

Pantheon Report

Generated at 2018-09-07 09:43:28 (UTC).

Data path: AWS India 1 on `ens5` (*local*) → India cellular on `ppp0` (*remote*).

Repeated the test of 18 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:

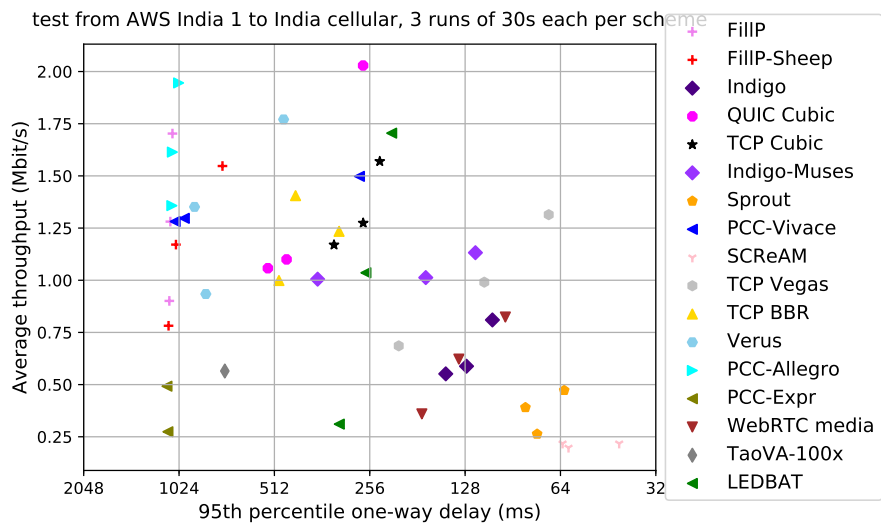
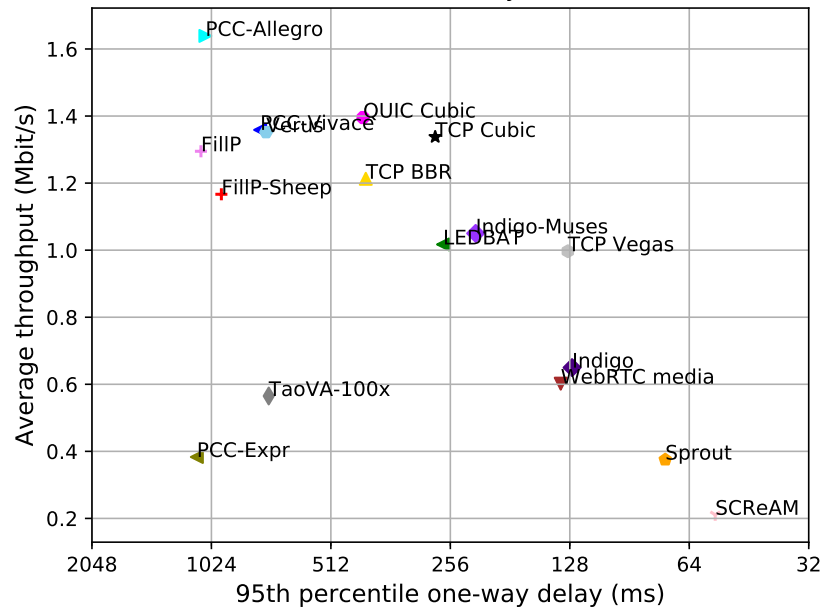
```
Linux 4.15.0-1020-aws
net.core.default_qdisc = fq
net.core.rmem_default = 16777216
net.core.rmem_max = 536870912
net.core.wmem_default = 16777216
net.core.wmem_max = 536870912
net.ipv4.tcp_rmem = 4096 16777216 536870912
net.ipv4.tcp_wmem = 4096 16777216 536870912
net.ipv4.tcp_mem = 536870912 536870912 536870912
```

Git summary:

```
branch: muses @ e0a9b05ad97d268013b7cc9a9c95637b593a1b4c
third_party/fillp @ d47f4fa1b454a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbdf58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc4dfe0ecd90c077e64d
third_party/libutp @ b3465b942e2826f2b179eaab4a906ce6bb7cf3cf
third_party/muses @ 7631aea3923a3598767c87765ae5103aca0678d3
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-quick @ 77961f1a82733a86b42f1bc8143ebc978f3cff42
third_party/scream-reproduce @ f099118d1421aa3131bf11ff1964974e1da3bdb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a46ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
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 cellular, 3 runs of 30s each per scheme
(mean of all runs by 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	1.21	418.12	2.17
Copa	0	N/A	N/A	N/A
TCP Cubic	3	1.34	279.51	0.98
FillP	3	1.29	1088.11	62.53
FillP-Sheep	3	1.17	966.49	28.38
Indigo	3	0.65	126.33	0.11
LEDBAT	3	1.02	267.06	0.87
Indigo-Muses	3	1.05	221.05	0.28
PCC-Allegro	3	1.64	1060.43	22.91
PCC-Expr	2	0.38	1114.37	92.63
QUIC Cubic	3	1.40	424.75	1.88
SCReAM	3	0.21	55.06	0.13
Sprout	3	0.37	73.57	0.00
TaoVA-100x	1	0.57	734.26	45.63
TCP Vegas	3	1.00	129.48	0.30
Verus	3	1.35	745.57	4.63
PCC-Vivace	3	1.36	771.90	4.70
WebRTC media	3	0.60	134.93	0.16

Run 1: Statistics of TCP BBR

Start at: 2018-09-07 08:52:17

End at: 2018-09-07 08:52:47

Local clock offset: 2.287 ms

Remote clock offset: -5.12 ms

Below is generated by plot.py at 2018-09-07 09:42:56

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.00 Mbit/s

95th percentile per-packet one-way delay: 495.367 ms

Loss rate: 2.54%

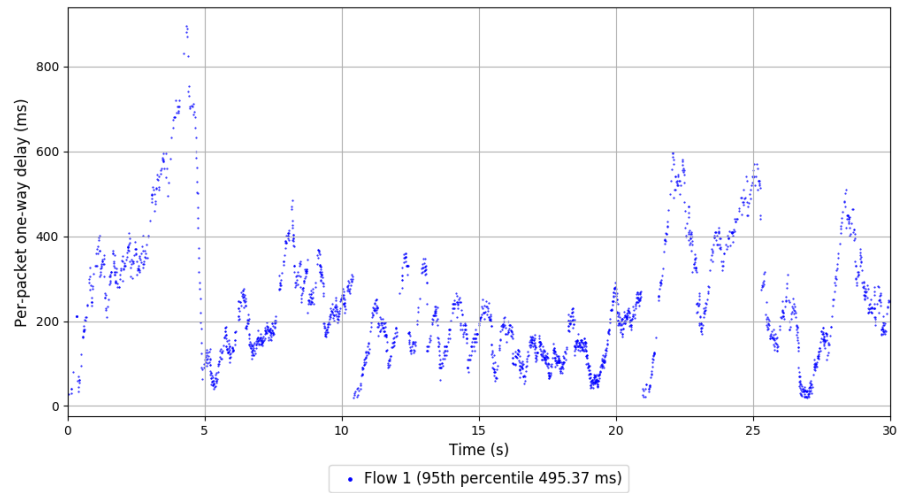
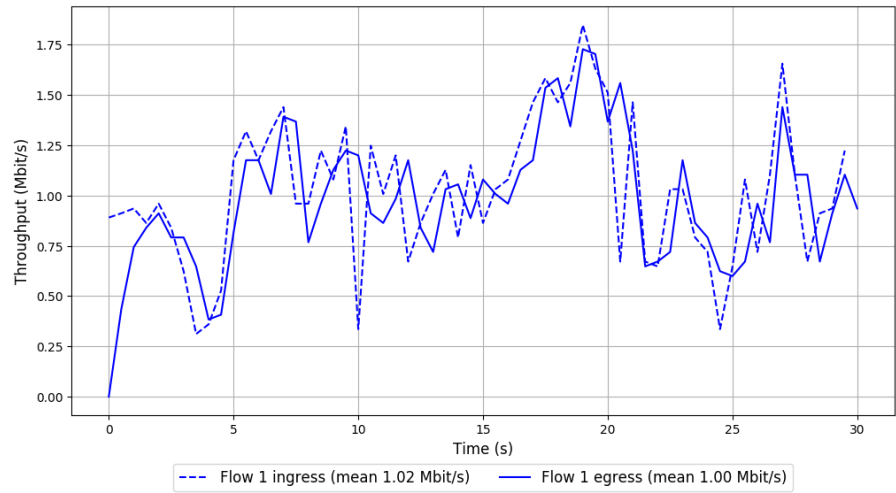
-- Flow 1:

Average throughput: 1.00 Mbit/s

95th percentile per-packet one-way delay: 495.367 ms

Loss rate: 2.54%

Run 1: Report of TCP BBR — Data Link

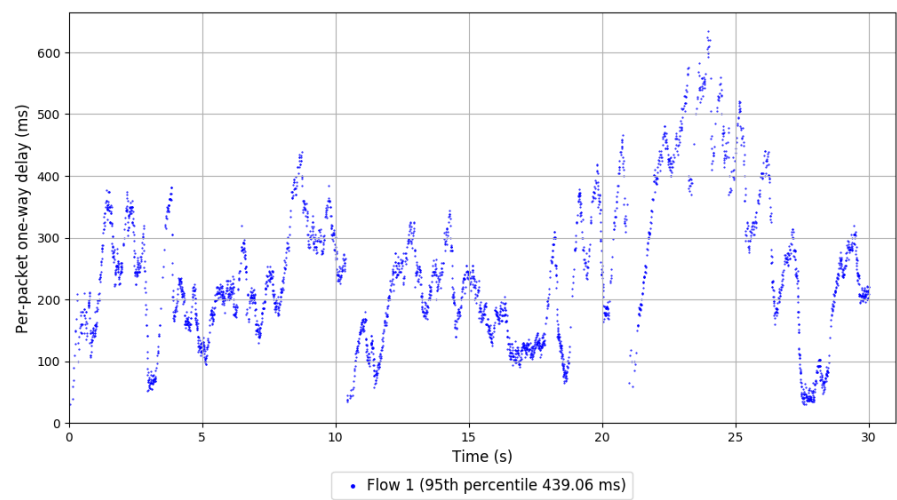
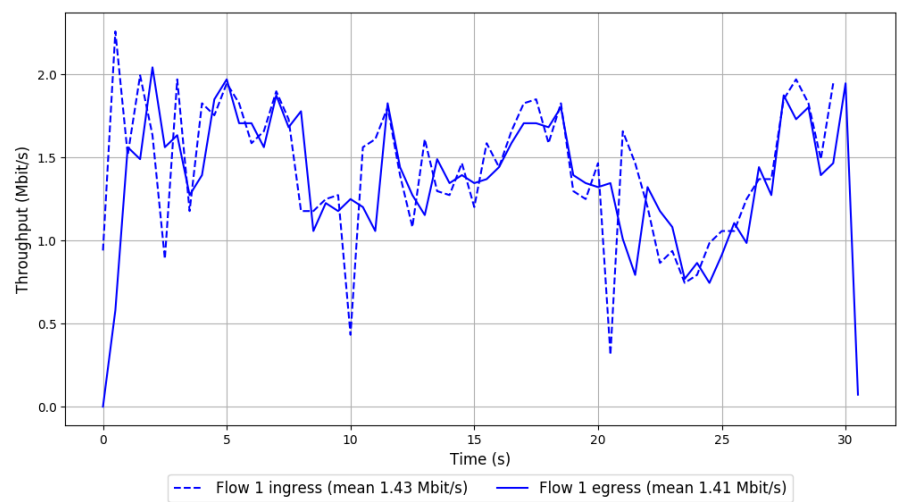


Run 2: Statistics of TCP BBR

Start at: 2018-09-07 09:11:51
End at: 2018-09-07 09:12:21
Local clock offset: 3.264 ms
Remote clock offset: -2.578 ms

Below is generated by plot.py at 2018-09-07 09:42:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.41 Mbit/s
95th percentile per-packet one-way delay: 439.056 ms
Loss rate: 2.06%
-- Flow 1:
Average throughput: 1.41 Mbit/s
95th percentile per-packet one-way delay: 439.056 ms
Loss rate: 2.06%

Run 2: Report of TCP BBR — Data Link

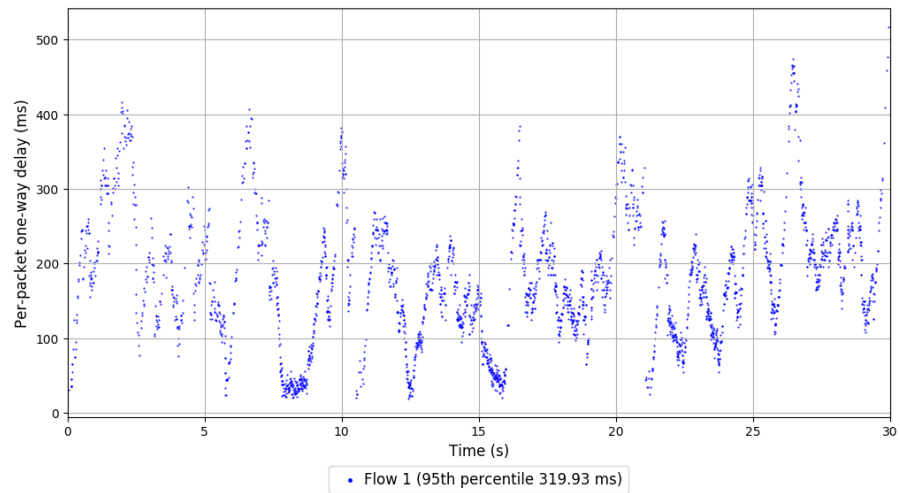
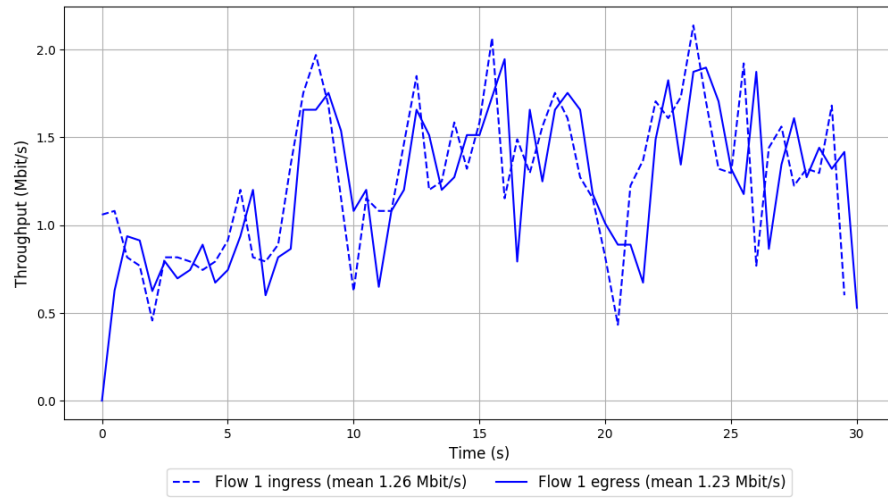


Run 3: Statistics of TCP BBR

Start at: 2018-09-07 09:31:25
End at: 2018-09-07 09:31:55
Local clock offset: -1.135 ms
Remote clock offset: -3.367 ms

Below is generated by plot.py at 2018-09-07 09:42:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 319.927 ms
Loss rate: 1.91%
-- Flow 1:
Average throughput: 1.23 Mbit/s
95th percentile per-packet one-way delay: 319.927 ms
Loss rate: 1.91%

Run 3: Report of TCP BBR — Data Link



Run 1: Statistics of Copa

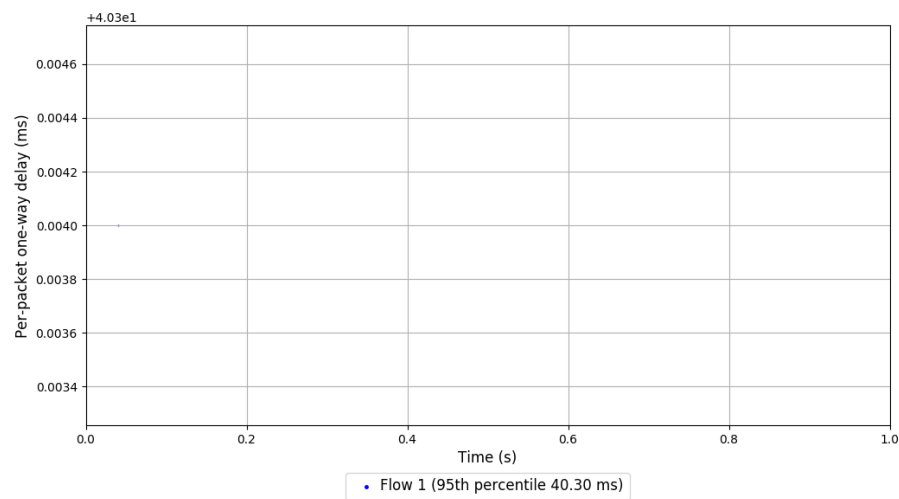
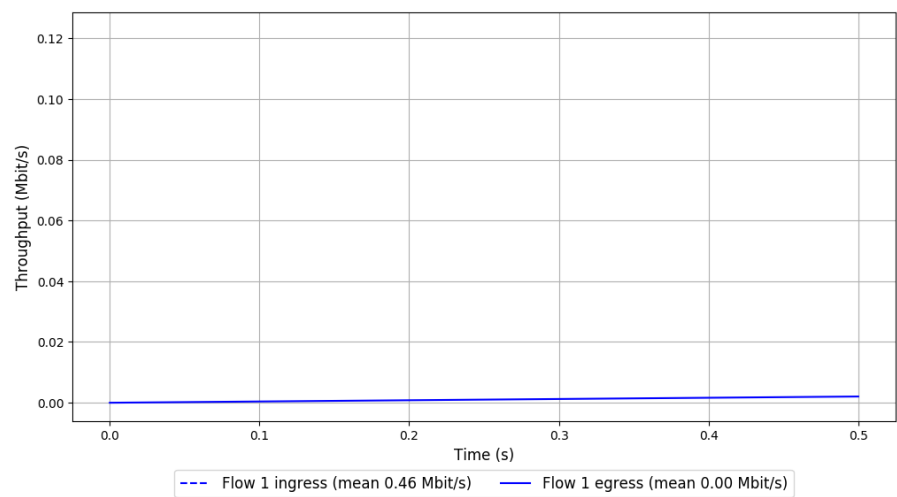
Start at: 2018-09-07 08:44:40

End at: 2018-09-07 08:45:10

Local clock offset: 2.632 ms

Remote clock offset: -1.67 ms

Run 1: Report of Copa — Data Link



Run 2: Statistics of Copa

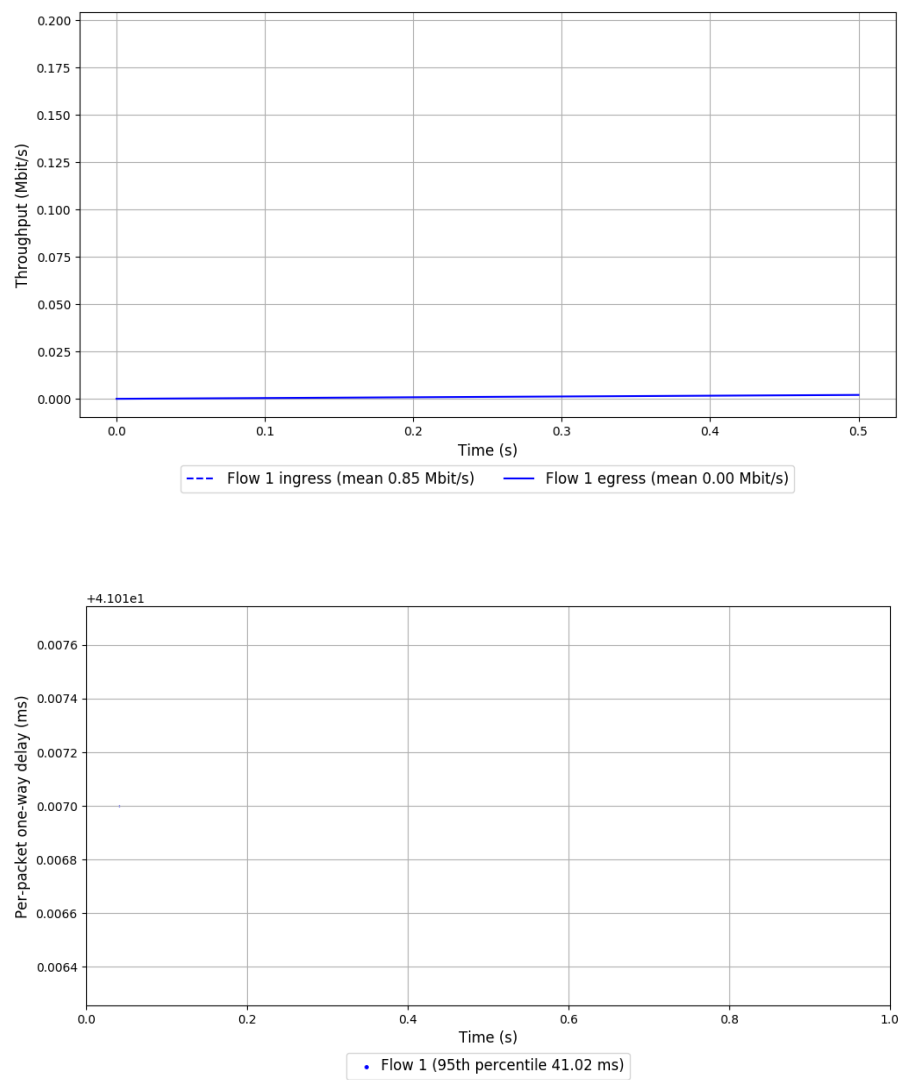
Start at: 2018-09-07 09:04:15

End at: 2018-09-07 09:04:45

Local clock offset: 0.966 ms

Remote clock offset: -2.736 ms

Run 2: Report of Copa — Data Link



Run 3: Statistics of Copa

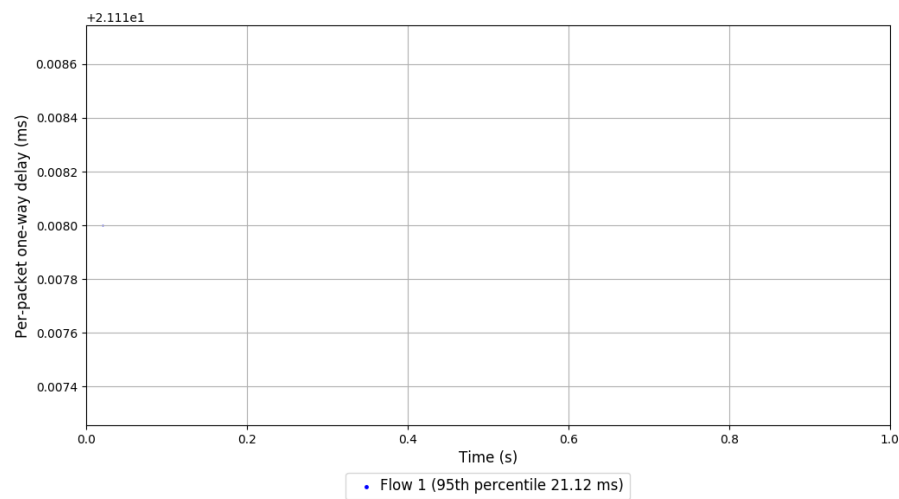
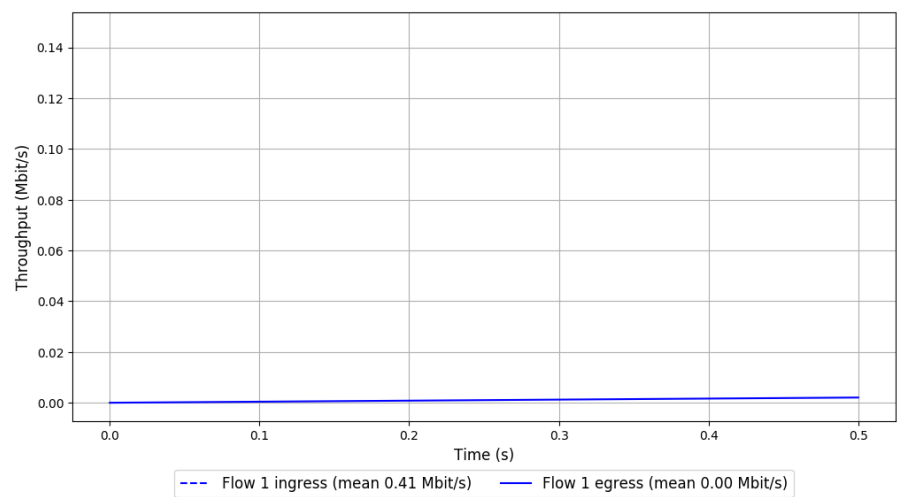
Start at: 2018-09-07 09:23:48

End at: 2018-09-07 09:24:18

Local clock offset: -0.168 ms

Remote clock offset: -2.798 ms

Run 3: Report of Copa — Data Link

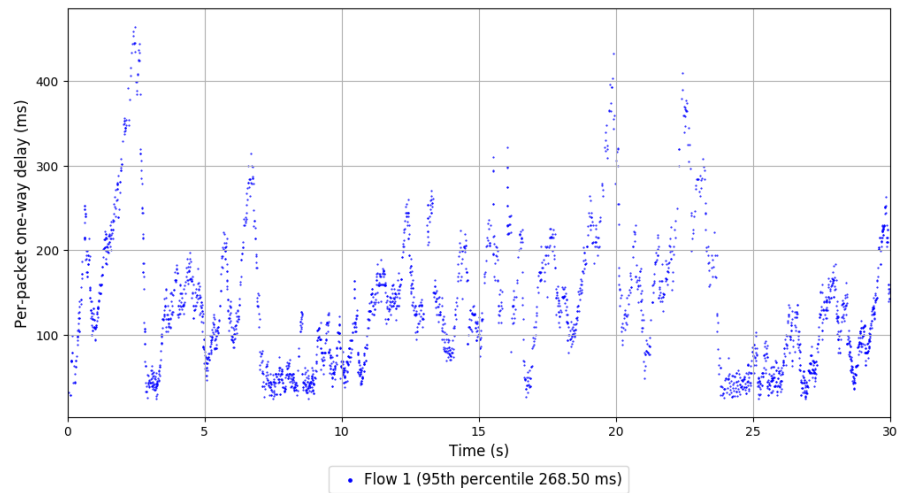
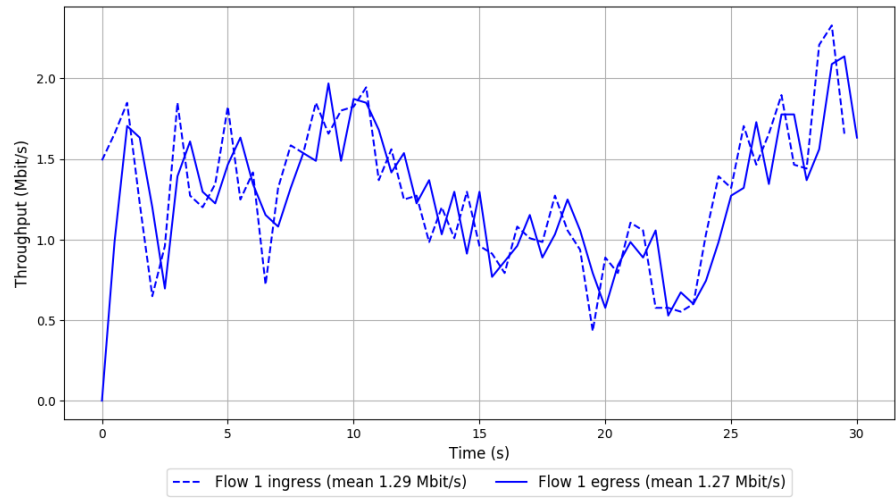


Run 1: Statistics of TCP Cubic

Start at: 2018-09-07 08:51:11
End at: 2018-09-07 08:51:41
Local clock offset: 2.146 ms
Remote clock offset: -2.454 ms

Below is generated by plot.py at 2018-09-07 09:42:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 268.500 ms
Loss rate: 1.24%
-- Flow 1:
Average throughput: 1.27 Mbit/s
95th percentile per-packet one-way delay: 268.500 ms
Loss rate: 1.24%

Run 1: Report of TCP Cubic — Data Link

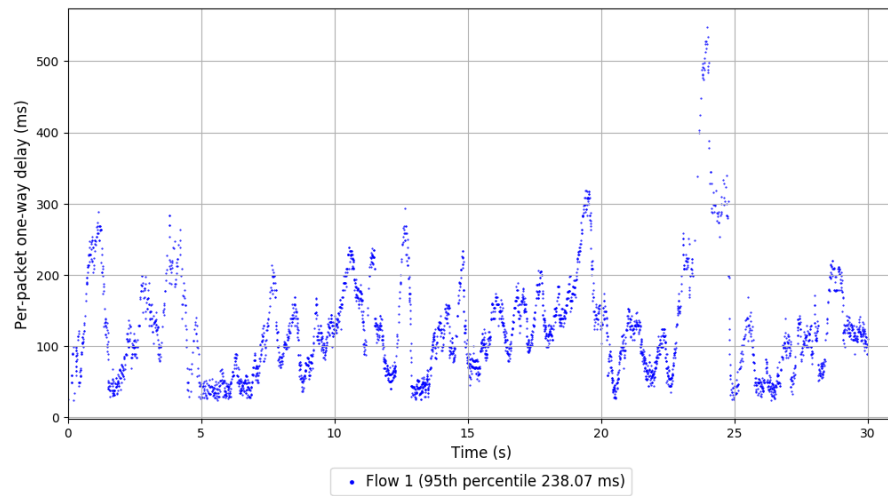
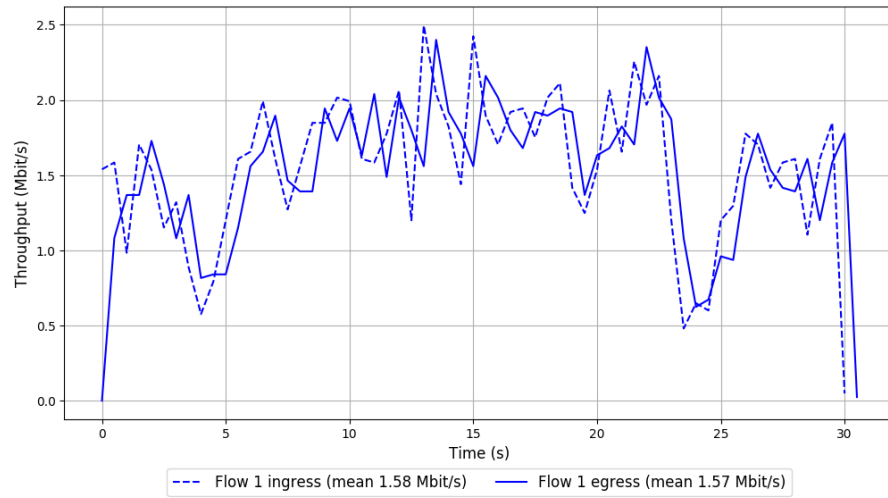


Run 2: Statistics of TCP Cubic

Start at: 2018-09-07 09:10:46
End at: 2018-09-07 09:11:16
Local clock offset: -0.019 ms
Remote clock offset: -1.966 ms

Below is generated by plot.py at 2018-09-07 09:42:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 238.067 ms
Loss rate: 0.83%
-- Flow 1:
Average throughput: 1.57 Mbit/s
95th percentile per-packet one-way delay: 238.067 ms
Loss rate: 0.83%

Run 2: Report of TCP Cubic — Data Link

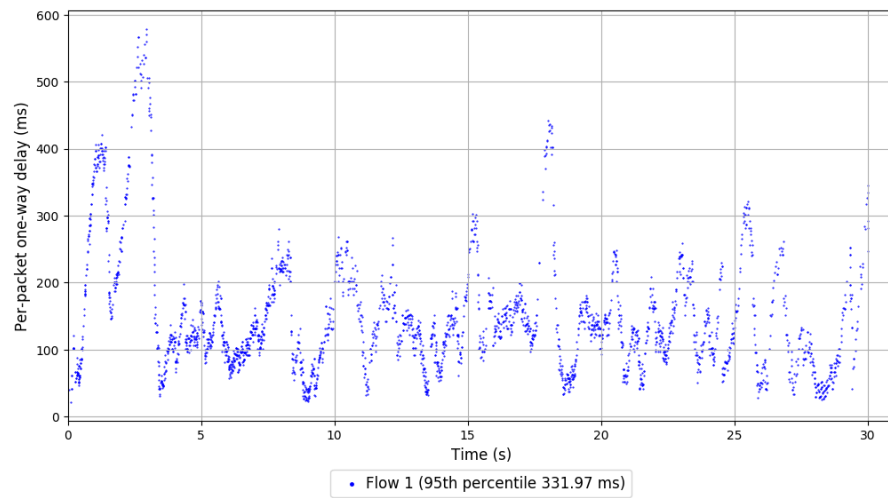
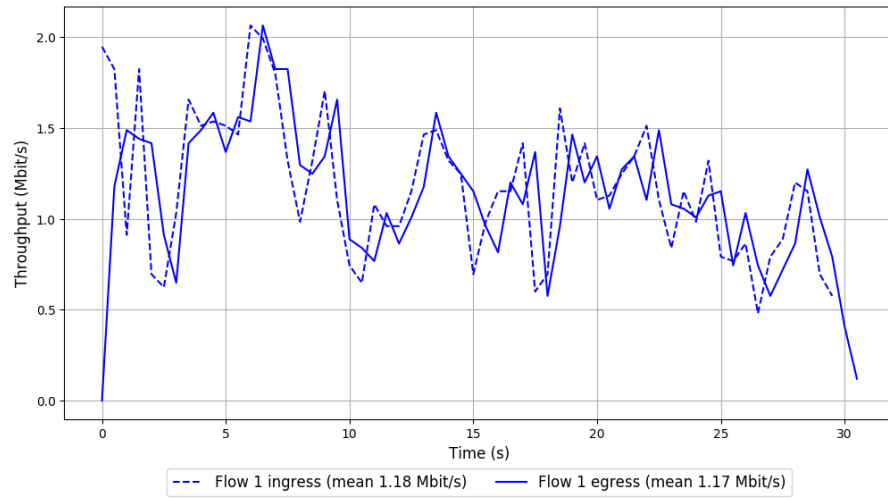


Run 3: Statistics of TCP Cubic

Start at: 2018-09-07 09:30:20
End at: 2018-09-07 09:30:50
Local clock offset: -0.363 ms
Remote clock offset: -3.056 ms

Below is generated by plot.py at 2018-09-07 09:42:58
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 331.969 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 1.17 Mbit/s
95th percentile per-packet one-way delay: 331.969 ms
Loss rate: 0.88%

Run 3: Report of TCP Cubic — Data Link

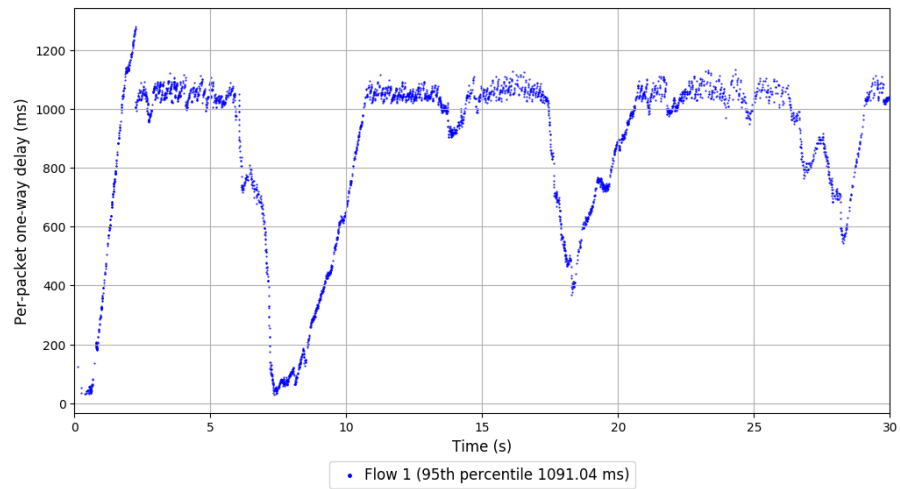
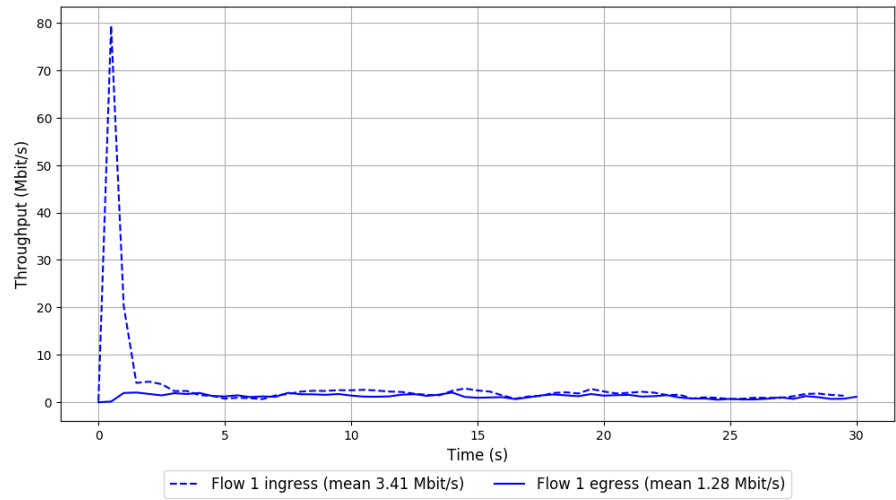


Run 1: Statistics of FillP

Start at: 2018-09-07 08:59:54
End at: 2018-09-07 09:00:24
Local clock offset: 2.646 ms
Remote clock offset: -3.111 ms

Below is generated by plot.py at 2018-09-07 09:43:01
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 1091.040 ms
Loss rate: 62.57%
-- Flow 1:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 1091.040 ms
Loss rate: 62.57%

Run 1: Report of FillP — Data Link



Run 2: Statistics of FillP

Start at: 2018-09-07 09:19:28

End at: 2018-09-07 09:19:58

Local clock offset: 2.471 ms

Remote clock offset: -2.71 ms

Below is generated by plot.py at 2018-09-07 09:43:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.70 Mbit/s

95th percentile per-packet one-way delay: 1074.333 ms

Loss rate: 59.20%

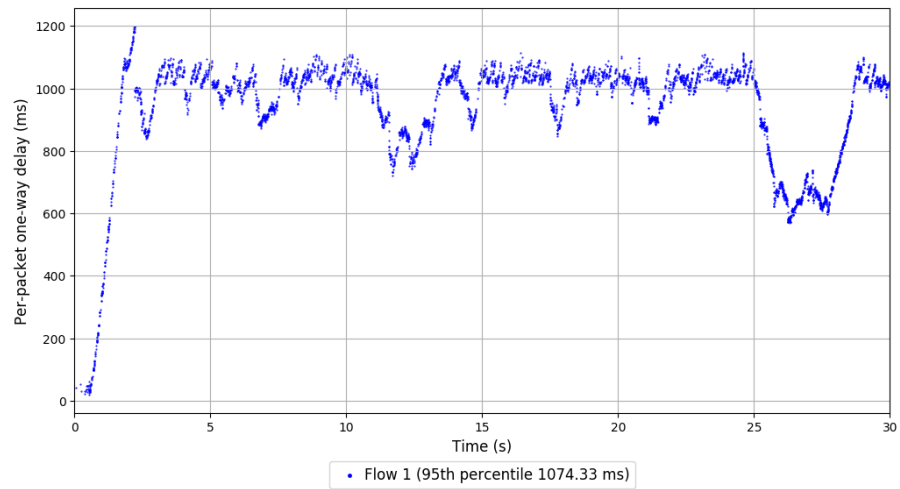
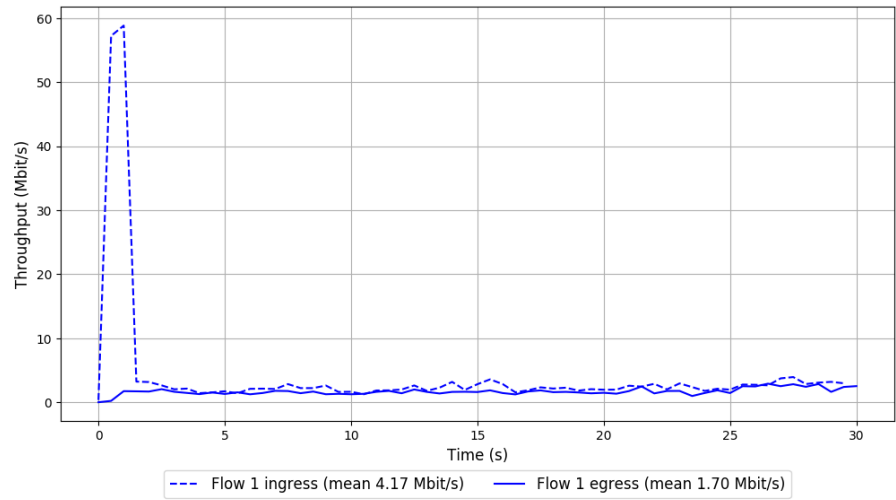
-- Flow 1:

Average throughput: 1.70 Mbit/s

95th percentile per-packet one-way delay: 1074.333 ms

Loss rate: 59.20%

Run 2: Report of FillP — Data Link



Run 3: Statistics of FillP

Start at: 2018-09-07 09:39:02

End at: 2018-09-07 09:39:32

Local clock offset: -2.464 ms

Remote clock offset: -1.75 ms

Below is generated by plot.py at 2018-09-07 09:43:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.90 Mbit/s

95th percentile per-packet one-way delay: 1098.966 ms

Loss rate: 65.81%

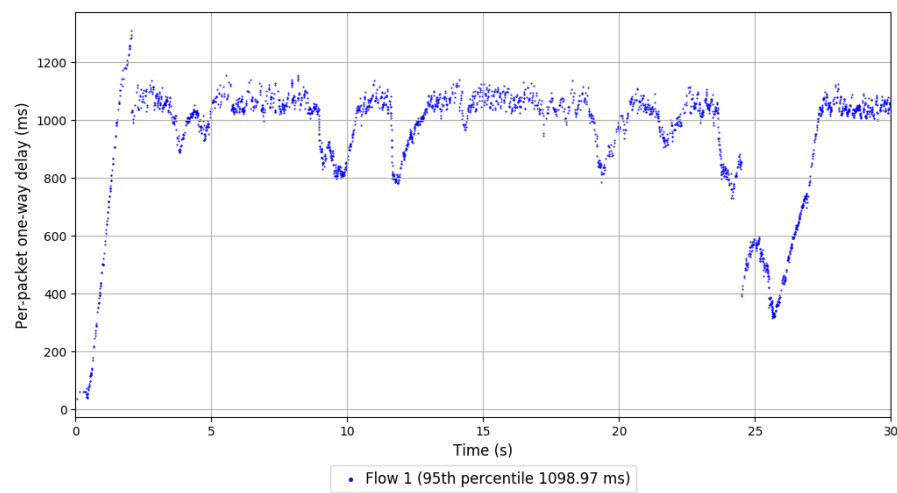
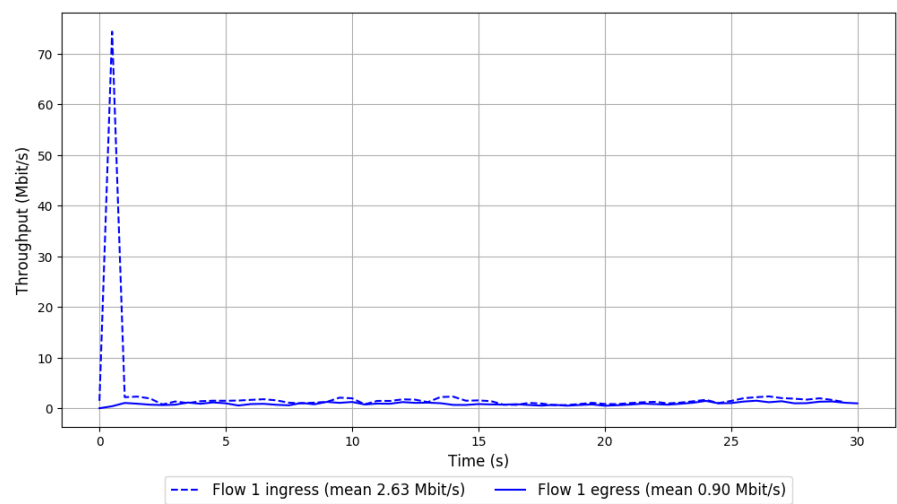
-- Flow 1:

Average throughput: 0.90 Mbit/s

95th percentile per-packet one-way delay: 1098.966 ms

Loss rate: 65.81%

Run 3: Report of FillP — Data Link



Run 1: Statistics of FillP-Sheep

Start at: 2018-09-07 08:56:38

End at: 2018-09-07 08:57:08

Local clock offset: 2.894 ms

Remote clock offset: -2.007 ms

Below is generated by plot.py at 2018-09-07 09:43:03

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 1047.389 ms

Loss rate: 15.88%

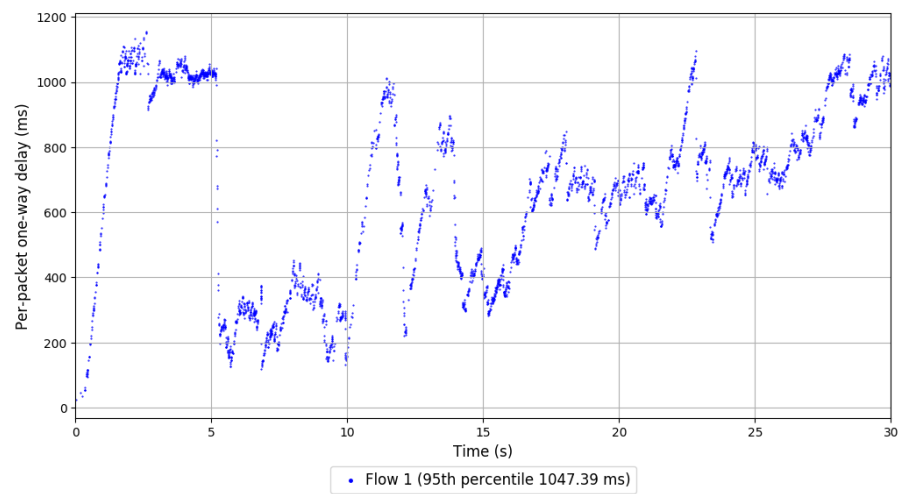
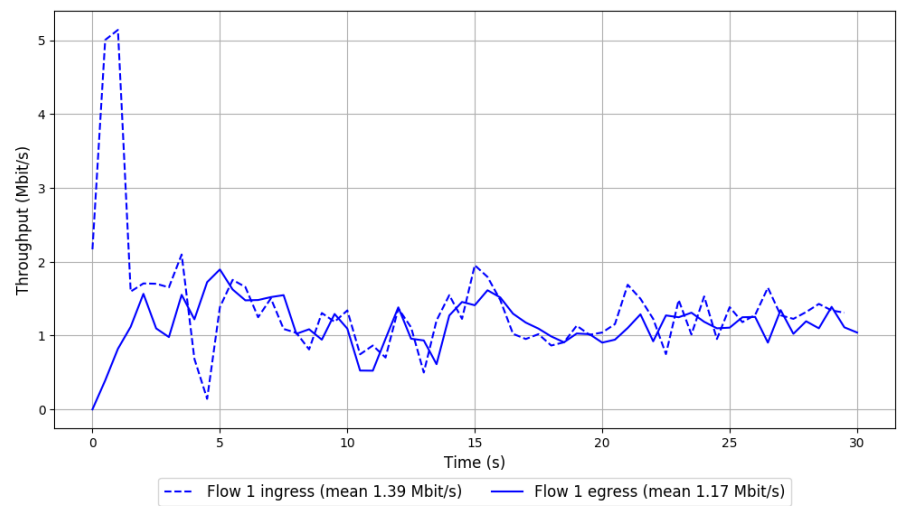
-- Flow 1:

Average throughput: 1.17 Mbit/s

95th percentile per-packet one-way delay: 1047.389 ms

Loss rate: 15.88%

Run 1: Report of FillP-Sheep — Data Link

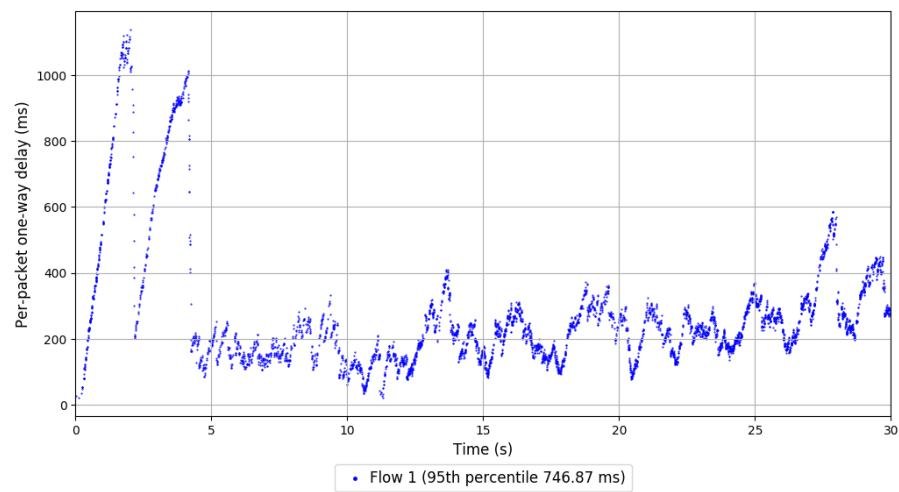
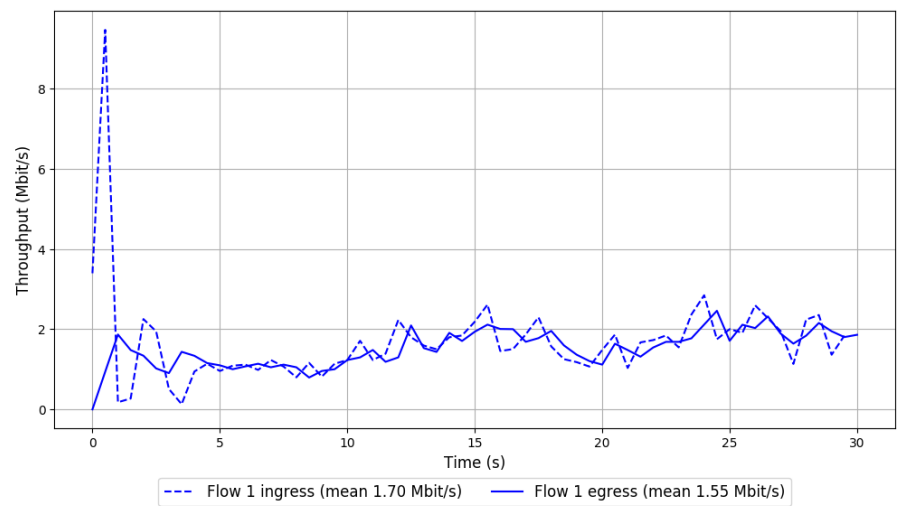


Run 2: Statistics of FillP-Sheep

Start at: 2018-09-07 09:16:12
End at: 2018-09-07 09:16:42
Local clock offset: 0.699 ms
Remote clock offset: -2.821 ms

Below is generated by plot.py at 2018-09-07 09:43:04
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 746.865 ms
Loss rate: 8.87%
-- Flow 1:
Average throughput: 1.55 Mbit/s
95th percentile per-packet one-way delay: 746.865 ms
Loss rate: 8.87%

Run 2: Report of FillP-Sheep — Data Link

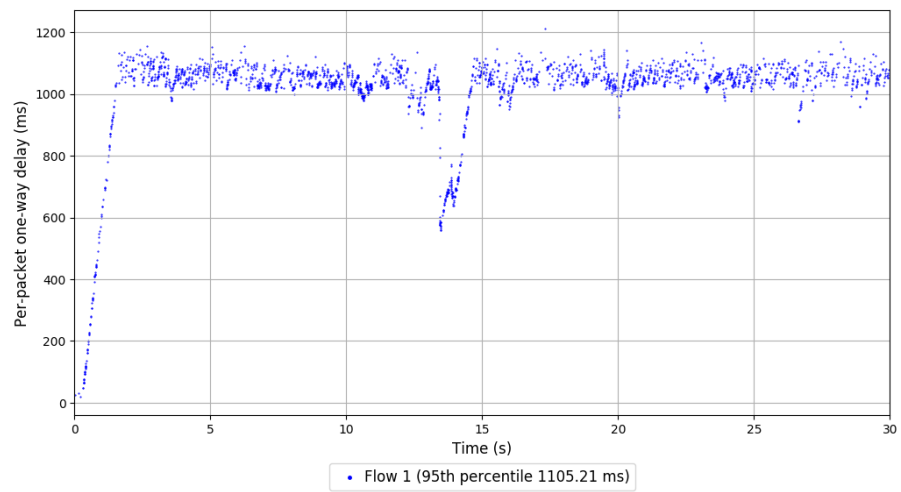
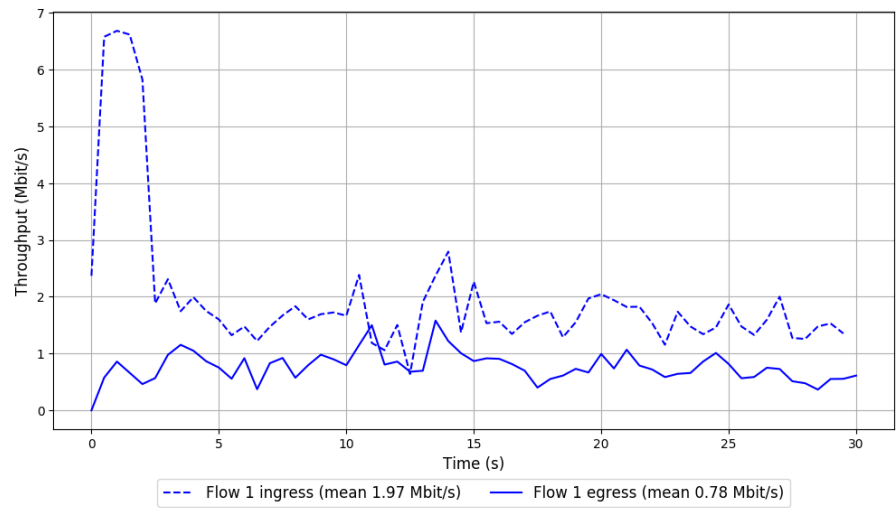


Run 3: Statistics of FillP-Sheep

Start at: 2018-09-07 09:35:46
End at: 2018-09-07 09:36:16
Local clock offset: -1.363 ms
Remote clock offset: -2.018 ms

Below is generated by plot.py at 2018-09-07 09:43:04
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 1105.214 ms
Loss rate: 60.40%
-- Flow 1:
Average throughput: 0.78 Mbit/s
95th percentile per-packet one-way delay: 1105.214 ms
Loss rate: 60.40%

Run 3: Report of FillP-Sheep — Data Link

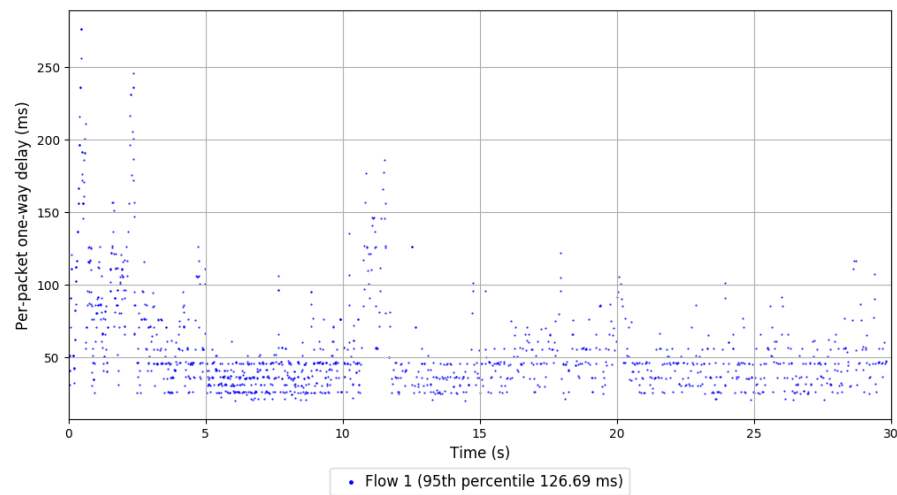
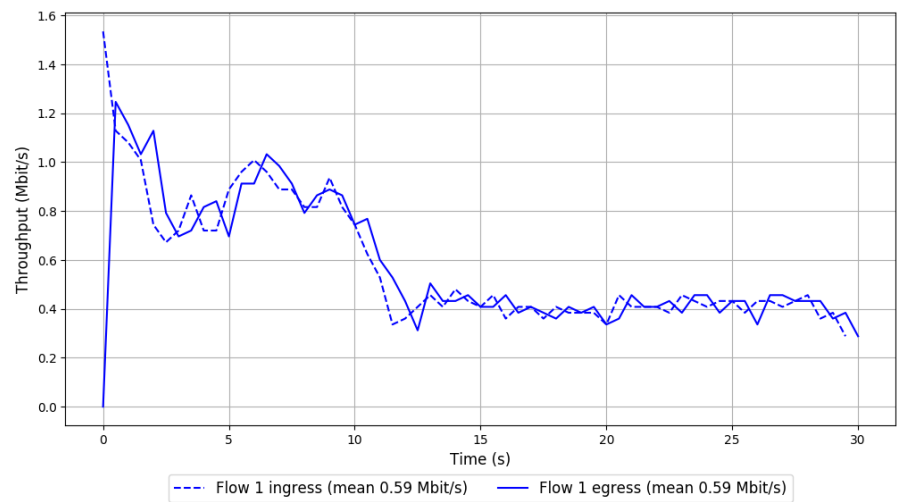


Run 1: Statistics of Indigo

Start at: 2018-09-07 08:50:06
End at: 2018-09-07 08:50:36
Local clock offset: 3.491 ms
Remote clock offset: -2.393 ms

Below is generated by plot.py at 2018-09-07 09:43:04
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 126.691 ms
Loss rate: 0.07%
-- Flow 1:
Average throughput: 0.59 Mbit/s
95th percentile per-packet one-way delay: 126.691 ms
Loss rate: 0.07%

Run 1: Report of Indigo — Data Link

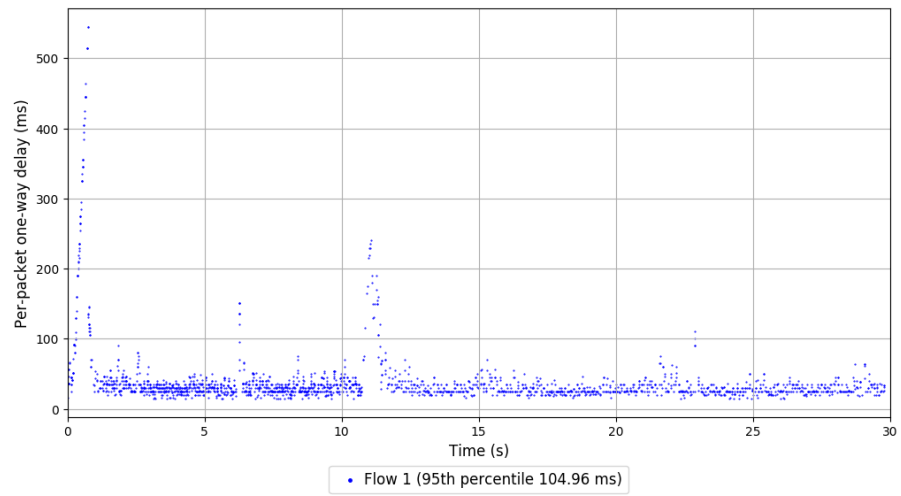
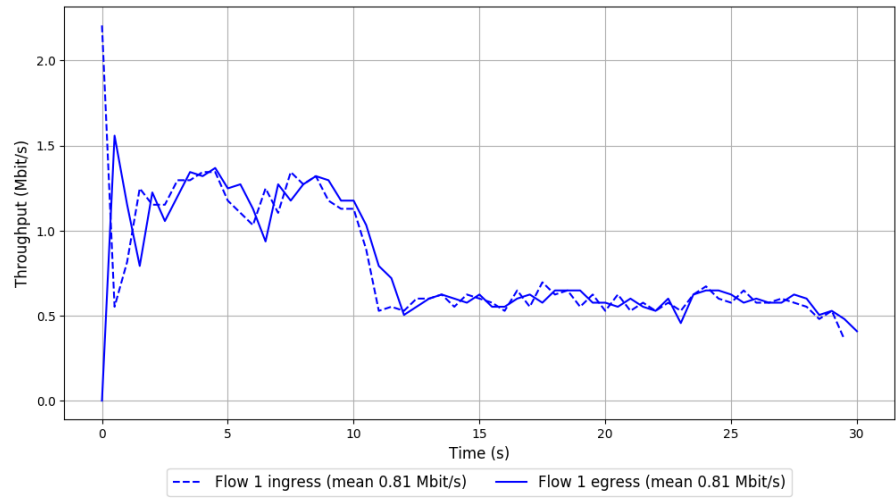


Run 2: Statistics of Indigo

Start at: 2018-09-07 09:09:41
End at: 2018-09-07 09:10:11
Local clock offset: 3.019 ms
Remote clock offset: -3.636 ms

Below is generated by plot.py at 2018-09-07 09:43:04
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 104.964 ms
Loss rate: 0.05%
-- Flow 1:
Average throughput: 0.81 Mbit/s
95th percentile per-packet one-way delay: 104.964 ms
Loss rate: 0.05%

Run 2: Report of Indigo — Data Link

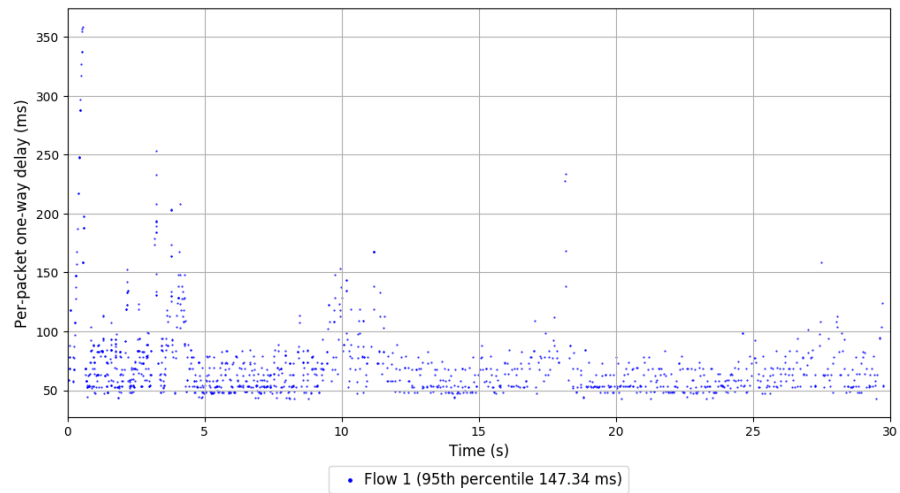
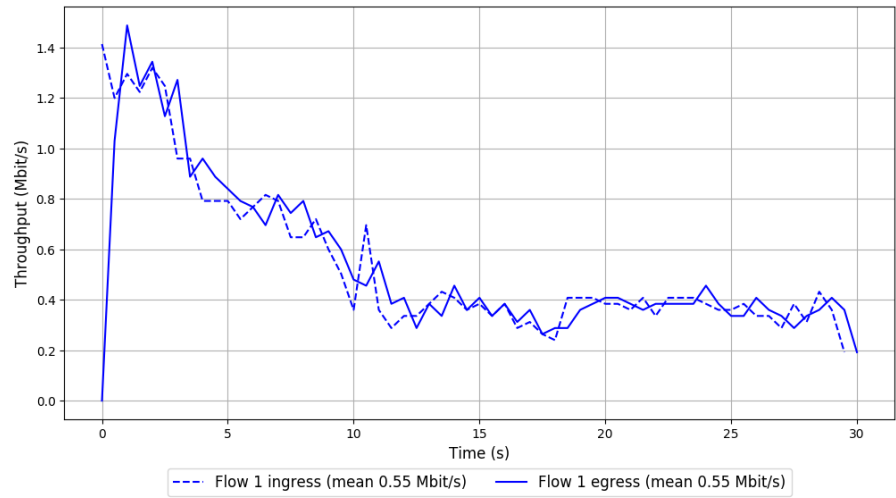


Run 3: Statistics of Indigo

Start at: 2018-09-07 09:29:14
End at: 2018-09-07 09:29:44
Local clock offset: -1.276 ms
Remote clock offset: -2.281 ms

Below is generated by plot.py at 2018-09-07 09:43:05
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 147.344 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 0.55 Mbit/s
95th percentile per-packet one-way delay: 147.344 ms
Loss rate: 0.22%

Run 3: Report of Indigo — Data Link

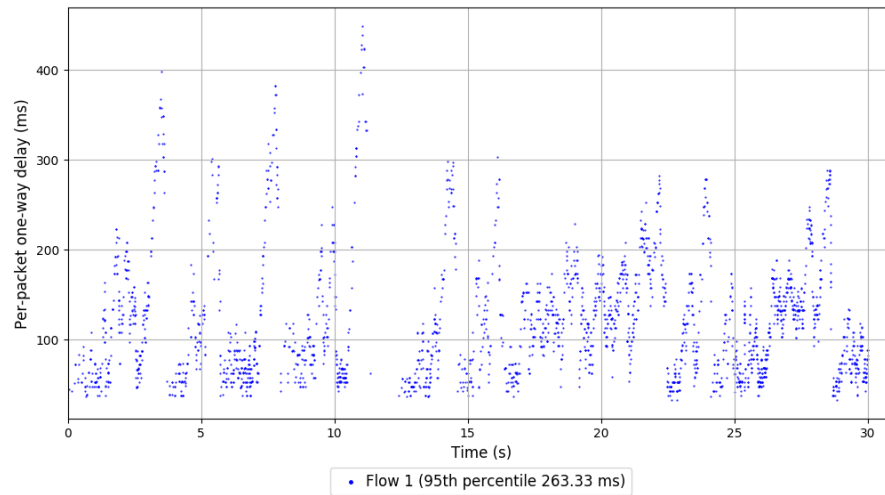
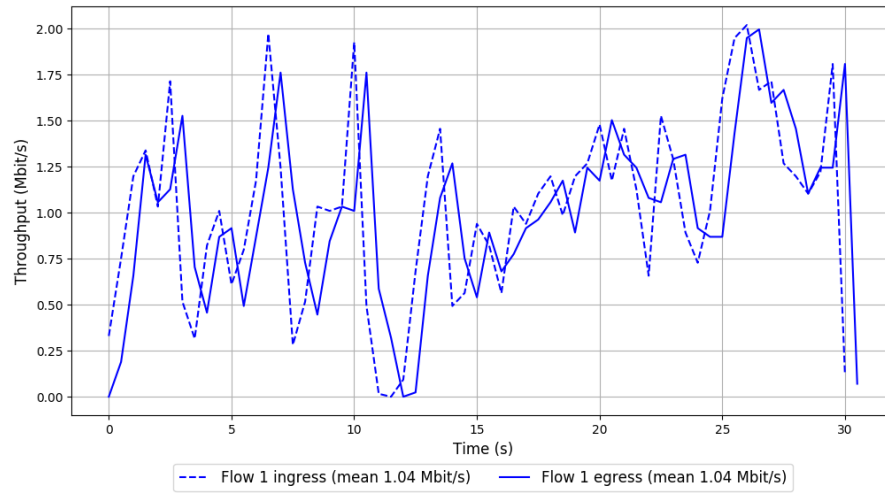



```
Run 1: Statistics of LEDBAT

Start at: 2018-09-07 08:58:49
End at: 2018-09-07 08:59:19
Local clock offset: -0.582 ms
Remote clock offset: -2.412 ms

# Below is generated by plot.py at 2018-09-07 09:43:06
# Datalink statistics
-- Total of 1 flow:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 263.333 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 1.04 Mbit/s
95th percentile per-packet one-way delay: 263.333 ms
Loss rate: 0.86%
```

Run 1: Report of LEDBAT — Data Link

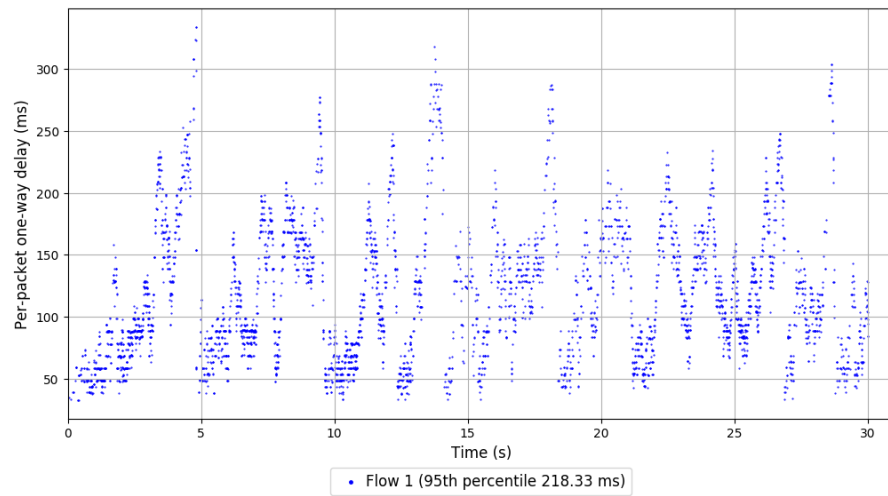
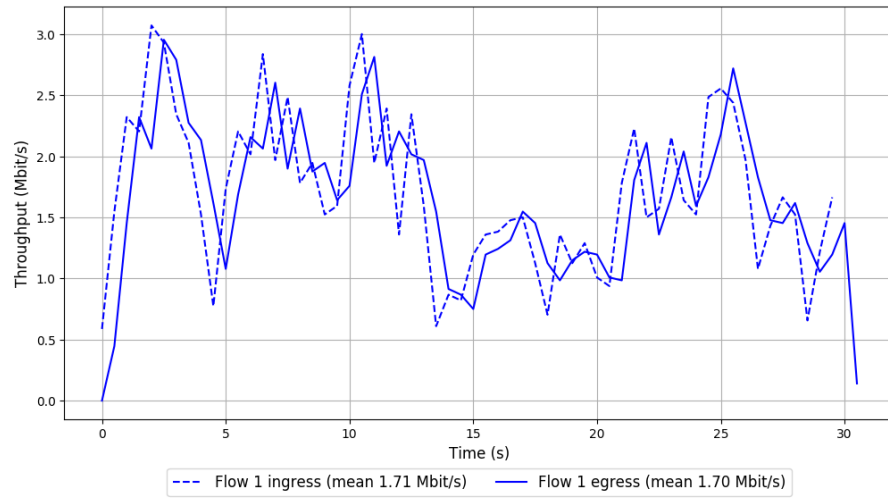


Run 2: Statistics of LEDBAT

Start at: 2018-09-07 09:18:22
End at: 2018-09-07 09:18:53
Local clock offset: -0.152 ms
Remote clock offset: -2.246 ms

Below is generated by plot.py at 2018-09-07 09:43:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 218.328 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 1.70 Mbit/s
95th percentile per-packet one-way delay: 218.328 ms
Loss rate: 0.39%

Run 2: Report of LEDBAT — Data Link

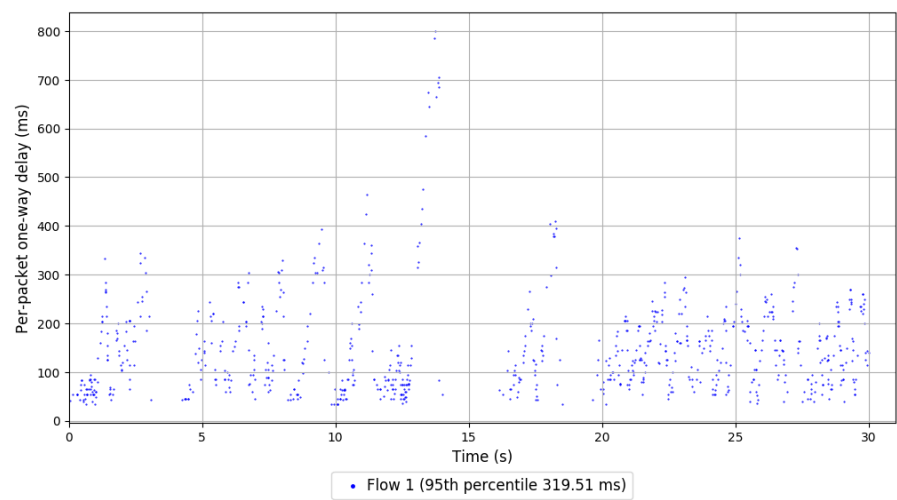
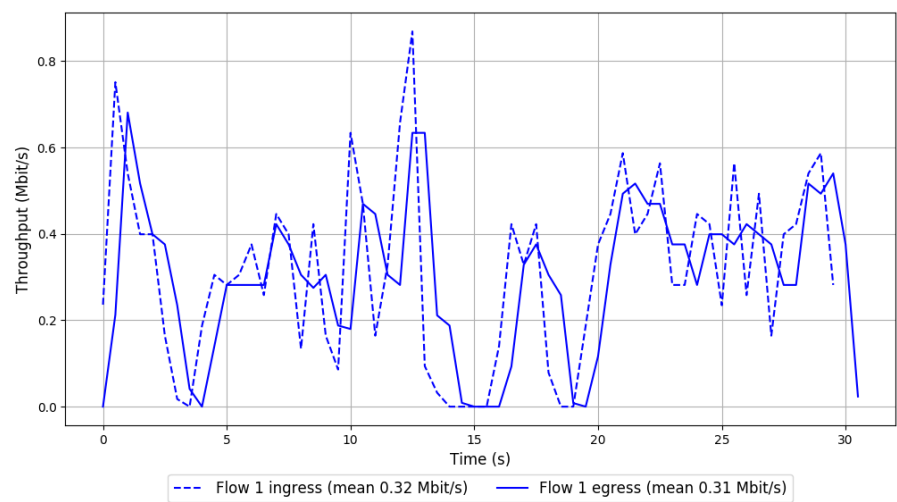


Run 3: Statistics of LEDBAT

Start at: 2018-09-07 09:37:57
End at: 2018-09-07 09:38:27
Local clock offset: -0.616 ms
Remote clock offset: -2.644 ms

Below is generated by plot.py at 2018-09-07 09:43:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 319.507 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 319.507 ms
Loss rate: 1.37%

Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of Indigo-Muses

Start at: 2018-09-07 08:54:27

End at: 2018-09-07 08:54:57

Local clock offset: 0.526 ms

Remote clock offset: -2.873 ms

Below is generated by plot.py at 2018-09-07 09:43:08

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.01 Mbit/s

95th percentile per-packet one-way delay: 373.978 ms

Loss rate: 0.46%

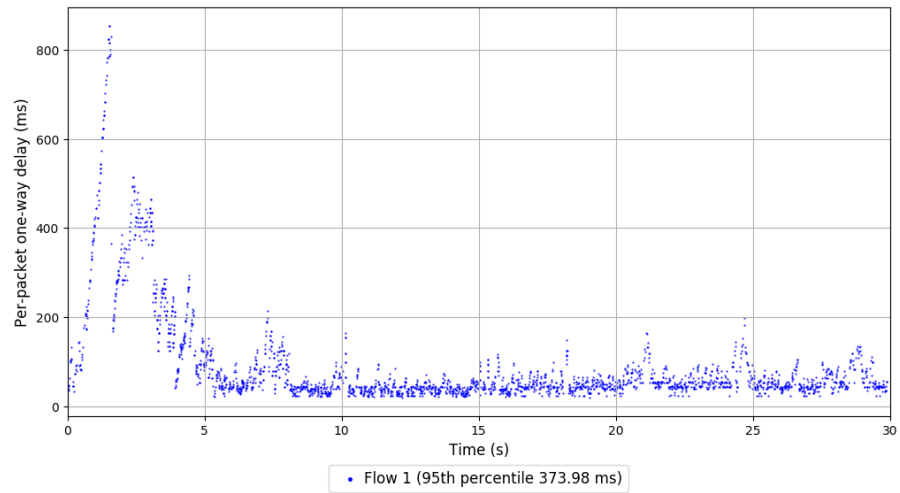
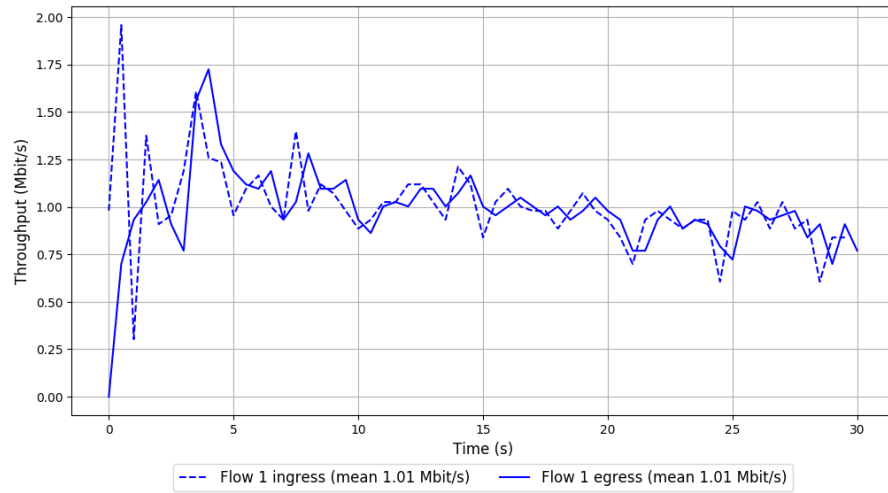
-- Flow 1:

Average throughput: 1.01 Mbit/s

95th percentile per-packet one-way delay: 373.978 ms

Loss rate: 0.46%

Run 1: Report of Indigo-Muses — Data Link

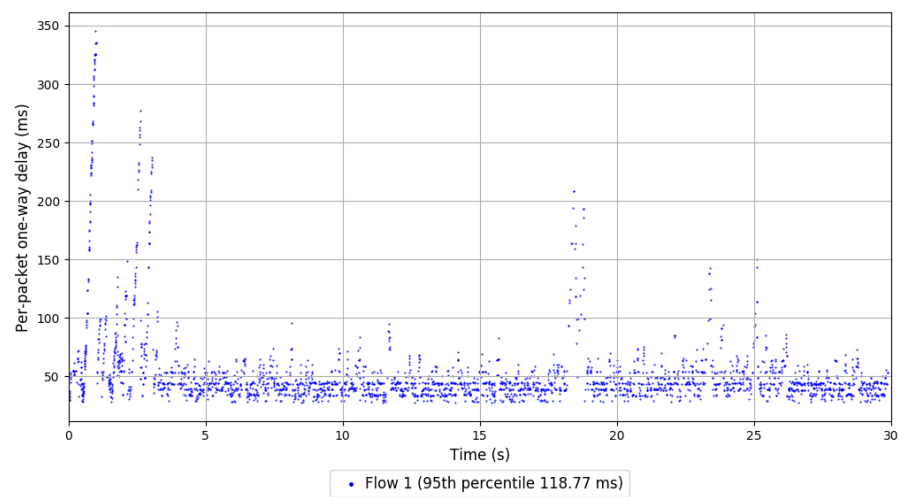
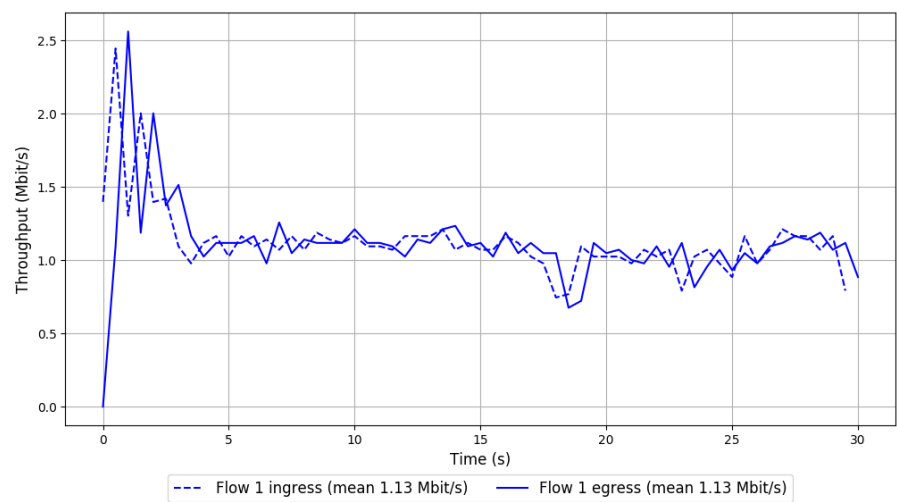


Run 2: Statistics of Indigo-Muses

Start at: 2018-09-07 09:14:01
End at: 2018-09-07 09:14:31
Local clock offset: 1.576 ms
Remote clock offset: -3.581 ms

Below is generated by plot.py at 2018-09-07 09:43:08
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 118.771 ms
Loss rate: 0.10%
-- Flow 1:
Average throughput: 1.13 Mbit/s
95th percentile per-packet one-way delay: 118.771 ms
Loss rate: 0.10%

Run 2: Report of Indigo-Muses — Data Link

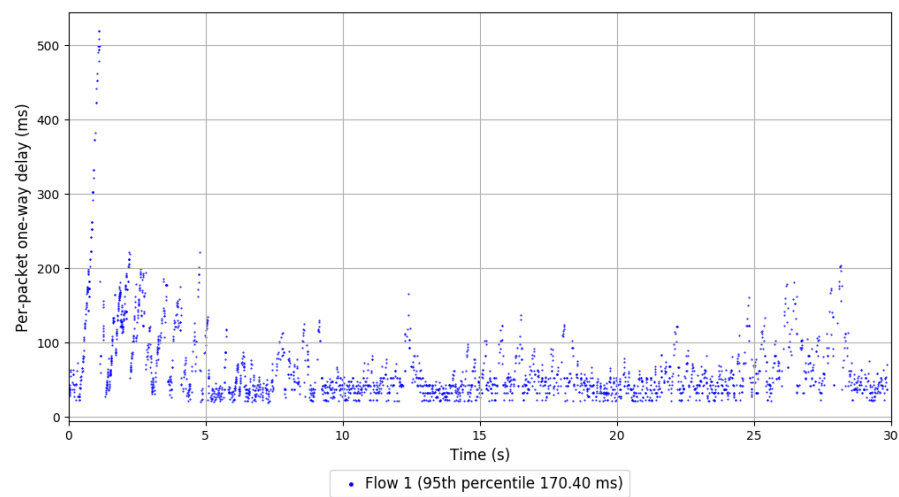
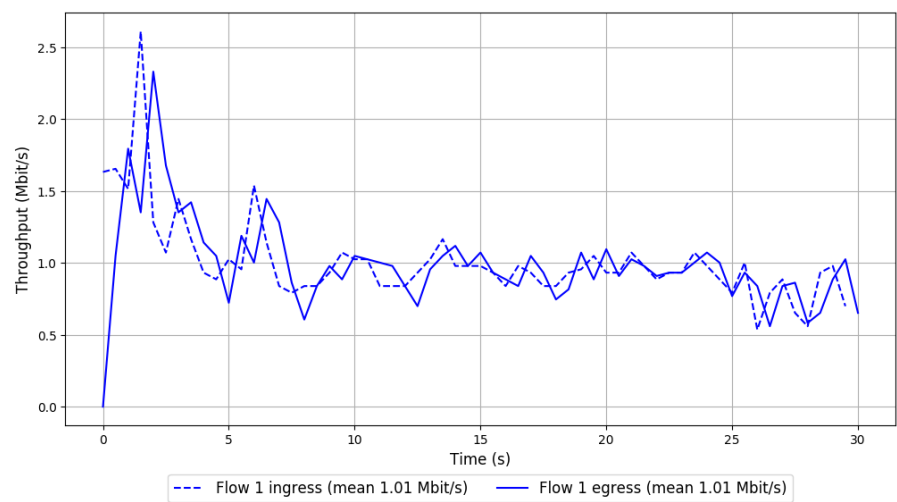


Run 3: Statistics of Indigo-Muses

Start at: 2018-09-07 09:33:35
End at: 2018-09-07 09:34:05
Local clock offset: 0.185 ms
Remote clock offset: -1.073 ms

Below is generated by plot.py at 2018-09-07 09:43:09
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 170.403 ms
Loss rate: 0.27%
-- Flow 1:
Average throughput: 1.01 Mbit/s
95th percentile per-packet one-way delay: 170.403 ms
Loss rate: 0.27%

Run 3: Report of Indigo-Muses — Data Link



Run 1: Statistics of PCC-Allegro

Start at: 2018-09-07 09:03:10

End at: 2018-09-07 09:03:40

Local clock offset: 0.344 ms

Remote clock offset: -2.98 ms

Below is generated by plot.py at 2018-09-07 09:43:10

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.95 Mbit/s

95th percentile per-packet one-way delay: 1027.331 ms

Loss rate: 5.93%

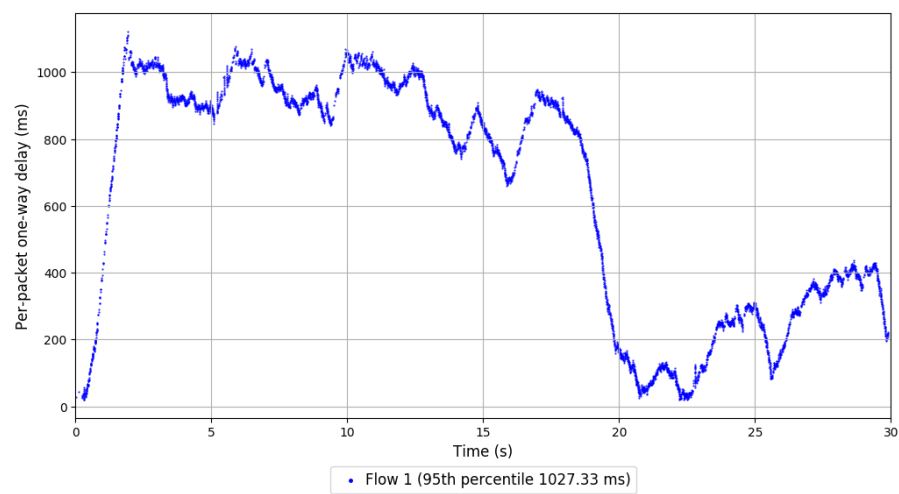
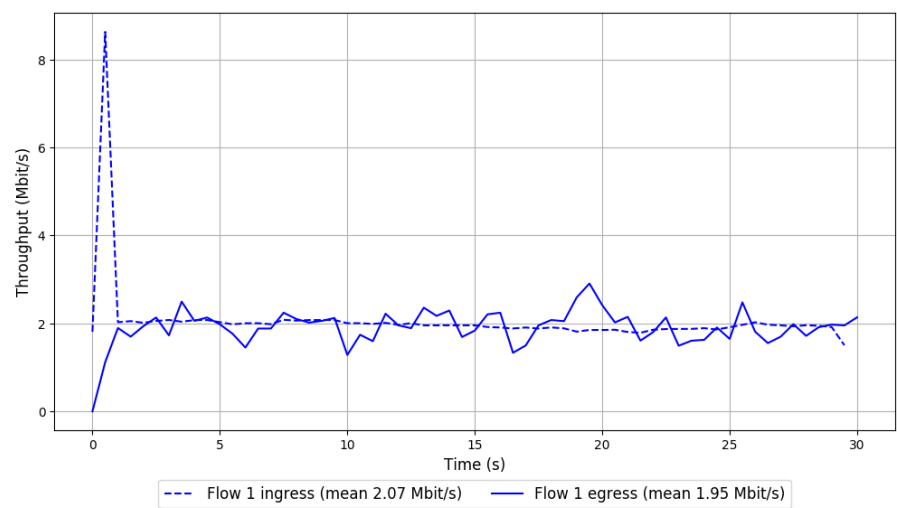
-- Flow 1:

Average throughput: 1.95 Mbit/s

95th percentile per-packet one-way delay: 1027.331 ms

Loss rate: 5.93%

Run 1: Report of PCC-Allegro — Data Link



Run 2: Statistics of PCC-Allegro

Start at: 2018-09-07 09:22:43

End at: 2018-09-07 09:23:13

Local clock offset: 0.984 ms

Remote clock offset: -2.792 ms

Below is generated by plot.py at 2018-09-07 09:43:10

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.61 Mbit/s

95th percentile per-packet one-way delay: 1075.004 ms

Loss rate: 21.08%

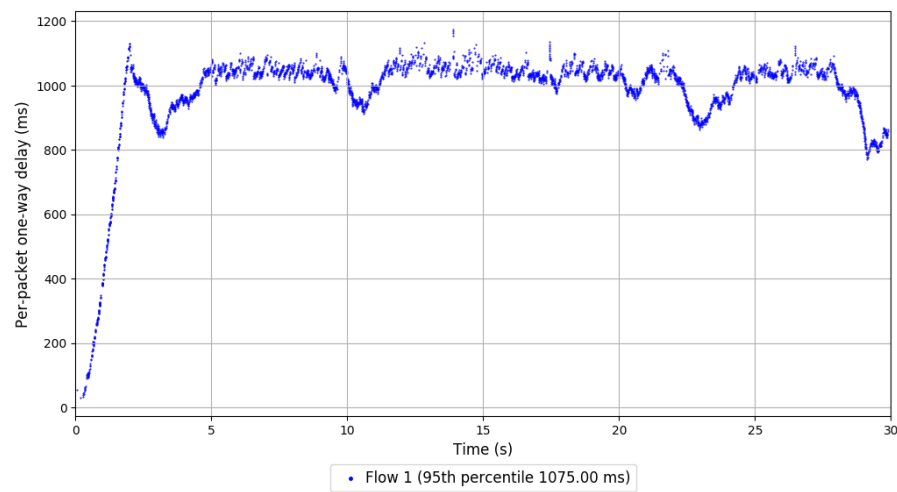
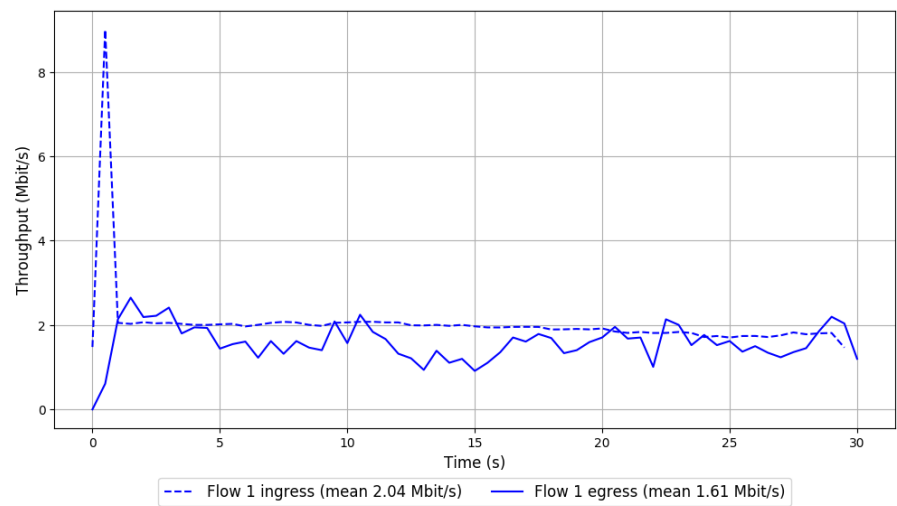
-- Flow 1:

Average throughput: 1.61 Mbit/s

95th percentile per-packet one-way delay: 1075.004 ms

Loss rate: 21.08%

Run 2: Report of PCC-Allegro — Data Link



Run 3: Statistics of PCC-Allegro

Start at: 2018-09-07 09:42:18

End at: 2018-09-07 09:42:48

Local clock offset: 1.352 ms

Remote clock offset: -3.777 ms

Below is generated by plot.py at 2018-09-07 09:43:12

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 1078.945 ms

Loss rate: 41.71%

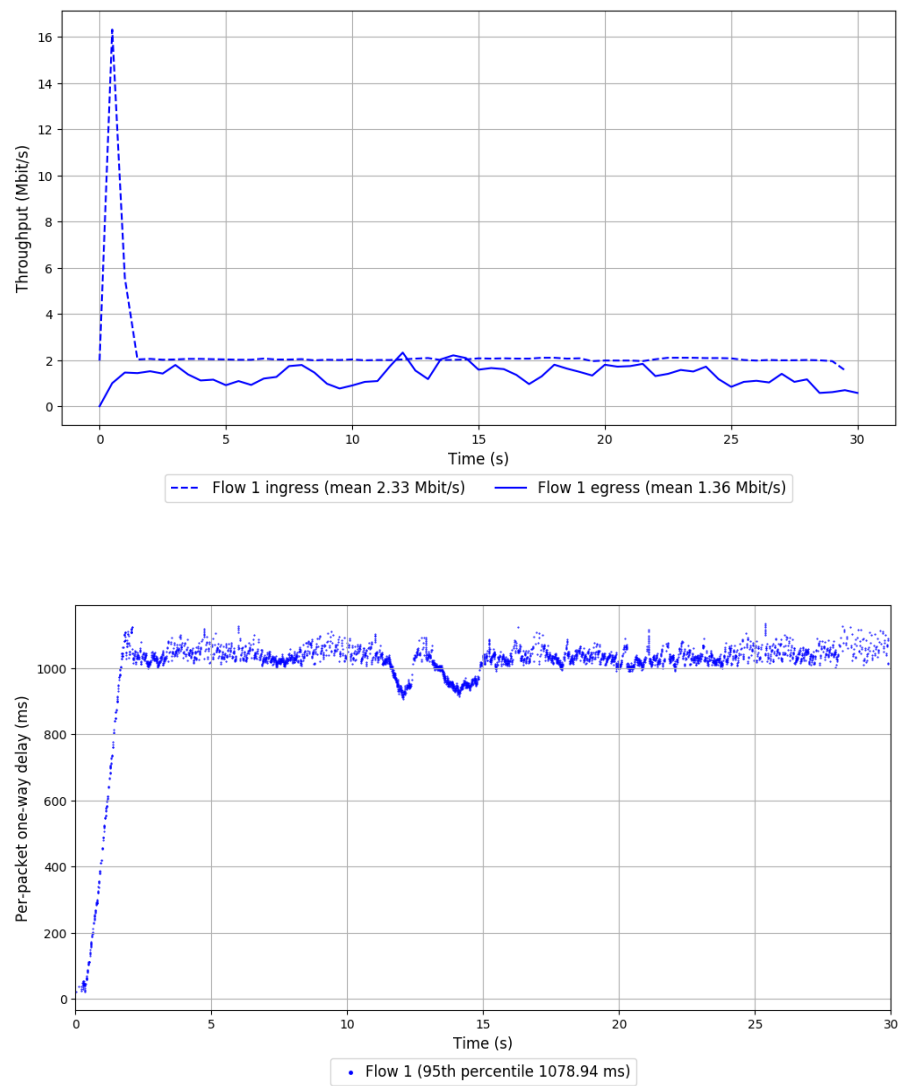
-- Flow 1:

Average throughput: 1.36 Mbit/s

95th percentile per-packet one-way delay: 1078.945 ms

Loss rate: 41.71%

Run 3: Report of PCC-Allegro — Data Link



Run 1: Statistics of PCC-Expr

Start at: 2018-09-07 08:45:45

End at: 2018-09-07 08:46:15

Local clock offset: 2.475 ms

Remote clock offset: -2.068 ms

Below is generated by plot.py at 2018-09-07 09:43:13

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.27 Mbit/s

95th percentile per-packet one-way delay: 1110.526 ms

Loss rate: 95.06%

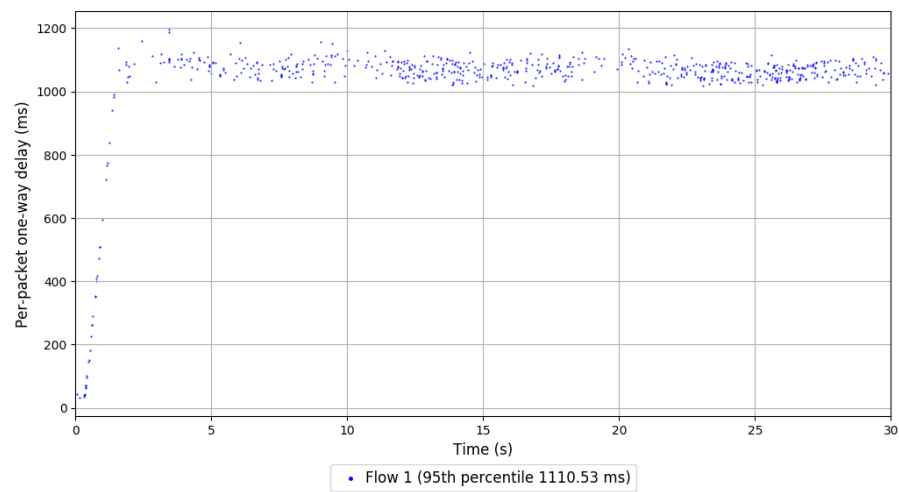
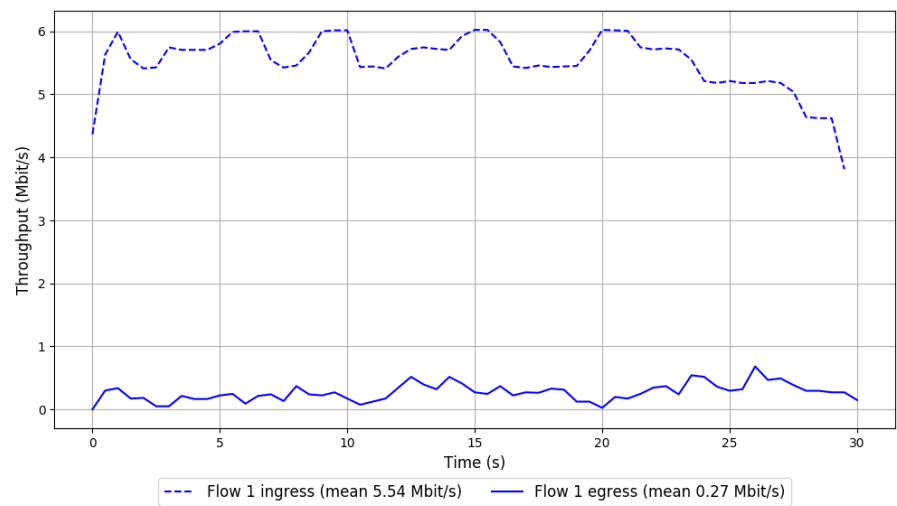
-- Flow 1:

Average throughput: 0.27 Mbit/s

95th percentile per-packet one-way delay: 1110.526 ms

Loss rate: 95.06%

Run 1: Report of PCC-Expr — Data Link

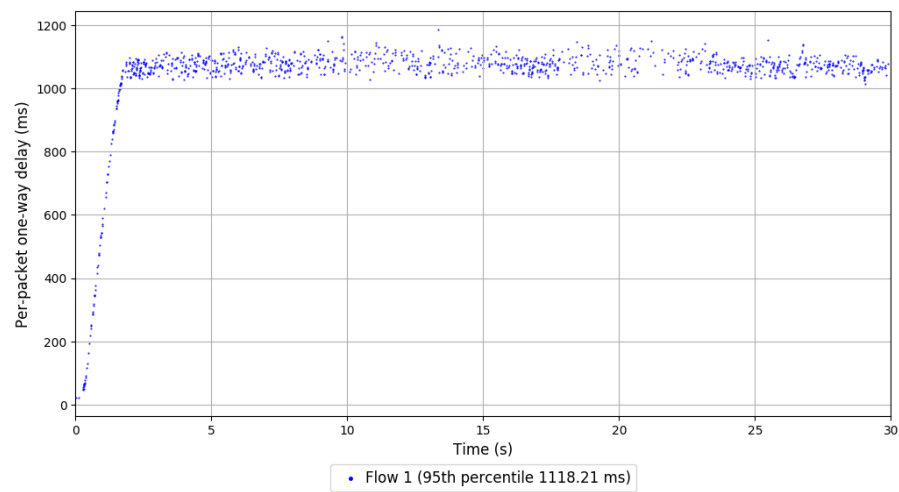
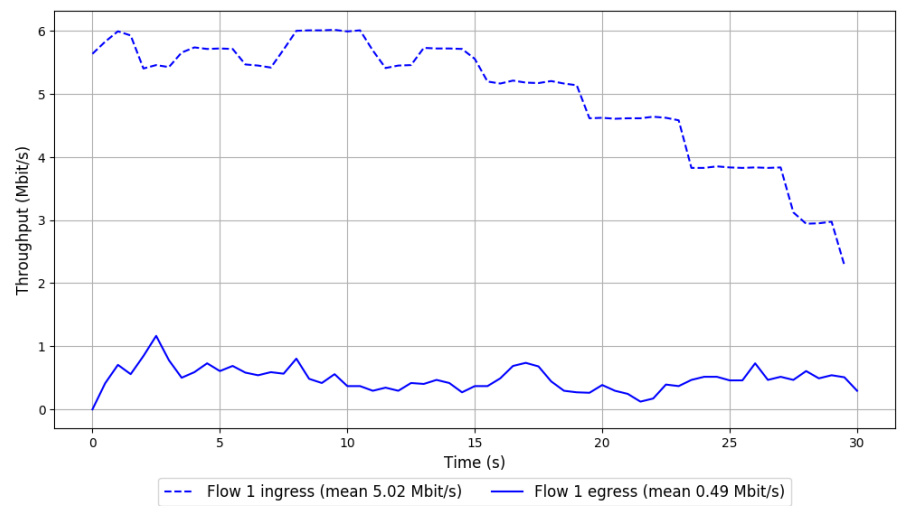


Run 2: Statistics of PCC-Expr

Start at: 2018-09-07 09:05:20
End at: 2018-09-07 09:05:50
Local clock offset: 0.482 ms
Remote clock offset: -3.015 ms

Below is generated by plot.py at 2018-09-07 09:43:14
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 1118.210 ms
Loss rate: 90.20%
-- Flow 1:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 1118.210 ms
Loss rate: 90.20%

Run 2: Report of PCC-Expr — Data Link



Run 3: Statistics of PCC-Expr

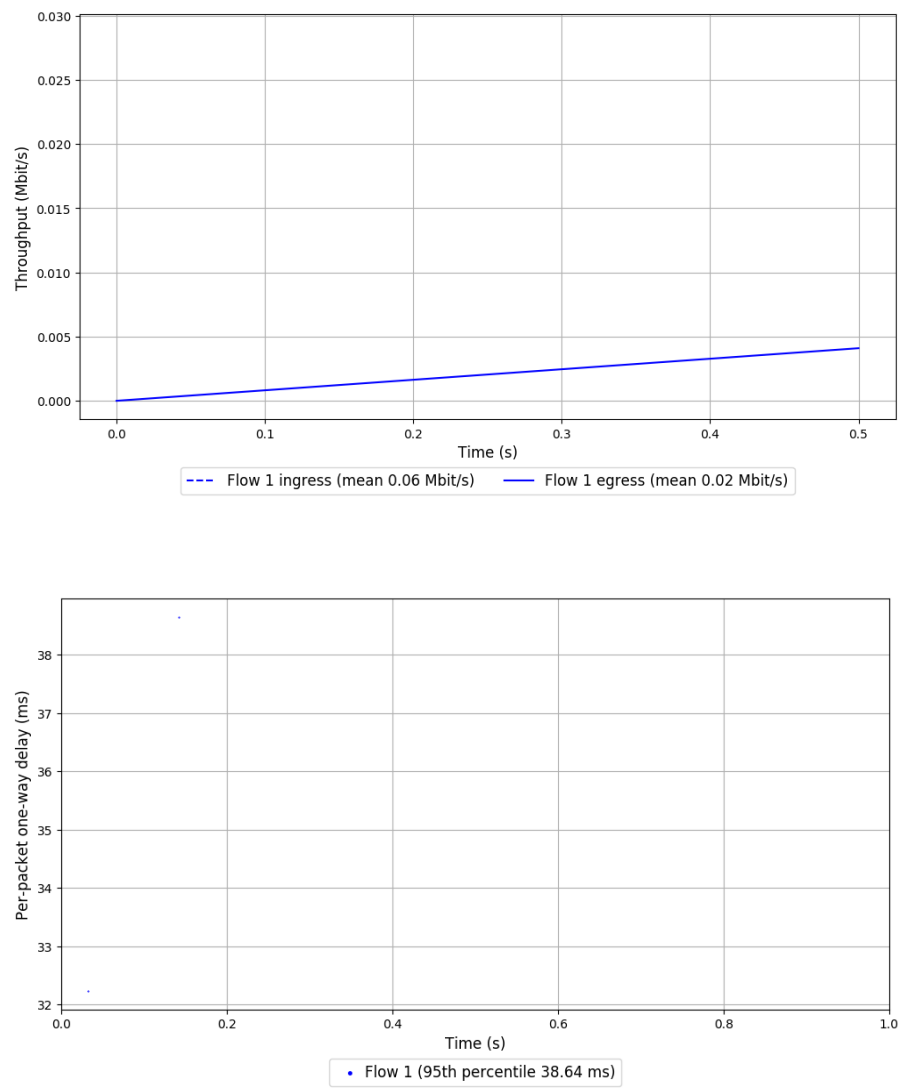
Start at: 2018-09-07 09:24:53

End at: 2018-09-07 09:25:24

Local clock offset: 1.776 ms

Remote clock offset: -2.687 ms

Run 3: Report of PCC-Expr — Data Link



Run 1: Statistics of QUIC Cubic

Start at: 2018-09-07 09:02:04

End at: 2018-09-07 09:02:34

Local clock offset: 1.905 ms

Remote clock offset: -2.628 ms

Below is generated by plot.py at 2018-09-07 09:43:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 2.03 Mbit/s

95th percentile per-packet one-way delay: 268.708 ms

Loss rate: 1.24%

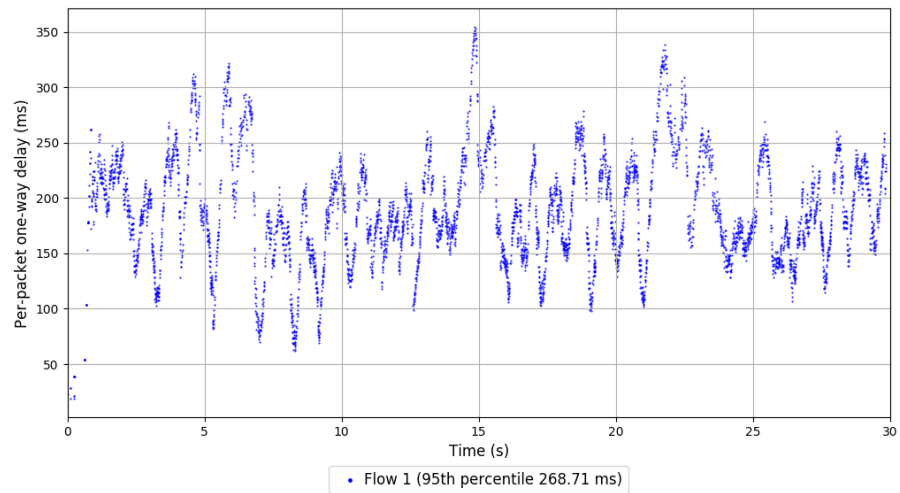
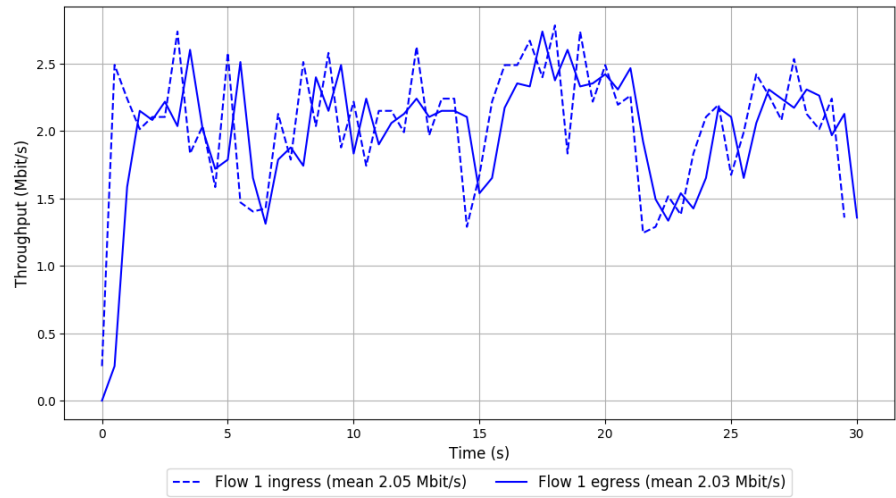
-- Flow 1:

Average throughput: 2.03 Mbit/s

95th percentile per-packet one-way delay: 268.708 ms

Loss rate: 1.24%

Run 1: Report of QUIC Cubic — Data Link



Run 2: Statistics of QUIC Cubic

Start at: 2018-09-07 09:21:38

End at: 2018-09-07 09:22:08

Local clock offset: 2.34 ms

Remote clock offset: -3.455 ms

Below is generated by plot.py at 2018-09-07 09:43:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.06 Mbit/s

95th percentile per-packet one-way delay: 536.918 ms

Loss rate: 2.04%

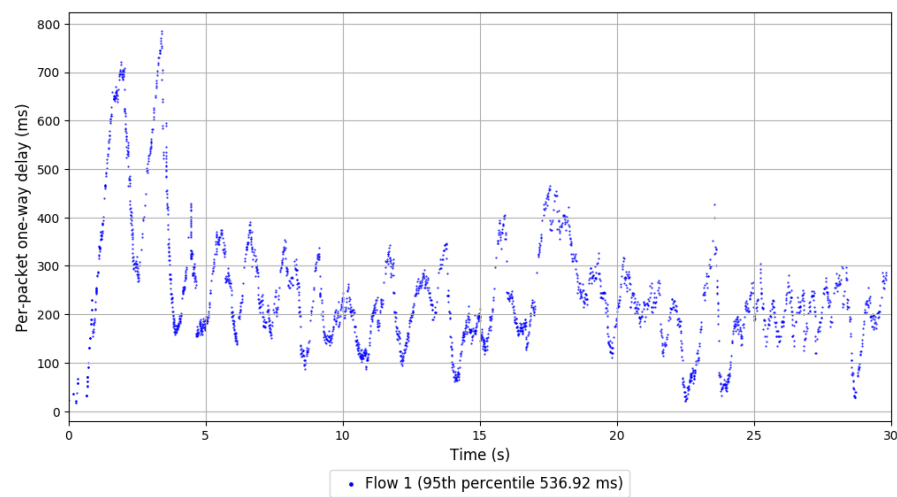
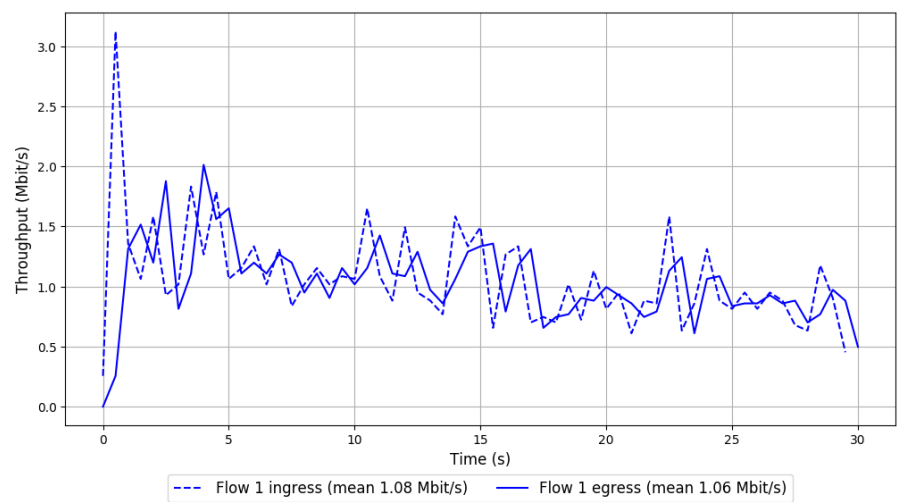
-- Flow 1:

Average throughput: 1.06 Mbit/s

95th percentile per-packet one-way delay: 536.918 ms

Loss rate: 2.04%

Run 2: Report of QUIC Cubic — Data Link



Run 3: Statistics of QUIC Cubic

Start at: 2018-09-07 09:41:12

End at: 2018-09-07 09:41:42

Local clock offset: 0.262 ms

Remote clock offset: -3.105 ms

Below is generated by plot.py at 2018-09-07 09:43:16

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.10 Mbit/s

95th percentile per-packet one-way delay: 468.624 ms

Loss rate: 2.36%

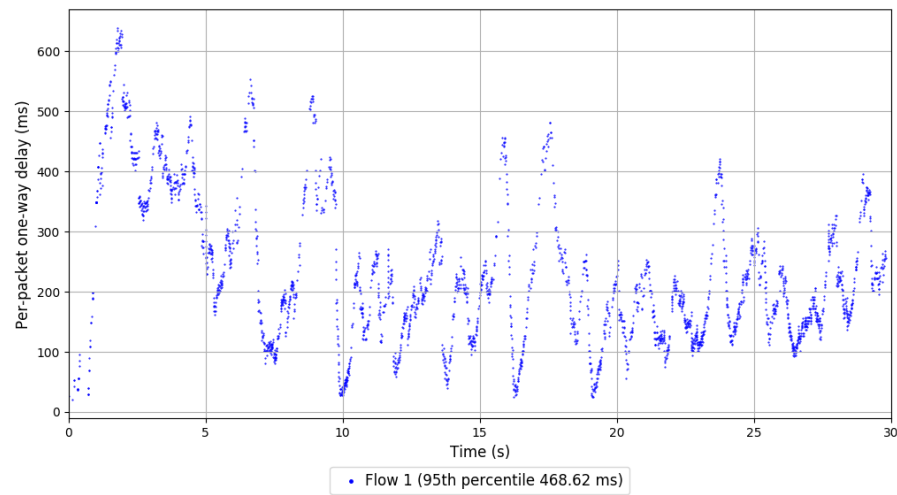
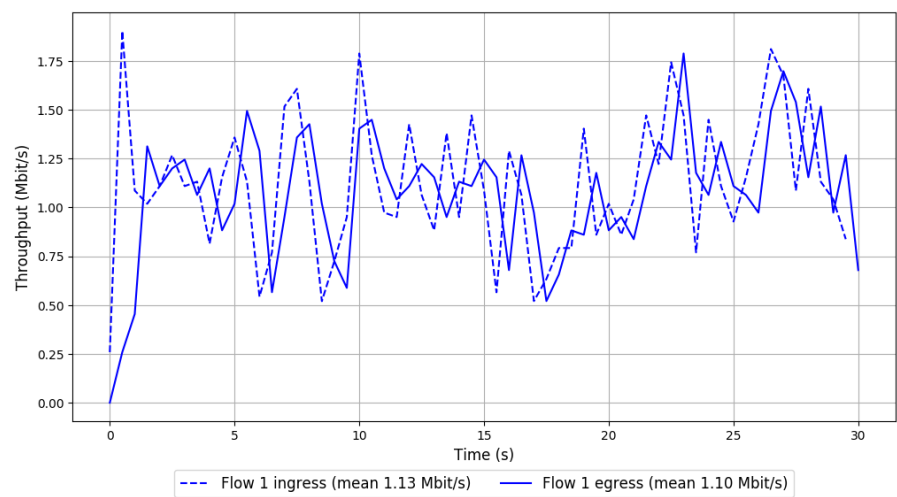
-- Flow 1:

Average throughput: 1.10 Mbit/s

95th percentile per-packet one-way delay: 468.624 ms

Loss rate: 2.36%

Run 3: Report of QUIC Cubic — Data Link

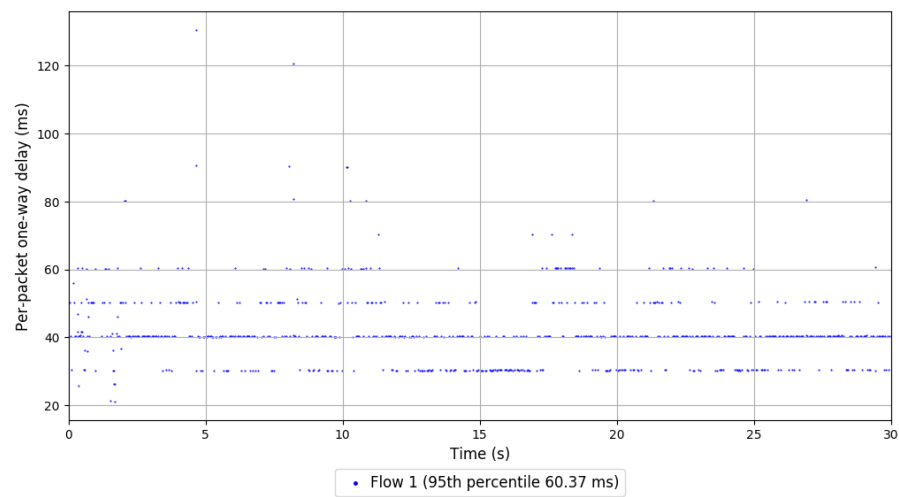
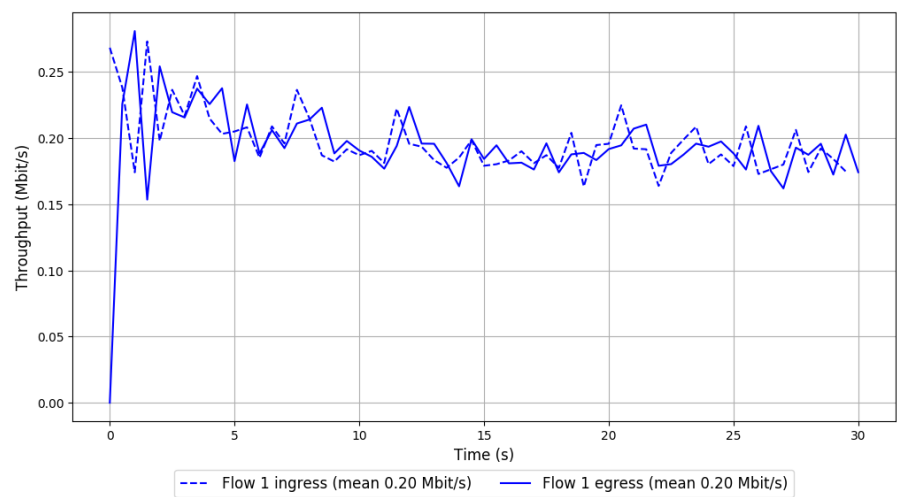


Run 1: Statistics of SCReAM

Start at: 2018-09-07 08:46:51
End at: 2018-09-07 08:47:21
Local clock offset: 3.503 ms
Remote clock offset: -2.451 ms

Below is generated by plot.py at 2018-09-07 09:43:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 60.365 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 60.365 ms
Loss rate: 0.13%

Run 1: Report of SReAM — Data Link

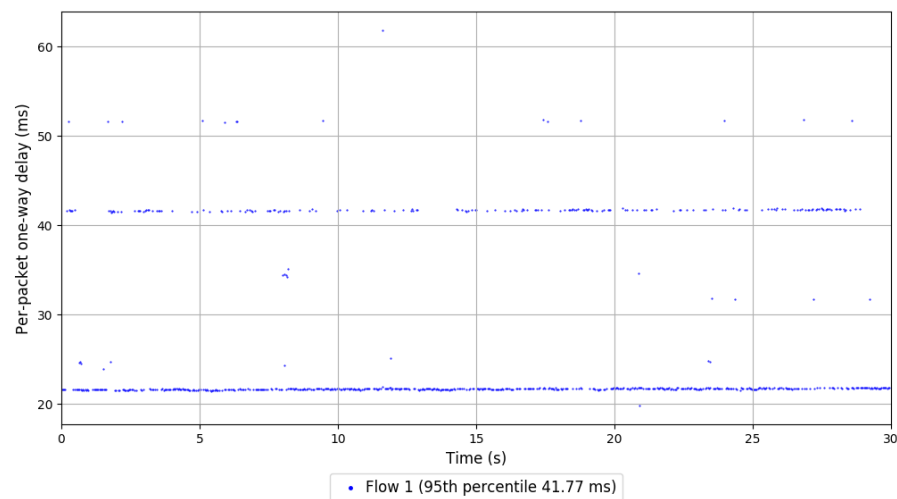
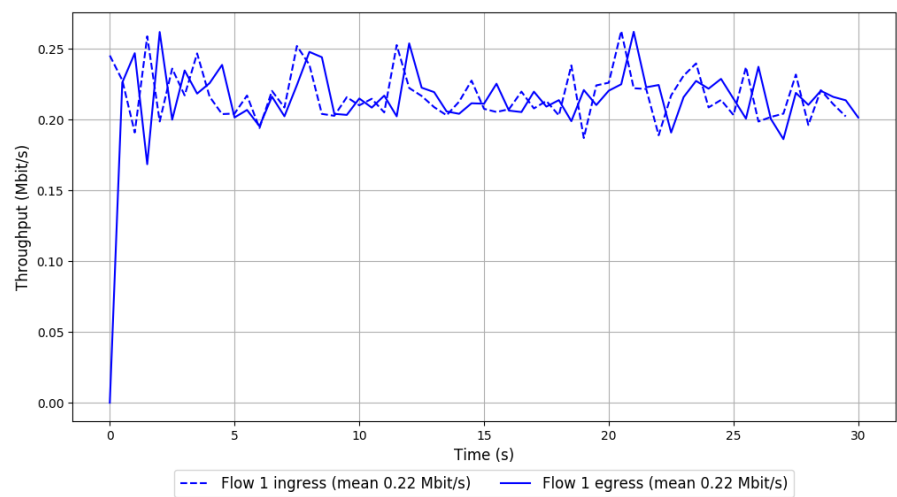


Run 2: Statistics of SCReAM

Start at: 2018-09-07 09:06:25
End at: 2018-09-07 09:06:55
Local clock offset: 1.319 ms
Remote clock offset: -3.449 ms

Below is generated by plot.py at 2018-09-07 09:43:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 41.768 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 41.768 ms
Loss rate: 0.13%

Run 2: Report of SReAM — Data Link

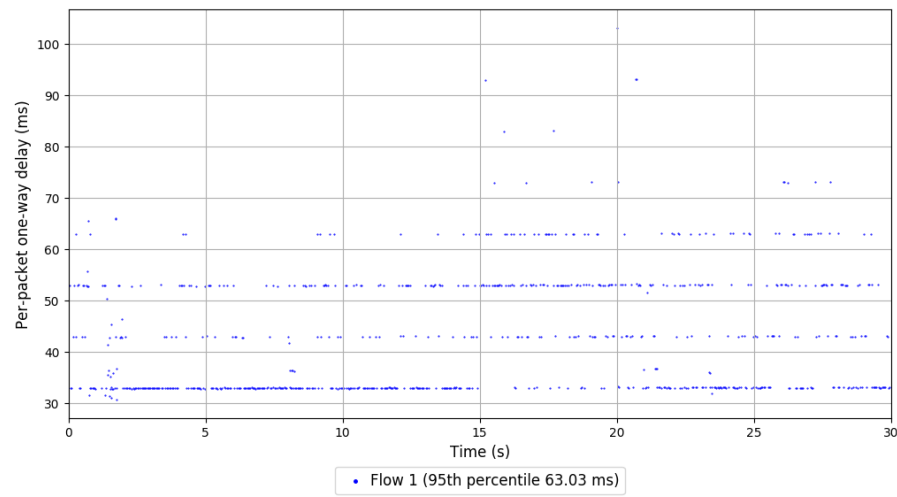
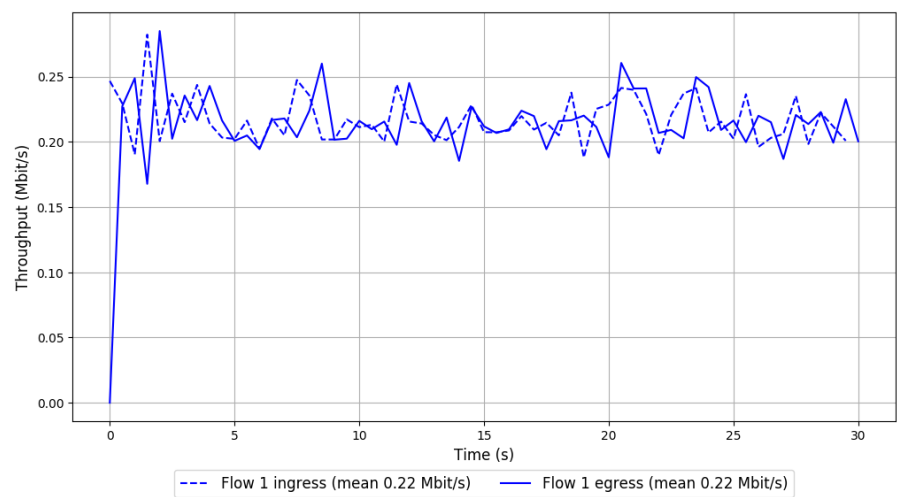


Run 3: Statistics of SCReAM

Start at: 2018-09-07 09:25:59
End at: 2018-09-07 09:26:29
Local clock offset: 0.354 ms
Remote clock offset: -2.205 ms

Below is generated by plot.py at 2018-09-07 09:43:16
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.032 ms
Loss rate: 0.13%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 63.032 ms
Loss rate: 0.13%

Run 3: Report of SReAM — Data Link



Run 1: Statistics of Sprout

Start at: 2018-09-07 08:57:43

End at: 2018-09-07 08:58:13

Local clock offset: 0.366 ms

Remote clock offset: -1.991 ms

Below is generated by plot.py at 2018-09-07 09:43:18

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 82.569 ms

Loss rate: 0.00%

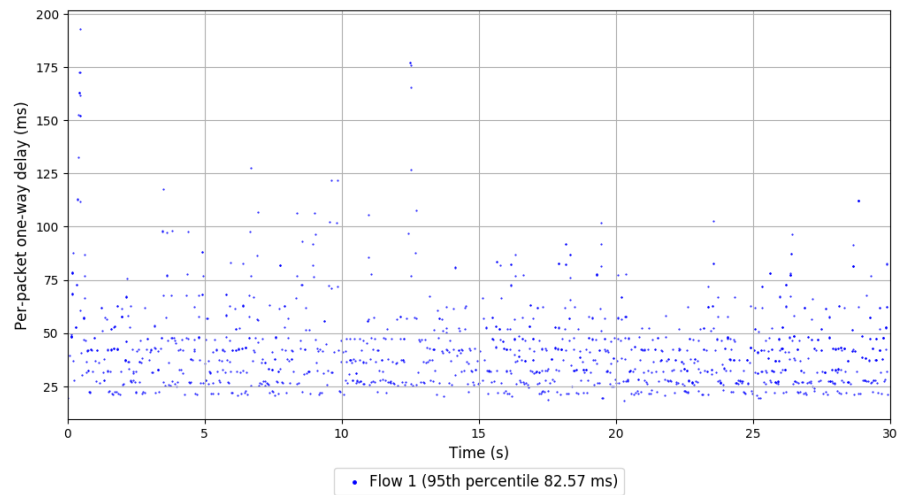
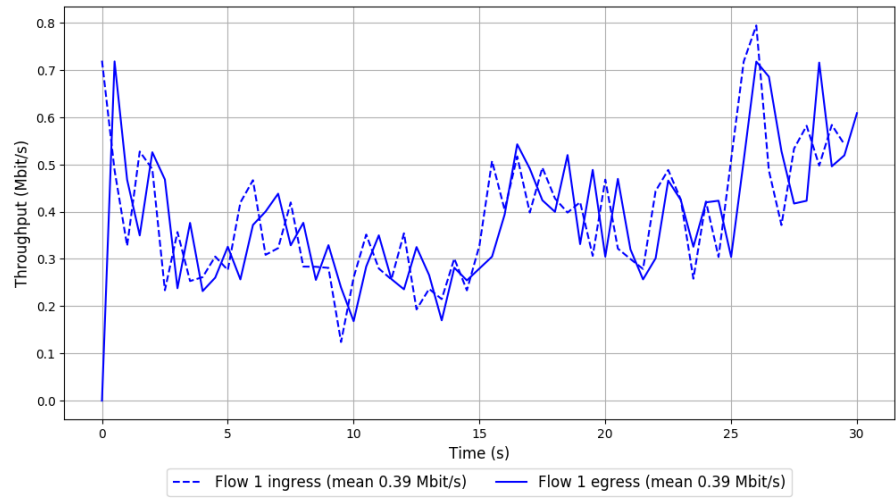
-- Flow 1:

Average throughput: 0.39 Mbit/s

95th percentile per-packet one-way delay: 82.569 ms

Loss rate: 0.00%

Run 1: Report of Sprout — Data Link

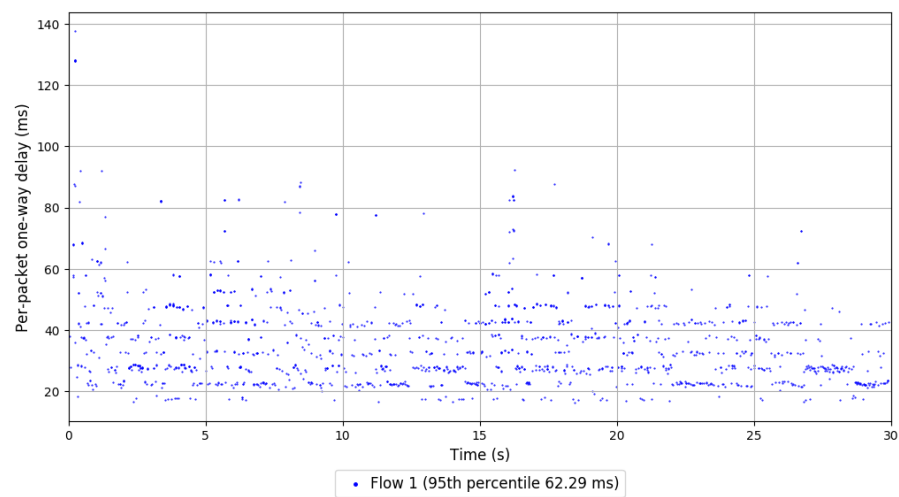
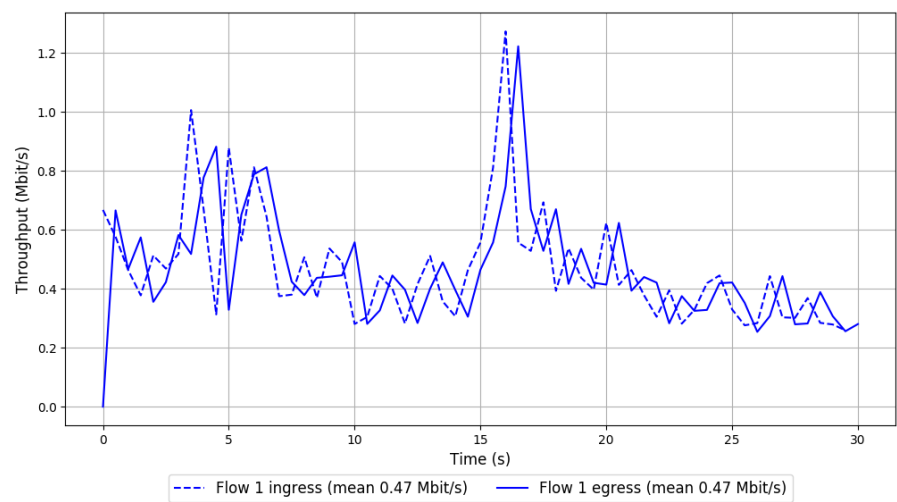


Run 2: Statistics of Sprout

Start at: 2018-09-07 09:17:17
End at: 2018-09-07 09:17:47
Local clock offset: 0.908 ms
Remote clock offset: -3.546 ms

Below is generated by plot.py at 2018-09-07 09:43:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 62.293 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 62.293 ms
Loss rate: 0.01%

Run 2: Report of Sprout — Data Link

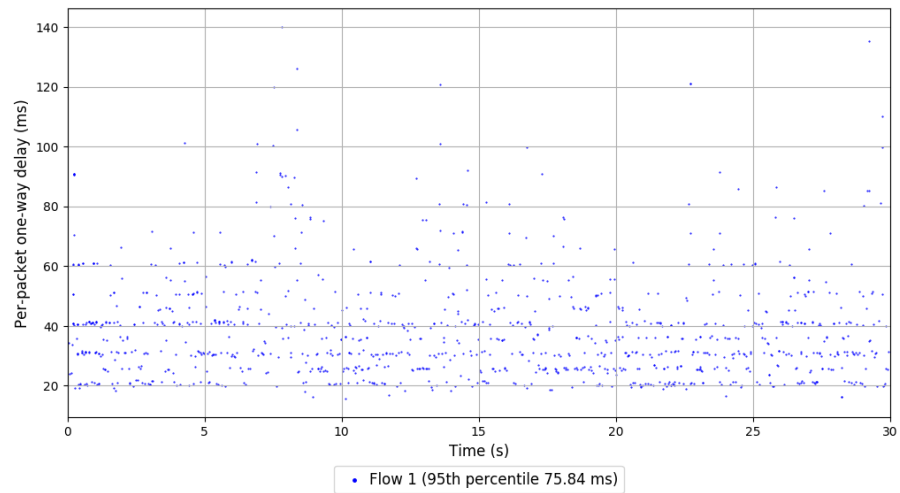
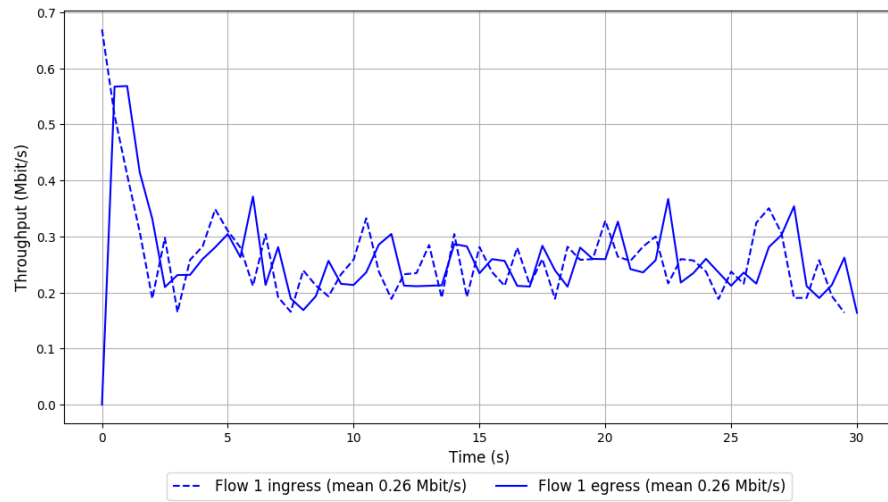


Run 3: Statistics of Sprout

Start at: 2018-09-07 09:36:52
End at: 2018-09-07 09:37:22
Local clock offset: 1.718 ms
Remote clock offset: -2.505 ms

Below is generated by plot.py at 2018-09-07 09:43:19
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 75.836 ms
Loss rate: 0.00%
-- Flow 1:
Average throughput: 0.26 Mbit/s
95th percentile per-packet one-way delay: 75.836 ms
Loss rate: 0.00%

Run 3: Report of Sprout — Data Link



Run 1: Statistics of TaoVA-100x

Start at: 2018-09-07 08:53:22

End at: 2018-09-07 08:53:52

Local clock offset: -0.9 ms

Remote clock offset: -2.478 ms

Below is generated by plot.py at 2018-09-07 09:43:19

Datalink statistics

-- Total of 1 flow:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 734.257 ms

Loss rate: 45.63%

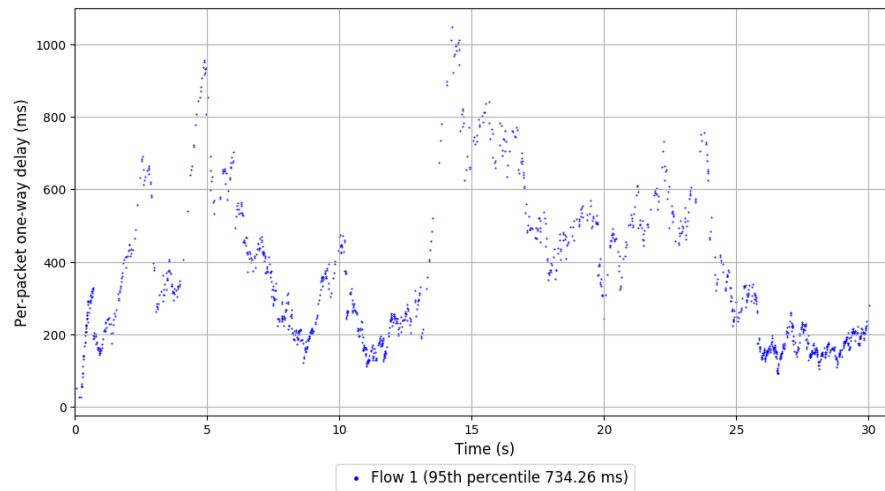
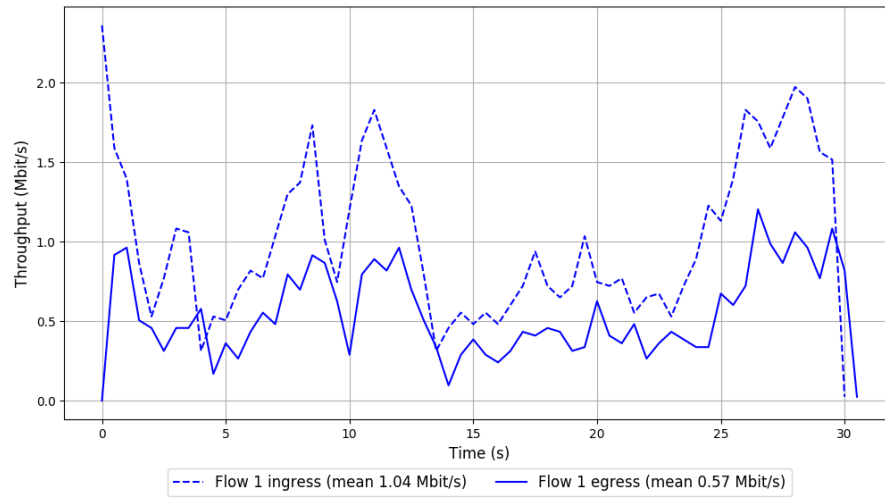
-- Flow 1:

Average throughput: 0.57 Mbit/s

95th percentile per-packet one-way delay: 734.257 ms

Loss rate: 45.63%

Run 1: Report of TaoVA-100x — Data Link



Run 2: Statistics of TaoVA-100x

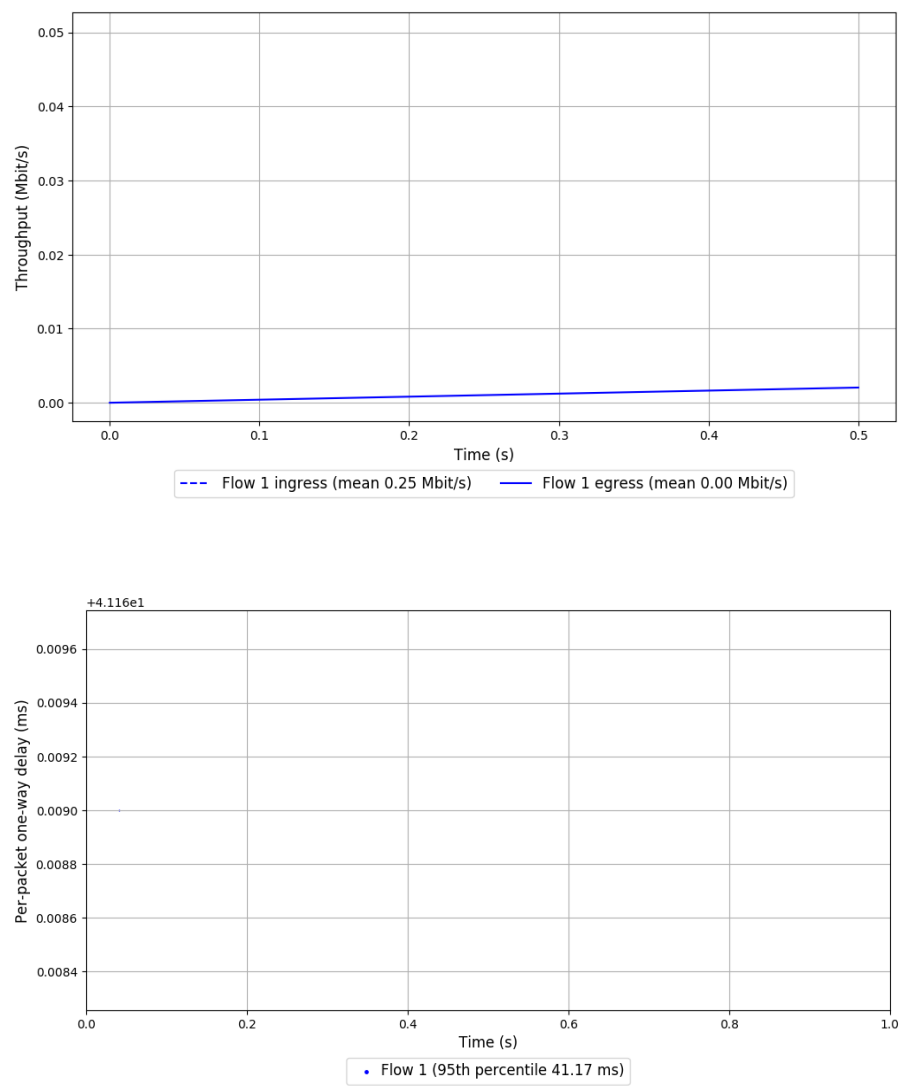
Start at: 2018-09-07 09:12:56

End at: 2018-09-07 09:13:26

Local clock offset: 0.649 ms

Remote clock offset: -2.809 ms

Run 2: Report of TaoVA-100x — Data Link



Run 3: Statistics of TaoVA-100x

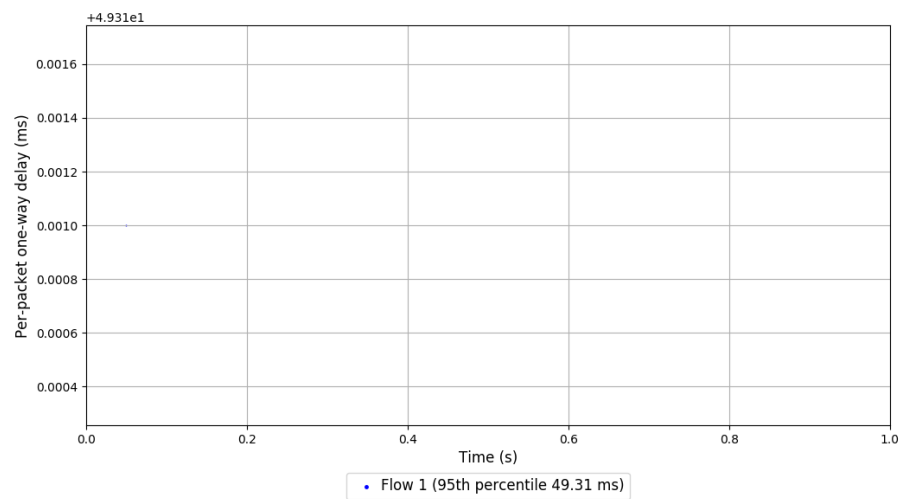
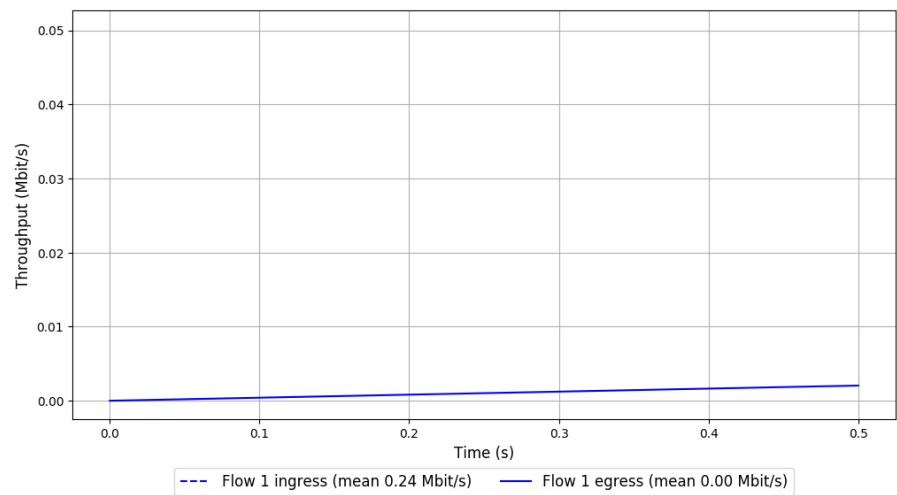
Start at: 2018-09-07 09:32:30

End at: 2018-09-07 09:33:00

Local clock offset: 0.049 ms

Remote clock offset: -1.463 ms

Run 3: Report of TaoVA-100x — Data Link

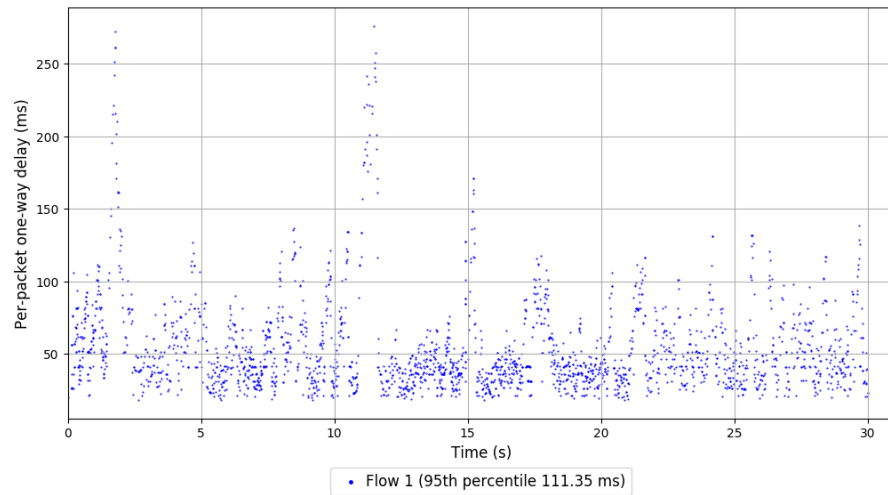
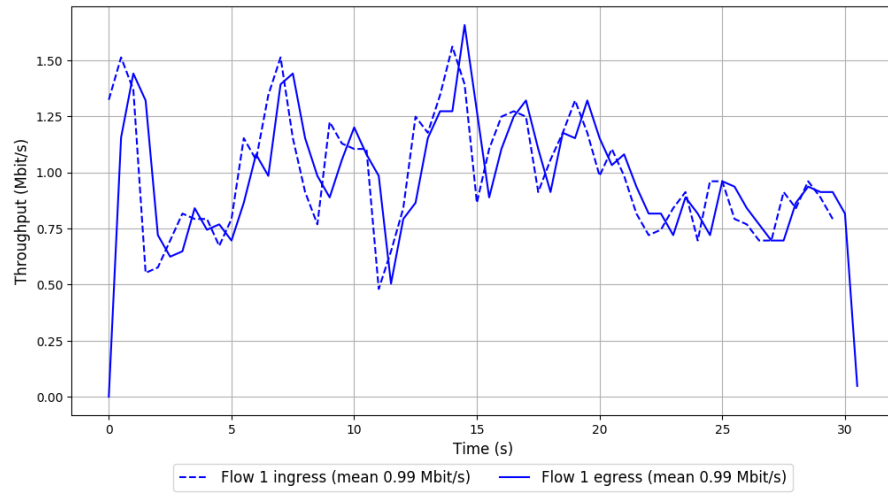


Run 1: Statistics of TCP Vegas

Start at: 2018-09-07 08:47:56
End at: 2018-09-07 08:48:26
Local clock offset: 3.98 ms
Remote clock offset: -2.488 ms

Below is generated by plot.py at 2018-09-07 09:43:20
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 111.347 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 0.99 Mbit/s
95th percentile per-packet one-way delay: 111.347 ms
Loss rate: 0.08%

Run 1: Report of TCP Vegas — Data Link

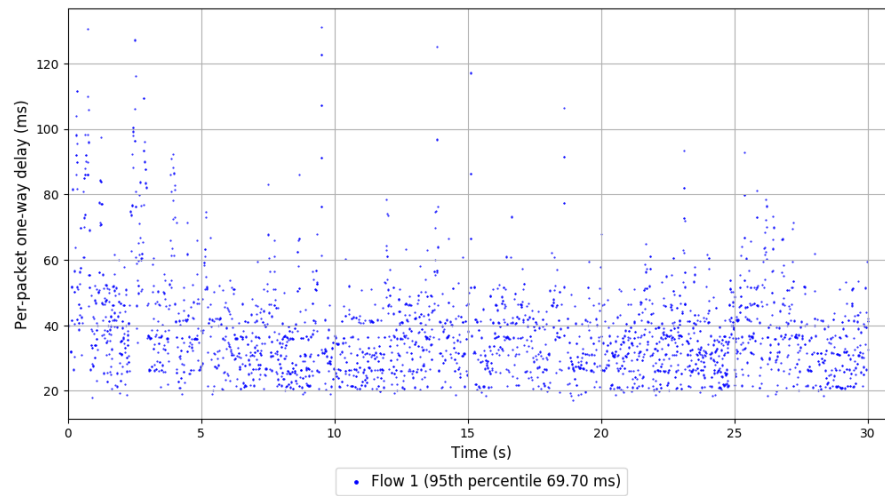
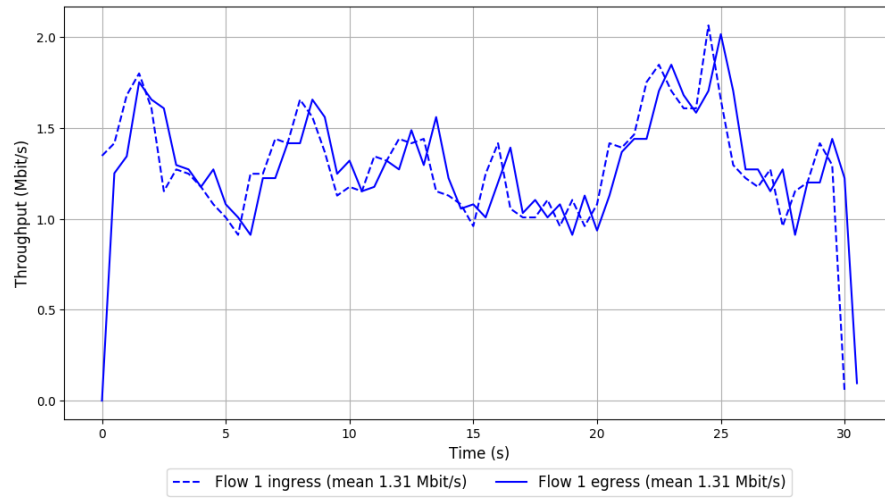


Run 2: Statistics of TCP Vegas

Start at: 2018-09-07 09:07:30
End at: 2018-09-07 09:08:00
Local clock offset: 2.447 ms
Remote clock offset: -4.064 ms

Below is generated by plot.py at 2018-09-07 09:43:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 69.704 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 1.31 Mbit/s
95th percentile per-packet one-way delay: 69.704 ms
Loss rate: 0.12%

Run 2: Report of TCP Vegas — Data Link

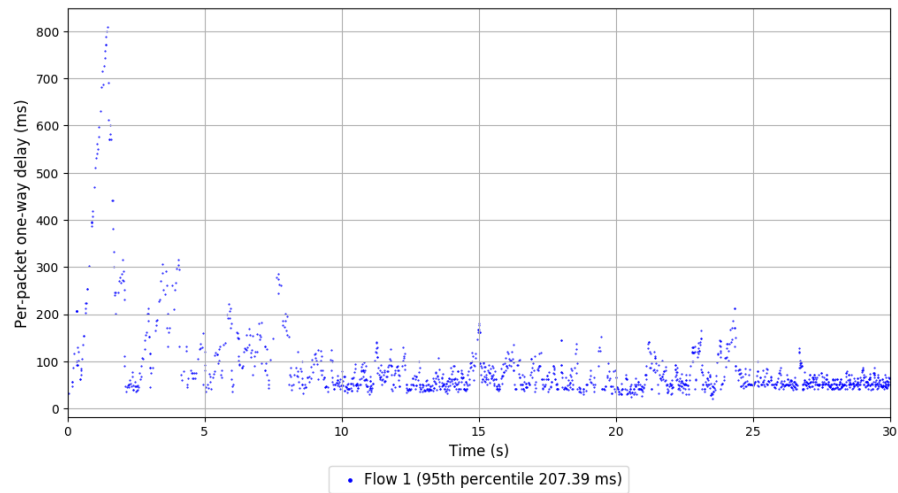
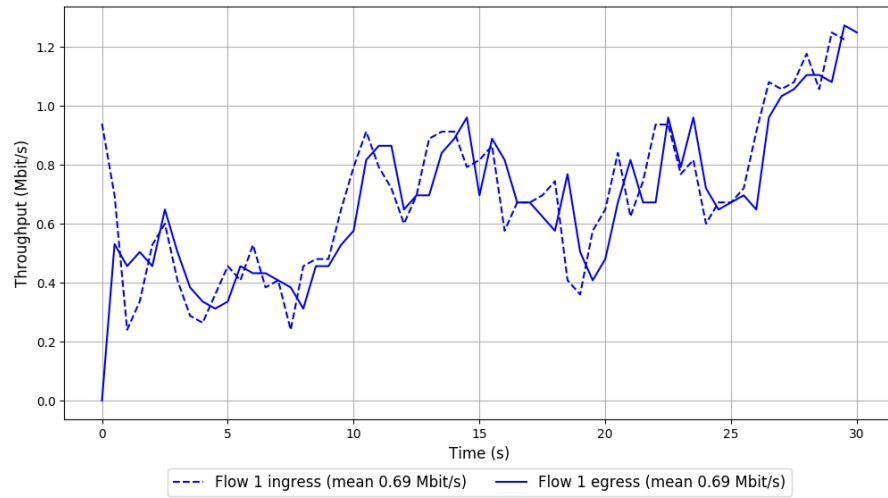


Run 3: Statistics of TCP Vegas

Start at: 2018-09-07 09:27:04
End at: 2018-09-07 09:27:34
Local clock offset: -0.671 ms
Remote clock offset: -2.377 ms

Below is generated by plot.py at 2018-09-07 09:43:21
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 207.386 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 0.69 Mbit/s
95th percentile per-packet one-way delay: 207.386 ms
Loss rate: 0.70%

Run 3: Report of TCP Vegas — Data Link

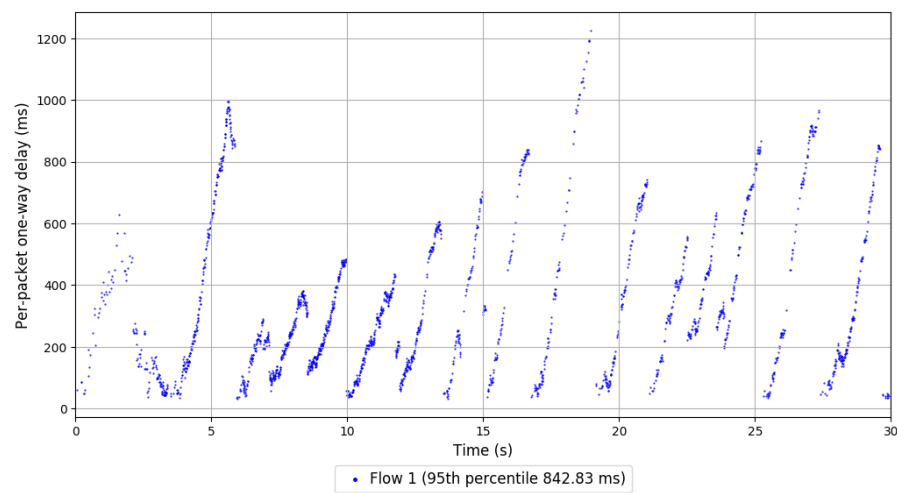
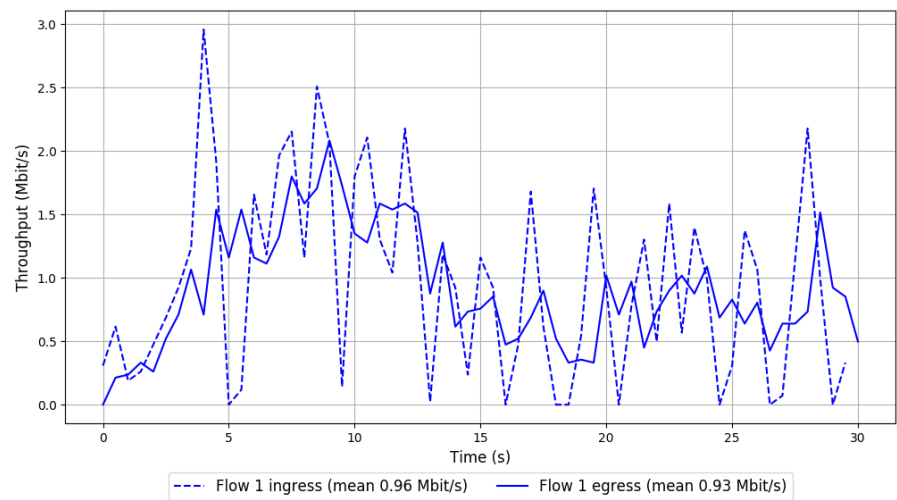


Run 1: Statistics of Verus

Start at: 2018-09-07 08:55:33
End at: 2018-09-07 08:56:03
Local clock offset: 1.599 ms
Remote clock offset: -1.145 ms

Below is generated by plot.py at 2018-09-07 09:43:22
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 842.834 ms
Loss rate: 2.40%
-- Flow 1:
Average throughput: 0.93 Mbit/s
95th percentile per-packet one-way delay: 842.834 ms
Loss rate: 2.40%

Run 1: Report of Verus — Data Link

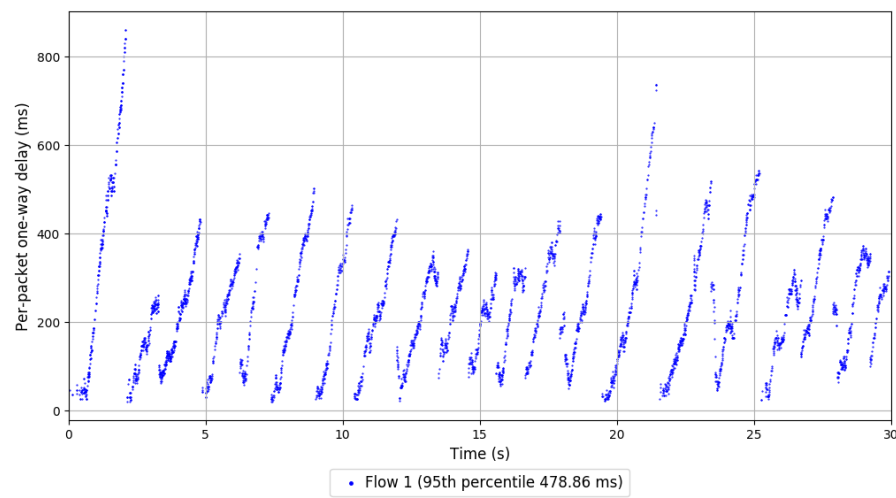
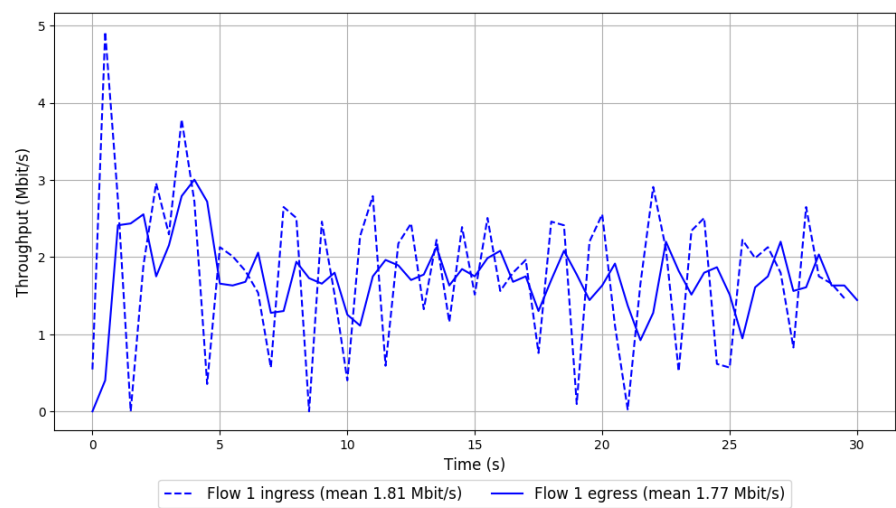


Run 2: Statistics of Verus

Start at: 2018-09-07 09:15:06
End at: 2018-09-07 09:15:36
Local clock offset: 0.578 ms
Remote clock offset: -3.255 ms

Below is generated by plot.py at 2018-09-07 09:43:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 478.858 ms
Loss rate: 1.89%
-- Flow 1:
Average throughput: 1.77 Mbit/s
95th percentile per-packet one-way delay: 478.858 ms
Loss rate: 1.89%

Run 2: Report of Verus — Data Link

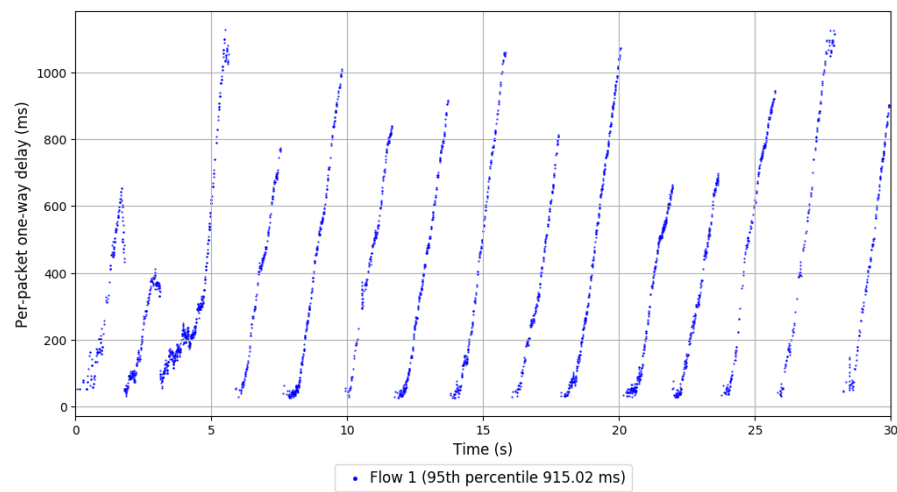
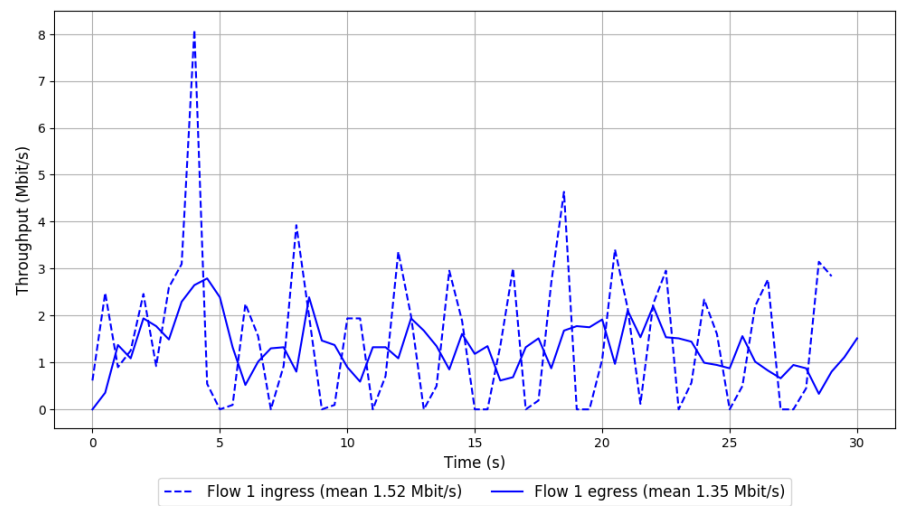


Run 3: Statistics of Verus

Start at: 2018-09-07 09:34:41
End at: 2018-09-07 09:35:11
Local clock offset: -1.053 ms
Remote clock offset: -2.305 ms

Below is generated by plot.py at 2018-09-07 09:43:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 915.020 ms
Loss rate: 9.59%
-- Flow 1:
Average throughput: 1.35 Mbit/s
95th percentile per-packet one-way delay: 915.020 ms
Loss rate: 9.59%

Run 3: Report of Verus — Data Link

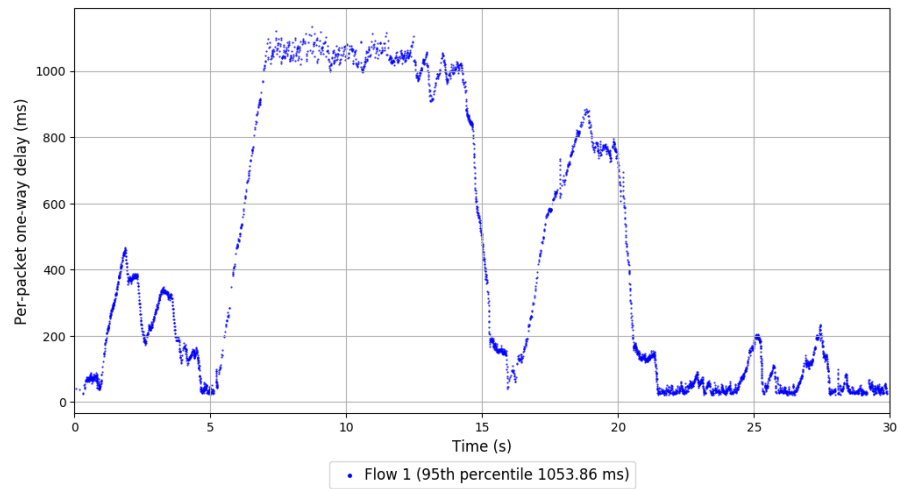
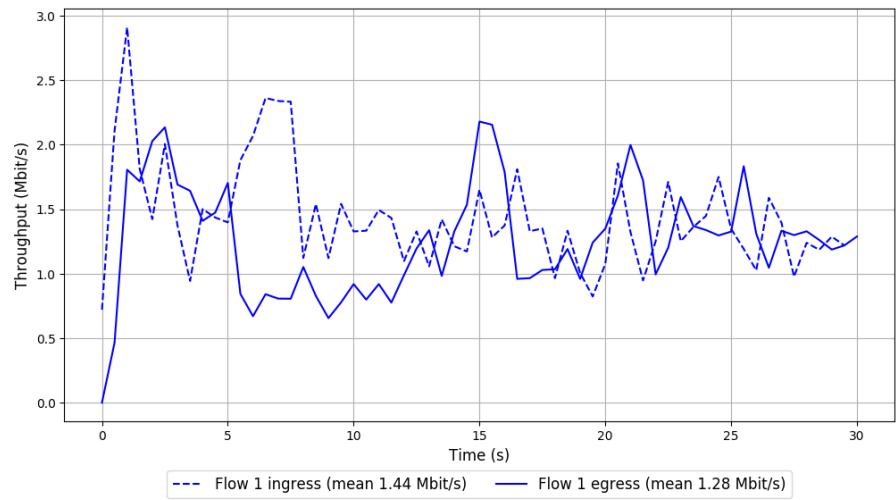


Run 1: Statistics of PCC-Vivace

Start at: 2018-09-07 08:49:01
End at: 2018-09-07 08:49:31
Local clock offset: 3.371 ms
Remote clock offset: -2.299 ms

Below is generated by plot.py at 2018-09-07 09:43:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 1053.863 ms
Loss rate: 11.18%
-- Flow 1:
Average throughput: 1.28 Mbit/s
95th percentile per-packet one-way delay: 1053.863 ms
Loss rate: 11.18%

Run 1: Report of PCC-Vivace — Data Link



Run 2: Statistics of PCC-Vivace

Start at: 2018-09-07 09:08:35

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

Local clock offset: 0.806 ms

Remote clock offset: -4.022 ms

Below is generated by plot.py at 2018-09-07 09:43:25

Datalink statistics

-- Total of 1 flow:

Average throughput: 1.50 Mbit/s

95th percentile per-packet one-way delay: 275.990 ms

Loss rate: 0.16%

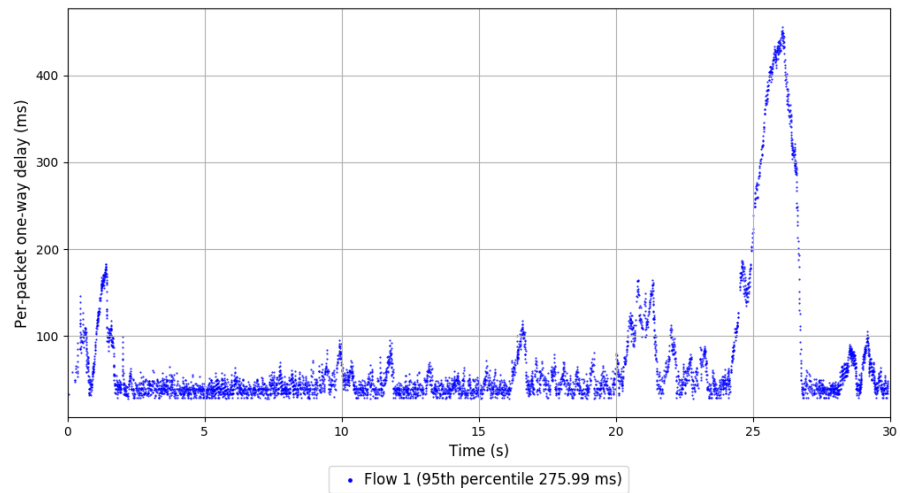
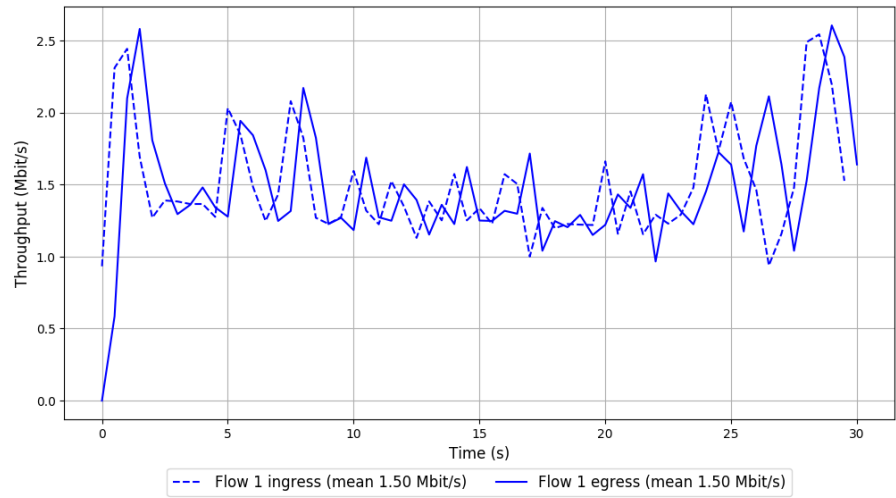
-- Flow 1:

Average throughput: 1.50 Mbit/s

95th percentile per-packet one-way delay: 275.990 ms

Loss rate: 0.16%

Run 2: Report of PCC-Vivace — Data Link

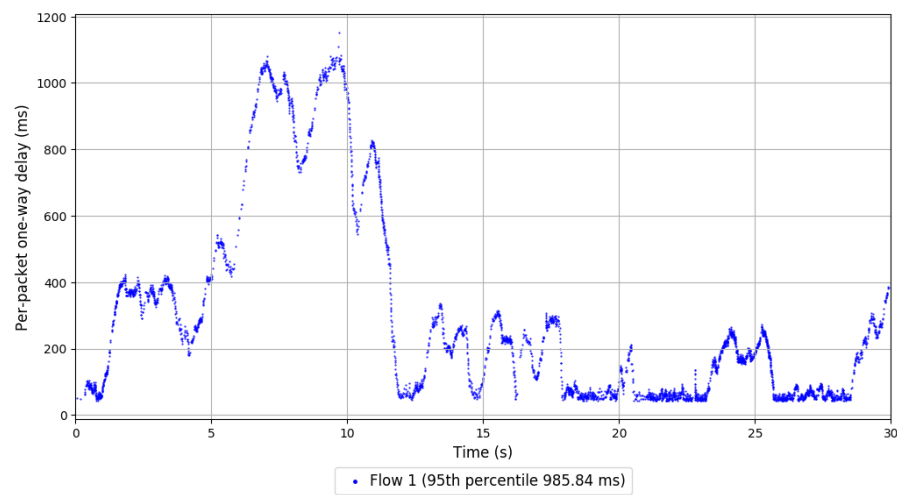
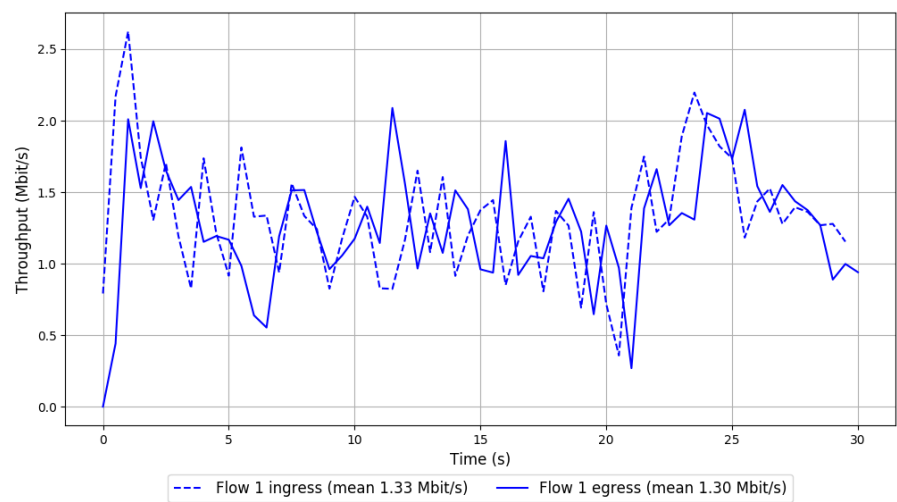


Run 3: Statistics of PCC-Vivace

Start at: 2018-09-07 09:28:09
End at: 2018-09-07 09:28:39
Local clock offset: -1.652 ms
Remote clock offset: -2.678 ms

Below is generated by plot.py at 2018-09-07 09:43:25
Datalink statistics
-- Total of 1 flow:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 985.844 ms
Loss rate: 2.77%
-- Flow 1:
Average throughput: 1.30 Mbit/s
95th percentile per-packet one-way delay: 985.844 ms
Loss rate: 2.77%

Run 3: Report of PCC-Vivace — Data Link

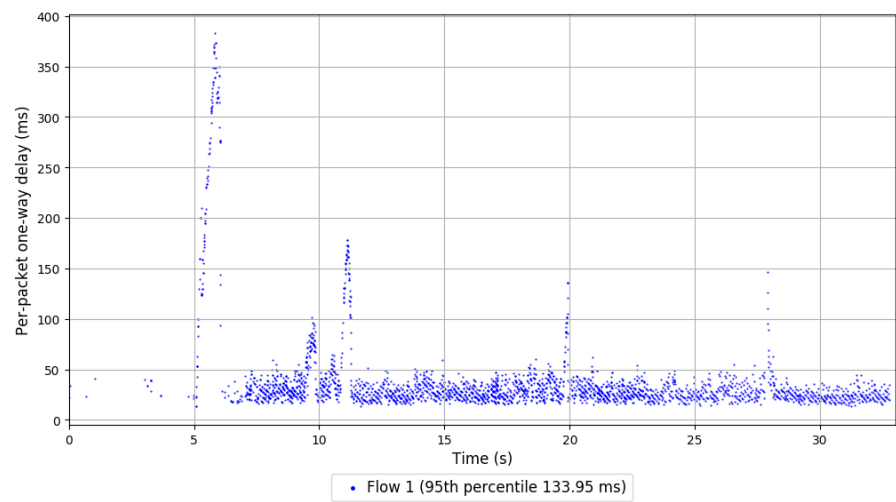
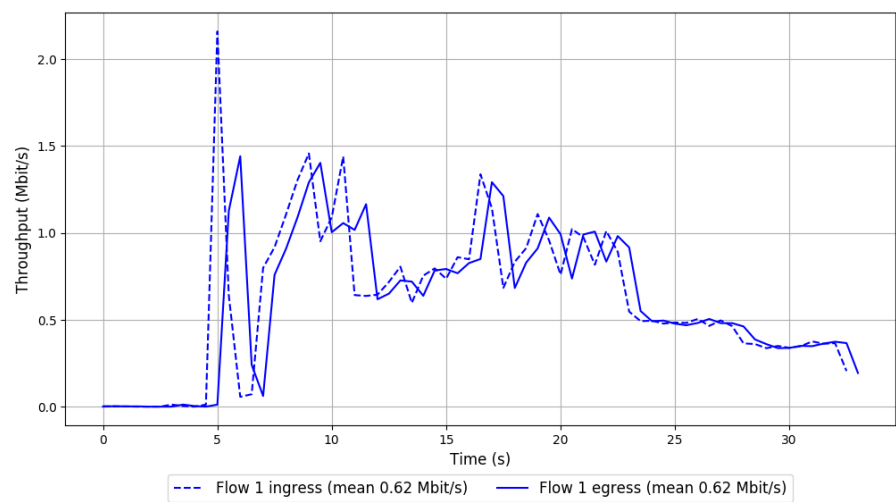


Run 1: Statistics of WebRTC media

Start at: 2018-09-07 09:00:59
End at: 2018-09-07 09:01:29
Local clock offset: 4.146 ms
Remote clock offset: -2.852 ms

Below is generated by plot.py at 2018-09-07 09:43:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 133.954 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 0.62 Mbit/s
95th percentile per-packet one-way delay: 133.954 ms
Loss rate: 0.17%

Run 1: Report of WebRTC media — Data Link

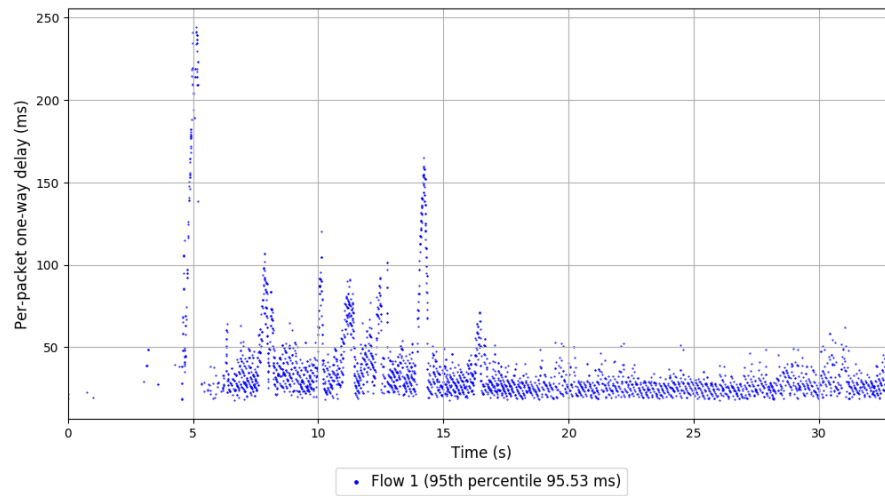
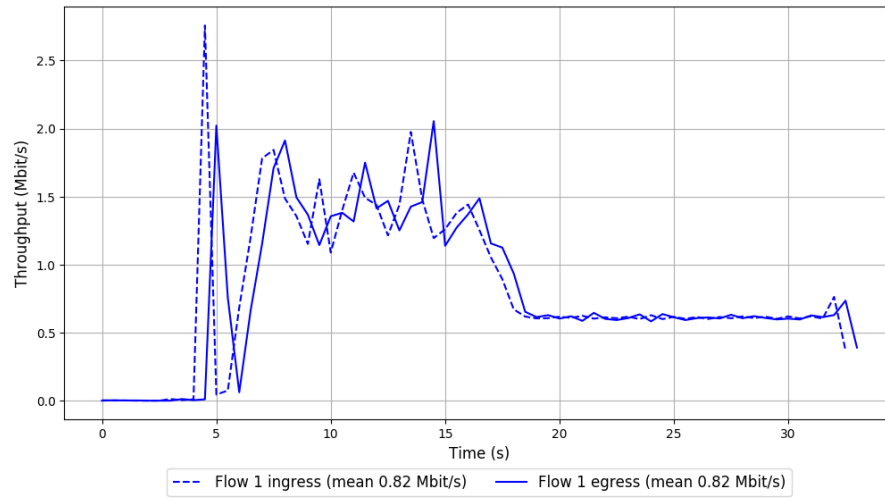


Run 2: Statistics of WebRTC media

Start at: 2018-09-07 09:20:33
End at: 2018-09-07 09:21:03
Local clock offset: 0.894 ms
Remote clock offset: -2.899 ms

Below is generated by plot.py at 2018-09-07 09:43:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 95.531 ms
Loss rate: 0.09%
-- Flow 1:
Average throughput: 0.82 Mbit/s
95th percentile per-packet one-way delay: 95.531 ms
Loss rate: 0.09%

Run 2: Report of WebRTC media — Data Link



Run 3: Statistics of WebRTC media

Start at: 2018-09-07 09:40:07
End at: 2018-09-07 09:40:37
Local clock offset: -1.026 ms
Remote clock offset: -2.408 ms

Below is generated by plot.py at 2018-09-07 09:43:26
Datalink statistics
-- Total of 1 flow:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 175.292 ms
Loss rate: 0.22%
-- Flow 1:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 175.292 ms
Loss rate: 0.22%

Run 3: Report of WebRTC media — Data Link

