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hpe-server-dl325

AMD EPYC 7302P 16-Core testing with a HPE ProLiant DL325 Gen10 Plus (A43 BIOS) and Matrox MGA G200eH3 on Ubuntu 20.04 via the Phoronix Test Suite.

Test Systems:

LOGICAL VOLUME - AMD EPYC 7302P 16-Core

Processor: AMD EPYC 7302P 16-Core @ 3.00GHz (16 Cores / 32 Threads), Motherboard: HPE ProLiant DL325 Gen10 Plus (A43 BIOS), Chipset: AMD Starship/Matisse, Memory: 2 x 16384 MB DDR4-3200MT/s Hynix HMA82GR7DJR8N-XN, Disk: 480GB LOGICAL VOLUME, Graphics: Matrox MGA G200eH3, Network: 2 x Broadcom BCM57416 NetXtreme-E Dual-Media 10G RDMA

OS: Ubuntu 20.04, Kernel: 5.4.0-81-generic (x86_64), Desktop: GNOME Shell, Vulkan: 1.0.2, Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1024x768

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-checking=release --enable-clocale-gnu --enable-default-pie
--enable-gnu-unique-object --enable-languages=c,ada,c++,go,brig,d,fortran,objc,obj-c++,gm2 --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch

```
--enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-9-HskZEA/gcc-9-9.3.0/debian/tmp-nvptx/usr.hsa --enable-plugin
--enable-shared --enable-threads=posix --host=x86_64-linux-gnu --program-prefix=x86_64-linux-gnu- --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686
--with-default-libstdcxx-abi=new --with-gcc-major-version-only --with-multilib-list=m32,m64,mx32 --with-target-system-zlib=auto --with-tune=generic --without-cuda-driver -v
Disk Notes: NONE / relatime,rw,stripe=64 / Block Size: 4096
```

Processor Notes: Scaling Governor: acpi-cpufreq ondemand (Boost: Enabled) - CPU Microcode: 0x830104d

Java Notes: OpenJDK Runtime Environment (build 11.0.11+9-Ubuntu-0ubuntu2.20.04)

Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retroline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

LOGICAL VOLUME - AMD EPYC 7302P 16-Core

MariaDB - 1024 (Queries/sec)	115
Standard Deviation	3.5%
Apache HBase - Increment - 128 (us - Latency)	2073
Apache HBase - Increment - 128 (Rows/sec)	56029
Apache HBase - Increment - 64 (us - Latency)	1103
Apache HBase - Increment - 64 (Rows/sec)	57414
MariaDB - 4096 (Queries/sec)	112
Standard Deviation	1.4%
MariaDB - 2048 (Queries/sec)	120
Standard Deviation	1.2%
PostgreSQL pgbench - 1000 - 250 - Read Write - Average Latency	29.832
Standard Deviation	3.5%
PostgreSQL pgbench - 1000 - 250 - Read Write (TPS)	8391
Standard Deviation	3.8%
PostgreSQL pgbench - 1000 - 1 - Read Only - Average Latency (ms)	0.055
Standard Deviation	6.1%
PostgreSQL pgbench - 1000 - 1 - Read Only (TPS)	18354
Standard Deviation	6.1%
MariaDB - 512 (Queries/sec)	254
Standard Deviation	2.2%
MariaDB - 256 (Queries/sec)	257
Standard Deviation	1%
Apache Cassandra - Reads (Op/s)	103623
Standard Deviation	10.5%
MariaDB - 128 (Queries/sec)	286
Standard Deviation	2.5%
Apache Cassandra - Mixed 1:3 (Op/s)	94581
Standard Deviation	5%
InfluxDB - 1024 - 10000 - 2,5000,1 - 10000 (val/sec)	802560
Standard Deviation	2.7%
PostgreSQL pgbench - 1 - 1 - Read Only - Average Latency (ms)	0.043
Standard Deviation	4.8%
PostgreSQL pgbench - 1 - 1 - Read Only (TPS)	23554
Standard Deviation	4.8%
nginx - 20 (Req/s/sec)	138656
Standard Deviation	2.6%
Memtier_benchmark - Redis (Ops/sec)	1521404
Standard Deviation	3.4%
PostgreSQL pgbench - 1000 - 50 - Read Write - Average Latency (ms)	10.647

	Standard Deviation	0.7%
PostgreSQL pgbench - 1000 - 50 - Read Write (TPS)	4696	
	Standard Deviation	0.7%
PostgreSQL pgbench - 1000 - 100 - Read Write - Average Latency	16.192	
	Standard Deviation	0.1%
PostgreSQL pgbench - 1000 - 100 - Read Write (TPS)	6177	
	Standard Deviation	0.1%
PostgreSQL pgbench - 1000 - 1 - Read Write - Average Latency	0.760	
	Standard Deviation	0.8%
PostgreSQL pgbench - 1000 - 1 - Read Write (TPS)	1315	
	Standard Deviation	0.8%
PostgreSQL pgbench - 1000 - 100 - Read Only - Average Latency	0.281	
	Standard Deviation	0.2%
PostgreSQL pgbench - 1000 - 100 - Read Only (TPS)	356583	
	Standard Deviation	0.3%
PostgreSQL pgbench - 1000 - 50 - Read Only - Average Latency	0.143	
	Standard Deviation	0.4%
PostgreSQL pgbench - 1000 - 50 - Read Only (TPS)	348841	
	Standard Deviation	0.3%
PostgreSQL pgbench - 1000 - 250 - Read Only - Average Latency	0.675	
	Standard Deviation	0.2%
PostgreSQL pgbench - 1000 - 250 - Read Only (TPS)	370735	
	Standard Deviation	0.2%
Apache HBase - Increment - 4 (us - Latency)	252	
	Standard Deviation	2.7%
Apache HBase - Increment - 4 (Rows/sec)	15755	
	Standard Deviation	2.7%
Apache HBase - Increment - 1 (us - Latency)	196	
	Standard Deviation	4.2%
Apache HBase - Increment - 1 (Rows/sec)	5072	
	Standard Deviation	4%
MariaDB - 64 (Queries/sec)	978	
	Standard Deviation	0.7%
Apache Cassandra - Mixed 1:1 (Op/s)	95691	
	Standard Deviation	1.6%
PostgreSQL pgbench - 1 - 250 - Read Write - Average Latency (ms)	239.954	
	Standard Deviation	2.2%
PostgreSQL pgbench - 1 - 250 - Read Write (TPS)	1042	
	Standard Deviation	2.2%
Apache CouchDB - 100 - 1000 - 24 (sec)	163.708	
	Standard Deviation	1.3%
InfluxDB - 4 - 10000 - 2,5000,1 - 10000 (val/sec)	661303	
	Standard Deviation	0.1%
Apache Siege - 250 (Transactions/sec)	82595	
	Standard Deviation	12%
InfluxDB - 64 - 10000 - 2,5000,1 - 10000 (val/sec)	695800	
	Standard Deviation	0.1%
LevelDB - Hot Read (us/Op)	33.666	
	Standard Deviation	4.1%
Apache Cassandra - Writes (Op/s)	116875	
	Standard Deviation	1.1%
PostgreSQL pgbench - 100 - 1 - Read Only - Average Latency (ms)	0.052	
	Standard Deviation	0%

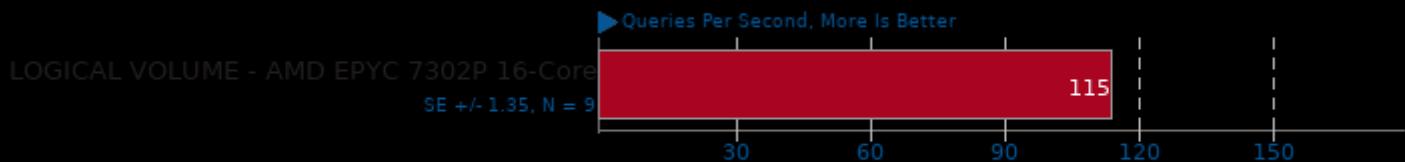
PostgreSQL pgbench - 100 - 1 - Read Only (TPS)	19170
Standard Deviation	0.5%
PostgreSQL pgbench - 100 - 1 - Read Write - Average Latency (ms)	0.727
Standard Deviation	1.6%
PostgreSQL pgbench - 100 - 1 - Read Write (TPS)	1375
Standard Deviation	1.6%
PostgreSQL pgbench - 100 - 100 - Read Write - Average Latency	5.699
Standard Deviation	0.5%
PostgreSQL pgbench - 100 - 100 - Read Write (TPS)	17551
Standard Deviation	0.5%
PostgreSQL pgbench - 100 - 50 - Read Write - Average Latency	3.030
Standard Deviation	0.2%
PostgreSQL pgbench - 100 - 50 - Read Write (TPS)	16503
Standard Deviation	0.2%
PostgreSQL pgbench - 100 - 250 - Read Only - Average Latency	0.636
Standard Deviation	0.4%
PostgreSQL pgbench - 100 - 250 - Read Only (TPS)	393342
Standard Deviation	0.3%
PostgreSQL pgbench - 100 - 250 - Read Write - Average Latency	19.694
Standard Deviation	1.9%
PostgreSQL pgbench - 100 - 250 - Read Write (TPS)	12699
Standard Deviation	1.9%
PostgreSQL pgbench - 100 - 50 - Read Only - Average Latency (ms)	0.137
Standard Deviation	0.8%
PostgreSQL pgbench - 100 - 50 - Read Only (TPS)	365892
Standard Deviation	0.6%
PostgreSQL pgbench - 100 - 100 - Read Only - Average Latency	0.264
Standard Deviation	0.2%
PostgreSQL pgbench - 100 - 100 - Read Only (TPS)	378555
Standard Deviation	0.1%
LevelDB - Seq Fill (us/Op)	234.010
Standard Deviation	0.3%
LevelDB - Seq Fill (MB/s)	15.1
Standard Deviation	0.4%
Apache HBase - Increment - 32 (us - Latency)	553
Standard Deviation	0.7%
Apache HBase - Increment - 32 (Rows/sec)	57377
Standard Deviation	1.2%
LevelDB - Rand Delete (us/Op)	229.207
Standard Deviation	0.3%
Node.js Express HTTP Load Test (Req/s/sec)	4923
Standard Deviation	3.7%
PostgreSQL pgbench - 1 - 100 - Read Write - Average Latency (ms)	57.402
Standard Deviation	1.1%
PostgreSQL pgbench - 1 - 100 - Read Write (TPS)	1743
Standard Deviation	1.1%
PostgreSQL pgbench - 1 - 250 - Read Only - Average Latency (ms)	0.513
Standard Deviation	0.7%
PostgreSQL pgbench - 1 - 250 - Read Only (TPS)	487284
Standard Deviation	0.7%
PostgreSQL pgbench - 1 - 50 - Read Write - Average Latency (ms)	23.618
Standard Deviation	1%
PostgreSQL pgbench - 1 - 50 - Read Write (TPS)	2117

	Standard Deviation	1%
PostgreSQL pgbench - 1 - 1 - Read Write - Average Latency (ms)	0.624	
	Standard Deviation	0.9%
PostgreSQL pgbench - 1 - 1 - Read Write (TPS)	1604	
	Standard Deviation	1%
PostgreSQL pgbench - 1 - 100 - Read Only - Average Latency (ms)	0.230	
	Standard Deviation	0.3%
PostgreSQL pgbench - 1 - 100 - Read Only (TPS)	435092	
	Standard Deviation	0.2%
PostgreSQL pgbench - 1 - 50 - Read Only - Average Latency (ms)	0.118	
	Standard Deviation	1%
PostgreSQL pgbench - 1 - 50 - Read Only (TPS)	422640	
	Standard Deviation	0.7%
MariaDB - 32 (Queries/sec)	2254	
	Standard Deviation	1.3%
Apache HBase - Increment - 16 (us - Latency)	330	
	Standard Deviation	1.7%
Apache HBase - Increment - 16 (Rows/sec)	48064	
	Standard Deviation	2.3%
Apache HTTP Server - 1000 (Req/s)	51276	
	Standard Deviation	0.2%
Redis - GET (Req/s)	1242315	
	Standard Deviation	4.4%
Apache HTTP Server - 100 (Req/s)	53132	
	Standard Deviation	0.2%
Apache HTTP Server - 500 (Req/s)	51571	
	Standard Deviation	0.2%
Apache HTTP Server - 200 (Req/s)	52641	
	Standard Deviation	0.5%
nginx - 1 (Req/s)	39921	
	Standard Deviation	0.5%
nginx - 200 (Req/s)	144822	
	Standard Deviation	0.4%
nginx - 1000 (Req/s)	135379	
	Standard Deviation	0.3%
Apache HTTP Server - 1 (Req/s)	5564	
	Standard Deviation	0.4%
nginx - 100 (Req/s)	149788	
	Standard Deviation	1.4%
nginx - 500 (Req/s)	139090	
	Standard Deviation	0.7%
Apache HTTP Server - 20 (Req/s)	31723	
	Standard Deviation	1.3%
SQLite Speedtest - Timed Time - Size 1,000 (sec)	89.312	
	Standard Deviation	0.7%
Redis - LPOP (Req/s)	1287448	
	Standard Deviation	3.1%
MariaDB - 16 (Queries/sec)	2997	
	Standard Deviation	1.4%
MariaDB - 8 (Queries/sec)	3290	
	Standard Deviation	0.9%
Facebook RocksDB - Rand Fill Sync (Op/s)	43088	
	Standard Deviation	1.5%

Facebook RocksDB - Rand Fill (Op/s)	500028
Standard Deviation	0.4%
Facebook RocksDB - Update Rand (Op/s)	499418
Standard Deviation	0.1%
Facebook RocksDB - R.R.W.R (Op/s)	1861450
Standard Deviation	0.2%
Facebook RocksDB - Read While Writing (Op/s)	2801534
Standard Deviation	1.9%
Facebook RocksDB - Rand Read (Op/s)	75848167
Standard Deviation	0.3%
Facebook RocksDB - Seq Fill (Op/s)	544933
Standard Deviation	0.8%
LevelDB - Seek Rand (us/Op)	57.263
Standard Deviation	0.2%
Perl Benchmarks - Interpreter (sec)	0.00204855
Standard Deviation	0.5%
Perl Benchmarks - Pod2html (sec)	0.17788604
Standard Deviation	0.6%
MariaDB - 1 (Queries/sec)	6147
Standard Deviation	2.2%
PHPBench - P.B.S (Score)	505820
Standard Deviation	1.6%
LevelDB - Rand Read (us/Op)	33.581
Standard Deviation	0.4%
LevelDB - Rand Fill (us/Op)	245.842
Standard Deviation	0.2%
LevelDB - Rand Fill (MB/s)	14.4
Standard Deviation	0%
LevelDB - Overwrite (us/Op)	245.336
Standard Deviation	0.2%
LevelDB - Overwrite (MB/s)	14.4
Standard Deviation	0%
Redis - LPUSH (Req/sec)	881328
Standard Deviation	0.3%
Redis - SET (Req/sec)	1005875
Standard Deviation	1.7%
OpenSSL - R.4.b.P (Signs/sec)	3510
Standard Deviation	0.2%
ebizzy (Records/s)	1131048
Standard Deviation	2%
Redis - SADD (Req/sec)	1109830
Standard Deviation	0.9%
SQLite - 1 (sec)	4.580
Standard Deviation	0.2%
PHP Micro Benchmarks - Zend micro_bench (sec)	3.058
Standard Deviation	0.6%
LevelDB - Fill Sync (us/Op)	929.257
Standard Deviation	0.1%
LevelDB - Fill Sync (MB/s)	3.8
Standard Deviation	0%
PHP Micro Benchmarks - Zend bench (sec)	0.816
Standard Deviation	1%

MariaDB 10.6.4

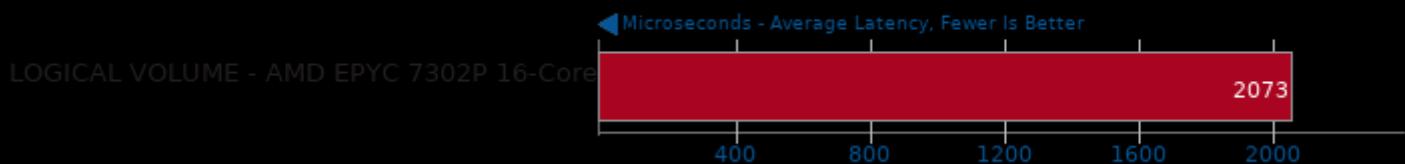
Clients: 1024



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lssl -lcrypto -lpthread -ldl

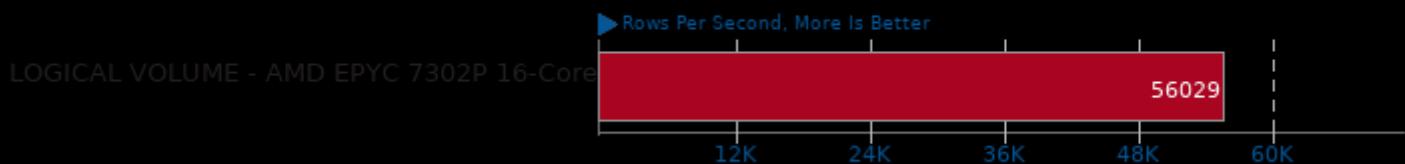
Apache HBase 2.2.3

Test: Increment - Clients: 128



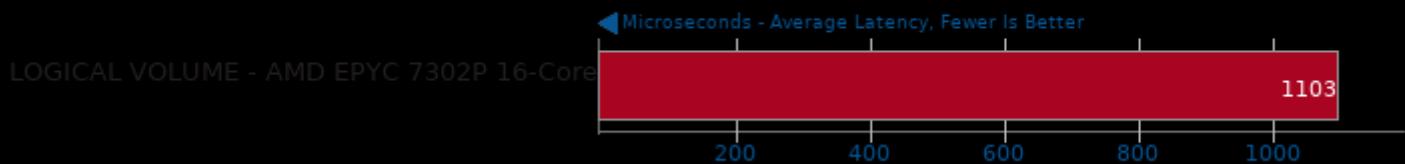
Apache HBase 2.2.3

Test: Increment - Clients: 128



Apache HBase 2.2.3

Test: Increment - Clients: 64



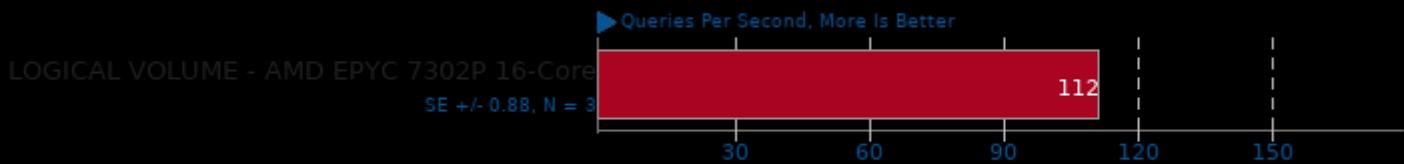
Apache HBase 2.2.3

Test: Increment - Clients: 64



MariaDB 10.6.4

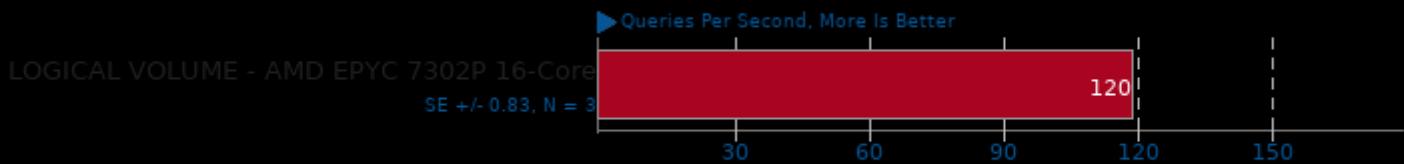
Clients: 4096



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -lpthread -ldl

MariaDB 10.6.4

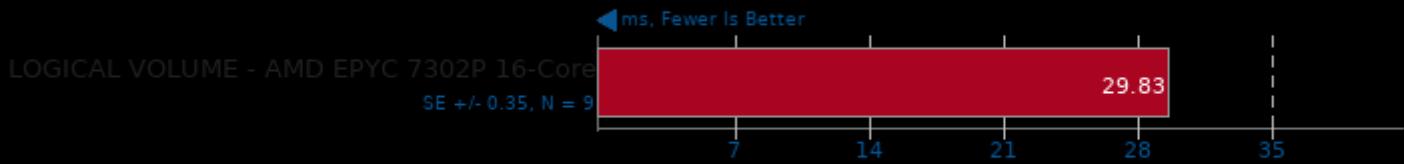
Clients: 2048



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -lpthread -ldl

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 250 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 250 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

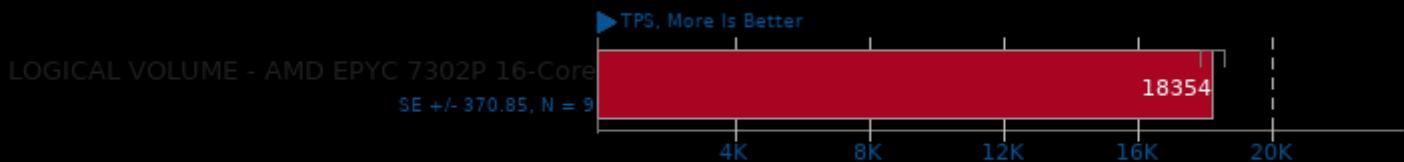
Scaling Factor: 1000 - Clients: 1 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 1 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -Ipgcommon -Ipgport -Ipq -Ipthread -Irt -Idl -Im

MariaDB 10.6.4

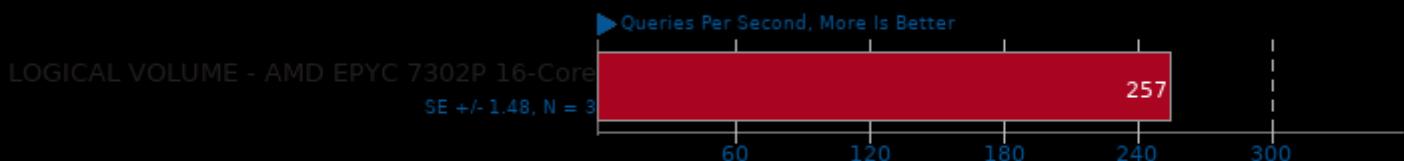
Clients: 512



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -Ipthread -Idl

MariaDB 10.6.4

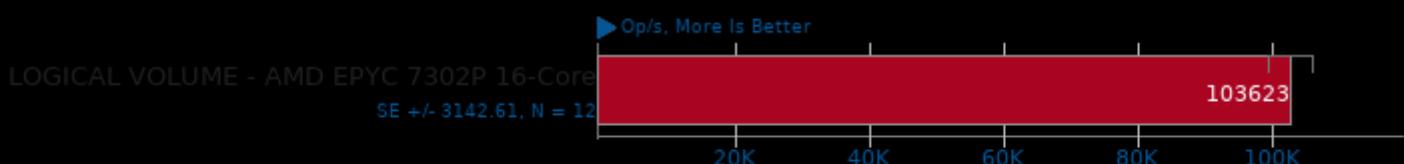
Clients: 256



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -Ipthread -Idl

Apache Cassandra 4.0

Test: Reads



MariaDB 10.6.4

Clients: 128



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -Ipthread -Idl

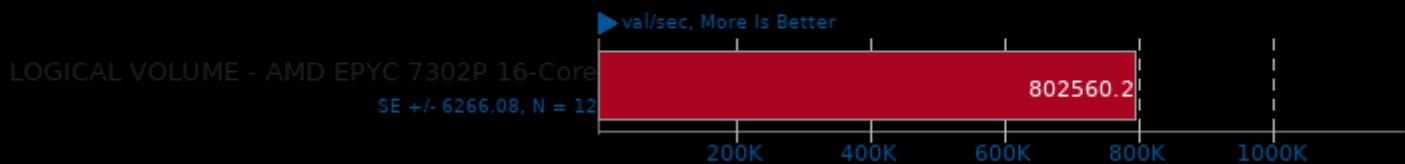
Apache Cassandra 4.0

Test: Mixed 1:3



InfluxDB 1.8.2

Concurrent Streams: 1024 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000



PostgreSQL pgbench 13.0

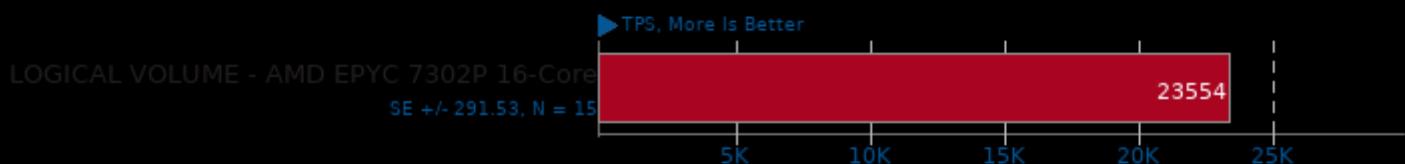
Scaling Factor: 1 - Clients: 1 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 1 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

nginx 1.21.1

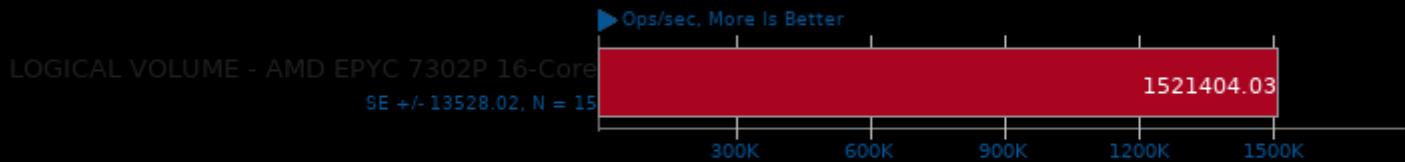
Concurrent Requests: 20



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

Memtier_benchmark 1.2.17

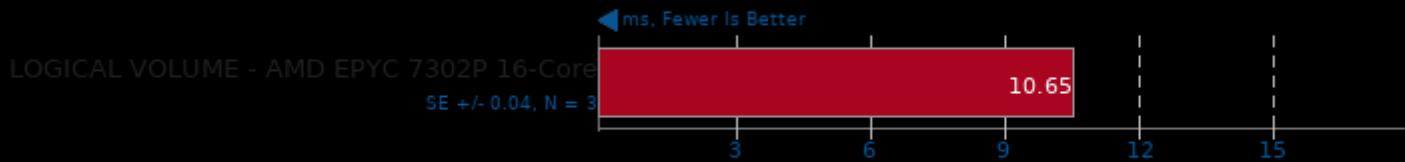
Protocol: Redis



1. (CXX) g++ options: -O2 -levent -lpthread -lz -lpcre

PostgreSQL pgbench 13.0

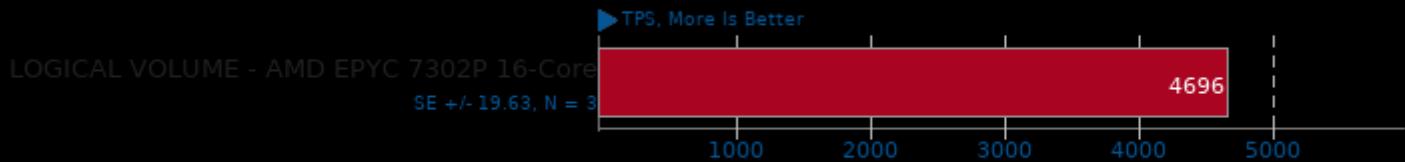
Scaling Factor: 1000 - Clients: 50 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

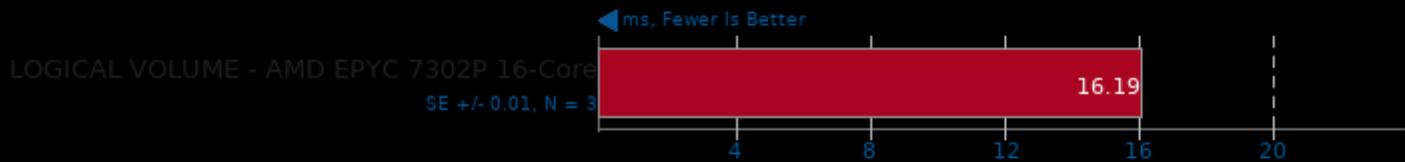
Scaling Factor: 1000 - Clients: 50 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 100 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

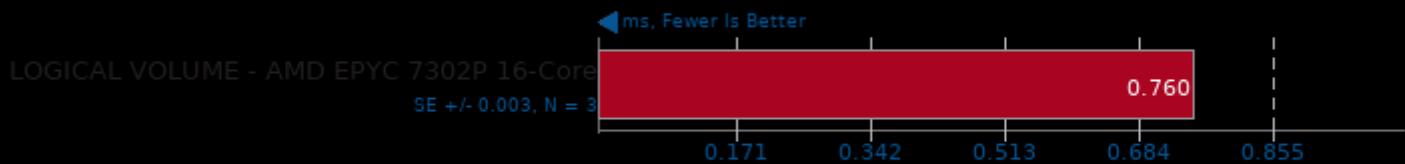
Scaling Factor: 1000 - Clients: 100 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 1 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

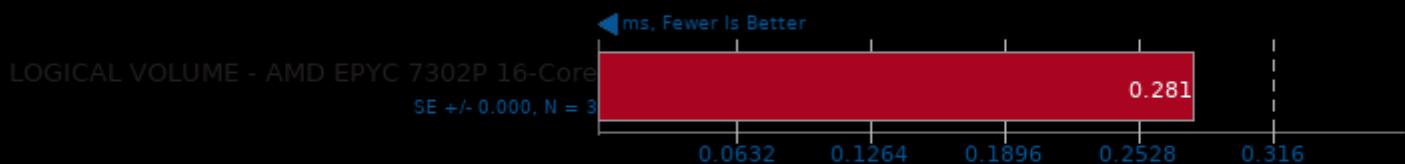
Scaling Factor: 1000 - Clients: 1 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

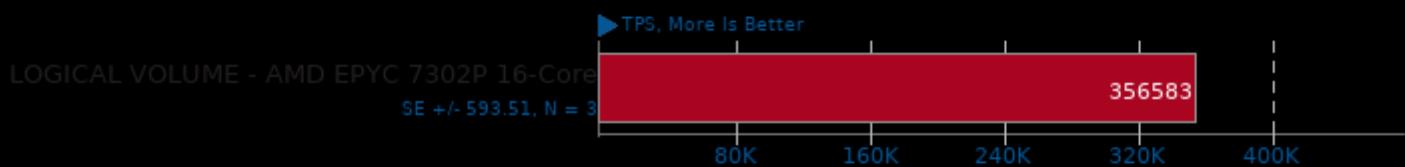
Scaling Factor: 1000 - Clients: 100 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

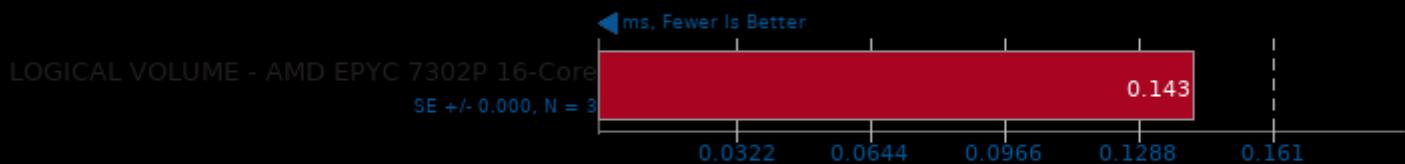
Scaling Factor: 1000 - Clients: 100 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 50 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 50 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpcommon -lpport -pq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1000 - Clients: 250 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpcommon -lpport -pq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

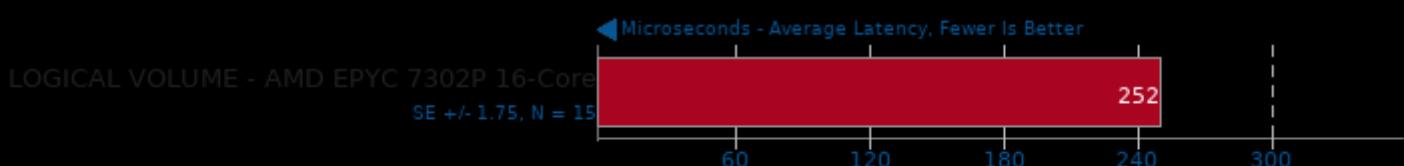
Scaling Factor: 1000 - Clients: 250 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpcommon -lpport -pq -pthread -lrt -ldl -lm

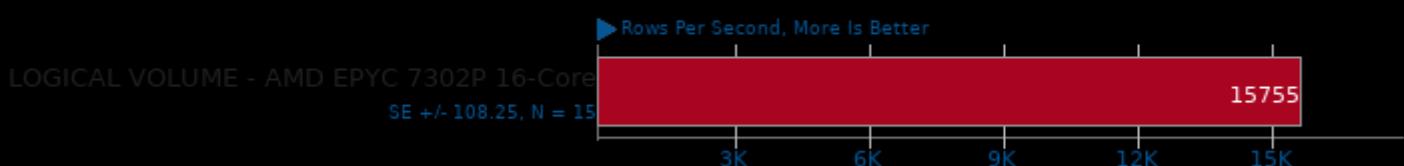
Apache HBase 2.2.3

Test: Increment - Clients: 4



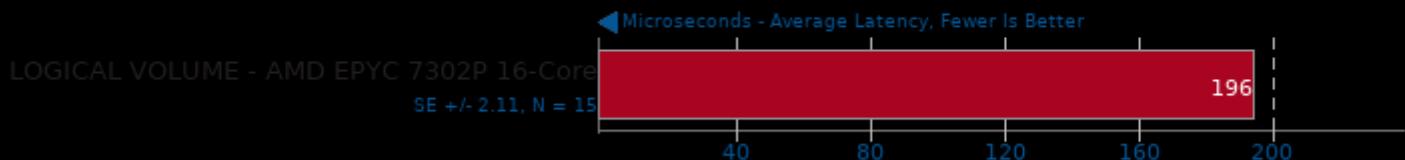
Apache HBase 2.2.3

Test: Increment - Clients: 4



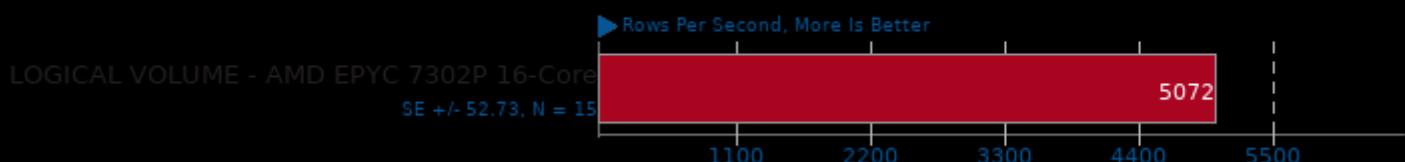
Apache HBase 2.2.3

Test: Increment - Clients: 1



Apache HBase 2.2.3

Test: Increment - Clients: 1



MariaDB 10.6.4

Clients: 64



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -lpthread -ldl

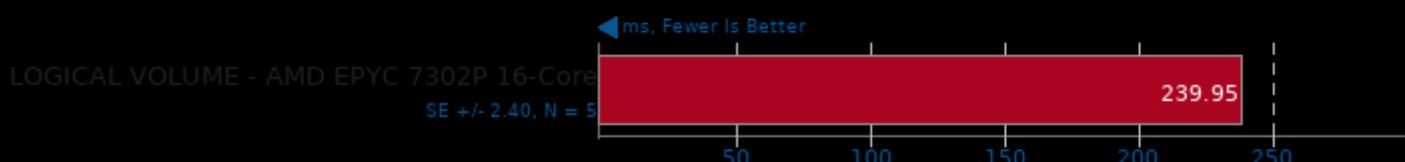
Apache Cassandra 4.0

Test: Mixed 1:1



PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 250 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgcccommon -lgccport -lgpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

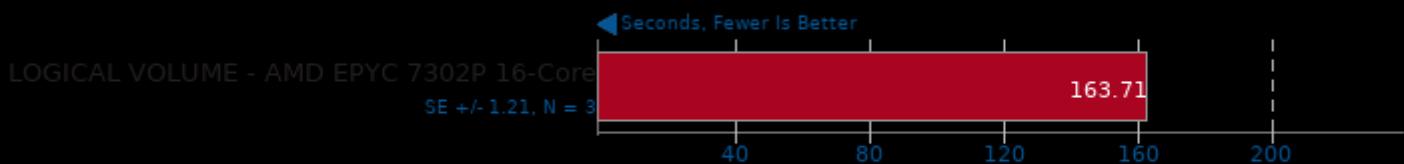
Scaling Factor: 1 - Clients: 250 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -pthread -lrt -ldl -lm

Apache CouchDB 3.1.1

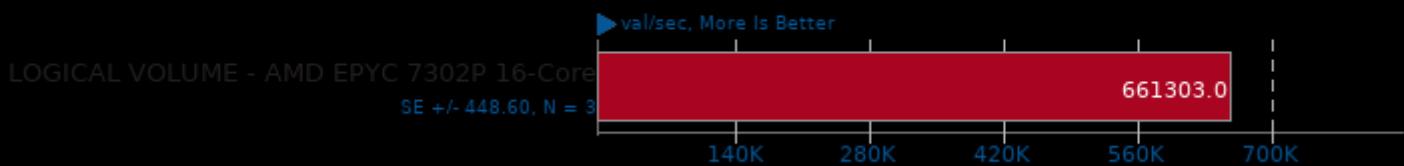
Bulk Size: 100 - Inserts: 1000 - Rounds: 24



1. (CXX) g++ options: -std=c++14 -lmozjs-68 -lm -lerl_interface -lei -fPIC -MMD

InfluxDB 1.8.2

Concurrent Streams: 4 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000



Apache Siege 2.4.29

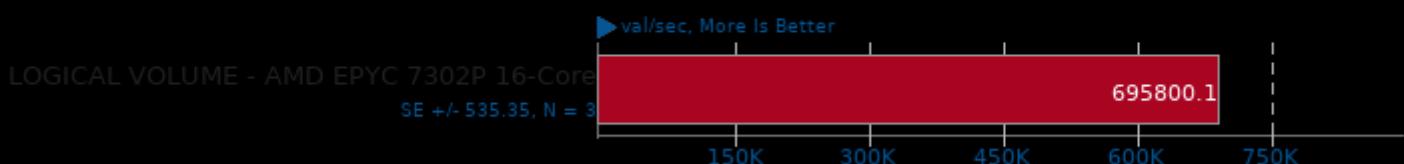
Concurrent Users: 250



1. (CC) gcc options: -O2 -lpthread -ldl -lssl -lcrypto

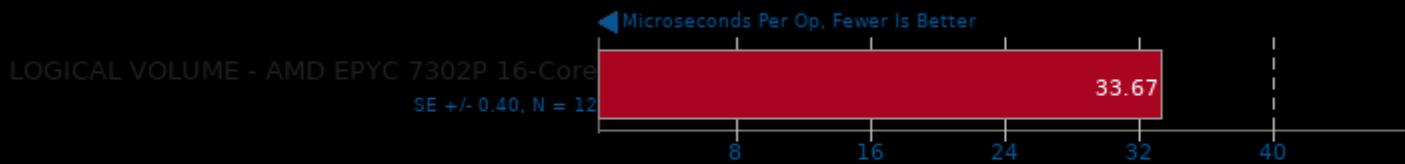
InfluxDB 1.8.2

Concurrent Streams: 64 - Batch Size: 10000 - Tags: 2,5000,1 - Points Per Series: 10000



LevelDB 1.22

Benchmark: Hot Read



1. (CXX) g++ options: -O3 -lsnappy -lpthread

Apache Cassandra 4.0

Test: Writes



PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 1 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 1 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 1 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lgpgcommon -lgpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 1 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

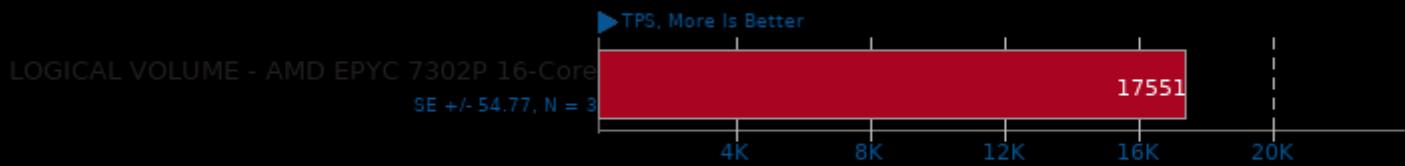
Scaling Factor: 100 - Clients: 100 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 100 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 50 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 50 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

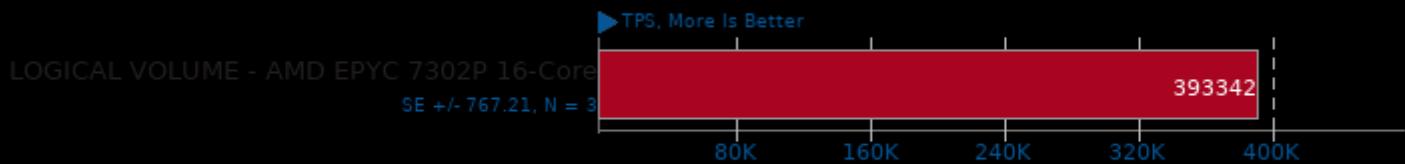
Scaling Factor: 100 - Clients: 250 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

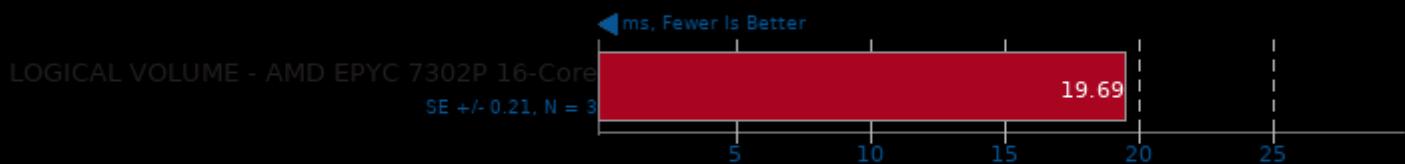
Scaling Factor: 100 - Clients: 250 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

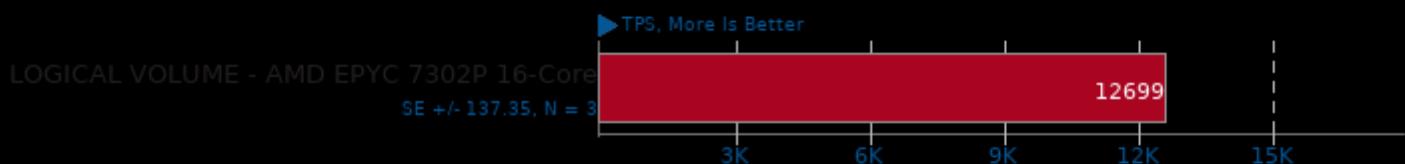
Scaling Factor: 100 - Clients: 250 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 250 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 50 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 50 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -Irt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 100 - Clients: 100 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -Irt -ldl -lm

PostgreSQL pgbench 13.0

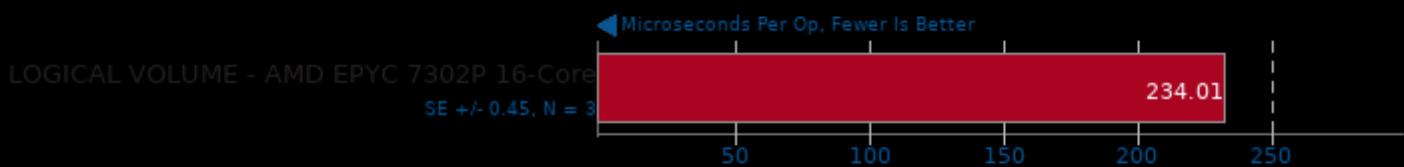
Scaling Factor: 100 - Clients: 100 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -Irt -ldl -lm

LevelDB 1.22

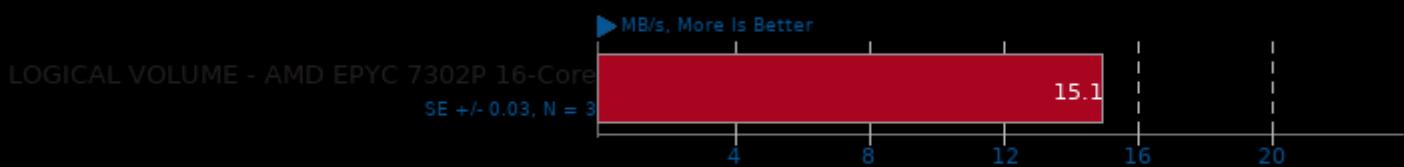
Benchmark: Sequential Fill



1. (CXX) g++ options: -O3 -lsnappy -pthread

LevelDB 1.22

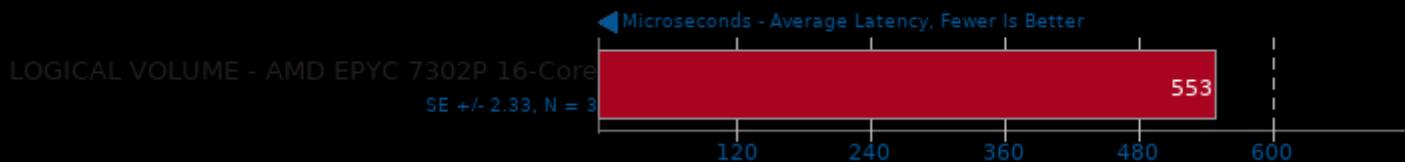
Benchmark: Sequential Fill



1. (CXX) g++ options: -O3 -lsnappy -pthread

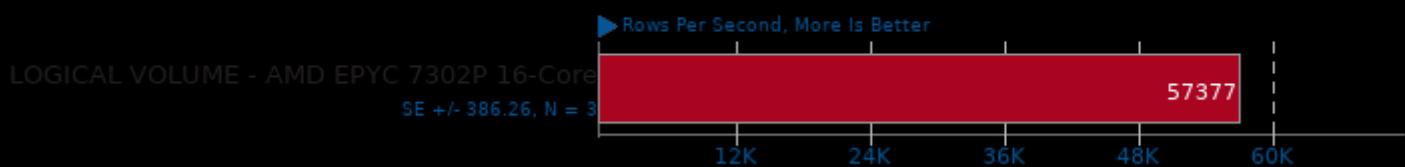
Apache HBase 2.2.3

Test: Increment - Clients: 32



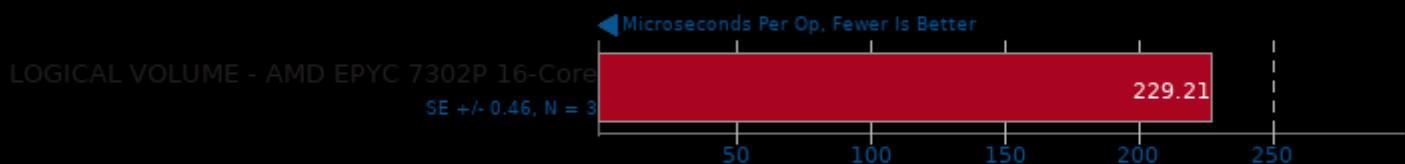
Apache HBase 2.2.3

Test: Increment - Clients: 32



LevelDB 1.22

Benchmark: Random Delete



1. (CXX) g++ options: -O3 -lsnappy -lpthread

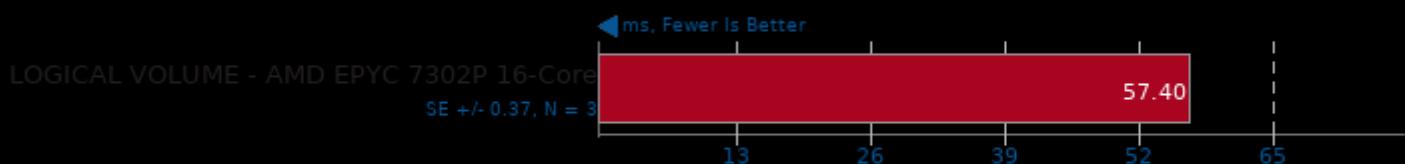
Node.js Express HTTP Load Test



1. Nodejs
v10.19.0

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 100 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lpthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

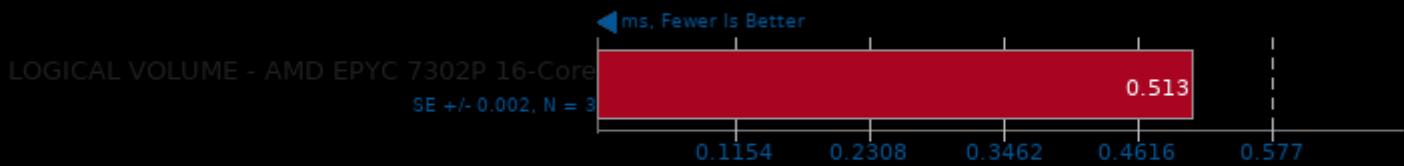
Scaling Factor: 1 - Clients: 100 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

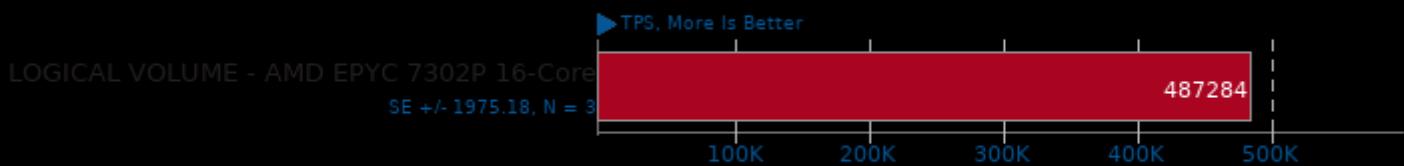
Scaling Factor: 1 - Clients: 250 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

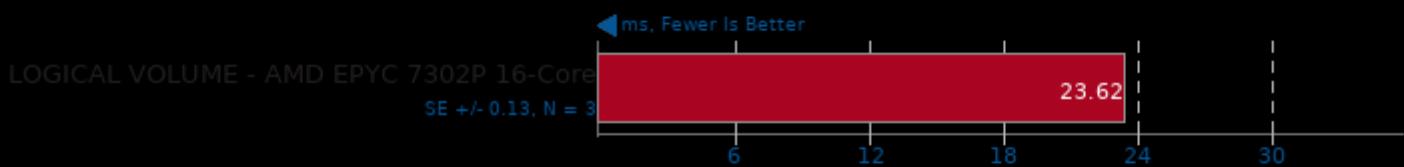
Scaling Factor: 1 - Clients: 250 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 50 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 50 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 1 - Mode: Read Write - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 1 - Mode: Read Write



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

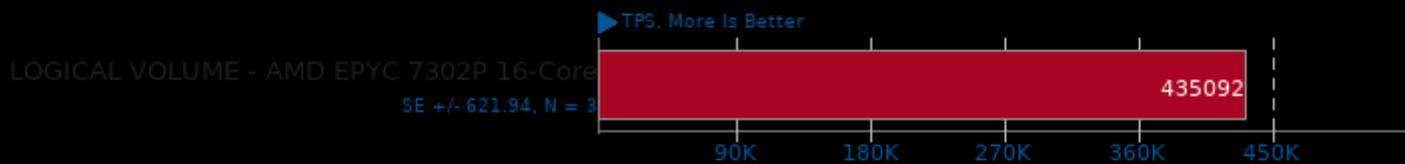
Scaling Factor: 1 - Clients: 100 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 100 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 50 - Mode: Read Only - Average Latency



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpqcommon -lpqport -lpq -pthread -lrt -ldl -lm

PostgreSQL pgbench 13.0

Scaling Factor: 1 - Clients: 50 - Mode: Read Only



1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -Ipgcommon -Ipgport -Ipq -Ipthread -Irt -Idl -Im

MariaDB 10.6.4

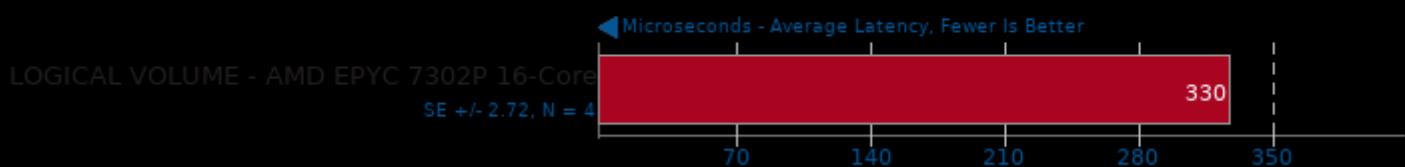
Clients: 32



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -Ipthread -ldl

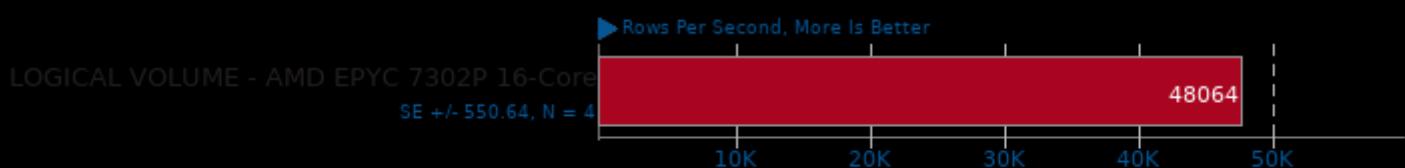
Apache HBase 2.2.3

Test: Increment - Clients: 16



Apache HBase 2.2.3

Test: Increment - Clients: 16



Apache HTTP Server 2.4.48

Concurrent Requests: 1000



1. (CC) gcc options: -shared -fPIC -O2 -pthread

Redis 6.0.9

Test: GET



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Apache HTTP Server 2.4.48

Concurrent Requests: 100



1. (CC) gcc options: -shared -fPIC -O2 -pthread

Apache HTTP Server 2.4.48

Concurrent Requests: 500



1. (CC) gcc options: -shared -fPIC -O2 -pthread

Apache HTTP Server 2.4.48

Concurrent Requests: 200



1. (CC) gcc options: -shared -fPIC -O2 -pthread

nginx 1.21.1

Concurrent Requests: 1



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

nginx 1.21.1

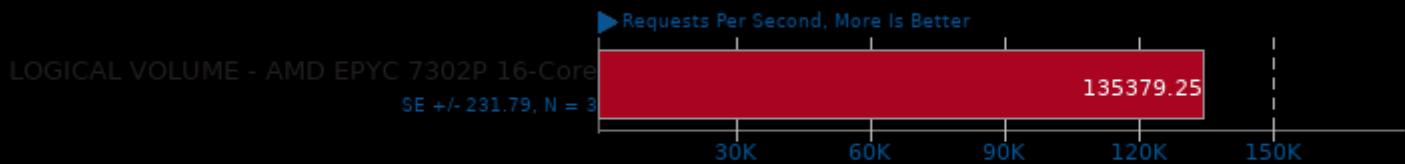
Concurrent Requests: 200



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

nginx 1.21.1

Concurrent Requests: 1000



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

Apache HTTP Server 2.4.48

Concurrent Requests: 1



1. (CC) gcc options: -shared -fPIC -O2 -pthread

nginx 1.21.1

Concurrent Requests: 100



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

nginx 1.21.1

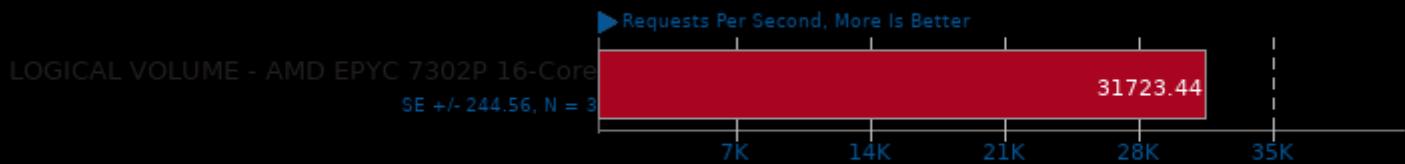
Concurrent Requests: 500



1. (CC) gcc options: -ldl -lpthread -lcrypt -lz -O3 -march=native

Apache HTTP Server 2.4.48

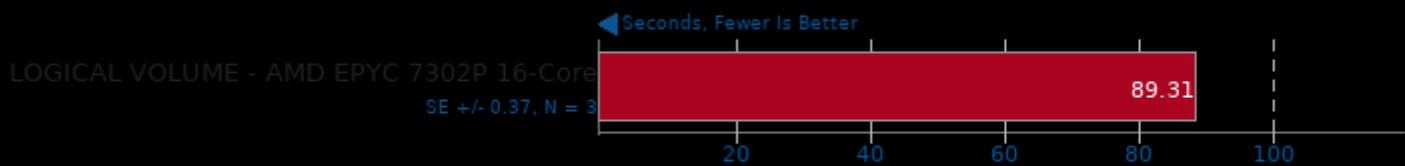
Concurrent Requests: 20



1. (CC) gcc options: -shared -fPIC -O2 -pthread

SQLite Speedtest 3.30

Timed Time - Size 1,000



1. (CC) gcc options: -O2 -ldl -lz -pthread

Redis 6.0.9

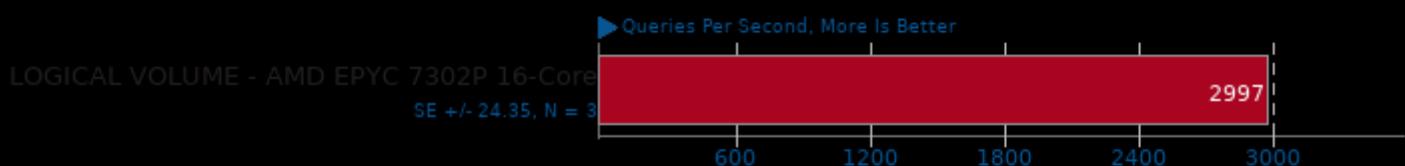
Test: LPOP



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

MariaDB 10.6.4

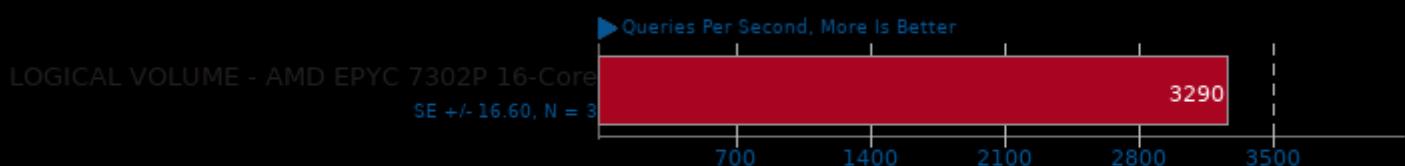
Clients: 16



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -lpthread -ldl

MariaDB 10.6.4

Clients: 8



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -lpthread -ldl

Facebook RocksDB 6.22.1

Test: Random Fill Sync



1. (CXX) g++ options: -O3 -march=native -pthread -fno-built-in-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

Test: Random Fill



1. (CXX) g++ options: -O3 -march=native -pthread -fno-built-in-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

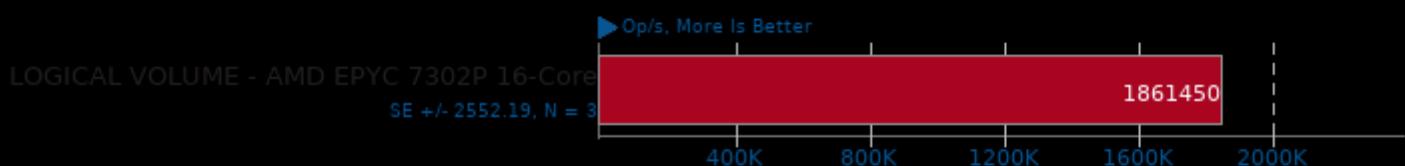
Test: Update Random



1. (CXX) g++ options: -O3 -march=native -pthread -fno-built-in-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

Test: Read Random Write Random



1. (CXX) g++ options: -O3 -march=native -pthread -fno-built-in-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

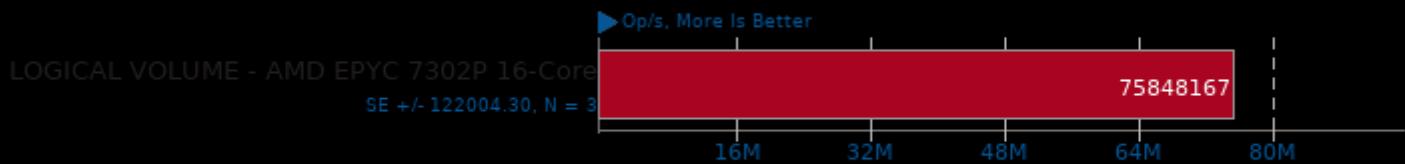
Test: Read While Writing



1. (CXX) g++ options: -O3 -march=native -pthread -fno-built-in-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

Test: Random Read



1. (CXX) g++ options: -O3 -march=native -pthread -fno-built-in-memcmp -fno-rtti -lpthread

Facebook RocksDB 6.22.1

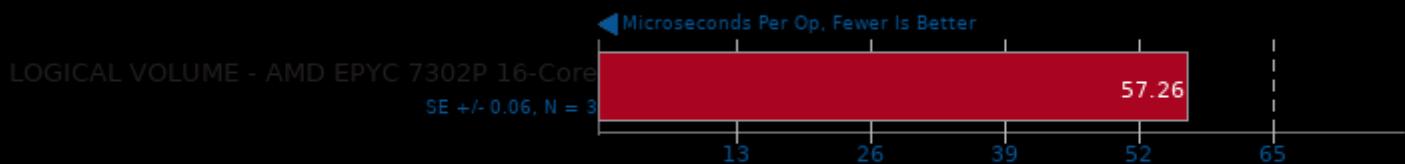
Test: Sequential Fill



1. (CXX) g++ options: -O3 -march=native -pthread -fno-built-in-memcmp -fno-rtti -lpthread

LevelDB 1.22

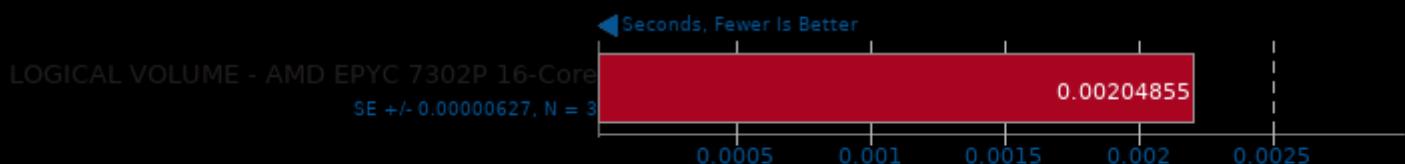
Benchmark: Seek Random



1. (CXX) g++ options: -O3 -lsnappy -lpthread

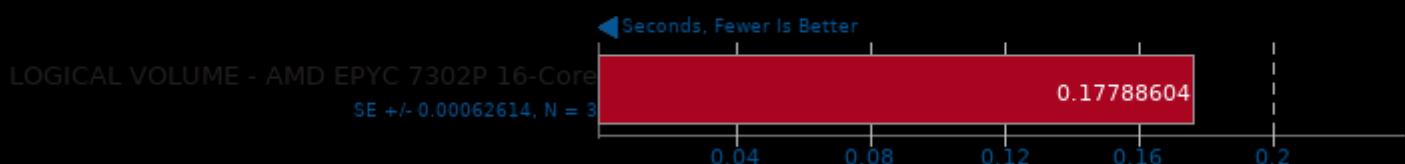
Perl Benchmarks

Test: Interpreter



Perl Benchmarks

Test: Pod2html



MariaDB 10.6.4

Clients: 1



1. (CXX) g++ options: -pie -fPIC -fstack-protector -O3 -pthread -lsnappy -lcrypt -lz -lm -lssl -lcrypto -lpthread -ldl

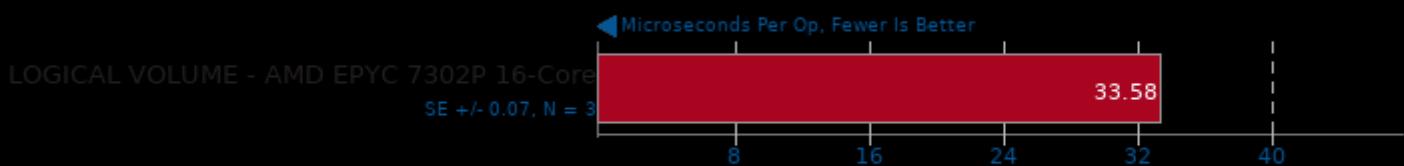
PHPBench 0.8.1

PHP Benchmark Suite



LevelDB 1.22

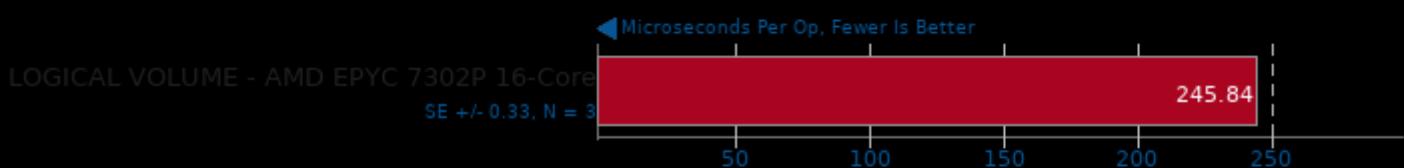
Benchmark: Random Read



1. (CXX) g++ options: -O3 -lsnappy -pthread

LevelDB 1.22

Benchmark: Random Fill



1. (CXX) g++ options: -O3 -lsnappy -pthread

LevelDB 1.22

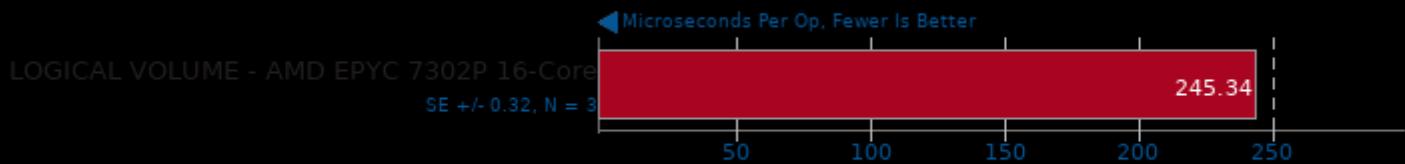
Benchmark: Random Fill



1. (CXX) g++ options: -O3 -lsnappy -pthread

LevelDB 1.22

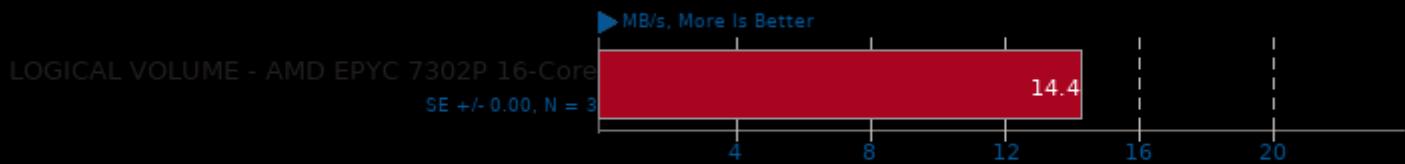
Benchmark: Overwrite



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

Benchmark: Overwrite



1. (CXX) g++ options: -O3 -lsnappy -lpthread

Redis 6.0.9

Test: LPUSH



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

Redis 6.0.9

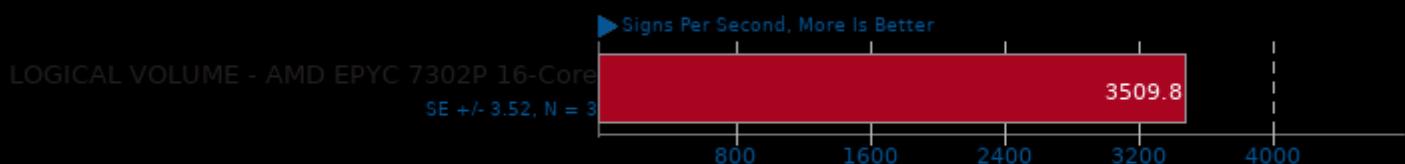
Test: SET



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

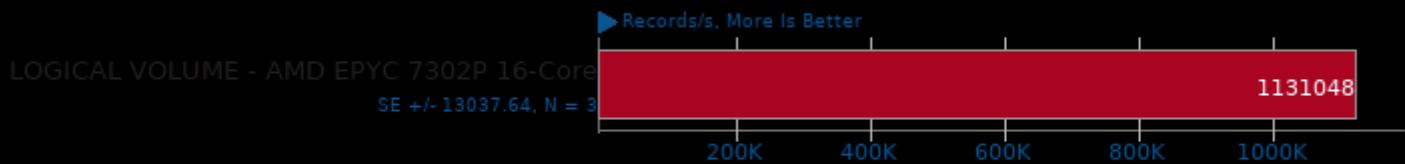
OpenSSL 1.1.1

RSA 4096-bit Performance



1. (CC) gcc options: -pthread -m64 -O3 -lssl -lcrypto -ldl

ebizzy 0.3



1. (CC) gcc options: -pthread -lpthread -O3 -march=native

Redis 6.0.9

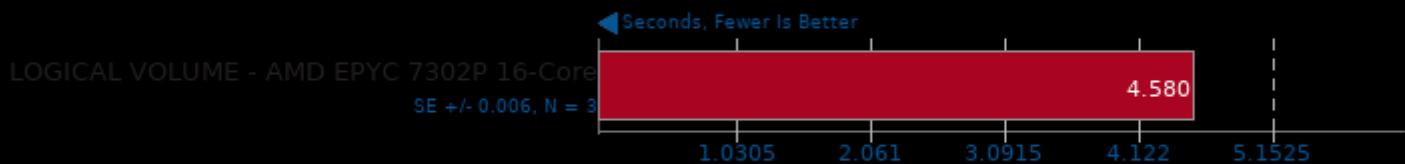
Test: SADD



1. (CXX) g++ options: -MM -MT -g3 -fvisibility=hidden -O3

SQLite 3.30.1

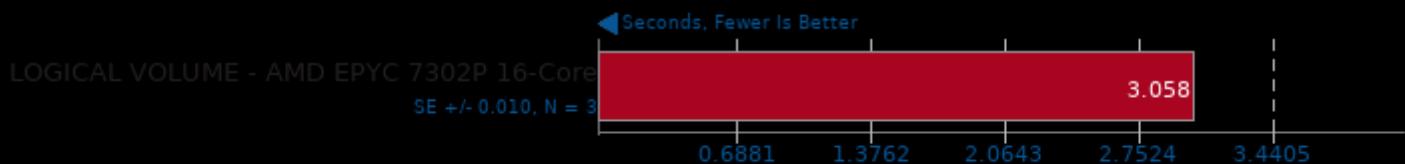
Threads / Copies: 1



1. (CC) gcc options: -O2 -lz -lm -ldl -lpthread

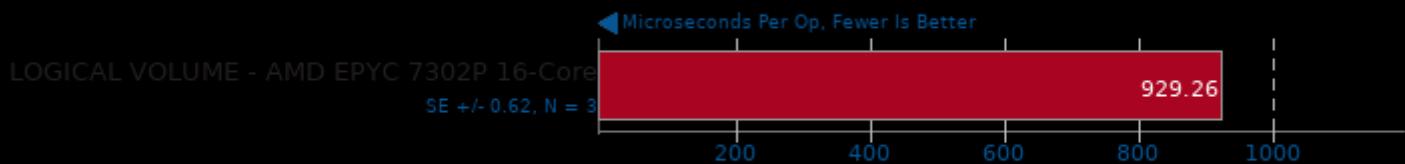
PHP Micro Benchmarks

Test: Zend micro_bench



LevelDB 1.22

Benchmark: Fill Sync



1. (CXX) g++ options: -O3 -lsnappy -lpthread

LevelDB 1.22

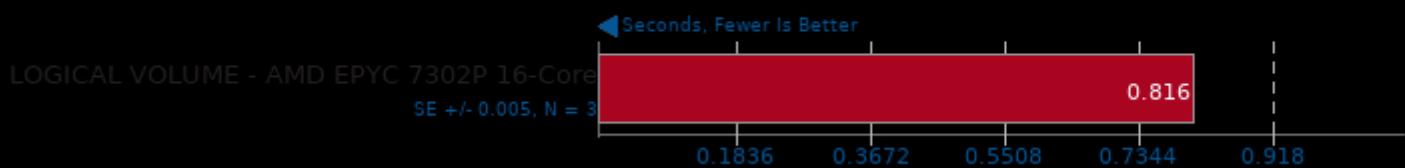
Benchmark: Fill Sync



1. (CXX) g++ options: -O3 -lsnappy -lpthread

PHP Micro Benchmarks

Test: Zend bench



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