DOAT Report

DPDK Optimisation & Analysis Tool

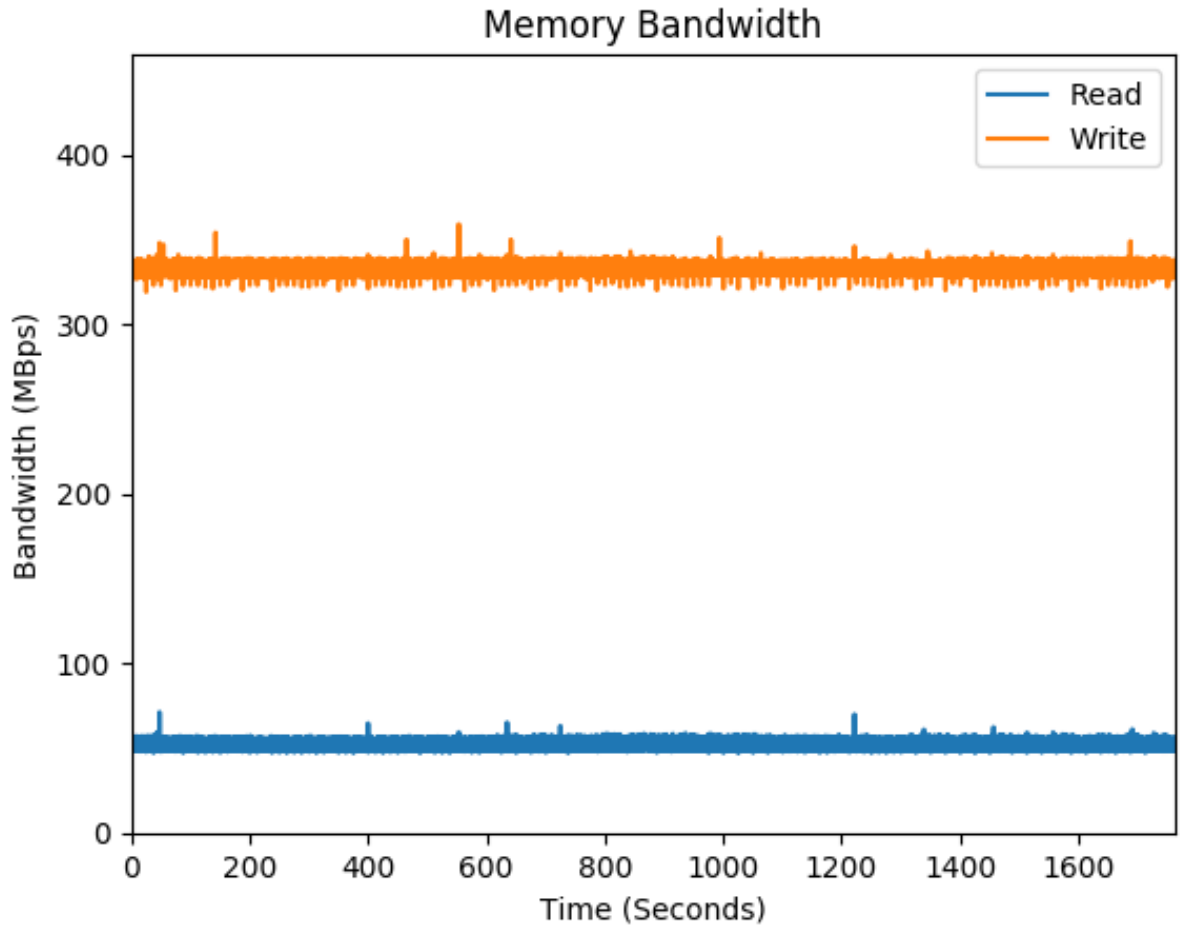
Report compiled at 03:06PM on 29 January 2020 using 25,185,471 data points

Project: Custom QoS Schedular Benchmarking

Tester: Conor Walsh (conor@conorwalsh.net)

Original DPDK App

Memory Bandwidth

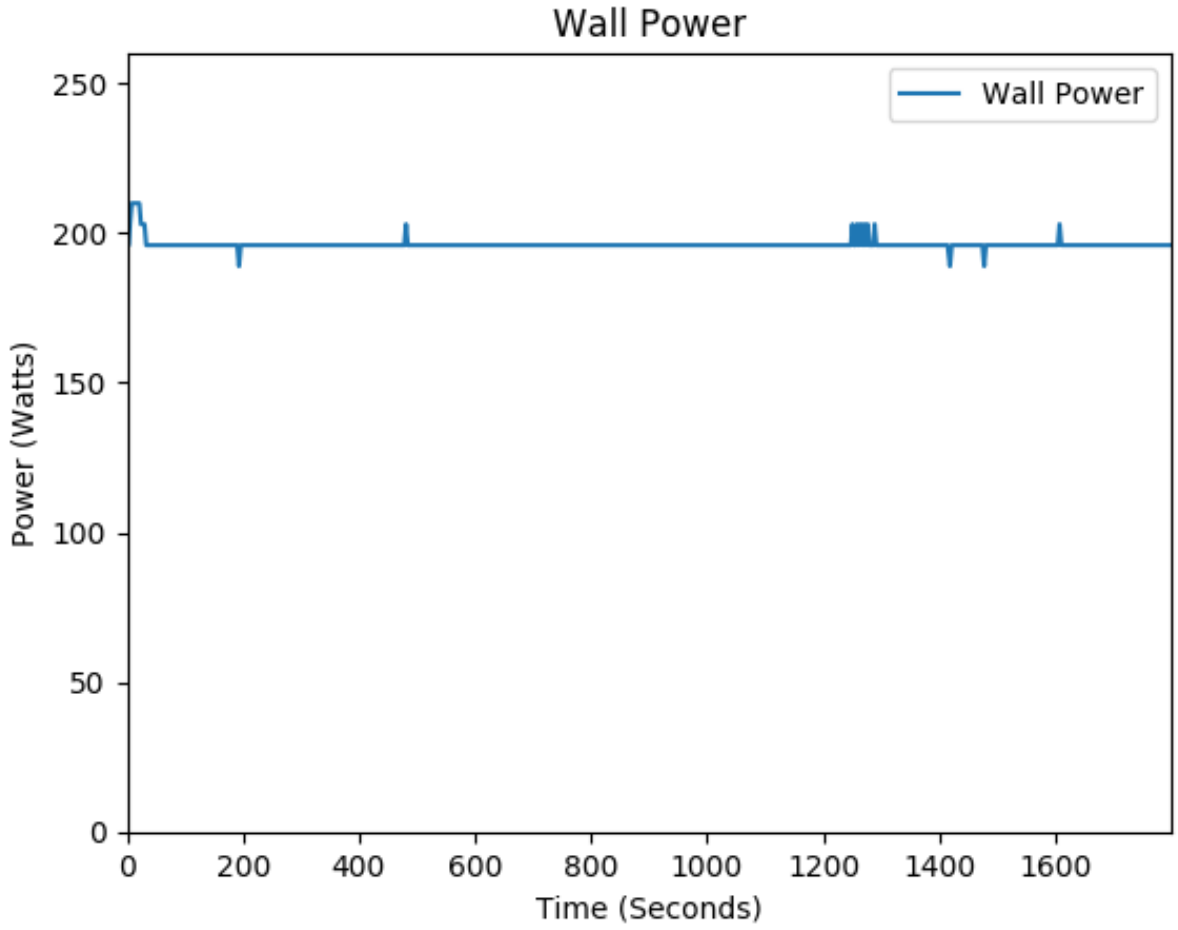


Read Avg: 50.13MBps

Write Avg: 331.44MBps

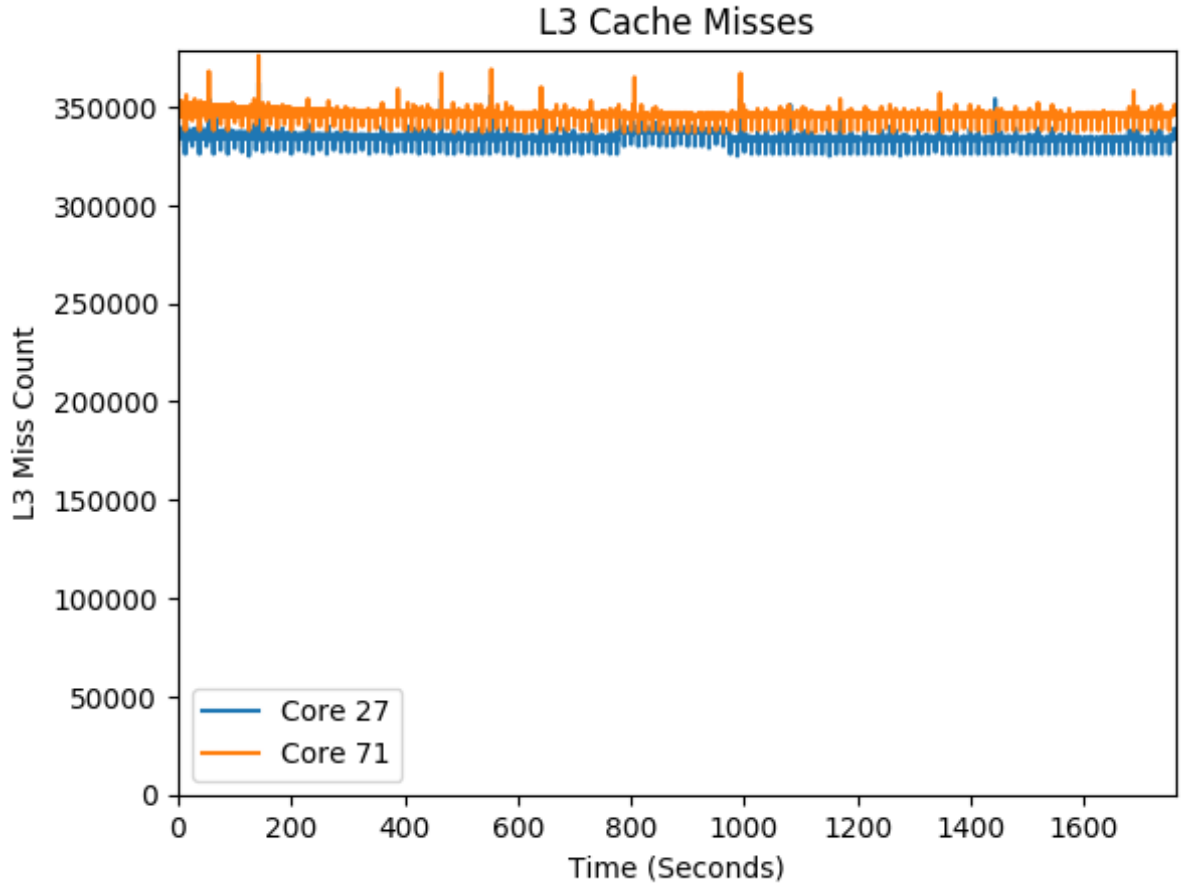
Write to Read Ratio: 6.61

Wall Power



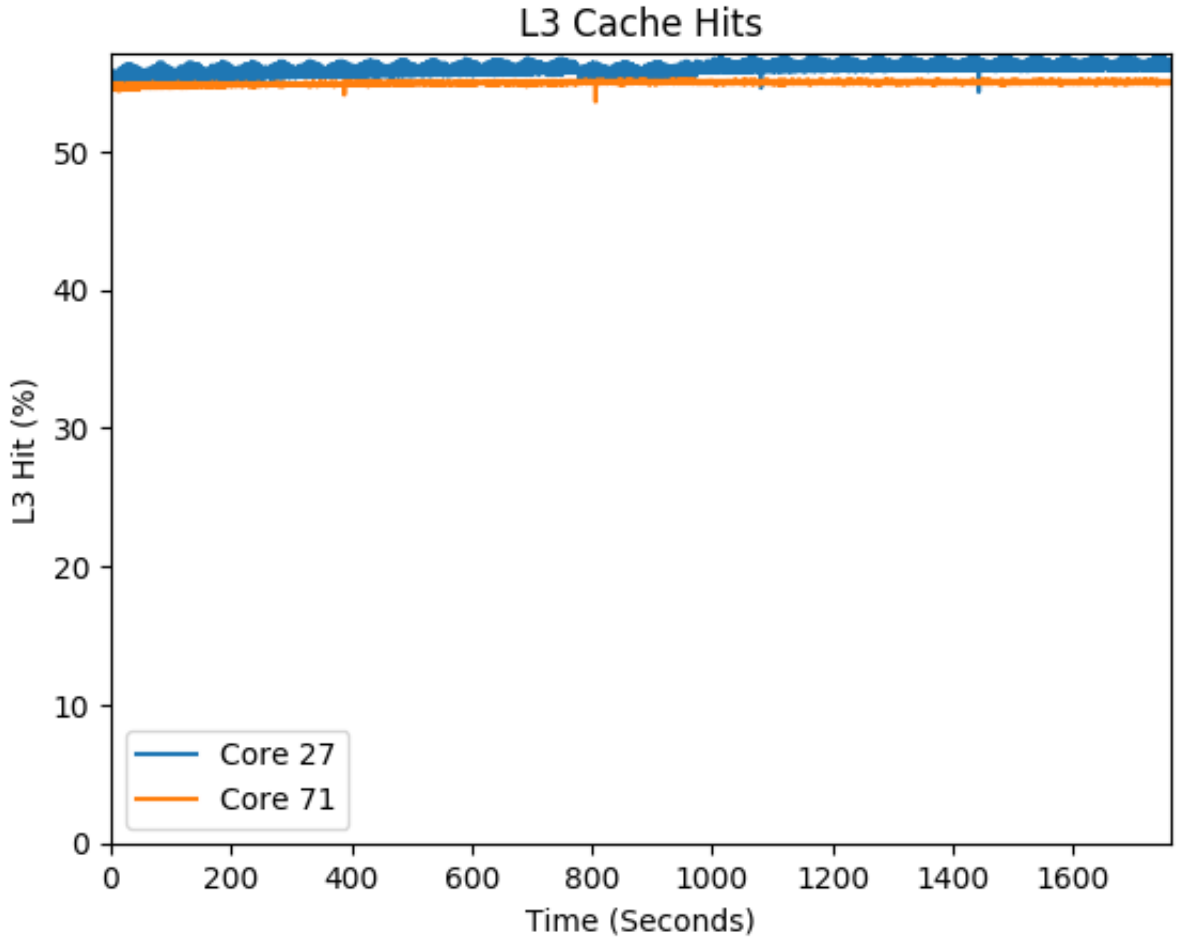
Wall Power Avg: 196.2Watts

L3 Cache



Core 27 L3 Misses: 334619.0

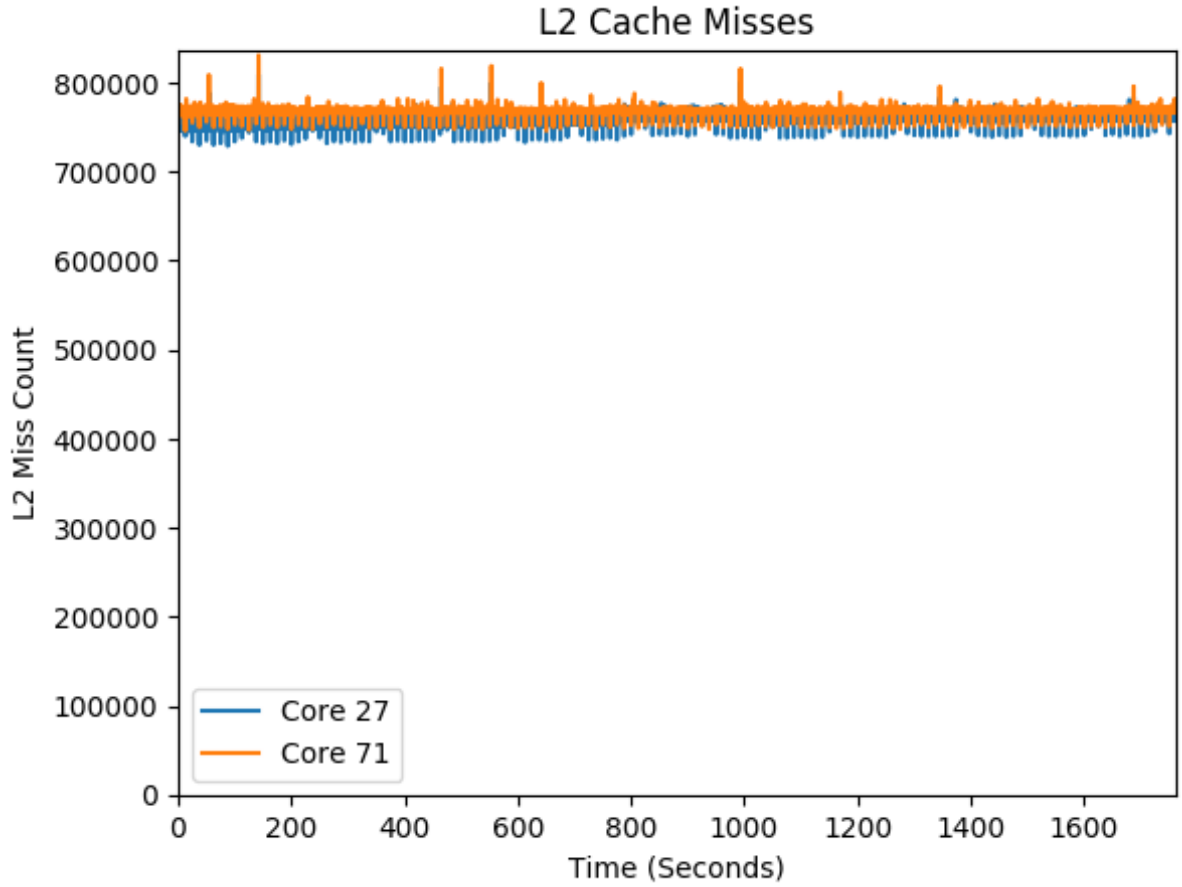
Core 71 L3 Misses: 346326.4



Core 27 L3 Hits: 55.8%

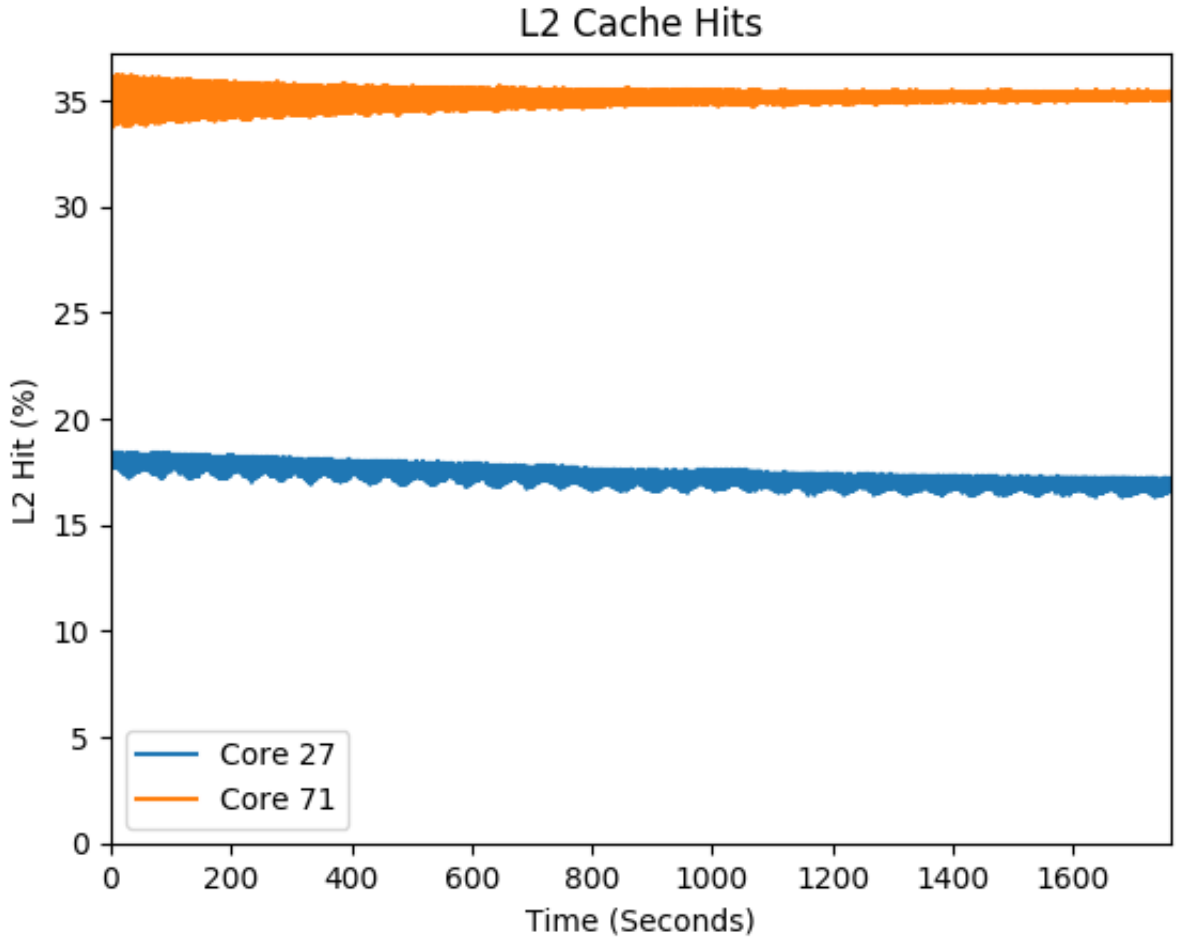
Core 71 L3 Hits: 55.0%

L2 Cache



Core 27 L2 Misses: 757195.2

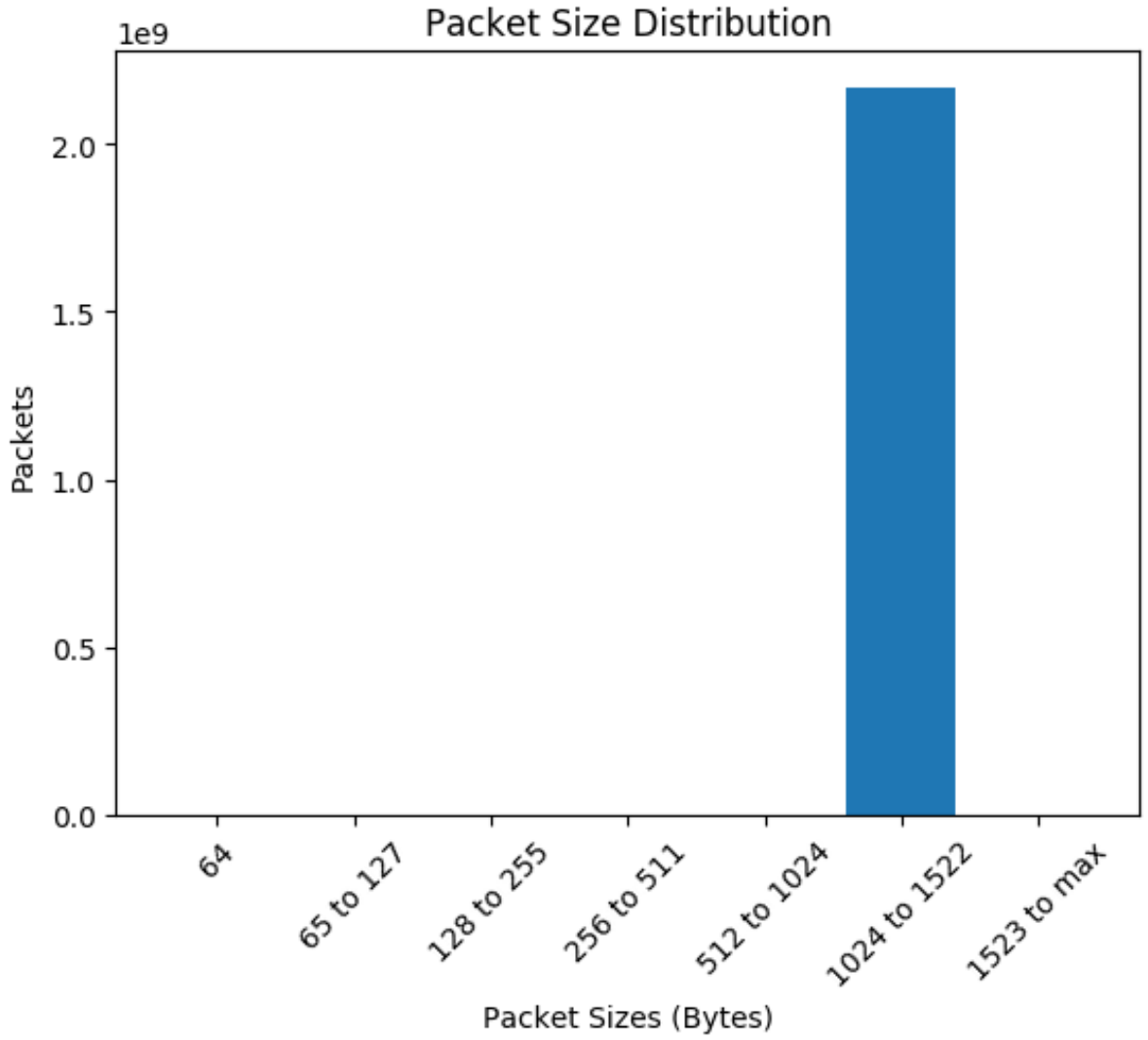
Core 71 L2 Misses: 768827.8

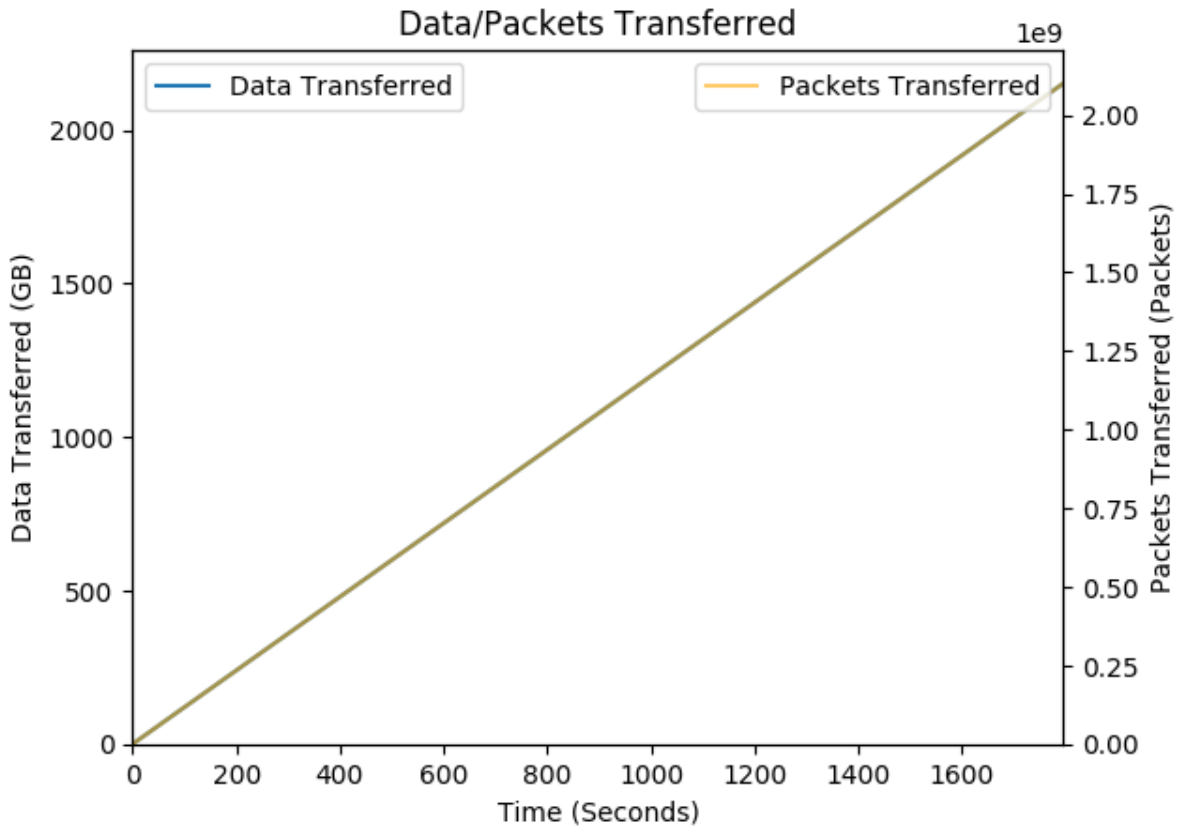


Core 27 L2 Hits: 17.4%

Core 71 L2 Hits: 35.1%

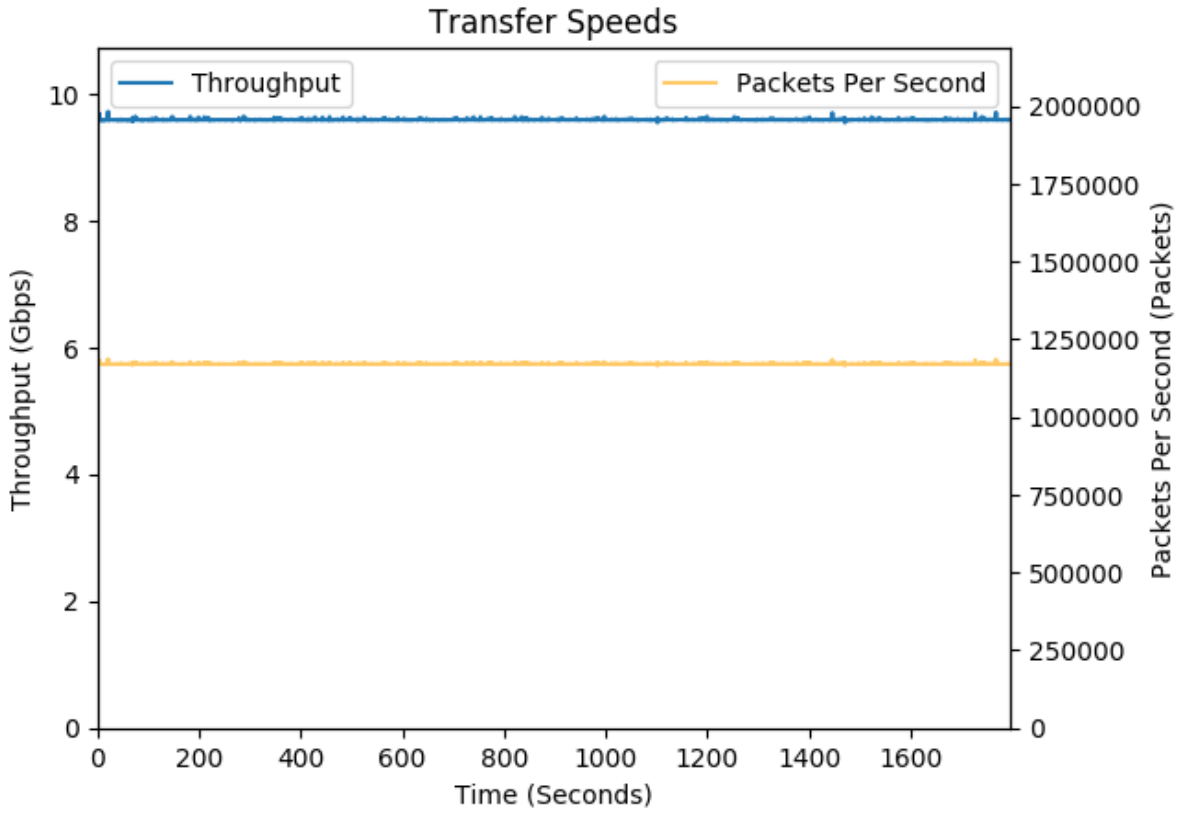
Telemetry


Packet Size Distribution
1e9
2.0
1.5
1.0
0.5
0.0
Packets
64
65 to 127
128 to 255
256 to 511
512 to 1024
1024 to 1522
1523 to max
Packet Sizes (Bytes)



Total Data Transferred: 2152.0GB

Total Packets Transferred: 2,101,573,009 packets



Average Throughput: 9.59 Gbps

Average Packets Per Second: 1,170,467.0 pps

Errors

RX Errors: 0

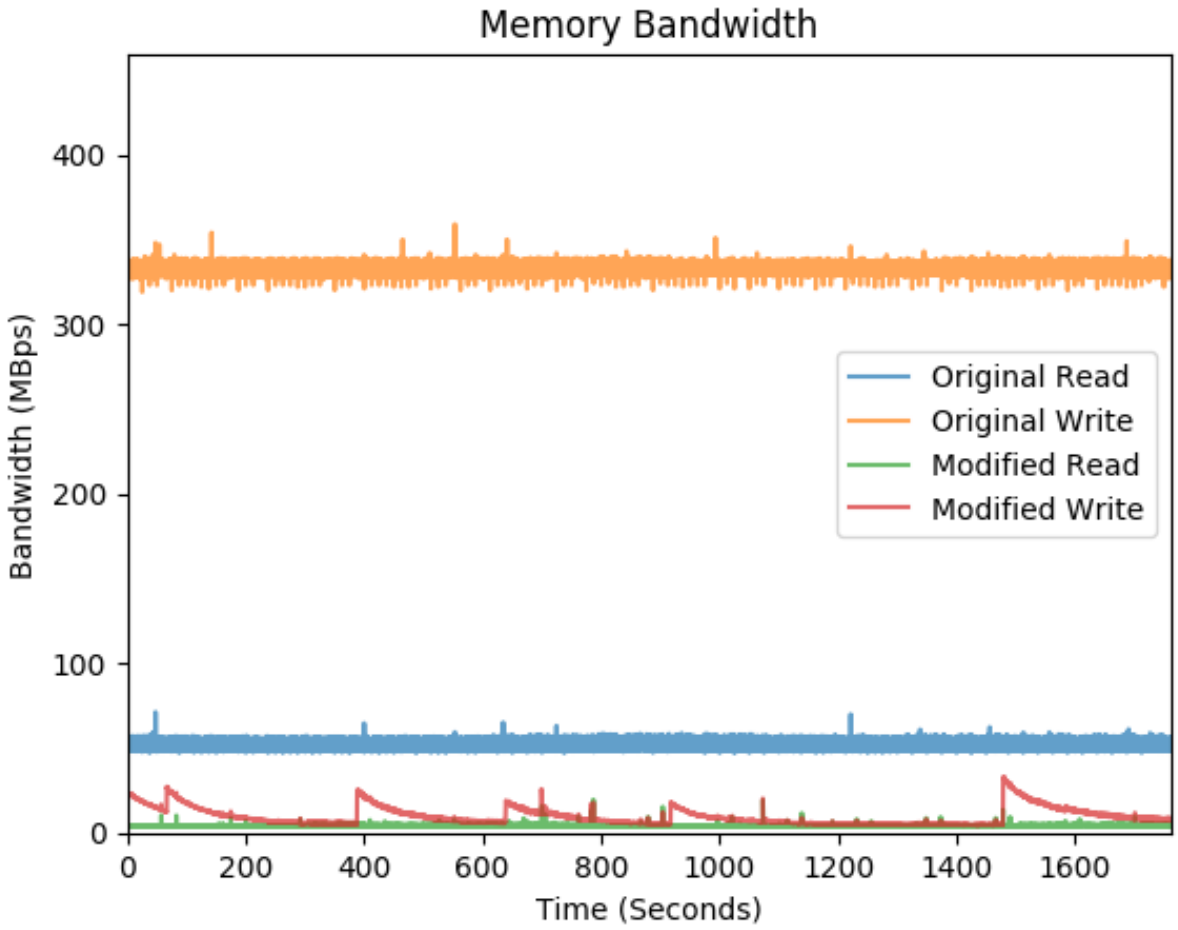
TX Errors: 0

RX Dropped Packets: 0

TX Dropped Packets: 0

Modified DPDK App

Memory Bandwidth

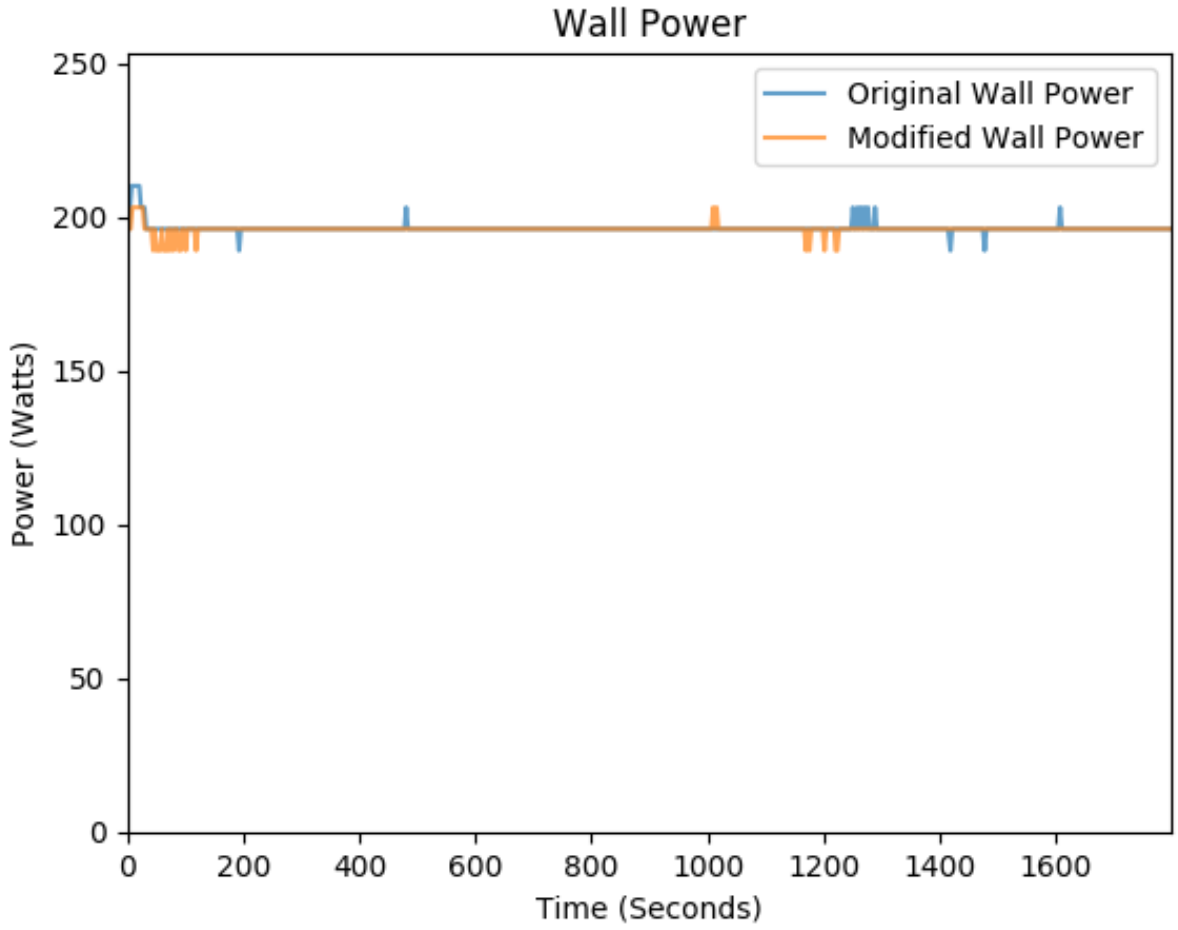


Read Avg: 4.23MBps (-91.6%)

Write Avg: 9.65MBps (-97.1%)

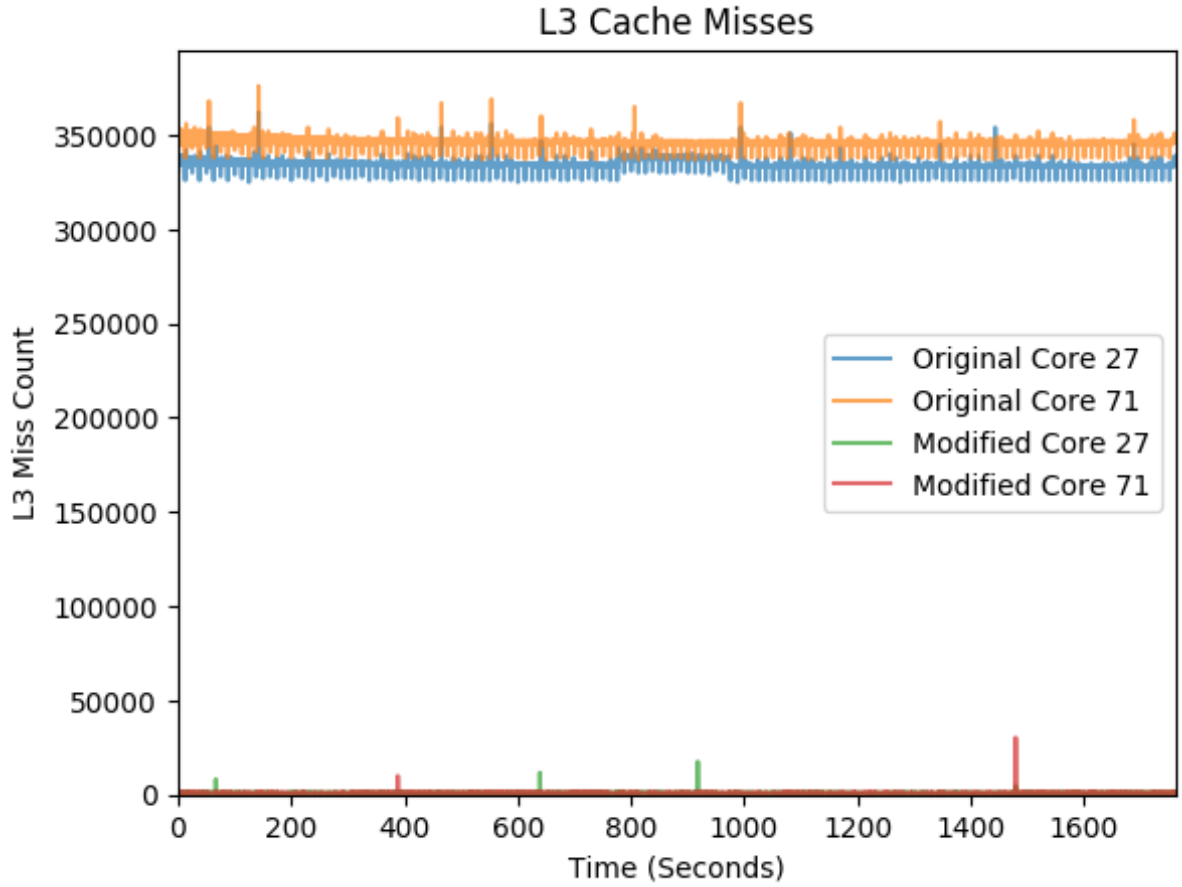
Write to Read Ratio: 2.28

Wall Power



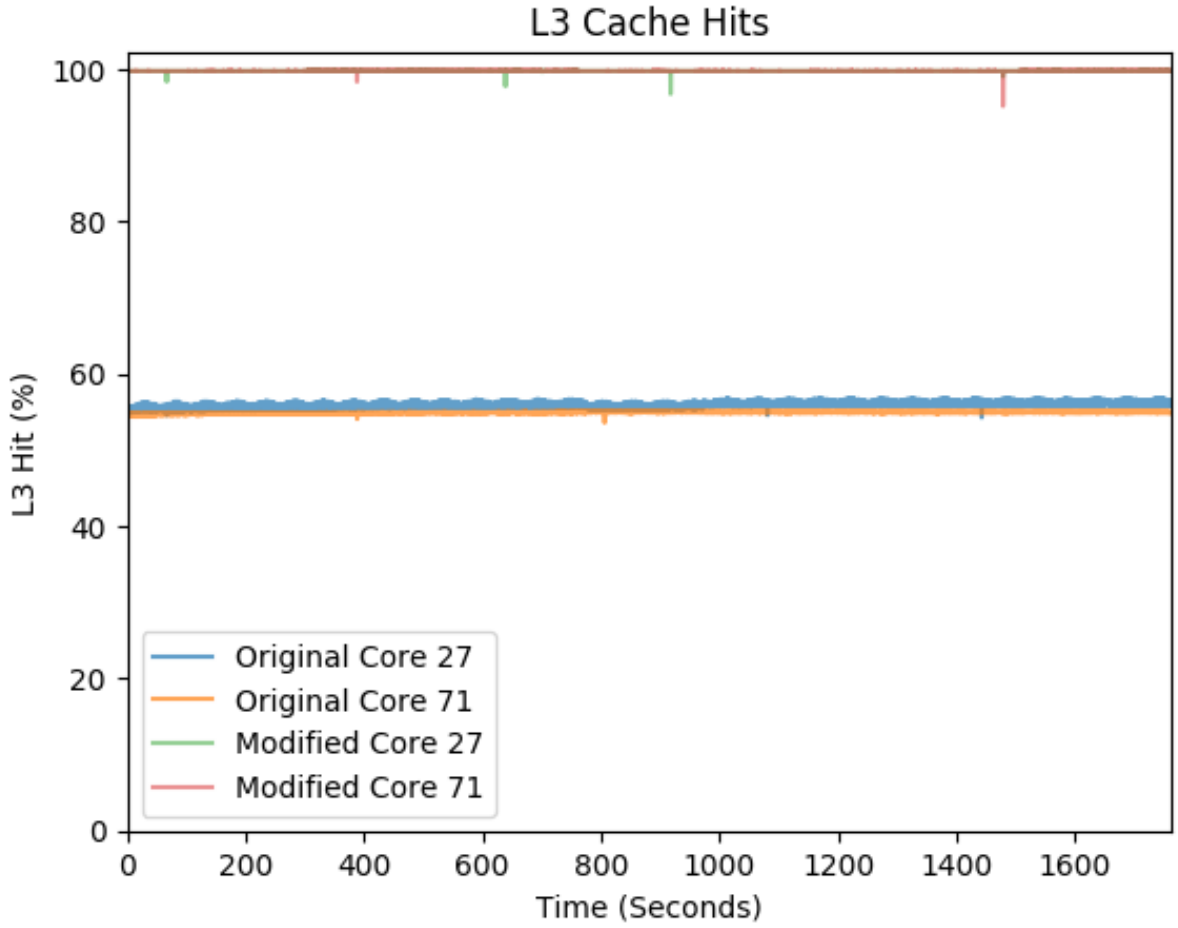
Wall Power Avg: 195.9Watts (-0.2%)

L3 Cache



Core 27 L3 Misses: 1008.3 (-99.7%)

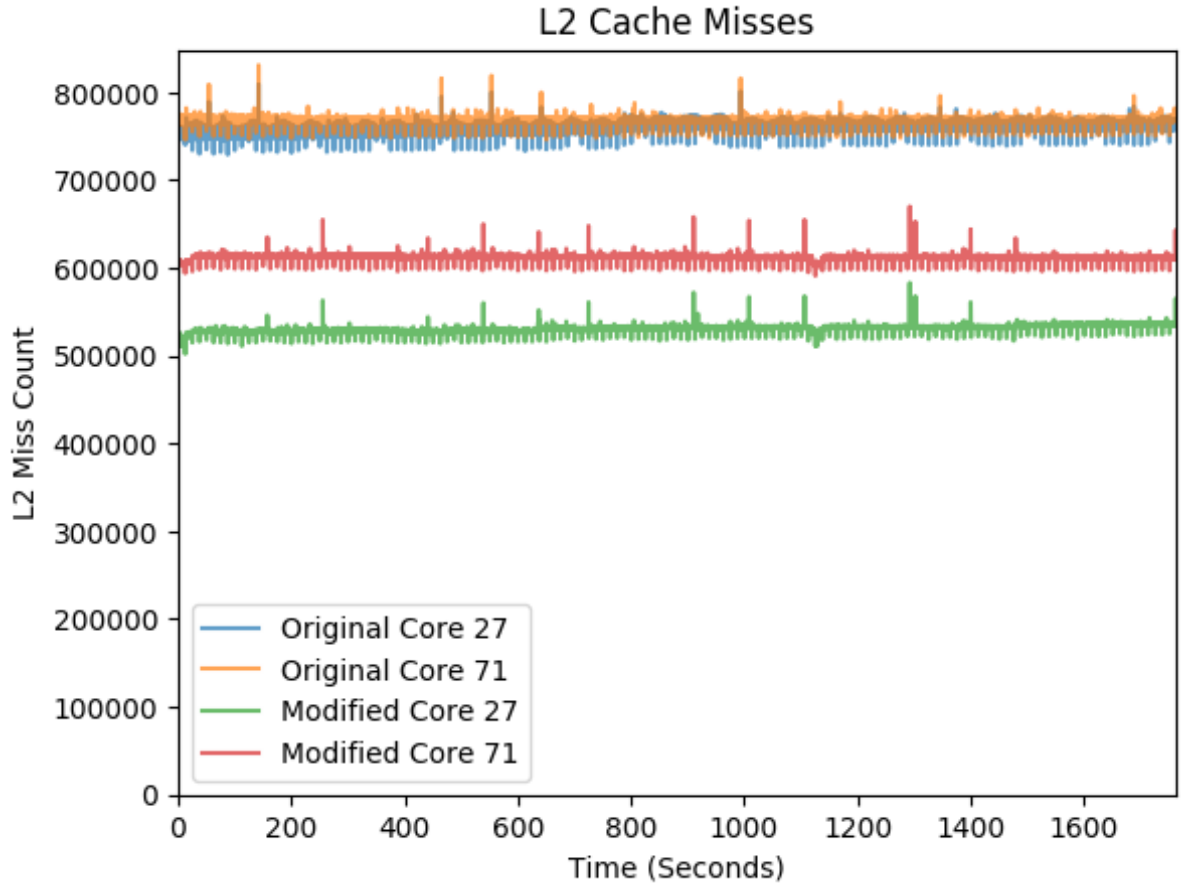
Core 71 L3 Misses: 1032.7 (-99.7%)



Core 27 L3 Hits: 99.8% (+44.0%)

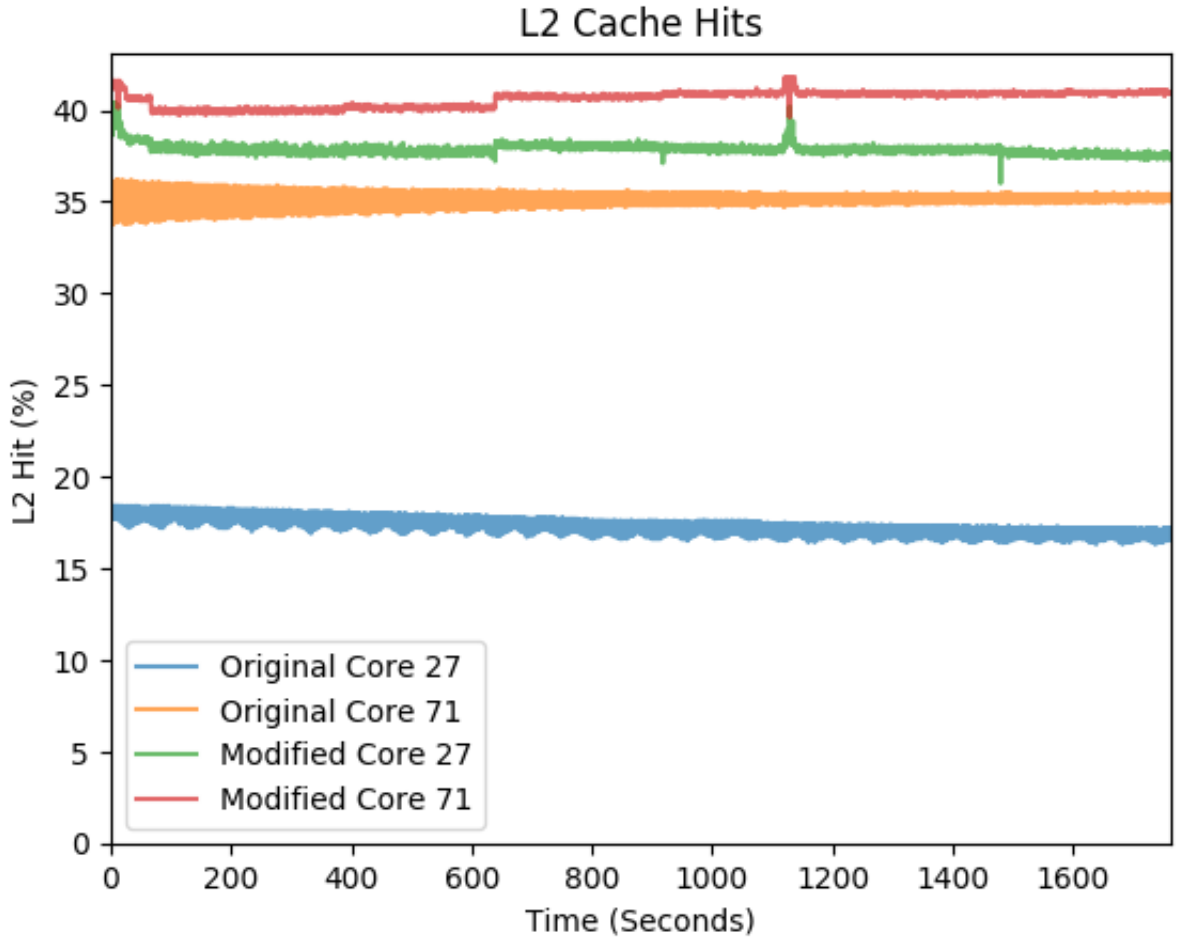
Core 71 L3 Hits: 99.8% (+44.8%)

L2 Cache



Core 27 L2 Misses: 530915.9 (-29.9%)

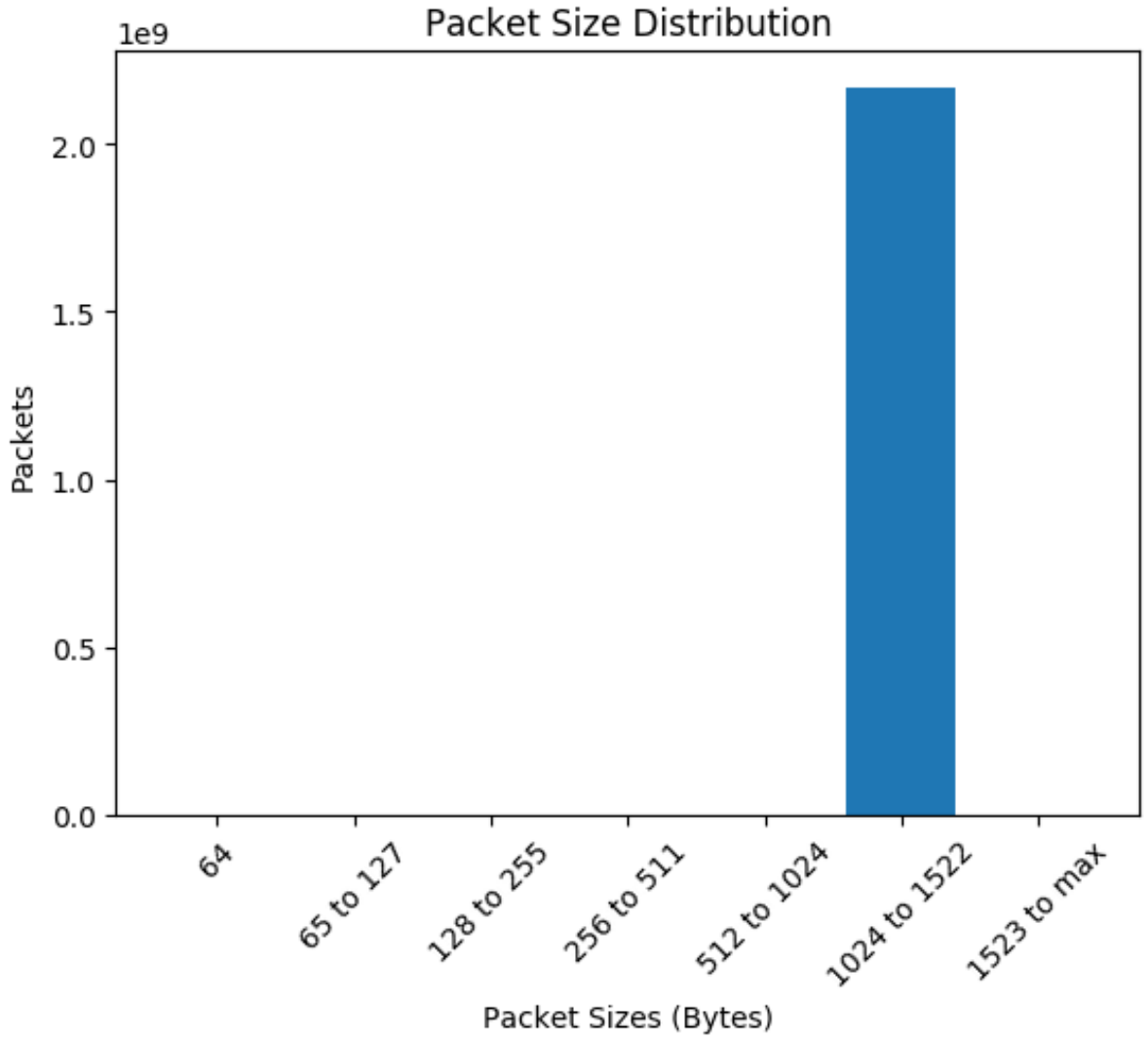
Core 71 L2 Misses: 612568.3 (-20.3%)

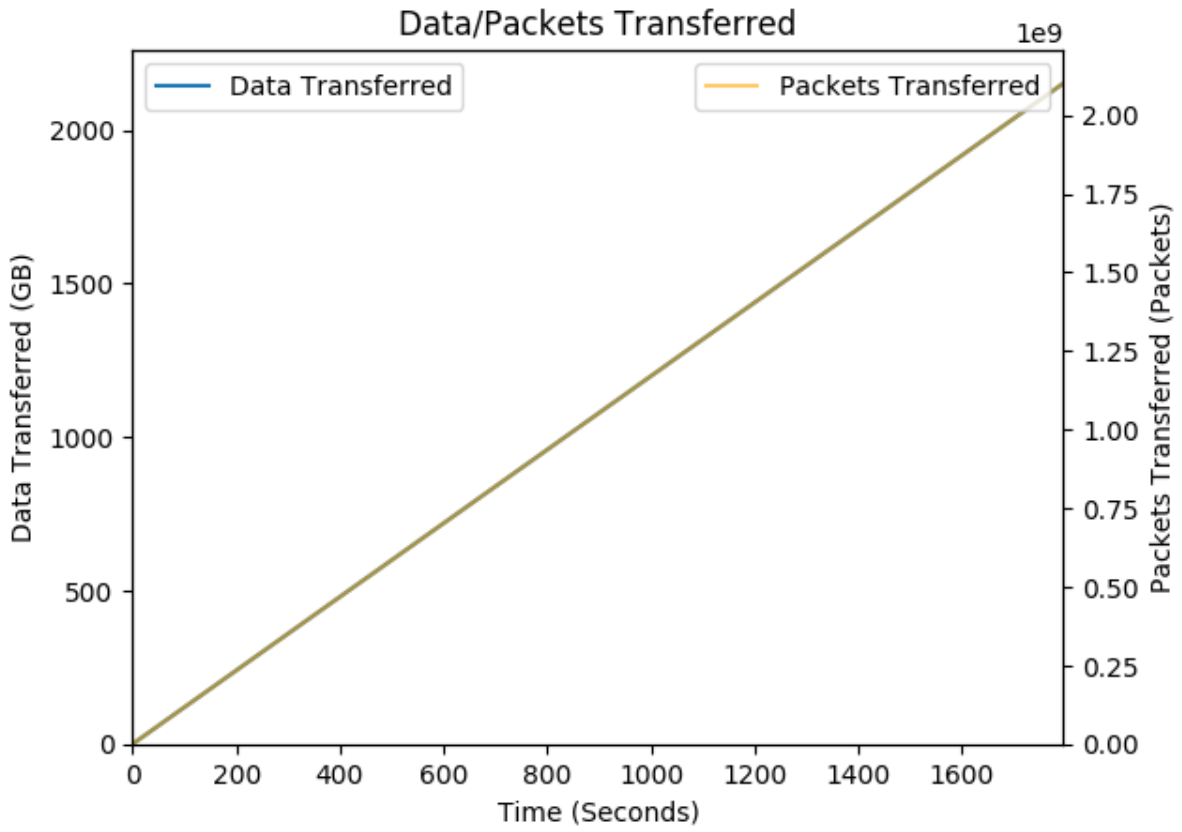


Core 27 L2 Hits: 37.9% (+20.5%)

Core 71 L2 Hits: 40.6% (+5.5%)

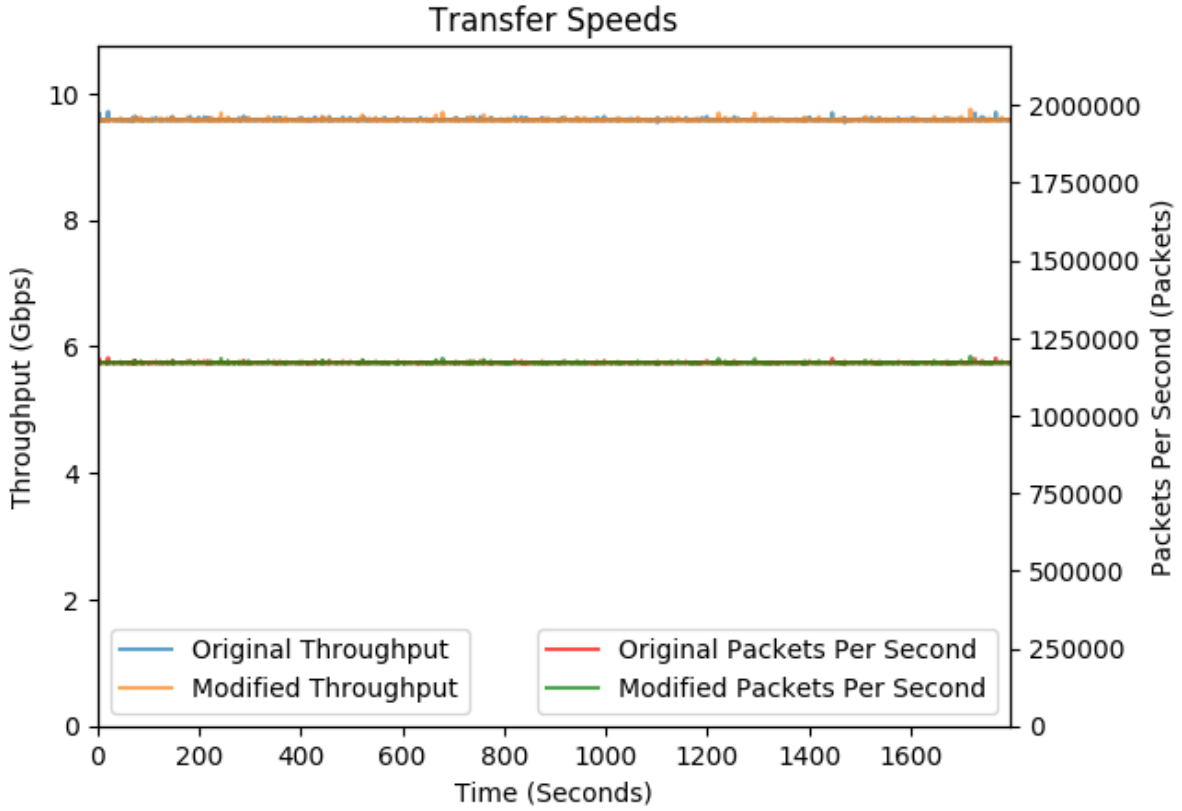
Telemetry


Packet Size Distribution
1e9
2.0
1.5
1.0
0.5
0.0
Packets
64
65 to 127
128 to 255
256 to 511
512 to 1024
1024 to 1522
1523 to max
Packet Sizes (Bytes)



Total Data Transferred: 2151.9GB (-0.1GB)

Total Packets Transferred: 2,101,461,538 packets (-111,471 packets)



Average Throughput: 9.59 Gbps (+0.00Gbps)

Average Packets Per Second: 1,170,242.0 pps (-225 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	1800
	teststepsize	0.25
	serverport	80
REPORTING	**projectname**	Custom QoS Schedular Benchmarking
	testername	Conor Walsh
	testeremail	conor@conorwalsh.net
	generatepdf	True
	generatezip	True
	doatack	True
	includemaster	False
APPPARAM	**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
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