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AMD Ryzen 9 7950X 16-Core testing with a ASUS ROG CROSSHAIR X670E HERO (0805 BIOS) and AMD Radeon RX 6800 XT 16GB on Ubuntu 22.10 via the Phoronix Test Suite.

Automated Executive Summary

AMD 7950X had the most wins, coming in first place for 42% of the tests.

Based on the geometric mean of all complete results, the fastest (7950X) was 1.002x the speed of the slowest (AMD Ryzen 9 7950X 16-Core - AMD Radeon RX 6800 XT). AMD 7950X was 1x the speed of 7950X and AMD Ryzen 9 7950X 16-Core - AMD Radeon RX 6800 XT was 0.999x the speed of AMD 7950X.

Test Systems:

AMD Ryzen 9 7950X 16-Core - AMD Radeon RX 6800 XT

7950X

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AMD 7950X

Processor: AMD Ryzen 9 7950X 16-Core @ 4.50GHz (16 Cores / 32 Threads), Motherboard: ASUS ROG CROSSHAIR X670E HERO (0805 BIOS), Chipset: AMD Device 14d8, Memory: 32GB, Disk: Western Digital WD_BLACK SN850X 1000GB + 2000GB, Graphics: AMD Radeon RX 6800 XT 16GB (2575/1000MHz), Audio: AMD Navi 21/23, Monitor: ASUS MG28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.10, Kernel: 6.2.0-rc1-phx (x86_64), Desktop: GNOME Shell 43.1, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.2.1 (LLVM 15.0.2 DRM 3.49), Vulkan: 1.3.224, Compiler: GCC 12.2.0 + Clang 15.0.2-1, File-System: ext4, Screen Resolution: 3840x2160

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-cet --enable-checking=release --enable-clocale=gnu --enable-default-pie --enable-gnu-unique-object --enable-languages=c,ada,c++,go,d,fortran,objc,obj-c++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-defaulted --enable-offload-targets=nvptx-none=/build/gcc-12-U8K4Qv/gcc-12-12.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-12-U8K4Qv/gcc-12-12.2.0/debian/tmp-gcn/usr --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
Processor Notes: Scaling Governor: acpi-cpufreq schedutil (Boost: Enabled) - CPU Microcode: 0xa601203
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling PBRSB-eIBRS: Not affected + srbds: Not affected + tsx_async_abort: Not affected

	AMD Ryzen 9 7950X 16-Core - AMD Radeon RX 6800 XT	7950X	AMD 7950X
RocksDB - Rand Fill (Op/s)	**1440532**	1442821	**1454696**
Normalized	99.03%	99.18%	100%
Standard Deviation	0.1%	0.7%	0.5%
RocksDB - Rand Read (Op/s)	156234944	**155697098**	**156948287**
Normalized	99.55%	99.2%	100%
Standard Deviation	0.8%	0.8%	0.1%
RocksDB - Update Rand (Op/s)	**1005548**	1007912	**1010212**
Normalized	99.54%	99.77%	100%
Standard Deviation	0.4%	0.2%	0.4%
RocksDB - Seq Fill (Op/s)	**1493953**	**1486026**	1489002
Normalized	100%	99.47%	99.67%
Standard Deviation	0.1%	0.2%	0.1%
RocksDB - Rand Fill Sync (Op/s)	39024	**39032**	**38687**
Normalized	99.98%	100%	99.12%
Standard Deviation	0.2%	0.2%	1.4%
RocksDB - Read While Writing (Op/s)	**4338943**	**4426854**	4375240
Normalized	98.01%	100%	98.83%
Standard Deviation	0.9%	2.1%	0.7%
RocksDB - R.R.W.R (Op/s)	**3350145**	3334651	**3328287**
Normalized	100%	99.54%	99.35%
Standard Deviation	0.2%	0.2%	0.3%

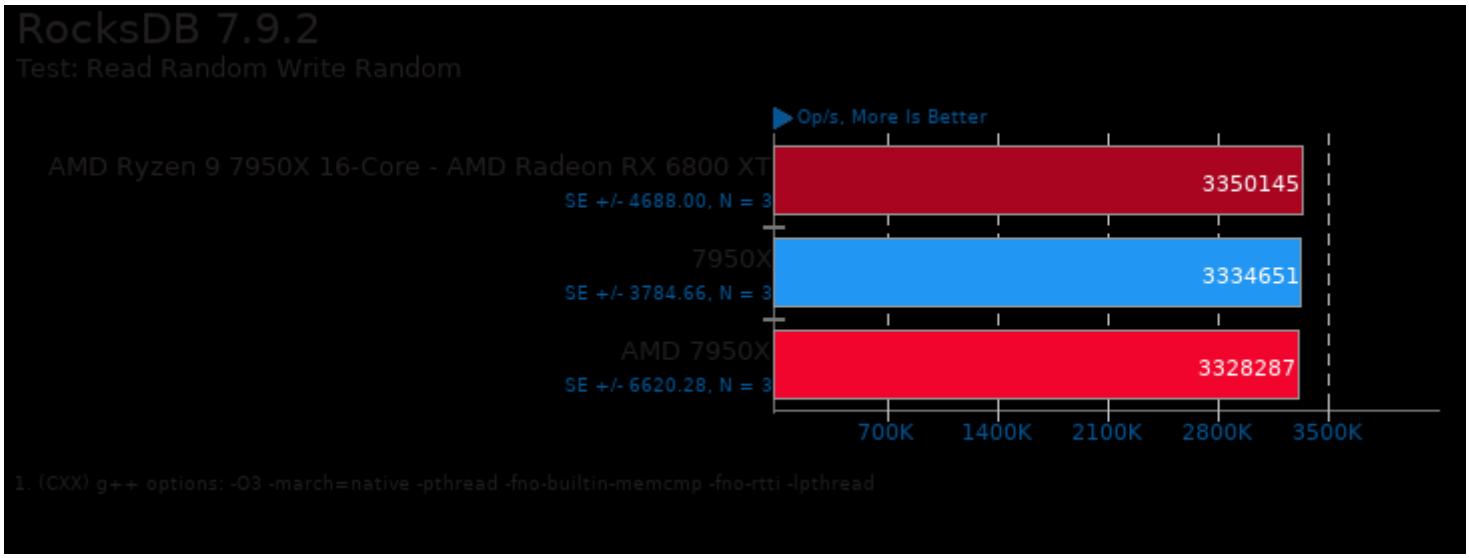
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