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pgbench hp dev one

AMD Ryzen 7 PRO 5850U testing with a HP 8A78 (F.04 BIOS) and AMD Cezanne 512MB on Pop 22.04 via the Phoronix Test Suite.

Automated Executive Summary

a had the most wins, coming in first place for 65% of the tests.

Based on the geometric mean of all complete results, the fastest (a) was 1.356x the speed of the slowest (c). b was 0.933x the speed of a and c was 0.79x the speed of b.

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

PostgreSQL (Scaling Factor: 1000 - Clients: 1 - Mode: Read Write) at 4.333x
PostgreSQL (Scaling Factor: 1000 - Clients: 1 - Mode: Read Write - Average Latency) at 4.33x
PostgreSQL (Scaling Factor: 100 - Clients: 1 - Mode: Read Write - Average Latency) at 3.131x
PostgreSQL (Scaling Factor: 100 - Clients: 1 - Mode: Read Write) at 3.129x
PostgreSQL (Scaling Factor: 100 - Clients: 50 - Mode: Read Write) at 2.975x
PostgreSQL (Scaling Factor: 100 - Clients: 50 - Mode: Read Write - Average Latency) at 2.974x
PostgreSQL (Scaling Factor: 100 - Clients: 100 - Mode: Read Write - Average Latency) at 2.514x
PostgreSQL (Scaling Factor: 100 - Clients: 100 - Mode: Read Write) at 2.513x
PostgreSQL (Scaling Factor: 1 - Clients: 100 - Mode: Read Write - Average Latency) at 2.373x

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PostgreSQL (Scaling Factor: 1 - Clients: 100 - Mode: Read Write) at 2.372x.

Test Systems:

a

b

c

Processor: AMD Ryzen 7 PRO 5850U @ 4.51GHz (8 Cores / 16 Threads), Motherboard: HP 8A78 (F.04 BIOS), Chipset: AMD Renoir/Cezanne, Memory: 16GB, Disk: 1024GB SK hynix PC711 HFS001TDE9X073N, Graphics: AMD Cezanne 512MB (2000/400MHz), Audio: AMD Renoir Radeon HD Audio, Network: Realtek RTL8822CE 802.11ac PCIe

OS: Pop 22.04, Kernel: 5.19.0-76051900-generic (x86_64), Desktop: GNOME Shell 42.3.1, Display Server: X Server 1.21.1.3, OpenGL: 4.6 Mesa 22.0.5 (LLVM 13.0.1 DRM 3.47), Vulkan: 1.3.204, Compiler: GCC 11.2.0, 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-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: amd-pstate schedutil (Boost: Enabled) - CPU Microcode: 0xa50000c
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + retbleed: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	a	b	c
PostgreSQL - 1 - 1 - Read Only (TPS)	**68319**	**72788**	71653
Normalized	93.86%	100%	98.44%
PostgreSQL - 1 - 1 - Read Write (TPS)	**2743**	2525	**1198**
Normalized	100%	92.05%	43.67%
PostgreSQL - 1 - 50 - Read Only (TPS)	**457888**	**450486**	455785
Normalized	100%	98.38%	99.54%
PostgreSQL - 1 - 100 - Read Only (TPS)	**419023**	423099	**439084**
Normalized	95.43%	96.36%	100%
PostgreSQL - 1 - 250 - Read Only (TPS)	**379264**	373327	**372118**
Normalized	100%	98.43%	98.12%
PostgreSQL - 1 - 50 - Read Write (TPS)	**2710**	2701	**1175**
Normalized	100%	99.67%	43.36%
PostgreSQL - 1 - 500 - Read Only (TPS)	**293789**	289396	**286512**
Normalized	100%	98.5%	97.52%

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PostgreSQL - 100 - 1 - Read Only (TPS)	60168	60363	59026
Normalized	99.68%	100%	97.79%
PostgreSQL - 1 - 100 - Read Write (TPS)	2403	2387	1013
Normalized	100%	99.33%	42.16%
PostgreSQL - 1 - 250 - Read Write (TPS)	1397	1556	1001
Normalized	89.78%	100%	64.33%
PostgreSQL - 1 - 500 - Read Write (TPS)	645	553	738
Normalized	87.4%	74.93%	100%
PostgreSQL - 100 - 1 - Read Write (TPS)	2569	2565	821
Normalized	100%	99.84%	31.96%
PostgreSQL - 100 - 50 - Read Only (TPS)	413991	417073	414639
Normalized	99.26%	100%	99.42%
PostgreSQL - 1000 - 1 - Read Only (TPS)	13549	12785	11809
Normalized	100%	94.36%	87.16%
PostgreSQL - 100 - 100 - Read Only (TPS)	393983	391257	386396
Normalized	100%	99.31%	98.07%
PostgreSQL - 100 - 250 - Read Only (TPS)	344431	341186	334241
Normalized	100%	99.06%	97.04%
PostgreSQL - 100 - 50 - Read Write (TPS)	28594	25941	9611
Normalized	100%	90.72%	33.61%
PostgreSQL - 100 - 500 - Read Only (TPS)	256602	258374	254592
Normalized	99.31%	100%	98.54%
PostgreSQL - 1000 - 1 - Read Write (TPS)	2188	572	505
Normalized	100%	26.14%	23.08%
PostgreSQL - 1000 - 50 - Read Only (TPS)	180415	146682	170053
Normalized	100%	81.3%	94.26%
PostgreSQL - 100 - 100 - Read Write (TPS)	30265	30844	12272
Normalized	98.12%	100%	39.79%
PostgreSQL - 100 - 250 - Read Write (TPS)	24193	24766	14998
Normalized	97.69%	100%	60.56%
PostgreSQL - 100 - 500 - Read Write (TPS)	18792	18704	14737
Normalized	100%	99.53%	78.42%
PostgreSQL - 1000 - 100 - Read Only (TPS)	174537	175729	165594
Normalized	99.32%	100%	94.23%
PostgreSQL - 1000 - 250 - Read Only (TPS)	146001	140732	142207
Normalized	100%	96.39%	97.4%
PostgreSQL - 1000 - 50 - Read Write (TPS)	12209	9698	8359
Normalized	100%	79.43%	68.47%
PostgreSQL - 1000 - 500 - Read Only (TPS)	119382	116355	112774
Normalized	100%	97.46%	94.46%
PostgreSQL - 1000 - 100 - Read Write (TPS)	15801	15150	12921
Normalized	100%	95.88%	81.77%
PostgreSQL - 1000 - 250 - Read Write (TPS)	16345	16996	14634
Normalized	96.17%	100%	86.1%
PostgreSQL - 1000 - 500 - Read Write (TPS)	14567	14375	13804
Normalized	100%	98.68%	94.76%
PostgreSQL - 1 - 1 - Read Only - Average Latency (ms)	0.015	0.014	0.014
Normalized	93.33%	100%	100%
PostgreSQL - 1 - 1 - Read Write - Average Latency (ms)	0.365	0.396	0.835
Normalized	100%	92.17%	43.71%

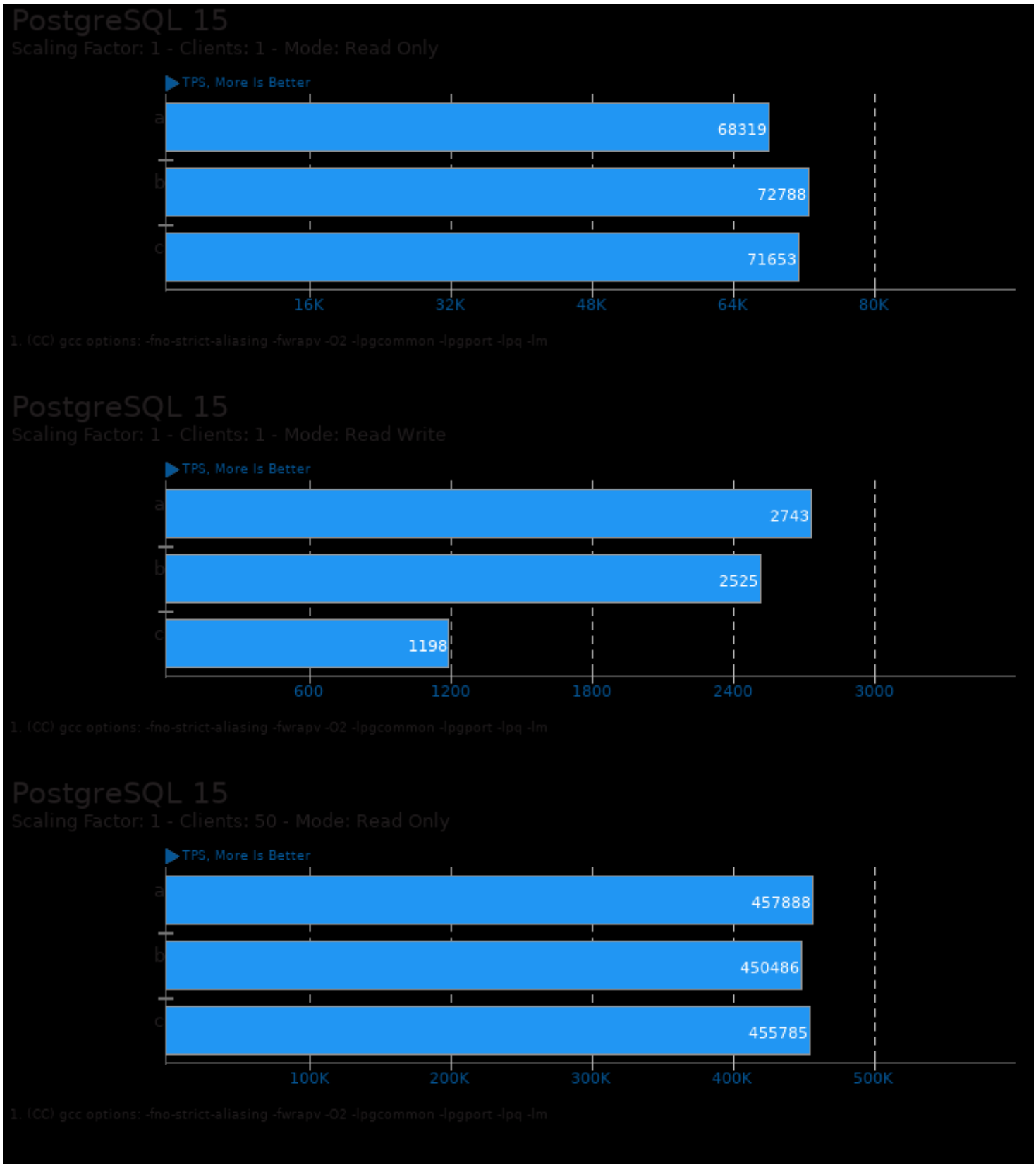
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PostgreSQL - 1 - 50 - Read Only - Average Latency (ms)	0.109	0.111	0.11
Normalized	100%	98.2%	99.09%
PostgreSQL - 1 - 100 - Read Only - Average Latency (ms)	0.239	0.236	0.228
Normalized	95.4%	96.61%	100%
PostgreSQL - 1 - 250 - Read Only - Average Latency (ms)	0.659	0.67	0.672
Normalized	100%	98.36%	98.07%
PostgreSQL - 1 - 50 - Read Write - Average Latency (ms)	18.449	18.512	42.554
Normalized	100%	99.66%	43.35%
PostgreSQL - 1 - 500 - Read Only - Average Latency (ms)	1.702	1.728	1.745
Normalized	100%	98.5%	97.54%
PostgreSQL - 100 - 1 - Read Only - Average Latency (ms)	0.017	0.017	0.017
PostgreSQL - 1 - 100 - Read Write - Average Latency (ms)	41.61	41.895	98.752
Normalized	100%	99.32%	42.14%
PostgreSQL - 1 - 250 - Read Write - Average Latency (ms)	178.944	160.685	249.674
Normalized	89.8%	100%	64.36%
PostgreSQL - 1 - 500 - Read Write - Average Latency (ms)	774.626	904.456	677.382
Normalized	87.45%	74.89%	100%
PostgreSQL - 100 - 1 - Read Write - Average Latency (ms)	0.389	0.39	1.218
Normalized	100%	99.74%	31.94%
PostgreSQL - 100 - 50 - Read Only - Average Latency (ms)	0.121	0.12	0.121
Normalized	99.17%	100%	99.17%
PostgreSQL - 1000 - 1 - Read Only - Average Latency (ms)	0.074	0.078	0.085
Normalized	100%	94.87%	87.06%
PostgreSQL - 100 - 100 - Read Only - Average Latency (ms)	0.254	0.256	0.259
Normalized	100%	99.22%	98.07%
PostgreSQL - 100 - 250 - Read Only - Average Latency (ms)	0.726	0.733	0.748
Normalized	100%	99.05%	97.06%
PostgreSQL - 100 - 50 - Read Write - Average Latency (ms)	1.749	1.927	5.202
Normalized	100%	90.76%	33.62%
PostgreSQL - 100 - 500 - Read Only - Average Latency (ms)	1.949	1.935	1.964
Normalized	99.28%	100%	98.52%
PostgreSQL - 1000 - 1 - Read Write - Average Latency (ms)	0.457	1.748	1.979
Normalized	100%	26.14%	23.09%

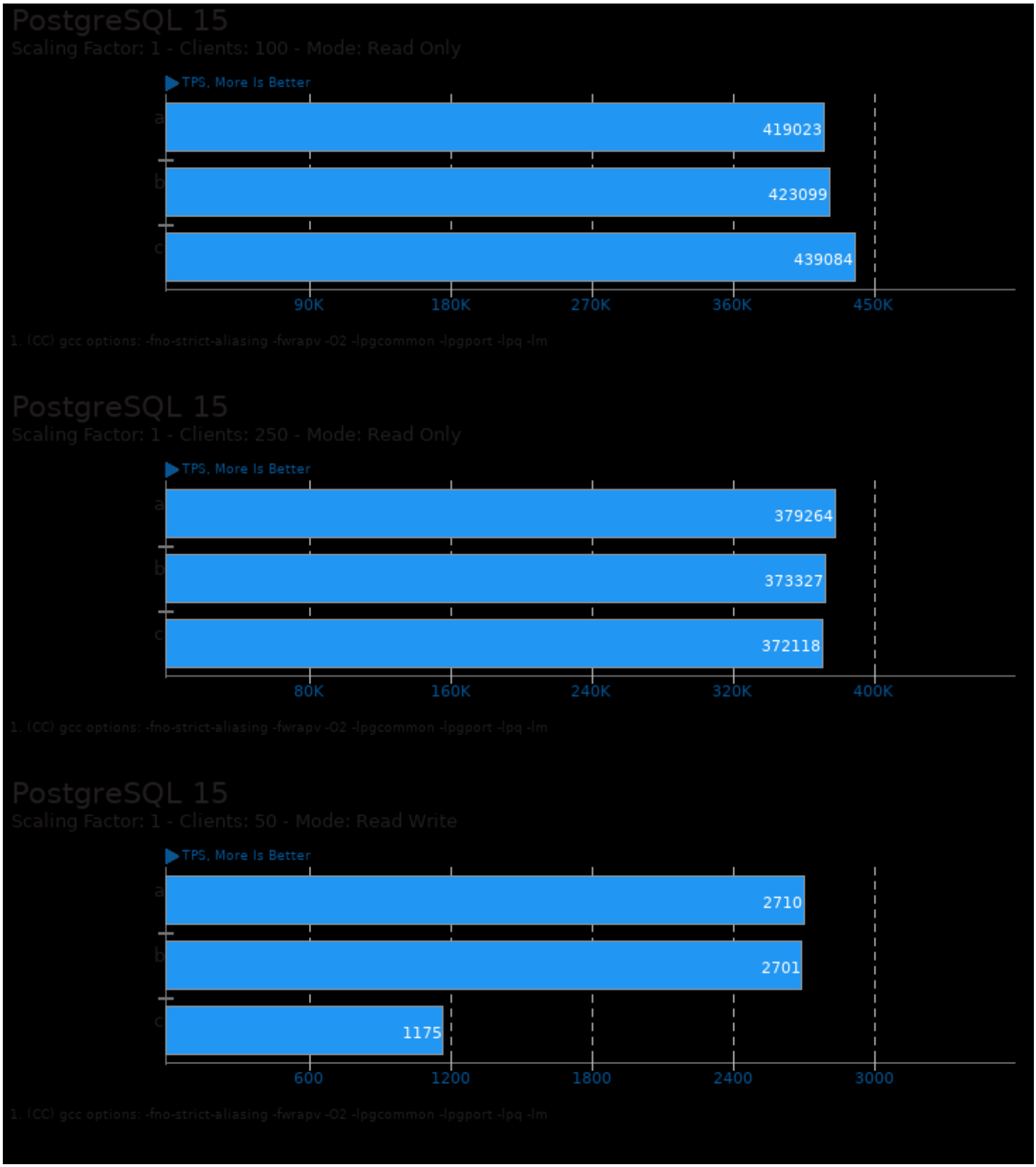
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PostgreSQL - 1000 - 50 - Read Only - Average Latency (ms)	**0.277**	**0.341**	0.294
Normalized	100%	81.23%	94.22%
PostgreSQL - 100 - 100 - Read Write - Average Latency (ms)	3.304	**3.242**	**8.149**
Normalized	98.12%	100%	39.78%
PostgreSQL - 100 - 250 - Read Write - Average Latency (ms)	10.334	**10.094**	**16.668**
Normalized	97.68%	100%	60.56%
PostgreSQL - 100 - 500 - Read Write - Average Latency (ms)	**26.607**	26.732	**33.929**
Normalized	100%	99.53%	78.42%
PostgreSQL - 1000 - 100 - Read Only - Average Latency (ms)	0.573	**0.569**	**0.604**
Normalized	99.3%	100%	94.21%
PostgreSQL - 1000 - 250 - Read Only - Average Latency (ms)	**1.712**	**1.776**	1.758
Normalized	100%	96.4%	97.38%
PostgreSQL - 1000 - 50 - Read Write - Average Latency (ms)	**4.095**	5.156	**5.981**
Normalized	100%	79.42%	68.47%
PostgreSQL - 1000 - 500 - Read Only - Average Latency (ms)	**4.188**	4.297	**4.434**
Normalized	100%	97.46%	94.45%
PostgreSQL - 1000 - 100 - Read Write - Average Latency (ms)	**6.329**	6.601	**7.74**
Normalized	100%	95.88%	81.77%
PostgreSQL - 1000 - 250 - Read Write - Average Latency (ms)	15.295	**14.709**	**17.083**
Normalized	96.17%	100%	86.1%
PostgreSQL - 1000 - 500 - Read Write - Average Latency (ms)	**34.324**	34.784	**36.222**
Normalized	100%	98.68%	94.76%

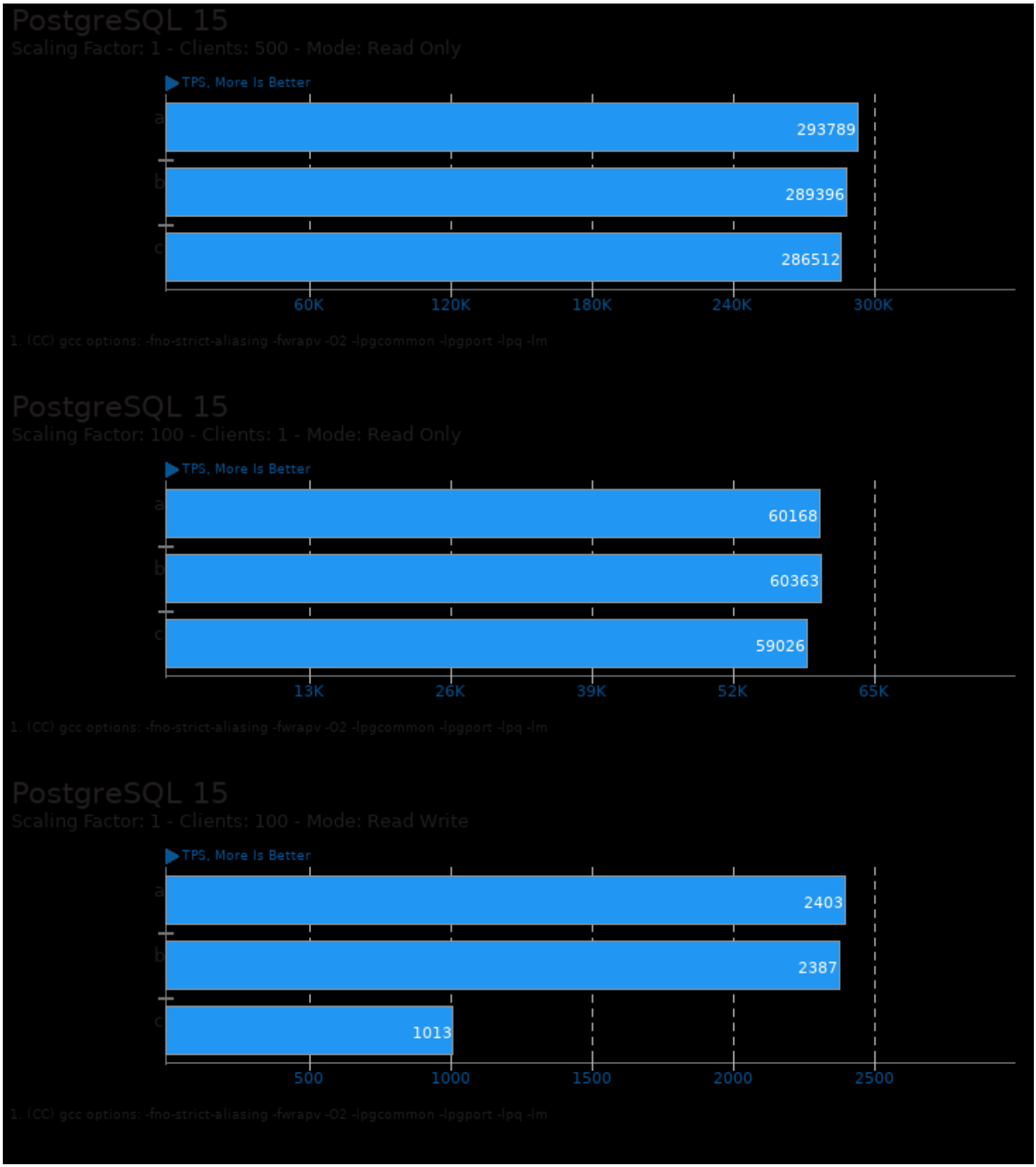
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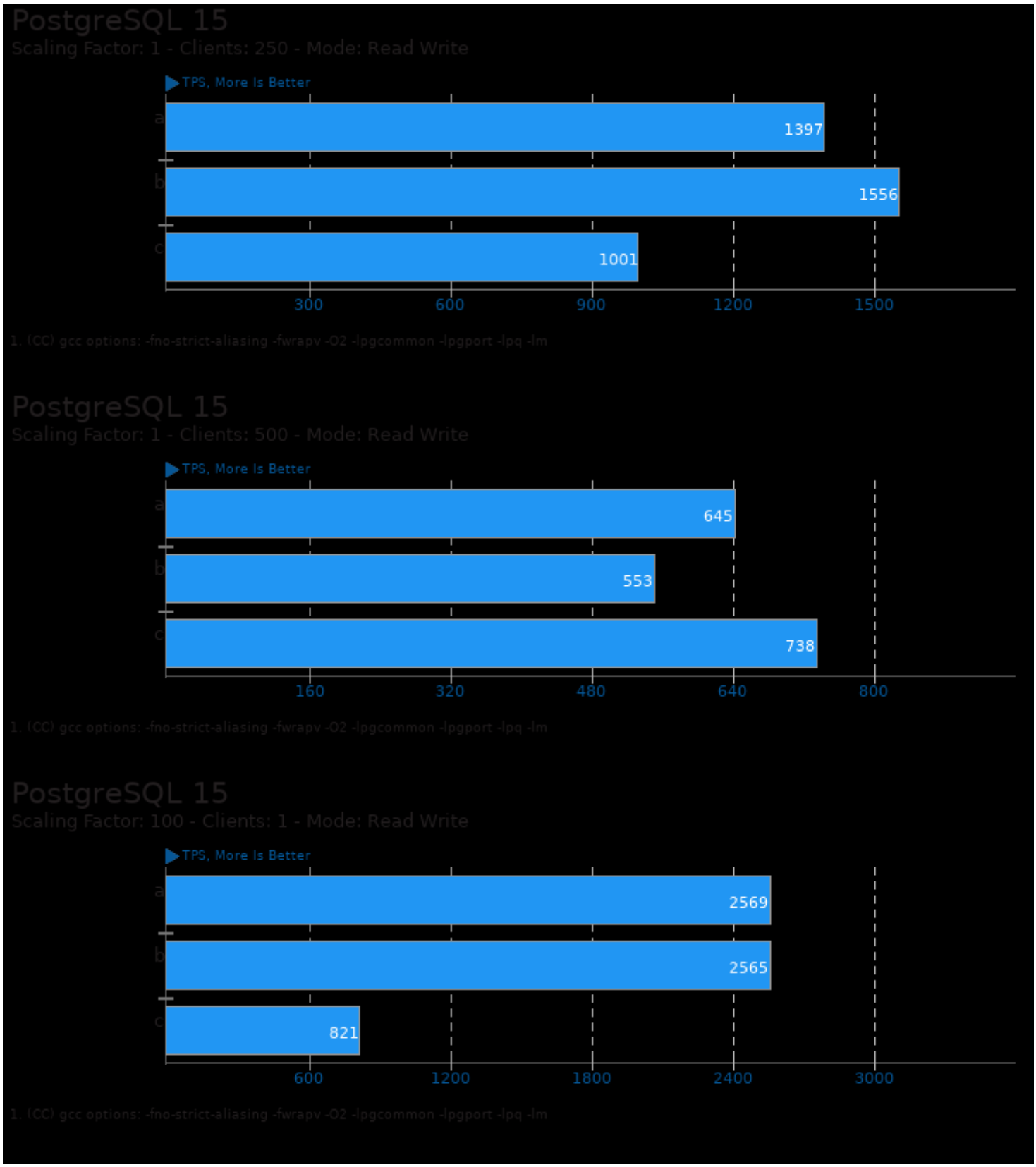
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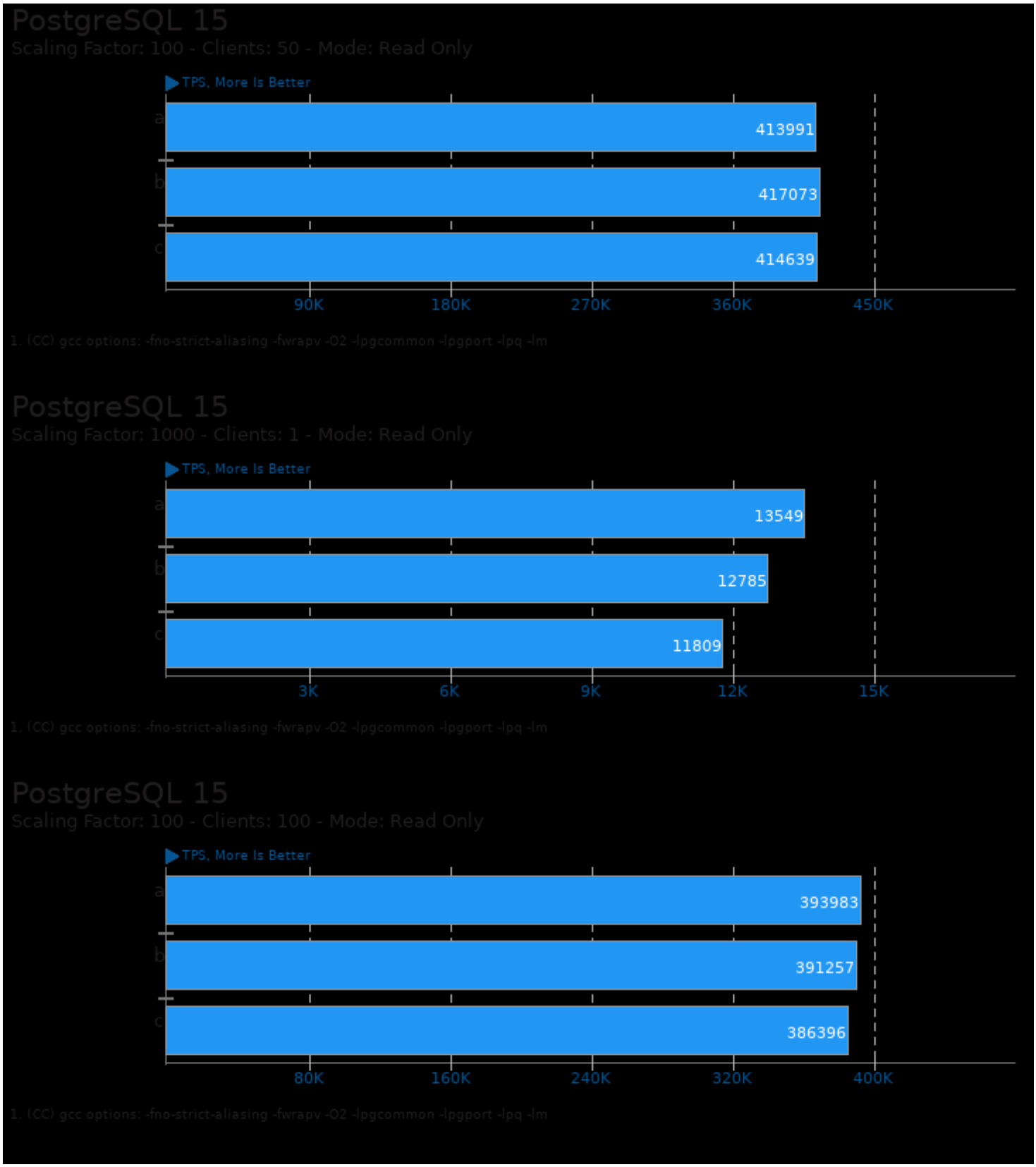
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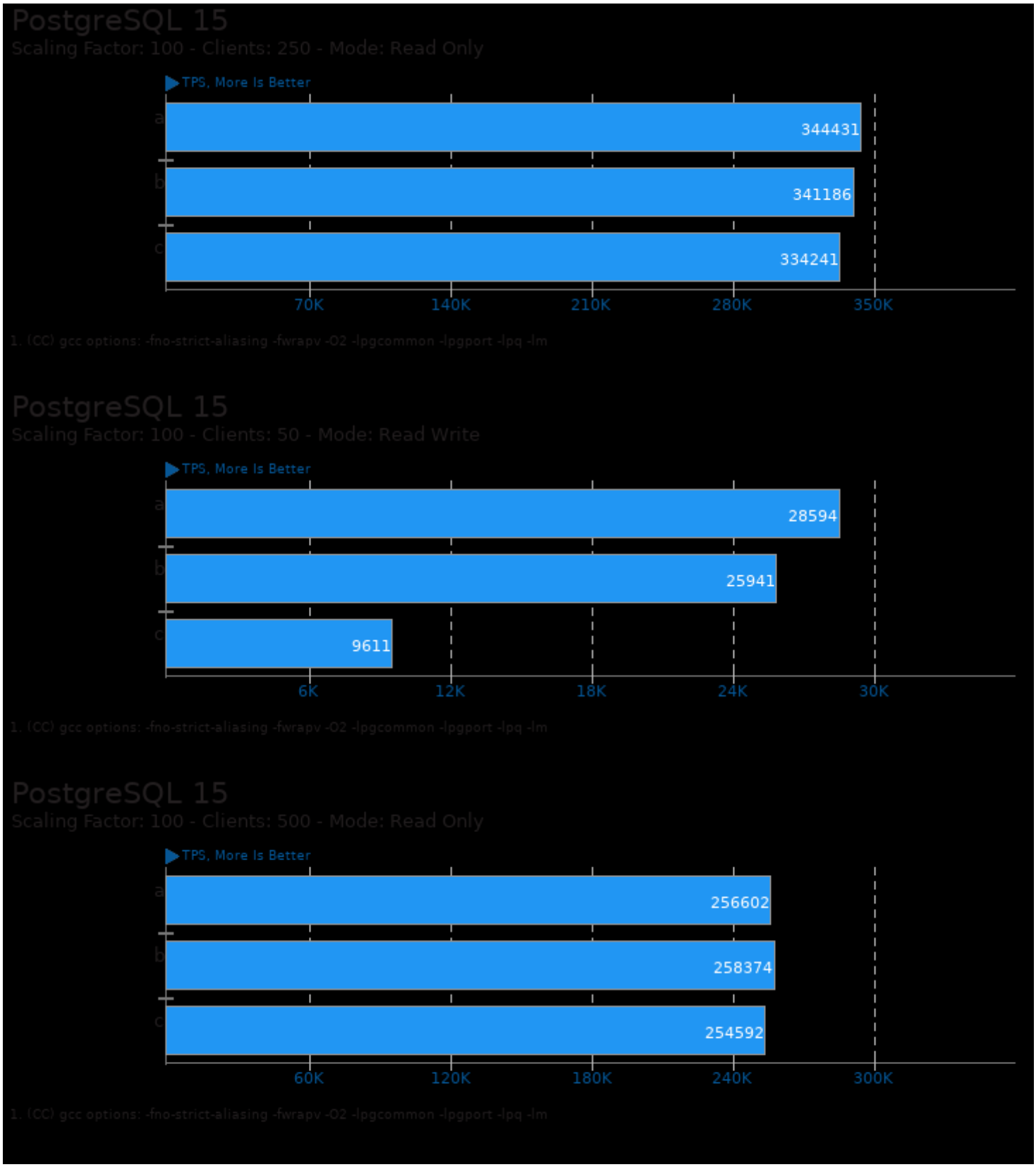
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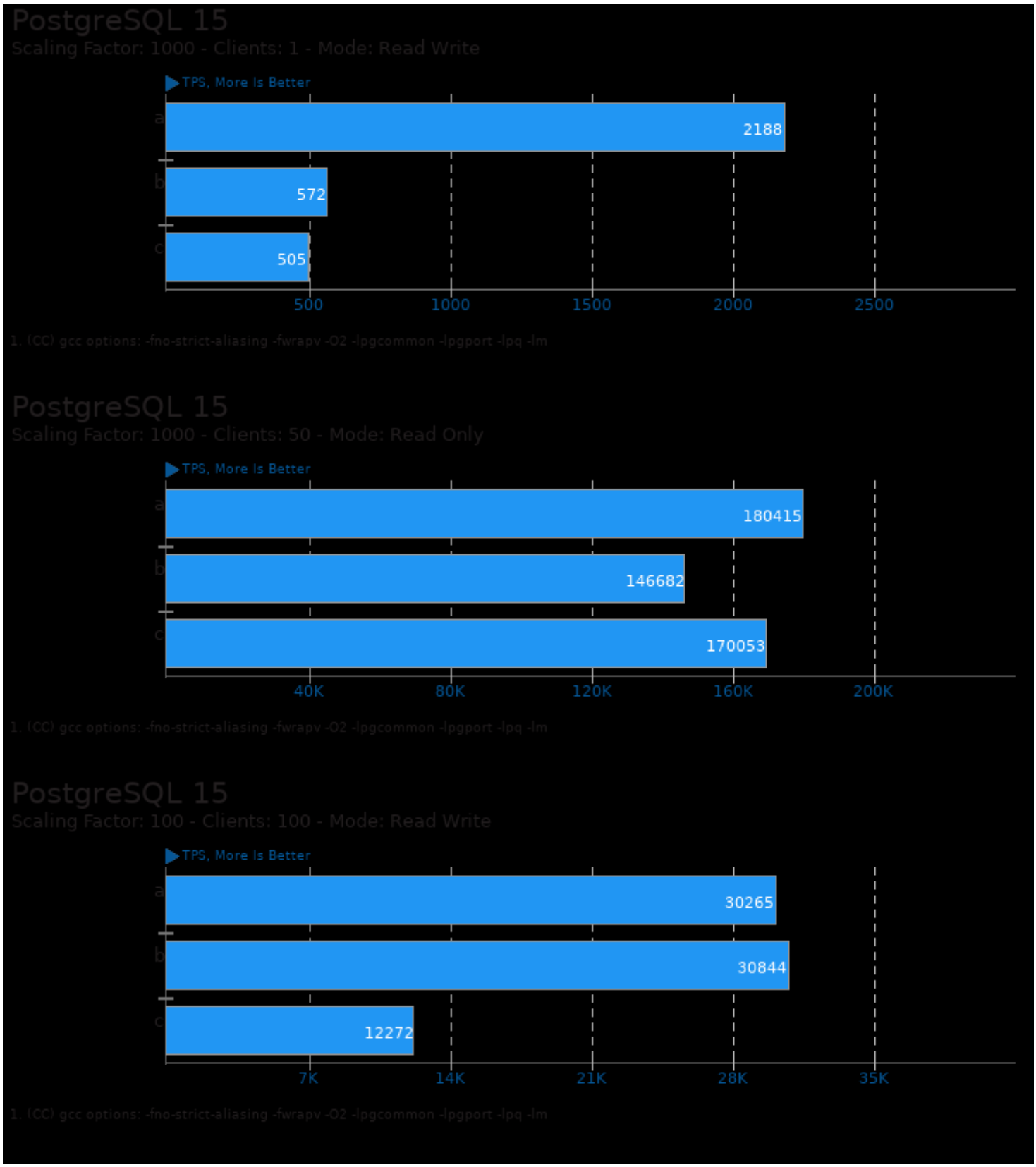
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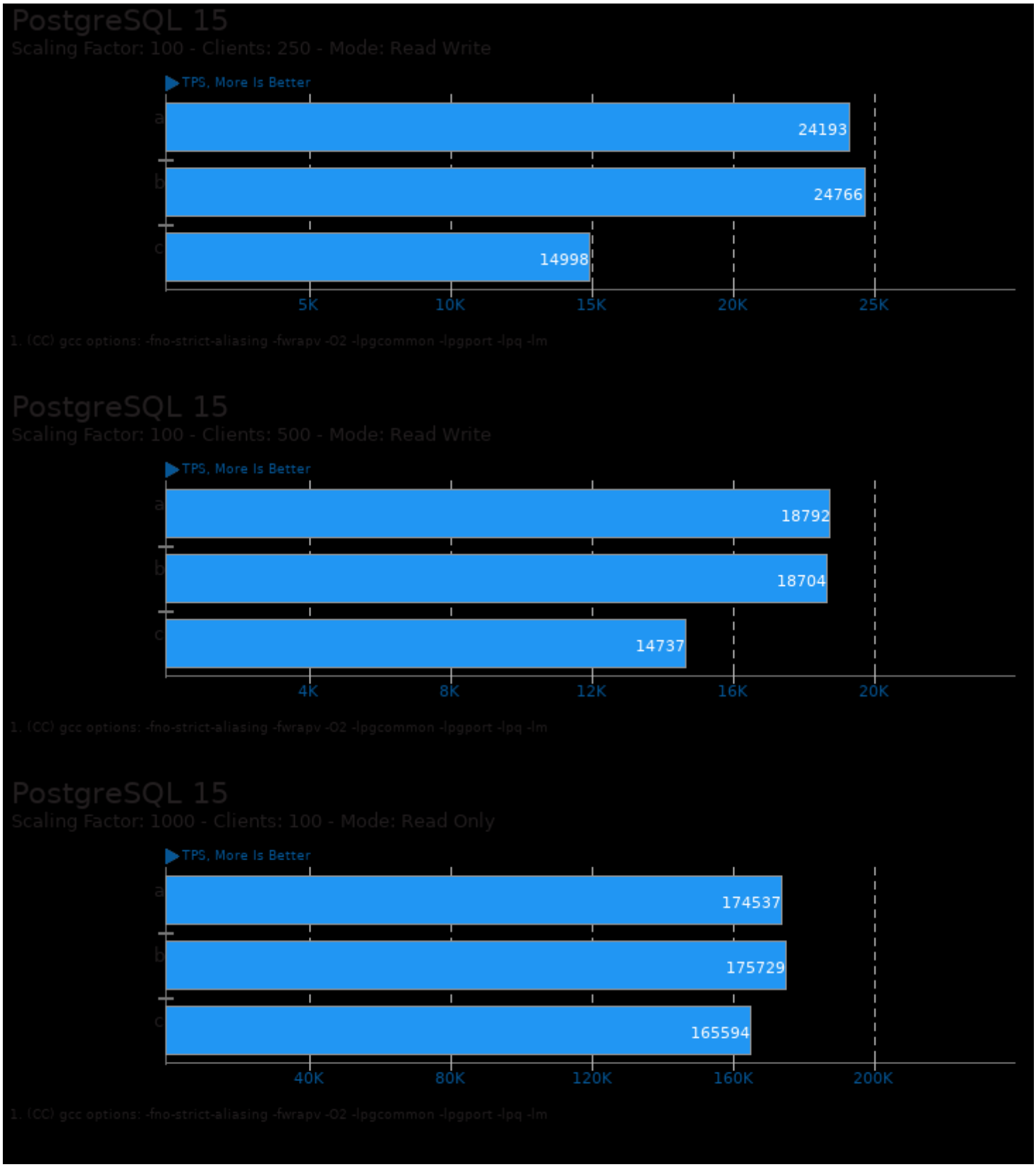
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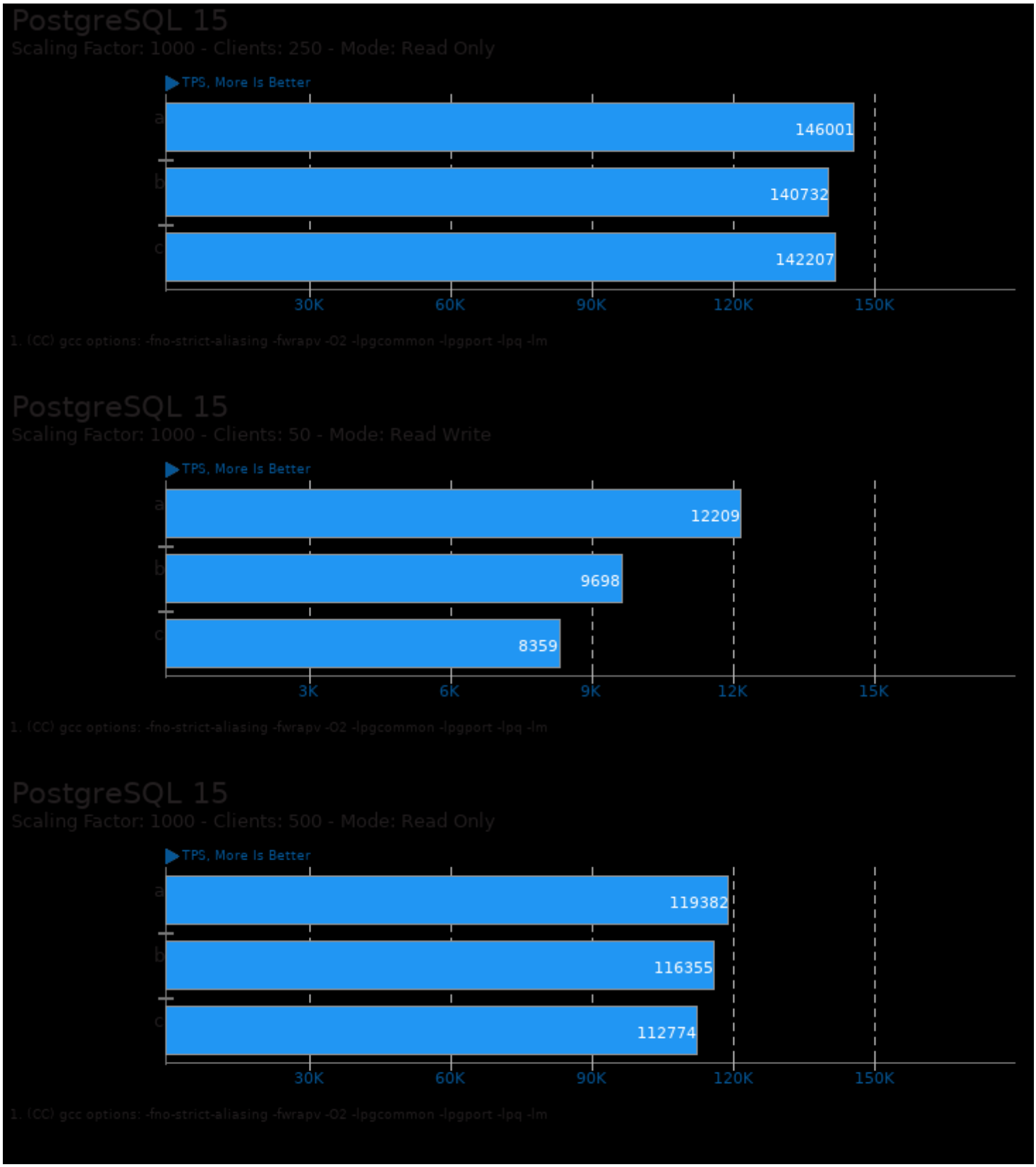
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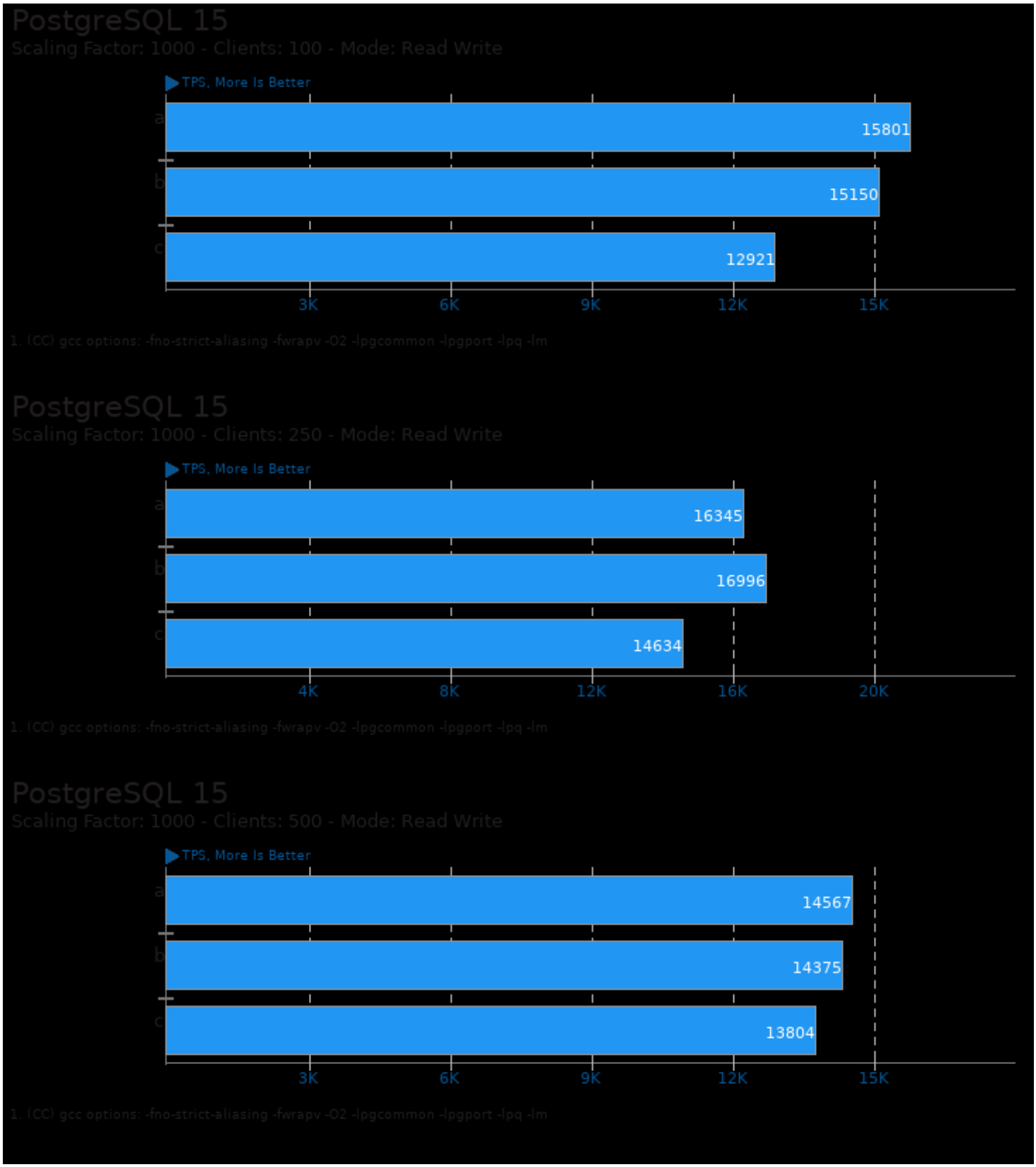
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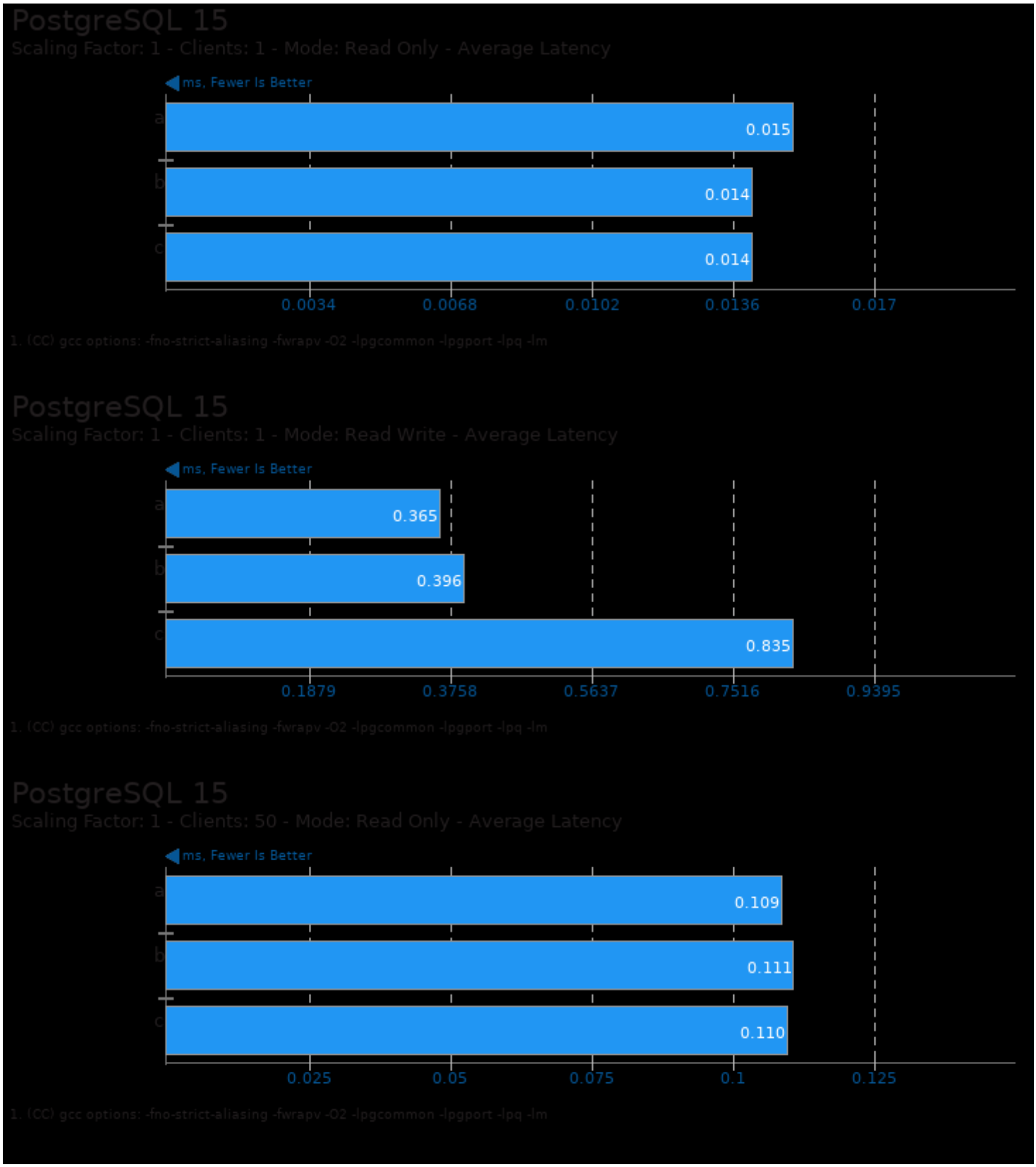


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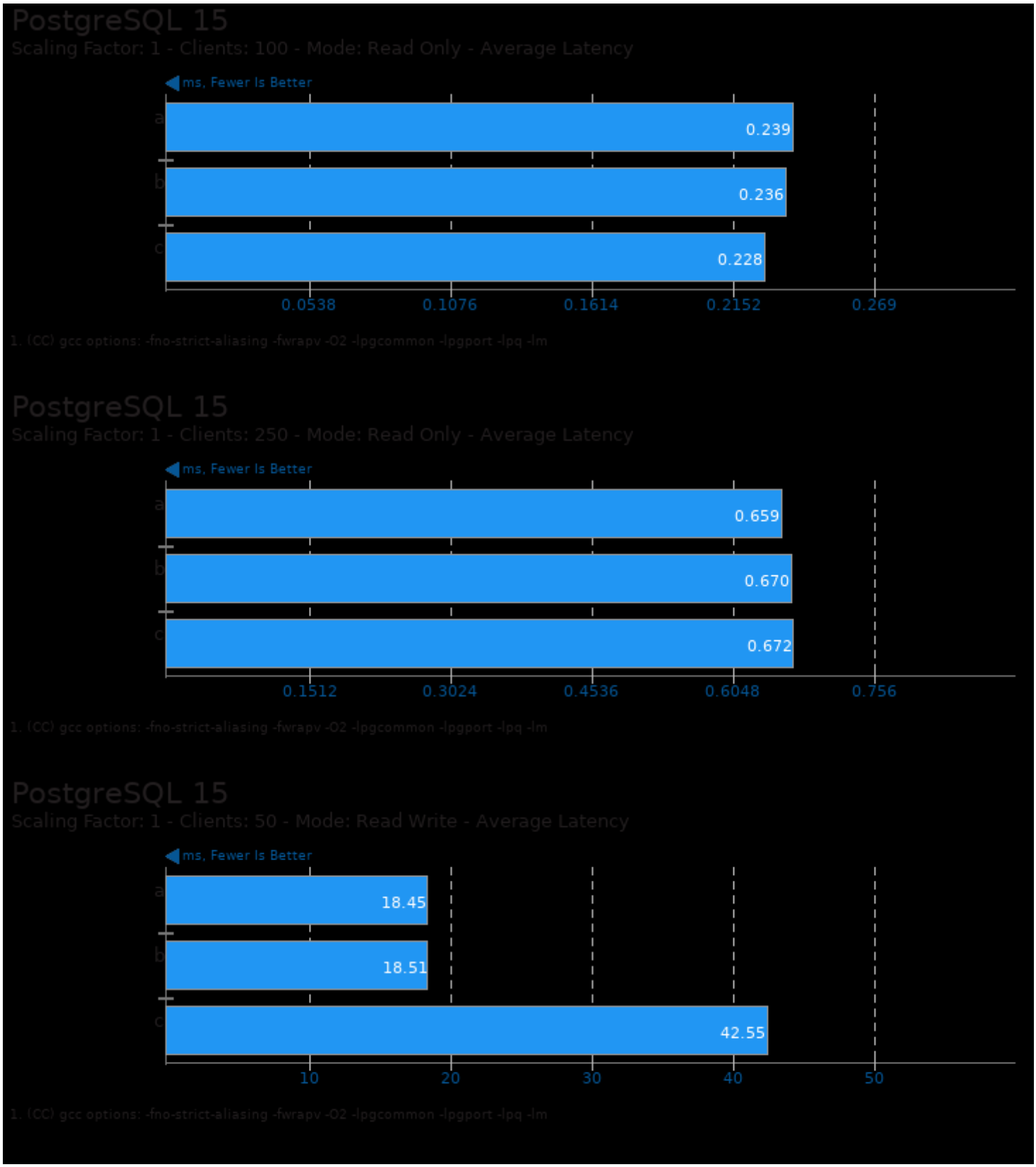


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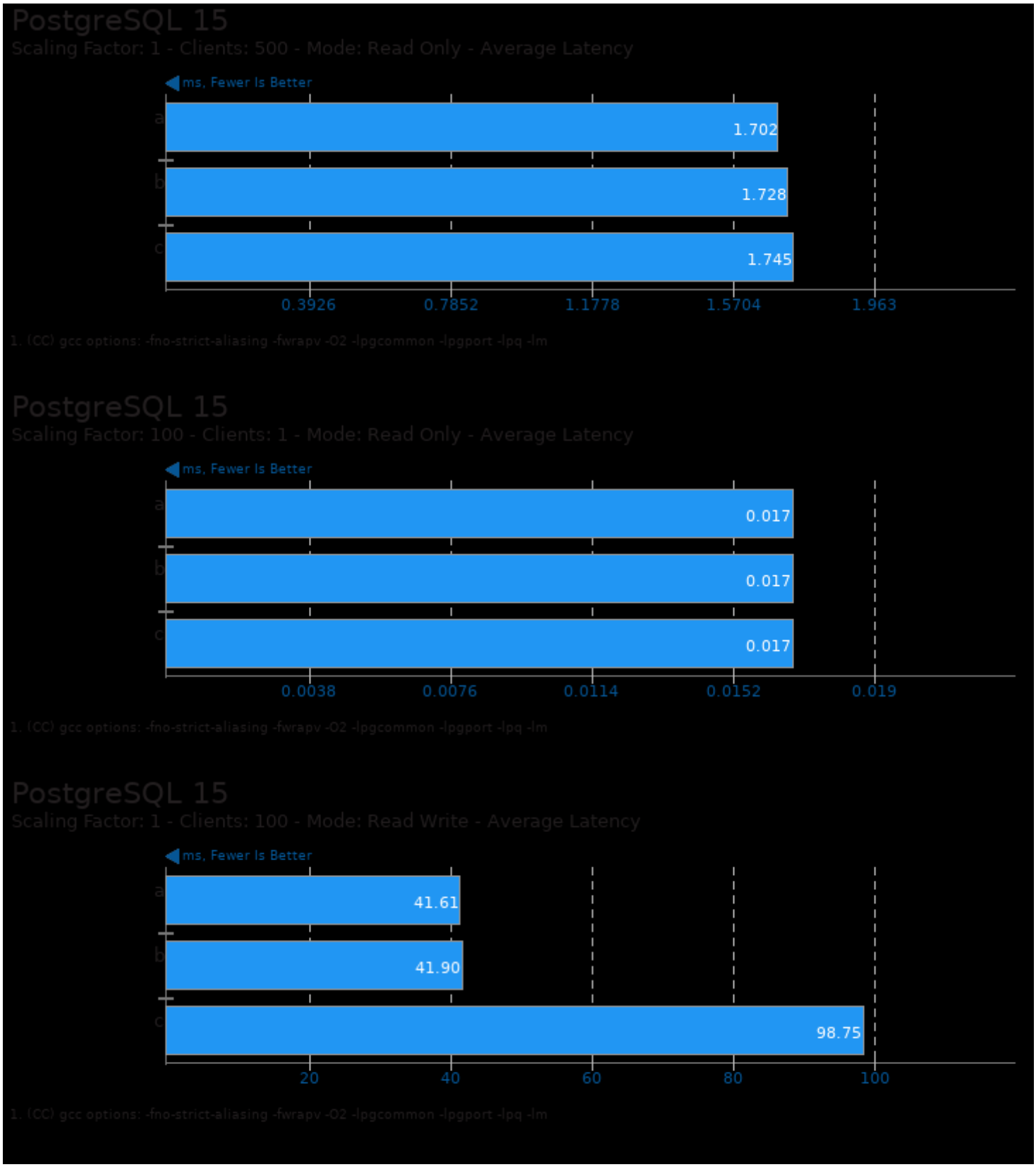



PostgreSQL 15
Scaling Factor: 1 - Clients: 1 - Mode: Read Only - Average Latency
ms, Fewer Is Better
a
b
c
0.015
0.014
0.014
0.0034
0.0068
0.0102
0.0136
0.017
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL 15
Scaling Factor: 1 - Clients: 1 - Mode: Read Write - Average Latency
ms, Fewer Is Better
a
b
c
0.365
0.396
0.835
0.1879
0.3758
0.5637
0.7516
0.9395
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL 15
Scaling Factor: 1 - Clients: 50 - Mode: Read Only - Average Latency
ms, Fewer Is Better
a
b
c
0.109
0.111
0.110
0.025
0.05
0.075
0.1
0.125
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

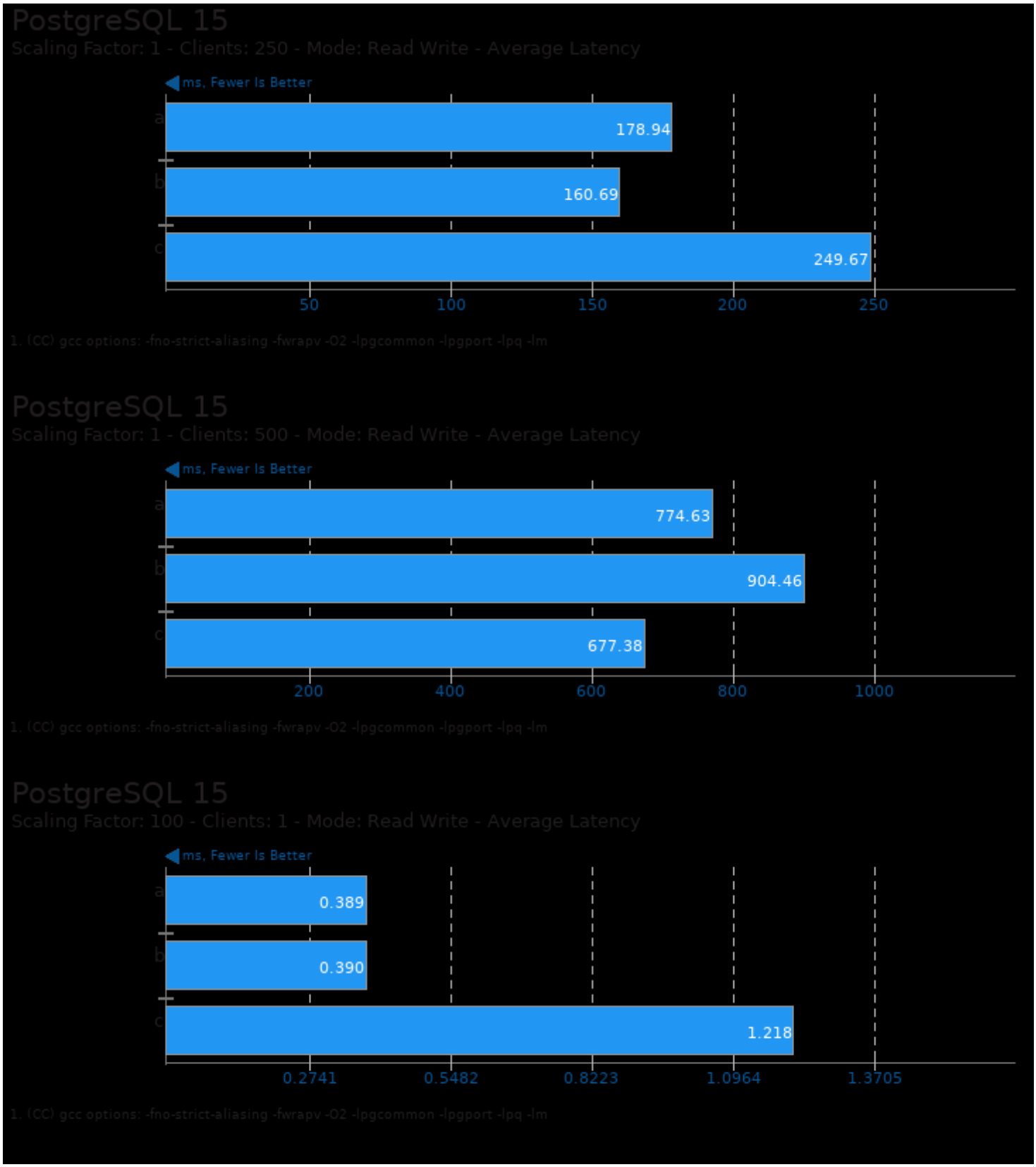
pgbench hp dev one



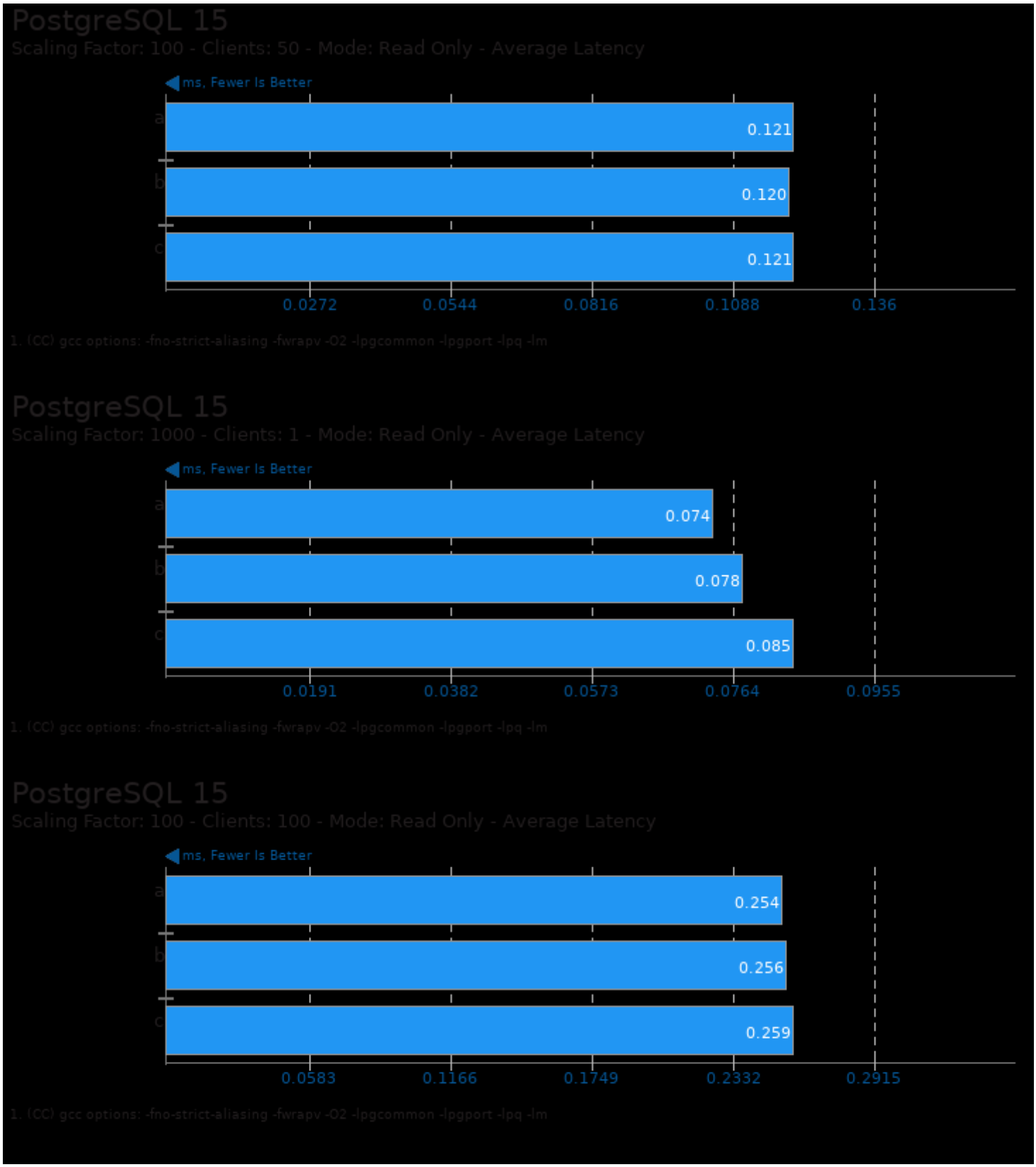
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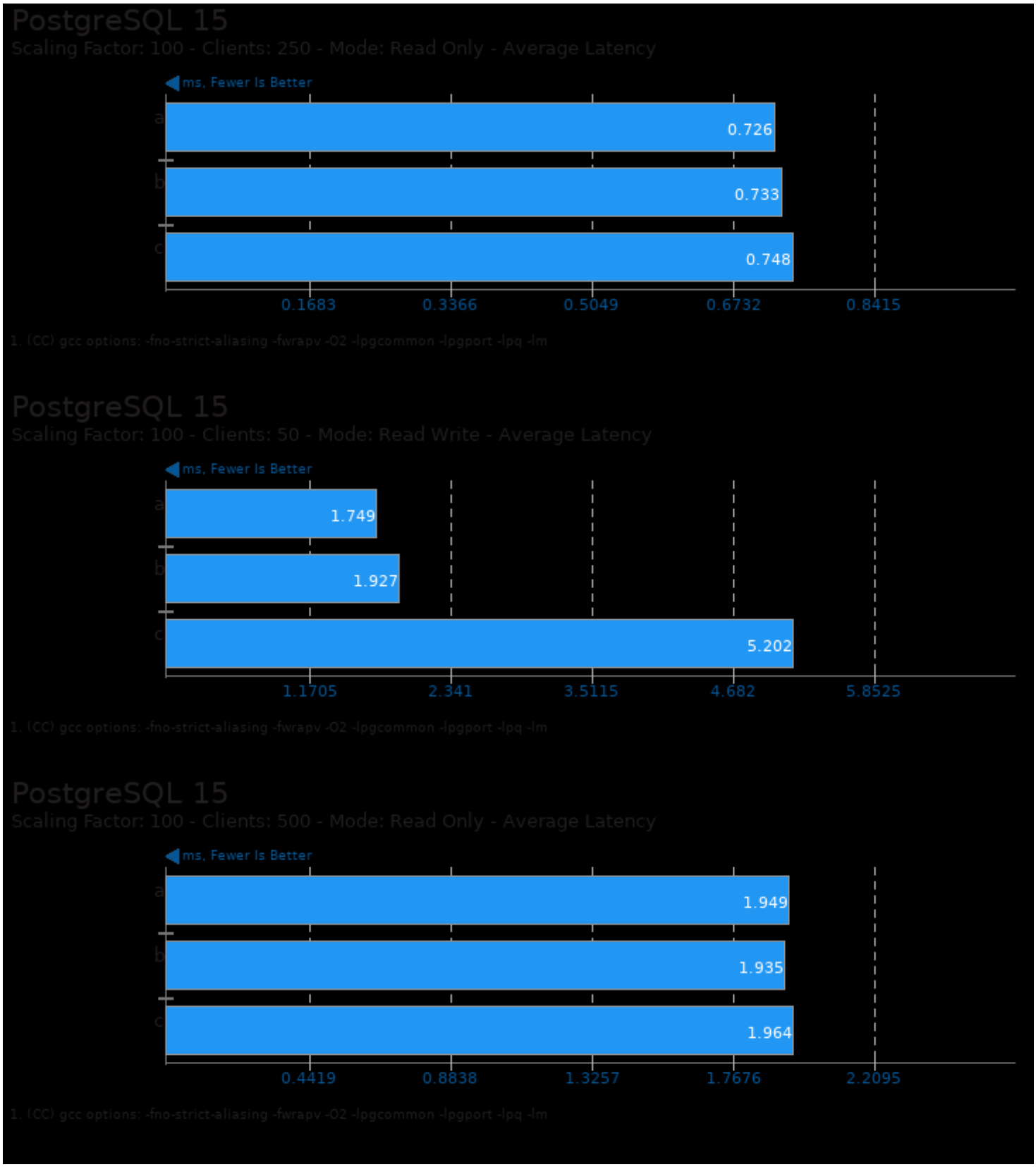
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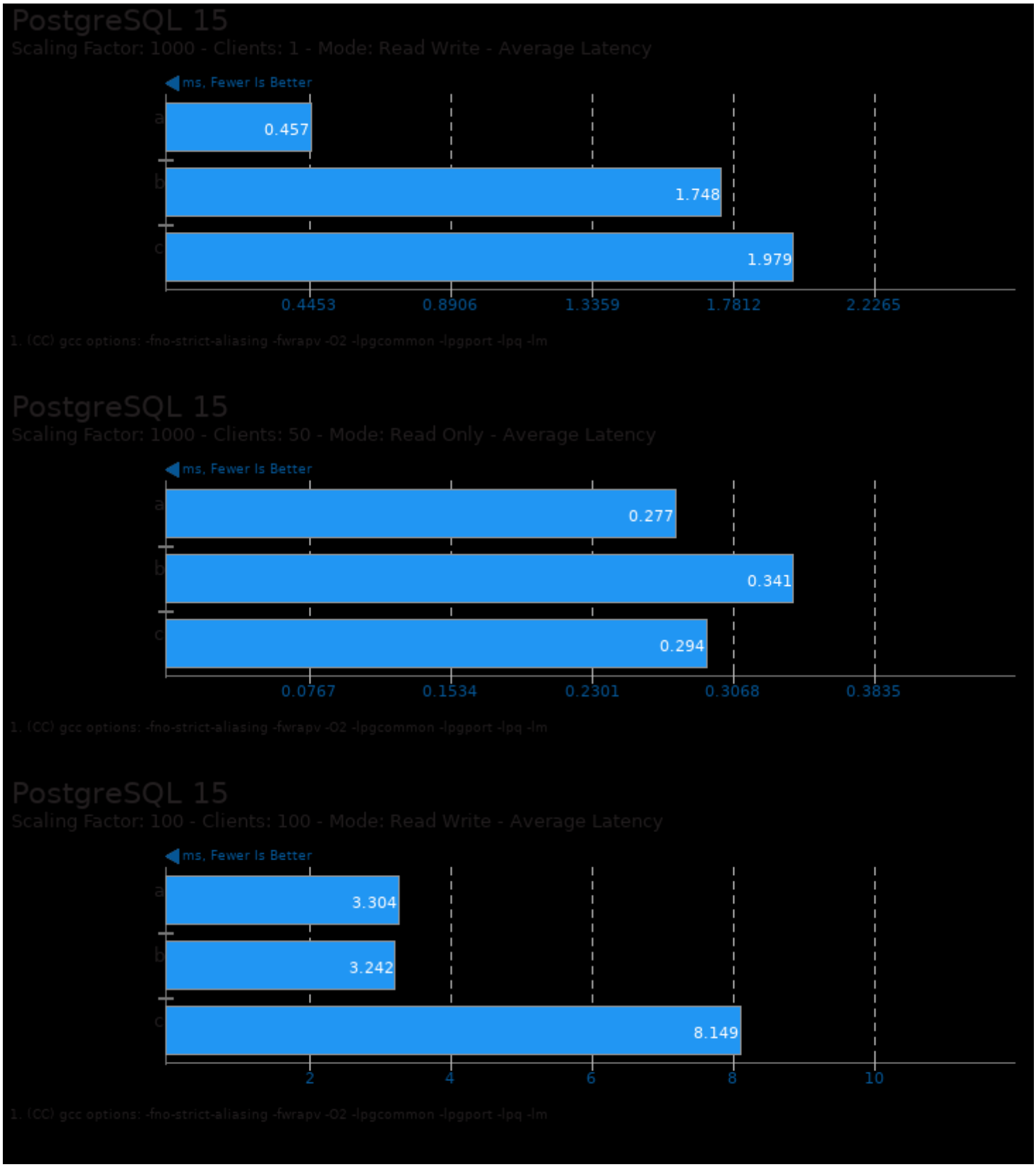
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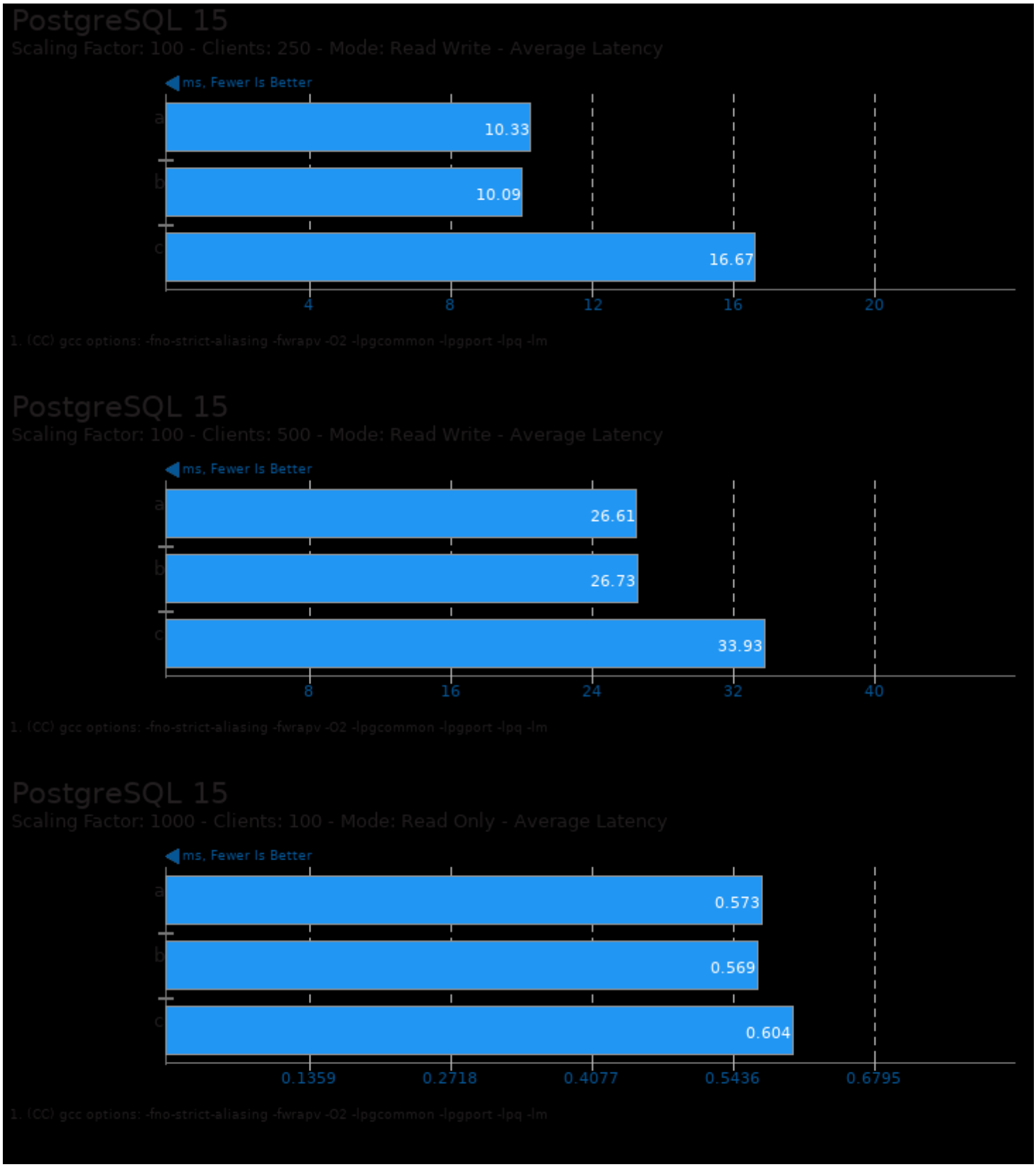


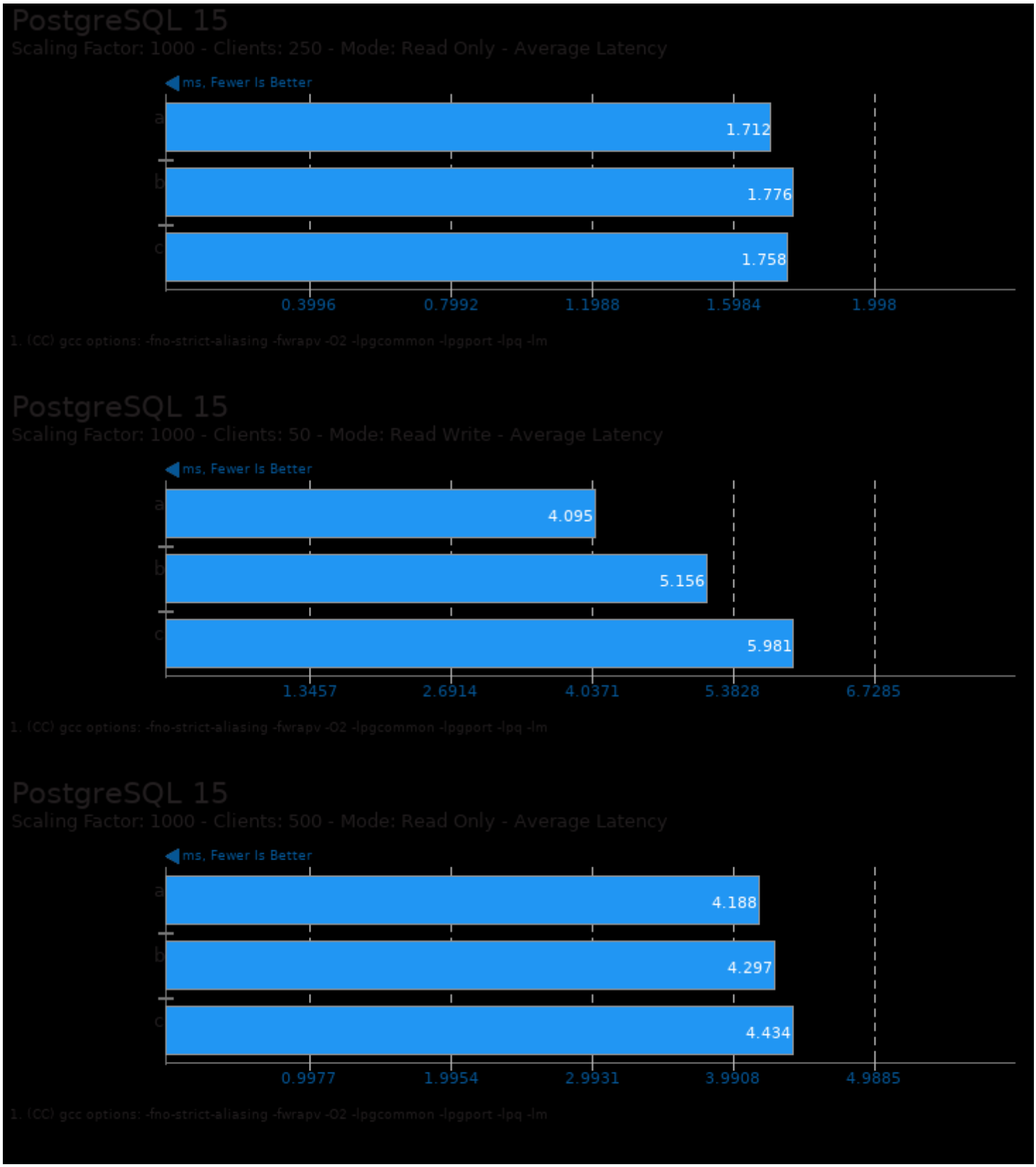
pgbench hp dev one



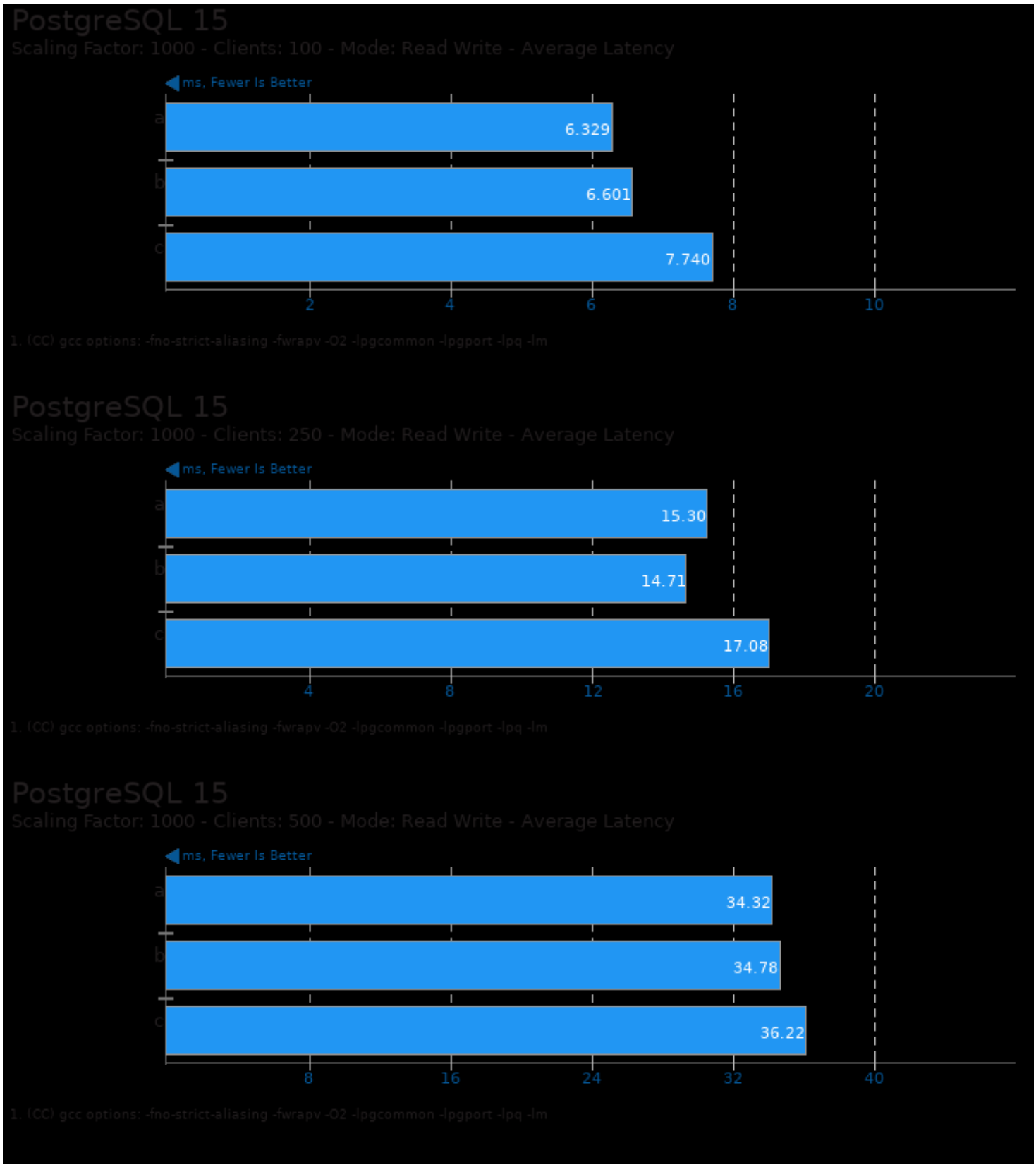
pgbench hp dev one




PostgreSQL 15
Scaling Factor: 100 - Clients: 250 - Mode: Read Write - Average Latency
ms, Fewer Is Better
a
10.33
b
10.09
c
16.67
4
8
12
16
20
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL 15
Scaling Factor: 100 - Clients: 500 - Mode: Read Write - Average Latency
ms, Fewer Is Better
a
26.61
b
26.73
c
33.93
8
16
24
32
40
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL 15
Scaling Factor: 1000 - Clients: 100 - Mode: Read Only - Average Latency
ms, Fewer Is Better
a
0.573
b
0.569
c
0.604
0.1359
0.2718
0.4077
0.5436
0.6795
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm


PostgreSQL 15
Scaling Factor: 1000 - Clients: 250 - Mode: Read Only - Average Latency
ms, Fewer Is Better
a
b
c
1.712
1.776
1.758
0.3996
0.7992
1.1988
1.5984
1.998
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL 15
Scaling Factor: 1000 - Clients: 50 - Mode: Read Write - Average Latency
ms, Fewer Is Better
a
b
c
4.095
5.156
5.981
1.3457
2.6914
4.0371
5.3828
6.7285
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm
PostgreSQL 15
Scaling Factor: 1000 - Clients: 500 - Mode: Read Only - Average Latency
ms, Fewer Is Better
a
b
c
4.188
4.297
4.434
0.9977
1.9954
2.9931
3.9908
4.9885
1. (CC) gcc options: -fno-strict-aliasing -fwrapv -O2 -lpgcommon -lpgport -lpq -lm

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