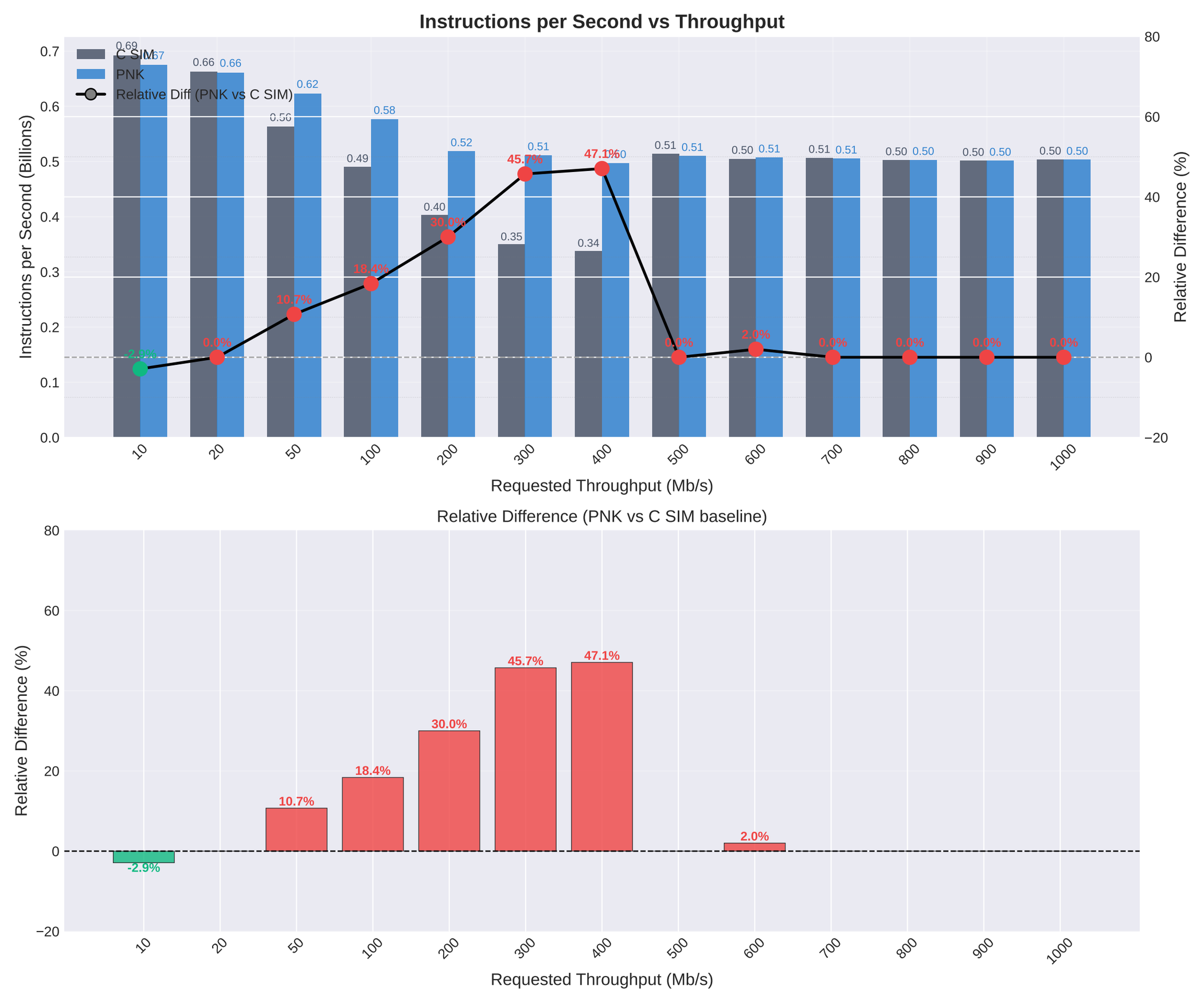
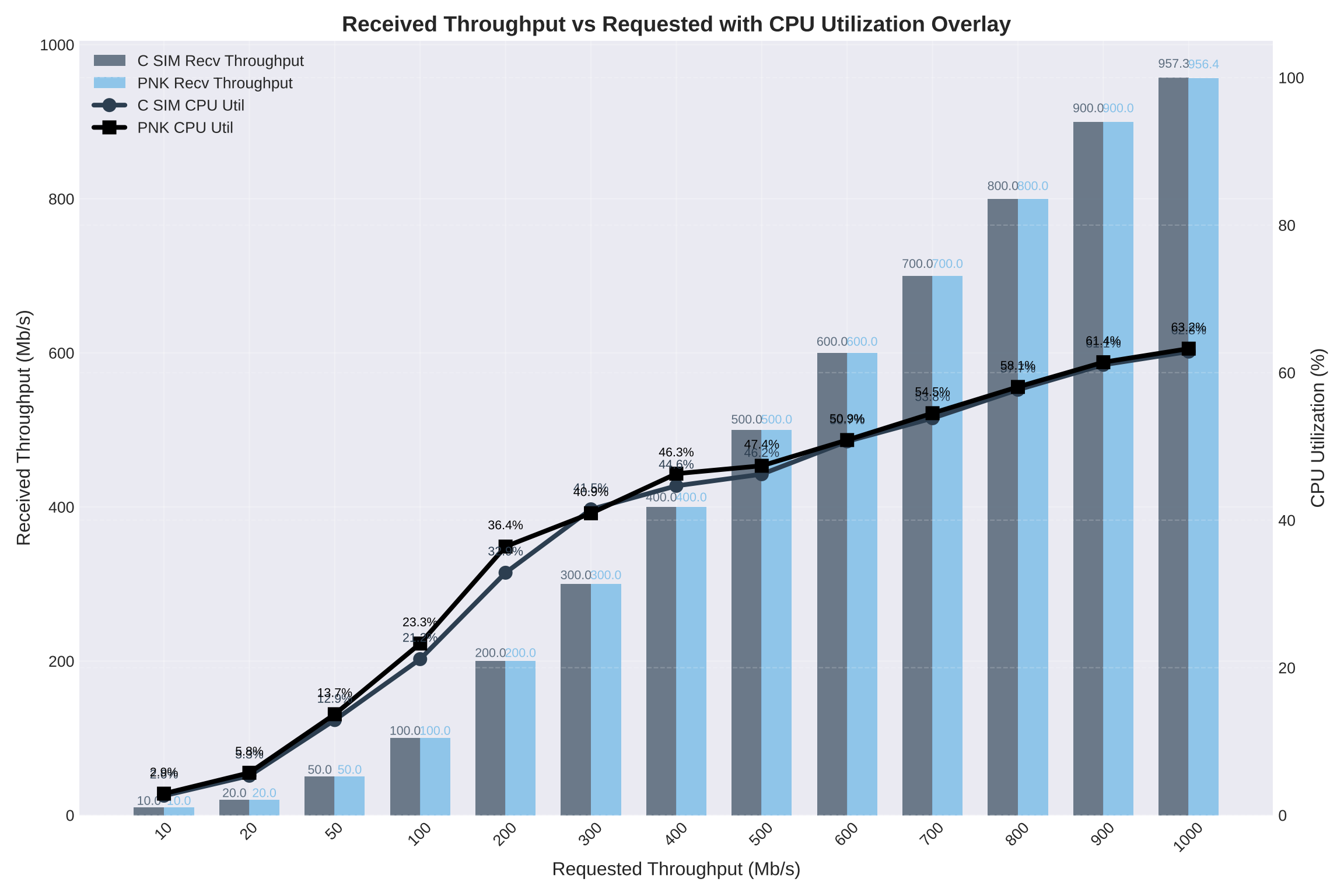
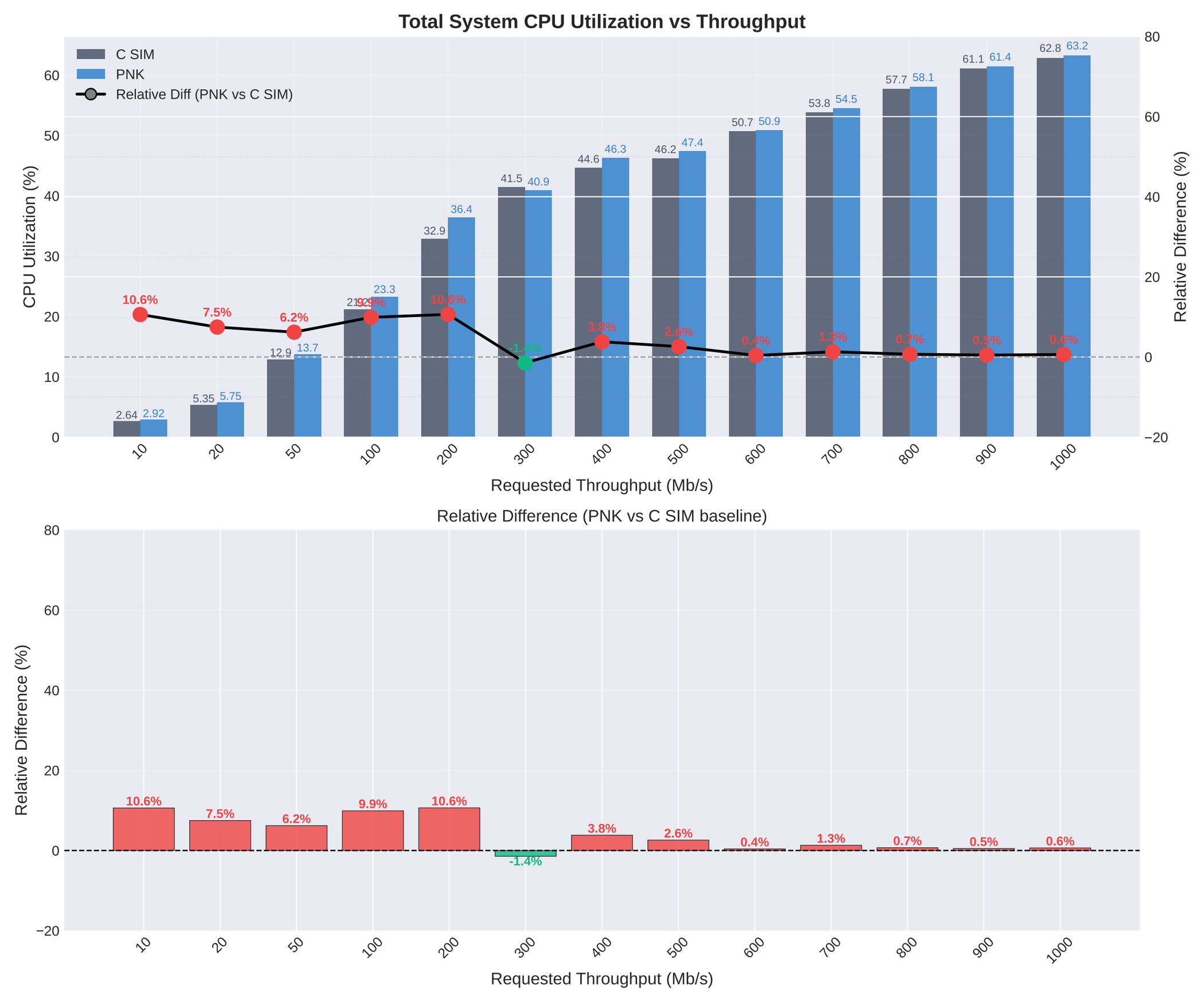
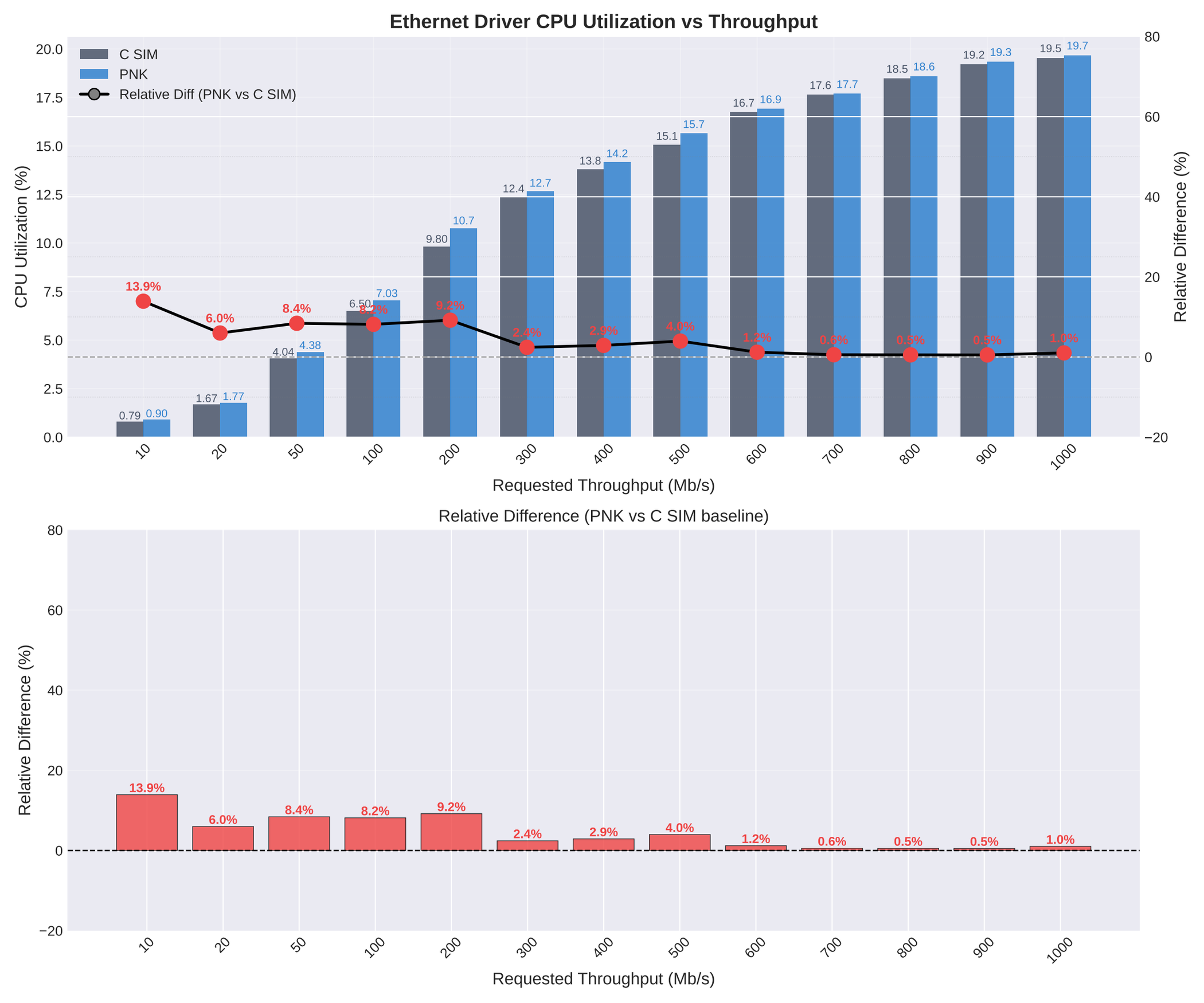
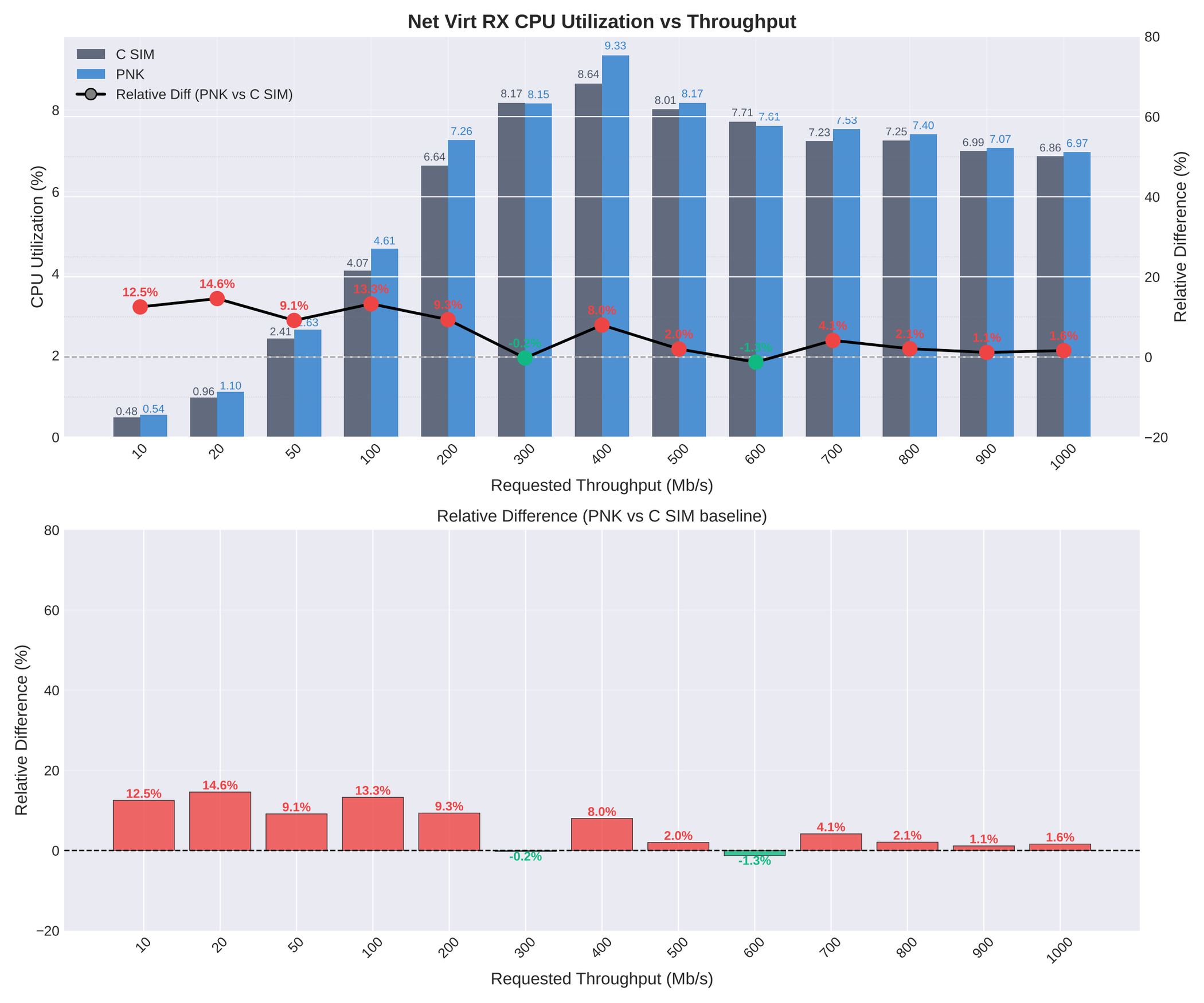

Instructions per Second vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Instructions per Second (Billions)
Relative Difference (%)
Requested Throughput (Mb/s)
0.69 0.67
0.66 0.66
0.56 0.62
0.49 0.58
0.40 0.52
0.35 0.51
0.34 0.50
0.51 0.51
0.50 0.51
0.51 0.51
0.50 0.50
0.50 0.50
0.50 0.50
-2.9%
0.0%
10.7%
18.4%
30.0%
45.7%
47.1%
0.0%
2.0%
0.0%
0.0%
0.0%
0.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)
-2.9%
10.7%
18.4%
30.0%
45.7%
47.1%
2.0%

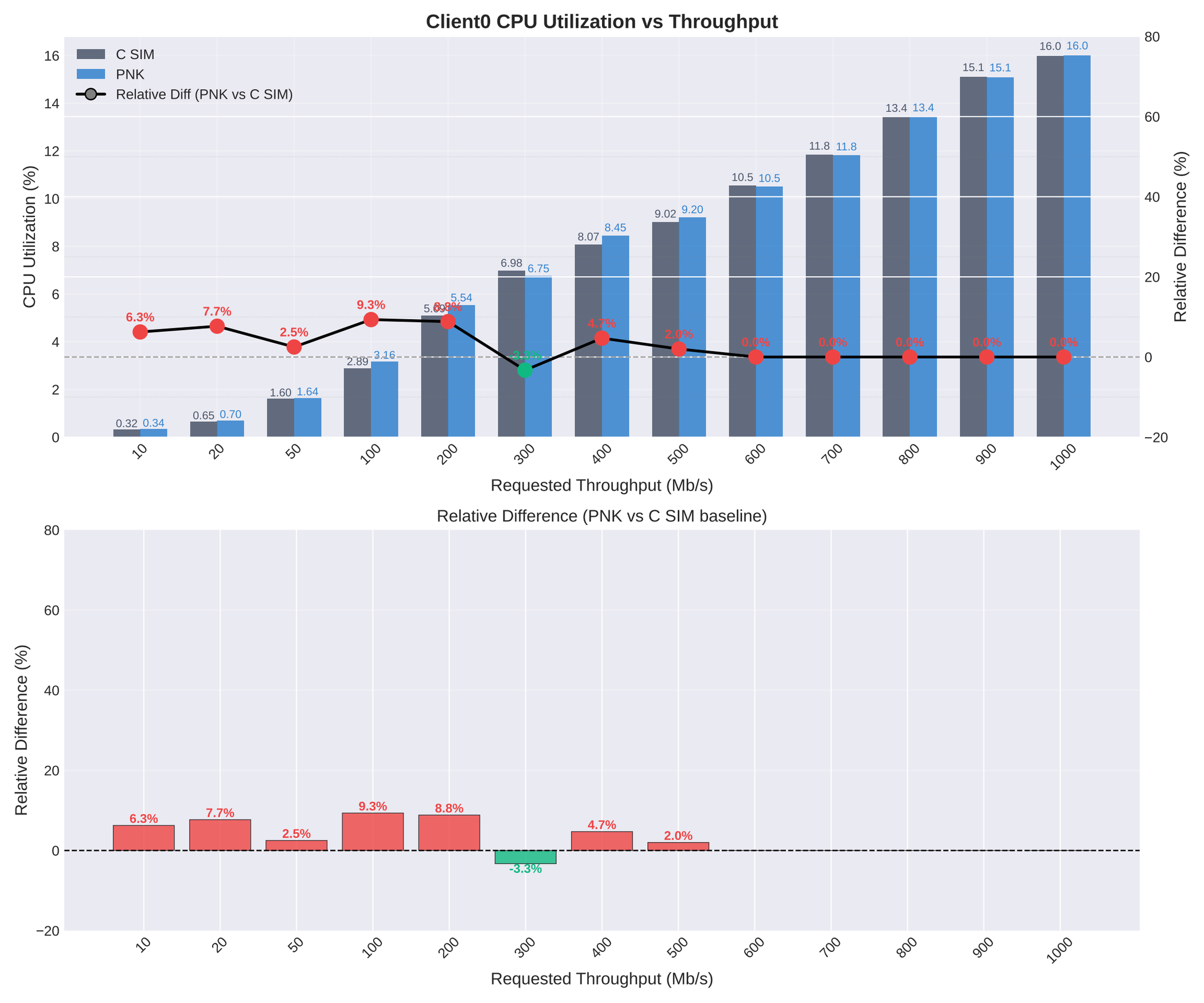

Received Throughput vs Requested with CPU Utilization Overlay
C SIM Recv Throughput
PNK Recv Throughput
C SIM CPU Util
PNK CPU Util
Received Throughput (Mb/s)
CPU Utilization (%)
Requested Throughput (Mb/s)
0
200
400
600
800
1000
0
20
40
60
80
100
10
20
50
100
200
300
400
500
600
700
800
900
1000
10.0
20.0
50.0
100.0
200.0
300.0
400.0
500.0
600.0
700.0
800.0
900.0
957.3
956.4
2.8%
5.8%
13.7%
23.3%
36.4%
41.5%
46.3%
47.4%
50.9%
54.5%
58.1%
61.4%
63.2%

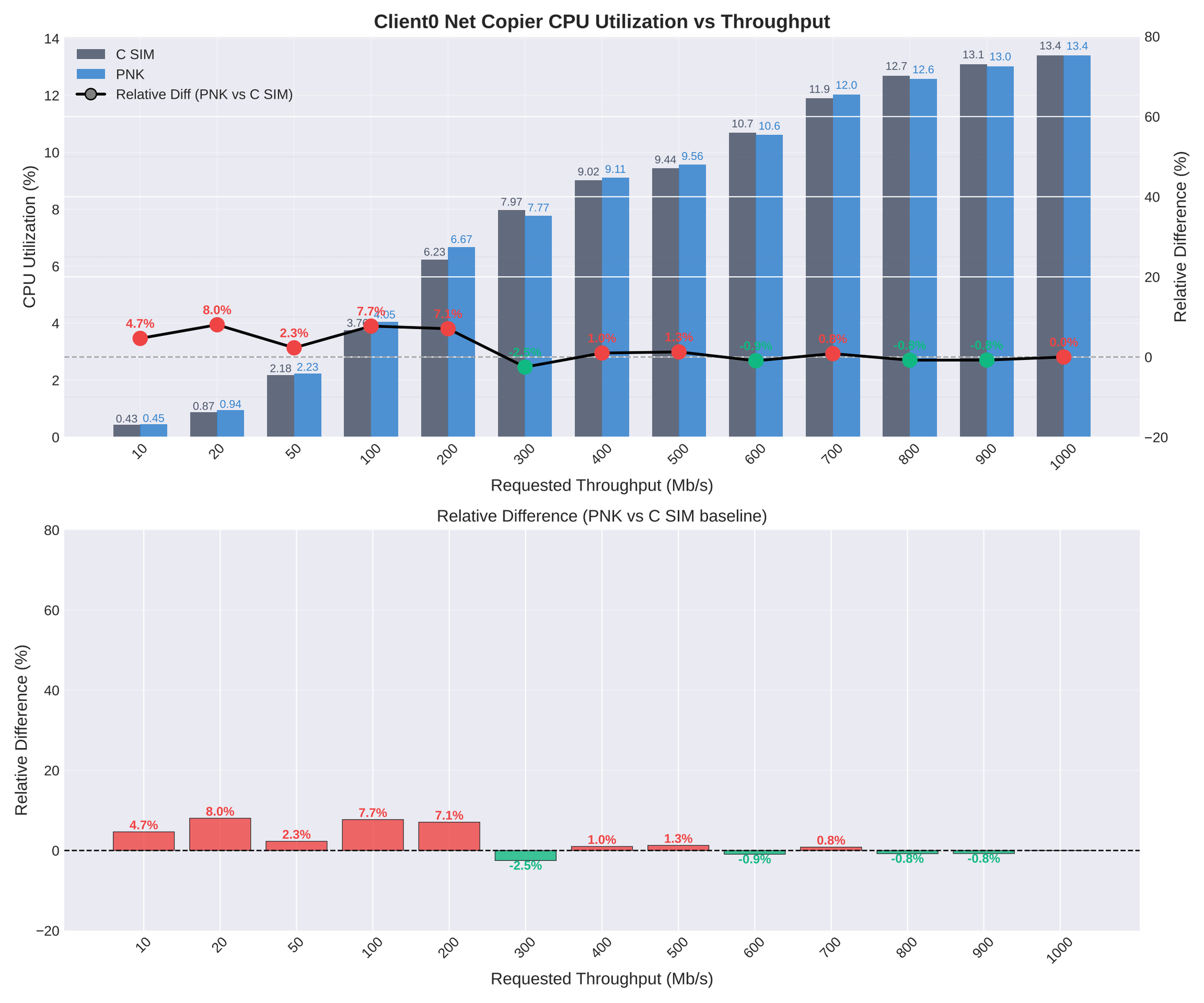

Total System CPU Utilization vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
CPU Utilization (%)
Relative Difference (%)
Requested Throughput (Mb/s)
2.64
2.92
5.35
5.75
12.9
13.7
21.9
23.3
32.9
36.4
41.5
40.9
44.6
46.3
46.2
47.4
50.7
50.9
53.8
54.5
57.7
58.1
61.1
61.4
62.8
63.2
10.6%
7.5%
6.2%
9.9%
10.6%
-1.4%
3.8%
2.6%
0.4%
1.3%
0.7%
0.5%
0.6%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

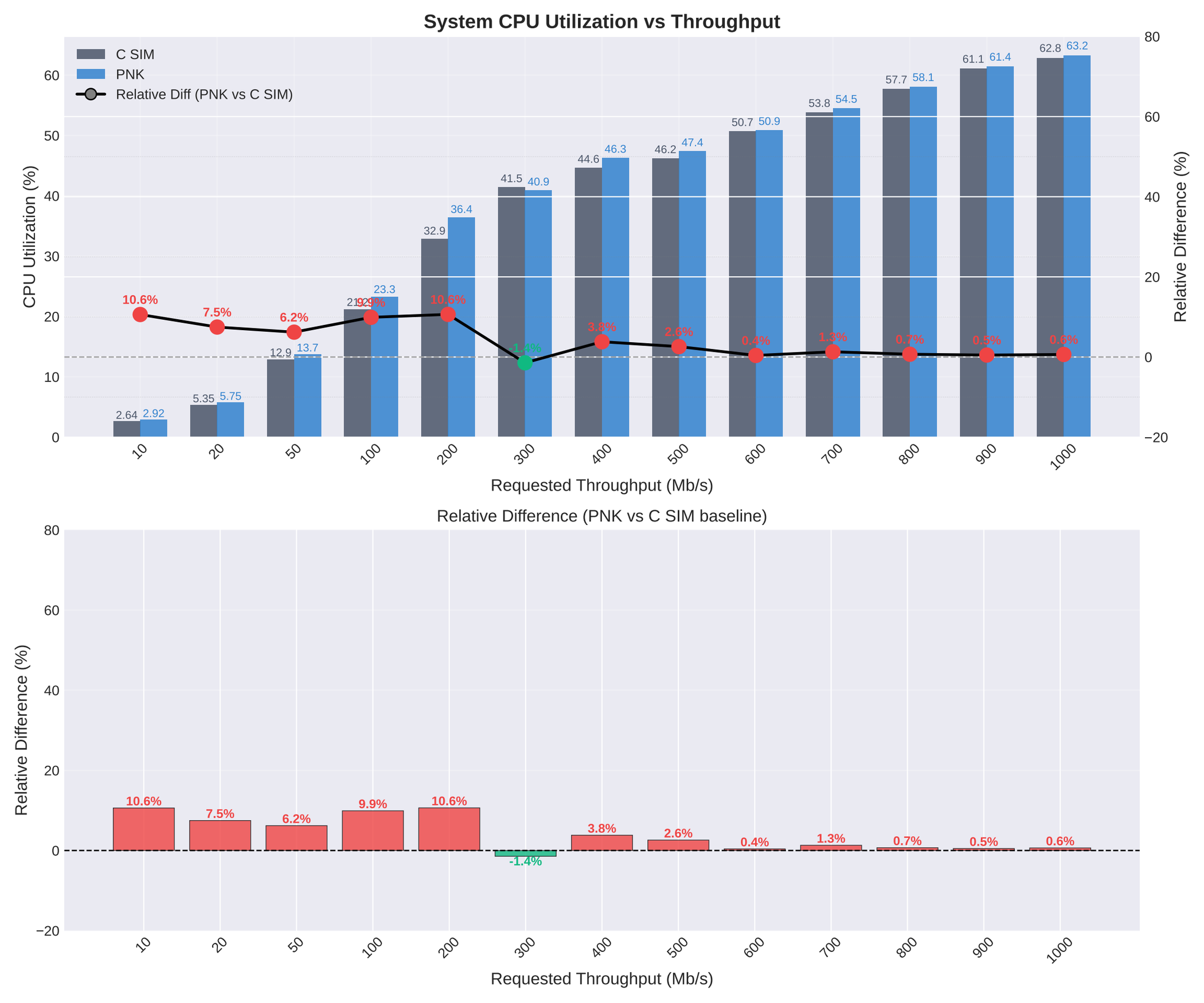

Ethernet Driver CPU Utilization vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
CPU Utilization (%)
Relative Difference (%)
Requested Throughput (Mb/s)
0.79
0.90
1.67
1.77
4.04
4.38
6.50
7.03
9.80
10.7
12.4
12.7
13.8
14.2
15.1
15.7
16.7
16.9
17.6
17.7
18.5
18.6
19.2
19.3
19.5
19.7
13.9%
6.0%
8.4%
8.2%
9.2%
2.4%
2.9%
4.0%
1.2%
0.6%
0.5%
0.5%
1.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

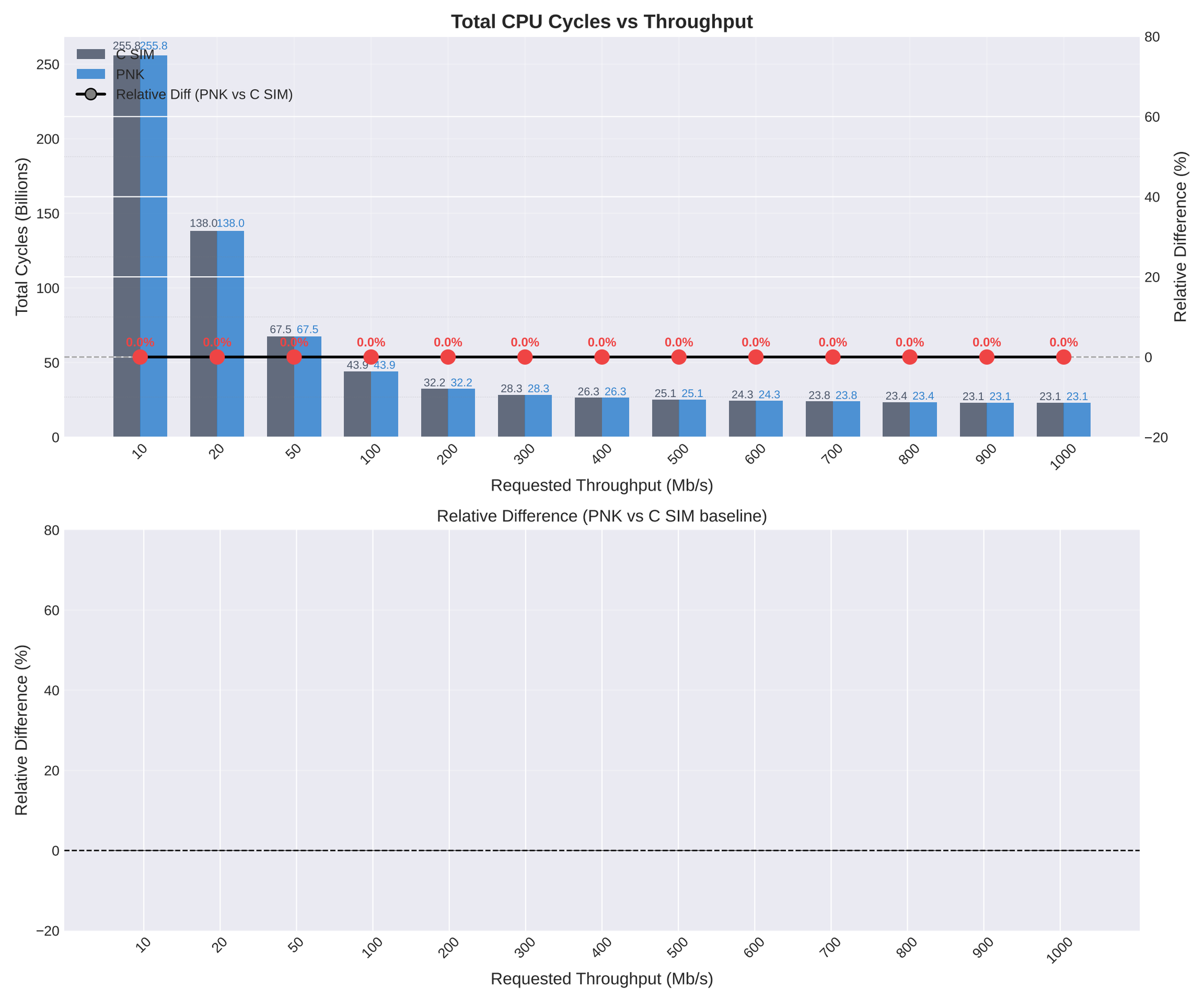
Net Virt TX CPU Utilization vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
CPU Utilization (%)
Relative Difference (%)
Requested Throughput (Mb/s)
0.31
0.38
0.68
0.77
1.65
1.82
2.5
3.05
3.62
4.51
4.42
4.33
4.17
4.50
4.22
4.32
4.57
4.76
4.74
4.93
5.35
5.55
6.18
6.36
6.56
6.67
22.6%
13.2%
10.3%
19.1%
24.6%
-2.0%
7.9%
2.4%
4.2%
4.0%
3.7%
2.9%
1.7%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

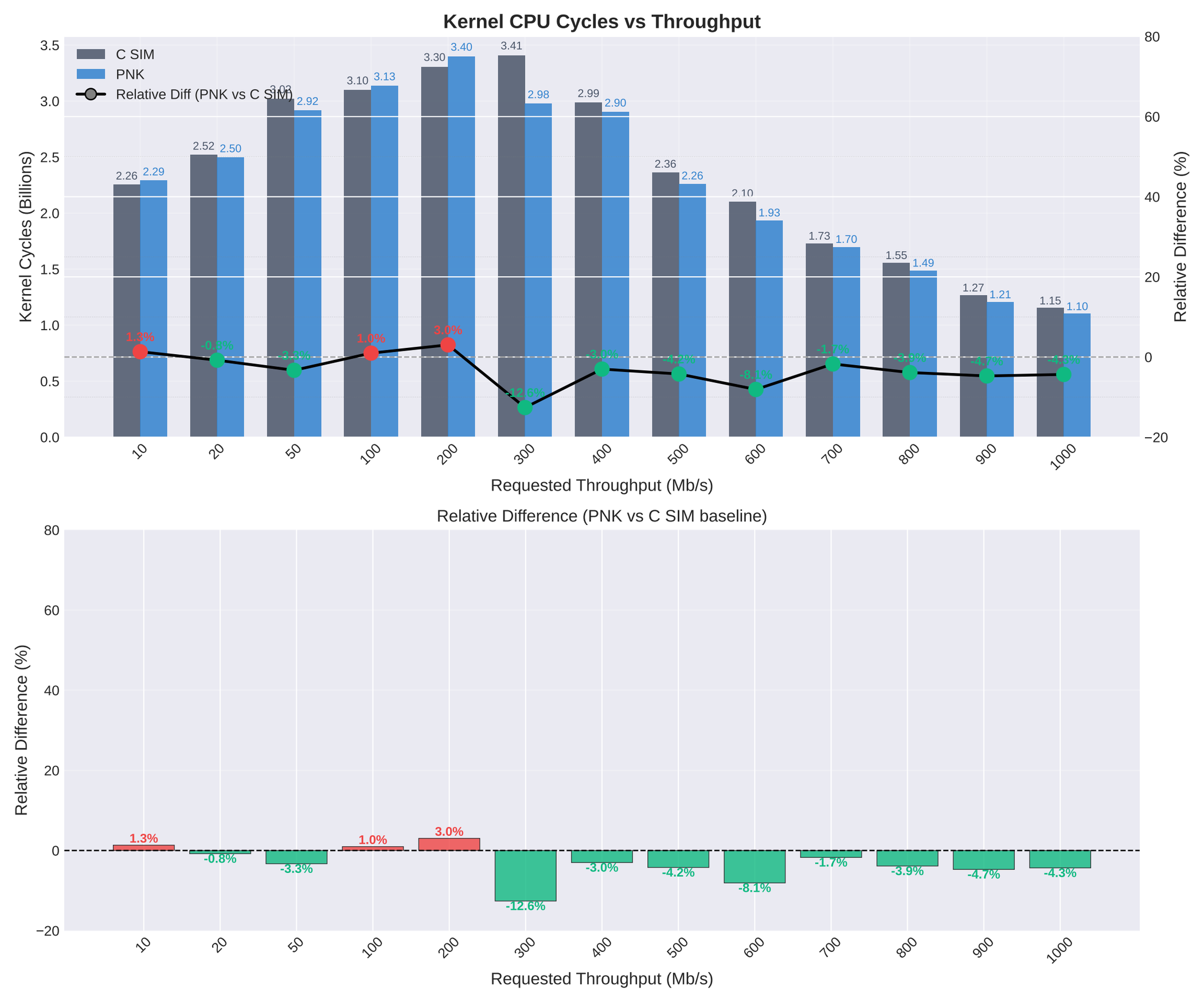

Net Virt RX CPU Utilization vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
CPU Utilization (%)
Relative Difference (%)
Requested Throughput (Mb/s)
0.48 0.54
0.96 1.10
2.41 2.63
4.07 4.61
6.64 7.26
8.17 8.15
8.64 9.33
8.01 8.17
7.71 7.61
7.23 7.53
7.25 7.40
6.99 7.07
6.86 6.97
12.5%
14.6%
9.1%
13.3%
9.3%
-0.2%
8.0%
2.0%
-1.3%
4.1%
2.1%
1.1%
1.6%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)


Client0 CPU Utilization vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
CPU Utilization (%)
Relative Difference (%)
Requested Throughput (Mb/s)
0.32 0.34
0.65 0.70
1.60 1.64
2.89 3.16
5.08 5.54
6.98 6.75
8.07 8.45
9.02 9.20
10.5 10.5
11.8 11.8
13.4 13.4
15.1 15.1
16.0 16.0
6.3%
7.7%
2.5%
9.3%
8.8%
-3.3%
4.7%
2.0%
0.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

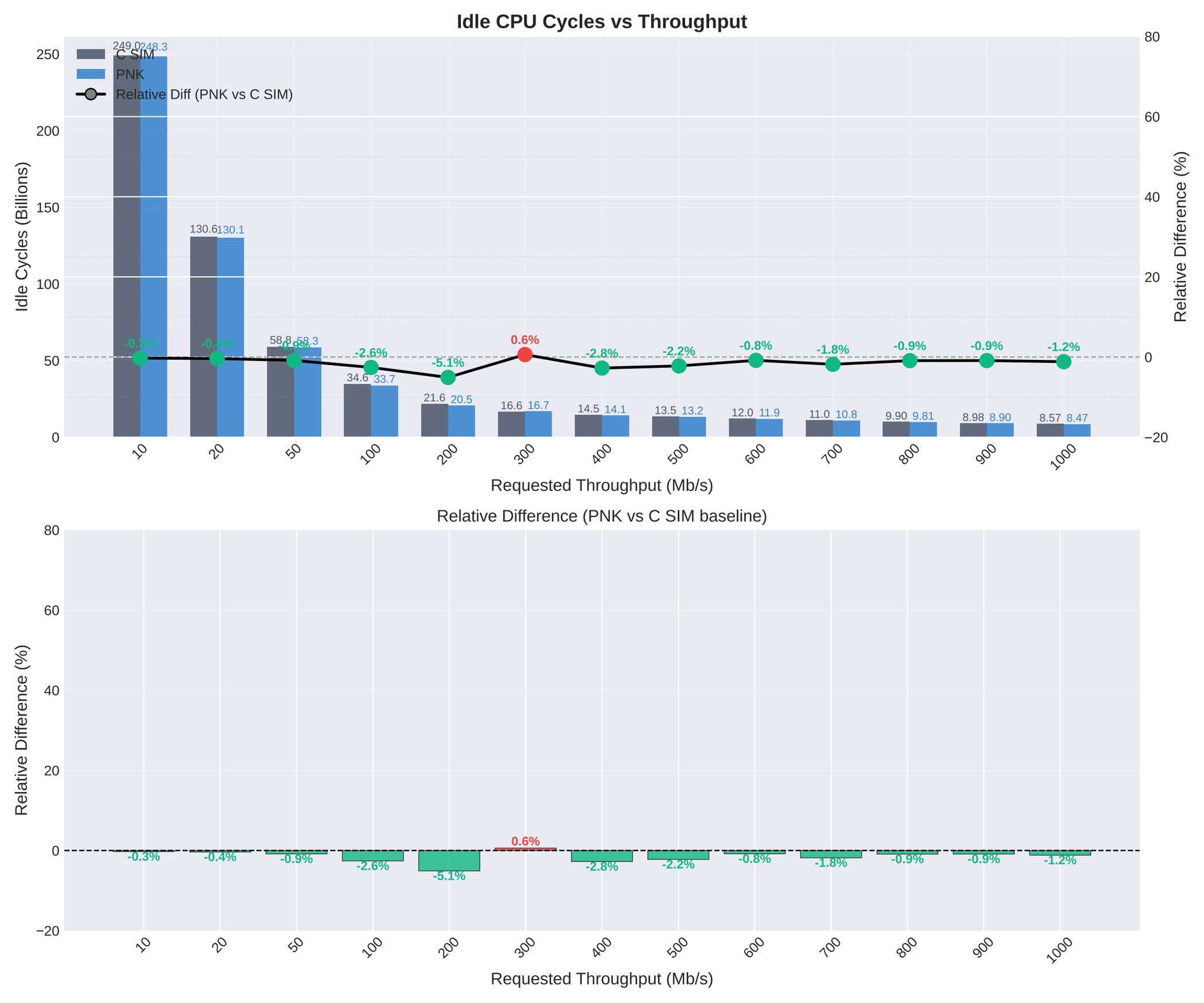

Client0 Net Copier CPU Utilization vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
CPU Utilization (%)
Relative Difference (%)
Requested Throughput (Mb/s)
0.43 0.45
0.87 0.94
2.18 2.23
3.70 4.05
6.23 6.67
7.97 7.77
9.02 9.11
9.44 9.56
10.7 10.6
11.9 12.0
12.7 12.6
13.1 13.0
13.4 13.4
4.7%
8.0%
2.3%
7.7%
7.1%
-2.5%
1.0%
1.3%
-0.9%
0.8%
-0.8%
-0.8%
0.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

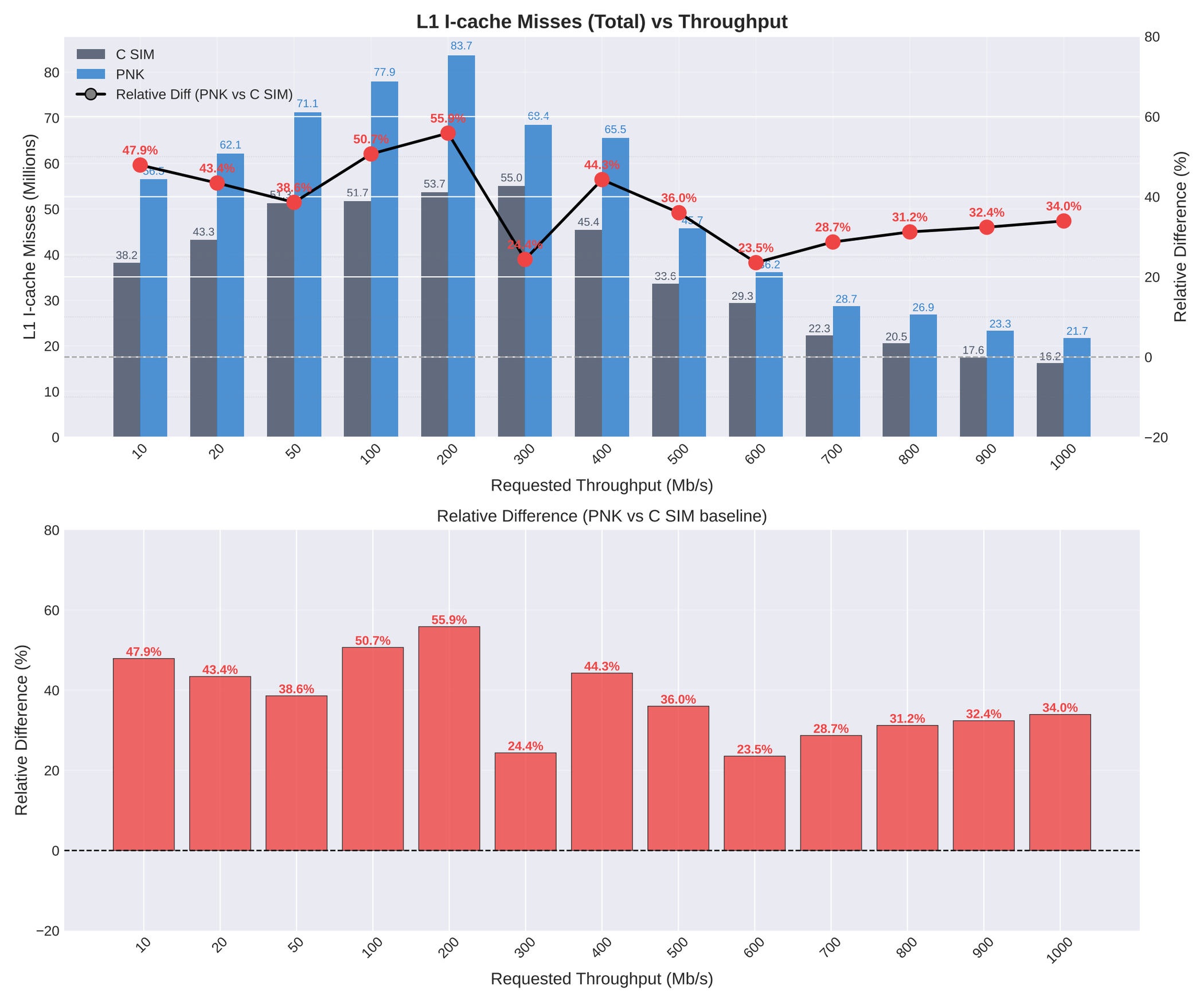

System CPU Utilization vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
CPU Utilization (%)
Relative Difference (%)
Requested Throughput (Mb/s)
2.64
2.92
5.35
5.75
12.9
13.7
21.9
23.3
32.9
36.4
41.5
40.9
44.6
46.3
46.2
47.4
50.7
50.9
53.8
54.5
57.7
58.1
61.1
61.4
62.8
63.2
10.6%
7.5%
6.2%
9.9%
10.6%
-1.4%
3.8%
2.6%
0.4%
1.3%
0.7%
0.5%
0.6%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

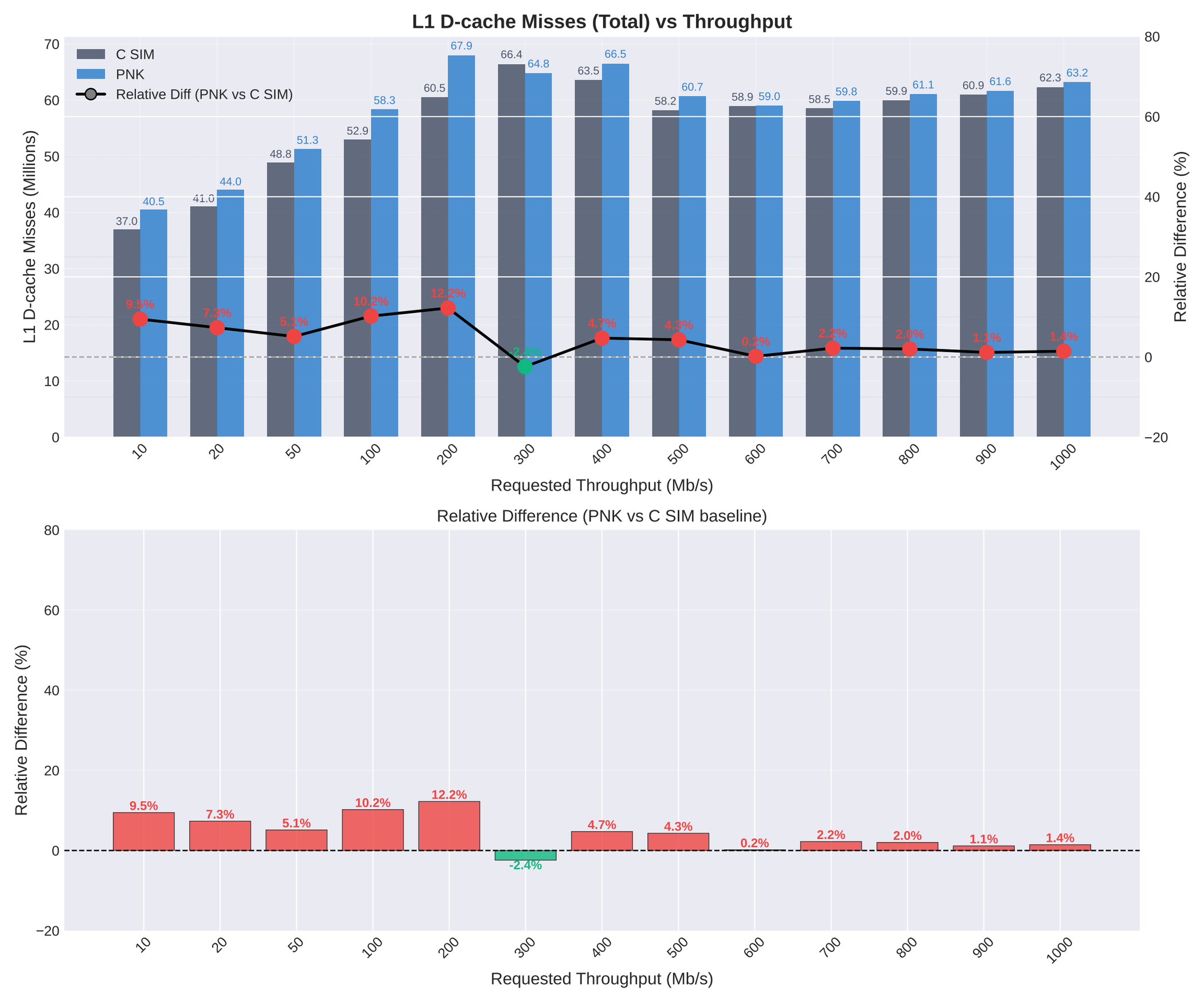

Total CPU Cycles vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Total Cycles (Billions)
Relative Difference (%)
Requested Throughput (Mb/s)
255.8 255.8
138.0 138.0
67.5 67.5
43.9 43.9
32.2 32.2
28.3 28.3
26.3 26.3
25.1 25.1
24.3 24.3
23.8 23.8
23.4 23.4
23.1 23.1
23.1 23.1
0.0%
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

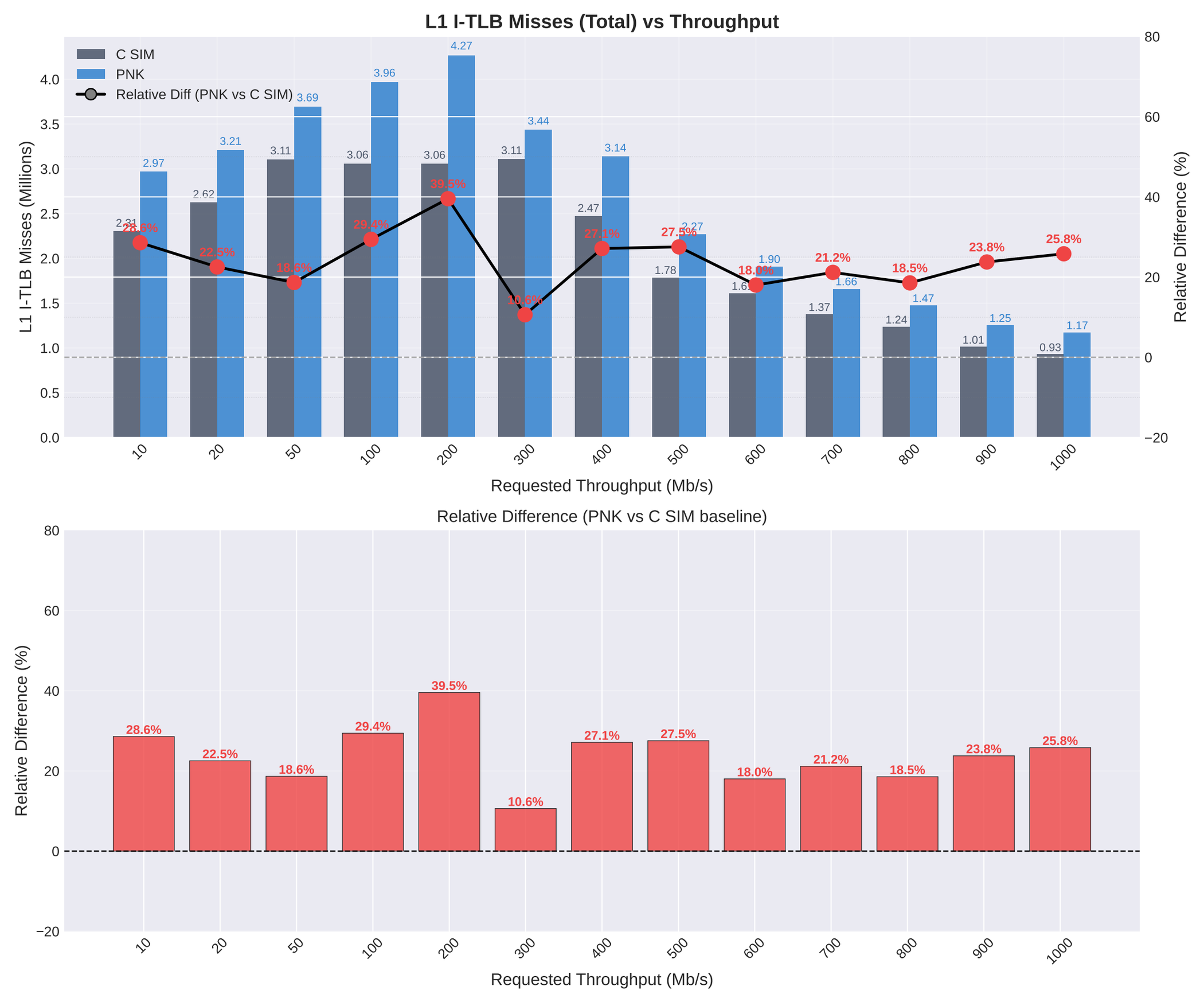

Kernel CPU Cycles vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Kernel Cycles (Billions)
Relative Difference (%)
Requested Throughput (Mb/s)
2.26
2.29
2.52
2.50
3.03
2.92
3.10
3.13
3.30
3.40
3.41
2.98
2.99
2.90
2.36
2.26
2.10
1.93
1.73
1.70
1.55
1.49
1.27
1.21
1.15
1.10
1.3%
-0.8%
-3.3%
1.0%
3.0%
-12.6%
-3.0%
-4.2%
-8.1%
-1.7%
-3.9%
-4.7%
-4.3%
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

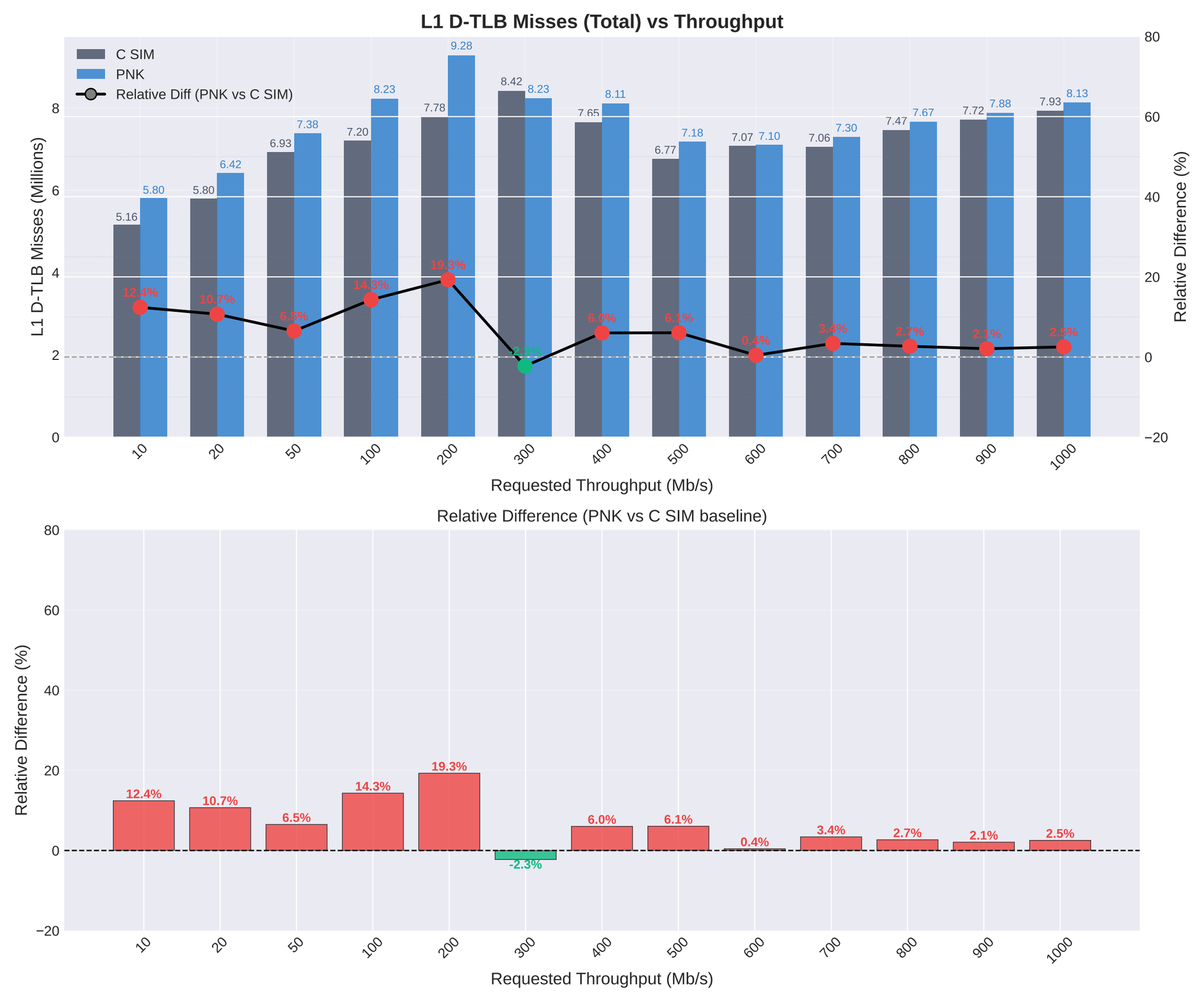
User CPU Cycles vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
User Cycles (Billions)
Relative Difference (%)
Requested Throughput (Mb/s)
3.81
4.48
17.6%
4.20
4.83
15.0%
5.04
5.70
13.1%
5.61
6.51
16.0%
6.83
7.82
14.5%
7.90
8.27
4.7%
8.51
9.09
6.8%
9.13
9.52
4.3%
10.1
10.3
2.0%
11.0
11.2
1.8%
11.8
12.0
1.7%
12.7
12.9
1.6%
13.2
13.4
1.5%
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

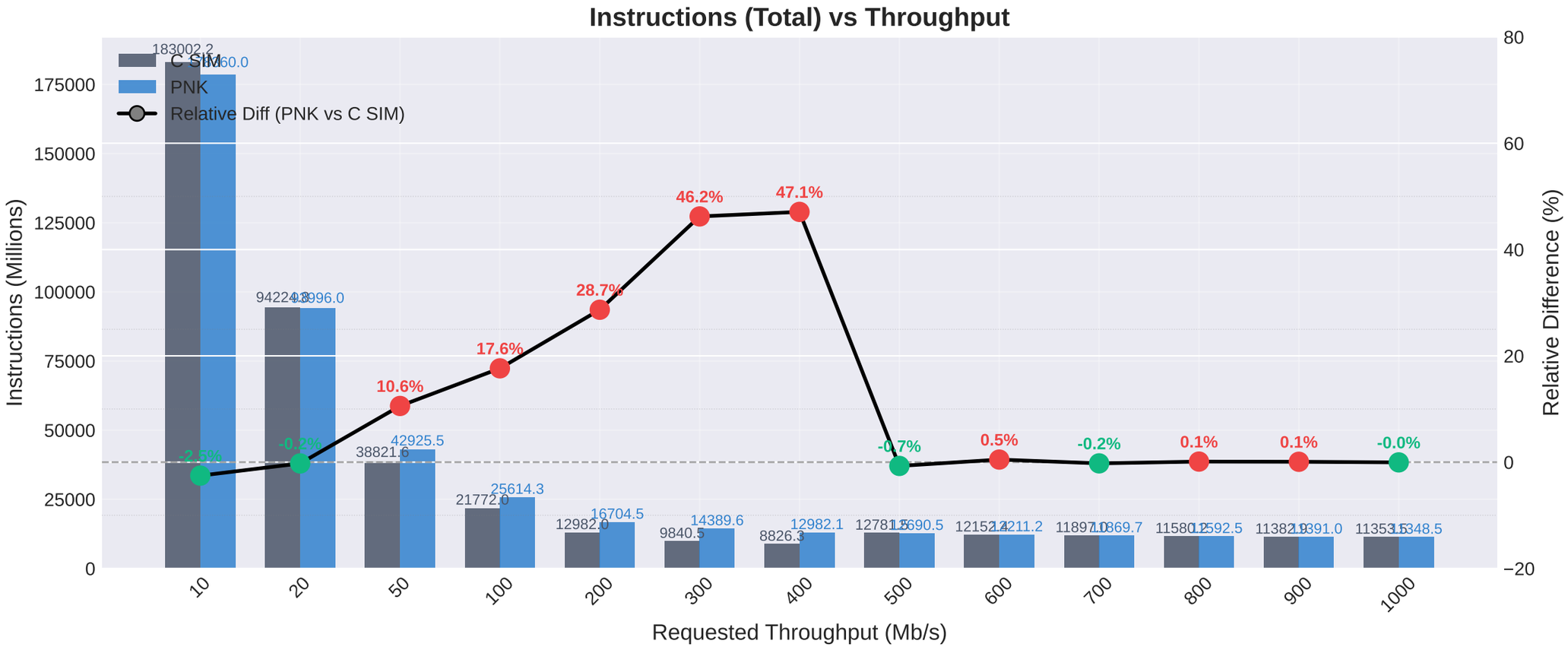

Idle CPU Cycles vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Idle Cycles (Billions)
Relative Difference (%)
Requested Throughput (Mb/s)
249.0 248.3
130.6 130.1
58.8 58.3
34.6 33.7
21.6 20.5
16.6 16.7
14.5 14.1
13.5 13.2
12.0 11.9
11.0 10.8
9.90 9.81
8.98 8.90
8.57 8.47
-0.3%
-0.4%
-0.9%
-2.6%
-5.1%
0.6%
-2.8%
-2.2%
-0.8%
-1.8%
-0.9%
-0.9%
-1.2%
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

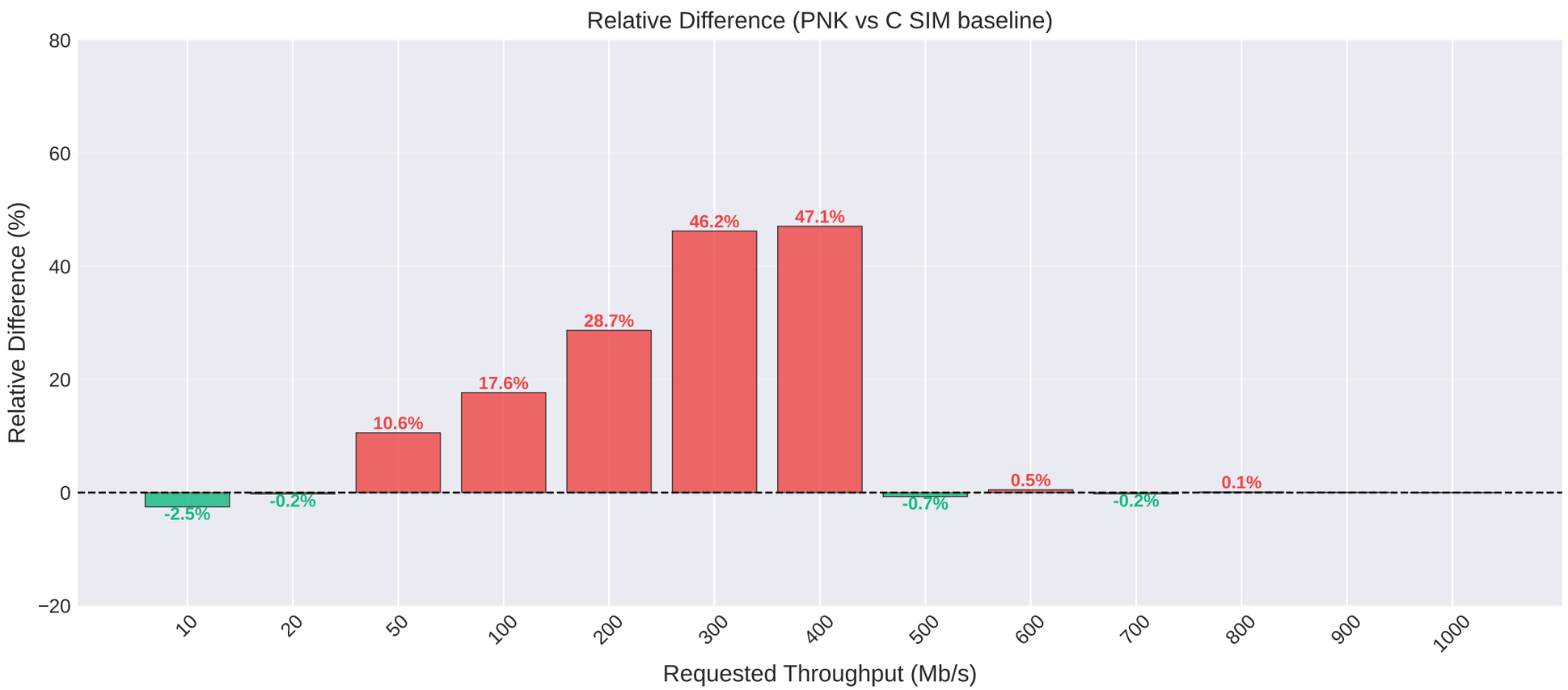

L1 I-cache Misses (Total) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 I-cache Misses (Millions)
Relative Difference (%)
Requested Throughput (Mb/s)
10
20
50
100
200
300
400
500
600
700
800
900
1000
38.2
43.3
51.7
53.7
55.0
45.4
33.6
29.3
22.3
20.5
17.6
16.2
62.1
71.1
77.9
83.7
65.5
28.7
26.9
23.3
21.7
47.9%
43.4%
38.6%
50.7%
55.9%
24.4%
44.3%
36.0%
23.5%
28.7%
31.2%
32.4%
34.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

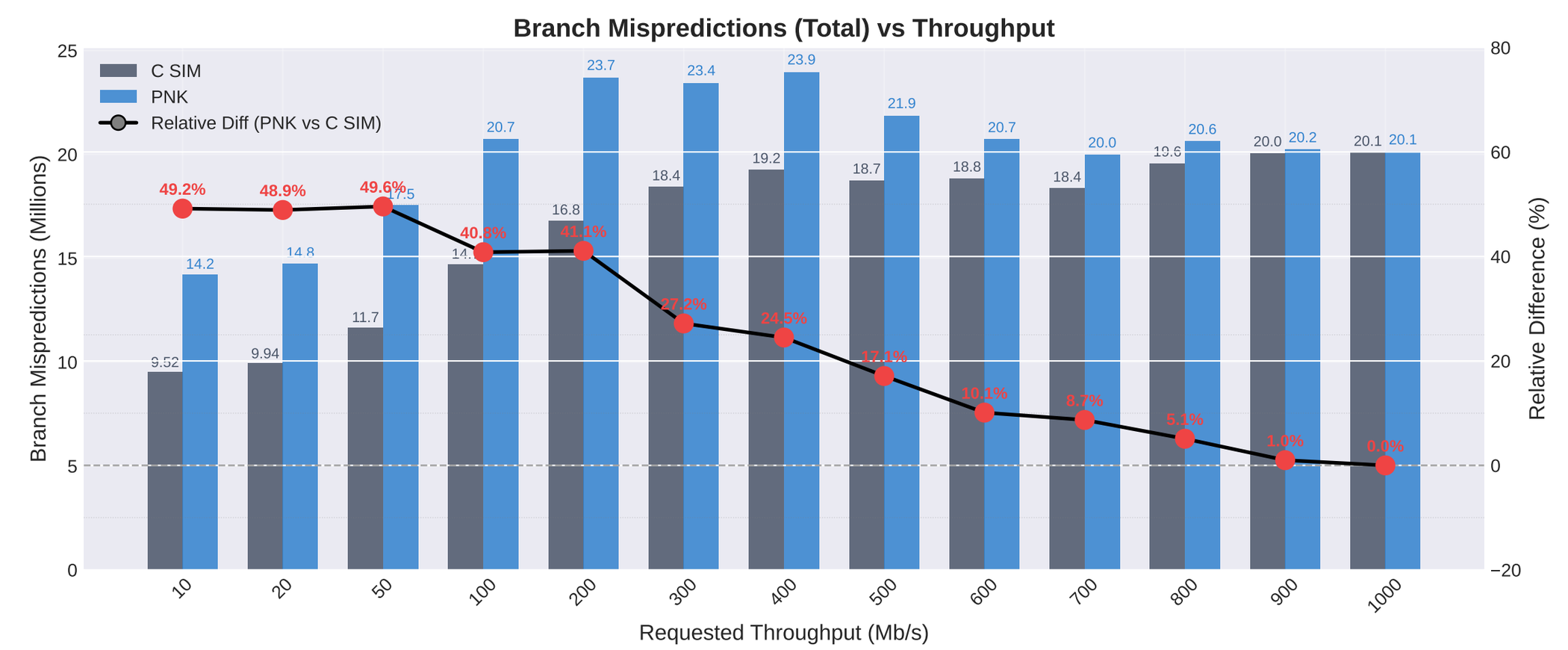

L1 D-cache Misses (Total) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 D-cache Misses (Millions)
Relative Difference (%)
Requested Throughput (Mb/s)
37.0
40.5
41.0
44.0
48.8
51.3
52.9
58.3
60.5
67.9
66.4
64.8
63.5
66.5
58.2
60.7
58.9
59.0
58.5
59.8
59.9
61.1
60.9
61.6
62.3
63.2
9.5%
7.3%
5.1%
10.2%
12.2%
-2.4%
4.7%
4.3%
0.2%
2.2%
2.0%
1.1%
1.4%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

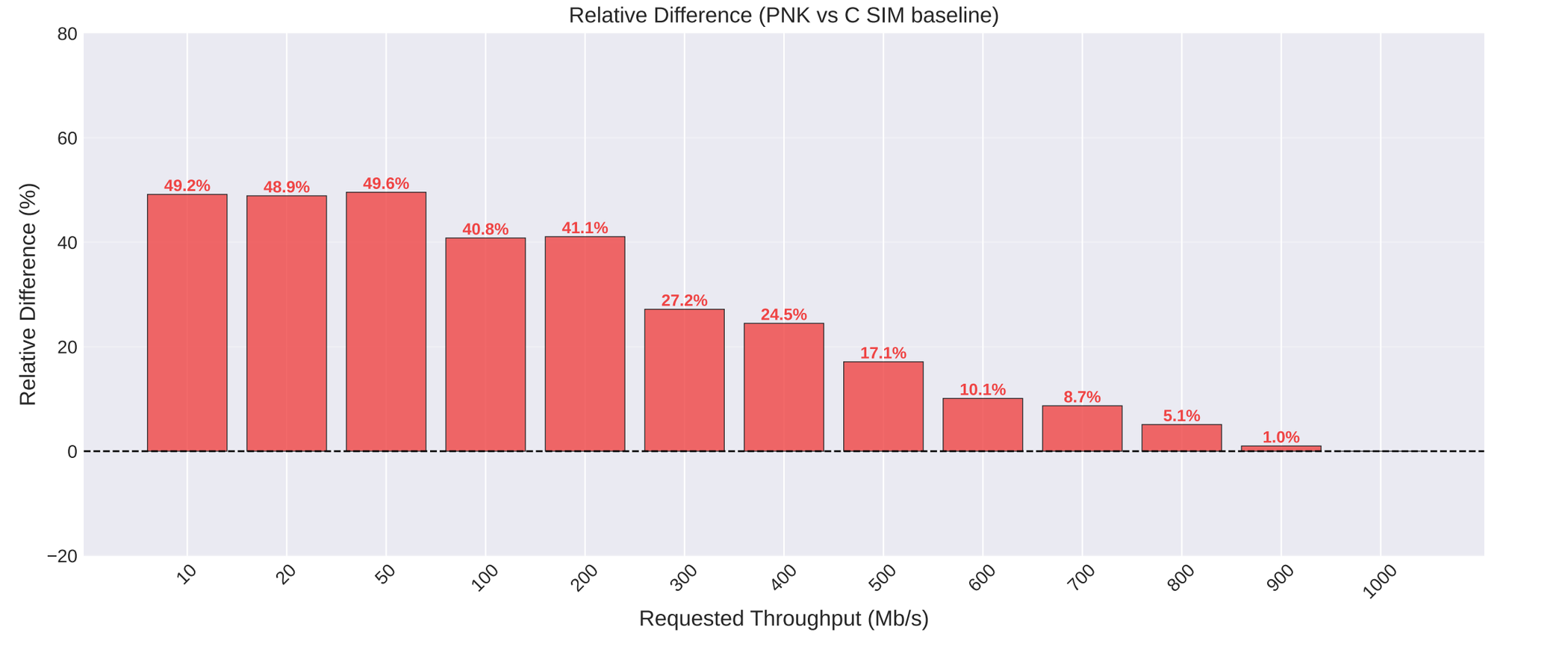

L1 I-TLB Misses (Total) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 I-TLB Misses (Millions)
Relative Difference (%)
Requested Throughput (Mb/s)
10
20
50
100
200
300
400
500
600
700
800
900
1000
2.97
3.21
3.69
3.96
4.27
3.44
3.14
2.27
1.90
1.66
1.47
1.25
1.17
2.62
3.11
3.06
3.06
3.11
2.47
1.78
1.37
1.24
1.01
0.93
28.6%
22.5%
18.6%
29.4%
39.5%
10.6%
27.1%
27.5%
18.0%
21.2%
18.5%
23.8%
25.8%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

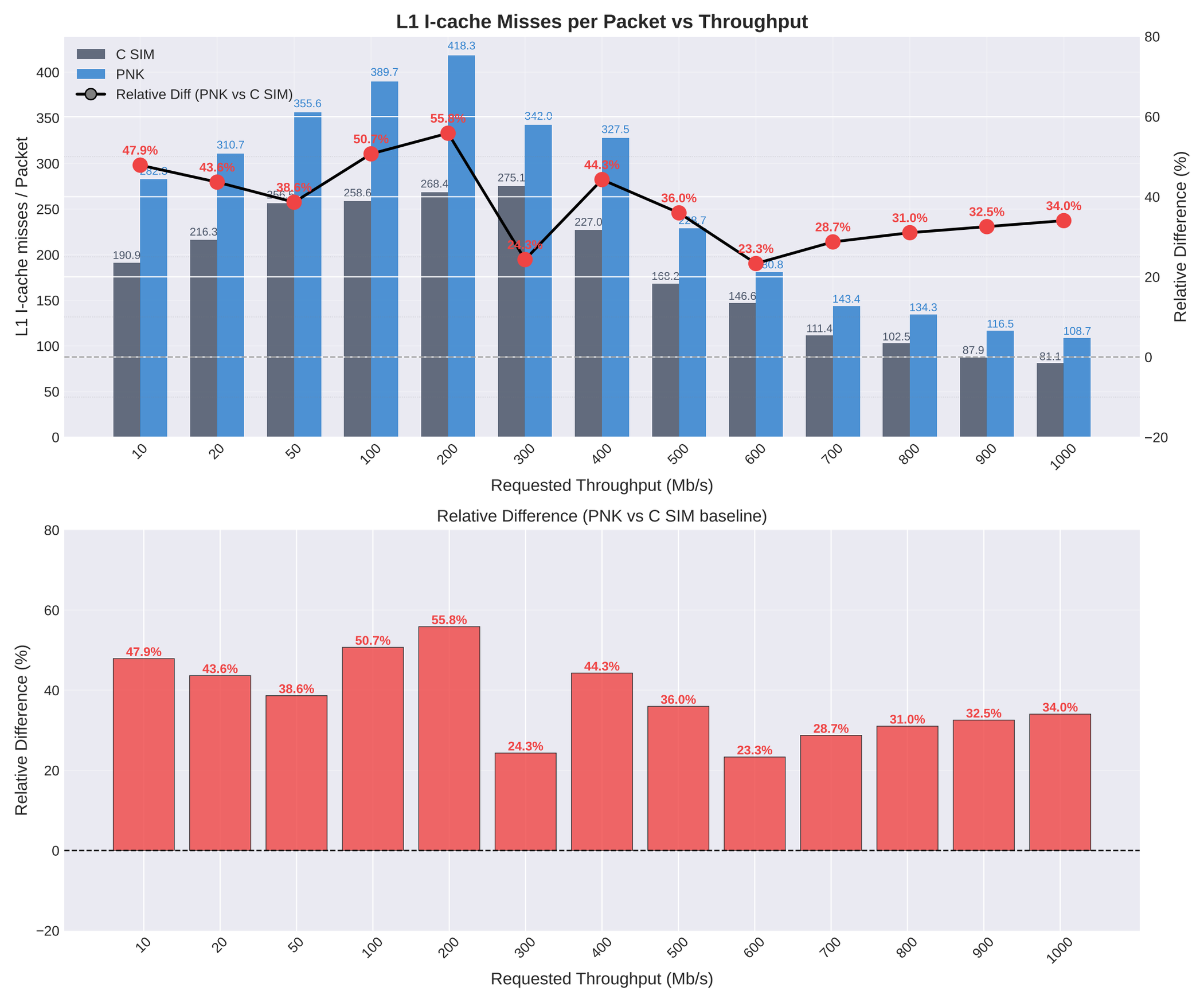

L1 D-TLB Misses (Total) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 D-TLB Misses (Millions)
Relative Difference (%)
Requested Throughput (Mb/s)
10
20
50
100
200
300
400
500
600
700
800
900
1000
5.16
5.80
5.80
6.42
6.93
7.38
7.20
8.23
7.78
9.28
8.42
8.23
7.65
8.11
6.77
7.18
7.07
7.10
7.06
7.30
7.47
7.67
7.72
7.88
7.93
8.13
12.4%
10.7%
6.5%
14.3%
19.3%
-2.3%
6.0%
6.1%
0.4%
3.4%
2.7%
2.1%
2.5%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

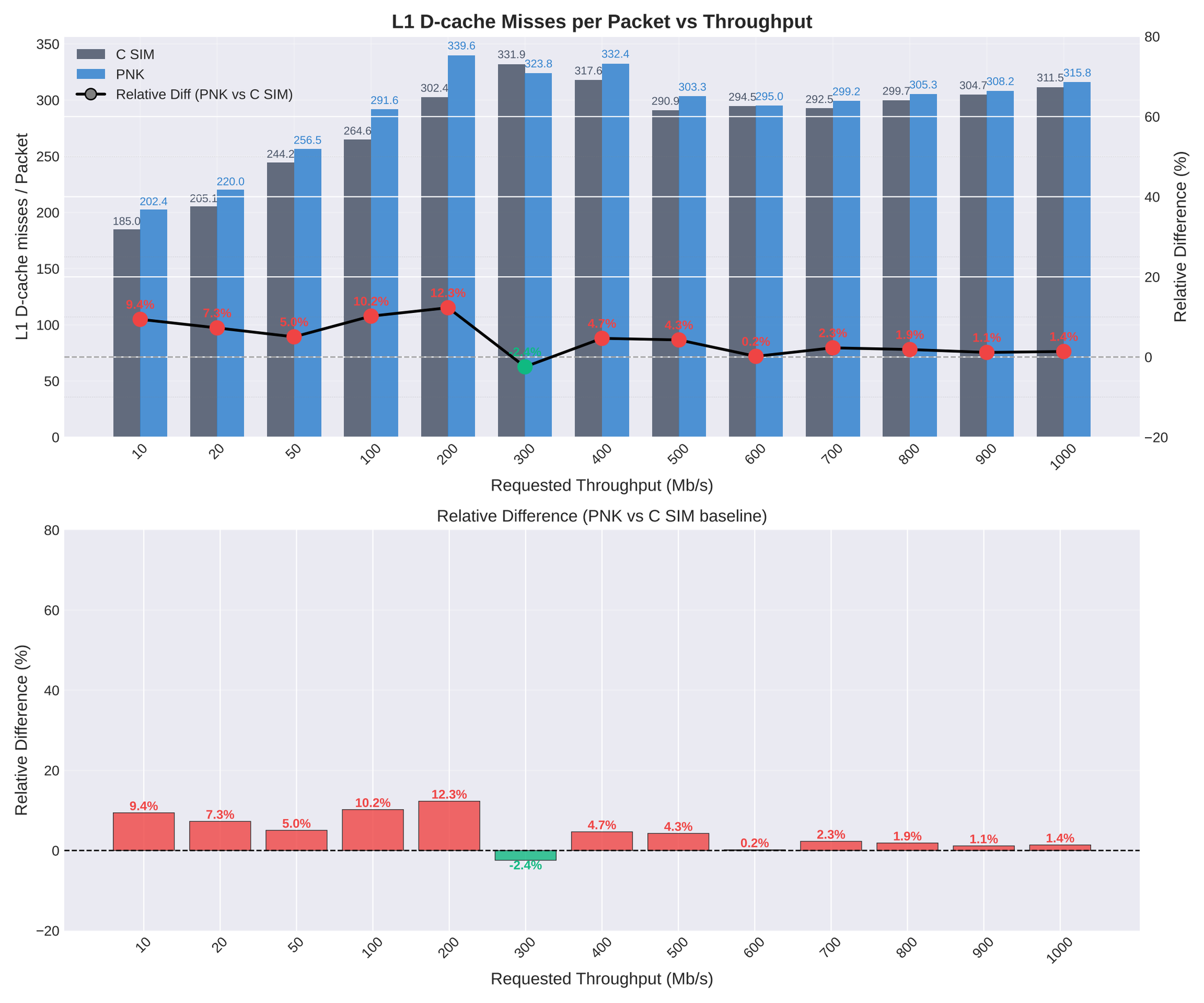

Instructions (Total) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Instructions (Millions)
Relative Difference (%)
Requested Throughput (Mb/s)
183002.2
94224.8
38821.6
42925.5
21772.0
25614.3
12982.0
16704.5
9840.5
14389.6
8826.3
12982.1
-2.5%
-0.2%
10.6%
17.6%
28.7%
46.2%
47.1%
-0.7%
0.5%
-0.2%
0.1%
0.1%
-0.0%

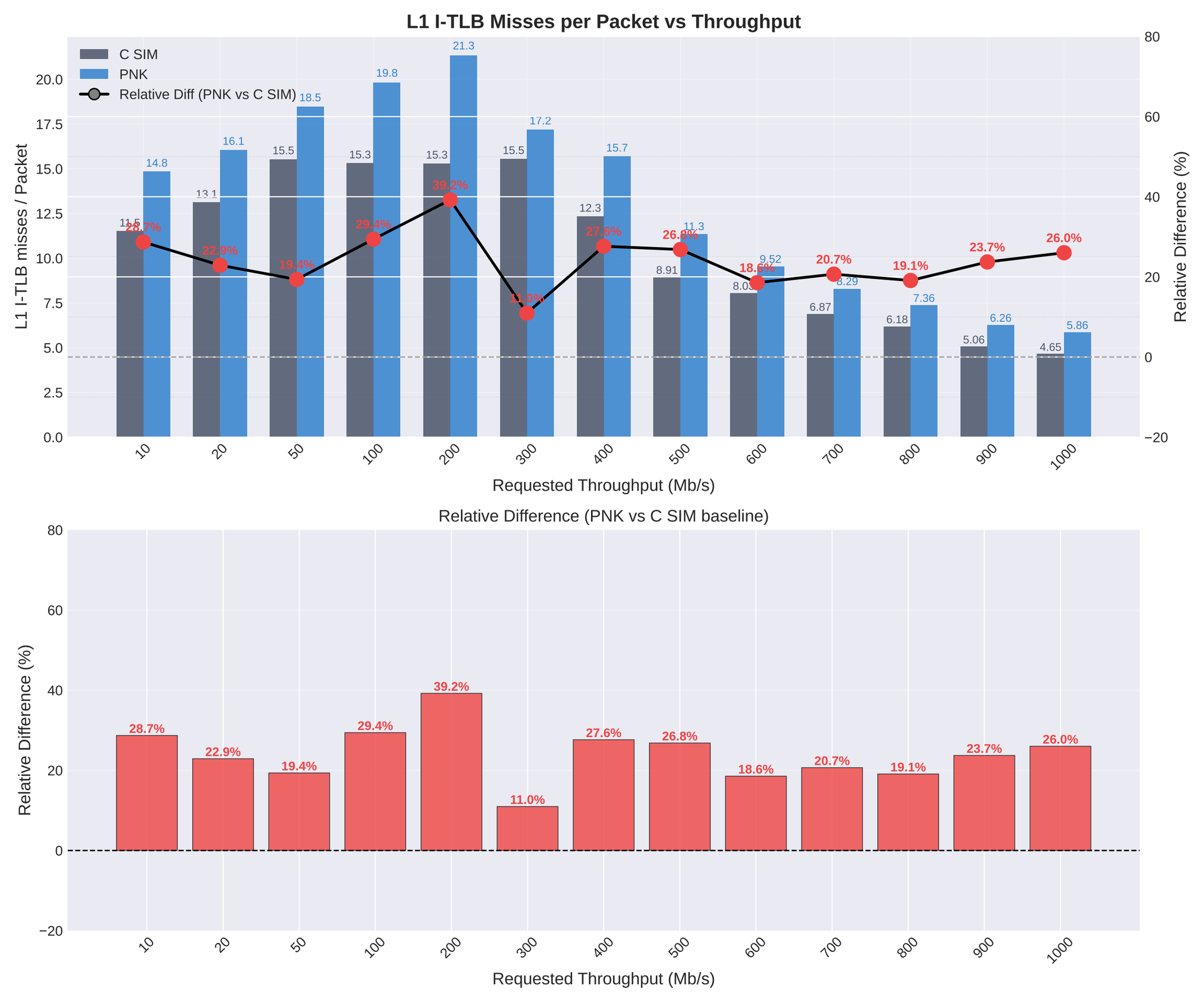

Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)
-2.5%
-0.2%
10.6%
17.6%
28.7%
46.2%
47.1%
-0.7%
0.5%
-0.2%
0.1%

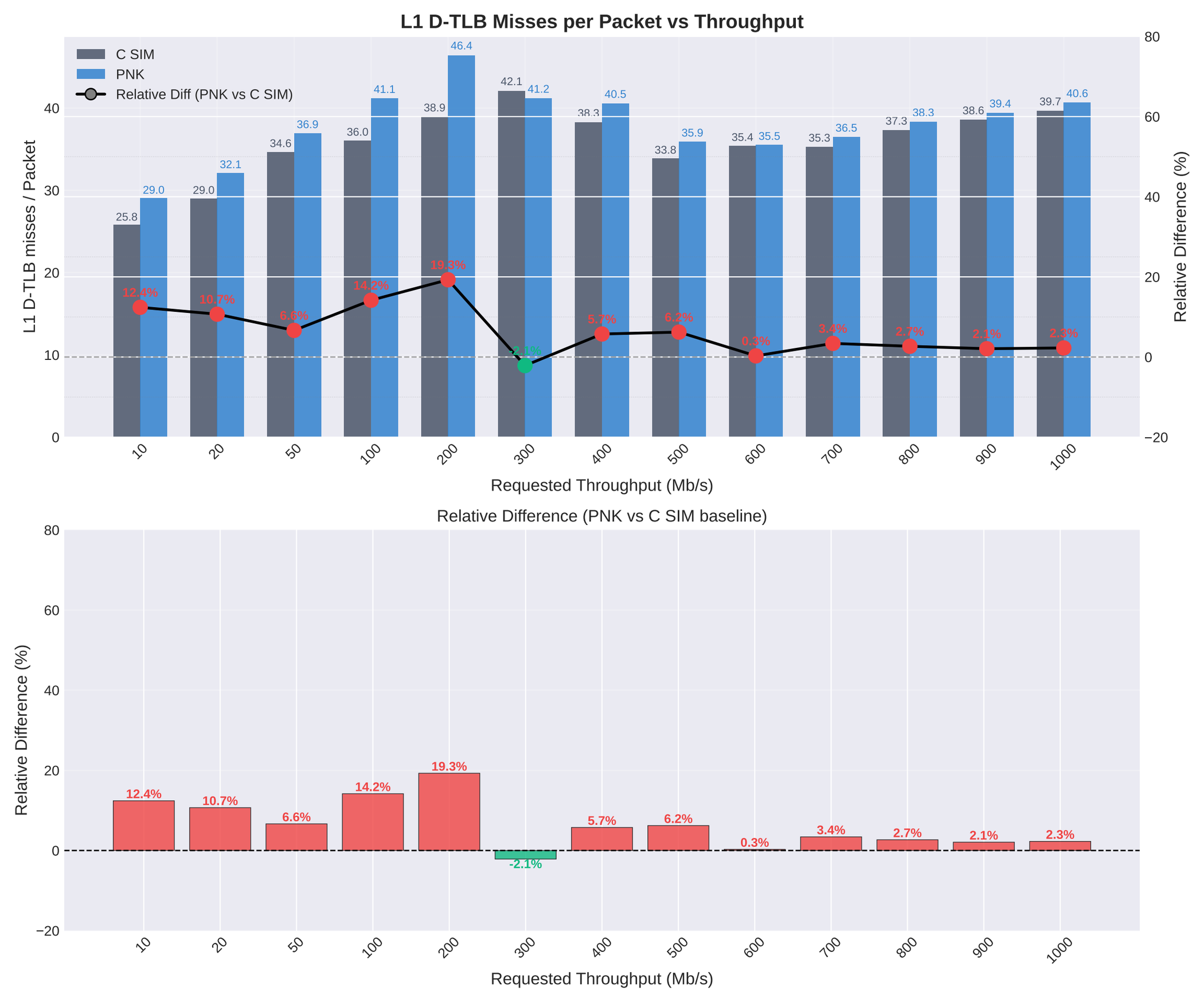

Branch Mispredictions (Total) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Branch Mispredictions (Millions)
Relative Difference (%)
Requested Throughput (Mb/s)
49.2%
48.9%
49.6%
40.8%
41.1%
27.2%
24.5%
17.1%
10.1%
8.7%
5.1%
1.0%
0.0%
9.52
9.94
11.7
14.2
14.8
17.5
20.7
16.8
23.7
18.4
23.4
19.2
23.9
18.7
21.9
18.8
20.7
18.4
20.0
19.6
20.6
20.0
20.2
20.1
20.1

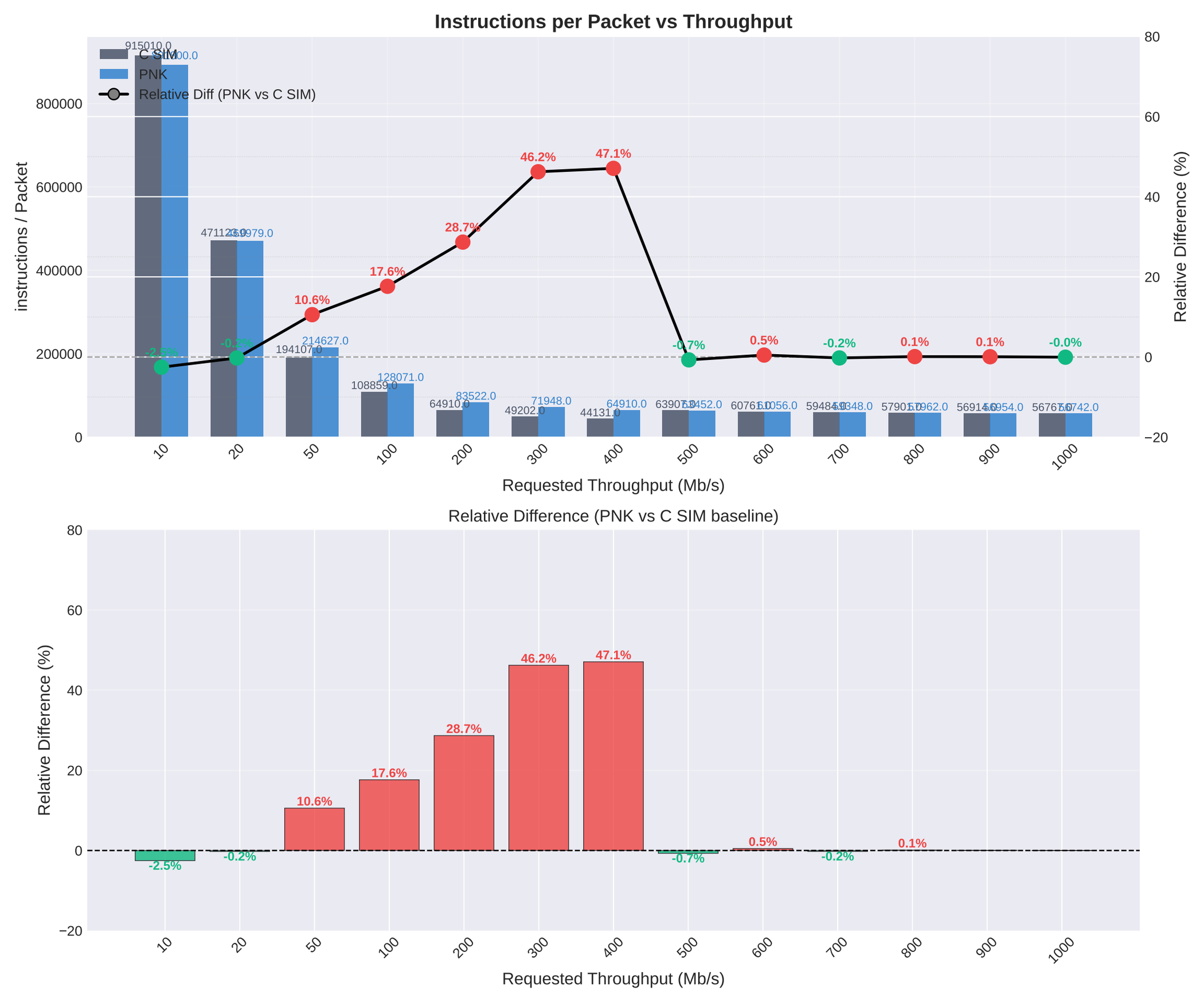

Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)
49.2%
48.9%
49.6%
40.8%
41.1%
27.2%
24.5%
17.1%
10.1%
8.7%
5.1%
1.0%

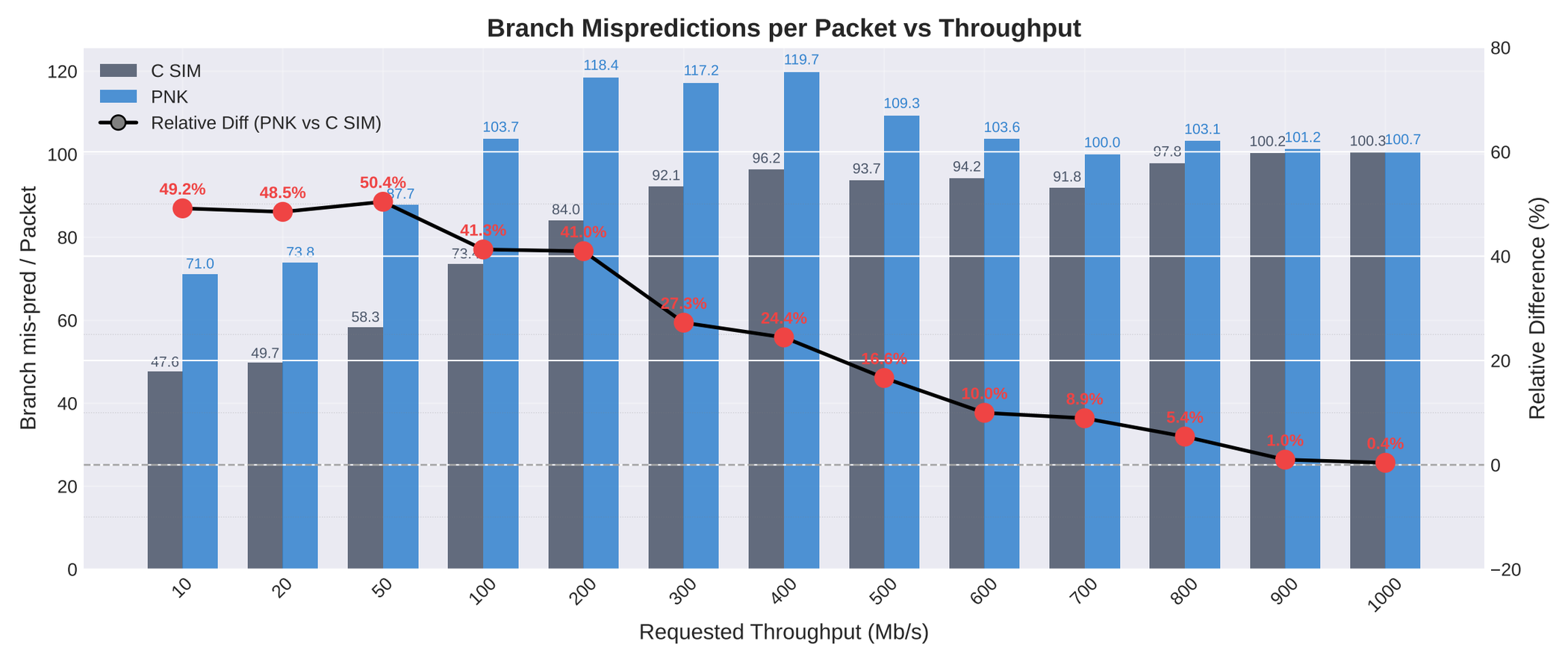

L1 I-cache Misses per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 I-cache misses / Packet
Relative Difference (%)
Requested Throughput (Mb/s)
190.9
282.9
47.9%
216.3
310.7
43.6%
256.5
355.6
38.6%
258.6
389.7
50.7%
268.4
418.3
55.8%
275.1
342.0
24.3%
227.0
327.5
44.3%
168.2
228.7
36.0%
146.6
30.8
23.3%
111.4
143.4
28.7%
102.5
134.3
31.0%
87.9
116.5
32.5%
81.1
108.7
34.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

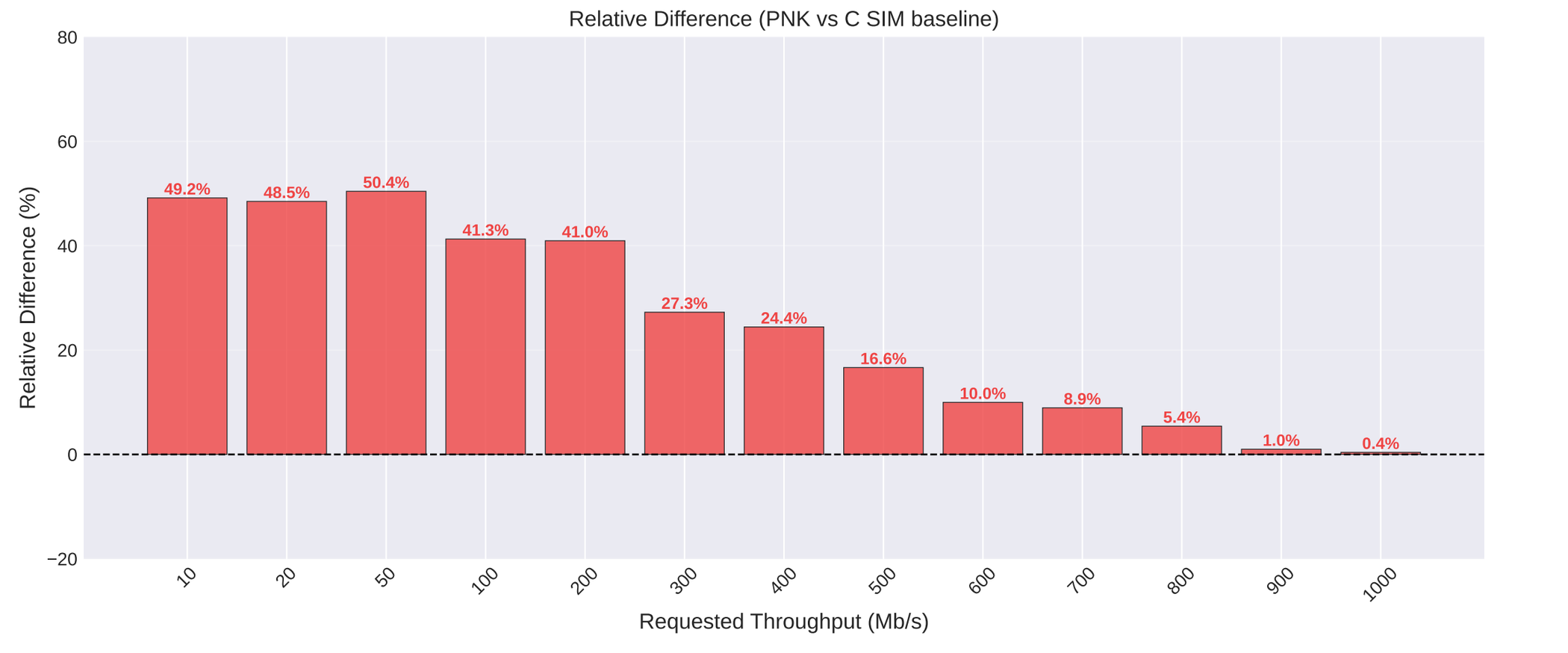

L1 D-cache Misses per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 D-cache misses / Packet
Relative Difference (%)
Requested Throughput (Mb/s)
185.0
202.4
205.1
220.0
244.2
256.5
264.6
291.6
302.4
339.6
331.9
323.8
317.6
332.4
290.9
303.3
294.5
295.0
292.5
299.2
299.7
305.3
304.7
308.2
311.5
315.8
9.4%
7.3%
5.0%
10.2%
12.3%
-2.4%
4.7%
4.3%
0.2%
2.3%
1.9%
1.1%
1.4%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

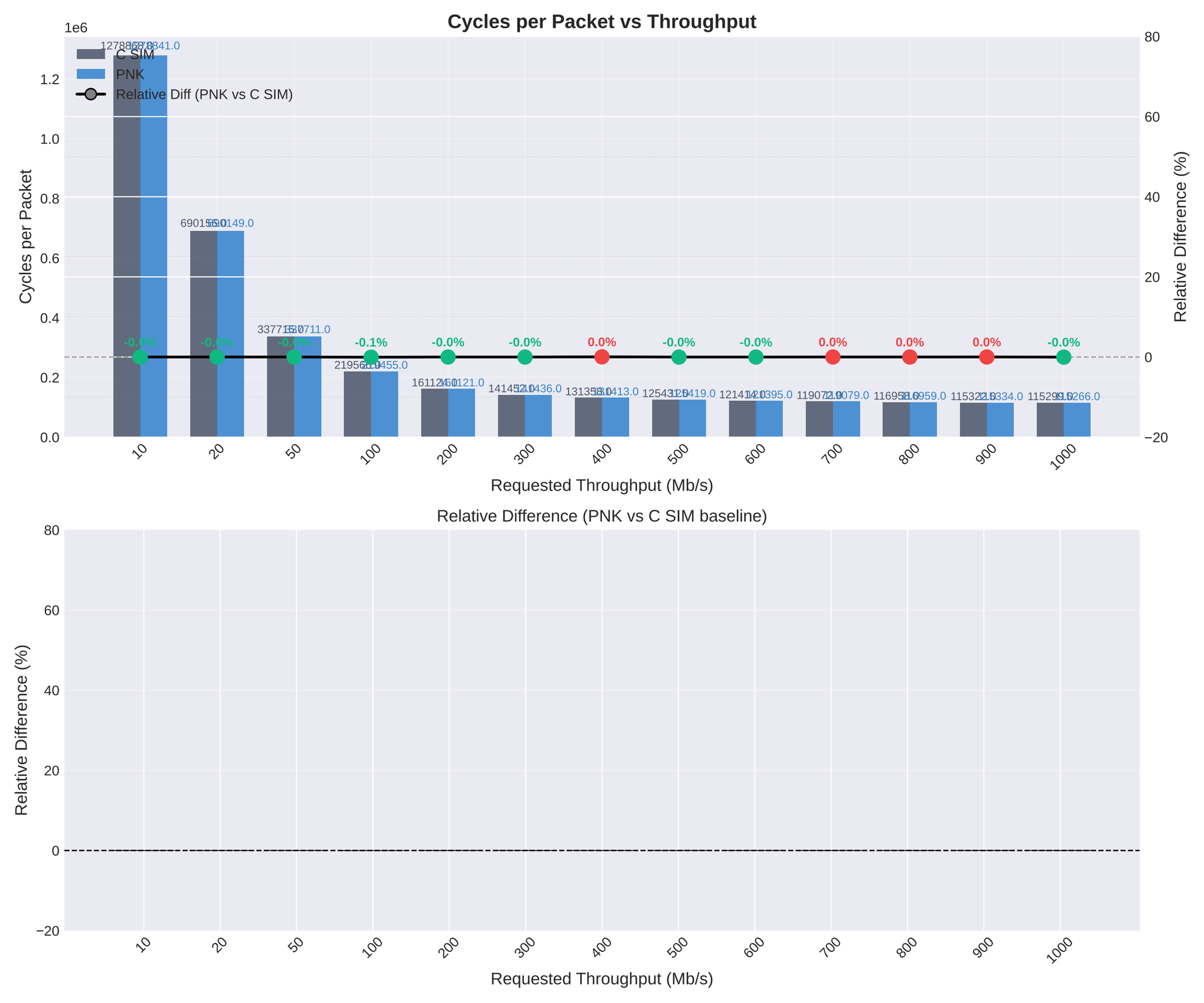

L1 I-TLB Misses per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 I-TLB misses / Packet
Relative Difference (%)
Requested Throughput (Mb/s)
10
20
50
100
200
300
400
500
600
700
800
900
1000
14.8
16.1
18.5
19.8
21.3
17.2
15.7
11.3
9.52
8.29
7.36
6.26
5.86
11.5
13.1
15.5
15.3
15.3
15.5
12.3
8.91
8.03
6.87
6.18
5.06
4.65
28.7%
22.9%
19.4%
29.4%
39.2%
11.0%
27.6%
26.8%
18.6%
20.7%
19.1%
23.7%
26.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

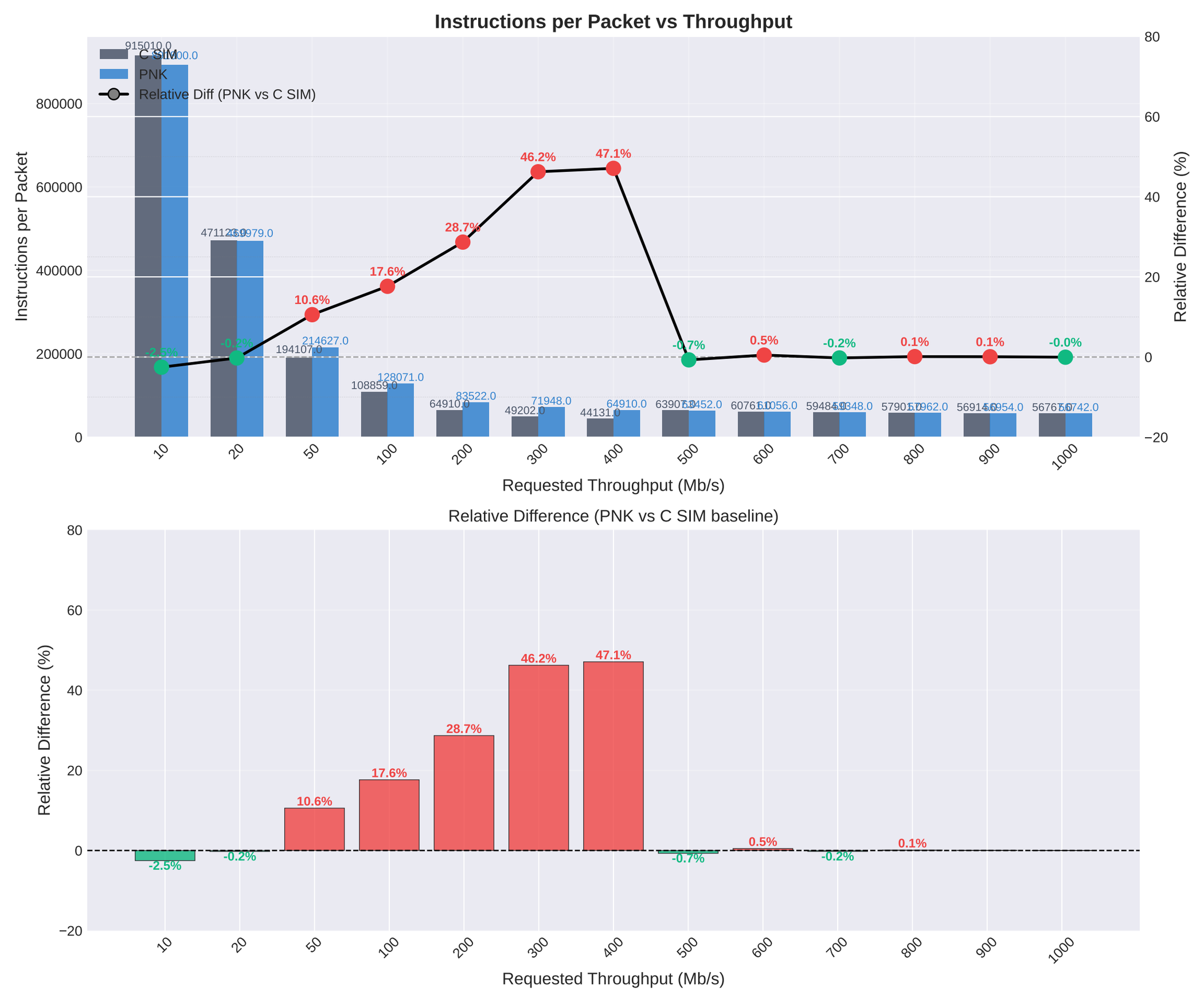

L1 D-TLB Misses per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
L1 D-TLB misses / Packet
Relative Difference (%)
Requested Throughput (Mb/s)
25.8
29.0
29.0
32.1
34.6
36.9
36.0
41.1
38.9
46.4
42.1
41.2
38.3
40.5
33.8
35.9
35.4
35.5
35.3
36.5
37.3
38.3
38.6
39.4
39.7
40.6
12.4%
10.7%
6.6%
14.2%
19.3%
-2.1%
5.7%
6.2%
0.3%
3.4%
2.7%
2.1%
2.3%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

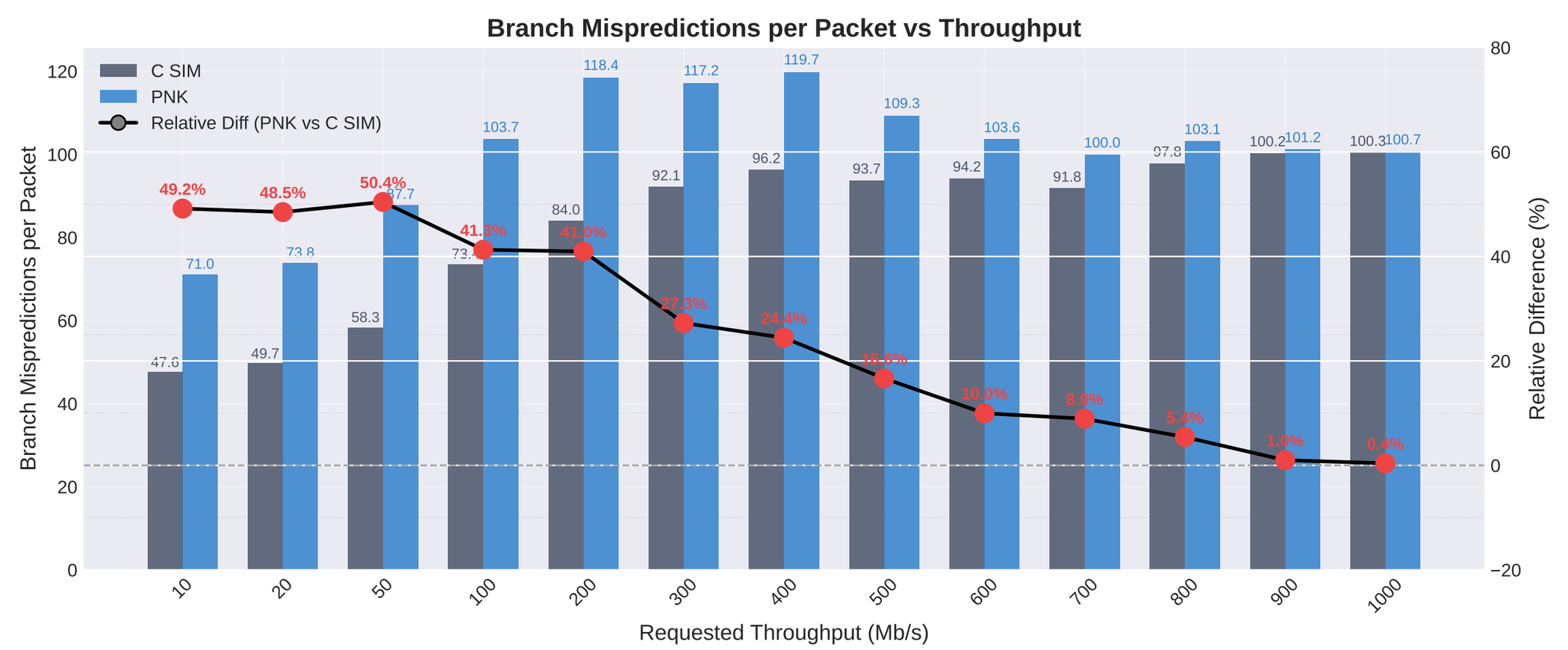

Instructions per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
instructions / Packet
Relative Difference (%)
Requested Throughput (Mb/s)
915010.0
471126.0
194107.0
108859.0
64910.0
49202.0
44131.0
214627.0
128071.0
83522.0
71948.0
64910.0
-2.5%
-0.2%
10.6%
17.6%
28.7%
46.2%
47.1%
-0.7%
0.5%
-0.2%
0.1%
0.1%
-0.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

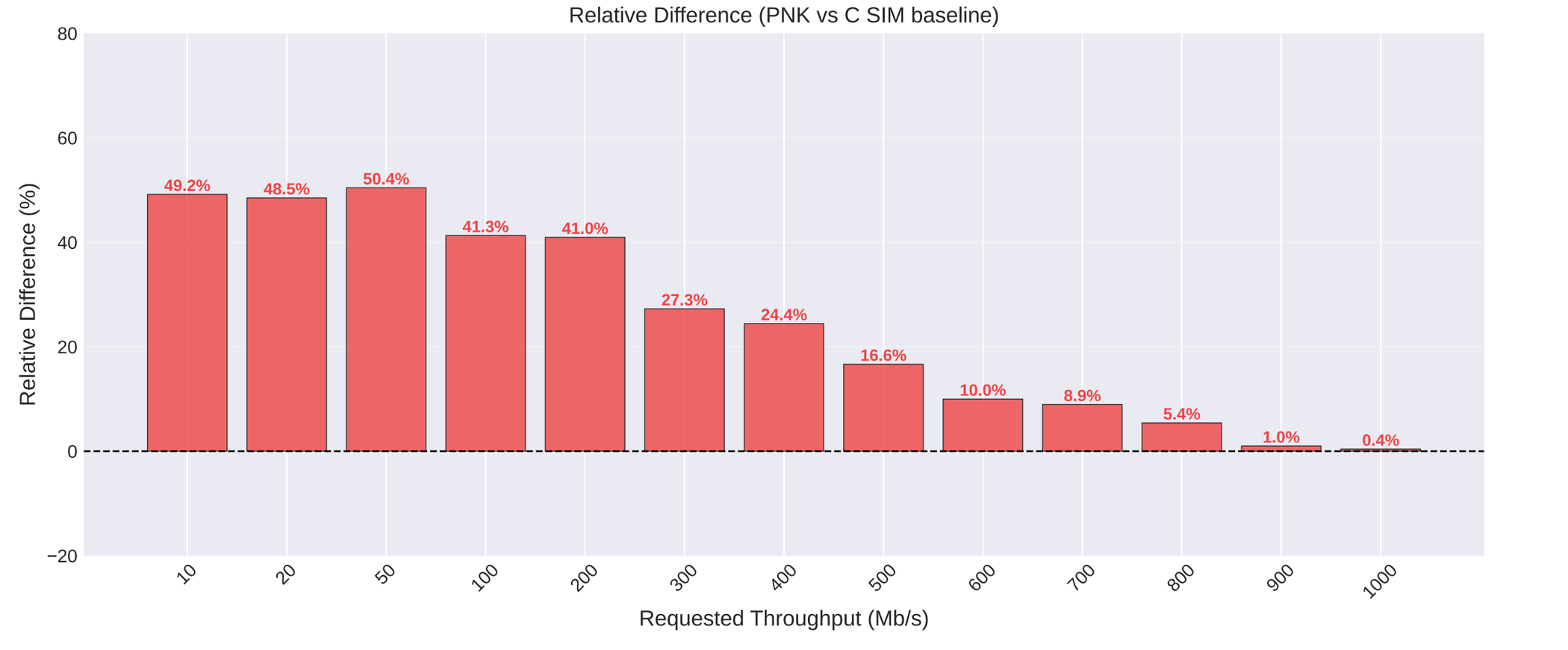

Branch Mispredictions per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Branch mis-pred / Packet
Relative Difference (%)
Requested Throughput (Mb/s)
10
20
50
100
200
300
400
500
600
700
800
900
1000
47.6
71.0
49.7
73.8
58.3
87.7
73.4
103.7
84.0
118.4
92.1
117.2
96.2
119.7
93.7
109.3
94.2
103.6
91.8
100.0
97.8
103.1
100.2
101.2
100.3
100.7
49.2%
48.5%
50.4%
41.3%
41.0%
27.3%
24.4%
16.6%
10.0%
8.9%
5.4%
1.0%
0.4%


Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)
10
20
50
100
200
300
400
500
600
700
800
900
1000
49.2%
48.5%
50.4%
41.3%
41.0%
27.3%
24.4%
16.6%
10.0%
8.9%
5.4%
1.0%
0.4%

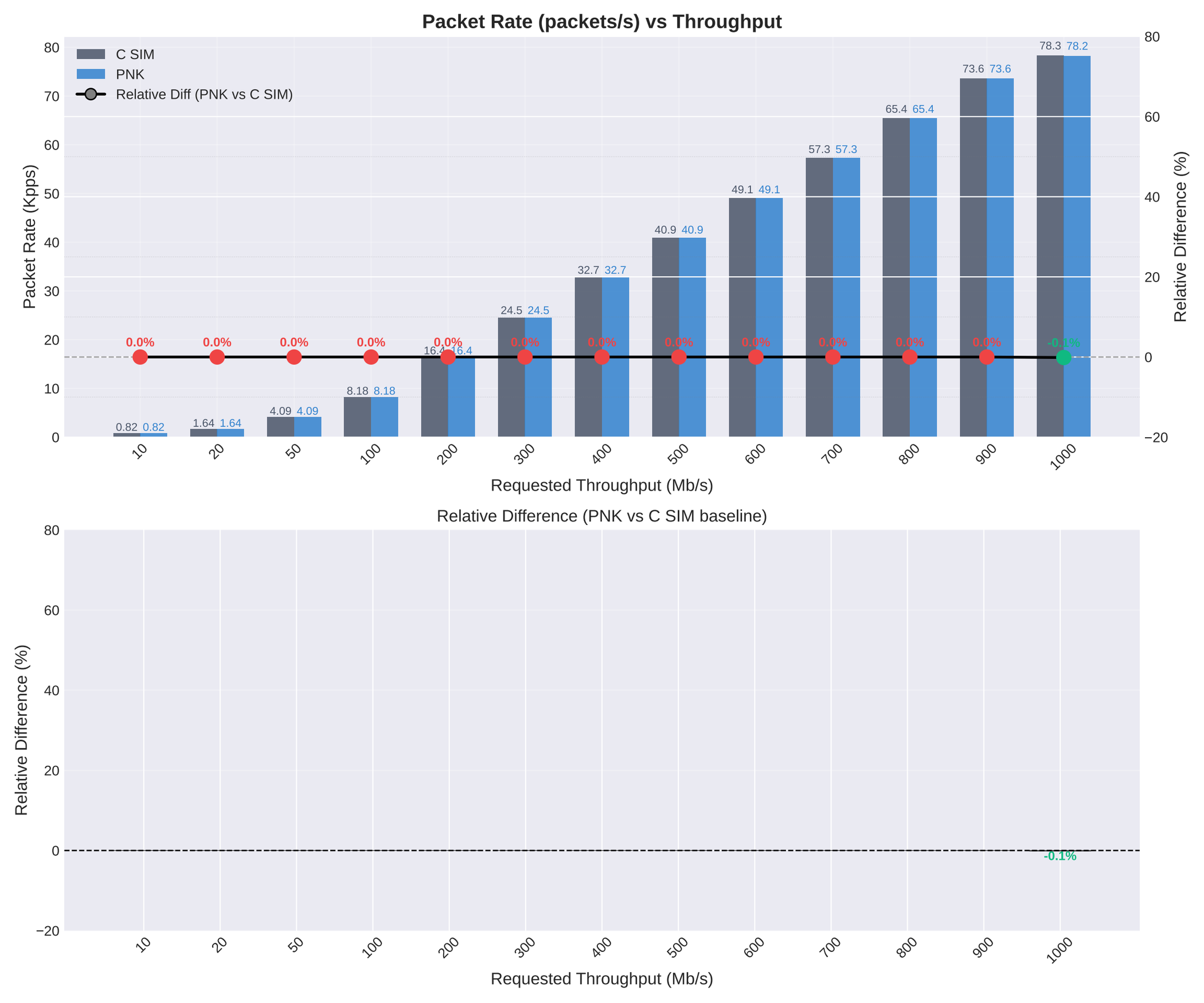

Cycles per Packet vs Throughput
1e6
C SIM
PNK
Relative Diff (PNK vs C SIM)
Cycles per Packet
Relative Difference (%)
Requested Throughput (Mb/s)
-0.0%
-0.0%
-0.0%
-0.1%
-0.0%
-0.0%
0.0%
-0.0%
-0.0%
0.0%
0.0%
0.0%
-0.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

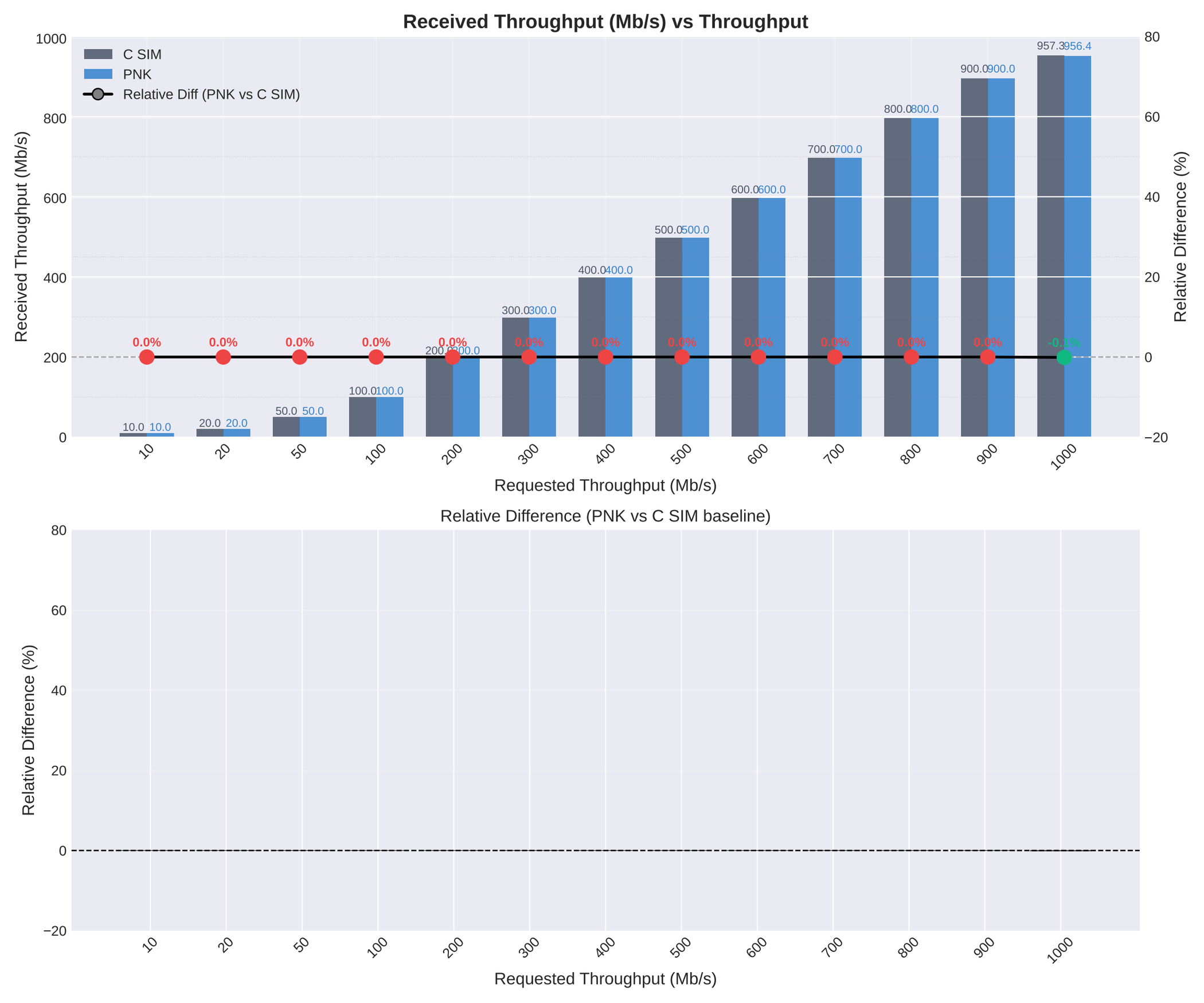

Instructions per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Instructions per Packet
Relative Difference (%)
Requested Throughput (Mb/s)
915010.0
471126.0
194107.0
108859.0
64910.0
49202.0
44131.0
-2.5%
-0.2%
10.6%
17.6%
28.7%
46.2%
47.1%
-0.7%
0.5%
-0.2%
0.1%
0.1%
-0.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)

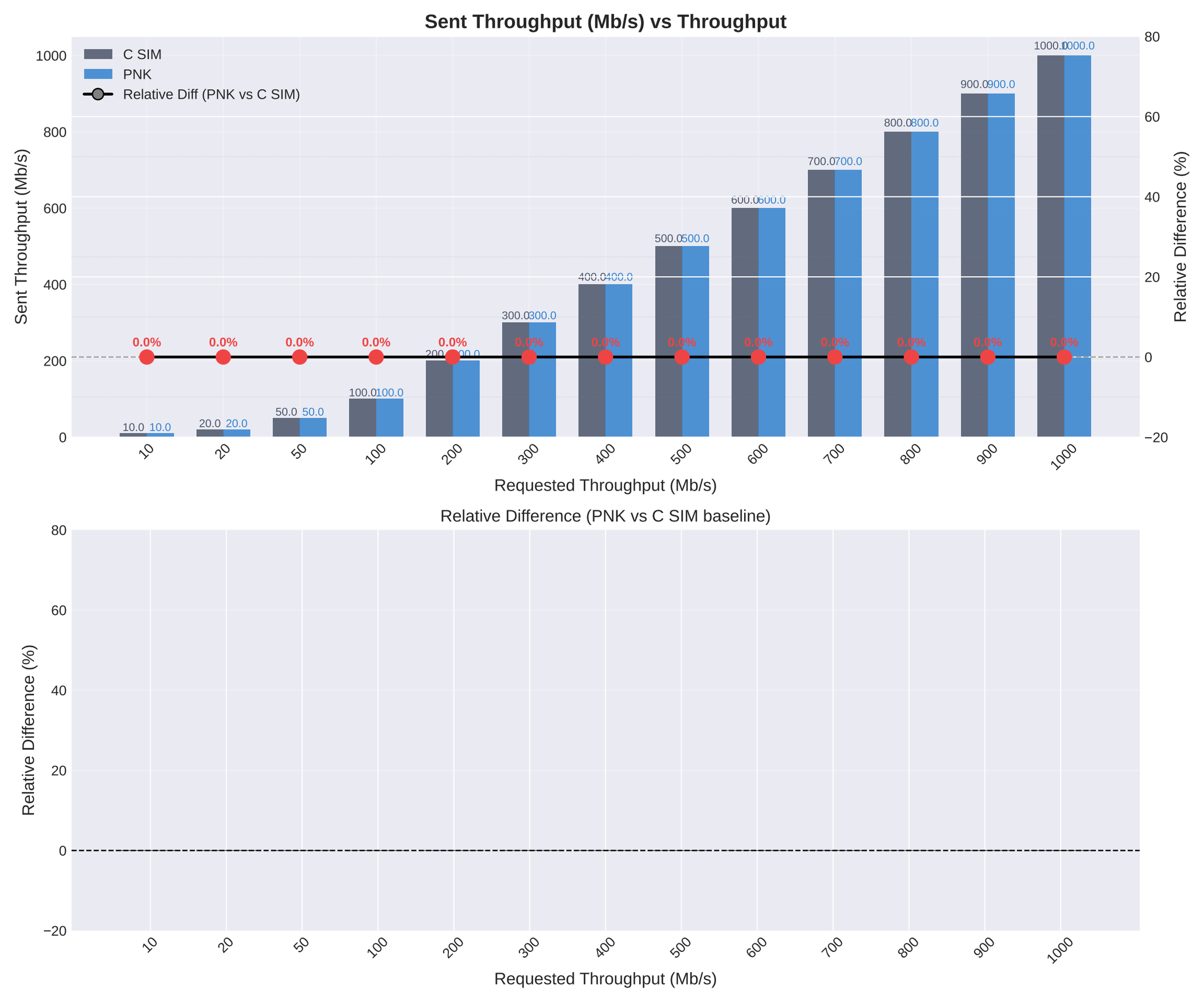

Branch Mispredictions per Packet vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Branch Mispredictions per Packet
Relative Difference (%)
Requested Throughput (Mb/s)
47.6
71.0
49.7
73.8
58.3
87.7
73.4
103.7
84.0
118.4
92.1
117.2
96.2
119.7
93.7
109.3
94.2
103.6
91.8
100.0
97.8
103.1
100.2
101.2
100.3
100.7
49.2%
48.5%
50.4%
41.3%
41.0%
27.3%
24.4%
16.6%
10.0%
8.9%
5.4%
1.0%
0.4%


Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)
49.2%
48.5%
50.4%
41.3%
41.0%
27.3%
24.4%
16.6%
10.0%
8.9%
5.4%
1.0%
0.4%

Mean Round-Trip Time (µs) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Mean Round-Trip Time (µs)
Relative Difference (%)
Requested Throughput (Mb/s)
-3.5%
-3.4%
2.2%
1.1%
2.4%
7.4%
5.8%
6.4%
3.2%
-0.5%
0.7%
-0.8%
0.3%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)


Packet Rate (packets/s) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Packet Rate (Kpps)
Relative Difference (%)
Requested Throughput (Mb/s)
0.82 0.82
1.64 1.64
4.09 4.09
8.18 8.18
16.4 16.4
24.5 24.5
32.7 32.7
40.9 40.9
49.1 49.1
57.3 57.3
65.4 65.4
73.6 73.6
78.3 78.2
0.0%
-0.1%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)
-0.1%


Received Throughput (Mb/s) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Received Throughput (Mb/s)
Relative Difference (%)
Requested Throughput (Mb/s)
10.0 10.0
20.0 20.0
50.0 50.0
100.0 100.0
200.0 200.0
300.0 300.0
400.0 400.0
500.0 500.0
600.0 600.0
700.0 700.0
800.0 800.0
900.0 900.0
957.3 956.4
0.0%
-0.1%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)


Sent Throughput (Mb/s) vs Throughput
C SIM
PNK
Relative Diff (PNK vs C SIM)
Sent Throughput (Mb/s)
Relative Difference (%)
Requested Throughput (Mb/s)
0.0%
Relative Difference (PNK vs C SIM baseline)
Relative Difference (%)
Requested Throughput (Mb/s)