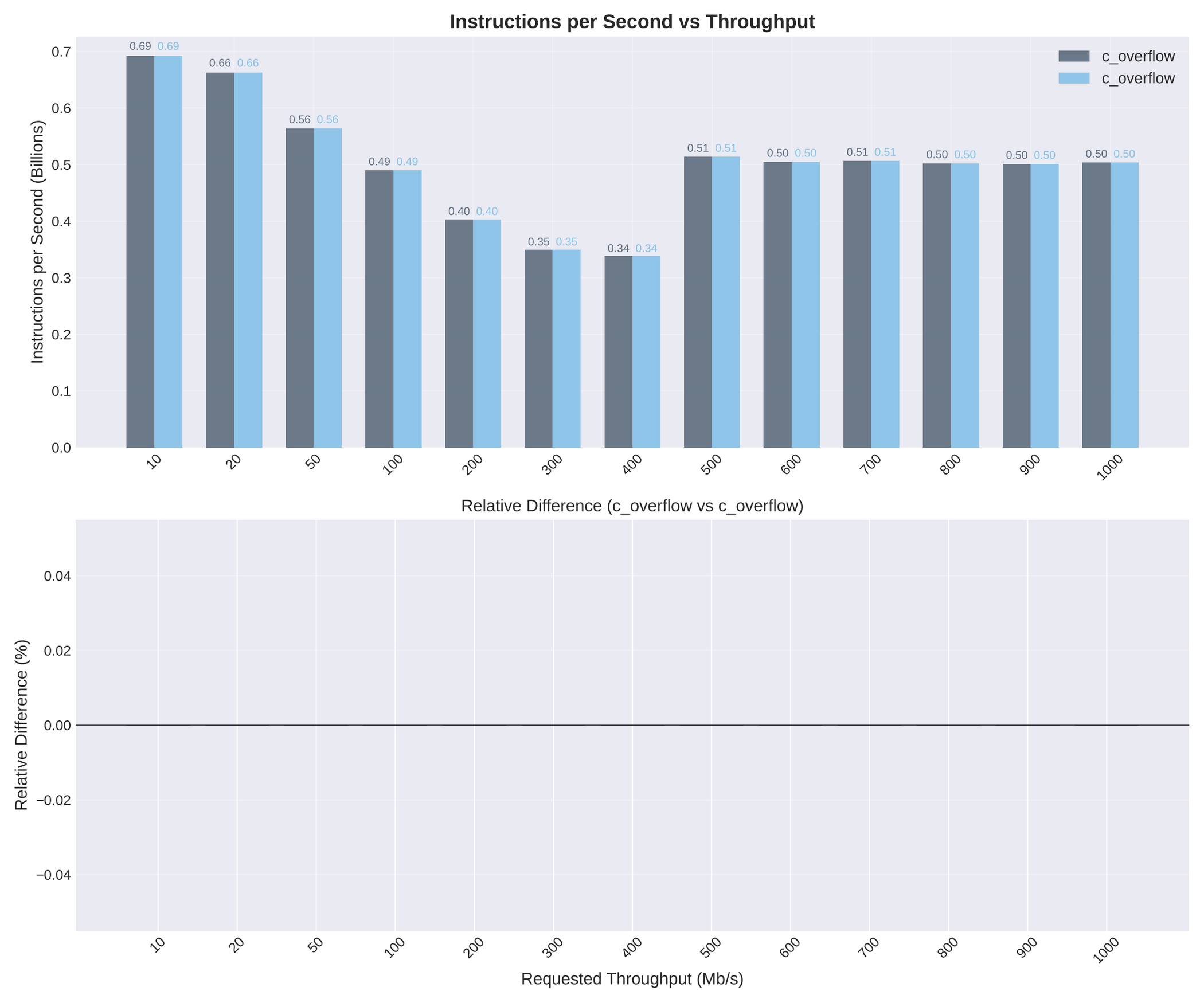
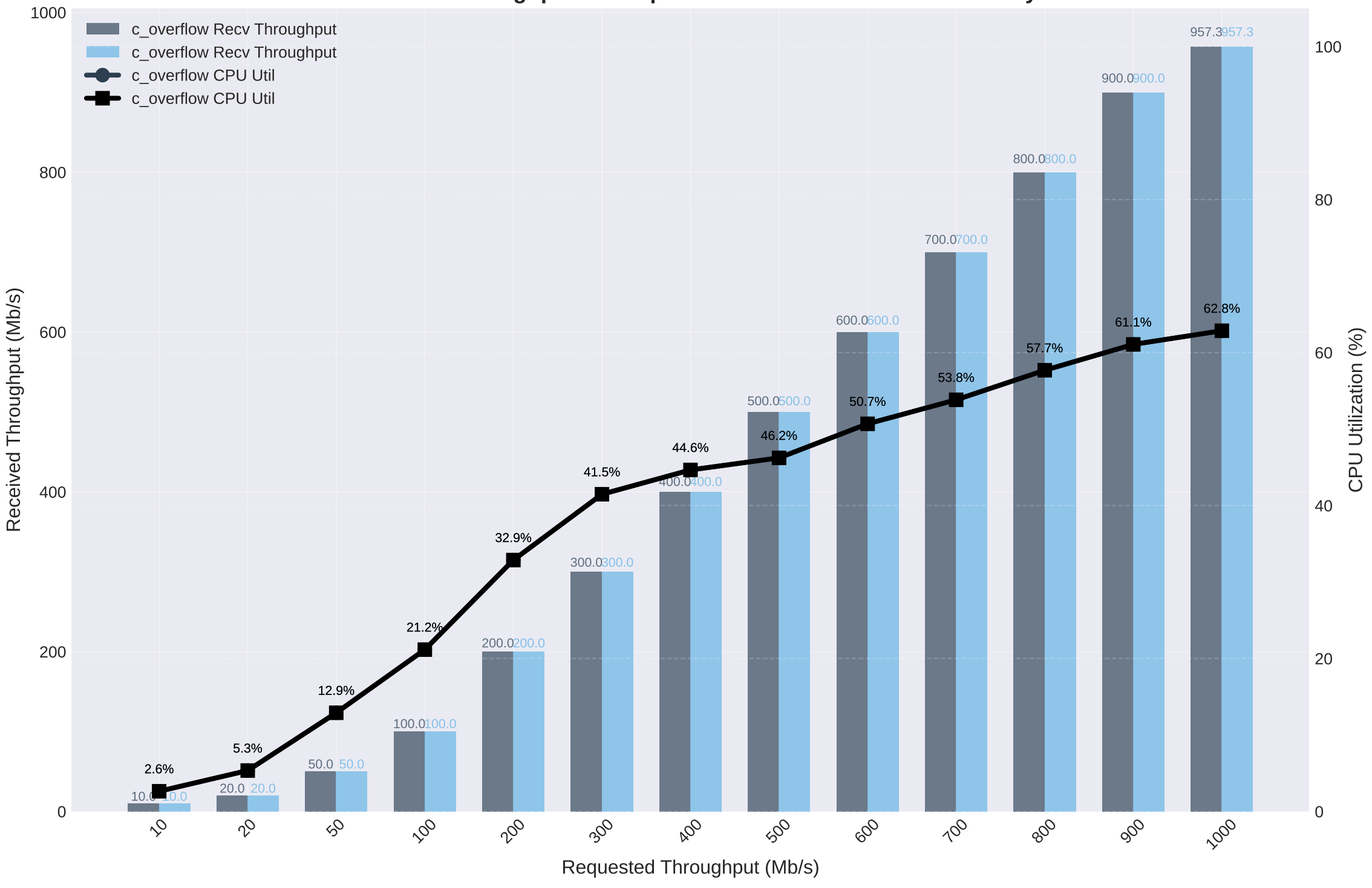
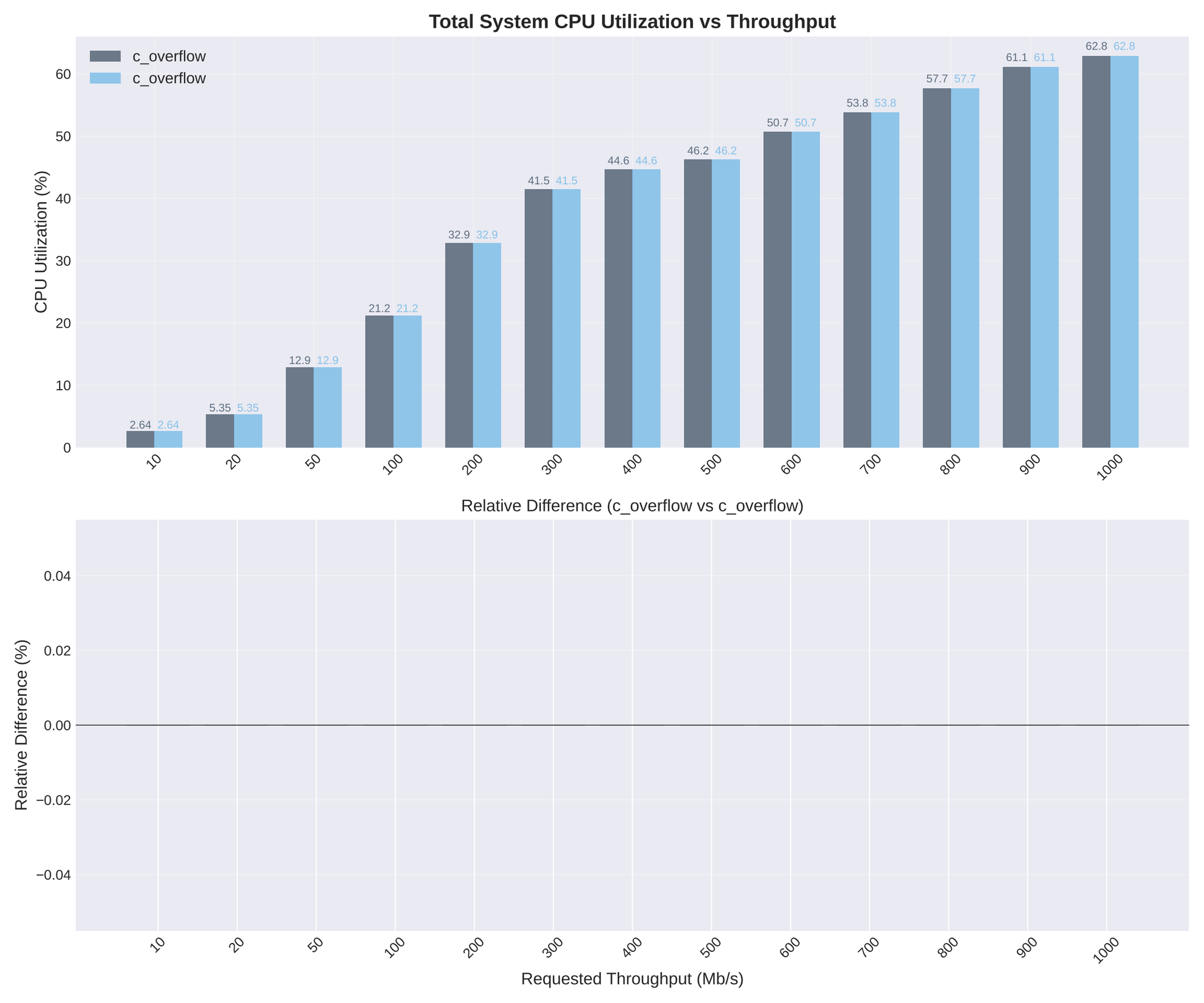
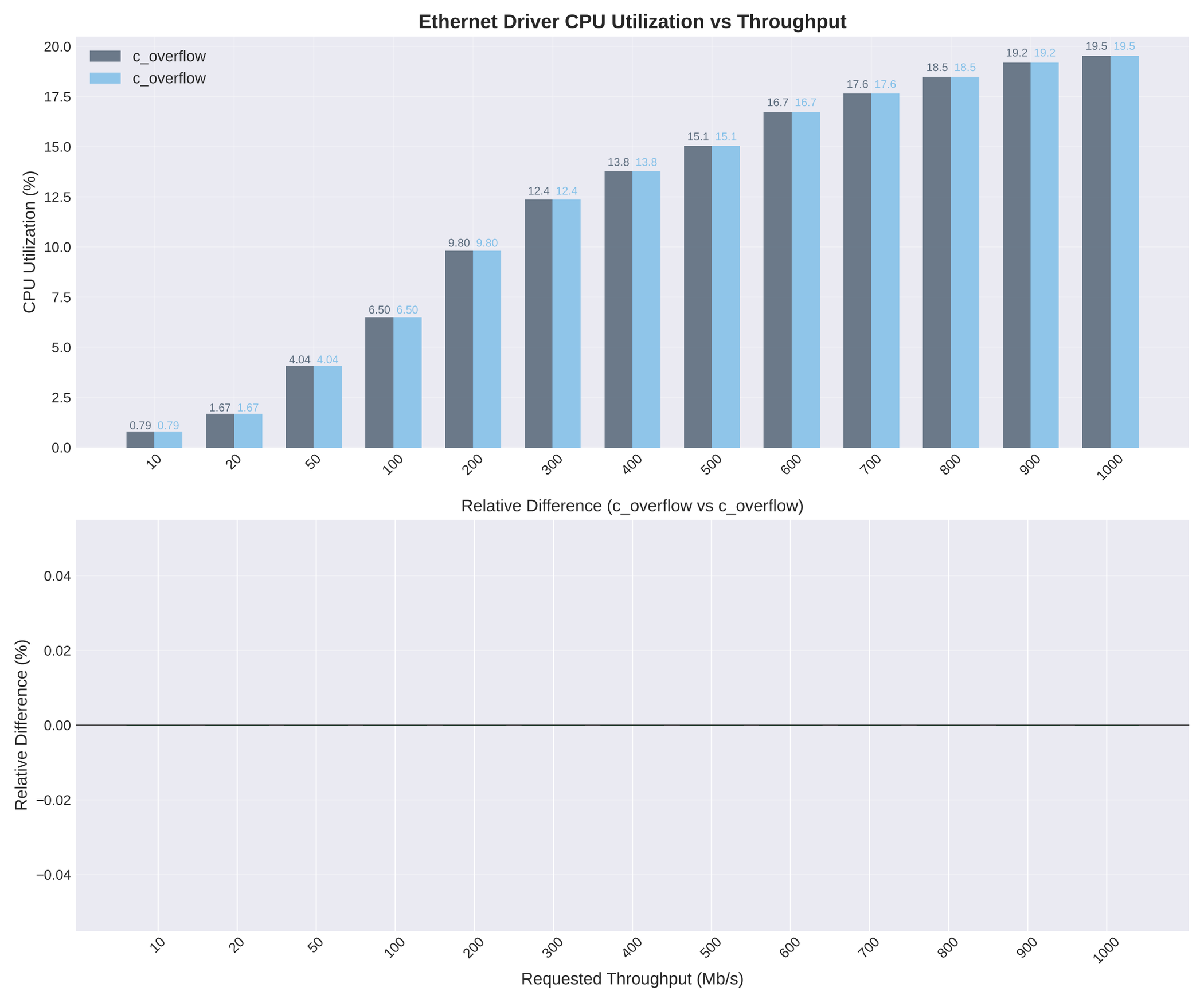
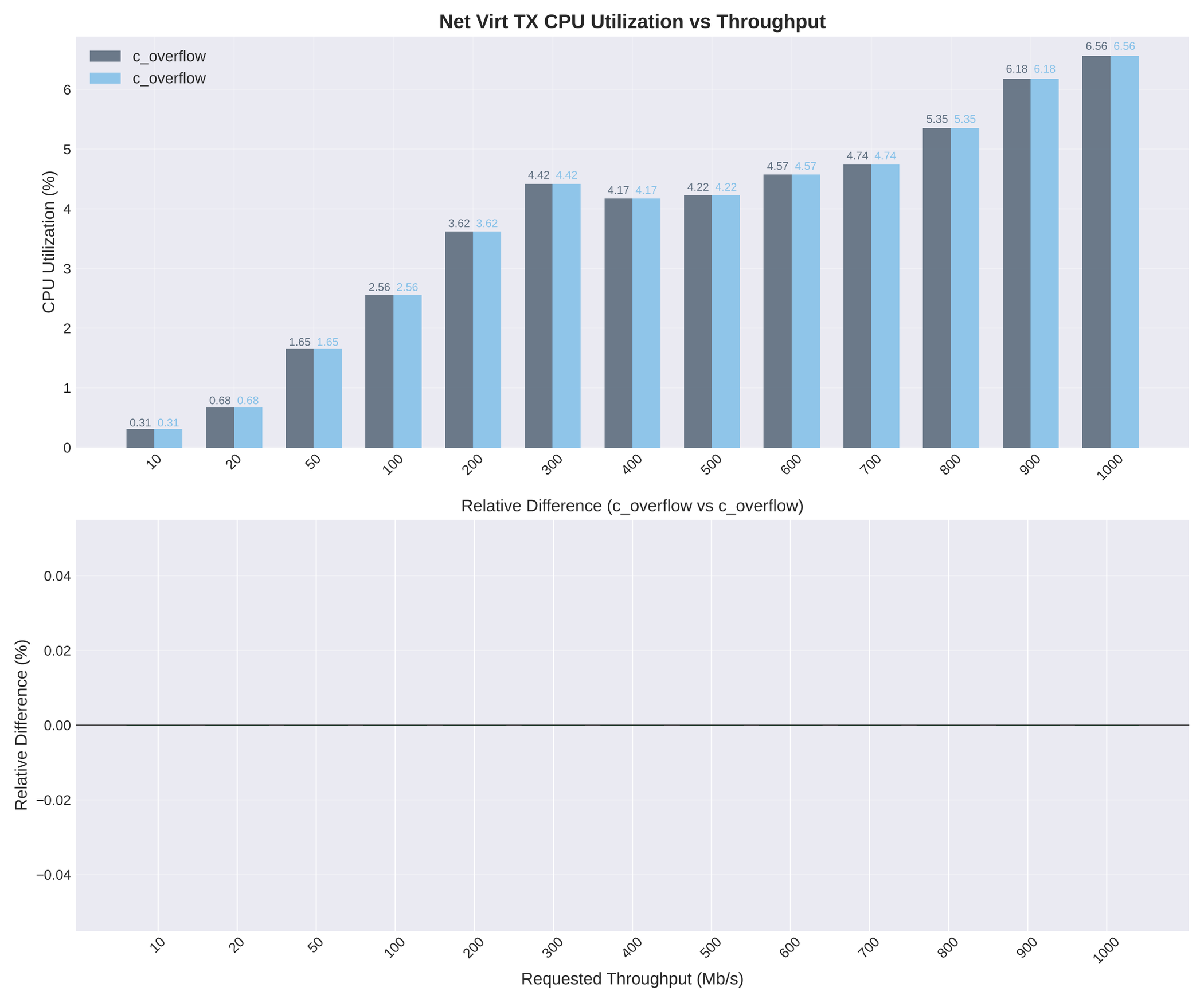
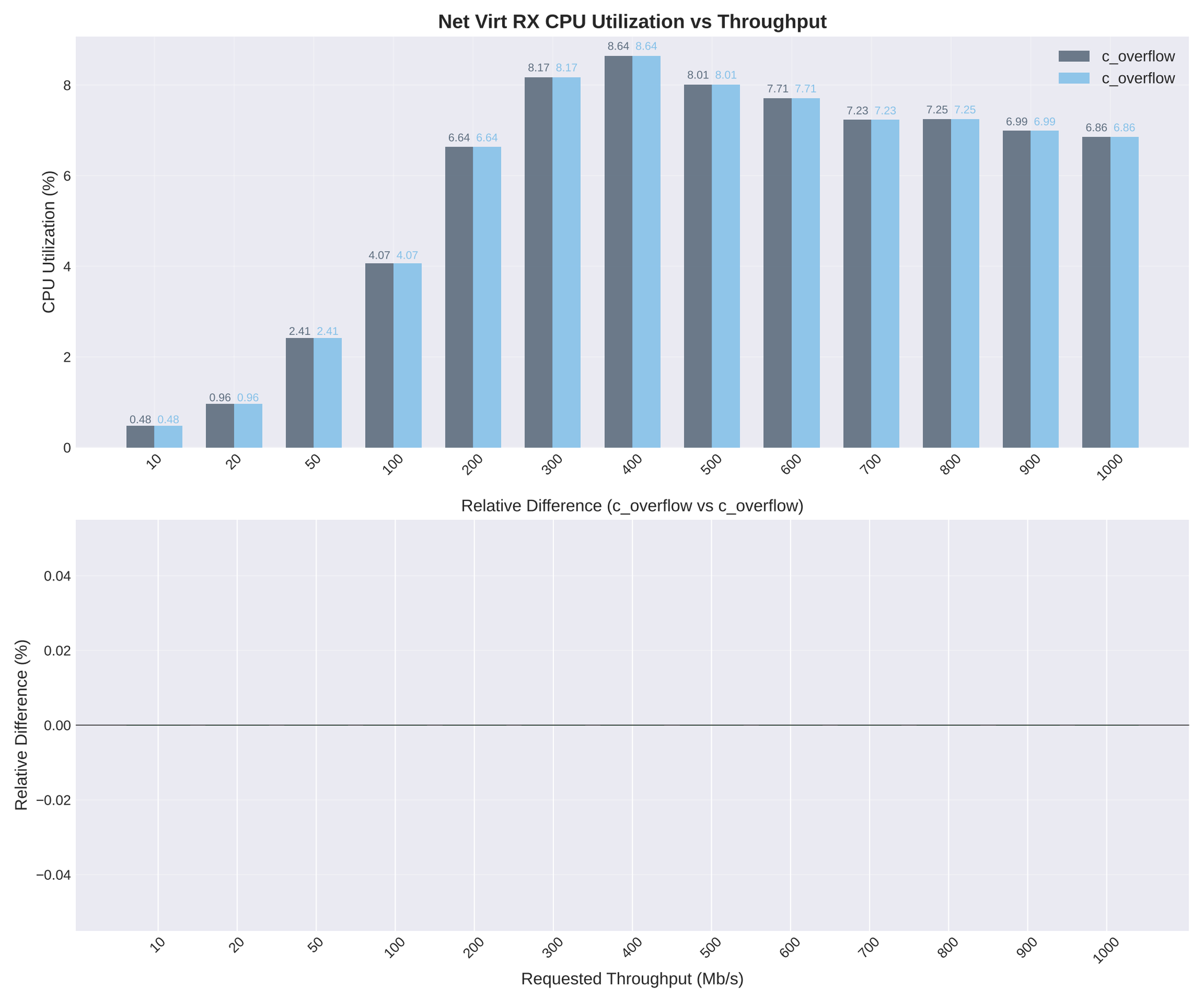

Instructions per Second vs Throughput
c_overflow
c_overflow
Instructions per Second (Billions)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.69 0.69
0.66 0.66
0.56 0.56
0.49 0.49
0.40 0.40
0.35 0.35
0.34 0.34
0.51 0.51
0.50 0.50
0.51 0.51
0.50 0.50
0.50 0.50
0.50 0.50
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

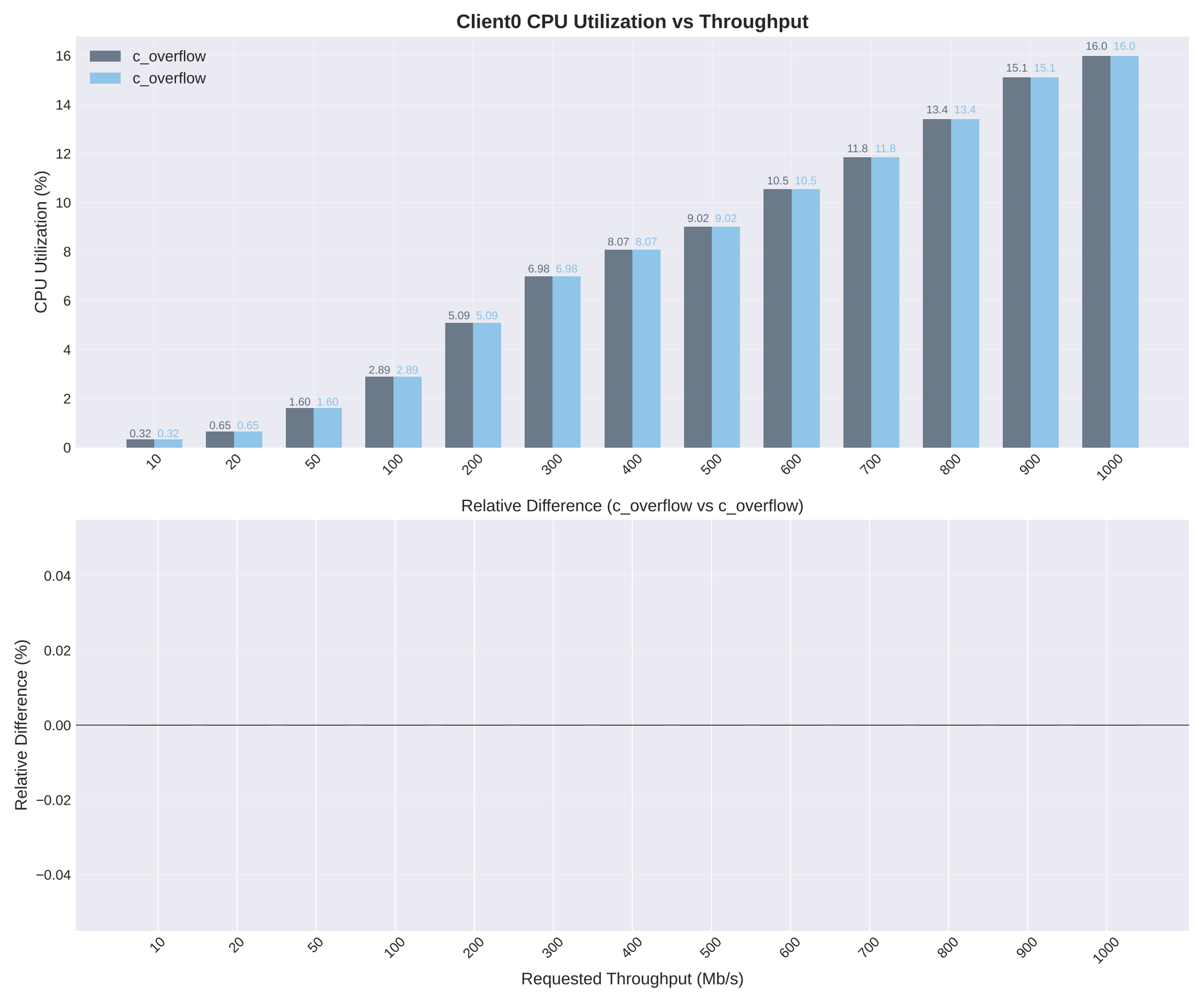

Received Throughput vs Requested with CPU Utilization Overlay
c_overflow Recv Throughput
c_overflow Recv Throughput
c_overflow CPU Util
c_overflow CPU Util
Received Throughput (Mb/s)
CPU Utilization (%)
Requested Throughput (Mb/s)
0
200
400
600
800
1000
0
20
40
60
80
100
10
20
50
100
200
300
400
500
600
700
800
900
1000
10.0 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
957.3 957.3
2.6%
5.3%
12.9%
21.2%
32.9%
41.5%
44.6%
46.2%
50.7%
53.8%
57.7%
61.1%
62.8%

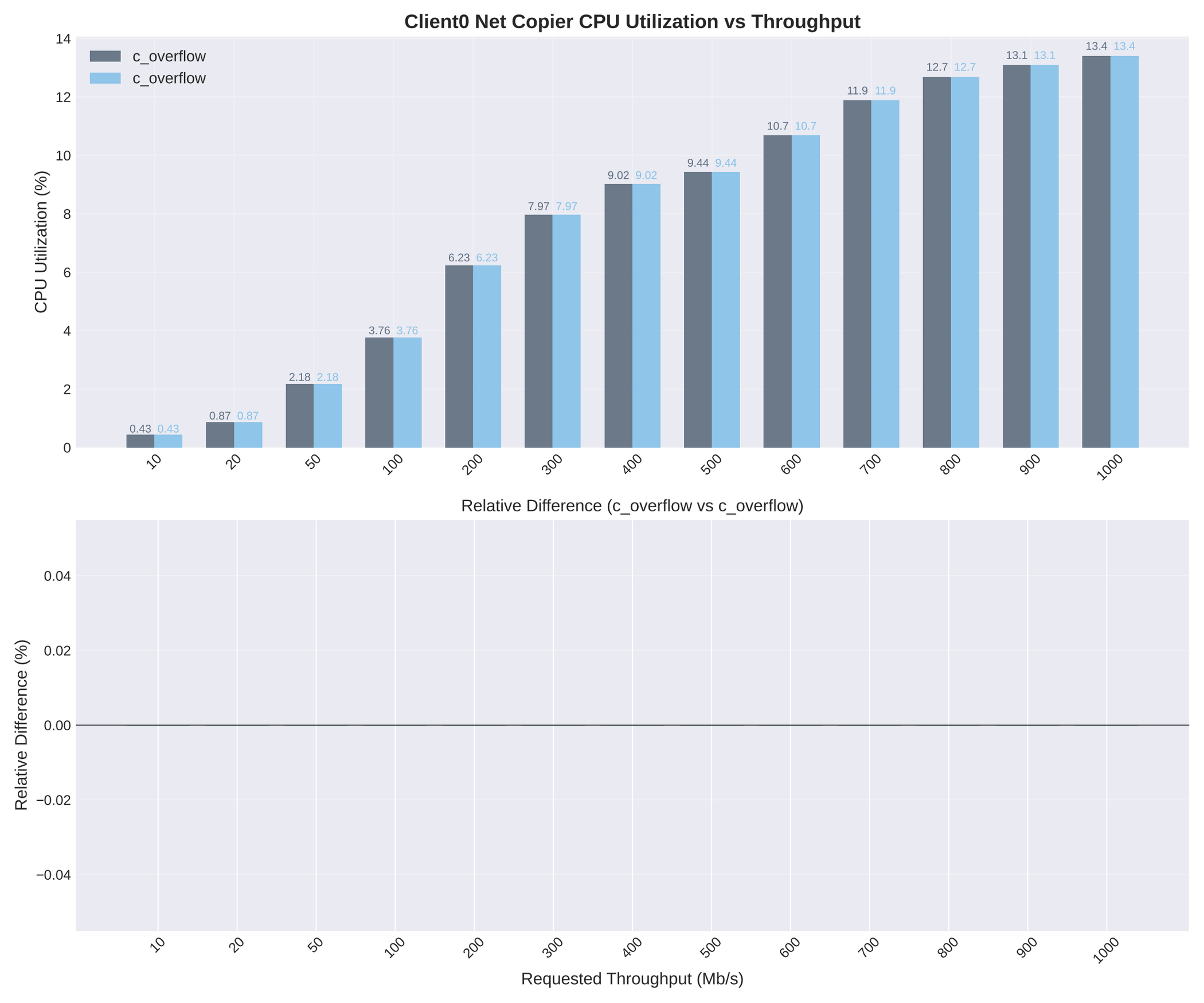

Total System CPU Utilization vs Throughput
c_overflow
c_overflow
CPU Utilization (%)
0
10
20
30
40
50
60
2.64 2.64
5.35 5.35
12.9 12.9
21.2 21.2
32.9 32.9
41.5 41.5
44.6 44.6
46.2 46.2
50.7 50.7
53.8 53.8
57.7 57.7
61.1 61.1
62.8 62.8
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

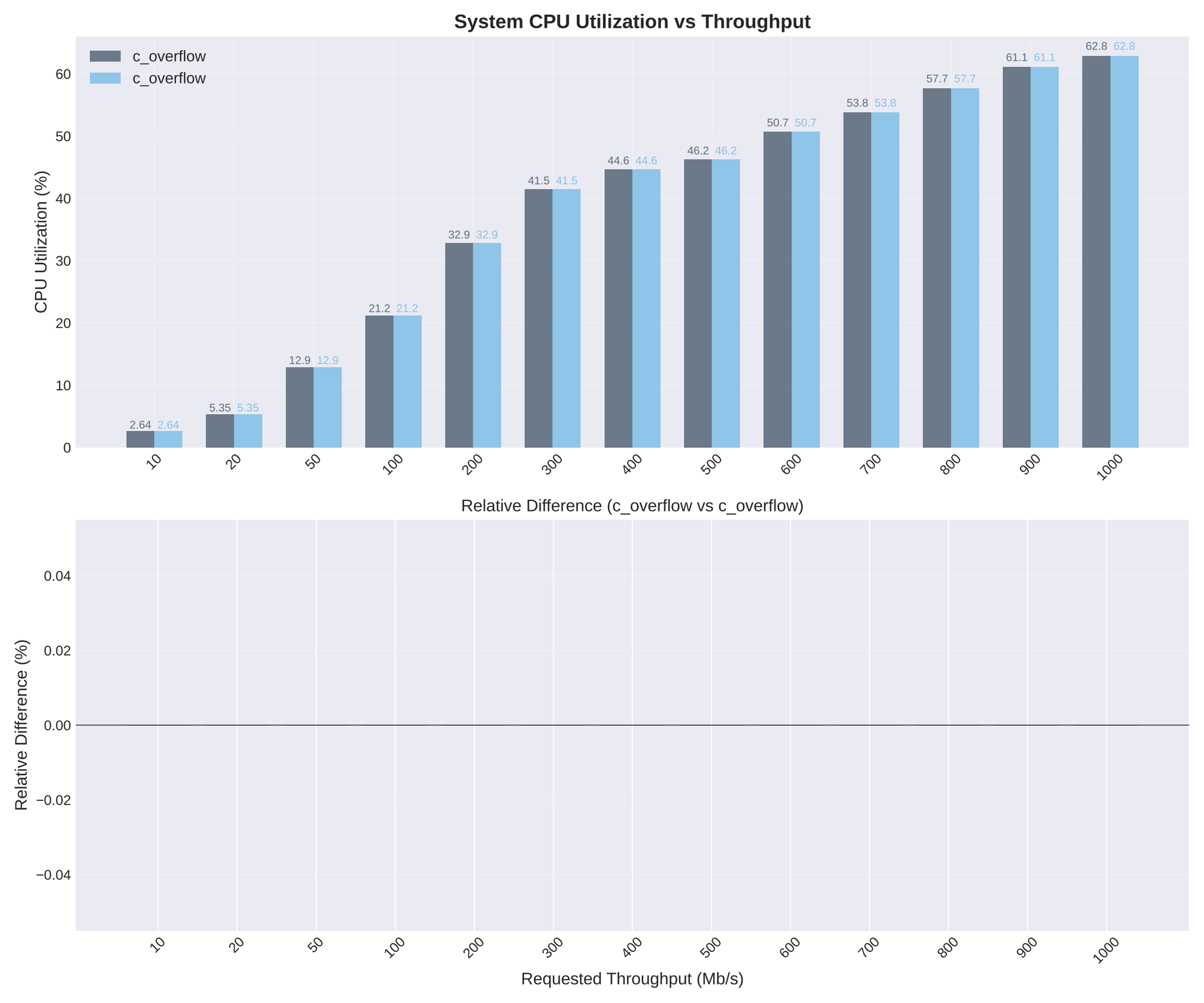

Ethernet Driver CPU Utilization vs Throughput
c_overflow
c_overflow
CPU Utilization (%)
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
0.79 0.79
1.67 1.67
4.04 4.04
6.50 6.50
9.80 9.80
12.4 12.4
13.8 13.8
15.1 15.1
16.7 16.7
17.6 17.6
18.5 18.5
19.2 19.2
19.5 19.5
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

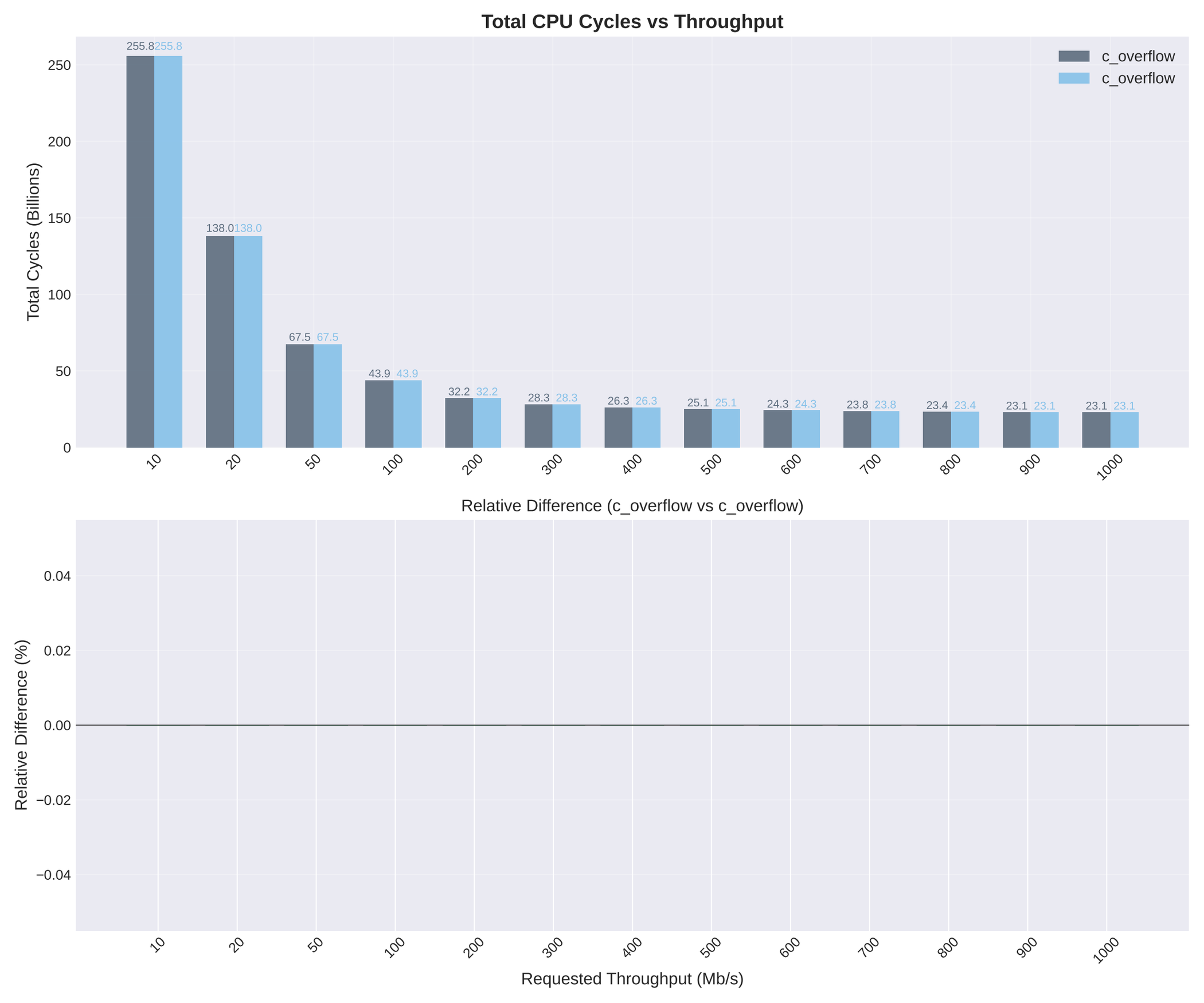

Net Virt TX CPU Utilization vs Throughput
c_overflow
c_overflow
CPU Utilization (%)
0
1
2
3
4
5
6
0.31 0.31
0.68 0.68
1.65 1.65
2.56 2.56
3.62 3.62
4.42 4.42
4.17 4.17
4.22 4.22
4.57 4.57
4.74 4.74
5.35 5.35
6.18 6.18
6.56 6.56
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

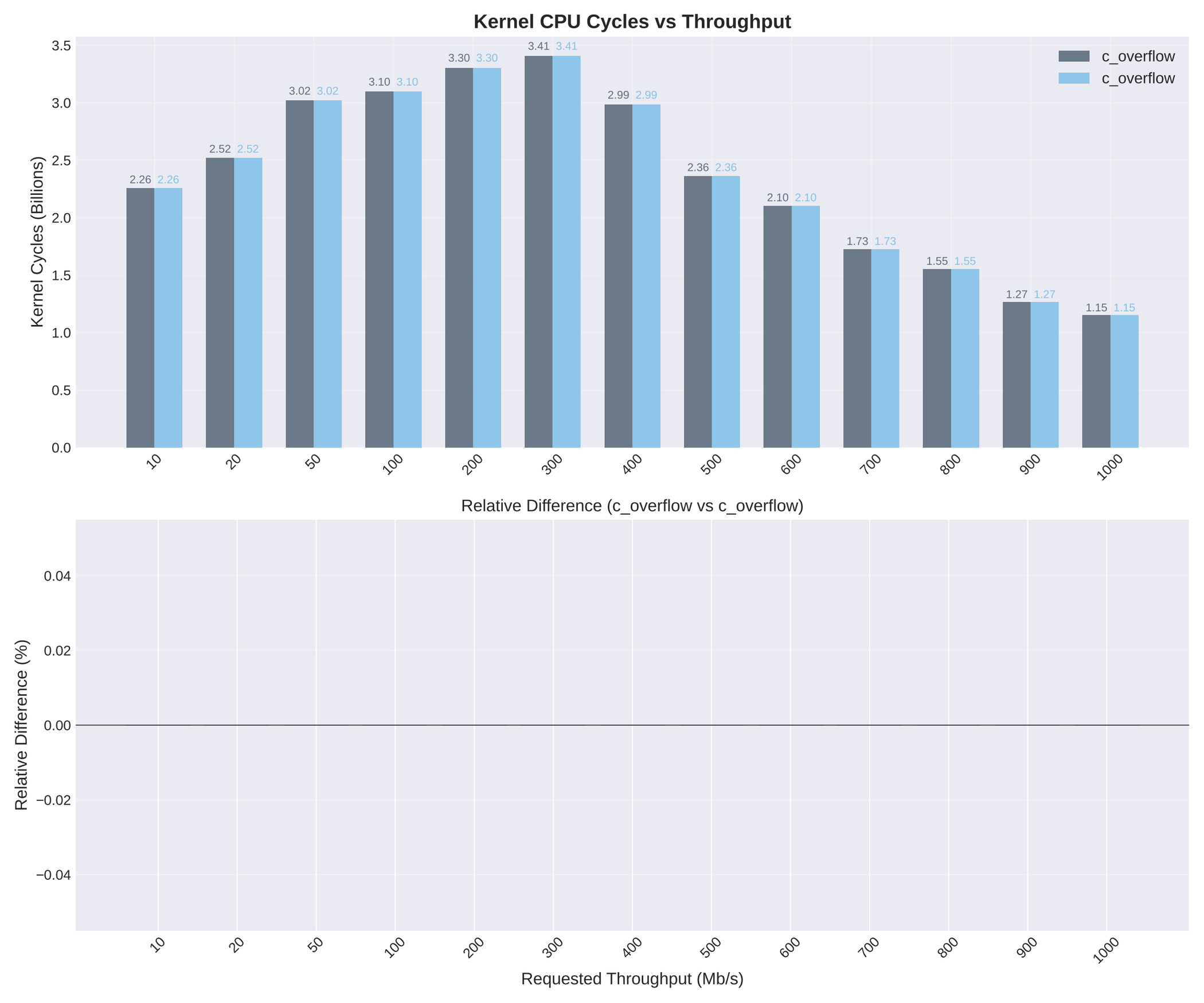

Net Virt RX CPU Utilization vs Throughput
c_overflow
c_overflow
CPU Utilization (%)
0
2
4
6
8
0.48 0.48
0.96 0.96
2.41 2.41
4.07 4.07
6.64 6.64
8.17 8.17
8.64 8.64
8.01 8.01
7.71 7.71
7.23 7.23
7.25 7.25
6.99 6.99
6.86 6.86
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

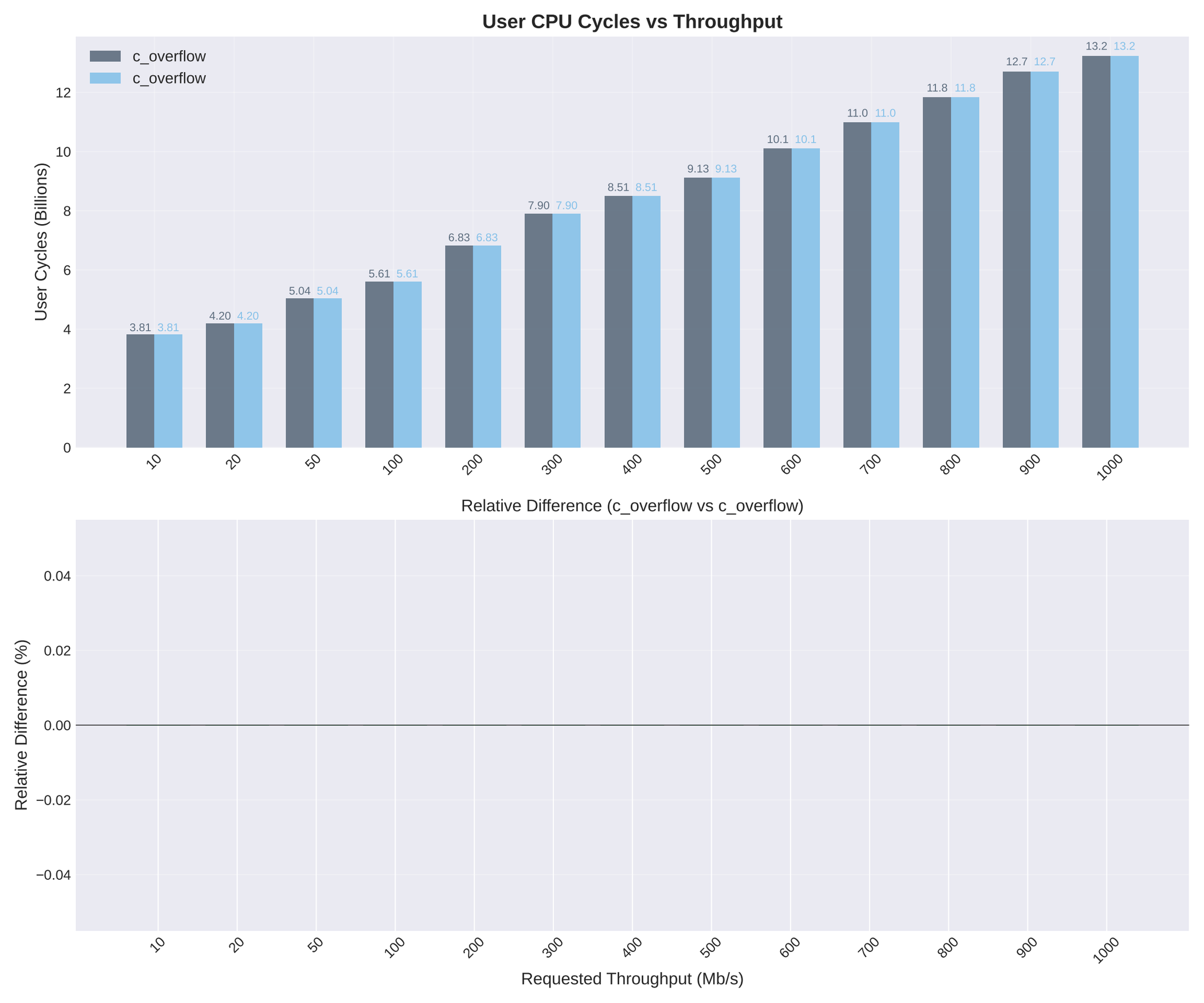

Client0 CPU Utilization vs Throughput
c_overflow
c_overflow
CPU Utilization (%)
0
2
4
6
8
10
12
14
16
0.32 0.32
0.65 0.65
1.60 1.60
2.89 2.89
5.09 5.09
6.98 6.98
8.07 8.07
9.02 9.02
10.5 10.5
11.8 11.8
13.4 13.4
15.1 15.1
16.0 16.0
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

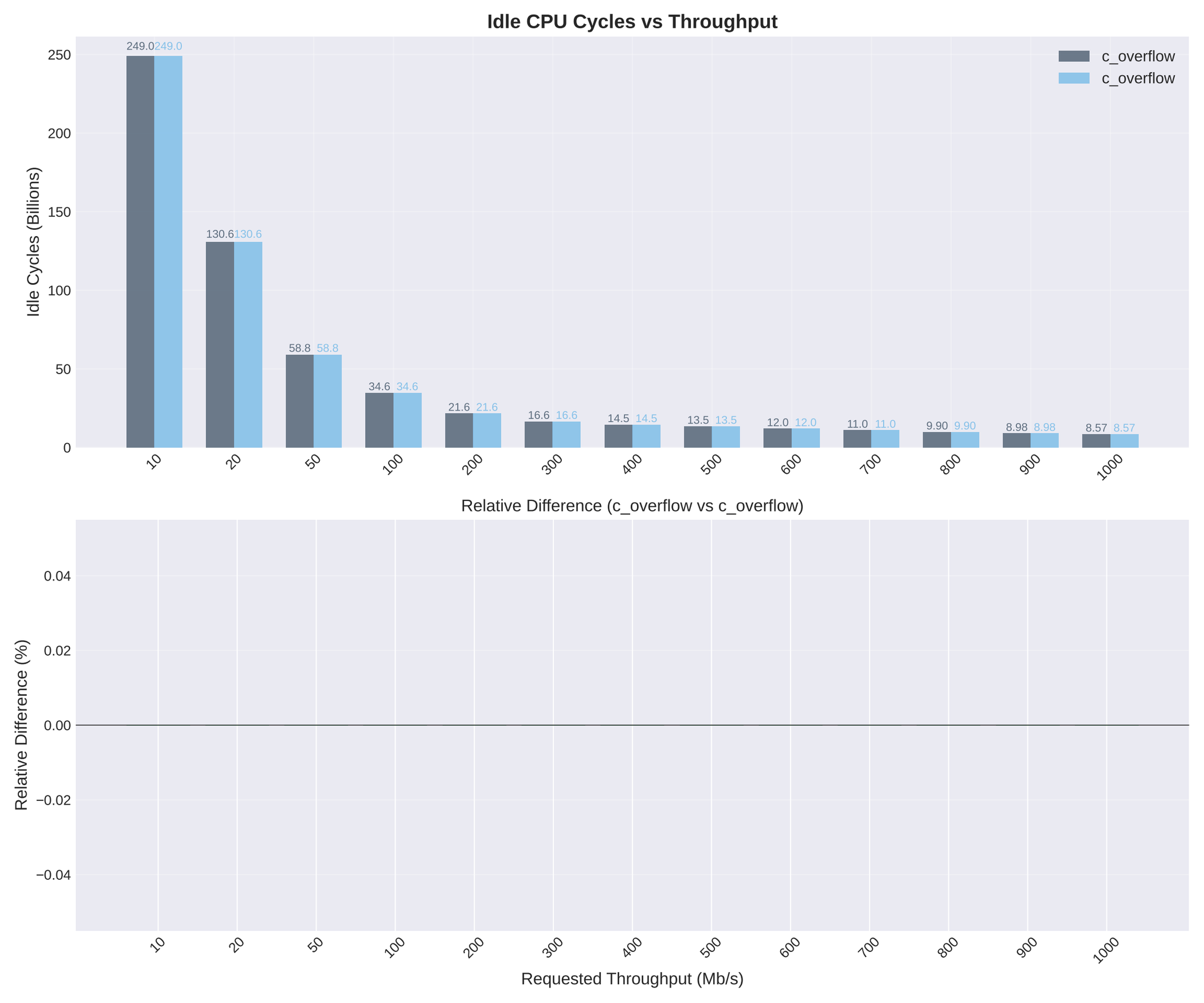

Client0 Net Copier CPU Utilization vs Throughput
c_overflow
c_overflow
CPU Utilization (%)
0
2
4
6
8
10
12
14
0.43 0.43
0.87 0.87
2.18 2.18
3.76 3.76
6.23 6.23
7.97 7.97
9.02 9.02
9.44 9.44
10.7 10.7
11.9 11.9
12.7 12.7
13.1 13.1
13.4 13.4
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

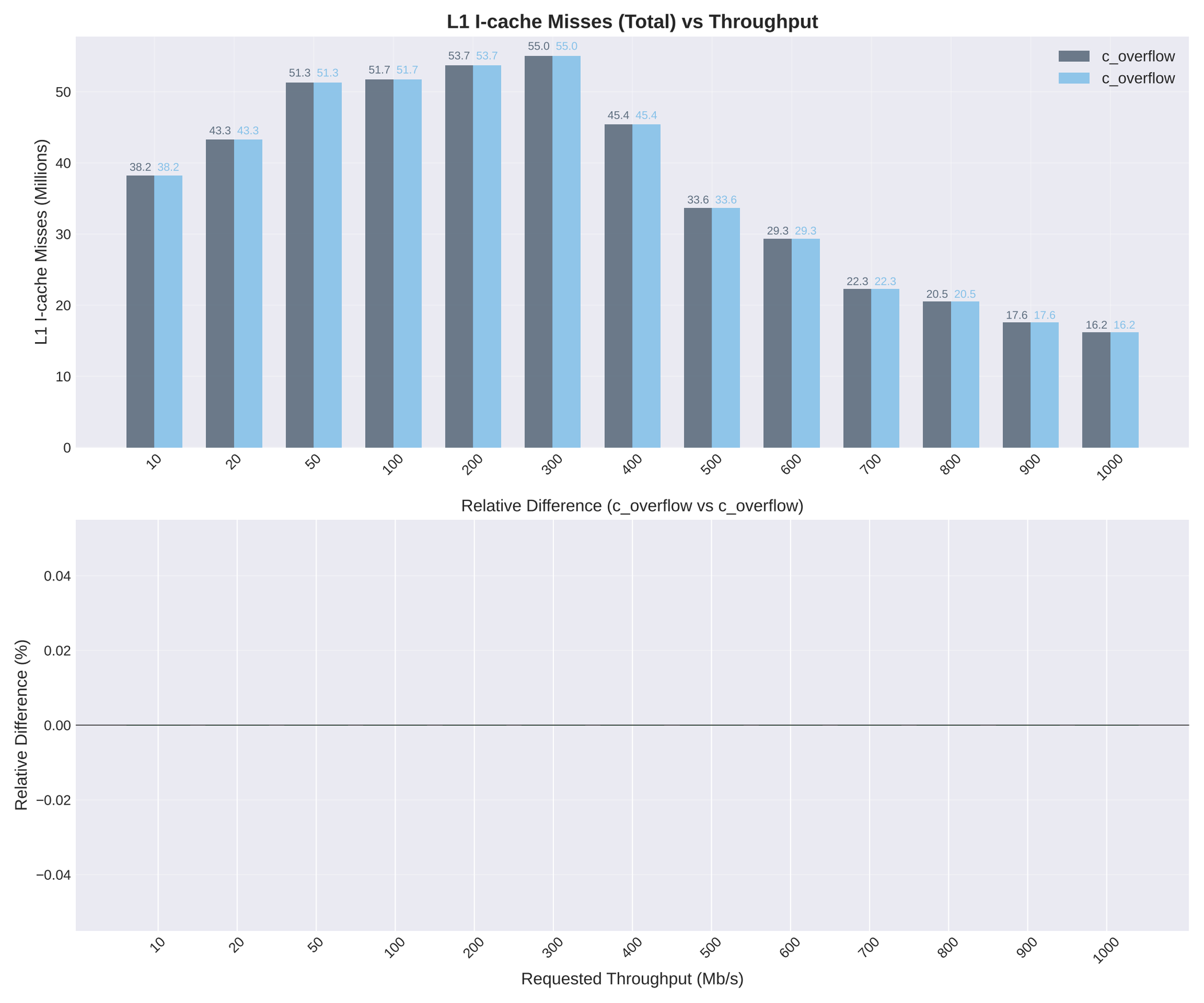

System CPU Utilization vs Throughput
c_overflow
c_overflow
CPU Utilization (%)
0
10
20
30
40
50
60
2.64 2.64
5.35 5.35
12.9 12.9
21.2 21.2
32.9 32.9
41.5 41.5
44.6 44.6
46.2 46.2
50.7 50.7
53.8 53.8
57.7 57.7
61.1 61.1
62.8 62.8
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

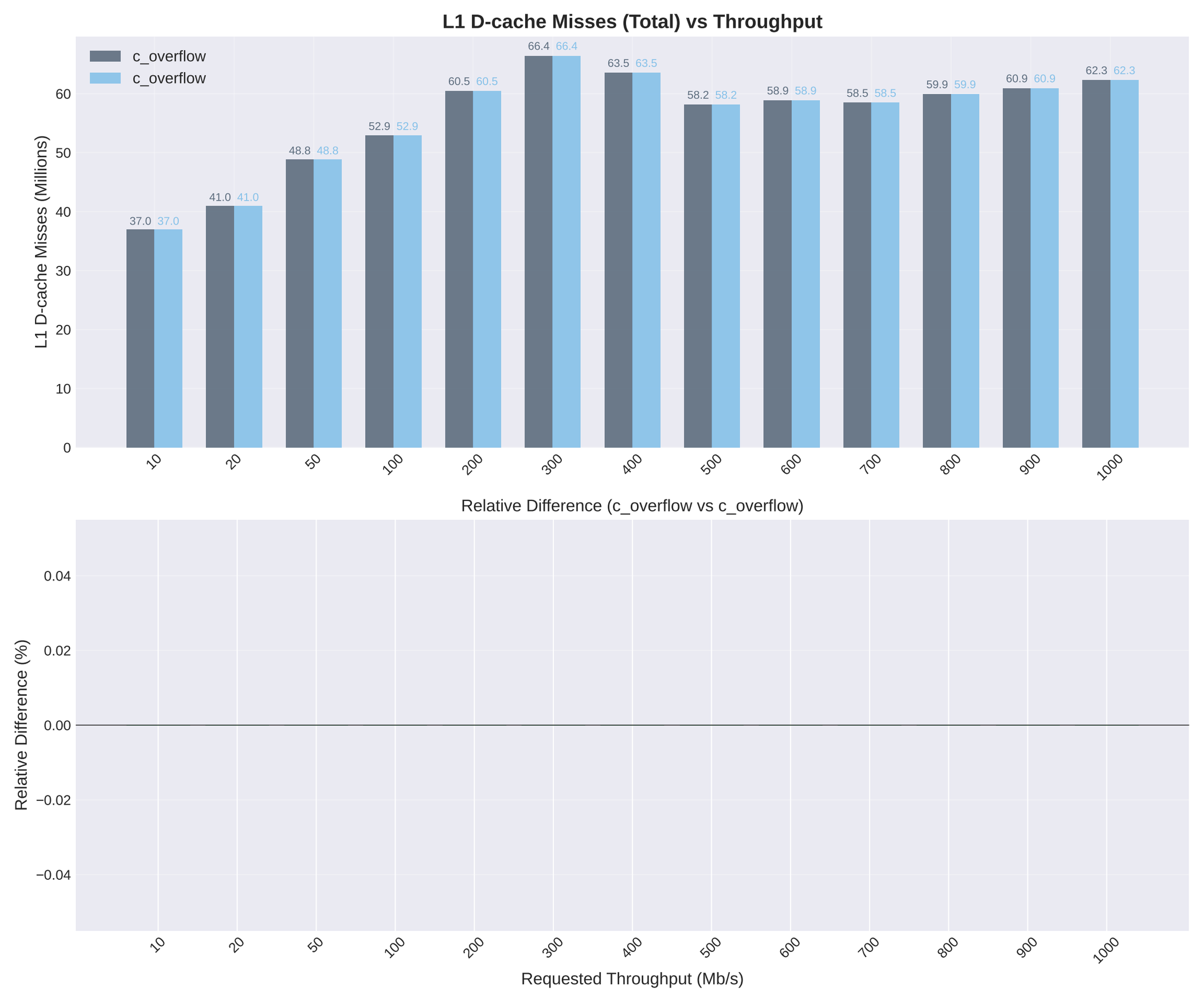

Total CPU Cycles vs Throughput
c_overflow
c_overflow
Total Cycles (Billions)
0
50
100
150
200
250
255.8 255.8
138.0 138.0
67.5 67.5
43.9 43.9
32.2 32.2
28.3 28.3
26.3 26.3
25.1 25.1
24.3 24.3
23.8 23.8
23.4 23.4
23.1 23.1
23.1 23.1
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

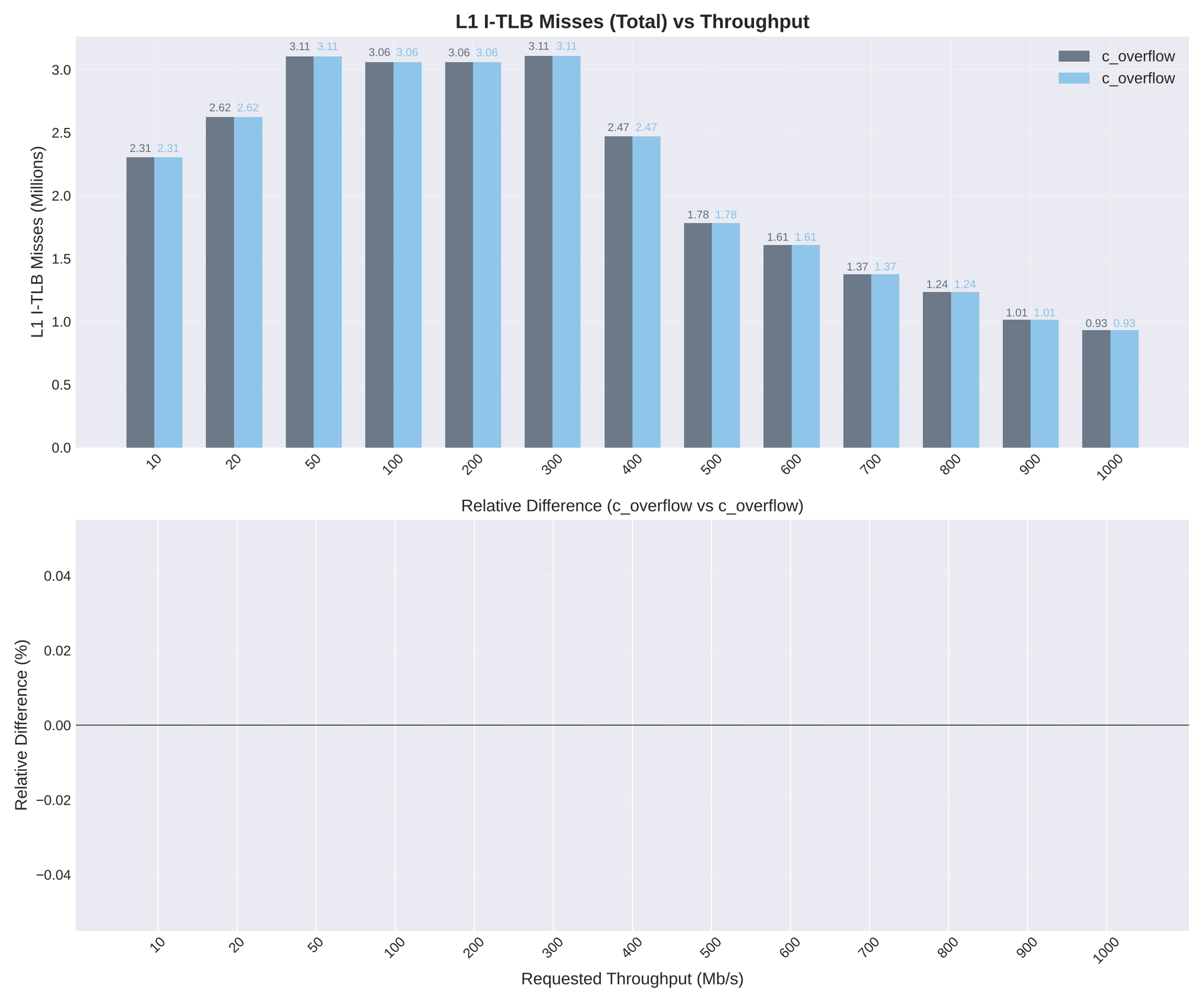

Kernel CPU Cycles vs Throughput
Kernel Cycles (Billions)
c_overflow
c_overflow
2.26 2.26
2.52 2.52
3.02 3.02
3.10 3.10
3.30 3.30
3.41 3.41
2.99 2.99
2.36 2.36
2.10 2.10
1.73 1.73
1.55 1.55
1.27 1.27
1.15 1.15
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
Requested Throughput (Mb/s)

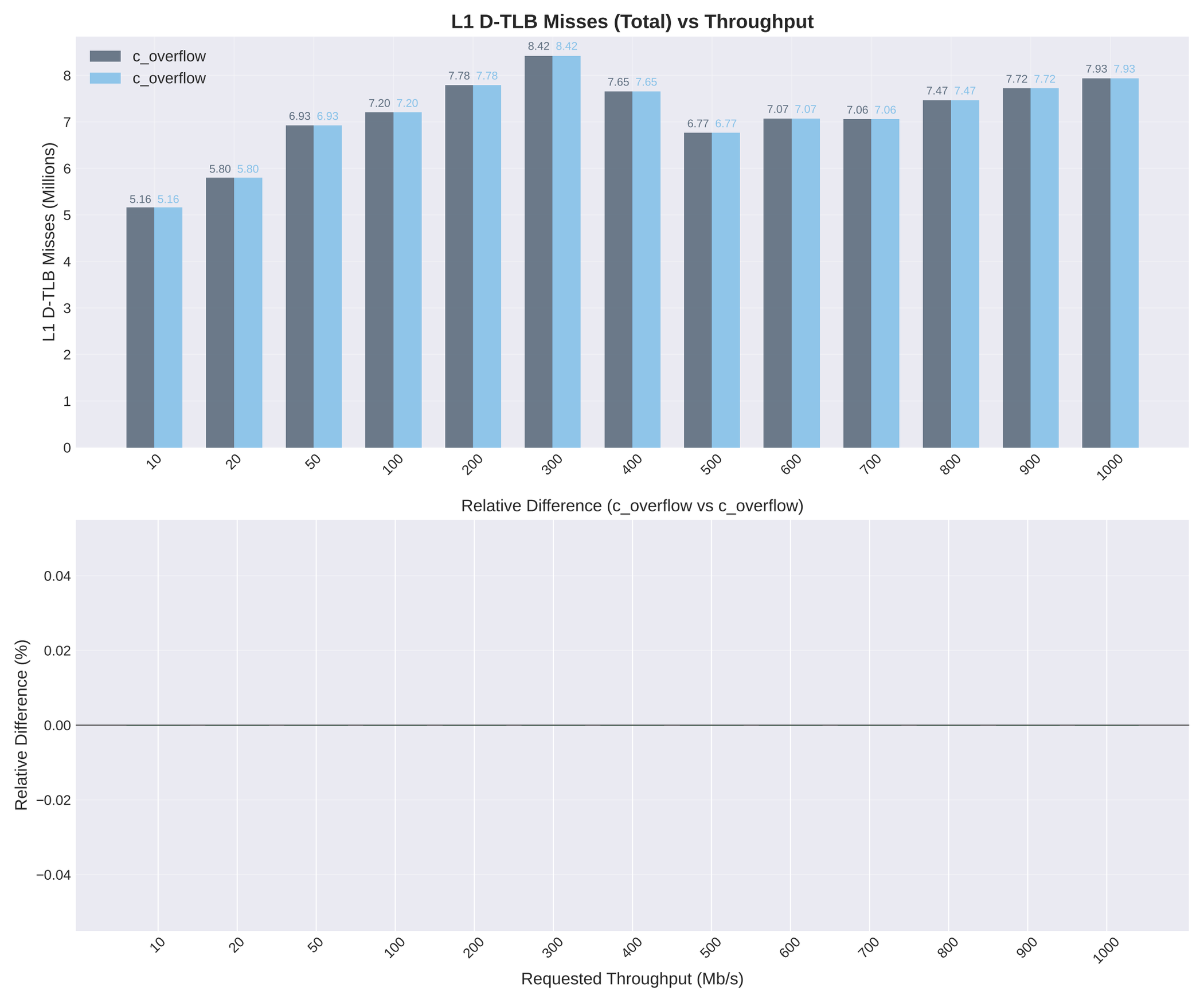

User CPU Cycles vs Throughput
c_overflow
c_overflow
User Cycles (Billions)
0
2
4
6
8
10
12
3.81 3.81
4.20 4.20
5.04 5.04
5.61 5.61
6.83 6.83
7.90 7.90
8.51 8.51
9.13 9.13
10.1 10.1
11.0 11.0
11.8 11.8
12.7 12.7
13.2 13.2
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

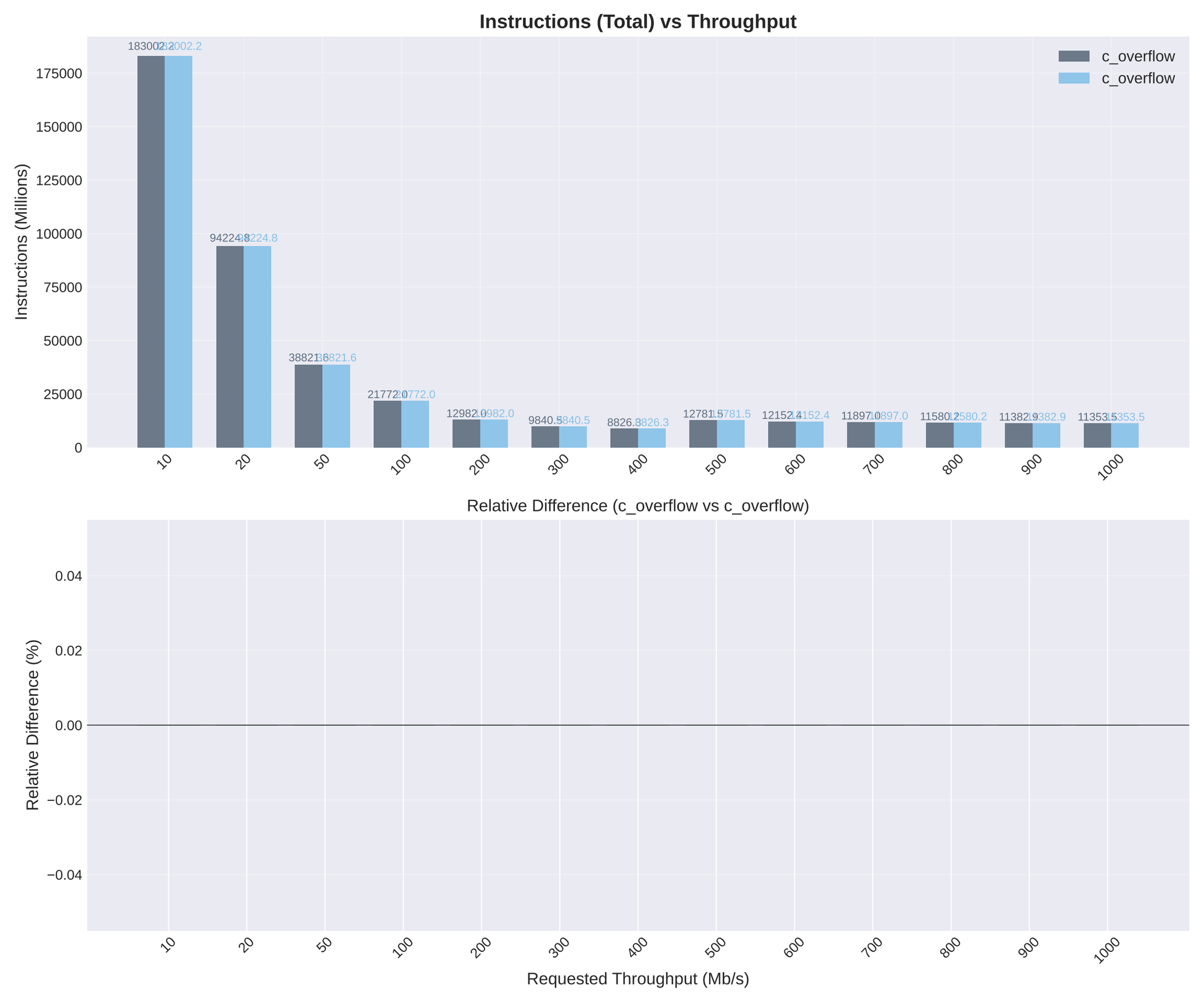

Idle CPU Cycles vs Throughput
c_overflow
c_overflow
Idle Cycles (Billions)
0
50
100
150
200
250
249.0 249.0
130.6 130.6
58.8 58.8
34.6 34.6
21.6 21.6
16.6 16.6
14.5 14.5
13.5 13.5
12.0 12.0
11.0 11.0
9.90 9.90
8.98 8.98
8.57 8.57
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

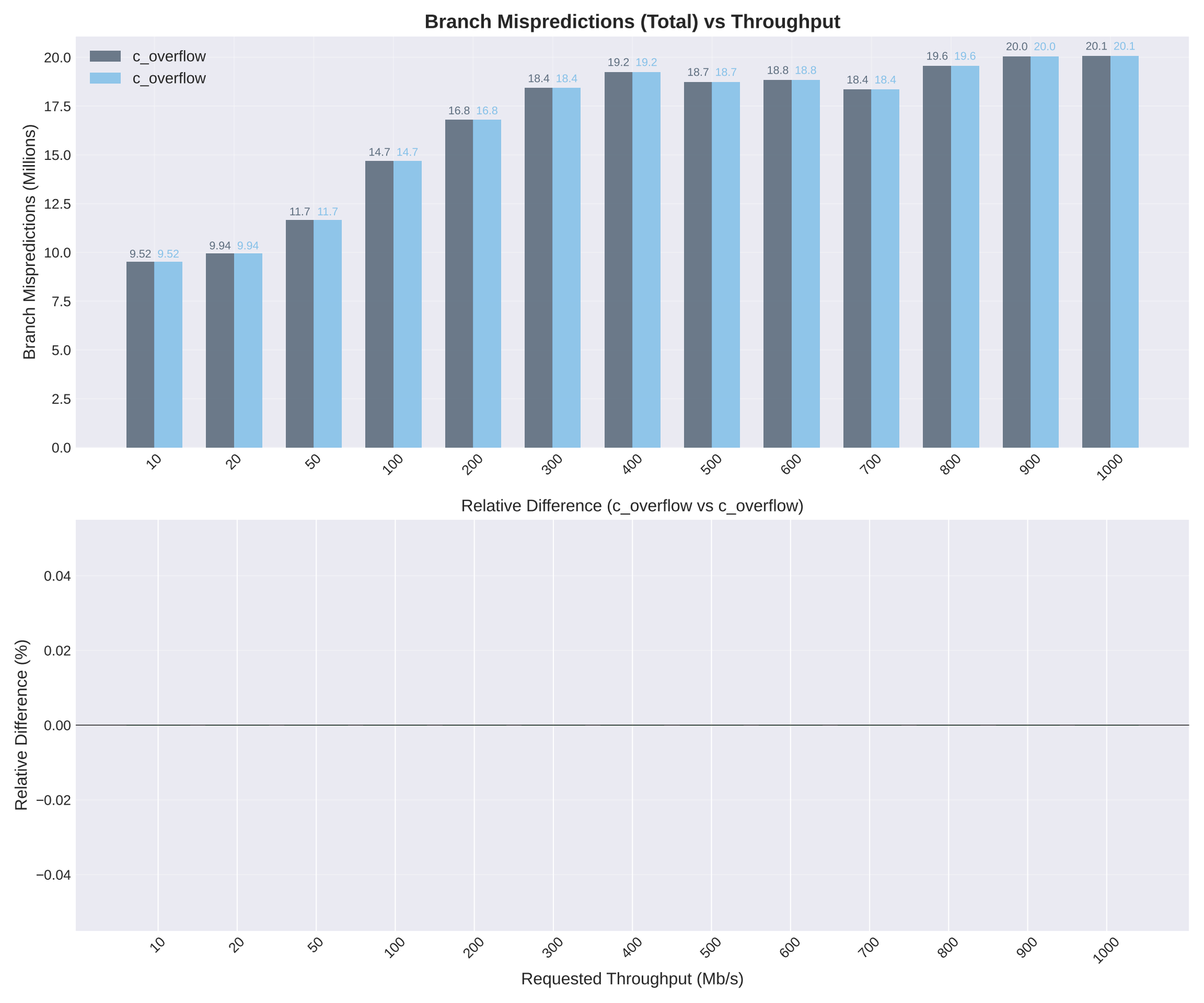

L1 I-cache Misses (Total) vs Throughput
c_overflow
c_overflow
L1 I-cache Misses (Millions)
0
10
20
30
40
50
38.2 38.2
43.3 43.3
51.3 51.3
51.7 51.7
53.7 53.7
55.0 55.0
45.4 45.4
33.6 33.6
29.3 29.3
22.3 22.3
20.5 20.5
17.6 17.6
16.2 16.2
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

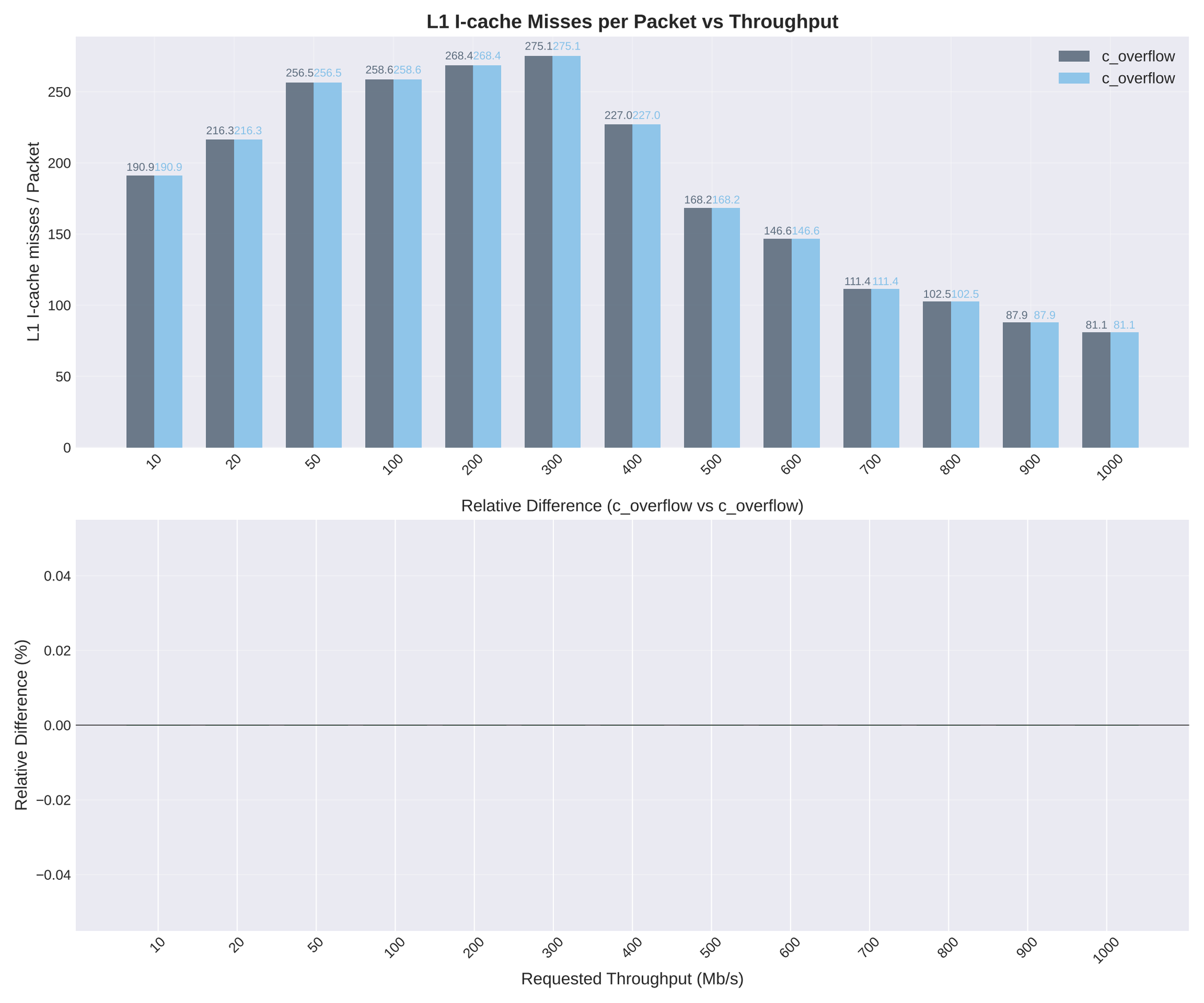

L1 D-cache Misses (Total) vs Throughput
c_overflow
c_overflow
L1 D-cache Misses (Millions)
0
10
20
30
40
50
60
37.0 37.0
41.0 41.0
48.8 48.8
52.9 52.9
60.5 60.5
66.4 66.4
63.5 63.5
58.2 58.2
58.9 58.9
58.5 58.5
59.9 59.9
60.9 60.9
62.3 62.3
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

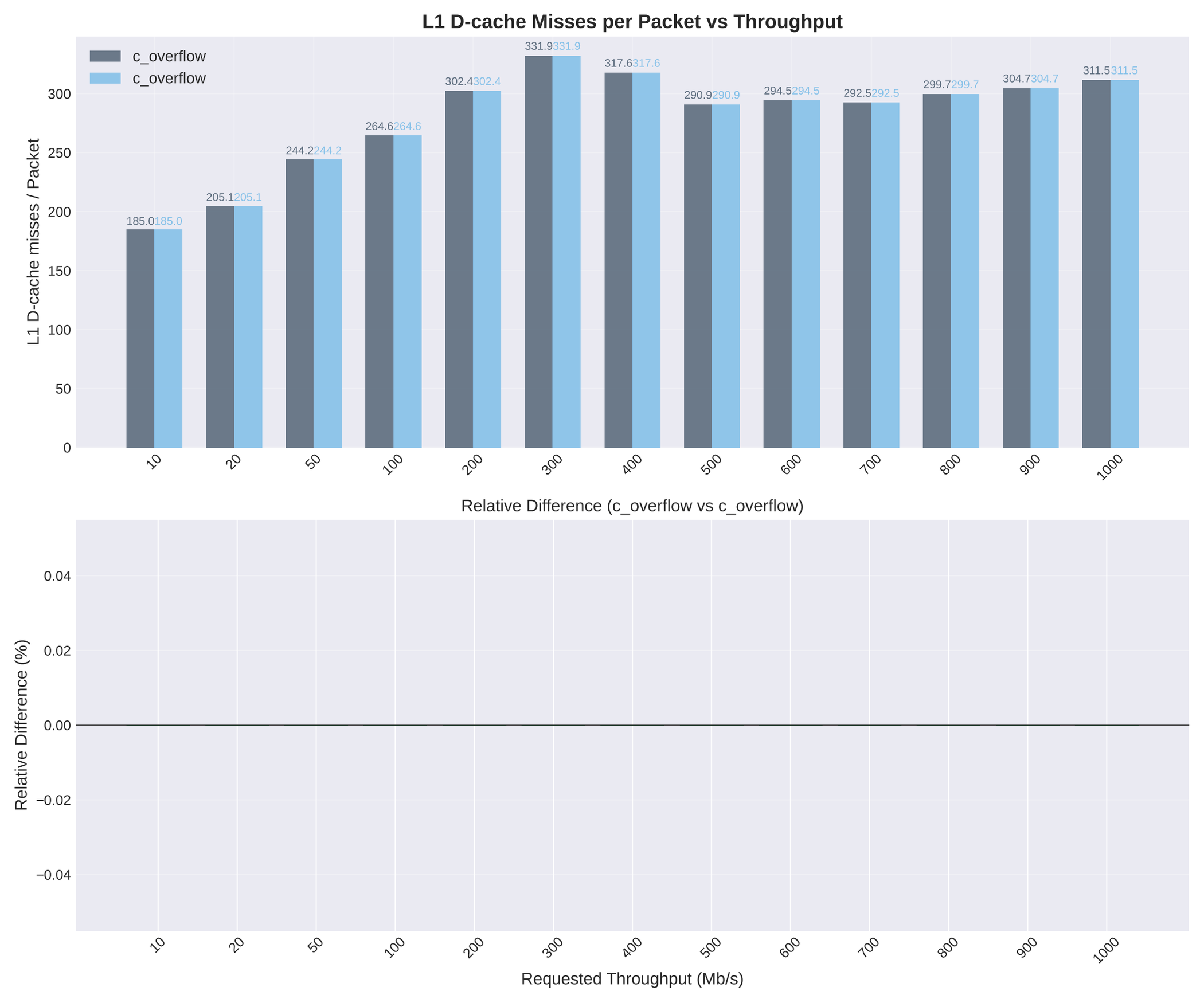

L1 I-TLB Misses (Total) vs Throughput
c_overflow
c_overflow
L1 I-TLB Misses (Millions)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
2.31 2.31
2.62 2.62
3.11 3.11
3.06 3.06
3.06 3.06
3.11 3.11
2.47 2.47
1.78 1.78
1.61 1.61
1.37 1.37
1.24 1.24
1.01 1.01
0.93 0.93
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

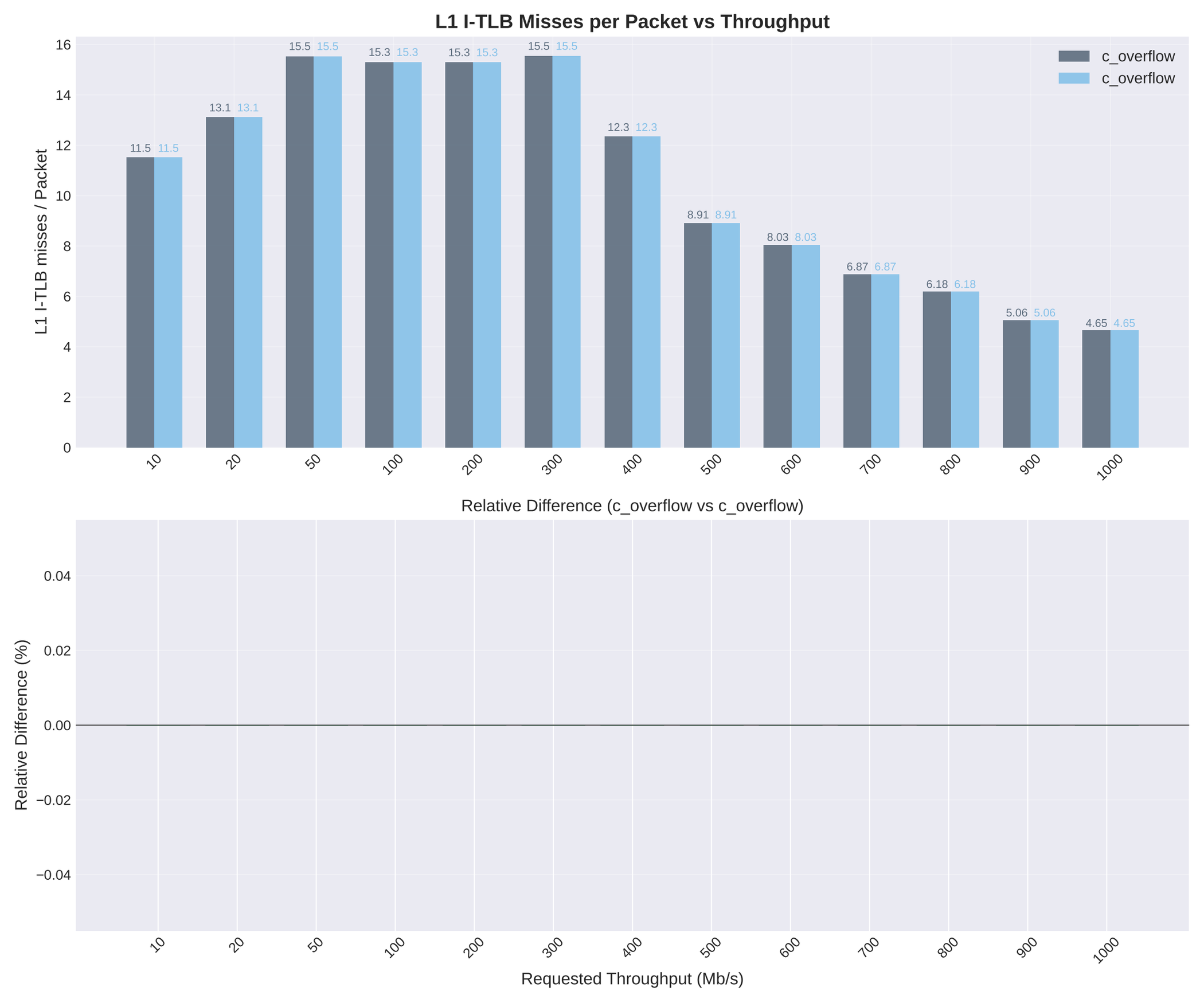

L1 D-TLB Misses (Total) vs Throughput
c_overflow
c_overflow
L1 D-TLB Misses (Millions)
0
1
2
3
4
5
6
7
8
5.16 5.16
5.80 5.80
6.93 6.93
7.20 7.20
7.78 7.78
8.42 8.42
7.65 7.65
6.77 6.77
7.07 7.07
7.06 7.06
7.47 7.47
7.72 7.72
7.93 7.93
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

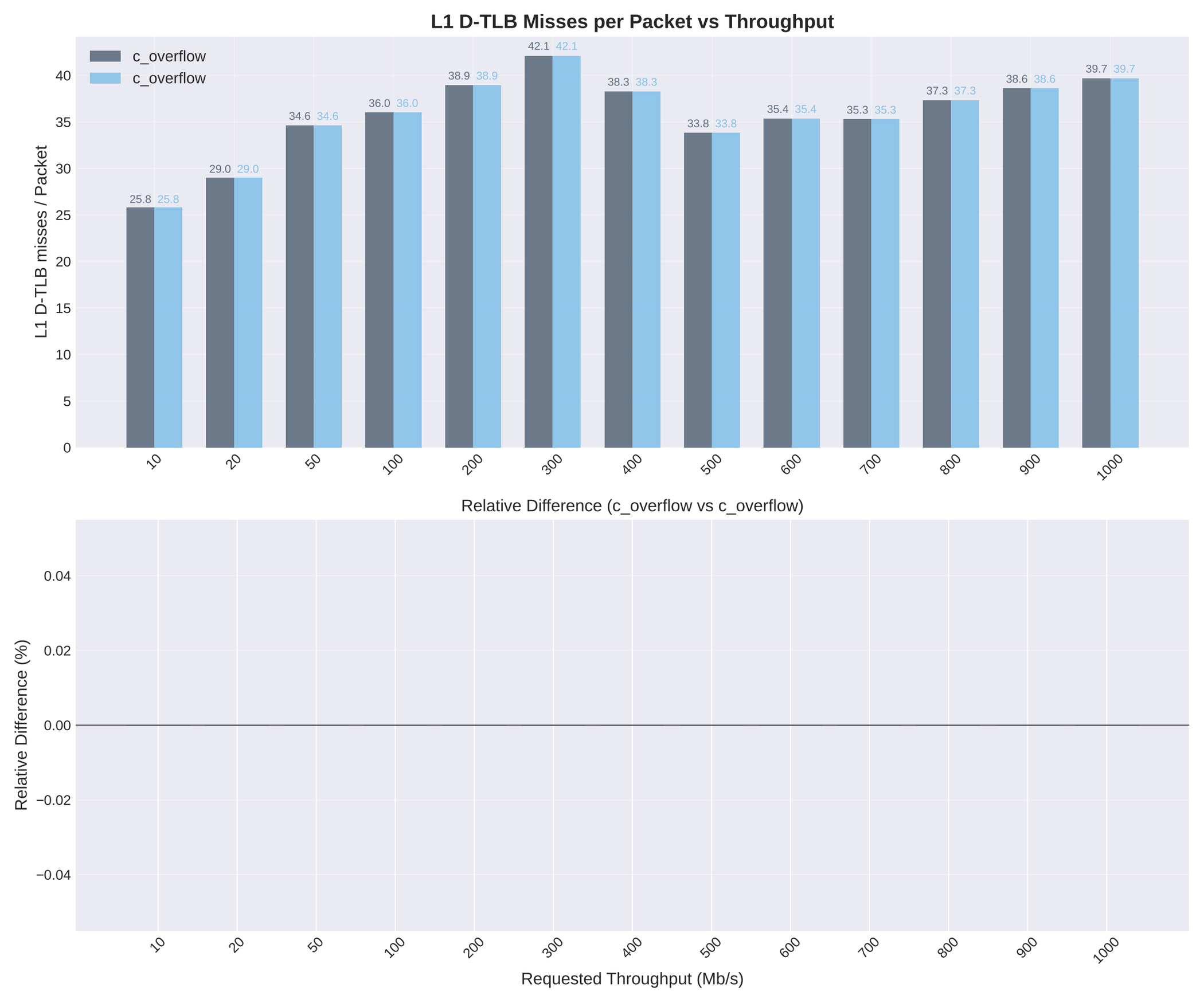

Instructions (Total) vs Throughput
c_overflow
c_overflow
Instructions (Millions)
0
25000
50000
75000
100000
125000
150000
175000
183002.2
183002.2
94224.8
94224.8
38821.6
38821.6
21772.0
21772.0
12982.0
12982.0
9840.5
9840.5
8826.3
8826.3
12781.5
12781.5
12152.4
12152.4
11897.0
11897.0
11580.2
11580.2
11382.9
11382.9
11353.5
11353.5
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

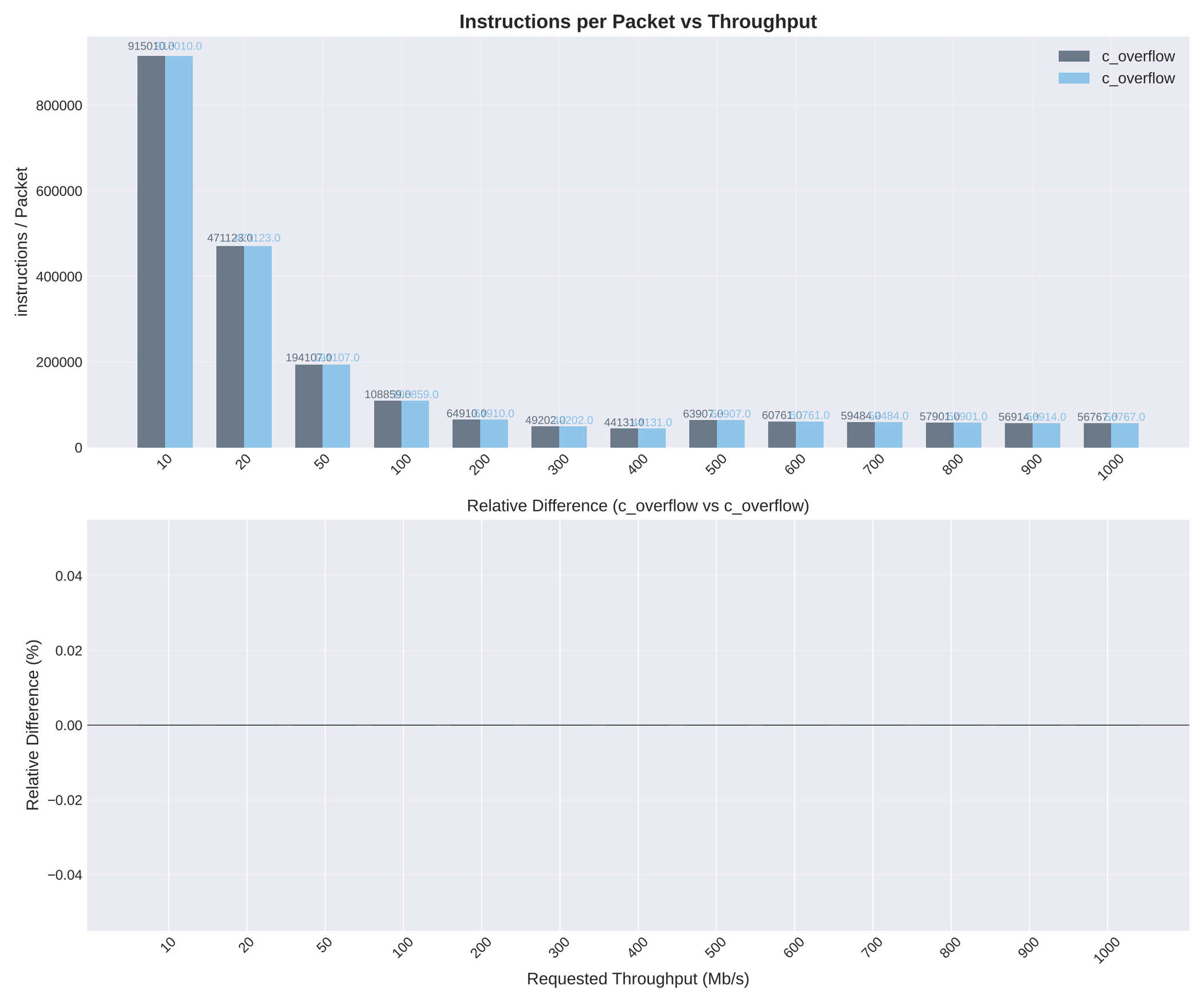

Branch Mispredictions (Total) vs Throughput
c_overflow
c_overflow
Branch Mispredictions (Millions)
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
9.52 9.52
9.94 9.94
11.7 11.7
14.7 14.7
16.8 16.8
18.4 18.4
19.2 19.2
18.7 18.7
18.8 18.8
18.4 18.4
19.6 19.6
20.0 20.0
20.1 20.1
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

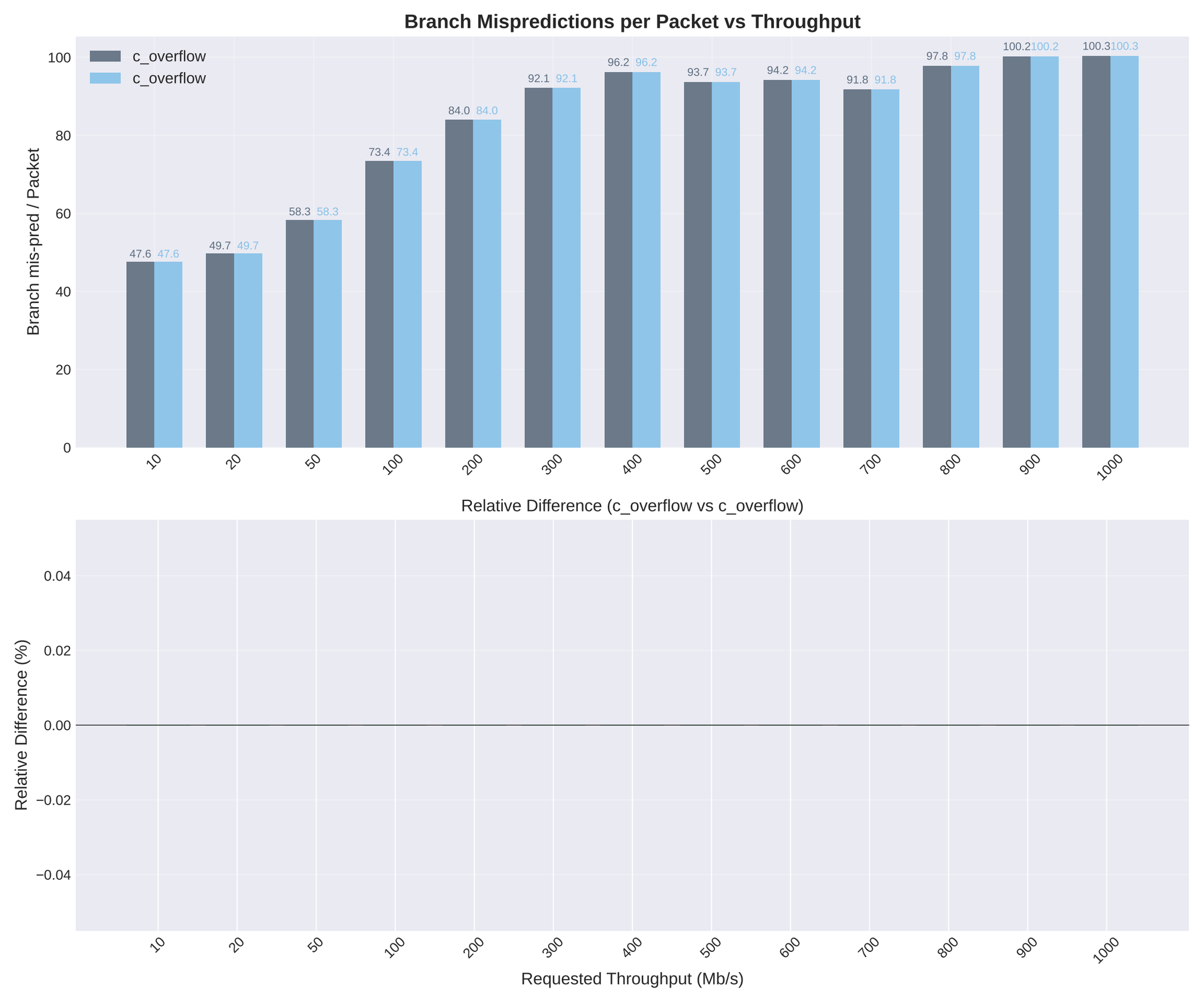

L1 I-cache Misses per Packet vs Throughput
c_overflow
c_overflow
L1 I-cache misses / Packet
0
50
100
150
200
250
190.9190.9
216.3216.3
256.5256.5
258.6258.6
268.4268.4
275.1275.1
227.0227.0
168.2168.2
146.6146.6
111.4111.4
102.5102.5
87.9 87.9
81.1 81.1
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

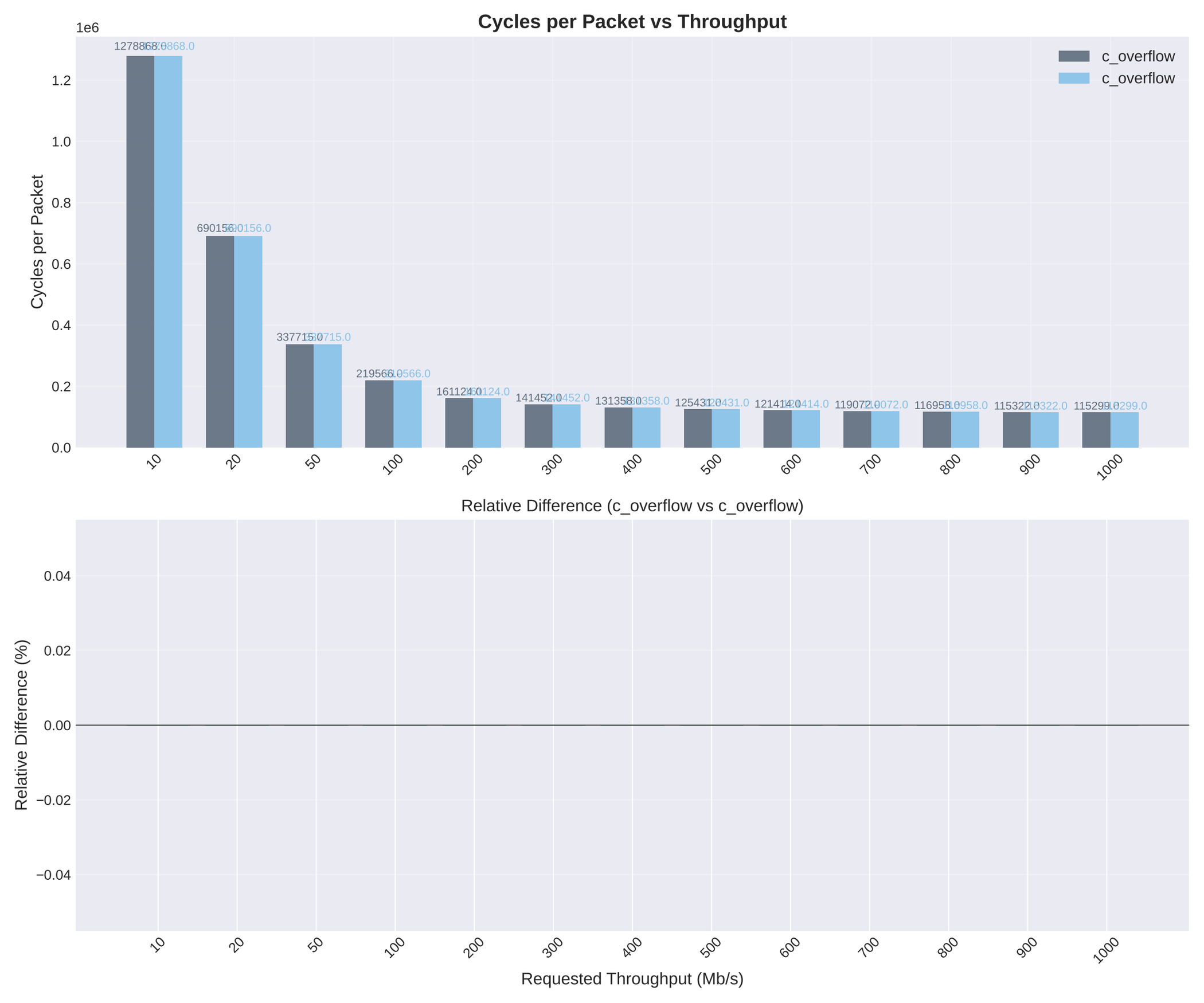

L1 D-cache Misses per Packet vs Throughput
c_overflow
c_overflow
L1 D-cache misses / Packet
0
50
100
150
200
250
300
185.0185.0
205.1205.1
244.2244.2
264.6264.6
302.4302.4
331.9331.9
317.6317.6
290.9290.9
294.5294.5
292.5292.5
299.7299.7
304.7304.7
311.5311.5
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

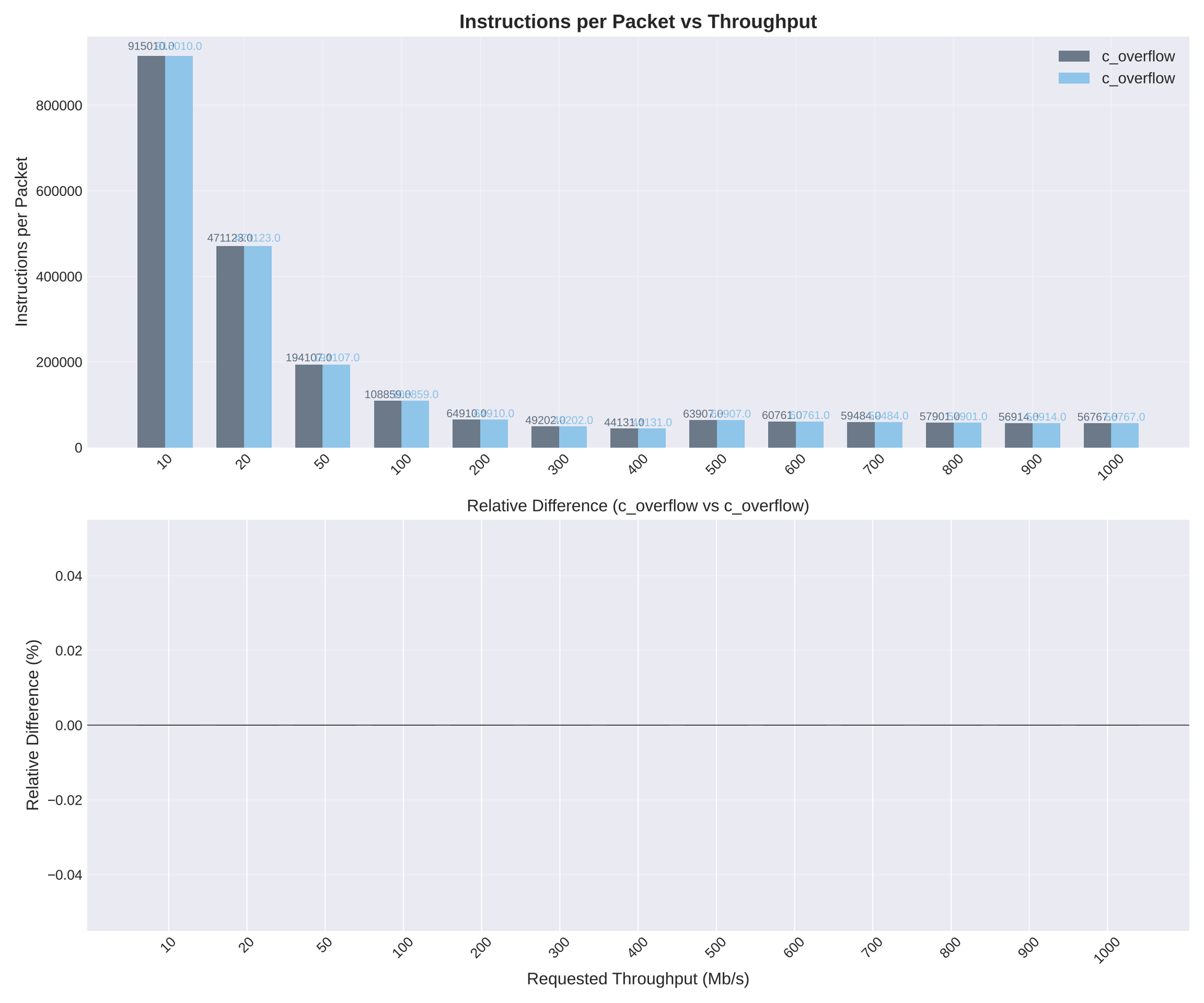

L1 I-TLB Misses per Packet vs Throughput
L1 I-TLB misses / Packet
c_overflow
c_overflow
11.5 11.5
13.1 13.1
15.5 15.5
15.3 15.3
15.3 15.3
15.5 15.5
12.3 12.3
8.91 8.91
8.03 8.03
6.87 6.87
6.18 6.18
5.06 5.06
4.65 4.65
0
2
4
6
8
10
12
14
16
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

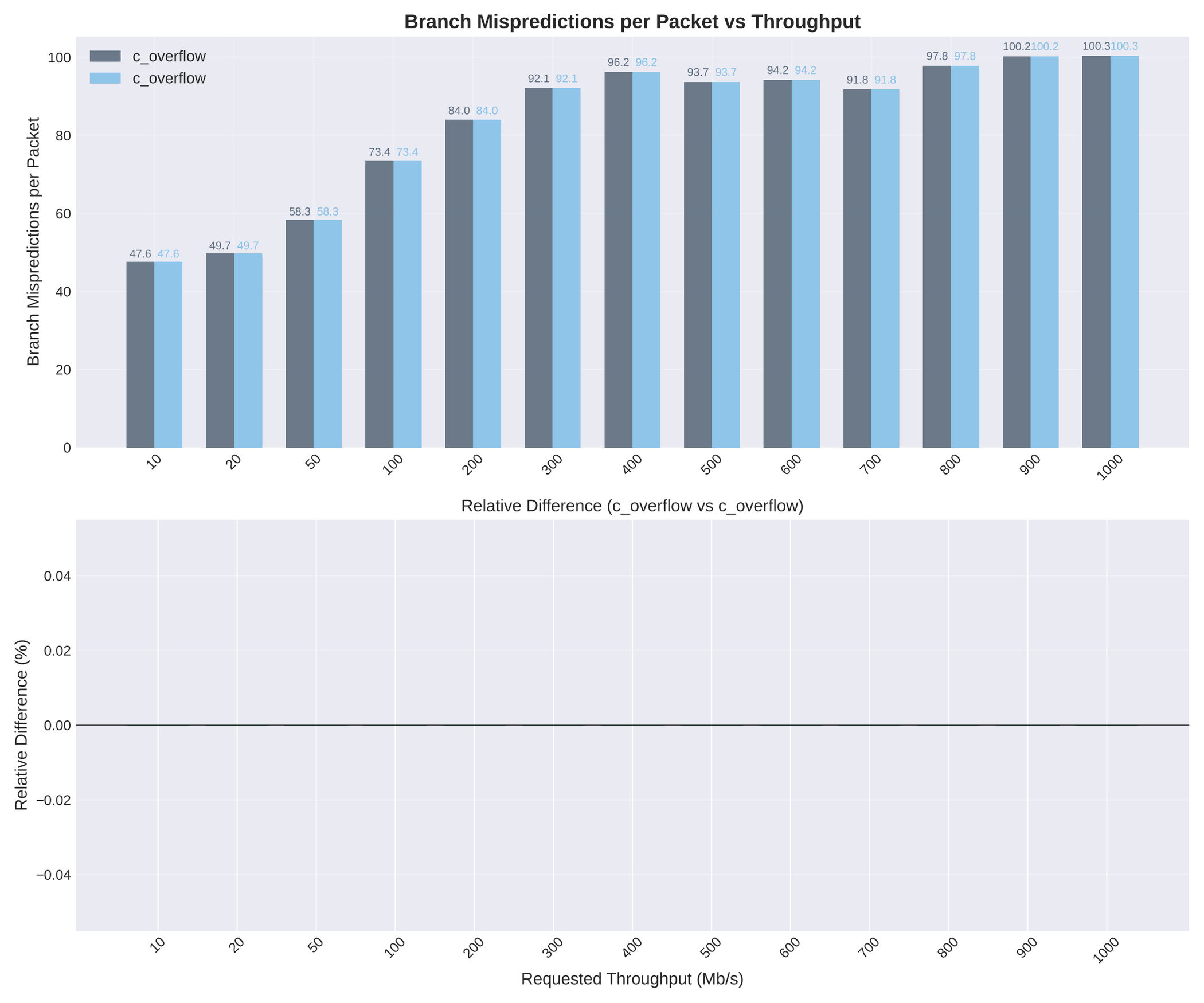

L1 D-TLB Misses per Packet vs Throughput
c_overflow
c_overflow
L1 D-TLB misses / Packet
0
5
10
15
20
25
30
35
40
25.8 25.8
29.0 29.0
34.6 34.6
36.0 36.0
38.9 38.9
42.1 42.1
38.3 38.3
33.8 33.8
35.4 35.4
35.3 35.3
37.3 37.3
38.6 38.6
39.7 39.7
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

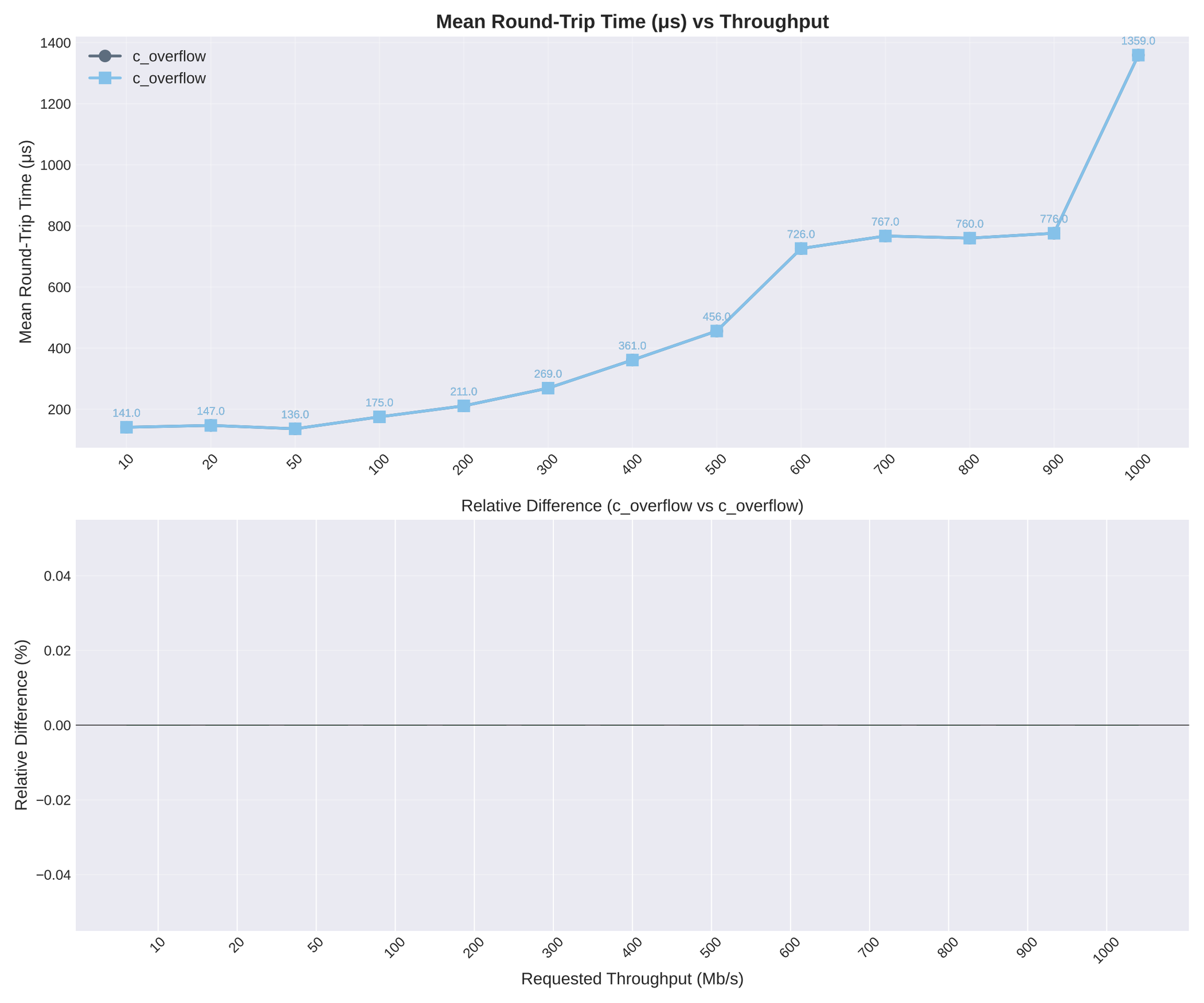

Instructions per Packet vs Throughput
c_overflow
c_overflow
instructions / Packet
0
200000
400000
600000
800000
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

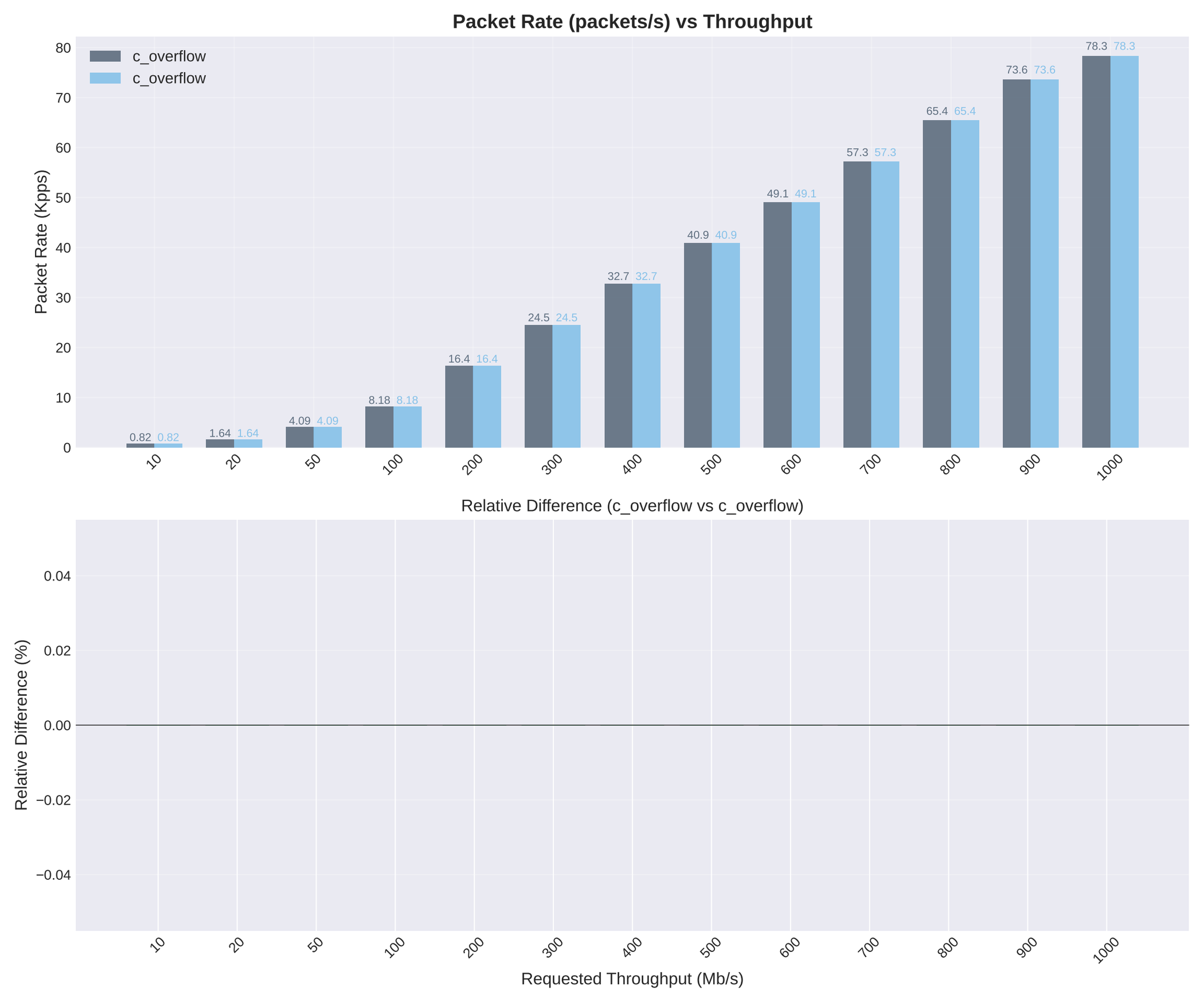

Branch Mispredictions per Packet vs Throughput
c_overflow
c_overflow
Branch mis-pred / Packet
0
20
40
60
80
100
47.6 47.6
49.7 49.7
58.3 58.3
73.4 73.4
84.0 84.0
92.1 92.1
96.2 96.2
93.7 93.7
94.2 94.2
91.8 91.8
97.8 97.8
100.2 100.2
100.3 100.3
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)

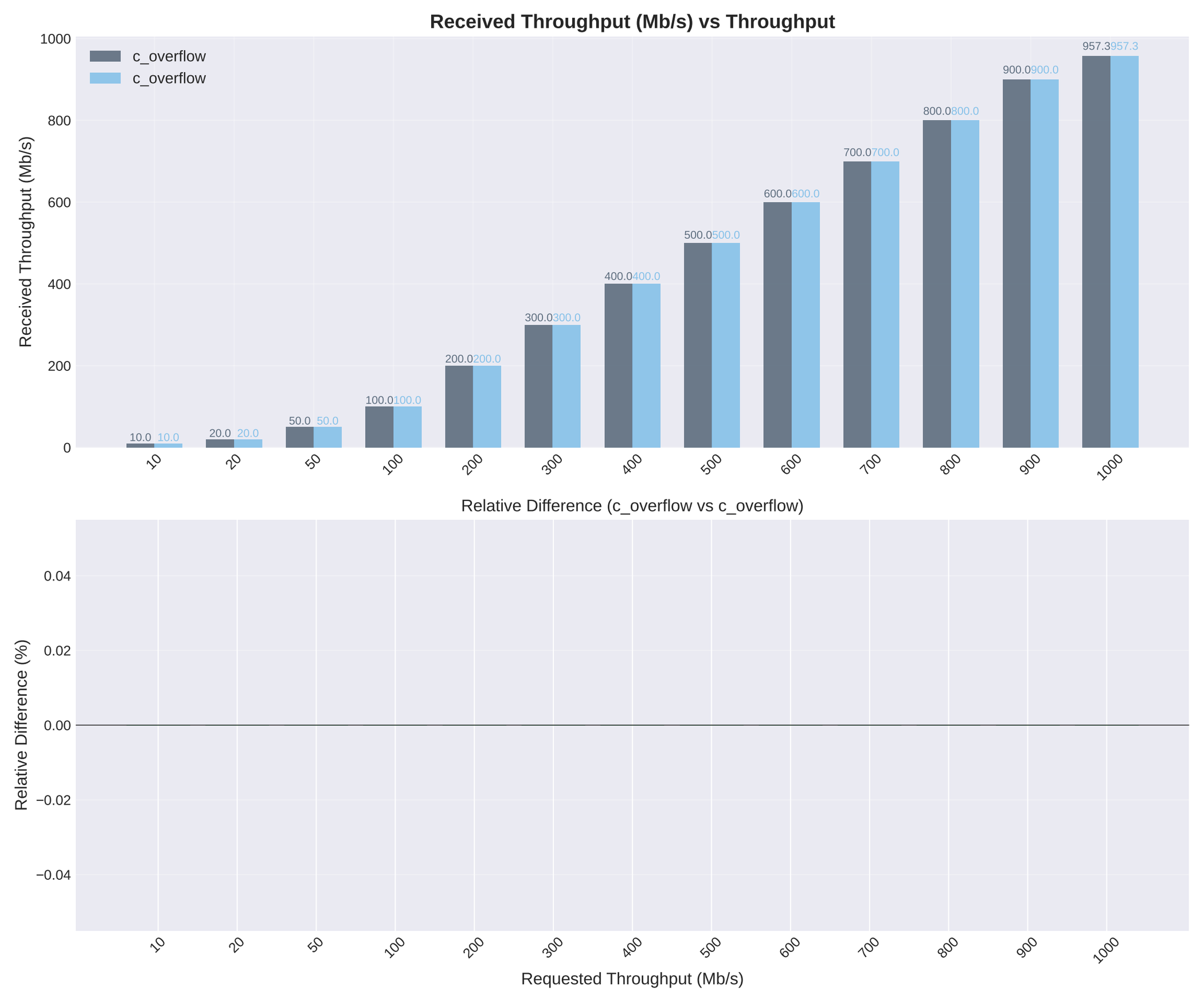

Cycles per Packet vs Throughput
1e6
c_overflow
c_overflow
Cycles per Packet
0.0
0.2
0.4
0.6
0.8
1.0
1.2
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)

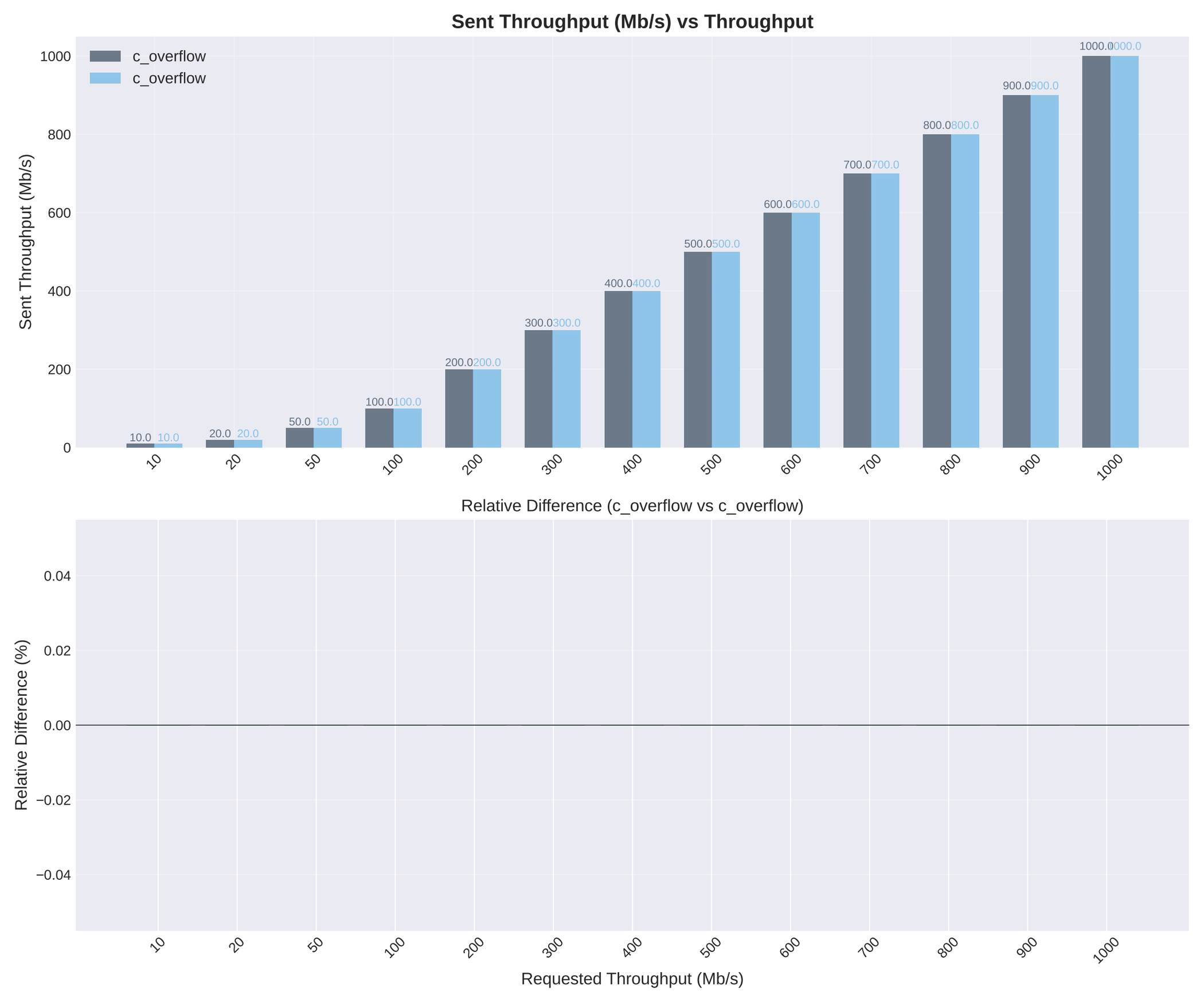

Instructions per Packet vs Throughput
c_overflow
c_overflow
Instructions per Packet
0
200000
400000
600000
800000
915010.0
915010.0
471123.0
471123.0
194107.0
194107.0
108859.0
108859.0
64910.0
64910.0
49202.0
49202.0
44131.0
44131.0
63907.0
63907.0
60761.0
60761.0
59484.0
59484.0
57901.0
57901.0
56914.0
56914.0
56767.0
56767.0
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)


Branch Mispredictions per Packet vs Throughput
c_overflow
c_overflow
Branch Mispredictions per Packet
0
20
40
60
80
100
47.6 47.6
49.7 49.7
58.3 58.3
73.4 73.4
84.0 84.0
92.1 92.1
96.2 96.2
93.7 93.7
94.2 94.2
91.8 91.8
97.8 97.8
100.2 100.2
100.3 100.3
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)


Mean Round-Trip Time (µs) vs Throughput
c_overflow
c_overflow
Mean Round-Trip Time (µs)
1400
1200
1000
800
600
400
200
141.0
147.0
136.0
175.0
211.0
269.0
361.0
456.0
726.0
767.0
760.0
776.0
1359.0
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)


Packet Rate (packets/s) vs Throughput
c_overflow
c_overflow
Packet Rate (Kpps)
0
10
20
30
40
50
60
70
80
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 78.3
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
10
20
50
100
200
300
400
500
600
700
800
900
1000
Requested Throughput (Mb/s)


Received Throughput (Mb/s) vs Throughput
c_overflow
c_overflow
Received Throughput (Mb/s)
1000
800
600
400
200
0
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
957.3 957.3
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)


Sent Throughput (Mb/s) vs Throughput
c_overflow
c_overflow
Sent Throughput (Mb/s)
0
200
400
600
800
1000
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
1000.0 1000.0
10
20
50
100
200
300
400
500
600
700
800
900
1000
Relative Difference (c_overflow vs c_overflow)
Relative Difference (%)
0.04
0.02
0.00
−0.02
−0.04
Requested Throughput (Mb/s)