

Pantheon Report

Generated at 2018-09-05 03:24:37 (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.

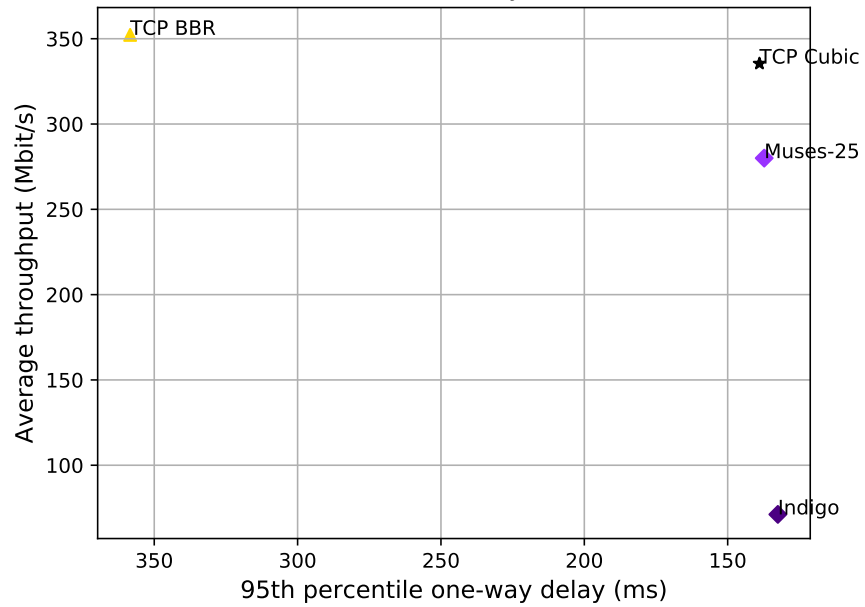
System info:

```
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
```

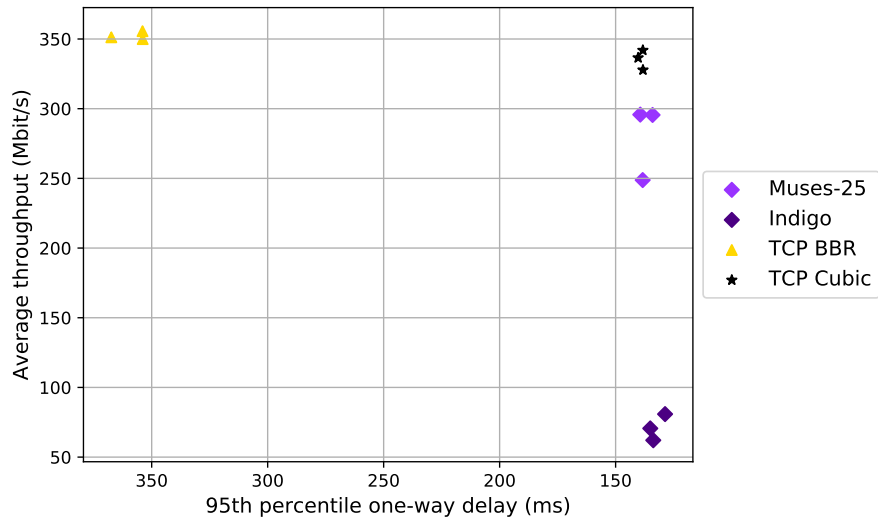
Git summary:

```
branch: muses @ 71e71e9a55b945431a7dea72180c1c9381097db9
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
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 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



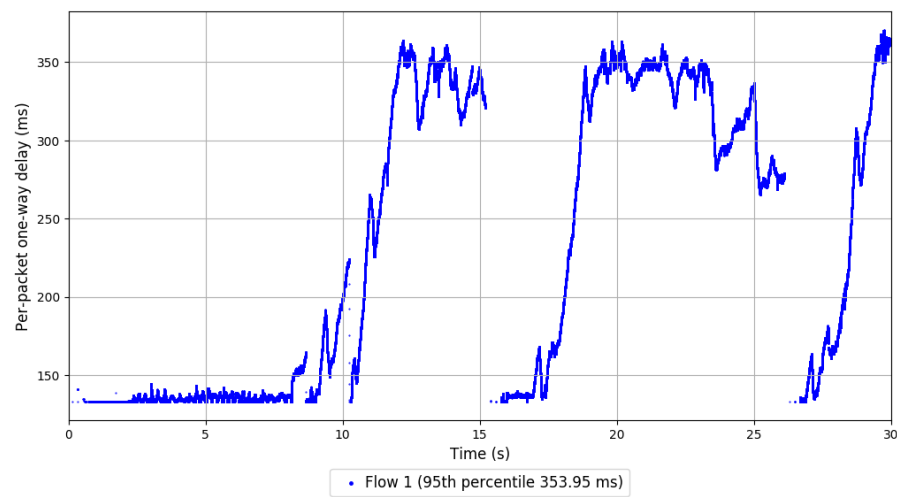
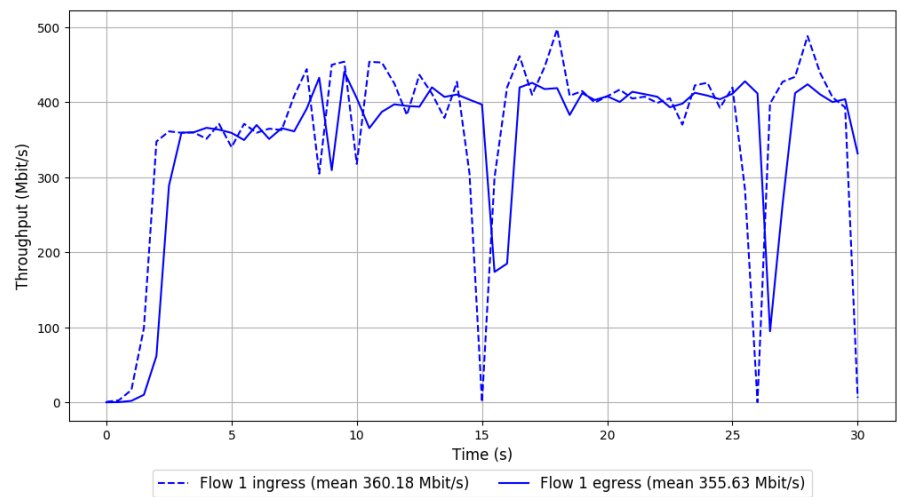
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	352.26	358.41	1.20
TCP Cubic	3	335.42	138.92	0.73
Indigo	3	71.18	132.50	0.76
Muses-25	3	280.02	137.25	0.58

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 03:07:32
End at: 2018-09-05 03:08:02
Local clock offset: -2.817 ms
Remote clock offset: -34.135 ms

Below is generated by plot.py at 2018-09-05 03:24:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 355.63 Mbit/s
95th percentile per-packet one-way delay: 353.949 ms
Loss rate: 1.93%
-- Flow 1:
Average throughput: 355.63 Mbit/s
95th percentile per-packet one-way delay: 353.949 ms
Loss rate: 1.93%

Run 1: Report of TCP BBR — Data Link

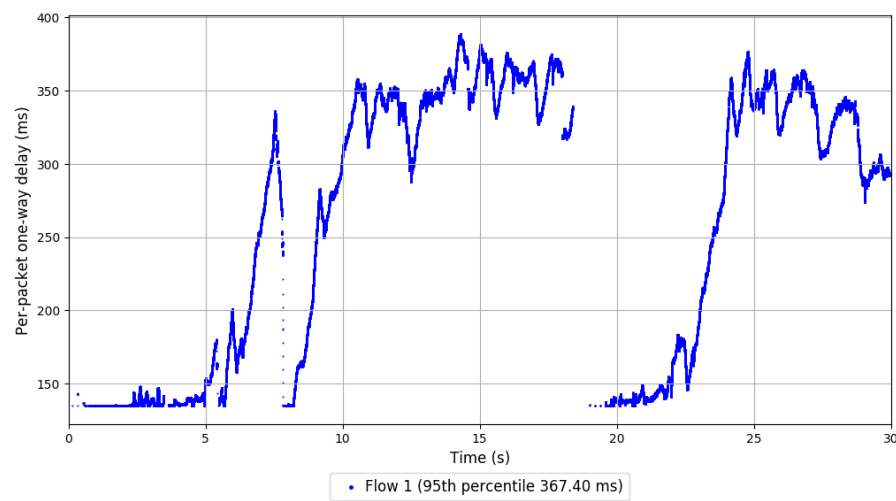
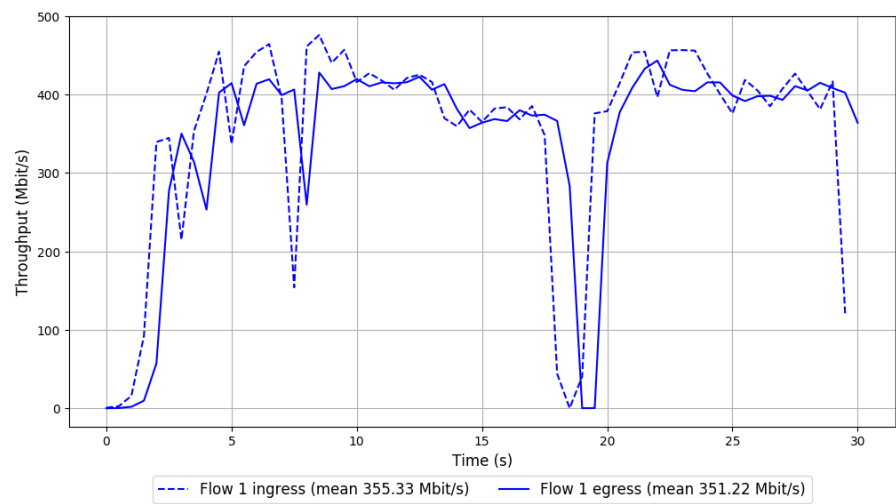


Run 2: Statistics of TCP BBR

Start at: 2018-09-05 03:13:04
End at: 2018-09-05 03:13:34
Local clock offset: -2.501 ms
Remote clock offset: -33.518 ms

Below is generated by plot.py at 2018-09-05 03:24:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 351.22 Mbit/s
95th percentile per-packet one-way delay: 367.400 ms
Loss rate: 0.63%
-- Flow 1:
Average throughput: 351.22 Mbit/s
95th percentile per-packet one-way delay: 367.400 ms
Loss rate: 0.63%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

Start at: 2018-09-05 03:18:33

End at: 2018-09-05 03:19:03

Local clock offset: -1.877 ms

Remote clock offset: -29.45 ms

Below is generated by plot.py at 2018-09-05 03:24:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 349.93 Mbit/s

95th percentile per-packet one-way delay: 353.875 ms

Loss rate: 1.03%

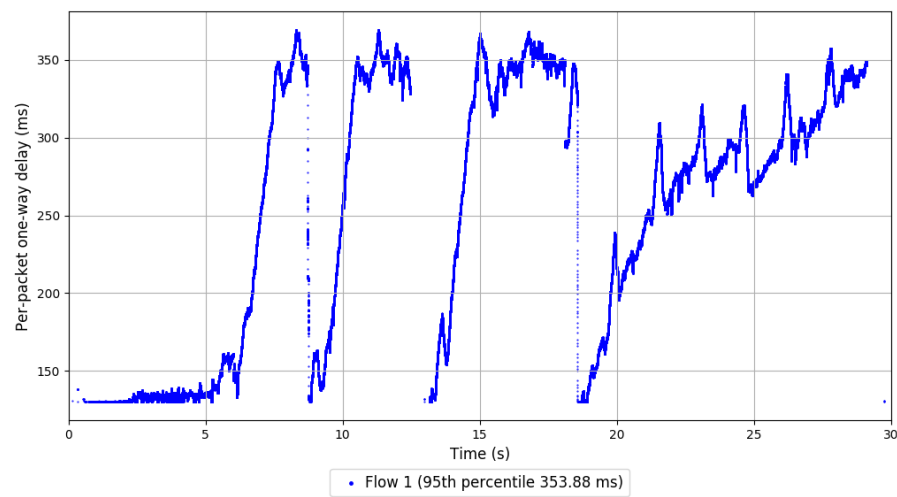
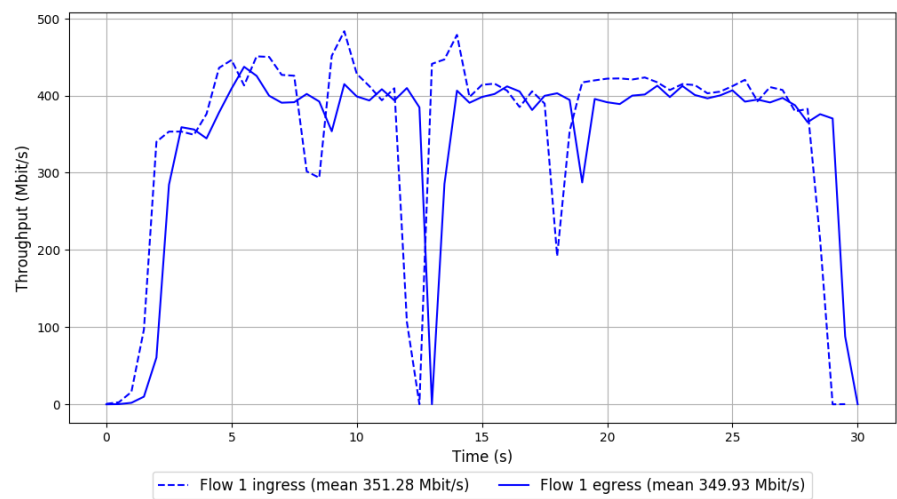
-- Flow 1:

Average throughput: 349.93 Mbit/s

95th percentile per-packet one-way delay: 353.875 ms

Loss rate: 1.03%

Run 3: Report of TCP BBR — Data Link

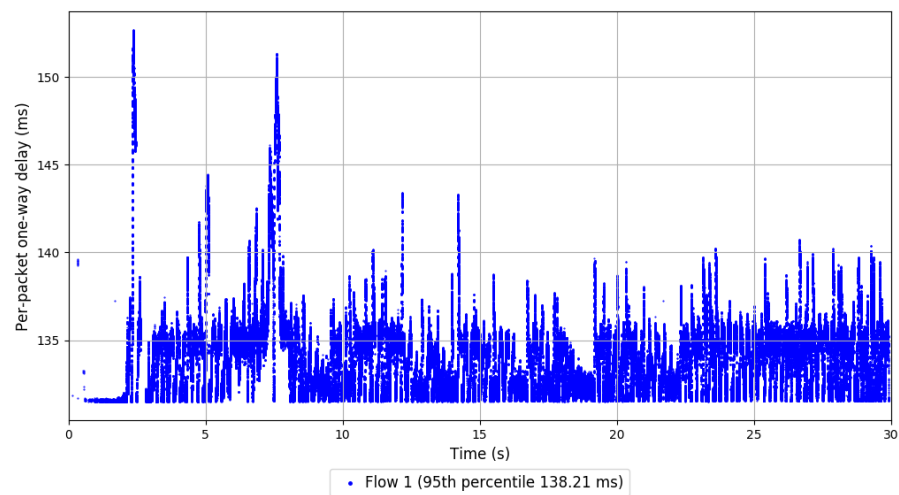
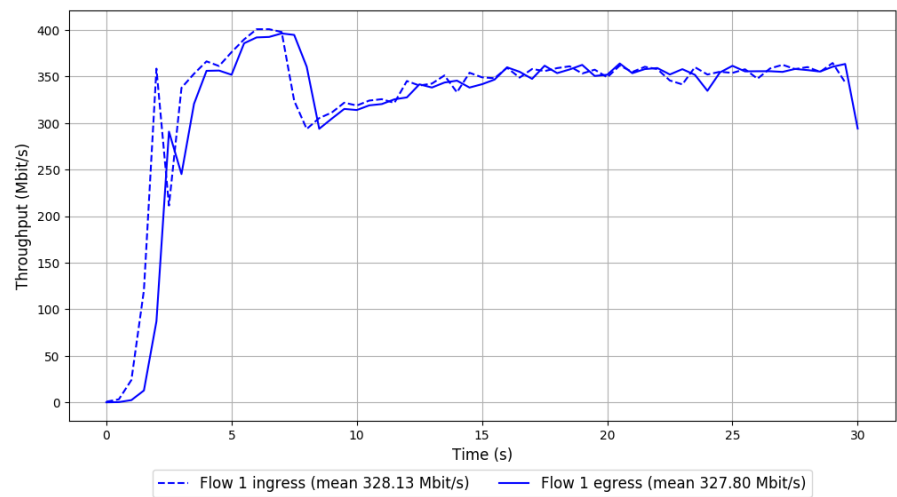


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 03:04:43
End at: 2018-09-05 03:05:13
Local clock offset: -1.961 ms
Remote clock offset: -30.688 ms

Below is generated by plot.py at 2018-09-05 03:24:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 327.80 Mbit/s
95th percentile per-packet one-way delay: 138.207 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 327.80 Mbit/s
95th percentile per-packet one-way delay: 138.207 ms
Loss rate: 0.75%

Run 1: Report of TCP Cubic — Data Link

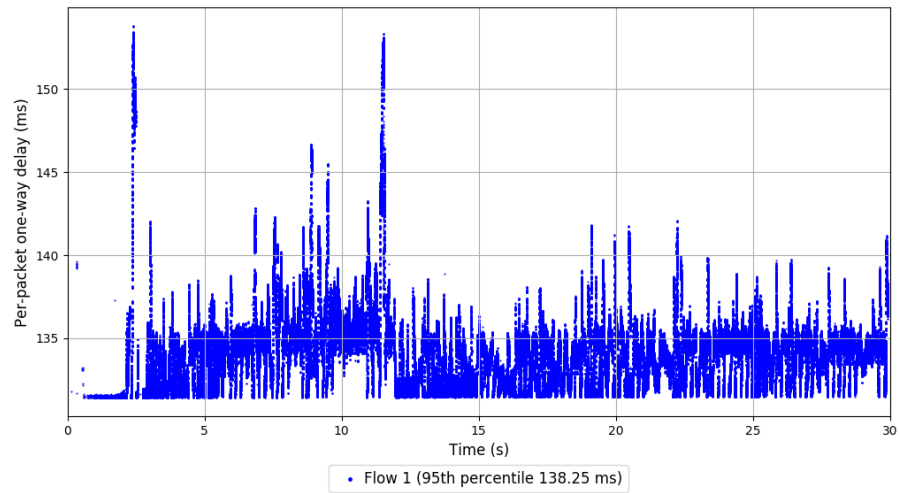
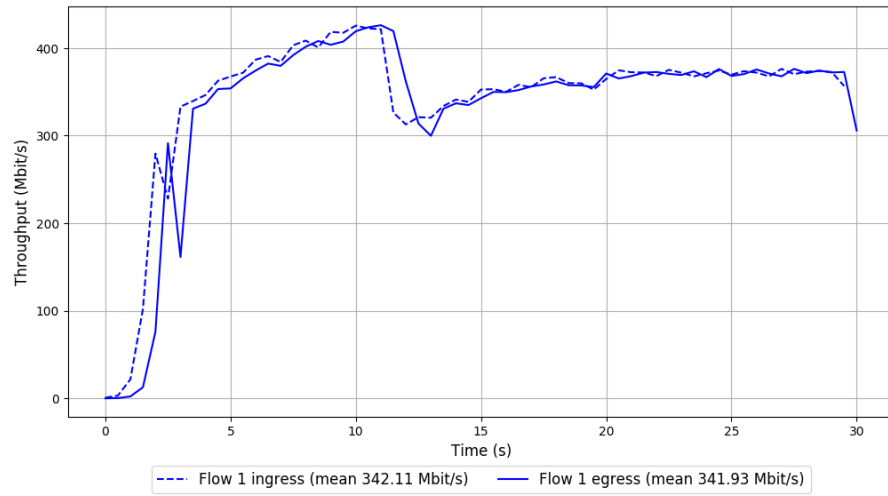


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 03:10:14
End at: 2018-09-05 03:10:44
Local clock offset: -1.169 ms
Remote clock offset: -29.177 ms

Below is generated by plot.py at 2018-09-05 03:24:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 341.93 Mbit/s
95th percentile per-packet one-way delay: 138.252 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 341.93 Mbit/s
95th percentile per-packet one-way delay: 138.252 ms
Loss rate: 0.73%

Run 2: Report of TCP Cubic — Data Link

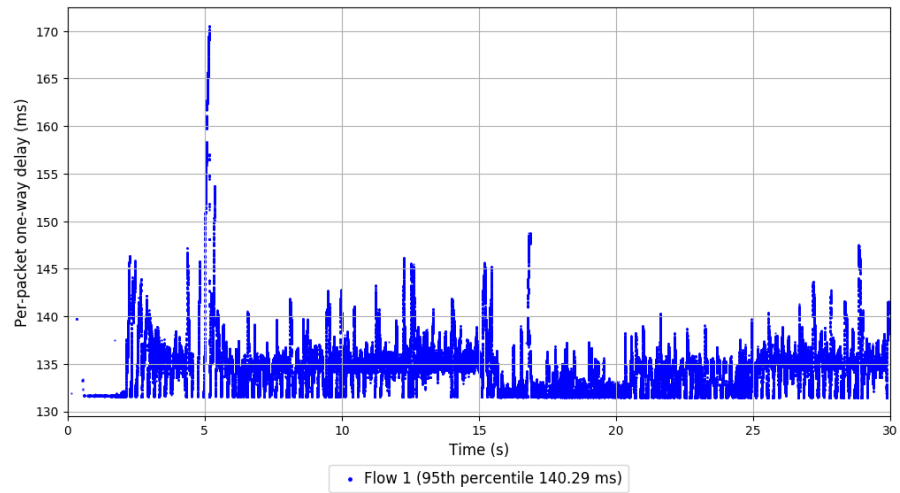
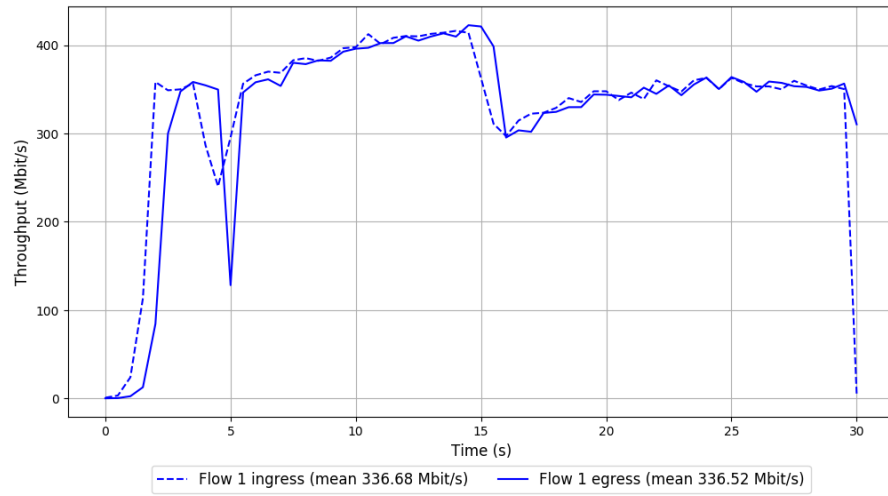


Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 03:15:45
End at: 2018-09-05 03:16:15
Local clock offset: -2.562 ms
Remote clock offset: -30.455 ms

Below is generated by plot.py at 2018-09-05 03:24:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 336.52 Mbit/s
95th percentile per-packet one-way delay: 140.295 ms
Loss rate: 0.71%
-- Flow 1:
Average throughput: 336.52 Mbit/s
95th percentile per-packet one-way delay: 140.295 ms
Loss rate: 0.71%

Run 3: Report of TCP Cubic — Data Link

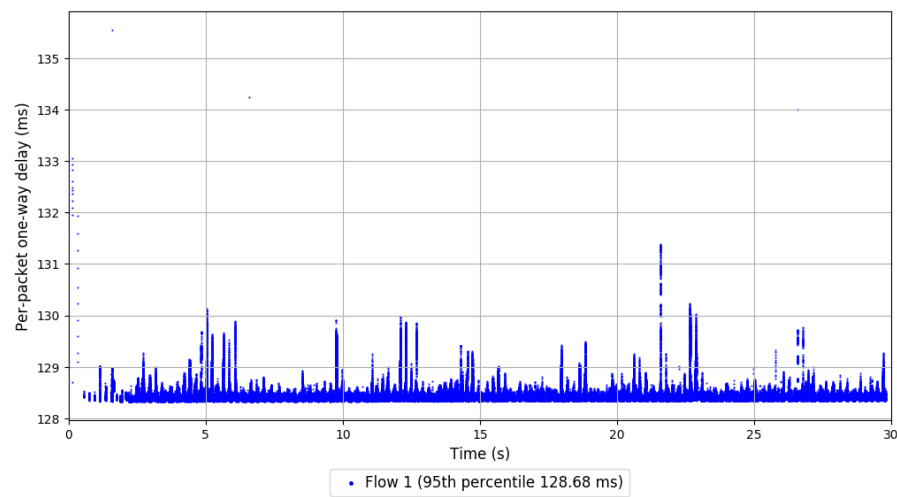
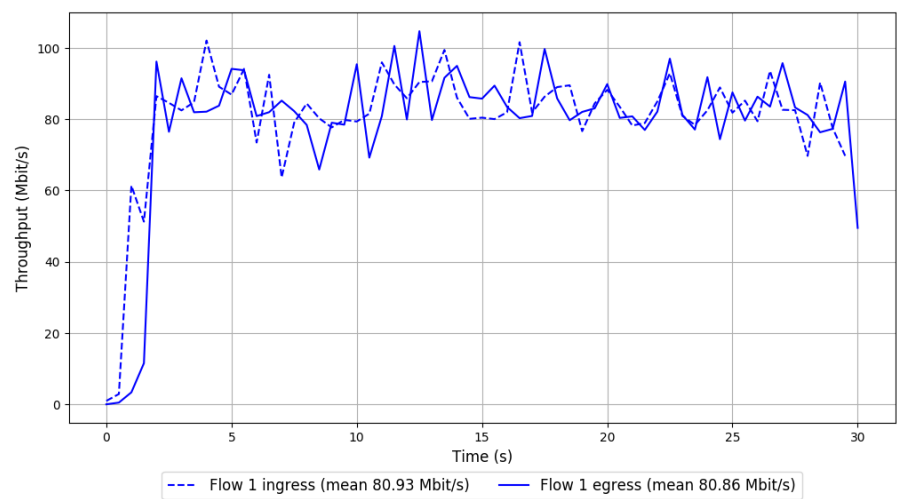


```
Run 1: Statistics of Indigo

Start at: 2018-09-05 03:03:27
End at: 2018-09-05 03:03:57
Local clock offset: -2.58 ms
Remote clock offset: -28.202 ms

# Below is generated by plot.py at 2018-09-05 03:24:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 80.86 Mbit/s
95th percentile per-packet one-way delay: 128.677 ms
Loss rate: 0.73%
-- Flow 1:
Average throughput: 80.86 Mbit/s
95th percentile per-packet one-way delay: 128.677 ms
Loss rate: 0.73%
```

Run 1: Report of Indigo — Data Link

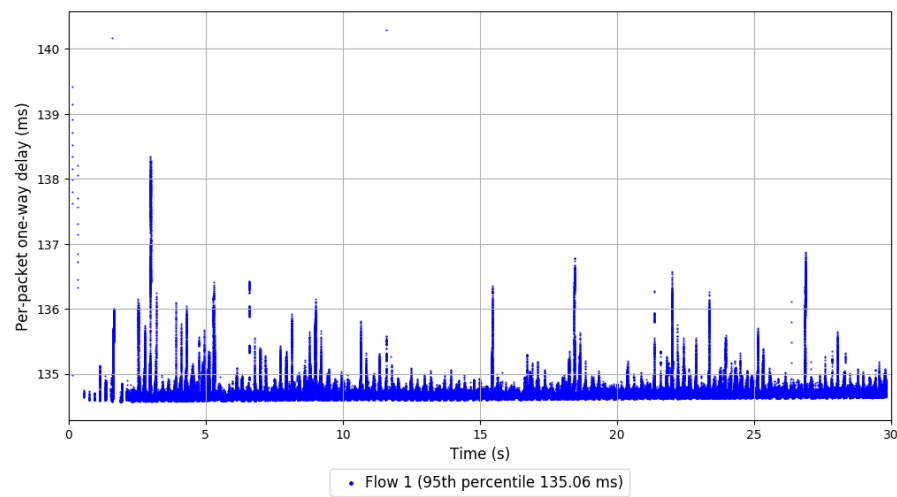
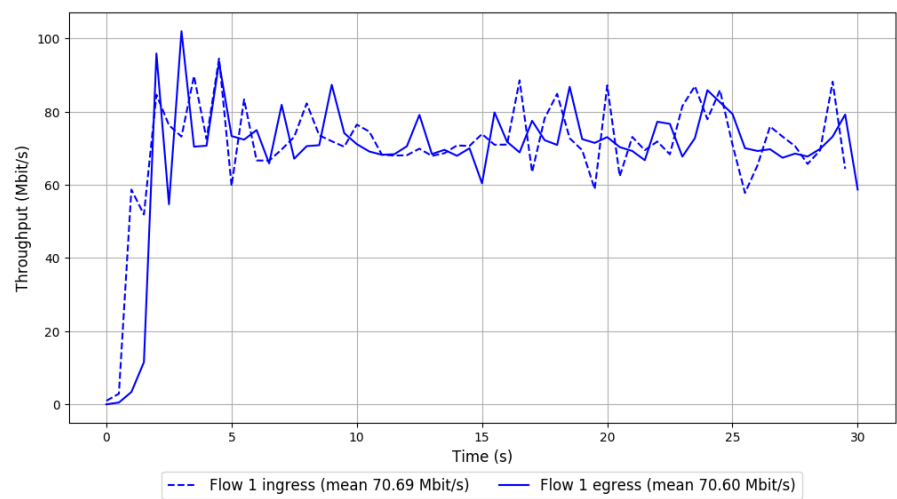


Run 2: Statistics of Indigo

Start at: 2018-09-05 03:08:59
End at: 2018-09-05 03:09:29
Local clock offset: -1.259 ms
Remote clock offset: -34.031 ms

Below is generated by plot.py at 2018-09-05 03:24:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 70.60 Mbit/s
95th percentile per-packet one-way delay: 135.056 ms
Loss rate: 0.78%
-- Flow 1:
Average throughput: 70.60 Mbit/s
95th percentile per-packet one-way delay: 135.056 ms
Loss rate: 0.78%

Run 2: Report of Indigo — Data Link

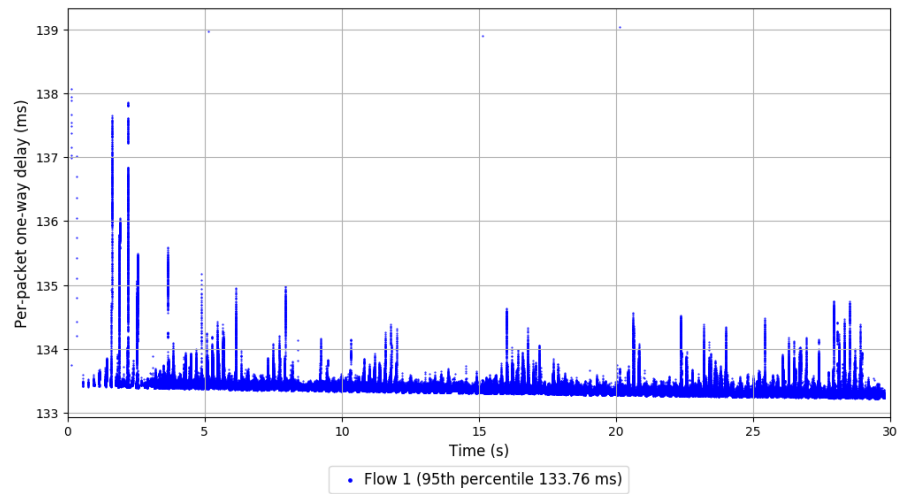
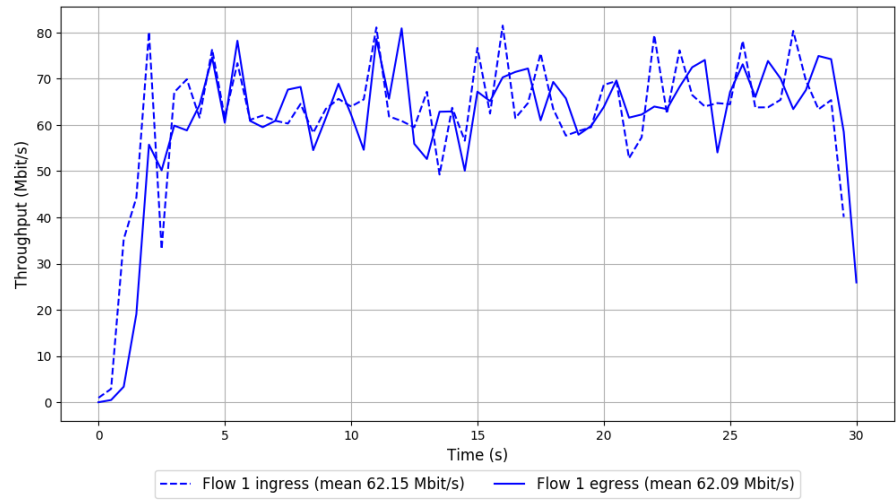


Run 3: Statistics of Indigo

Start at: 2018-09-05 03:14:31
End at: 2018-09-05 03:15:01
Local clock offset: -4.206 ms
Remote clock offset: -33.465 ms

Below is generated by plot.py at 2018-09-05 03:24:13
Datalink statistics
-- Total of 1 flow:
Average throughput: 62.09 Mbit/s
95th percentile per-packet one-way delay: 133.765 ms
Loss rate: 0.76%
-- Flow 1:
Average throughput: 62.09 Mbit/s
95th percentile per-packet one-way delay: 133.765 ms
Loss rate: 0.76%

Run 3: Report of Indigo — Data Link

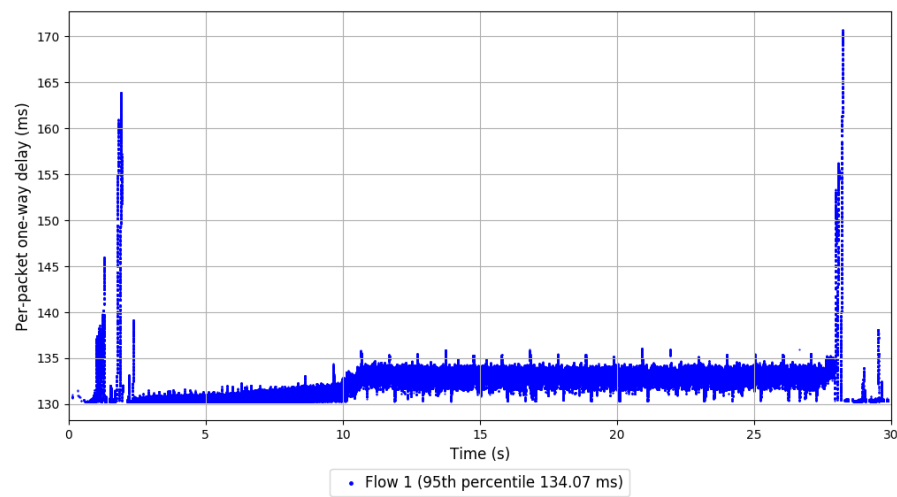
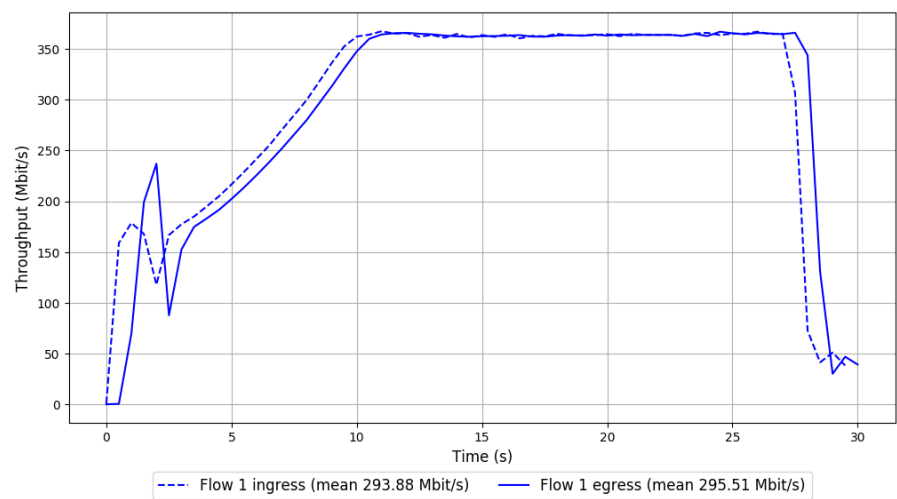


Run 1: Statistics of Muses-25

Start at: 2018-09-05 03:06:08
End at: 2018-09-05 03:06:38
Local clock offset: -2.443 ms
Remote clock offset: -31.165 ms

Below is generated by plot.py at 2018-09-05 03:24:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 295.51 Mbit/s
95th percentile per-packet one-way delay: 134.068 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 295.51 Mbit/s
95th percentile per-packet one-way delay: 134.068 ms
Loss rate: 0.09%

Run 1: Report of Muses-25 — Data Link

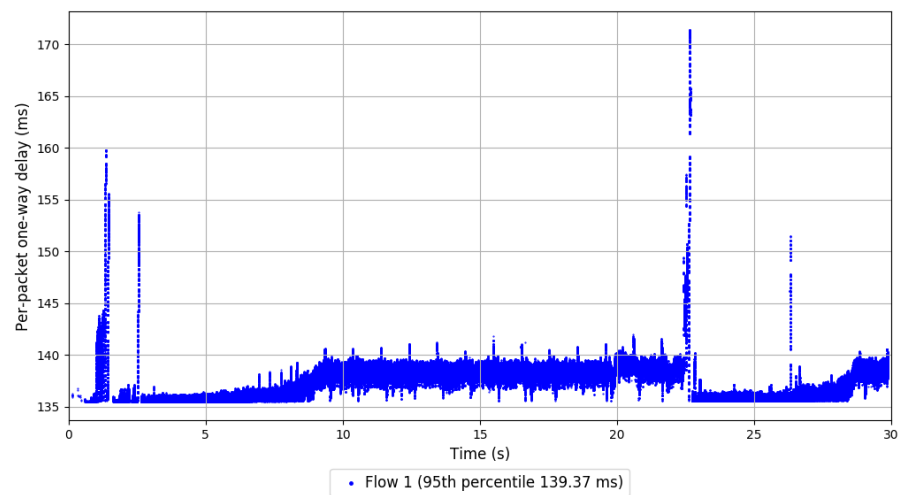
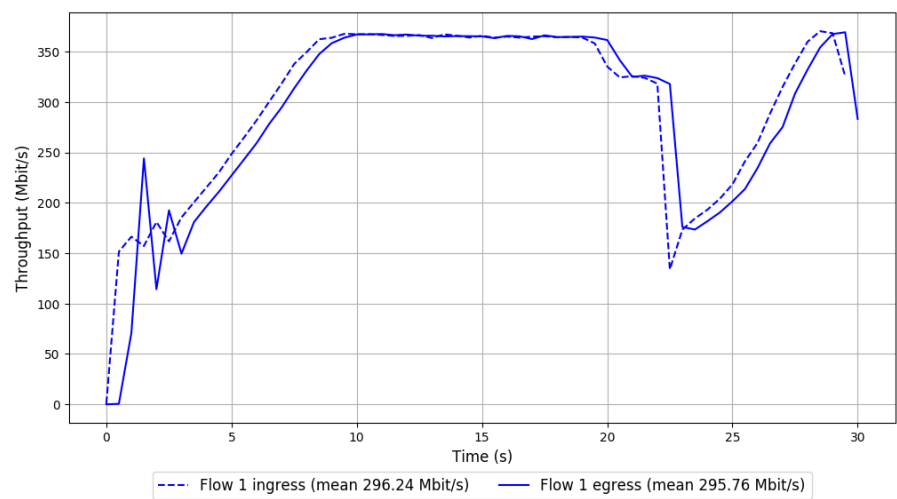


Run 2: Statistics of Muses-25

Start at: 2018-09-05 03:11:40
End at: 2018-09-05 03:12:10
Local clock offset: -2.745 ms
Remote clock offset: -34.317 ms

Below is generated by plot.py at 2018-09-05 03:24:29
Datalink statistics
-- Total of 1 flow:
Average throughput: 295.76 Mbit/s
95th percentile per-packet one-way delay: 139.367 ms
Loss rate: 0.81%
-- Flow 1:
Average throughput: 295.76 Mbit/s
95th percentile per-packet one-way delay: 139.367 ms
Loss rate: 0.81%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 03:17:11
End at: 2018-09-05 03:17:41
Local clock offset: -1.05 ms
Remote clock offset: -33.272 ms

Below is generated by plot.py at 2018-09-05 03:24:36
Datalink statistics
-- Total of 1 flow:
Average throughput: 248.78 Mbit/s
95th percentile per-packet one-way delay: 138.327 ms
Loss rate: 0.84%
-- Flow 1:
Average throughput: 248.78 Mbit/s
95th percentile per-packet one-way delay: 138.327 ms
Loss rate: 0.84%

Run 3: Report of Muses-25 — Data Link

