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alderlake ethr

Intel Core i9-12900K testing with a ASUS ROG STRIX Z690-E GAMING WIFI (1003 BIOS) and AMD Radeon RX 6800 XT 16GB on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

A had the most wins, coming in first place for 57% of the tests.

Based on the geometric mean of all complete results, the fastest (A) was 1.007x the speed of the slowest (C). B was 1x the speed of A and C was 0.993x the speed of B.

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

Ethr (Server Address: localhost - Protocol: TCP - Test: Latency - Threads: 1) at 1.052x
Ethr (Server Address: localhost - Protocol: UDP - Test: Bandwidth - Threads: 64) at 1.051x
Ethr (Server Address: localhost - Protocol: UDP - Test: Bandwidth - Threads: 8) at 1.034x
Ethr (Server Address: localhost - Protocol: UDP - Test: Bandwidth - Threads: 32) at 1.023x
Ethr (Server Address: localhost - Protocol: TCP - Test: Bandwidth - Threads: 8) at 1.02x
Ethr (Server Address: localhost - Protocol: UDP - Test: Bandwidth - Threads: 2) at 1.019x
Ethr (Server Address: localhost - Protocol: UDP - Test: Bandwidth - Threads: 1) at 1.017x
simdjson (Throughput Test: PartialTweets) at 1.014x
Ethr (Server Address: localhost - Protocol: TCP - Test: Bandwidth - Threads: 4) at 1.012x

simdjson (Throughput Test: TopTweet) at 1.012x.

Test Systems:

A

B

C

Processor: Intel Core i9-12900K @ 5.20GHz (16 Cores / 24 Threads), Motherboard: ASUS ROG STRIX Z690-E GAMING WIFI (1003 BIOS), Chipset: Intel Device 7aa7, Memory: 32GB, Disk: 1000GB Western Digital WDS100T1X0E-00AFY0 + 2000GB, Graphics: AMD Radeon RX 6800 XT 16GB (2575/1000MHz), Audio: Intel Device 7ad0, Monitor: ASUS VP28U, Network: Intel I225-V + Intel Wi-Fi 6 AX210/AX211/AX411

OS: Ubuntu 22.04, Kernel: 5.18.0-051800-generic (x86_64), Desktop: GNOME Shell 42.1, Display Server: X Server 1.21.1.3 + Wayland, OpenGL: 4.6 Mesa 22.2.0-devel (git-d67a3ec 2022-06-01 jammy-oibaf-ppa) (LLVM 14.0.0 DRM 3.46), Vulkan: 1.3.211, Compiler: GCC 11.2.0, 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-bootstrap --enable-cet --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-serialization=2 --enable-multiarch --enable-multilib --enable-nls --enable-objc-gc=auto --enable-offload-targets=nvptx-none=/build/gcc-11-gBFGDP/gcc-11-11.2.0/debian/tmp-nvptx/usr,amdgcn-amdhsa=/build/gcc-11-gBFGDP/gcc-11-11.2.0/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-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_pstate powersave (EPP: balance_performance) - CPU Microcode: 0x18 - Thermald 2.4.9
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: 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 Enhanced IBRS IBPB: conditional RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	A	B	C
Ethr - TCP - Latency - 1 (us)	**15.097**	15.499	**15.883**
Normalized	100%	97.41%	95.05%
Standard Deviation	5.4%	4.9%	
Ethr - TCP - Latency - 2 (us)	15.257	**15.539**	**15.113**
Normalized	99.06%	97.26%	100%
Standard Deviation	7.7%	8.7%	
Ethr - TCP - Latency - 4 (us)	**15.734**	15.270	**14.209**
Normalized	90.31%	93.05%	100%
Standard Deviation	5.8%	7.5%	
Ethr - TCP - Latency - 8 (us)	15.527	**15.357**	**16.492**
Normalized	98.91%	100%	93.12%
Standard Deviation	8.2%	9%	
Ethr - TCP - Latency - 16 (us)	15.637	**14.973**	**15.883**
Normalized	95.75%	100%	94.27%

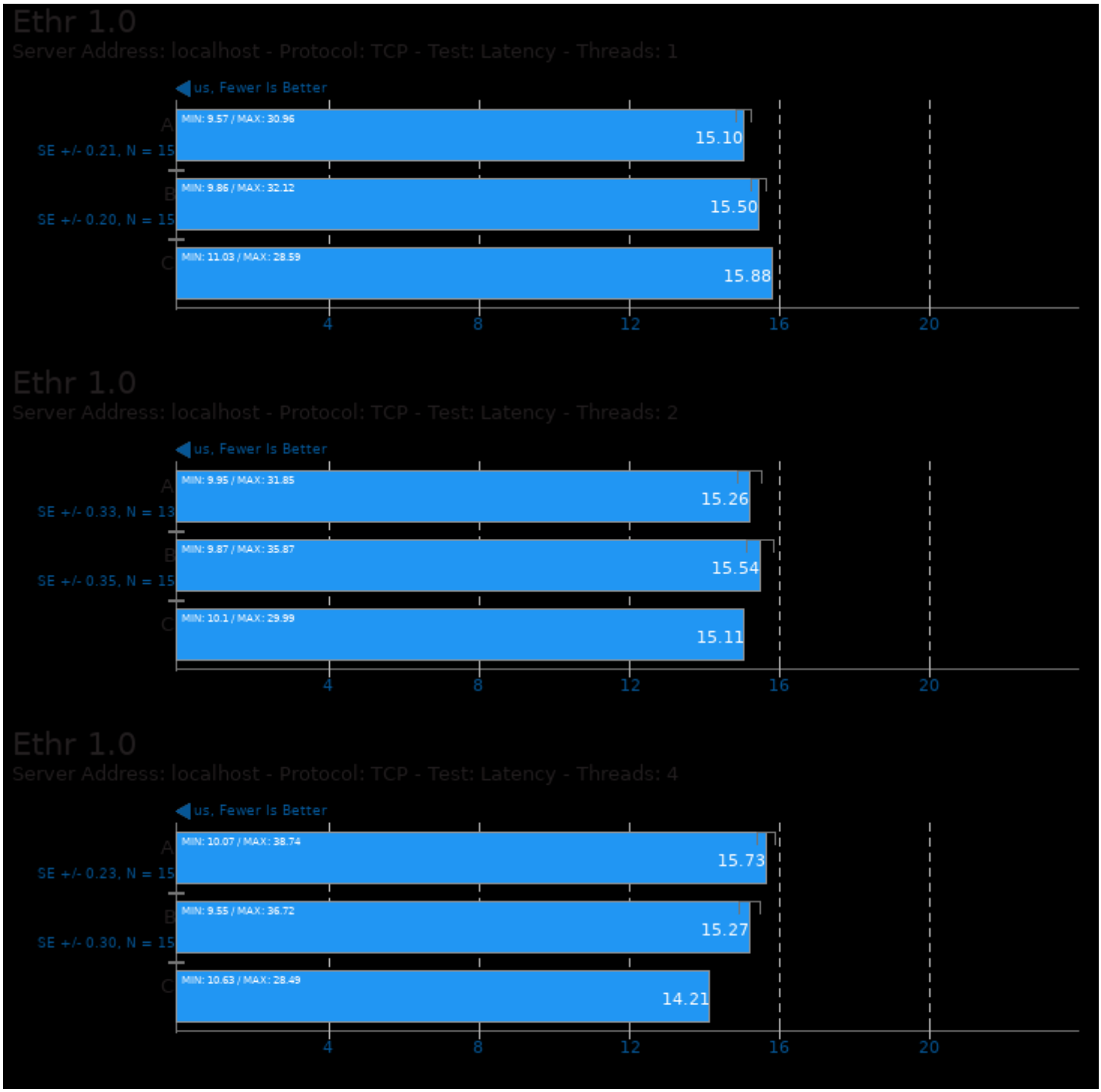
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Standard Deviation	7.8%	9.1%	
Ethr - TCP - Latency - 32 (us)	15.696	**15.457**	**17.682**
Normalized	98.48%	100%	87.42%
Standard Deviation	6%	6.9%	
Ethr - TCP - Latency - 64 (us)	**14.988**	15.519	**16.037**
Normalized	100%	96.58%	93.46%
Standard Deviation	6%	6.5%	
Ethr - TCP - Bandwidth - 1 (Gbits/sec)	**62.30**	**62.78**	62.38
Normalized	99.24%	100%	99.36%
Standard Deviation	0.8%	1.4%	
Ethr - TCP - Bandwidth - 2 (Gbits/sec)	**116.47**	116.18	**115.84**
Normalized	100%	99.75%	99.46%
Standard Deviation	0.4%	0.9%	
Ethr - TCP - Bandwidth - 4 (Gbits/sec)	180.74	**179.54**	**181.76**
Normalized	99.44%	98.78%	100%
Standard Deviation	0.5%	0.9%	
Ethr - TCP - Bandwidth - 8 (Gbits/sec)	**275.17**	273.29	**269.89**
Normalized	100%	99.32%	98.08%
Standard Deviation	1.5%	1.4%	
Ethr - UDP - Bandwidth - 1 (Packets/sec)	**550458**	544565	**541449**
Normalized	100%	98.93%	98.36%
Standard Deviation	0.7%	0.5%	
Ethr - UDP - Bandwidth - 2 (Packets/sec)	**1360267**	**1385600**	1378400
Normalized	98.17%	100%	99.48%
Standard Deviation	0.6%	0.7%	
Ethr - UDP - Bandwidth - 4 (Packets/sec)	**3390133**	**3371867**	3374400
Normalized	100%	99.46%	99.54%
Standard Deviation	0.8%	0.9%	
Ethr - UDP - Bandwidth - 8 (Packets/sec)	6711067	**6930133**	**6702400**
Normalized	96.84%	100%	96.71%
Standard Deviation	0.2%	1.3%	
Ethr - TCP - Bandwidth - 16 (Gbits/sec)	**177.10**	**175.70**	176.13
Normalized	100%	99.21%	99.45%
Standard Deviation	81.5%	81.5%	111.6%
Ethr - TCP - Bandwidth - 32 (Gbits/sec)	**294.38**	293.10	**292.95**
Normalized	100%	99.57%	99.51%
Standard Deviation	0.1%	0.1%	
Ethr - TCP - Bandwidth - 64 (Gbits/sec)	**277.17**	**276.15**	276.22
Normalized	100%	99.63%	99.66%
Standard Deviation	0.1%	0.2%	
Ethr - UDP - Bandwidth - 16 (Packets/sec)	4201818	**4215459**	**4156364**
Normalized	99.68%	100%	98.6%
Standard Deviation	81.5%	81.5%	111.6%
Ethr - UDP - Bandwidth - 32 (Packets/sec)	**9798667**	9661867	**9575200**
Normalized	100%	98.6%	97.72%
Standard Deviation	0.6%	0.9%	
Ethr - UDP - Bandwidth - 64 (Packets/sec)	9914533	**9602133**	**10088800**
Normalized	98.27%	95.18%	100%
Standard Deviation	2.1%	2.1%	
Ethr - TCP - Connections/s - 1 (Connections/sec)	505	505	505
Standard Deviation	0%	0%	

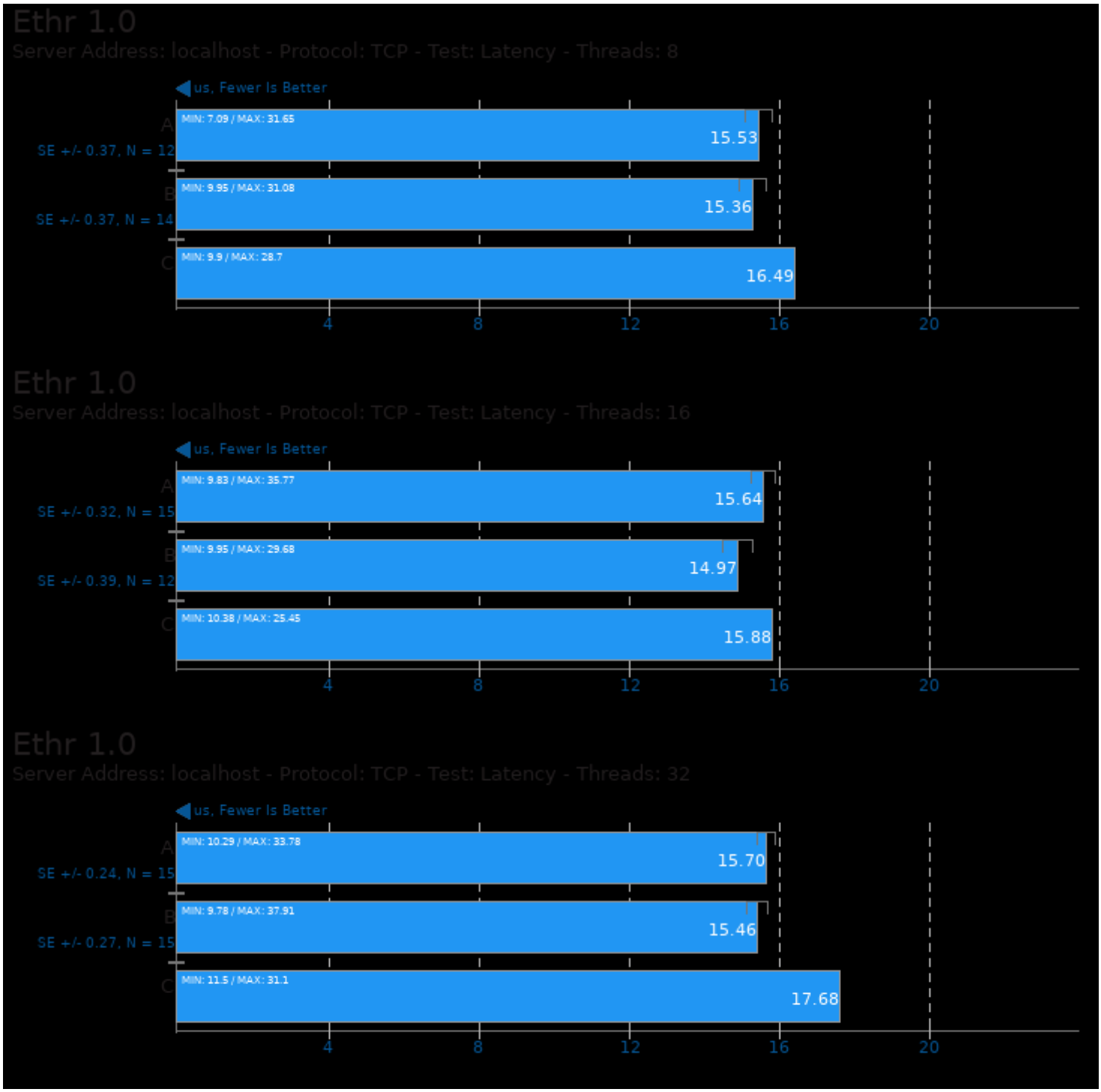
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Ethr - TCP - Connections/s - 2 (Connections/sec)	505	505	505
Standard Deviation	0%	0%	
Ethr - TCP - Connections/s - 4 (Connections/sec)	506	506	506
Standard Deviation	0.1%	0%	
Ethr - TCP - Connections/s - 8 (Connections/sec)	506	506	506
Standard Deviation	0.1%	0.1%	
Ethr - TCP - Connections/s - 16 (Connections/sec)	507	507	507
Standard Deviation	0%	0%	
Ethr - TCP - Connections/s - 32 (Connections/sec)	**507**	**507**	**506**
Normalized	100%	100%	99.8%
Standard Deviation	0.1%	0%	
Ethr - TCP - Connections/s - 64 (Connections/sec)	**507**	**507**	**508**
Normalized	99.8%	99.8%	100%
Standard Deviation	0.1%	0.1%	
simdjson - Kostya (GB/s)	**4.82**	**4.82**	**4.81**
Normalized	100%	100%	99.79%
Standard Deviation	0.2%	0.1%	
simdjson - TopTweet (GB/s)	**7.44**	7.51	**7.53**
Normalized	98.8%	99.73%	100%
Standard Deviation	2.3%	0.1%	
simdjson - LargeRand (GB/s)	1.72	1.72	1.72
Standard Deviation	0%	0%	
simdjson - PartialTweets (GB/s)	**6.34**	**6.25**	**6.34**
Normalized	100%	98.58%	100%
Standard Deviation	0%	2.5%	
simdjson - DistinctUserID (GB/s)	**7.67**	**7.75**	7.72
Normalized	98.97%	100%	99.61%
Standard Deviation	2.5%	0.1%	

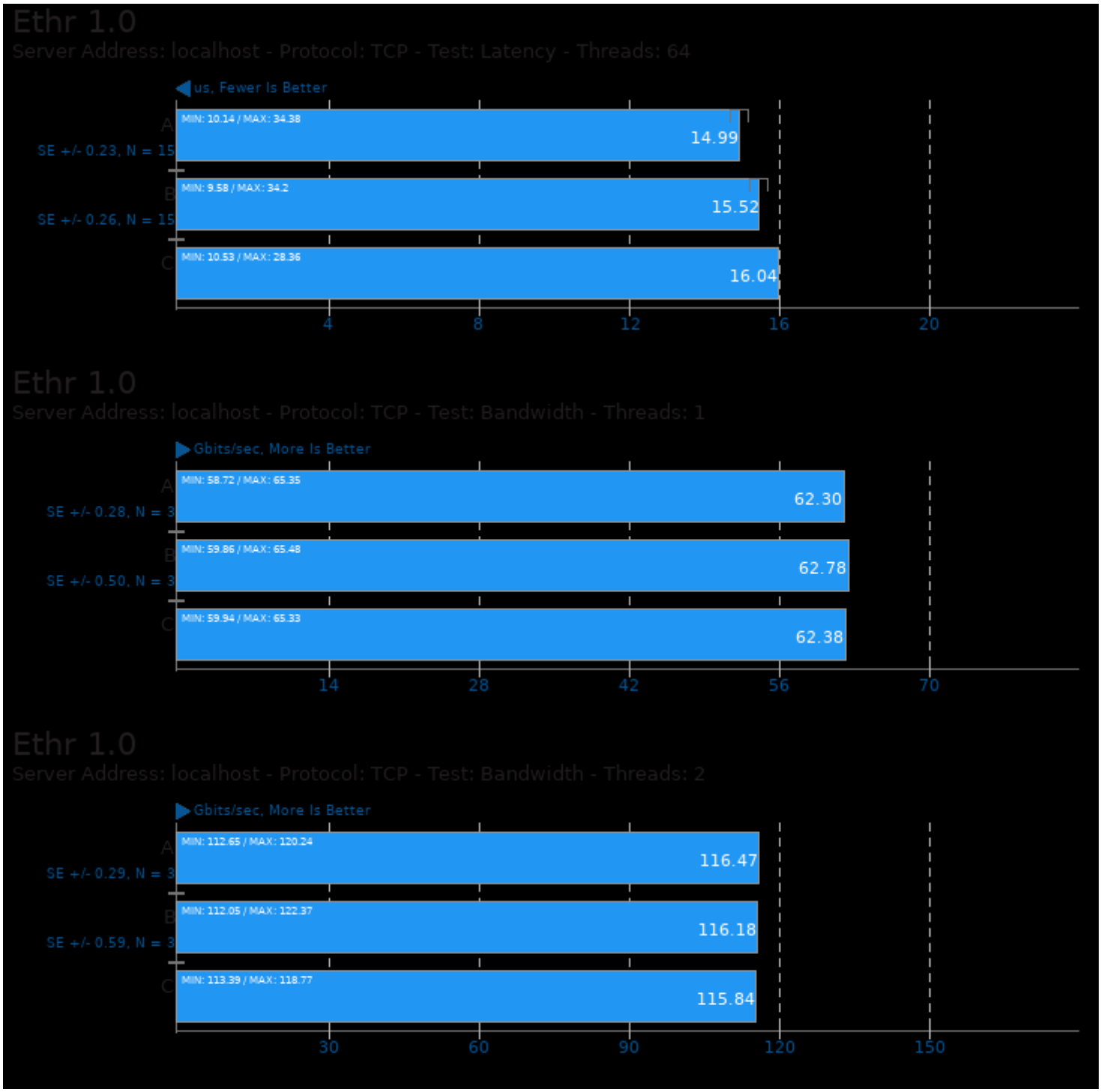
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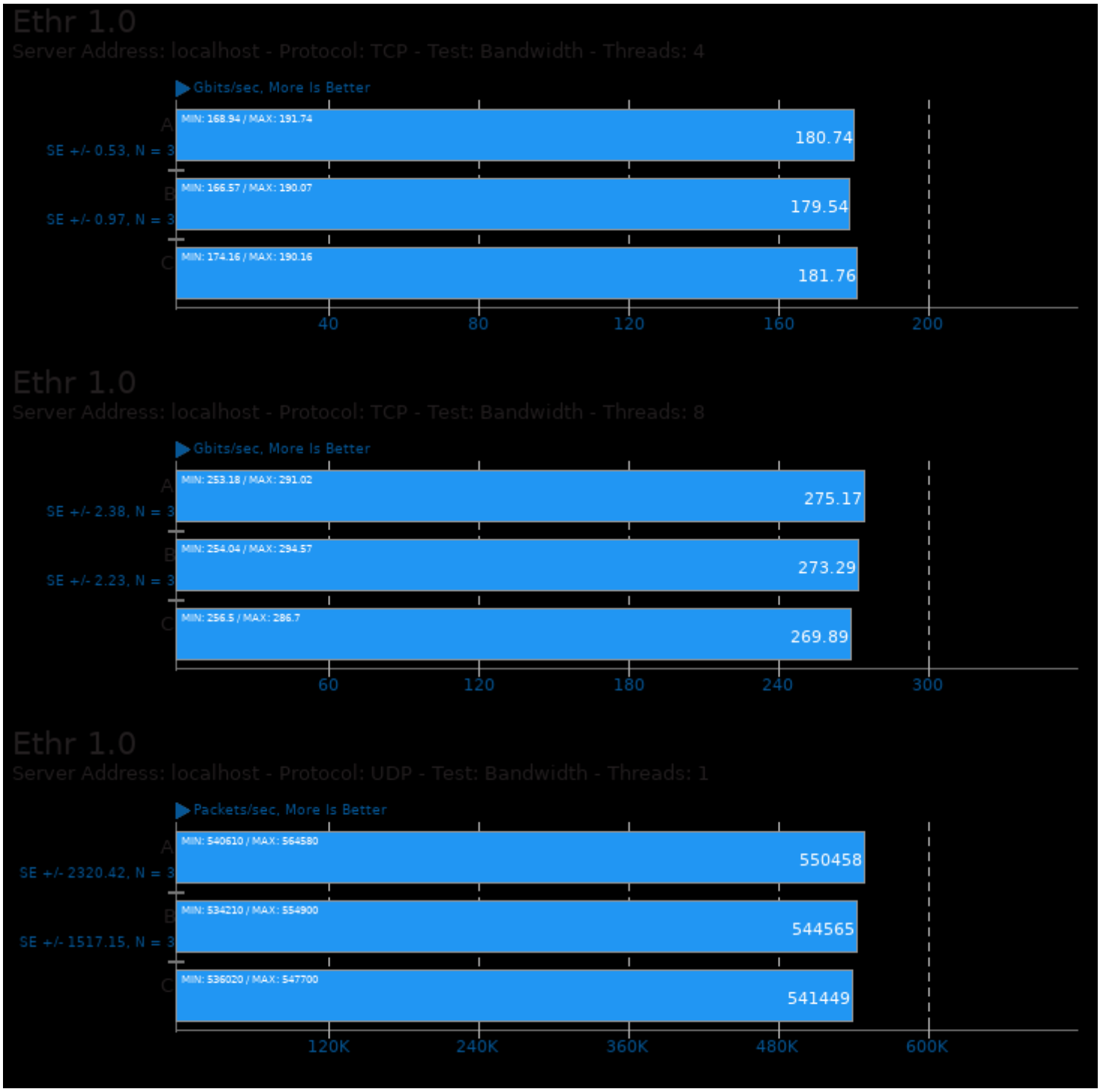
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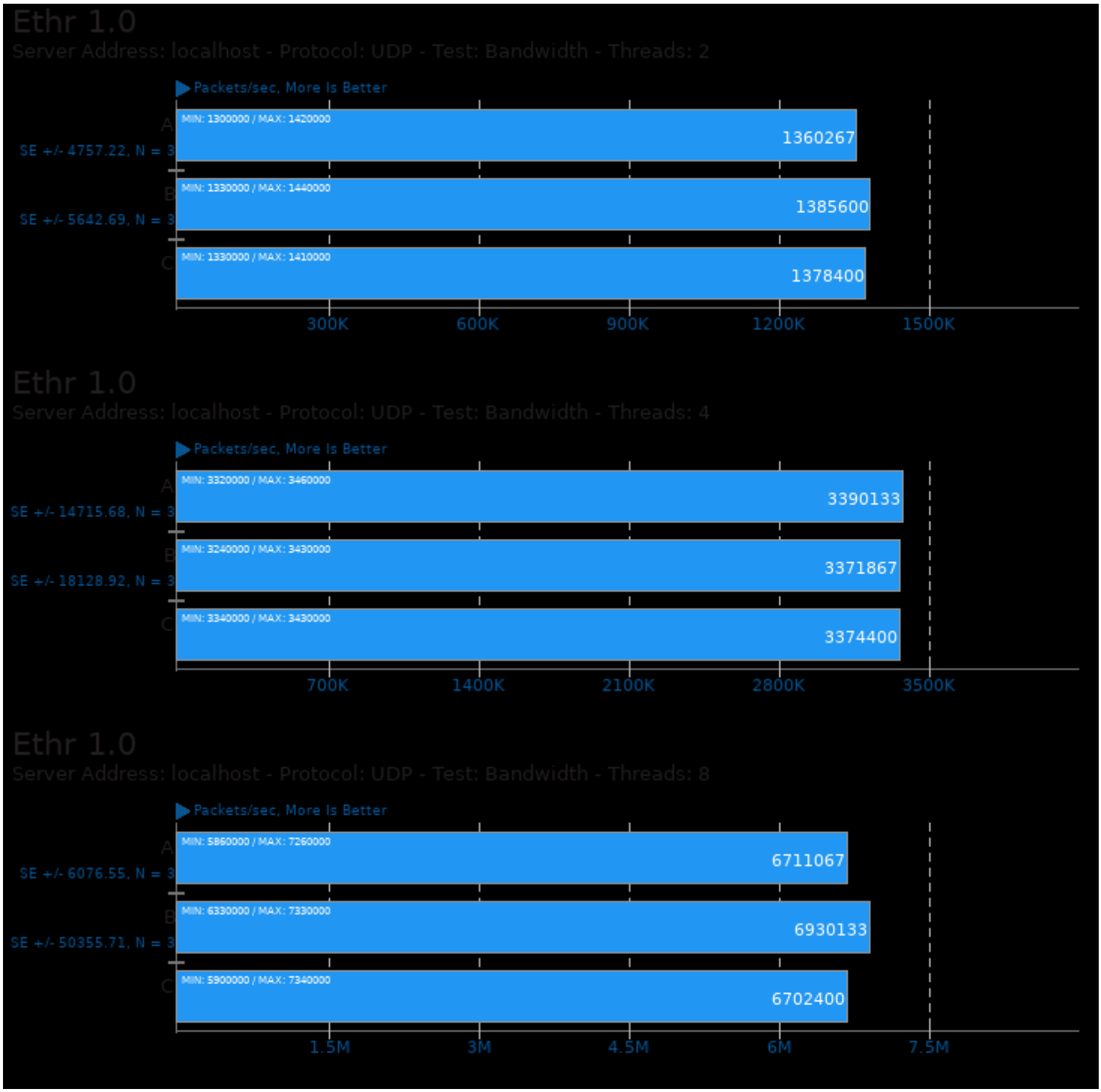
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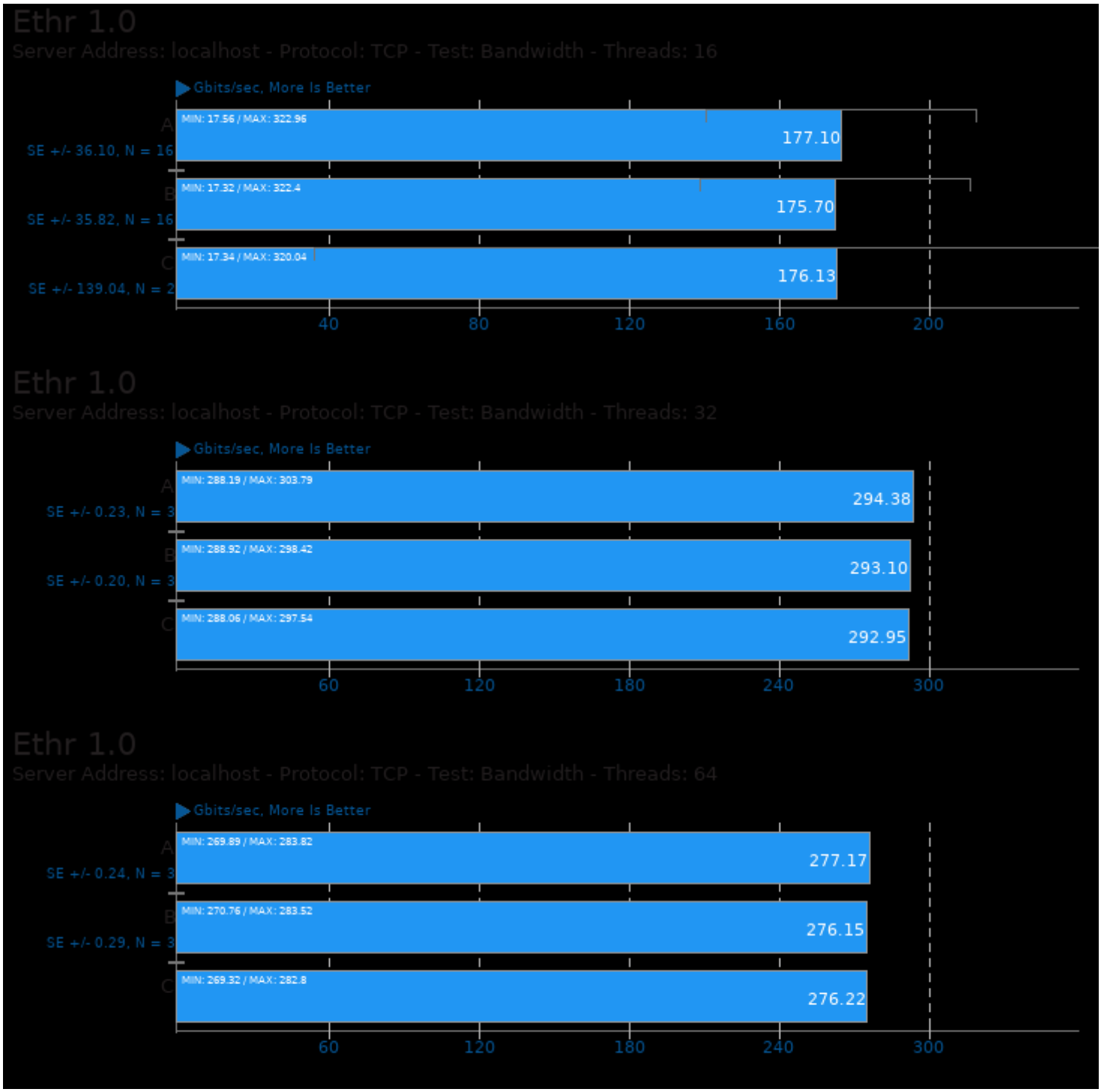
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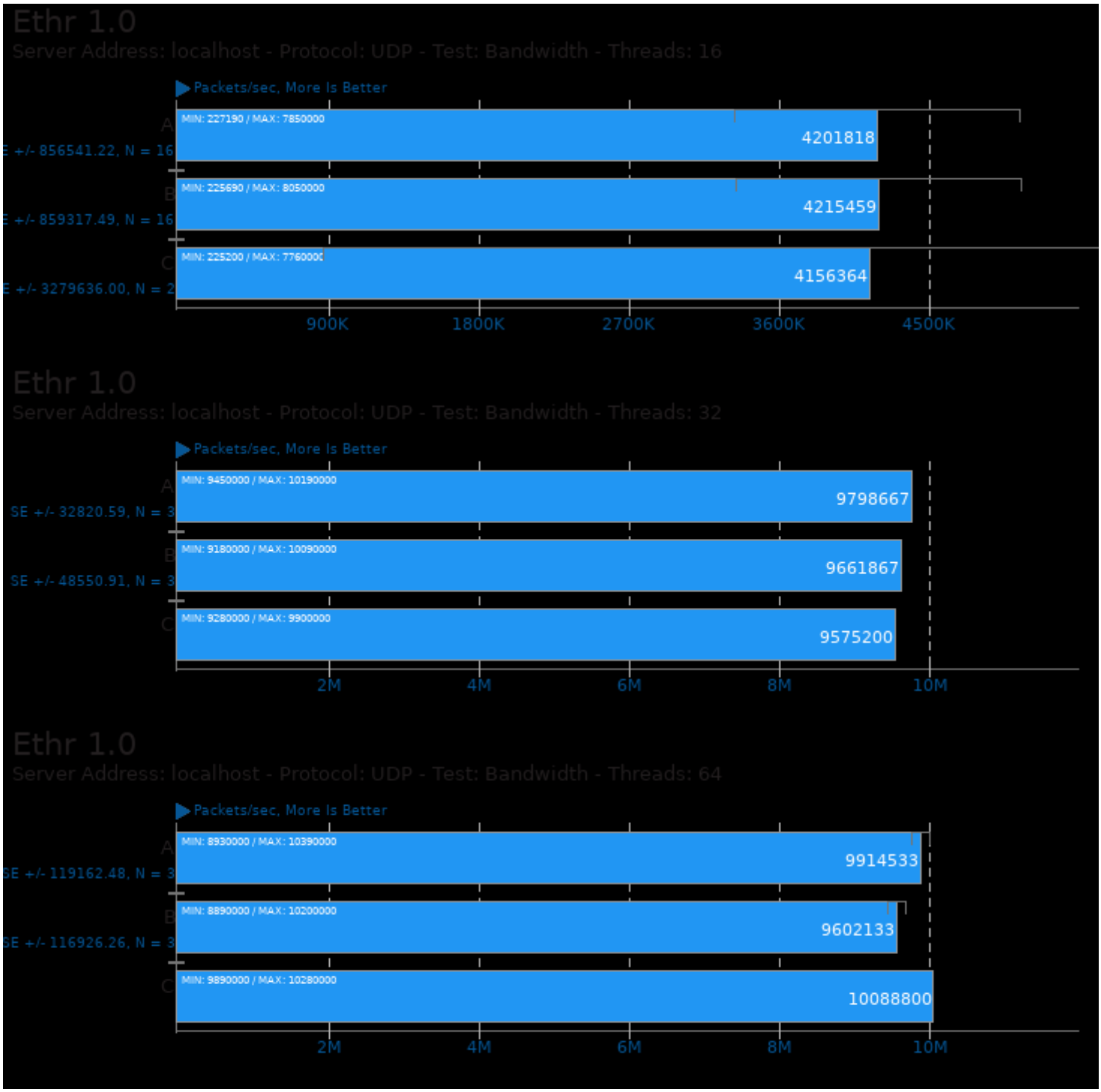
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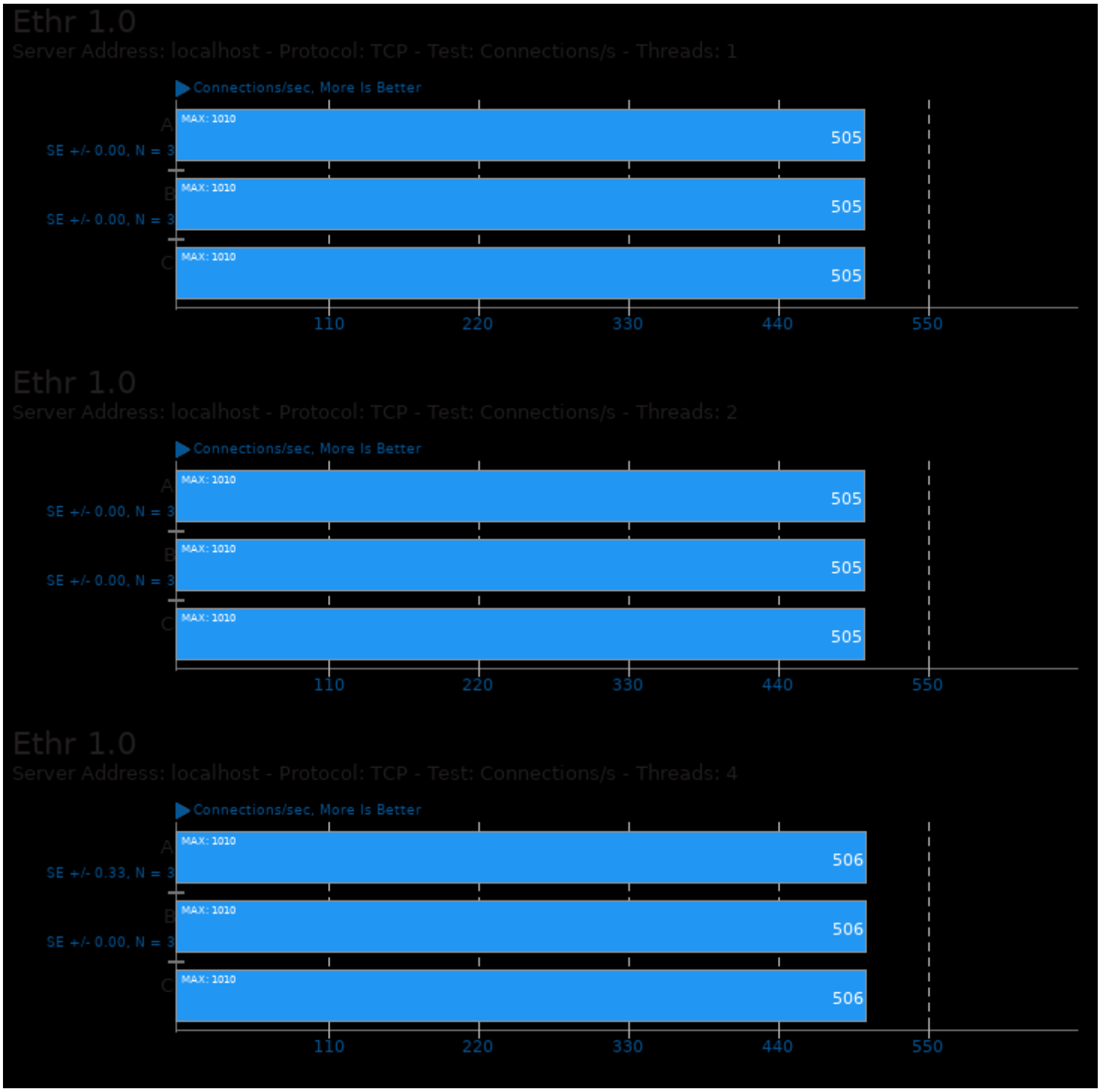
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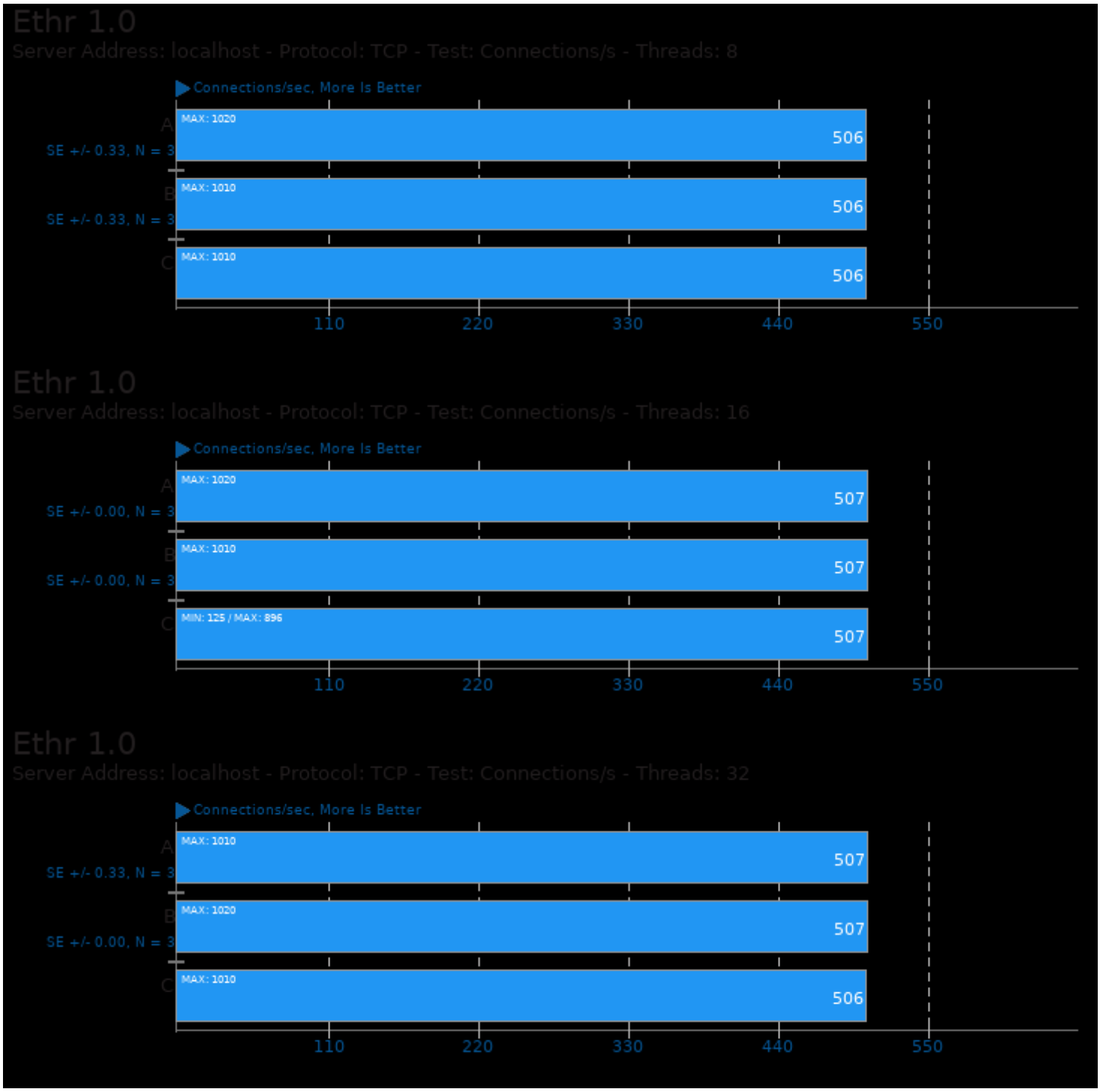
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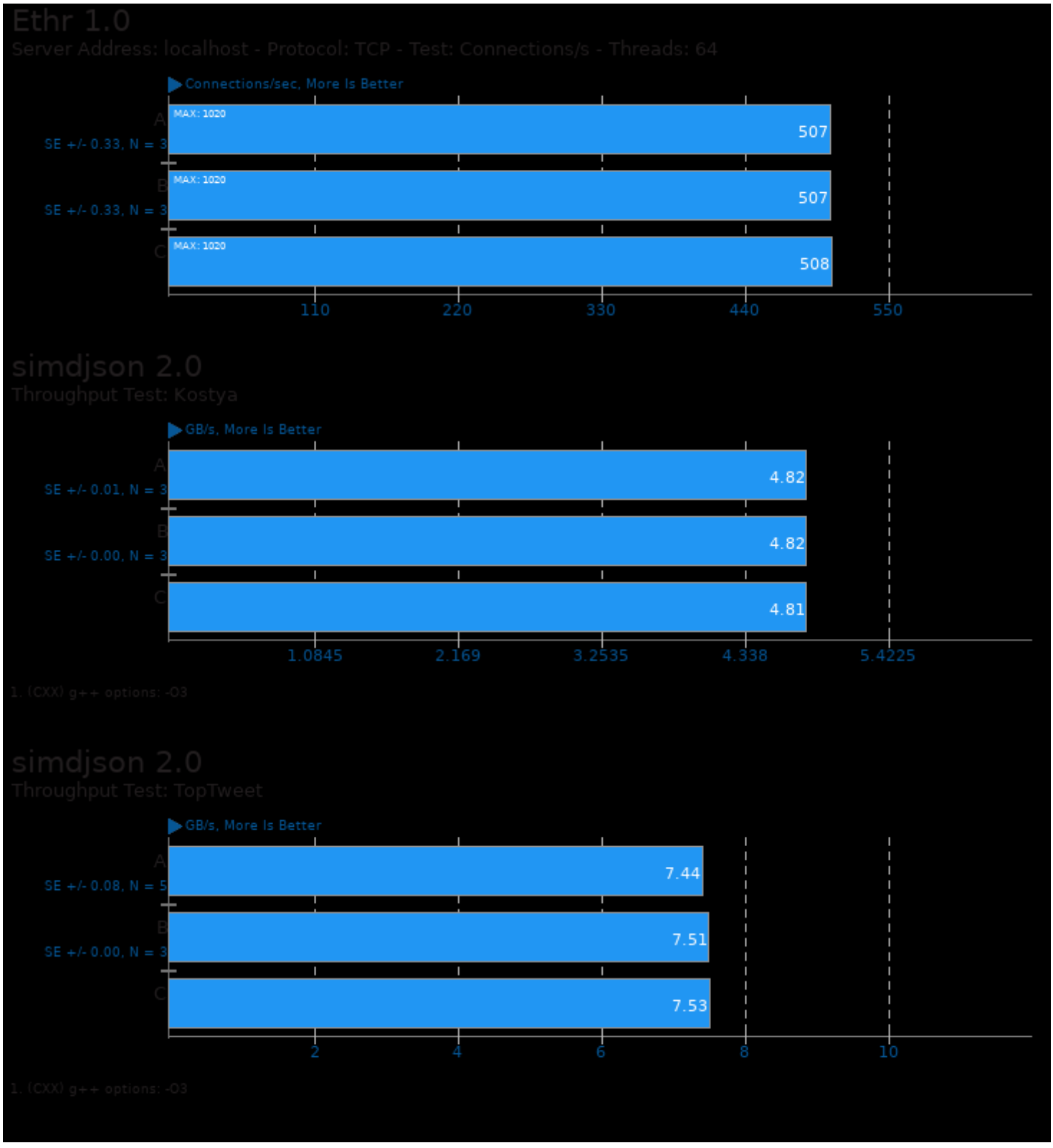
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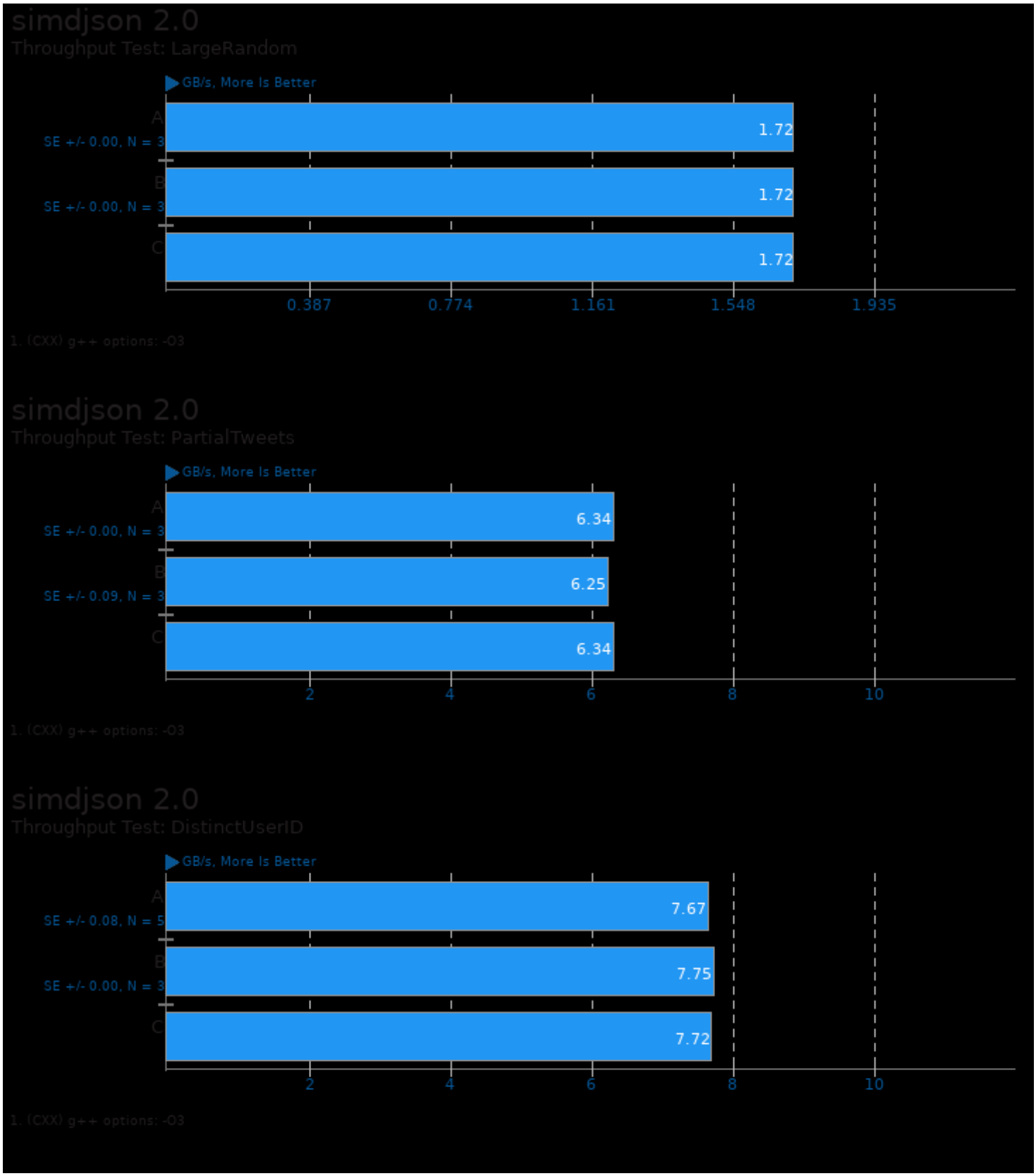


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