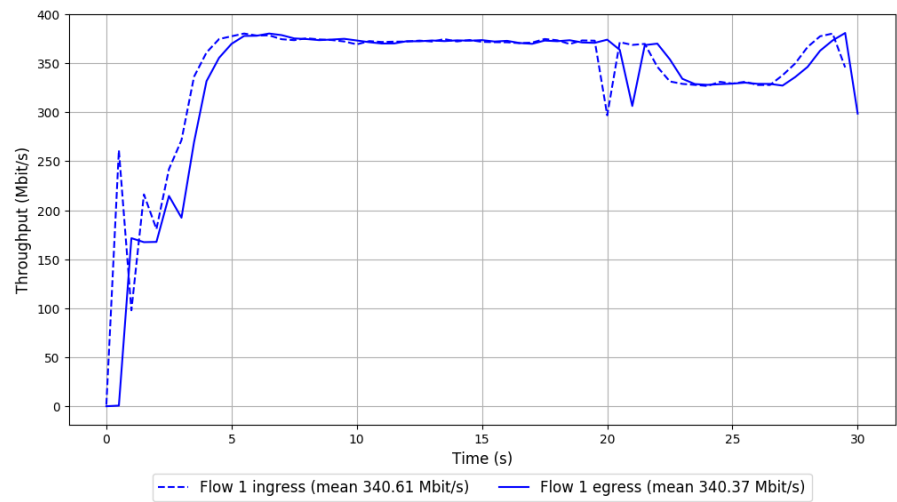


Run 2: Statistics of Muses-25

Start at: 2018-09-05 22:00:04
End at: 2018-09-05 22:00:34
Local clock offset: 0.68 ms
Remote clock offset: -35.261 ms

Below is generated by plot.py at 2018-09-05 22:26:32
Datalink statistics
-- Total of 1 flow:
Average throughput: 340.37 Mbit/s
95th percentile per-packet one-way delay: 136.092 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 340.37 Mbit/s
95th percentile per-packet one-way delay: 136.092 ms
Loss rate: 0.73%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 22:11:05
End at: 2018-09-05 22:11:35
Local clock offset: -2.206 ms
Remote clock offset: -31.967 ms

Below is generated by plot.py at 2018-09-05 22:26:39
Datalink statistics
-- Total of 1 flow:
Average throughput: 316.21 Mbit/s
95th percentile per-packet one-way delay: 129.502 ms
Loss rate: 0.79%
-- Flow 1:
Average throughput: 316.21 Mbit/s
95th percentile per-packet one-way delay: 129.502 ms
Loss rate: 0.79%

Run 3: Report of Muses-25 — Data Link

