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AMD EPYC 74F3 24-Core testing with a AMD DAYTONA_X (RYM1001D BIOS) and llvmpipe on Ubuntu 20.04 via the Phoronix Test Suite.

Automated Executive Summary

EPYC 7763 2P Pre had the most wins, coming in first place for 16% of the tests.

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

Xmrig (Variant: Monero - Hash Count: 1M) at 5.346x
Stockfish (Total Time) at 3.757x
Embree (Binary: Pathtracer - Model: Crown) at 3.578x
Embree (Binary: Pathtracer ISPC - Model: Crown) at 3.565x
Xcompact3d Incompact3d (Input: input.i3d 193 Cells Per Direction) at 3.275x
SVT-AV1 (Encoder Mode: Preset 8 - Input: Bosphorus 4K) at 3.12x
Xcompact3d Incompact3d (Input: input.i3d 129 Cells Per Direction) at 2.912x
Xmrig (Variant: Wownero - Hash Count: 1M) at 2.859x
Helsing (Digit Range: 14 digit) at 2.841x
LuxCoreRender (Scene: Orange Juice - Acceleration: CPU) at 2.838x.

Test Systems:

EPYC 7453 2P Pre

EPYC 7453 2P

Processor: 2 x AMD EPYC 7453 28-Core @ 2.75GHz (56 Cores / 112 Threads), Motherboard: AMD DAYTONA_X (RYM1001D BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.11.6-051106-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server, OpenGL: 4.5 Mesa 20.2.6 (LLVM 11.0.0 256 bits), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001119
Python Notes: Python 3.8.5
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 retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

EPYC 7453

EPYC 7453 Pre

Processor: AMD EPYC 7453 28-Core @ 2.75GHz (28 Cores / 56 Threads), Motherboard: AMD DAYTONA_X (RYM1001D BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.11.6-051106-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server, OpenGL: 4.5 Mesa 20.2.6 (LLVM 11.0.0 256 bits), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001119
Python Notes: Python 3.8.5
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 retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

EPYC 7763 Pre

EPYC 7763

Processor: AMD EPYC 7763 64-Core @ 2.45GHz (64 Cores / 128 Threads), Motherboard: AMD DAYTONA_X (RYM1001D BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.11.6-051106-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server, OpenGL: 4.5 Mesa 20.2.6 (LLVM 11.0.0 256 bits), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001119
Python Notes: Python 3.8.5
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 retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

EPYC 7763 2P Pre

EPYC 7763 2P

EPYC 7763 2P Post

Processor: 2 x AMD EPYC 7763 64-Core @ 2.45GHz (128 Cores / 256 Threads), Motherboard: AMD DAYTONA_X (RYM1001D BIOS), Chipset: AMD Starship/Matisse, Memory: 16 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.11.6-051106-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server, OpenGL: 4.5 Mesa 20.2.6 (LLVM 11.0.0 256 bits), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001119
Python Notes: Python 3.8.5
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 retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

EPYC 74F3 Pre

Processor: AMD EPYC 74F3 24-Core @ 3.20GHz (24 Cores / 48 Threads), Motherboard: AMD DAYTONA_X (RYM1001D BIOS), Chipset: AMD Starship/Matisse, Memory: 8 x 32 GB DDR4-3200MT/s 36ASF4G72PZ-3G2E2, Disk: 3841GB Micron_9300_MTFDHAL3T8TDP, Graphics: llvmpipe, Monitor: VE228, Network: 2 x Mellanox MT27710

OS: Ubuntu 20.04, Kernel: 5.11.6-051106-generic (x86_64), Desktop: GNOME Shell 3.36.4, Display Server: X Server, OpenGL: 4.5 Mesa 20.2.6 (LLVM 11.0.0 256 bits), Compiler: GCC 9.3.0, File-System: ext4, Screen Resolution: 1920x1080

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
Processor Notes: Scaling Governor: acpi-cpufreq performance (Boost: Enabled) - CPU Microcode: 0xa001119
Python Notes: Python 3.8.5
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 retpoline IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

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	EPYC 7453 2P Pre	EPYC 7453 2P	EPYC 7453	EPYC 7453 Pre	EPYC 7763 Pre	EPYC 7763	EPYC 7763 2P Pre	EPYC 7763 2P	EPYC 7763 2P Post	EPYC 74F3 Pre
Xmrig - Monero - 1M (H/s)	20623	21040	**14381**	14404	47306	41339	**76876**	69764	69142	
Normalized	26.83%	27.37%	18.71%	18.74%	61.54%	53.77%	100%	90.75%	89.94%	
Stockfish - Total Time (Nodes/s)	1480941 67	1408511 43	**7855745 2**	7940240 7	1585132 70	1637505 74	2805604 20	**2951208 73**	2784731 56	
Normalized	50.18%	47.73%	26.62%	26.91%	53.71%	55.49%	95.07%	100%	94.36%	
Embree - Pathtracer - Crown	52.8801	52.9452	31.2562	**31.193**	64.9209	64.8441	110.0575	**111.6192**	110.5398	
Normalized	47.38%	47.43%	28%	27.95%	58.16%	58.09%	98.6%	100%	99.03%	
**Embree - Pathtracer ISPC - **	49.2694	49.2407	**28.5525**	28.617	59.4146	59.3896	**101.7953**	100.7468	100.8912	
Normalized	48.4%	48.37%	28.05%	28.11%	58.37%	58.34%	100%	98.97%	99.11%	
Xcompact3d Incompact3d - i.i.1.C.P.D (sec)	15.99299 14	16.13322 26	33.09080 89	**33.69744 11**	21.52879 91	21.93997 38	10.80260 56	**10.29077 34**	10.68762 59	
Normalized	64.35%	63.79%	31.1%	30.54%	47.8%	46.9%	95.26%	100%	96.29%	
SVT-AV1 - Preset 8 - Bosphorus 4K		19.978	**18.573**	19.918	54.254	55.819	55.011	57.76	**57.948**	
Normalized		34.48%	32.05%	34.37%	93.63%	96.33%	94.93%	99.68%	100%	
Xcompact3d Incompact3d - i.i.1.C.P.D (sec)		4.444547 18	7.821946 14	**7.953744 89**	5.046487 81	4.959012 99	**2.731437 92**	2.755774 02		
Normalized		61.46%	34.92%	34.34%	54.13%	55.08%	100%	99.12%		
Xmrig - Wownero - 1M (H/s)	24714	32386	16583	**16504**	**47190**	45598	46149	42198	42144	
Normalized	52.37%	68.63%	35.14%	34.97%	100%	96.63%	97.79%	89.42%	89.31%	
Helsing - 14 digit (sec)	100.271	101.308	**204.4**	204.353	118.127	118.054	86.965	79.838	**71.947**	
Normalized	71.75%	71.02%	35.2%	35.21%	60.91%	60.94%	82.73%	90.12%	100%	
LuxCoreRender - Orange Juice - CPU (M samples/sec)	12.59	12.71	**7.53**	7.62	13.79	13.77	20.35	20.71	**21.37**	
Normalized	58.91%	59.48%	35.24%	35.66%	64.53%	64.44%	95.23%	96.91%	100%	
SVT-AV1 - Preset 4 - Bosphorus 4K		**1.439**	1.475	1.449	3.932	**3.933**	3.834	3.858	3.889	
Normalized		36.59%	37.5%	36.84%	99.97%	100%	97.48%	98.09%	98.88%	
LuxCoreRender - DLSC - CPU (M samples/sec)	8.68	8.22	4.95	**4.93**	9.17	9.16	13.03	**13.17**	12.85	
Normalized	65.91%	62.41%	37.59%	37.43%	69.63%	69.55%	98.94%	100%	97.57%	
Timed LLVM Compilation - Ninja (sec)		174.023	293.483	**293.551**	164.001	163.417	110.525	110.834	**110.121**	
Normalized		63.28%	37.52%	37.51%	67.15%	67.39%	99.63%	99.36%	100%	

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Timed Node.js Compilation - Time To Compile (sec)	121.335	120.571	**193.875**	193.248	112.256	112.357	80.978	**80.382**	80.865
Normalized	66.25%	66.67%	41.46%	41.6%	71.61%	71.54%	99.26%	100%	99.4%
Xcompact3d Incompact3d - X.b.i.i (sec)		380.065033	**732.748474**	731.673889	613.658264	612.730225	304.666687	**304.135803**	304.475006
Normalized		80.02%	41.51%	41.57%	49.56%	49.64%	99.83%	100%	99.89%
LuxCoreRender - Danish Mood - CPU (M samples/sec)	5.82	5.78	3.93	**3.82**	7.39	7.49	**9**	8.28	8.09
Normalized	64.67%	64.22%	43.67%	42.44%	82.11%	83.22%	100%	92%	89.89%
LuxCoreRender - LuxCore Benchmark - CPU (M samples/sec)	6.18	6.24	**4.12**	4.15	8.01	8.01	7.97	**9.26**	8.28
Normalized	66.74%	67.39%	44.49%	44.82%	86.5%	86.5%	86.07%	100%	89.42%
libgav1 - S.N.1	**89.92**	130.9	**198.12**	189.55	172.42	166.48	157.61	156.59	150.41
Normalized	45.39%	66.07%	100%	95.67%	87.03%	84.03%	79.55%	79.04%	75.92%
Embree - Pathtracer ISPC - Asian Dragon (FPS)	46.0532	46.3929	33.2235	**33.0691**	66.0866	66.0913	70.1405	70.5966	**72.0194**
Normalized	63.95%	64.42%	46.13%	45.92%	91.76%	91.77%	97.39%	98.02%	100%
Embree - Pathtracer ISPC - Asian Dragon Obj	41.9392	40.5897	**29.1094**	29.2995	58.0957	58.513	**61.1845**	56.7188	57.6706
Normalized	68.55%	66.34%	47.58%	47.89%	94.95%	95.63%	100%	92.7%	94.26%
libgav1 - Chimera 1080p (FPS)	83.55	95.39	**156.3**	149.13	137.74	134.6	116.82	**77**	112.18
Normalized	53.45%	61.03%	100%	95.41%	88.13%	86.12%	74.74%	49.26%	71.77%
SVT-VP9 - VMAF Optimized - Bosphorus 1080p (FPS)	228.73	438.66	240.77	434.09	244.24	**450.05**	**222.09**	394.97	398.73
Normalized	50.82%	97.47%	53.5%	96.45%	54.27%	100%	49.35%	87.76%	88.6%
Embree - Pathtracer - Asian Dragon (FPS)	48.4188	47.8493	36.6275	**36.4978**	71.072	70.963	**72.5283**	67.9536	71.2621
Normalized	66.76%	65.97%	50.5%	50.32%	97.99%	97.84%	100%	93.69%	98.25%
WRF - conus 2.5km (sec)		11573			**16671**	16650	**8474**	8477	
Normalized		73.22%			50.83%	50.89%	100%	99.97%	
Timed Linux Kernel Compilation - Time To Compile (sec)	29.13	28.99	**42.966**	42.918	28.27	28.336	**21.94**	22.515	22.068
Normalized	75.32%	75.68%	51.06%	51.12%	77.61%	77.43%	100%	97.45%	99.42%

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Embree - Pathtracer - Asian Dragon Obj (FPS)	42.0026	41.9926	**32.8076**	32.9423	**62.65**	62.5336	57.0864	57.4844	58.1538
Normalized	67.04%	67.03%	52.37%	52.58%	100%	99.81%	91.12%	91.75%	92.82%
SVT-HEVC - 1 - Bosphorus 1080p (FPS)	38.17	38.41	**21.82**	22.11	36.23	36.25	41.47	41.27	**41.61**
Normalized	91.73%	92.31%	52.44%	53.14%	87.07%	87.12%	99.66%	99.18%	100%
libgav1 - C.1.1.b (FPS)	36	**33.24**	**59.85**	57.33	57.28	55.77	44.13	46.78	45.6
Normalized	60.15%	55.54%	100%	95.79%	95.71%	93.18%	73.73%	78.16%	76.19%
Timed LLVM Compilation - Unix Makefiles (sec)		241.29	**360.349**	342.097	234.118	235.493	205.887	204.96	**203.762**
Normalized		84.45%	56.55%	59.56%	87.03%	86.53%	98.97%	99.42%	100%
Timed Mesa Compilation - Time To Compile (sec)	21.048	21.397	29.258	**29.281**	20.084	20.216	**18.235**	18.264	18.414
Normalized	86.64%	85.22%	62.32%	62.28%	90.79%	90.2%	100%	99.84%	99.03%
LuxCoreRender - R.C.a.P - CPU (M samples/sec)	14.71	14.77	**14.25**	14.36	18.42	18.36	16.14	**22.51**	15.75
Normalized	65.35%	65.62%	63.31%	63.79%	81.83%	81.56%	71.7%	100%	69.97%
libgav1 - Summer Nature 4K (FPS)	42.11	**40.4**	**62.76**	59.66	59.31	56.76	49.54	47.48	42.36
Normalized	67.1%	64.37%	100%	95.06%	94.5%	90.44%	78.94%	75.65%	67.5%
SVT-AV1 - Preset 8 - Bosphorus 1080p (FPS)		116.394	**110.508**	112.368	155.384	155.281	150.537	**156.287**	155.051
Normalized		74.47%	70.71%	71.9%	99.42%	99.36%	96.32%	100%	99.21%
SVT-AV1 - Preset 4 - Bosphorus 1080p (FPS)		**5.997**	6.365	6.344	8.072	**8.245**	7.997	8.175	8.046
Normalized		72.73%	77.2%	76.94%	97.9%	100%	96.99%	99.15%	97.59%
PJSIP - OPTIONS, Stateless (Responses/sec)		**41727**	55763	55628	55845	56246	**56295**	54166	55408
Normalized		74.12%	99.05%	98.82%	99.2%	99.91%	100%	96.22%	98.42%
Timed Godot Game Engine Compilation - Time To Compile (sec)	55.955	56.477	**69.634**	69.564	**52.602**	52.751	54.066	54.509	54.336
Normalized	94.01%	93.14%	75.54%	75.62%	100%	99.72%	97.29%	96.5%	96.81%
SVT-HEVC - 10 - Bosphorus 1080p (FPS)	513.26	499.58	542.01	543.48	**567.11**	560.22	476.57	**441.83**	495.87
Normalized	90.5%	88.09%	95.57%	95.83%	100%	98.79%	84.03%	77.91%	87.44%

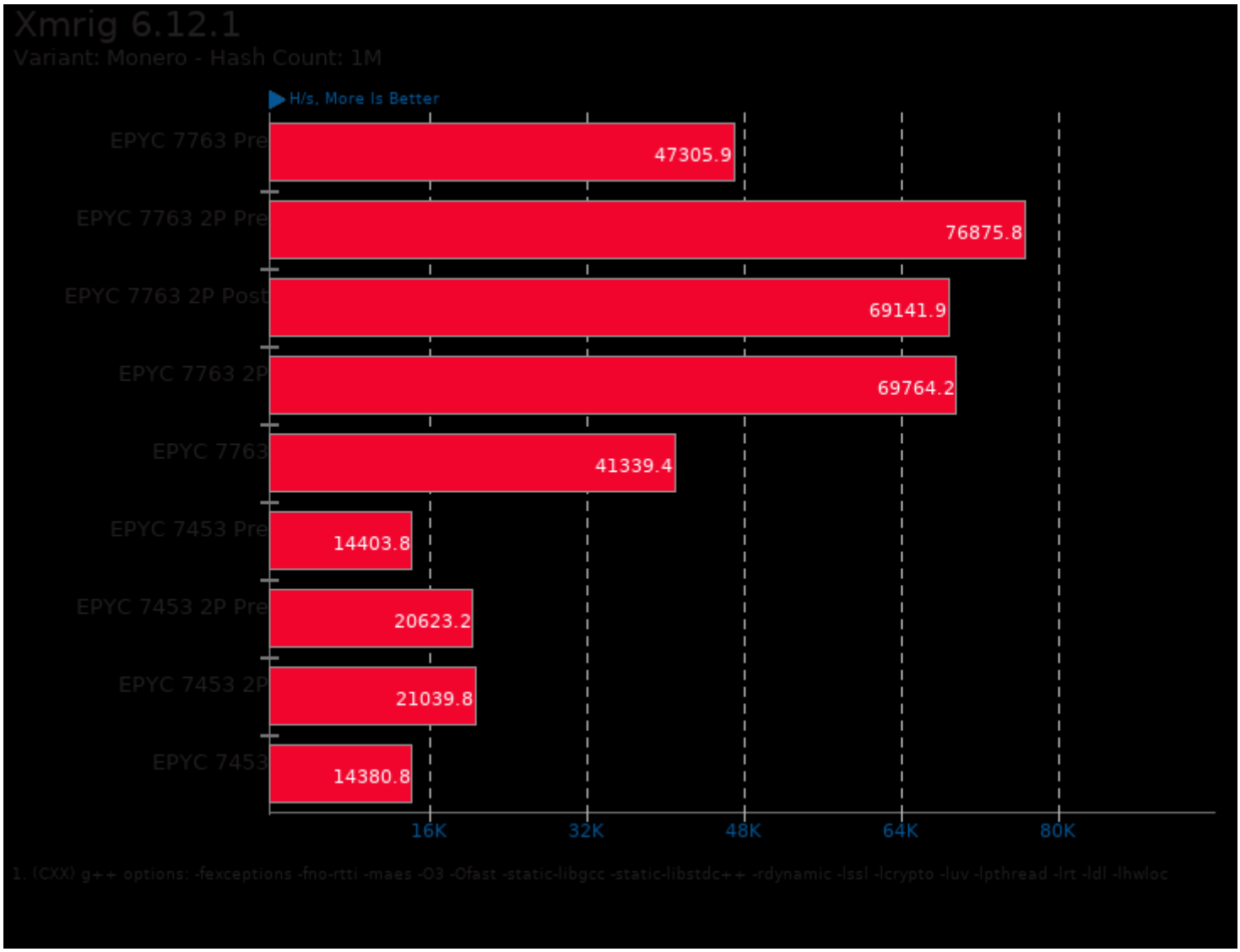
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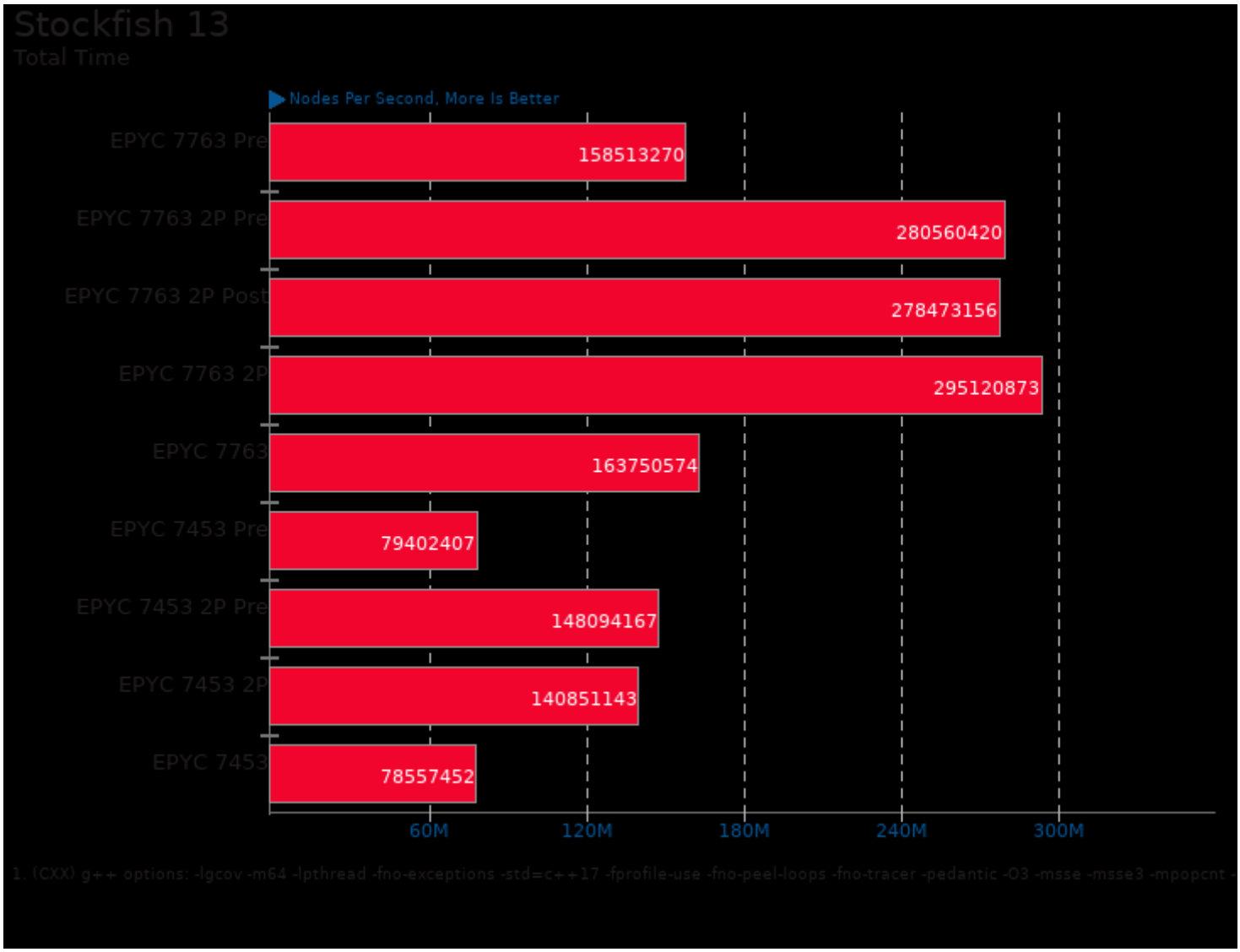
AOM AV1 - Speed 6 Realtime - Bosphorus 1080p (FPS)	28.46	26.68	**31.68**	31.64	30.99	30.89	**25.12**	28.11	27.64
Normalized	89.84%	84.22%	100%	99.87%	97.82%	97.51%	79.29%	88.73%	87.25%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 4K	7.89	**7.86**	8.98	8.91	9.72	**9.91**	8.99	8.5	8.87
Normalized	79.62%	79.31%	90.62%	89.91%	98.08%	100%	90.72%	85.77%	89.51%
Timed MrBayes Analysis - P.P.A (sec)	117.017	117.958	**115.782**	115.998	141.159	140.9	140.83	142.467	**143.23**
Normalized	98.94%	98.16%	100%	99.81%	82.02%	82.17%	82.21%	81.27%	80.84%
PJSIP - OPTIONS, Stateful (Responses/sec)		**7507**	7529	7704	9181	**9190**	9042	9068	9003
Normalized		81.69%	81.93%	83.83%	99.9%	100%	98.39%	98.67%	97.97%
AOM AV1 - Speed 8 Realtime - Bosphorus 1080p (FPS)	**107.19**	119.35	119.35	118.39	**129.45**	128.87	124.85	115.83	114.66
Normalized	82.8%	92.2%	92.2%	91.46%	100%	99.55%	96.45%	89.48%	88.57%
QMCPACK - simple-H2O (Execution Time - sec)		31.666	33.779	**31.437**	36.125	36.67	**37.692**	37.456	37.373
Normalized		99.28%	93.07%	100%	87.02%	85.73%	83.4%	83.93%	84.12%
AOM AV1 - Speed 9 Realtime - Bosphorus 4K	50.42	**49.54**	58.2	58.56	58.45	**59.19**	52.22	52.89	49.91
Normalized	85.18%	83.7%	98.33%	98.94%	98.75%	100%	88.22%	89.36%	84.32%
AOM AV1 - Speed 6 Two-Pass - Bosphorus 1080p (FPS)	21.43	21.25	24.65	**24.67**	24.35	23.84	**20.68**	21.4	20.71
Normalized	86.87%	86.14%	99.92%	100%	98.7%	96.64%	83.83%	86.75%	83.95%
AOM AV1 - Speed 4 Two-Pass - Bosphorus 4K	4.23	**4.16**	4.61	4.6	4.93	**4.96**	4.24	4.29	4.27
Normalized	85.28%	83.87%	92.94%	92.74%	99.4%	100%	85.48%	86.49%	86.09%
AOM AV1 - Speed 4 Two-Pass - Bosphorus 1080p (FPS)	6.71	6.51	7.44	**7.47**	7	6.98	6.38	**6.31**	6.34
Normalized	89.83%	87.15%	99.6%	100%	93.71%	93.44%	85.41%	84.47%	84.87%
AOM AV1 - Speed 8 Realtime - Bosphorus 4K	41.55	41.67	**48.49**	47.62	47.63	47.25	**41.06**	41.82	41.3
Normalized	85.69%	85.94%	100%	98.21%	98.23%	97.44%	84.68%	86.24%	85.17%

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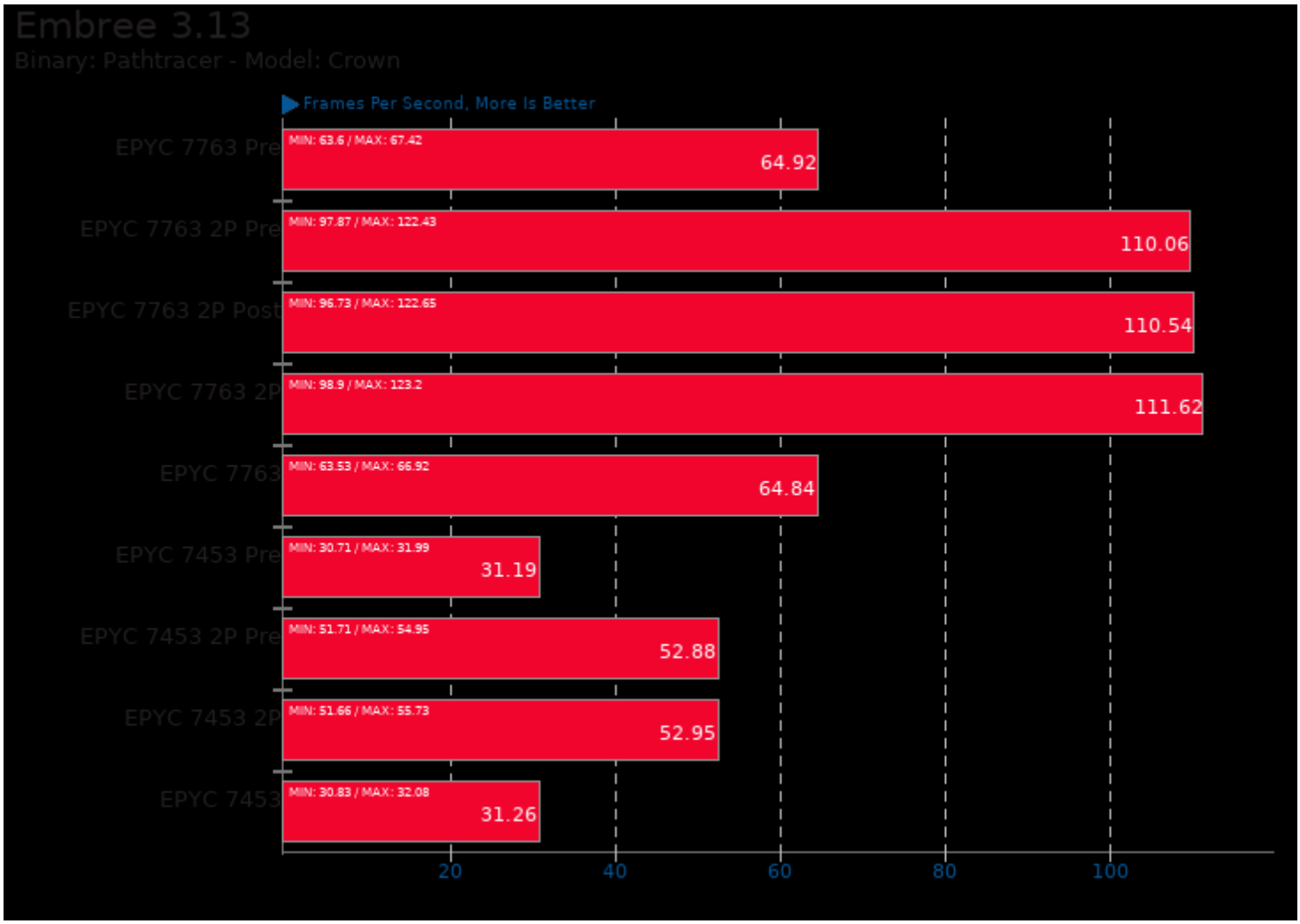
PJSIP - INVITE (Responses/sec)		4403	4297	4265	4971	4960	4905	4913	4869
Normalized		88.57%	86.44%	85.8%	100%	99.78%	98.67%	98.83%	97.95%
AOM AV1 - Speed 6 Realtime - Bosphorus 4K	16.96	17.54	18.37	18.21	18.63	18.89	16.27	17.18	17.11
Normalized	89.78%	92.85%	97.25%	96.4%	98.62%	100%	86.13%	90.95%	90.58%
SVT-VP9 - P.S.O - Bosphorus 1080p (FPS)	435.47	441.62	424.21	428.78	447.33	449.33	420.86	387.12	417.72
Normalized	96.92%	98.28%	94.41%	95.43%	99.55%	100%	93.66%	86.15%	92.97%
SVT-HEVC - 7 - Bosphorus 1080p (FPS)	322.41	325.73	282.62	283.29	309.12	314.14	298.36	302.72	304.26
Normalized	98.98%	100%	86.77%	86.97%	94.9%	96.44%	91.6%	92.94%	93.41%
SVT-VP9 - V.Q.O - Bosphorus 1080p (FPS)	354.65	347.96	339.38	339.75	338.49	342.76	333.5	319.8	319.09
Normalized	100%	98.11%	95.69%	95.8%	95.44%	96.65%	94.04%	90.17%	89.97%
AOM AV1 - Speed 9 Realtime - Bosphorus 1080p (FPS)	132.67	138.22	142.17	138.48	143.09	146.69	135.47	132.63	134.67
Normalized	90.44%	94.23%	96.92%	94.4%	97.55%	100%	92.35%	90.42%	91.81%
Chia Blockchain VDF - S.A.O (IPS)	105200	105600	103600	107500	103700	106400	109000	109700	112000
Normalized	93.93%	94.29%	92.5%	95.98%	92.59%	95%	97.32%	97.95%	100%
Timed Apache Compilation - Time To Compile (sec)	22.255	22.625	21.811	21.898	22.301	22.338	22.976	23.406	23.093
Normalized	98%	96.4%	100%	99.6%	97.8%	97.64%	94.93%	93.19%	94.45%
AOM AV1 - Speed 0 Two-Pass - Bosphorus 1080p (FPS)	0.5	0.5	0.51	0.51	0.49	0.49	0.48	0.48	0.49
Normalized	98.04%	98.04%	100%	100%	96.08%	96.08%	94.12%	94.12%	96.08%
AOM AV1 - Speed 0 Two-Pass - Bosphorus 4K	0.2	0.2	0.19	0.19	0.2	0.2	0.2	0.2	0.2
Normalized	100%	100%	95%	95%	100%	100%	100%	100%	100%
Chia Blockchain VDF - Square Plain C++ (IPS)	152600	151200	152500	151500	153000	152600	151400	150600	150200
Normalized	99.74%	98.82%	99.67%	99.02%	100%	99.74%	98.95%	98.43%	98.17%

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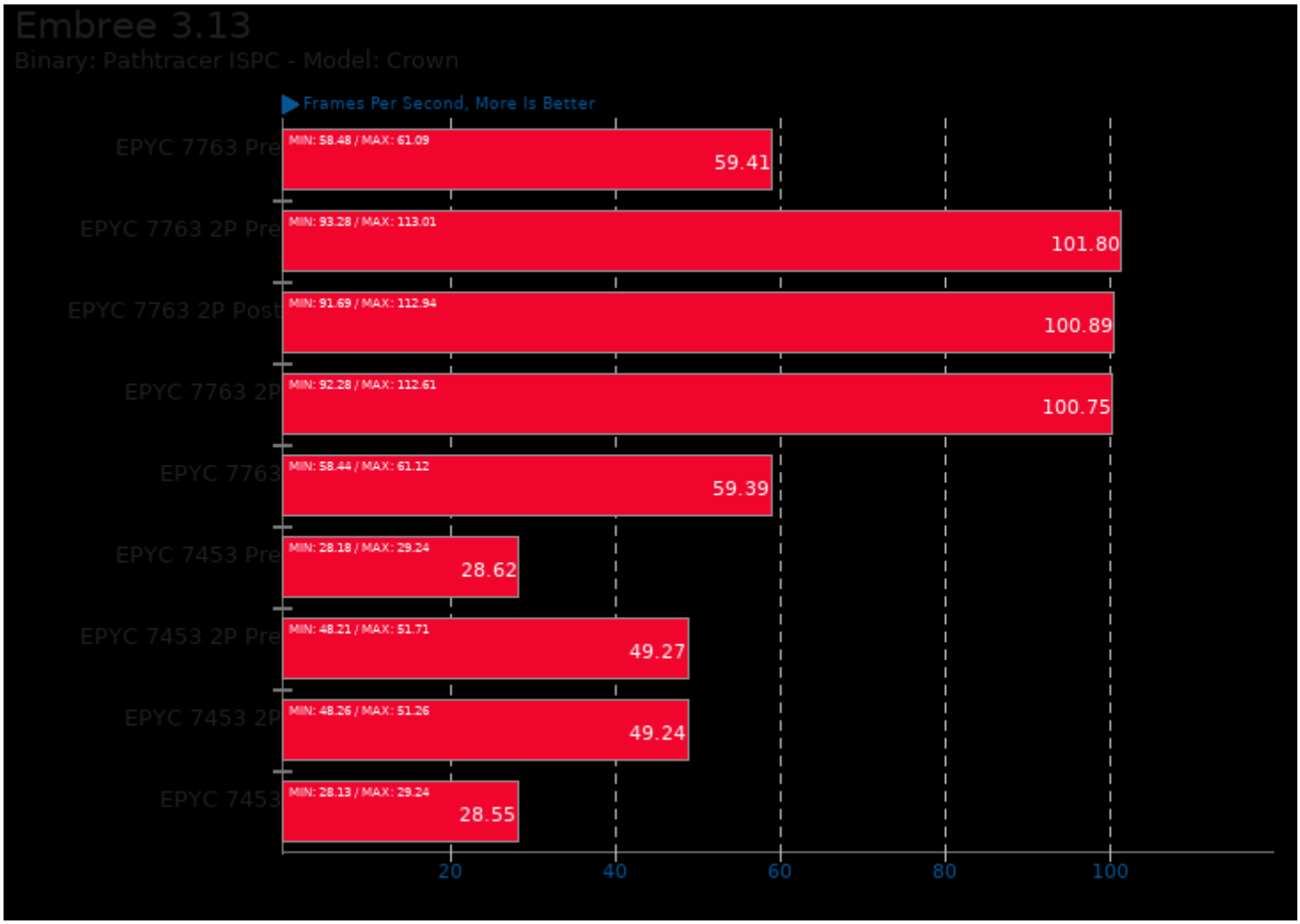


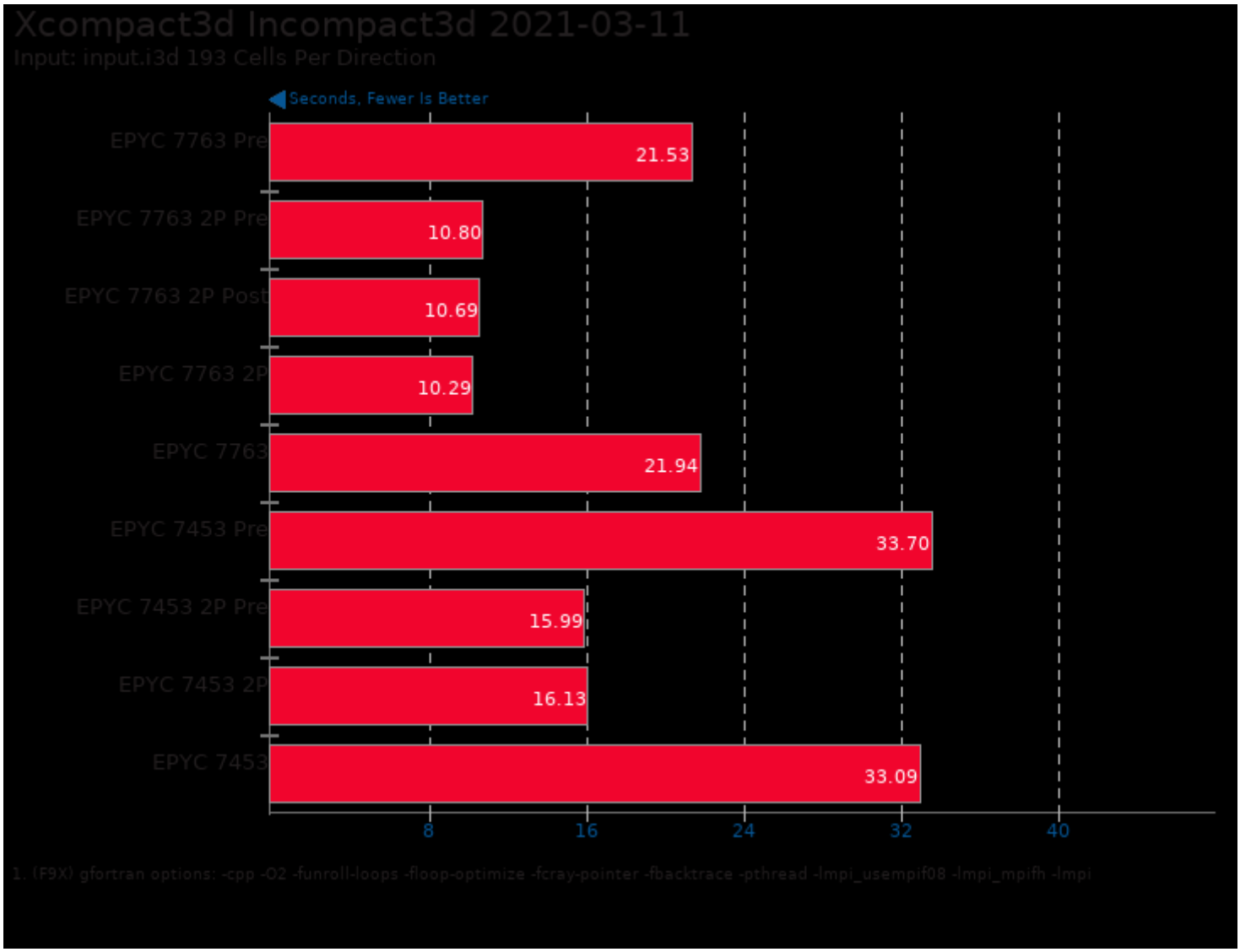

Stockfish 13
Total Time
Nodes Per Second, More Is Better
EPYC 7763 Pre
158513270
EPYC 7763 2P Pre
280560420
EPYC 7763 2P Post
278473156
EPYC 7763 2P
295120873
EPYC 7763
163750574
EPYC 7453 Pre
79402407
EPYC 7453 2P Pre
148094167
EPYC 7453 2P
140851143
EPYC 7453
78557452
60M
120M
180M
240M
300M
1. (CXX) g++ options: -lgcov -m64 -lpthread -fno-exceptions -std=c++17 -fprofile-use -fno-peel-loops -fno-tracer -pedantic -O3 -msse -msse3 -mpopcnt

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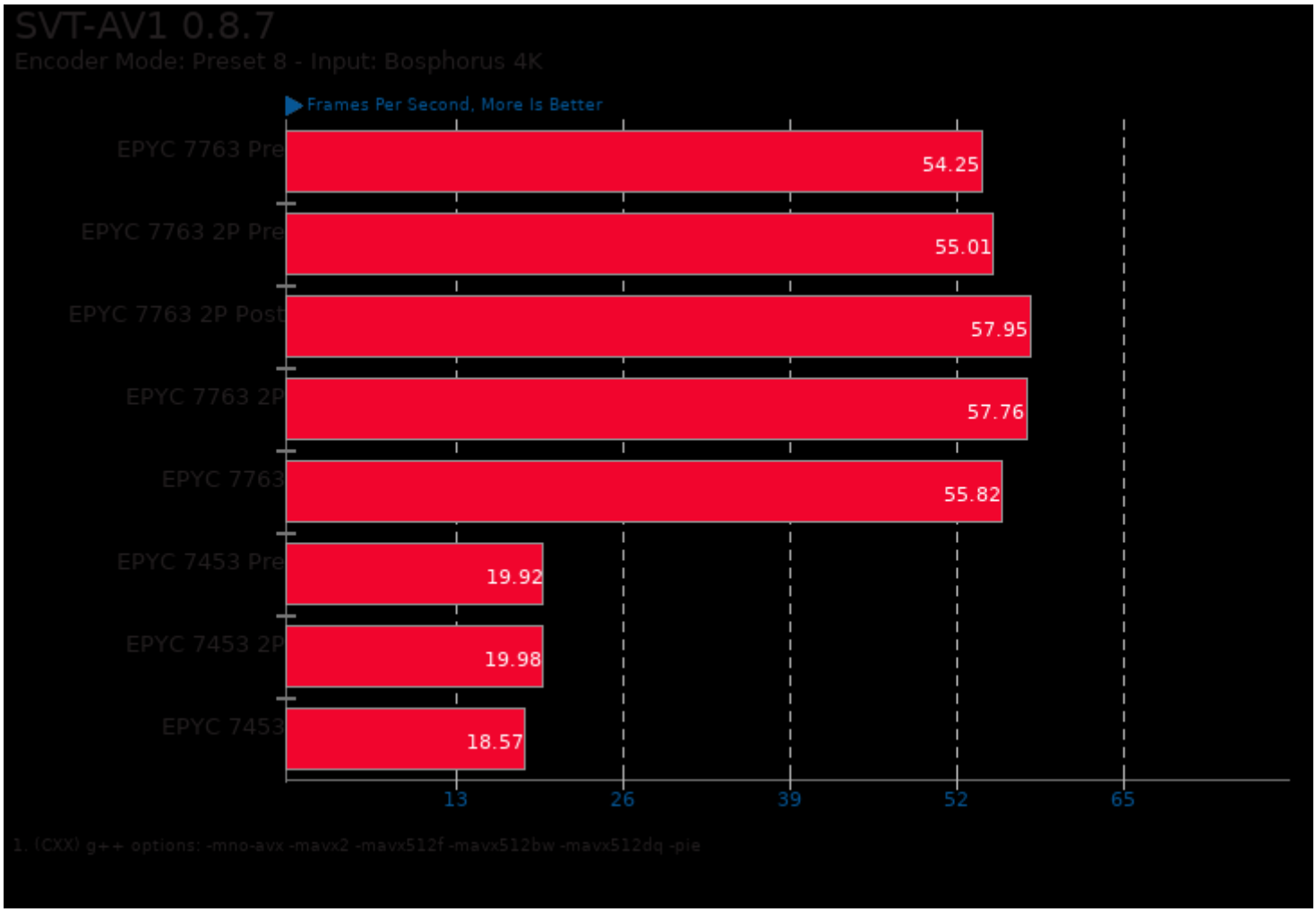


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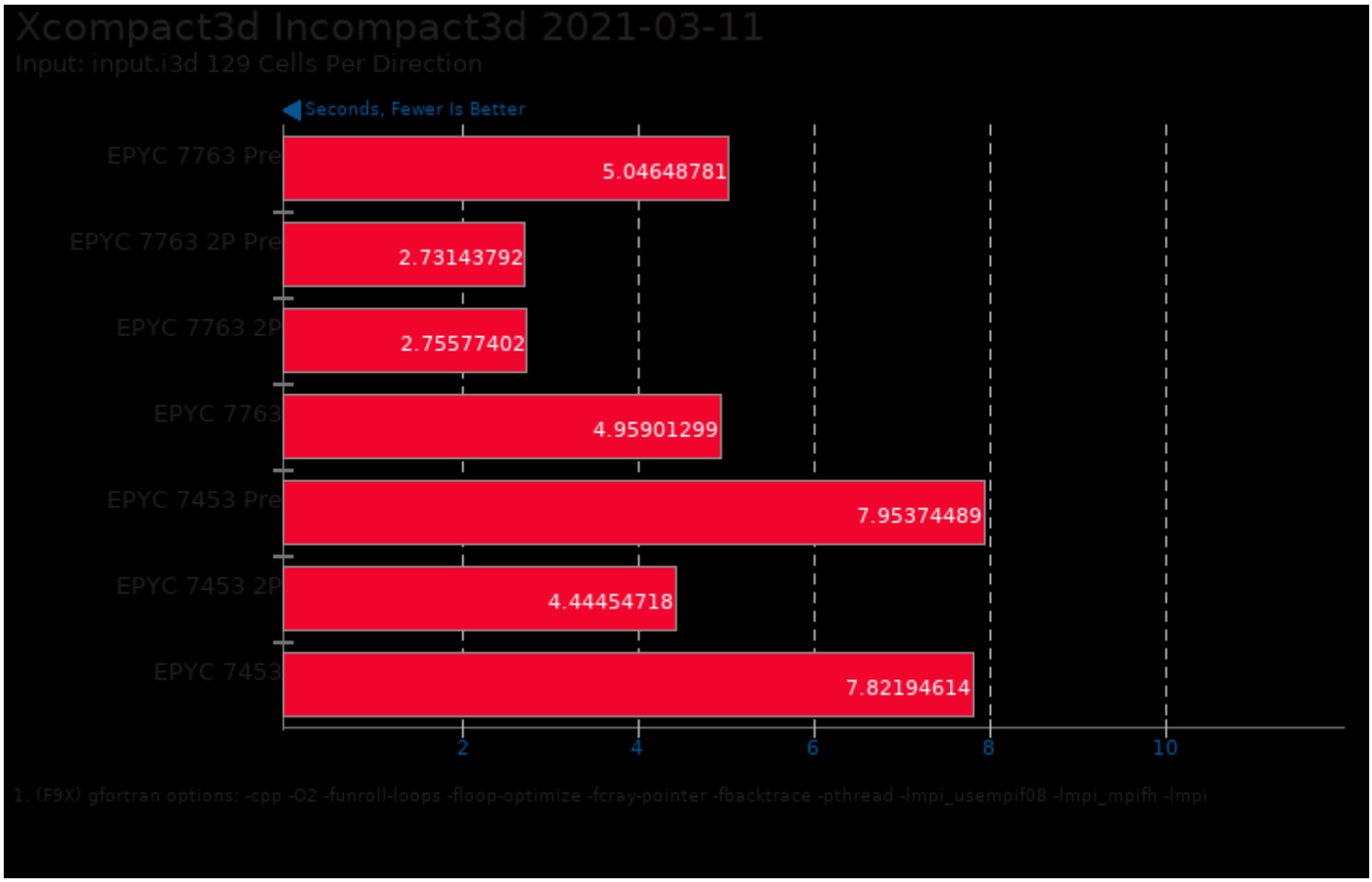



Xcompact3d Incompact3d 2021-03-11
Input: input.i3d 193 Cells Per Direction
Seconds, Fewer Is Better
EPYC 7763 Pre
21.53
EPYC 7763 2P Pre
10.80
EPYC 7763 2P Post
10.69
EPYC 7763 2P
10.29
EPYC 7763
21.94
EPYC 7453 Pre
33.70
EPYC 7453 2P Pre
15.99
EPYC 7453 2P
16.13
EPYC 7453
33.09
8
16
24
32
40
1. (F9X) gfortran options: -cpp -O2 -funroll-loops -floop-optimize -fcray-pointer -fbacktrace -pthread -lmpi_usempif08 -lmpi_mpifh -lmpi

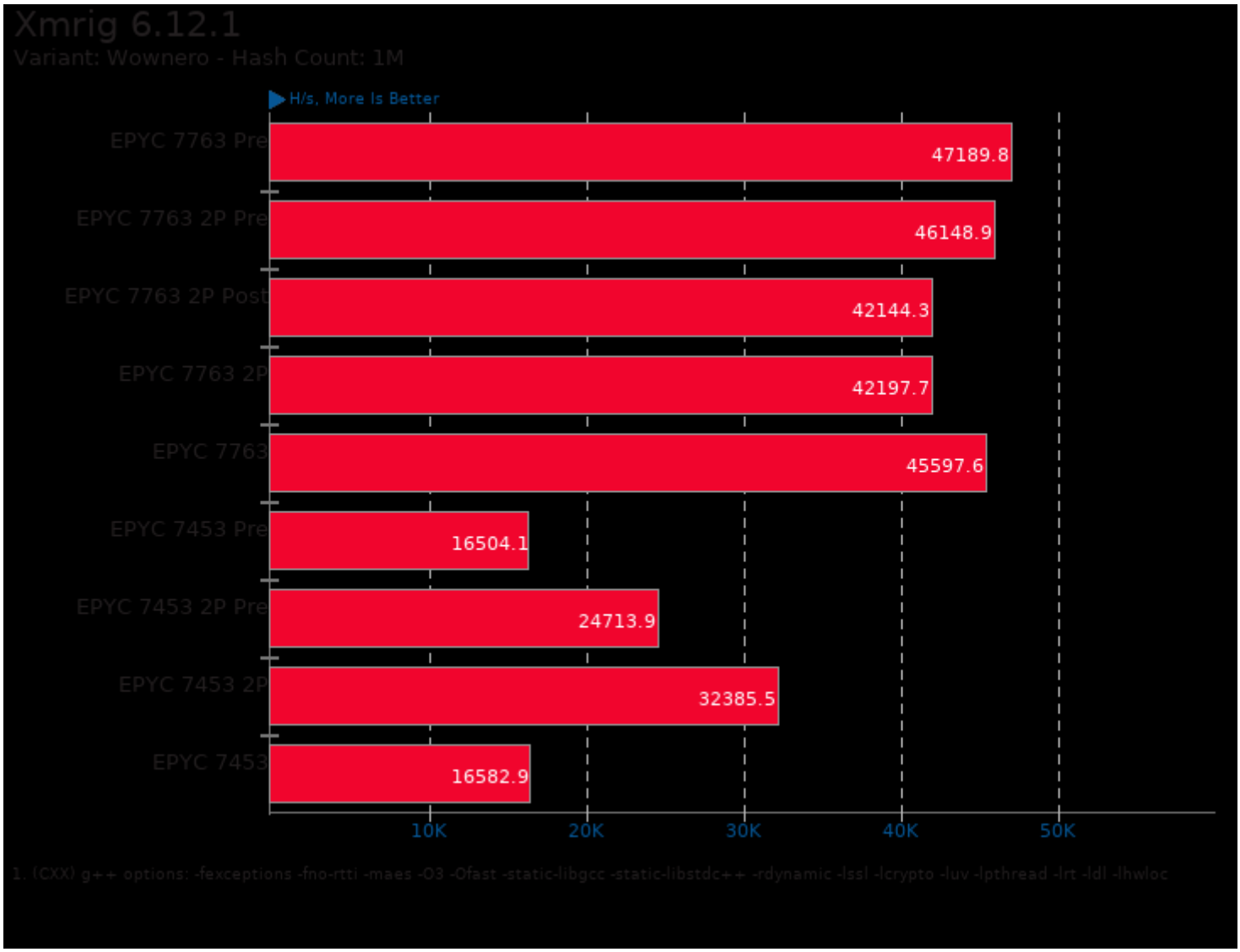
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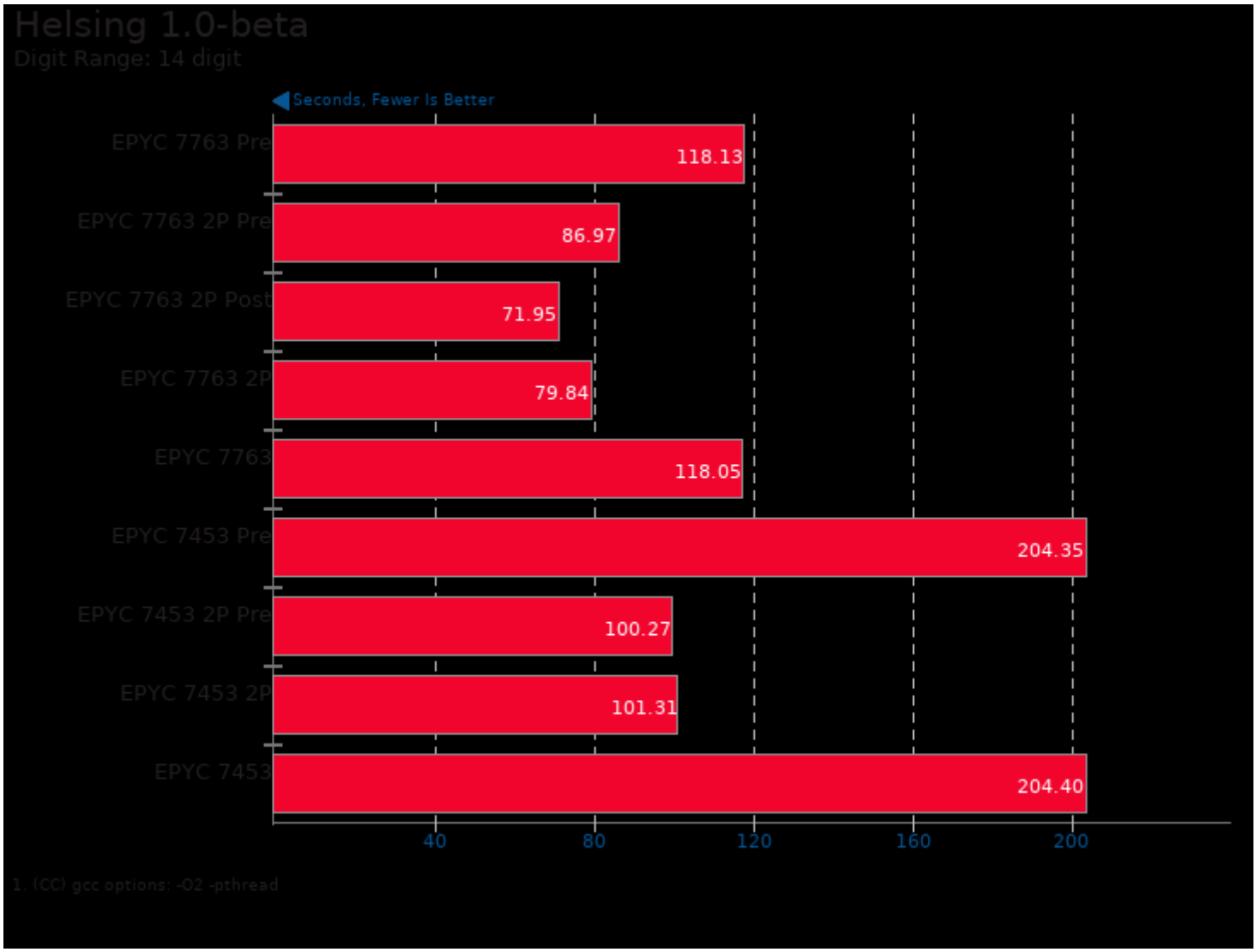
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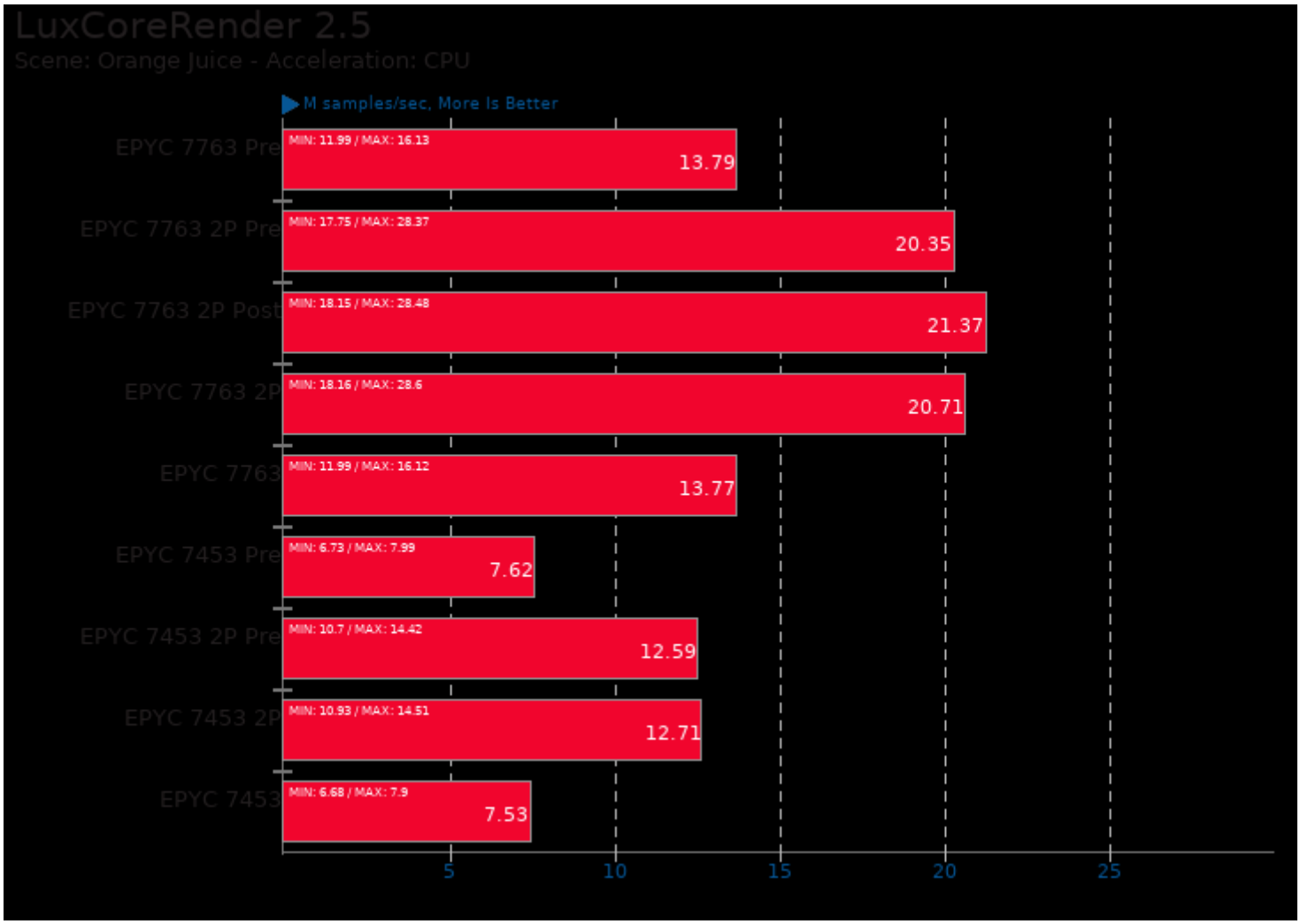
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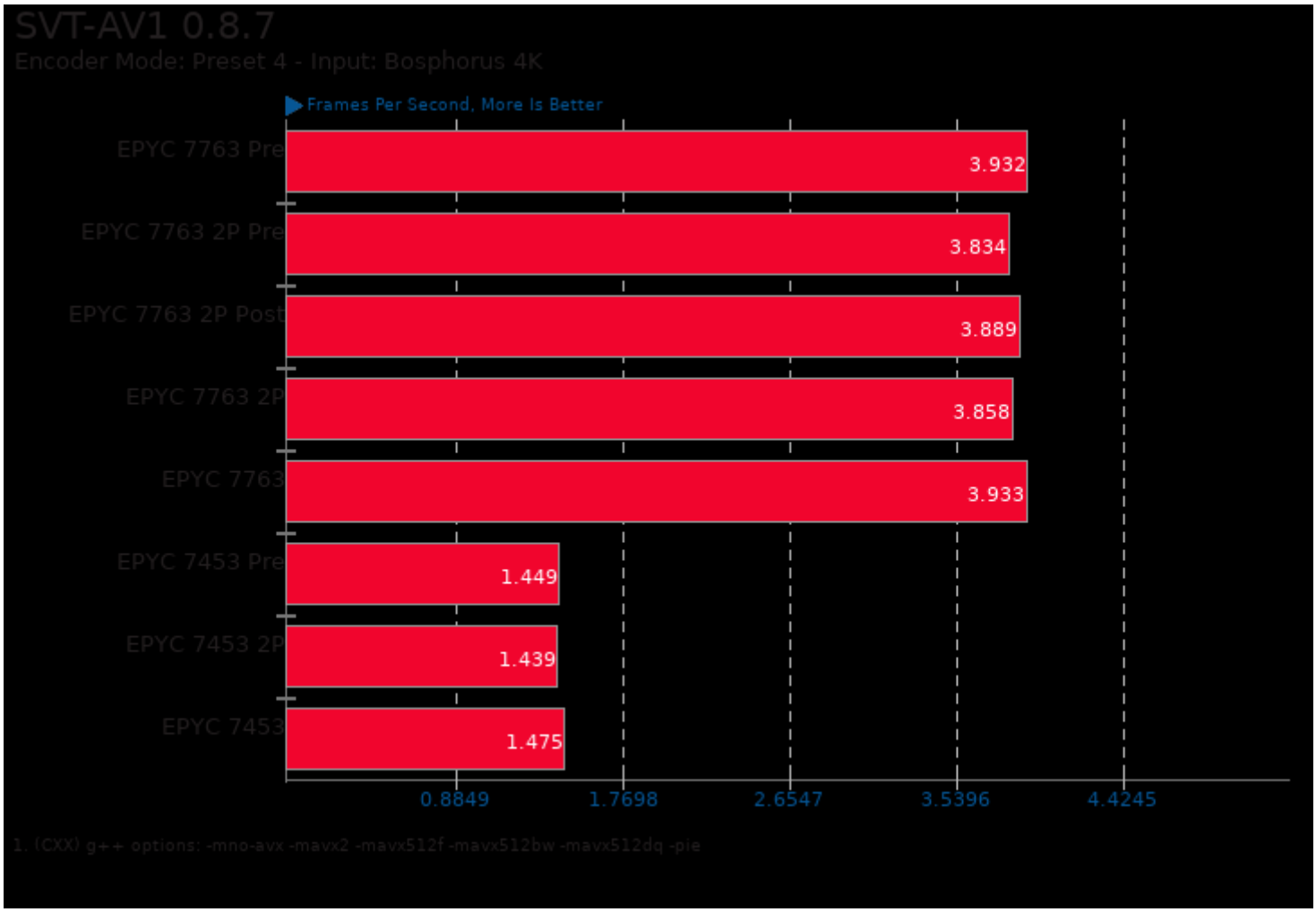
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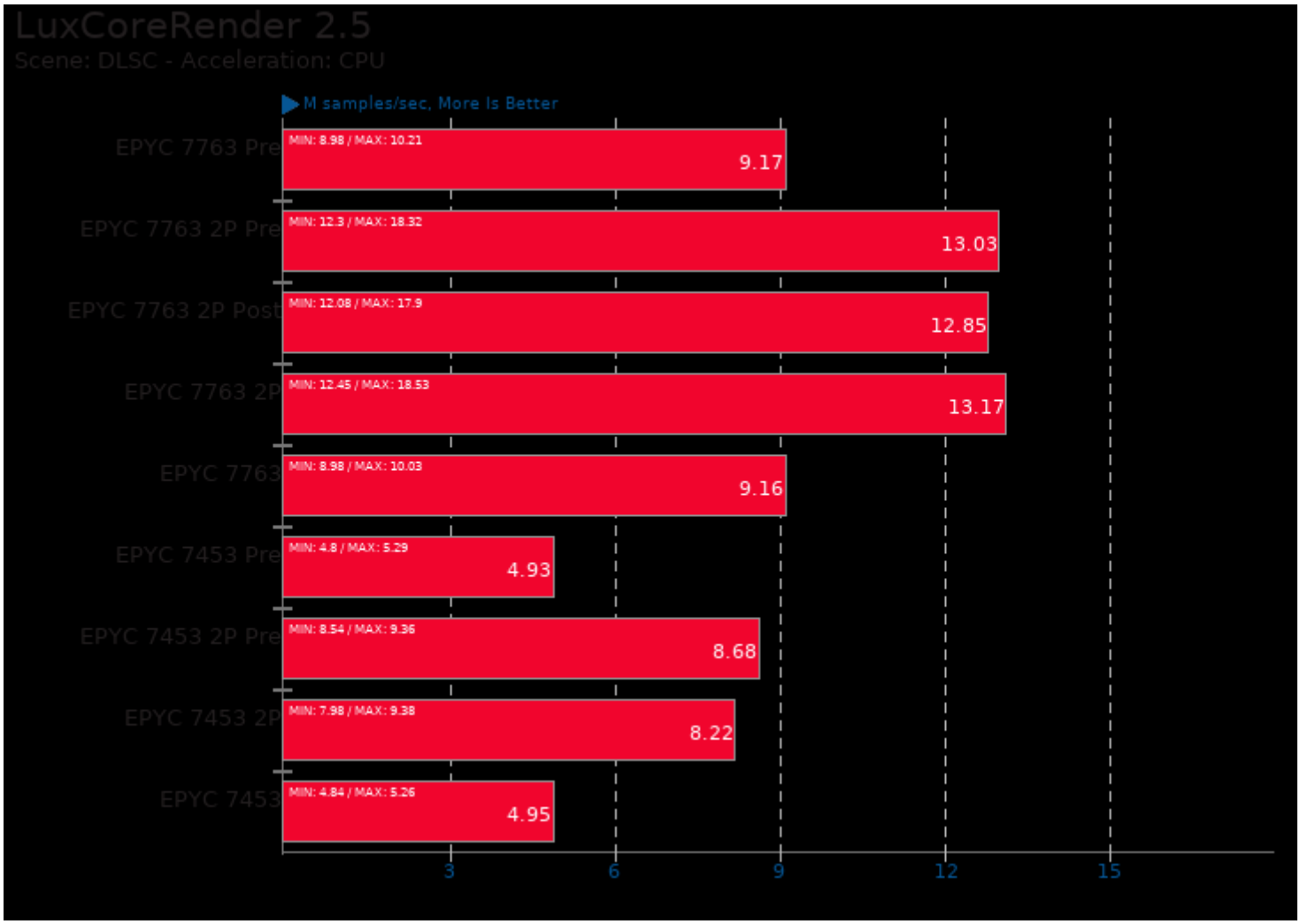
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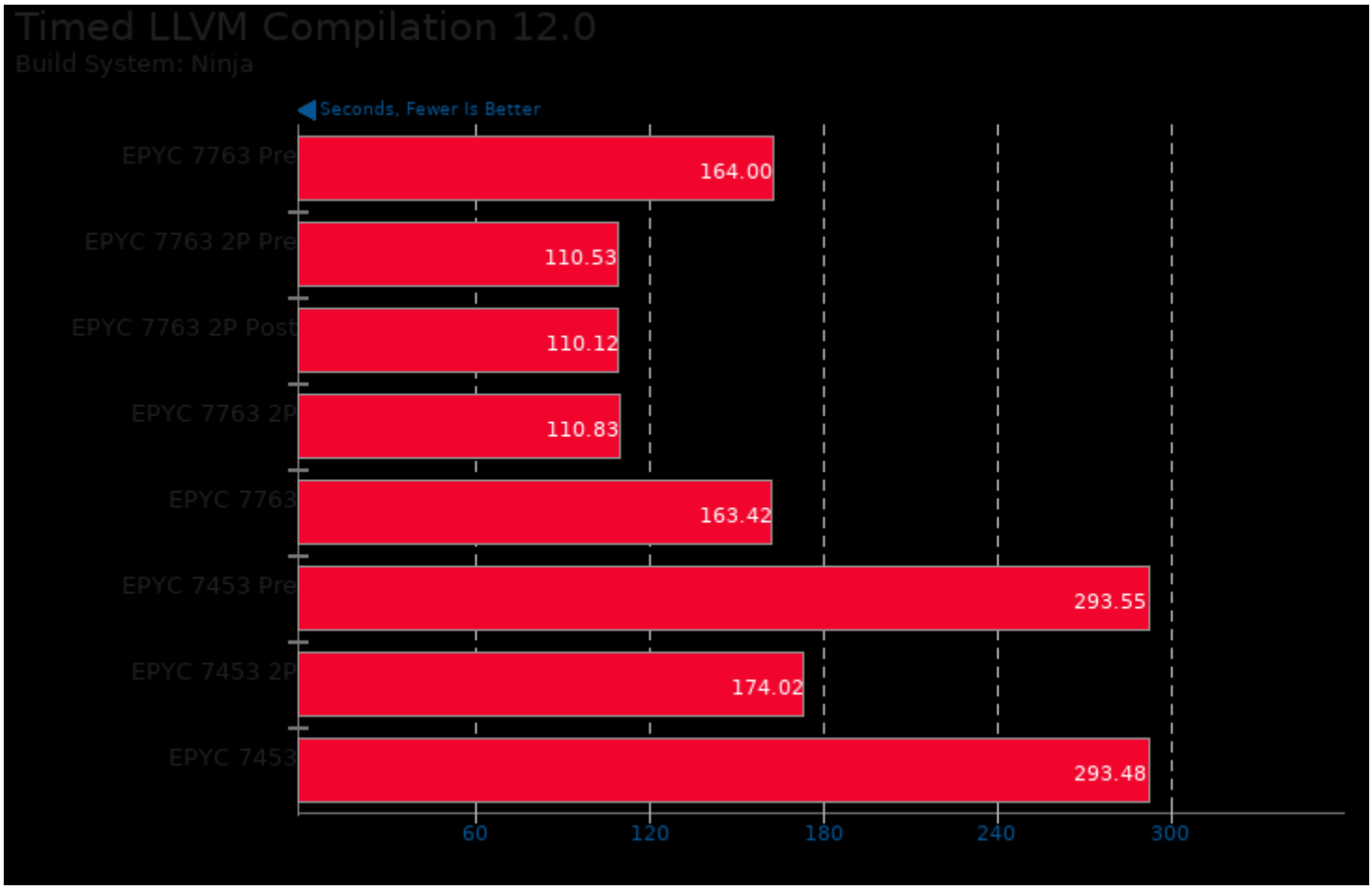
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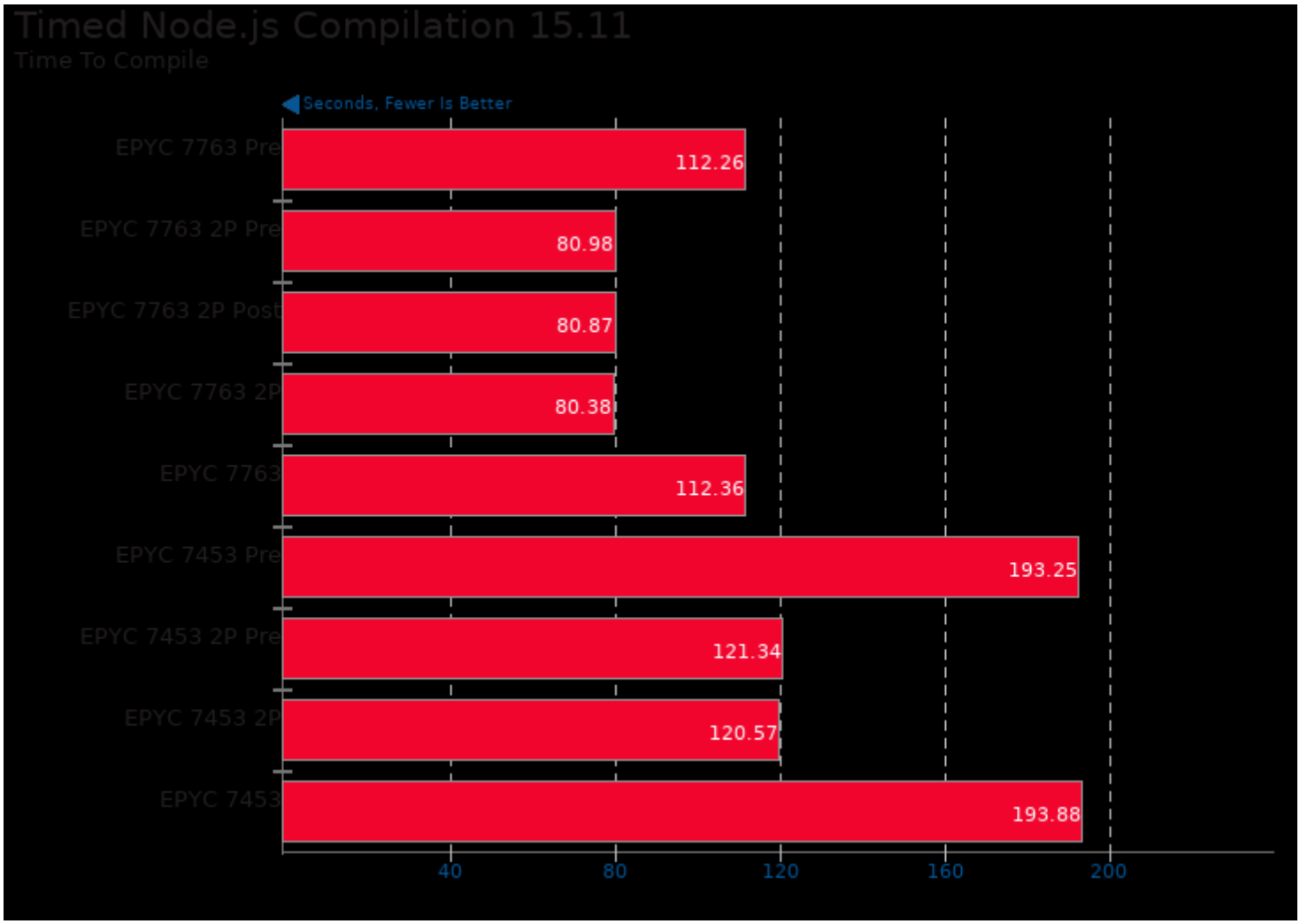


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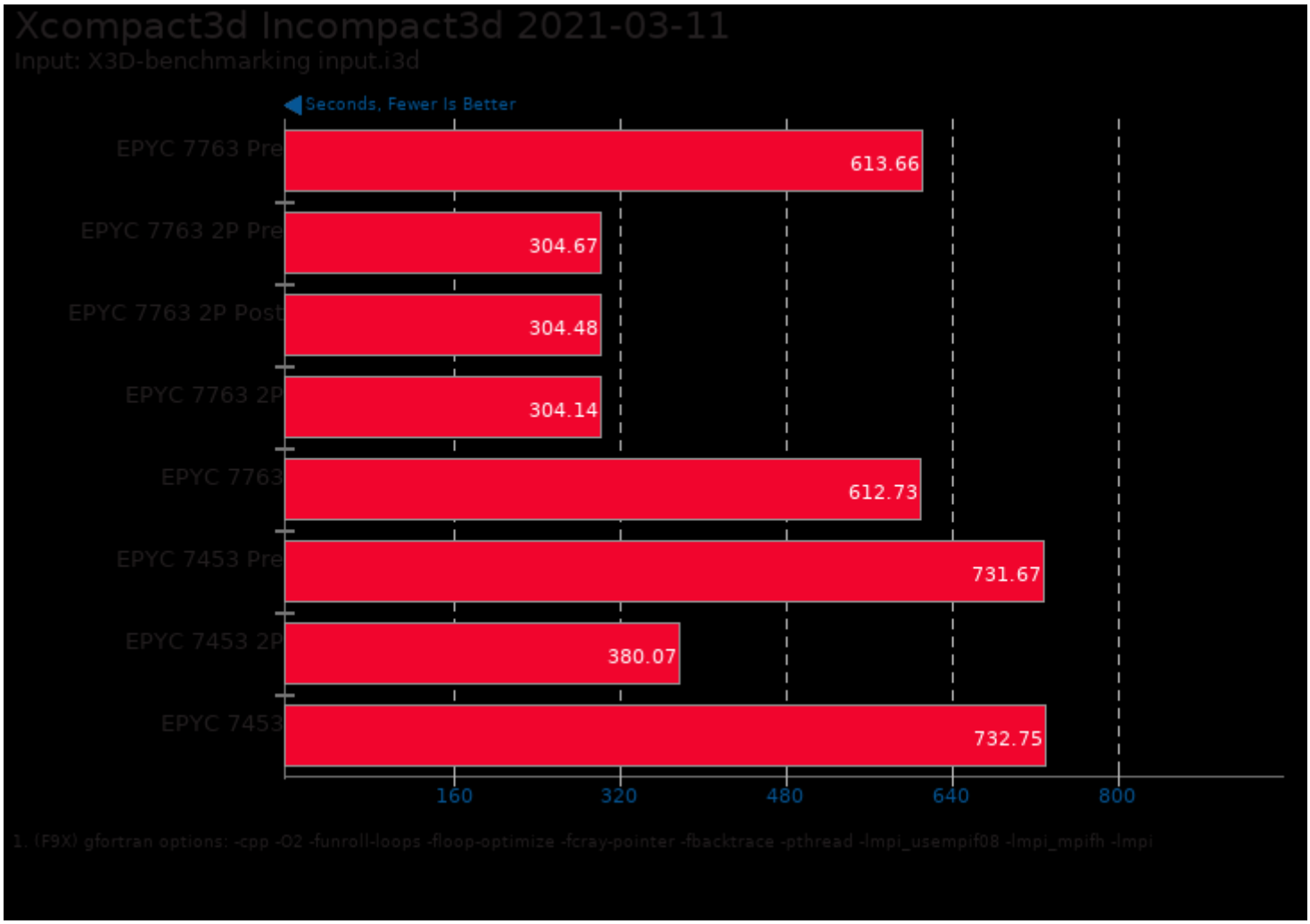


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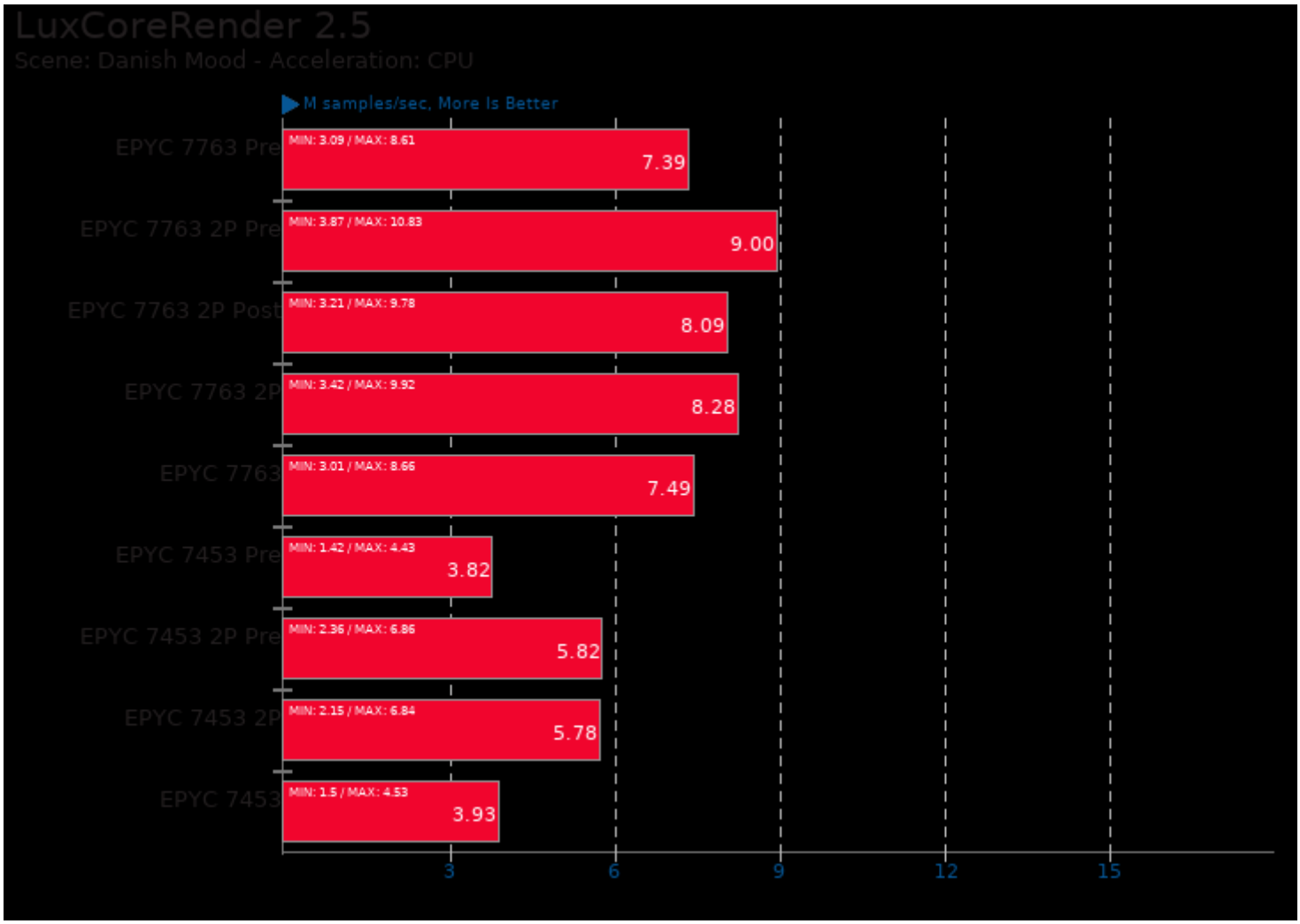



Timed Node.js Compilation 15.11
Time To Compile
Seconds, Fewer Is Better
EPYC 7763 Pre
112.26
EPYC 7763 2P Pre
80.98
EPYC 7763 2P Post
80.87
EPYC 7763 2P
80.38
EPYC 7763
112.36
EPYC 7453 Pre
193.25
EPYC 7453 2P Pre
121.34
EPYC 7453 2P
120.57
EPYC 7453
193.88
40
80
120
160
200

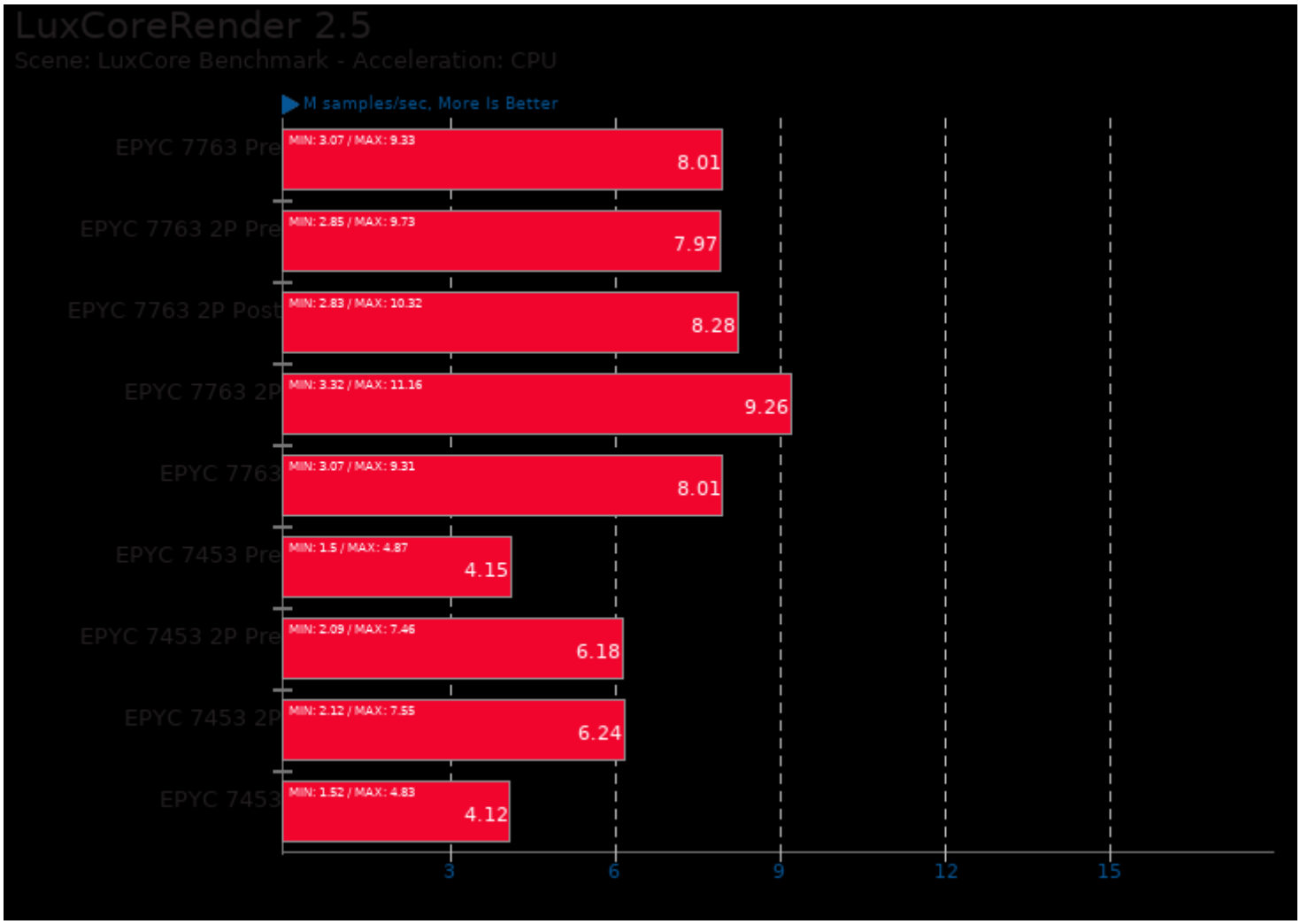
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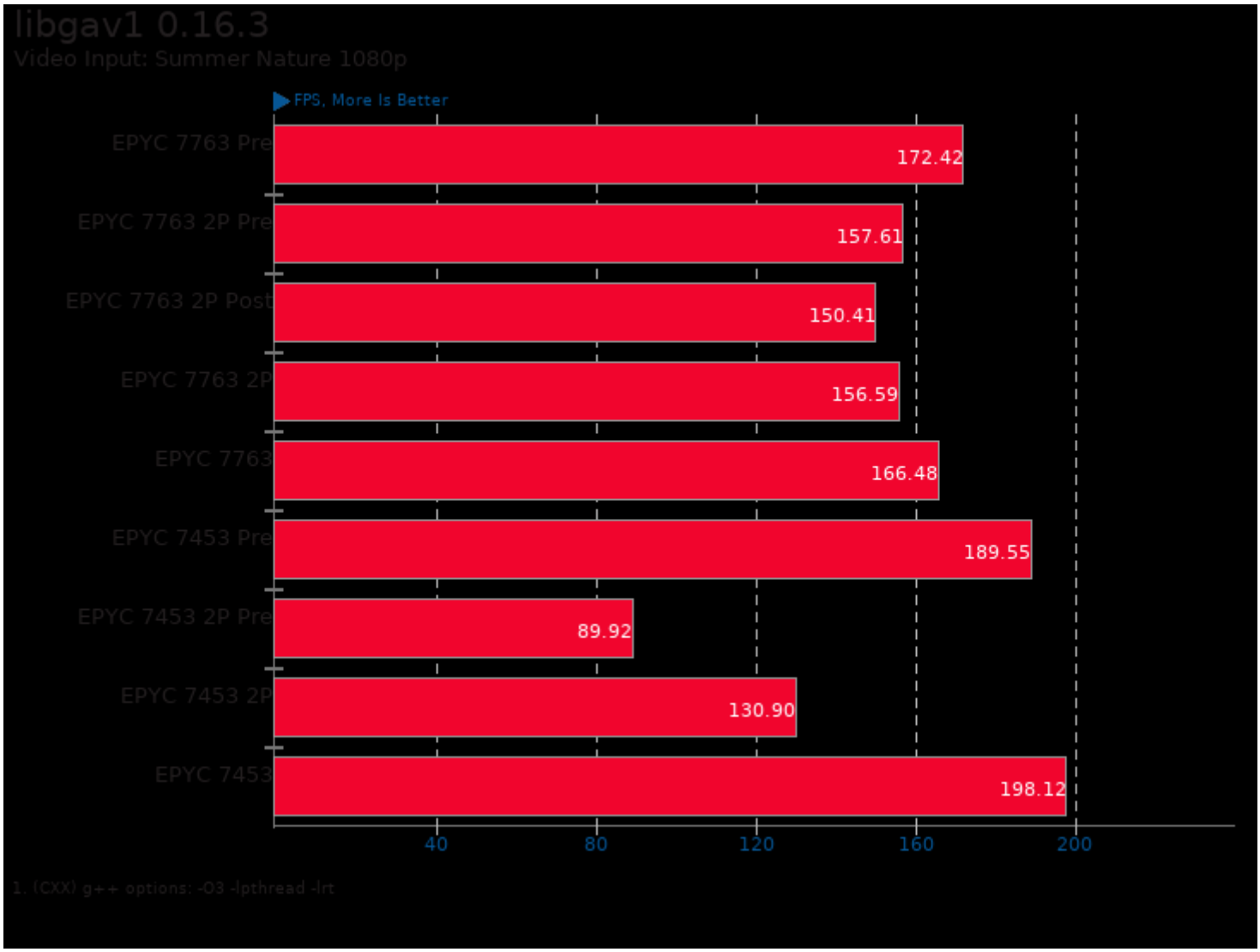
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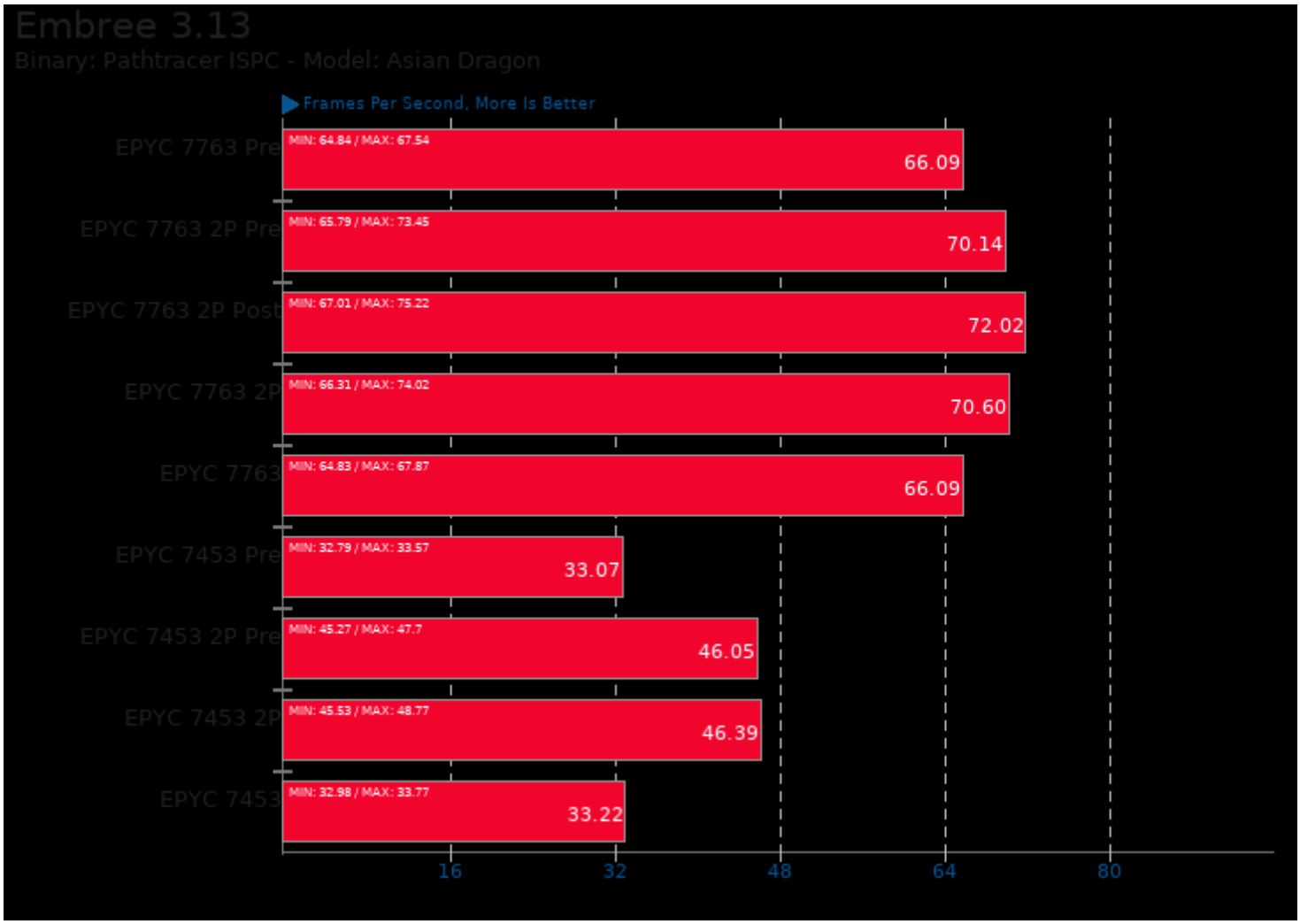
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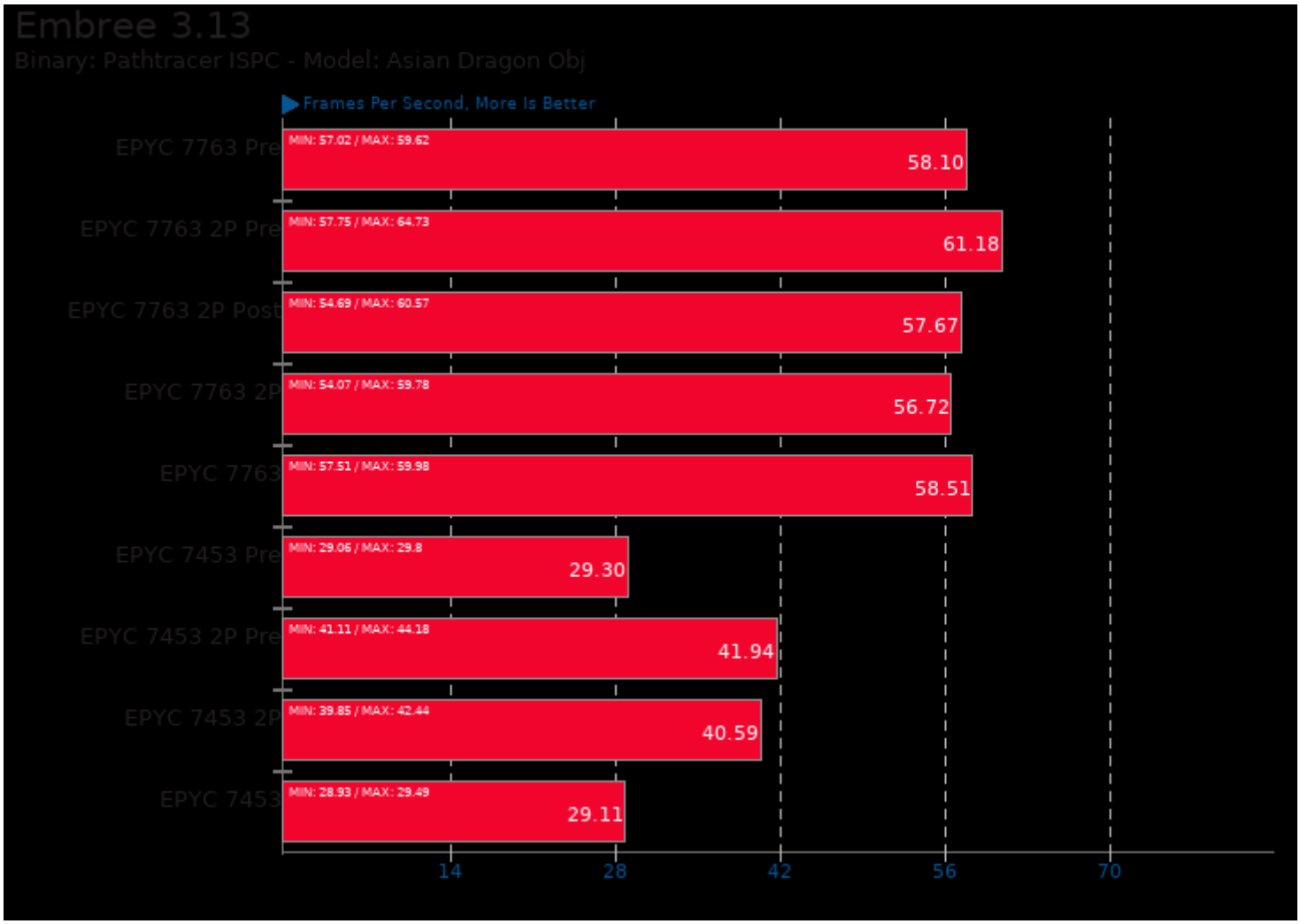
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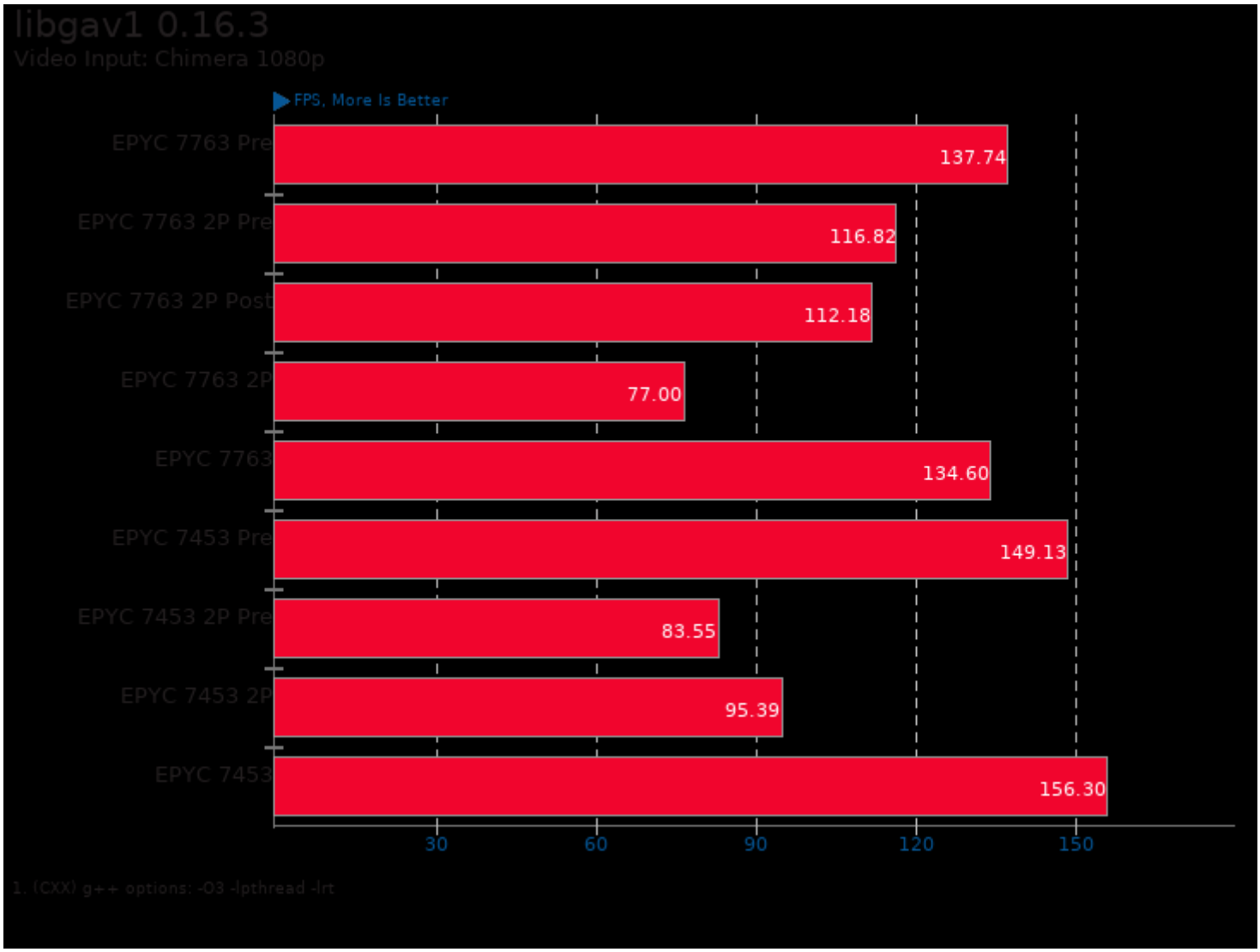
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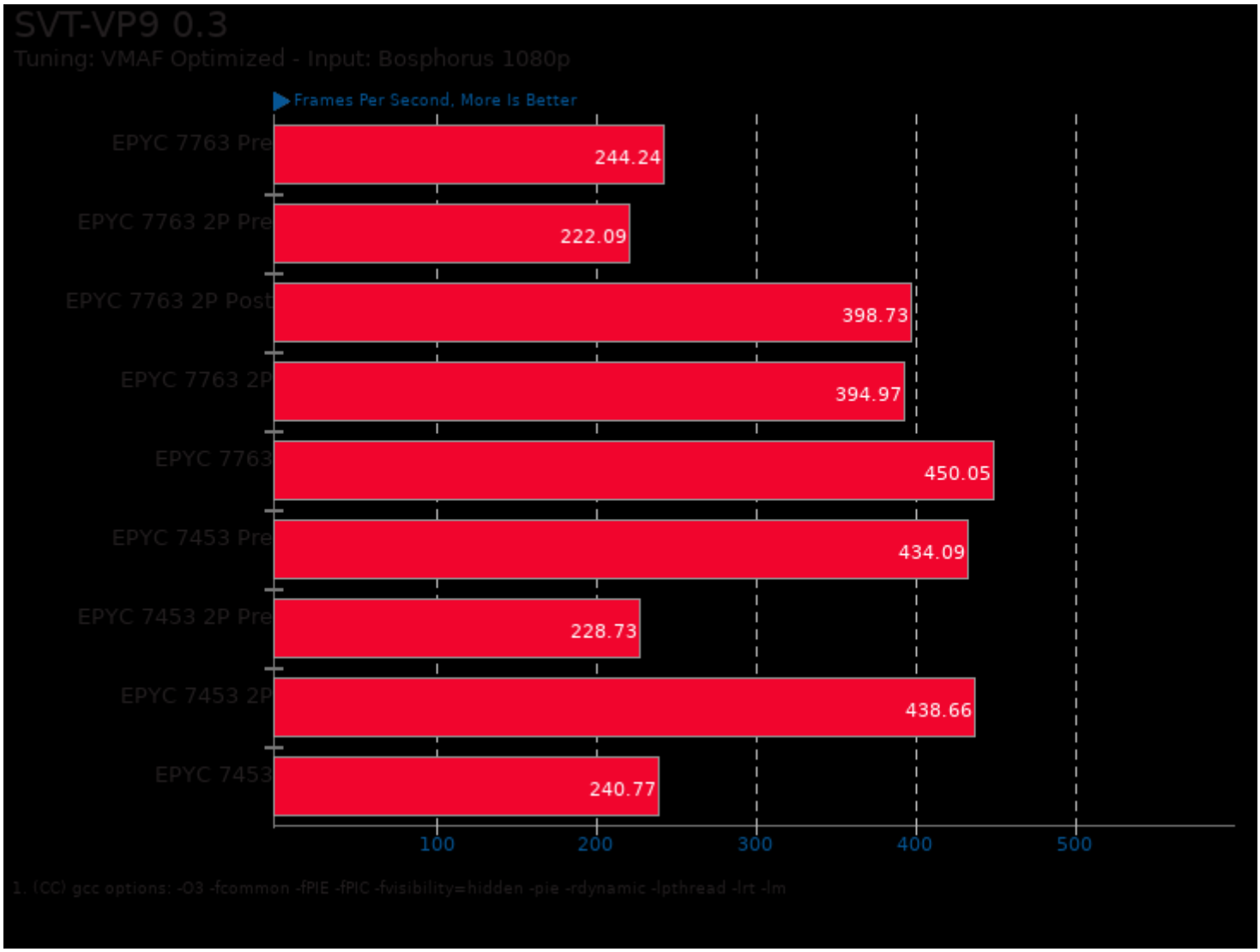
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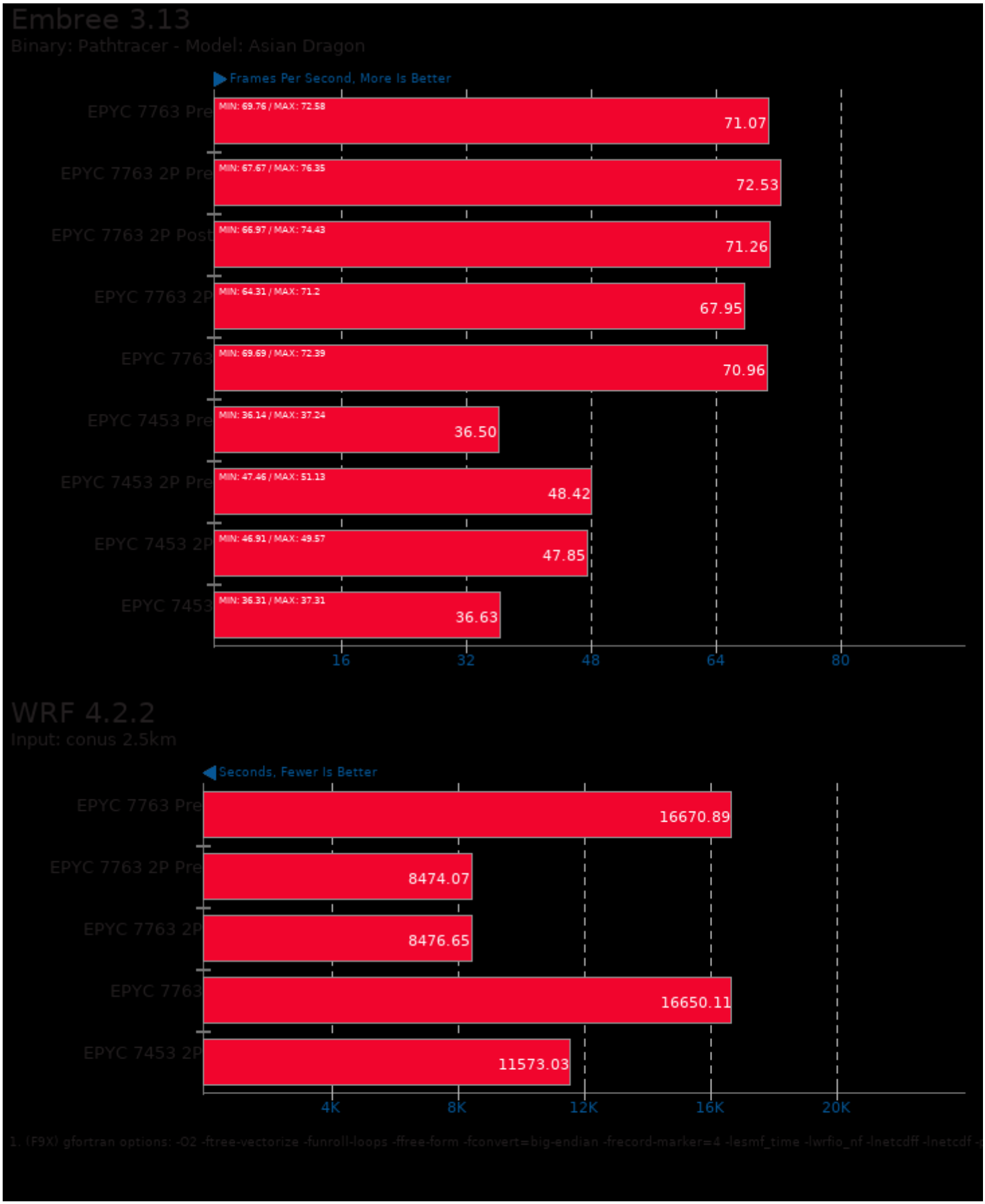
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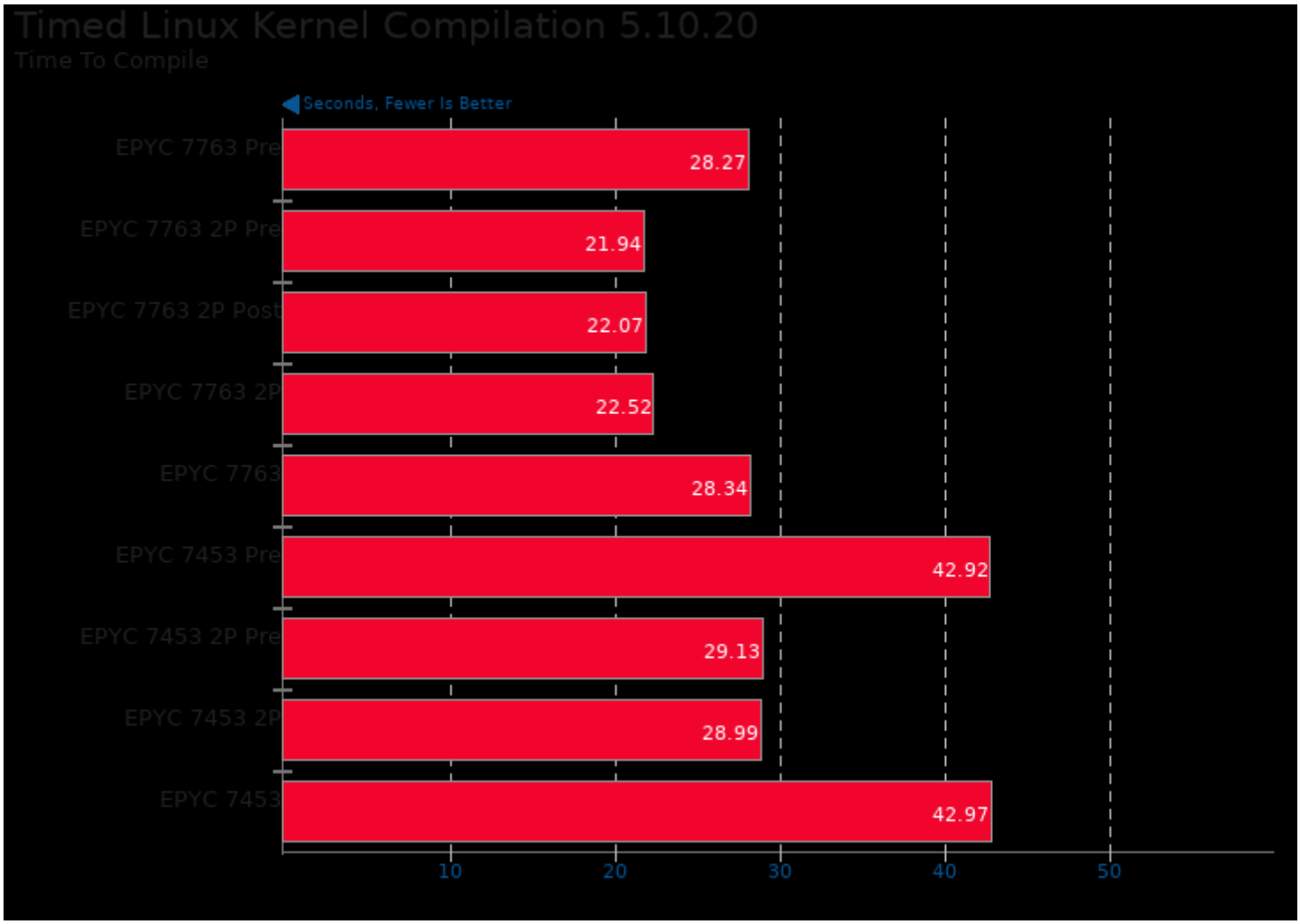


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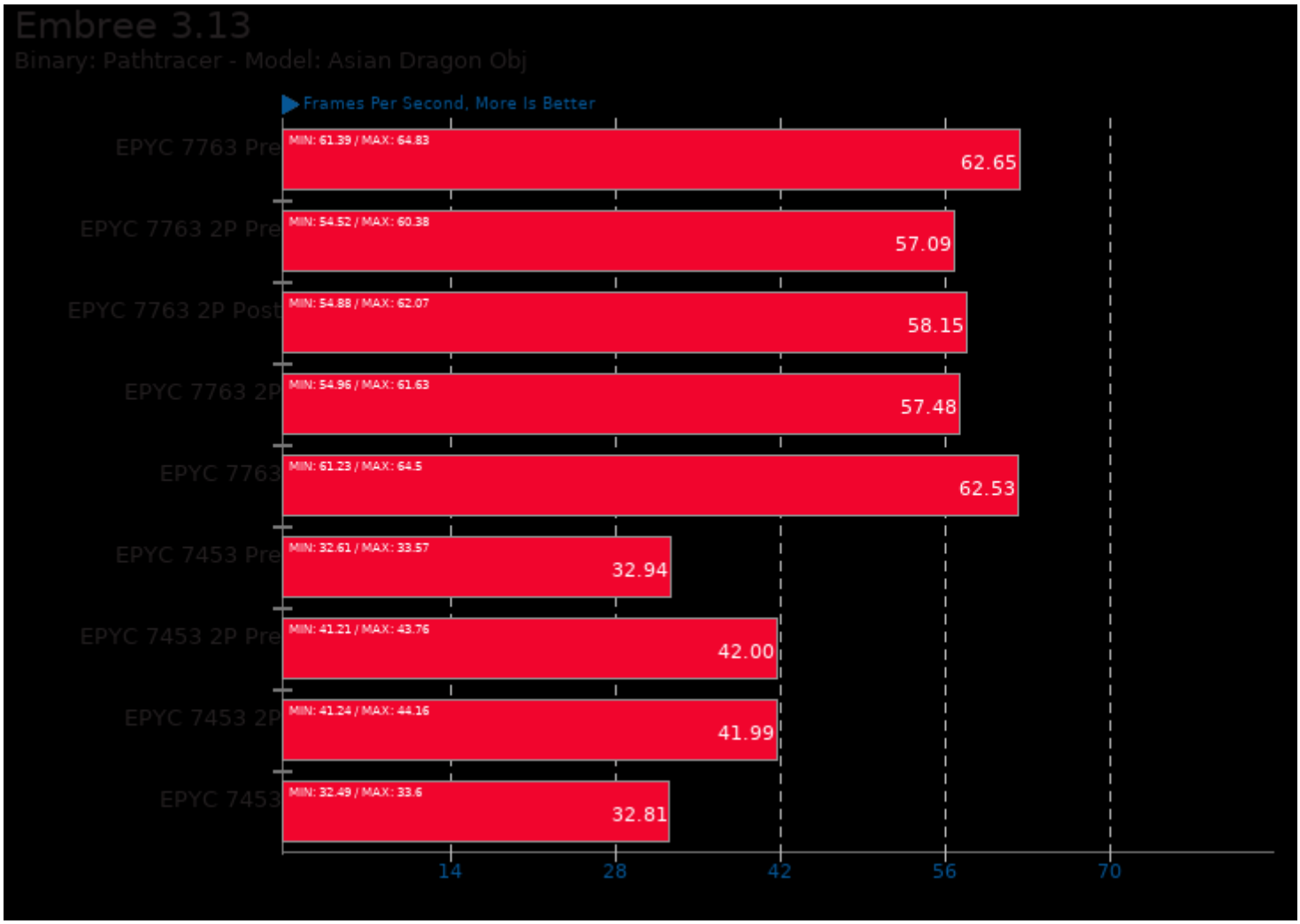


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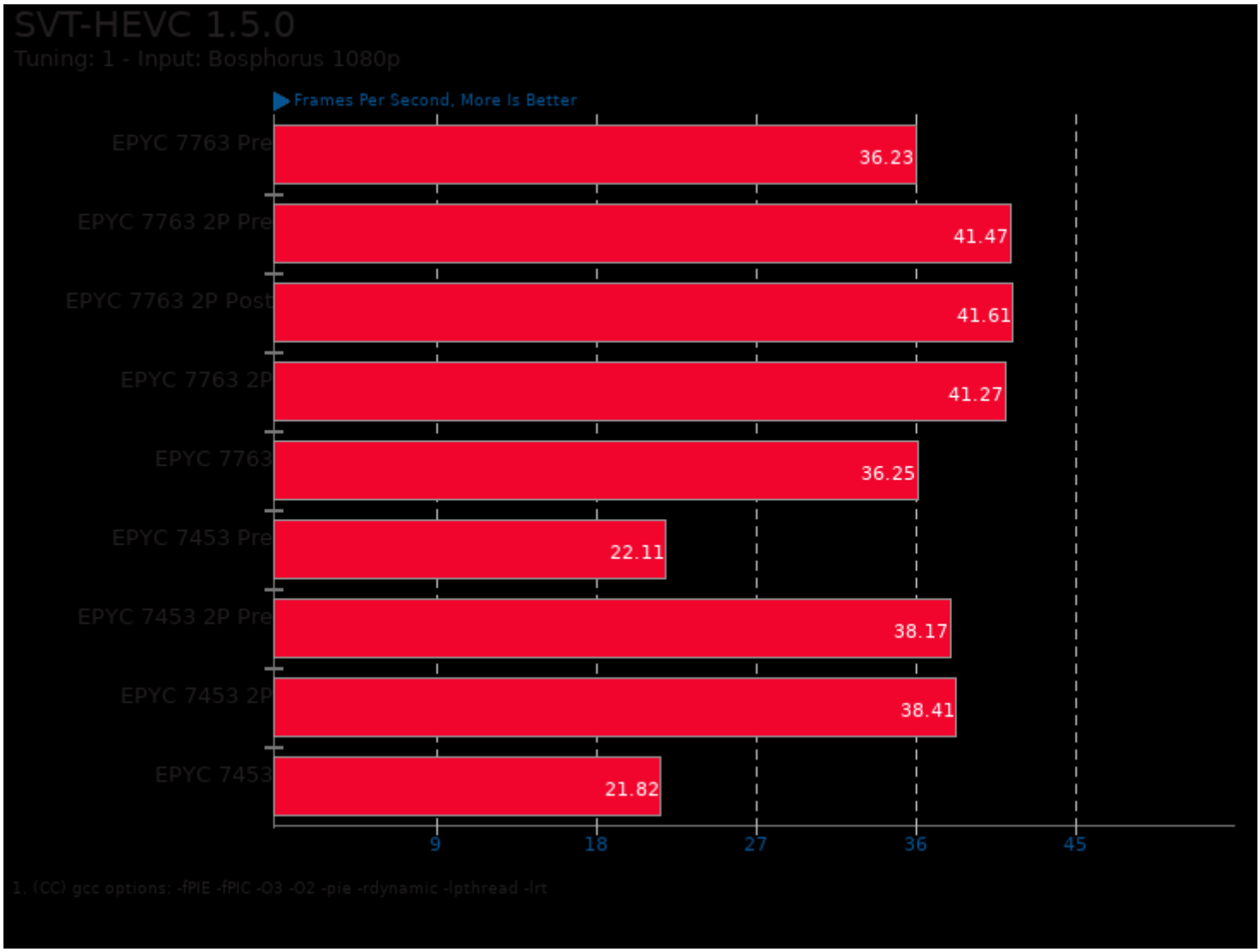



Timed Linux Kernel Compilation 5.10.20
Time To Compile
Seconds, Fewer Is Better
EPYC 7763 Pre
28.27
EPYC 7763 2P Pre
21.94
EPYC 7763 2P Post
22.07
EPYC 7763 2P
22.52
EPYC 7763
28.34
EPYC 7453 Pre
42.92
EPYC 7453 2P Pre
29.13
EPYC 7453 2P
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10
20
30
40
50

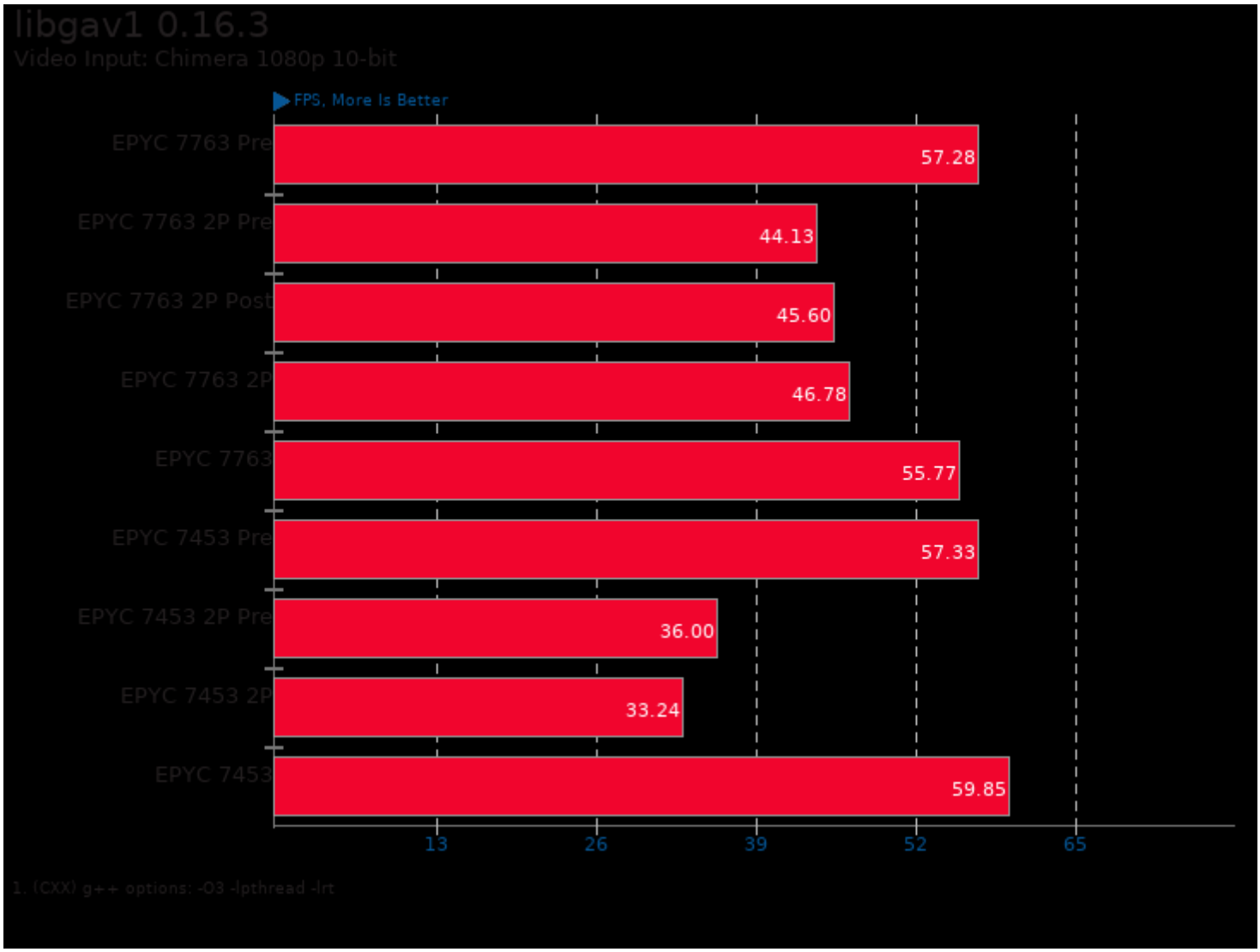
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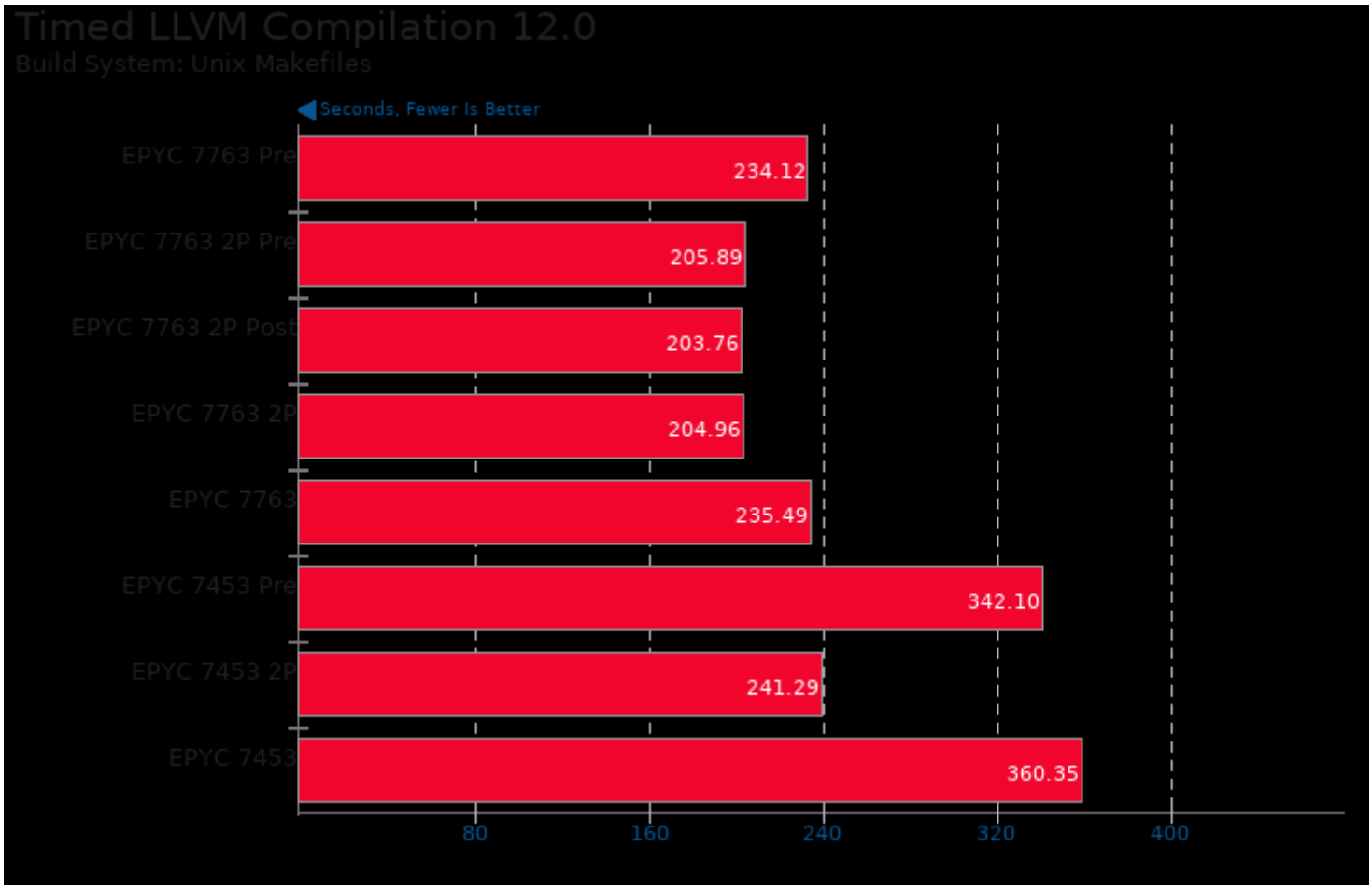
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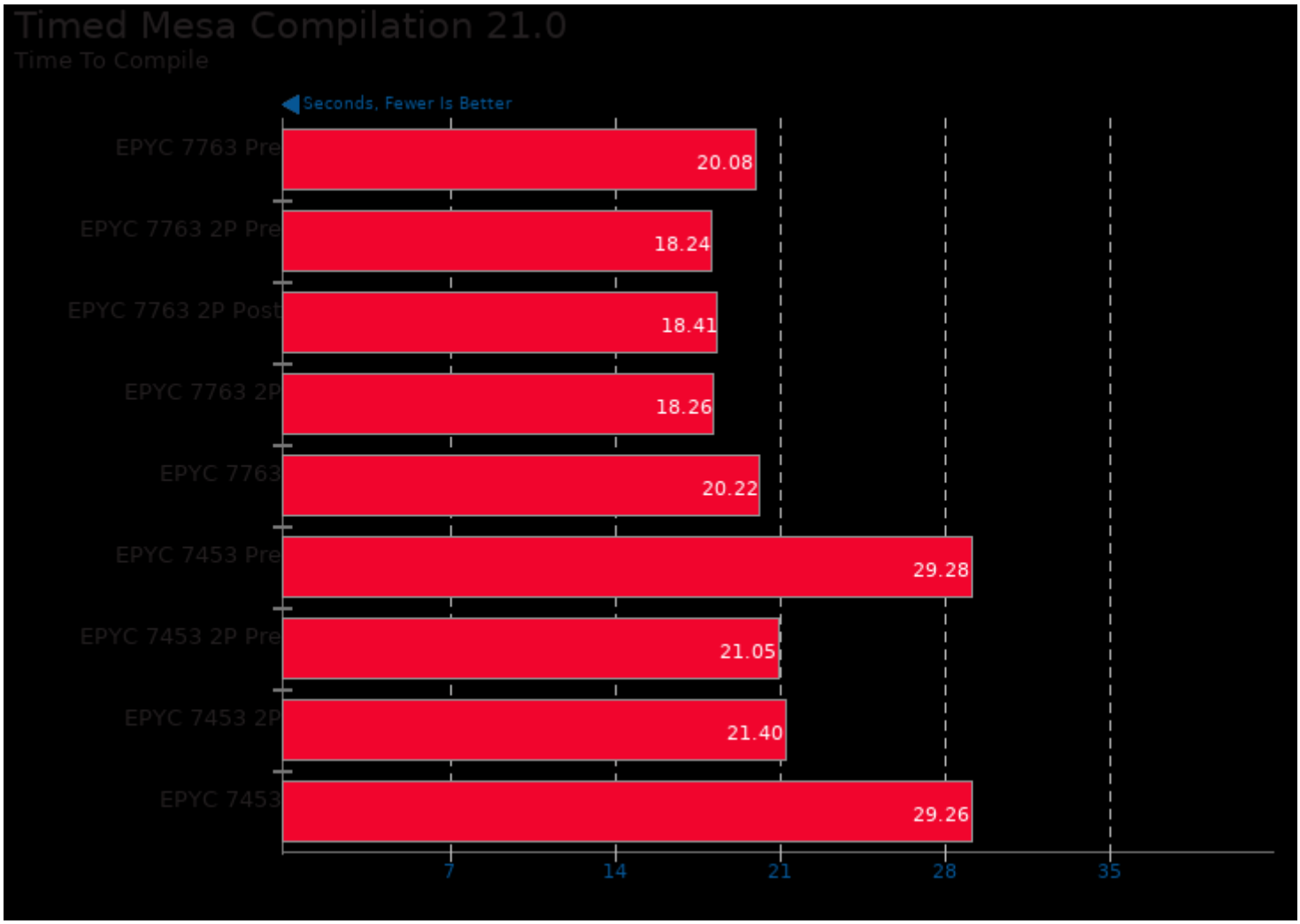
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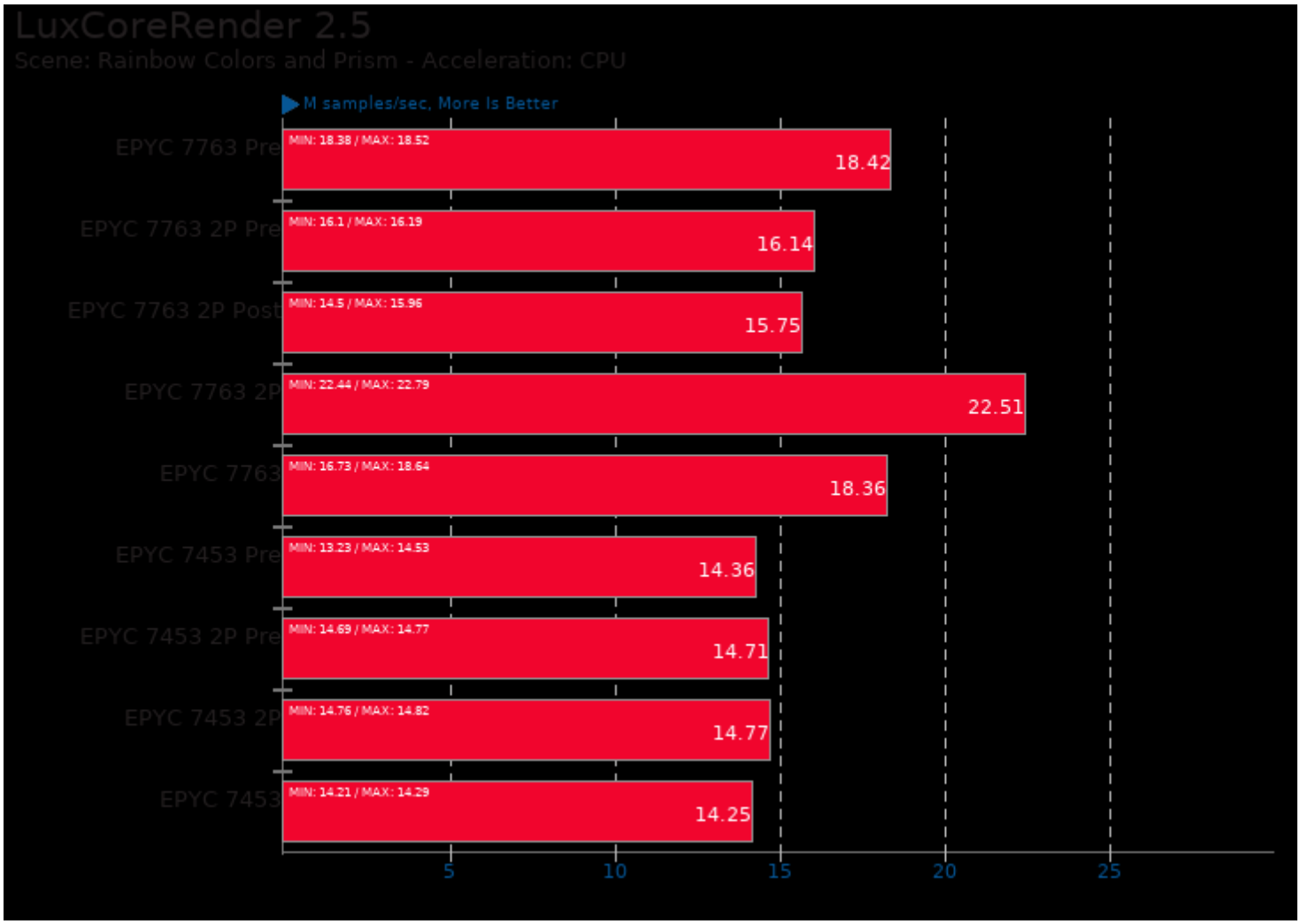
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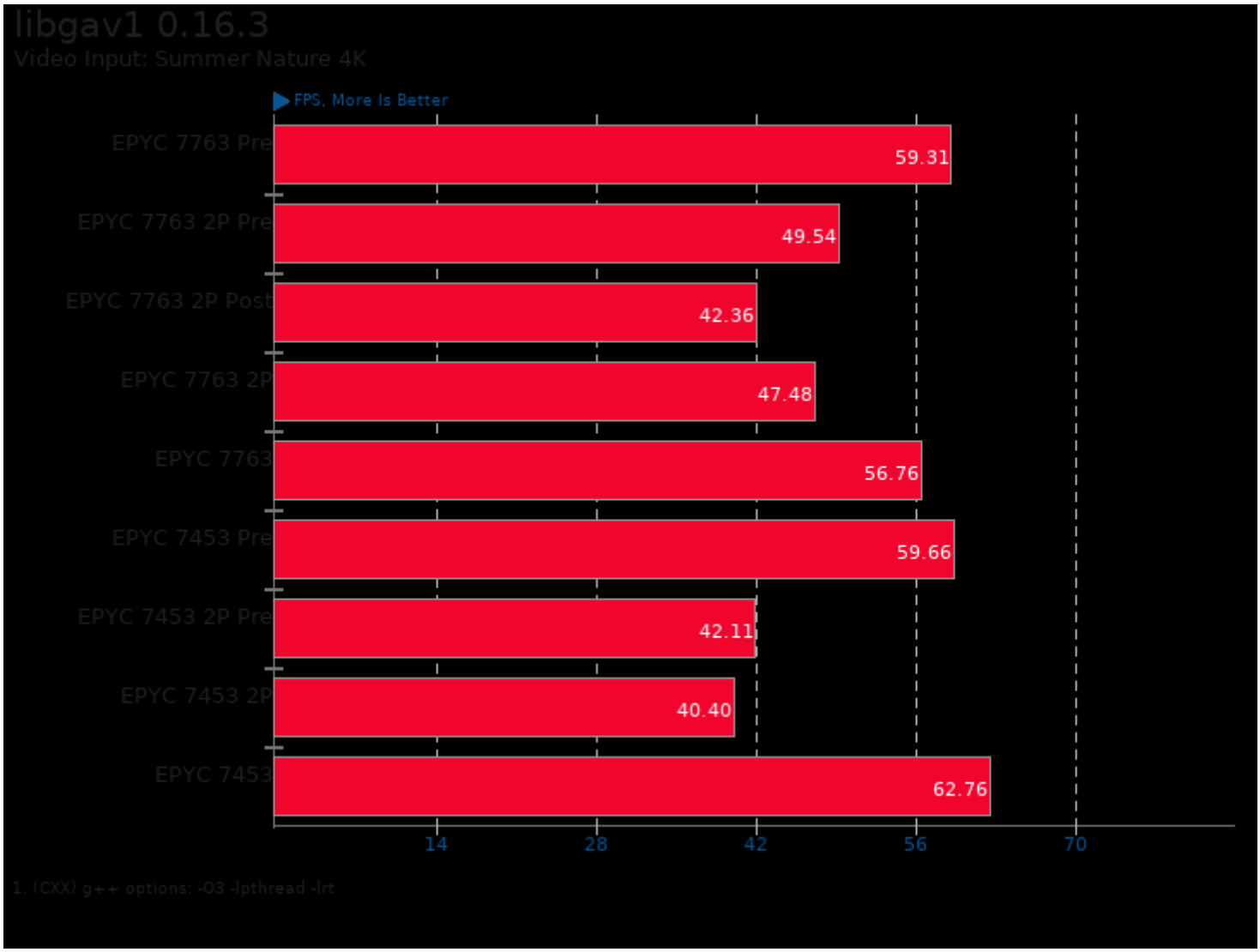
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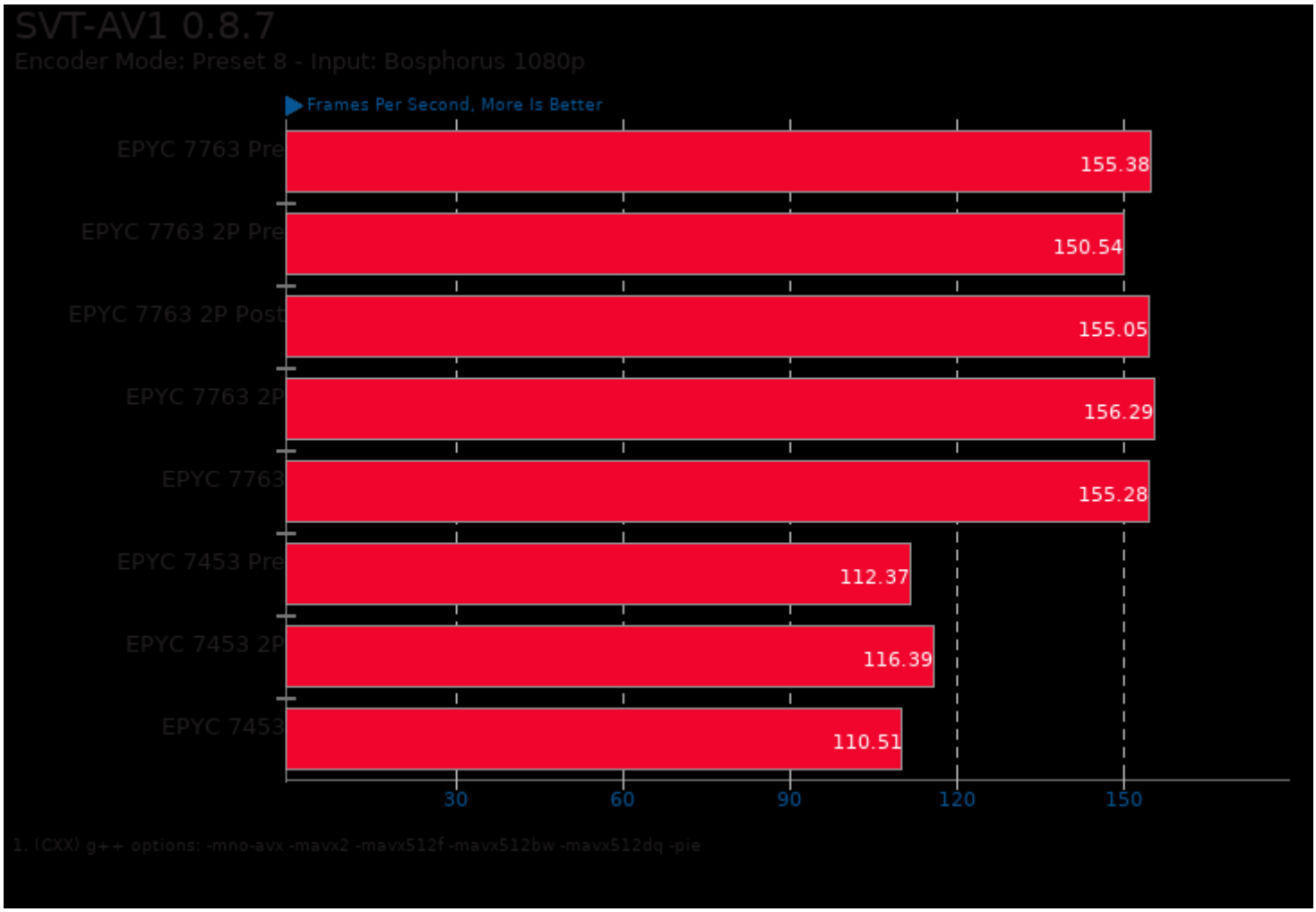
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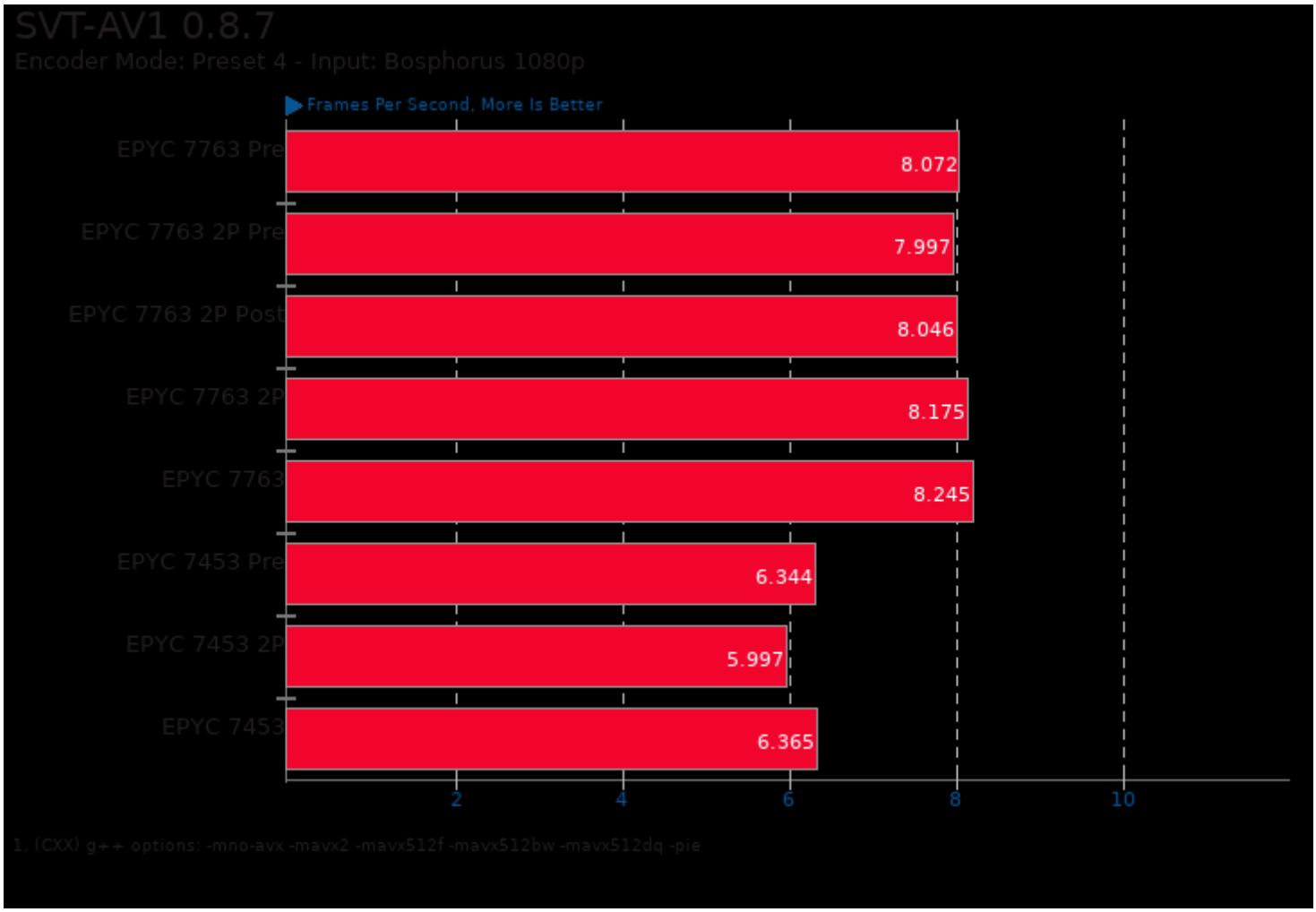
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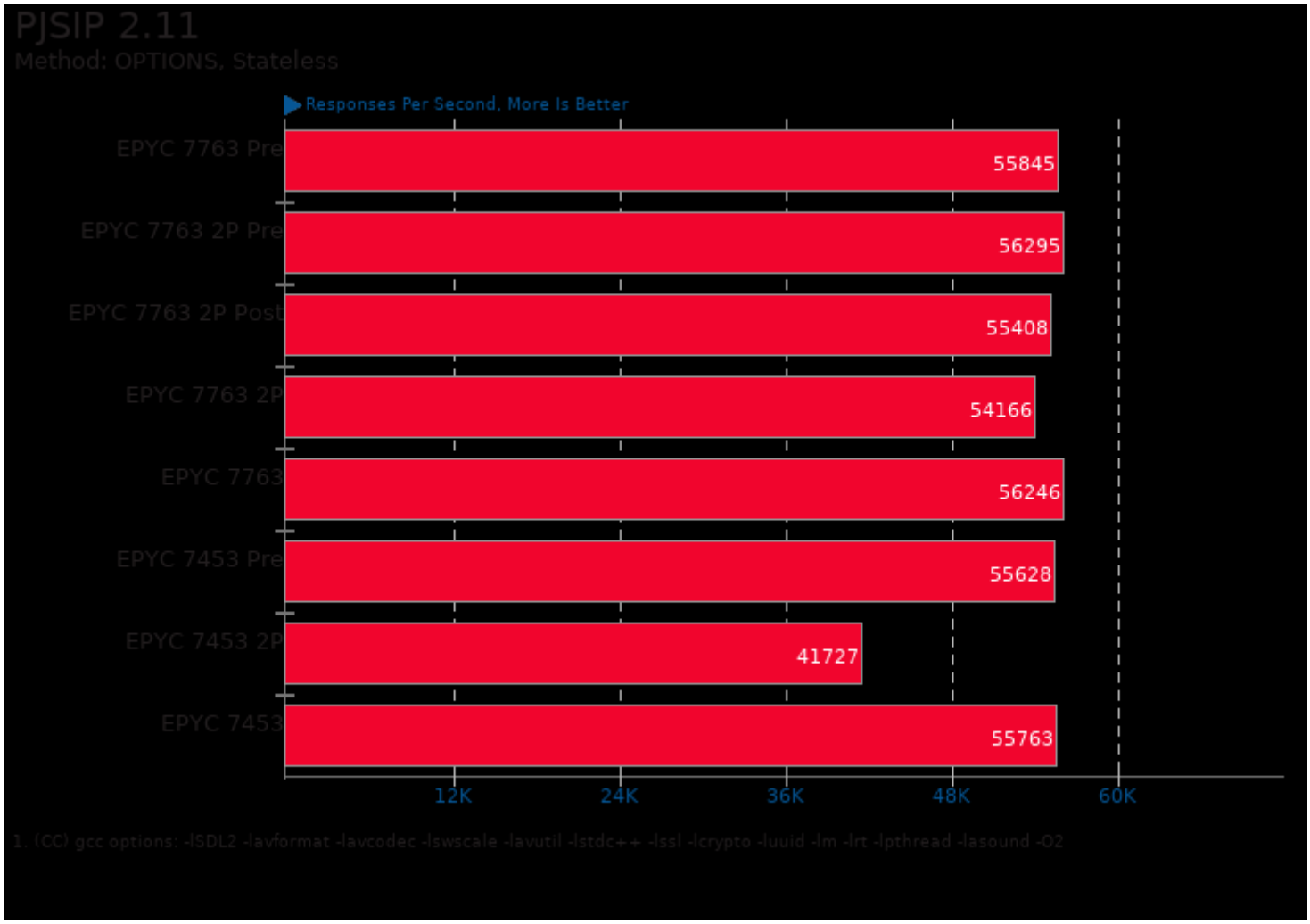
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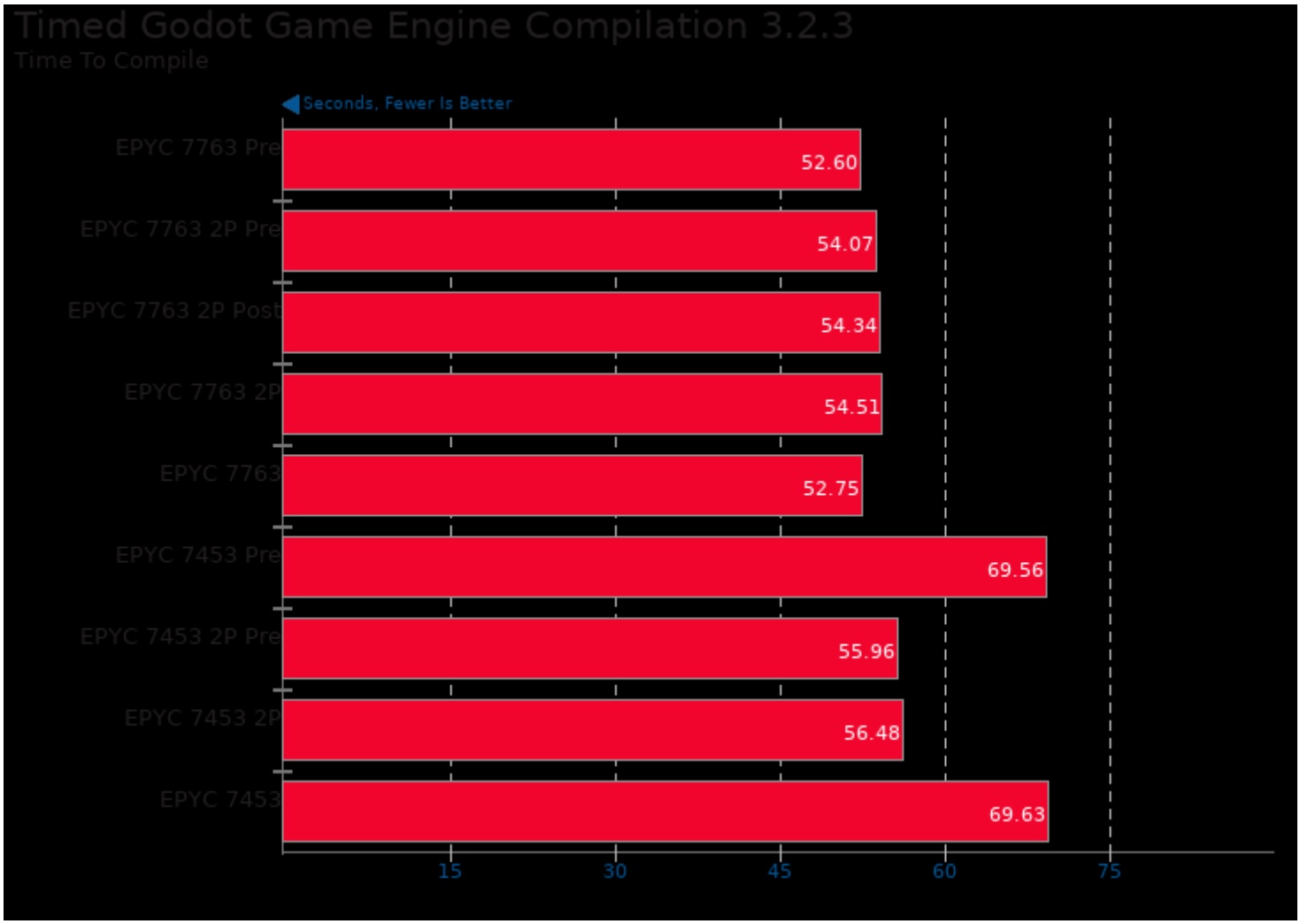


onerun-surplus

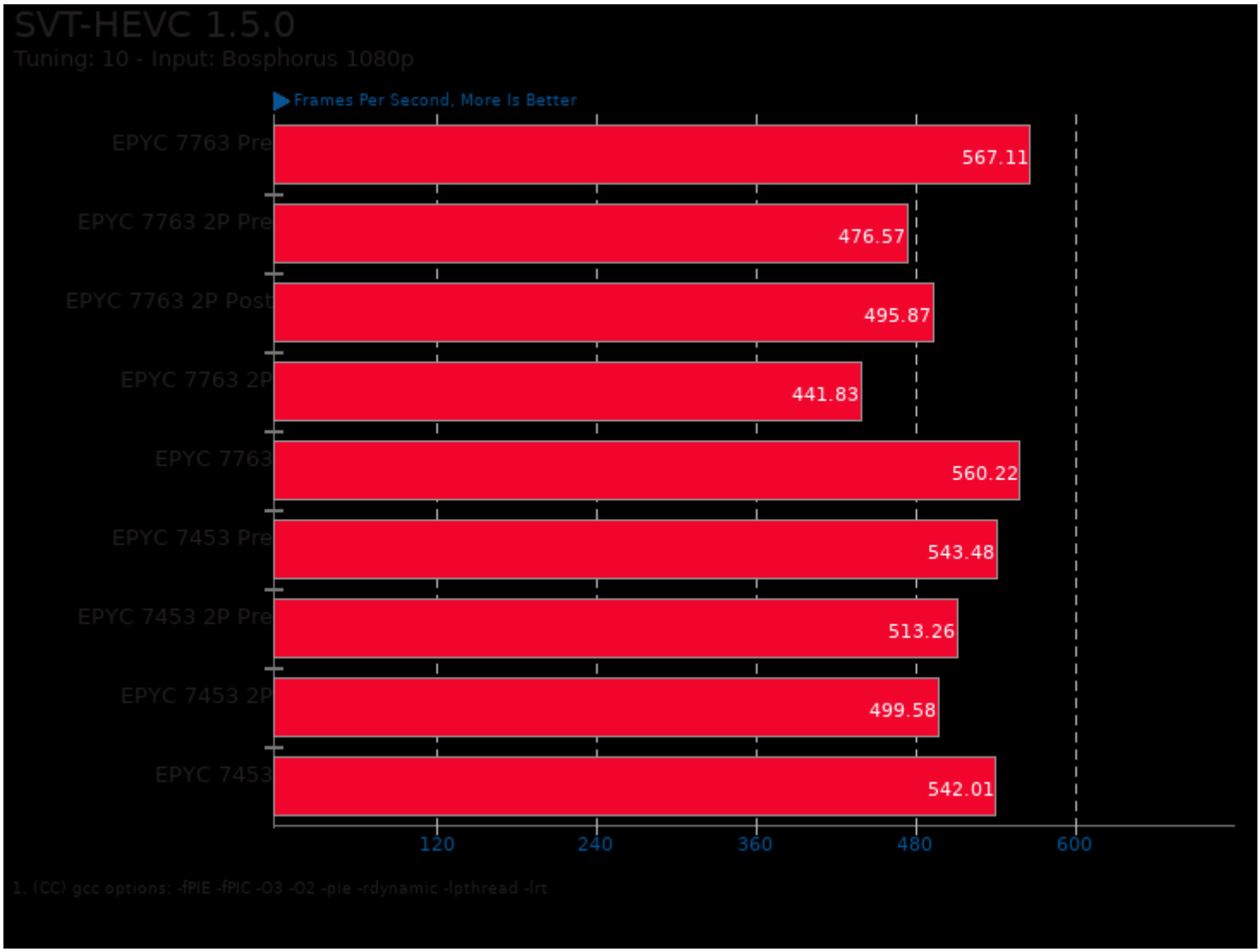


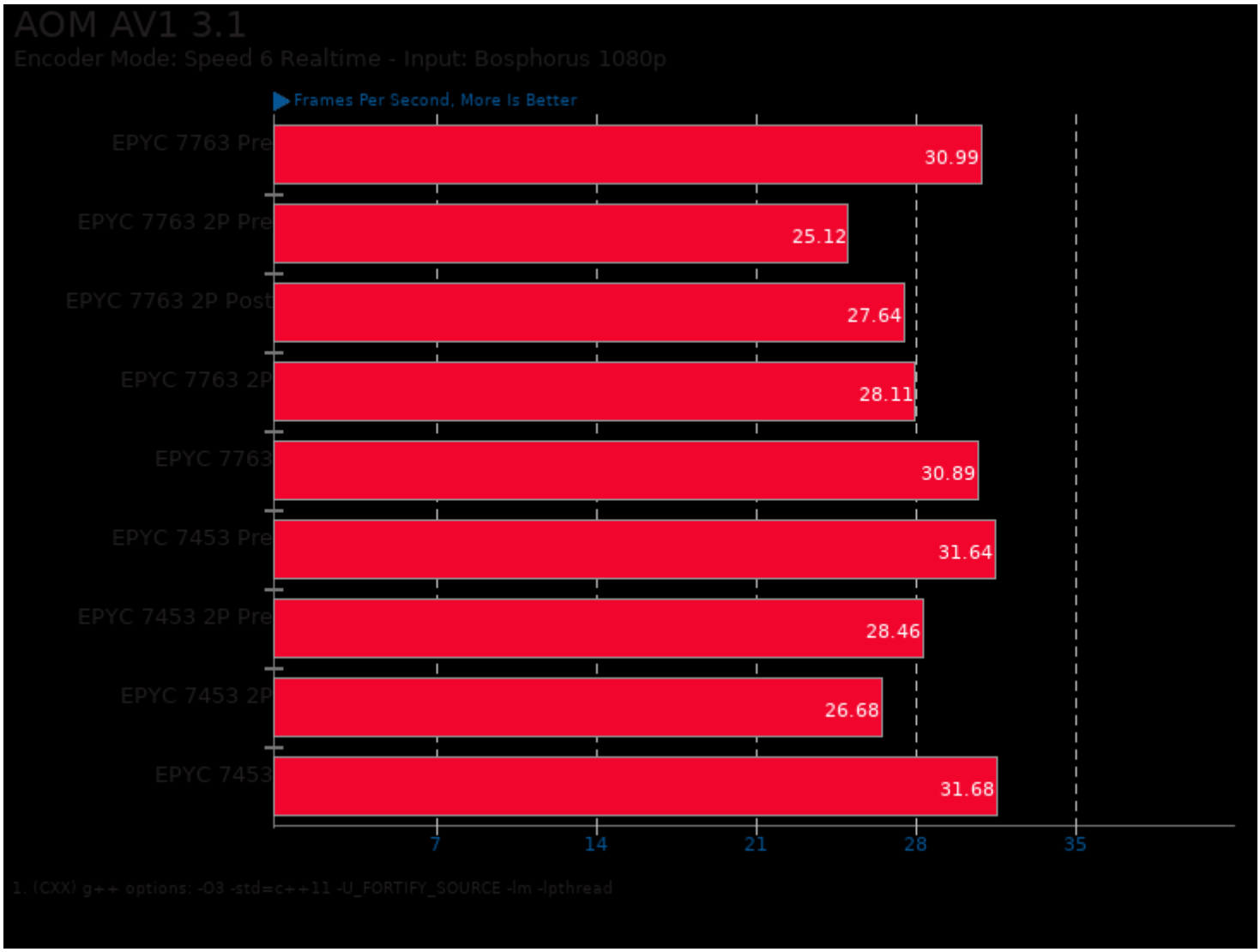
onerun-surplus



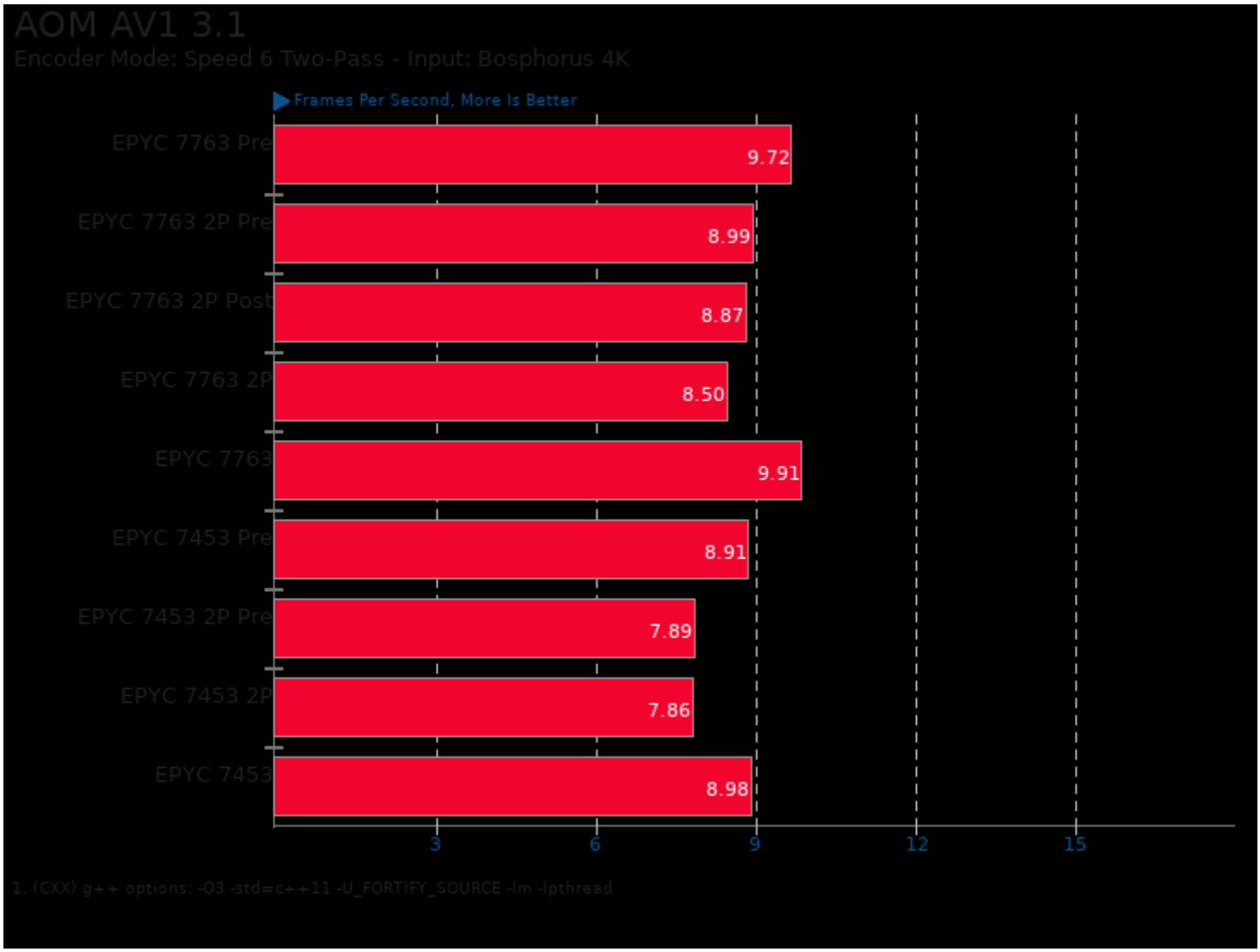

Timed Godot Game Engine Compilation 3.2.3
Time To Compile
Seconds, Fewer Is Better
EPYC 7763 Pre
52.60
EPYC 7763 2P Pre
54.07
EPYC 7763 2P Post
54.34
EPYC 7763 2P
54.51
EPYC 7763
52.75
EPYC 7453 Pre
69.56
EPYC 7453 2P Pre
55.96
EPYC 7453 2P
56.48
EPYC 7453
69.63
15
30
45
60
75

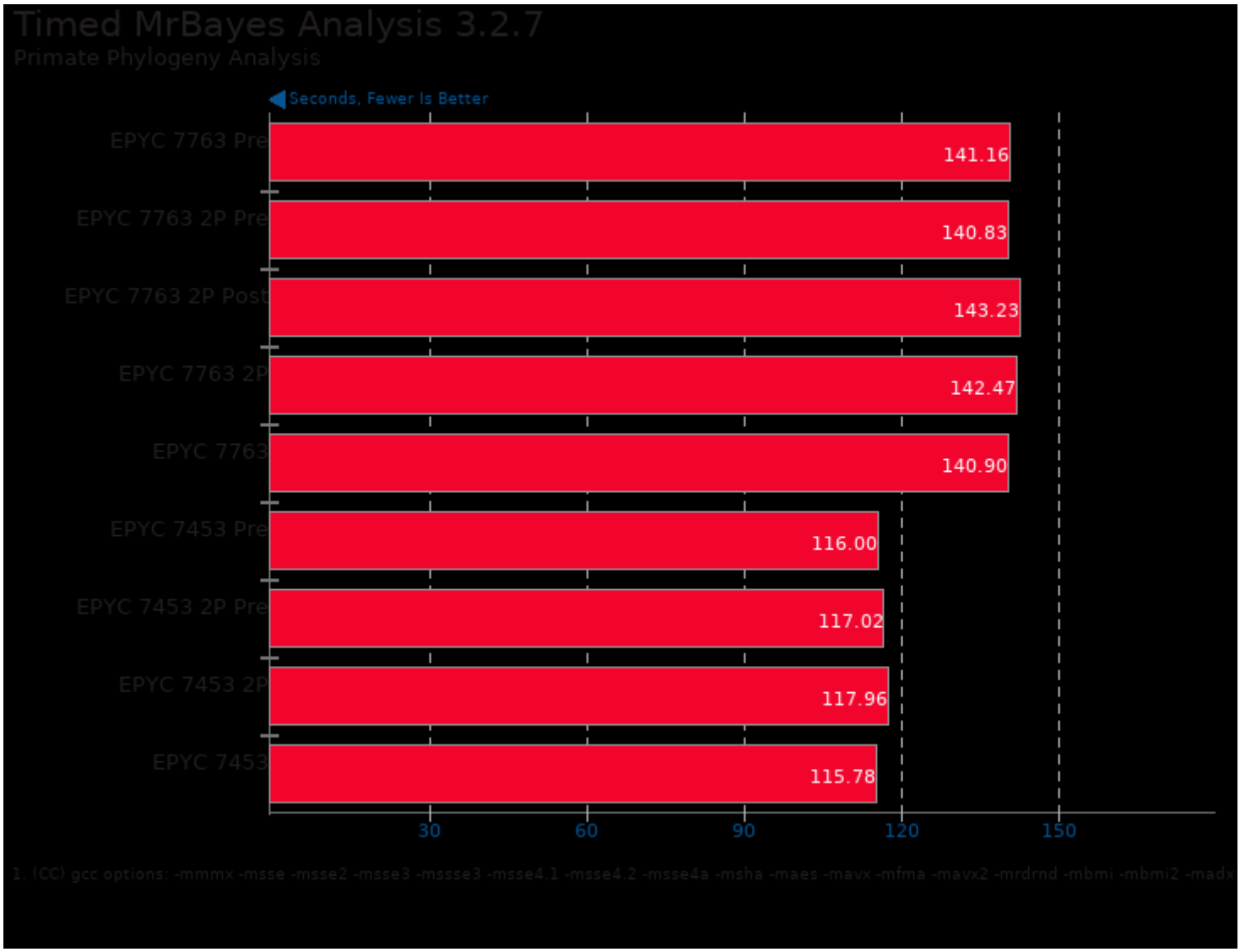
onerun-surplus

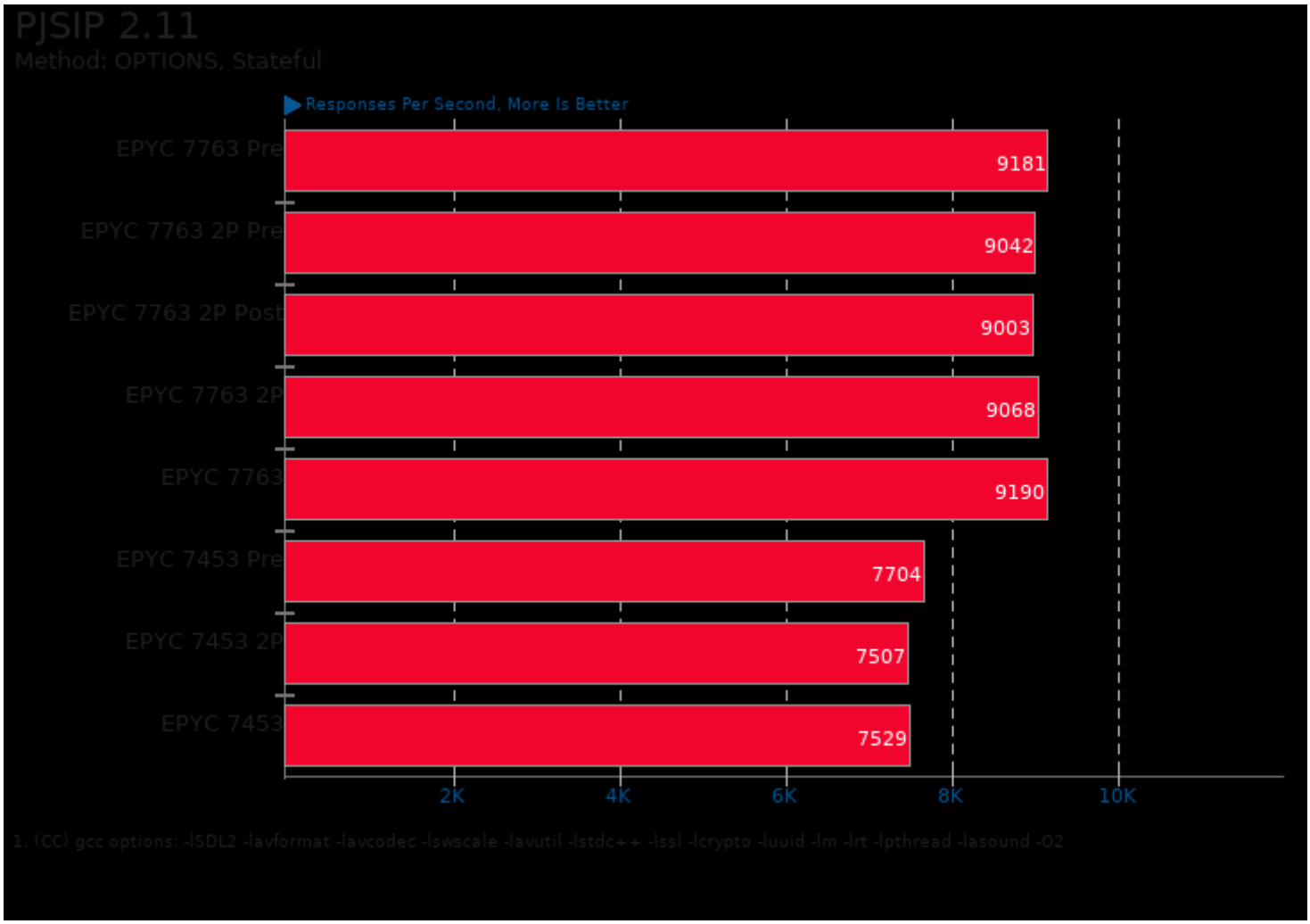



AOM AV1 3.1
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 1080p
Frames Per Second, More Is Better
EPYC 7763 Pre
30.99
EPYC 7763 2P Pre
25.12
EPYC 7763 2P Post
27.64
EPYC 7763 2P
28.11
EPYC 7763
30.89
EPYC 7453 Pre
31.64
EPYC 7453 2P Pre
28.46
EPYC 7453 2P
26.68
EPYC 7453
31.68
7
14
21
28
35
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

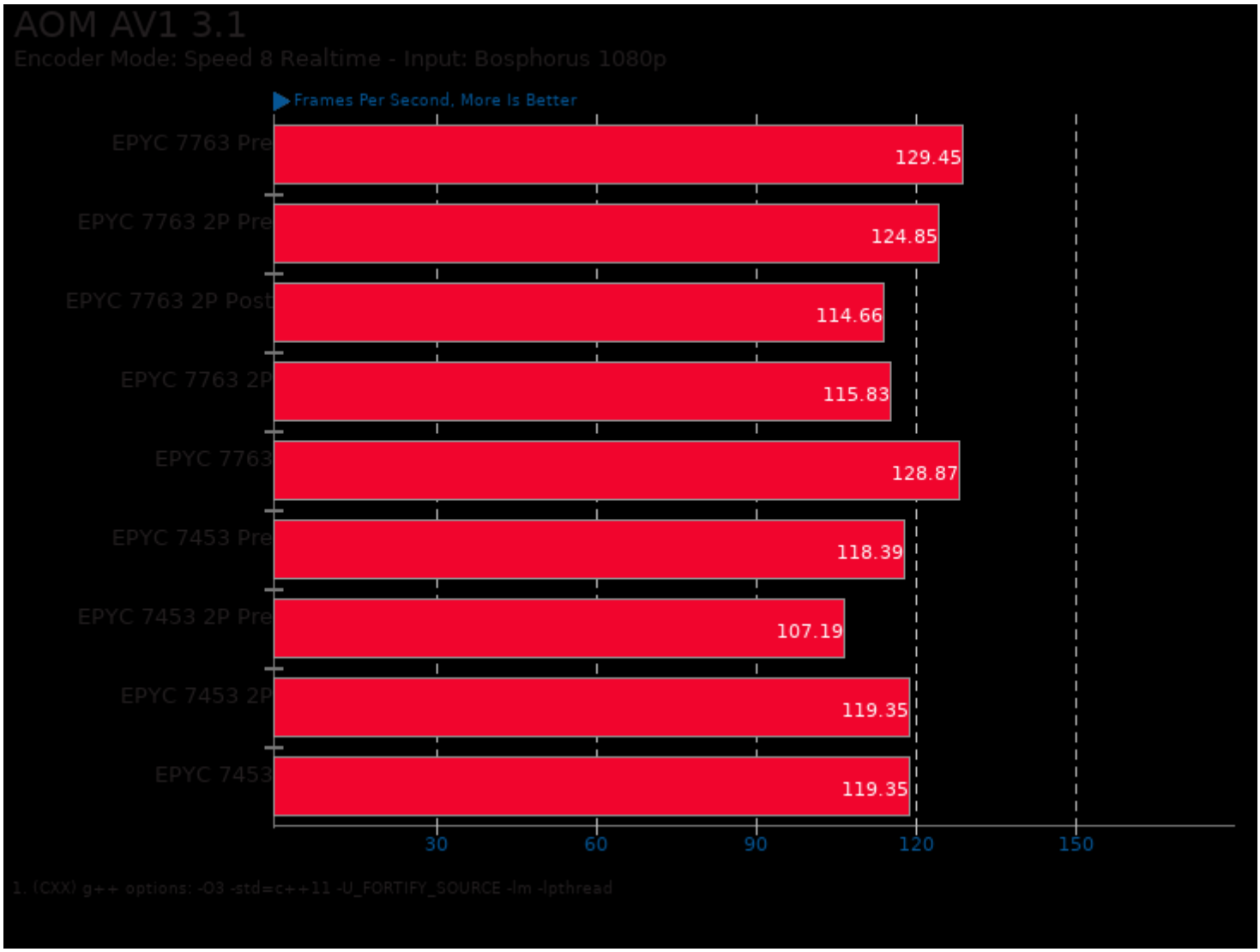
onerun-surplus



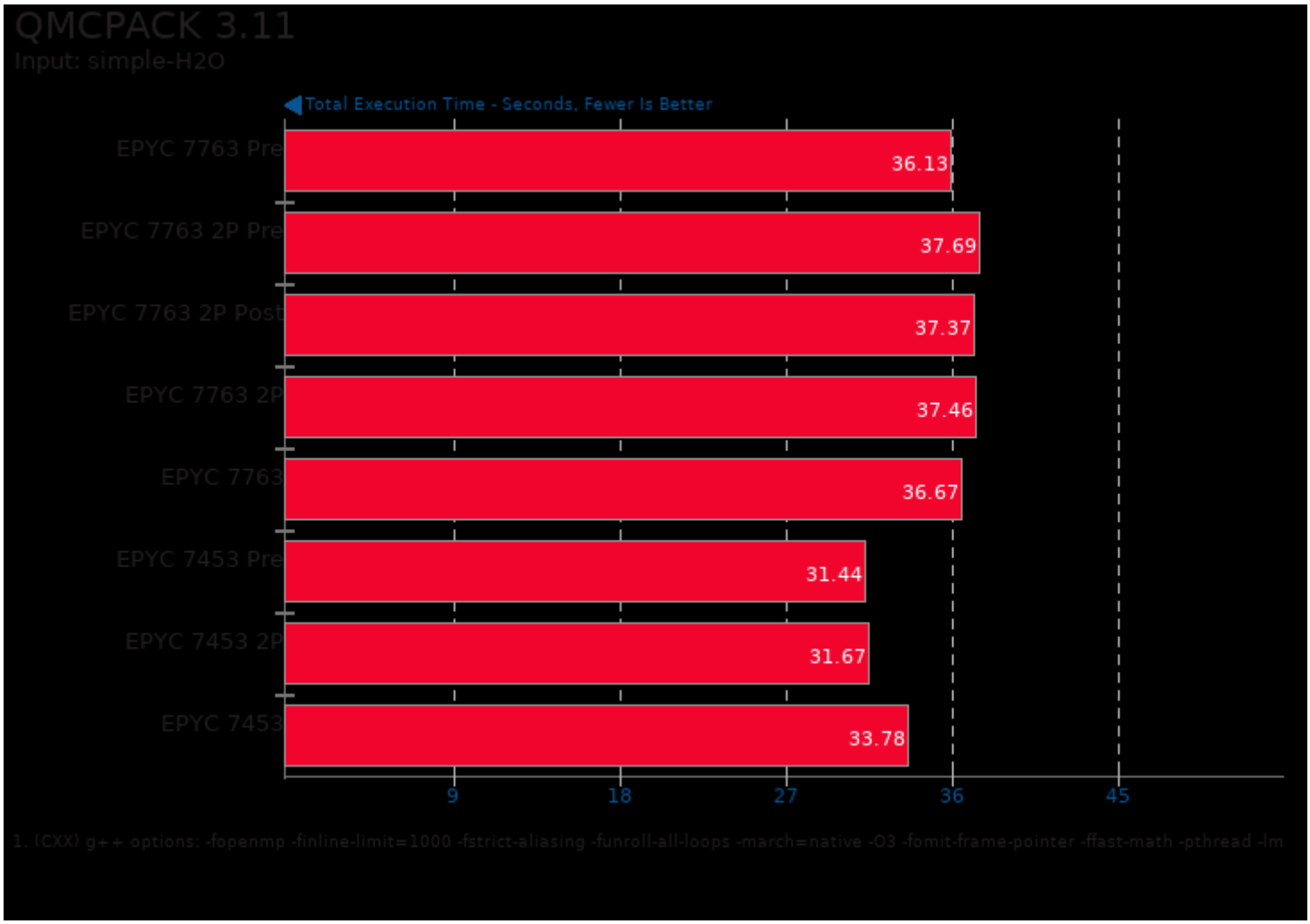

Timed MrBayes Analysis 3.2.7
Primate Phylogeny Analysis
Seconds, Fewer Is Better
EPYC 7763 Pre
EPYC 7763 2P Pre
EPYC 7763 2P Post
EPYC 7763 2P
EPYC 7763
EPYC 7453 Pre
EPYC 7453 2P Pre
EPYC 7453 2P
EPYC 7453
141.16
140.83
143.23
142.47
140.90
116.00
117.02
117.96
115.78
30
60
90
120
150
1. (CC) gcc options: -mmmx -msse -msse2 -msse3 -mssse3 -msse4.1 -msse4.2 -msse4a -msha -maes -mavx -mfma -mavx2 -mrdrnd -mbmi -mbmi2 -madx


PJSIP 2.11
Method: OPTIONS, Stateful
Responses Per Second, More Is Better
EPYC 7763 Pre
9181
EPYC 7763 2P Pre
9042
EPYC 7763 2P Post
9003
EPYC 7763 2P
9068
EPYC 7763
9190
EPYC 7453 Pre
7704
EPYC 7453 2P
7507
EPYC 7453
7529
2K
4K
6K
8K
10K
1. (CC) gcc options: -lSDL2 -lavformat -lavcodec -lswscale -lavutil -lstdc++ -lssl -lcrypto -luuid -lm -lrt -lpthread -lasound -O2

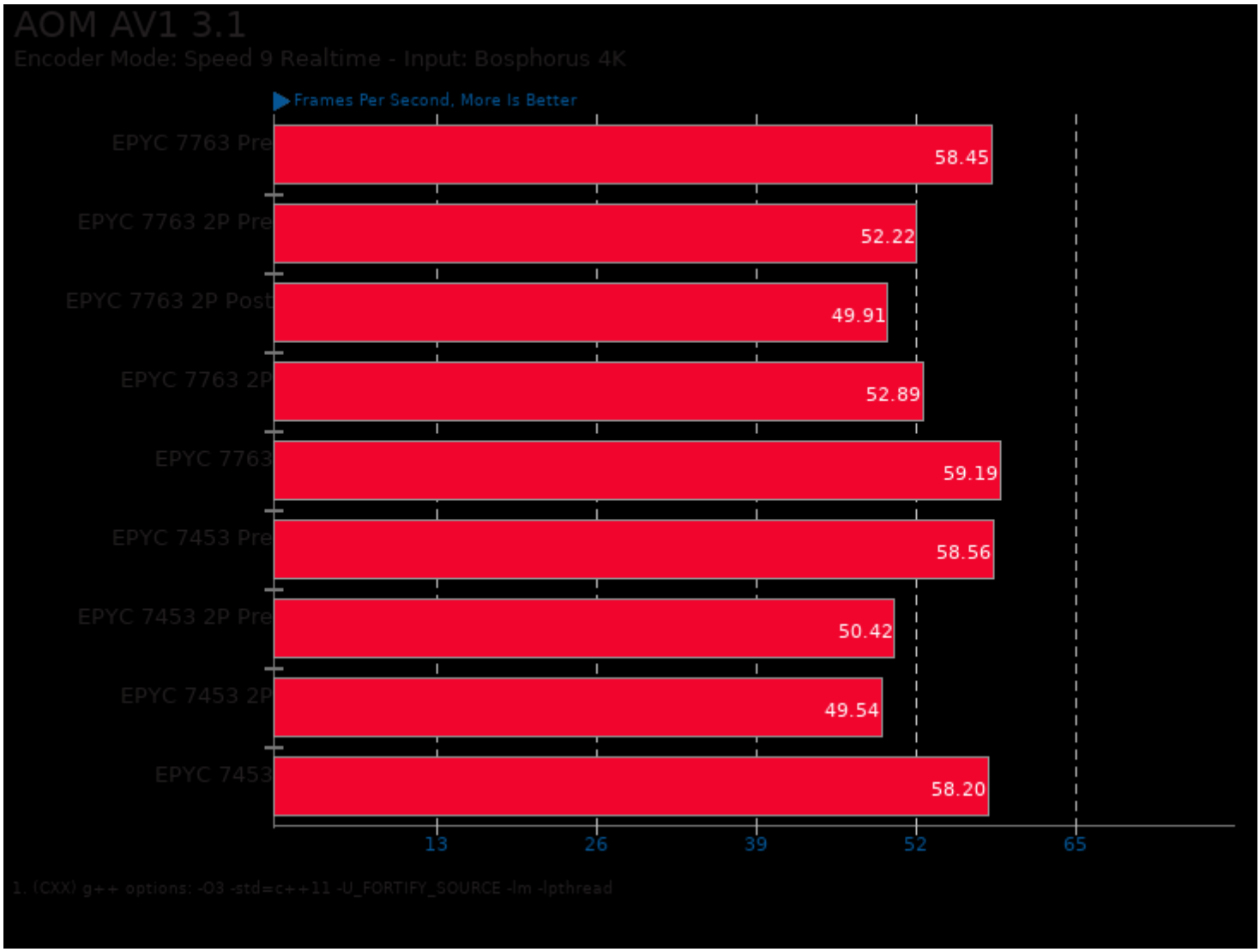
onerun-surplus



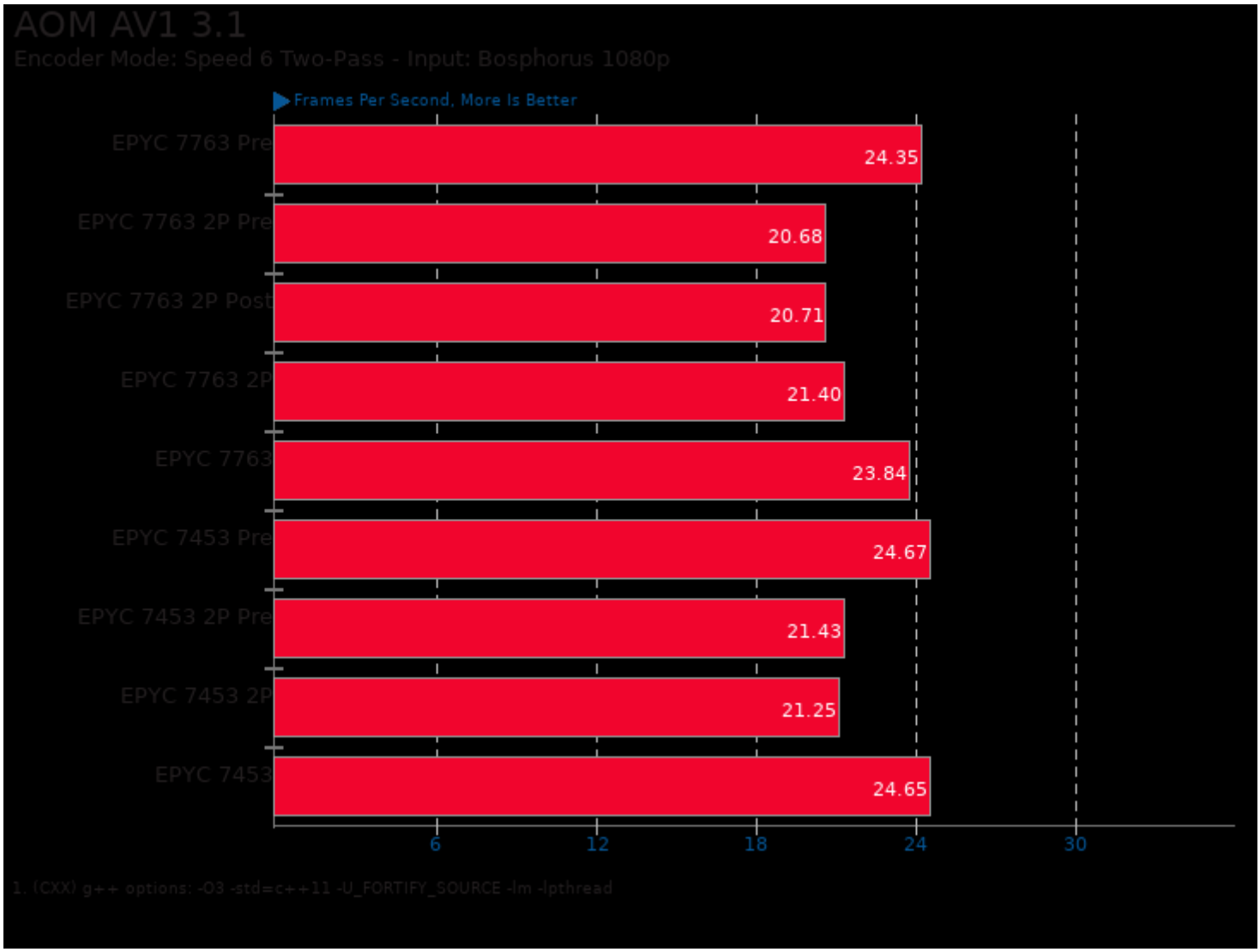
onerun-surplus



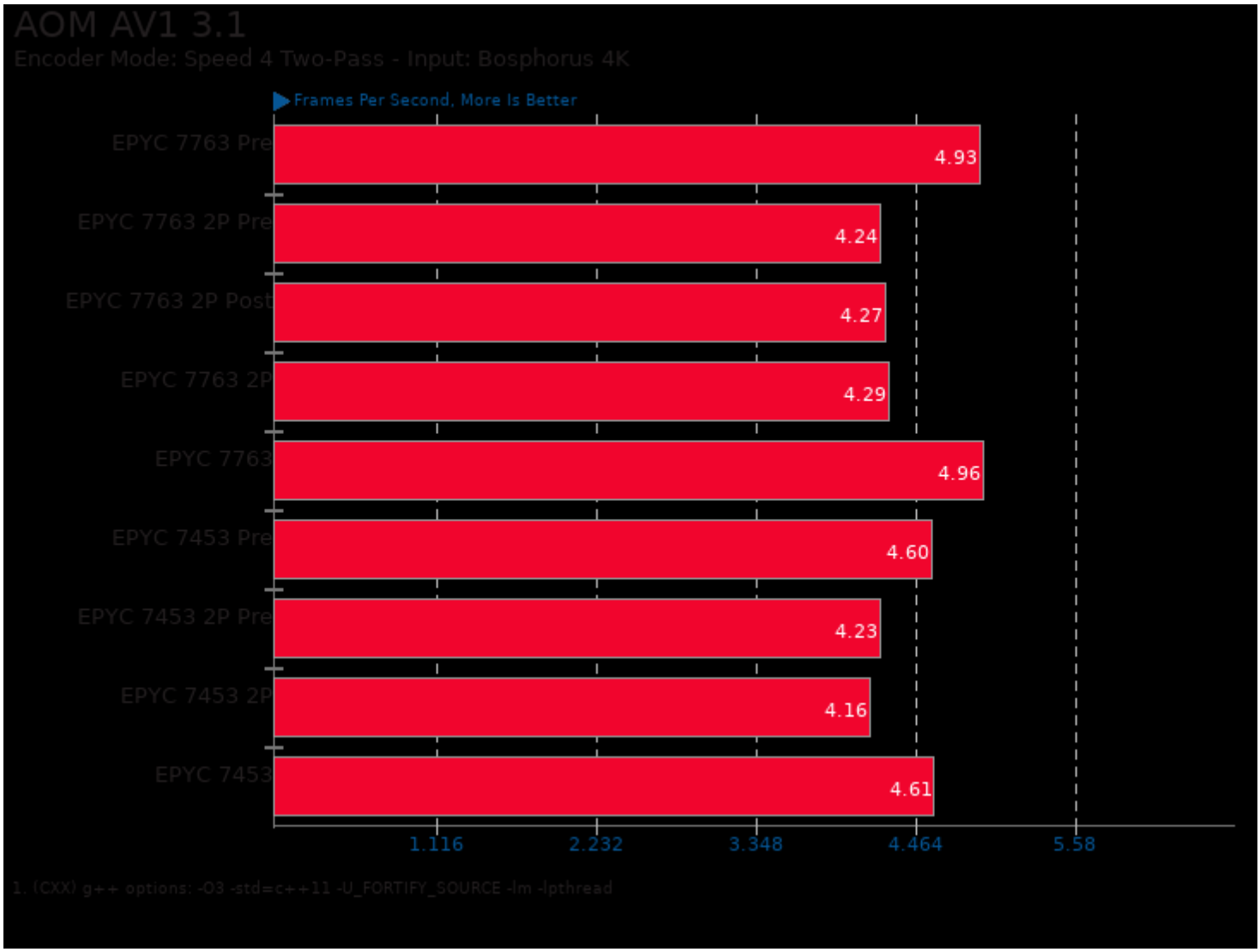
onerun-surplus

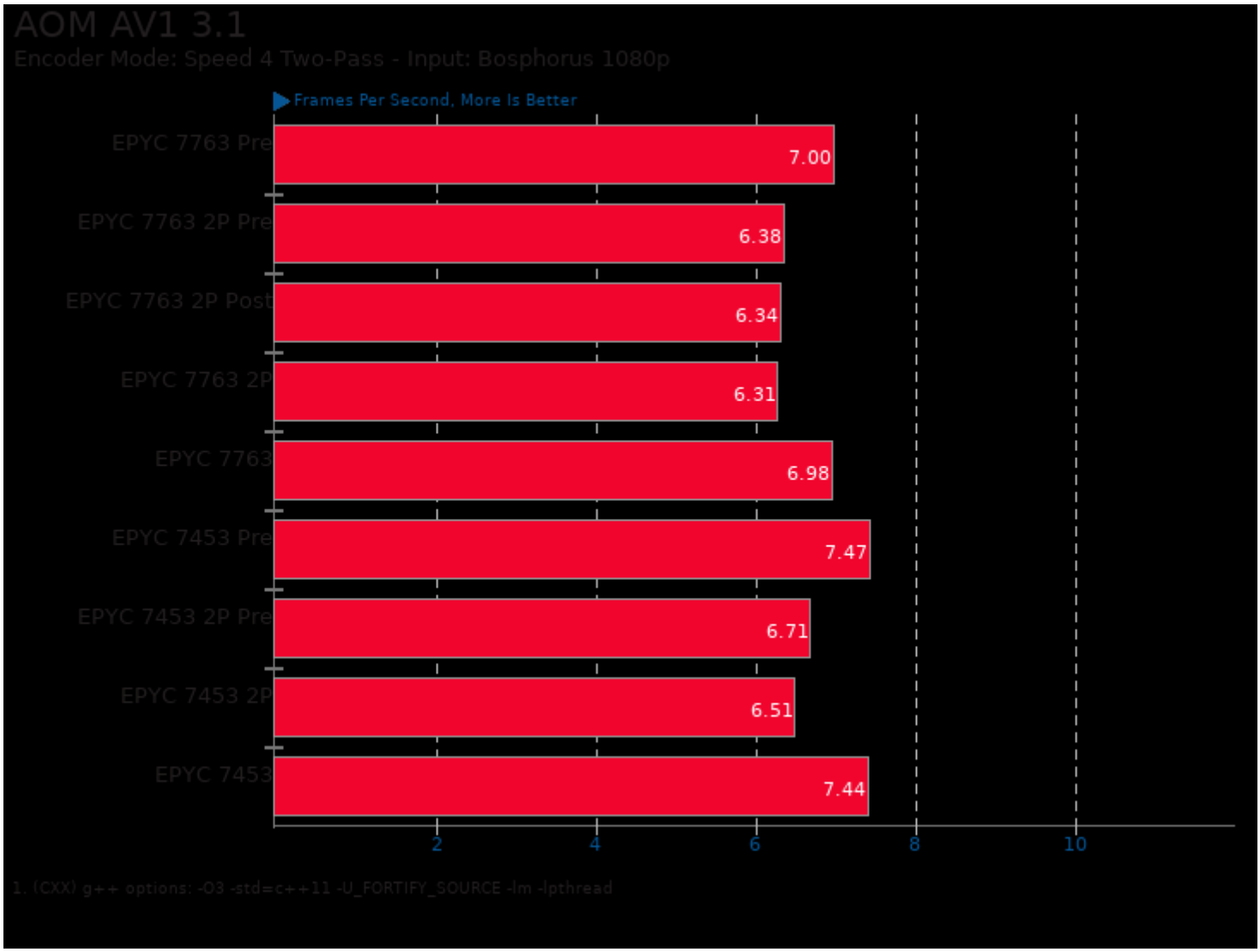


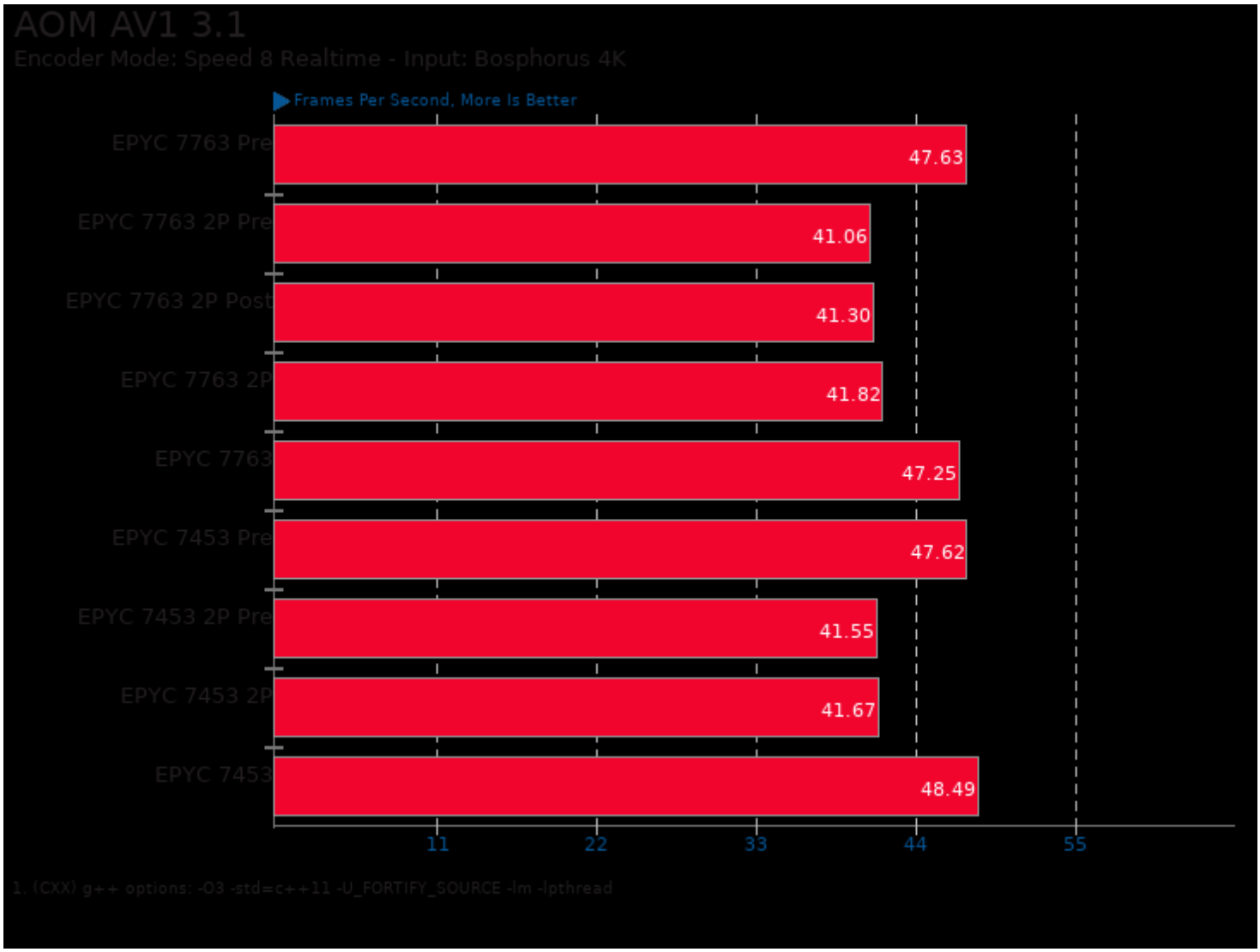
onerun-surplus



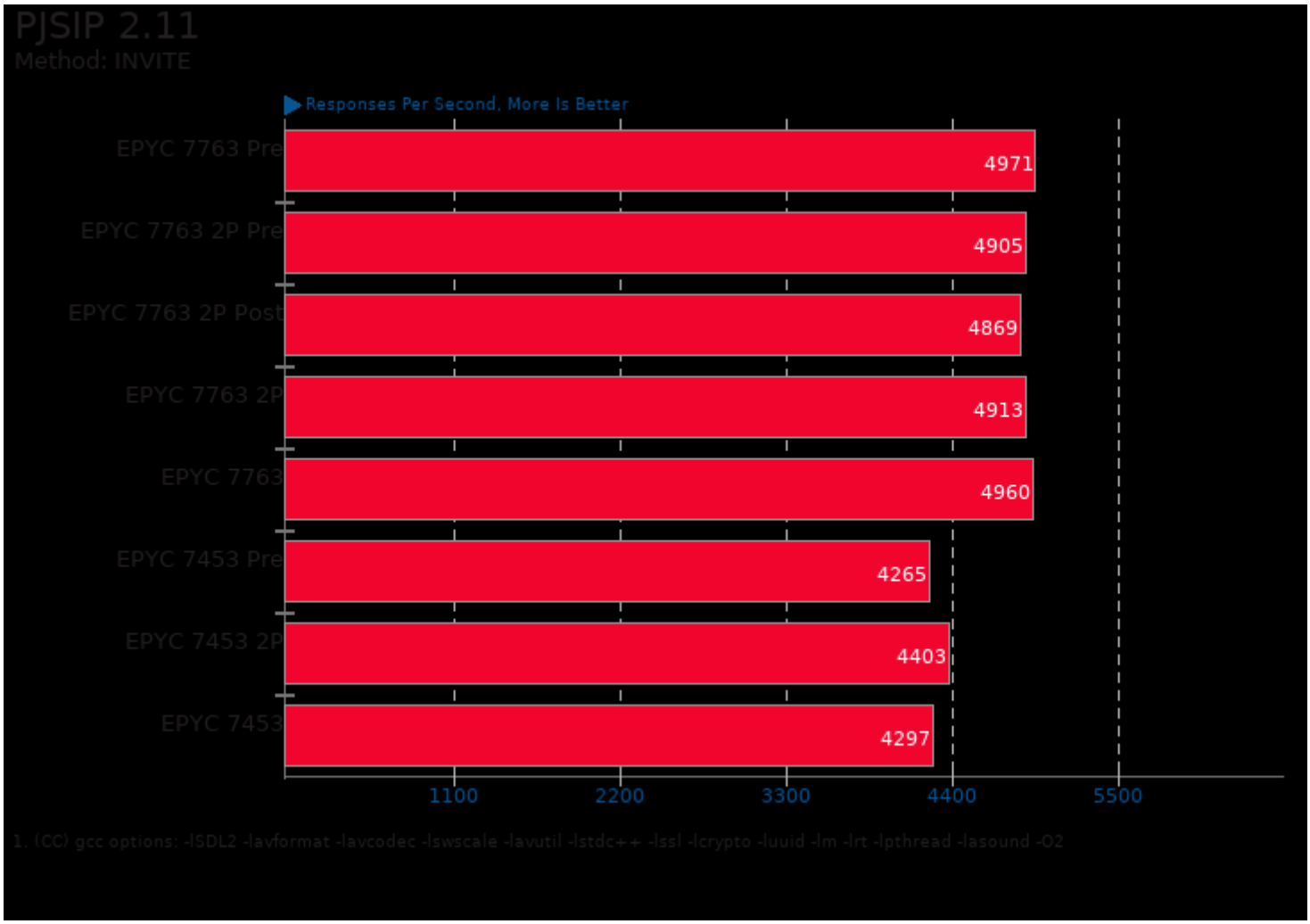
onerun-surplus

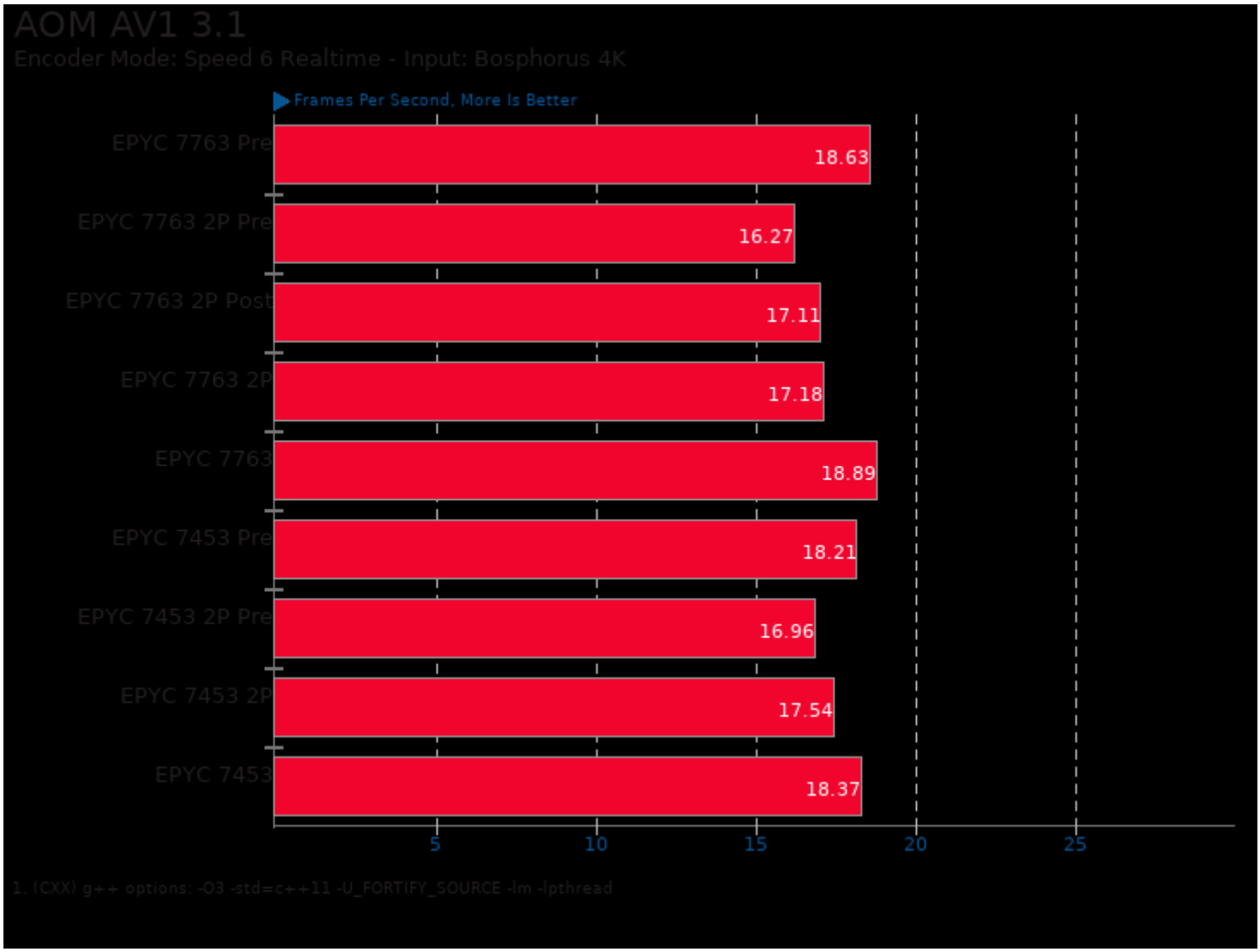



AOM AV1 3.1
Encoder Mode: Speed 4 Two-Pass - Input: Bosphorus 1080p
Frames Per Second, More Is Better
EPYC 7763 Pre
7.00
EPYC 7763 2P Pre
6.38
EPYC 7763 2P Post
6.34
EPYC 7763 2P
6.31
EPYC 7763
6.98
EPYC 7453 Pre
7.47
EPYC 7453 2P Pre
6.71
EPYC 7453 2P
6.51
EPYC 7453
7.44
2
4
6
8
10
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

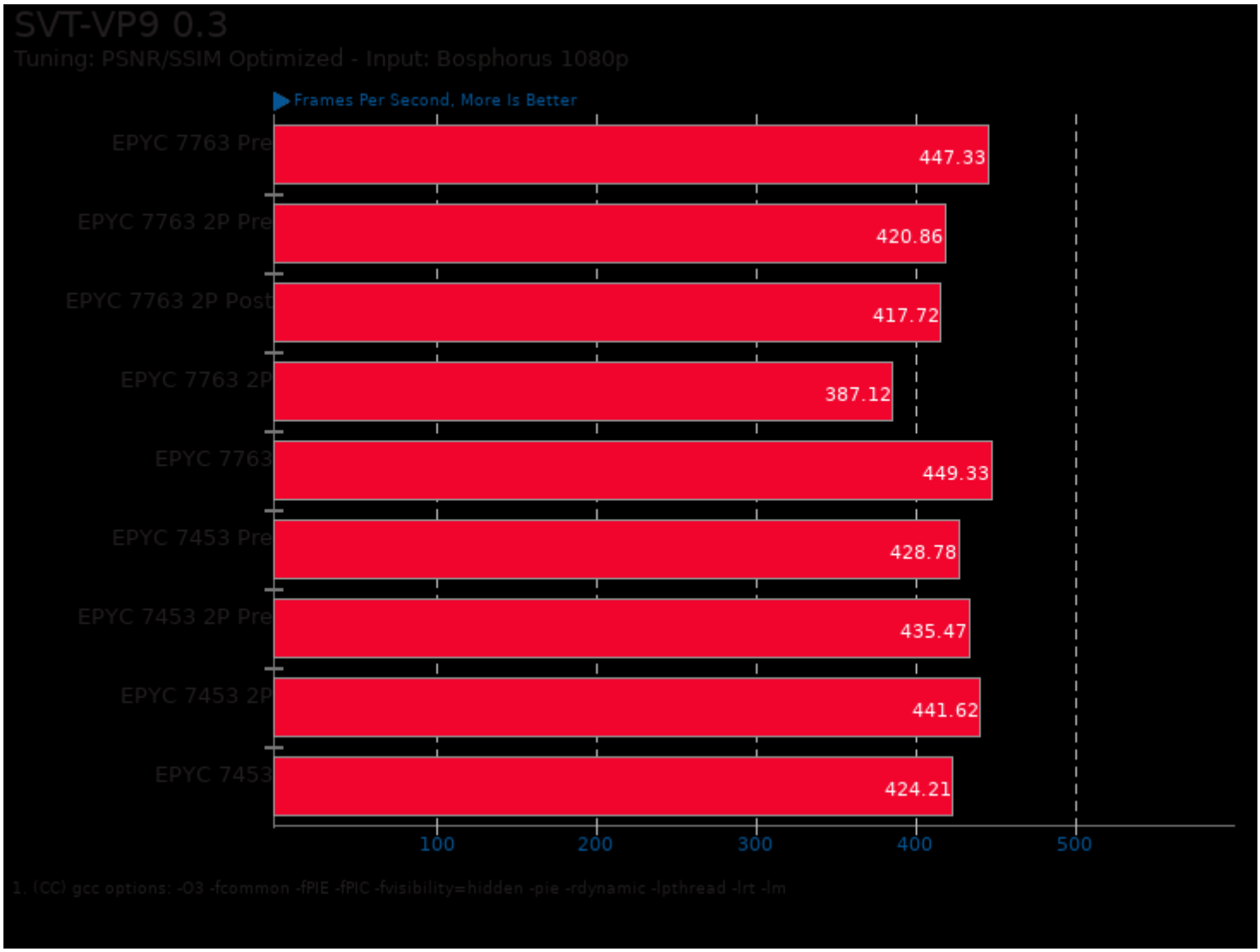

AOM AV1 3.1
Encoder Mode: Speed 8 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
EPYC 7763 Pre
47.63
EPYC 7763 2P Pre
41.06
EPYC 7763 2P Post
41.30
EPYC 7763 2P
41.82
EPYC 7763
47.25
EPYC 7453 Pre
47.62
EPYC 7453 2P Pre
41.55
EPYC 7453 2P
41.67
EPYC 7453
48.49
11
22
33
44
55
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

onerun-surplus

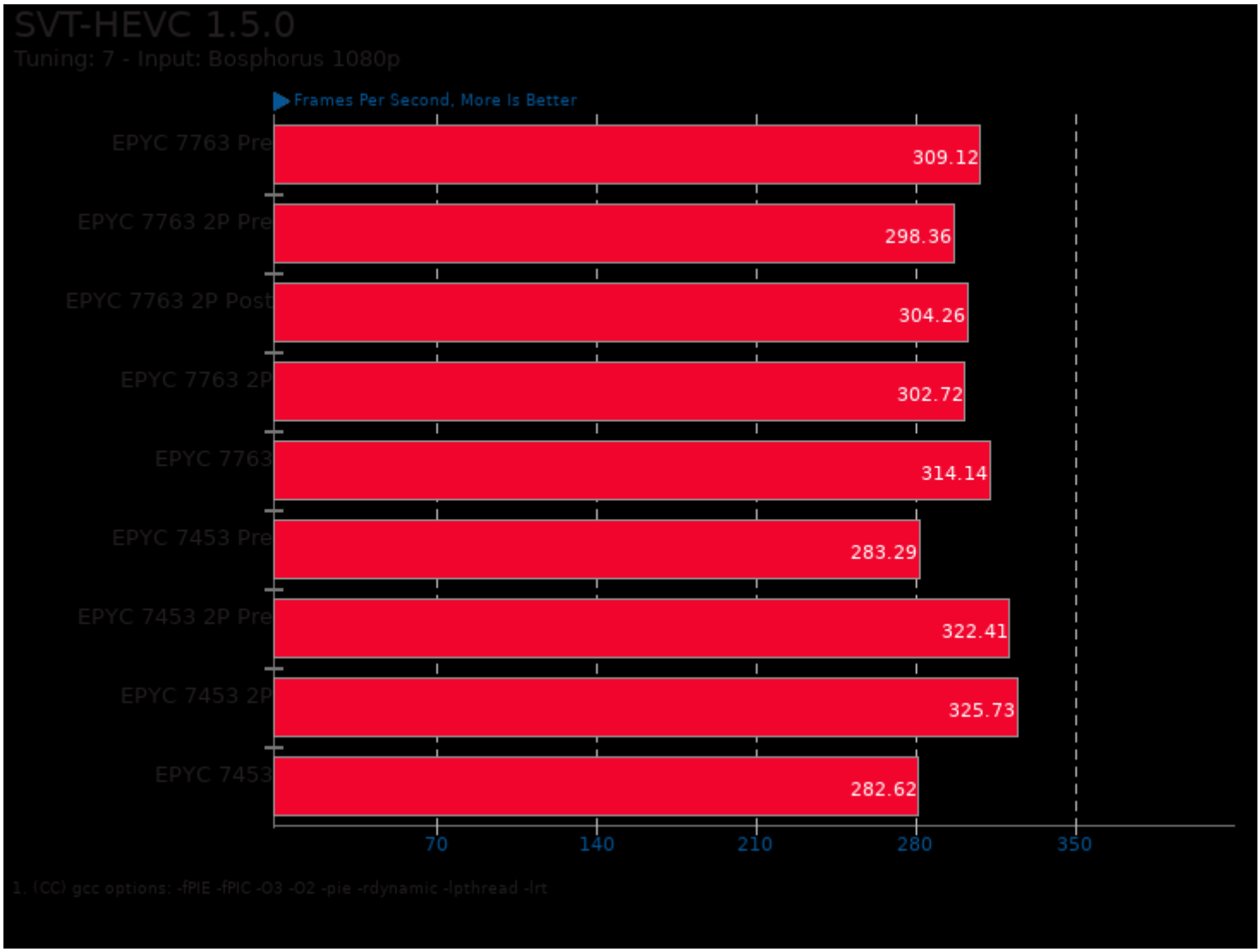


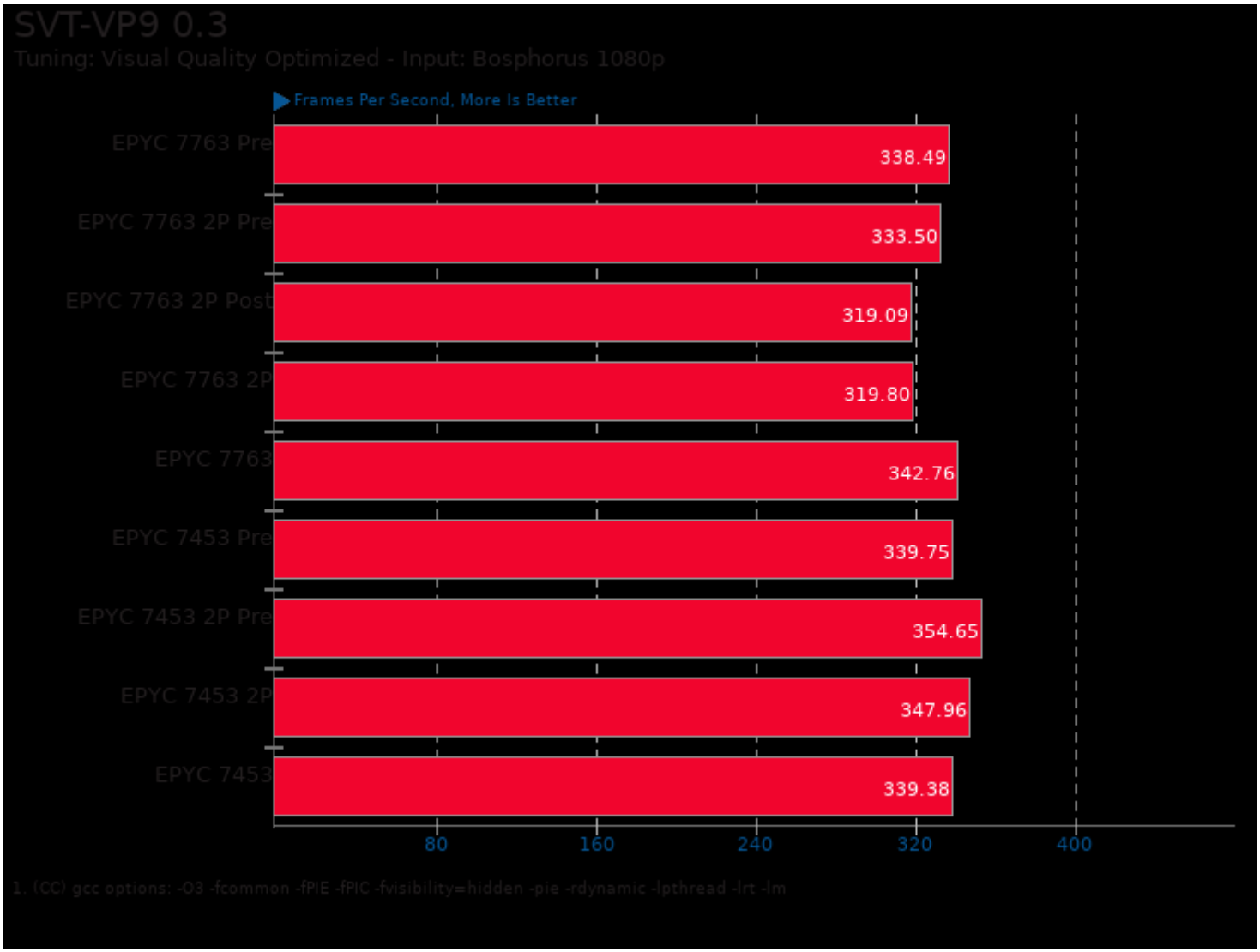

AOM AV1 3.1
Encoder Mode: Speed 6 Realtime - Input: Bosphorus 4K
Frames Per Second, More Is Better
EPYC 7763 Pre
18.63
EPYC 7763 2P Pre
16.27
EPYC 7763 2P Post
17.11
EPYC 7763 2P
17.18
EPYC 7763
18.89
EPYC 7453 Pre
18.21
EPYC 7453 2P Pre
16.96
EPYC 7453 2P
17.54
EPYC 7453
18.37
5
10
15
20
25
1. (CXX) g++ options: -O3 -std=c++11 -U_FORTIFY_SOURCE -lm -lpthread

onerun-surplus

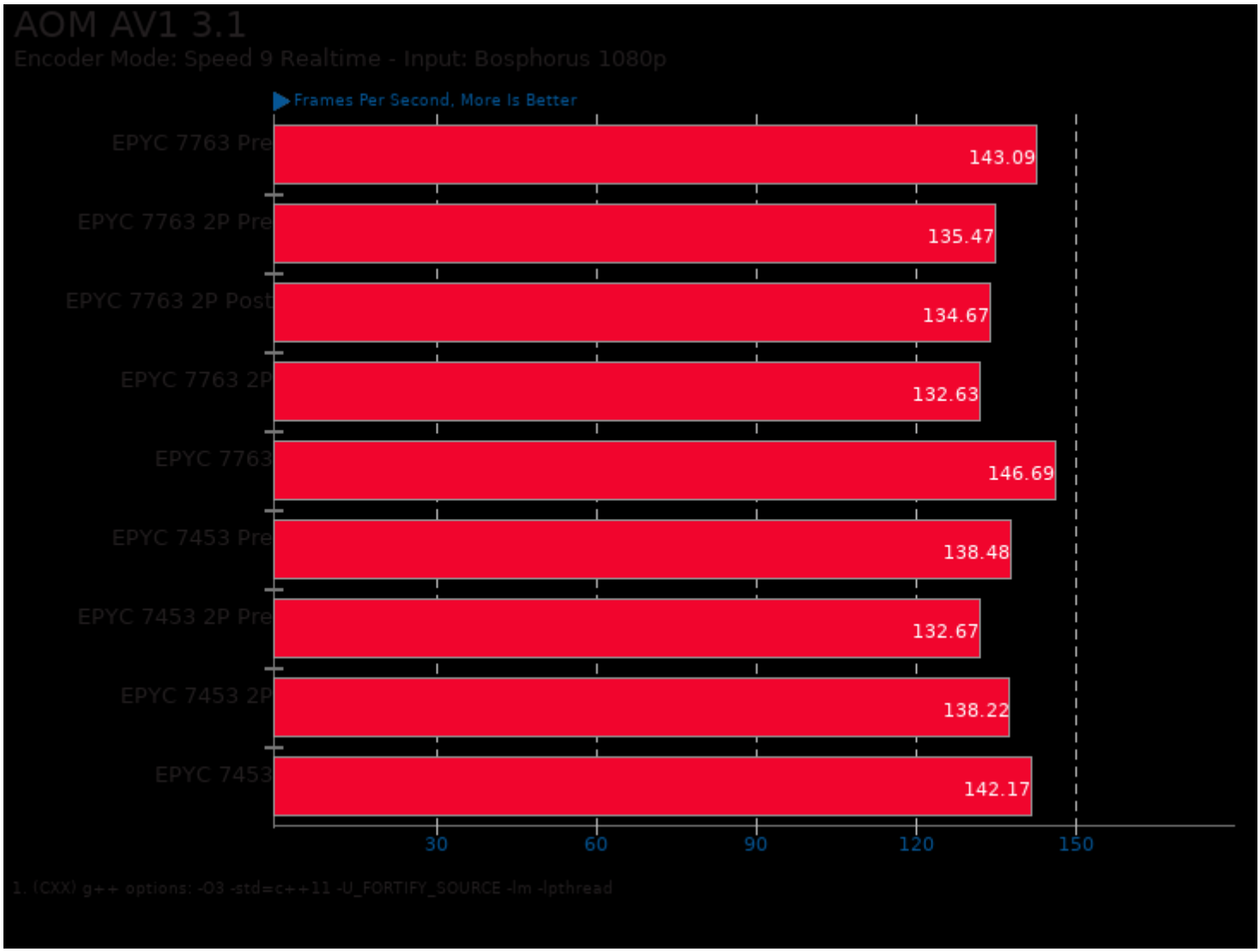


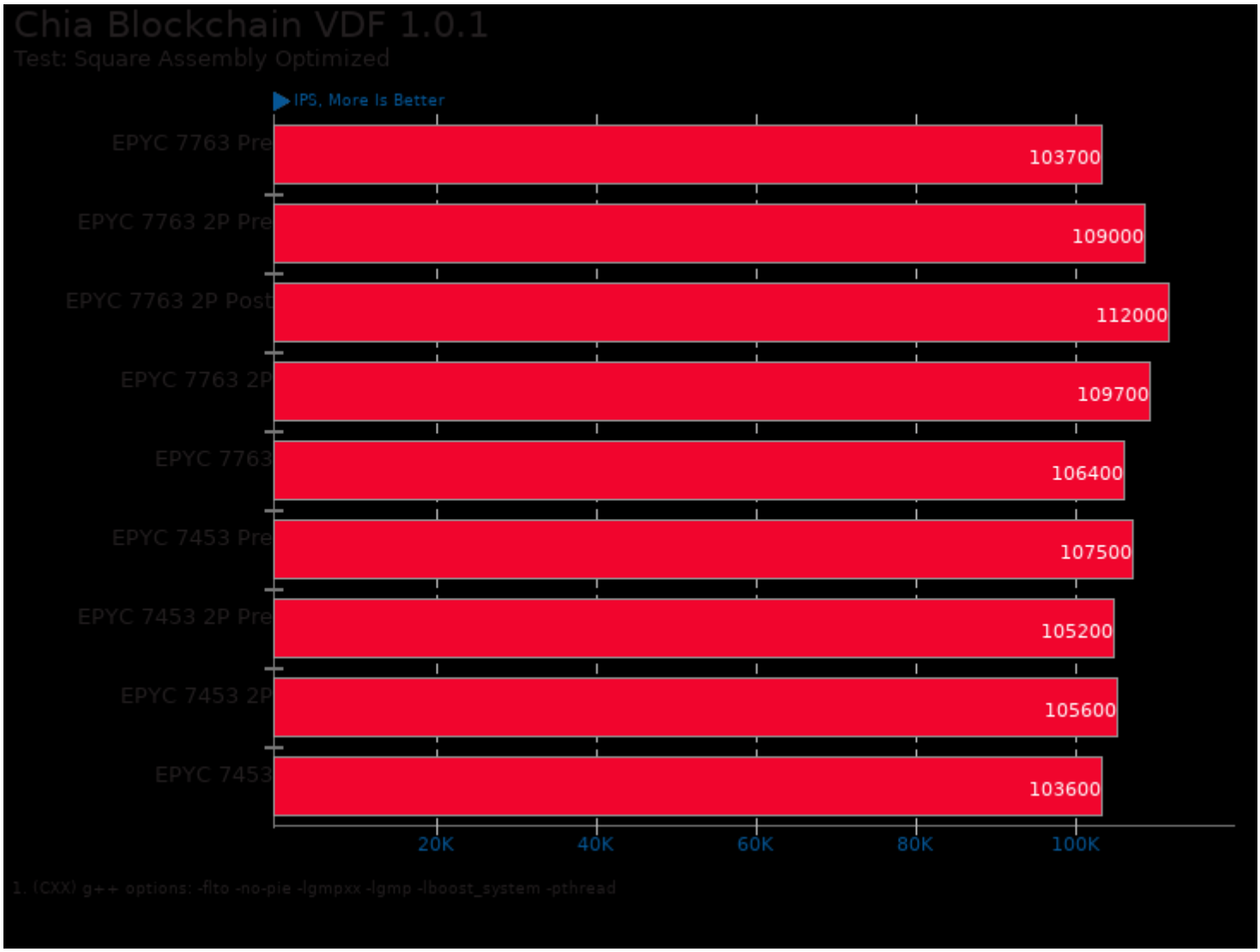
onerun-surplus

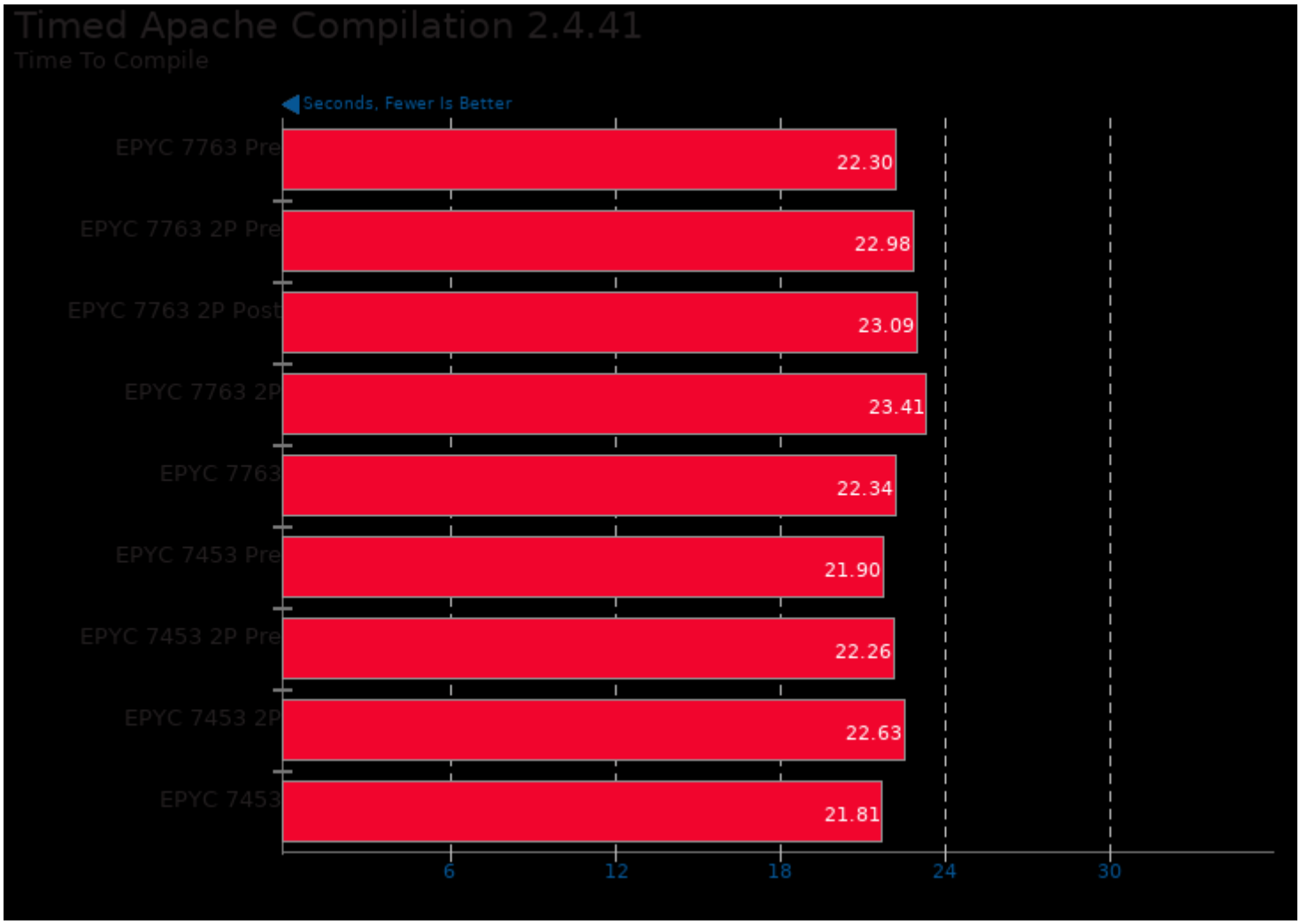



SVT-VP9 0.3
Tuning: Visual Quality Optimized - Input: Bosphorus 1080p
Frames Per Second, More Is Better
EPYC 7763 Pre
EPYC 7763 2P Pre
EPYC 7763 2P Post
EPYC 7763 2P
EPYC 7763
EPYC 7453 Pre
EPYC 7453 2P Pre
EPYC 7453 2P
EPYC 7453
338.49
333.50
319.09
319.80
342.76
339.75
354.65
347.96
339.38
80
160
240
320
400
1. (CC) gcc options: -O3 -fcommon -fPIE -fPIC -fvisibility=hidden -pie -rdynamic -lpthread -lrt -lm

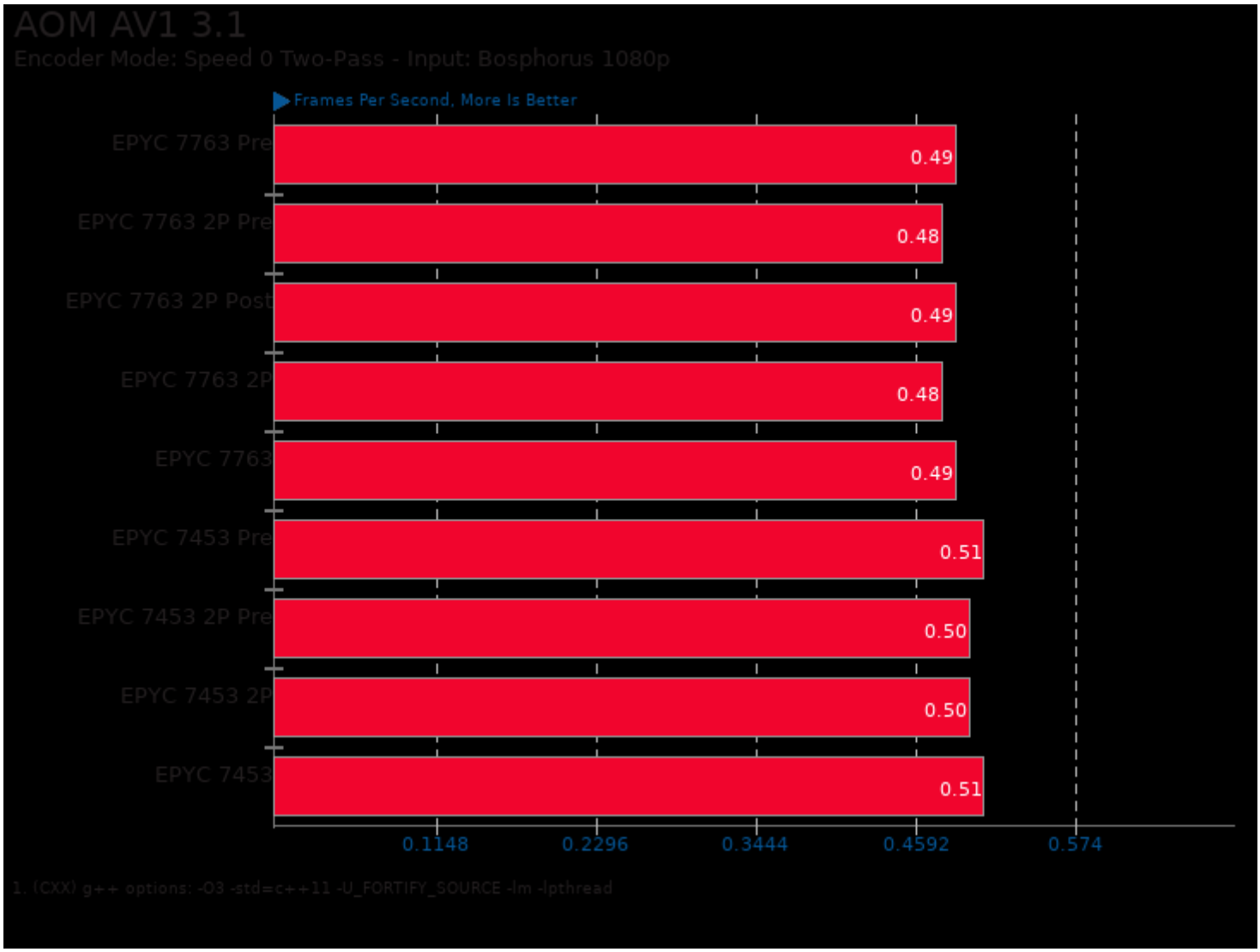
onerun-surplus



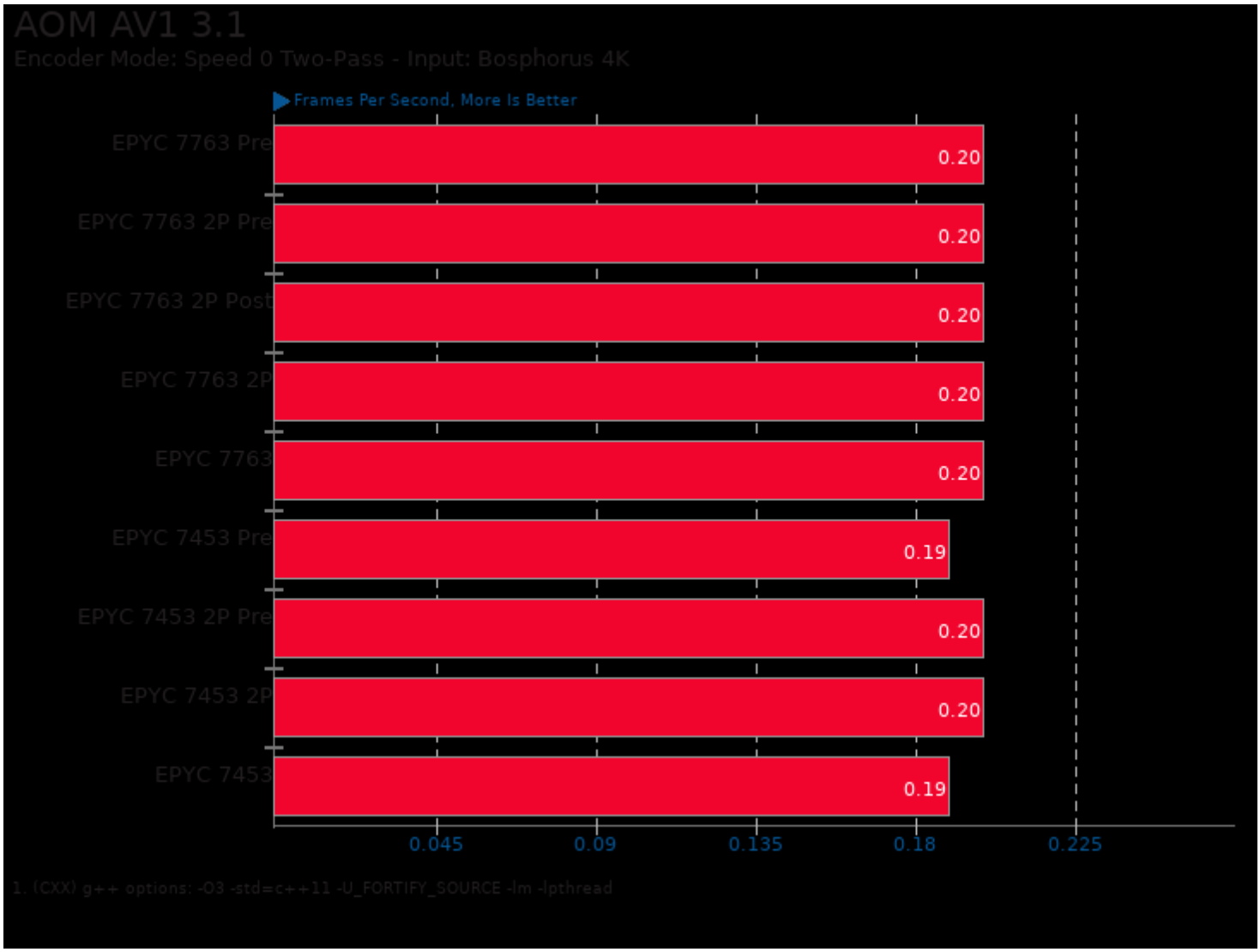

Chia Blockchain VDF 1.0.1
Test: Square Assembly Optimized
IPS, More Is Better
EPYC 7763 Pre
103700
EPYC 7763 2P Pre
109000
EPYC 7763 2P Post
112000
EPYC 7763 2P
109700
EPYC 7763
106400
EPYC 7453 Pre
107500
EPYC 7453 2P Pre
105200
EPYC 7453 2P
105600
EPYC 7453
103600
20K
40K
60K
80K
100K
1. (CXX) g++ options: -flto -no-pie -lgmpxx -lgmp -lboost_system -pthread

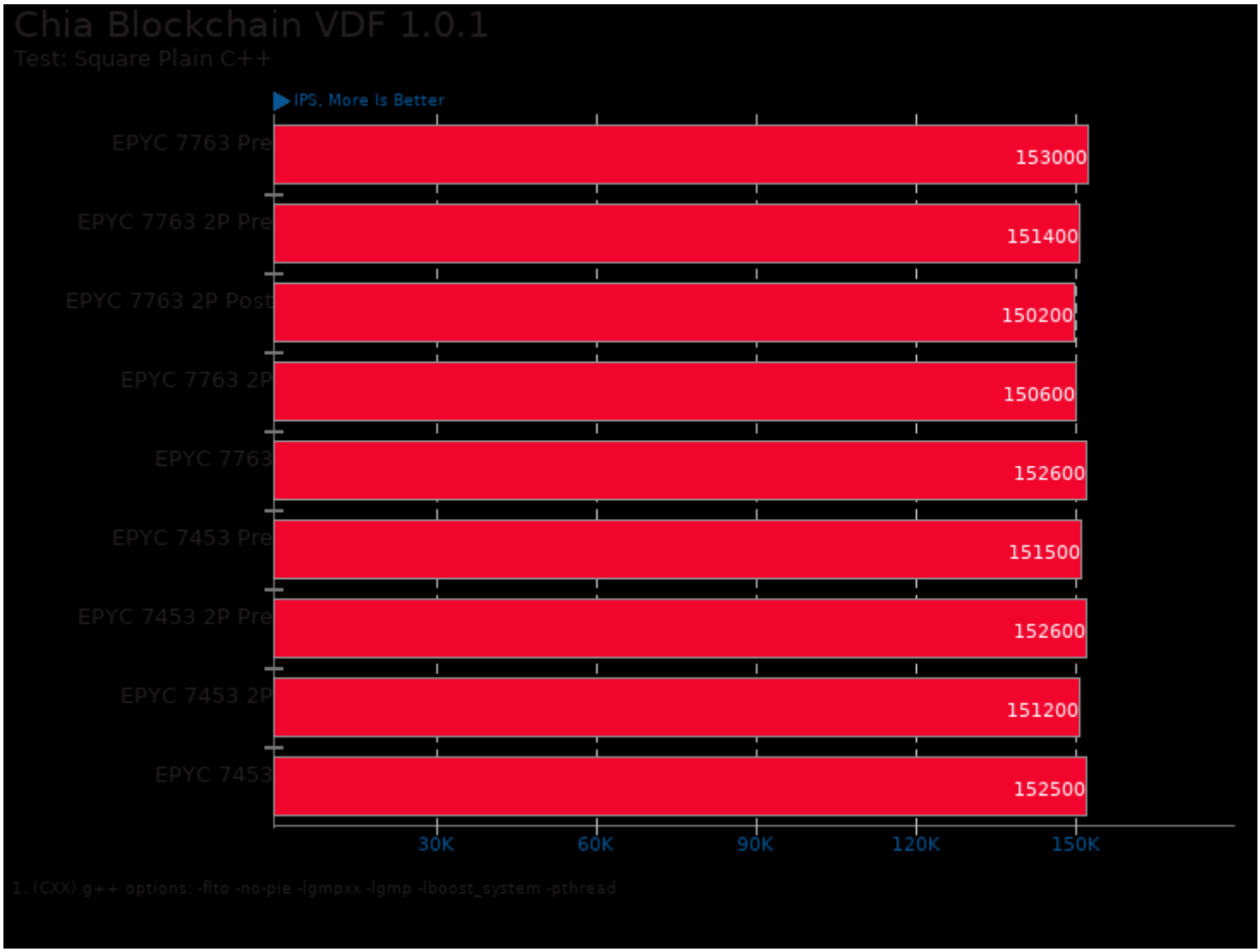

Timed Apache Compilation 2.4.41
Time To Compile
Seconds, Fewer Is Better
EPYC 7763 Pre
22.30
EPYC 7763 2P Pre
22.98
EPYC 7763 2P Post
23.09
EPYC 7763 2P
23.41
EPYC 7763
22.34
EPYC 7453 Pre
21.90
EPYC 7453 2P Pre
22.26
EPYC 7453 2P
22.63
EPYC 7453
21.81
6
12
18
24
30

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