Pantheon Report

Generated at 2018-08-22 18:34:48 (UTC).
Data path: Colombia ppp0 ppp0 (remote) → AWS Brazil 2 Ethernet (local).
Repeated the test of 17 congestion control schemes 3 times.
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
NTP offsets were measured against gps.ntp.br and have been applied to correct the timestamps in logs.

System info:
Linux 4.15.0-1017-aws
net.core.default_qdisc = fq_codel
net.core.rmem_default = 16777216
net.core.rmem_max = 33554432
net.core.wmem_default = 212992
net.core.wmem_max = 212992
net.ipv4.tcp_rmem = 4096 87380 6291456
net.ipv4.tcp_wmem = 4096 16384 4194304

Git summary:
branch: master @ 7719b900459a706f8452ab7d4a94dd562e9296e
third_party/fillp @ d47f4fa1b45a5e3c0537115c5a28436dbd4b834
third_party/fillp-sheep @ daed0c84f98531712514b2231f43ec6901114ffe
third_party/genericCC @ d0153f8e594aaa89e93b032143cedbfe58e562f4
third_party/indigo @ 2601c92e4aa9d58d38dc44de0eddbf90c077e64d
third_party/libutp @ b34659b492e2826f2b179eaab4a9060e6bb7cf3cfc
third_party/pantheon-tunnel @ 6f038ed31259d366f9840f65b82cbe8f464b1b39
third_party/pcc @ 1afc9558fa0d66d18b623c091a55feca872b49b1e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8adc08f9a2c4eb24f974ab
third_party/proto-quic @ 77961f1a82733a86b42f1bc8143c097bf3c0f42
third_party/scream-reproduce @ f099118d1421a3131bf11ff1964974e1da3bdb2
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 @ 2bafa86211435ae071a32f96b7d8c504587f5d7f4
third_party/webrtc @ 3f0ccf2a9061a41b6f9d04735770d143a1fa2851
test from Colombia ppp0 to AWS Brazil 2, 3 runs of 30s each per scheme
3 flows with 10s interval between flows (mean of all runs by scheme)
<table>
<thead>
<tr>
<th>scheme</th>
<th># runs</th>
<th>mean avg tput (Mbit/s)</th>
<th>mean 95th-%ile delay (ms)</th>
<th>mean loss rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>flow 1     flow 2     flow 3</td>
<td>flow 1     flow 2     flow 3</td>
<td>flow 1     flow 2     flow 3</td>
</tr>
<tr>
<td>TCP BBR</td>
<td>3</td>
<td>0.22       0.16       0.10</td>
<td>2804.24    2914.45    3140.71</td>
<td>4.68       7.98       43.88</td>
</tr>
<tr>
<td>Copa</td>
<td>3</td>
<td>0.23       0.17       0.11</td>
<td>1405.77    1348.83    1376.97</td>
<td>3.26       6.72       10.23</td>
</tr>
<tr>
<td>TCP Cubic</td>
<td>2</td>
<td>0.36       0.00       0.00</td>
<td>8017.39    7249.73    8330.73</td>
<td>32.02      53.44      90.87</td>
</tr>
<tr>
<td>FillIP</td>
<td>0</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
</tr>
<tr>
<td>FillIP-Sheep</td>
<td>0</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
</tr>
<tr>
<td>Indigo</td>
<td>3</td>
<td>0.16       0.12       0.18</td>
<td>1116.62    1068.45    1081.95</td>
<td>0.61       0.82       2.28</td>
</tr>
<tr>
<td>LEDBAT</td>
<td>3</td>
<td>0.18       0.10       0.09</td>
<td>519.69     2222.22    554.57</td>
<td>1.14       1.42       7.31</td>
</tr>
<tr>
<td>PCC-Allegro</td>
<td>0</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
</tr>
<tr>
<td>PCC-Expr</td>
<td>0</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
</tr>
<tr>
<td>QUIC Cubic</td>
<td>3</td>
<td>0.37       0.01       0.00</td>
<td>8538.31    7143.94    8765.72</td>
<td>30.98      0.00       50.00</td>
</tr>
<tr>
<td>SCRReAM</td>
<td>3</td>
<td>0.08       0.11       0.10</td>
<td>1039.82    1343.62    1370.81</td>
<td>0.79       0.73       2.33</td>
</tr>
<tr>
<td>Sprout</td>
<td>3</td>
<td>0.11       0.11       0.13</td>
<td>1059.58    1034.32    1155.43</td>
<td>0.99       0.92       2.60</td>
</tr>
<tr>
<td>TaoVA-100x</td>
<td>3</td>
<td>0.23       0.19       0.16</td>
<td>3776.15    4246.12    4663.43</td>
<td>10.82      17.44      46.61</td>
</tr>
<tr>
<td>TCP Vegas</td>
<td>3</td>
<td>0.27       0.20       0.12</td>
<td>2165.39    2233.18    2376.78</td>
<td>3.62       8.88       45.48</td>
</tr>
<tr>
<td>Verus</td>
<td>3</td>
<td>0.37       0.01       0.01</td>
<td>2565.37    2239.64    2500.16</td>
<td>4.42       4.62       15.45</td>
</tr>
<tr>
<td>PCC-Vivace</td>
<td>0</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
<td>N/A        N/A        N/A</td>
</tr>
<tr>
<td>WebRTC media</td>
<td>3</td>
<td>0.13       0.11       0.05</td>
<td>2549.61    2563.14    2410.12</td>
<td>0.74       1.62       11.19</td>
</tr>
</tbody>
</table>
Run 1: Statistics of TCP BBR

Start at: 2018-08-22 17:45:12
End at: 2018-08-22 17:45:42
Local clock offset: -4.644 ms
Remote clock offset: 8.502 ms

# Below is generated by plot.py at 2018-08-22 18:34:17
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.37 Mbit/s
  95th percentile per-packet one-way delay: 3959.217 ms
  Loss rate: 4.79%
-- Flow 1:
  Average throughput: 0.26 Mbit/s
  95th percentile per-packet one-way delay: 3957.462 ms
  Loss rate: 3.24%
-- Flow 2:
  Average throughput: 0.18 Mbit/s
  95th percentile per-packet one-way delay: 3964.740 ms
  Loss rate: 6.29%
-- Flow 3:
  Average throughput: 0.01 Mbit/s
  95th percentile per-packet one-way delay: 3937.711 ms
  Loss rate: 57.87%
Run 1: Report of TCP BBR — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 0.26 Mbit/s)  
Flow 1 egress (mean 0.26 Mbit/s)  
Flow 2 ingress (mean 0.18 Mbit/s)  
Flow 2 egress (mean 0.18 Mbit/s)  
Flow 3 ingress (mean 0.01 Mbit/s)  
Flow 3 egress (mean 0.01 Mbit/s)

Per-packet one-way delay (ms)

Time (s)

Flow 1 95th percentile 3957.46 ms  
Flow 2 95th percentile 3964.74 ms  
Flow 3 95th percentile 3937.71 ms
Run 2: Statistics of TCP BBR

Start at: 2018-08-22 18:06:05  
End at: 2018-08-22 18:06:35  
Local clock offset: -4.469 ms  
Remote clock offset: 6.812 ms

# Below is generated by plot.py at 2018-08-22 18:34:18
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.35 Mbit/s
  95th percentile per-packet one-way delay: 2242.044 ms
  Loss rate: 10.31%
-- Flow 1:
  Average throughput: 0.23 Mbit/s
  95th percentile per-packet one-way delay: 2141.765 ms
  Loss rate: 3.23%
-- Flow 2:
  Average throughput: 0.15 Mbit/s
  95th percentile per-packet one-way delay: 2346.141 ms
  Loss rate: 6.00%
-- Flow 3:
  Average throughput: 0.13 Mbit/s
  95th percentile per-packet one-way delay: 2154.442 ms
  Loss rate: 43.25%
Run 2: Report of TCP BBR — Data Link

![Graph 1: Throughput (Mbps) vs Time (s)]

- Flow 1 ingress (mean 0.22 Mbit/s)
- Flow 1 egress (mean 0.23 Mbit/s)
- Flow 2 ingress (mean 0.14 Mbit/s)
- Flow 2 egress (mean 0.15 Mbit/s)
- Flow 3 ingress (mean 0.18 Mbit/s)
- Flow 3 egress (mean 0.13 Mbit/s)

![Graph 2: Per-packet one-way delay (ms) vs Time (s)]

- Flow 1 95th percentile 2141.76 ms
- Flow 2 95th percentile 2346.14 ms
- Flow 3 95th percentile 2154.44 ms
Run 3: Statistics of TCP BBR

Start at: 2018-08-22 18:27:21
End at: 2018-08-22 18:27:51
Local clock offset: -5.061 ms
Remote clock offset: 2.604 ms

# Below is generated by plot.py at 2018-08-22 18:34:18
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.30 Mbit/s
  95th percentile per-packet one-way delay: 2782.454 ms
  Loss rate: 13.28%
-- Flow 1:
  Average throughput: 0.16 Mbit/s
  95th percentile per-packet one-way delay: 2313.497 ms
  Loss rate: 7.57%
-- Flow 2:
  Average throughput: 0.14 Mbit/s
  95th percentile per-packet one-way delay: 2432.482 ms
  Loss rate: 11.65%
-- Flow 3:
  Average throughput: 0.15 Mbit/s
  95th percentile per-packet one-way delay: 3329.990 ms
  Loss rate: 30.51%
Run 3: Report of TCP BBR — Data Link

![Graph showing throughput and latency over time for different flows]

Throughput (Mbps) vs. Time (s)

- Flow 1 ingress (mean 0.17 Mbps)
- Flow 1 egress (mean 0.16 Mbps)
- Flow 2 ingress (mean 0.16 Mbps)
- Flow 2 egress (mean 0.14 Mbps)
- Flow 3 ingress (mean 0.20 Mbps)
- Flow 3 egress (mean 0.15 Mbps)

Latency (ms) vs. Time (s)

- Flow 1 95th percentile 2313.50 ms
- Flow 2 95th percentile 2432.48 ms
- Flow 3 95th percentile 3329.99 ms
Run 1: Statistics of Copa

Start at: 2018-08-22 17:40:06
End at: 2018-08-22 17:40:36
Local clock offset: -4.279 ms
Remote clock offset: 9.671 ms

# Below is generated by plot.py at 2018-08-22 18:34:19
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 1850.884 ms
Loss rate: 7.28%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1829.535 ms
Loss rate: 6.25%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 1843.632 ms
Loss rate: 8.54%
-- Flow 3:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 1878.104 ms
Loss rate: 9.93%
Run 1: Report of Copa — Data Link
Run 2: Statistics of Copa

Start at: 2018-08-22 18:01:07
End at: 2018-08-22 18:01:37
Local clock offset: -5.904 ms
Remote clock offset: 8.008 ms

# Below is generated by plot.py at 2018-08-22 18:34:19
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.34 Mbit/s
  95th percentile per-packet one-way delay: 1617.754 ms
  Loss rate: 5.98%
-- Flow 1:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 1601.344 ms
  Loss rate: 2.52%
-- Flow 2:
  Average throughput: 0.14 Mbit/s
  95th percentile per-packet one-way delay: 1559.527 ms
  Loss rate: 10.58%
-- Flow 3:
  Average throughput: 0.08 Mbit/s
  95th percentile per-packet one-way delay: 1661.472 ms
  Loss rate: 16.55%
Run 2: Report of Copa — Data Link

![Graph 1: Throughput (Mbit/s)]

- Flow 1 ingress (mean 0.22 Mbit/s)
- Flow 1 egress (mean 0.22 Mbit/s)
- Flow 2 ingress (mean 0.16 Mbit/s)
- Flow 2 egress (mean 0.14 Mbit/s)
- Flow 3 ingress (mean 0.09 Mbit/s)
- Flow 3 egress (mean 0.08 Mbit/s)

![Graph 2: Per-packet one-way delay (ms)]

- Flow 1 (95th percentile 1601.34 ms)
- Flow 2 (95th percentile 1559.53 ms)
- Flow 3 (95th percentile 1661.47 ms)
Run 3: Statistics of Copa

Start at: 2018-08-22 18:22:17
End at: 2018-08-22 18:22:47
Local clock offset: -5.775 ms
Remote clock offset: 7.837 ms

# Below is generated by plot.py at 2018-08-22 18:34:19
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.45 Mbit/s
  95th percentile per-packet one-way delay: 733.054 ms
  Loss rate: 1.46%
-- Flow 1:
  Average throughput: 0.26 Mbit/s
  95th percentile per-packet one-way delay: 786.431 ms
  Loss rate: 1.01%
-- Flow 2:
  Average throughput: 0.19 Mbit/s
  95th percentile per-packet one-way delay: 643.320 ms
  Loss rate: 1.03%
-- Flow 3:
  Average throughput: 0.18 Mbit/s
  95th percentile per-packet one-way delay: 591.335 ms
  Loss rate: 4.22%
Run 3: Report of Copa — Data Link

![Graph showing throughput and delay over time]

**Throughput (Mbps):**
- Flow 1 ingress (mean 0.26 Mbps)
- Flow 1 egress (mean 0.26 Mbps)
- Flow 2 ingress (mean 0.19 Mbps)
- Flow 2 egress (mean 0.19 Mbps)
- Flow 3 ingress (mean 0.19 Mbps)
- Flow 3 egress (mean 0.18 Mbps)

**End-to-end one-way delay (ms):**
- Flow 1 (95th percentile 786.43 ms)
- Flow 2 (95th percentile 643.32 ms)
- Flow 3 (95th percentile 591.34 ms)
Run 1: Statistics of TCP Cubic

Start at: 2018-08-22 17:44:00
End at: 2018-08-22 17:44:30
Local clock offset: -4.555 ms
Remote clock offset: 3.64 ms

# Below is generated by plot.py at 2018-08-22 18:34:19
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.39 Mbit/s
  95th percentile per-packet one-way delay: 7653.820 ms
  Loss rate: 31.62%
-- Flow 1:
  Average throughput: 0.39 Mbit/s
  95th percentile per-packet one-way delay: 7643.983 ms
  Loss rate: 31.45%
-- Flow 2:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 6862.020 ms
  Loss rate: 53.44%
-- Flow 3:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 8012.730 ms
  Loss rate: 91.06%
Run 1: Report of TCP Cubic — Data Link

![Graph 1](image1.png)

![Graph 2](image2.png)
Run 2: Statistics of TCP Cubic

Start at: 2018-08-22 18:04:53
End at: 2018-08-22 18:05:23
Local clock offset: -5.268 ms
Remote clock offset: 8.889 ms

# Below is generated by plot.py at 2018-08-22 18:34:19
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.34 Mbit/s
  95th percentile per-packet one-way delay: 8390.806 ms
  Loss rate: 32.77%
-- Flow 1:
  Average throughput: 0.34 Mbit/s
  95th percentile per-packet one-way delay: 8390.806 ms
  Loss rate: 32.58%
-- Flow 2:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 7637.441 ms
  Loss rate: 53.44%
-- Flow 3:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 8648.722 ms
  Loss rate: 90.68%
Run 2: Report of TCP Cubic — Data Link
Run 3: Statistics of TCP Cubic

Start at: 2018-08-22 18:26:09
End at: 2018-08-22 18:26:39
Local clock offset: -5.081 ms
Remote clock offset: 7.772 ms
Run 3: Report of TCP Cubic — Data Link

![TCP Cubic Data Link Graph](image)

![TCP Cubic Data Link Graph](image)
Run 1: Statistics of FillP

Start at: 2018-08-22 17:32:42
End at: 2018-08-22 17:33:12
Local clock offset: ~4.27 ms
Remote clock offset: 8.496 ms
Run 1: Report of FillP — Data Link

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**Graph 1:**
- X-axis: Time (s)
- Y-axis: Throughput (Mbit/s)
- Legend:
  - Flow 1 ingress (mean 1.40 Mbit/s)
  - Flow 1 egress (mean 0.31 Mbit/s)
  - Flow 2 ingress (mean 0.00 Mbit/s)
  - Flow 2 egress (mean 0.00 Mbit/s)
  - Flow 3 ingress (mean 0.00 Mbit/s)
  - Flow 3 egress (mean 0.00 Mbit/s)

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**Graph 2:**
- X-axis: Time (s)
- Y-axis: Per-packet one-way delay (ms)
- Legend:
  - Flow 1 (95th percentile 25481.70 ms)
Run 2: Statistics of FillP

Start at: 2018-08-22 17:53:55
End at: 2018-08-22 17:54:25
Local clock offset: -4.966 ms
Remote clock offset: 7.344 ms
Run 2: Report of FillP — Data Link

![Throughput Graph](image1)

![Packet Delay Graph](image2)
Run 3: Statistics of FillP

Start at: 2018-08-22 18:14:55
End at: 2018-08-22 18:15:25
Local clock offset: -5.811 ms
Remote clock offset: 7.888 ms
Run 3: Report of FillP — Data Link

![Graph 1: Throughput (Mbps)](image1)

- **Flow 1 ingress** (mean 1.35 Mbps)
- **Flow 1 egress** (mean 0.40 Mbps)
- **Flow 2 ingress** (mean 0.00 Mbps)
- **Flow 2 egress** (mean 0.00 Mbps)
- **Flow 3 ingress** (mean 0.00 Mbps)
- **Flow 3 egress** (mean 0.00 Mbps)

![Graph 2: Per-packet one-way delay (ms)](image2)

- **Flow 1** (95th percentile 21430.42 ms)
Run 1: Statistics of FillP-Sheep

Start at: 2018-08-22 17:31:30
End at: 2018-08-22 17:32:00
Local clock offset: -3.933 ms
Remote clock offset: 8.537 ms
Run 1: Report of FillP-Sheep — Data Link

- Flow 1 ingress (mean 0.71 Mbit/s)
- Flow 1 egress (mean 0.37 Mbit/s)
- Flow 2 ingress (mean 0.00 Mbit/s)
- Flow 2 egress (mean 0.00 Mbit/s)
- Flow 3 ingress (mean 0.00 Mbit/s)
- Flow 3 egress (mean 0.00 Mbit/s)

- Flow 1 (95th percentile 21631.96 ms)
Run 2: Statistics of FillP-Sheep

Start at: 2018-08-22 17:52:42
End at: 2018-08-22 17:53:12
Local clock offset: ~4.172 ms
Remote clock offset: 4.66 ms
Run 2: Report of FillP-Sheep — Data Link

Throughput (Mbit/s)

Time (s)

Flow 1 ingress (mean 0.52 Mbit/s)  Flow 1 egress (mean 0.35 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)  Flow 2 egress (mean 0.01 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s)  Flow 3 egress (mean 0.00 Mbit/s)

Per-packet one-way delay (ms)

Time (s)

Flow 1 (95th percentile 16275.97 ms)  Flow 2 (95th percentile 14784.45 ms)
Run 3: Statistics of FillP-Sheep

/home/ubuntu/pantheon/data/2018-08-22T17-30-Colombia-ppp0-to-AWS-Brazil-2-3-runs-3-flows/fillp_sheep_stats_run3.log does not exist
Run 3: Report of FillP-Sheep — Data Link

Figure is missing

Figure is missing
Run 1: Statistics of Indigo

Start at: 2018-08-22 17:38:54
End at: 2018-08-22 17:39:24
Local clock offset: -4.963 ms
Remote clock offset: 3.55 ms

# Below is generated by plot.py at 2018-08-22 18:34:24
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.28 Mbit/s
  95th percentile per-packet one-way delay: 1134.882 ms
  Loss rate: 1.18%
-- Flow 1:
  Average throughput: 0.14 Mbit/s
  95th percentile per-packet one-way delay: 1174.753 ms
  Loss rate: 0.85%
-- Flow 2:
  Average throughput: 0.11 Mbit/s
  95th percentile per-packet one-way delay: 1117.131 ms
  Loss rate: 1.06%
-- Flow 3:
  Average throughput: 0.17 Mbit/s
  95th percentile per-packet one-way delay: 946.382 ms
  Loss rate: 2.14%
Run 1: Report of Indigo — Data Link

[Graph showing throughput and packet delay over time for different flows, with legend indicating mean speeds and 95th percentile delays for each flow.]
Run 2: Statistics of Indigo

Start at: 2018-08-22 17:59:56
End at: 2018-08-22 18:00:26
Local clock offset: -5.127 ms
Remote clock offset: 9.236 ms

# Below is generated by plot.py at 2018-08-22 18:34:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.28 Mbit/s
95th percentile per-packet one-way delay: 1166.411 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 1186.227 ms
Loss rate: 0.57%
-- Flow 2:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1026.681 ms
Loss rate: 0.86%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1248.934 ms
Loss rate: 1.80%
Run 2: Report of Indigo — Data Link

![Graph showing throughput and per-packet one-way delay over time for different flows.]

- **Flow 1 Ingress (mean 0.14 Mbit/s)**
- **Flow 1 Egress (mean 0.15 Mbit/s)**
- **Flow 2 Ingress (mean 0.14 Mbit/s)**
- **Flow 2 Egress (mean 0.14 Mbit/s)**
- **Flow 3 Ingress (mean 0.14 Mbit/s)**
- **Flow 3 Egress (mean 0.14 Mbit/s)**

- **Per-packet one-way delay (ms):**
  - **Flow 1 95th percentile 1186.23 ms**
  - **Flow 2 95th percentile 1026.68 ms**
  - **Flow 3 95th percentile 1248.93 ms**
Run 3: Statistics of Indigo

Start at: 2018-08-22 18:21:05
End at: 2018-08-22 18:21:35
Local clock offset: -5.781 ms
Remote clock offset: 7.838 ms

# Below is generated by plot.py at 2018-08-22 18:34:25
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.34 Mbit/s
95th percentile per-packet one-way delay: 1050.530 ms
Loss rate: 0.95%
-- Flow 1:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 988.888 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 1061.539 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 1050.530 ms
Loss rate: 2.89%
Run 3: Report of Indigo — Data Link

![Graph showing network performance metrics over time.](image-url)
Run 1: Statistics of LEDBAT

Start at: 2018-08-22 17:48:58
End at: 2018-08-22 17:49:28
Local clock offset: -5.661 ms
Remote clock offset: 3.581 ms

# Below is generated by plot.py at 2018-08-22 18:34:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 1348.584 ms
Loss rate: 2.44%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 719.766 ms
Loss rate: 1.65%
-- Flow 2:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 5808.348 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 717.233 ms
Loss rate: 14.70%
Run 1: Report of LEDBAT — Data Link

![Graph of throughput and round-trip time](image)

- **Throughput (Mbps)**
- **Time (s)**
- **Flow 1 ingress (mean 0.14 Mbit/s)**
- **Flow 1 egress (mean 0.14 Mbit/s)**
- **Flow 2 ingress (mean 0.05 Mbit/s)**
- **Flow 2 egress (mean 0.05 Mbit/s)**
- **Flow 3 ingress (mean 0.05 Mbit/s)**
- **Flow 3 egress (mean 0.05 Mbit/s)**

![Graph of per-packet one-way delay (ms)](image)

- **Per-packet one-way delay (ms)**
- **Time (s)**
- **Flow 1 (95th percentile 719.77 ms)**
- **Flow 2 (95th percentile 5808.35 ms)**
- **Flow 3 (95th percentile 717.23 ms)**
Run 2: Statistics of LEDBAT

Start at: 2018-08-22 18:09:48
End at: 2018-08-22 18:10:18
Local clock offset: -5.976 ms
Remote clock offset: 4.135 ms

# Below is generated by plot.py at 2018-08-22 18:34:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 411.468 ms
Loss rate: 1.29%
-- Flow 1:
Average throughput: 0.24 Mbit/s
95th percentile per-packet one-way delay: 400.891 ms
Loss rate: 0.82%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 421.435 ms
Loss rate: 1.83%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 419.488 ms
Loss rate: 3.86%
Run 2: Report of LEDBAT — Data Link

![Throughput Graph](image1)

![Delay Graph](image2)
Run 3: Statistics of LEDBAT

Start at: 2018-08-22 18:31:11
End at: 2018-08-22 18:31:41
Local clock offset: -5.861 ms
Remote clock offset: 6.859 ms

# Below is generated by plot.py at 2018-08-22 18:34:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 446.881 ms
Loss rate: 1.77%
-- Flow 1:
Average throughput: 0.17 Mbit/s
95th percentile per-packet one-way delay: 438.421 ms
Loss rate: 0.94%
-- Flow 2:
Average throughput: 0.15 Mbit/s
95th percentile per-packet one-way delay: 436.875 ms
Loss rate: 2.43%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 526.987 ms
Loss rate: 3.37%
Run 3: Report of LEDBAT — Data Link

![Graph showing throughput and delay over time for different flows.]

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 0.17 Mbps)
  - Flow 1 egress (mean 0.17 Mbps)
  - Flow 2 ingress (mean 0.15 Mbps)
  - Flow 2 egress (mean 0.15 Mbps)
  - Flow 3 ingress (mean 0.14 Mbps)
  - Flow 3 egress (mean 0.14 Mbps)

- **Delay (ms):**
  - Flow 1 (95th percentile 438.42 ms)
  - Flow 2 (95th percentile 436.88 ms)
  - Flow 3 (95th percentile 526.99 ms)
Run 1: Statistics of PCC-Allegro

Start at: 2018-08-22 17:51:21
End at: 2018-08-22 17:51:51
Local clock offset: -4.893 ms
Remote clock offset: 9.694 ms
Run 1: Report of PCC-Allegro — Data Link

[Graph 1: Throughput (Mbps) vs Time (s)]

[Graph 2: Per-packet one-way delay (ms) vs Time (s)]

Flow 1 ingress (mean 1.50 Mbit/s)
Flow 1 egress (mean 0.36 Mbit/s)
Flow 2 ingress (mean 0.00 Mbit/s)
Flow 2 egress (mean 0.00 Mbit/s)
Flow 3 ingress (mean 0.00 Mbit/s)
Flow 3 egress (mean 0.00 Mbit/s)
Run 2: Statistics of PCC-Allegro

Start at: 2018-08-22 18:12:12
End at: 2018-08-22 18:12:42
Local clock offset: -5.088 ms
Remote clock offset: 2.948 ms
Run 2: Report of PCC-Allegro — Data Link

![Graph 1: Throughput (Mbps)]

- **Flow 1 ingress**: mean 0.00 Mbps/s
- **Flow 1 egress**: mean 0.00 Mbps/s
- **Flow 2 ingress**: mean 1.92 Mbps/s
- **Flow 2 egress**: mean 0.35 Mbps/s
- **Flow 3 ingress**: mean 0.00 Mbps/s
- **Flow 3 egress**: mean 0.00 Mbps/s

![Graph 2: Per-packet one-way delay (ms)]

- **Flow 1**: 95th percentile 2879.53 ms
- **Flow 2**: 95th percentile 17495.98 ms
Run 3: Statistics of PCC-Allegro

Start at: 2018-08-22 18:33:35
End at: 2018-08-22 18:34:05
Local clock offset: -4.267 ms
Remote clock offset: 1.819 ms
Run 3: Report of PCC-Allegro — Data Link

![Graph 1: Throughput (Mbps)](image1)

- **Flow 1 ingress (mean 1.37 Mbps)**
- **Flow 1 egress (mean 0.40 Mbps)**
- **Flow 2 ingress (mean 0.00 Mbps)**
- **Flow 2 egress (mean 0.00 Mbps)**
- **Flow 3 ingress (mean 0.00 Mbps)**
- **Flow 3 egress (mean 0.00 Mbps)**

![Graph 2: Packet per second delay (ms)](image2)

- **Flow 1 (95th percentile 26139.94 ms)**
Run 1: Statistics of PCC-Expr

Start at: 2018-08-22 17:46:23
End at: 2018-08-22 17:46:53
Local clock offset: -5.509 ms
Remote clock offset: 3.718 ms
Run 1: Report of PCC-Expr — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 6.60 Mbps)
Flow 1 egress (mean 0.19 Mbps)
Flow 2 ingress (mean 0.00 Mbps)
Flow 2 egress (mean 0.00 Mbps)
Flow 3 ingress (mean 0.00 Mbps)
Flow 3 egress (mean 0.00 Mbps)

Per-packet one-way delay (ms)

Flow 1 (95th percentile 20770.16 ms)
Run 2: Statistics of PCC-Expr

Start at: 2018-08-22 18:07:16
End at: 2018-08-22 18:07:46
Local clock offset: -5.246 ms
Remote clock offset: 4.107 ms
Run 3: Statistics of PCC-Expr

Start at: 2018-08-22 18:28:33
End at: 2018-08-22 18:29:03
Local clock offset: -5.013 ms
Remote clock offset: 7.365 ms
Run 3: Report of PCC-Expr — Data Link

![Graph 1: Throughput vs Time](image1)

![Graph 2: Packet Delay vs Time](image2)
Run 1: Statistics of QUIC Cubic

Start at: 2018-08-22 17:34:07
End at: 2018-08-22 17:34:37
Local clock offset: -3.933 ms
Remote clock offset: 9.493 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 8912.741 ms
Loss rate: 30.38%
-- Flow 1:
Average throughput: 0.38 Mbit/s
95th percentile per-packet one-way delay: 8910.240 ms
Loss rate: 30.38%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7204.285 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 9022.309 ms
Loss rate: 50.00%
Run 1: Report of QUIC Cubic — Data Link

**Graph 1:**
Throughput (Mbps) vs. Time (s)
- Flow 1 ingress (mean 0.55 Mbps)
- Flow 1 egress (mean 0.38 Mbps)
- Flow 2 ingress (mean 0.00 Mbps)
- Flow 2 egress (mean 0.00 Mbps)
- Flow 3 ingress (mean 0.00 Mbps)
- Flow 3 egress (mean 0.00 Mbps)

**Graph 2:**
Per-packet one-way delay (ms) vs. Time (s)
- Flow 1 (95th percentile 8910.24 ms)
- Flow 2 (95th percentile 7294.28 ms)
- Flow 3 (95th percentile 9022.31 ms)
Run 2: Statistics of QUIC Cubic

Start at: 2018-08-22 17:55:07
End at: 2018-08-22 17:55:37
Local clock offset: -5.774 ms
Remote clock offset: 9.352 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.36 Mbit/s
  95th percentile per-packet one-way delay: 7541.036 ms
  Loss rate: 27.82%
-- Flow 1:
  Average throughput: 0.34 Mbit/s
  95th percentile per-packet one-way delay: 7591.161 ms
  Loss rate: 28.69%
-- Flow 2:
  Average throughput: 0.03 Mbit/s
  95th percentile per-packet one-way delay: 7108.220 ms
  Loss rate: 0.00%
-- Flow 3:
  Average throughput: 0.00 Mbit/s
  95th percentile per-packet one-way delay: 7658.656 ms
  Loss rate: 33.33%
Run 2: Report of QUIC Cubic — Data Link
Run 3: Statistics of QUIC Cubic

Start at: 2018-08-22 18:16:17
End at: 2018-08-22 18:16:47
Local clock offset: -5.04 ms
Remote clock offset: 4.104 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 9169.571 ms
Loss rate: 33.88%
-- Flow 1:
Average throughput: 0.39 Mbit/s
95th percentile per-packet one-way delay: 9113.543 ms
Loss rate: 33.88%
-- Flow 2:
Average throughput: 0.00 Mbit/s
95th percentile per-packet one-way delay: 7119.307 ms
Loss rate: 0.00%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 9616.199 ms
Loss rate: 66.67%
Run 3: Report of QUIC Cubic — Data Link
Run 1: Statistics of SCReAM

Start at: 2018-08-22 17:50:10
End at: 2018-08-22 17:50:40
Local clock offset: -5.629 ms
Remote clock offset: 3.672 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 280.422 ms
Loss rate: 0.94%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 268.223 ms
Loss rate: 0.79%
-- Flow 2:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 277.515 ms
Loss rate: 0.79%
-- Flow 3:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 309.287 ms
Loss rate: 1.60%
Run 1: Report of SCReAM — Data Link

![Graph showing network performance metrics over time](image1)

- **Graph 1**: Throughput (Mbps) vs. Time (s)
  - Lines for different flows with labeled mean bandwidths

- **Graph 2**: Per-packet one-way delay (ms) vs. Time (s)
  - Markers for 95th percentile delay times

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Run 2: Statistics of SCReAM

Start at: 2018-08-22 18:11:00
End at: 2018-08-22 18:11:30
Local clock offset: -5.884 ms
Remote clock offset: 4.146 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.16 Mbit/s
95th percentile per-packet one-way delay: 3193.914 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 0.07 Mbit/s
95th percentile per-packet one-way delay: 2564.081 ms
Loss rate: 0.92%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 3453.006 ms
Loss rate: 0.41%
-- Flow 3:
Average throughput: 0.09 Mbit/s
95th percentile per-packet one-way delay: 3474.871 ms
Loss rate: 3.51%
Run 2: Report of SCReAM — Data Link
Run 3: Statistics of SCReAM

Start at: 2018-08-22 18:32:23
End at: 2018-08-22 18:32:53
Local clock offset: -5.812 ms
Remote clock offset: 1.893 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 297.402 ms
Loss rate: 1.01%
-- Flow 1:
Average throughput: 0.08 Mbit/s
95th percentile per-packet one-way delay: 287.170 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 300.352 ms
Loss rate: 0.99%
-- Flow 3:
Average throughput: 0.10 Mbit/s
95th percentile per-packet one-way delay: 328.280 ms
Loss rate: 1.87%
Run 3: Report of SCReAM — Data Link
Run 1: Statistics of Sprout

Start at: 2018-08-22 17:42:48
End at: 2018-08-22 17:43:18
Local clock offset: -4.465 ms
Remote clock offset: 3.603 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 812.895 ms
Loss rate: 1.56%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 796.948 ms
Loss rate: 1.40%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 787.532 ms
Loss rate: 0.65%
-- Flow 3:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 847.823 ms
Loss rate: 3.48%
Run 1: Report of Sprout — Data Link

![Graph showing throughput and per-packet round-trip delay over time for different flows.]

- Flow 1 ingress (mean 0.11 Mbit/s)
- Flow 1 egress (mean 0.11 Mbit/s)
- Flow 2 ingress (mean 0.11 Mbit/s)
- Flow 2 egress (mean 0.11 Mbit/s)
- Flow 3 ingress (mean 0.13 Mbit/s)
- Flow 3 egress (mean 0.13 Mbit/s)

Flow 1 (95th percentile 796.95 ms)
Flow 2 (95th percentile 787.53 ms)
Flow 3 (95th percentile 847.82 ms)
Run 2: Statistics of Sprout

Start at: 2018-08-22 18:03:42
End at: 2018-08-22 18:04:12
Local clock offset: -5.956 ms
Remote clock offset: 3.171 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.21 Mbit/s
  95th percentile per-packet one-way delay: 1564.030 ms
  Loss rate: 1.24%
-- Flow 1:
  Average throughput: 0.10 Mbit/s
  95th percentile per-packet one-way delay: 1563.673 ms
  Loss rate: 0.51%
-- Flow 2:
  Average throughput: 0.10 Mbit/s
  95th percentile per-packet one-way delay: 1505.318 ms
  Loss rate: 1.07%
-- Flow 3:
  Average throughput: 0.12 Mbit/s
  95th percentile per-packet one-way delay: 1706.716 ms
  Loss rate: 3.34%
Run 2: Report of Sprout — Data Link
Run 3: Statistics of Sprout

Start at: 2018-08-22 18:24:58
End at: 2018-08-22 18:25:28
Local clock offset: -4.99 ms
Remote clock offset: 4.083 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.23 Mbit/s
95th percentile per-packet one-way delay: 828.939 ms
Loss rate: 1.04%
-- Flow 1:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 818.110 ms
Loss rate: 1.05%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 810.115 ms
Loss rate: 1.04%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 911.742 ms
Loss rate: 0.99%
Run 3: Report of Sprout — Data Link
Run 1: Statistics of TaoVA-100x

Start at: 2018-08-22 17:37:42
End at: 2018-08-22 17:38:12
Local clock offset: -4.749 ms
Remote clock offset: 8.399 ms

# Below is generated by plot.py at 2018-08-22 18:34:39
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.36 Mbit/s
95th percentile per-packet one-way delay: 4651.712 ms
Loss rate: 28.98%
-- Flow 1:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 4364.537 ms
Loss rate: 20.56%
-- Flow 2:
Average throughput: 0.19 Mbit/s
95th percentile per-packet one-way delay: 5009.251 ms
Loss rate: 30.09%
-- Flow 3:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 4791.498 ms
Loss rate: 54.09%
Run 1: Report of TaoVA-100x — Data Link

Throughput (Mbps)

Time (s)

Flow 1 ingress (mean 0.26 Mbit/s)
Flow 1 egress (mean 0.21 Mbit/s)
Flow 2 ingress (mean 0.25 Mbit/s)
Flow 2 egress (mean 0.19 Mbit/s)
Flow 3 ingress (mean 0.39 Mbit/s)
Flow 3 egress (mean 0.14 Mbit/s)

Per-packet one-way delay (ms)

Time (s)

Flow 1 (95th percentile 4364.54 ms)
Flow 2 (95th percentile 5009.25 ms)
Flow 3 (95th percentile 4791.50 ms)
Run 2: Statistics of TaoVA-100x

Start at: 2018-08-22 17:58:43
End at: 2018-08-22 17:59:13
Local clock offset: -5.094 ms
Remote clock offset: 8.113 ms

# Below is generated by plot.py at 2018-08-22 18:34:40
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.37 Mbit/s
  95th percentile per-packet one-way delay: 4182.148 ms
  Loss rate: 15.17%
-- Flow 1:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 3808.667 ms
  Loss rate: 6.44%
-- Flow 2:
  Average throughput: 0.18 Mbit/s
  95th percentile per-packet one-way delay: 4171.615 ms
  Loss rate: 11.85%
-- Flow 3:
  Average throughput: 0.15 Mbit/s
  95th percentile per-packet one-way delay: 4642.255 ms
  Loss rate: 47.99%
Run 2: Report of TaoVA-100x — Data Link

![Graph showing throughput and delay over time for different flows.

Throughput:
- Flow 1 ingress (mean 0.23 Mbit/s)
- Flow 1 egress (mean 0.22 Mbit/s)
- Flow 2 ingress (mean 0.19 Mbit/s)
- Flow 2 egress (mean 0.18 Mbit/s)
- Flow 3 ingress (mean 0.34 Mbit/s)
- Flow 3 egress (mean 0.15 Mbit/s)

Delay:
- Flow 1 95th percentile 3808.67 ms
- Flow 2 95th percentile 4171.61 ms
- Flow 3 95th percentile 4642.26 ms]
Run 3: Statistics of TaoVA-100x

Start at: 2018-08-22 18:19:53
End at: 2018-08-22 18:20:23
Local clock offset: -5.789 ms
Remote clock offset: 4.157 ms

# Below is generated by plot.py at 2018-08-22 18:34:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.44 Mbit/s
95th percentile per-packet one-way delay: 3947.563 ms
Loss rate: 11.81%
-- Flow 1:
Average throughput: 0.27 Mbit/s
95th percentile per-packet one-way delay: 3155.251 ms
Loss rate: 5.46%
-- Flow 2:
Average throughput: 0.20 Mbit/s
95th percentile per-packet one-way delay: 3557.495 ms
Loss rate: 10.39%
-- Flow 3:
Average throughput: 0.18 Mbit/s
95th percentile per-packet one-way delay: 4556.532 ms
Loss rate: 37.76%
Run 3: Report of TaoVA-100x — Data Link
Run 1: Statistics of TCP Vegas

Start at: 2018-08-22 17:35:19
End at: 2018-08-22 17:35:49
Local clock offset: -4.008 ms
Remote clock offset: 7.354 ms

# Below is generated by plot.py at 2018-08-22 18:34:42
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.41 Mbit/s
  95th percentile per-packet one-way delay: 2411.383 ms
  Loss rate: 12.30%
-- Flow 1:
  Average throughput: 0.26 Mbit/s
  95th percentile per-packet one-way delay: 2410.291 ms
  Loss rate: 4.26%
-- Flow 2:
  Average throughput: 0.18 Mbit/s
  95th percentile per-packet one-way delay: 2281.313 ms
  Loss rate: 10.06%
-- Flow 3:
  Average throughput: 0.11 Mbit/s
  95th percentile per-packet one-way delay: 2582.555 ms
  Loss rate: 53.25%
Run 1: Report of TCP Vegas — Data Link

Throughput (Mbit/s)

Time (s)

Flow 1 ingress (mean 0.27 Mbit/s)  
Flow 1 egress (mean 0.26 Mbit/s)  
Flow 2 ingress (mean 0.19 Mbit/s)  
Flow 2 egress (mean 0.18 Mbit/s)  
Flow 3 ingress (mean 0.19 Mbit/s)  
Flow 3 egress (mean 0.11 Mbit/s)

Delay (ms)

Time (s)

Flow 1 95th percentile 2410.29 ms   
Flow 2 95th percentile 2281.31 ms   
Flow 3 95th percentile 2582.55 ms
Run 2: Statistics of TCP Vegas

Start at: 2018-08-22 17:56:18  
End at: 2018-08-22 17:56:48  
Local clock offset: -4.277 ms  
Remote clock offset: 8.18 ms

# Below is generated by plot.py at 2018-08-22 18:34:42  
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.39 Mbit/s  
95th percentile per-packet one-way delay: 2305.883 ms  
Loss rate: 7.62%  
-- Flow 1:
Average throughput: 0.23 Mbit/s  
95th percentile per-packet one-way delay: 1993.534 ms  
Loss rate: 2.94%  
-- Flow 2:
Average throughput: 0.20 Mbit/s  
95th percentile per-packet one-way delay: 2345.896 ms  
Loss rate: 8.98%  
-- Flow 3:
Average throughput: 0.12 Mbit/s  
95th percentile per-packet one-way delay: 2365.162 ms  
Loss rate: 29.93%
Run 2: Report of TCP Vegas — Data Link
Run 3: Statistics of TCP Vegas

Start at: 2018-08-22 18:17:29
End at: 2018-08-22 18:17:59
Local clock offset: -4.262 ms
Remote clock offset: 3.008 ms

# Below is generated by plot.py at 2018-08-22 18:34:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.47 Mbit/s
95th percentile per-packet one-way delay: 2102.823 ms
Loss rate: 10.51%
-- Flow 1:
Average throughput: 0.31 Mbit/s
95th percentile per-packet one-way delay: 2092.331 ms
Loss rate: 3.67%
-- Flow 2:
Average throughput: 0.21 Mbit/s
95th percentile per-packet one-way delay: 2072.336 ms
Loss rate: 7.60%
-- Flow 3:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 2182.622 ms
Loss rate: 53.25%
Run 3: Report of TCP Vegas — Data Link
Run 1: Statistics of Verus

Start at: 2018-08-22 17:47:46
End at: 2018-08-22 17:48:16
Local clock offset: -5.512 ms
Remote clock offset: 9.673 ms

# Below is generated by plot.py at 2018-08-22 18:34:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.41 Mbit/s
95th percentile per-packet one-way delay: 2468.183 ms
Loss rate: 5.60%
-- Flow 1:
Average throughput: 0.40 Mbit/s
95th percentile per-packet one-way delay: 2459.327 ms
Loss rate: 5.49%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 2493.416 ms
Loss rate: 4.76%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 2669.793 ms
Loss rate: 18.18%
Run 1: Report of Verus — Data Link
Run 2: Statistics of Verus

Start at: 2018-08-22 18:08:37
End at: 2018-08-22 18:09:07
Local clock offset: -5.182 ms
Remote clock offset: 3.083 ms

# Below is generated by plot.py at 2018-08-22 18:34:42
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.38 Mbit/s
  95th percentile per-packet one-way delay: 2053.637 ms
  Loss rate: 4.68%
-- Flow 1:
  Average throughput: 0.37 Mbit/s
  95th percentile per-packet one-way delay: 2053.637 ms
  Loss rate: 4.53%
-- Flow 2:
  Average throughput: 0.01 Mbit/s
  95th percentile per-packet one-way delay: 1825.551 ms
  Loss rate: 4.76%
-- Flow 3:
  Average throughput: 0.01 Mbit/s
  95th percentile per-packet one-way delay: 2056.711 ms
  Loss rate: 18.18%
Run 2: Report of Verus — Data Link
Run 3: Statistics of Verus

Start at: 2018-08-22 18:30:00
End at: 2018-08-22 18:30:30
Local clock offset: -5.022 ms
Remote clock offset: 3.312 ms

# Below is generated by plot.py at 2018-08-22 18:34:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.35 Mbit/s
95th percentile per-packet one-way delay: 3152.698 ms
Loss rate: 3.34%
-- Flow 1:
Average throughput: 0.33 Mbit/s
95th percentile per-packet one-way delay: 3183.156 ms
Loss rate: 3.23%
-- Flow 2:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 2399.949 ms
Loss rate: 4.35%
-- Flow 3:
Average throughput: 0.01 Mbit/s
95th percentile per-packet one-way delay: 2773.972 ms
Loss rate: 10.00%
Run 3: Report of Verus — Data Link
Run 1: Statistics of PCC-Vivace

Start at: 2018-08-22 17:41:20
End at: 2018-08-22 17:41:50
Local clock offset: -4.37 ms
Remote clock offset: 9.526 ms
Run 1: Report of PCC-Vivace — Data Link

![Graph showing throughput and per-packet one-way delay](image-url)

- Flow 1 ingress (mean 2.37 Mbit/s)
- Flow 1 egress (mean 0.38 Mbit/s)
- Flow 2 ingress (mean 0.00 Mbit/s)
- Flow 2 egress (mean 0.00 Mbit/s)
- Flow 3 ingress (mean 0.00 Mbit/s)
- Flow 3 egress (mean 0.00 Mbit/s)

![Graph showing per-packet one-way delay](image-url)

- Flow 1 (95th percentile 21708.28 ms)
Run 2: Statistics of PCC-Vivace

Start at: 2018-08-22 18:02:19
End at: 2018-08-22 18:02:49
Local clock offset: -5.924 ms
Remote clock offset: 3.113 ms
Run 2: Report of PCC-Vivace — Data Link

![Graph 1: Throughput (MB/s) vs Time (s) for various flows.]

- Flow 1 ingress (mean 2.34 Mbit/s)
- Flow 1 egress (mean 0.35 Mbit/s)
- Flow 2 ingress (mean 0.00 Mbit/s)
- Flow 2 egress (mean 0.00 Mbit/s)
- Flow 3 ingress (mean 0.00 Mbit/s)
- Flow 3 egress (mean 0.00 Mbit/s)

![Graph 2: Per-packet one-way delay (ms) vs Time (s) for Flow 1.]

- Flow 1 (95th percentile 22618.43 ms)
Run 3: Statistics of PCC-Vivace

Start at: 2018-08-22 18:23:28
End at: 2018-08-22 18:23:58
Local clock offset: -4.228 ms
Remote clock offset: 8.929 ms
Run 3: Report of PCC-Vivace — Data Link

![Throughput Graph](image1.png)

![Per-packet one-way delay Graph](image2.png)
Run 1: Statistics of WebRTC media

Start at: 2018-08-22 17:36:31
End at: 2018-08-22 17:37:01
Local clock offset: 4.743 ms
Remote clock offset: 4.611 ms

# Below is generated by plot.py at 2018-08-22 18:34:46
# Datalink statistics
-- Total of 3 flows:
95th percentile per-packet one-way delay: 1944.022 ms
Loss rate: 2.53%
-- Flow 1:
Average throughput: 0.14 Mbit/s
95th percentile per-packet one-way delay: 1977.478 ms
Loss rate: 0.45%
-- Flow 2:
Average throughput: 0.11 Mbit/s
95th percentile per-packet one-way delay: 1973.864 ms
Loss rate: 0.25%
-- Flow 3:
Average throughput: 0.05 Mbit/s
95th percentile per-packet one-way delay: 1869.854 ms
Loss rate: 11.59%
Run 1: Report of WebRTC media — Data Link
Run 2: Statistics of WebRTC media

Start at: 2018-08-22 17:57:31
End at: 2018-08-22 17:58:01
Local clock offset: -5.828 ms
Remote clock offset: 4.37 ms

# Below is generated by plot.py at 2018-08-22 18:34:46
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.27 Mbit/s
  95th percentile per-packet one-way delay: 3512.543 ms
  Loss rate: 0.70%
-- Flow 1:
  Average throughput: 0.13 Mbit/s
  95th percentile per-packet one-way delay: 3434.148 ms
  Loss rate: 0.46%
-- Flow 2:
  Average throughput: 0.09 Mbit/s
  95th percentile per-packet one-way delay: 3512.543 ms
  Loss rate: 1.23%
-- Flow 3:
  Average throughput: 0.05 Mbit/s
  95th percentile per-packet one-way delay: 3689.039 ms
  Loss rate: 0.31%
Run 2: Report of WebRTC media — Data Link

![Graph showing throughput and per-packet one-way delay over time.]

- Flow 1 ingress (mean 0.13 Mbit/s)
- Flow 1 egress (mean 0.13 Mbit/s)
- Flow 2 ingress (mean 0.09 Mbit/s)
- Flow 2 egress (mean 0.09 Mbit/s)
- Flow 3 ingress (mean 0.05 Mbit/s)
- Flow 3 egress (mean 0.05 Mbit/s)
Run 3: Statistics of WebRTC media

Start at: 2018-08-22 18:18:41
End at: 2018-08-22 18:19:11
Local clock offset: -5.019 ms
Remote clock offset: 4.022 ms

# Below is generated by plot.py at 2018-08-22 18:34:46
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.30 Mbit/s
95th percentile per-packet one-way delay: 2210.867 ms
Loss rate: 6.48%
-- Flow 1:
Average throughput: 0.13 Mbit/s
95th percentile per-packet one-way delay: 2237.189 ms
Loss rate: 1.30%
-- Flow 2:
Average throughput: 0.12 Mbit/s
95th percentile per-packet one-way delay: 2203.019 ms
Loss rate: 3.37%
-- Flow 3:
Average throughput: 0.06 Mbit/s
95th percentile per-packet one-way delay: 1671.468 ms
Loss rate: 21.67%
Run 3: Report of WebRTC media — Data Link