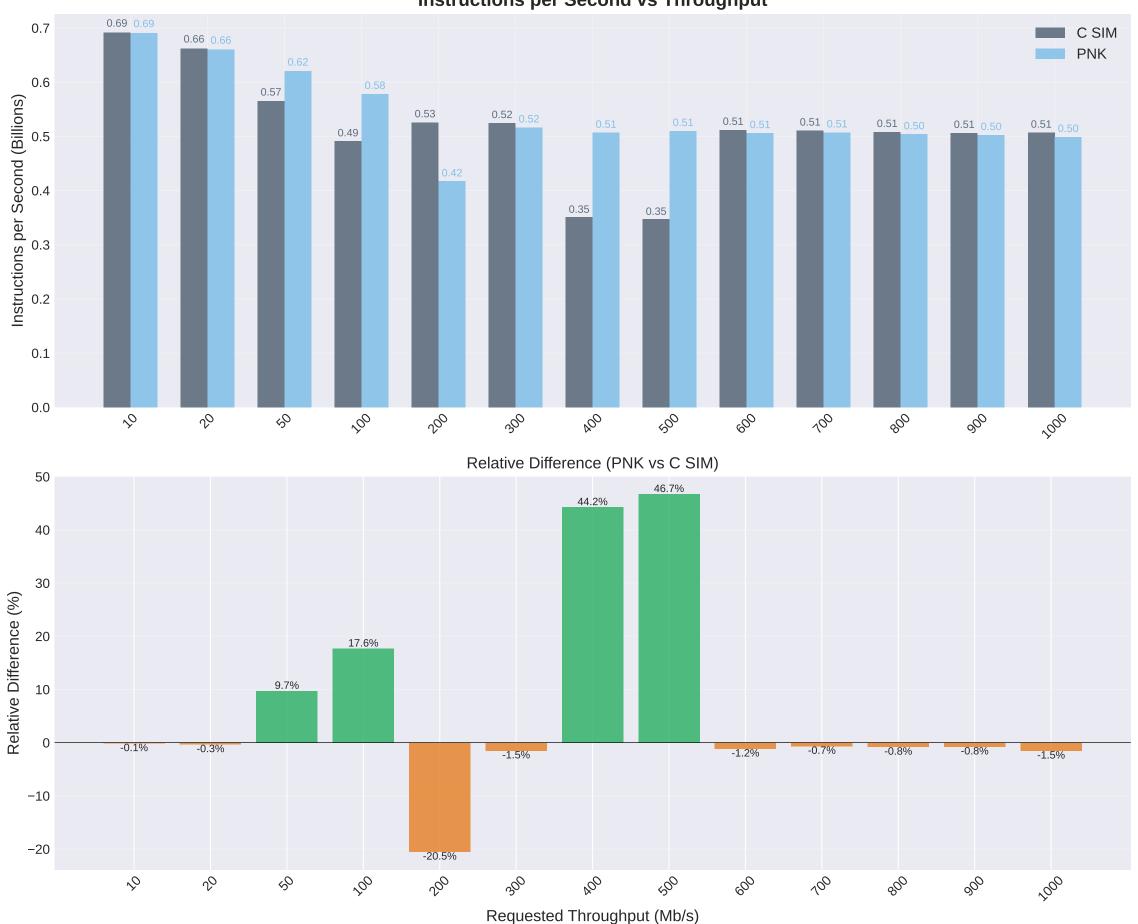
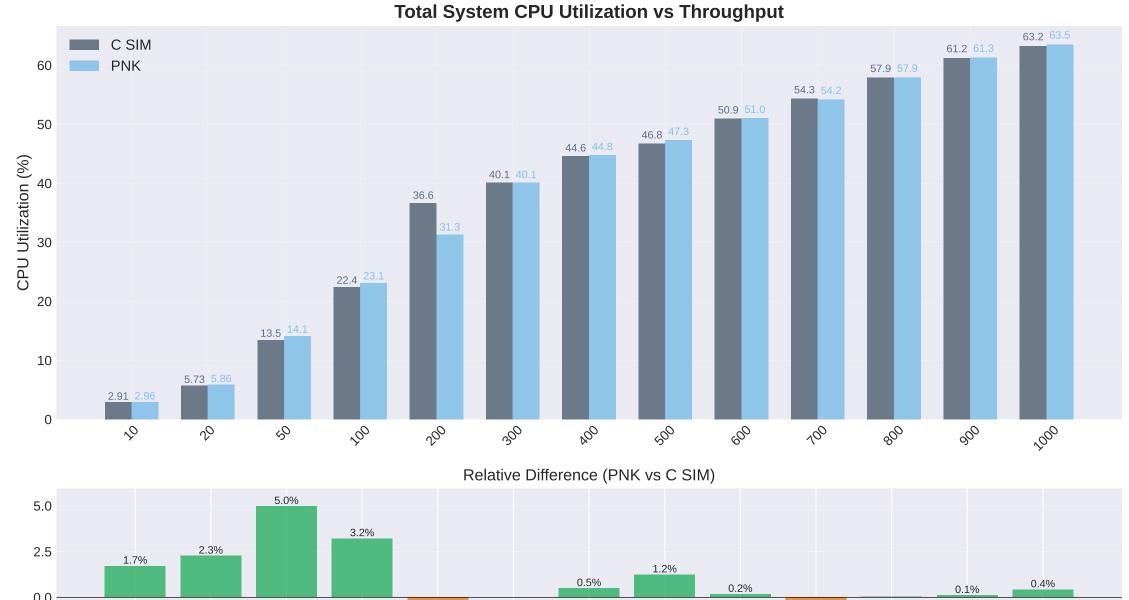
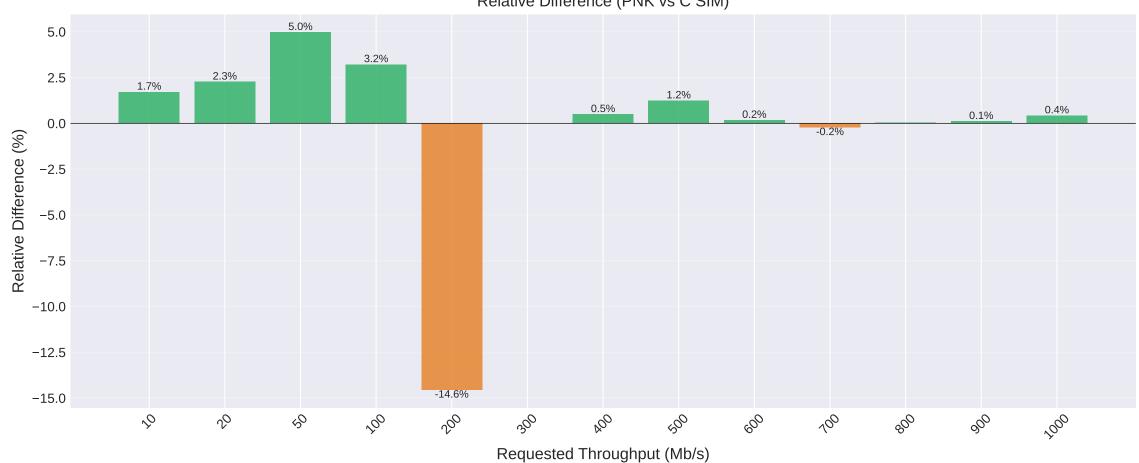
Instructions per Second vs Throughput



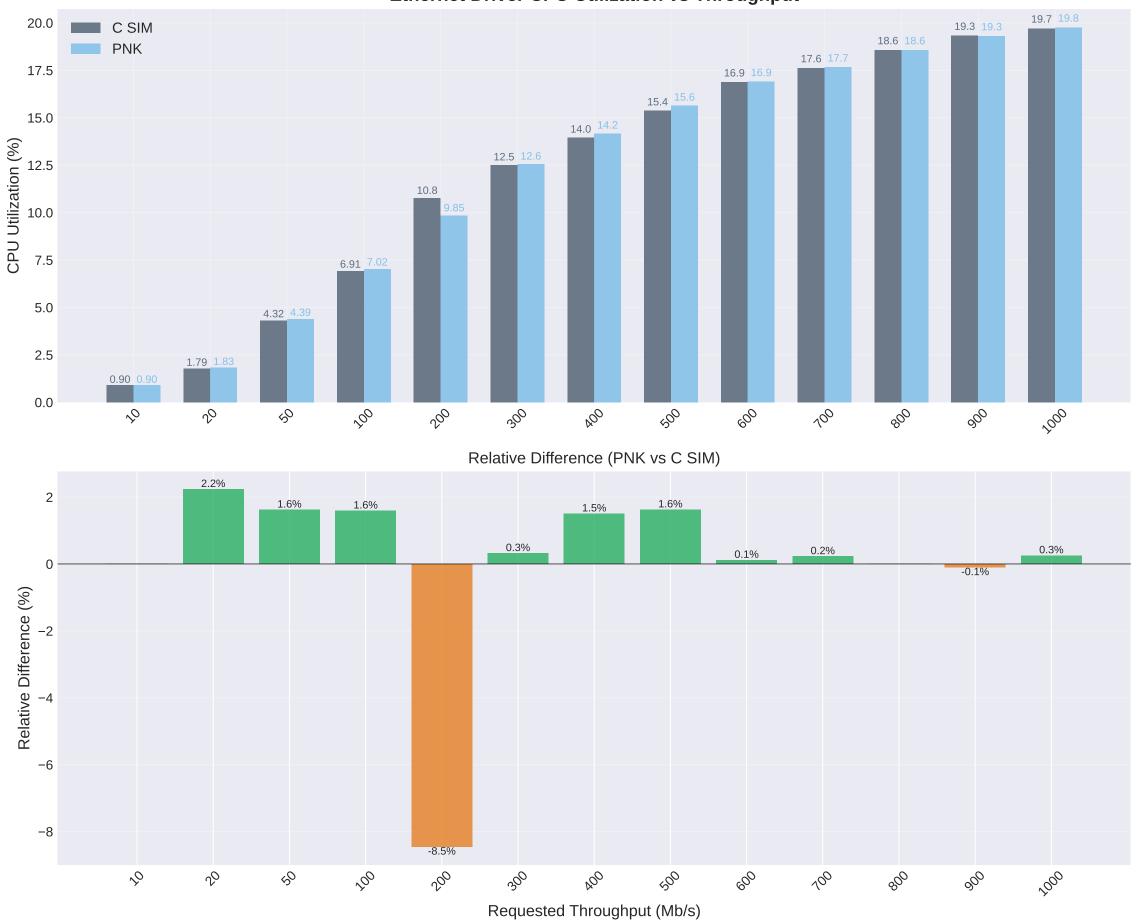
Received Throughput vs Requested with CPU Utilization Overlay 1000 C SIM Recv Throughput 957.3957.0 100 PNK Recv Throughput C SIM CPU Util 900.0900.0 PNK CPU Util 800.0800.0 800 80 700.0700.0 Received Throughput (Mb/s) 63.5% 61.3% 600.0600.0 600 CPU Utilization (%) 57.9% 54.2% 51.9% 500.0500.0 47.8% 44.8% 40.1% 400 36.6% 300.0300.0 200.0200.0 200 20 100.0100.0 50.0 50.0 3.9% 20.0 20.0 0 900 200 NOO 400 2000 700 300 600 100 900 20 20 50

Requested Throughput (Mb/s)





Ethernet Driver CPU Utilization vs Throughput



Net Virt TX CPU Utilization vs Throughput 7 6.65 6.72 C SIM 6.31 6.35 PNK 6 5.48 5.55 4.85 4.94 5 4.70 4.75 CPU Utilization (%) 4.42 4.34 4.15 4.38 4.15 4.13 2.69 2 1.76 1 0.75 0.80 0.37 0.39 0 200 200 300 400 400 600 100 800 900 2000 20 20 B Relative Difference (PNK vs C SIM) 11.9% 11.5% 10 6.7% 5.4% 5 4.1% 1.9% 1.3% Relative Difference (%) 1.1% 1.1% 0.6% -0.5% -1.8% -15 -20 -23.5% -25

Requested Throughput (Mb/s)

NO

400

600

100

900

\$0

20

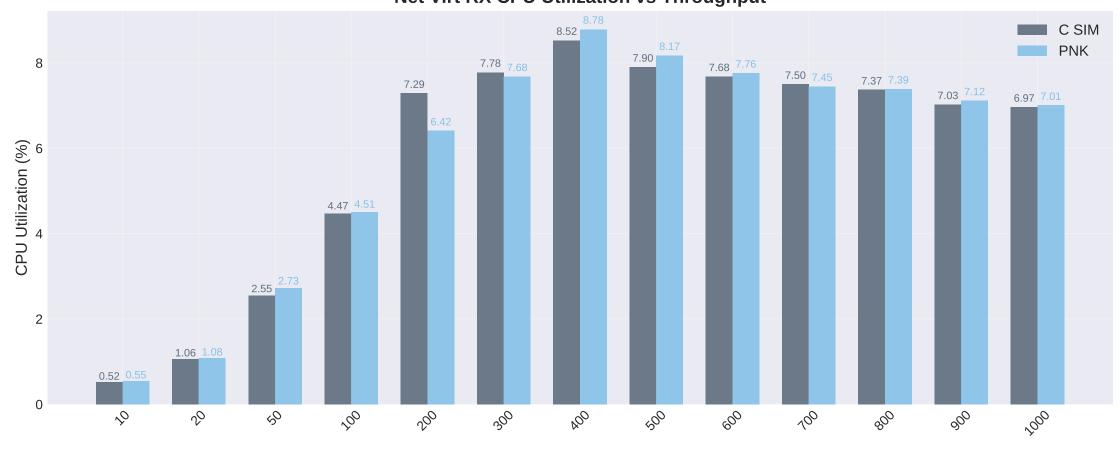
SO

200

200

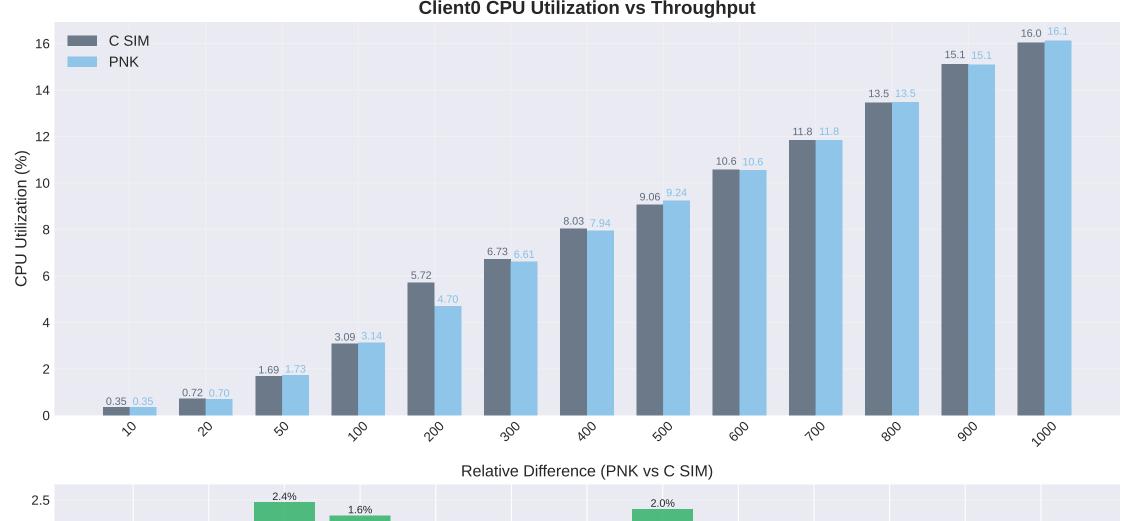
300

Net Virt RX CPU Utilization vs Throughput

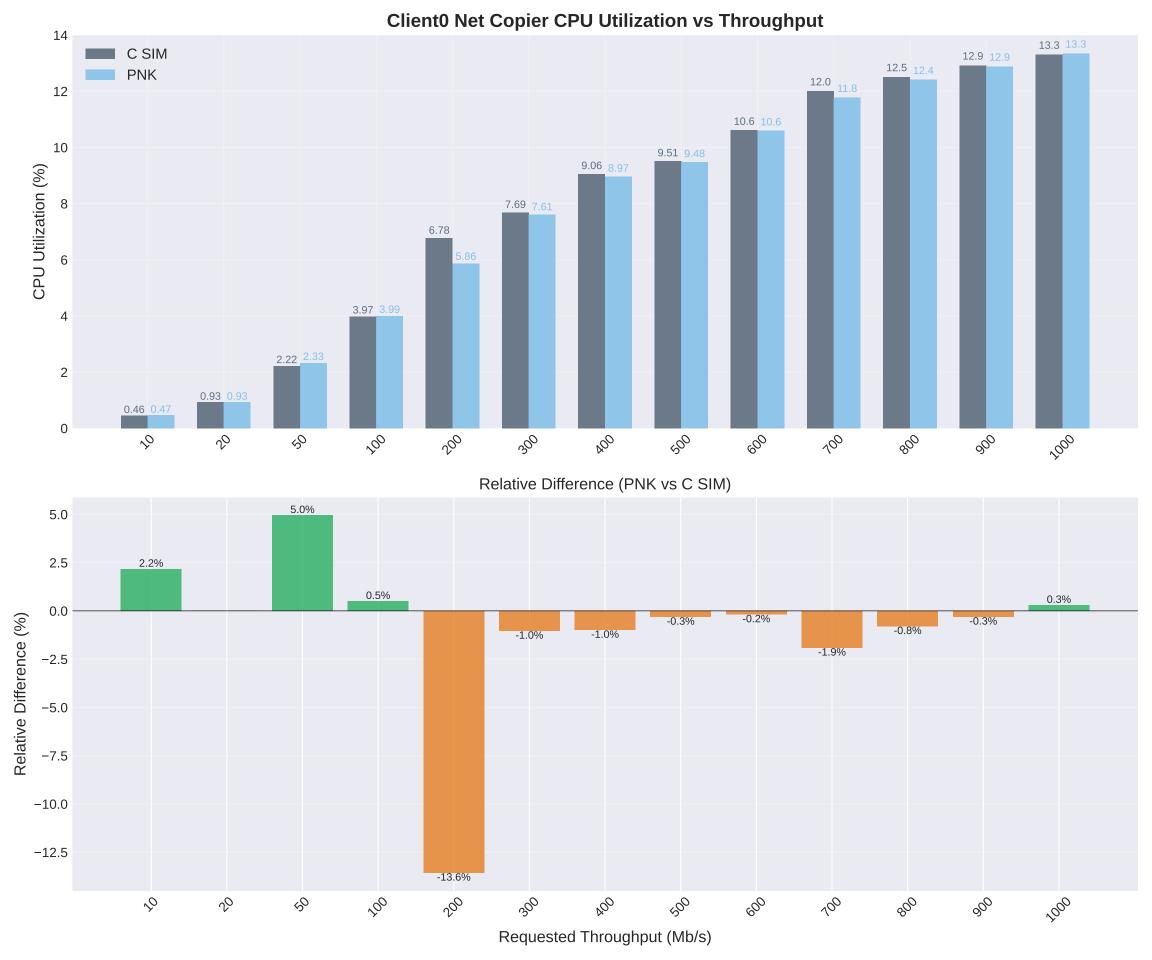




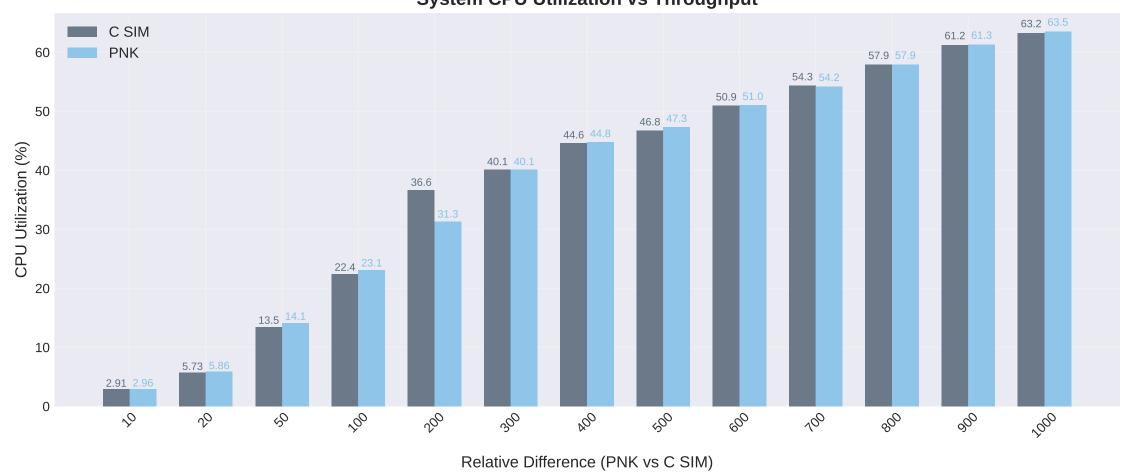
Client0 CPU Utilization vs Throughput

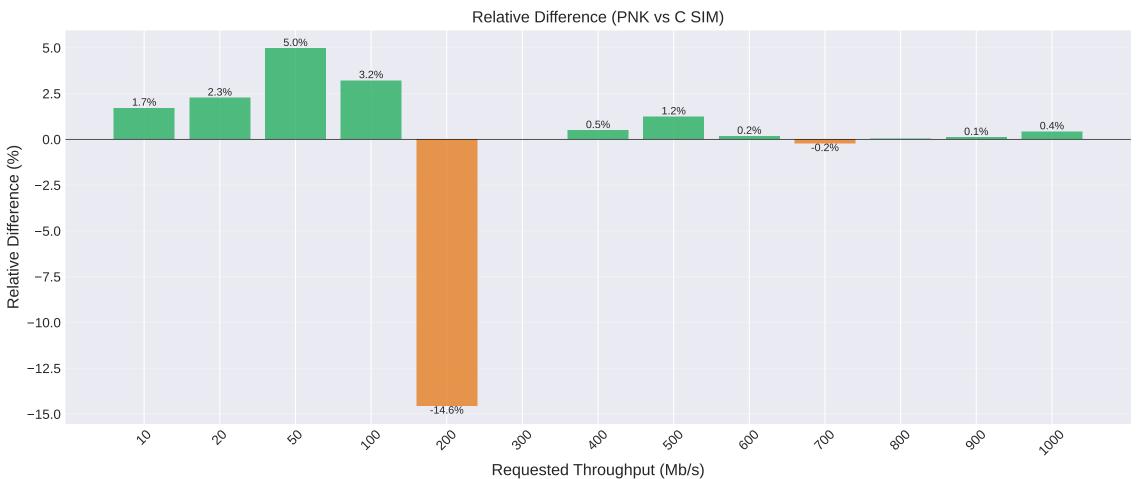


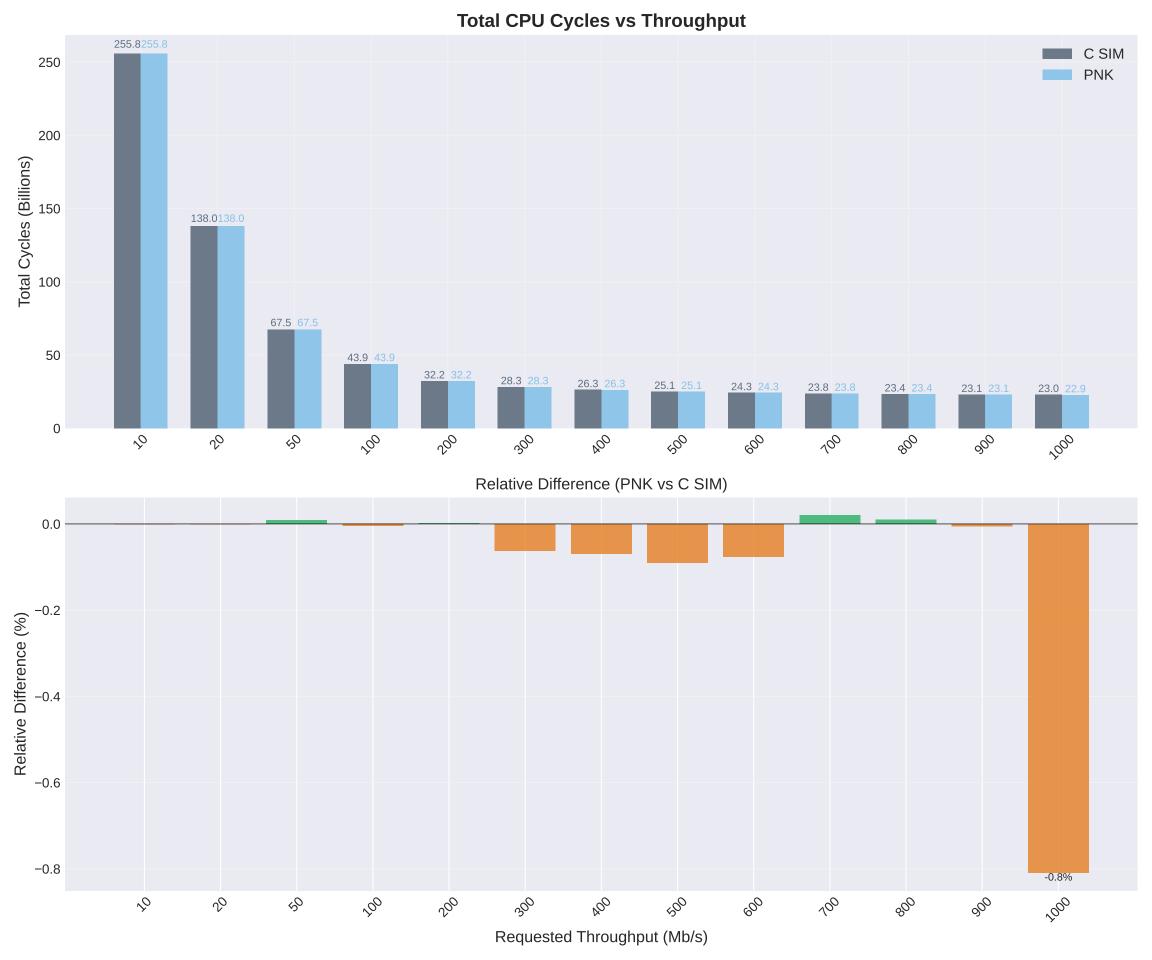




System CPU Utilization vs Throughput

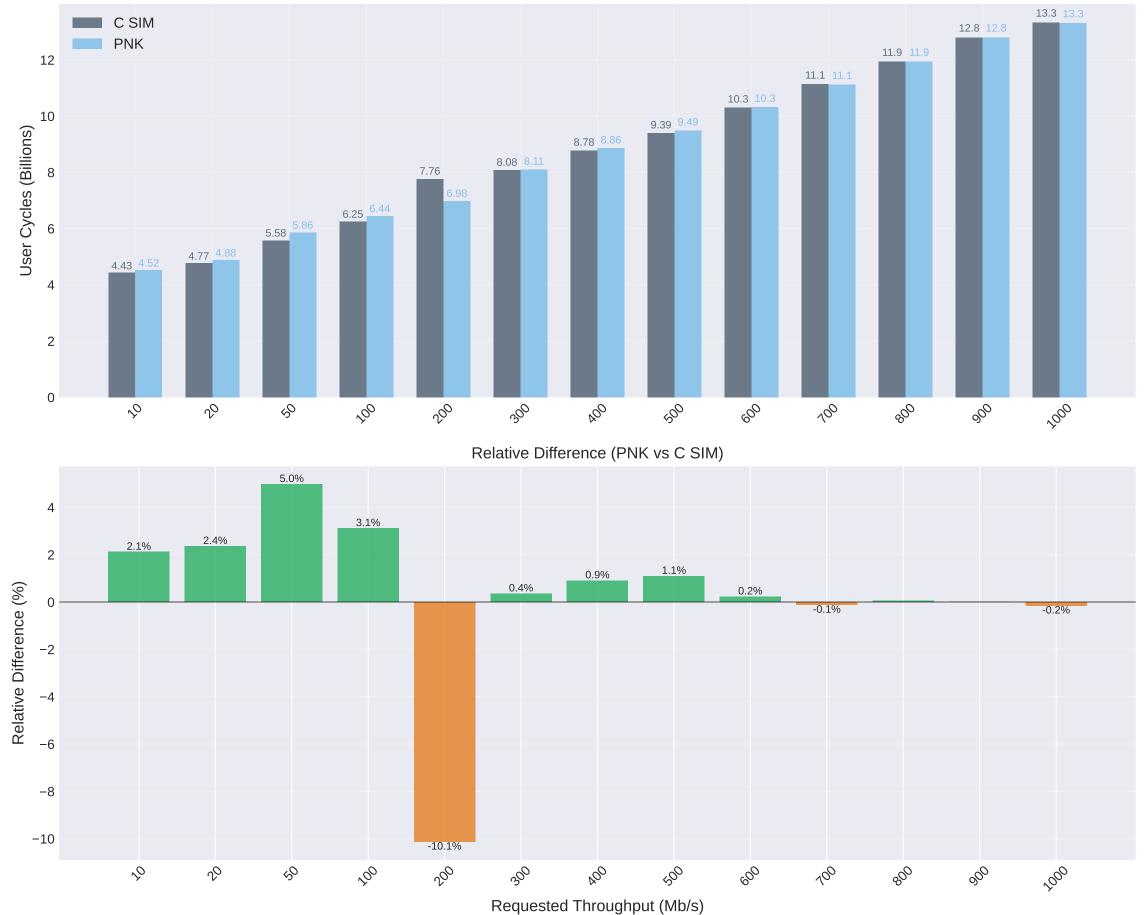






Kernel CPU Cycles vs Throughput C SIM 3.5 PNK 3.06 3.09 2.93 3.0 2.92 2.72 2.71 2.51 2.55 Kernel Cycles (Billions) 1.5 2.32 2.37 2.23 2.27 1.97 1.96 1.69 1.67 1.49 1.50 1.21 1.23 1.13 1.10 1.0 0.5 0.0 200 200 300 400 400 600 700 800 900 2000 20 20 B Relative Difference (PNK vs C SIM) 5.2% 5 2.1% 1.5% 1.5% 1.2% 1.0% 0 -0.4% -0.6% -0.9% -2.0% Relative Difference (%) -2.8% -15 -20 -21.1% \$0 20 60 200 200 300 400 600 100 900 NO

User CPU Cycles vs Throughput



Idle CPU Cycles vs Throughput 248.3248.2 250 C SIM PNK 200 Idle Cycles (Billions) 130.1129.9 58.4 58.0 50 34.1 33.8 20.4 22.1 16.9 16.9 14.6 14.5 13.4 13.2 11.9 11.9 10.9 10.9 9.85 9.84 8.47 8.34 8.95 8.93 0 600 \$ 200 200 300 400 400 700 800 900 2000 20 60 Relative Difference (PNK vs C SIM) 8.4% 8 6 Relative Difference (%) 0.3% 0 -0.1% -0.2% -0.3% -0.5% -0.8% -0.9% -1.2% -1.5% -2 \$ 20 SO 100 200 300 NOO 400 600 700 900 900 7000

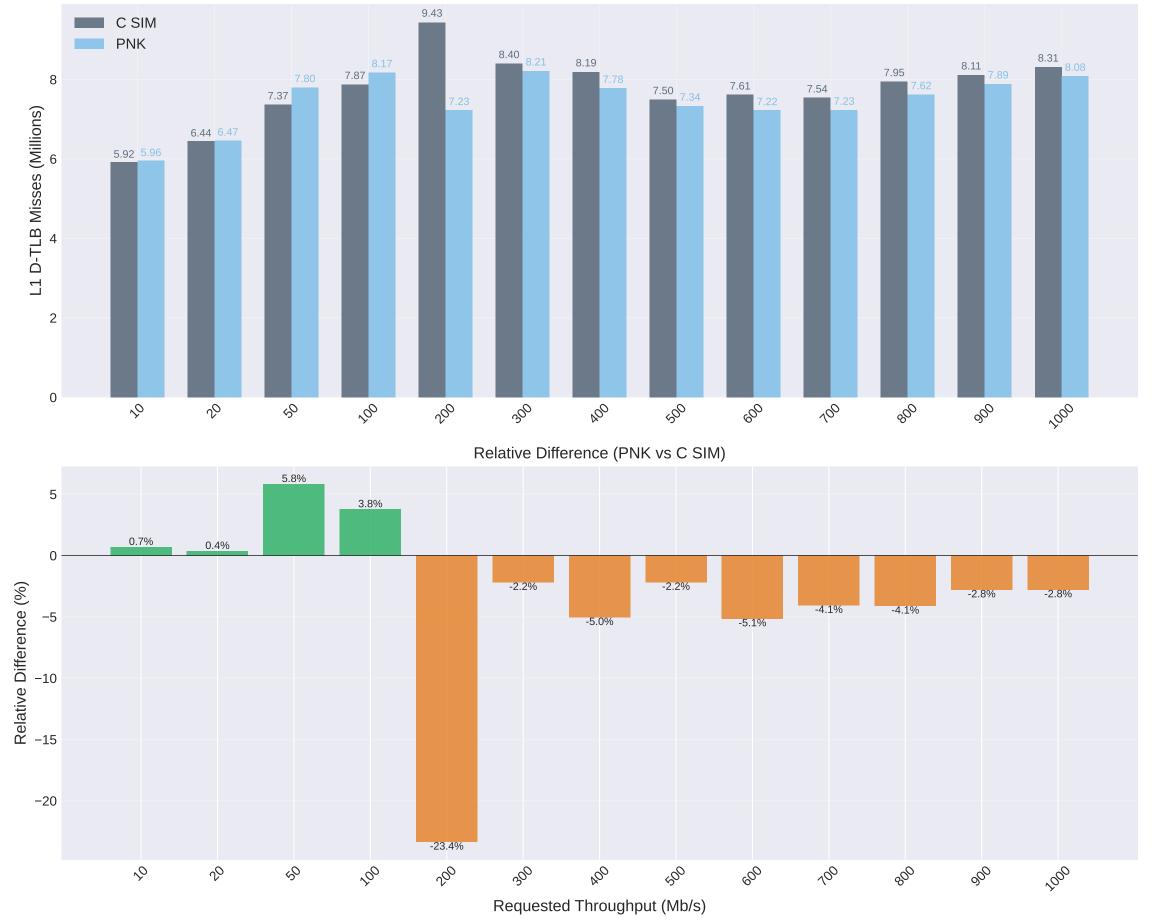
L1 I-cache Misses (Total) vs Throughput 80 77.4 C SIM 75.4 PNK 71.0 70 63.1 60.9 58.5 L1 I-cache Misses (Millions) 54.3 51.6 47.3 47.2 46.2 36.8 35.7 30.3 28.4 26.9 23.9 21.9 18.9 18.3 10 0 200 200 300 400 400 600 100 800 900 2000 \$0 20 60 Relative Difference (PNK vs C SIM) 29.6% 30 28.9% 27.1% 24.8% 23.0% 22.8% 22.2% 22.1% 21.5% 21.4% 20 18.8% 17.6% Relative Difference (%) 10 -10 -11.4% \$0 SO 200 200 300 500 600 100 900 20 NO

L1 D-cache Misses (Total) vs Throughput C SIM 70 PNK 67.6 66.6 63.8 62.7 62.3 61.3 61.8 60.7 61.8 61.0 60.7 59.2 61.7 59.6 L1 D-cache Misses (Millions)
0 0 0 0 0 54.2 53.6 47.0 43.5 10 0 100 200 300 400 400 600 700 800 900 2000 20 20 B Relative Difference (PNK vs C SIM) 0 -1.0% -1.2% -1.8% -1.7% -1.7% -2.5% -2.7% -3.8% -5 -5.0% -5.1% -5.2% -5.4% Relative Difference (%) -20 -23.2% \$0 20 60 200 200 300 400 600 100 900 NO

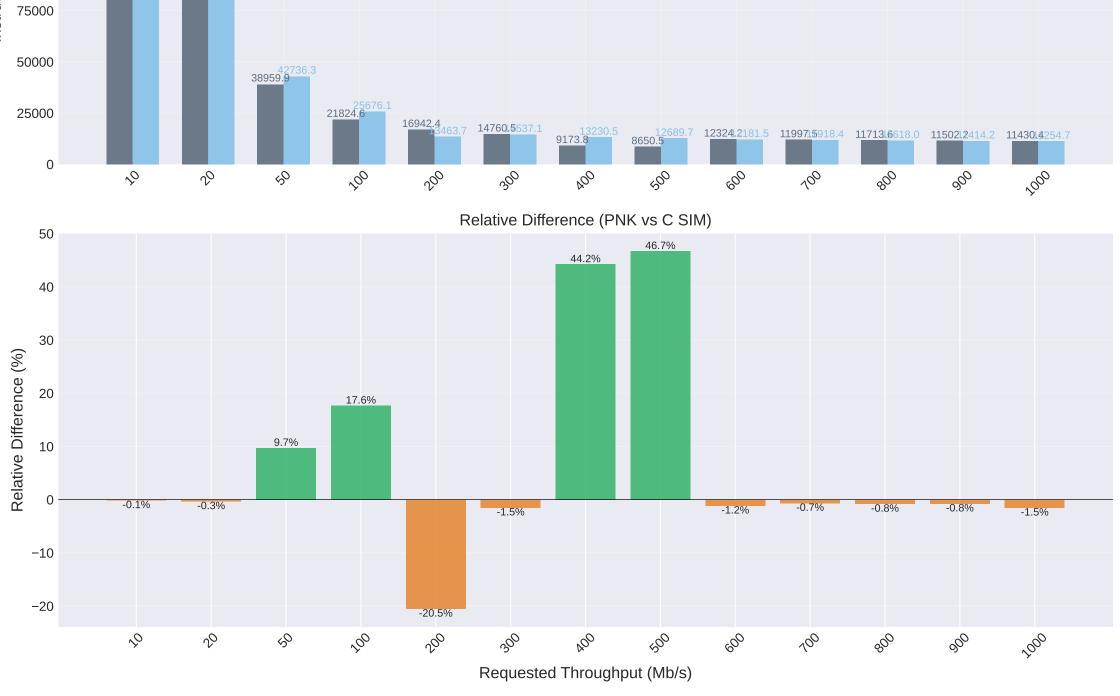
Requested Throughput (Mb/s)

L1 I-TLB Misses (Total) vs Throughput 4.06 4.01 C SIM 3.96 4.0 PNK 3.53 3.43 3.5 3.16 3.08 L1 I-TLB Misses (Millions) 3.0 5.2 1.2 1.5 2.79 2.82 2.80 2.12 1.91 1.93 1.61 1.65 1.42 1.16 1.10 1.0 0.5 0.0 200 200 300 400 400 600 100 800 900 2000 20 20 B Relative Difference (PNK vs C SIM) 15.5% 15 13.5% 10 9.3% 8.7% 7.9% 7.1% 6.8% 5.2% 5.0% 5 Relative Difference (%) 2.0% 1.0% 0.6% -15 -20 -22.1% \$0 20 200 200 300 400 600 100 900 SO NO

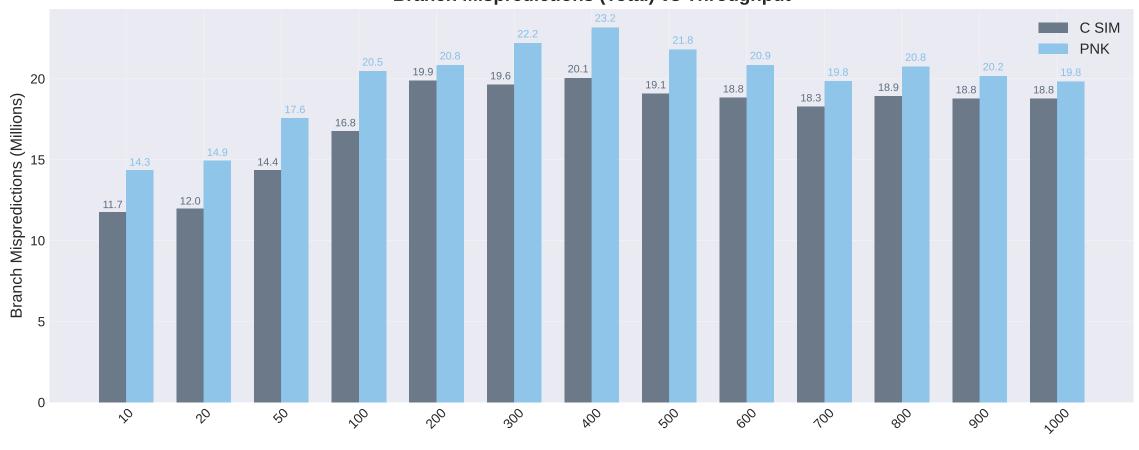
L1 D-TLB Misses (Total) vs Throughput

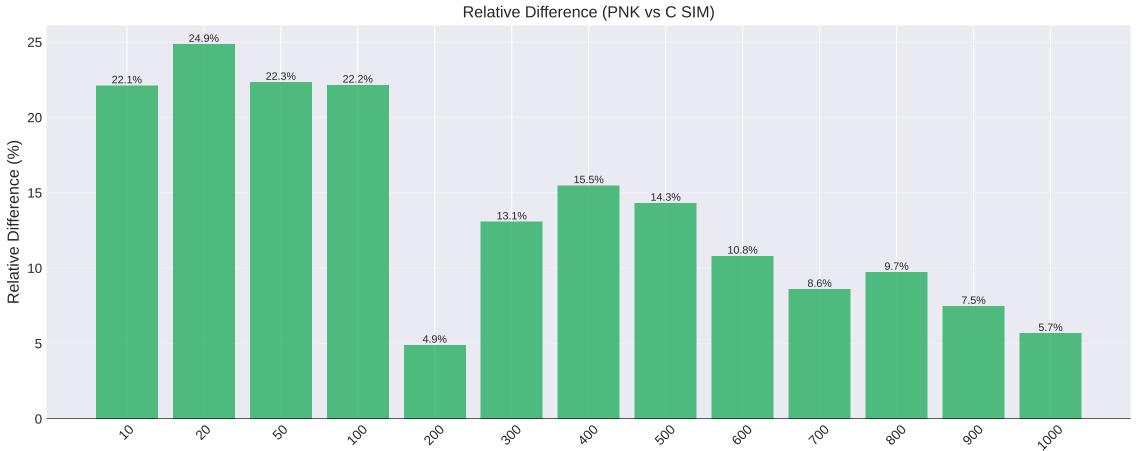


Instructions (Total) vs Throughput 18285988592.7 C SIM 175000 PNK 150000 Instructions (Millions) 125000 100000 9422198902.6 75000 50000 42736.3 38959.9 2<u>1824.</u>6 25000 16942.4 14760.**5**537.1 12324.2181.5 11997.5918.4 11713.6618.0 11502.2414.2 11430.4254.7 0 2000 300 ADO 200 200 500 600 100 900 900 \$ 20 50 Relative Difference (PNK vs C SIM) 50 46.7% 44.2% 40 30 20 17.6% 9.7%



Branch Mispredictions (Total) vs Throughput





L1 I-cache Misses per Packet vs Throughput 400 C SIM PNK 354.8 350 315.4 314.1 304.4 292.3 L1 I-cache misses / Packet 271.6 258.1 236.4 235.8 178.4 151.7 141.8 119.4 117.8 109.6 107.4 100 94.4 91.2 50 0 200 200 300 400 400 600 100 800 900 2000 \$0 20 60 Relative Difference (PNK vs C SIM) 29.6% 30 28.9% 27.1% 24.8% 23.0% 22.8% 22.1% 22.2% 21.5% 21.4% 20 18.8% 17.7% Relative Difference (%) 10 -10 -11.4% \$0 200 200 300 600 600 100 900 20 SO NO

L1 D-cache Misses per Packet vs Throughput 337.8 332.8 318.8313.5 311.5 306.3 309.2 308.9305.1 303.6 308.3 298.0 283.5 270.9268.1 234.9

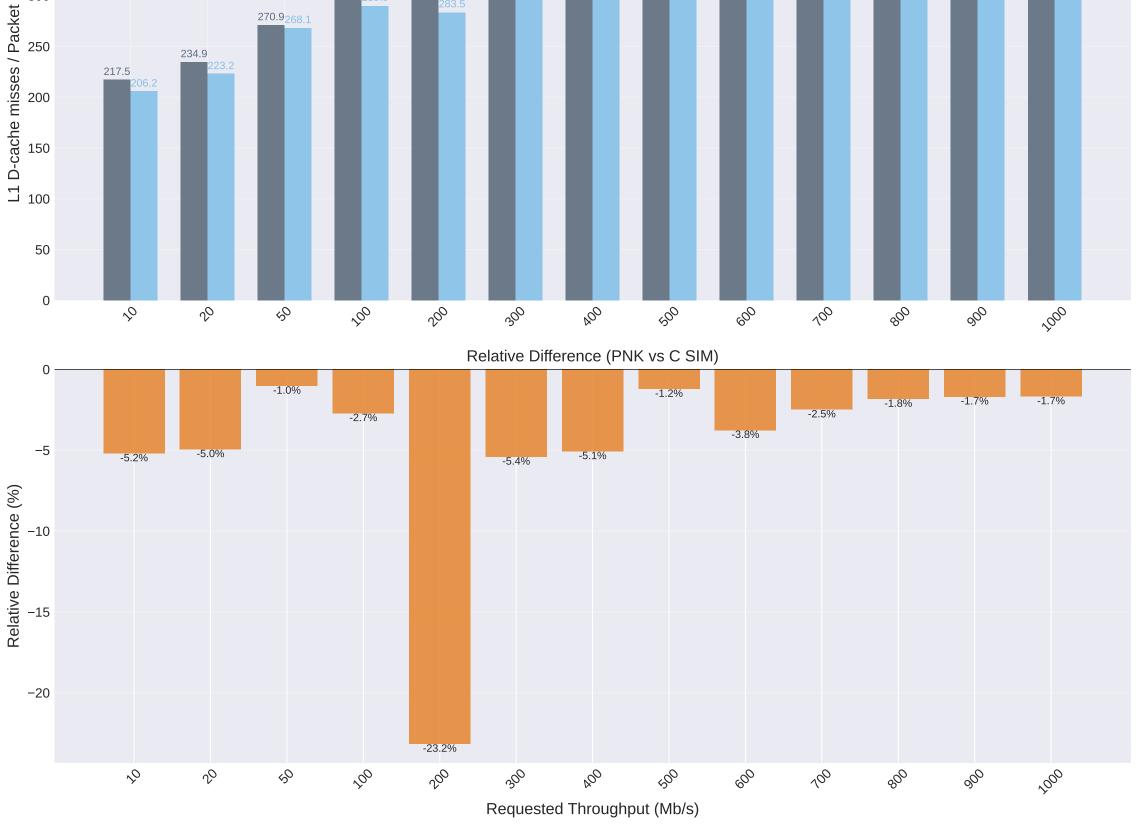
350

300

217.5

C SIM

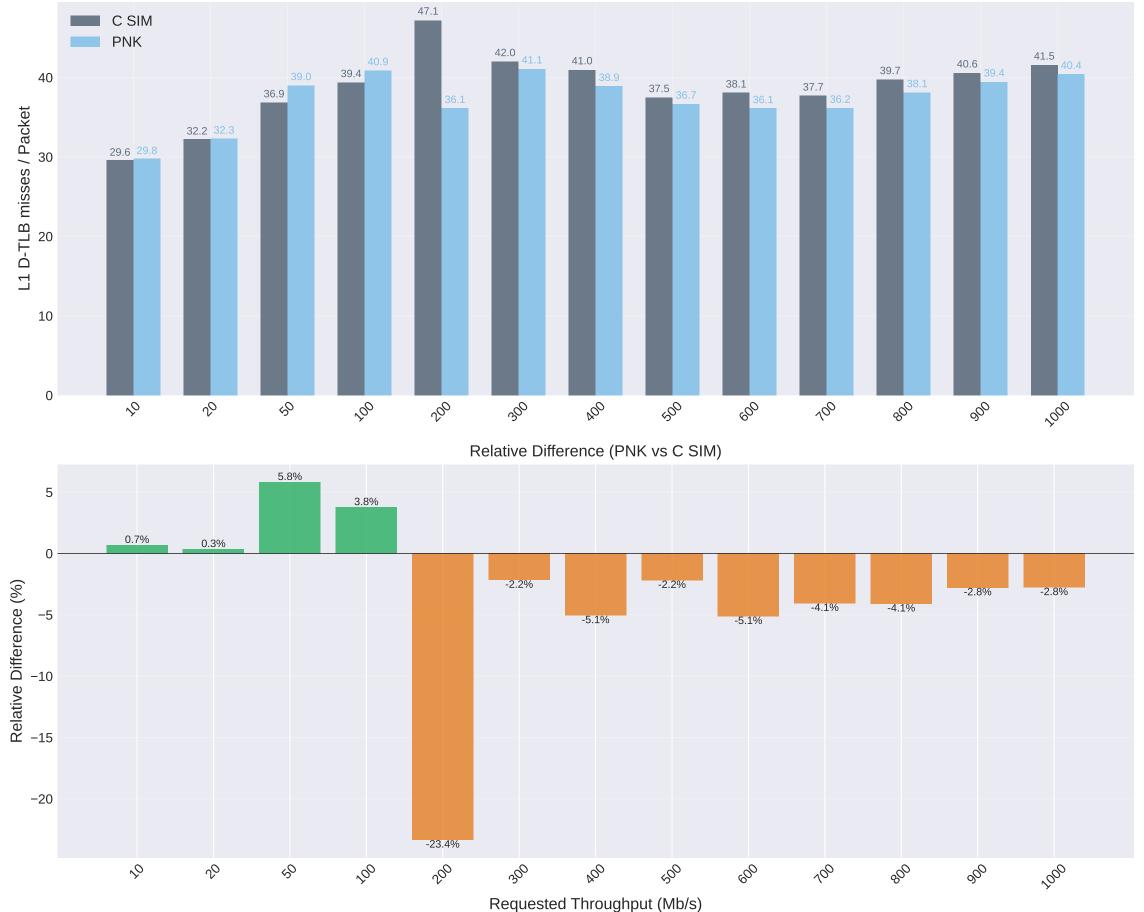
PNK



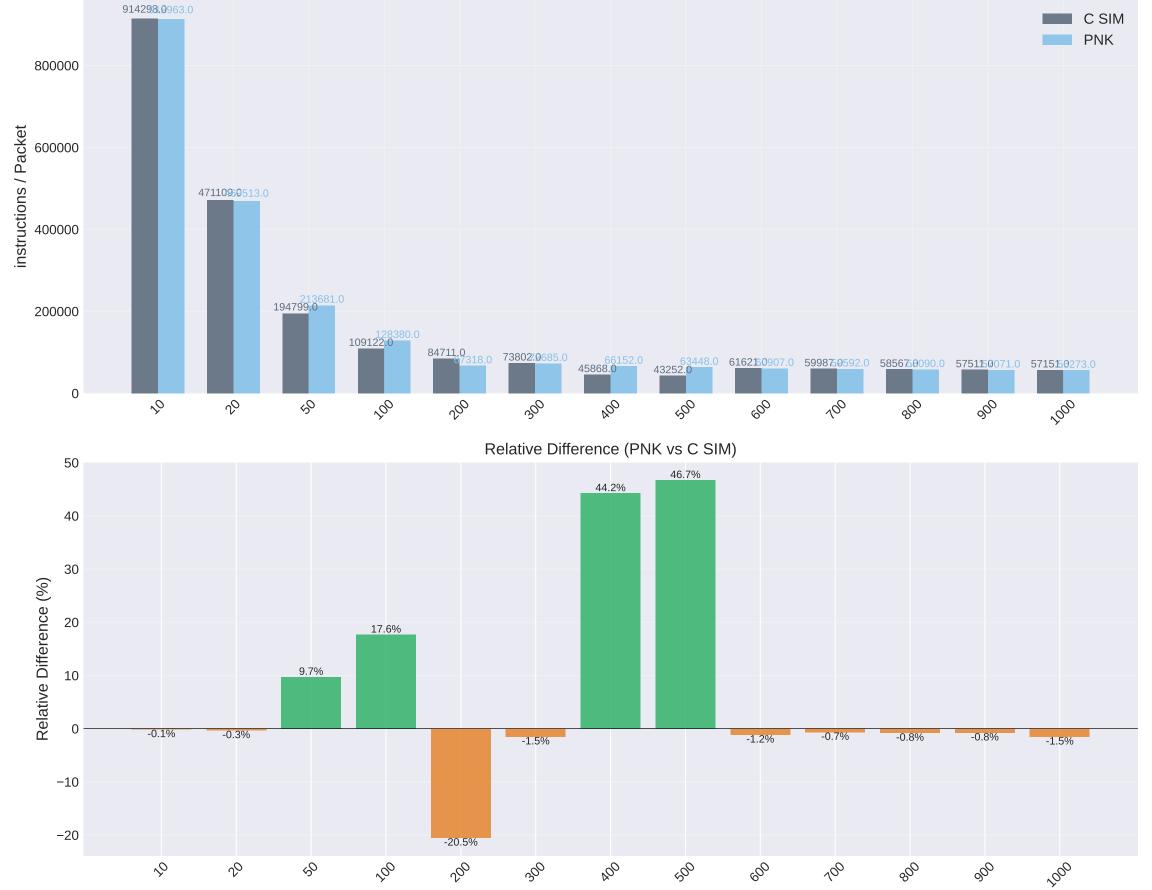
L1 I-TLB Misses per Packet vs Throughput C SIM 19.8 20.0 PNK 17.7 17.2 17.5 15.8 15.8 15.4 13.9 14.1 14.0 10.6 9.56 9.63 8.07 8.23 7.10 5.79 6.33 5.51 5.88 5.0 2.5 0.0 800 200 200 300 NOO 400 600 700 900 2000 20 20 SO Relative Difference (PNK vs C SIM) 15.5% 15 13.5% 10 9.3% 8.7% 7.9% 7.1% 6.7% 5.2% 4.9% 5 Relative Difference (%) 2.0% 1.0% 0.7% -15 -20 -22.1% 30 20 SO 200 200 300 NOO 500 100 900 600

Requested Throughput (Mb/s)

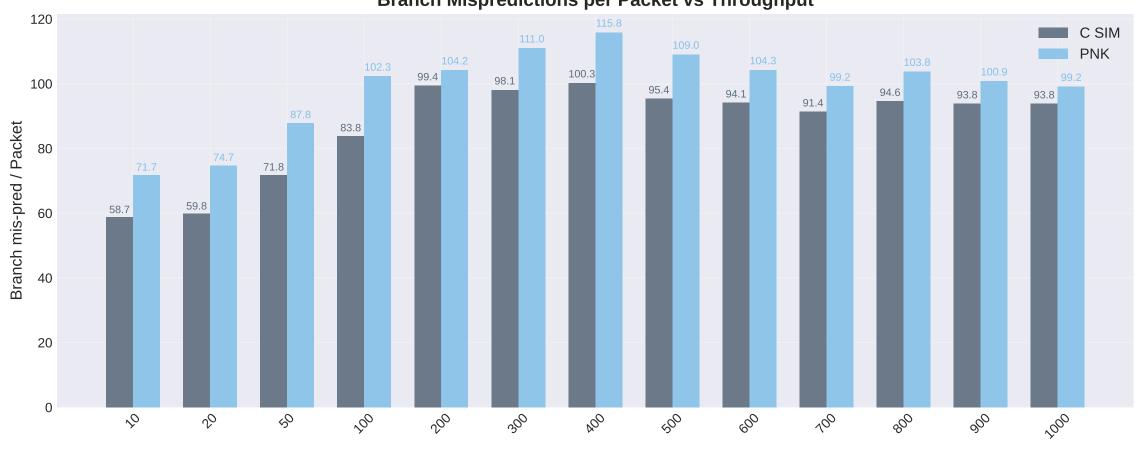
L1 D-TLB Misses per Packet vs Throughput

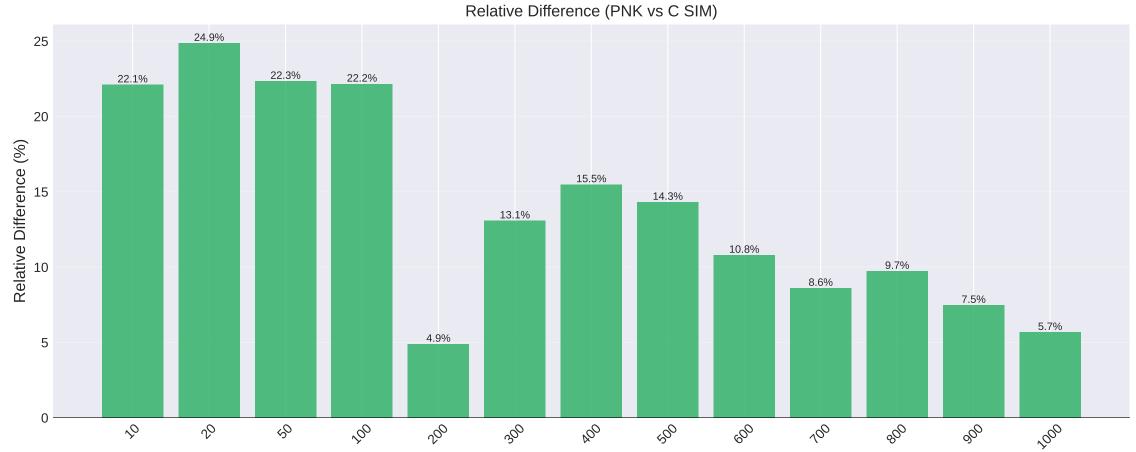


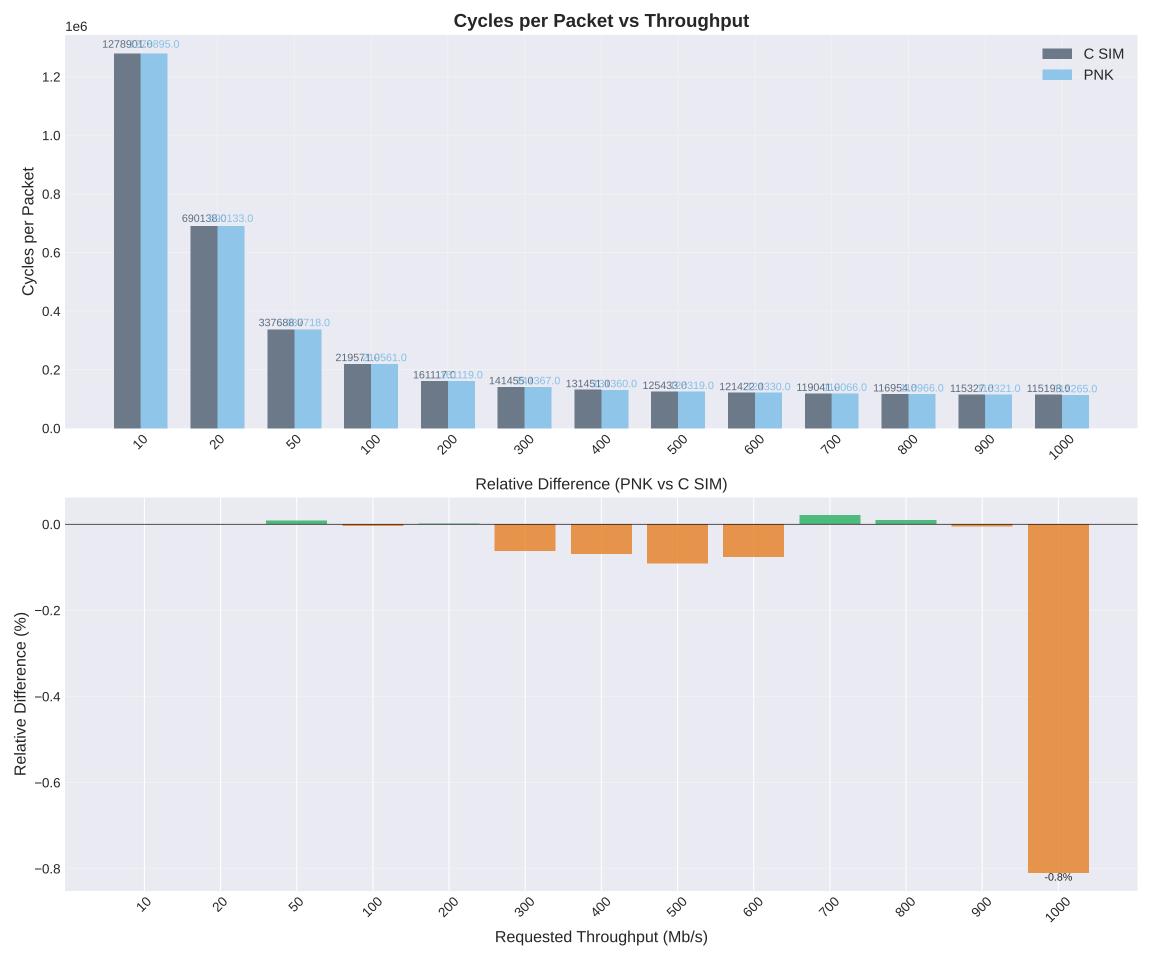




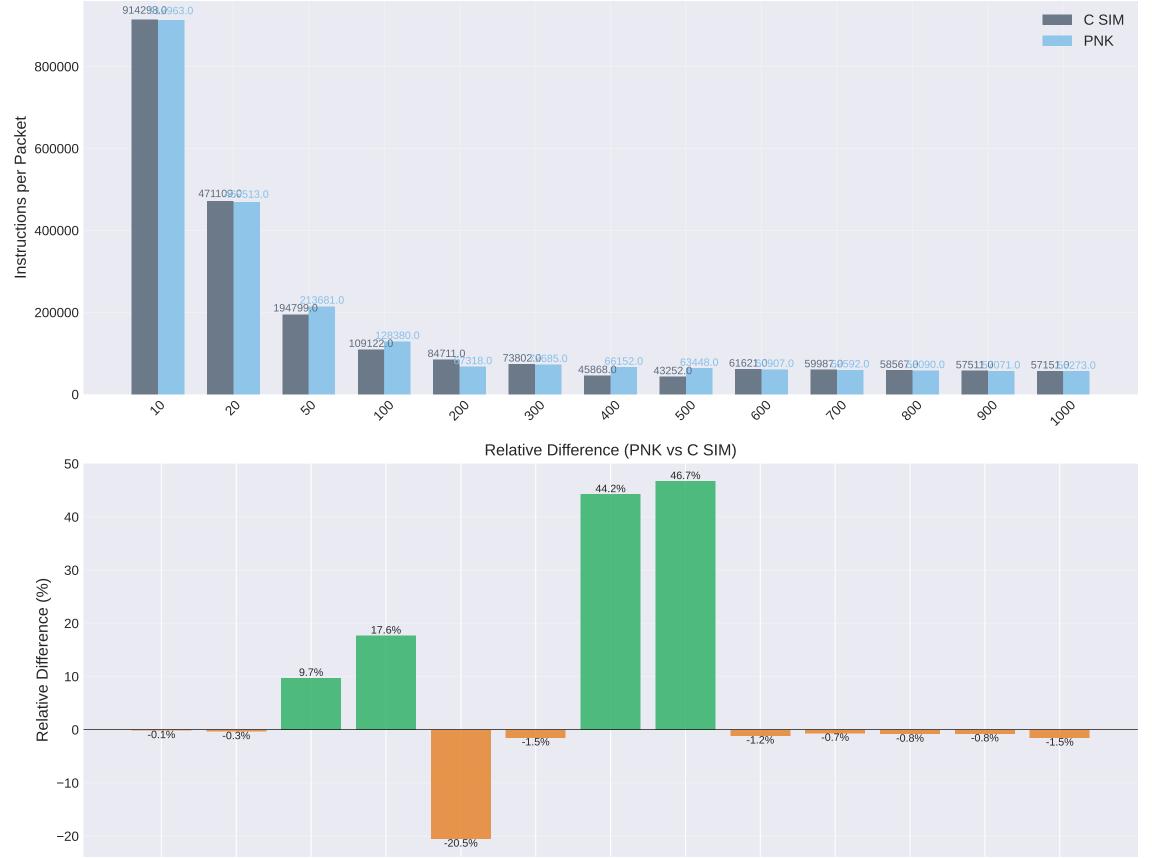
Branch Mispredictions per Packet vs Throughput











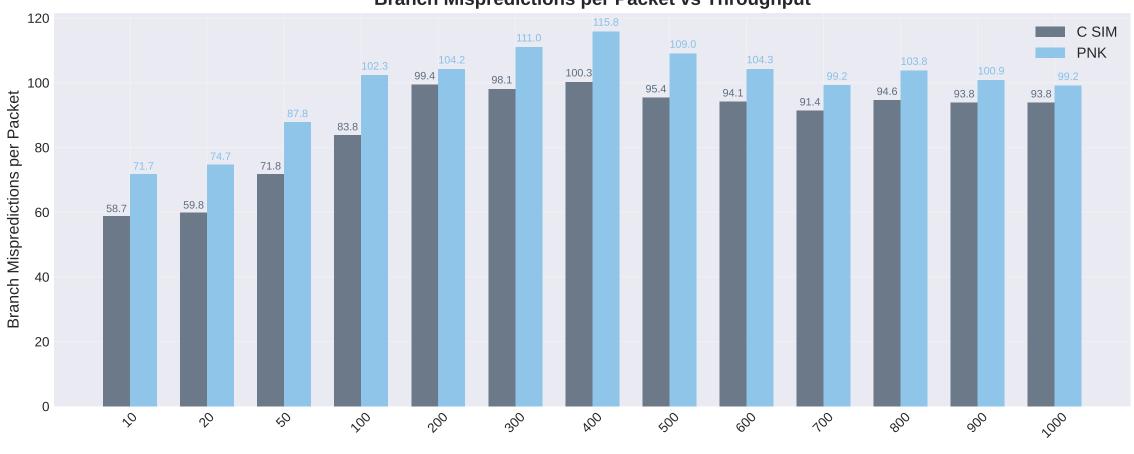
\$

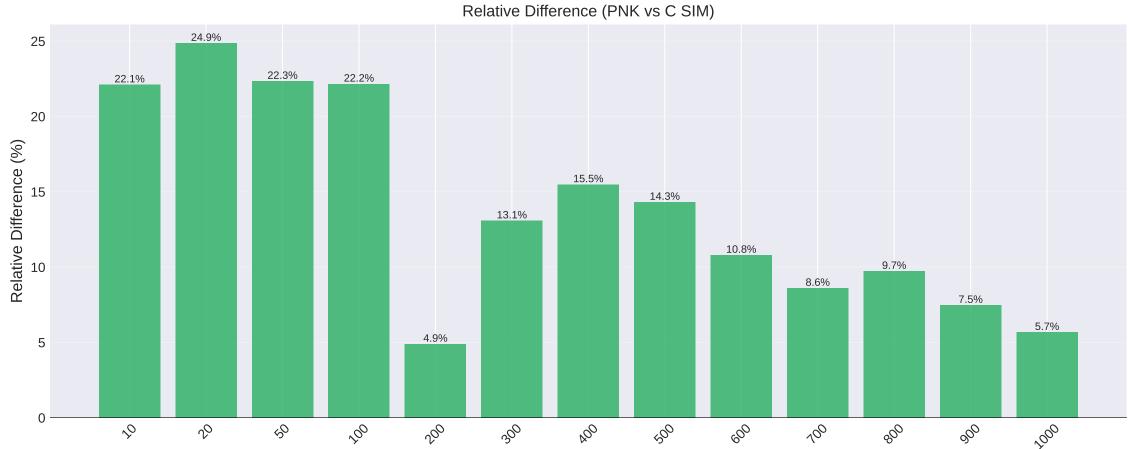
SO

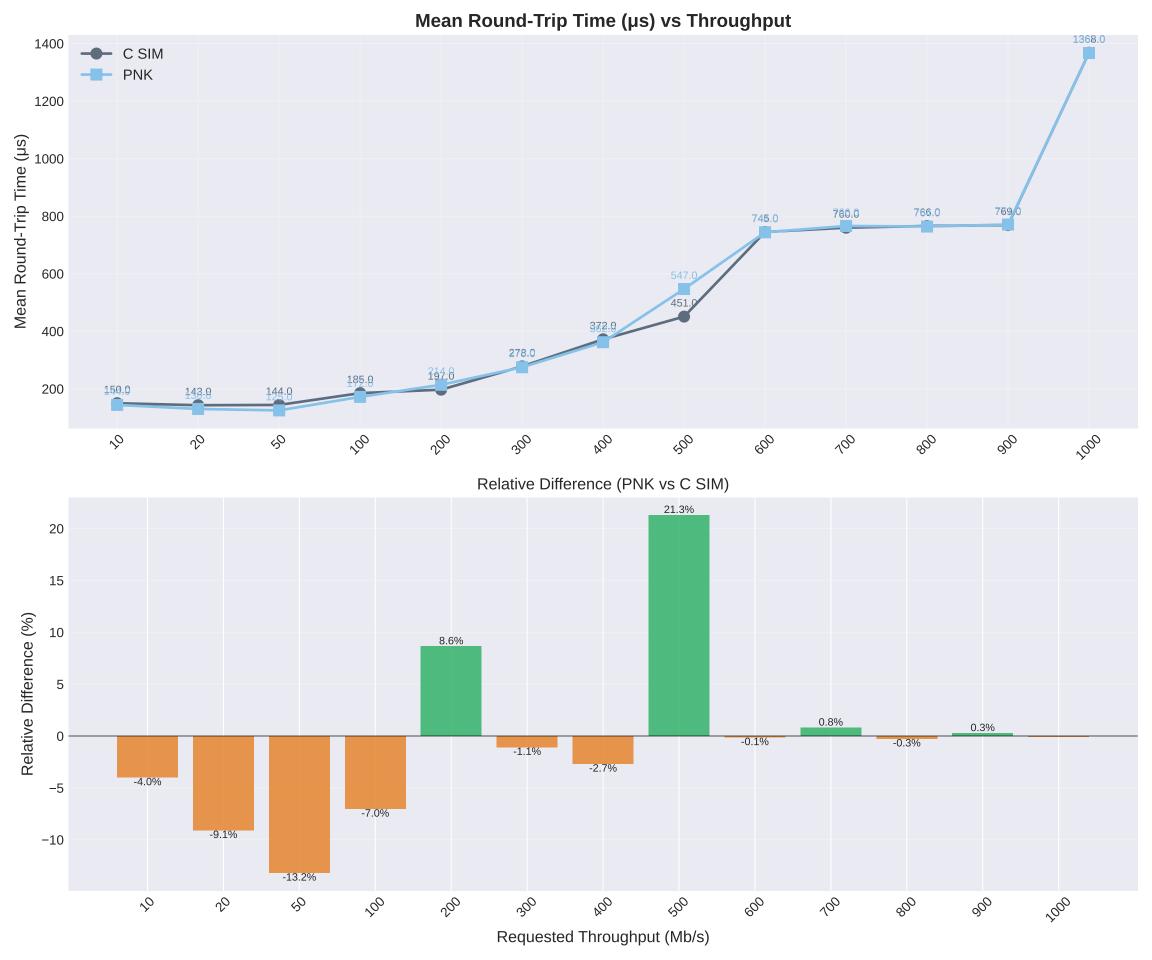
NO

Requested Throughput (Mb/s)

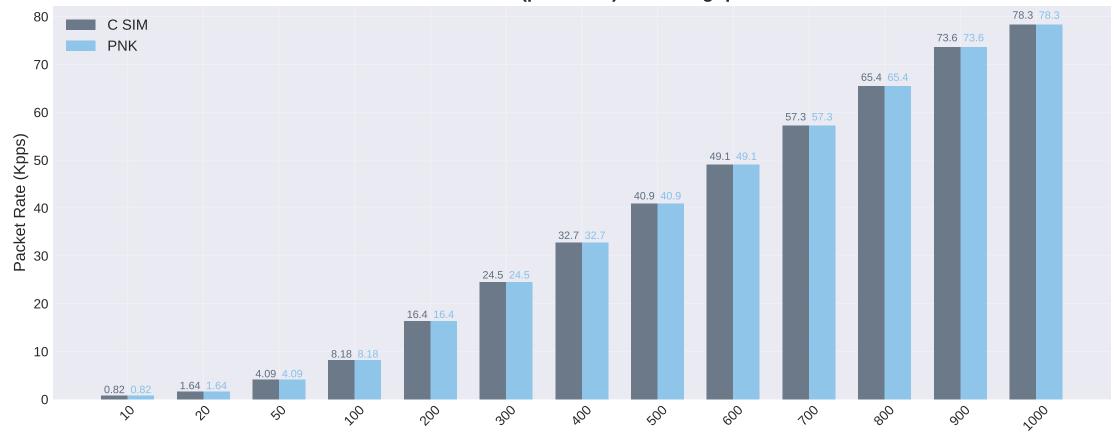
Branch Mispredictions per Packet vs Throughput



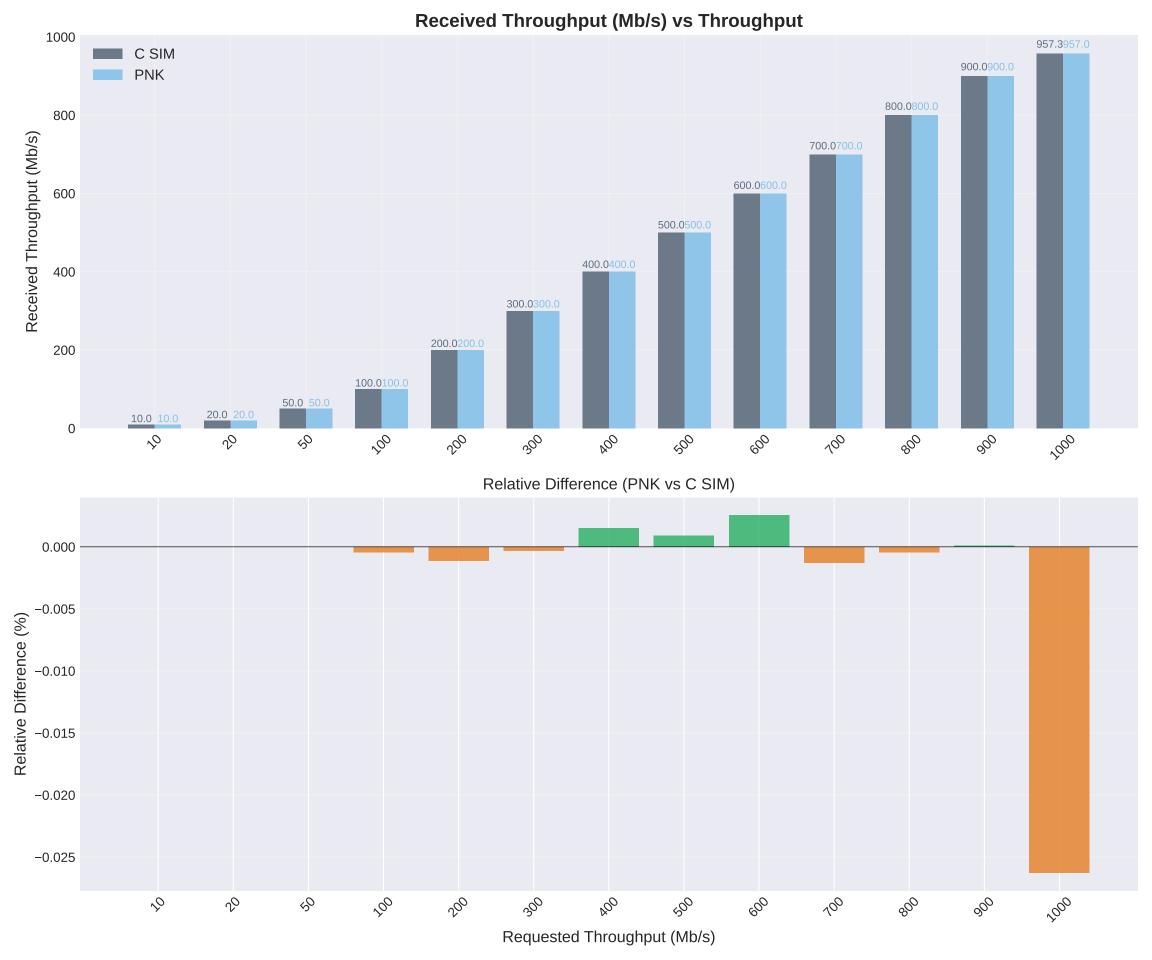












Sent Throughput (Mb/s) vs Throughput 1000.0000.0 C SIM 1000 PNK 900.0900.0 800.0800.0 800 Sent Throughput (Mb/s) 700.0700.0 600.0600.0 600 500.0500.0 400.0400.0 400 300.0300.0 200.0200.0 200 100.0100.0 50.0 50.0 20.0 20.0 10.0 10.0 0 200 200 300 NOO 400 600 901 900 900 2000 \$0 20 60 Relative Difference (PNK vs C SIM) 0.00075 0.00050 0.00025 Relative Difference (%)
0.00000
-0.00025
-0.00050

