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Virgl asnychronous command stream submission

Virgl testsing of performance improvement

Automated Executive Summary

Async transfer query fixed too again had the most wins, coming in first place for 25% of the tests.

Test Systems:

Asnychronous command emission and early flush

Processor: 8 x QEMU Virtual 2.5+ (8 Cores), Motherboard: QEMU Standard PC (Q35 + ICH9 2009) (rel-1.14.0-0-g155821a1990b-prebuilt.qemu.org BIOS), Chipset: Intel 82G33/G31/P35/P31 + ICH9, Memory: 32GB, Disk: 97GB, Graphics: virgl 12288GB, Audio: Intel 82801I, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Gentoo/Linux, Kernel: 5.15.11-gentoo-x86_64 (x86_64), Display Server: X Server 1.20.14, OpenGL: 4.3 Mesa 22.0.0-devel (git-55482b8164) (LLVM 13.0.0 D...), Compiler: GCC 11.2.0 + LLVM 13.0.0, File-System: ext4, Screen Resolution: 1440x900, System Layer: QEMU

Processor Notes: CPU Microcode: 0x1000065
Python Notes: Python 3.9.9
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Not affected + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Baseline

Processor: 8 x QEMU Virtual 2.5+ (8 Cores), Motherboard: QEMU Standard PC (Q35 + ICH9 2009) (rel-1.14.0-0-g155821a1990b-prebuilt.qemu.org BIOS), Chipset: Intel 82G33/G31/P35/P31 + ICH9, Memory: 32GB, Disk: 97GB, Graphics: virgl 12288GB, Audio: Intel 82801I, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Gentoo/Linux, Kernel: 5.15.11-gentoo-x86_64 (x86_64), Display Server: X Server 1.20.14, OpenGL: 4.3 Mesa 22.0.0-devel (git-a167e8ecc8) (LLVM 13.0.0 D...), Compiler: GCC 11.2.0 + LLVM 13.0.0, File-System: ext4, Screen Resolution: 1440x900, System Layer: QEMU

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Python Notes: Python 3.9.9
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Async transfer fixed

Processor: 8 x QEMU Virtual 2.5+ (8 Cores), Motherboard: QEMU Standard PC (Q35 + ICH9 2009) (rel-1.14.0-0-g155821a1990b-prebuilt.qemu.org BIOS), Chipset: Intel 82G33/G31/P35/P31 + ICH9, Memory: 32GB, Disk: 97GB, Graphics: virgl 12288GB, Audio: Intel 82801I, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Gentoo/Linux, Kernel: 5.15.11-gentoo-x86_64 (x86_64), Display Server: X Server 1.20.14, OpenGL: 4.3 Mesa 22.0.0-devel (git-47fee50e3e) (LLVM 13.0.0 D...), Compiler: GCC 11.2.0 + LLVM 13.0.0, File-System: ext4, Screen Resolution: 1024x768, System Layer: QEMU

Processor Notes: CPU Microcode: 0x1000065
Python Notes: Python 3.9.9
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Not affected + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Async transfer query fixed too

Async transfer query fixed too again

Processor: 8 x QEMU Virtual 2.5+ (8 Cores), Motherboard: QEMU Standard PC (Q35 + ICH9 2009) (rel-1.14.0-0-g155821a1990b-prebuilt.qemu.org BIOS), Chipset: Intel 82G33/G31/P35/P31 + ICH9, Memory: 32GB, Disk: 97GB, Graphics: virgl 12288GB, Audio: Intel 82801I, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Gentoo/Linux, Kernel: 5.15.11-gentoo-x86_64 (x86_64), Display Server: X Server 1.20.14, OpenGL: 4.3 Mesa 22.0.0-devel (git-692c5348f2) (LLVM 13.0.0 D...), Compiler: GCC 11.2.0 + LLVM 13.0.0, File-System: ext4, Screen Resolution: 1024x768, System Layer: QEMU

Processor Notes: CPU Microcode: 0x1000065
Python Notes: Python 3.9.9
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Not affected + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

Async transfer fixed staging too

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Async transfer fixed staging too disable dpms

Async transfer fixed staging too -dpms

Processor: 8 x QEMU Virtual 2.5+ (8 Cores), Motherboard: QEMU Standard PC (Q35 + ICH9 2009) (rel-1.14.0-0-g155821a1990b-prebuilt.qemu.org BIOS), Chipset: Intel 82G33/G31/P35/P31 + ICH9, Memory: 32GB, Disk: 97GB, Graphics: virgl 12288GB, Audio: Intel 82801I, Monitor: QEMU Monitor, Network: Red Hat Virtio device

OS: Gentoo/Linux, Kernel: 5.15.11-gentoo-x86_64 (x86_64), Display Server: X Server 1.20.14, OpenGL: 4.3 Mesa 22.0.0-devel (git-b8ec3a5274) (LLVM 13.0.0 D...), Compiler: GCC 11.2.0 + LLVM 13.0.0, File-System: ext4, Screen Resolution: 1024x768, System Layer: QEMU

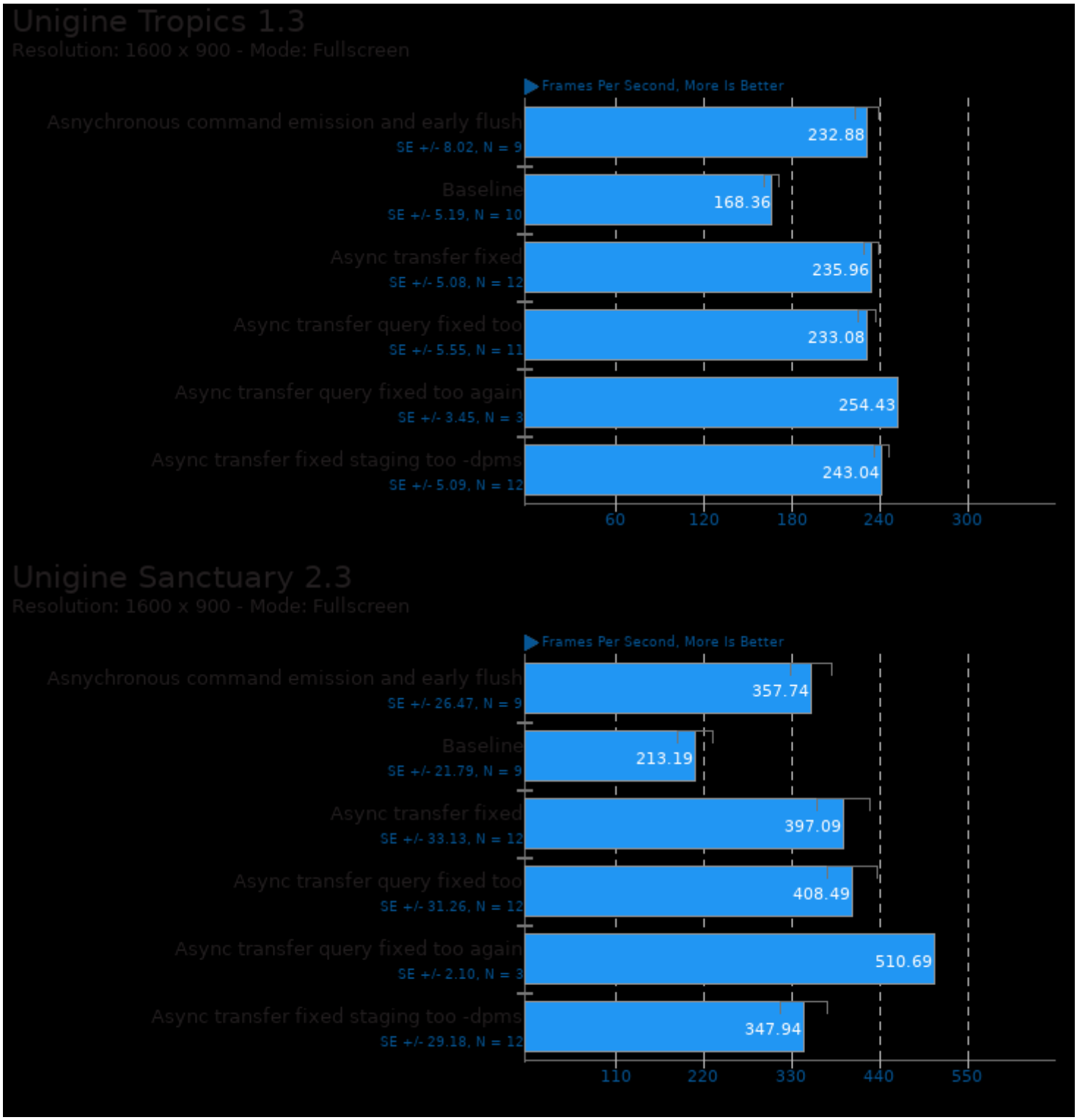
Processor Notes: CPU Microcode: 0x1000065
Python Notes: Python 3.9.9
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + spec_store_bypass: Not affected + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Full AMD retpoline STIBP: disabled RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	Asnychronous command emission and early flush	Baseline	Async transfer fixed	Async transfer query fixed too	Async transfer query fixed too again	Async transfer fixed staging too	Async transfer fixed staging too disable dpms	Async transfer fixed staging too -dpms
Unigine Tropics - 1600 x 900 - Fullscreen (FPS)	232.878	**168.360**	235.961	233.080	**254.427**			243.035
Normalized	91.53%	66.17%	92.74%	91.61%	100%			95.52%
Standard Deviation	10.3%	9.8%	7.5%	7.9%	2.3%			7.3%
Unigine Sanctuary - 1600 x 900 - Fullscreen	357.740	**213.194**	397.093	408.487	**510.694**			347.941
Normalized	70.05%	41.75%	77.76%	79.99%	100%			68.13%
Standard Deviation	22.2%	30.7%	28.9%	26.5%	0.7%			29.1%
Unigine Heaven - 1600 x 900 - Fullscreen - OpenGL (FPS)	163.886	162.689	**165.368**	163.478	164.351	**157.481**		164.467
Normalized	99.1%	98.38%	100%	98.86%	99.39%	95.23%		99.46%
Standard Deviation	0.2%	0.6%	0.2%	0.3%	0.1%	3.1%		0.3%
Unigine Valley - 1600 x 900 - Fullscreen - OpenGL (FPS)	159.183	160.499	161.147	**159.120**	159.482			**163.096**
Normalized	97.6%	98.41%	98.8%	97.56%	97.78%			100%
Standard Deviation	1.6%	0.4%	0.5%	0.8%	0.6%			0.6%
GLmark2 - 1024 x 768 (Score)	4640	**4672**	4613	4517	**4480**			4516
Normalized	99.32%	100%	98.74%	96.68%	95.89%			96.66%
GpuTest - 1600 x 900 (Points)	14741	**13369**	14618	**14859**	14741			14816
Normalized	99.21%	89.97%	98.38%	100%	99.21%			99.71%
Standard Deviation	0.6%	1.4%	0.9%	0.1%	0.5%			0.4%

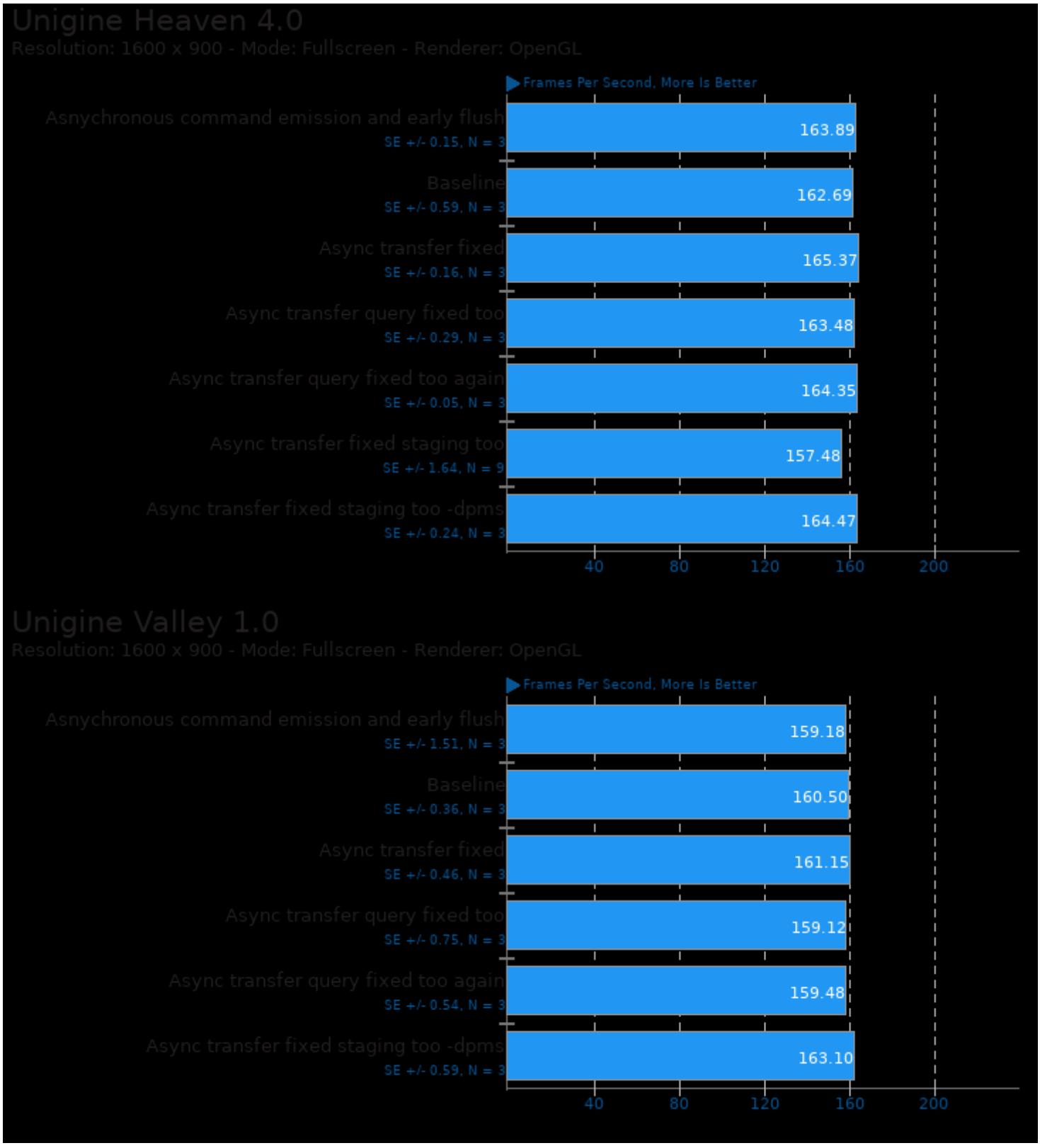
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Xonotic - 1024 x 768 - Ultimate (FPS)	268.313281 0	**250.4787894**	271.1263553	270.1677618	271.2741134		**272.2699109**
Normalized	98.55%	92%	99.58%	99.23%	99.63%		100%
Standard Deviation	0.3%	0.4%	0.2%	0.7%	1%		1.1%
OpenArena - 1600 x 900 (FPS)	**412.6**	**301.1**	365.5	392.5	399.9	358.0	374.1
Normalized	100%	72.98%	88.58%	95.13%	96.92%	86.77%	90.67%
Standard Deviation	1.4%	0.6%	0.4%	2.2%	1.3%	2.5%	0.6%

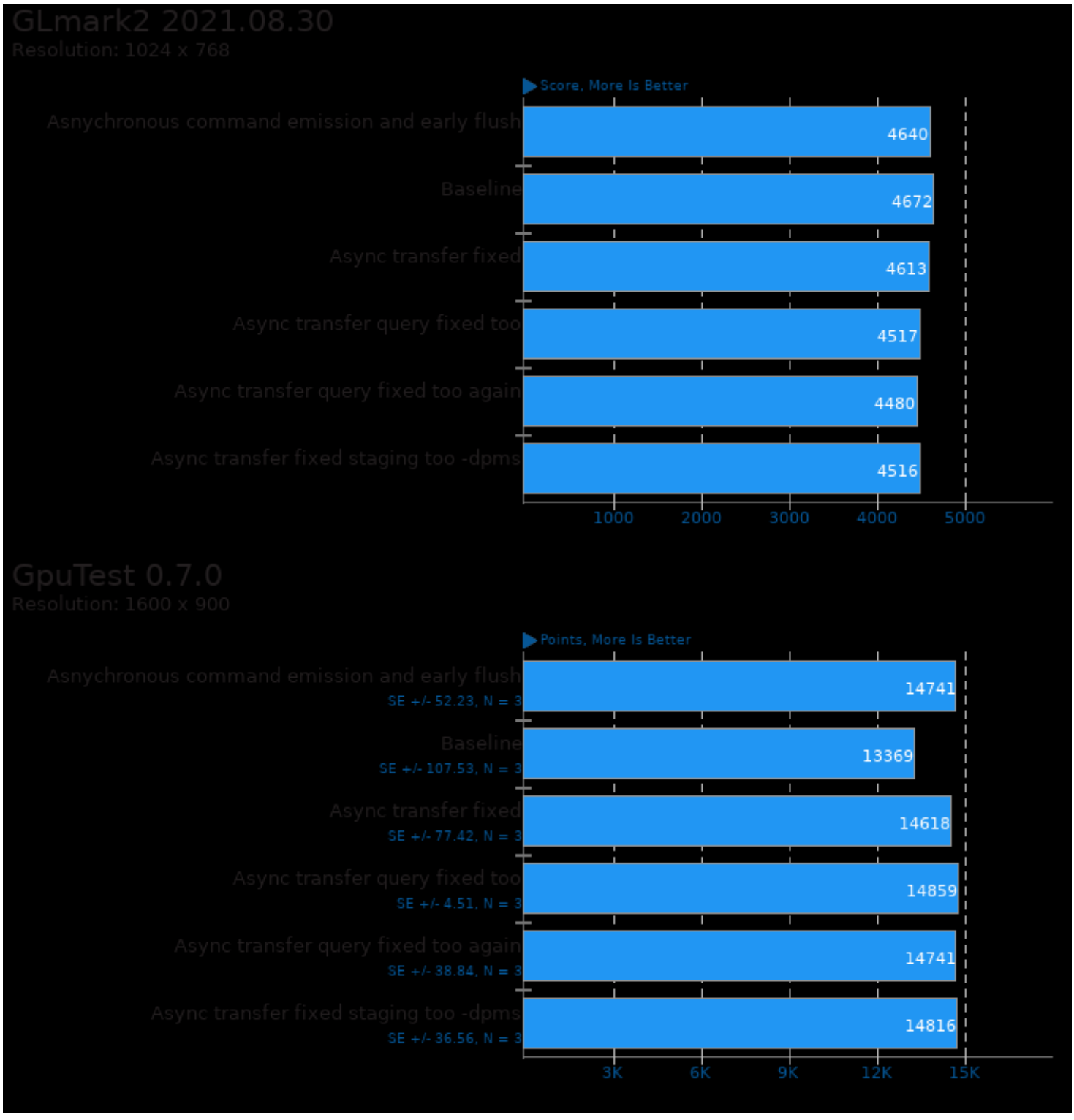
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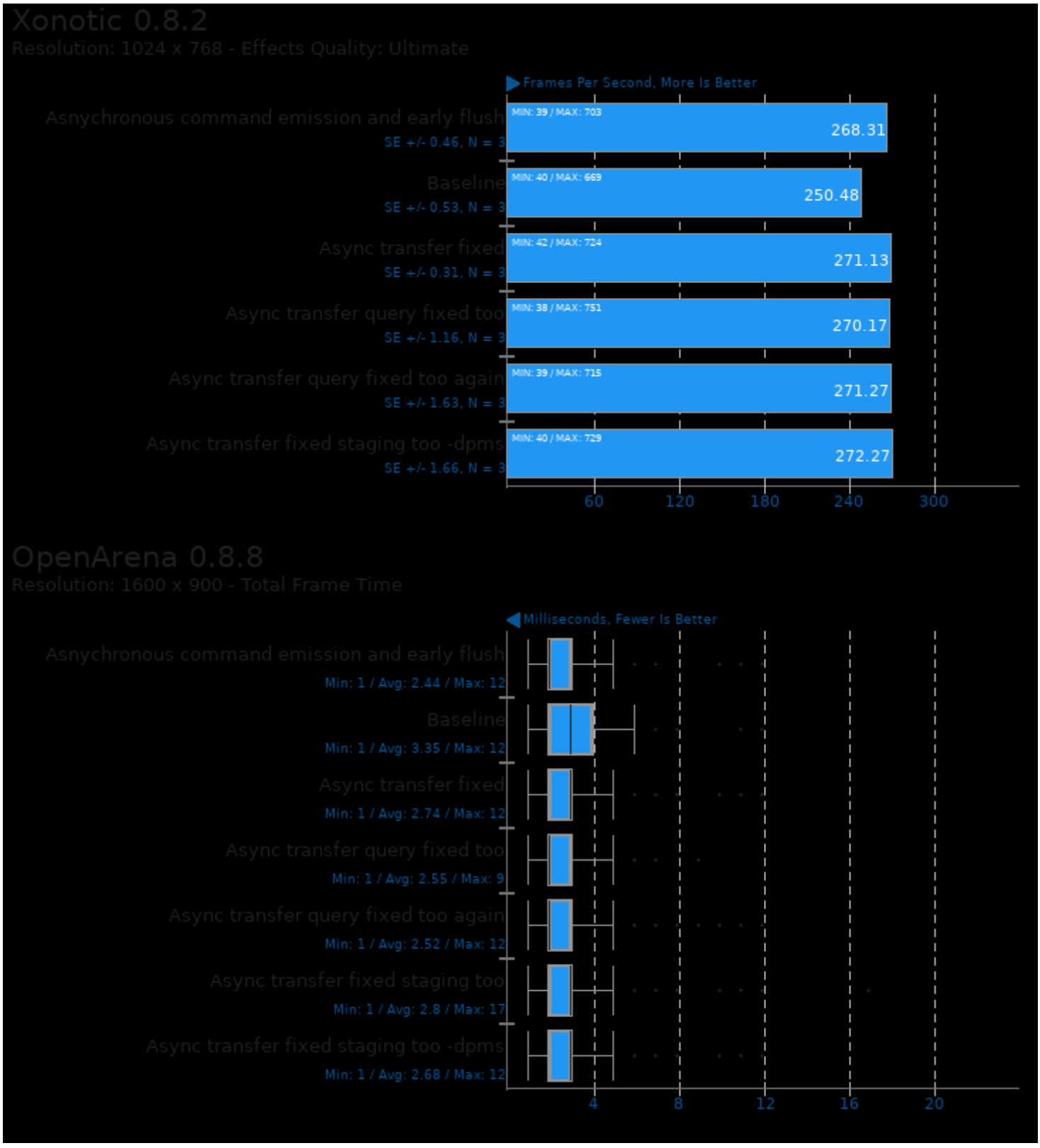
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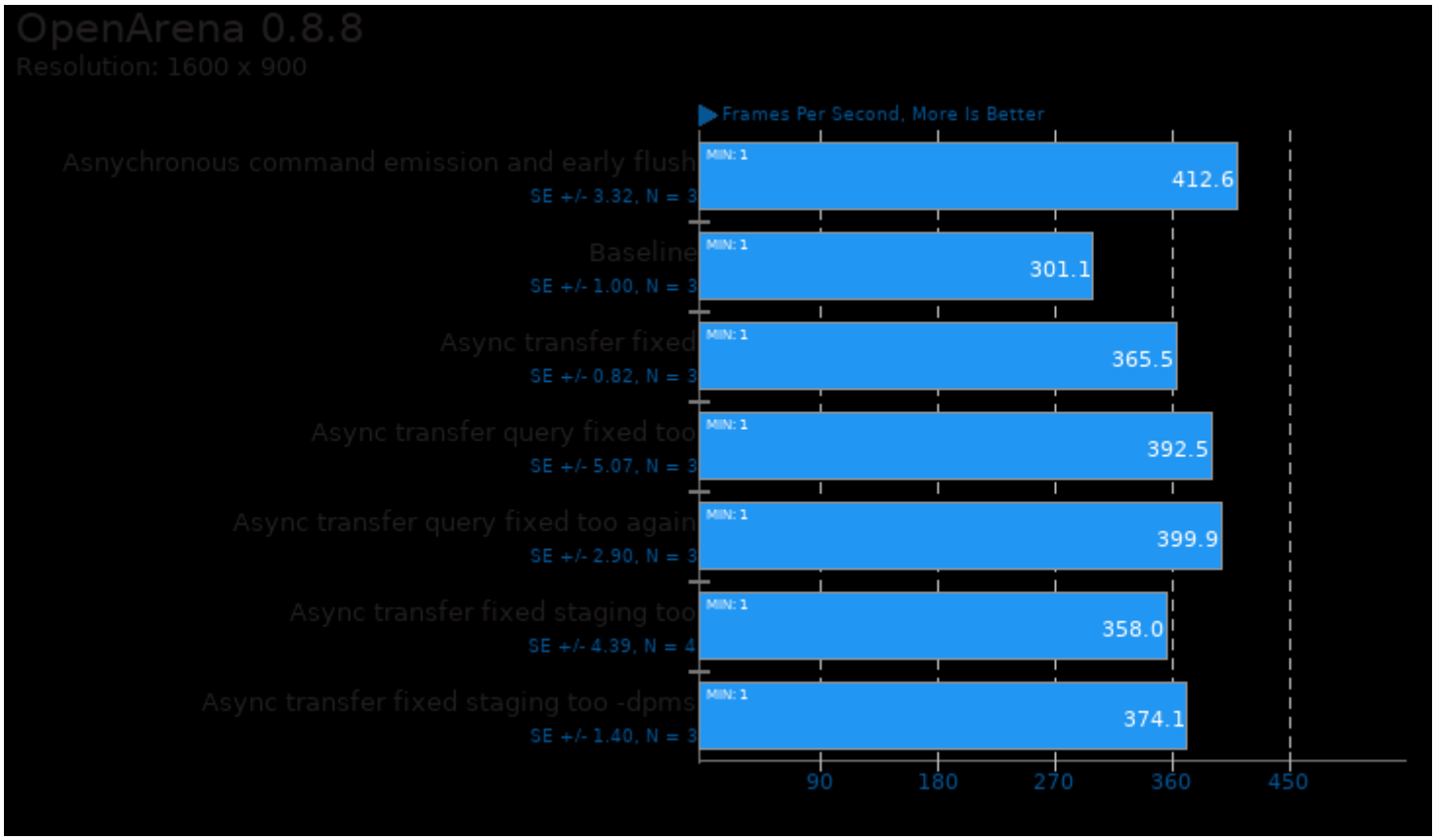
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