Pantheon Report

Generated at 2018-09-08 12:58:47 (UTC).
Data path: GCE Iowa on ens4 (remote) → GCE London on ens4 (local).
Repeated the test of 18 congestion control schemes 5 times.
Each test lasted for 30 seconds running 3 flows with 10-second interval between two flows.
NTP offsets were measured against time.google.com and have been applied to correct the timestamps in logs.

System info:
Linux 4.15.0-1018-gcp
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 = 190986 254651 381972

Git summary:
branch: muses @ e0a9b05ad97d268013b7cc9a9c95637b593a1b4c
third_party/fillp @ d47f4fa1b454a5e3c0573115c5a28436dbd4b334
third_party/fillp-sheep @ daed0c84f9851712514b2231f43ec690111ffe
third_party/genericCC @ d0153f8e594aa89e93b032143cedbde58e562f4
third_party/indigo @ 2601c92e4a9d58d38dc4dfe0edbf90c077e64d
third_party/libutp @ b3465b942e2826f2b179eab4a906ce6bb7cf3cf
third_party/muses @ 7631aaa3923a5398767c87765ae5103aca0678d3
third_party/pantheon-tunnel @ cbf1e6db5f5740dafe1771f813cd646339e1952
third_party/pcc @ l1afc95f8a0d66d18b623c091a55fec872b4981e1
M receiver/src/buffer.h
M receiver/src/core.cpp
M sender/src/buffer.h
M sender/src/core.cpp
third_party/pcc-experimental @ cd43e34e3f5f5613e8acd08f9ab24f974ab
third_party/proto-quic @ 77961f1a82733386b42f1bc8143ebc978f3cfd2
third_party/scream-reproduce @ f099118d421aa3131bf11ff1964974e1da3dbb2
M src/ScreamClient
M src/ScreamServer
third_party/sprout @ 366e35c6178b01e31d4a6ad18c74f9415f19a26
M src/examples/cellsim.cc
M src/examples/sproutbt2.cc
M src/network/sproutconn.cc
third_party/verus @ d4b447ea74c6c60a261149af2629562939f9a494
M src/verus.hpp
test from GCE Iowa to GCE London, 5 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>flow 1 (Mbit/s)</th>
<th>flow 2 (Mbit/s)</th>
<th>flow 3 (Mbit/s)</th>
<th>mean 95th-%ile delay (ms)</th>
<th>mean loss rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCP BBR</td>
<td>5</td>
<td>543.64</td>
<td>526.84</td>
<td>491.92</td>
<td>167.48</td>
<td>1.42</td>
</tr>
<tr>
<td>Copa</td>
<td>5</td>
<td>331.80</td>
<td>308.32</td>
<td>240.78</td>
<td>62.98</td>
<td>0.29</td>
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<td>TCP Cubic</td>
<td>5</td>
<td>563.56</td>
<td>541.01</td>
<td>510.73</td>
<td>93.86</td>
<td>0.38</td>
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<td>FillP</td>
<td>5</td>
<td>778.74</td>
<td>732.56</td>
<td>557.45</td>
<td>118.51</td>
<td>2.19</td>
</tr>
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<td>FillP-Sheep</td>
<td>5</td>
<td>703.71</td>
<td>634.05</td>
<td>525.89</td>
<td>113.20</td>
<td>1.15</td>
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<tr>
<td>Indigo</td>
<td>5</td>
<td>222.90</td>
<td>210.90</td>
<td>180.83</td>
<td>51.35</td>
<td>0.34</td>
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<td>LEDBAT</td>
<td>5</td>
<td>36.64</td>
<td>24.33</td>
<td>12.08</td>
<td>51.13</td>
<td>0.66</td>
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<tr>
<td>Indigo-Muses</td>
<td>5</td>
<td>503.74</td>
<td>441.20</td>
<td>374.49</td>
<td>56.56</td>
<td>0.29</td>
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<tr>
<td>PCC-Allegro</td>
<td>5</td>
<td>453.14</td>
<td>406.20</td>
<td>292.66</td>
<td>169.34</td>
<td>2.49</td>
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<tr>
<td>PCC-Expr</td>
<td>5</td>
<td>332.29</td>
<td>279.40</td>
<td>122.42</td>
<td>131.16</td>
<td>1.67</td>
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<td>QUIC Cubic</td>
<td>5</td>
<td>65.70</td>
<td>42.79</td>
<td>33.82</td>
<td>49.81</td>
<td>0.45</td>
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<td>SCReAM</td>
<td>5</td>
<td>0.22</td>
<td>0.22</td>
<td>0.22</td>
<td>50.63</td>
<td>0.31</td>
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<td>Sprout</td>
<td>5</td>
<td>8.29</td>
<td>8.20</td>
<td>7.81</td>
<td>50.08</td>
<td>0.33</td>
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<td>TaoVA-100x</td>
<td>5</td>
<td>245.52</td>
<td>238.68</td>
<td>235.61</td>
<td>50.16</td>
<td>0.35</td>
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<td>TCP Vegas</td>
<td>5</td>
<td>471.54</td>
<td>521.88</td>
<td>488.00</td>
<td>67.30</td>
<td>0.29</td>
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<td>Verus</td>
<td>5</td>
<td>166.82</td>
<td>142.67</td>
<td>108.86</td>
<td>107.60</td>
<td>0.42</td>
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<tr>
<td>PCC-Vivace</td>
<td>5</td>
<td>335.69</td>
<td>295.89</td>
<td>149.84</td>
<td>93.91</td>
<td>0.51</td>
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<td>WebRTC media</td>
<td>5</td>
<td>1.79</td>
<td>1.21</td>
<td>0.50</td>
<td>49.97</td>
<td>0.40</td>
</tr>
</tbody>
</table>
Run 1: Statistics of TCP BBR

Start at: 2018-09-08 07:45:35
End at: 2018-09-08 07:46:05
Local clock offset: -0.106 ms
Remote clock offset: -0.282 ms

# Below is generated by plot.py at 2018-09-08 10:38:34
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1032.70 Mbit/s
  95th percentile per-packet one-way delay: 154.323 ms
  Loss rate: 1.48%
-- Flow 1:
  Average throughput: 537.26 Mbit/s
  95th percentile per-packet one-way delay: 133.176 ms
  Loss rate: 0.87%
-- Flow 2:
  Average throughput: 511.30 Mbit/s
  95th percentile per-packet one-way delay: 158.483 ms
  Loss rate: 1.78%
-- Flow 3:
  Average throughput: 470.27 Mbit/s
  95th percentile per-packet one-way delay: 184.219 ms
  Loss rate: 2.87%
Run 1: Report of TCP BBR — Data Link

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

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 540.19 Mbps)
  - Flow 1 egress (mean 537.26 Mbps)
  - Flow 2 ingress (mean 517.94 Mbps)
  - Flow 2 egress (mean 511.30 Mbps)
  - Flow 3 ingress (mean 479.27 Mbps)
  - Flow 3 egress (mean 470.27 Mbps)

- **Delay (ms):**
  - Flow 1 (95th percentile 133.18 ms)
  - Flow 2 (95th percentile 158.48 ms)
  - Flow 3 (95th percentile 184.22 ms)
Run 2: Statistics of TCP BBR

Start at: 2018-09-08 08:17:22
End at: 2018-09-08 08:17:52
Local clock offset: 0.03 ms
Remote clock offset: 0.023 ms

# Below is generated by plot.py at 2018-09-08 10:40:00
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1081.89 Mbit/s
  95th percentile per-packet one-way delay: 164.055 ms
  Loss rate: 1.68%
-- Flow 1:
  Average throughput: 537.75 Mbit/s
  95th percentile per-packet one-way delay: 173.175 ms
  Loss rate: 1.72%
-- Flow 2:
  Average throughput: 568.79 Mbit/s
  95th percentile per-packet one-way delay: 162.044 ms
  Loss rate: 1.44%
-- Flow 3:
  Average throughput: 502.36 Mbit/s
  95th percentile per-packet one-way delay: 160.361 ms
  Loss rate: 2.12%
Run 2: Report of TCP BBR — Data Link

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

Legend:
- Blue dashed line: Flow 1 ingress (mean 545.33 Mbit/s)
- Blue solid line: Flow 1 egress (mean 537.75 Mbit/s)
- Green dashed line: Flow 2 ingress (mean 574.23 Mbit/s)
- Green solid line: Flow 2 egress (mean 568.79 Mbit/s)
- Red dashed line: Flow 3 ingress (mean 508.02 Mbit/s)
- Red solid line: Flow 3 egress (mean 502.36 Mbit/s)
Run 3: Statistics of TCP BBR

Start at: 2018-09-08 08:49:08
End at: 2018-09-08 08:49:38
Local clock offset: 0.339 ms
Remote clock offset: -0.015 ms

# Below is generated by plot.py at 2018-09-08 10:40:00
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1057.77 Mbit/s
  95th percentile per-packet one-way delay: 151.028 ms
  Loss rate: 1.17%
-- Flow 1:
  Average throughput: 570.37 Mbit/s
  95th percentile per-packet one-way delay: 148.124 ms
  Loss rate: 1.06%
-- Flow 2:
  Average throughput: 473.77 Mbit/s
  95th percentile per-packet one-way delay: 152.934 ms
  Loss rate: 1.14%
-- Flow 3:
  Average throughput: 521.92 Mbit/s
  95th percentile per-packet one-way delay: 154.615 ms
  Loss rate: 1.59%
Run 3: Report of TCP BBR — Data Link

![Graph 1: Throughput vs Time]

![Graph 2: Per-packet one-way delay vs Time]

Legend:
- Flow 1 ingress (mean 574.55 Mbit/s)
- Flow 1 egress (mean 570.37 Mbit/s)
- Flow 2 ingress (mean 476.81 Mbit/s)
- Flow 2 egress (mean 473.77 Mbit/s)
- Flow 3 ingress (mean 524.99 Mbit/s)
- Flow 3 egress (mean 521.92 Mbit/s)
Run 4: Statistics of TCP BBR

Start at: 2018-09-08 09:20:57
End at: 2018-09-08 09:21:27
Local clock offset: 0.27 ms
Remote clock offset: -0.081 ms

# Below is generated by plot.py at 2018-09-08 10:40:05
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1075.37 Mbit/s
95th percentile per-packet one-way delay: 163.091 ms
Loss rate: 1.70%
-- Flow 1:
Average throughput: 549.01 Mbit/s
95th percentile per-packet one-way delay: 170.348 ms
Loss rate: 1.52%
-- Flow 2:
Average throughput: 538.96 Mbit/s
95th percentile per-packet one-way delay: 147.101 ms
Loss rate: 1.36%
-- Flow 3:
Average throughput: 516.53 Mbit/s
95th percentile per-packet one-way delay: 153.207 ms
Loss rate: 2.96%
Run 4: Report of TCP BBR — Data Link

![Graph showing throughput and delay over time for Flow 1, Flow 2, and Flow 3.]

- Flow 1 ingress (mean 555.62 Mbit/s)
- Flow 1 egress (mean 549.01 Mbit/s)
- Flow 2 ingress (mean 548.86 Mbit/s)
- Flow 2 egress (mean 538.96 Mbit/s)
- Flow 3 ingress (mean 526.92 Mbit/s)
- Flow 3 egress (mean 516.53 Mbit/s)

![Graph showing per-packet one-way delay for Flow 1, Flow 2, and Flow 3.]

- Flow 1 (95th percentile 170.35 ms)
- Flow 2 (95th percentile 147.10 ms)
- Flow 3 (95th percentile 153.21 ms)
Run 5: Statistics of TCP BBR

Start at: 2018-09-08 09:52:31
End at: 2018-09-08 09:53:01
Local clock offset: -0.012 ms
Remote clock offset: -0.085 ms

# Below is generated by plot.py at 2018-09-08 10:40:05
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1032.02 Mbit/s
  95th percentile per-packet one-way delay: 164.360 ms
  Loss rate: 1.71%
-- Flow 1:
  Average throughput: 523.80 Mbit/s
  95th percentile per-packet one-way delay: 212.570 ms
  Loss rate: 1.93%
-- Flow 2:
  Average throughput: 541.39 Mbit/s
  95th percentile per-packet one-way delay: 151.064 ms
  Loss rate: 1.49%
-- Flow 3:
  Average throughput: 448.53 Mbit/s
  95th percentile per-packet one-way delay: 141.229 ms
  Loss rate: 1.42%
Run 5: Report of TCP BBR — Data Link

![Graph of Throughput vs Time for different flows]

- **Flow 1 Ingress (mean 532.33 Mbit/s)**
- **Flow 1 Egress (mean 523.80 Mbit/s)**
- **Flow 2 Ingress (mean 546.80 Mbit/s)**
- **Flow 2 Egress (mean 541.39 Mbit/s)**
- **Flow 3 Ingress (mean 450.39 Mbit/s)**
- **Flow 3 Egress (mean 444.53 Mbit/s)**

![Graph of Per-Packet One-Way Delay vs Time for different flows]

- **Flow 1 (95th percentile 212.57 ms)**
- **Flow 2 (95th percentile 151.06 ms)**
- **Flow 3 (95th percentile 141.23 ms)**
Run 1: Statistics of Copa

Start at: 2018-09-08 07:27:57
End at: 2018-09-08 07:28:27
Local clock offset: -0.104 ms
Remote clock offset: -0.202 ms

# Below is generated by plot.py at 2018-09-08 10:41:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 643.40 Mbit/s
95th percentile per-packet one-way delay: 67.852 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 347.59 Mbit/s
95th percentile per-packet one-way delay: 61.500 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 330.96 Mbit/s
95th percentile per-packet one-way delay: 68.925 ms
Loss rate: 0.45%
-- Flow 3:
Average throughput: 229.16 Mbit/s
95th percentile per-packet one-way delay: 95.026 ms
Loss rate: 1.01%
Run 1: Report of Copa — Data Link
Run 2: Statistics of Copa

Start at: 2018-09-08 07:59:44
End at: 2018-09-08 08:00:14
Local clock offset: -0.021 ms
Remote clock offset: -0.128 ms

# Below is generated by plot.py at 2018-09-08 10:41:42
# Datalink statistics
-- Total of 3 flows:
Average throughput: 616.14 Mbit/s
95th percentile per-packet one-way delay: 72.479 ms
Loss rate: 0.43%
-- Flow 1:
Average throughput: 323.10 Mbit/s
95th percentile per-packet one-way delay: 77.799 ms
Loss rate: 0.20%
-- Flow 2:
Average throughput: 322.34 Mbit/s
95th percentile per-packet one-way delay: 64.632 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 238.12 Mbit/s
95th percentile per-packet one-way delay: 77.244 ms
Loss rate: 1.13%
Run 2: Report of Copa — Data Link

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

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 322.66 Mbps)
  - Flow 1 egress (mean 323.10 Mbps)
  - Flow 2 ingress (mean 322.37 Mbps)
  - Flow 2 egress (mean 322.34 Mbps)
  - Flow 3 ingress (mean 238.41 Mbps)
  - Flow 3 egress (mean 238.32 Mbps)

- **Per-packet one-way delay (ms):**
  - Flow 1 (95th percentile 77.80 ms)
  - Flow 2 (95th percentile 64.63 ms)
  - Flow 3 (95th percentile 77.24 ms)
Run 3: Statistics of Copa

Start at: 2018-09-08 08:31:29
End at: 2018-09-08 08:31:59
Local clock offset: -0.013 ms
Remote clock offset: 0.016 ms

# Below is generated by plot.py at 2018-09-08 10:42:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 650.15 Mbit/s
95th percentile per-packet one-way delay: 65.302 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 332.85 Mbit/s
95th percentile per-packet one-way delay: 60.660 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 334.37 Mbit/s
95th percentile per-packet one-way delay: 66.497 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 287.61 Mbit/s
95th percentile per-packet one-way delay: 67.498 ms
Loss rate: 1.18%
Run 3: Report of Copa — Data Link

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

- Flow 1 ingress (mean 332.77 Mbps)
- Flow 1 egress (mean 332.85 Mbps)
- Flow 2 ingress (mean 334.45 Mbps)
- Flow 2 egress (mean 334.37 Mbps)
- Flow 3 ingress (mean 288.14 Mbps)
- Flow 3 egress (mean 287.61 Mbps)

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

- Flow 1 (95th percentile 60.66 ms)
- Flow 2 (95th percentile 66.50 ms)
- Flow 3 (95th percentile 67.50 ms)
Run 4: Statistics of Copa

Start at: 2018-09-08 09:03:21
End at: 2018-09-08 09:03:51
Local clock offset: -0.055 ms
Remote clock offset: -0.025 ms

# Below is generated by plot.py at 2018-09-08 10:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 608.28 Mbit/s
95th percentile per-packet one-way delay: 65.767 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 338.76 Mbit/s
95th percentile per-packet one-way delay: 58.463 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 301.37 Mbit/s
95th percentile per-packet one-way delay: 68.766 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 209.39 Mbit/s
95th percentile per-packet one-way delay: 79.992 ms
Loss rate: 1.06%
Run 4: Report of Copa — Data Link

![Graph showing throughput and packet loss over time for different flow types.]

- Flow 1 ingress (mean 338.72 Mbit/s)
- Flow 1 egress (mean 338.76 Mbit/s)
- Flow 2 ingress (mean 301.53 Mbit/s)
- Flow 2 egress (mean 301.37 Mbit/s)
- Flow 3 ingress (mean 209.50 Mbit/s)
- Flow 3 egress (mean 209.39 Mbit/s)

![Graph showing packet loss over time for different flow types.]

- Flow 1 (95th percentile 58.46 ms)
- Flow 2 (95th percentile 68.77 ms)
- Flow 3 (95th percentile 79.99 ms)
Run 5: Statistics of Copa

Start at: 2018-09-08 09:35:16
End at: 2018-09-08 09:35:46
Local clock offset: -0.085 ms
Remote clock offset: -0.133 ms

# Below is generated by plot.py at 2018-09-08 10:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 563.74 Mbit/s
95th percentile per-packet one-way delay: 62.608 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 316.69 Mbit/s
95th percentile per-packet one-way delay: 56.481 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 252.54 Mbit/s
95th percentile per-packet one-way delay: 70.487 ms
Loss rate: 0.71%
-- Flow 3:
Average throughput: 239.64 Mbit/s
95th percentile per-packet one-way delay: 70.630 ms
Loss rate: 1.18%
Run 5: Report of Copa — Data Link
Run 1: Statistics of TCP Cubic

Start at: 2018-09-08 07:25:53
End at: 2018-09-08 07:26:23
Local clock offset: -0.105 ms
Remote clock offset: -0.203 ms

# Below is generated by plot.py at 2018-09-08 10:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1098.36 Mbit/s
95th percentile per-packet one-way delay: 134.841 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 562.56 Mbit/s
95th percentile per-packet one-way delay: 139.603 ms
Loss rate: 0.51%
-- Flow 2:
Average throughput: 522.19 Mbit/s
95th percentile per-packet one-way delay: 133.658 ms
Loss rate: 0.81%
-- Flow 3:
Average throughput: 571.35 Mbit/s
95th percentile per-packet one-way delay: 131.843 ms
Loss rate: 1.38%
Run 1: Report of TCP Cubic — Data Link
Run 2: Statistics of TCP Cubic

Start at: 2018-09-08 07:57:42
End at: 2018-09-08 07:58:12
Local clock offset: 0.309 ms
Remote clock offset: -0.134 ms

# Below is generated by plot.py at 2018-09-08 10:57:54
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1061.20 Mbit/s
  95th percentile per-packet one-way delay: 88.716 ms
  Loss rate: 0.53%
-- Flow 1:
  Average throughput: 559.79 Mbit/s
  95th percentile per-packet one-way delay: 67.564 ms
  Loss rate: 0.40%
-- Flow 2:
  Average throughput: 543.32 Mbit/s
  95th percentile per-packet one-way delay: 94.586 ms
  Loss rate: 0.48%
-- Flow 3:
  Average throughput: 424.00 Mbit/s
  95th percentile per-packet one-way delay: 56.143 ms
  Loss rate: 1.21%
Run 2: Report of TCP Cubic — Data Link
Run 3: Statistics of TCP Cubic

Start at: 2018-09-08 08:29:27
End at: 2018-09-08 08:29:57
Local clock offset: 0.365 ms
Remote clock offset: 0.02 ms

# Below is generated by plot.py at 2018-09-08 10:57:54
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1034.43 Mbit/s
95th percentile per-packet one-way delay: 117.625 ms
Loss rate: 0.70%
-- Flow 1:
Average throughput: 519.28 Mbit/s
95th percentile per-packet one-way delay: 75.769 ms
Loss rate: 0.24%
-- Flow 2:
Average throughput: 510.76 Mbit/s
95th percentile per-packet one-way delay: 78.508 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 531.52 Mbit/s
95th percentile per-packet one-way delay: 131.630 ms
Loss rate: 2.19%
Run 3: Report of TCP Cubic — Data Link
Run 4: Statistics of TCP Cubic

Start at: 2018-09-08 09:01:16
End at: 2018-09-08 09:01:46
Local clock offset: -0.038 ms
Remote clock offset: -0.026 ms

# Below is generated by plot.py at 2018-09-08 10:59:31
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1105.20 Mbit/s
95th percentile per-packet one-way delay: 135.993 ms
Loss rate: 0.33%
-- Flow 1:
Average throughput: 569.71 Mbit/s
95th percentile per-packet one-way delay: 90.500 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 556.77 Mbit/s
95th percentile per-packet one-way delay: 149.427 ms
Loss rate: 0.01%
-- Flow 3:
Average throughput: 500.02 Mbit/s
95th percentile per-packet one-way delay: 89.023 ms
Loss rate: 1.14%
Run 4: Report of TCP Cubic — Data Link

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

- Flow 1 ingress (mean 569.49 Mbit/s)
- Flow 1 egress (mean 569.71 Mbit/s)
- Flow 2 ingress (mean 553.30 Mbit/s)
- Flow 2 egress (mean 556.77 Mbit/s)
- Flow 3 ingress (mean 590.79 Mbit/s)
- Flow 3 egress (mean 500.02 Mbit/s)

![Graph 2: Packet Delay vs Time](image2)

- Flow 1 (95th percentile 95.50 ms)
- Flow 2 (95th percentile 149.43 ms)
- Flow 3 (95th percentile 89.02 ms)
Run 5: Statistics of TCP Cubic

Start at: 2018-09-08 09:33:08
End at: 2018-09-08 09:33:38
Local clock offset: -0.11 ms
Remote clock offset: -0.098 ms

# Below is generated by plot.py at 2018-09-08 11:01:06
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1160.65 Mbit/s
95th percentile per-packet one-way delay: 137.988 ms
Loss rate: 0.75%
-- Flow 1:
Average throughput: 606.45 Mbit/s
95th percentile per-packet one-way delay: 95.840 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 572.03 Mbit/s
95th percentile per-packet one-way delay: 149.401 ms
Loss rate: 0.91%
-- Flow 3:
Average throughput: 526.75 Mbit/s
95th percentile per-packet one-way delay: 89.059 ms
Loss rate: 1.32%
Run 5: Report of TCP Cubic — Data Link

![Graph of Throughput and Per-Packet Round-Trip Time](image-url)
Run 1: Statistics of FillP

Start at: 2018-09-08 07:32:12
End at: 2018-09-08 07:32:42
Local clock offset: -0.449 ms
Remote clock offset: -0.23 ms

# Below is generated by plot.py at 2018-09-08 11:09:47
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1417.34 Mbit/s
95th percentile per-packet one-way delay: 119.194 ms
Loss rate: 2.86%
-- Flow 1:
Average throughput: 778.44 Mbit/s
95th percentile per-packet one-way delay: 118.324 ms
Loss rate: 2.60%
-- Flow 2:
Average throughput: 732.82 Mbit/s
95th percentile per-packet one-way delay: 127.752 ms
Loss rate: 3.79%
-- Flow 3:
Average throughput: 461.18 Mbit/s
95th percentile per-packet one-way delay: 74.678 ms
Loss rate: 1.15%
Run 1: Report of FillP — Data Link

![Throughput (Mbps/s) vs. Time (s) graph]

- Flow 1 Ingress (mean 796.53 Mbps/s)
- Flow 2 Ingress (mean 757.92 Mbps/s)
- Flow 3 Ingress (mean 462.00 Mbps/s)
- Flow 1 Egress (mean 778.44 Mbps/s)
- Flow 2 Egress (mean 732.82 Mbps/s)
- Flow 3 Egress (mean 461.18 Mbps/s)

![Per packet one-way delay (ms) vs. Time (s) graph]

- Flow 1 (95th percentile 118.32 ms)
- Flow 2 (95th percentile 127.75 ms)
- Flow 3 (95th percentile 74.68 ms)
Run 2: Statistics of FillP

Start at: 2018-09-08 08:03:54
End at: 2018-09-08 08:04:24
Local clock offset: -0.019 ms
Remote clock offset: -0.024 ms

# Below is generated by plot.py at 2018-09-08 11:26:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1474.54 Mbit/s
95th percentile per-packet one-way delay: 96.051 ms
Loss rate: 0.68%
-- Flow 1:
Average throughput: 783.76 Mbit/s
95th percentile per-packet one-way delay: 105.006 ms
Loss rate: 0.78%
-- Flow 2:
Average throughput: 720.65 Mbit/s
95th percentile per-packet one-way delay: 66.708 ms
Loss rate: 0.35%
-- Flow 3:
Average throughput: 643.94 Mbit/s
95th percentile per-packet one-way delay: 68.122 ms
Loss rate: 1.04%
Run 2: Report of FillIP — Data Link

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

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

- Flow 1 ingress (mean 787.29 Mbps/s)
- Flow 1 egress (mean 783.76 Mbps/s)
- Flow 2 ingress (mean 719.44 Mbps/s)
- Flow 2 egress (mean 720.65 Mbps/s)
- Flow 3 ingress (mean 644.10 Mbps/s)
- Flow 3 egress (mean 643.94 Mbps/s)

Flow 1 (95th percentile 105.01 ms)
Flow 2 (95th percentile 66.71 ms)
Flow 3 (95th percentile 68.12 ms)
Run 3: Statistics of FillP

Start at: 2018-09-08 08:35:44
End at: 2018-09-08 08:36:14
Local clock offset: 0.298 ms
Remote clock offset: 0.007 ms

# Below is generated by plot.py at 2018-09-08 11:28:14
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1492.27 Mbit/s
  95th percentile per-packet one-way delay: 111.884 ms
  Loss rate: 1.69%
-- Flow 1:
  Average throughput: 788.17 Mbit/s
  95th percentile per-packet one-way delay: 117.300 ms
  Loss rate: 2.06%
-- Flow 2:
  Average throughput: 765.04 Mbit/s
  95th percentile per-packet one-way delay: 111.026 ms
  Loss rate: 1.50%
-- Flow 3:
  Average throughput: 593.65 Mbit/s
  95th percentile per-packet one-way delay: 64.902 ms
  Loss rate: 0.70%
Run 3: Report of FillP — Data Link

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

- **Throughput (Mbps):**
  - Flow 1 Ingress (mean 802.06 Mbps)
  - Flow 1 Egress (mean 788.17 Mbps)
  - Flow 2 Ingress (mean 772.85 Mbps)
  - Flow 2 Egress (mean 765.04 Mbps)
  - Flow 3 Ingress (mean 591.96 Mbps)
  - Flow 3 Egress (mean 593.65 Mbps)

- **Packet delay (ms):**
  - Flow 1 (95th percentile 117.30 ms)
  - Flow 2 (95th percentile 111.03 ms)
  - Flow 3 (95th percentile 64.90 ms)
Run 4: Statistics of FillP

Start at: 2018-09-08 09:07:33
End at: 2018-09-08 09:08:03
Local clock offset: 0.273 ms
Remote clock offset: -0.052 ms

# Below is generated by plot.py at 2018-09-08 11:28:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1412.78 Mbit/s
95th percentile per-packet one-way delay: 120.450 ms
Loss rate: 2.43%
-- Flow 1:
Average throughput: 777.04 Mbit/s
95th percentile per-packet one-way delay: 121.184 ms
Loss rate: 2.31%
-- Flow 2:
Average throughput: 704.11 Mbit/s
95th percentile per-packet one-way delay: 124.319 ms
Loss rate: 3.11%
-- Flow 3:
Average throughput: 510.91 Mbit/s
95th percentile per-packet one-way delay: 71.508 ms
Loss rate: 1.10%
Run 4: Report of FillP — Data Link

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

- Blue dashed line: Flow 1 ingress (mean 792.69 Mb/s), Flow 1 egress (mean 777.04 Mb/s)
- Green dashed line: Flow 2 ingress (mean 723.07 Mb/s), Flow 2 egress (mean 704.13 Mb/s)
- Red dashed line: Flow 3 ingress (mean 511.35 Mb/s), Flow 3 egress (mean 510.93 Mb/s)

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

- Blue line: Flow 1 (95th percentile 121.18 ms)
- Green line: Flow 2 (95th percentile 124.32 ms)
- Red line: Flow 3 (95th percentile 71.51 ms)
Run 5: Statistics of FillP

Start at: 2018-09-08 09:39:22
End at: 2018-09-08 09:39:52
Local clock offset: -0.118 ms
Remote clock offset: -0.073 ms

# Below is generated by plot.py at 2018-09-08 11:28:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1448.51 Mbit/s
95th percentile per-packet one-way delay: 125.936 ms
Loss rate: 2.89%
-- Flow 1:
Average throughput: 766.31 Mbit/s
95th percentile per-packet one-way delay: 130.756 ms
Loss rate: 3.19%
-- Flow 2:
Average throughput: 740.17 Mbit/s
95th percentile per-packet one-way delay: 115.693 ms
Loss rate: 2.53%
-- Flow 3:
Average throughput: 577.55 Mbit/s
95th percentile per-packet one-way delay: 125.510 ms
Loss rate: 2.60%
Run 5: Report of FillP — Data Link

Graph 1: Throughput (Mbps)
- Flow 1 Ingress (mean 788.89 Mbps)
- Flow 1 Egress (mean 766.31 Mbps)
- Flow 2 Ingress (mean 755.72 Mbps)
- Flow 2 Egress (mean 740.12 Mbps)
- Flow 3 Ingress (mean 586.87 Mbps)
- Flow 3 Egress (mean 577.55 Mbps)

Graph 2: Per-packet one-way delay (ms)
- Flow 1 (95th percentile: 130.76 ms)
- Flow 2 (95th percentile: 115.69 ms)
- Flow 3 (95th percentile: 125.51 ms)
Run 1: Statistics of FillP-Sheep

Start at: 2018-09-08 07:52:33
End at: 2018-09-08 07:53:03
Local clock offset: -0.117 ms
Remote clock offset: -0.238 ms

# Below is generated by plot.py at 2018-09-08 11:28:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1364.69 Mbit/s
95th percentile per-packet one-way delay: 107.058 ms
Loss rate: 1.07%
-- Flow 1:
Average throughput: 723.99 Mbit/s
95th percentile per-packet one-way delay: 116.933 ms
Loss rate: 1.58%
-- Flow 2:
Average throughput: 701.32 Mbit/s
95th percentile per-packet one-way delay: 99.910 ms
Loss rate: 0.33%
-- Flow 3:
Average throughput: 532.06 Mbit/s
95th percentile per-packet one-way delay: 65.992 ms
Loss rate: 0.92%
Run 1: Report of FillP-Sheep — Data Link

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

- Flow 1 ingress (mean 733.25 Mbps)
- Flow 1 egress (mean 723.99 Mbps)
- Flow 2 ingress (mean 699.67 Mbps)
- Flow 2 egress (mean 703.32 Mbps)
- Flow 3 ingress (mean 531.54 Mbps)
- Flow 3 egress (mean 532.06 Mbps)

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

- Flow 1 (95th percentile 116.93 ms)
- Flow 2 (95th percentile 95.91 ms)
- Flow 3 (95th percentile 55.99 ms)
Run 2: Statistics of FillP-Sheep

Start at: 2018-09-08 08:24:21
End at: 2018-09-08 08:24:51
Local clock offset: 0.397 ms
Remote clock offset: 0.035 ms

# Below is generated by plot.py at 2018-09-08 11:28:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1255.38 Mbit/s
95th percentile per-packet one-way delay: 124.459 ms
Loss rate: 1.63%
-- Flow 1:
Average throughput: 688.09 Mbit/s
95th percentile per-packet one-way delay: 124.011 ms
Loss rate: 1.46%
-- Flow 2:
Average throughput: 606.35 Mbit/s
95th percentile per-packet one-way delay: 126.051 ms
Loss rate: 1.62%
-- Flow 3:
Average throughput: 497.96 Mbit/s
95th percentile per-packet one-way delay: 117.427 ms
Loss rate: 2.33%
Run 2: Report of FillP-Sheep — Data Link

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**Graph 1:**

- Flow 1 ingress (mean 696.22 Mbit/s)
- Flow 1 egress (mean 688.09 Mbit/s)
- Flow 2 ingress (mean 613.32 Mbit/s)
- Flow 2 egress (mean 606.35 Mbit/s)
- Flow 3 ingress (mean 504.88 Mbit/s)
- Flow 3 egress (mean 497.96 Mbit/s)

**Graph 2:**

- Flow 1 (95th percentile 124.01 ms)
- Flow 2 (95th percentile 126.05 ms)
- Flow 3 (95th percentile 117.43 ms)
Run 3: Statistics of FillP-Sheep

Start at: 2018-09-08 08:56:05
End at: 2018-09-08 08:56:35
Local clock offset: -0.027 ms
Remote clock offset: -0.031 ms

# Below is generated by plot.py at 2018-09-08 11:28:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1259.41 Mbit/s
95th percentile per-packet one-way delay: 85.714 ms
Loss rate: 0.48%
-- Flow 1:
Average throughput: 690.12 Mbit/s
95th percentile per-packet one-way delay: 89.748 ms
Loss rate: 0.41%
-- Flow 2:
Average throughput: 615.56 Mbit/s
95th percentile per-packet one-way delay: 75.689 ms
Loss rate: 0.46%
-- Flow 3:
Average throughput: 485.64 Mbit/s
95th percentile per-packet one-way delay: 54.574 ms
Loss rate: 0.86%
Run 3: Report of FillP-Sheep — Data Link

![Graph of Throughput](image1)

- Flow 1 Ingress (mean 690.63 Mbit/s)
- Flow 1 Egress (mean 690.12 Mbit/s)
- Flow 2 Ingress (mean 615.51 Mbit/s)
- Flow 2 Egress (mean 615.56 Mbit/s)
- Flow 3 Ingress (mean 484.85 Mbit/s)
- Flow 3 Egress (mean 485.64 Mbit/s)

![Graph of Per-packet Round-trip delay](image2)

- Flow 1 (95th percentile 89.75 ms)
- Flow 2 (95th percentile 75.69 ms)
- Flow 3 (95th percentile 54.57 ms)
Run 4: Statistics of FillP-Sheep

Start at: 2018-09-08 09:27:59
End at: 2018-09-08 09:28:29
Local clock offset: -0.058 ms
Remote clock offset: -0.069 ms

# Below is generated by plot.py at 2018-09-08 11:41:29
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1291.99 Mbit/s
  95th percentile per-packet one-way delay: 106.998 ms
  Loss rate: 0.69%
-- Flow 1:
  Average throughput: 697.75 Mbit/s
  95th percentile per-packet one-way delay: 107.953 ms
  Loss rate: 0.77%
-- Flow 2:
  Average throughput: 628.35 Mbit/s
  95th percentile per-packet one-way delay: 97.186 ms
  Loss rate: 0.40%
-- Flow 3:
  Average throughput: 536.95 Mbit/s
  95th percentile per-packet one-way delay: 123.502 ms
  Loss rate: 1.09%
Run 4: Report of FillP-Sheep — Data Link

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

- **Flow 1 Ingress (mean 700.38 Mbps)**
- **Flow 1 Egress (mean 697.75 Mbps)**
- **Flow 2 Ingress (mean 627.78 Mbps)**
- **Flow 2 Egress (mean 628.35 Mbps)**
- **Flow 3 Ingress (mean 537.37 Mbps)**
- **Flow 3 Egress (mean 536.95 Mbps)**

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

- **Flow 1 (95th percentile 107.95 ms)**
- **Flow 2 (95th percentile 97.19 ms)**
- **Flow 3 (95th percentile 123.50 ms)**

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Run 5: Statistics of FillP-Sheep

Start at: 2018-09-08 09:59:28
End at: 2018-09-08 09:59:58
Local clock offset: 0.232 ms
Remote clock offset: -0.097 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1319.72 Mbit/s
  95th percentile per-packet one-way delay: 127.604 ms
  Loss rate: 1.82%
-- Flow 1:
  Average throughput: 718.60 Mbit/s
  95th percentile per-packet one-way delay: 127.332 ms
  Loss rate: 1.52%
-- Flow 2:
  Average throughput: 618.66 Mbit/s
  95th percentile per-packet one-way delay: 138.927 ms
  Loss rate: 2.68%
-- Flow 3:
  Average throughput: 576.82 Mbit/s
  95th percentile per-packet one-way delay: 71.959 ms
  Loss rate: 1.06%
Run 5: Report of FillP-Sheep — Data Link

![Graph 1: Throughput vs Time for different flows]

![Graph 2: Packet Delay vs Time for different flows]

Legend:
- Flow 1 Ingress (mean 727.21 Mb/s)
- Flow 1 Egress (mean 718.60 Mb/s)
- Flow 2 Ingress (mean 632.50 Mb/s)
- Flow 2 Egress (mean 618.66 Mb/s)
- Flow 3 Ingress (mean 577.06 Mb/s)
- Flow 3 Egress (mean 576.82 Mb/s)

Legend:
- Flow 1 (95th percentile 127.33 ms)
- Flow 2 (95th percentile 138.93 ms)
- Flow 3 (95th percentile 71.96 ms)
Run 1: Statistics of Indigo

Start at: 2018-09-08 07:50:44
End at: 2018-09-08 07:51:14
Local clock offset: 0.266 ms
Remote clock offset: -0.272 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 429.37 Mbit/s
95th percentile per-packet one-way delay: 51.312 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 223.46 Mbit/s
95th percentile per-packet one-way delay: 49.757 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 214.64 Mbit/s
95th percentile per-packet one-way delay: 50.824 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 180.51 Mbit/s
95th percentile per-packet one-way delay: 52.423 ms
Loss rate: 1.28%
Run 1: Report of Indigo — Data Link

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

- Flow 1 ingress (mean 223.38 Mbit/s)
- Flow 1 egress (mean 223.46 Mbit/s)
- Flow 2 ingress (mean 214.69 Mbit/s)
- Flow 2 egress (mean 214.64 Mbit/s)
- Flow 3 ingress (mean 180.95 Mbit/s)
- Flow 3 egress (mean 180.51 Mbit/s)

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

- Flow 1 (95th percentile 49.76 ms)
- Flow 2 (95th percentile 50.82 ms)
- Flow 3 (95th percentile 52.42 ms)
Run 2: Statistics of Indigo

Start at: 2018-09-08 08:22:31
End at: 2018-09-08 08:23:01
Local clock offset: 0.023 ms
Remote clock offset: 0.032 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 425.75 Mbit/s
  95th percentile per-packet one-way delay: 51.707 ms
  Loss rate: 0.52%
-- Flow 1:
  Average throughput: 229.63 Mbit/s
  95th percentile per-packet one-way delay: 52.106 ms
  Loss rate: 0.33%
-- Flow 2:
  Average throughput: 208.10 Mbit/s
  95th percentile per-packet one-way delay: 50.348 ms
  Loss rate: 0.58%
-- Flow 3:
  Average throughput: 178.60 Mbit/s
  95th percentile per-packet one-way delay: 51.174 ms
  Loss rate: 1.14%
Run 2: Report of Indigo — Data Link

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

- Flow 1 ingress (mean 229.60 Mbit/s)
- Flow 1 egress (mean 229.63 Mbit/s)
- Flow 2 ingress (mean 208.26 Mbit/s)
- Flow 2 egress (mean 208.10 Mbit/s)
- Flow 3 ingress (mean 178.82 Mbit/s)
- Flow 3 egress (mean 178.60 Mbit/s)

![Graph showing packet loss over time for different flows.]

- Flow 1 (95th percentile 52.11 ms)
- Flow 2 (95th percentile 50.35 ms)
- Flow 3 (95th percentile 51.17 ms)
Run 3: Statistics of Indigo

Start at: 2018-09-08 08:54:15
End at: 2018-09-08 08:54:45
Local clock offset: -0.041 ms
Remote clock offset: -0.011 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 429.08 Mbit/s
  95th percentile per-packet one-way delay: 50.924 ms
  Loss rate: 0.52%
-- Flow 1:
  Average throughput: 224.99 Mbit/s
  95th percentile per-packet one-way delay: 50.824 ms
  Loss rate: 0.35%
-- Flow 2:
  Average throughput: 214.98 Mbit/s
  95th percentile per-packet one-way delay: 51.254 ms
  Loss rate: 0.51%
-- Flow 3:
  Average throughput: 185.56 Mbit/s
  95th percentile per-packet one-way delay: 49.894 ms
  Loss rate: 1.19%
Run 3: Report of Indigo — Data Link

![Graph showing throughput and ping delays](image-url)
Run 4: Statistics of Indigo

Start at: 2018-09-08 09:26:10
End at: 2018-09-08 09:26:40
Local clock offset: -0.096 ms
Remote clock offset: -0.08 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 417.26 Mbit/s
95th percentile per-packet one-way delay: 52.398 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 220.20 Mbit/s
95th percentile per-packet one-way delay: 51.959 ms
Loss rate: 0.34%
-- Flow 2:
Average throughput: 207.80 Mbit/s
95th percentile per-packet one-way delay: 53.056 ms
Loss rate: 0.55%
-- Flow 3:
Average throughput: 181.96 Mbit/s
95th percentile per-packet one-way delay: 52.202 ms
Loss rate: 1.17%
Run 4: Report of Indigo — Data Link

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

**Throughput (Mbps):**
- Flow 1 ingress (mean 220.19 Mbps)
- Flow 1 egress (mean 220.20 Mbps)
- Flow 2 ingress (mean 207.87 Mbps)
- Flow 2 egress (mean 207.88 Mbps)
- Flow 3 ingress (mean 182.21 Mbps)
- Flow 3 egress (mean 181.96 Mbps)

**Packet one-way delay (ms):**
- Flow 1 (95th percentile 51.96 ms)
- Flow 2 (95th percentile 53.06 ms)
- Flow 3 (95th percentile 52.20 ms)
Run 5: Statistics of Indigo

Start at: 2018-09-08 09:57:39
End at: 2018-09-08 09:58:09
Local clock offset: -0.072 ms
Remote clock offset: -0.08 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 412.74 Mbit/s
95th percentile per-packet one-way delay: 51.861 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 216.23 Mbit/s
95th percentile per-packet one-way delay: 52.081 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 209.00 Mbit/s
95th percentile per-packet one-way delay: 51.828 ms
Loss rate: 0.57%
-- Flow 3:
Average throughput: 177.50 Mbit/s
95th percentile per-packet one-way delay: 50.178 ms
Loss rate: 1.15%
Run 5: Report of Indigo — Data Link
Run 1: Statistics of LEDBAT

Start at: 2018-09-08 07:42:17
End at: 2018-09-08 07:42:47
Local clock offset: -0.07 ms
Remote clock offset: -0.24 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 56.34 Mbit/s
  95th percentile per-packet one-way delay: 51.101 ms
  Loss rate: 0.84%
-- Flow 1:
  Average throughput: 36.13 Mbit/s
  95th percentile per-packet one-way delay: 51.023 ms
  Loss rate: 0.62%
-- Flow 2:
  Average throughput: 24.32 Mbit/s
  95th percentile per-packet one-way delay: 50.964 ms
  Loss rate: 1.01%
-- Flow 3:
  Average throughput: 12.27 Mbit/s
  95th percentile per-packet one-way delay: 51.350 ms
  Loss rate: 2.02%
Run 1: Report of LEDBAT — Data Link
Run 2: Statistics of LEDBAT

Start at: 2018-09-08 08:14:04
End at: 2018-09-08 08:14:34
Local clock offset: 0.01 ms
Remote clock offset: -0.003 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 56.10 Mbit/s
95th percentile per-packet one-way delay: 51.781 ms
Loss rate: 0.87%
-- Flow 1:
Average throughput: 36.02 Mbit/s
95th percentile per-packet one-way delay: 51.879 ms
Loss rate: 0.67%
-- Flow 2:
Average throughput: 24.14 Mbit/s
95th percentile per-packet one-way delay: 51.708 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 12.34 Mbit/s
95th percentile per-packet one-way delay: 49.626 ms
Loss rate: 2.02%
Run 2: Report of LEDBAT — Data Link

Throughput (Mbps/s) vs Time (s)

- Flow 1 ingress (mean 35.14 Mbps/s)
- Flow 1 egress (mean 36.02 Mbps/s)
- Flow 2 ingress (mean 24.26 Mbps/s)
- Flow 2 egress (mean 24.14 Mbps/s)
- Flow 3 ingress (mean 12.47 Mbps/s)
- Flow 3 egress (mean 12.34 Mbps/s)

Per packet one-way delay (ms)

- Flow 1 (95th percentile 51.88 ms)
- Flow 2 (95th percentile 51.71 ms)
- Flow 3 (95th percentile 49.63 ms)
Run 3: Statistics of LEDBAT

Start at: 2018-09-08 08:45:55
End at: 2018-09-08 08:46:25
Local clock offset: -0.037 ms
Remote clock offset: -0.006 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 57.09 Mbit/s
95th percentile per-packet one-way delay: 51.366 ms
Loss rate: 0.85%
-- Flow 1:
Average throughput: 36.75 Mbit/s
95th percentile per-packet one-way delay: 51.478 ms
Loss rate: 0.67%
-- Flow 2:
Average throughput: 24.81 Mbit/s
95th percentile per-packet one-way delay: 49.832 ms
Loss rate: 0.97%
-- Flow 3:
Average throughput: 11.84 Mbit/s
95th percentile per-packet one-way delay: 51.252 ms
Loss rate: 2.06%
Run 3: Report of LEDBAT — Data Link

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

- Flow 1 ingress (mean 36.88 Mbps)
- Flow 1 egress (mean 36.75 Mbps)
- Flow 2 ingress (mean 25.04 Mbps)
- Flow 2 egress (mean 24.81 Mbps)
- Flow 3 ingress (mean 11.97 Mbps)
- Flow 3 egress (mean 11.84 Mbps)

![Graph 2: Per-packet End-to-End Delay (ms)](image2)

- Flow 1 (95th percentile 51.48 ms)
- Flow 2 (95th percentile 49.83 ms)
- Flow 3 (95th percentile 51.25 ms)
Run 4: Statistics of LEDBAT

Start at: 2018-09-08 09:17:38
End at: 2018-09-08 09:18:08
Local clock offset: -0.072 ms
Remote clock offset: -0.114 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 57.10 Mbit/s
95th percentile per-packet one-way delay: 51.525 ms
Loss rate: 0.86%
-- Flow 1:
Average throughput: 37.01 Mbit/s
95th percentile per-packet one-way delay: 51.537 ms
Loss rate: 0.66%
-- Flow 2:
Average throughput: 24.41 Mbit/s
95th percentile per-packet one-way delay: 51.575 ms
Loss rate: 1.01%
-- Flow 3:
Average throughput: 11.81 Mbit/s
95th percentile per-packet one-way delay: 51.174 ms
Loss rate: 2.06%
Run 4: Report of LEDBAT — Data Link

[Graphs showing throughput and per-packet round trip delay for different flows.]

Throughput (Mbit/s) vs Time (s)

Flow 1 ingress (mean 37.13 Mbit/s)
Flow 1 egress (mean 37.01 Mbit/s)
Flow 2 ingress (mean 24.34 Mbit/s)
Flow 2 egress (mean 24.41 Mbit/s)
Flow 3 ingress (mean 11.93 Mbit/s)
Flow 3 egress (mean 11.01 Mbit/s)

Per-packet round trip delay (ms) vs Time (s)

Flow 1 (95th percentile 51.54 ms)
Flow 2 (95th percentile 51.38 ms)
Flow 3 (95th percentile 51.17 ms)
Run 5: Statistics of LEDBAT

Start at: 2018-09-08 09:49:28
End at: 2018-09-08 09:49:58
Local clock offset: -0.454 ms
Remote clock offset: -0.097 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 57.13 Mbit/s
  95th percentile per-packet one-way delay: 50.961 ms
  Loss rate: 0.86%
-- Flow 1:
  Average throughput: 37.27 Mbit/s
  95th percentile per-packet one-way delay: 49.720 ms
  Loss rate: 0.66%
-- Flow 2:
  Average throughput: 23.95 Mbit/s
  95th percentile per-packet one-way delay: 51.408 ms
  Loss rate: 1.02%
-- Flow 3:
  Average throughput: 12.14 Mbit/s
  95th percentile per-packet one-way delay: 49.710 ms
  Loss rate: 2.03%
Run 5: Report of LEDBAT — Data Link

[Graph 1: Throughput over time for different flows, showing trends and mean throughput values for each flow.]

[Graph 2: Per-packet one-way delay over time for different flows, showing variability and 95th percentile delays.]
Run 1: Statistics of Indigo-Muses

Start at: 2018-09-08 07:54:37
End at: 2018-09-08 07:55:07
Local clock offset: -0.43 ms
Remote clock offset: -0.207 ms

# Below is generated by plot.py at 2018-09-08 11:54:28
# Datalink statistics
-- Total of 3 flows:
Average throughput: 907.91 Mbit/s
95th percentile per-packet one-way delay: 55.826 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 493.77 Mbit/s
95th percentile per-packet one-way delay: 56.029 ms
Loss rate: 0.35%
-- Flow 2:
Average throughput: 444.04 Mbit/s
95th percentile per-packet one-way delay: 56.348 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 360.99 Mbit/s
95th percentile per-packet one-way delay: 53.725 ms
Loss rate: 1.13%
Run 1: Report of Indigo-Muses — Data Link

![Graph showing data link performance](image-url)

- **Flow 1 ingress (mean 493.84 Mbit/s)**
- **Flow 1 egress (mean 493.77 Mbit/s)**
- **Flow 2 ingress (mean 444.29 Mbit/s)**
- **Flow 2 egress (mean 444.04 Mbit/s)**
- **Flow 3 ingress (mean 361.44 Mbit/s)**
- **Flow 3 egress (mean 360.99 Mbit/s)**

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

- **Flow 1 (95th percentile 56.03 ms)**
- **Flow 2 (95th percentile 56.35 ms)**
- **Flow 3 (95th percentile 53.73 ms)**
Run 2: Statistics of Indigo-Muses

Start at: 2018-09-08 08:26:22
End at: 2018-09-08 08:26:52
Local clock offset: 0.346 ms
Remote clock offset: 0.073 ms

# Below is generated by plot.py at 2018-09-08 11:55:29
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 899.78 Mbit/s
  95th percentile per-packet one-way delay: 55.959 ms
  Loss rate: 0.48%
-- Flow 1:
  Average throughput: 495.85 Mbit/s
  95th percentile per-packet one-way delay: 56.590 ms
  Loss rate: 0.26%
-- Flow 2:
  Average throughput: 425.68 Mbit/s
  95th percentile per-packet one-way delay: 55.801 ms
  Loss rate: 0.57%
-- Flow 3:
  Average throughput: 372.26 Mbit/s
  95th percentile per-packet one-way delay: 52.859 ms
  Loss rate: 1.16%
Run 2: Report of Indigo-Muses — Data Link
Run 3: Statistics of Indigo-Muses

Start at: 2018-09-08 08:58:06
End at: 2018-09-08 08:58:36
Local clock offset: -0.065 ms
Remote clock offset: -0.052 ms

# Below is generated by plot.py at 2018-09-08 11:57:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 968.32 Mbit/s
95th percentile per-packet one-way delay: 56.788 ms
Loss rate: 0.50%
-- Flow 1:
Average throughput: 547.91 Mbit/s
95th percentile per-packet one-way delay: 57.956 ms
Loss rate: 0.25%
-- Flow 2:
Average throughput: 441.13 Mbit/s
95th percentile per-packet one-way delay: 53.289 ms
Loss rate: 0.56%
-- Flow 3:
Average throughput: 392.79 Mbit/s
95th percentile per-packet one-way delay: 57.092 ms
Loss rate: 1.43%
Run 3: Report of Indigo-Muses — Data Link

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

- **Flow 1 ingress (mean 547.44 Mbit/s)**
- **Flow 1 egress (mean 547.91 Mbit/s)**
- **Flow 2 ingress (mean 441.39 Mbit/s)**
- **Flow 2 egress (mean 441.13 Mbit/s)**
- **Flow 3 ingress (mean 394.33 Mbit/s)**
- **Flow 3 egress (mean 392.79 Mbit/s)**
Run 4: Statistics of Indigo-Muses

Start at: 2018-09-08 09:30:02
End at: 2018-09-08 09:30:32
Local clock offset: -0.43 ms
Remote clock offset: -0.087 ms

# Below is generated by plot.py at 2018-09-08 11:57:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 908.71 Mbit/s
95th percentile per-packet one-way delay: 54.766 ms
Loss rate: 0.49%
-- Flow 1:
Average throughput: 482.99 Mbit/s
95th percentile per-packet one-way delay: 54.727 ms
Loss rate: 0.31%
-- Flow 2:
Average throughput: 447.52 Mbit/s
95th percentile per-packet one-way delay: 55.163 ms
Loss rate: 0.49%
-- Flow 3:
Average throughput: 391.56 Mbit/s
95th percentile per-packet one-way delay: 54.133 ms
Loss rate: 1.15%
Run 4: Report of Indigo-Muses — Data Link

![Graphs showing throughput and per-packet end-to-end delay over time for different flows.]
Run 5: Statistics of Indigo-Muses

Start at: 2018-09-08 10:01:32
End at: 2018-09-08 10:02:02
Local clock offset: -0.063 ms
Remote clock offset: -0.083 ms

# Below is generated by plot.py at 2018-09-08 11:57:35
# Datalink statistics
-- Total of 3 flows:
Average throughput: 912.08 Mbit/s
95th percentile per-packet one-way delay: 57.778 ms
Loss rate: 0.47%
-- Flow 1:
Average throughput: 498.19 Mbit/s
95th percentile per-packet one-way delay: 57.476 ms
Loss rate: 0.29%
-- Flow 2:
Average throughput: 447.65 Mbit/s
95th percentile per-packet one-way delay: 59.445 ms
Loss rate: 0.47%
-- Flow 3:
Average throughput: 354.86 Mbit/s
95th percentile per-packet one-way delay: 56.646 ms
Loss rate: 1.26%
Run 5: Report of Indigo-Muses — Data Link

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

- Flow 1 ingress (mean 498.02 Mbit/s)
- Flow 1 egress (mean 498.19 Mbit/s)
- Flow 2 ingress (mean 447.51 Mbit/s)
- Flow 2 egress (mean 447.05 Mbit/s)
- Flow 3 ingress (mean 355.69 Mbit/s)
- Flow 3 egress (mean 354.86 Mbit/s)
Run 1: Statistics of PCC-Allegro

Start at: 2018-09-08 07:30:06
End at: 2018-09-08 07:30:36
Local clock offset: 0.278 ms
Remote clock offset: -0.213 ms

# Below is generated by plot.py at 2018-09-08 12:08:38
# Datalink statistics
-- Total of 3 flows:
Average throughput: 833.18 Mbit/s
95th percentile per-packet one-way delay: 176.250 ms
Loss rate: 4.87%
-- Flow 1:
Average throughput: 465.58 Mbit/s
95th percentile per-packet one-way delay: 160.332 ms
Loss rate: 1.64%
-- Flow 2:
Average throughput: 432.03 Mbit/s
95th percentile per-packet one-way delay: 185.598 ms
Loss rate: 10.56%
-- Flow 3:
Average throughput: 248.31 Mbit/s
95th percentile per-packet one-way delay: 66.370 ms
Loss rate: 1.23%
Run 1: Report of PCC-Allegro — Data Link

Throughput (Mbps) vs. Time (s):
- Flow 1 ingress (mean 471.76 Mbps)
- Flow 1 egress (mean 465.58 Mbps)
- Flow 2 ingress (mean 480.65 Mbps)
- Flow 2 egress (mean 432.03 Mbps)
- Flow 3 ingress (mean 248.84 Mbps)
- Flow 3 egress (mean 248.31 Mbps)

Per-packet one way delay (ms) vs. Time (s):
- Flow 1 (95th percentile 160.33 ms)
- Flow 2 (95th percentile 185.68 ms)
- Flow 3 (95th percentile 66.37 ms)
Run 2: Statistics of PCC-Allegro

Start at: 2018-09-08 08:01:51
End at: 2018-09-08 08:02:21
Local clock offset: -0.022 ms
Remote clock offset: -0.064 ms

# Below is generated by plot.py at 2018-09-08 12:08:38
# Datalink statistics
--- Total of 3 flows:
Average throughput: 807.70 Mbit/s
95th percentile per-packet one-way delay: 180.794 ms
Loss rate: 4.38%
--- Flow 1:
Average throughput: 440.27 Mbit/s
95th percentile per-packet one-way delay: 195.695 ms
Loss rate: 2.67%
--- Flow 2:
Average throughput: 429.12 Mbit/s
95th percentile per-packet one-way delay: 177.227 ms
Loss rate: 7.76%
--- Flow 3:
Average throughput: 252.69 Mbit/s
95th percentile per-packet one-way delay: 70.903 ms
Loss rate: 1.20%
Run 2: Report of PCC-Allegro — Data Link

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

- Flow 1 ingress (mean 450.81 Mbit/s)
- Flow 1 egress (mean 440.27 Mbit/s)
- Flow 2 ingress (mean 462.90 Mbit/s)
- Flow 2 egress (mean 429.12 Mbit/s)
- Flow 3 ingress (mean 253.39 Mbit/s)
- Flow 3 egress (mean 252.69 Mbit/s)

![Graph 2: Per-Packet End-to-End Delay](image2)

- Flow 1 (95th percentile 195.69 ms)
- Flow 2 (95th percentile 177.23 ms)
- Flow 3 (95th percentile 70.90 ms)
Run 3: Statistics of PCC-Allegro

Start at: 2018-09-08 08:33:39  
End at: 2018-09-08 08:34:09  
Local clock offset: -0.029 ms  
Remote clock offset: -0.032 ms

# Below is generated by plot.py at 2018-09-08 12:22:45
# Datalink statistics
-- Total of 3 flows:
Average throughput: 814.04 Mbit/s
95th percentile per-packet one-way delay: 150.512 ms
Loss rate: 1.12%
-- Flow 1:
Average throughput: 451.50 Mbit/s
95th percentile per-packet one-way delay: 155.898 ms
Loss rate: 0.89%
-- Flow 2:
Average throughput: 390.20 Mbit/s
95th percentile per-packet one-way delay: 94.548 ms
Loss rate: 0.62%
-- Flow 3:
Average throughput: 316.49 Mbit/s
95th percentile per-packet one-way delay: 159.212 ms
Loss rate: 3.34%
Run 3: Report of PCC-Allegro — Data Link
Run 4: Statistics of PCC-Allegro

Start at: 2018-09-08 09:05:29
End at: 2018-09-08 09:05:59
Local clock offset: 0.33 ms
Remote clock offset: -0.083 ms

# Below is generated by plot.py at 2018-09-08 12:23:49
# Datalink statistics
-- Total of 3 flows:
Average throughput: 820.22 Mbit/s
95th percentile per-packet one-way delay: 171.628 ms
Loss rate: 3.24%
-- Flow 1:
Average throughput: 444.67 Mbit/s
95th percentile per-packet one-way delay: 177.315 ms
Loss rate: 5.10%
-- Flow 2:
Average throughput: 401.06 Mbit/s
95th percentile per-packet one-way delay: 148.624 ms
Loss rate: 0.80%
-- Flow 3:
Average throughput: 334.75 Mbit/s
95th percentile per-packet one-way delay: 152.604 ms
Loss rate: 1.34%
Run 4: Report of PCC-Allegro — Data Link

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

- Flow 1 ingress (mean 466.95 Mbit/s)
- Flow 1 egress (mean 444.67 Mbit/s)
- Flow 2 ingress (mean 492.22 Mbit/s)
- Flow 2 egress (mean 401.06 Mbit/s)
- Flow 3 ingress (mean 335.74 Mbit/s)
- Flow 3 egress (mean 334.75 Mbit/s)
Run 5: Statistics of PCC-Allegro

Start at: 2018-09-08 09:37:18
End at: 2018-09-08 09:37:48
Local clock offset: -0.081 ms
Remote clock offset: -0.093 ms

# Below is generated by plot.py at 2018-09-08 12:24:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 816.68 Mbit/s
95th percentile per-packet one-way delay: 156.367 ms
Loss rate: 1.65%
-- Flow 1:
Average throughput: 463.70 Mbit/s
95th percentile per-packet one-way delay: 157.437 ms
Loss rate: 2.16%
-- Flow 2:
Average throughput: 378.57 Mbit/s
95th percentile per-packet one-way delay: 97.235 ms
Loss rate: 0.78%
-- Flow 3:
Average throughput: 311.06 Mbit/s
95th percentile per-packet one-way delay: 80.826 ms
Loss rate: 1.47%
Run 5: Report of PCC-Allegro — Data Link

![Graph showing throughput over time for different flows]

- **Throughput (Mbps):**
  - **Flow 1 Ingress:** (mean 472.34 Mbps)
  - **Flow 1 Egress:** (mean 463.70 Mbps)
  - **Flow 2 Ingress:** (mean 379.60 Mbps)
  - **Flow 2 Egress:** (mean 378.57 Mbps)
  - **Flow 3 Ingress:** (mean 312.45 Mbps)
  - **Flow 3 Egress:** (mean 311.06 Mbps)

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

- **Per-packet one-way delay (ms):**
  - **Flow 1:** (95th percentile 157.44 ms)
  - **Flow 2:** (95th percentile 97.23 ms)
  - **Flow 3:** (95th percentile 80.83 ms)
Run 1: Statistics of PCC-Expr

Start at: 2018-09-08 07:34:18
End at: 2018-09-08 07:34:48
Local clock offset: -0.456 ms
Remote clock offset: -0.253 ms

# Below is generated by plot.py at 2018-09-08 12:24:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 546.61 Mbit/s
95th percentile per-packet one-way delay: 97.669 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 332.69 Mbit/s
95th percentile per-packet one-way delay: 101.321 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 303.23 Mbit/s
95th percentile per-packet one-way delay: 79.624 ms
Loss rate: 1.30%
-- Flow 3:
Average throughput: 39.86 Mbit/s
95th percentile per-packet one-way delay: 50.308 ms
Loss rate: 1.55%
Run 1: Report of PCC-Expr — Data Link
Run 2: Statistics of PCC-Expr

Start at: 2018-09-08 08:06:02
End at: 2018-09-08 08:06:32
Local clock offset: -0.021 ms
Remote clock offset: -0.065 ms

# Below is generated by plot.py at 2018-09-08 12:24:18
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 603.14 Mbit/s
  95th percentile per-packet one-way delay: 154.443 ms
  Loss rate: 1.83%
-- Flow 1:
  Average throughput: 336.94 Mbit/s
  95th percentile per-packet one-way delay: 136.756 ms
  Loss rate: 1.25%
-- Flow 2:
  Average throughput: 315.01 Mbit/s
  95th percentile per-packet one-way delay: 170.886 ms
  Loss rate: 2.86%
-- Flow 3:
  Average throughput: 174.11 Mbit/s
  95th percentile per-packet one-way delay: 59.480 ms
  Loss rate: 1.43%
Run 2: Report of PCC-Expr — Data Link
Run 3: Statistics of PCC-Expr

Start at: 2018-09-08 08:37:54
End at: 2018-09-08 08:38:24
Local clock offset: 0.35 ms
Remote clock offset: -0.007 ms

# Below is generated by plot.py at 2018-09-08 12:24:18
# Datalink statistics
-- Total of 3 flows:
Average throughput: 568.53 Mbit/s
95th percentile per-packet one-way delay: 153.733 ms
Loss rate: 1.95%
-- Flow 1:
Average throughput: 333.15 Mbit/s
95th percentile per-packet one-way delay: 148.354 ms
Loss rate: 2.01%
-- Flow 2:
Average throughput: 266.99 Mbit/s
95th percentile per-packet one-way delay: 161.809 ms
Loss rate: 2.11%
-- Flow 3:
Average throughput: 177.35 Mbit/s
95th percentile per-packet one-way delay: 69.294 ms
Loss rate: 1.10%
Run 3: Report of PCC-Expr — Data Link

![Graph 1: Throughput (Mbps)]

- Flow 1 ingress (mean 338.84 Mbps)
- Flow 1 egress (mean 333.35 Mbps)
- Flow 2 ingress (mean 271.34 Mbps)
- Flow 2 egress (mean 266.99 Mbps)
- Flow 3 ingress (mean 177.52 Mbps)
- Flow 3 egress (mean 177.35 Mbps)

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

- Flow 1 (95th percentile 148.35 ms)
- Flow 2 (95th percentile 161.81 ms)
- Flow 3 (95th percentile 69.29 ms)
Run 4: Statistics of PCC-Expr

Start at: 2018-09-08 09:09:41
End at: 2018-09-08 09:10:11
Local clock offset: -0.413 ms
Remote clock offset: -0.062 ms

# Below is generated by plot.py at 2018-09-08 12:27:24
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 547.33 Mbit/s
  95th percentile per-packet one-way delay: 148.613 ms
  Loss rate: 2.63%
-- Flow 1:
  Average throughput: 353.67 Mbit/s
  95th percentile per-packet one-way delay: 152.343 ms
  Loss rate: 3.64%
-- Flow 2:
  Average throughput: 243.62 Mbit/s
  95th percentile per-packet one-way delay: 62.246 ms
  Loss rate: 0.65%
-- Flow 3:
  Average throughput: 97.46 Mbit/s
  95th percentile per-packet one-way delay: 49.812 ms
  Loss rate: 1.24%
Run 4: Report of PCC-Expr — Data Link

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

- Flow 1 ingress (mean 365.77 Mbit/s)
- Flow 1 egress (mean 353.47 Mbit/s)
- Flow 2 ingress (mean 243.88 Mbit/s)
- Flow 2 egress (mean 243.62 Mbit/s)
- Flow 3 ingress (mean 97.67 Mbit/s)
- Flow 3 egress (mean 97.46 Mbit/s)
Run 5: Statistics of PCC-Expr

Start at: 2018-09-08 09:41:32
End at: 2018-09-08 09:42:02
Local clock offset: -0.073 ms
Remote clock offset: -0.066 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 523.41 Mbit/s
95th percentile per-packet one-way delay: 114.416 ms
Loss rate: 0.96%
-- Flow 1:
Average throughput: 304.98 Mbit/s
95th percentile per-packet one-way delay: 117.025 ms
Loss rate: 0.96%
-- Flow 2:
Average throughput: 268.17 Mbit/s
95th percentile per-packet one-way delay: 116.546 ms
Loss rate: 0.44%
-- Flow 3:
Average throughput: 123.32 Mbit/s
95th percentile per-packet one-way delay: 50.626 ms
Loss rate: 3.18%
Run 5: Report of PCC-Expr — Data Link

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

- Flow 1 ingress (mean 306.90 Mbit/s)
- Flow 1 egress (mean 304.98 Mbit/s)
- Flow 2 ingress (mean 267.98 Mbit/s)
- Flow 2 egress (mean 268.17 Mbit/s)
- Flow 3 ingress (mean 126.06 Mbit/s)
- Flow 3 egress (mean 123.32 Mbit/s)

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

- Flow 1 (95th percentile 117.03 ms)
- Flow 2 (95th percentile 116.55 ms)
- Flow 3 (95th percentile 50.63 ms)
Run 1: Statistics of QUIC Cubic

Start at: 2018-09-08 07:41:00
End at: 2018-09-08 07:41:30
Local clock offset: -0.481 ms
Remote clock offset: -0.252 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 107.58 Mbit/s
  95th percentile per-packet one-way delay: 50.381 ms
  Loss rate: 0.53%
-- Flow 1:
  Average throughput: 72.85 Mbit/s
  95th percentile per-packet one-way delay: 50.396 ms
  Loss rate: 0.38%
-- Flow 2:
  Average throughput: 40.86 Mbit/s
  95th percentile per-packet one-way delay: 50.049 ms
  Loss rate: 0.87%
-- Flow 3:
  Average throughput: 19.26 Mbit/s
  95th percentile per-packet one-way delay: 50.010 ms
  Loss rate: 0.66%
Run 1: Report of QUIC Cubic — Data Link

![Graphs showing network performance metrics for different flows over time.](image)

- Flow 1 ingress (mean 72.87 Mbit/s)
- Flow 1 egress (mean 72.85 Mbit/s)
- Flow 2 ingress (mean 41.01 Mbit/s)
- Flow 2 egress (mean 40.86 Mbit/s)
- Flow 3 ingress (mean 19.19 Mbit/s)
- Flow 3 egress (mean 19.26 Mbit/s)

![Graphs showing network delay metrics for different flows over time.](image)

- Flow 1 (95th percentile 50.40 ms)
- Flow 2 (95th percentile 50.05 ms)
- Flow 3 (95th percentile 50.01 ms)
Run 2: Statistics of QUIC Cubic

Start at: 2018-09-08 08:12:48
End at: 2018-09-08 08:13:18
Local clock offset: -0.015 ms
Remote clock offset: -0.027 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 110.13 Mbit/s
95th percentile per-packet one-way delay: 50.568 ms
Loss rate: 0.55%
-- Flow 1:
Average throughput: 64.93 Mbit/s
95th percentile per-packet one-way delay: 48.695 ms
Loss rate: 0.44%
-- Flow 2:
Average throughput: 37.08 Mbit/s
95th percentile per-packet one-way delay: 50.618 ms
Loss rate: 1.00%
-- Flow 3:
Average throughput: 62.56 Mbit/s
95th percentile per-packet one-way delay: 49.792 ms
Loss rate: 0.34%
Run 2: Report of QUIC Cubic — Data Link
Run 3: Statistics of QUIC Cubic

Start at: 2018-09-08 08:44:39
End at: 2018-09-08 08:45:09
Local clock offset: 0.335 ms
Remote clock offset: -0.014 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 107.91 Mbit/s
95th percentile per-packet one-way delay: 50.905 ms
Loss rate: 0.74%
-- Flow 1:
Average throughput: 67.41 Mbit/s
95th percentile per-packet one-way delay: 49.815 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 45.32 Mbit/s
95th percentile per-packet one-way delay: 50.947 ms
Loss rate: 0.92%
-- Flow 3:
Average throughput: 31.18 Mbit/s
95th percentile per-packet one-way delay: 49.823 ms
Loss rate: 2.55%
Run 3: Report of QUIC Cubic — Data Link

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

- **Throughput (Mbps):**
  - Flow 1 ingress (mean 67.44 Mbps)
  - Flow 1 egress (mean 67.41 Mbps)
  - Flow 2 ingress (mean 45.51 Mbps)
  - Flow 2 egress (mean 45.32 Mbps)
  - Flow 3 ingress (mean 31.68 Mbps)
  - Flow 3 egress (mean 31.18 Mbps)

- **One-way delay (ms):**
  - Flow 1 (95th percentile 49.81 ms)
  - Flow 2 (95th percentile 50.95 ms)
  - Flow 3 (95th percentile 49.82 ms)
Run 4: Statistics of QUIC Cubic

Start at: 2018-09-08 09:16:22
End at: 2018-09-08 09:16:52
Local clock offset: -0.099 ms
Remote clock offset: -0.063 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 105.29 Mbit/s
  95th percentile per-packet one-way delay: 50.625 ms
  Loss rate: 0.62%
-- Flow 1:
  Average throughput: 63.60 Mbit/s
  95th percentile per-packet one-way delay: 49.445 ms
  Loss rate: 0.56%
-- Flow 2:
  Average throughput: 45.61 Mbit/s
  95th percentile per-packet one-way delay: 50.666 ms
  Loss rate: 0.97%
-- Flow 3:
  Average throughput: 35.07 Mbit/s
  95th percentile per-packet one-way delay: 49.714 ms
  Loss rate: 0.00%
Run 5: Statistics of QUIC Cubic

Start at: 2018-09-08 09:48:12
End at: 2018-09-08 09:48:42
Local clock offset: -0.058 ms
Remote clock offset: -0.069 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 96.48 Mbit/s
95th percentile per-packet one-way delay: 50.737 ms
Loss rate: 0.61%
-- Flow 1:
Average throughput: 59.71 Mbit/s
95th percentile per-packet one-way delay: 50.715 ms
Loss rate: 0.47%
-- Flow 2:
Average throughput: 45.10 Mbit/s
95th percentile per-packet one-way delay: 50.765 ms
Loss rate: 0.98%
-- Flow 3:
Average throughput: 21.04 Mbit/s
95th percentile per-packet one-way delay: 50.724 ms
Loss rate: 0.27%
Run 5: Report of QUIC Cubic — Data Link

![Graph showing throughput and end-to-end delay over time for different flows with specified mean speeds.]

- Flow 1 ingress (mean 59.79 Mbit/s)
- Flow 1 egress (mean 59.71 Mbit/s)
- Flow 2 ingress (mean 45.32 Mbit/s)
- Flow 2 egress (mean 45.10 Mbit/s)
- Flow 3 ingress (mean 20.58 Mbit/s)
- Flow 3 egress (mean 21.04 Mbit/s)
Run 1: Statistics of SCReAM

Start at: 2018-09-08 07:36:17
End at: 2018-09-08 07:36:47
Local clock offset: -0.452 ms
Remote clock offset: -0.226 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 50.209 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.241 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 48.508 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.183 ms
Loss rate: 1.09%
Run 1: Report of SCReAM — Data Link

[Graph showing throughput and delay over time for different flows with annotations for mean and 95th percentile values]
Run 2: Statistics of SCReAM

Start at: 2018-09-08 08:08:06
End at: 2018-09-08 08:08:36
Local clock offset: 0.365 ms
Remote clock offset: -0.034 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 0.43 Mbit/s
  95th percentile per-packet one-way delay: 50.643 ms
  Loss rate: 0.52%
-- Flow 1:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 50.660 ms
  Loss rate: 0.26%
-- Flow 2:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 50.192 ms
  Loss rate: 0.61%
-- Flow 3:
  Average throughput: 0.22 Mbit/s
  95th percentile per-packet one-way delay: 49.274 ms
  Loss rate: 1.08%
Run 3: Statistics of SCReAM

Start at: 2018-09-08 08:39:55
End at: 2018-09-08 08:40:25
Local clock offset: -0.012 ms
Remote clock offset: 0.015 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 50.735 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.752 ms
Loss rate: 0.26%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.685 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 48.756 ms
Loss rate: 1.08%
Run 3: Report of SCReAM — Data Link

![Graph 1: Throughput (Mbps)]

![Graph 2: Per-packet one-way delay (ms)]
Run 4: Statistics of SCReAM

Start at: 2018-09-08 09:11:40
End at: 2018-09-08 09:12:10
Local clock offset: -0.079 ms
Remote clock offset: -0.061 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 50.931 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.948 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.899 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 49.917 ms
Loss rate: 1.09%
Run 4: Report of SCReAM — Data Link

Graph showing throughput and packet delay over time for different flows.
Run 5: Statistics of SCReAM

Start at: 2018-09-08 09:43:29
End at: 2018-09-08 09:43:59
Local clock offset: -0.451 ms
Remote clock offset: -0.085 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 0.43 Mbit/s
95th percentile per-packet one-way delay: 50.544 ms
Loss rate: 0.58%
-- Flow 1:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.568 ms
Loss rate: 0.38%
-- Flow 2:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 48.439 ms
Loss rate: 0.61%
-- Flow 3:
Average throughput: 0.22 Mbit/s
95th percentile per-packet one-way delay: 50.352 ms
Loss rate: 1.09%
Run 5: Report of SCReAM — Data Link
Run 1: Statistics of Sprout

Start at: 2018-09-08 07:47:44
End at: 2018-09-08 07:48:14
Local clock offset: -0.08 ms
Remote clock offset: -0.295 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 16.41 Mbit/s
  95th percentile per-packet one-way delay: 51.318 ms
  Loss rate: 0.63%
-- Flow 1:
  Average throughput: 8.37 Mbit/s
  95th percentile per-packet one-way delay: 49.217 ms
  Loss rate: 0.41%
-- Flow 2:
  Average throughput: 8.19 Mbit/s
  95th percentile per-packet one-way delay: 50.893 ms
  Loss rate: 0.64%
-- Flow 3:
  Average throughput: 7.95 Mbit/s
  95th percentile per-packet one-way delay: 51.700 ms
  Loss rate: 1.34%
Run 1: Report of Sprout — Data Link

[Graph showing throughput and delay over time for different flows]
Run 2: Statistics of Sprout

Start at: 2018-09-08 08:19:30
End at: 2018-09-08 08:20:00
Local clock offset: 0.384 ms
Remote clock offset: 0.004 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 16.27 Mbit/s
  95th percentile per-packet one-way delay: 51.760 ms
  Loss rate: 0.59%
-- Flow 1:
  Average throughput: 8.27 Mbit/s
  95th percentile per-packet one-way delay: 50.983 ms
  Loss rate: 0.42%
-- Flow 2:
  Average throughput: 8.15 Mbit/s
  95th percentile per-packet one-way delay: 52.147 ms
  Loss rate: 0.53%
-- Flow 3:
  Average throughput: 7.93 Mbit/s
  95th percentile per-packet one-way delay: 51.316 ms
  Loss rate: 1.28%
Run 2: Report of Sprout — Data Link

[Graph showing throughput and packet loss over time for different data flows.


- Packet loss (ms): Flow 1 (95th percentile 50.38 ms), Flow 2 (95th percentile 52.15 ms), Flow 3 (95th percentile 51.32 ms).]
Run 3: Statistics of Sprout

Start at: 2018-09-08 08:51:17
End at: 2018-09-08 08:51:47
Local clock offset: -0.022 ms
Remote clock offset: -0.021 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 16.20 Mbit/s
95th percentile per-packet one-way delay: 50.842 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 8.19 Mbit/s
95th percentile per-packet one-way delay: 49.360 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 8.23 Mbit/s
95th percentile per-packet one-way delay: 49.161 ms
Loss rate: 0.24%
-- Flow 3:
Average throughput: 7.84 Mbit/s
95th percentile per-packet one-way delay: 51.150 ms
Loss rate: 1.33%
Run 3: Report of Sprout — Data Link
Run 4: Statistics of Sprout

Start at: 2018-09-08 09:23:06
End at: 2018-09-08 09:23:36
Local clock offset: -0.452 ms
Remote clock offset: -0.094 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
Average throughput: 16.13 Mbit/s
95th percentile per-packet one-way delay: 50.879 ms
Loss rate: 0.56%
-- Flow 1:
Average throughput: 8.27 Mbit/s
95th percentile per-packet one-way delay: 50.849 ms
Loss rate: 0.42%
-- Flow 2:
Average throughput: 8.17 Mbit/s
95th percentile per-packet one-way delay: 50.863 ms
Loss rate: 0.32%
-- Flow 3:
Average throughput: 7.48 Mbit/s
95th percentile per-packet one-way delay: 50.954 ms
Loss rate: 1.58%
Run 5: Statistics of Sprout

Start at: 2018-09-08 09:54:38
End at: 2018-09-08 09:55:08
Local clock offset: -0.083 ms
Remote clock offset: -0.107 ms

# Below is generated by plot.py at 2018-09-08 12:27:53
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 16.38 Mbit/s
  95th percentile per-packet one-way delay: 50.994 ms
  Loss rate: 0.42%
-- Flow 1:
  Average throughput: 8.33 Mbit/s
  95th percentile per-packet one-way delay: 49.978 ms
  Loss rate: 0.00%
-- Flow 2:
  Average throughput: 8.25 Mbit/s
  95th percentile per-packet one-way delay: 50.102 ms
  Loss rate: 0.61%
-- Flow 3:
  Average throughput: 7.86 Mbit/s
  95th percentile per-packet one-way delay: 51.326 ms
  Loss rate: 1.35%
Run 5: Report of Sprout — Data Link
Run 1: Statistics of TaoVA-100x

Start at: 2018-09-08 07:37:27
End at: 2018-09-08 07:37:57
Local clock offset: -0.451 ms
Remote clock offset: -0.258 ms

# Below is generated by plot.py at 2018-09-08 12:36:26
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 481.83 Mbit/s
  95th percentile per-packet one-way delay: 50.347 ms
  Loss rate: 0.55%
-- Flow 1:
  Average throughput: 250.08 Mbit/s
  95th percentile per-packet one-way delay: 50.036 ms
  Loss rate: 0.36%
-- Flow 2:
  Average throughput: 235.01 Mbit/s
  95th percentile per-packet one-way delay: 48.483 ms
  Loss rate: 0.54%
-- Flow 3:
  Average throughput: 228.33 Mbit/s
  95th percentile per-packet one-way delay: 51.282 ms
  Loss rate: 1.18%
Run 1: Report of TaoVA-100x — Data Link

[Graph showing throughput and packet size delay over time]

Throughput (Mbps):
- Flow 1 ingress: mean 250.13 Mbps
- Flow 1 egress: mean 250.08 Mbps
- Flow 2 ingress: mean 235.11 Mbps
- Flow 2 egress: mean 235.01 Mbps
- Flow 3 ingress: mean 226.72 Mbps
- Flow 3 egress: mean 226.33 Mbps

Per packet one-way delay (ms):
- Flow 1: 95th percentile 50.04 ms
- Flow 2: 95th percentile 48.48 ms
- Flow 3: 95th percentile 51.28 ms
Run 2: Statistics of TaoVA-100x

Start at: 2018-09-08 08:09:16
End at: 2018-09-08 08:09:46
Local clock offset: 0.385 ms
Remote clock offset: 0.008 ms

# Below is generated by plot.py at 2018-09-08 12:37:02
# Datalink statistics
-- Total of 3 flows:
Average throughput: 482.51 Mbit/s
95th percentile per-packet one-way delay: 51.280 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 241.52 Mbit/s
95th percentile per-packet one-way delay: 50.780 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 241.33 Mbit/s
95th percentile per-packet one-way delay: 51.355 ms
Loss rate: 0.44%
-- Flow 3:
Average throughput: 243.90 Mbit/s
95th percentile per-packet one-way delay: 51.303 ms
Loss rate: 1.08%
Run 2: Report of TaoVA-100x — Data Link

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

- **Throughput Graph:**
  - Flow 1 ingress (mean 241.61 Mbps)
  - Flow 1 egress (mean 241.52 Mbps)
  - Flow 2 ingress (mean 241.17 Mbps)
  - Flow 2 egress (mean 241.33 Mbps)
  - Flow 3 ingress (mean 244.09 Mbps)
  - Flow 3 egress (mean 243.99 Mbps)

- **Packet Delay Graph:**
  - Flow 1 (95th percentile 50.78 ms)
  - Flow 2 (95th percentile 51.35 ms)
  - Flow 3 (95th percentile 51.30 ms)
Run 3: Statistics of TaoVA-100x

Start at: 2018-09-08 08:41:05
End at: 2018-09-08 08:41:35
Local clock offset: -0.012 ms
Remote clock offset: -0.017 ms

# Below is generated by plot.py at 2018-09-08 12:37:10
# Datalink statistics
-- Total of 3 flows:
Average throughput: 486.28 Mbit/s
95th percentile per-packet one-way delay: 50.600 ms
Loss rate: 0.51%
-- Flow 1:
Average throughput: 246.60 Mbit/s
95th percentile per-packet one-way delay: 49.631 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 240.83 Mbit/s
95th percentile per-packet one-way delay: 49.704 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 240.90 Mbit/s
95th percentile per-packet one-way delay: 50.770 ms
Loss rate: 1.03%
Run 3: Report of TaoVA-100x — Data Link
Run 4: Statistics of TaoVA-100x

Start at: 2018-09-08 09:12:50
End at: 2018-09-08 09:13:20
Local clock offset: -0.462 ms
Remote clock offset: -0.061 ms

# Below is generated by plot.py at 2018-09-08 12:38:27
# Datalink statistics
-- Total of 3 flows:
Average throughput: 478.07 Mbit/s
95th percentile per-packet one-way delay: 50.489 ms
Loss rate: 0.53%
-- Flow 1:
Average throughput: 242.55 Mbit/s
95th percentile per-packet one-way delay: 50.469 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 232.66 Mbit/s
95th percentile per-packet one-way delay: 50.502 ms
Loss rate: 0.57%
-- Flow 3:
Average throughput: 244.48 Mbit/s
95th percentile per-packet one-way delay: 50.527 ms
Loss rate: 0.99%
Run 4: Report of TaoVA-100x — Data Link
Run 5: Statistics of TaoVA-100x

Start at: 2018-09-08 09:44:39
End at: 2018-09-08 09:45:09
Local clock offset: -0.443 ms
Remote clock offset: -0.097 ms

# Below is generated by plot.py at 2018-09-08 12:39:14
# Datalink statistics
-- Total of 3 flows:
Average throughput: 481.63 Mbit/s
95th percentile per-packet one-way delay: 49.824 ms
Loss rate: 0.52%
-- Flow 1:
Average throughput: 246.84 Mbit/s
95th percentile per-packet one-way delay: 49.870 ms
Loss rate: 0.33%
-- Flow 2:
Average throughput: 243.57 Mbit/s
95th percentile per-packet one-way delay: 48.556 ms
Loss rate: 0.51%
-- Flow 3:
Average throughput: 220.42 Mbit/s
95th percentile per-packet one-way delay: 48.753 ms
Loss rate: 1.19%
Run 5: Report of TaoVA-100x — Data Link

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

Throughput (Mbps):
- Flow 1 ingress (mean 246.82 Mbps)
- Flow 2 ingress (mean 243.60 Mbps)
- Flow 3 ingress (mean 220.86 Mbps)
- Flow 1 egress (mean 246.84 Mbps)
- Flow 2 egress (mean 243.57 Mbps)
- Flow 3 egress (mean 220.42 Mbps)

Packet latency (ms):
- Flow 1 (95th percentile 49.87 ms)
- Flow 2 (95th percentile 48.56 ms)
- Flow 3 (95th percentile 48.75 ms)
Run 1: Statistics of TCP Vegas

Start at: 2018-09-08 07:43:32
End at: 2018-09-08 07:44:02
Local clock offset: -0.452 ms
Remote clock offset: -0.266 ms

# Below is generated by plot.py at 2018-09-08 12:43:28
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1082.49 Mbit/s
  95th percentile per-packet one-way delay: 85.660 ms
  Loss rate: 0.56%
  -- Flow 1:
    Average throughput: 571.36 Mbit/s
    95th percentile per-packet one-way delay: 88.728 ms
    Loss rate: 0.38%
  -- Flow 2:
    Average throughput: 517.38 Mbit/s
    95th percentile per-packet one-way delay: 75.295 ms
    Loss rate: 0.56%
  -- Flow 3:
    Average throughput: 504.98 Mbit/s
    95th percentile per-packet one-way delay: 61.399 ms
    Loss rate: 1.14%
Run 1: Report of TCP Vegas — Data Link
Run 2: Statistics of TCP Vegas

Start at: 2018-09-08 08:15:20
End at: 2018-09-08 08:15:50
Local clock offset: 0.391 ms
Remote clock offset: -0.004 ms

# Below is generated by plot.py at 2018-09-08 12:47:36
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 1077.33 Mbit/s
  95th percentile per-packet one-way delay: 63.014 ms
  Loss rate: 0.51%
-- Flow 1:
  Average throughput: 536.61 Mbit/s
  95th percentile per-packet one-way delay: 60.350 ms
  Loss rate: 0.34%
-- Flow 2:
  Average throughput: 564.80 Mbit/s
  95th percentile per-packet one-way delay: 67.262 ms
  Loss rate: 0.50%
-- Flow 3:
  Average throughput: 499.32 Mbit/s
  95th percentile per-packet one-way delay: 57.922 ms
  Loss rate: 1.07%
Run 2: Report of TCP Vegas — Data Link
Run 3: Statistics of TCP Vegas

Start at: 2018-09-08 08:47:11
End at: 2018-09-08 08:47:41
Local clock offset: -0.02 ms
Remote clock offset: -0.028 ms

# Below is generated by plot.py at 2018-09-08 12:47:36
# Datalink statistics
-- Total of 3 flows:
Average throughput: 951.95 Mbit/s
95th percentile per-packet one-way delay: 60.756 ms
Loss rate: 0.29%
-- Flow 1:
Average throughput: 506.10 Mbit/s
95th percentile per-packet one-way delay: 55.928 ms
Loss rate: 0.18%
-- Flow 2:
Average throughput: 469.17 Mbit/s
95th percentile per-packet one-way delay: 58.714 ms
Loss rate: 0.29%
-- Flow 3:
Average throughput: 404.98 Mbit/s
95th percentile per-packet one-way delay: 70.931 ms
Loss rate: 0.71%
Run 3: Report of TCP Vegas — Data Link

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

Legend:
- Flow 1 ingress (mean 505.31 Mbit/s)
- Flow 1 egress (mean 506.10 Mbit/s)
- Flow 2 ingress (mean 468.16 Mbit/s)
- Flow 2 egress (mean 469.17 Mbit/s)
- Flow 3 ingress (mean 403.88 Mbit/s)
- Flow 3 egress (mean 404.98 Mbit/s)
Run 4: Statistics of TCP Vegas

Start at: 2018-09-08 09:18:54
End at: 2018-09-08 09:19:24
Local clock offset: -0.085 ms
Remote clock offset: -0.095 ms

# Below is generated by plot.py at 2018-09-08 12:56:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 1061.30 Mbit/s
95th percentile per-packet one-way delay: 68.042 ms
Loss rate: 0.54%
-- Flow 1:
Average throughput: 542.28 Mbit/s
95th percentile per-packet one-way delay: 67.230 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 524.55 Mbit/s
95th percentile per-packet one-way delay: 56.248 ms
Loss rate: 0.53%
-- Flow 3:
Average throughput: 515.67 Mbit/s
95th percentile per-packet one-way delay: 88.159 ms
Loss rate: 1.12%
Run 4: Report of TCP Vegas — Data Link

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**Graph 1:**
- **Y-axis:** Throughput (Mbps)
- **X-axis:** Time (s)
- **Legend:**
  - Flow 1 ingress (mean 542.40 Mbps)
  - Flow 1 egress (mean 542.28 Mbps)
  - Flow 2 ingress (mean 524.69 Mbps)
  - Flow 2 egress (mean 524.55 Mbps)
  - Flow 3 ingress (mean 516.33 Mbps)
  - Flow 3 egress (mean 515.67 Mbps)

**Graph 2:**
- **Y-axis:** Per-packet one way delay (ms)
- **X-axis:** Time (s)
- **Legend:**
  - Flow 1 (95th percentile 67.23 ms)
  - Flow 2 (95th percentile 56.25 ms)
  - Flow 3 (95th percentile 88.16 ms)
Run 5: Statistics of TCP Vegas

Start at: 2018-09-08 09:50:44
End at: 2018-09-08 09:51:14
Local clock offset: -0.081 ms
Remote clock offset: -0.114 ms

# Below is generated by plot.py at 2018-09-08 12:56:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 726.21 Mbit/s
95th percentile per-packet one-way delay: 64.083 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 201.37 Mbit/s
95th percentile per-packet one-way delay: 64.256 ms
Loss rate: 0.19%
-- Flow 2:
Average throughput: 533.49 Mbit/s
95th percentile per-packet one-way delay: 57.571 ms
Loss rate: 0.50%
-- Flow 3:
Average throughput: 515.06 Mbit/s
95th percentile per-packet one-way delay: 70.872 ms
Loss rate: 1.13%
Run 5: Report of TCP Vegas — Data Link

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

Legend:
- Flow 1 ingress (mean 201.09 Mbit/s)
- Flow 1 egress (mean 201.37 Mbit/s)
- Flow 2 ingress (mean 533.47 Mbit/s)
- Flow 2 egress (mean 533.49 Mbit/s)
- Flow 3 ingress (mean 515.70 Mbit/s)
- Flow 3 egress (mean 515.06 Mbit/s)

- Flow 1 (95th percentile 64.26 ms)
- Flow 2 (95th percentile 57.57 ms)
- Flow 3 (95th percentile 70.87 ms)
Run 1: Statistics of Verus

Start at: 2018-09-08 07:39:21
End at: 2018-09-08 07:39:51
Local clock offset: -0.09 ms
Remote clock offset: -0.24 ms

# Below is generated by plot.py at 2018-09-08 12:56:22
# Datalink statistics
-- Total of 3 flows:
Average throughput: 312.86 Mbit/s
95th percentile per-packet one-way delay: 148.921 ms
Loss rate: 0.97%
-- Flow 1:
Average throughput: 187.72 Mbit/s
95th percentile per-packet one-way delay: 159.099 ms
Loss rate: 1.14%
-- Flow 2:
Average throughput: 151.18 Mbit/s
95th percentile per-packet one-way delay: 86.694 ms
Loss rate: 0.49%
-- Flow 3:
Average throughput: 77.98 Mbit/s
95th percentile per-packet one-way delay: 67.124 ms
Loss rate: 1.61%
Run 1: Report of Verus — Data Link
Run 2: Statistics of Verus

Start at: 2018-09-08 08:11:11
End at: 2018-09-08 08:11:41
Local clock offset: 0.014 ms
Remote clock offset: 0.013 ms

# Below is generated by plot.py at 2018-09-08 12:56:22
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 283.00 Mbit/s
  95th percentile per-packet one-way delay: 99.803 ms
  Loss rate: 0.78%
-- Flow 1:
  Average throughput: 175.92 Mbit/s
  95th percentile per-packet one-way delay: 104.929 ms
  Loss rate: 0.40%
-- Flow 2:
  Average throughput: 125.20 Mbit/s
  95th percentile per-packet one-way delay: 74.267 ms
  Loss rate: 0.91%
-- Flow 3:
  Average throughput: 72.34 Mbit/s
  95th percentile per-packet one-way delay: 55.284 ms
  Loss rate: 3.07%
Run 2: Report of Verus — Data Link
Run 3: Statistics of Verus

Start at: 2018-09-08 08:43:00
End at: 2018-09-08 08:43:30
Local clock offset: -0.037 ms
Remote clock offset: -0.034 ms

# Below is generated by plot.py at 2018-09-08 12:56:22
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 299.91 Mbit/s
  95th percentile per-packet one-way delay: 97.025 ms
  Loss rate: 0.12%
-- Flow 1:
  Average throughput: 181.05 Mbit/s
  95th percentile per-packet one-way delay: 104.115 ms
  Loss rate: 0.00%
-- Flow 2:
  Average throughput: 117.09 Mbit/s
  95th percentile per-packet one-way delay: 56.007 ms
  Loss rate: 0.05%
-- Flow 3:
  Average throughput: 125.39 Mbit/s
  95th percentile per-packet one-way delay: 79.372 ms
  Loss rate: 0.78%
Run 3: Report of Verus — Data Link

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

- Flow 1 ingress (mean 181.16 Mbps)
- Flow 1 egress (mean 181.05 Mbps)
- Flow 2 ingress (mean 116.56 Mbps)
- Flow 2 egress (mean 117.09 Mbps)
- Flow 3 ingress (mean 125.13 Mbps)
- Flow 3 egress (mean 125.39 Mbps)

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

- Flow 1 (95th percentile 104.11 ms)
- Flow 2 (95th percentile 56.01 ms)
- Flow 3 (95th percentile 79.37 ms)
Run 4: Statistics of Verus

Start at: 2018-09-08 09:14:45
End at: 2018-09-08 09:15:15
Local clock offset: -0.45 ms
Remote clock offset: -0.097 ms

# Below is generated by plot.py at 2018-09-08 12:56:22
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 285.68 Mbit/s
  95th percentile per-packet one-way delay: 108.789 ms
  Loss rate: 0.62%
-- Flow 1:
  Average throughput: 121.10 Mbit/s
  95th percentile per-packet one-way delay: 62.069 ms
  Loss rate: 0.00%
-- Flow 2:
  Average throughput: 153.19 Mbit/s
  95th percentile per-packet one-way delay: 99.120 ms
  Loss rate: 0.97%
-- Flow 3:
  Average throughput: 192.40 Mbit/s
  95th percentile per-packet one-way delay: 137.154 ms
  Loss rate: 1.20%
Run 4: Report of Verus — Data Link
Run 5: Statistics of Verus

Start at: 2018-09-08 09:46:34
End at: 2018-09-08 09:47:04
Local clock offset: 0.287 ms
Remote clock offset: -0.087 ms

# Below is generated by plot.py at 2018-09-08 12:56:31
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 304.21 Mbit/s
  95th percentile per-packet one-way delay: 104.472 ms
  Loss rate: 0.64%
-- Flow 1:
  Average throughput: 168.32 Mbit/s
  95th percentile per-packet one-way delay: 107.783 ms
  Loss rate: 0.55%
-- Flow 2:
  Average throughput: 166.68 Mbit/s
  95th percentile per-packet one-way delay: 99.944 ms
  Loss rate: 0.68%
-- Flow 3:
  Average throughput: 76.19 Mbit/s
  95th percentile per-packet one-way delay: 56.562 ms
  Loss rate: 1.10%
Run 5: Report of Verus — Data Link

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

- Flow 1 ingress (mean 168.84 Mbps)
- Flow 1 egress (mean 168.32 Mbps)
- Flow 2 ingress (mean 167.19 Mbps)
- Flow 2 egress (mean 166.68 Mbps)
- Flow 3 ingress (mean 76.25 Mbps)
- Flow 3 egress (mean 76.19 Mbps)

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

- Flow 1 (95th percentile 107.78 ms)
- Flow 2 (95th percentile 99.94 ms)
- Flow 3 (95th percentile 56.56 ms)
Run 1: Statistics of PCC-Vivace

Start at: 2018-09-08 07:48:55
End at: 2018-09-08 07:49:25
Local clock offset: -0.091 ms
Remote clock offset: -0.281 ms

# Below is generated by plot.py at 2018-09-08 12:57:24
# Datalink statistics
-- Total of 3 flows:
Average throughput: 573.47 Mbit/s
95th percentile per-packet one-way delay: 51.574 ms
Loss rate: 0.60%
-- Flow 1:
Average throughput: 361.69 Mbit/s
95th percentile per-packet one-way delay: 51.333 ms
Loss rate: 0.32%
-- Flow 2:
Average throughput: 296.21 Mbit/s
95th percentile per-packet one-way delay: 51.970 ms
Loss rate: 1.05%
-- Flow 3:
Average throughput: 46.48 Mbit/s
95th percentile per-packet one-way delay: 49.708 ms
Loss rate: 1.26%
Run 1: Report of PCC-Vivace — Data Link

![Graph showing throughput and per-packet end-to-end delay over time for different flows.]
Run 2: Statistics of PCC-Vivace

Start at: 2018-09-08 08:20:42
End at: 2018-09-08 08:21:12
Local clock offset: 0.01 ms
Remote clock offset: 0.027 ms

# Below is generated by plot.py at 2018-09-08 12:58:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 587.60 Mbit/s
95th percentile per-packet one-way delay: 51.986 ms
Loss rate: 0.42%
-- Flow 1:
Average throughput: 329.40 Mbit/s
95th percentile per-packet one-way delay: 51.334 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 277.07 Mbit/s
95th percentile per-packet one-way delay: 50.749 ms
Loss rate: 0.64%
-- Flow 3:
Average throughput: 226.73 Mbit/s
95th percentile per-packet one-way delay: 55.797 ms
Loss rate: 0.45%
Run 2: Report of PCC-Vivace — Data Link

![Graph of throughput and packet queue size delay over time.]

- Flow 1 ingress (mean 329.29 Mbit/s)
- Flow 1 egress (mean 329.40 Mbit/s)
- Flow 2 ingress (mean 277.47 Mbit/s)
- Flow 2 egress (mean 277.07 Mbit/s)
- Flow 3 ingress (mean 226.58 Mbit/s)
- Flow 3 egress (mean 226.73 Mbit/s)
Run 3: Statistics of PCC-Vivace

Start at: 2018-09-08 08:52:29
End at: 2018-09-08 08:52:59
Local clock offset: -0.013 ms
Remote clock offset: -0.022 ms

# Below is generated by plot.py at 2018-09-08 12:58:11
# Datalink statistics
-- Total of 3 flows:
Average throughput: 539.78 Mbit/s
95th percentile per-packet one-way delay: 51.253 ms
Loss rate: 0.39%
-- Flow 1:
Average throughput: 338.35 Mbit/s
95th percentile per-packet one-way delay: 51.676 ms
Loss rate: 0.23%
-- Flow 2:
Average throughput: 261.61 Mbit/s
95th percentile per-packet one-way delay: 51.052 ms
Loss rate: 0.57%
-- Flow 3:
Average throughput: 84.69 Mbit/s
95th percentile per-packet one-way delay: 50.712 ms
Loss rate: 1.24%
Run 3: Report of PCC-Vivace — Data Link

![Throughput Graph](chart1.png)

![Packet Delay Graph](chart2.png)
Run 4: Statistics of PCC-Vivace

Start at: 2018-09-08 09:24:17
End at: 2018-09-08 09:24:47
Local clock offset: 0.244 ms
Remote clock offset: -0.1 ms

# Below is generated by plot.py at 2018-09-08 12:58:43
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 628.62 Mbit/s
  95th percentile per-packet one-way delay: 120.301 ms
  Loss rate: 0.65%
-- Flow 1:
  Average throughput: 323.69 Mbit/s
  95th percentile per-packet one-way delay: 149.079 ms
  Loss rate: 0.68%
-- Flow 2:
  Average throughput: 340.98 Mbit/s
  95th percentile per-packet one-way delay: 97.860 ms
  Loss rate: 0.65%
-- Flow 3:
  Average throughput: 239.55 Mbit/s
  95th percentile per-packet one-way delay: 109.912 ms
  Loss rate: 0.56%
Run 4: Report of PCC-Vivace — Data Link

![Graph showing network performance metrics for different flows.]

**Throughput (Mbps):**
- Flow 1 ingress (mean 324.81 Mbps)
- Flow 1 egress (mean 323.69 Mbps)
- Flow 2 ingress (mean 341.48 Mbps)
- Flow 2 egress (mean 340.98 Mbps)
- Flow 3 ingress (mean 236.41 Mbps)
- Flow 3 egress (mean 239.55 Mbps)

**Packet one-way delay (ms):**
- Flow 1 (95th percentile 149.08 ms)
- Flow 2 (95th percentile 97.86 ms)
- Flow 3 (95th percentile 109.91 ms)
Run 5: Statistics of PCC-Vivace

Start at: 2018-09-08 09:55:49
End at: 2018-09-08 09:56:19
Local clock offset: 0.296 ms
Remote clock offset: -0.057 ms

# Below is generated by plot.py at 2018-09-08 12:58:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 576.59 Mbit/s
95th percentile per-packet one-way delay: 126.441 ms
Loss rate: 0.80%
-- Flow 1:
Average throughput: 325.32 Mbit/s
95th percentile per-packet one-way delay: 166.112 ms
Loss rate: 1.03%
-- Flow 2:
Average throughput: 303.56 Mbit/s
95th percentile per-packet one-way delay: 69.248 ms
Loss rate: 0.48%
-- Flow 3:
Average throughput: 151.76 Mbit/s
95th percentile per-packet one-way delay: 80.947 ms
Loss rate: 0.64%
Run 5: Report of PCC-Vivace — Data Link

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

- Flow 1 ingress (mean 327.57 Mbps)
- Flow 1 egress (mean 325.32 Mbps)
- Flow 2 ingress (mean 303.47 Mbps)
- Flow 2 egress (mean 303.56 Mbps)
- Flow 3 ingress (mean 151.16 Mbps)
- Flow 3 egress (mean 151.76 Mbps)

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

- Flow 1 (95th percentile 166.11 ms)
- Flow 2 (95th percentile 69.25 ms)
- Flow 3 (95th percentile 80.95 ms)
Run 1: Statistics of WebRTC media

Start at: 2018-09-08 07:24:43
End at: 2018-09-08 07:25:13
Local clock offset: -0.112 ms
Remote clock offset: -0.231 ms

# Below is generated by plot.py at 2018-09-08 12:58:43
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 3.32 Mbit/s
  95th percentile per-packet one-way delay: 50.659 ms
  Loss rate: 0.53%
-- Flow 1:
  Average throughput: 1.60 Mbit/s
  95th percentile per-packet one-way delay: 49.560 ms
  Loss rate: 0.44%
-- Flow 2:
  Average throughput: 1.24 Mbit/s
  95th percentile per-packet one-way delay: 50.695 ms
  Loss rate: 0.60%
-- Flow 3:
  Average throughput: 0.51 Mbit/s
  95th percentile per-packet one-way delay: 50.226 ms
  Loss rate: 0.64%
Run 1: Report of WebRTC media — Data Link
Run 2: Statistics of WebRTC media

Start at: 2018-09-08 07:56:32
End at: 2018-09-08 07:57:02
Local clock offset: 0.322 ms
Remote clock offset: -0.147 ms

# Below is generated by plot.py at 2018-09-08 12:58:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.66 Mbit/s
95th percentile per-packet one-way delay: 51.243 ms
Loss rate: 0.46%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 51.247 ms
Loss rate: 0.36%
-- Flow 2:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 51.259 ms
Loss rate: 0.57%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 50.679 ms
Loss rate: 0.54%
Run 2: Report of WebRTC media — Data Link

Throughput (Mbit/s)

Time (s)

Flow 1 ingress (mean 1.96 Mbit/s)
Flow 1 egress (mean 1.95 Mbit/s)
Flow 2 ingress (mean 1.22 Mbit/s)
Flow 2 egress (mean 1.22 Mbit/s)
Flow 3 ingress (mean 0.51 Mbit/s)
Flow 3 egress (mean 0.50 Mbit/s)

Per-packet code word delay (ms)

Time (s)

Flow 1 (95th percentile 51.25 ms)
Flow 2 (95th percentile 51.26 ms)
Flow 3 (95th percentile 50.68 ms)
Run 3: Statistics of WebRTC media

Start at: 2018-09-08 08:28:17
End at: 2018-09-08 08:28:47
Local clock offset: -0.317 ms
Remote clock offset: 0.003 ms

# Below is generated by plot.py at 2018-09-08 12:58:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.60 Mbit/s
95th percentile per-packet one-way delay: 48.610 ms
Loss rate: 0.44%
-- Flow 1:
Average throughput: 1.95 Mbit/s
95th percentile per-packet one-way delay: 48.610 ms
Loss rate: 0.30%
-- Flow 2:
Average throughput: 1.18 Mbit/s
95th percentile per-packet one-way delay: 48.586 ms
Loss rate: 0.58%
-- Flow 3:
Average throughput: 0.49 Mbit/s
95th percentile per-packet one-way delay: 48.642 ms
Loss rate: 0.62%
Run 3: Report of WebRTC media — Data Link
Run 4: Statistics of WebRTC media

Start at: 2018-09-08 09:00:05
End at: 2018-09-08 09:00:35
Local clock offset: -0.062 ms
Remote clock offset: -0.019 ms

# Below is generated by plot.py at 2018-09-08 12:58:43
# Datalink statistics
-- Total of 3 flows:
  Average throughput: 3.25 Mbit/s
  95th percentile per-packet one-way delay: 49.940 ms
  Loss rate: 0.52%
-- Flow 1:
  Average throughput: 1.56 Mbit/s
  95th percentile per-packet one-way delay: 49.962 ms
  Loss rate: 0.53%
-- Flow 2:
  Average throughput: 1.21 Mbit/s
  95th percentile per-packet one-way delay: 49.609 ms
  Loss rate: 0.60%
-- Flow 3:
  Average throughput: 0.49 Mbit/s
  95th percentile per-packet one-way delay: 49.948 ms
  Loss rate: 0.33%
Run 4: Report of WebRTC media — Data Link
Run 5: Statistics of WebRTC media

Start at: 2018-09-08 09:31:57
End at: 2018-09-08 09:32:27
Local clock offset: -0.436 ms
Remote clock offset: -0.118 ms

# Below is generated by plot.py at 2018-09-08 12:58:43
# Datalink statistics
-- Total of 3 flows:
Average throughput: 3.61 Mbit/s
95th percentile per-packet one-way delay: 50.534 ms
Loss rate: 0.57%
-- Flow 1:
Average throughput: 1.90 Mbit/s
95th percentile per-packet one-way delay: 50.472 ms
Loss rate: 0.37%
-- Flow 2:
Average throughput: 1.22 Mbit/s
95th percentile per-packet one-way delay: 49.946 ms
Loss rate: 0.87%
-- Flow 3:
Average throughput: 0.50 Mbit/s
95th percentile per-packet one-way delay: 50.609 ms
Loss rate: 0.61%
Run 5: Report of WebRTC media — Data Link