

Pantheon Report

Generated at 2018-09-05 03:17:18 (UTC).

Data path: China on **eno1** (*remote*) → AWS Korea 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 **ntp.nict.jp** and have been applied to correct the timestamps in logs.

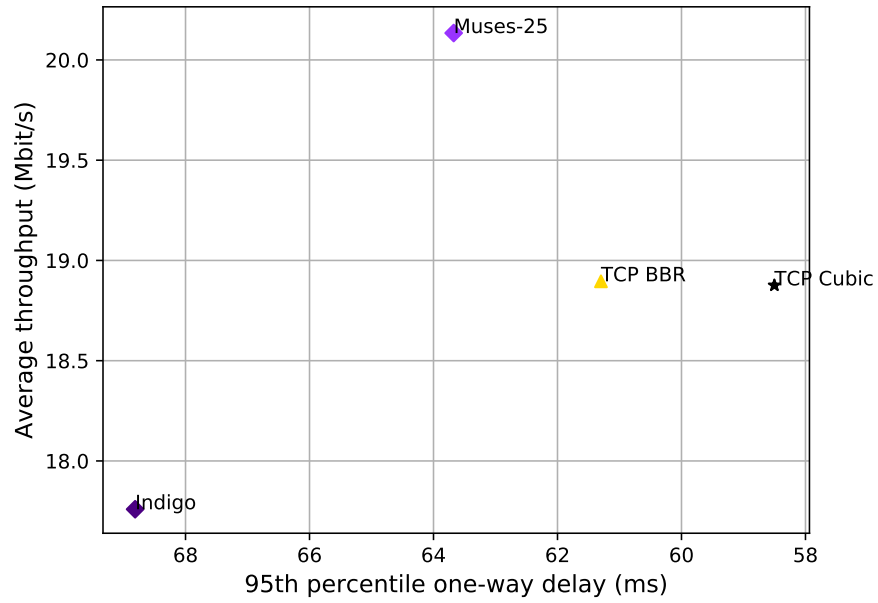
System info:

```
Linux 4.15.0-1010-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
```

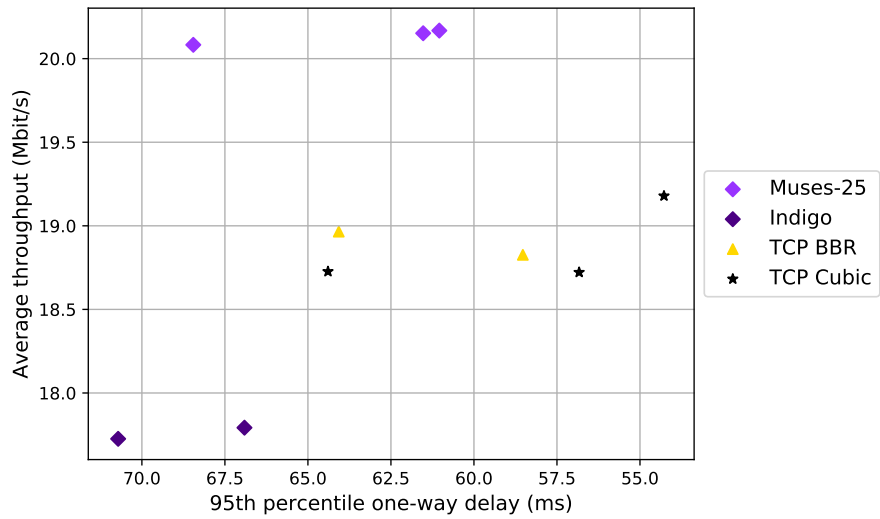
Git summary:

```
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 China to AWS Korea, 3 runs of 30s each per scheme
(mean of all runs by scheme)



test from China to AWS Korea, 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	2	18.90	61.30	11.89
TCP Cubic	3	18.88	58.50	4.17
Indigo	2	17.76	68.81	58.70
Muses-25	3	20.13	63.67	47.12

Run 1: Statistics of TCP BBR

Start at: 2018-09-05 03:05:51

End at: 2018-09-05 03:06:21

Local clock offset: 5.769 ms

Remote clock offset: 25.991 ms

Below is generated by plot.py at 2018-09-05 03:17:10

Datalink statistics

-- Total of 1 flow:

Average throughput: 18.97 Mbit/s

95th percentile per-packet one-way delay: 64.071 ms

Loss rate: 12.89%

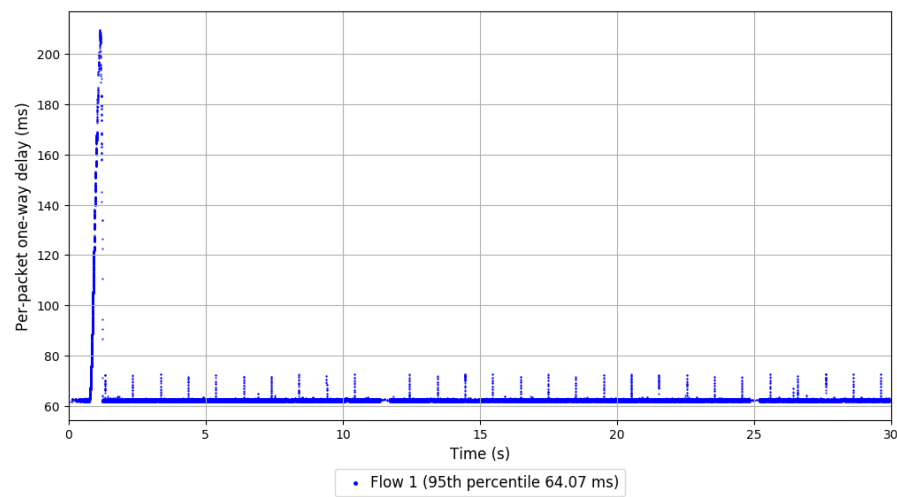
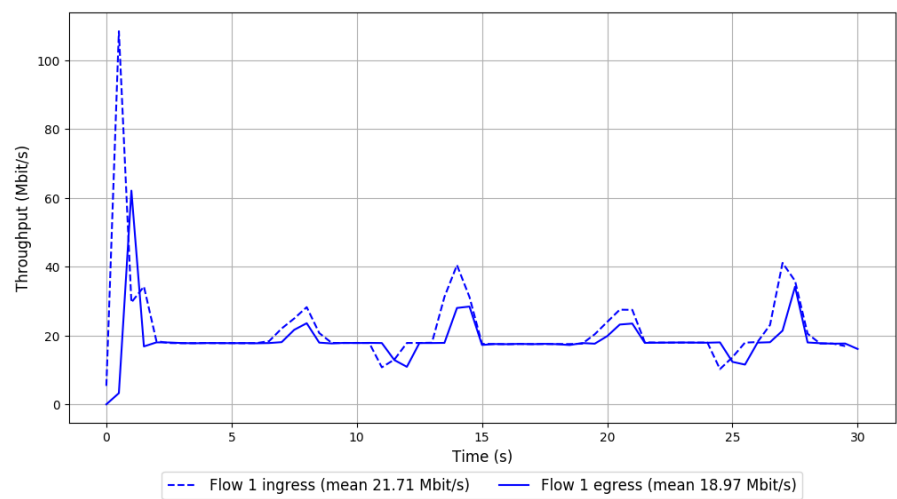
-- Flow 1:

Average throughput: 18.97 Mbit/s

95th percentile per-packet one-way delay: 64.071 ms

Loss rate: 12.89%

Run 1: Report of TCP BBR — Data Link



Run 2: Statistics of TCP BBR

Start at: 2018-09-05 03:10:30

End at: 2018-09-05 03:11:00

Local clock offset: 6.073 ms

Remote clock offset: 24.304 ms

Below is generated by plot.py at 2018-09-05 03:17:10

Datalink statistics

-- Total of 1 flow:

Average throughput: 18.83 Mbit/s

95th percentile per-packet one-way delay: 58.527 ms

Loss rate: 10.90%

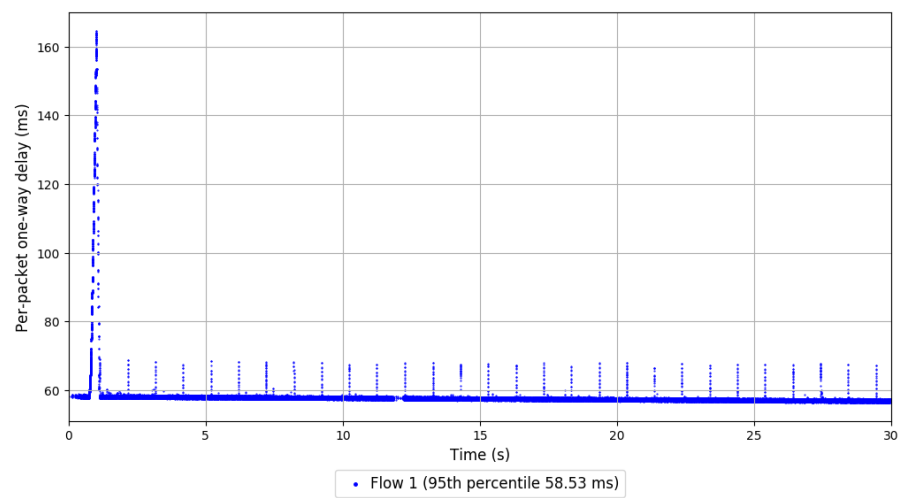
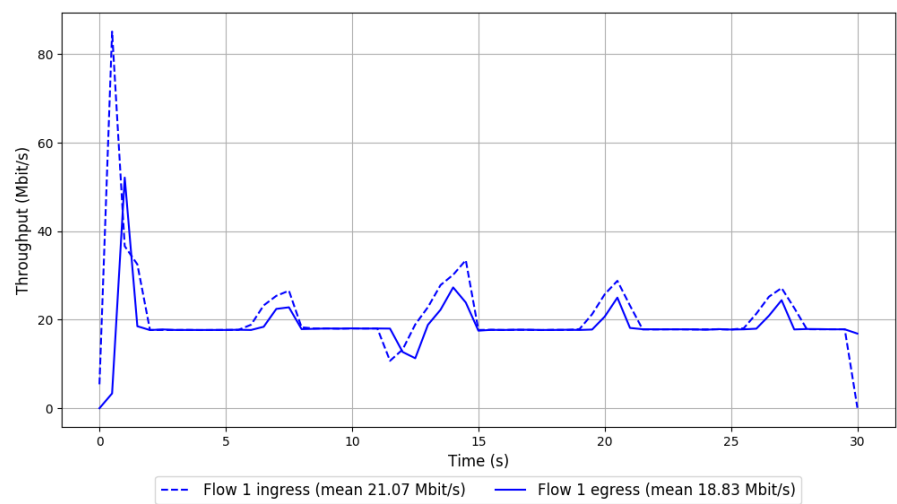
-- Flow 1:

Average throughput: 18.83 Mbit/s

95th percentile per-packet one-way delay: 58.527 ms

Loss rate: 10.90%

Run 2: Report of TCP BBR — Data Link



Run 3: Statistics of TCP BBR

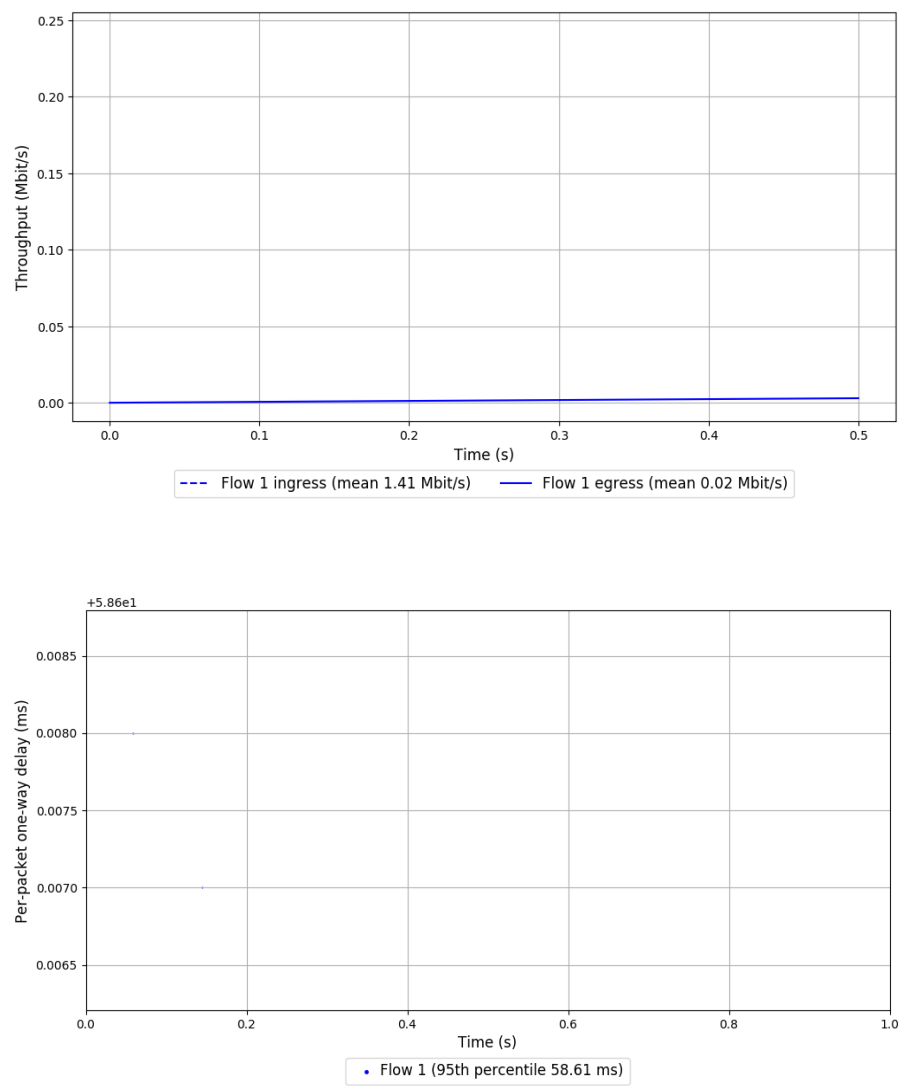
Start at: 2018-09-05 03:15:08

End at: 2018-09-05 03:15:38

Local clock offset: 5.911 ms

Remote clock offset: 14.055 ms

Run 3: Report of TCP BBR — Data Link

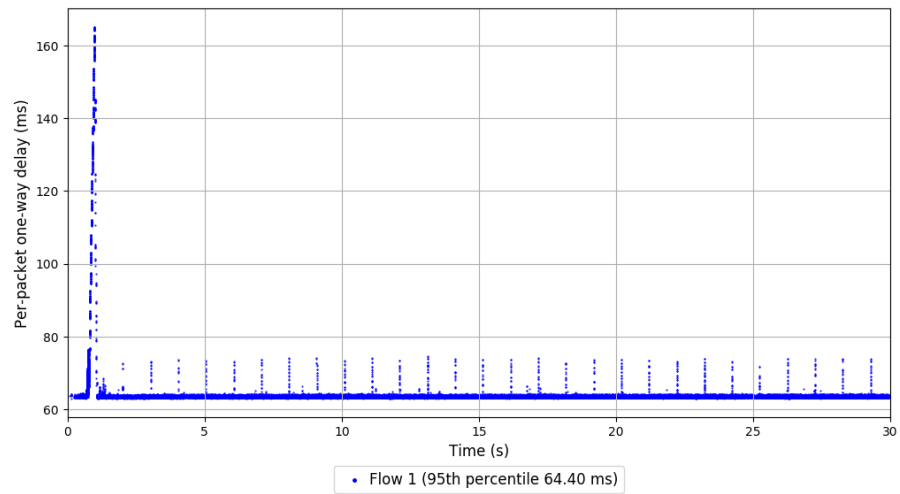
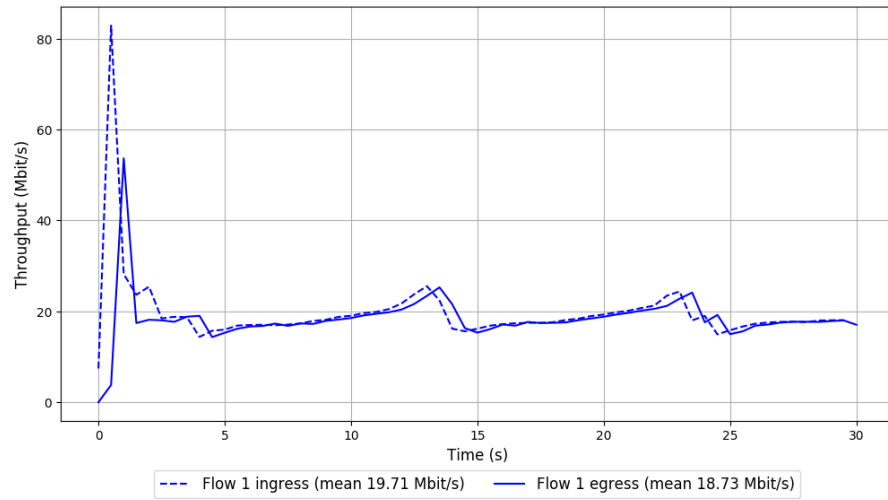


Run 1: Statistics of TCP Cubic

Start at: 2018-09-05 03:07:00
End at: 2018-09-05 03:07:30
Local clock offset: 5.92 ms
Remote clock offset: 24.917 ms

Below is generated by plot.py at 2018-09-05 03:17:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.73 Mbit/s
95th percentile per-packet one-way delay: 64.396 ms
Loss rate: 5.29%
-- Flow 1:
Average throughput: 18.73 Mbit/s
95th percentile per-packet one-way delay: 64.396 ms
Loss rate: 5.29%

Run 1: Report of TCP Cubic — Data Link

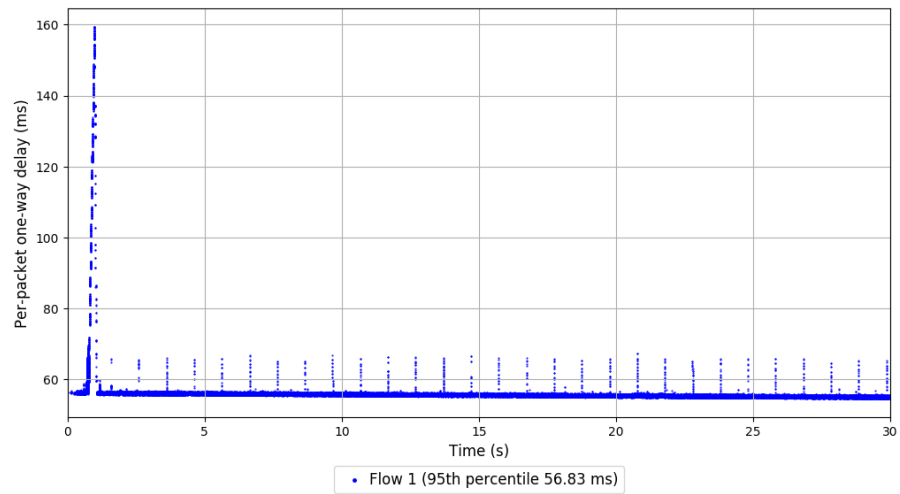
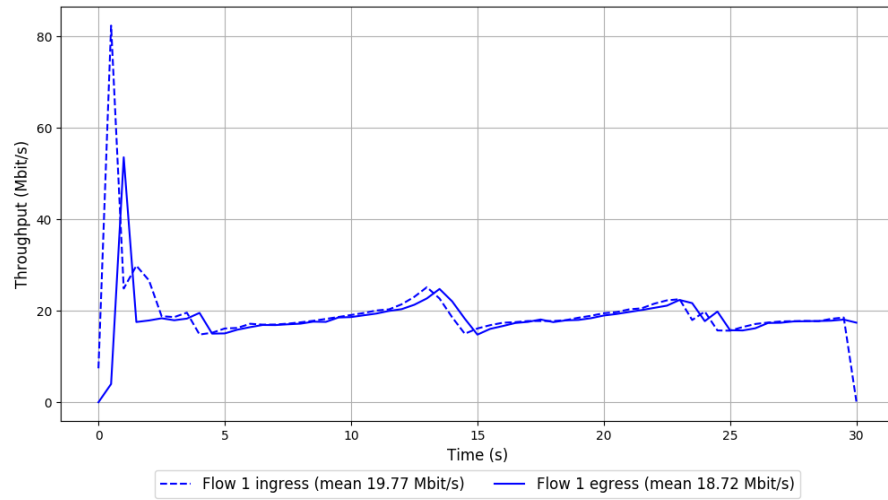


Run 2: Statistics of TCP Cubic

Start at: 2018-09-05 03:11:39
End at: 2018-09-05 03:12:09
Local clock offset: 6.305 ms
Remote clock offset: 23.446 ms

Below is generated by plot.py at 2018-09-05 03:17:10
Datalink statistics
-- Total of 1 flow:
Average throughput: 18.72 Mbit/s
95th percentile per-packet one-way delay: 56.832 ms
Loss rate: 5.60%
-- Flow 1:
Average throughput: 18.72 Mbit/s
95th percentile per-packet one-way delay: 56.832 ms
Loss rate: 5.60%

Run 2: Report of TCP Cubic — Data Link



Run 3: Statistics of TCP Cubic

Start at: 2018-09-05 03:16:16

End at: 2018-09-05 03:16:46

Local clock offset: 4.873 ms

Remote clock offset: 17.09 ms

Below is generated by plot.py at 2018-09-05 03:17:10

Datalink statistics

-- Total of 1 flow:

Average throughput: 19.18 Mbit/s

95th percentile per-packet one-way delay: 54.277 ms

Loss rate: 1.63%

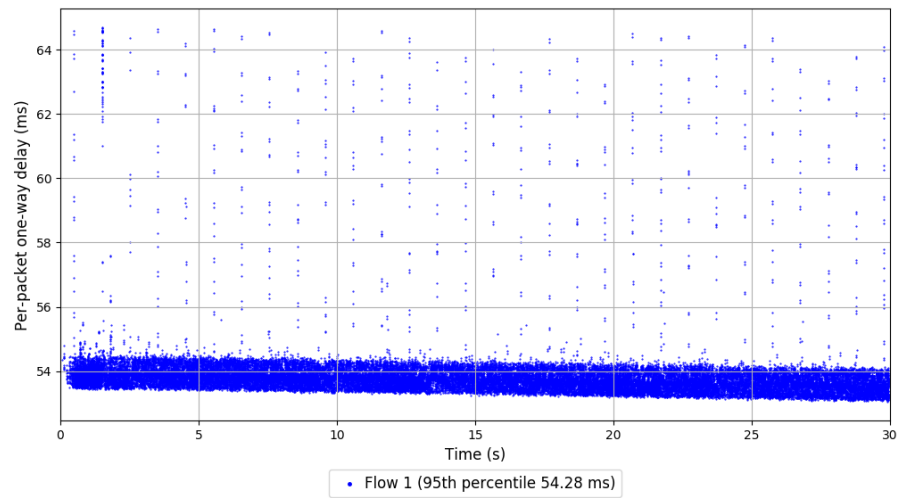
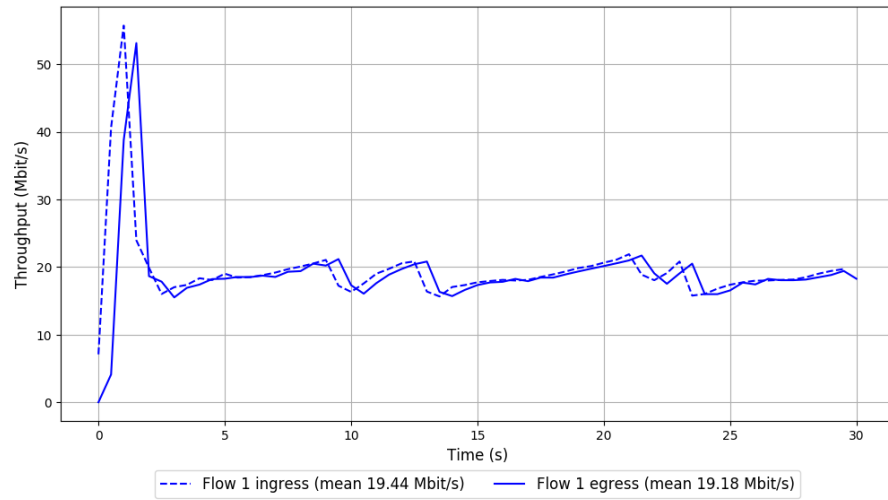
-- Flow 1:

Average throughput: 19.18 Mbit/s

95th percentile per-packet one-way delay: 54.277 ms

Loss rate: 1.63%

Run 3: Report of TCP Cubic — Data Link



Run 1: Statistics of Indigo

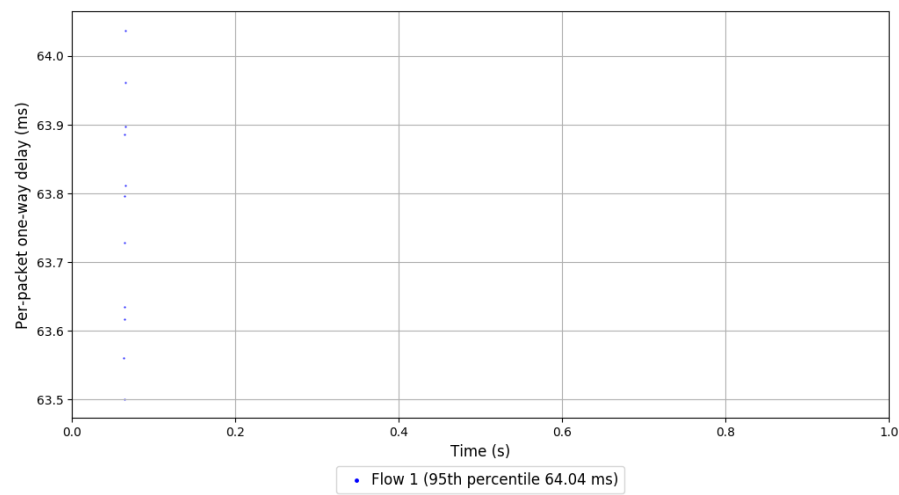
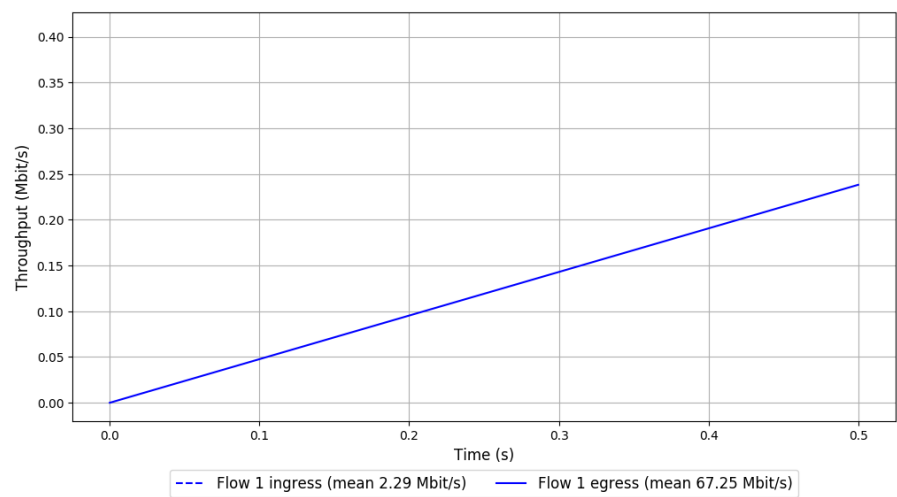
Start at: 2018-09-05 03:03:25

End at: 2018-09-05 03:03:56

Local clock offset: 5.807 ms

Remote clock offset: 24.528 ms

Run 1: Report of Indigo — Data Link

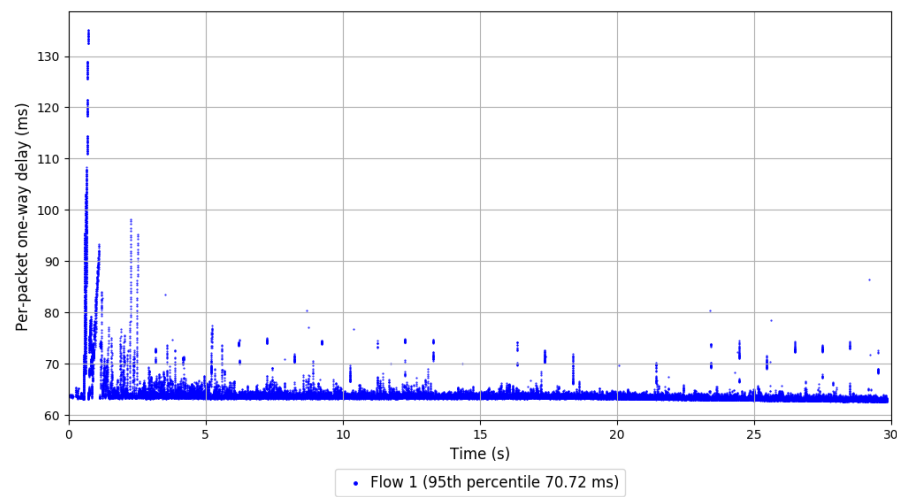
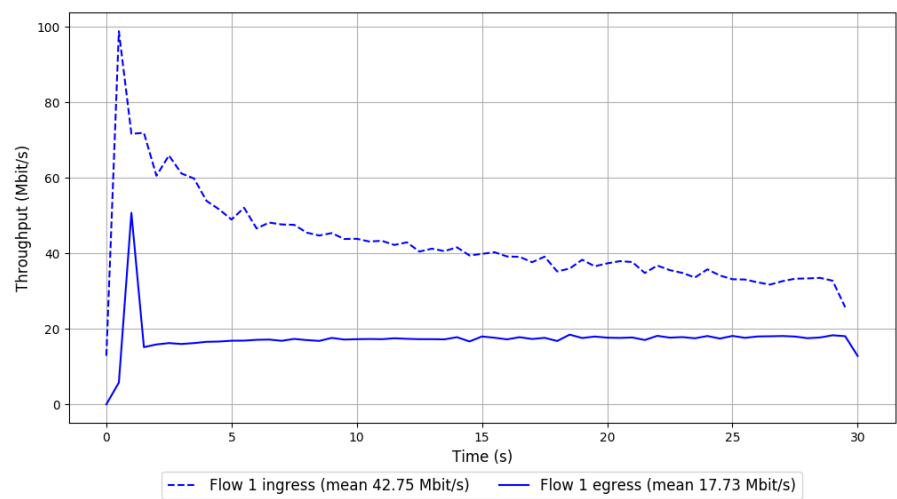


Run 2: Statistics of Indigo

Start at: 2018-09-05 03:08:10
End at: 2018-09-05 03:08:40
Local clock offset: 5.935 ms
Remote clock offset: 24.927 ms

Below is generated by plot.py at 2018-09-05 03:17:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 17.73 Mbit/s
95th percentile per-packet one-way delay: 70.715 ms
Loss rate: 58.67%
-- Flow 1:
Average throughput: 17.73 Mbit/s
95th percentile per-packet one-way delay: 70.715 ms
Loss rate: 58.67%

Run 2: Report of Indigo — Data Link



Run 3: Statistics of Indigo

Start at: 2018-09-05 03:12:49

End at: 2018-09-05 03:13:19

Local clock offset: 6.279 ms

Remote clock offset: 19.46 ms

Below is generated by plot.py at 2018-09-05 03:17:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 17.79 Mbit/s

95th percentile per-packet one-way delay: 66.911 ms

Loss rate: 58.73%

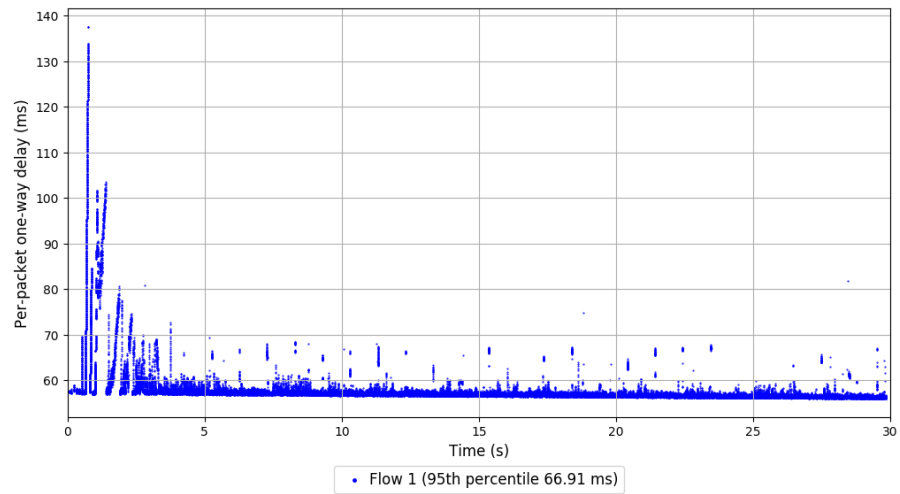
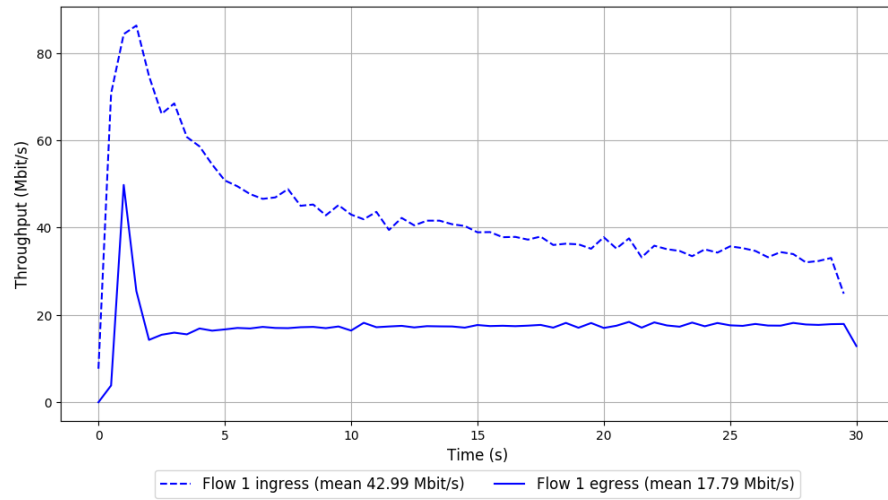
-- Flow 1:

Average throughput: 17.79 Mbit/s

95th percentile per-packet one-way delay: 66.911 ms

Loss rate: 58.73%

Run 3: Report of Indigo — Data Link



Run 1: Statistics of Muses-25

Start at: 2018-09-05 03:04:33

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

Local clock offset: 5.88 ms

Remote clock offset: 25.34 ms

Below is generated by plot.py at 2018-09-05 03:17:15

Datalink statistics

-- Total of 1 flow:

Average throughput: 20.08 Mbit/s

95th percentile per-packet one-way delay: 68.452 ms

Loss rate: 47.07%

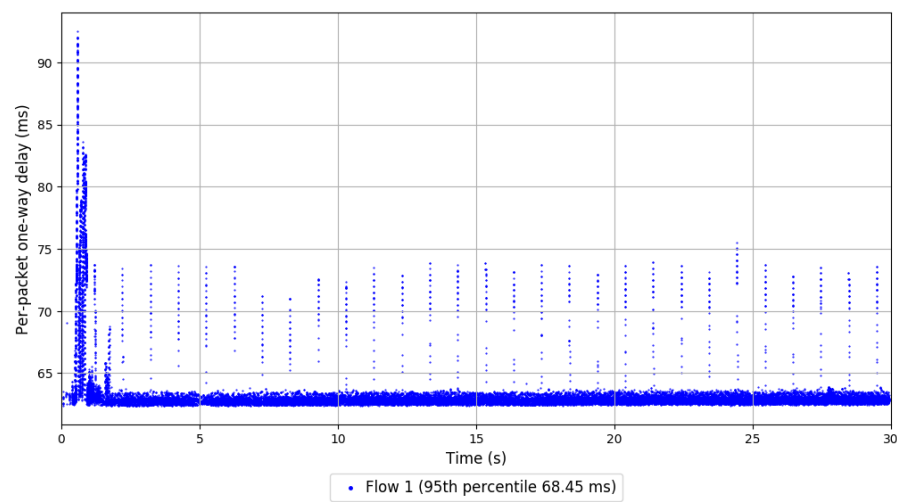
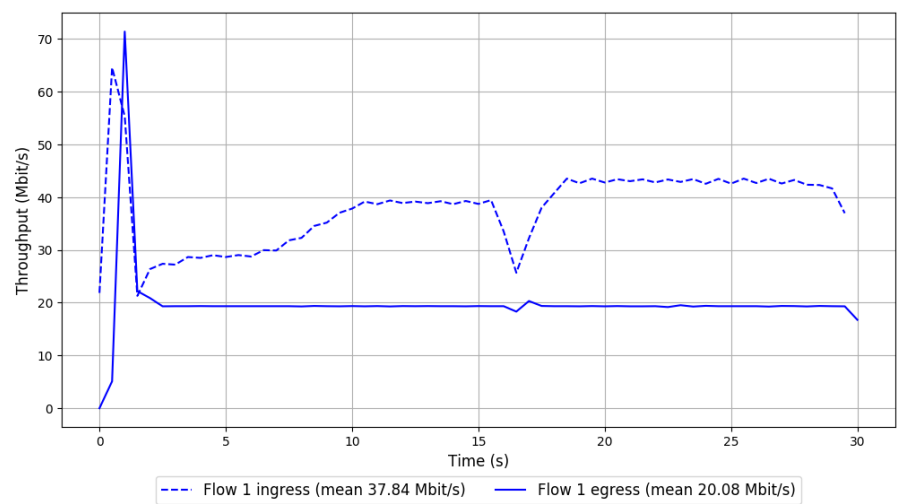
-- Flow 1:

Average throughput: 20.08 Mbit/s

95th percentile per-packet one-way delay: 68.452 ms

Loss rate: 47.07%

Run 1: Report of Muses-25 — Data Link

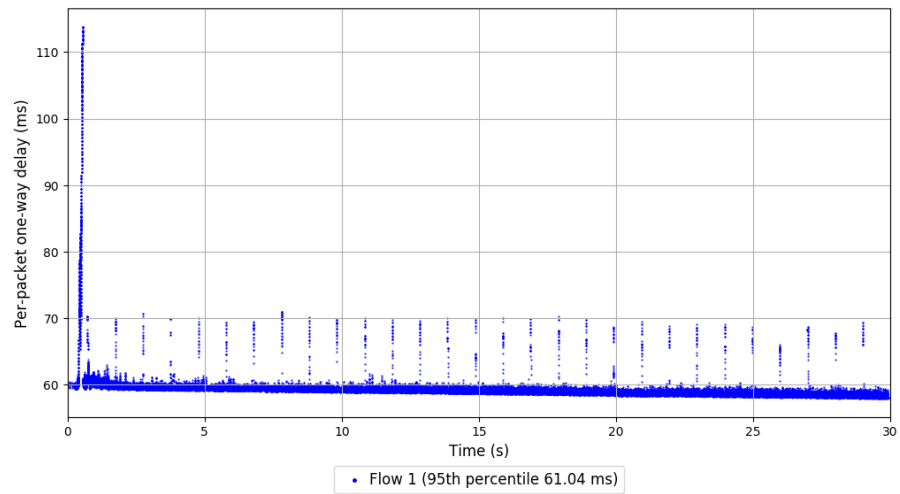
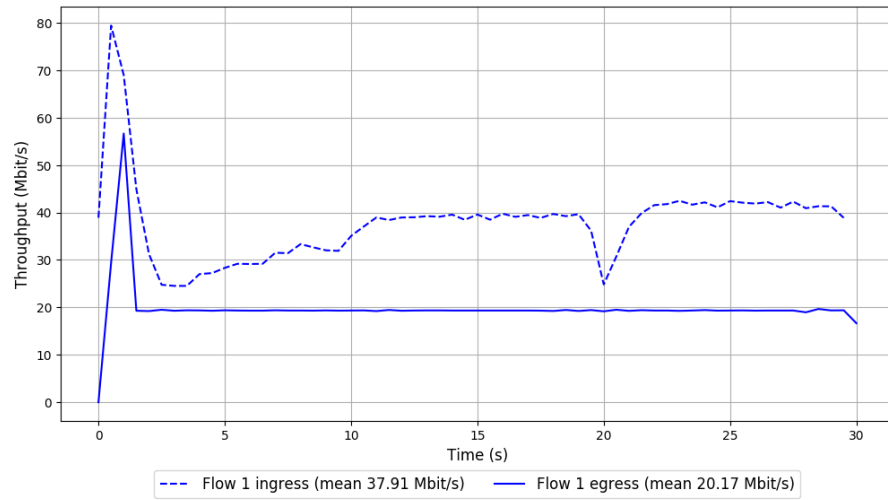


Run 2: Statistics of Muses-25

Start at: 2018-09-05 03:09:20
End at: 2018-09-05 03:09:50
Local clock offset: 5.807 ms
Remote clock offset: 26.077 ms

Below is generated by plot.py at 2018-09-05 03:17:17
Datalink statistics
-- Total of 1 flow:
Average throughput: 20.17 Mbit/s
95th percentile per-packet one-way delay: 61.043 ms
Loss rate: 46.96%
-- Flow 1:
Average throughput: 20.17 Mbit/s
95th percentile per-packet one-way delay: 61.043 ms
Loss rate: 46.96%

Run 2: Report of Muses-25 — Data Link



Run 3: Statistics of Muses-25

Start at: 2018-09-05 03:13:59
End at: 2018-09-05 03:14:29
Local clock offset: 6.341 ms
Remote clock offset: 14.116 ms

Below is generated by plot.py at 2018-09-05 03:17:18
Datalink statistics
-- Total of 1 flow:
Average throughput: 20.15 Mbit/s
95th percentile per-packet one-way delay: 61.529 ms
Loss rate: 47.32%
-- Flow 1:
Average throughput: 20.15 Mbit/s
95th percentile per-packet one-way delay: 61.529 ms
Loss rate: 47.32%

Run 3: Report of Muses-25 — Data Link

