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Intel Bay Trail NUC Kit Ubuntu Linux Comparison

Testing by Michael Larabel of Phoronix for a future article on Phoronix of the Intel Bay Trail NUC Kit Celeron SoC and other hardware while running Ubuntu Linux.

Automated Executive Summary

CompuLab Intense-PC had the most wins, coming in first place for 81% of the tests.

Based on the geometric mean of all complete results, the fastest (CompuLab Intense-PC) was 68.915x the speed of the slowest (Intel Galileo Squeeze). ASRock 3D Vision NetTop was 0.687x the speed of CompuLab Intense-PC, ASRock Core i3 NetTop was 0.902x the speed of ASRock 3D Vision NetTop, Intel Bay Trail NUC Kit was 0.62x the speed of ASRock Core i3 NetTop, TREK-572 was 0.569x the speed of Intel Bay Trail NUC Kit, CompuLab Fit-PC2 was 0.545x the speed of TREK-572, CompuLab Utilite was 0.845x the speed of CompuLab Fit-PC2, CompuLab Trim-Slice was 0.903x the speed of CompuLab Utilite, Intel Galileo Squeeze was 0.16x the speed of CompuLab Trim-Slice.

The results with the greatest spread from best to worst included:

C-Ray (Total Time) at 318.028x
Smallpt (Global Illumination Renderer; 100 Samples) at 140.77x
SciMark (Computational Test: Sparse Matrix Multiply) at 123.591x
SciMark (Computational Test: Dense LU Matrix Factorization) at 111.236x
SciMark (Computational Test: Composite) at 79.577x

Timed Apache Compilation (Time To Compile) at 79.506x
Himeno Benchmark (Poisson Pressure Solver) at 78.722x
FLAC Audio Encoding (WAV To FLAC) at 72.554x
Primesieve (1e12 Prime Number Generation) at 59.752x
SciMark (Computational Test: Monte Carlo) at 51.965x.

Test Systems:

CompuLab Utilite

Processor: ARMv7 rev 10 @ 1.00GHz (4 Cores), Motherboard: Compulab CM-FX6, Memory: 2048MB, Disk: 32GB SanDisk SSD U100, Graphics: GC2000 Engine, Network: Intel I211 Gigabit Connection

OS: Ubuntu 12.04, Kernel: 3.0.35-cm-fx6-5.1 (armv7l), Desktop: GNOME 3.2.1, Display Server: X Server 1.11.3, OpenGL: 2.1, Compiler: GCC 4.6, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=arm-linux-gnueabi --disable-sjlj-exceptions --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=arm-linux-gnueabi --target=arm-linux-gnueabi --with-arch=armv7-a --with-float=softfp --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: imx ondemand

CompuLab Fit-PC2

Processor: Intel Atom Z530 @ 1.60GHz (2 Cores), Motherboard: Intel SBC-FITPC2, Chipset: Intel Hub + SCH, Memory: 1024MB, Disk: 160GB Hitachi HTS54501, Graphics: Intel Hub (SCH Poulsbo), Audio: Realtek ALC260, Monitor: DELL S2409W, Network: Realtek RTL8111/8168B + Ralink RT3090 Wireless 802.11n 1T/1R

OS: Ubuntu 12.04, Kernel: 3.8.0-29-generic (i686), Display Driver: modesetting 0.7.0, Compiler: GCC 4.6, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=i686-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-targets=all --enable-threads=posix --host=i686-linux-gnu --target=i686-linux-gnu --with-arch-32=i686 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

CompuLab Trim-Slice

Processor: ARMv7 rev 0 @ 1.00GHz (2 Cores), Motherboard: trimslice, Memory: 593MB, Disk: 250GB Samsung HM251HI, Graphics: NVIDIA TEGRA, Monitor: DELL S2409W, Network: Realtek RTL8111/8168B

OS: Ubuntu 12.04, Kernel: 3.1.10-l4t.r16.01 (armv7l), Compiler: GCC 4.6, File-System: ext2, Screen Resolution: 1366x1536

Compiler Notes: --build=arm-linux-gnueabihf --disable-sjlj-exceptions --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multilib --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=arm-linux-gnueabihf --target=arm-linux-gnueabihf --with-arch=armv7-a --with-float=hard --with-fpu=vfpv3-d16 --with-mode=thumb -v
Processor Notes: Scaling Governor: tegra ondemand

CompuLab Intense-PC

Processor: Intel Core i7-3517UE @ 2.10GHz (4 Cores), Motherboard: CompuLab Intense-PC, Chipset: Intel Ivy Bridge DRAM, Memory: 8192MB, Disk: 500GB Hitachi HCC54755, Graphics: Intel Ivy Bridge (1000MHz), Audio: Realtek ALC888, Monitor: DELL S2409W, Network: Intel 82579LM Gigabit Connection + Realtek RTL8188CE 802.11b/g/n

OS: Ubuntu 12.04, Kernel: 3.8.0-29-generic (x86_64), Desktop: Unity 5.20.0, Display Server: X Server 1.13.3, Display Driver: intel 2.21.6, OpenGL: 3.0 Mesa 9.1.4, Compiler: GCC 4.6, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

ASRock 3D Vision NetTop

Processor: Intel Core i3 370M @ 2.40GHz (4 Cores), Motherboard: ASRock HM55-MXM, Chipset: Intel Core DRAM, Memory: 4096MB, Disk: 500GB Western Digital WD5000BEKT-8, Graphics: NVIDIA GeForce GT 425M 512MB (202/324MHz), Audio: Realtek ALC889A, Monitor: DELL S2409W, Network: Realtek RTL8111/8168B + Atheros AR9287 Wireless

OS: Ubuntu 12.04, Kernel: 3.8.0-29-generic (x86_64), Desktop: Unity 5.20.0, Display Server: X Server 1.13.3, Display Driver: nouveau 1.0.7, OpenGL: 3.0 Mesa 9.1.4 Gallium 0.4, Compiler: GCC 4.6, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

ASRock Core i3 NetTop

Processor: Intel Core i3 330M @ 2.13GHz (4 Cores), Motherboard: ASRock HM55-HT, Chipset: Intel Core DRAM, Memory: 4096MB, Disk: 500GB Seagate ST9500325AS, Graphics: Intel Core IGP, Audio: VIA VT2020, Monitor: DELL S2409W, Network: Realtek RTL8111/8168B + Atheros AR9287 Wireless

OS: Ubuntu 12.04, Kernel: 3.8.0-29-generic (x86_64), Desktop: Unity 5.20.0, Display Server: X Server 1.13.3, Display Driver: intel 2.21.6, OpenGL: 2.1 Mesa 9.1.4, Compiler: GCC 4.6, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-arch-32=i686 --with-tune=generic -v
Processor Notes: Scaling Governor: acpi-cpufreq ondemand

Intel Bay Trail NUC Kit

Processor: Intel Celeron N2820 @ 1.60GHz (2 Cores), Motherboard: Intel DN2820FYK, Chipset: Intel ValleyView SSA-CUnit, Memory: 8192MB, Disk: 60GB OCZ VERTEX2, Graphics: Intel ValleyView Gen7 (708MHz), Audio: Realtek ALC283, Network: Realtek RTL8111/8168/8411 + Intel Wireless 7260

OS: Ubuntu 13.10, Kernel: 3.14.0-999-generic (x86_64), Desktop: Unity 7.1.2, Display Server: X Server 1.14.5, Display Driver: intel 2.99.909, OpenGL: 3.3 Mesa 10.2.0-devel (git-57f94bf saucy-oibaf-ppa), Compiler: GCC 4.8, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=x86_64-linux-gnu --disable-browser-plugin --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-threads=posix --host=x86_64-linux-gnu --target=x86_64-linux-gnu --with-abi=m64 --with-arch-32=i686 --with-arch-directory=amd64 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate performance

Intel Galileo Squeeze

Processor: Unknown (1 Core), Disk: 4GB

OS: Debian Linux 6.0.8, Kernel: 3.8.7-yocto-standard (i686), Desktop: GNOME, Display Server: Wayland Weston + SurfaceFlinger + GNOME Shell Wayland, Compiler: GCC 4.4.5, File-System: ext2/ext3

Compiler Notes: --build=i486-linux-gnu --enable-checking=release --enable-clocale=gnu --enable-languages=c,c++,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-multiarch --enable-nls --enable-objc-gc --enable-shared --enable-targets=all --enable-threads=posix --host=i486-linux-gnu --target=i486-linux-gnu --with-arch-32=i586 --with-tune=generic -v

TREK-572

Processor: Intel Atom E3815 @ 1.10GHz (1 Core), Motherboard: AMI Aptio CRB, Chipset: Intel ValleyView SSA-CUnit, Memory: 1 x 2048 MB DDR3-1600MHz Transcend, Disk: 16GB SQF-SMSS4-16G-S8, Graphics: Intel ValleyView Gen7 (397MHz), Audio: Realtek ALC892, Network: Intel I210 Gigabit Connection + Qualcomm Atheros AR9462 Wireless

OS: Ubuntu 14.04, Kernel: 3.13.6 (i686), Desktop: LXDE 0.6.1, Display Server: X Server 1.15.1, Display Driver: intel 2.99.910, OpenGL: 3.3 Mesa 10.1.3, Compiler: GCC 4.8.2, File-System: ext4, Screen Resolution: 1920x1080

Compiler Notes: --build=i686-linux-gnu --disable-browser-plugin --disable-libmudflap --disable-werror --enable-checking=release --enable-clocale=gnu --enable-gnu-unique-object --enable-gtk-cairo --enable-java-awt=gtk --enable-java-home --enable-languages=c,c++,java,go,d,fortran,objc,obj-c++ --enable-libstdcxx-debug --enable-libstdcxx-time=yes --enable-multiarch --enable-nls --enable-objc-gc --enable-plugin --enable-shared --enable-targets=all --enable-threads=posix --host=i686-linux-gnu --target=i686-linux-gnu --with-arch-32=i686 --with-arch-directory=i386 --with-multilib-list=m32,m64,mx32 --with-tune=generic -v
Processor Notes: Scaling Governor: intel_pstate performance

	CompuLab Utilite	CompuLab Fit-PC2	CompuLab Trim-Slice	CompuLab Intense-PC	ASRock 3D Vision NetTop	ASRock Core i3 NetTop	Intel Bay Trail NUC Kit	Intel Galileo Squeeze	TREK-572
HPC Challenge - G-HPL (GFLOPS)	2.01655	**0.82762**	1.04644	**7.73103**	5.85633	5.19380	3.82001		1.18203
Normalized	26.08%	10.71%	13.54%	100%	75.75%	67.18%	49.41%		15.29%
Standard Deviation	0.1%	0.8%	1%	0%	0.3%	0.3%	0.6%		0%
HPC Challenge - G-Ffte (GFLOPS)	0.24977	0.18720	**0.15694**	**2.20394**	1.41956	1.28883	0.71068		0.25661
Normalized	11.33%	8.49%	7.12%	100%	64.41%	58.48%	32.25%		11.64%
Standard Deviation	0.6%	0.3%	2.1%	0.8%	0.9%	1.2%	0.6%		0.2%
HPC Challenge - EP-DGEMM (GFLOPS)	0.56971	**0.44101**	0.56679	**2.01932**	1.54409	1.36686	1.99315		1.21239
Normalized	28.21%	21.84%	28.07%	100%	76.47%	67.69%	98.7%		60.04%
Standard Deviation	0.1%	4.4%	2.7%	0%	0.1%	0%	0%		0.1%
HPC Challenge - G-Ptrans (GB/s)	**0.08971**	0.11404	0.13199	0.55574	0.33193	0.31007	**0.59813**		0.11219
Normalized	15%	19.07%	22.07%	92.91%	55.49%	51.84%	100%		18.76%
Standard Deviation	3.9%	0.4%	2.6%	0.7%	1%	0.6%	0.2%		0.6%

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HPC Challenge - EP-STREAM Triad (GB/s)	0.51484	0.85012	**0.44687**	3.49379	2.05182	1.88436	2.04644		**3.78999**
Normalized	13.58%	22.43%	11.79%	92.18%	54.14%	49.72%	54%		100%
Standard Deviation	1.6%	1.3%	0.8%	6.6%	0.4%	0.7%	1.9%		0%
HPC Challenge - M.P.P.B (MB/s)	711.956	**521.511**	1281	**6411**	3758	3482	1858		
Normalized	11.11%	8.13%	19.97%	100%	58.61%	54.31%	28.99%		
Standard Deviation	1.9%	9.6%	0.7%	0%	1.3%	1.1%	1.1%		
Dolfyn - C.F.D (sec)	**578.60**	325.91	551.51	**32.92**	50.46	58.67	109.32		177.30
Normalized	5.69%	10.1%	5.97%	100%	65.24%	56.11%	30.11%		18.57%
Standard Deviation	0.4%	0.2%	0.9%	1%	0.2%	0.2%	0.8%		0.1%
PolyBench-C - C.C (sec)	24.53	30.88	21.87	7.14	7.94	9.00	**5.84**	**240.01**	15.81
Normalized	23.81%	18.91%	26.7%	81.79%	73.55%	64.89%	100%	2.43%	36.94%
Standard Deviation	0.6%	1.4%	1.5%	2.8%	0.3%	0.2%	10.1%	0%	0.4%
PolyBench-C - C.C (sec)	24.59	**31.22**	21.97	7.03	7.89	8.94	**5.85**		15.84
Normalized	23.79%	18.74%	26.63%	83.21%	74.14%	65.44%	100%		36.93%
Standard Deviation	0.1%	3.6%	1.7%	2.9%	0.2%	0.1%	10%		0.7%
PolyBench-C - 3.M.M (sec)	571.48	485.77	551.93	**30.63**	49.31	52.30	126.50	**1270**	157.59
Normalized	5.36%	6.31%	5.55%	100%	62.12%	58.57%	24.21%	2.41%	19.44%
Standard Deviation	0.3%	0.1%	0.1%	1.9%	3.2%	0.9%	0.8%	0.1%	0.3%
SciMark - Composite (Mflops)	62.15	128.86	64.53	**927.07**	563.63	502.71	323.06	**11.65**	226.94
Normalized	6.7%	13.9%	6.96%	100%	60.8%	54.23%	34.85%	1.26%	24.48%
Standard Deviation	0.2%	0.1%	1.6%	0.5%	0.4%	0.3%	0.2%	0.1%	0.1%
SciMark - Monte Carlo (Mflops)	49.80	48.11	56.33	**398.05**	290.99	258.11	157.90	**7.66**	90.74
Normalized	12.51%	12.09%	14.15%	100%	73.1%	64.84%	39.67%	1.92%	22.8%
Standard Deviation	0.4%	0%	3.4%	0.4%	0.2%	0%	0%	0%	0%
SciMark - F.F.T (Mflops)	16.57	16.15	17.48	**221.33**	124.28	119.34	51.30	**4.80**	41.73
Normalized	7.49%	7.3%	7.9%	100%	56.15%	53.92%	23.18%	2.17%	18.85%
Standard Deviation	0.9%	0.1%	2.3%	3.8%	0.5%	0.6%	0.3%	0%	0.1%
SciMark - S.M.M (Mflops)	52.73	156.46	54.77	**1563**	830.85	748.14	463.35	**12.65**	331.06
Normalized	3.37%	10.01%	3.5%	100%	53.14%	47.85%	29.64%	0.81%	21.18%
Standard Deviation	0.2%	0.3%	1.5%	0.8%	0.5%	0.5%	0.4%	0%	0.1%
SciMark - D.L.M.F (Mflops)	67.53	153.00	53.98	**1604**	905.52	797.22	384.81	**14.42**	276.85
Normalized	4.21%	9.54%	3.37%	100%	56.45%	49.7%	23.99%	0.9%	17.26%
Standard Deviation	0.2%	0.1%	1.1%	0.2%	0.7%	0.4%	0.2%	0%	0%
SciMark - J.S.O.R (Mflops)	124.12	270.60	140.10	**839.39**	666.50	590.73	557.94	**18.71**	394.79
Normalized	14.79%	32.24%	16.69%	100%	79.4%	70.38%	66.47%	2.23%	47.03%
Standard Deviation	0.2%	0.2%	4.7%	0.3%	0.4%	0.2%	0.2%	0.3%	0.2%
TSCP - A.C.P (Nodes/s)	127979	197936	126451	**807594**	555678	488369	323454	**40673**	234393
Normalized	15.85%	24.51%	15.66%	100%	68.81%	60.47%	40.05%	5.04%	29.02%
Standard Deviation	1.5%	0%	1.9%	0.2%	0.5%	0.3%	0%	0.5%	0%

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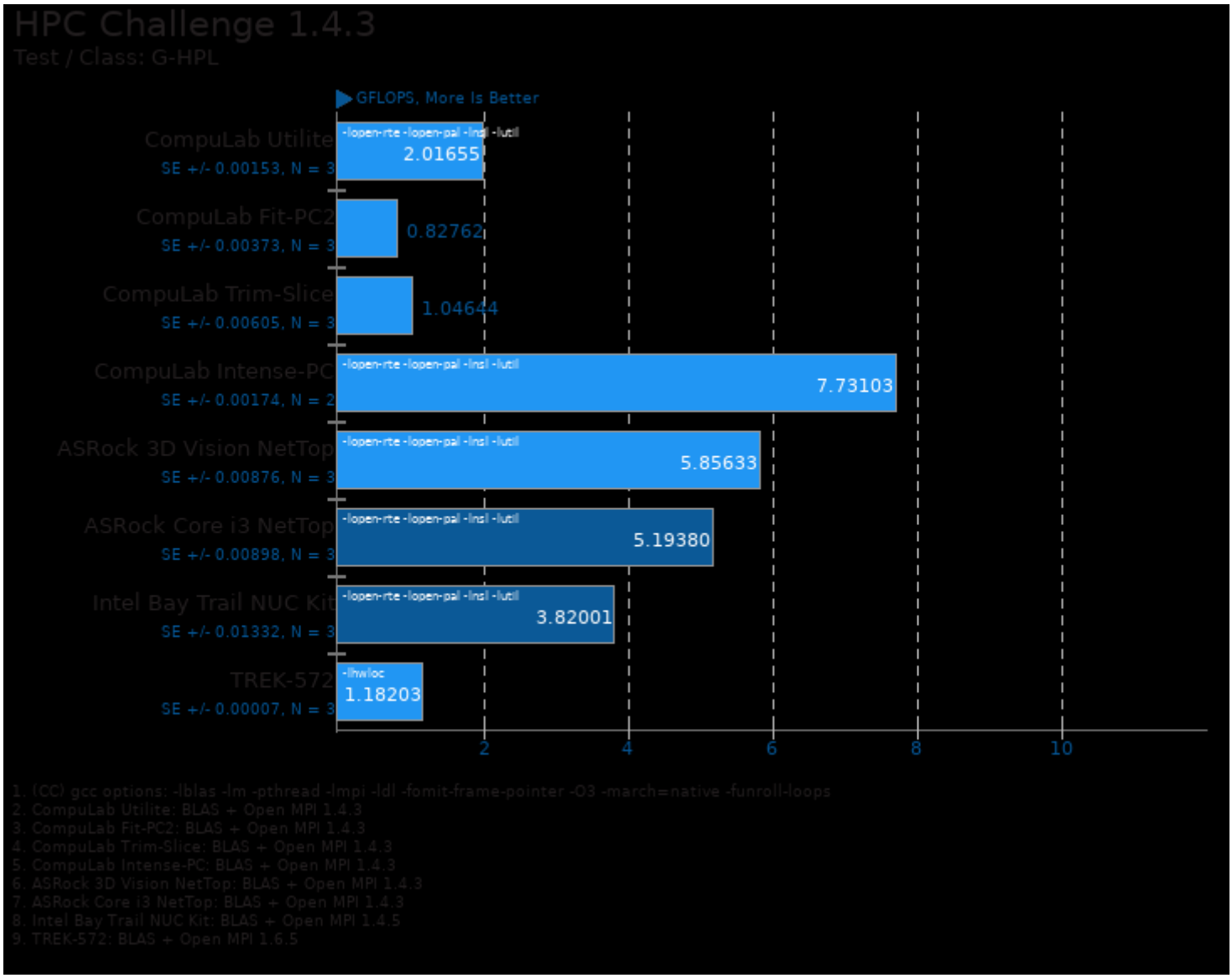
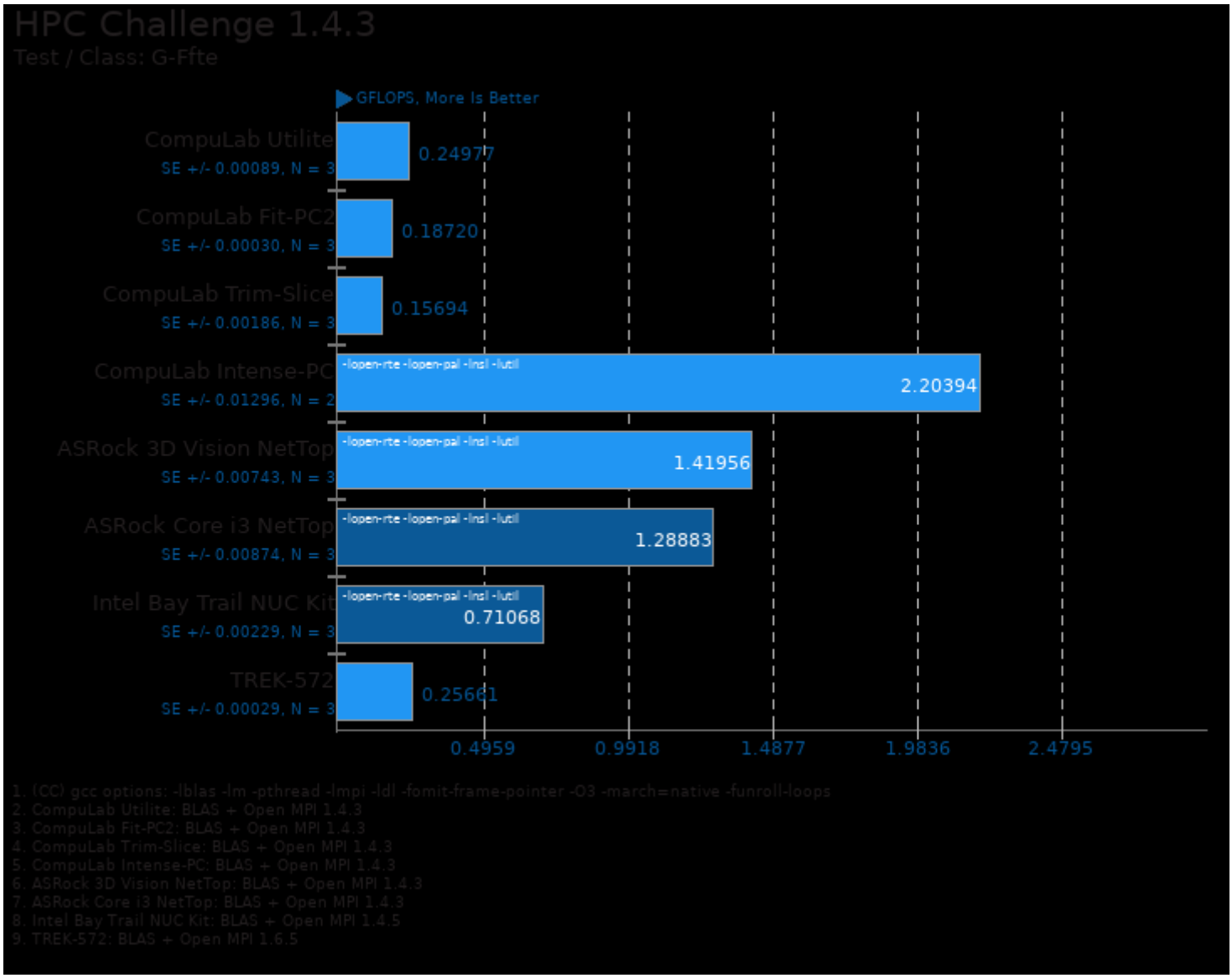
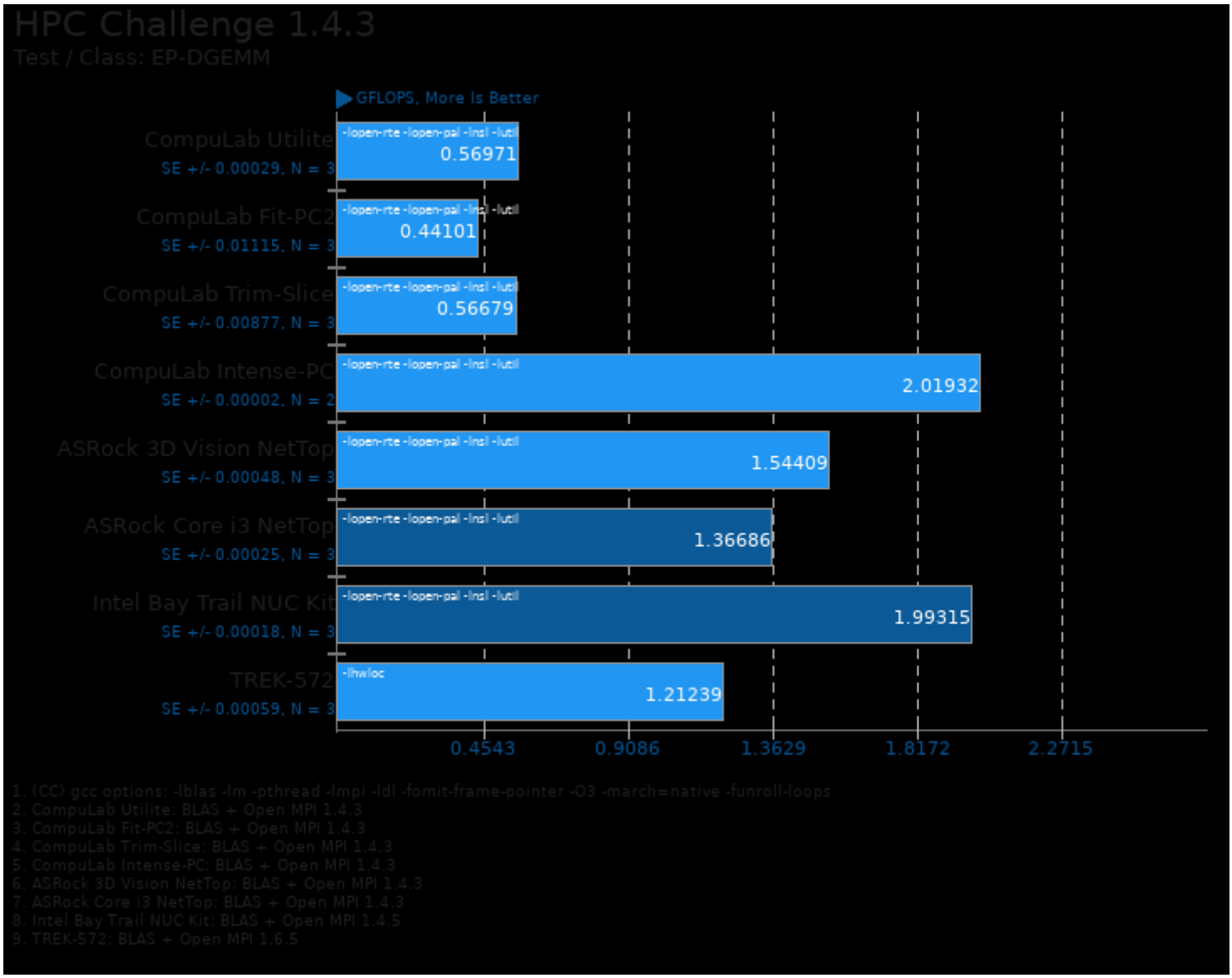
Himeno Benchmark - P.P.S (MFLOPS)	109.12	104.05	103.47	**1094**	803.71	779.53	535.62	**13.90**	327.68
Normalized	9.97%	9.51%	9.46%	100%	73.45%	71.24%	48.95%	1.27%	29.95%
Standard Deviation	1.8%	0.6%	1%	0.9%	0.2%	0.3%	0%	0.3%	0.2%
Timed Apache Compilation - Time To Compile (sec)	390.00	473.04	537.40	**61.52**	76.30	85.40	226.44	**4891**	
Normalized	15.77%	13.01%	11.45%	100%	80.63%	72.04%	27.17%	1.26%	
Standard Deviation	0.4%	0%	0.1%	0.2%	0.6%	0.3%	0.2%	0.1%	
C-Ray - Total Time (sec)	630.47	1823	1261	**127.32**	141.01	159.21	282.25	**40491**	1234
Normalized	20.19%	6.98%	10.09%	100%	90.29%	79.97%	45.11%	0.31%	10.32%
Standard Deviation	1.2%	0%	0%	0%	0%	0%	0%	0.5%	0%
Primesieve - 1.P.N.G (sec)	1382	2264	**2513**	233.49	289.83	340.10	558.17	**42.06**	
Normalized	3.04%	1.86%	1.67%	18.01%	14.51%	12.37%	7.54%	100%	
Standard Deviation	5.6%	0.2%	17.8%	0.1%	0.2%	0.1%	0.1%	198.6%	
Smallpt - G.I.R.1.S (sec)	1419	2559	3049	**230**	315	366	888	**32377**	2787
Normalized	16.21%	8.99%	7.54%	100%	73.02%	62.84%	25.9%	0.71%	8.25%
Standard Deviation	0.1%	0%	0%	0%	0%	0.2%	0.1%	0.3%	0.1%
Gzip Compression - 2.F.C (sec)	102.70	86.34	146.01	**17.28**	19.37	25.82	31.50	**868.31**	
Normalized	16.83%	20.01%	11.83%	100%	89.21%	66.92%	54.86%	1.99%	
Standard Deviation	0.2%	0.8%	0.7%	7.8%	2.8%	1.3%	0.2%	0.6%	
FLAC Audio Encoding - WAV To	56.82	56.70	61.44	**7.33**	11.68	13.19	19.28	**531.82**	
Normalized	12.9%	12.93%	11.93%	100%	62.76%	55.57%	38.02%	1.38%	
Standard Deviation	0.8%	0.2%	1.2%	1.1%	0.5%	0.5%	0.2%	0.3%	
LAME MP3 Encoding - WAV To MP3 (sec)	128.79	135.49	**135.75**	**17.96**	26.35	29.84	48.00		
Normalized	13.95%	13.26%	13.23%	100%	68.16%	60.19%	37.42%		
Standard Deviation	0.9%	0.1%	0.1%	0.1%	0.4%	0.1%	0%		
FFmpeg - H.2.H.T.N.D (sec)	357.63		**489.53**	**28.73**	33.53	36.97	55.35		
Normalized	8.03%		5.87%	100%	85.68%	77.71%	51.91%		
Standard Deviation	0.7%		2.3%	2.2%	1.8%	1.7%	0.2%		
N-Queens - Elapsed Time (sec)	246.59		518.44	**113.19**	140.39	162.77	250.56	**4043**	745.89
Normalized	45.9%		21.83%	100%	80.63%	69.54%	45.17%	2.8%	15.18%
Standard Deviation	3.4%		0%	0%	0%	0%	0%	0%	0%

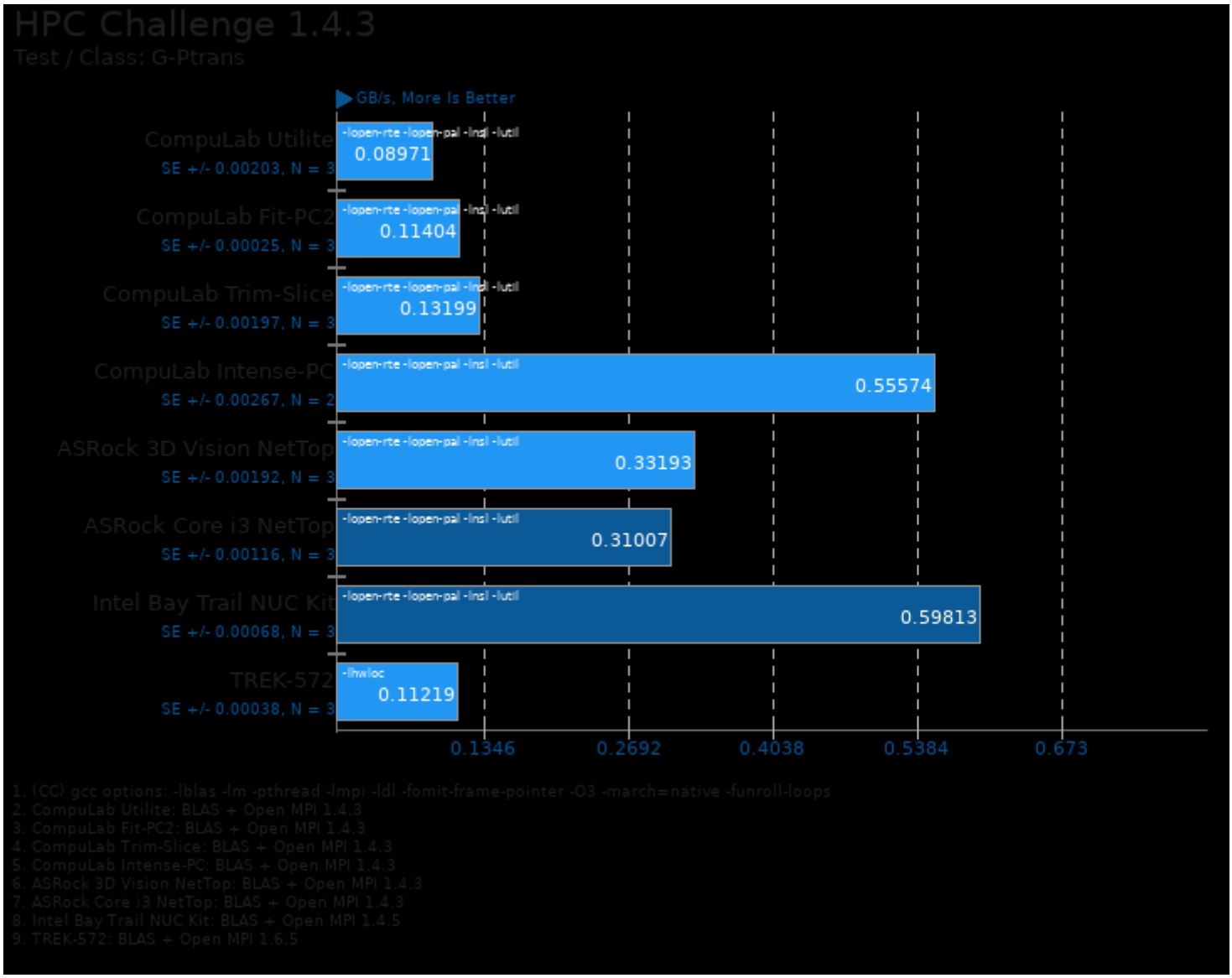

HPC Challenge 1.4.3
Test / Class: G-HPL
GFLOPS, More Is Better
CompuLab Utilite
SE +/- 0.00153, N = 3
2.01655
CompuLab Fit-PC2
SE +/- 0.00373, N = 3
0.82762
CompuLab Trim-Slice
SE +/- 0.00605, N = 3
1.04644
CompuLab Intense-PC
SE +/- 0.00174, N = 2
-lopen-rte -lopen-pal -lmpi -lutil
7.73103
ASRock 3D Vision NetTop
SE +/- 0.00876, N = 3
5.85633
ASRock Core i3 NetTop
SE +/- 0.00898, N = 3
5.19380
Intel Bay Trail NUC Kit
SE +/- 0.01332, N = 3
3.82001
TREK-572
SE +/- 0.00007, N = 3
-lhwloc
1.18203
2
4
6
8
10
1. (CC) gcc options: -lblas -lm -pthread -lmpi -ldl -fomit-frame-pointer -O3 -march=native -funroll-loops
2. CompuLab Utilite: BLAS + Open MPI 1.4.3
3. CompuLab Fit-PC2: BLAS + Open MPI 1.4.3
4. CompuLab Trim-Slice: BLAS + Open MPI 1.4.3
5. CompuLab Intense-PC: BLAS + Open MPI 1.4.3
6. ASRock 3D Vision NetTop: BLAS + Open MPI 1.4.3
7. ASRock Core i3 NetTop: BLAS + Open MPI 1.4.3
8. Intel Bay Trail NUC Kit: BLAS + Open MPI 1.4.5
9. TREK-572: BLAS + Open MPI 1.6.5


HPC Challenge 1.4.3
Test / Class: G-Ffte
GFLOPS, More Is Better
CompuLab Utilite
SE +/- 0.00089, N = 3
0.24977
CompuLab Fit-PC2
SE +/- 0.00030, N = 3
0.18720
CompuLab Trim-Slice
SE +/- 0.00186, N = 3
0.15694
CompuLab Intense-PC
SE +/- 0.01296, N = 2
-lopen-rte -lopen-pal -lnsl -lutil
2.20394
ASRock 3D Vision NetTop
SE +/- 0.00743, N = 3
-lopen-rte -lopen-pal -lnsl -lutil
1.41956
ASRock Core i3 NetTop
SE +/- 0.00874, N = 3
-lopen-rte -lopen-pal -lnsl -lutil
1.28883
Intel Bay Trail NUC Kit
SE +/- 0.00229, N = 3
-lopen-rte -lopen-pal -lnsl -lutil
0.71068
TREK-572
SE +/- 0.00029, N = 3
0.25661
0.4959
0.9918
1.4877
1.9836
2.4795
1. (CC) gcc options: -lblas -lm -pthread -lmpi -ldl -fomit-frame-pointer -O3 -march=native -funroll-loops
2. CompuLab Utilite: BLAS + Open MPI 1.4.3
3. CompuLab Fit-PC2: BLAS + Open MPI 1.4.3
4. CompuLab Trim-Slice: BLAS + Open MPI 1.4.3
5. CompuLab Intense-PC: BLAS + Open MPI 1.4.3
6. ASRock 3D Vision NetTop: BLAS + Open MPI 1.4.3
7. ASRock Core i3 NetTop: BLAS + Open MPI 1.4.3
8. Intel Bay Trail NUC Kit: BLAS + Open MPI 1.4.5
9. TREK-572: BLAS + Open MPI 1.6.5

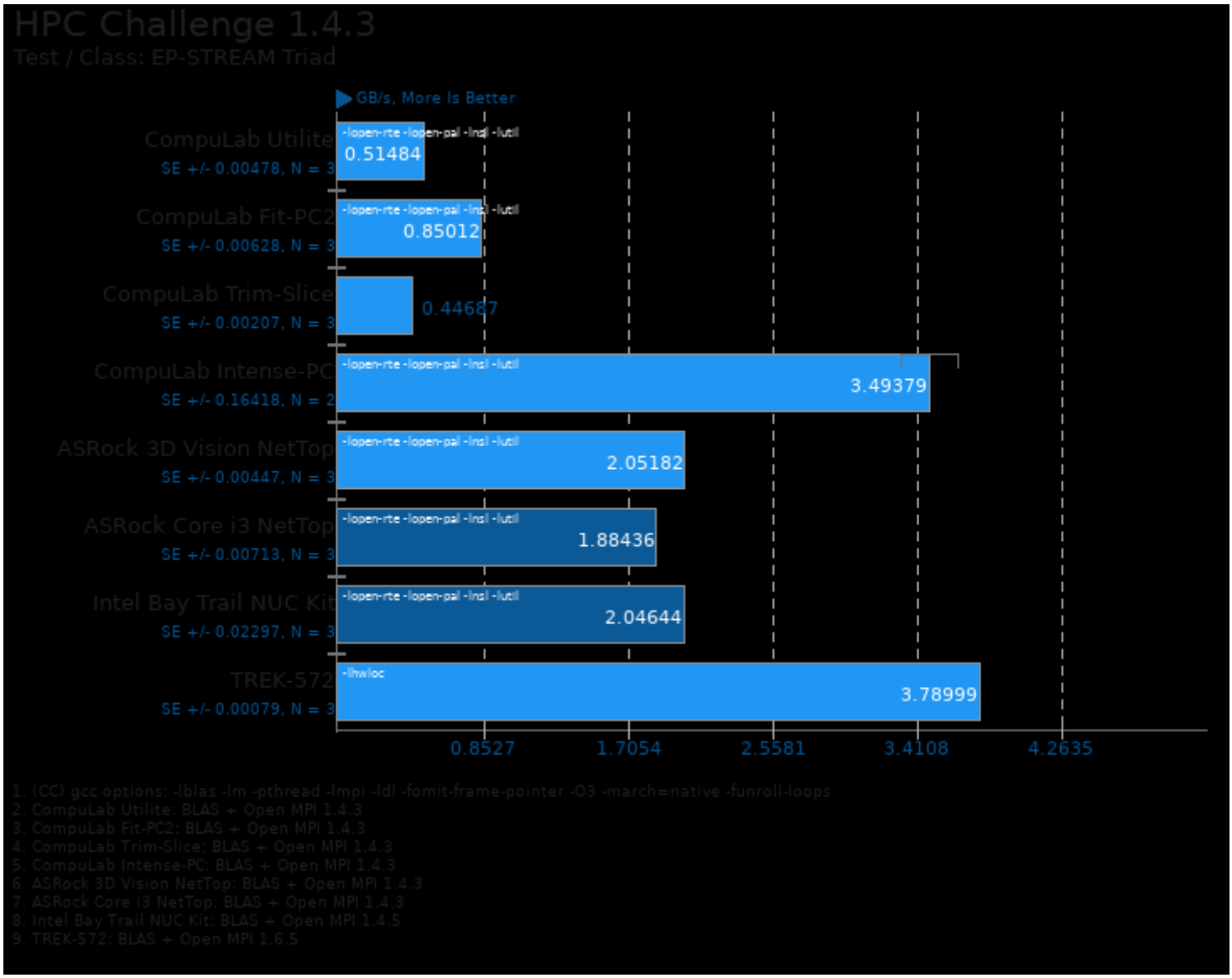
Intel Bay Trail NUC Kit Ubuntu Linux Comparison

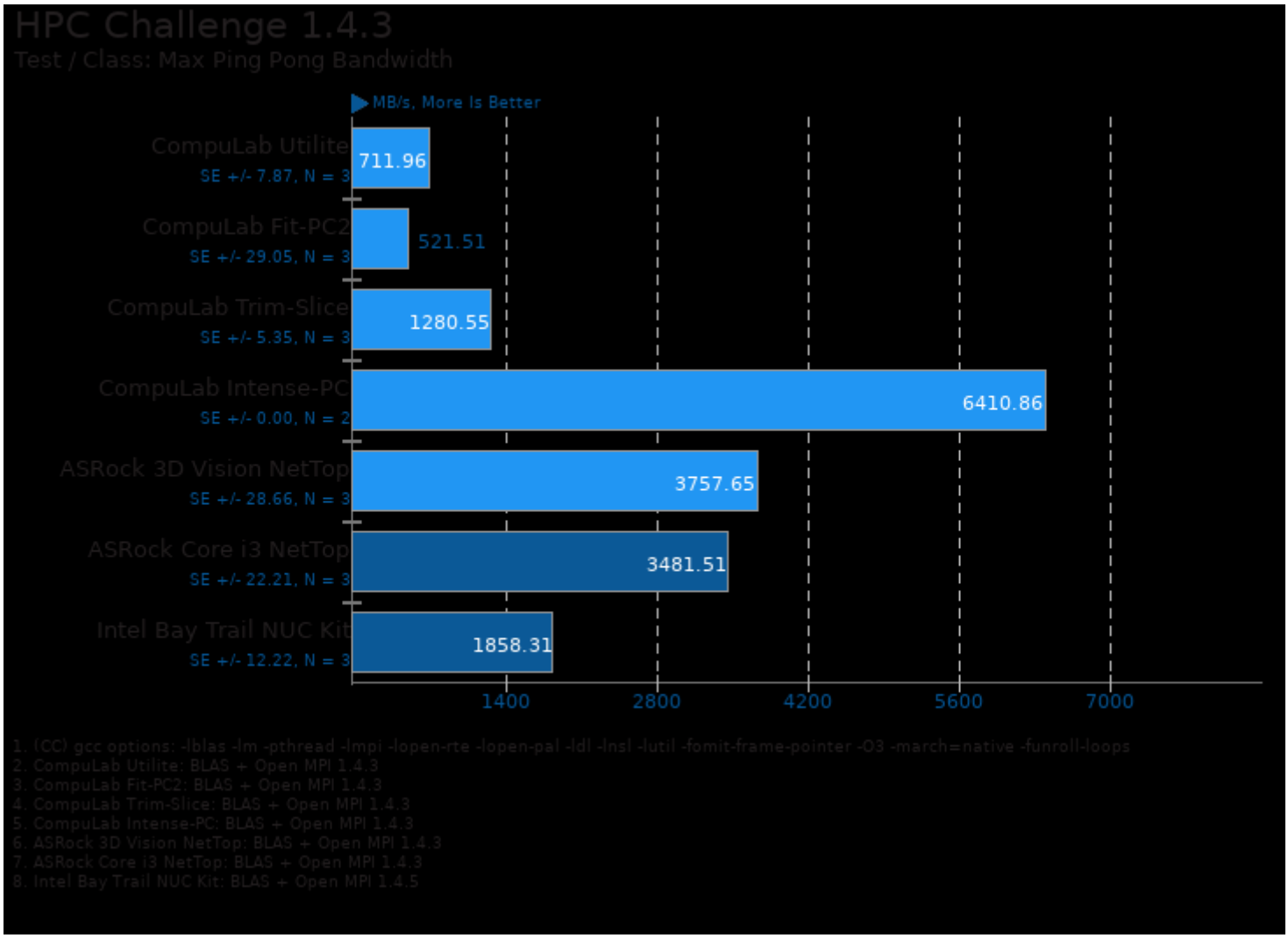


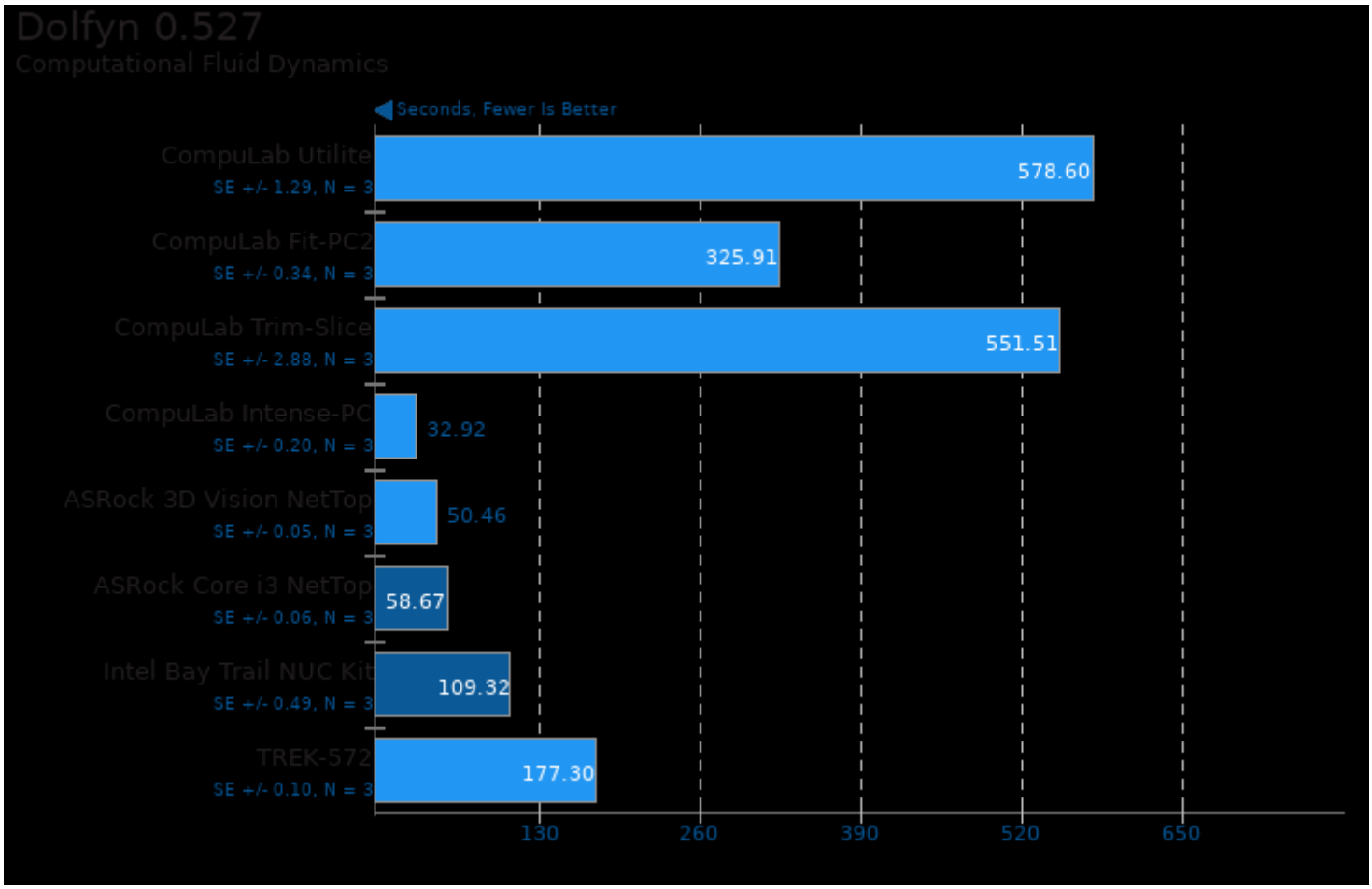
Intel Bay Trail NUC Kit Ubuntu Linux Comparison

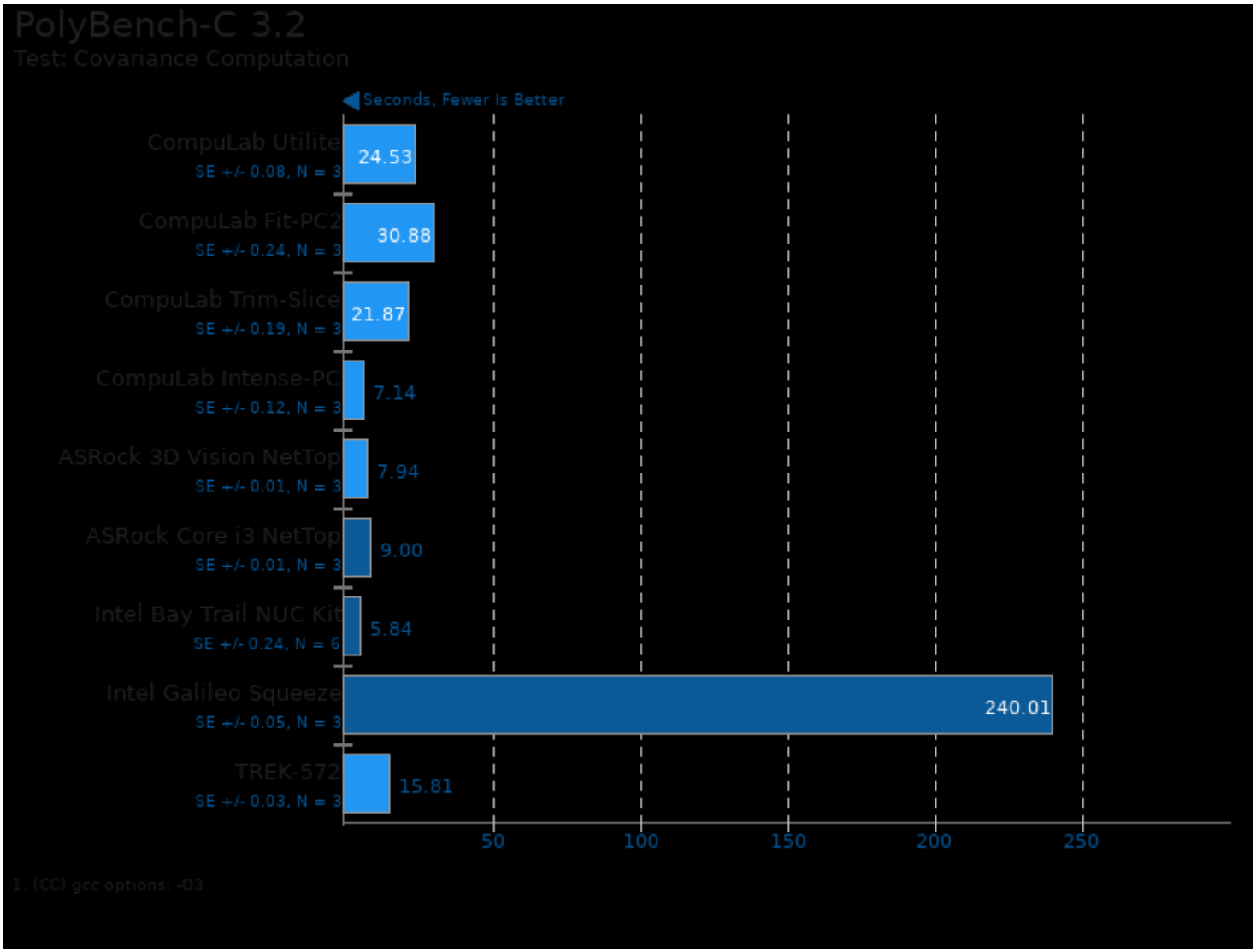


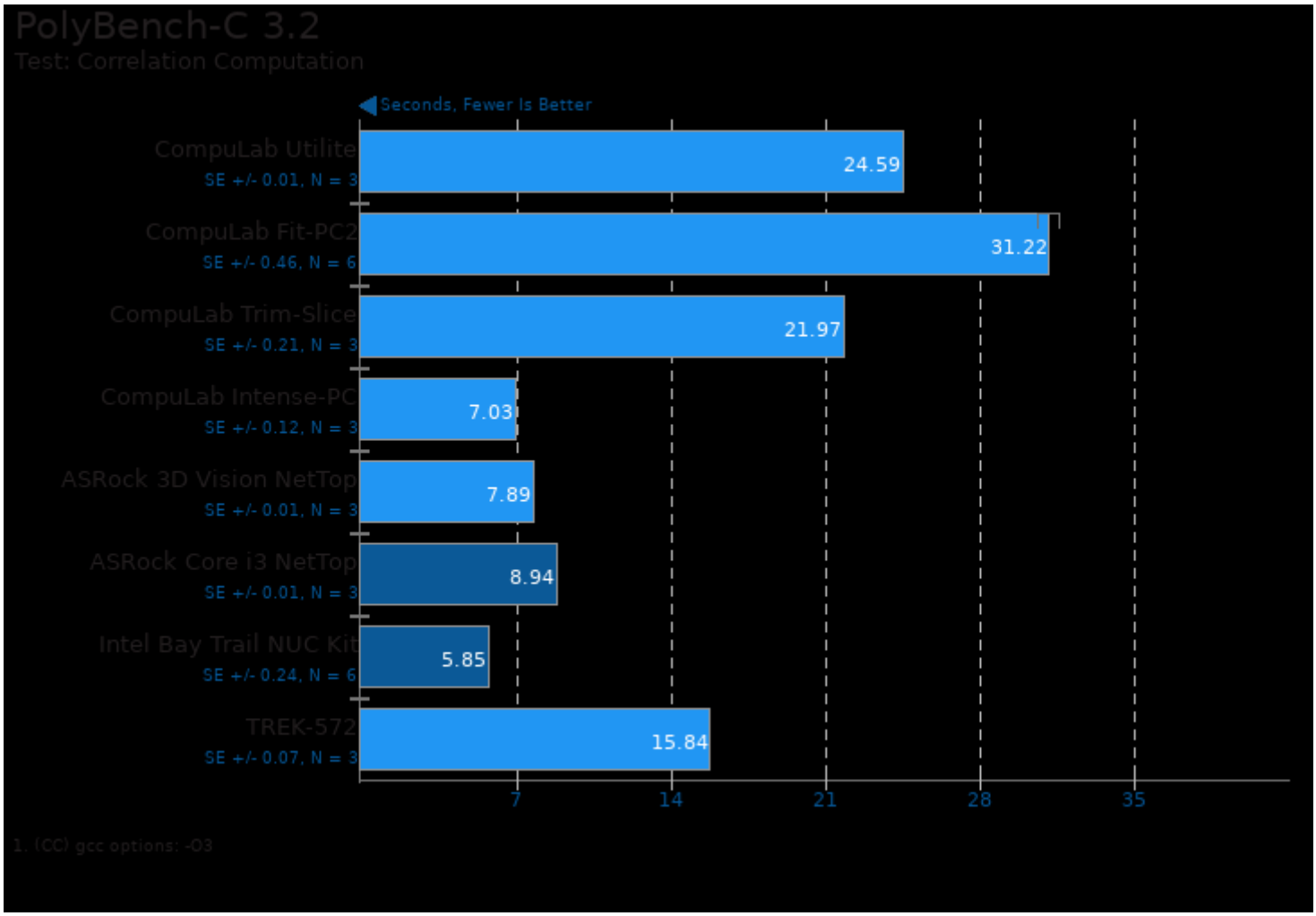
Intel Bay Trail NUC Kit Ubuntu Linux Comparison

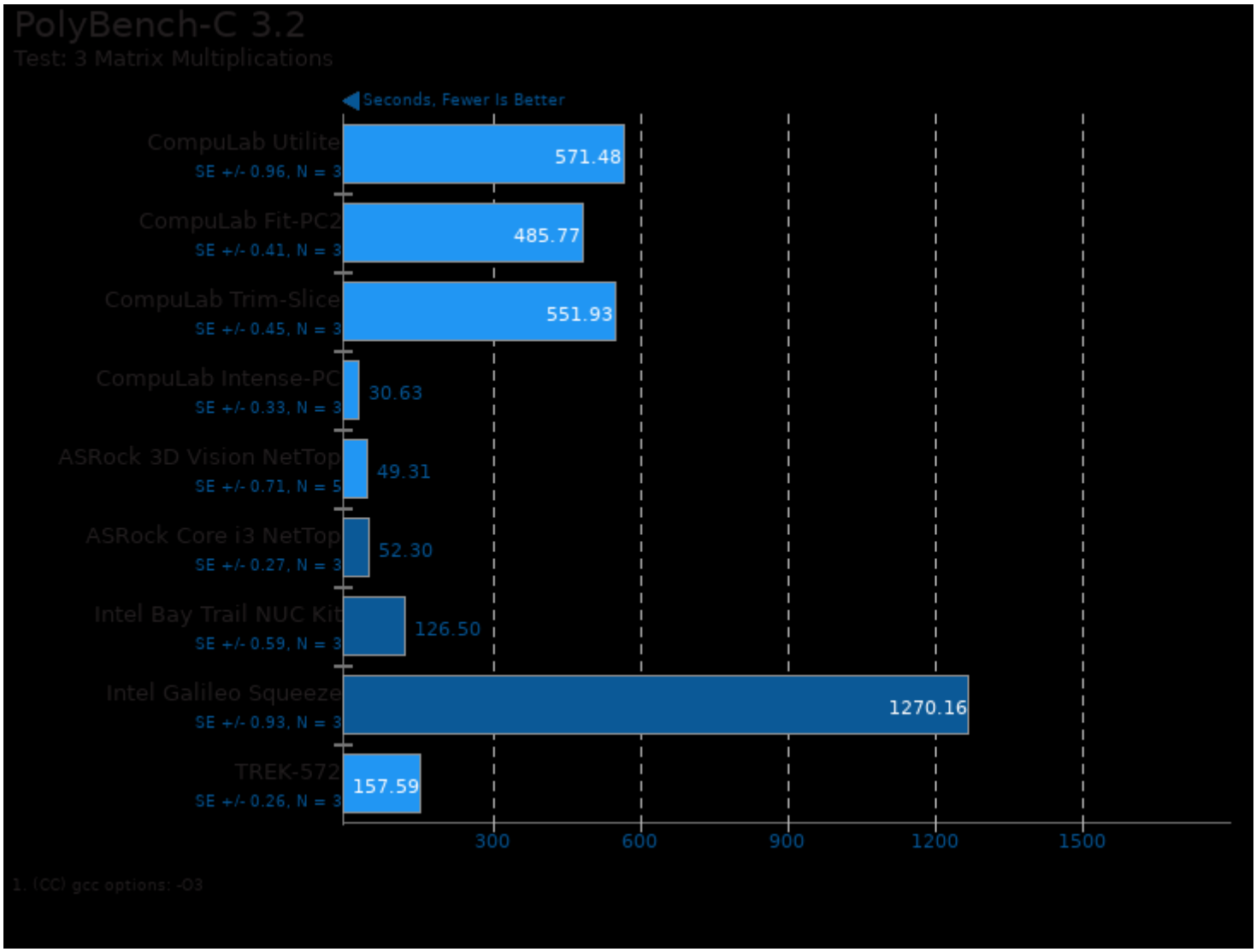



HPC Challenge 1.4.3
Test / Class: Max Ping Pong Bandwidth
MB/s, More Is Better
CompuLab Utilite
SE +/- 7.87, N = 3
711.96
CompuLab Fit-PC2
SE +/- 29.05, N = 3
521.51
CompuLab Trim-Slice
SE +/- 5.35, N = 3
1280.55
CompuLab Intense-PC
SE +/- 0.00, N = 2
6410.86
ASRock 3D Vision NetTop
SE +/- 28.66, N = 3
3757.65
ASRock Core i3 NetTop
SE +/- 22.21, N = 3
3481.51
Intel Bay Trail NUC Kit
SE +/- 12.22, N = 3
1858.31
1400
2800
4200
5600
7000
1. (CC) gcc options: -lblas -lm -pthread -lmpi -lopen-rte -lopen-pal -ldl -lnsl -lutil -fomit-frame-pointer -O3 -march=native -funroll-loops
2. CompuLab Utilite: BLAS + Open MPI 1.4.3
3. CompuLab Fit-PC2: BLAS + Open MPI 1.4.3
4. CompuLab Trim-Slice: BLAS + Open MPI 1.4.3
5. CompuLab Intense-PC: BLAS + Open MPI 1.4.3
6. ASRock 3D Vision NetTop: BLAS + Open MPI 1.4.3
7. ASRock Core i3 NetTop: BLAS + Open MPI 1.4.3
8. Intel Bay Trail NUC Kit: BLAS + Open MPI 1.4.5

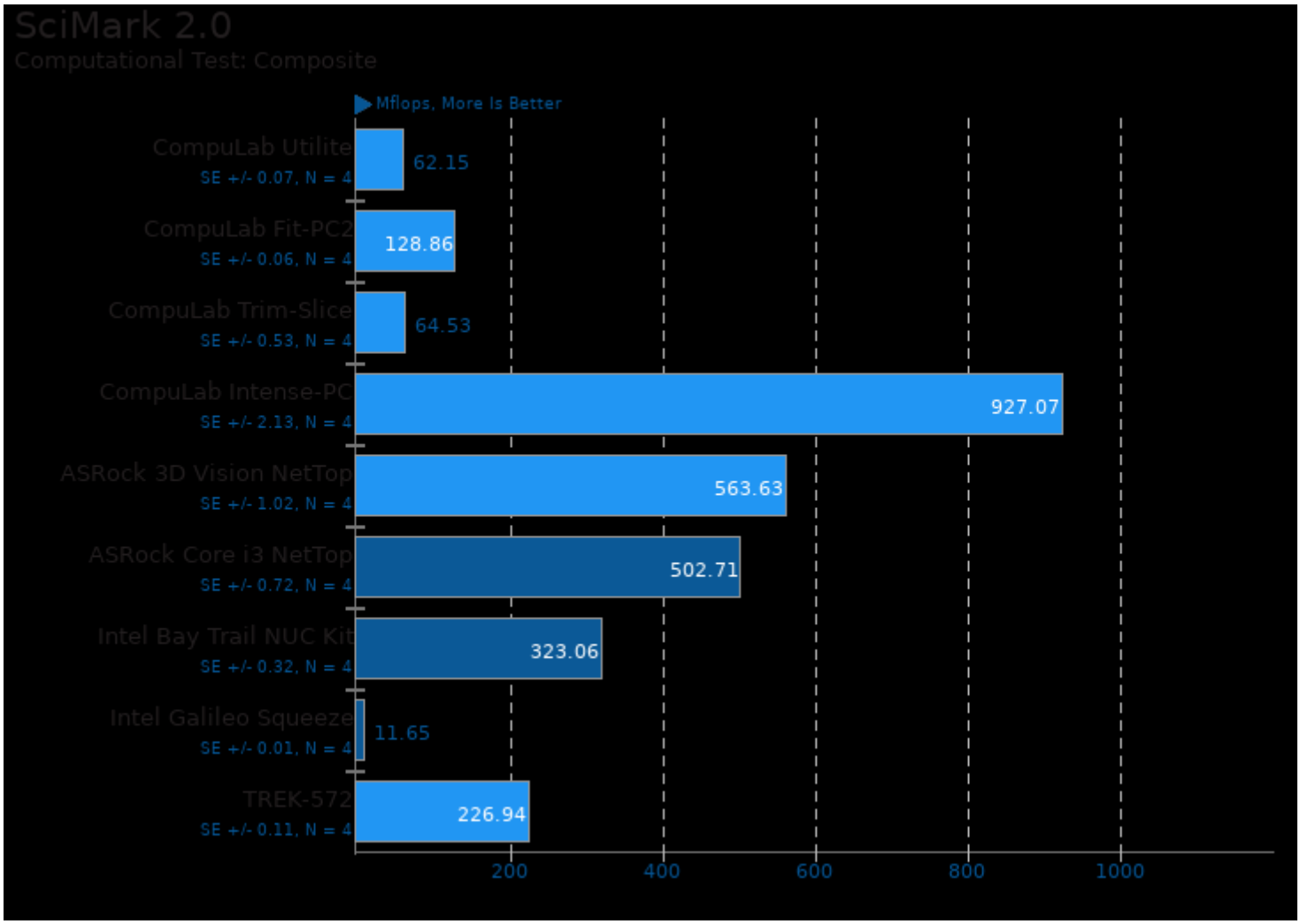

Dolfyn 0.527
Computational Fluid Dynamics
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 1.29, N = 3
578.60
CompuLab Fit-PC2
SE +/- 0.34, N = 3
325.91
CompuLab Trim-Slice
SE +/- 2.88, N = 3
551.51
CompuLab Intense-PC
SE +/- 0.20, N = 3
32.92
ASRock 3D Vision NetTop
SE +/- 0.05, N = 3
50.46
ASRock Core i3 NetTop
SE +/- 0.06, N = 3
58.67
Intel Bay Trail NUC Kit
SE +/- 0.49, N = 3
109.32
TREK-572
SE +/- 0.10, N = 3
177.30
130
260
390
520
650

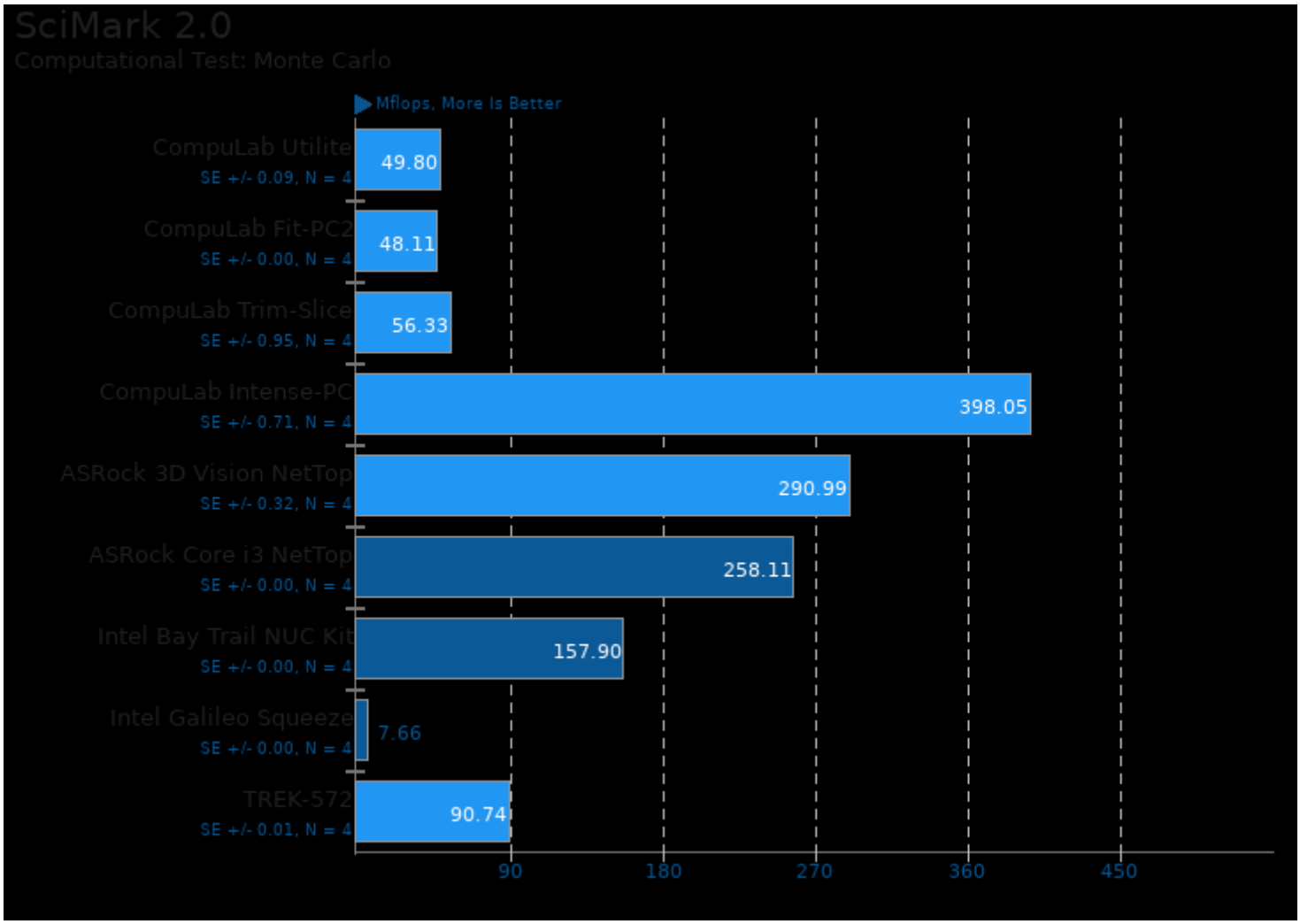

PolyBench-C 3.2
Test: Covariance Computation
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.08, N = 3
24.53
CompuLab Fit-PC2
SE +/- 0.24, N = 3
30.88
CompuLab Trim-Slice
SE +/- 0.19, N = 3
21.87
CompuLab Intense-PC
SE +/- 0.12, N = 3
7.14
ASRock 3D Vision NetTop
SE +/- 0.01, N = 3
7.94
ASRock Core i3 NetTop
SE +/- 0.01, N = 3
9.00
Intel Bay Trail NUC Kit
SE +/- 0.24, N = 6
5.84
Intel Galileo Squeeze
SE +/- 0.05, N = 3
240.01
TREK-572
SE +/- 0.03, N = 3
15.81
50
100
150
200
250
1. (CC) gcc options: -O3

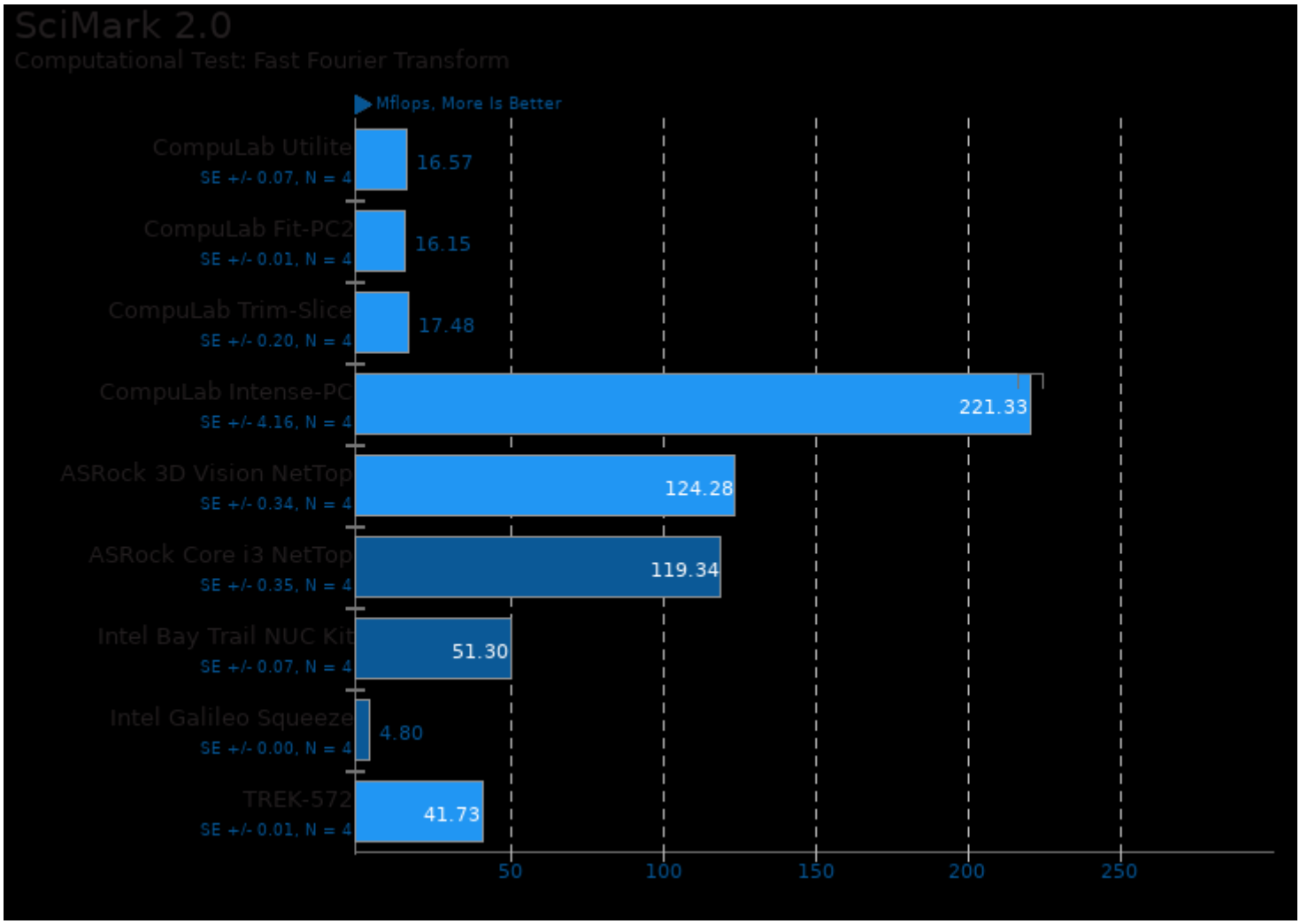

PolyBench-C 3.2
Test: Correlation Computation
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.01, N = 3
24.59
CompuLab Fit-PC2
SE +/- 0.46, N = 6
31.22
CompuLab Trim-Slice
SE +/- 0.21, N = 3
21.97
CompuLab Intense-PC
SE +/- 0.12, N = 3
7.03
ASRock 3D Vision NetTop
SE +/- 0.01, N = 3
7.89
ASRock Core i3 NetTop
SE +/- 0.01, N = 3
8.94
Intel Bay Trail NUC Kit
SE +/- 0.24, N = 6
5.85
TREK-572
SE +/- 0.07, N = 3
15.84
7
14
21
28
35
1. (CC) gcc options: -O3

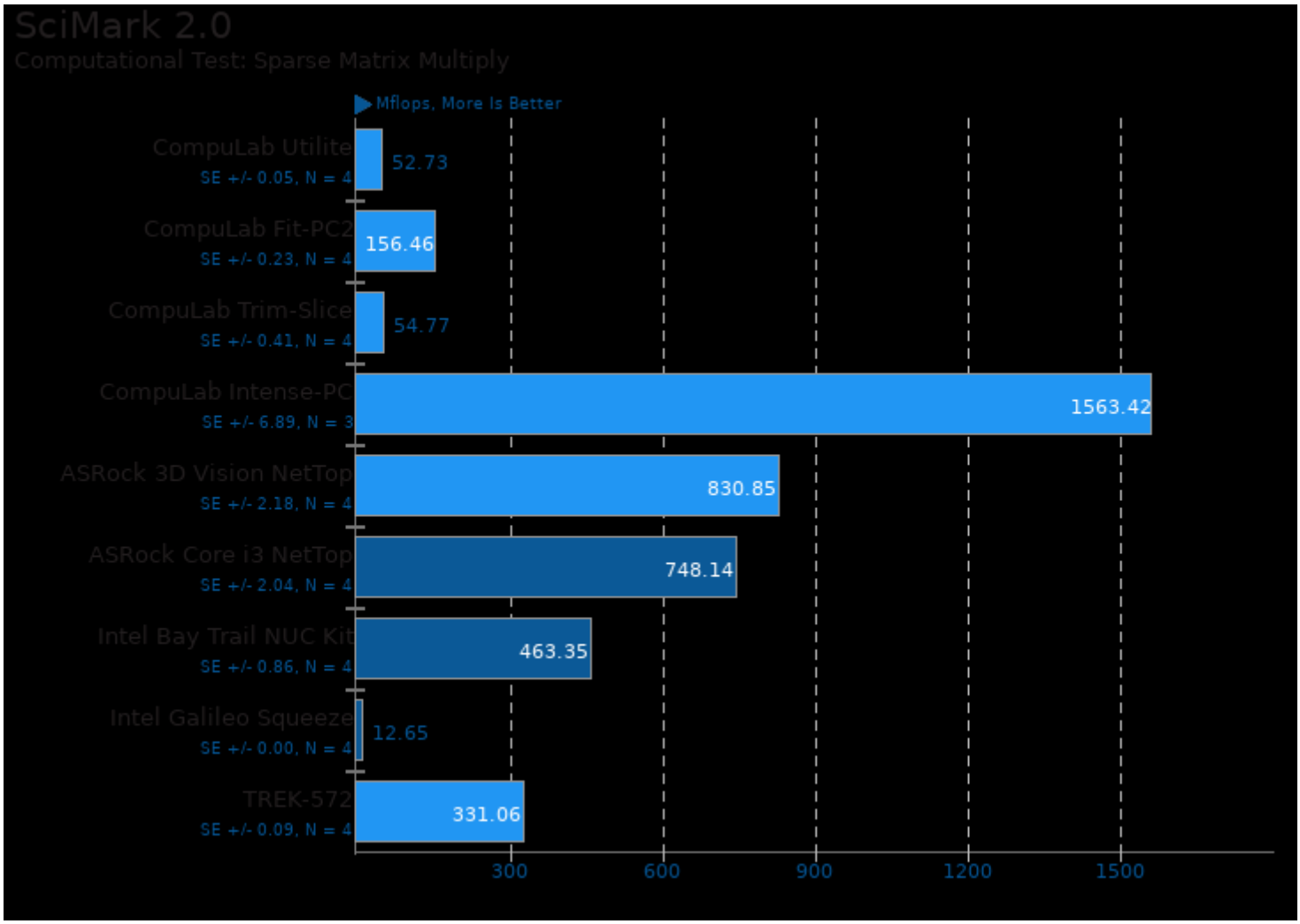

PolyBench-C 3.2
Test: 3 Matrix Multiplications
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.96, N = 3
571.48
CompuLab Fit-PC2
SE +/- 0.41, N = 3
485.77
CompuLab Trim-Slice
SE +/- 0.45, N = 3
551.93
CompuLab Intense-PC
SE +/- 0.33, N = 3
30.63
ASRock 3D Vision NetTop
SE +/- 0.71, N = 5
49.31
ASRock Core i3 NetTop
SE +/- 0.27, N = 3
52.30
Intel Bay Trail NUC Kit
SE +/- 0.59, N = 3
126.50
Intel Galileo Squeeze
SE +/- 0.93, N = 3
1270.16
TREK-572
SE +/- 0.26, N = 3
157.59
300
600
900
1200
1500
1. (CC) gcc options: -O3

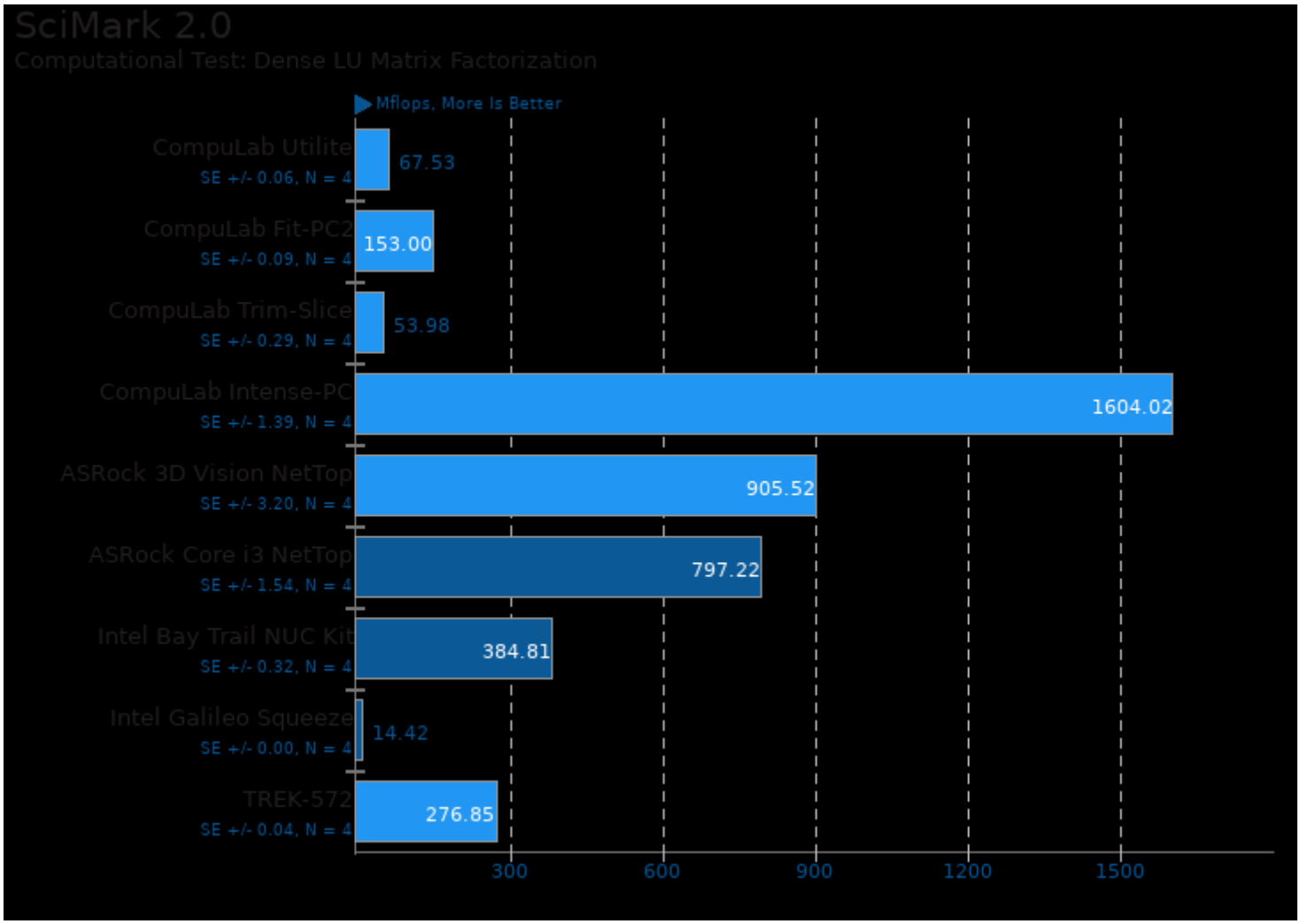
Intel Bay Trail NUC Kit Ubuntu Linux Comparison

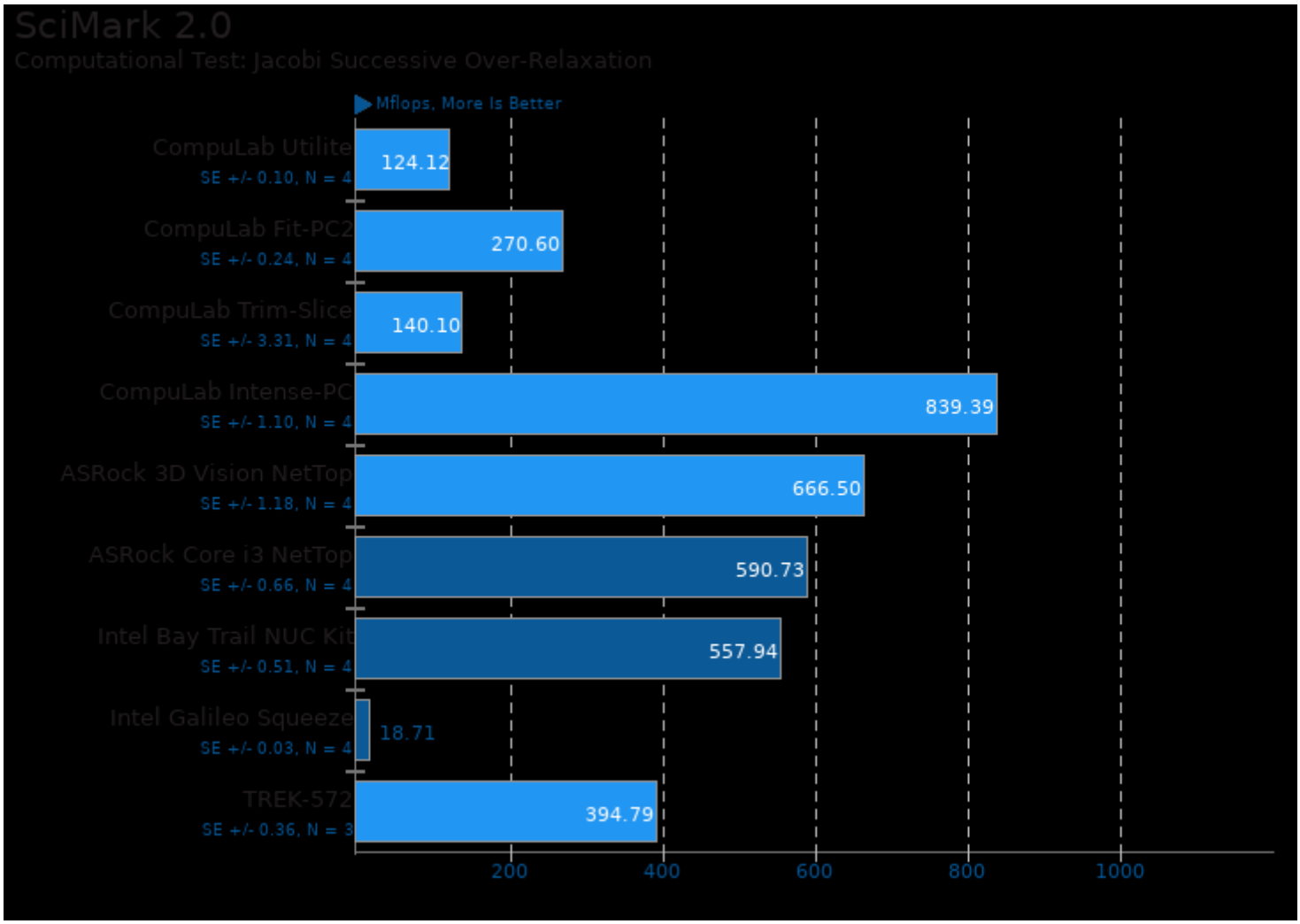


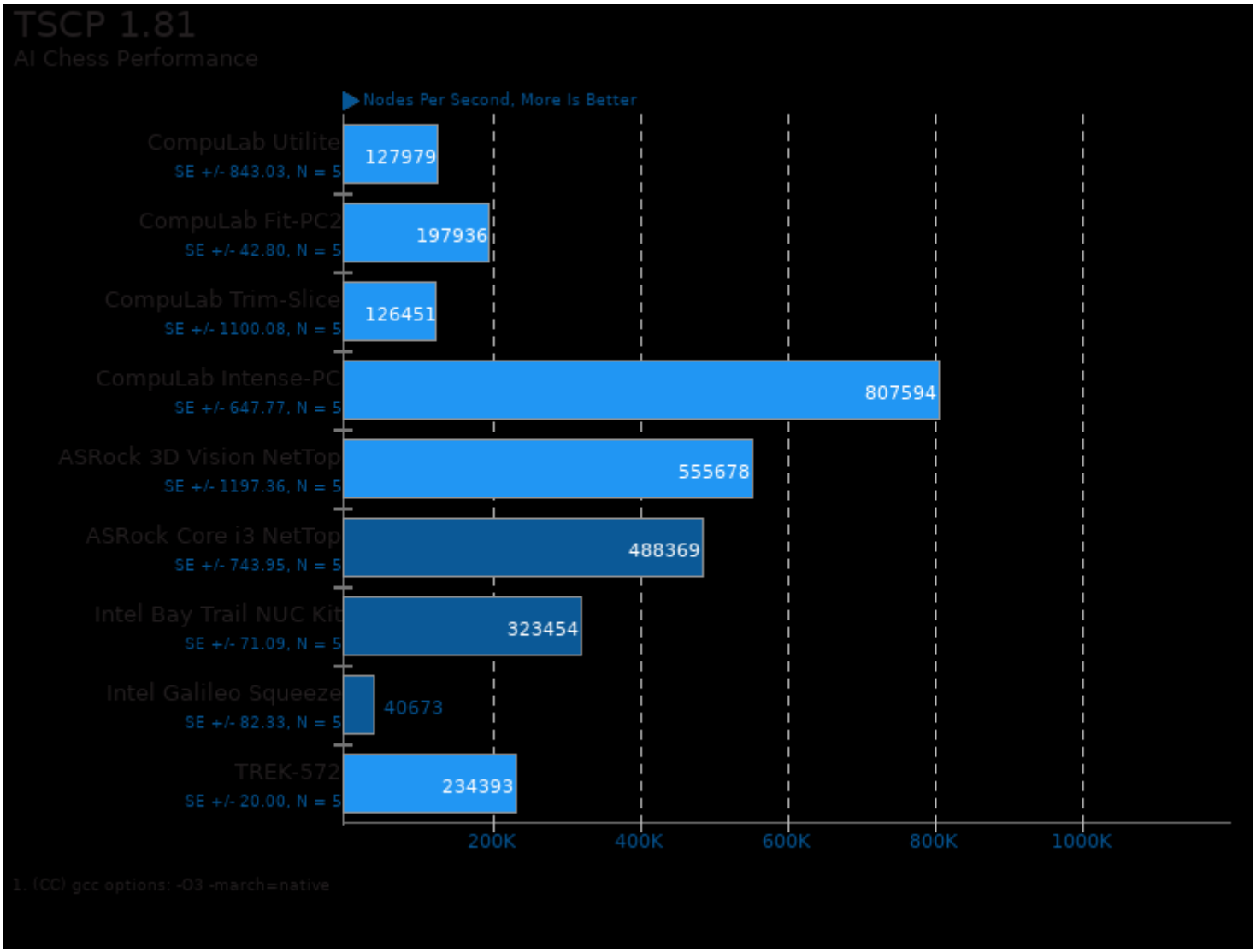

SciMark 2.0
Computational Test: Monte Carlo
Mflops, More Is Better
CompuLab Utilite
SE +/- 0.09, N = 4
49.80
CompuLab Fit-PC2
SE +/- 0.00, N = 4
48.11
CompuLab Trim-Slice
SE +/- 0.95, N = 4
56.33
CompuLab Intense-PC
SE +/- 0.71, N = 4
398.05
ASRock 3D Vision NetTop
SE +/- 0.32, N = 4
290.99
ASRock Core i3 NetTop
SE +/- 0.00, N = 4
258.11
Intel Bay Trail NUC Kit
SE +/- 0.00, N = 4
157.90
Intel Galileo Squeeze
SE +/- 0.00, N = 4
7.66
TREK-572
SE +/- 0.01, N = 4
90.74
90
180
270
360
450

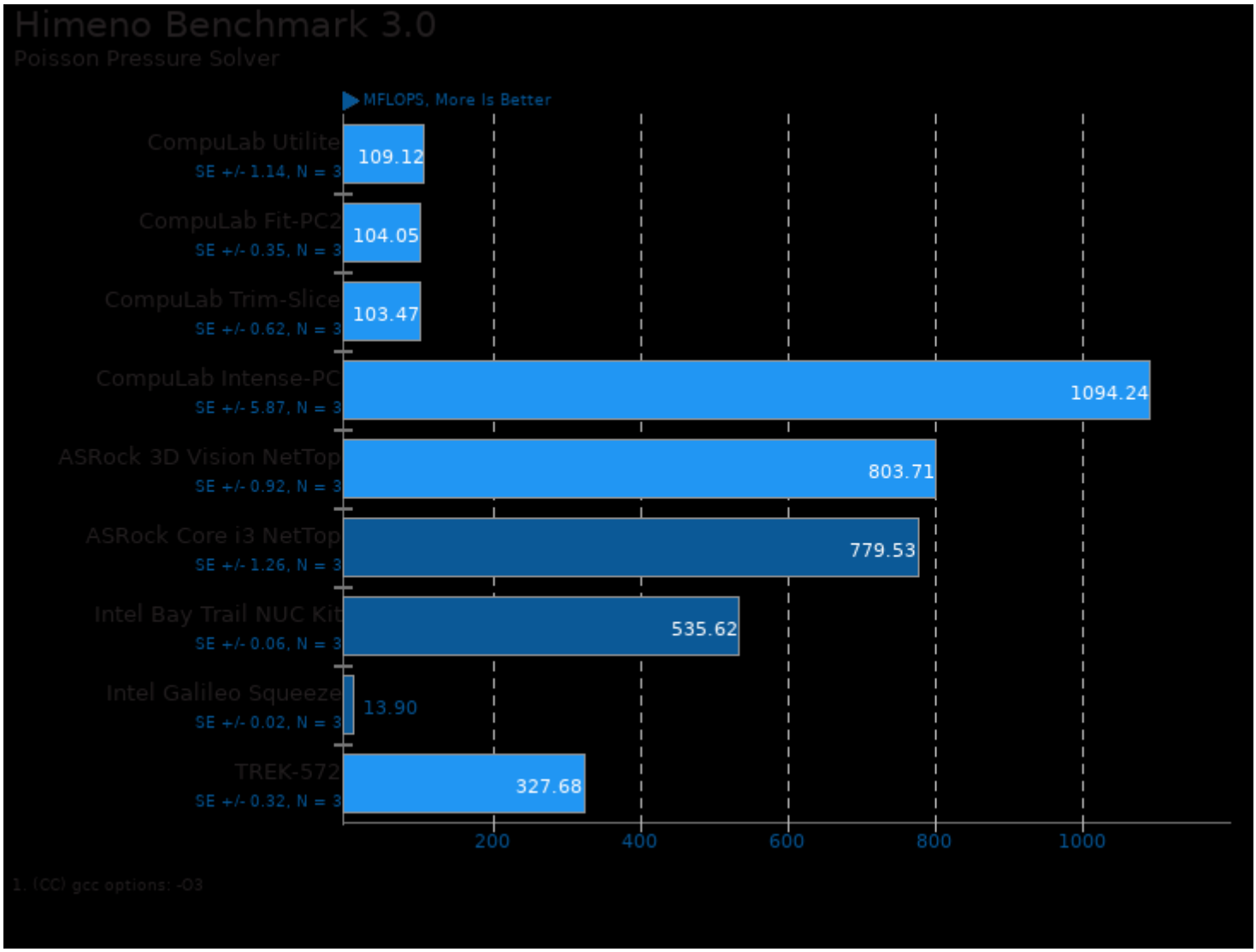

SciMark 2.0
Computational Test: Fast Fourier Transform
Mflops, More Is Better
CompuLab Utilite
SE +/- 0.07, N = 4
16.57
CompuLab Fit-PC2
SE +/- 0.01, N = 4
16.15
CompuLab Trim-Slice
SE +/- 0.20, N = 4
17.48
CompuLab Intense-PC
SE +/- 4.16, N = 4
221.33
ASRock 3D Vision NetTop
SE +/- 0.34, N = 4
124.28
ASRock Core i3 NetTop
SE +/- 0.35, N = 4
119.34
Intel Bay Trail NUC Kit
SE +/- 0.07, N = 4
51.30
Intel Galileo Squeeze
SE +/- 0.00, N = 4
4.80
TREK-572
SE +/- 0.01, N = 4
41.73
50
100
150
200
250

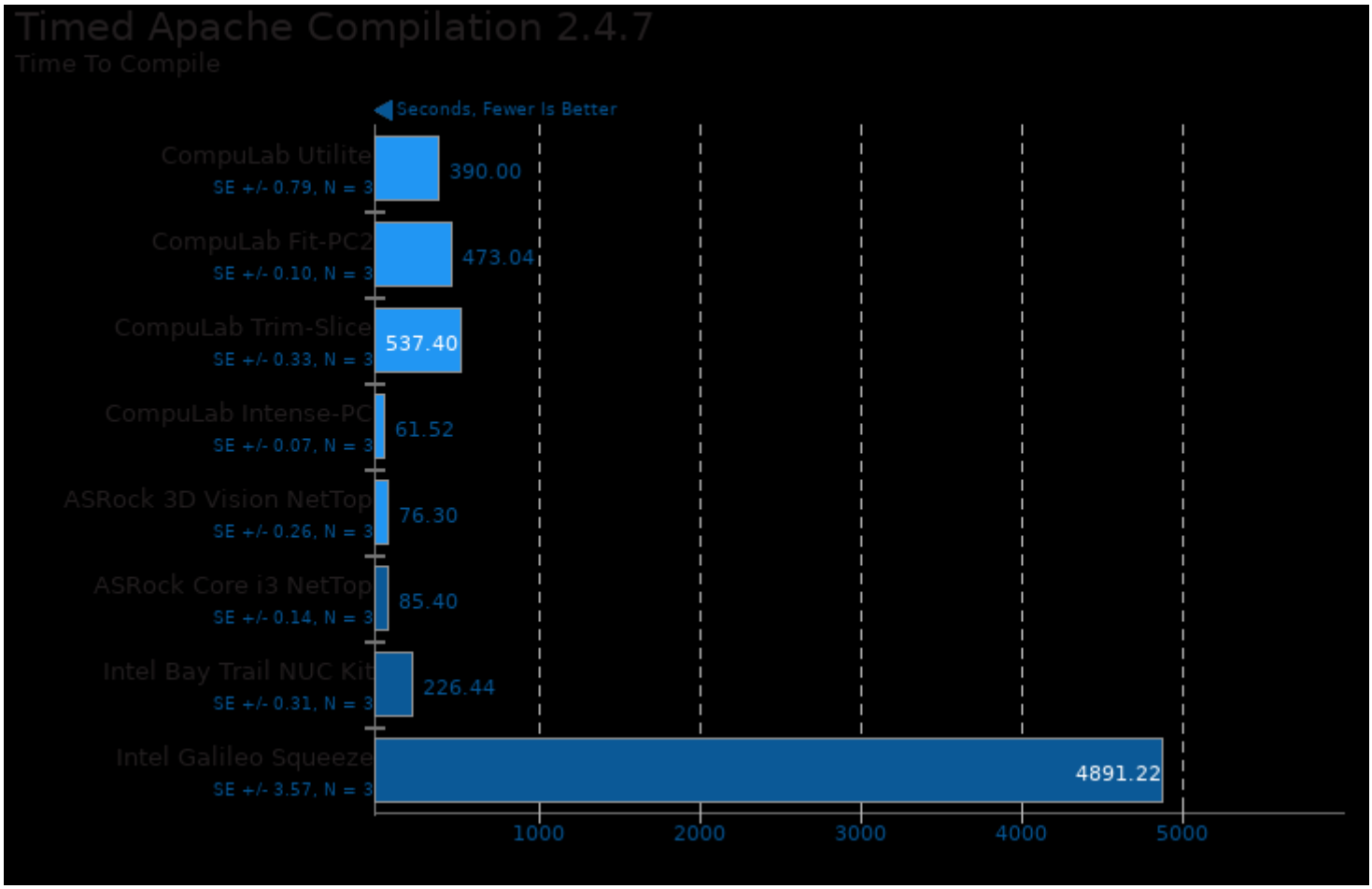

SciMark 2.0
Computational Test: Sparse Matrix Multiply
Mflops, More Is Better
CompuLab Utilite
SE +/- 0.05, N = 4
52.73
CompuLab Fit-PC2
SE +/- 0.23, N = 4
156.46
CompuLab Trim-Slice
SE +/- 0.41, N = 4
54.77
CompuLab Intense-PC
SE +/- 6.89, N = 3
1563.42
ASRock 3D Vision NetTop
SE +/- 2.18, N = 4
830.85
ASRock Core i3 NetTop
SE +/- 2.04, N = 4
748.14
Intel Bay Trail NUC Kit
SE +/- 0.86, N = 4
463.35
Intel Galileo Squeeze
SE +/- 0.00, N = 4
12.65
TREK-572
SE +/- 0.09, N = 4
331.06
300
600
900
1200
1500

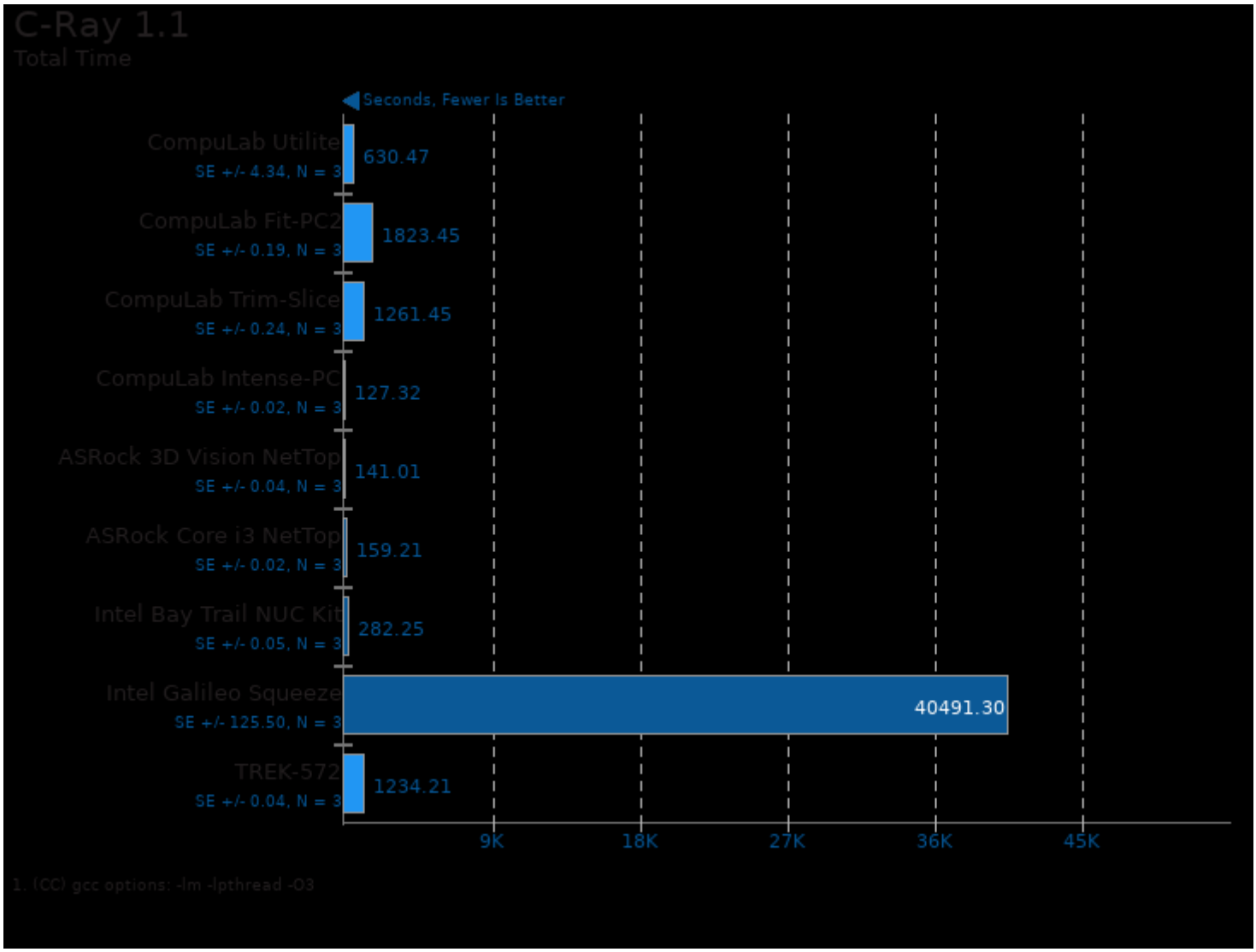

SciMark 2.0
Computational Test: Dense LU Matrix Factorization
Mflops, More Is Better
CompuLab Utilite
SE +/- 0.06, N = 4
67.53
CompuLab Fit-PC2
SE +/- 0.09, N = 4
153.00
CompuLab Trim-Slice
SE +/- 0.29, N = 4
53.98
CompuLab Intense-PC
SE +/- 1.39, N = 4
1604.02
ASRock 3D Vision NetTop
SE +/- 3.20, N = 4
905.52
ASRock Core i3 NetTop
SE +/- 1.54, N = 4
797.22
Intel Bay Trail NUC Kit
SE +/- 0.32, N = 4
384.81
Intel Galileo Squeeze
SE +/- 0.00, N = 4
14.42
TREK-572
SE +/- 0.04, N = 4
276.85
300
600
900
1200
1500

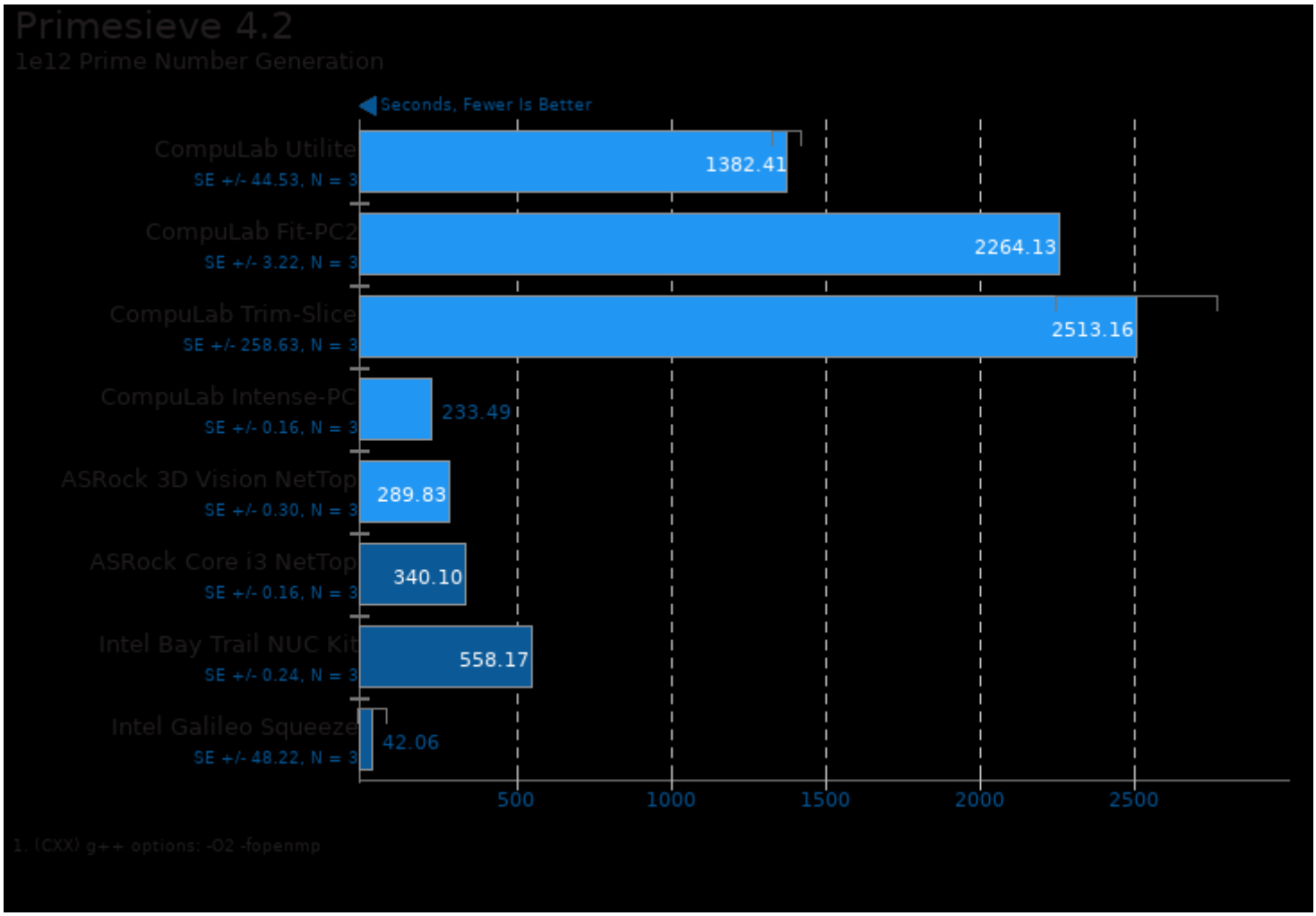

SciMark 2.0
Computational Test: Jacobi Successive Over-Relaxation
Mflops, More Is Better
CompuLab Utilite
SE +/- 0.10, N = 4
124.12
CompuLab Fit-PC2
SE +/- 0.24, N = 4
270.60
CompuLab Trim-Slice
SE +/- 3.31, N = 4
140.10
CompuLab Intense-PC
SE +/- 1.10, N = 4
839.39
ASRock 3D Vision NetTop
SE +/- 1.18, N = 4
666.50
ASRock Core i3 NetTop
SE +/- 0.66, N = 4
590.73
Intel Bay Trail NUC Kit
SE +/- 0.51, N = 4
557.94
Intel Galileo Squeeze
SE +/- 0.03, N = 4
18.71
TREK-572
SE +/- 0.36, N = 3
394.79
200
400
600
800
1000

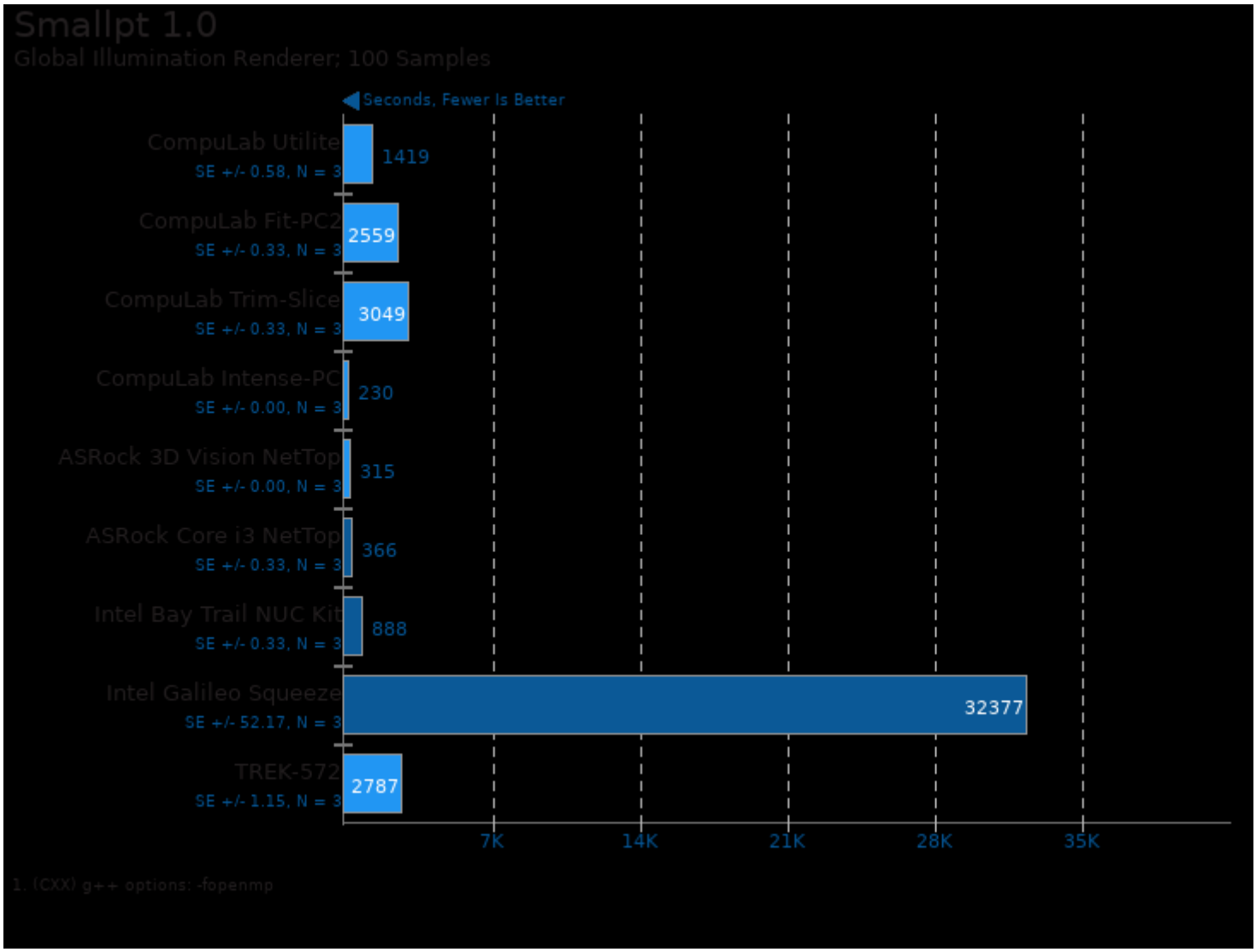

TSCP 1.81
AI Chess Performance
Nodes Per Second, More Is Better
CompuLab Utilite
SE +/- 843.03, N = 5
127979
CompuLab Fit-PC2
SE +/- 42.80, N = 5
197936
CompuLab Trim-Slice
SE +/- 1100.08, N = 5
126451
CompuLab Intense-PC
SE +/- 647.77, N = 5
807594
ASRock 3D Vision NetTop
SE +/- 1197.36, N = 5
555678
ASRock Core i3 NetTop
SE +/- 743.95, N = 5
488369
Intel Bay Trail NUC Kit
SE +/- 71.09, N = 5
323454
Intel Galileo Squeeze
SE +/- 82.33, N = 5
40673
TREK-572
SE +/- 20.00, N = 5
234393
200K
400K
600K
800K
1000K
1. (CC) gcc options: -O3 -march=native

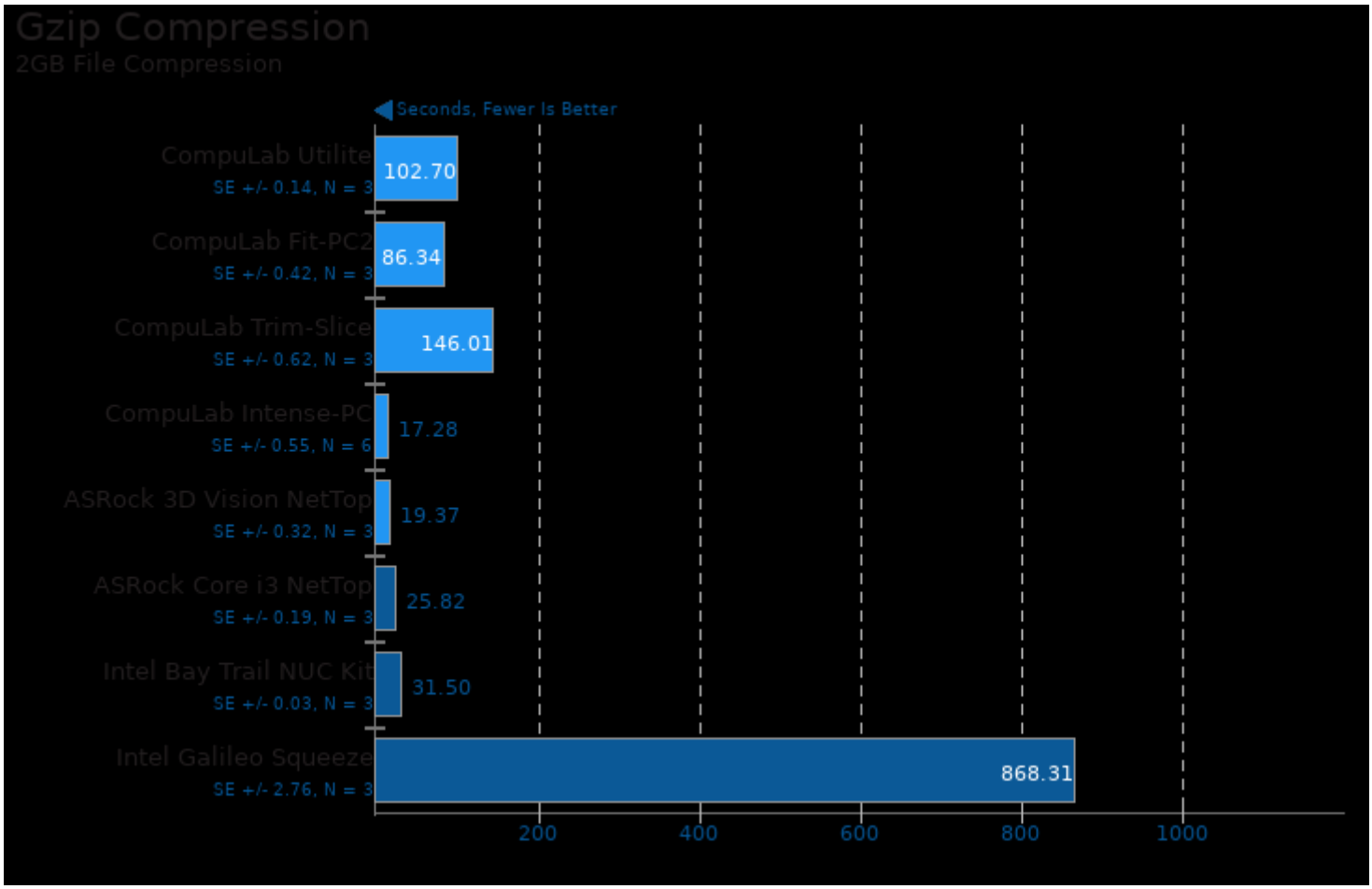

Himeno Benchmark 3.0
Poisson Pressure Solver
MFLOPS, More Is Better
CompuLab Utilite
SE +/- 1.14, N = 3
109.12
CompuLab Fit-PC2
SE +/- 0.35, N = 3
104.05
CompuLab Trim-Slice
SE +/- 0.62, N = 3
103.47
CompuLab Intense-PC
SE +/- 5.87, N = 3
1094.24
ASRock 3D Vision NetTop
SE +/- 0.92, N = 3
803.71
ASRock Core i3 NetTop
SE +/- 1.26, N = 3
779.53
Intel Bay Trail NUC Kit
SE +/- 0.06, N = 3
535.62
Intel Galileo Squeeze
SE +/- 0.02, N = 3
13.90
TREK-572
SE +/- 0.32, N = 3
327.68
200
400
600
800
1000
1. (CC) gcc options: -O3

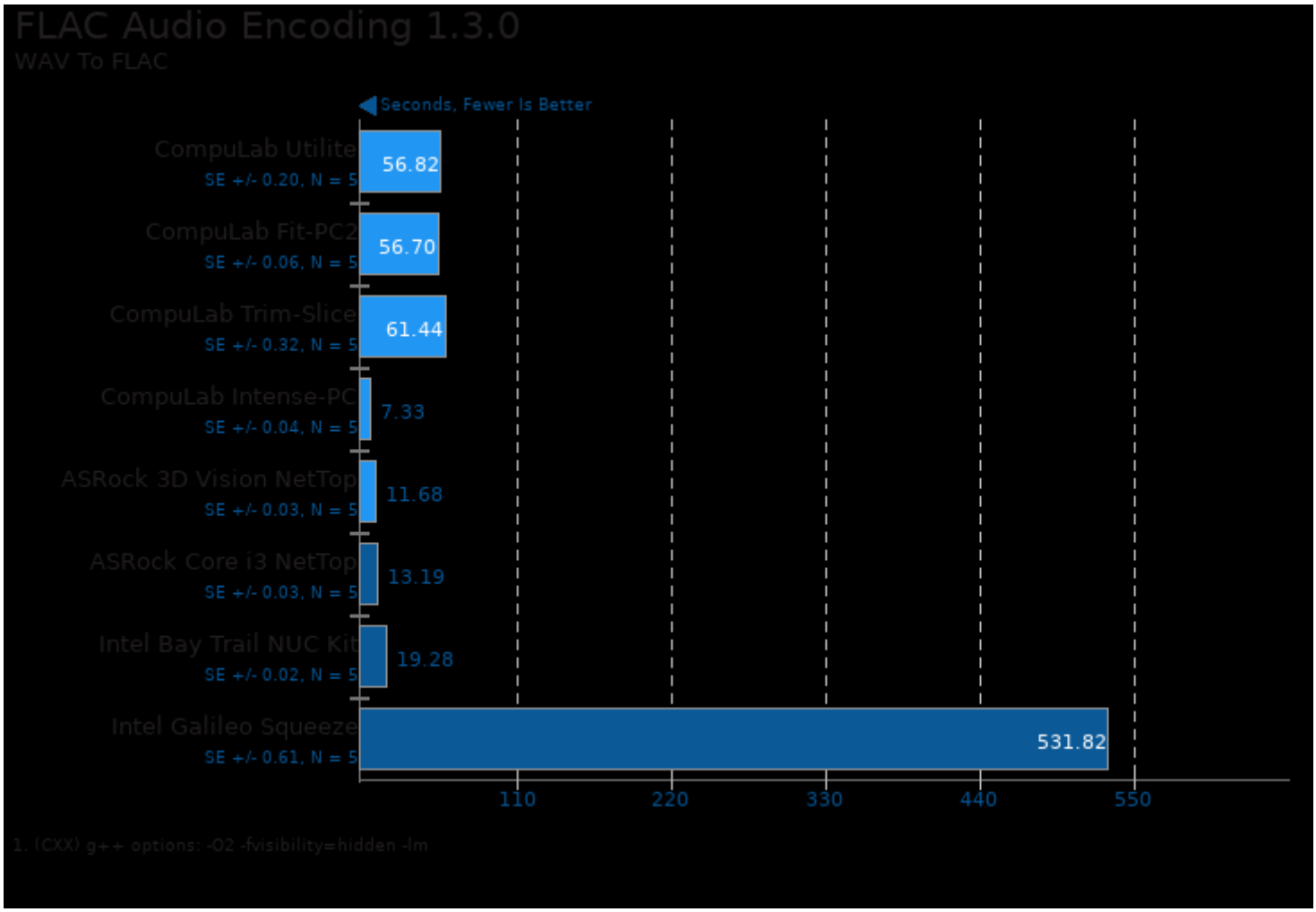

Timed Apache Compilation 2.4.7
Time To Compile
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.79, N = 3
390.00
CompuLab Fit-PC2
SE +/- 0.10, N = 3
473.04
CompuLab Trim-Slice
SE +/- 0.33, N = 3
537.40
CompuLab Intense-PC
SE +/- 0.07, N = 3
61.52
ASRock 3D Vision NetTop
SE +/- 0.26, N = 3
76.30
ASRock Core i3 NetTop
SE +/- 0.14, N = 3
85.40
Intel Bay Trail NUC Kit
SE +/- 0.31, N = 3
226.44
Intel Galileo Squeeze
SE +/- 3.57, N = 3
4891.22
1000
2000
3000
4000
5000

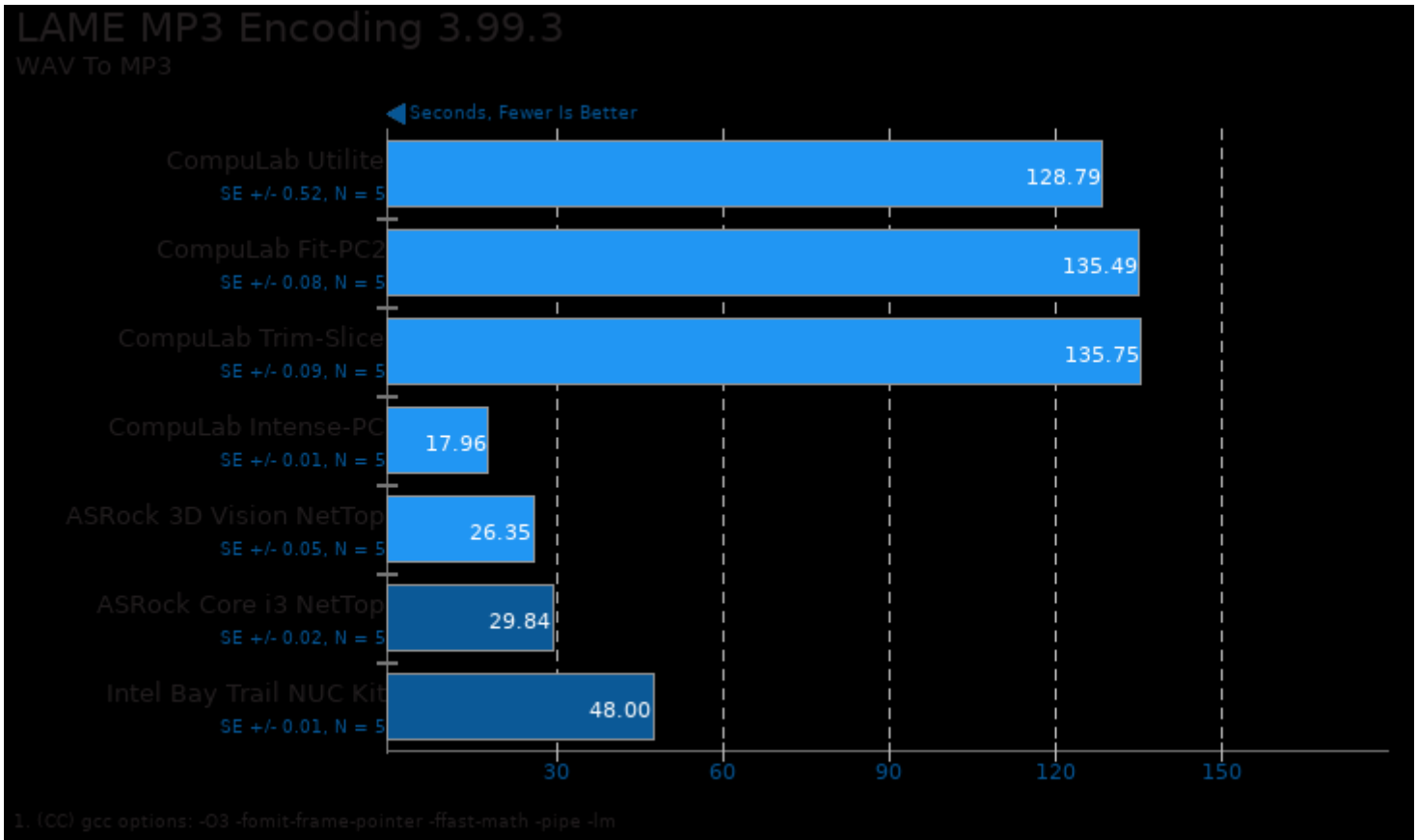

C-Ray 1.1
Total Time
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 4.34, N = 3
630.47
CompuLab Fit-PC2
SE +/- 0.19, N = 3
1823.45
CompuLab Trim-Slice
SE +/- 0.24, N = 3
1261.45
CompuLab Intense-PC
SE +/- 0.02, N = 3
127.32
ASRock 3D Vision NetTop
SE +/- 0.04, N = 3
141.01
ASRock Core i3 NetTop
SE +/- 0.02, N = 3
159.21
Intel Bay Trail NUC Kit
SE +/- 0.05, N = 3
282.25
Intel Galileo Squeeze
SE +/- 125.50, N = 3
40491.30
TREK-572
SE +/- 0.04, N = 3
1234.21
9K
18K
27K
36K
45K
1. (CC) gcc options: -lm -lpthread -O3

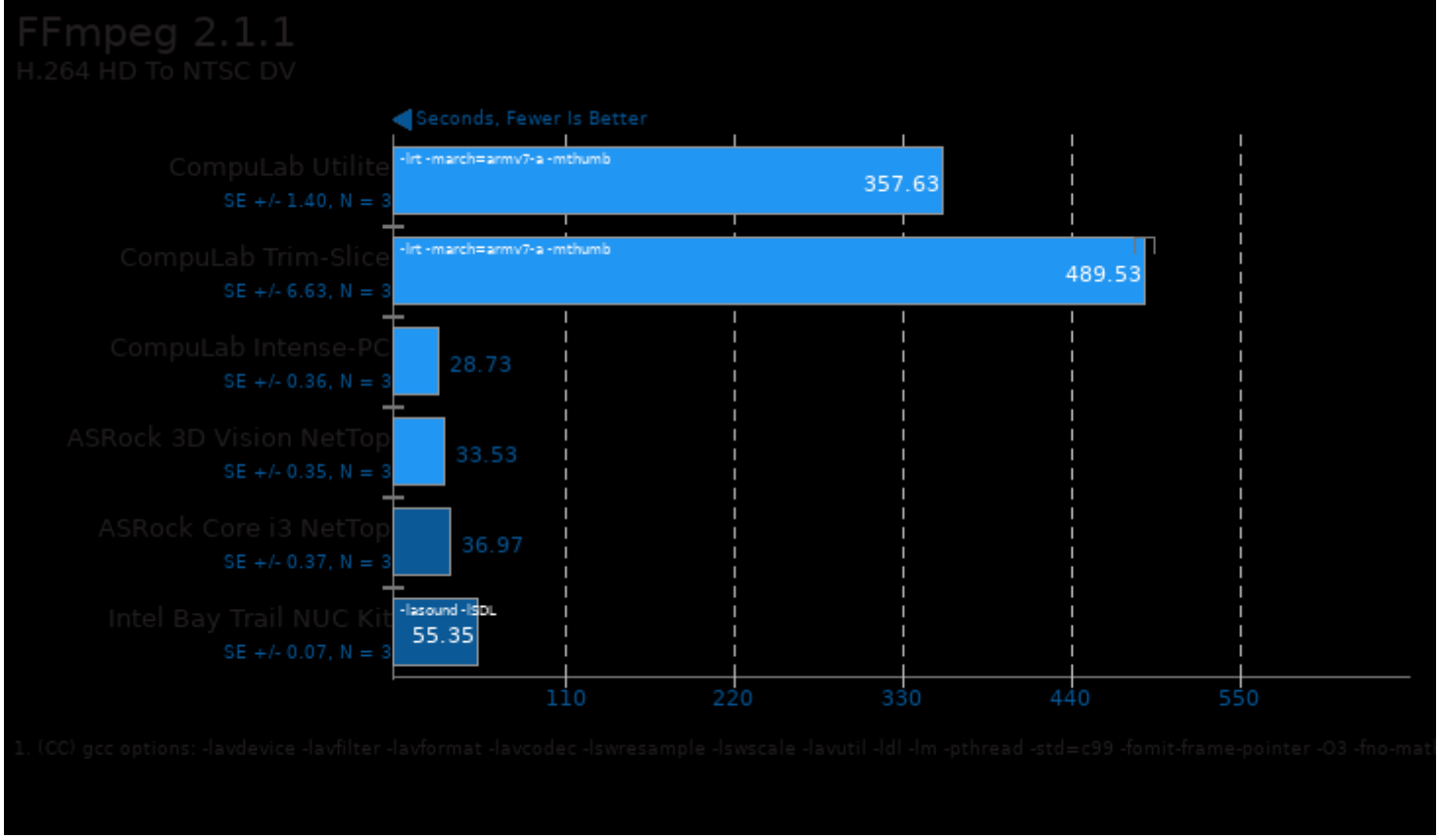

Primesieve 4.2
1e12 Prime Number Generation
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 44.53, N = 3
1382.41
CompuLab Fit-PC2
SE +/- 3.22, N = 3
2264.13
CompuLab Trim-Slice
SE +/- 258.63, N = 3
2513.16
CompuLab Intense-PC
SE +/- 0.16, N = 3
233.49
ASRock 3D Vision NetTop
SE +/- 0.30, N = 3
289.83
ASRock Core i3 NetTop
SE +/- 0.16, N = 3
340.10
Intel Bay Trail NUC Kit
SE +/- 0.24, N = 3
558.17
Intel Galileo Squeeze
SE +/- 48.22, N = 3
42.06
500
1000
1500
2000
2500
1. (CXX) g++ options: -O2 -fopenmp


Smallpt 1.0
Global Illumination Renderer; 100 Samples
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.58, N = 3
1419
CompuLab Fit-PC2
SE +/- 0.33, N = 3
2559
CompuLab Trim-Slice
SE +/- 0.33, N = 3
3049
CompuLab Intense-PC
SE +/- 0.00, N = 3
230
ASRock 3D Vision NetTop
SE +/- 0.00, N = 3
315
ASRock Core i3 NetTop
SE +/- 0.33, N = 3
366
Intel Bay Trail NUC Kit
SE +/- 0.33, N = 3
888
Intel Galileo Squeeze
SE +/- 52.17, N = 3
32377
TREK-572
SE +/- 1.15, N = 3
2787
7K
14K
21K
28K
35K
1. (CXX) g++ options: -fopenmp

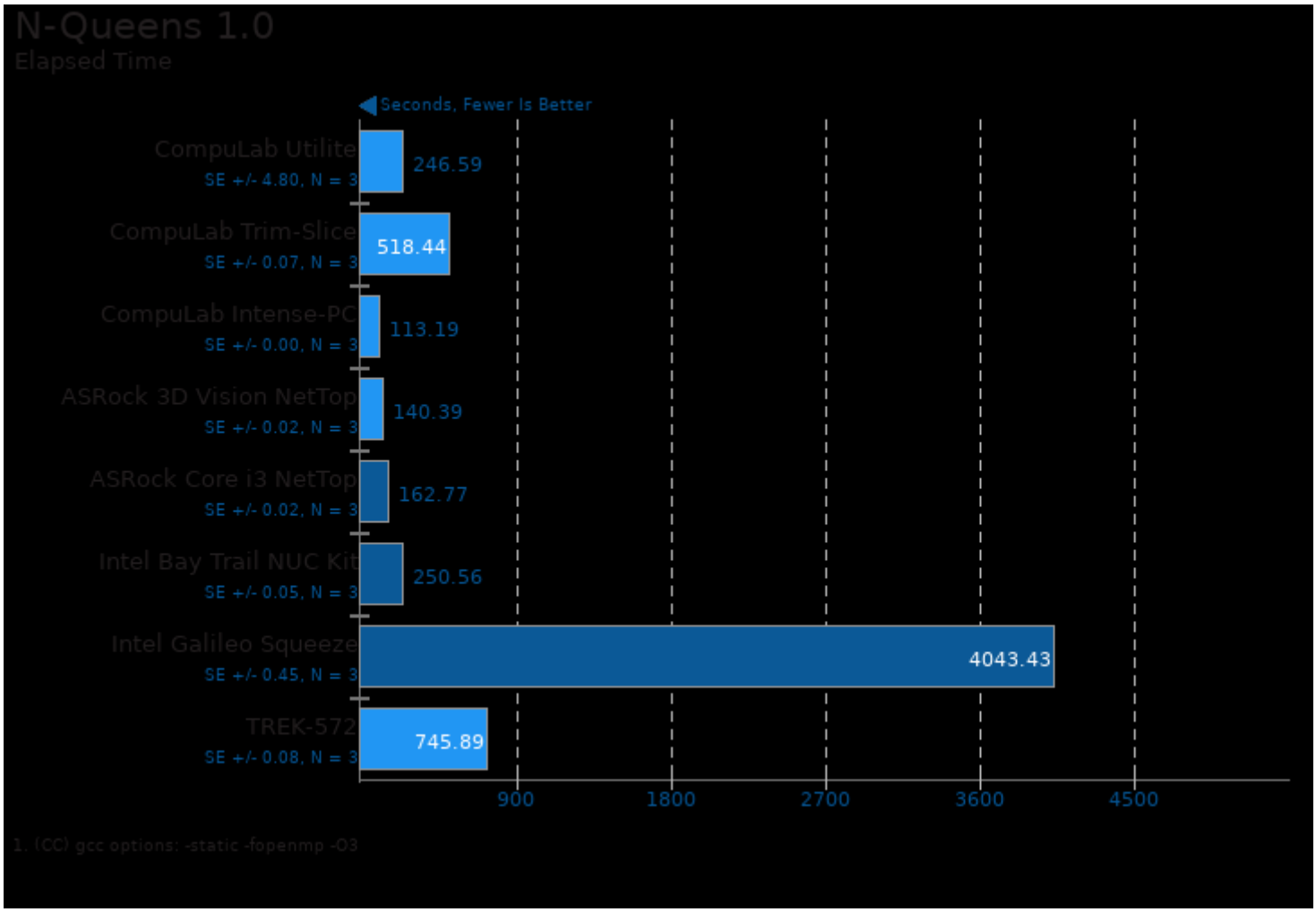

Gzip Compression
2GB File Compression
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.14, N = 3
102.70
CompuLab Fit-PC2
SE +/- 0.42, N = 3
86.34
CompuLab Trim-Slice
SE +/- 0.62, N = 3
146.01
CompuLab Intense-PC
SE +/- 0.55, N = 6
17.28
ASRock 3D Vision NetTop
SE +/- 0.32, N = 3
19.37
ASRock Core i3 NetTop
SE +/- 0.19, N = 3
25.82
Intel Bay Trail NUC Kit
SE +/- 0.03, N = 3
31.50
Intel Galileo Squeeze
SE +/- 2.76, N = 3
868.31
200
400
600
800
1000


FLAC Audio Encoding 1.3.0
WAV To FLAC
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.20, N = 5
56.82
CompuLab Fit-PC2
SE +/- 0.06, N = 5
56.70
CompuLab Trim-Slice
SE +/- 0.32, N = 5
61.44
CompuLab Intense-PC
SE +/- 0.04, N = 5
7.33
ASRock 3D Vision NetTop
SE +/- 0.03, N = 5
11.68
ASRock Core i3 NetTop
SE +/- 0.03, N = 5
13.19
Intel Bay Trail NUC Kit
SE +/- 0.02, N = 5
19.28
Intel Galileo Squeeze
SE +/- 0.61, N = 5
531.82
110
220
330
440
550
1. (CXX) g++ options: -O2 -fvisibility=hidden -lm

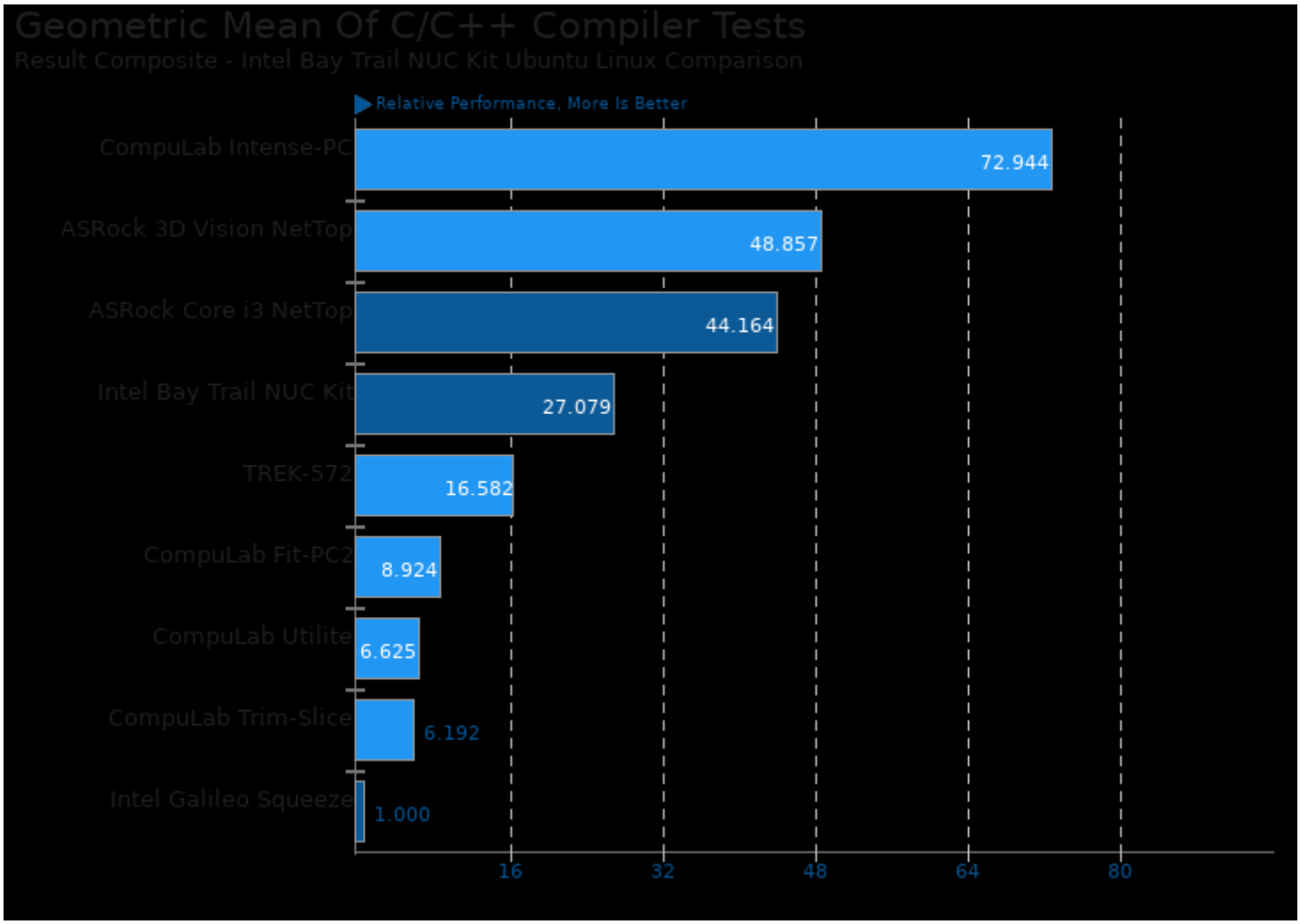

LAME MP3 Encoding 3.99.3
WAV To MP3
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 0.52, N = 5
128.79
CompuLab Fit-PC2
SE +/- 0.08, N = 5
135.49
CompuLab Trim-Slice
SE +/- 0.09, N = 5
135.75
CompuLab Intense-PC
SE +/- 0.01, N = 5
17.96
ASRock 3D Vision NetTop
SE +/- 0.05, N = 5
26.35
ASRock Core i3 NetTop
SE +/- 0.02, N = 5
29.84
Intel Bay Trail NUC Kit
SE +/- 0.01, N = 5
48.00
30
60
90
120
150
1. (CC) gcc options: -O3 -fomit-frame-pointer -ffast-math -pipe -lm


FFmpeg 2.1.1
H.264 HD To NTSC DV
Seconds, Fewer Is Better
CompuLab Utilite
SE +/- 1.40, N = 3
-lrt -march=armv7-a -mthumb
357.63
CompuLab Trim-Slice
SE +/- 6.63, N = 3
-lrt -march=armv7-a -mthumb
489.53
CompuLab Intense-PC
SE +/- 0.36, N = 3
28.73
ASRock 3D Vision NetTop
SE +/- 0.35, N = 3
33.53
ASRock Core i3 NetTop
SE +/- 0.37, N = 3
36.97
Intel Bay Trail NUC Kit
SE +/- 0.07, N = 3
-lasound -lSDL
55.35
110
220
330
440
550
1. (CC) gcc options: -lavdevice -lavfilter -lavformat -lavcodec -lswresample -lswscale -lavutil -ldl -lm -pthread -std=c99 -fomit-frame-pointer -O3 -fno-mat

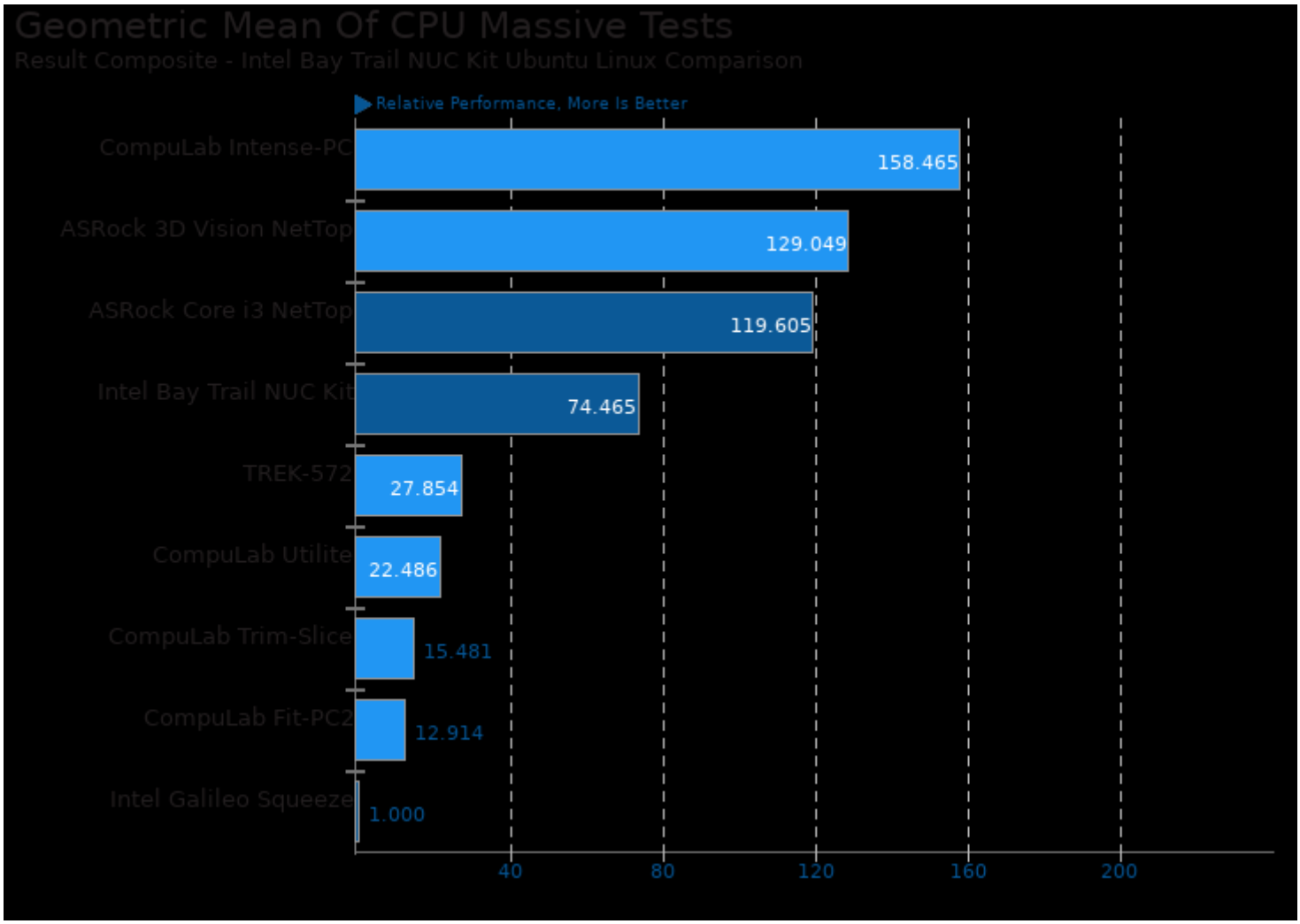
Intel Bay Trail NUC Kit Ubuntu Linux Comparison



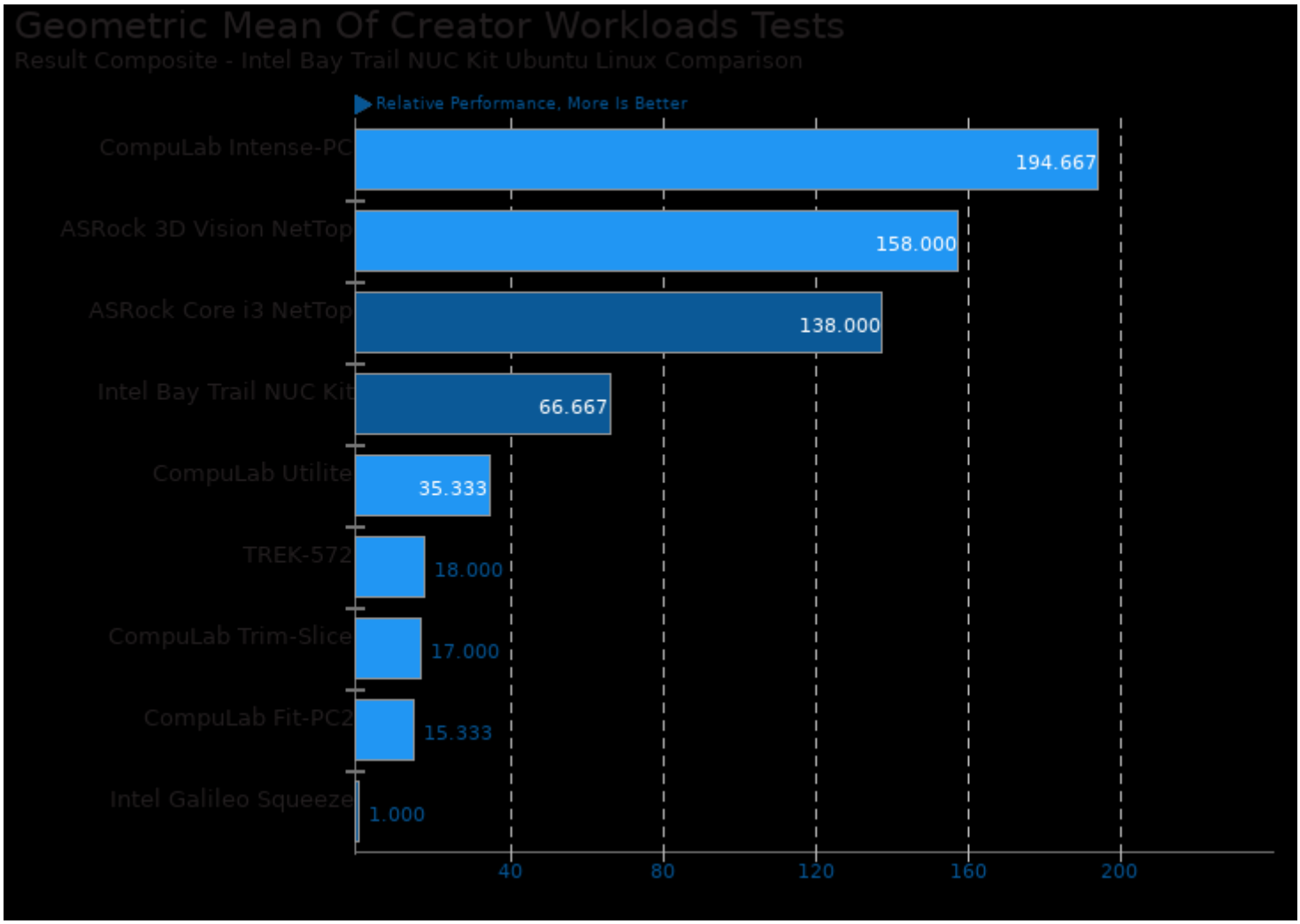
These geometric means are based upon test groupings / test suites for this result file.



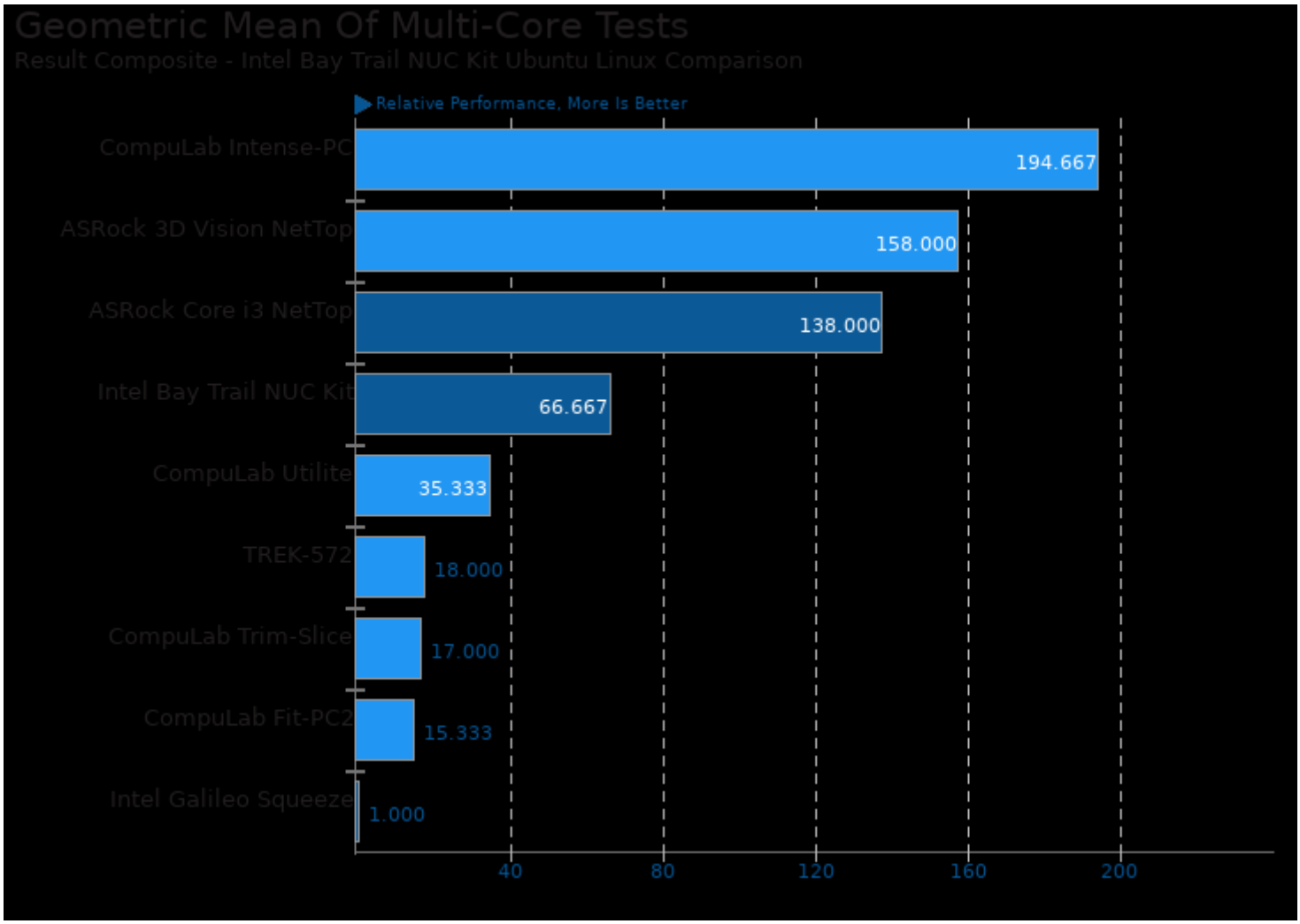
Geometric mean based upon tests: pts/scimark2, pts/tscp, pts/himeno, pts/c-ray, pts/encode-mp3, pts/encode-flac and pts/build-apache



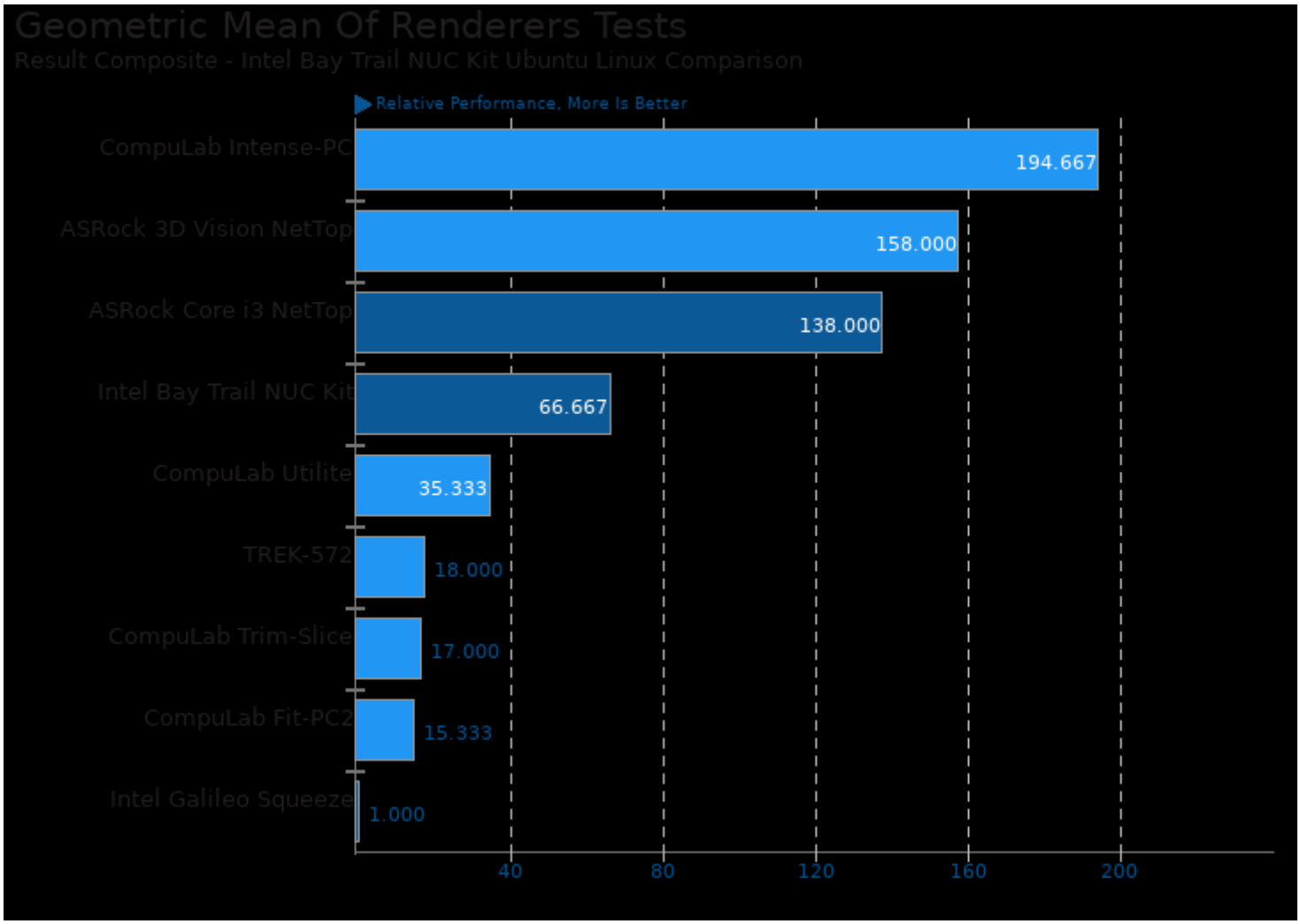
Geometric mean based upon tests: pts/build-apache, pts/c-ray, pts/dolfyn, pts/encode-flac, pts/encode-mp3, pts/himeno, pts/hpcc and pts/primesieve



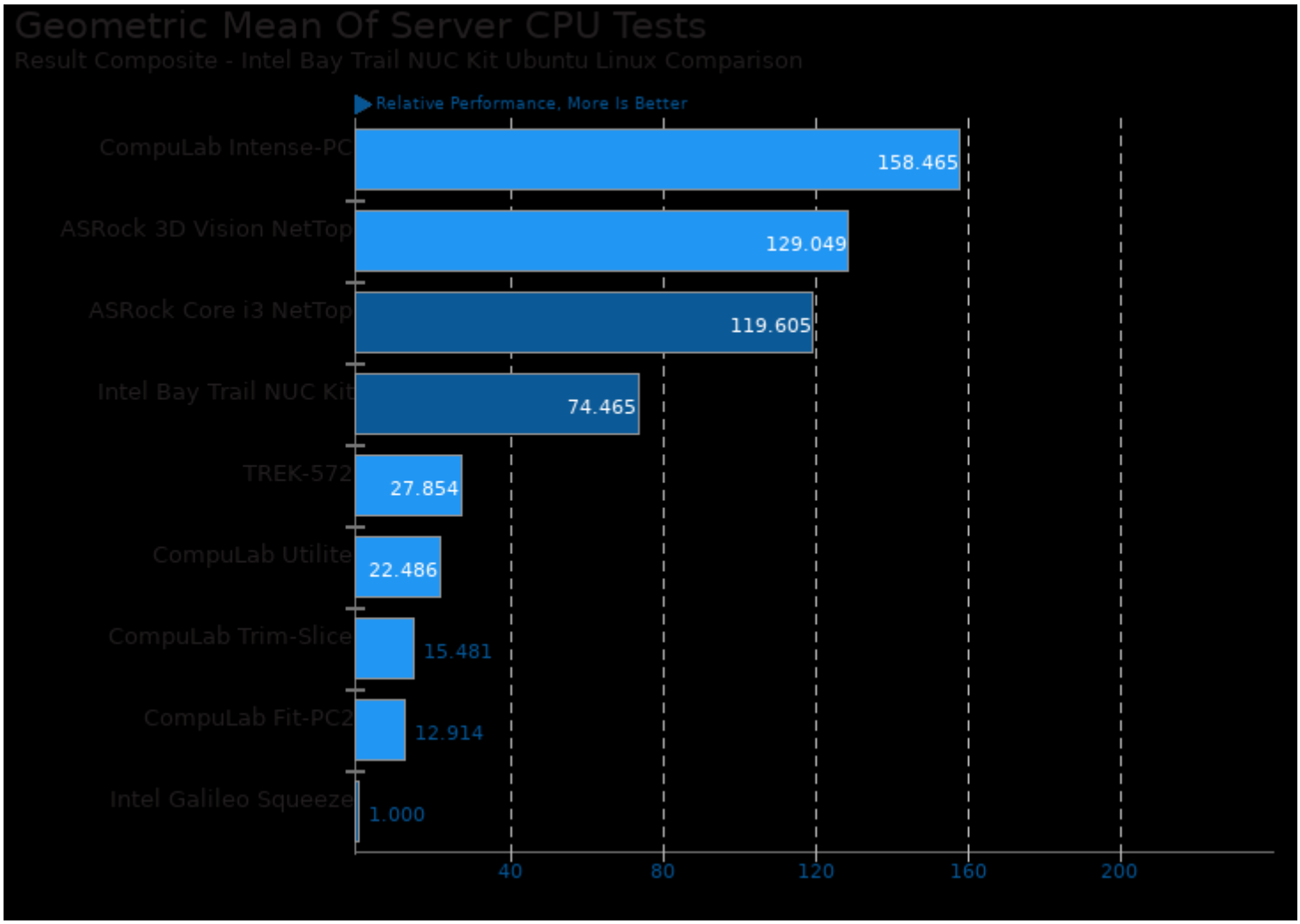
Geometric mean based upon tests: pts/c-ray, pts/smallpt, pts/ffmpeg, pts/encode-mp3 and pts/encode-flac



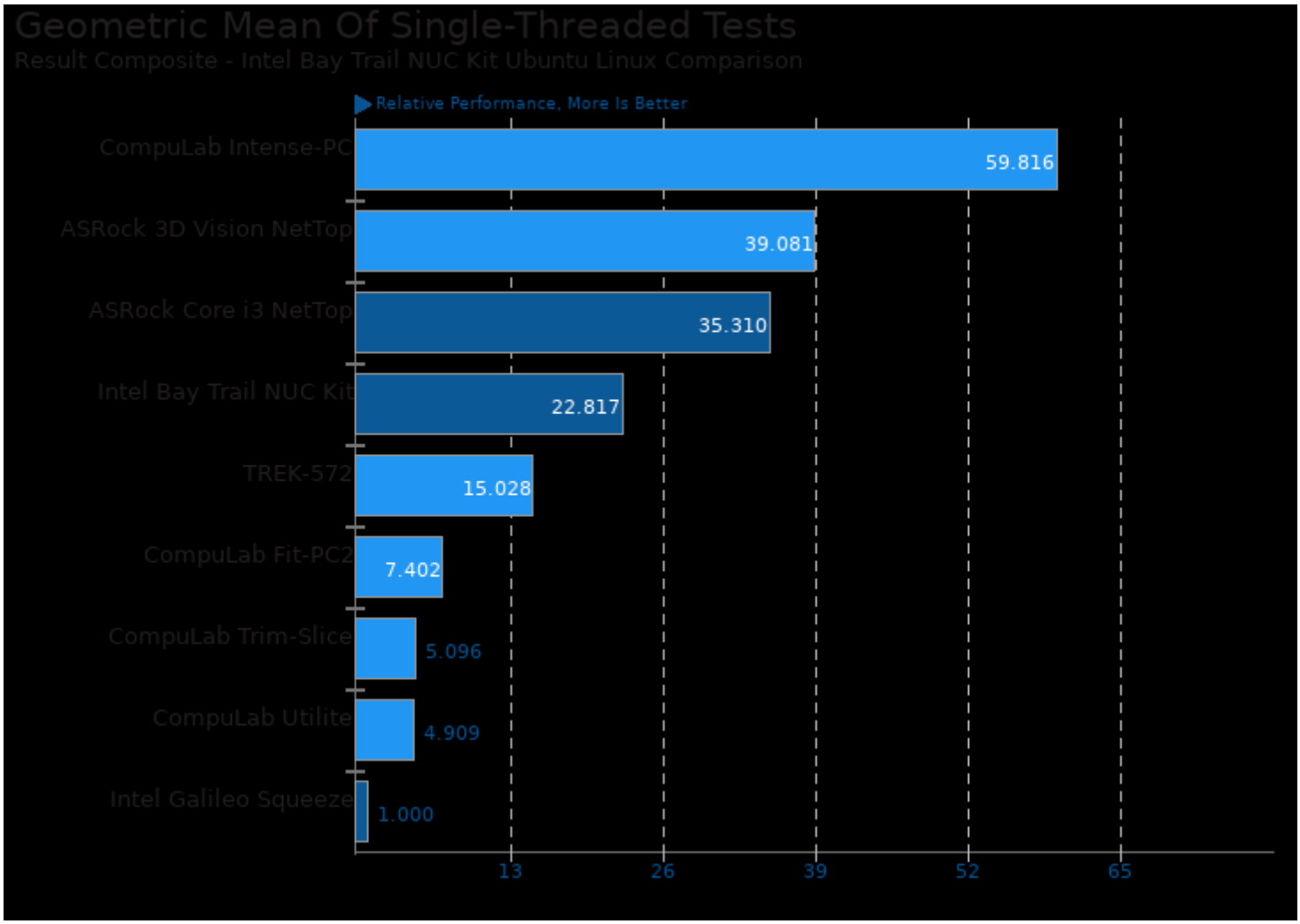
Geometric mean based upon tests: pts/c-ray, pts/n-queens, pts/ffmpeg, pts/primesieve, pts/smallpt and pts/build-apache



Geometric mean based upon tests: pts/c-ray and pts/smallpt



Geometric mean based upon tests: pts/himeno and pts/c-ray



Geometric mean based upon tests: pts/polybench-c, pts/scimark2, pts/compress-gzip, pts/encode-flac and pts/encode-mp3

This file was automatically generated via the Phoronix Test Suite benchmarking software on Wednesday, 17 July 2024 07:20.