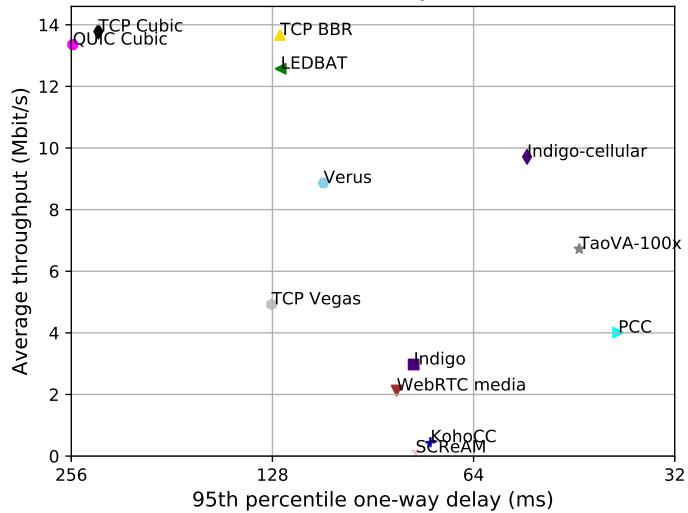


## Pantheon Report

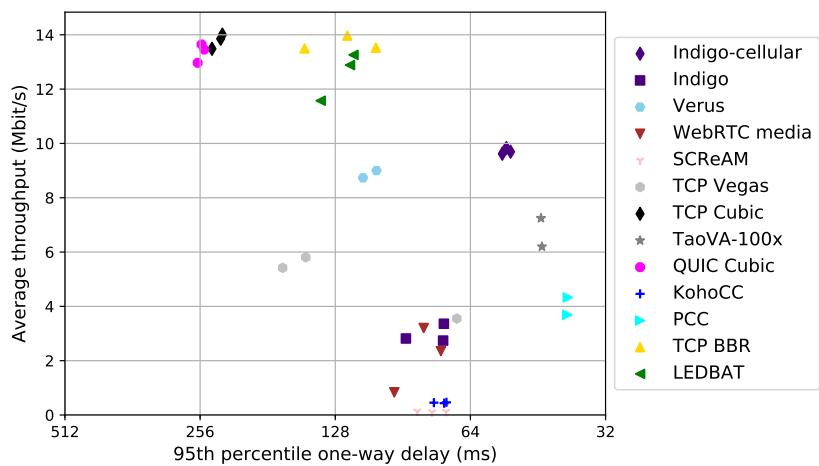
Generated at 2017-09-22 11:21:57 (UTC).  
Data path: Stanford ppp0 (*remote*) → AWS California 1 Ethernet (*local*).  
Repeated the test of 14 congestion control schemes 3 times.  
Each test lasted for 30 seconds running 1 flow.  
Increased UDP receive buffer to 16 MB (default) and 32 MB (max).  
Tested BBR with qdisc of Fair Queuing (**fq**), and other schemes with the default Linux qdisc (**pfifo\_fast**).  
NTP offsets were measured against `time.stanford.edu` and have been applied to correct the timestamps in logs.

Git summary:  
branch: `indigos` @ `46c7c812d4acb71eea4f5fb0b03b3657cea3062f`  
`third_party/calibrated_koho` @ `3cb73c0d1c0322cdfae446ea37a522e53227db50`  
M `datagrump/sender.cc`  
`third_party/genericCC` @ `f7ca42f251bf49b432bb71de6d13fa903515c366`  
`third_party/indigo` @ `b19f3730105f9aa95452552af924e3719b03cc55`  
`third_party/indigo-cellular` @ `aee99e8eb842cb053f8c9a80e28cd256a930bbc2`  
`third_party/indigo-no-calib` @ `7224f2202e8a044d8306fa0b983ad84360c53d89`  
`third_party/indigo-no-cwnd` @ `3e58442c04028a11d7b02456e137604633ba2d6c`  
`third_party/indigo-no-delivery-rate` @ `57caa40858b964906edff4876d5a7e5bfff666c5`  
`third_party/indigo-no-queuing-delay` @ `03455460fd1a8ffbdad86fabb936fdca204b80db`  
`third_party/indigo-no-send-rate` @ `b39dfa6b2c5f19cb7cd89626cb4f5bb81f9fecda`  
`third_party/koho_cc` @ `f0f2e693303aee82ea808e6928eac4f1083a6681`  
M `datagrump/sender.cc`  
`third_party/libutp` @ `b3465b942e2826f2b179eaab4a906ce6bb7cf3cf`  
`third_party/pantheon-tunnel` @ `baf443516dea3eeddeccaf9b916cc313273ca4f4`  
`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/proto-quic` @ `77961f1a82733a86b42f1bc8143ebc978f3cff42`  
`third_party/scream` @ `c3370fd7bd17265a79aeb34e4016ad23f5965885`  
`third_party/sourdough` @ `f1a14bffe749737437f61b1eaeb30b267cde681`  
`third_party/sprout` @ `6f2efe6e088d91066a9f023df375eee2665089ce`  
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/webrtc` @ `a488197ddd041ace68a42849b2540ad834825f42`

test from Stanford ppp0 to AWS California 1 Ethernet, 3 runs of 30s each per scheme  
(mean of all runs by scheme)



test from Stanford ppp0 to AWS California 1 Ethernet, 3 runs of 30s each per scheme



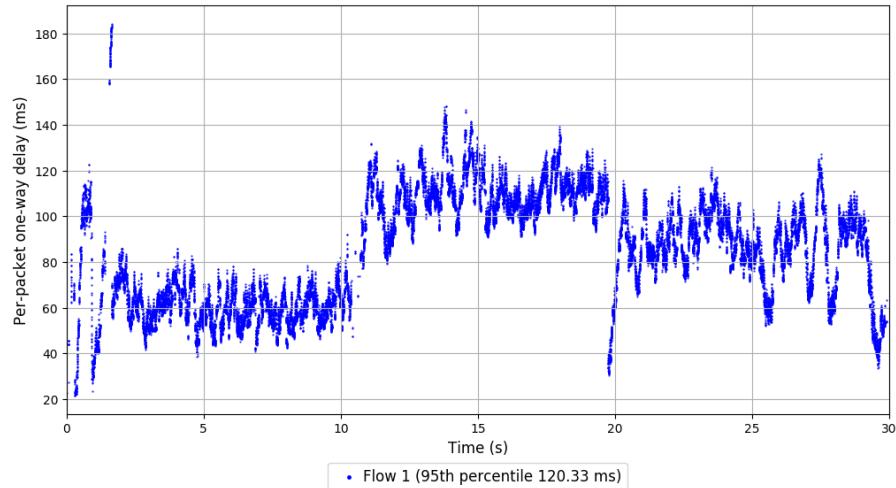
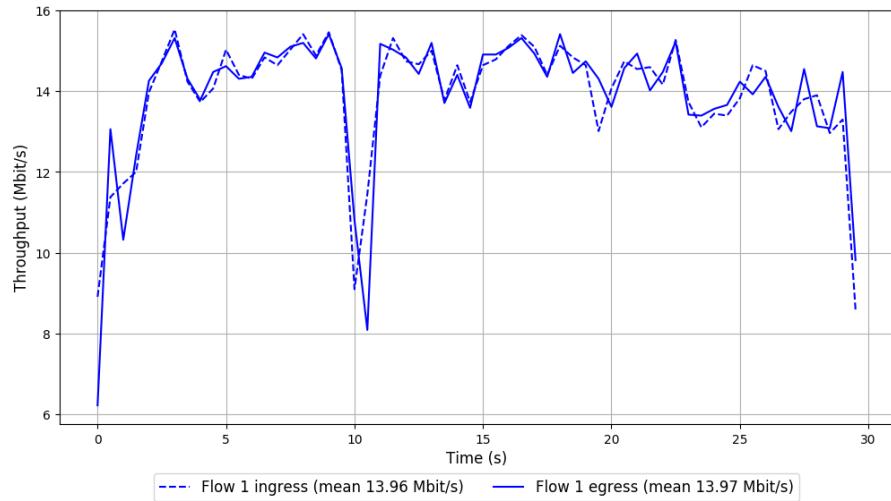
scheme	# runs	mean avg tput (Mbit/s) flow 1	mean 95th-%ile delay (ms) flow 1	mean loss rate (%) flow 1
TCP BBR	3	13.67	124.69	0.32
TCP Cubic	3	13.78	233.22	0.89
LEDBAT	3	12.57	124.42	0.52
PCC	2	4.01	38.88	0.14
QUIC Cubic	3	13.36	254.66	1.26
SCReAM	3	0.12	78.15	0.44
WebRTC media	3	2.13	83.44	0.56
Sprout	0	N/A	N/A	N/A
TaoVA-100x	2	6.72	44.46	0.73
TCP Vegas	3	4.92	128.39	0.04
Verus	2	8.87	107.33	31.25
Indigo	3	2.97	78.68	0.19
Indigo-cellular	3	9.71	53.22	0.19
KohoCC	3	0.45	74.26	0.68

Run 1: Statistics of TCP BBR

```
Start at: 2017-09-22 09:50:27
End at: 2017-09-22 09:50:57
Local clock offset: -0.904 ms
Remote clock offset: -2.115 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.97 Mbit/s
95th percentile per-packet one-way delay: 120.333 ms
Loss rate: 0.01%
-- Flow 1:
Average throughput: 13.97 Mbit/s
95th percentile per-packet one-way delay: 120.333 ms
Loss rate: 0.01%
```

## Run 1: Report of TCP BBR — Data Link

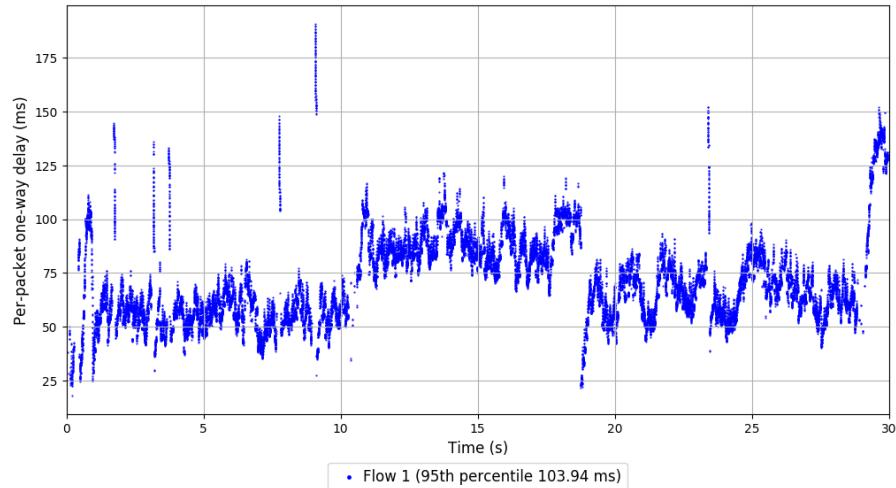
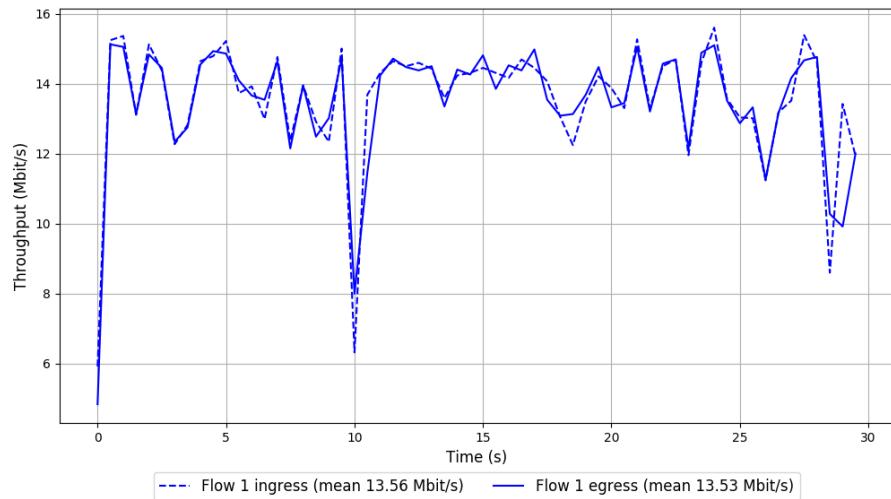


Run 2: Statistics of TCP BBR

```
Start at: 2017-09-22 10:06:56
End at: 2017-09-22 10:07:26
Local clock offset: -0.683 ms
Remote clock offset: -2.398 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.53 Mbit/s
95th percentile per-packet one-way delay: 103.937 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 13.53 Mbit/s
95th percentile per-packet one-way delay: 103.937 ms
Loss rate: 0.43%
```

## Run 2: Report of TCP BBR — Data Link

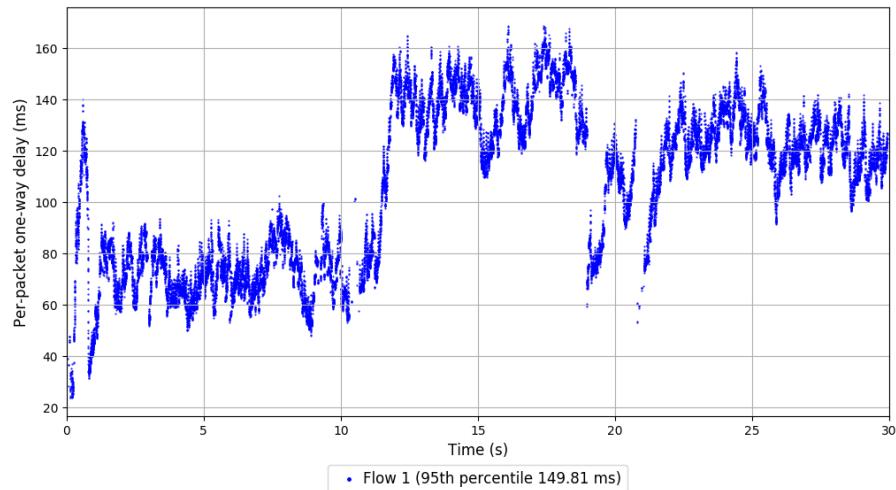
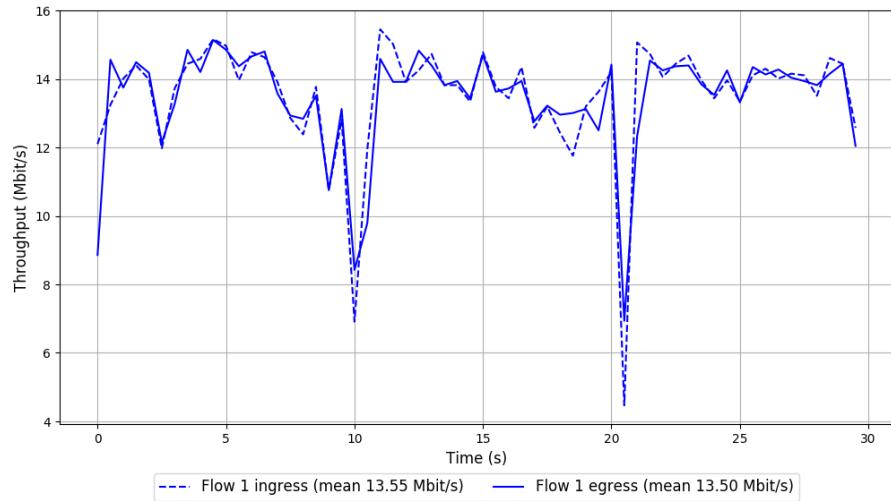


Run 3: Statistics of TCP BBR

```
Start at: 2017-09-22 10:23:25
End at: 2017-09-22 10:23:55
Local clock offset: -0.456 ms
Remote clock offset: -1.963 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.50 Mbit/s
95th percentile per-packet one-way delay: 149.808 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 13.50 Mbit/s
95th percentile per-packet one-way delay: 149.808 ms
Loss rate: 0.51%
```

### Run 3: Report of TCP BBR — Data Link

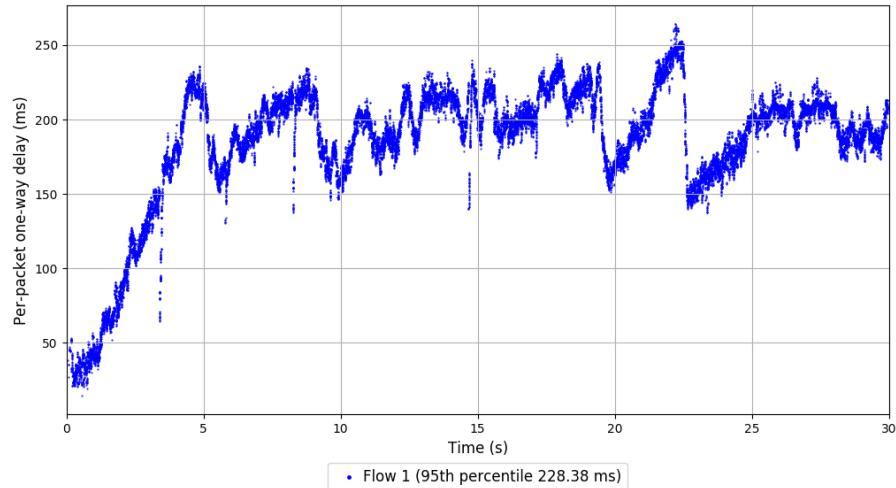
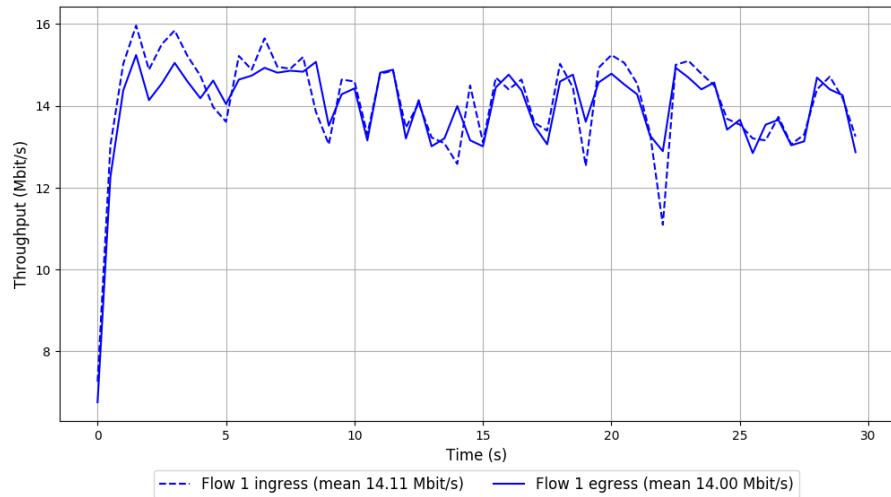


```
Run 1: Statistics of TCP Cubic
```

```
Start at: 2017-09-22 09:52:49
End at: 2017-09-22 09:53:19
Local clock offset: -0.9 ms
Remote clock offset: -2.187 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 14.00 Mbit/s
95th percentile per-packet one-way delay: 228.379 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 14.00 Mbit/s
95th percentile per-packet one-way delay: 228.379 ms
Loss rate: 0.88%
```

## Run 1: Report of TCP Cubic — Data Link

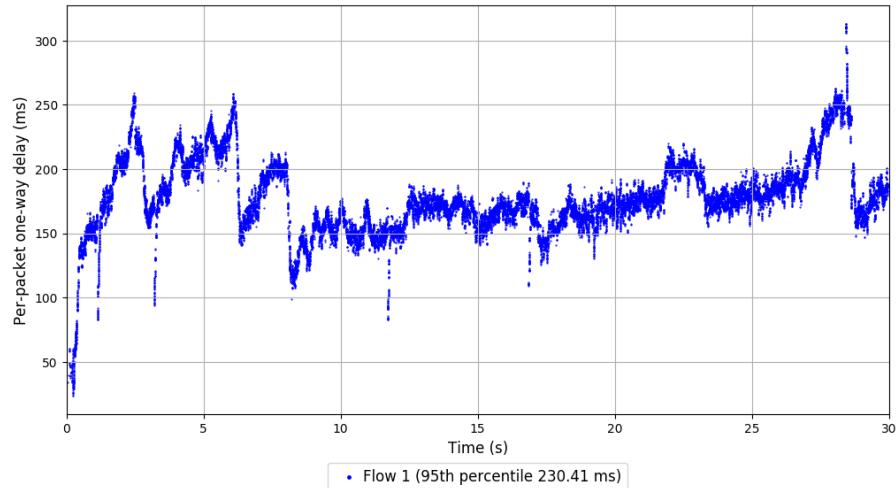
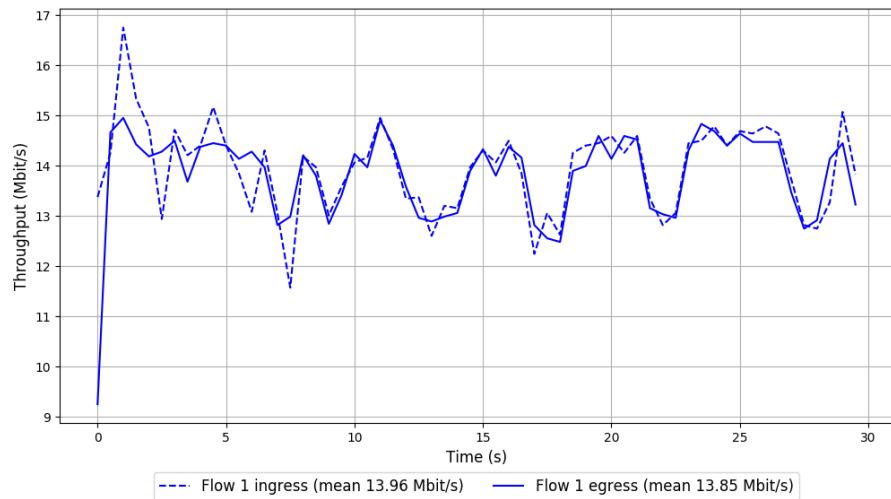


Run 2: Statistics of TCP Cubic

```
Start at: 2017-09-22 10:09:18
End at: 2017-09-22 10:09:48
Local clock offset: -0.648 ms
Remote clock offset: -2.296 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.85 Mbit/s
95th percentile per-packet one-way delay: 230.411 ms
Loss rate: 0.92%
-- Flow 1:
Average throughput: 13.85 Mbit/s
95th percentile per-packet one-way delay: 230.411 ms
Loss rate: 0.92%
```

## Run 2: Report of TCP Cubic — Data Link

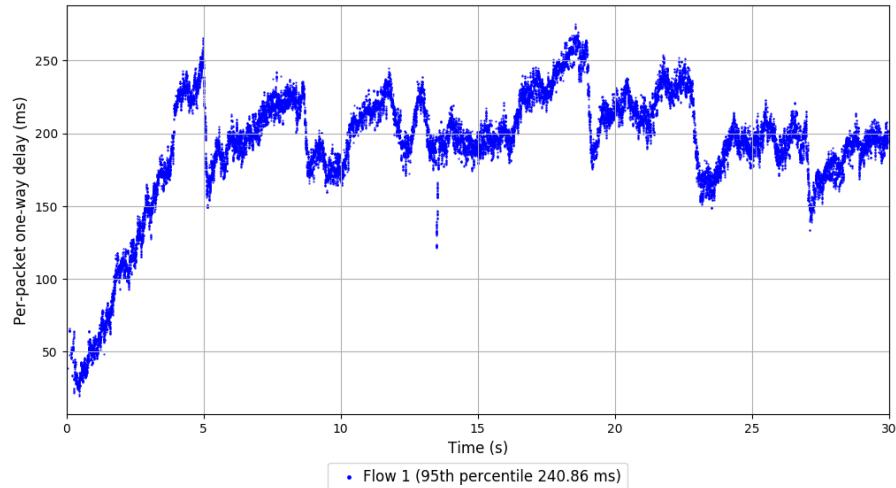
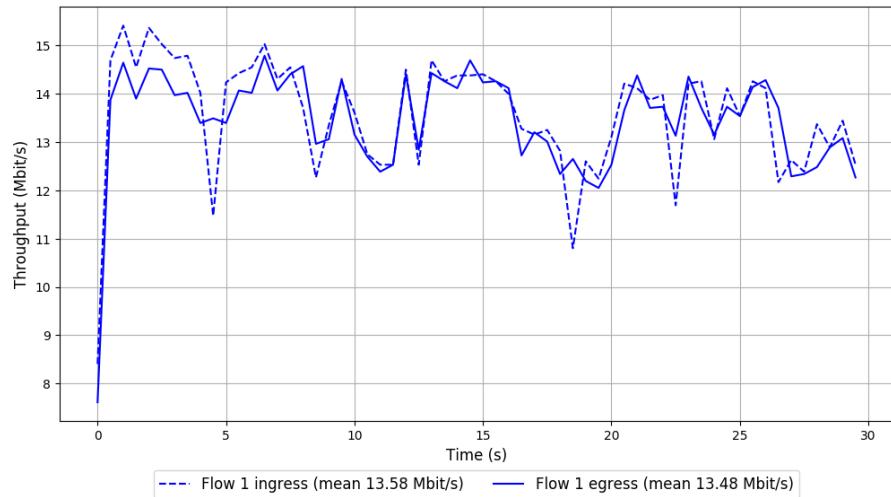


Run 3: Statistics of TCP Cubic

```
Start at: 2017-09-22 10:25:47
End at: 2017-09-22 10:26:17
Local clock offset: -0.405 ms
Remote clock offset: -2.024 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.48 Mbit/s
95th percentile per-packet one-way delay: 240.862 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 13.48 Mbit/s
95th percentile per-packet one-way delay: 240.862 ms
Loss rate: 0.87%
```

### Run 3: Report of TCP Cubic — Data Link

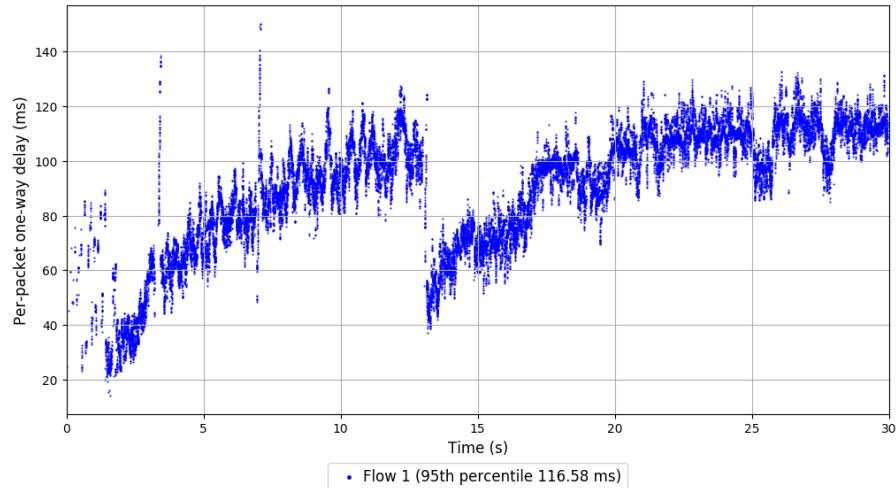
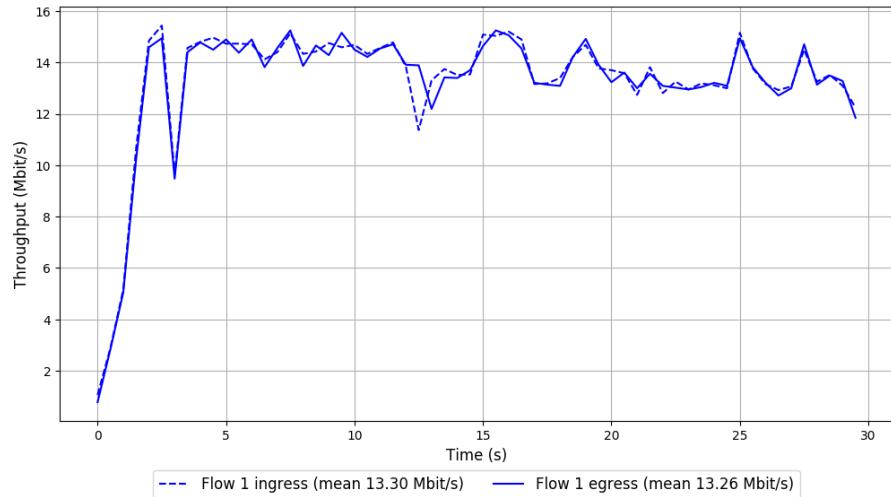


```
Run 1: Statistics of LEDBAT
```

```
Start at: 2017-09-22 09:51:38
End at: 2017-09-22 09:52:08
Local clock offset: -1.005 ms
Remote clock offset: -2.243 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.26 Mbit/s
95th percentile per-packet one-way delay: 116.581 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 13.26 Mbit/s
95th percentile per-packet one-way delay: 116.581 ms
Loss rate: 0.42%
```

## Run 1: Report of LEDBAT — Data Link

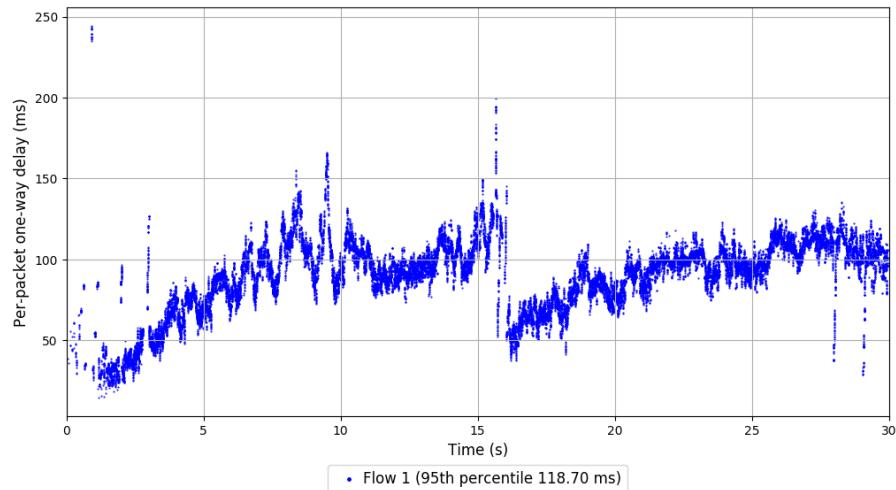
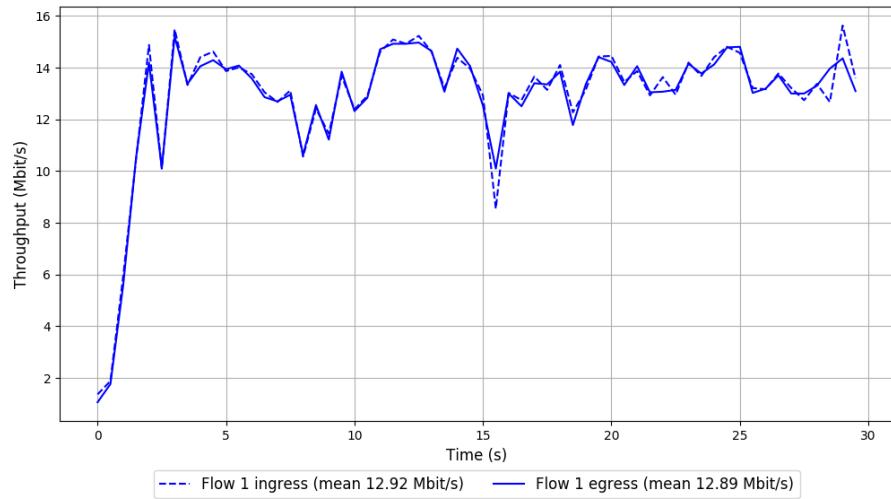


Run 2: Statistics of LEDBAT

```
Start at: 2017-09-22 10:08:07
End at: 2017-09-22 10:08:37
Local clock offset: -0.682 ms
Remote clock offset: -2.288 ms

# Below is generated by plot.py at 2017-09-22 11:21:13
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.89 Mbit/s
95th percentile per-packet one-way delay: 118.702 ms
Loss rate: 0.45%
-- Flow 1:
Average throughput: 12.89 Mbit/s
95th percentile per-packet one-way delay: 118.702 ms
Loss rate: 0.45%
```

## Run 2: Report of LEDBAT — Data Link

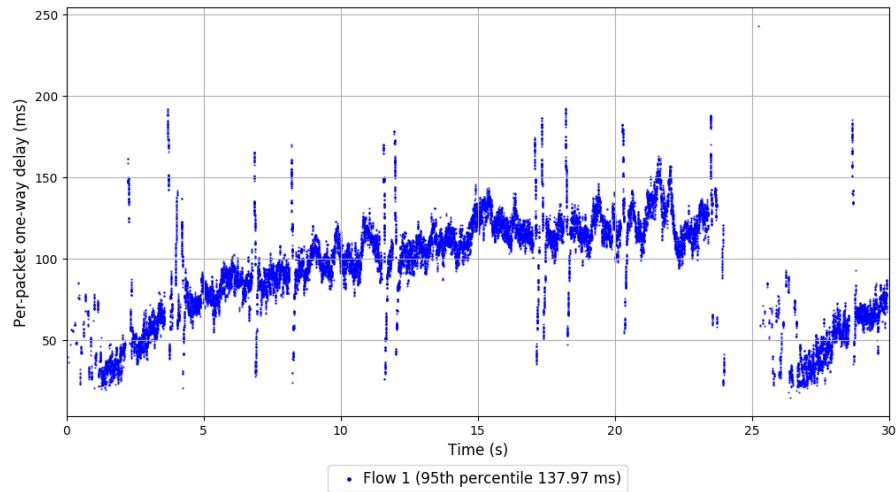
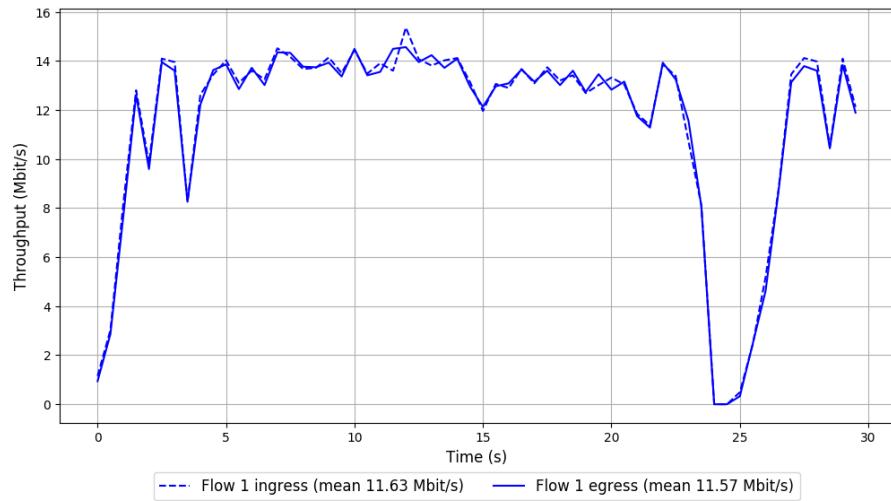


Run 3: Statistics of LEDBAT

```
Start at: 2017-09-22 10:24:36
End at: 2017-09-22 10:25:06
Local clock offset: -0.415 ms
Remote clock offset: -1.92 ms

# Below is generated by plot.py at 2017-09-22 11:21:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 11.57 Mbit/s
95th percentile per-packet one-way delay: 137.966 ms
Loss rate: 0.69%
-- Flow 1:
Average throughput: 11.57 Mbit/s
95th percentile per-packet one-way delay: 137.966 ms
Loss rate: 0.69%
```

### Run 3: Report of LEDBAT — Data Link



Run 1: Statistics of PCC

Start at: 2017-09-22 09:57:32  
End at: 2017-09-22 09:58:02  
Local clock offset: -0.806 ms  
Remote clock offset: -2.239 ms

Run 1: Report of PCC — Data Link

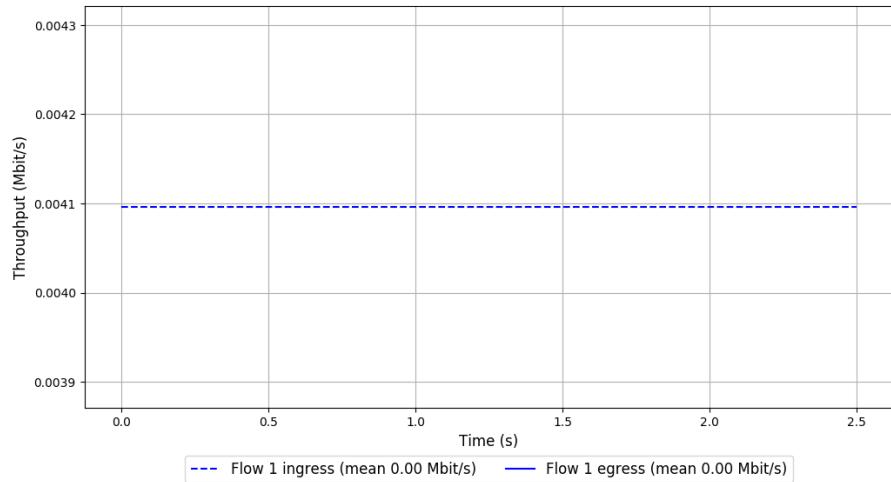


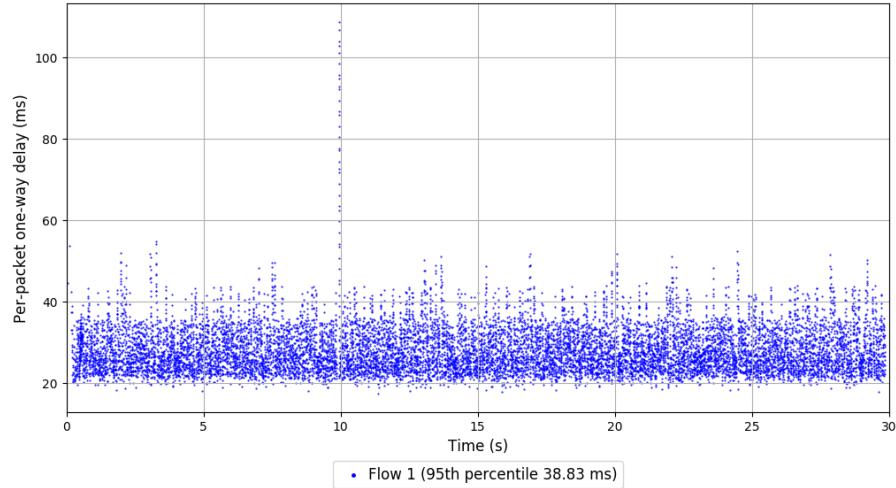
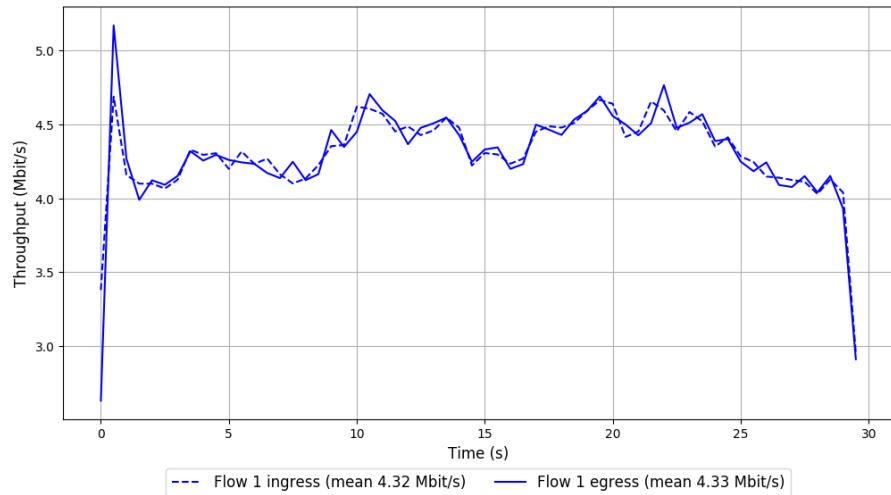
Figure is missing

Run 2: Statistics of PCC

```
Start at: 2017-09-22 10:14:01
End at: 2017-09-22 10:14:31
Local clock offset: -0.578 ms
Remote clock offset: -2.241 ms

# Below is generated by plot.py at 2017-09-22 11:21:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 4.33 Mbit/s
95th percentile per-packet one-way delay: 38.827 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 4.33 Mbit/s
95th percentile per-packet one-way delay: 38.827 ms
Loss rate: 0.14%
```

## Run 2: Report of PCC — Data Link

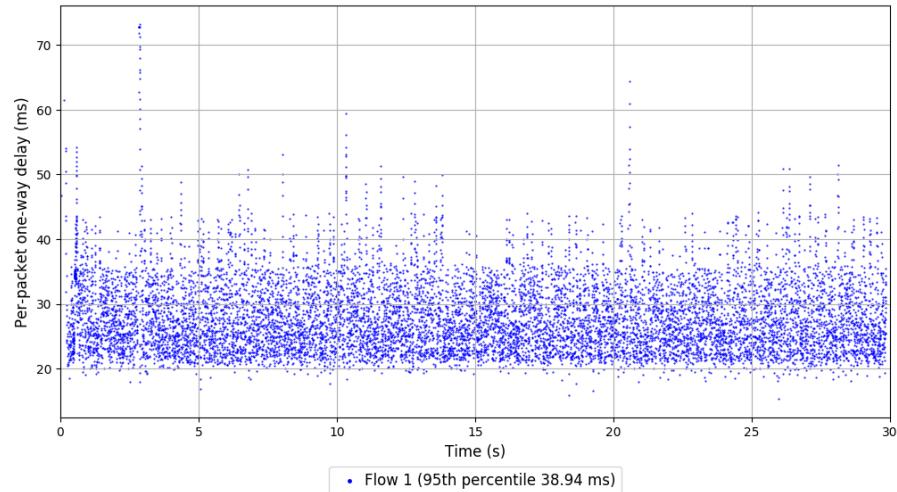
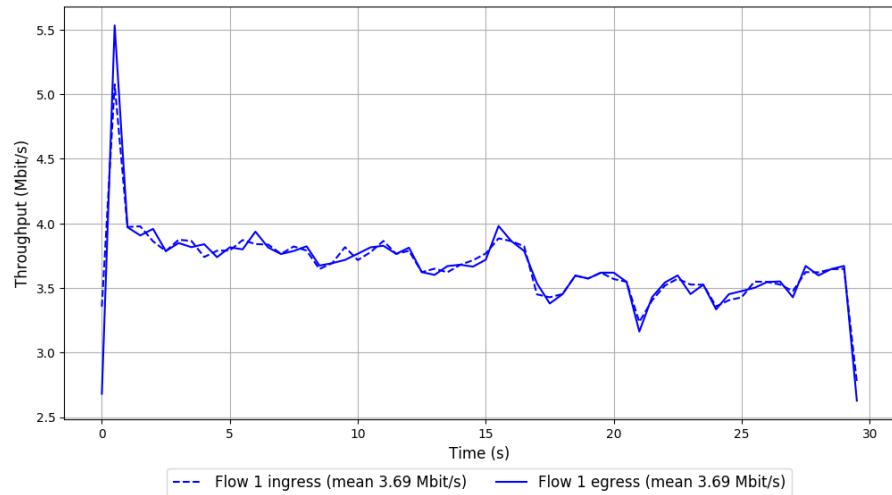


Run 3: Statistics of PCC

```
Start at: 2017-09-22 10:30:30
End at: 2017-09-22 10:31:00
Local clock offset: -0.432 ms
Remote clock offset: -2.098 ms

# Below is generated by plot.py at 2017-09-22 11:21:27
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.69 Mbit/s
95th percentile per-packet one-way delay: 38.941 ms
Loss rate: 0.14%
-- Flow 1:
Average throughput: 3.69 Mbit/s
95th percentile per-packet one-way delay: 38.941 ms
Loss rate: 0.14%
```

### Run 3: Report of PCC — Data Link

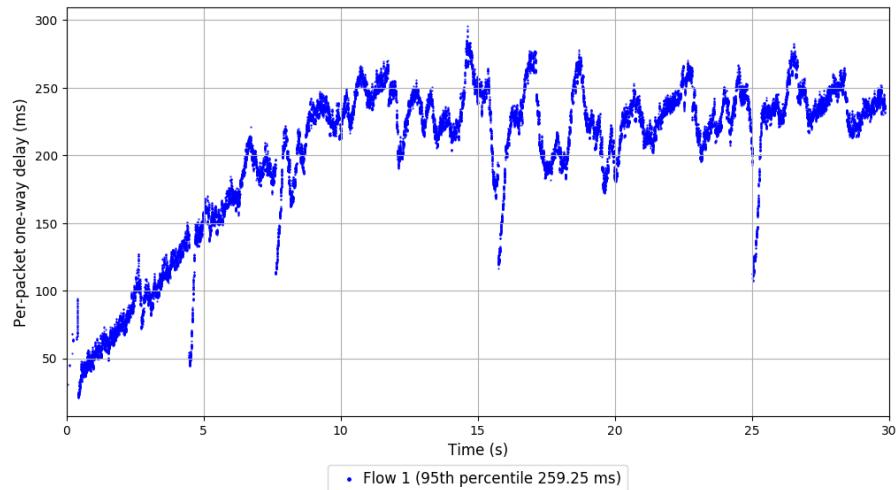
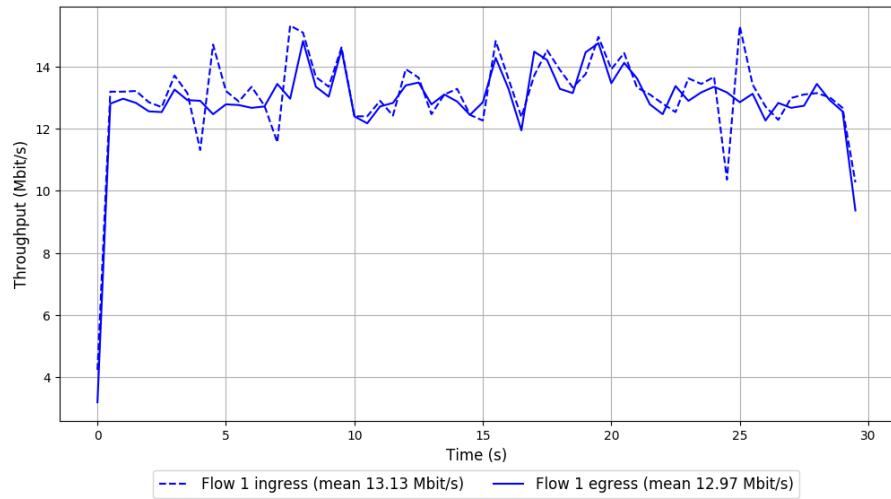


```
Run 1: Statistics of QUIC Cubic
```

```
Start at: 2017-09-22 09:48:06
End at: 2017-09-22 09:48:36
Local clock offset: -0.933 ms
Remote clock offset: -2.231 ms

# Below is generated by plot.py at 2017-09-22 11:21:33
# Datalink statistics
-- Total of 1 flow:
Average throughput: 12.97 Mbit/s
95th percentile per-packet one-way delay: 259.248 ms
Loss rate: 1.37%
-- Flow 1:
Average throughput: 12.97 Mbit/s
95th percentile per-packet one-way delay: 259.248 ms
Loss rate: 1.37%
```

Run 1: Report of QUIC Cubic — Data Link

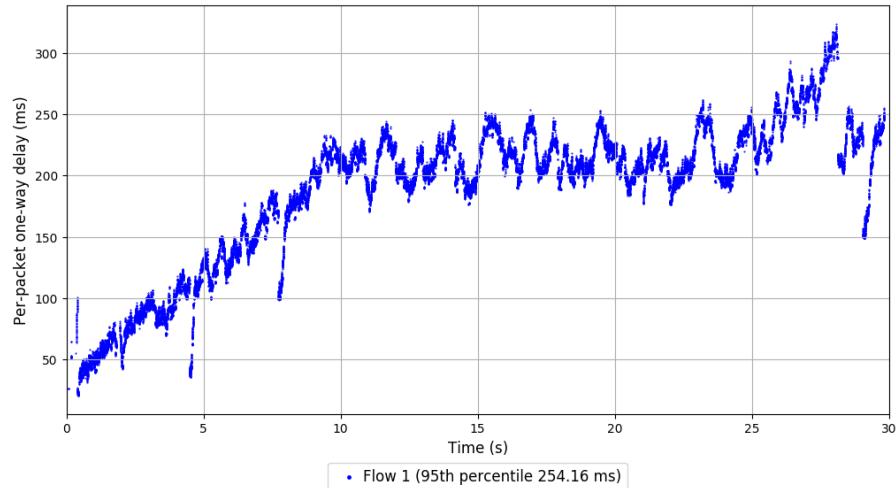
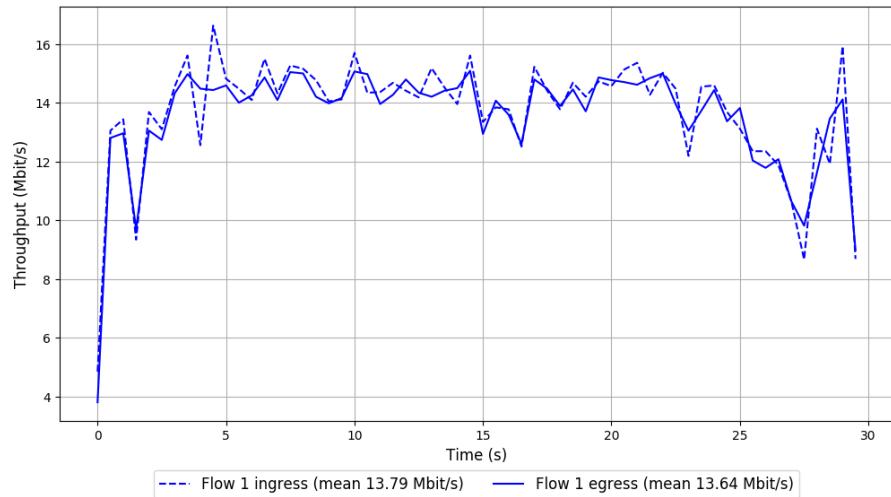


Run 2: Statistics of QUIC Cubic

```
Start at: 2017-09-22 10:04:34
End at: 2017-09-22 10:05:04
Local clock offset: -0.807 ms
Remote clock offset: -2.388 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.64 Mbit/s
95th percentile per-packet one-way delay: 254.161 ms
Loss rate: 1.22%
-- Flow 1:
Average throughput: 13.64 Mbit/s
95th percentile per-packet one-way delay: 254.161 ms
Loss rate: 1.22%
```

## Run 2: Report of QUIC Cubic — Data Link

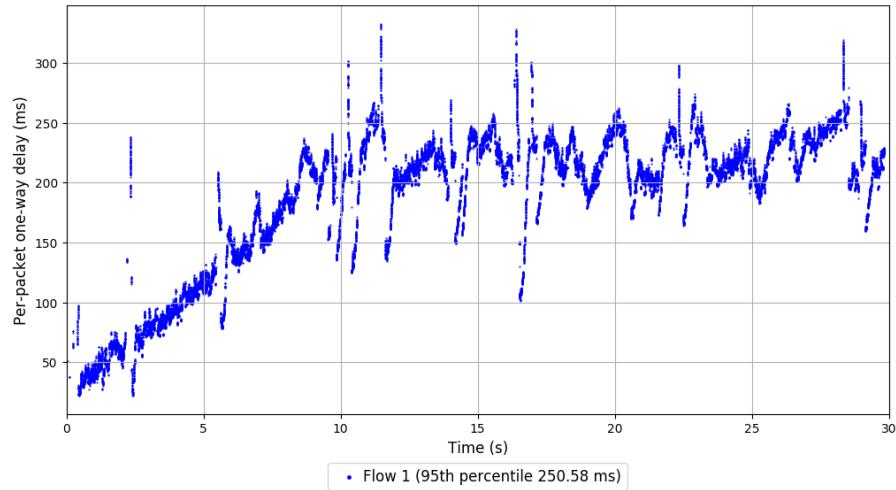
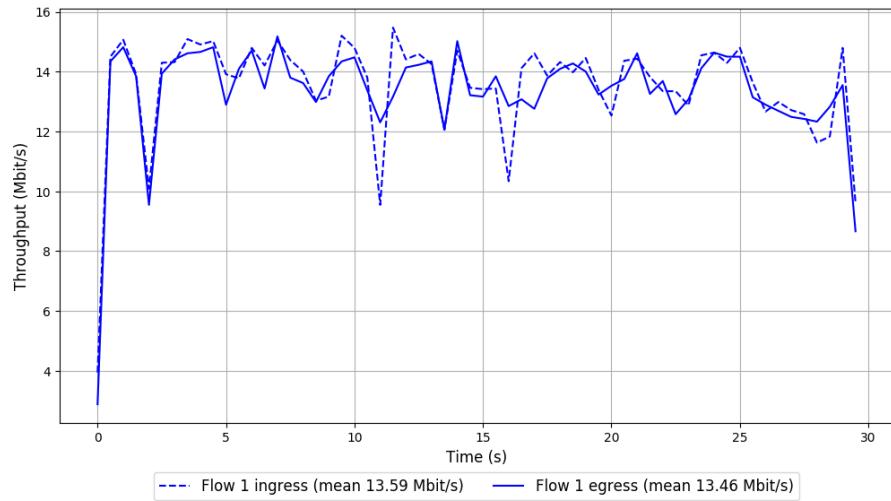


```
Run 3: Statistics of QUIC Cubic
```

```
Start at: 2017-09-22 10:21:04
End at: 2017-09-22 10:21:34
Local clock offset: -0.551 ms
Remote clock offset: -2.053 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 13.46 Mbit/s
95th percentile per-packet one-way delay: 250.579 ms
Loss rate: 1.20%
-- Flow 1:
Average throughput: 13.46 Mbit/s
95th percentile per-packet one-way delay: 250.579 ms
Loss rate: 1.20%
```

### Run 3: Report of QUIC Cubic — Data Link

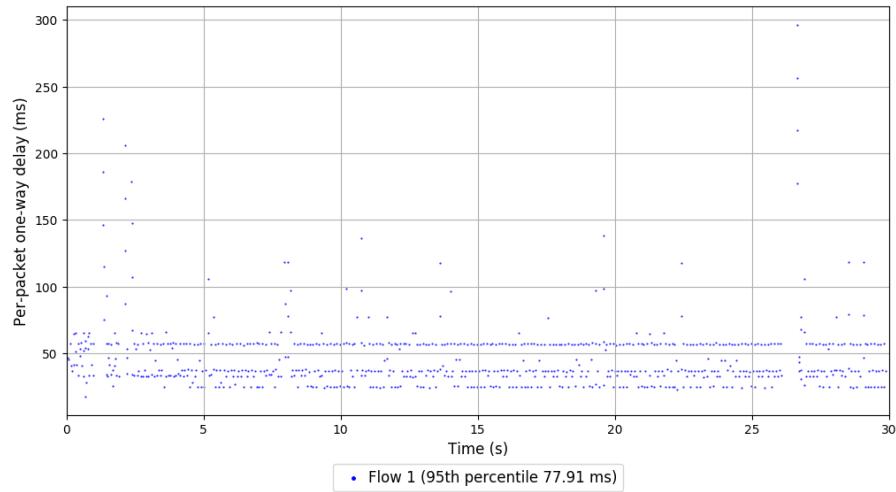
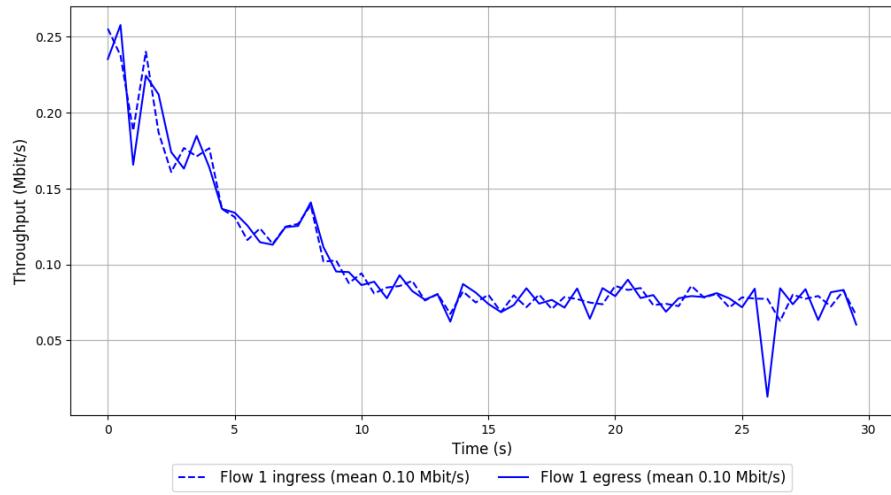


```
Run 1: Statistics of SCReAM

Start at: 2017-09-22 09:42:13
End at: 2017-09-22 09:42:43
Local clock offset: -1.12 ms
Remote clock offset: -2.195 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 77.907 ms
Loss rate: 0.88%
-- Flow 1:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 77.907 ms
Loss rate: 0.88%
```

## Run 1: Report of SCReAM — Data Link

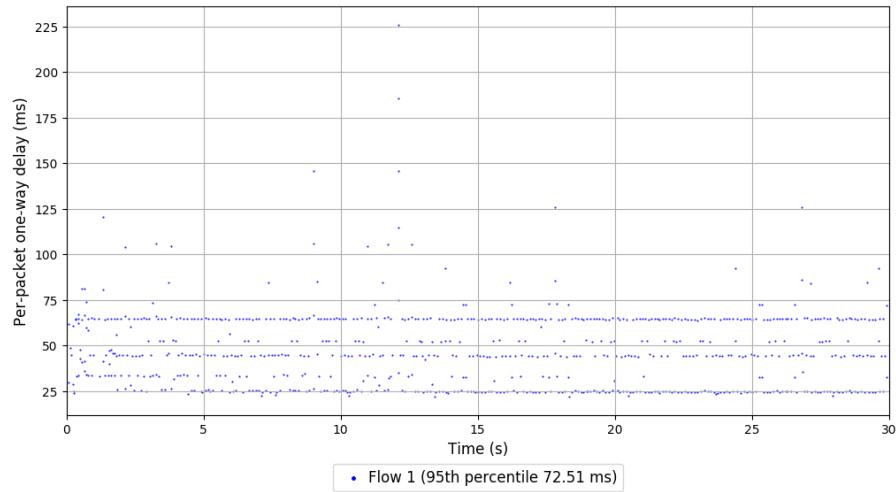
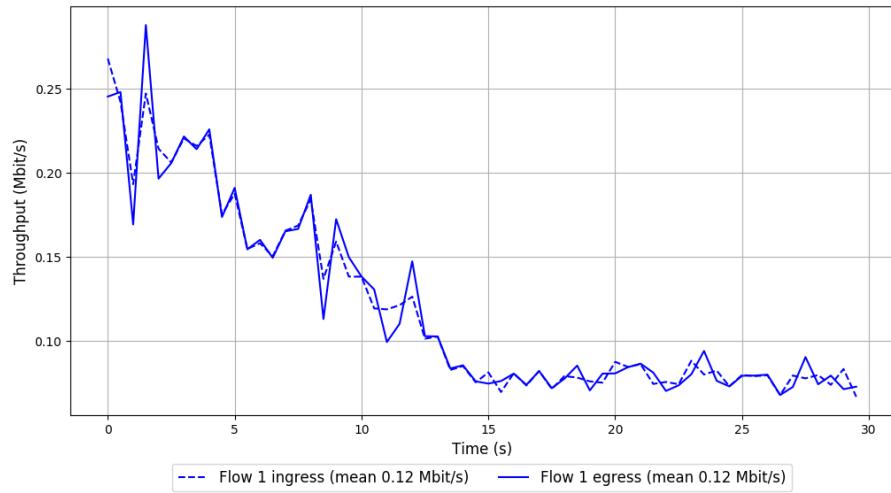


Run 2: Statistics of SCReAM

```
Start at: 2017-09-22 09:58:42
End at: 2017-09-22 09:59:12
Local clock offset: -0.798 ms
Remote clock offset: -2.353 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 72.506 ms
Loss rate: 0.08%
-- Flow 1:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 72.506 ms
Loss rate: 0.08%
```

## Run 2: Report of SCReAM — Data Link

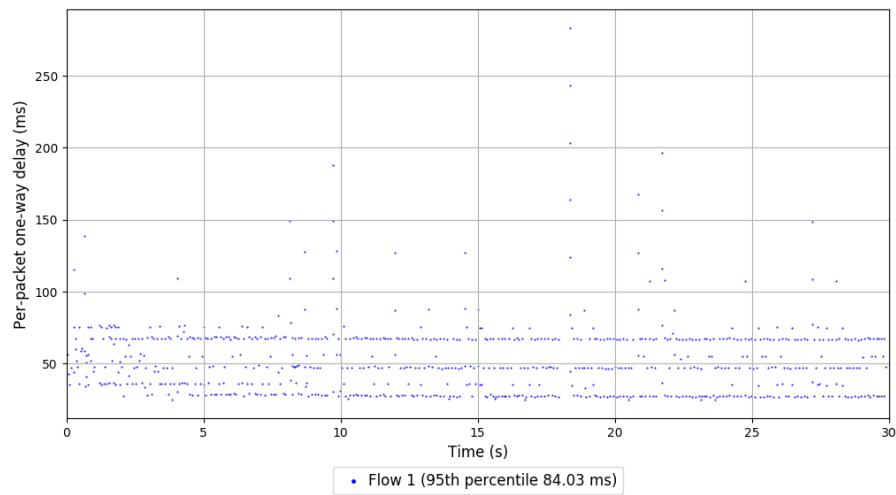
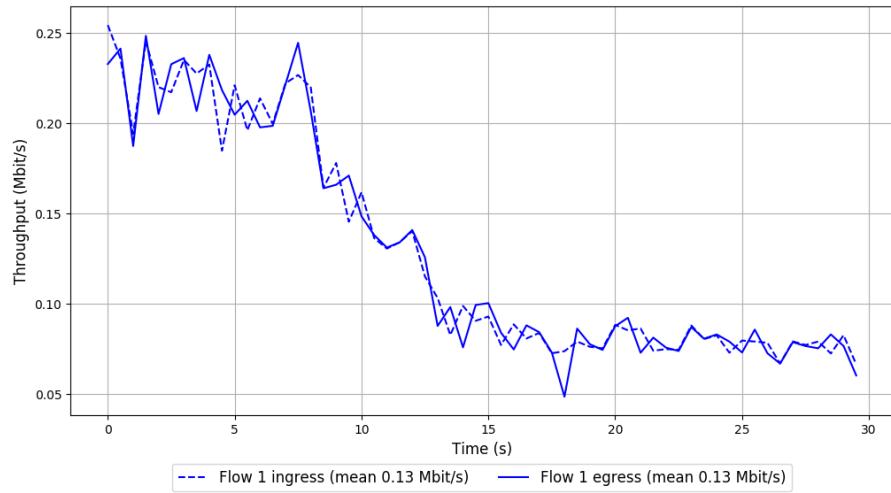


Run 3: Statistics of SCReAM

```
Start at: 2017-09-22 10:15:11
End at: 2017-09-22 10:15:41
Local clock offset: -0.548 ms
Remote clock offset: -2.217 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 84.030 ms
Loss rate: 0.37%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 84.030 ms
Loss rate: 0.37%
```

### Run 3: Report of SCReAM — Data Link

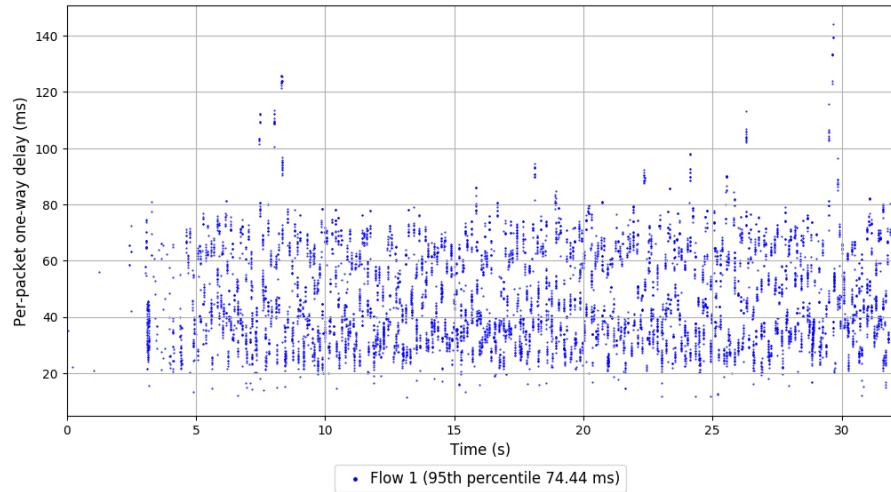
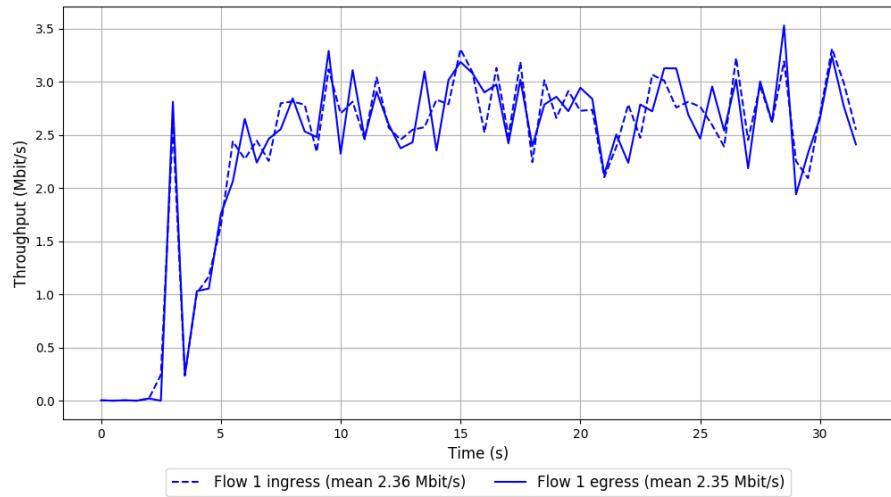


```
Run 1: Statistics of WebRTC media
```

```
Start at: 2017-09-22 09:45:45
End at: 2017-09-22 09:46:15
Local clock offset: -1.078 ms
Remote clock offset: -2.235 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.35 Mbit/s
95th percentile per-packet one-way delay: 74.445 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 2.35 Mbit/s
95th percentile per-packet one-way delay: 74.445 ms
Loss rate: 0.42%
```

Run 1: Report of WebRTC media — Data Link

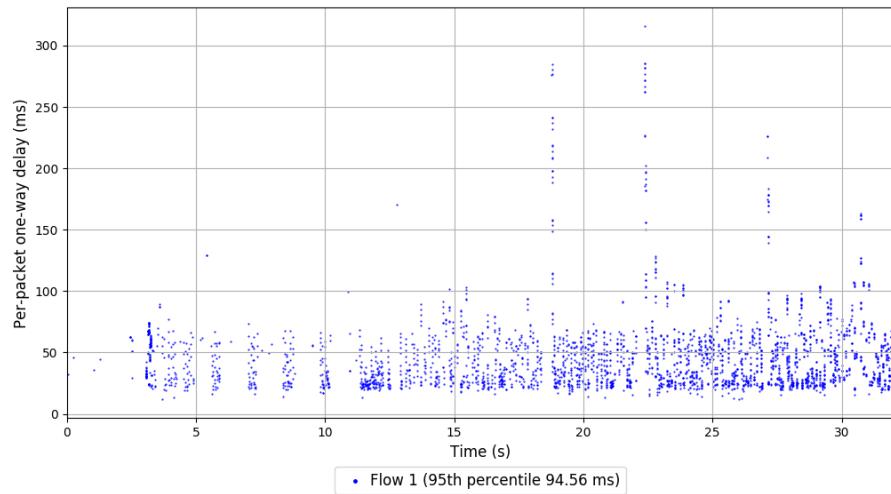
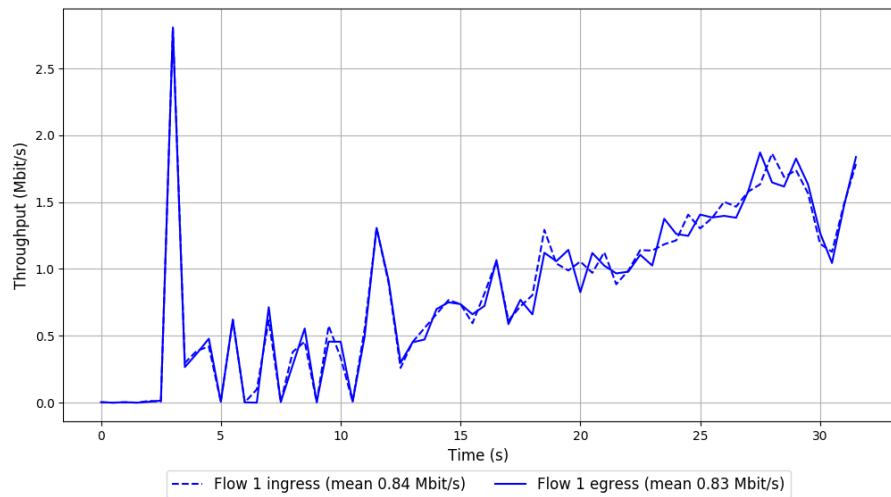


Run 2: Statistics of WebRTC media

```
Start at: 2017-09-22 10:02:13
End at: 2017-09-22 10:02:43
Local clock offset: -0.837 ms
Remote clock offset: -2.359 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 94.563 ms
Loss rate: 0.59%
-- Flow 1:
Average throughput: 0.83 Mbit/s
95th percentile per-packet one-way delay: 94.563 ms
Loss rate: 0.59%
```

## Run 2: Report of WebRTC media — Data Link

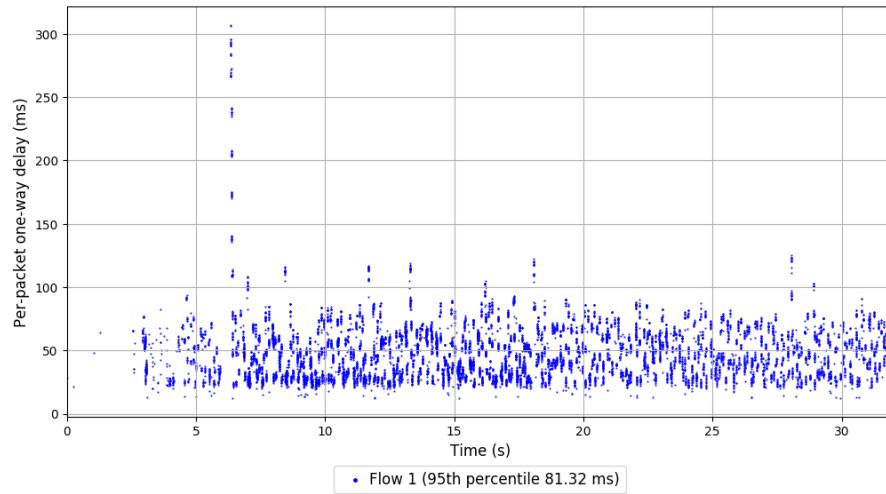
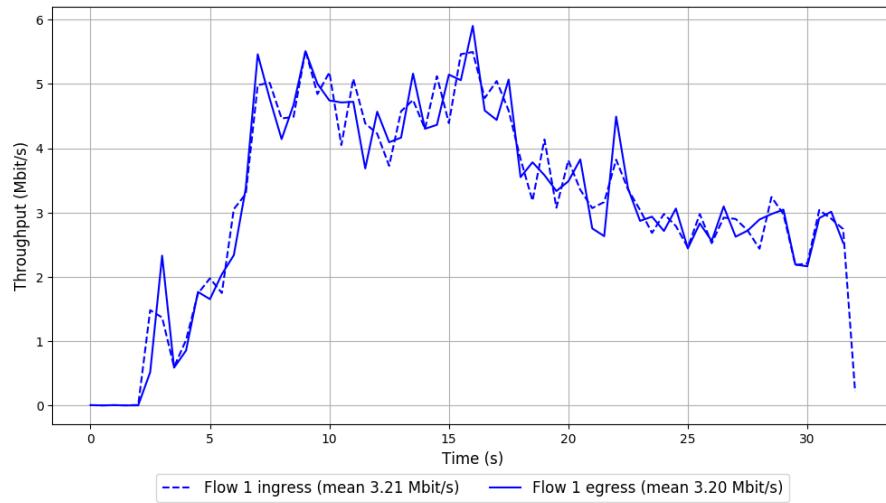


```
Run 3: Statistics of WebRTC media
```

```
Start at: 2017-09-22 10:18:43
End at: 2017-09-22 10:19:13
Local clock offset: -0.509 ms
Remote clock offset: -2.161 ms

# Below is generated by plot.py at 2017-09-22 11:21:34
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.20 Mbit/s
95th percentile per-packet one-way delay: 81.323 ms
Loss rate: 0.66%
-- Flow 1:
Average throughput: 3.20 Mbit/s
95th percentile per-packet one-way delay: 81.323 ms
Loss rate: 0.66%
```

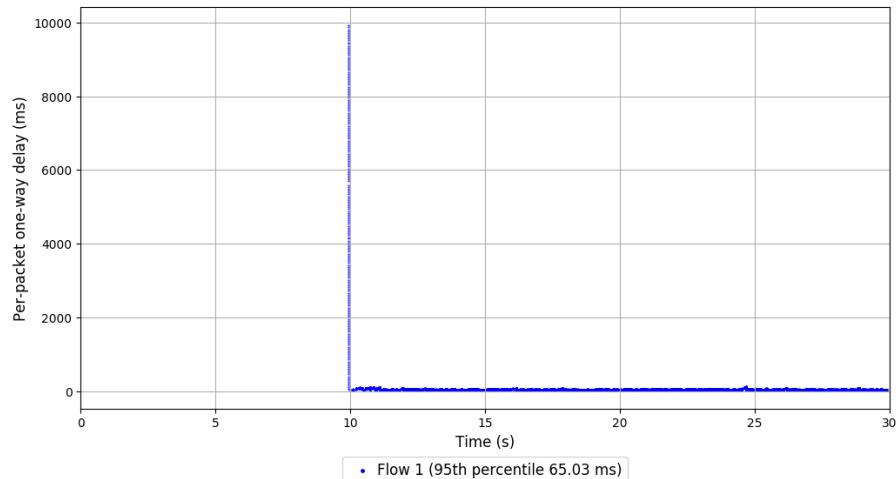
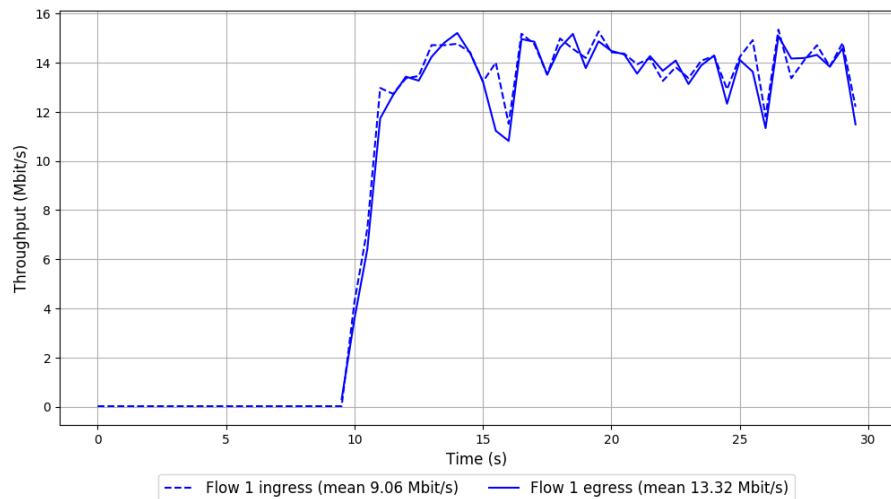
### Run 3: Report of WebRTC media — Data Link



Run 1: Statistics of Sprout

Start at: 2017-09-22 09:49:17  
End at: 2017-09-22 09:49:47  
Local clock offset: -1.028 ms  
Remote clock offset: -2.201 ms

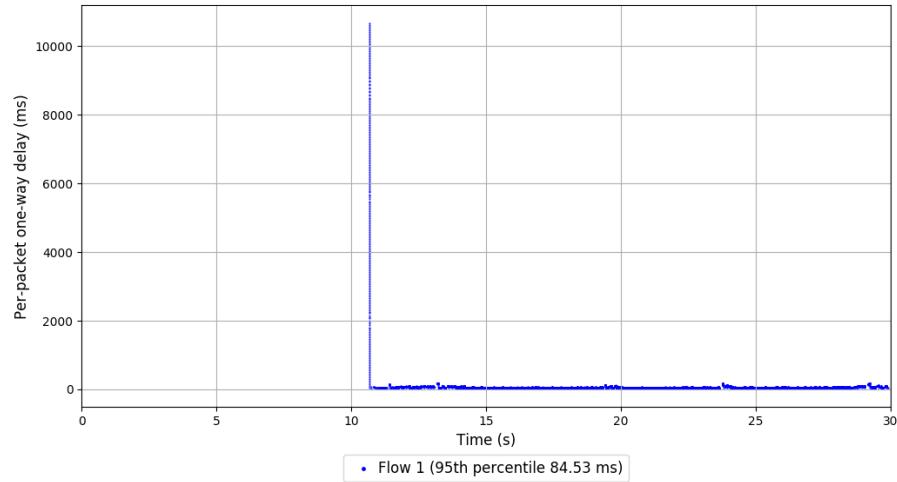
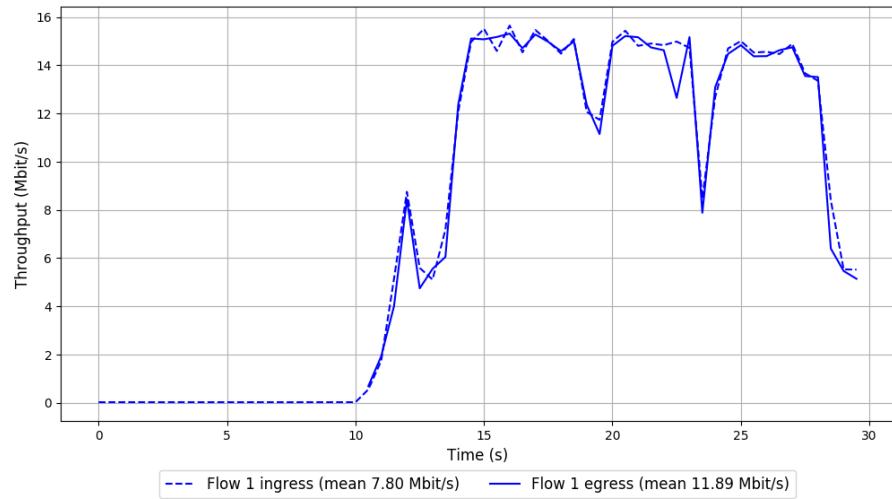
## Run 1: Report of Sprout — Data Link



Run 2: Statistics of Sprout

Start at: 2017-09-22 10:05:45  
End at: 2017-09-22 10:06:15  
Local clock offset: -0.691 ms  
Remote clock offset: -2.439 ms

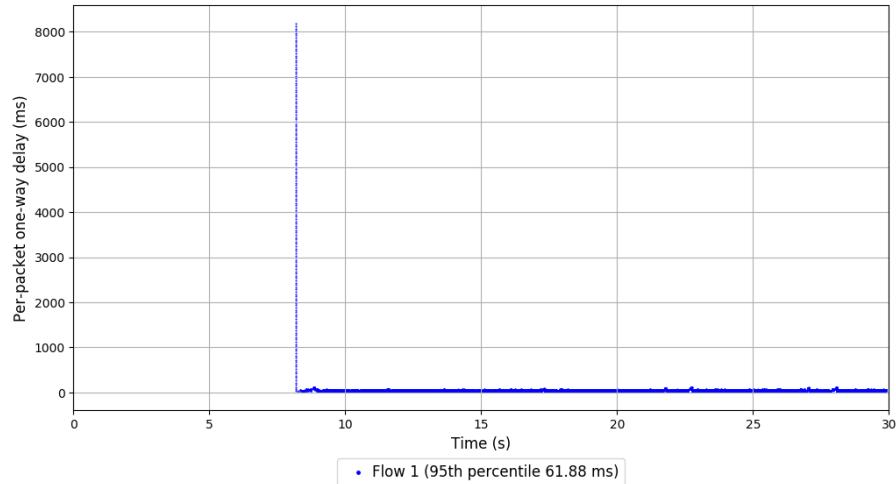
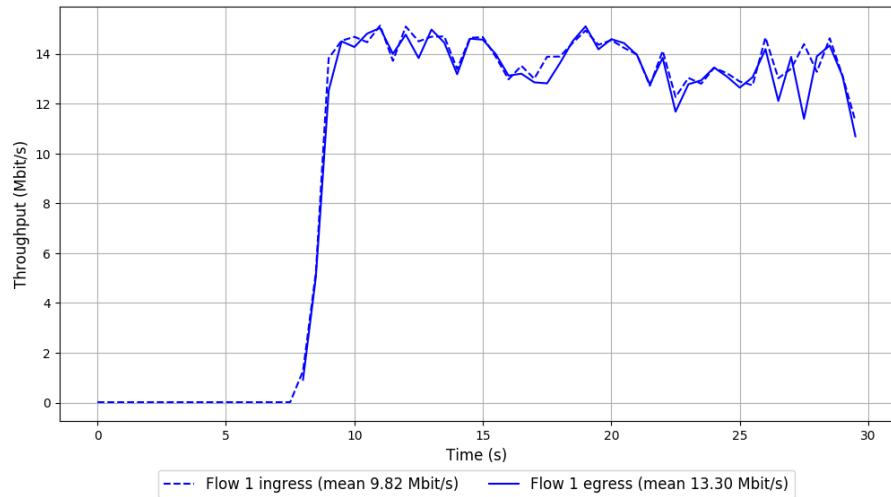
## Run 2: Report of Sprout — Data Link



Run 3: Statistics of Sprout

Start at: 2017-09-22 10:22:15  
End at: 2017-09-22 10:22:45  
Local clock offset: -0.458 ms  
Remote clock offset: -1.999 ms

### Run 3: Report of Sprout — Data Link

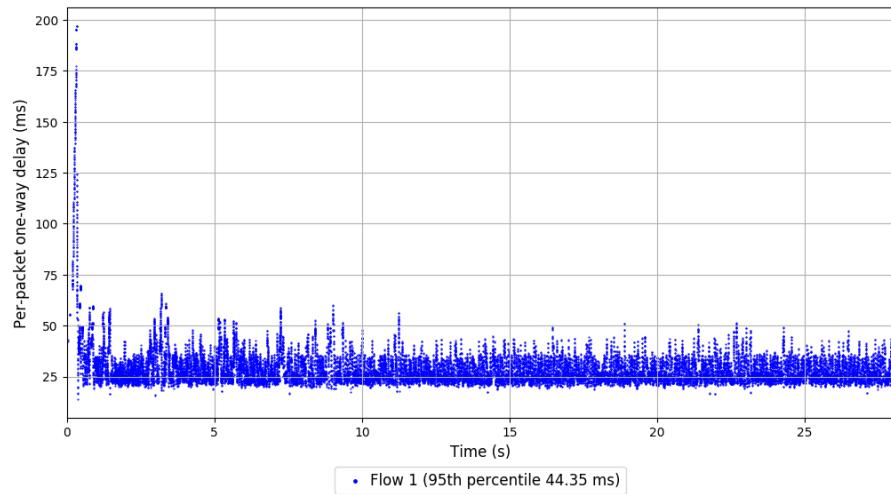
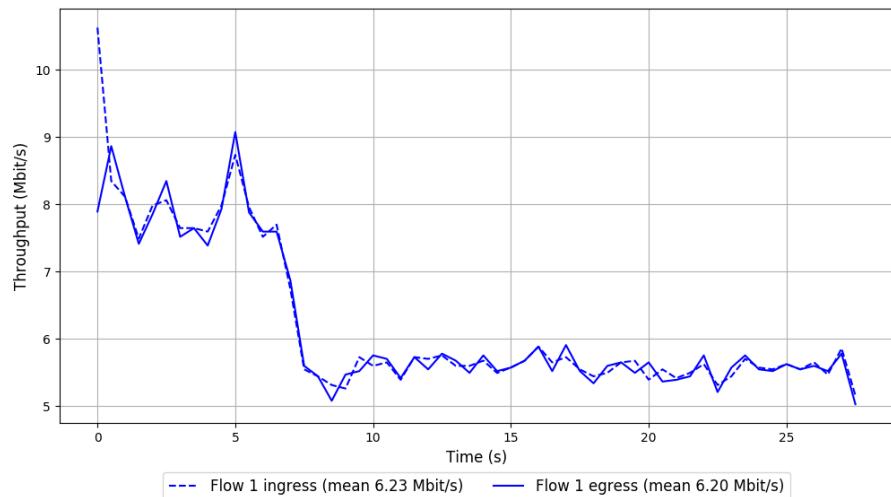


Run 1: Statistics of TaoVA-100x

```
Start at: 2017-09-22 09:54:00
End at: 2017-09-22 09:54:30
Local clock offset: -0.873 ms
Remote clock offset: -2.173 ms

# Below is generated by plot.py at 2017-09-22 11:21:40
# Datalink statistics
-- Total of 1 flow:
Average throughput: 6.20 Mbit/s
95th percentile per-packet one-way delay: 44.350 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 6.20 Mbit/s
95th percentile per-packet one-way delay: 44.350 ms
Loss rate: 0.68%
```

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

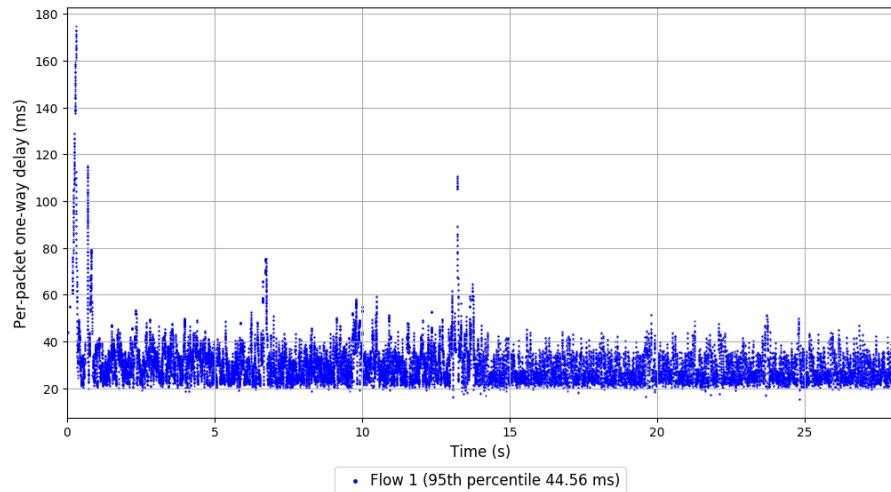
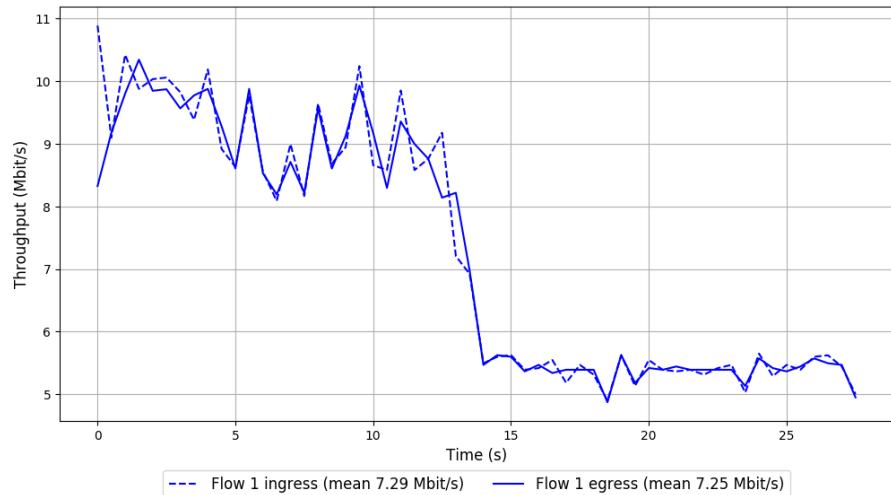


Run 2: Statistics of TaoVA-100x

```
Start at: 2017-09-22 10:10:29
End at: 2017-09-22 10:10:59
Local clock offset: -0.713 ms
Remote clock offset: -2.333 ms

# Below is generated by plot.py at 2017-09-22 11:21:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 7.25 Mbit/s
95th percentile per-packet one-way delay: 44.563 ms
Loss rate: 0.77%
-- Flow 1:
Average throughput: 7.25 Mbit/s
95th percentile per-packet one-way delay: 44.563 ms
Loss rate: 0.77%
```

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



Run 3: Statistics of TaoVA-100x

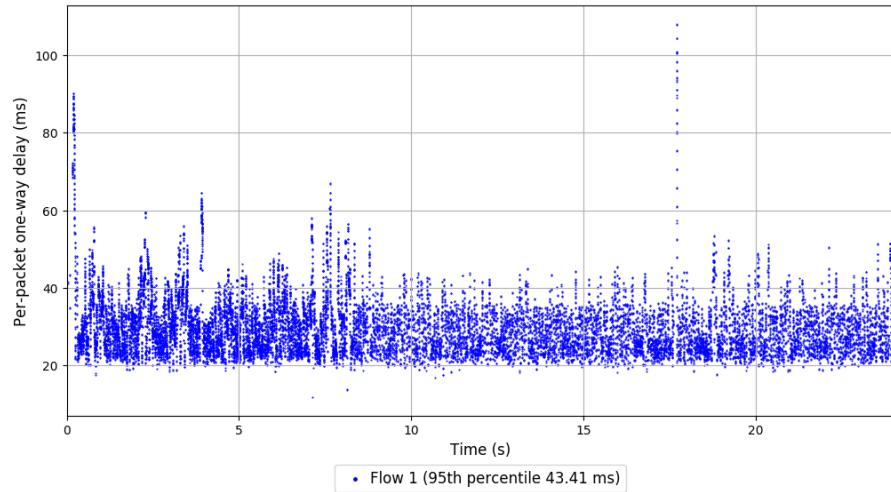
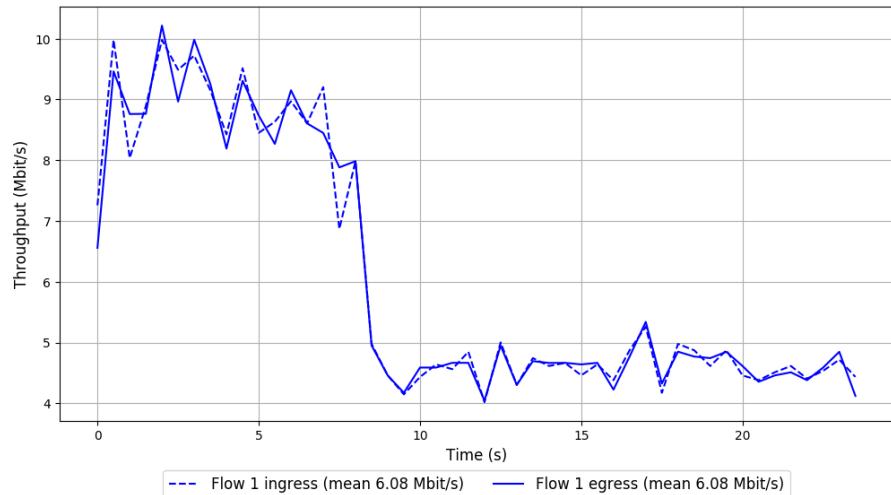
Start at: 2017-09-22 10:26:58

End at: 2017-09-22 10:27:28

Local clock offset: -0.483 ms

Remote clock offset: -2.039 ms

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

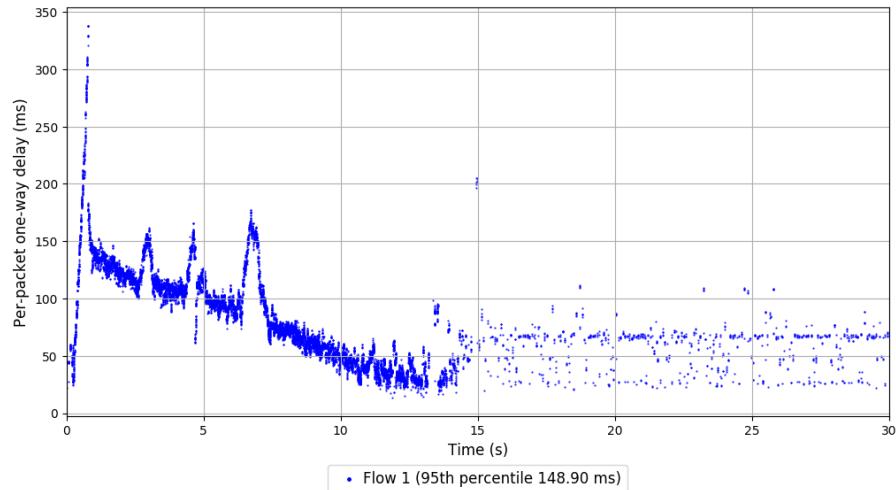
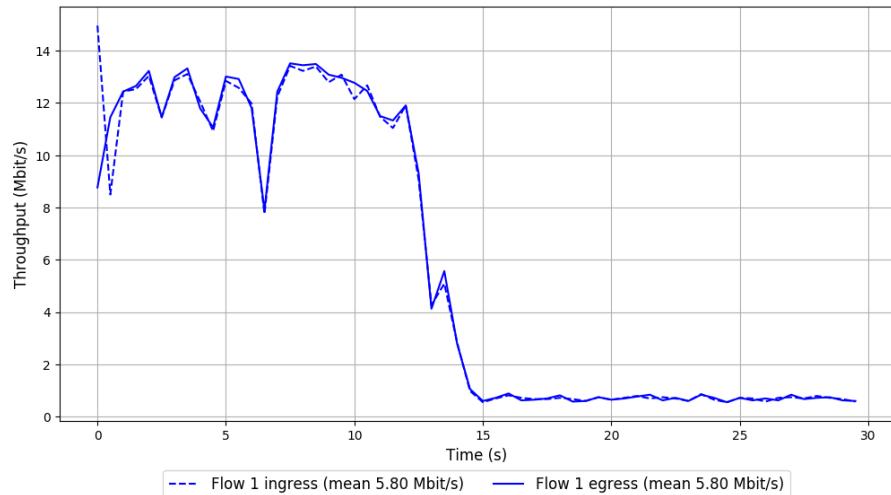


Run 1: Statistics of TCP Vegas

```
Start at: 2017-09-22 09:44:34
End at: 2017-09-22 09:45:04
Local clock offset: -1.097 ms
Remote clock offset: -2.274 ms

# Below is generated by plot.py at 2017-09-22 11:21:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.80 Mbit/s
95th percentile per-packet one-way delay: 148.896 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 5.80 Mbit/s
95th percentile per-packet one-way delay: 148.896 ms
Loss rate: 0.03%
```

### Run 1: Report of TCP Vegas — Data Link

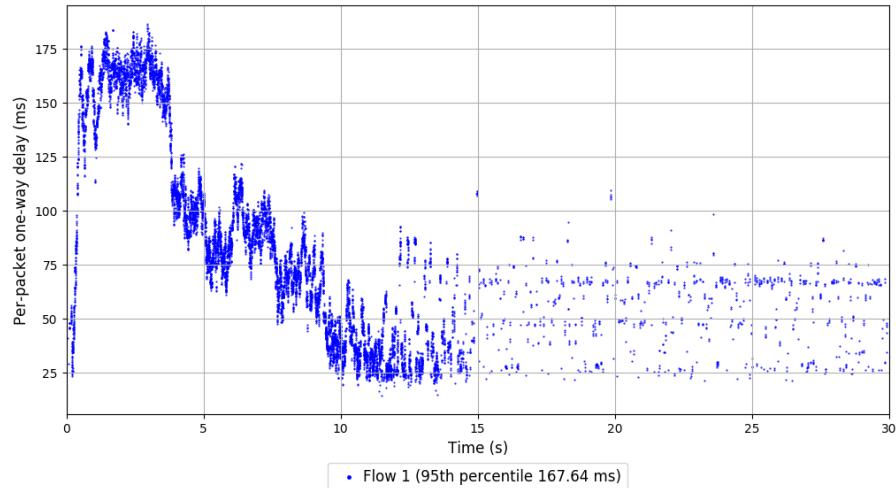
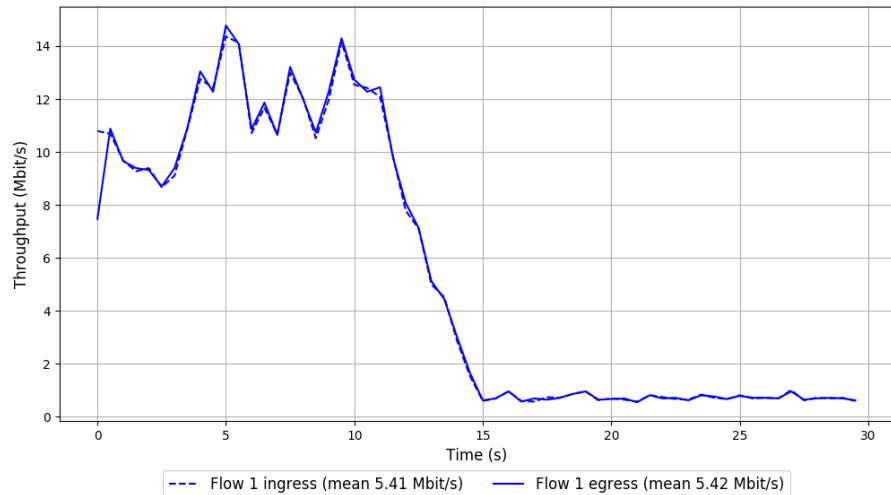


Run 2: Statistics of TCP Vegas

```
Start at: 2017-09-22 10:01:03
End at: 2017-09-22 10:01:33
Local clock offset: -0.846 ms
Remote clock offset: -2.347 ms

# Below is generated by plot.py at 2017-09-22 11:21:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 5.42 Mbit/s
95th percentile per-packet one-way delay: 167.642 ms
Loss rate: 0.03%
-- Flow 1:
Average throughput: 5.42 Mbit/s
95th percentile per-packet one-way delay: 167.642 ms
Loss rate: 0.03%
```

## Run 2: Report of TCP Vegas — Data Link

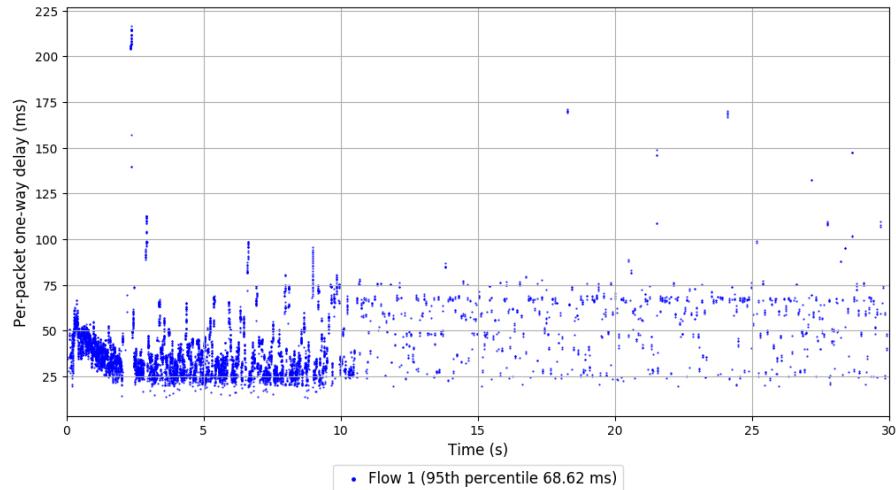
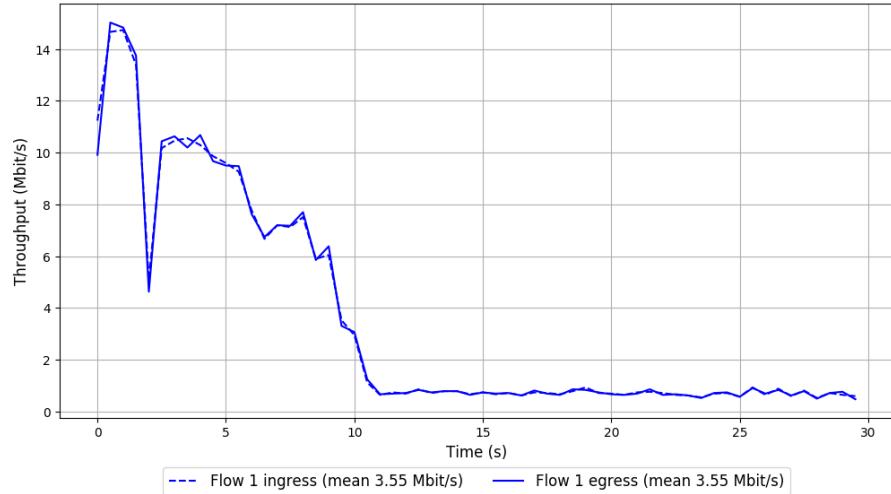


Run 3: Statistics of TCP Vegas

```
Start at: 2017-09-22 10:17:32
End at: 2017-09-22 10:18:02
Local clock offset: -0.507 ms
Remote clock offset: -2.08 ms

# Below is generated by plot.py at 2017-09-22 11:21:48
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.55 Mbit/s
95th percentile per-packet one-way delay: 68.621 ms
Loss rate: 0.06%
-- Flow 1:
Average throughput: 3.55 Mbit/s
95th percentile per-packet one-way delay: 68.621 ms
Loss rate: 0.06%
```

### Run 3: Report of TCP Vegas — Data Link

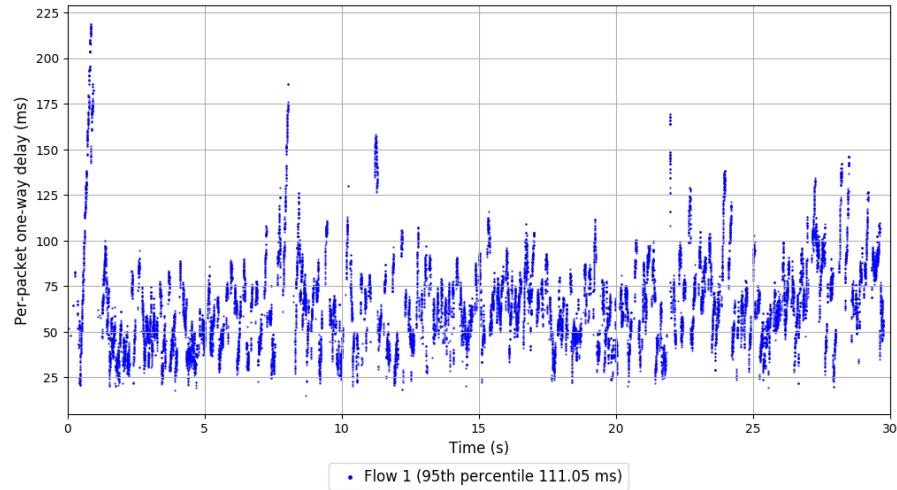
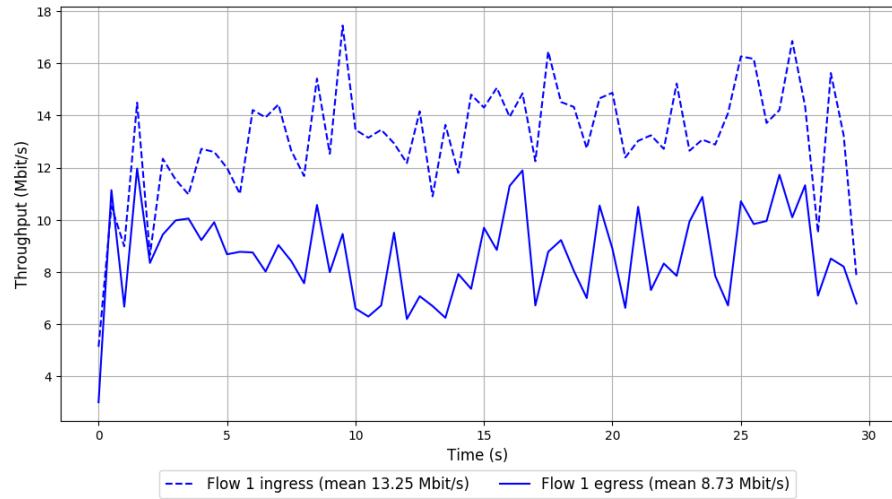


Run 1: Statistics of Verus

```
Start at: 2017-09-22 09:55:11
End at: 2017-09-22 09:55:41
Local clock offset: -0.938 ms
Remote clock offset: -2.238 ms

# Below is generated by plot.py at 2017-09-22 11:21:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 8.73 Mbit/s
95th percentile per-packet one-way delay: 111.052 ms
Loss rate: 34.24%
-- Flow 1:
Average throughput: 8.73 Mbit/s
95th percentile per-packet one-way delay: 111.052 ms
Loss rate: 34.24%
```

## Run 1: Report of Verus — Data Link

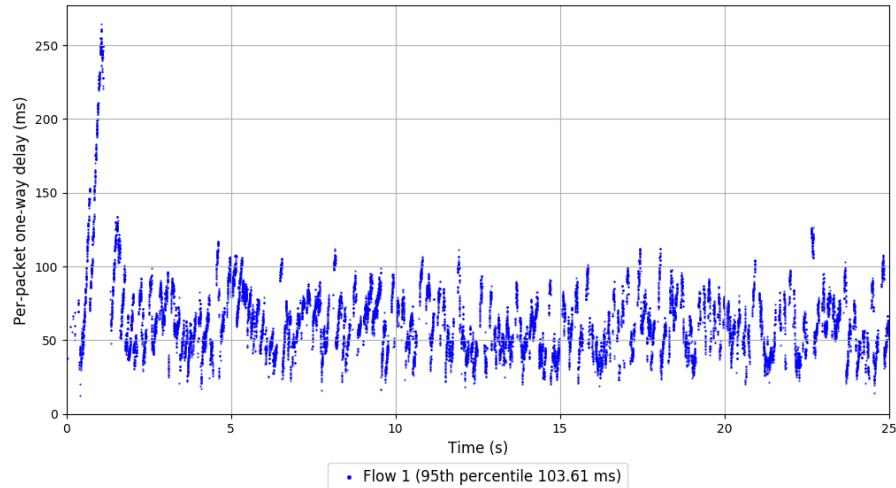
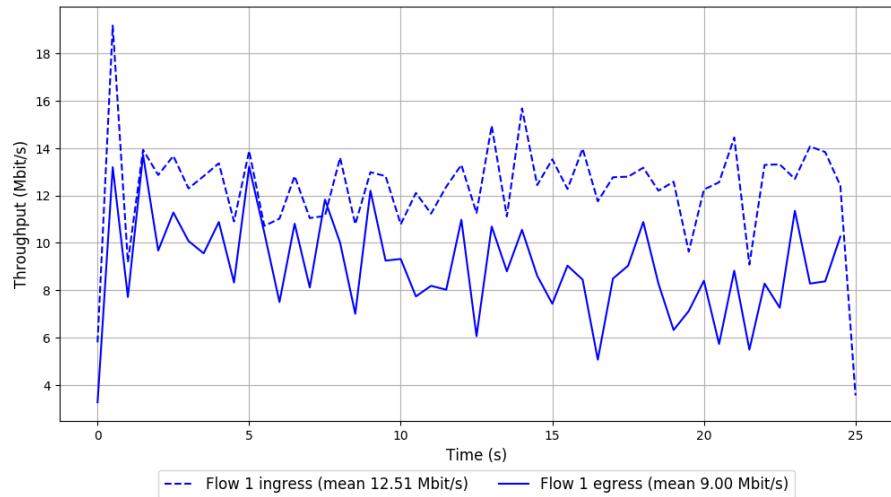


Run 2: Statistics of Verus

```
Start at: 2017-09-22 10:11:40
End at: 2017-09-22 10:12:10
Local clock offset: -0.616 ms
Remote clock offset: -2.21 ms

# Below is generated by plot.py at 2017-09-22 11:21:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.00 Mbit/s
95th percentile per-packet one-way delay: 103.611 ms
Loss rate: 28.26%
-- Flow 1:
Average throughput: 9.00 Mbit/s
95th percentile per-packet one-way delay: 103.611 ms
Loss rate: 28.26%
```

## Run 2: Report of Verus — Data Link



Run 3: Statistics of Verus

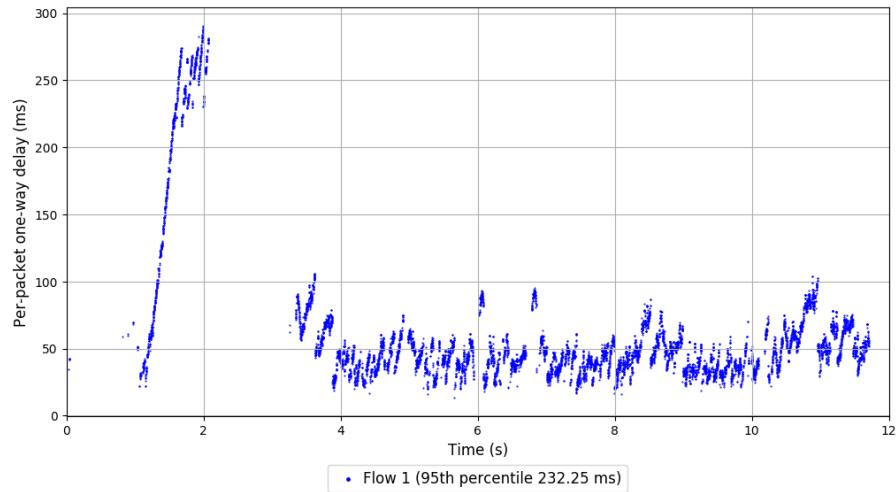
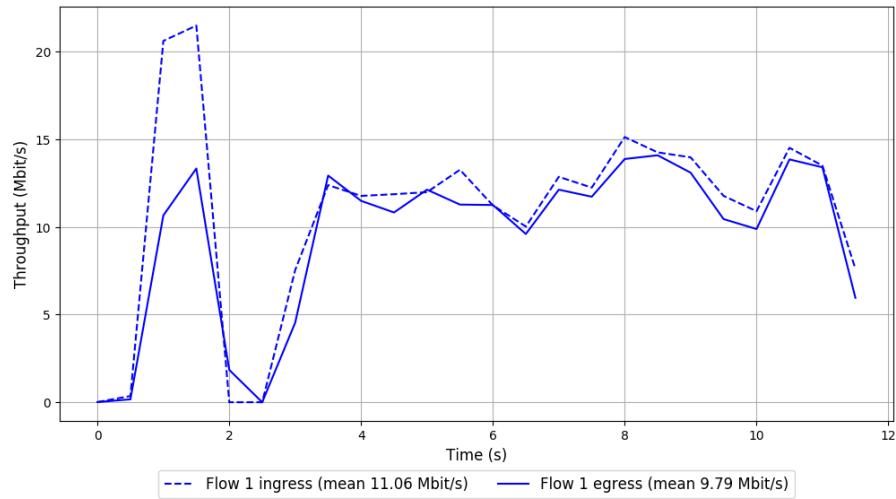
Start at: 2017-09-22 10:28:08

End at: 2017-09-22 10:28:39

Local clock offset: -0.465 ms

Remote clock offset: -2.055 ms

### Run 3: Report of Verus — Data Link

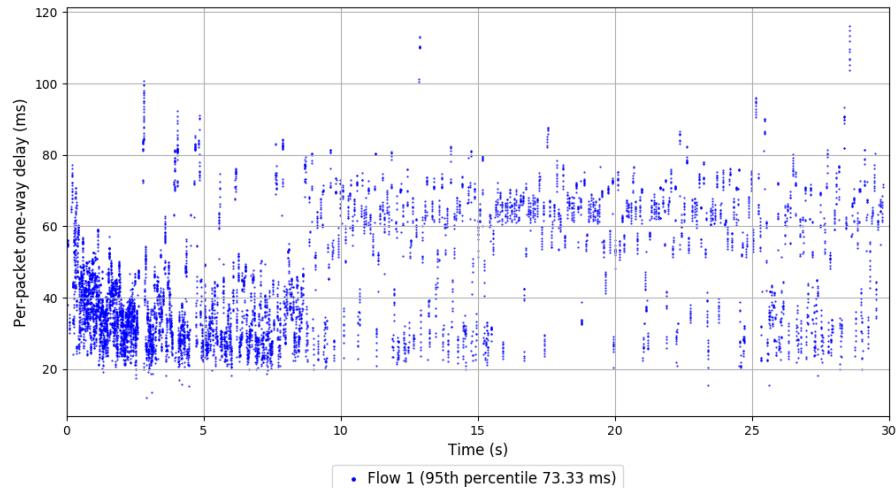
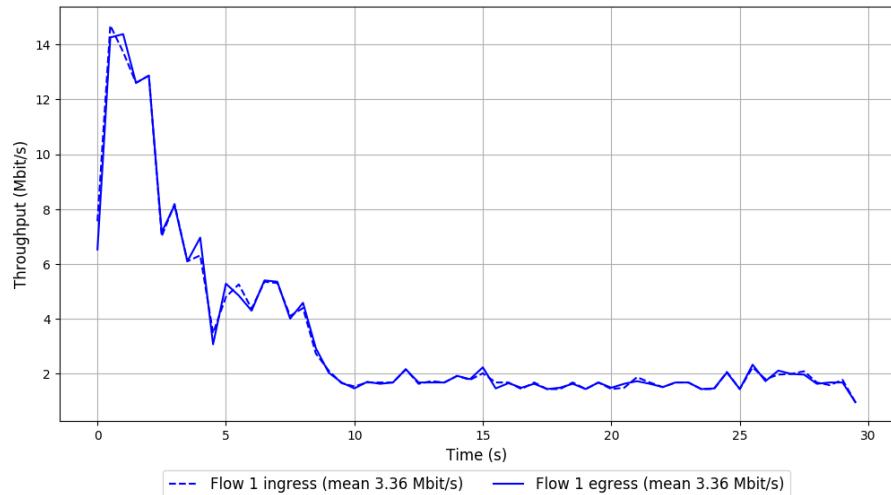


Run 1: Statistics of Indigo

```
Start at: 2017-09-22 09:56:21
End at: 2017-09-22 09:56:51
Local clock offset: -0.832 ms
Remote clock offset: -2.256 ms

# Below is generated by plot.py at 2017-09-22 11:21:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 73.329 ms
Loss rate: 0.12%
-- Flow 1:
Average throughput: 3.36 Mbit/s
95th percentile per-packet one-way delay: 73.329 ms
Loss rate: 0.12%
```

## Run 1: Report of Indigo — Data Link

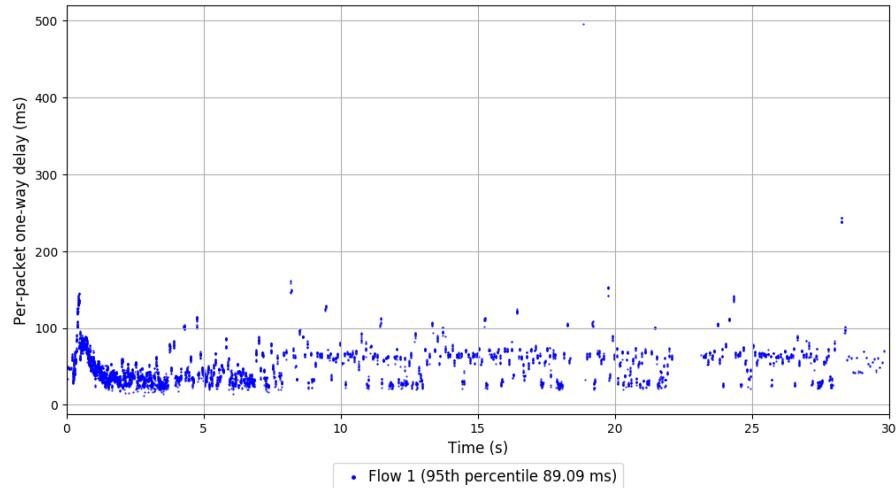
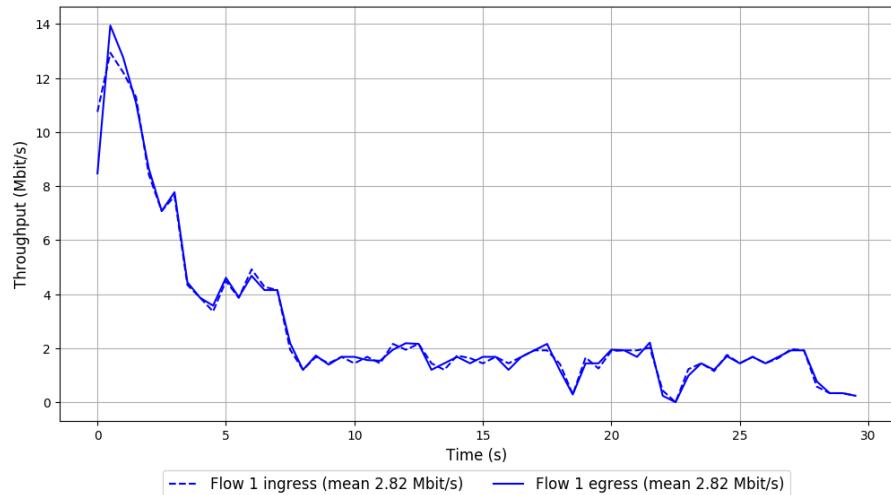


Run 2: Statistics of Indigo

```
Start at: 2017-09-22 10:12:50
End at: 2017-09-22 10:13:20
Local clock offset: -0.677 ms
Remote clock offset: -2.18 ms

# Below is generated by plot.py at 2017-09-22 11:21:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.82 Mbit/s
95th percentile per-packet one-way delay: 89.093 ms
Loss rate: 0.30%
-- Flow 1:
Average throughput: 2.82 Mbit/s
95th percentile per-packet one-way delay: 89.093 ms
Loss rate: 0.30%
```

## Run 2: Report of Indigo — Data Link

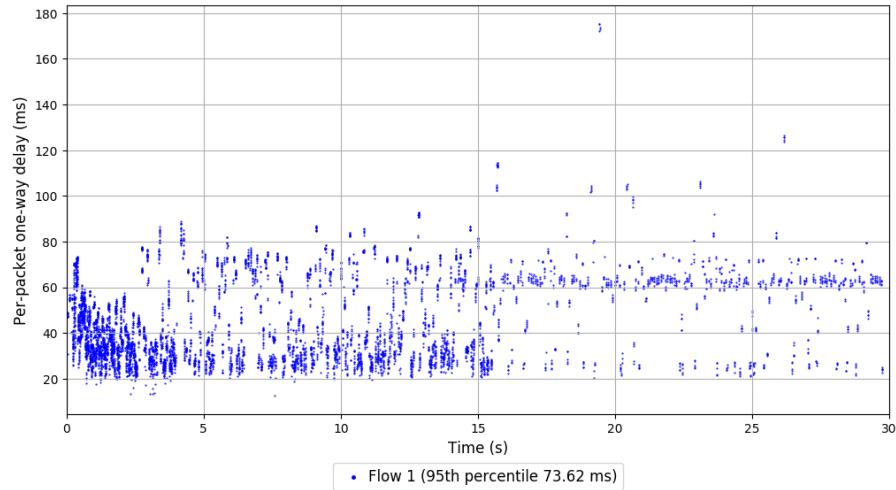
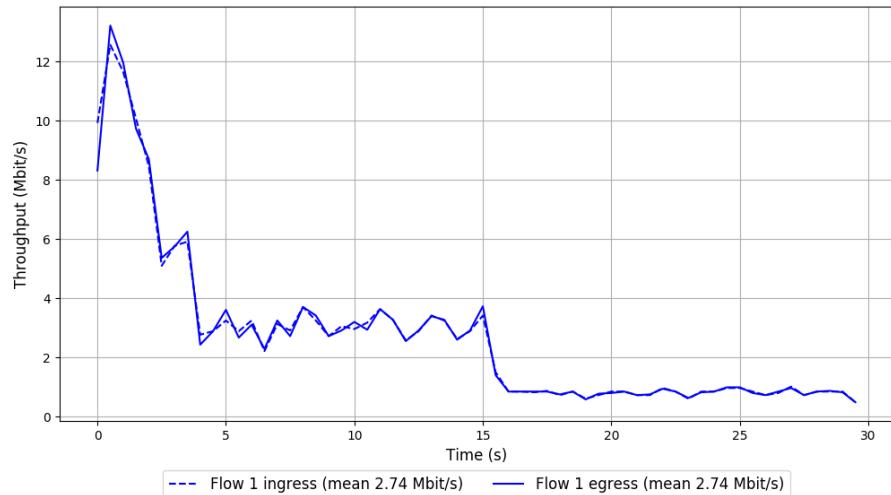


Run 3: Statistics of Indigo

```
Start at: 2017-09-22 10:29:19
End at: 2017-09-22 10:29:49
Local clock offset: -0.36 ms
Remote clock offset: -2.064 ms

# Below is generated by plot.py at 2017-09-22 11:21:52
# Datalink statistics
-- Total of 1 flow:
Average throughput: 2.74 Mbit/s
95th percentile per-packet one-way delay: 73.619 ms
Loss rate: 0.16%
-- Flow 1:
Average throughput: 2.74 Mbit/s
95th percentile per-packet one-way delay: 73.619 ms
Loss rate: 0.16%
```

### Run 3: Report of Indigo — Data Link

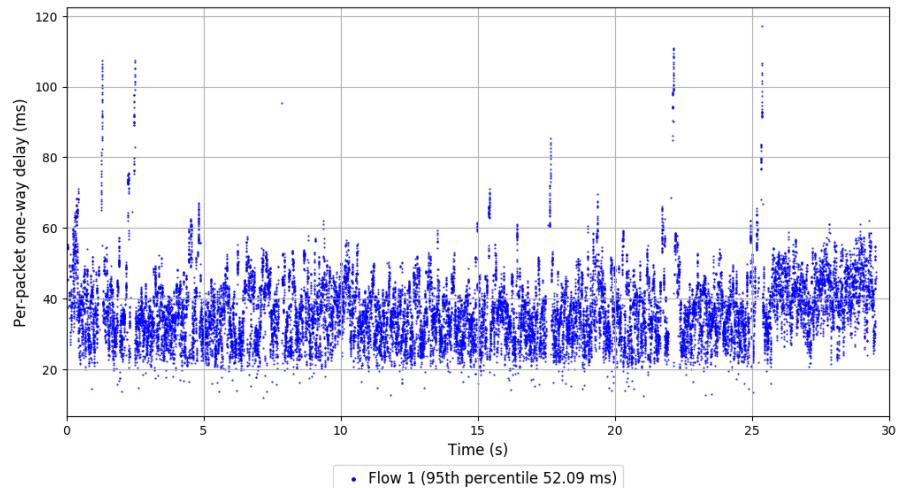
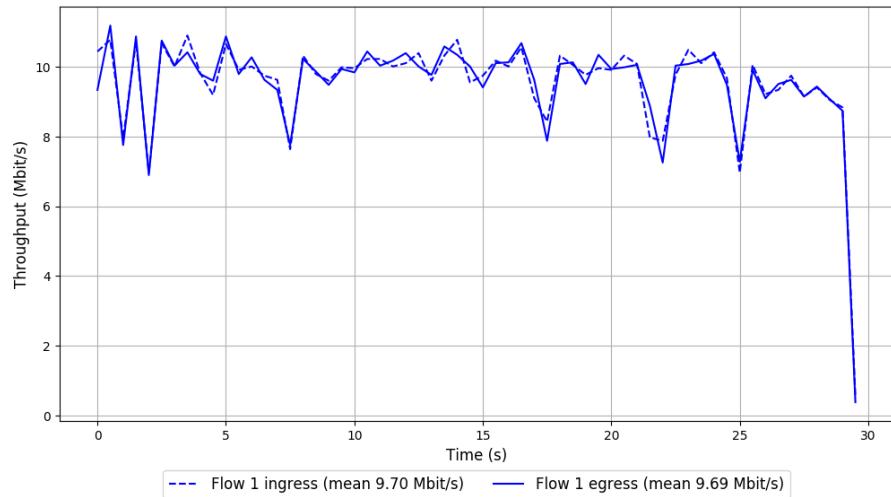


```
Run 1: Statistics of Indigo-cellular
```

```
Start at: 2017-09-22 09:46:55
End at: 2017-09-22 09:47:25
Local clock offset: -0.954 ms
Remote clock offset: -2.187 ms

# Below is generated by plot.py at 2017-09-22 11:21:55
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.69 Mbit/s
95th percentile per-packet one-way delay: 52.090 ms
Loss rate: 0.21%
-- Flow 1:
Average throughput: 9.69 Mbit/s
95th percentile per-packet one-way delay: 52.090 ms
Loss rate: 0.21%
```

## Run 1: Report of Indigo-cellular — Data Link

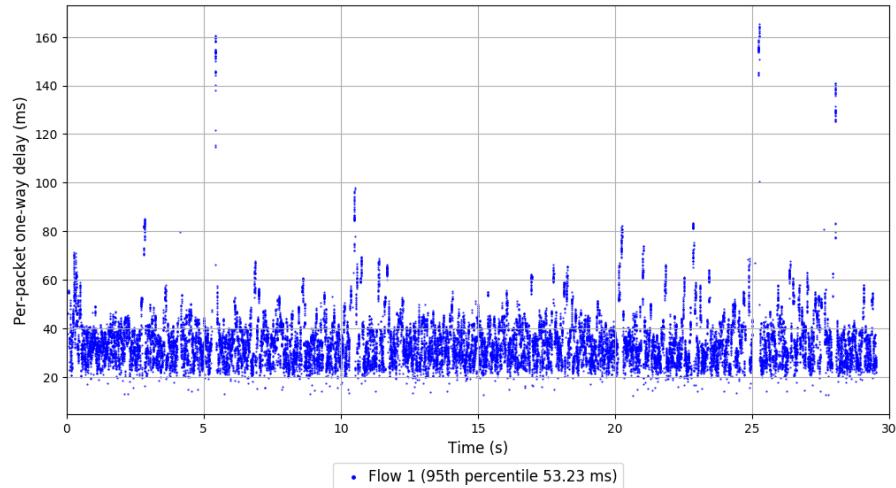
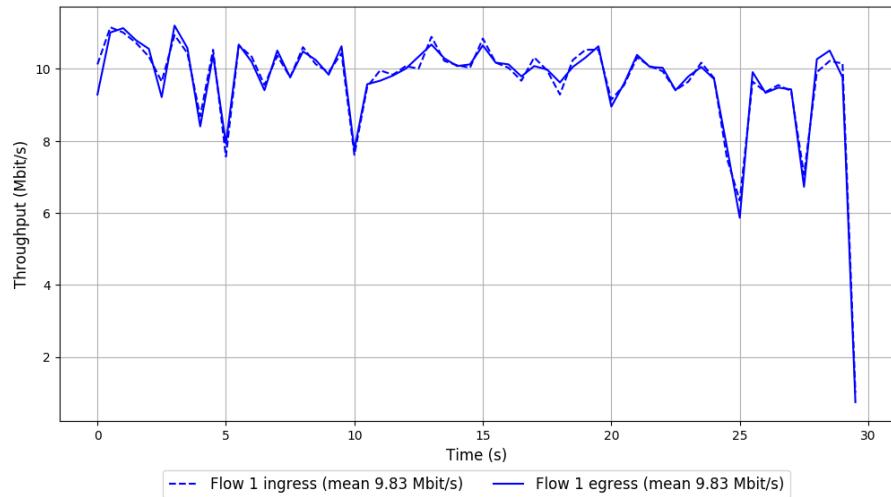


Run 2: Statistics of Indigo-cellular

```
Start at: 2017-09-22 10:03:24
End at: 2017-09-22 10:03:54
Local clock offset: -0.824 ms
Remote clock offset: -2.449 ms

# Below is generated by plot.py at 2017-09-22 11:21:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.83 Mbit/s
95th percentile per-packet one-way delay: 53.232 ms
Loss rate: 0.18%
-- Flow 1:
Average throughput: 9.83 Mbit/s
95th percentile per-packet one-way delay: 53.232 ms
Loss rate: 0.18%
```

## Run 2: Report of Indigo-cellular — Data Link

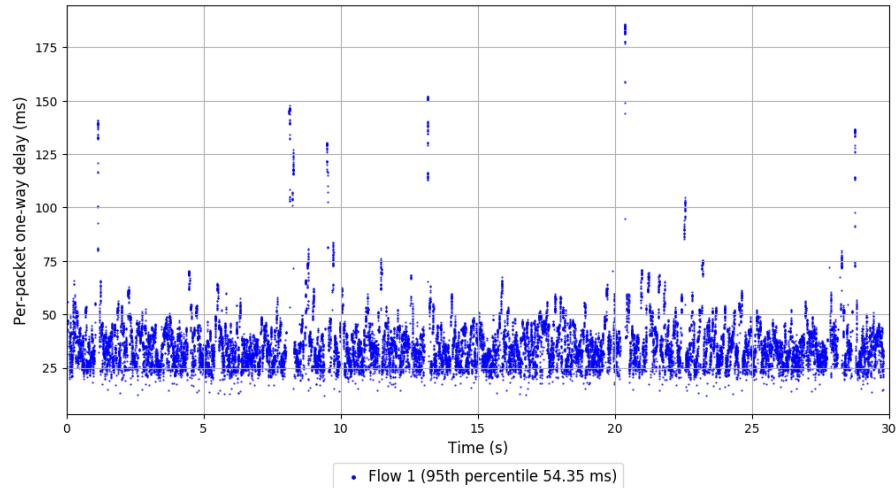
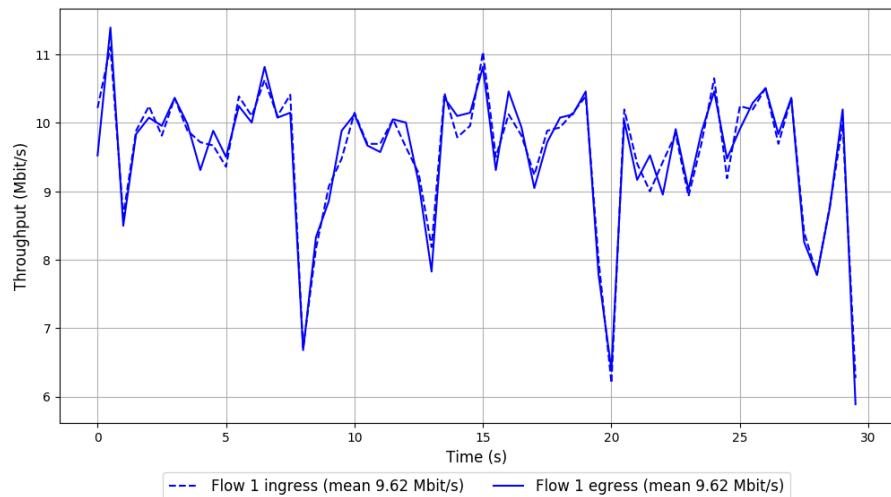


Run 3: Statistics of Indigo-cellular

```
Start at: 2017-09-22 10:19:53
End at: 2017-09-22 10:20:23
Local clock offset: -0.509 ms
Remote clock offset: -2.107 ms

# Below is generated by plot.py at 2017-09-22 11:21:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 9.62 Mbit/s
95th percentile per-packet one-way delay: 54.349 ms
Loss rate: 0.17%
-- Flow 1:
Average throughput: 9.62 Mbit/s
95th percentile per-packet one-way delay: 54.349 ms
Loss rate: 0.17%
```

### Run 3: Report of Indigo-cellular — Data Link

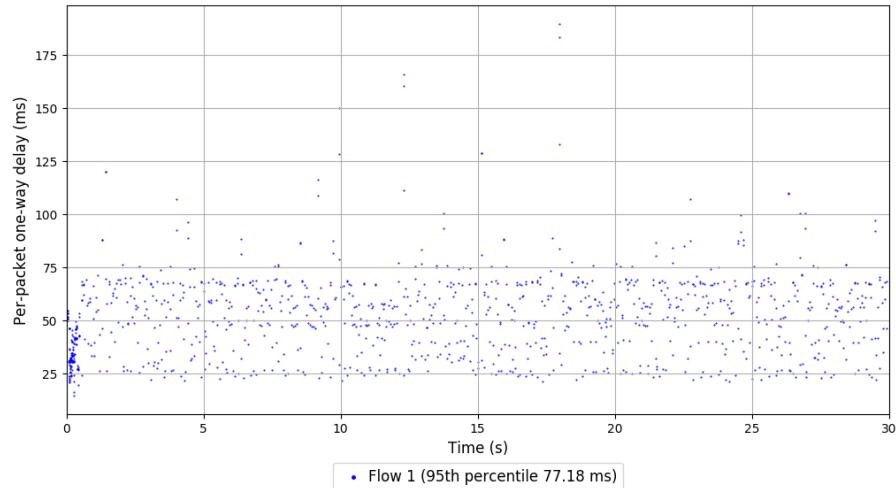
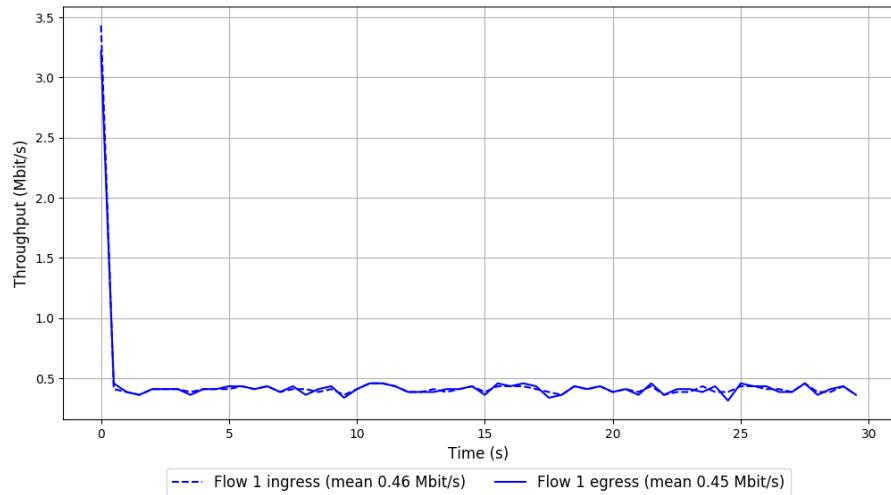


```
Run 1: Statistics of KohoCC

Start at: 2017-09-22 09:43:24
End at: 2017-09-22 09:43:54
Local clock offset: -1.102 ms
Remote clock offset: -2.199 ms

# Below is generated by plot.py at 2017-09-22 11:21:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 77.180 ms
Loss rate: 0.62%
-- Flow 1:
Average throughput: 0.45 Mbit/s
95th percentile per-packet one-way delay: 77.180 ms
Loss rate: 0.62%
```

## Run 1: Report of KohoCC — Data Link

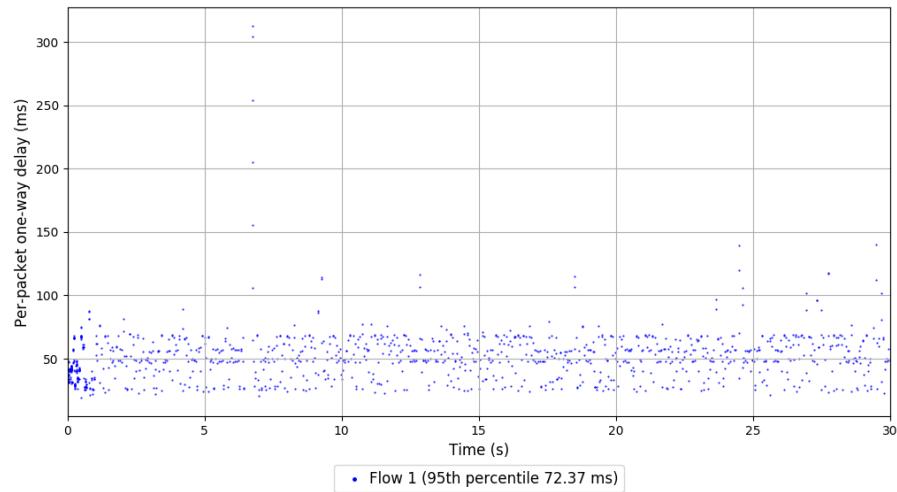
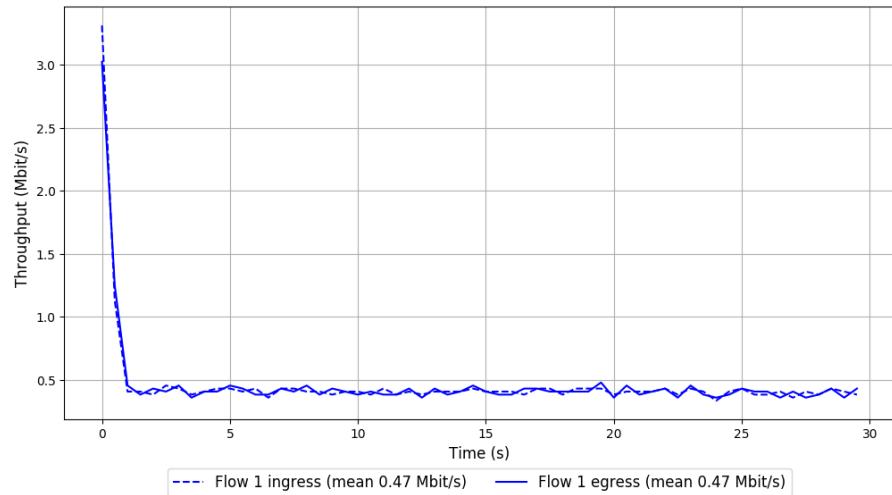


Run 2: Statistics of KohoCC

```
Start at: 2017-09-22 09:59:52
End at: 2017-09-22 10:00:22
Local clock offset: -0.797 ms
Remote clock offset: -2.382 ms

# Below is generated by plot.py at 2017-09-22 11:21:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 72.370 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 72.370 ms
Loss rate: 0.51%
```

## Run 2: Report of KohoCC — Data Link



Run 3: Statistics of KohoCC

```
Start at: 2017-09-22 10:16:21
End at: 2017-09-22 10:16:51
Local clock offset: -0.543 ms
Remote clock offset: -2.136 ms

# Below is generated by plot.py at 2017-09-22 11:21:56
# Datalink statistics
-- Total of 1 flow:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 73.219 ms
Loss rate: 0.91%
-- Flow 1:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 73.219 ms
Loss rate: 0.91%
```

### Run 3: Report of KohoCC — Data Link

