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Parallel Bioindormatic

Parallels Virtualization testing on FreeBSD via the Phoronix Test Suite.

Test Systems:

Musl Stable cmang 11.1.0

Processor: Intel Core i7-3615QM (8 Cores), Motherboard: Parallels Software Virtual (16.1.2 49151 BIOS), Memory: 4096MB, Disk: 69GB Gentoo-Musl-0 SS, Graphics: virtio_gpudrmfb

OS: Gentoo/Linux, Kernel: 5.10.27-gentoo-x86_64-gcc (x86_64), Compiler: GCC 10.2.0, File-System: ext4, Screen Resolution: 1008x759, System Layer: Parallels Virtualization

Kernel Notes: Transparent Huge Pages: always
Compiler Notes: --bindir=/usr/x86_64-gentoo-linux-musl/gcc-bin/10.2.0 --build=x86_64-gentoo-linux-musl --datadir=/usr/share/gcc-data/x86_64-gentoo-linux-musl/10.2.0 --disable-fixed-point --disable-libada --disable-libsanitizer --disable-libssp --disable-libstdcxx-pch --disable-libvtv --disable-multilib --disable-nls --disable-systemtap --disable-vtable-verify --disable-werror --enable-__cxa_atexit --enable-checking=release --enable-default-pie --enable-default-ssp --enable-esp --enable-languages=c,c++,fortran --enable-libgomp --enable-libstdcxx-time --enable-lto --enable-obsolete --enable-secureplt --enable-shared --enable-targets=all --enable-threads=posix --host=x86_64-gentoo-linux-musl --includedir=/usr/lib/gcc/x86_64-gentoo-linux-musl/10.2.0/include --mandir=/usr/share/gcc-data/x86_64-gentoo-linux-musl/10.2.0/man --with-multilib-list=m64 --with-python-dir=/share/gcc-data/x86_64-gentoo-linux-musl/10.2.0/python --with-zstd --without-isl

Processor Notes: CPU Microcode: 0x21
Security Notes: itlb_multihit: KVM: Mitigation of VMX unsupported + l1tf: Mitigation of PTE Inversion + mds: Vulnerable: Clear buffers attempted no microcode; SMT Host state unknown + meltdown: Mitigation of PTI + spec_store_bypass: Vulnerable + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full generic retpoline STIBP: disabled RSB filling + srbds: Unknown: Dependent on hypervisor status + tsx_async_abort: Not affected

Gentoo HDD GLIBC GCC 11.1

Processor: Intel Core i7-3615QM @ 3.30GHz (4 Cores / 8 Threads), Motherboard: Apple Mac-C3EC7CD22292981F (421.0.0.0.0 BIOS), Chipset: Intel 3rd Gen Core DRAM, Memory: 8GB, Disk: 251GB APPLE SSD SM256E + 500GB Generic, Graphics: NVIDIA GeForce GT 650M 1GB, Audio: Cirrus Logic CS4206, Monitor: Color LCD, Network: Broadcom NetXtreme BCM57786 PCIe + Broadcom BCM4331 802.11a/b/g/n

OS: Gentoo/Linux, Kernel: 5.12.4-gentoo-x86_64-v2 (x86_64), Desktop: MATE 1.24.1, Display Server: X Server 1.20.11, Display Driver: NVIDIA 465.27, OpenGL: 4.6.0, Compiler: GCC 11.1.0 + Clang 12.0.0 + LLVM 12.0.0, File-System: btrfs, Screen Resolution: 2880x1800

Kernel Notes: i915.fastboot=1 - Transparent Huge Pages: always
Processor Notes: Scaling Governor: intel_cpufreq performance - CPU Microcode: 0x21
Security Notes: itlb_multihit: vulnerable + l1tf: Mitigation of PTE Inversion + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Vulnerable: No microcode + tsx_async_abort: Not affected

Gentoo HDD GLIBC Clang 12.0

Processor: Intel Core i7-3615QM @ 3.30GHz (4 Cores / 8 Threads), Motherboard: Apple Mac-C3EC7CD22292981F (421.0.0.0.0 BIOS), Chipset: Intel 3rd Gen Core DRAM, Memory: 8GB, Disk: 251GB APPLE SSD SM256E + 500GB Generic, Graphics: NVIDIA GeForce GT 650M 1GB, Audio: Cirrus Logic CS4206, Monitor: Color LCD, Network: Broadcom NetXtreme BCM57786 PCIe + Broadcom BCM4331 802.11a/b/g/n

OS: Gentoo/Linux, Kernel: 5.12.4-gentoo-x86_64-v2 (x86_64), Desktop: MATE 1.24.1, Display Server: X Server 1.20.11, Display Driver: NVIDIA 465.27, OpenGL: 4.6.0, Compiler: Clang 12.0.0 + GCC 11.1.0 + LLVM 12.0.0, File-System: btrfs, Screen Resolution: 2880x1800

Kernel Notes: i915.fastboot=1 - Transparent Huge Pages: always
Compiler Notes: Optimized build; Default target: x86_64-pc-linux-gnu; Host CPU: ivybridge
Processor Notes: Scaling Governor: intel_cpufreq performance - CPU Microcode: 0x21
Security Notes: itlb_multihit: vulnerable + l1tf: Mitigation of PTE Inversion + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Vulnerable: No microcode + tsx_async_abort: Not affected

Ubuntu 21.04 miti GCC 10.3

Processor: Intel Core i7-3615QM @ 3.30GHz (4 Cores / 8 Threads), Motherboard: Apple Mac-C3EC7CD22292981F (421.0.0.0.0 BIOS), Chipset: Intel 3rd Gen Core DRAM, Memory: 8GB, Disk: 251GB APPLE SSD SM256E, Graphics: NVIDIA GeForce GT 650M 1GB, Audio: Cirrus Logic CS4206, Monitor: Color LCD, Network: Broadcom NetXtreme BCM57786 PCIe + Broadcom NetXtreme BCM57762 PCIe + Broadcom BCM4331 802.11a/b/g/n

OS: Ubuntu 21.04, Kernel: 5.11.0-18-generic (x86_64), Desktop: MATE 1.24.1, Display Server: X Server 1.20.11, Display Driver: NVIDIA 460.80, OpenGL: 4.6.0, OpenCL: OpenCL 1.2 CUDA 11.2.162, Vulkan: 1.2.155, Compiler: GCC 10.3.0 + Clang 12.0.0-1ubuntu1 + LLVM 12.0.0, File-System: zfs, Screen Resolution: 2880x1800

Kernel Notes: Transparent Huge Pages: madvise
Compiler Notes: --build=x86_64-linux-gnu --disable-vtable-verify --disable-werror --enable-bootstrap --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++,m2 --enable-libphobos-checking=release --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-link-mutex --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-10-gDeRY6/gcc-10-10.3.0/debian/tmp-gcn/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-build-config=bootstrap-lto-lean --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: intel_cpufreq performance - CPU Microcode: 0x21 - Thermald 2.4.3
Security Notes: itlb_multihit: KVM: Mitigation of VMX disabled + l1tf: Mitigation of PTE Inversion; VMX: conditional cache flushes SMT vulnerable + mds: Mitigation of Clear buffers; SMT vulnerable + meltdown: Mitigation of PTI + 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 generic retpoline IBPB: conditional IBRS_FW STIBP: conditional RSB filling + srbds: Vulnerable: No microcode + tsx_async_abort: Not affected

FreeBSD 13.1 ports ivybridge

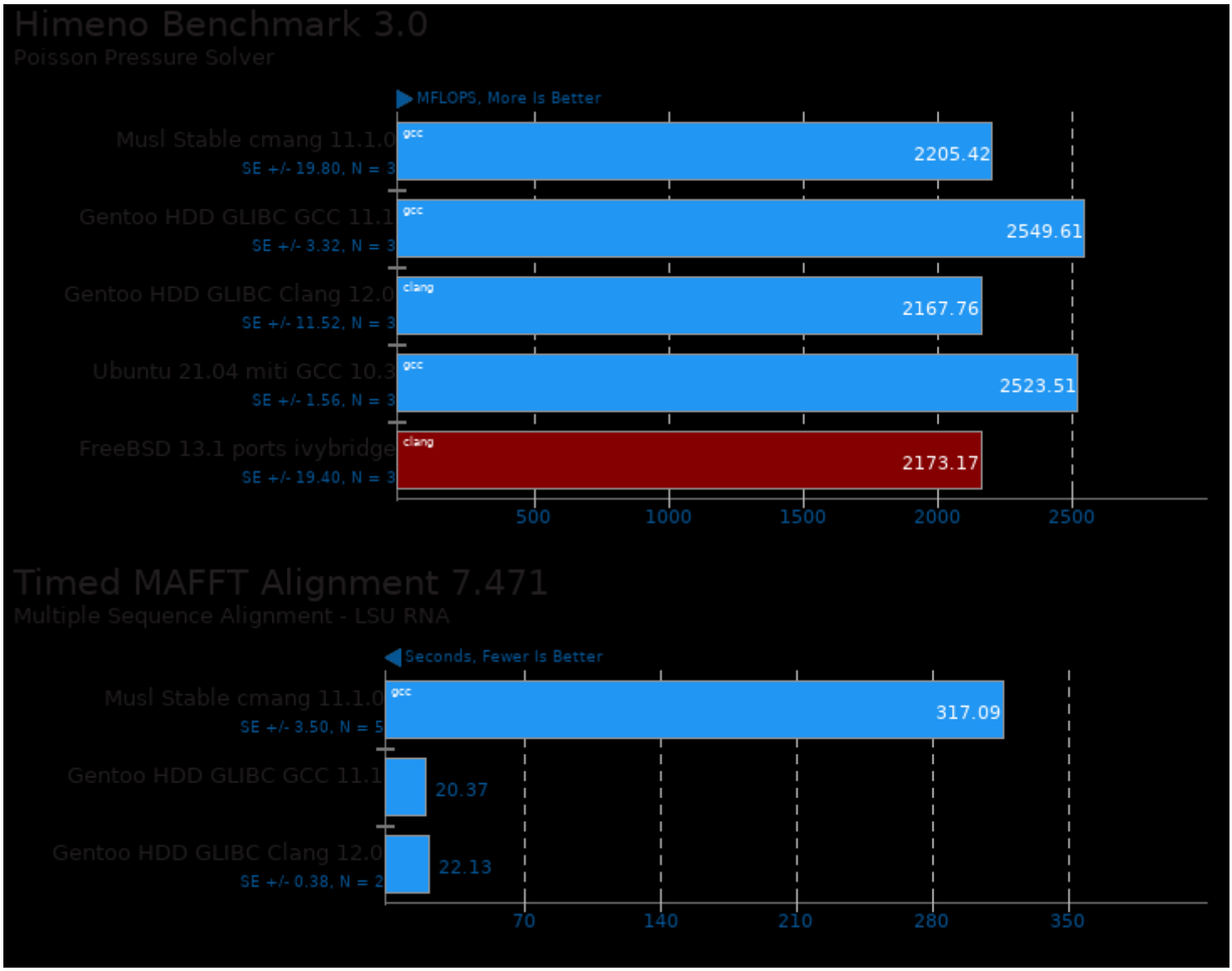
Processor: Intel Core i7-3615QM (8 Cores), Motherboard: Parallels Software Virtual, Chipset: Intel 82P965/G965 MCH, Memory: 4096MB, Disk: 59GB, Graphics: Parallels Accelerated Virtual Video, Network: Intel Legacy PRO/1000 MT 82545EM (Copper)

OS: FreeBSD, Kernel: 13.1-STABLE (x86_64), Compiler: Clang 14.0.5, File-System: ufs, Screen Resolution: 1024x768, System Layer: Parallels Virtualization

Security Notes: KPTI

	Musl Stable cmang 11.1.0	Gentoo HDD GLIBC GCC 11.1	Gentoo HDD GLIBC Clang 12.0	Ubuntu 21.04 miti GCC 10.3	FreeBSD 13.1 ports ivybridge
Himeno Benchmark - P.P.S (MFLOPS)	2205	**2550**	**2168**	2524	2173
Normalized	86.5%	100%	85.02%	98.98%	85.24%
Standard Deviation	1.6%	0.2%	0.9%	0.1%	1.5%
Timed MAFFT Alignment - M.S.A - LSU RNA (sec)	**317.088**	**20.367**	22.127		
Normalized	6.42%	100%	92.05%		
Standard Deviation	2.5%		2.4%		

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