

DOAT Report

DPDK Optimisation & Analysis Tool

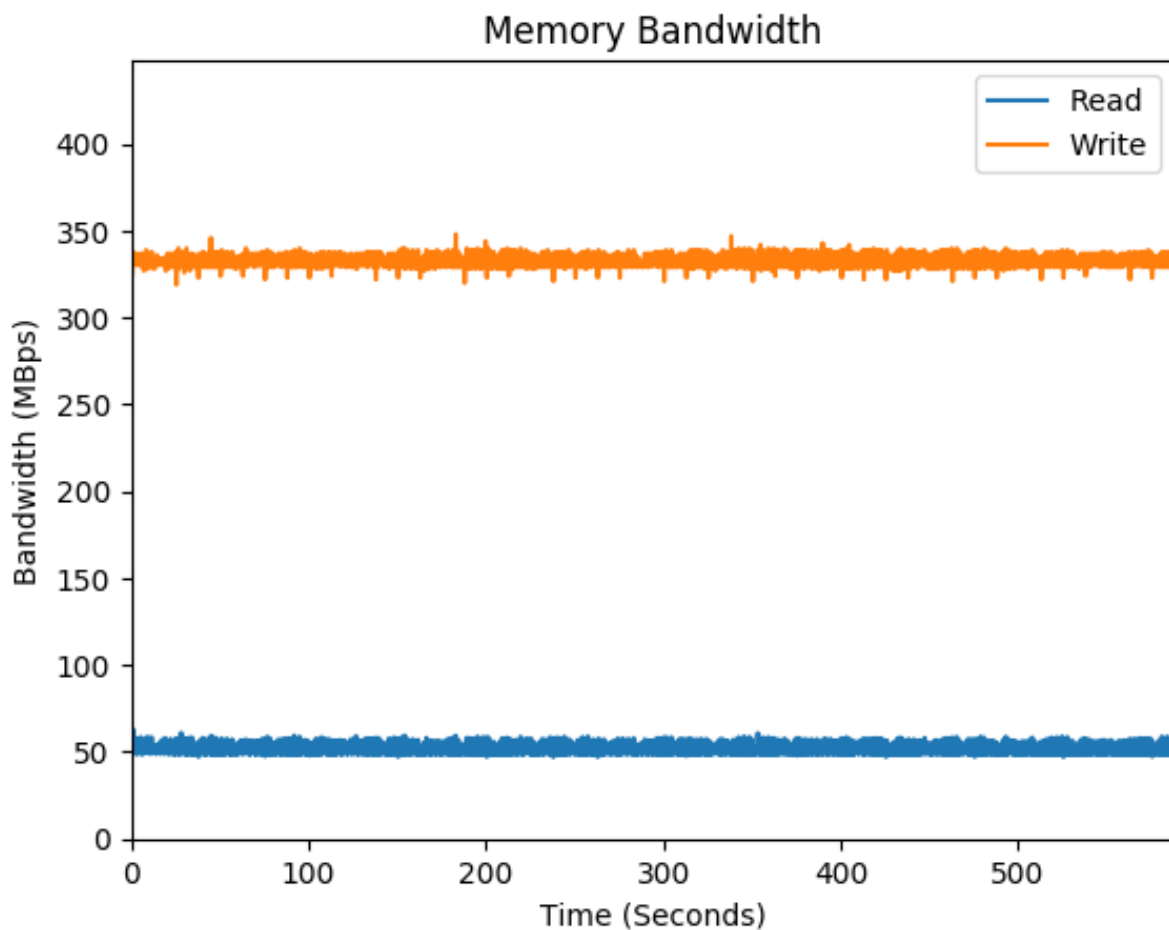
Report compiled at 08:12PM on 08 March 2020 using 8,412,439 data points

Project: Custom QoS Scheduler Benchmarking

Tester: Conor Walsh (conor@conorwalsh.net)

Original DPDK App

Memory Bandwidth

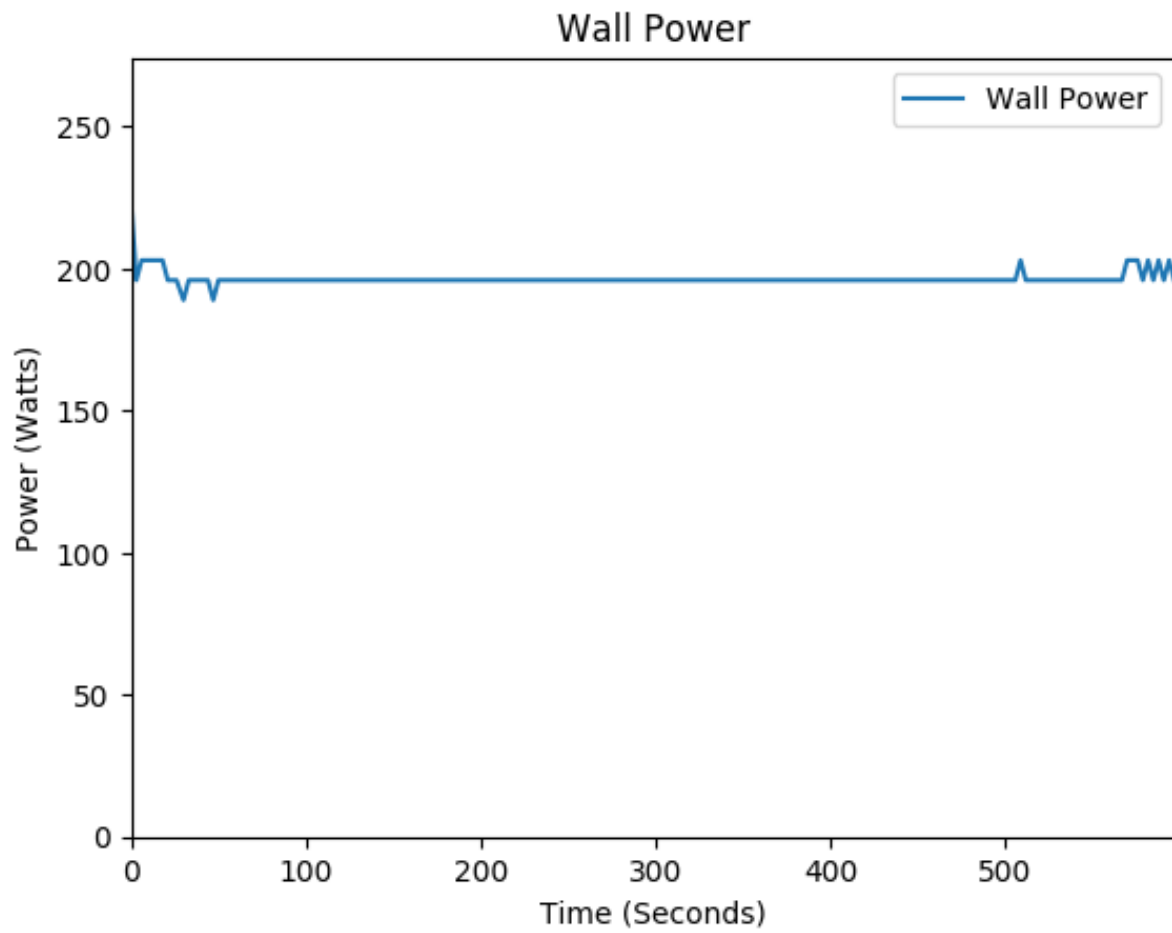


Read Avg: 50.69MBps

Write Avg: 331.8MBps

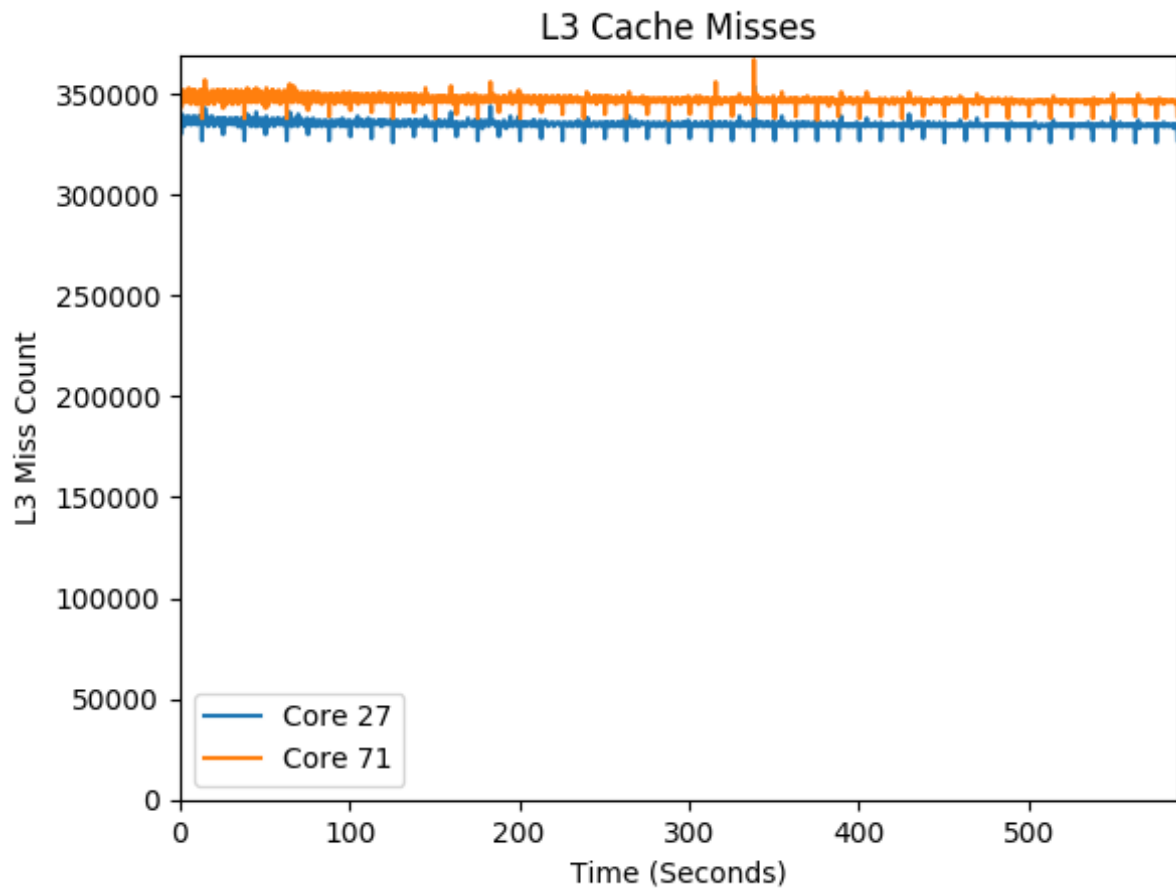
Write to Read Ratio: 6.55

Wall Power



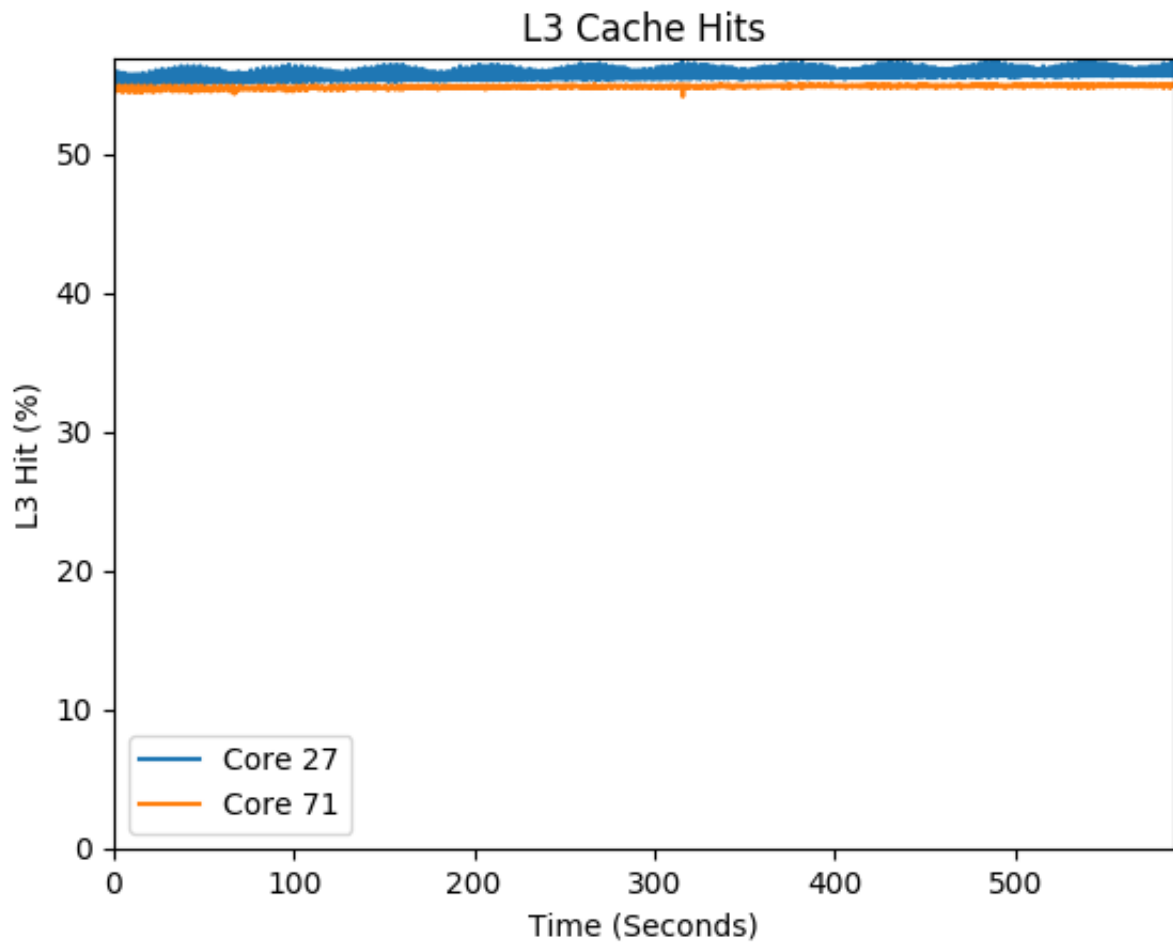
Wall Power Avg: 196.5Watts

L3 Cache



Core 27 L3 Misses: 335097.7

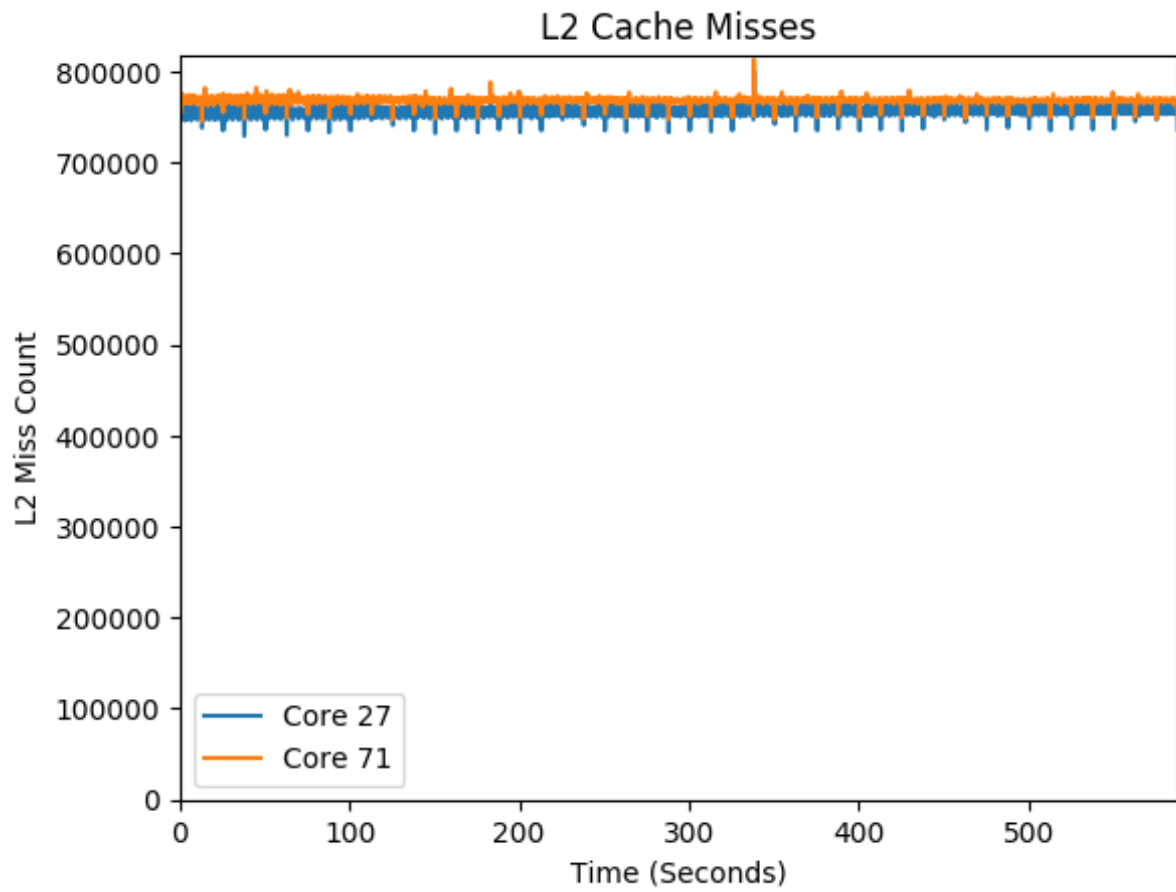
Core 71 L3 Misses: 347112.2



Core 27 L3 Hits: 55.6%

Core 71 L3 Hits: 54.8%

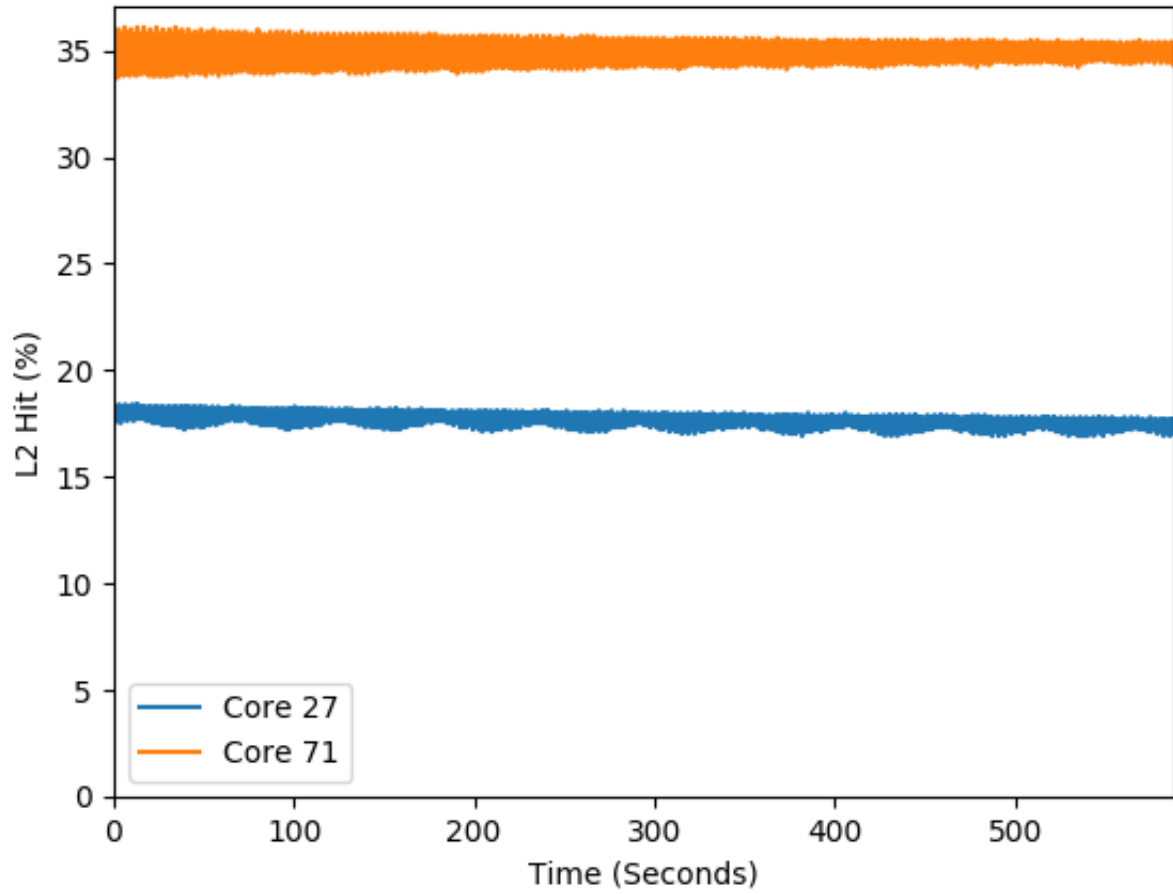
L2 Cache



Core 27 L2 Misses: 754341.7

Core 71 L2 Misses: 768108.4

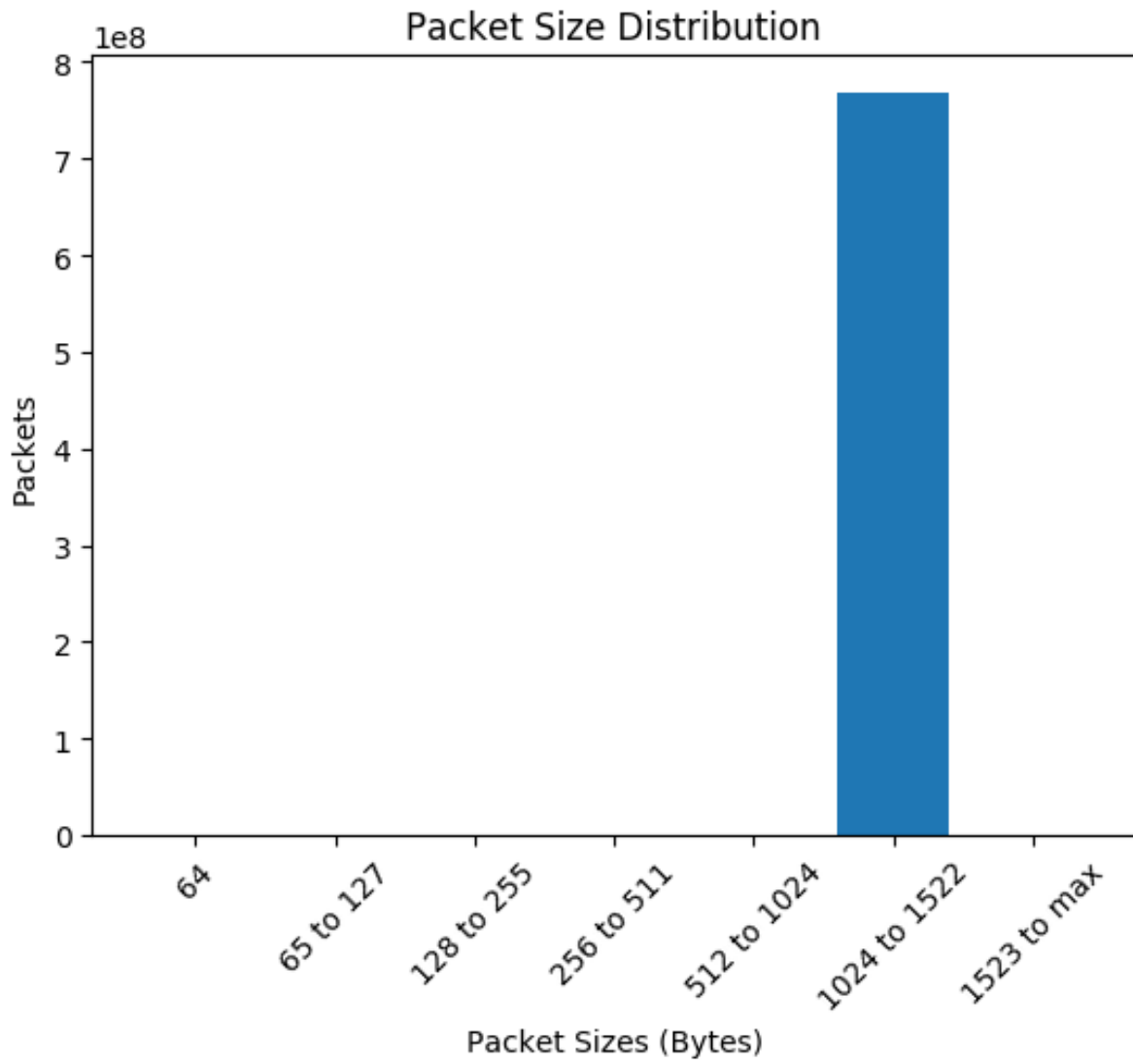
L2 Cache Hits

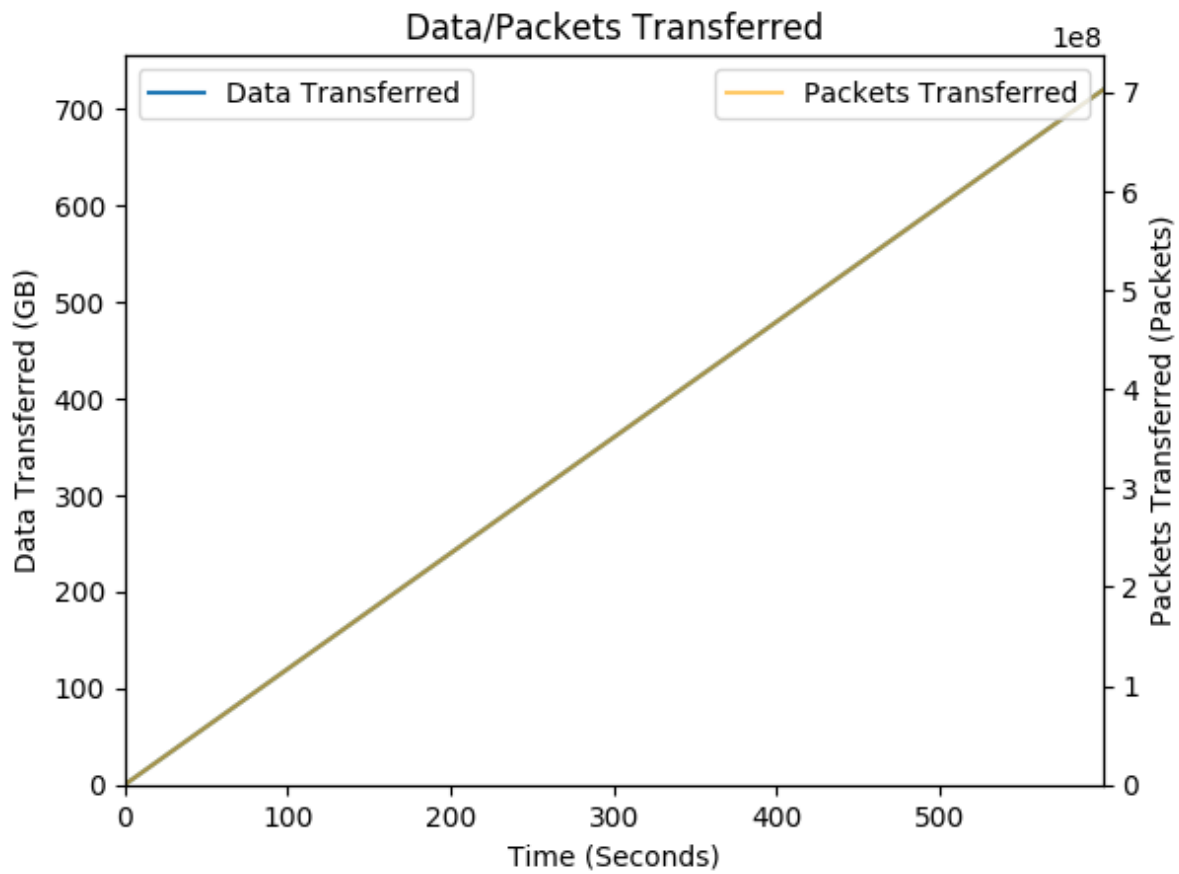


Core 27 L2 Hits: 17.8%

Core 71 L2 Hits: 34.9%

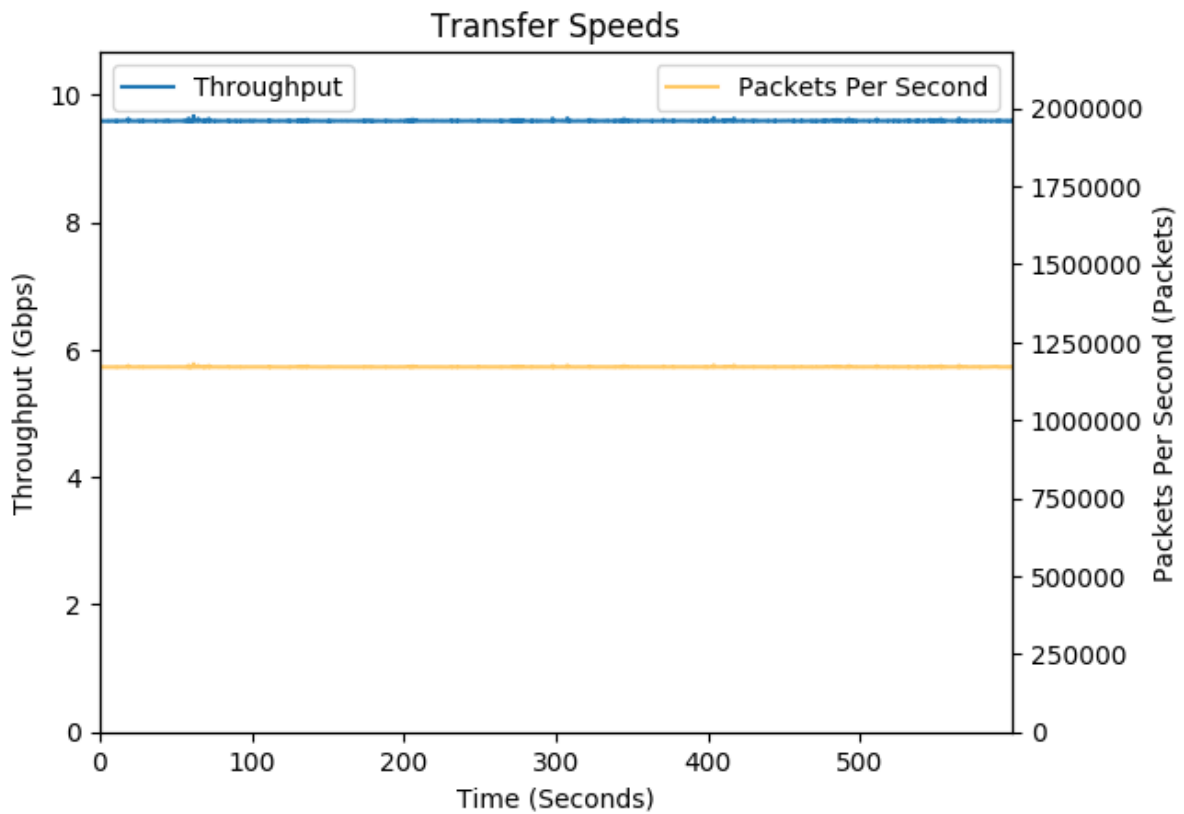
Telemetry





Total Data Transferred: 718.8GB

Total Packets Transferred: 701,964,470 packets



Average Throughput: 9.59 Gbps

Average Packets Per Second: 1,170,428.0 pps

Errors

RX Errors: 0

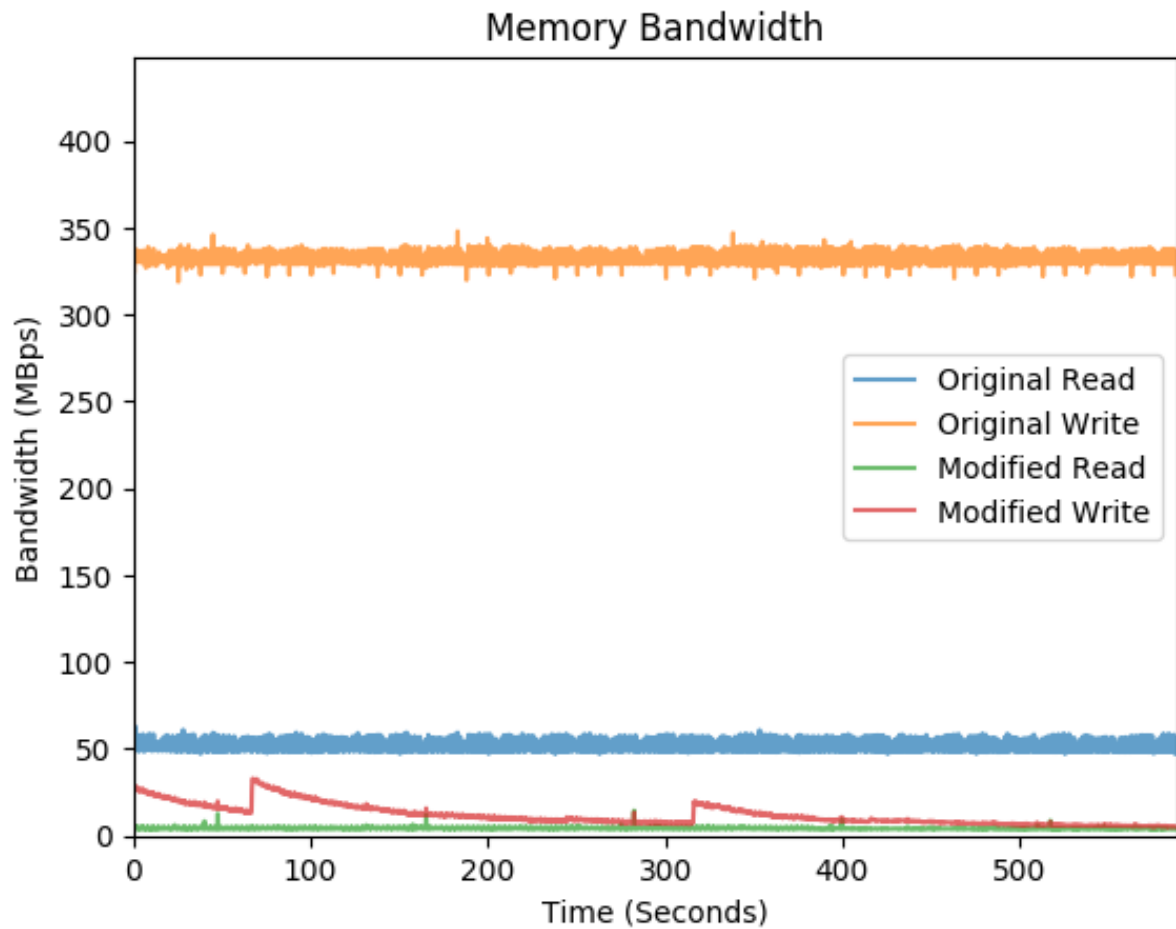
TX Errors: 0

RX Dropped Packets: 0

TX Dropped Packets: 0

Modified DPDK App

Memory Bandwidth

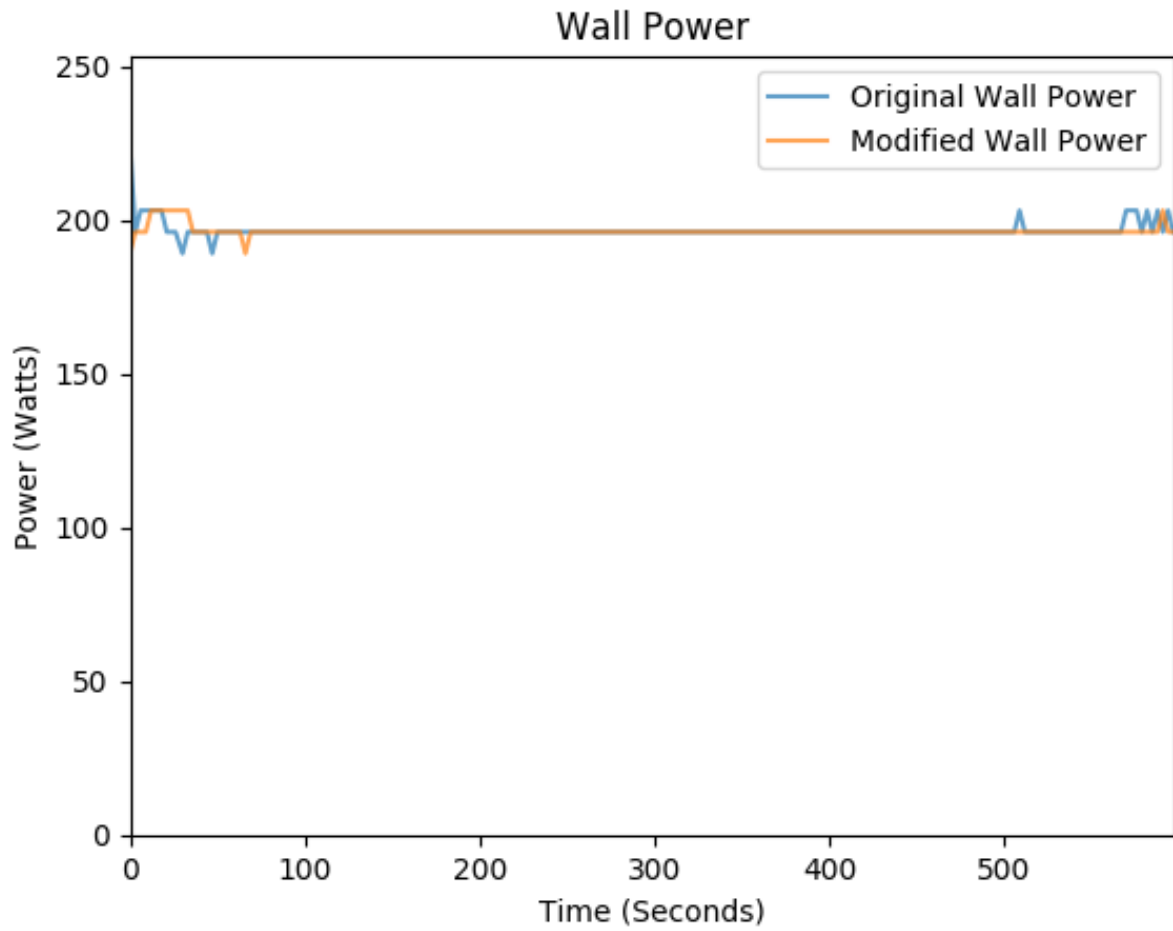


Read Avg: 4.32MBps (-91.5%)

Write Avg: 11.88MBps (-96.4%)

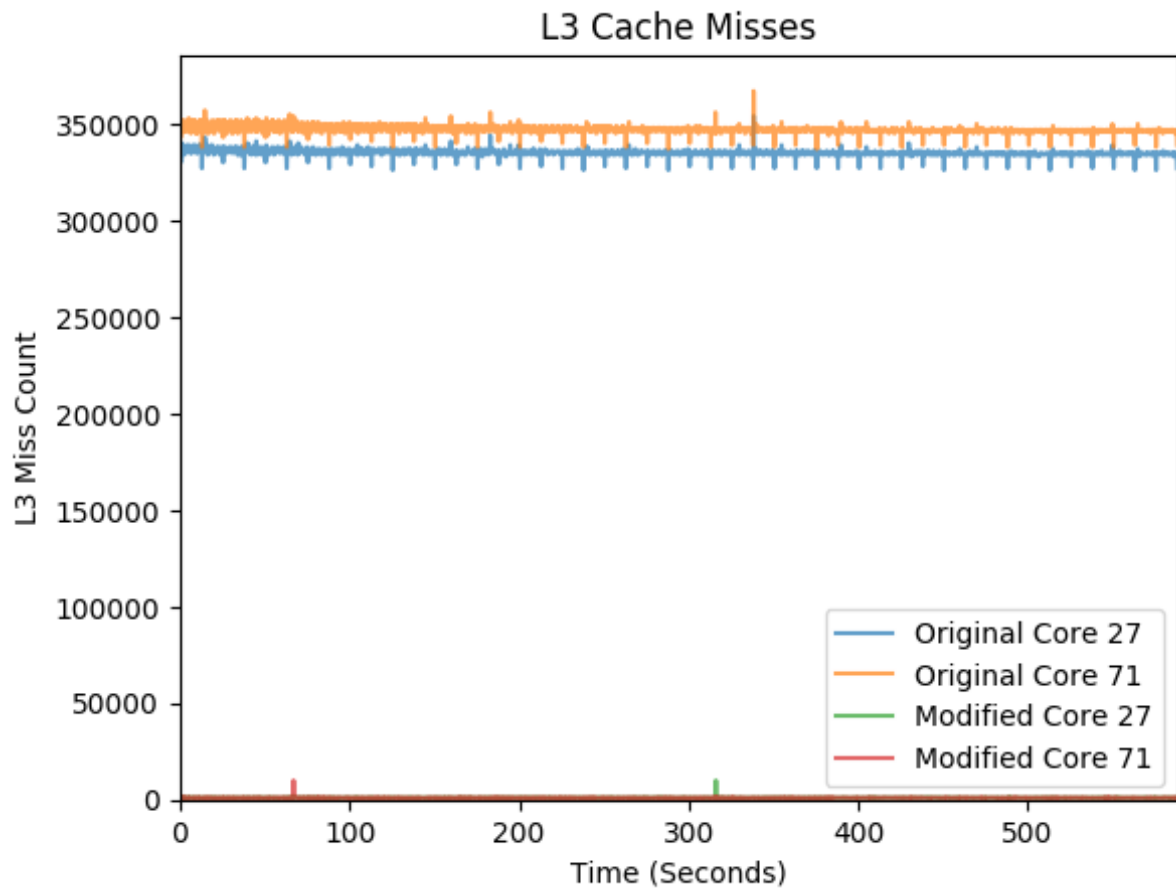
Write to Read Ratio: 2.75

Wall Power



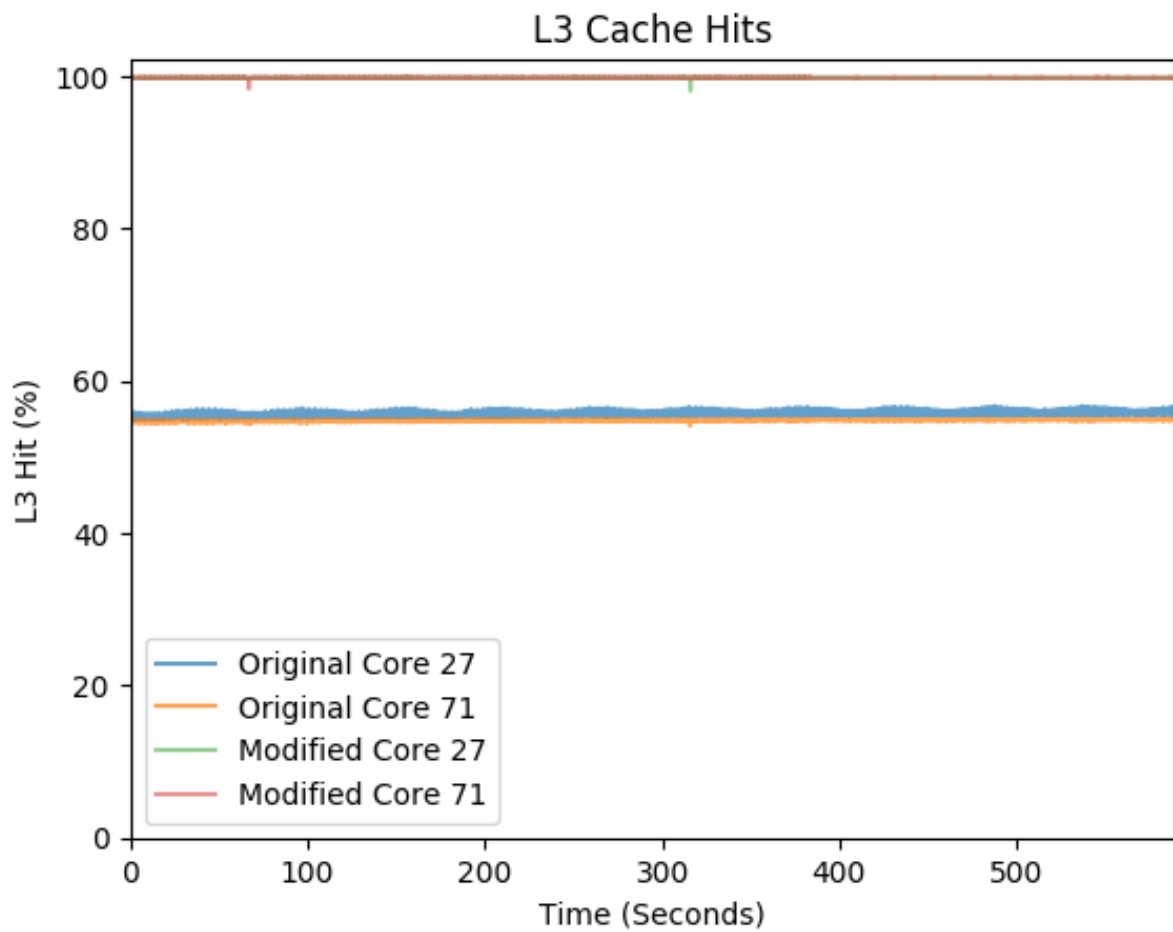
Wall Power Avg: 196.2Watts (-0.2%)

L3 Cache



Core 27 L3 Misses: 1027.1 (-99.7%)

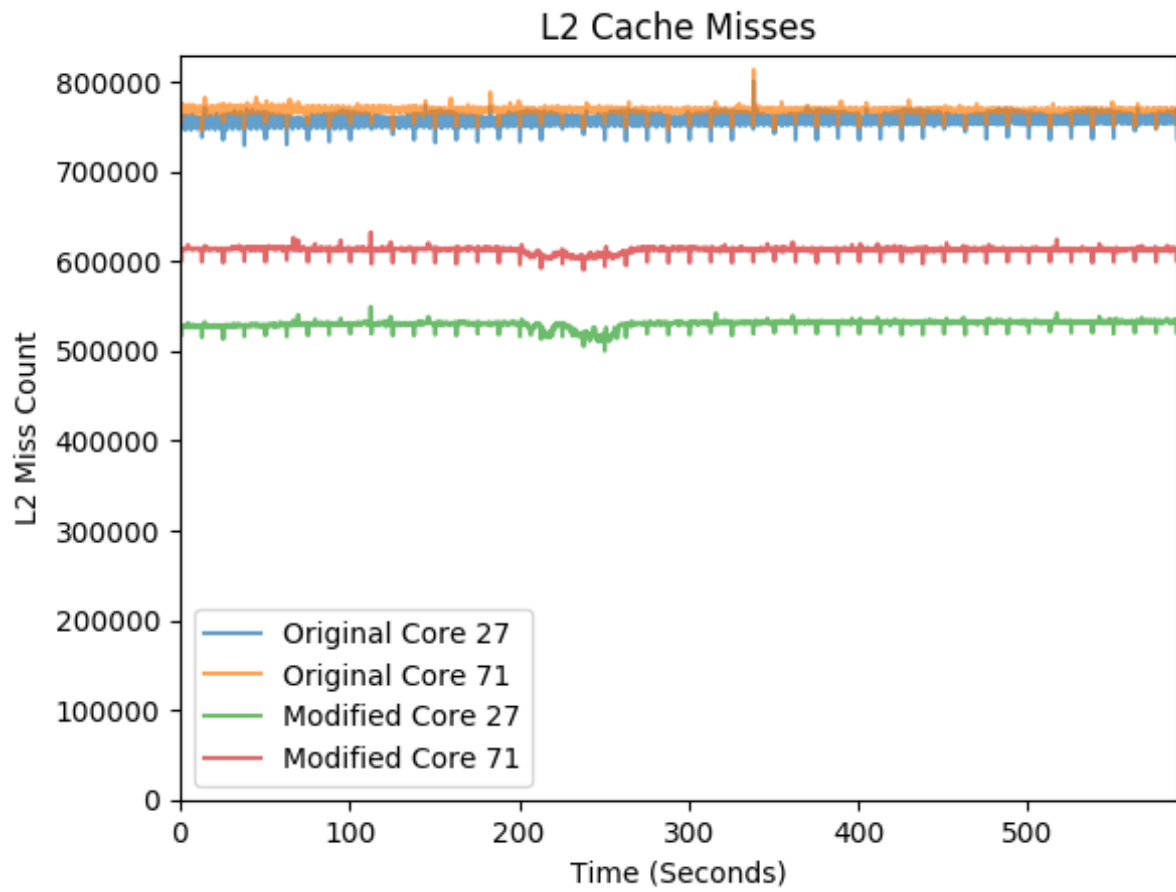
Core 71 L3 Misses: 1034.9 (-99.7%)



Core 27 L3 Hits: 99.8% (+44.2%)

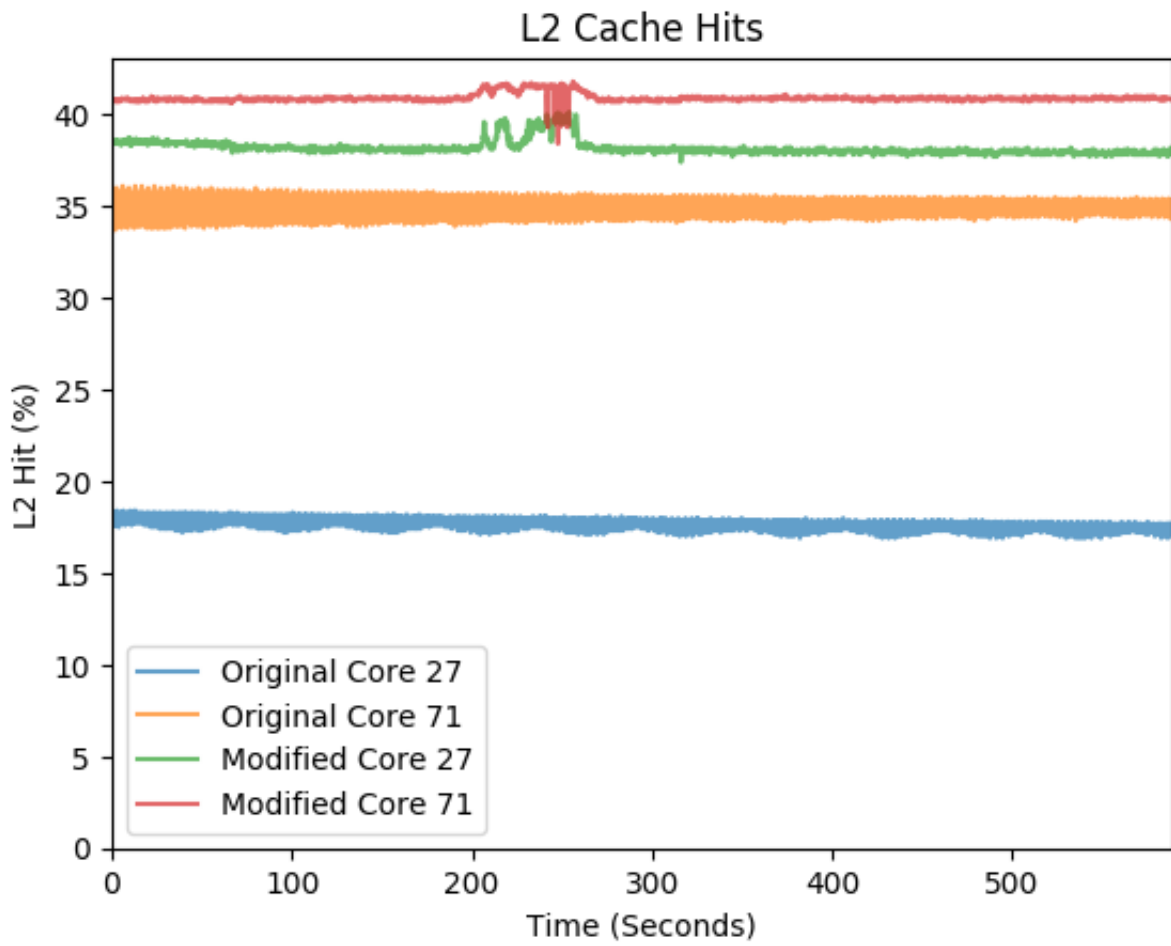
Core 71 L3 Hits: 99.8% (+45.0%)

L2 Cache



Core 27 L2 Misses: 529788.9 (-29.8%)

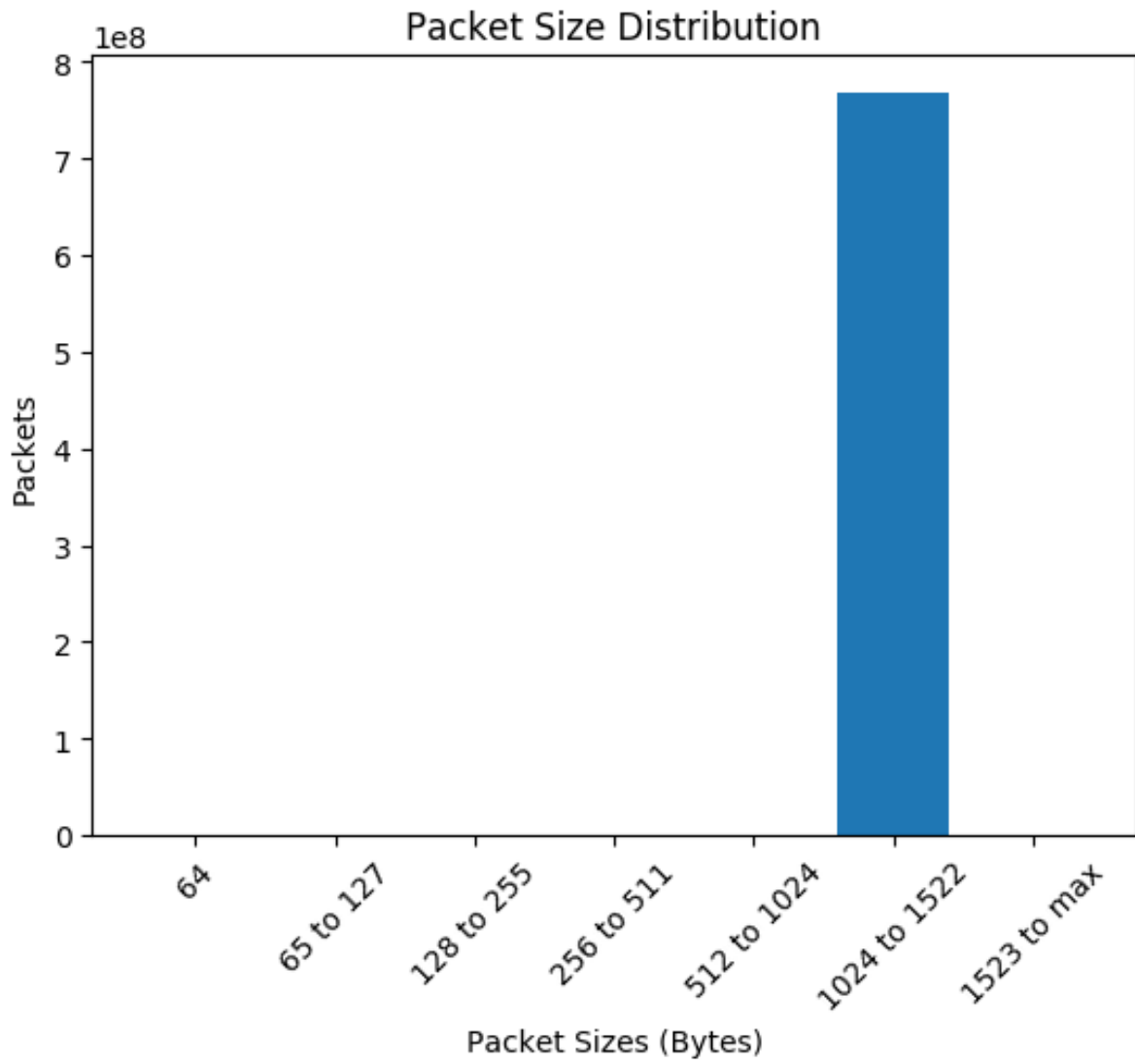
Core 71 L2 Misses: 612247.2 (-20.3%)

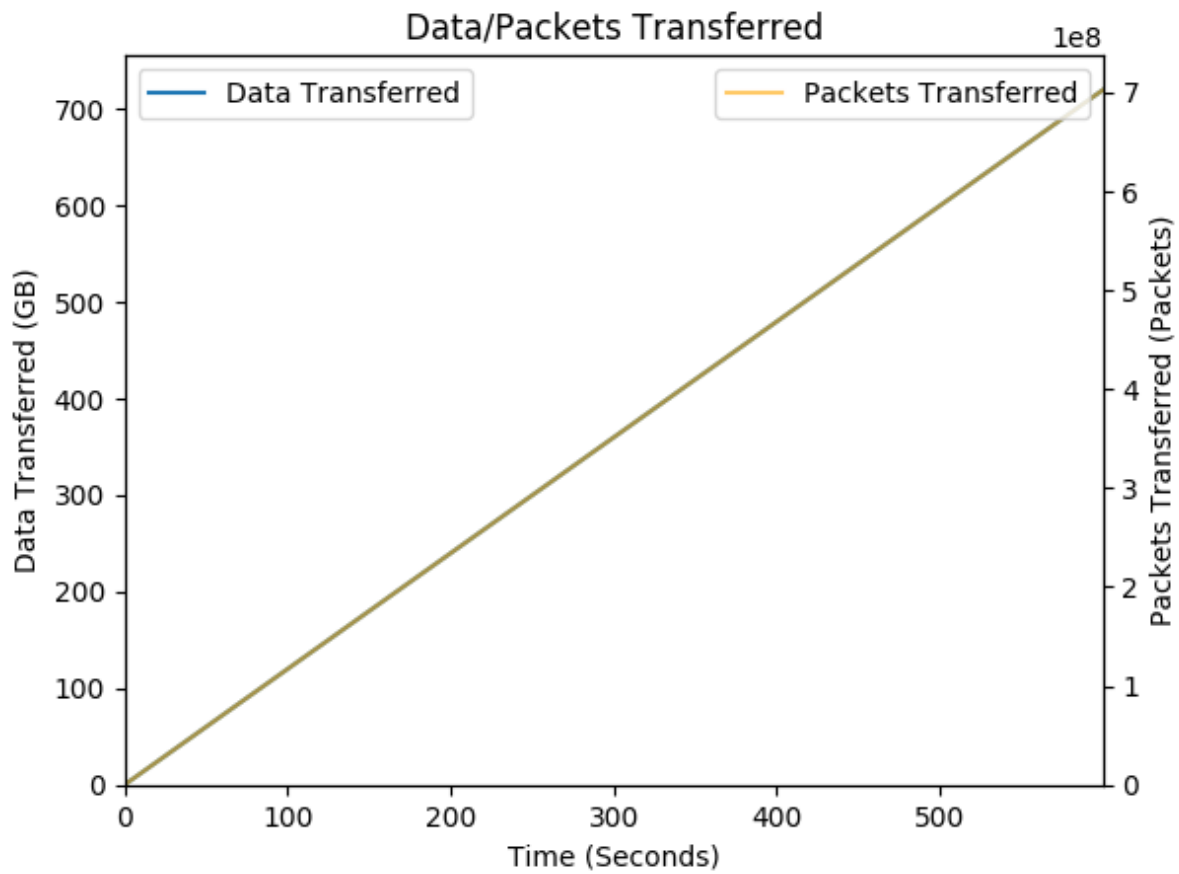


Core 27 L2 Hits: 38.2% (+20.4%)

Core 71 L2 Hits: 40.9% (+6.0%)

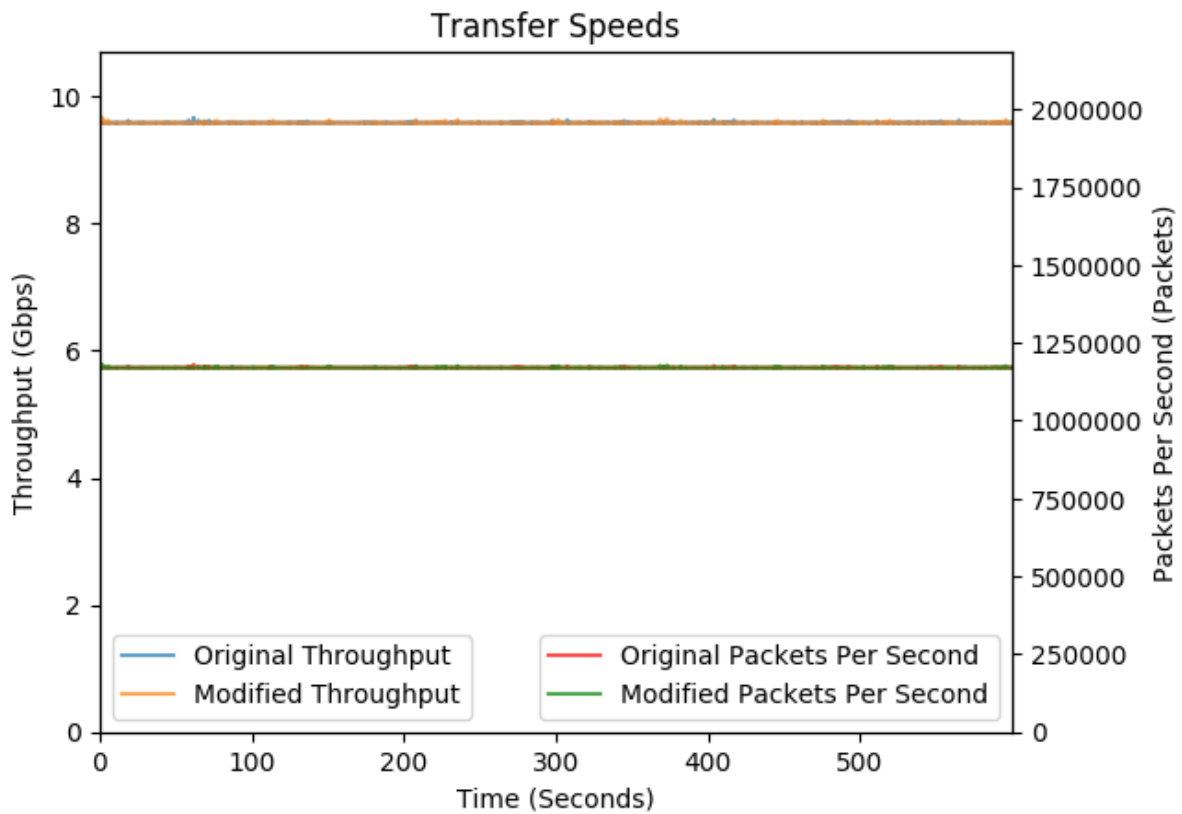
Telemetry





Total Data Transferred: 718.7GB (-0.1GB)

Total Packets Transferred: 701,844,126 packets (-120,344 packets)



Average Throughput: 9.59 Gbps (+0.00Gbps)

Average Packets Per Second: 1,170,227.0 pps (-201 pps)

Errors

RX Errors: 0 (+0)

TX Errors: 0 (+0)

RX Dropped Packets: 0 (+0)

TX Dropped Packets: 0 (+0)

Optimisation Recommendations

It is recommended to change from ring mempools to stack mempools based on the optimisation results. This can be done by setting `CONFIG_RTE_MBUF_DEFAULT_MEMPOOL_OPS="stack"` in the DPDK `common_base` file.

Please manually review this report to confirm that this recommendation is right for your project.

Test Configuration

DOAT	startuptime 60 testruntime 600 teststepsize 0.25 serverport 80
REPORTING	projectname Custom QoS Scheduler Benchmarking testername Conor Walsh testeremail conor@conorwalsh.net generatepdf True generatezip True doatack True includemaster False
APPARAM	applocation /root/walshc/dpdk1911/dpdk/examples/qos_sched_custom/ appcmd run_1_telem.sh telemetry True socketpath /var/run/dpdk/default_client
OPTIMISATION	optimisation True dpdkmakecmd make -j install T=x86_64-native-linux-gcc DESTDIR=install appmakecmd make memop True cacheadjust False newcache 256
CPU	testcore 18 appmaster 26 appcores 27,71
TOOLS	pcmdir /root/walshc/pcm/

DOAT Acknowledgement



This report was compiled using the DPDK Optimisation & Analysis Tool or DOAT for short *Pronunciation: dōt*

DOAT is a tool for analysing and assisting in the optimisation of applications built using DPDK. DOAT is an out of band analysis tool that does not require the DPDK app being analysed to be changed.

DOAT was developed by as part of his final year project for his degree in Electronic and Computer Engineering at the University of Limerick. Hardware and guidance for the project was provided by the Networks Platform Group in Intel (Shannon, Ireland).

DOAT is available as an open source project: github.com/conorwalsh/doat