



The new HP Z8 Fury G5 Workstation Desktop PC: Crunch through demanding workloads in considerably less time

vs. an HP Z8 G4 Workstation Desktop PC

Whether you're generating three-dimensional images, shaping machine-driven interactions, or working with AI-based language technologies, the ultimate goal is the same: Get more done in less time.

At Principled Technologies, we compared CPU and GPU performance of the new HP Z8 Fury G5 Workstation to that of its predecessor, the HP Z8 G4 Workstation. We're happy to report that, much as the Z8 G4 was the successor to the powerful HP Z840 in 2017, so is the Z8 Fury G5 Workstation to the Z8 G4 Workstation in 2023.

And, while many of the benchmarks we used for this comparison are content-creation-focused, the CPU and GPU performance results we report aren't just for creatives. These results are also applicable to technical professionals who rely on hardware-intensive computer-aided design (CAD); utilize ray-tracing techniques to generate realistic digital images; work with complex datasets that include videos, images, and speech; or run advanced simulations and visualizations.

Reach new heights in 3D modeling

Higher Cinebench R23, Geekbench 6 Pro, and Maxon Redshift benchmark scores

Tackle bigger projects

Higher CrossMark Pro and PugetBench benchmark scores

Speed development cycles

Faster Blender 3.6 renders while processing more samples per minute





How we tested

Before we started testing, we set the G4 workstation power mode to “high performance” and the G5 workstation power mode to “ultimate performance.” Other than making and verifying those changes, we used out-of-box OEM performance settings. To see how much the increased CPU and GPU capabilities on the G5 boosted performance, we tested the best configurations available for each generation:

HP Z8 Fury G5 Workstation

- 1x 56-core Intel® Xeon® w9-3495X CPU (1.9 - 4.8 GHz)
- 4x dual-slot NVIDIA® RTX™ 6000 Ada-generation GPUs
- 8x 16GB cards of DDR5-4800 memory
- 4x 1TB NVMe® SSDs

HP Z8 G4 Workstation

- 2x (28-core) Intel Xeon Gold 6258R CPUs (2.7 - 4.0 GHz)
- 2x NVIDIA RTX A6000 GPUs
- 12x 8GB cards of DDR5-2933 memory
- 2x 1TB NVMe SSDs

About the HP Z8 Fury G5

According to HP, the HP Z8 Fury G5 Workstation includes “transformative” single-socket Intel Xeon w9 processor technology with up to 56 cores, 1.5 TB of high-speed memory, up to 56 TB of storage, ISV certification for professional apps, and four NVIDIA RTX 6000 Ada-generation GPUs. This combination enables users to handle the most complex simulations, virtual production, and high-quality VFX projects.¹

While we didn’t test internal or external security features on this model, the rack-mountable HP Z8 Fury G5 Workstation includes lockable front access carriers, side panel locks with an interlock sensor, and a Kensington lock slot to prevent the physical removal of the compute device. Plus, HP Anyware Remote System Controller allows your IT team to manage your workstation fleet remotely from a single interface.²

CPU performance can sometimes limit performance for certain demanding applications. So, we chose punishing CPU- and GPU-intensive workloads that stressed each system in different ways. We ran a range of workloads three times and report the median results:

- **Cinebench R23 and Geekbench 6 Pro** to compare CPU single- and multi-core performance.
- **Geekbench 6 Pro** to compare GPU performance with augmented reality and machine learning workloads.
- **Blender** to compare GPU rendering, multi-GPU acceleration, and ray-tracing performance.
- **CrossMark™ Pro** to compare general performance in the areas of productivity, creativity, and responsiveness.
- **PugetBench benchmarks** to compare photo- and video-editing performance with Adobe® Creative Cloud® apps.
- **Maxon Redshift** to compare production rendering performance.

The benchmark scores we report reflect the specific configurations we tested. Any difference in the configurations you test, as well as network traffic, or software additions, can affect these results. For a deeper dive into our testing parameters and procedures, see the [science behind the report](#).



Note: The graphs in this report use two different x-axis scales to keep to a consistent size. Please be mindful of each graph's data range as you compare.

Stay ahead in your industry

With more than 75 percent of businesses looking to embrace big data solutions, take advantage of cloud computing technologies, and profit from AI in the next five years, powerful workstations are more important than ever.³ High-performance workstations are useful for everything from AI and machine learning engineering to resource exploration models; from architectural design to data science research; and from building virtual worlds to utilizing deep learning algorithms.

From AI creation to resource exploration models

The Cinebench benchmark provides performance scores based on "Cinema 4D's ability to take advantage of multiple CPU cores and modern processor features available to the average user."⁴ Cinema 4D is real-world 3D computer animation, modeling, simulation, and rendering software.⁵

Higher CPU single- and multi-core scores in our Cinebench R23 and Geekbench 6 Pro comparisons highlight the advantages the single-socket, 56-core Intel Xeon w9-3495X processor brought to the table. This jump forward can be a boon for engineers and data scientists trying to complete difficult and resource-heavy machine learning tasks as quickly as possible.

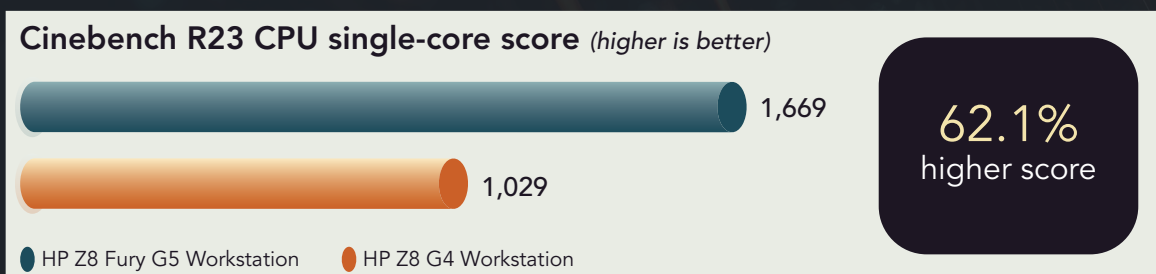


Figure 1: Cinebench R23 CPU single-core scores. Higher is better. Source: Principled Technologies.

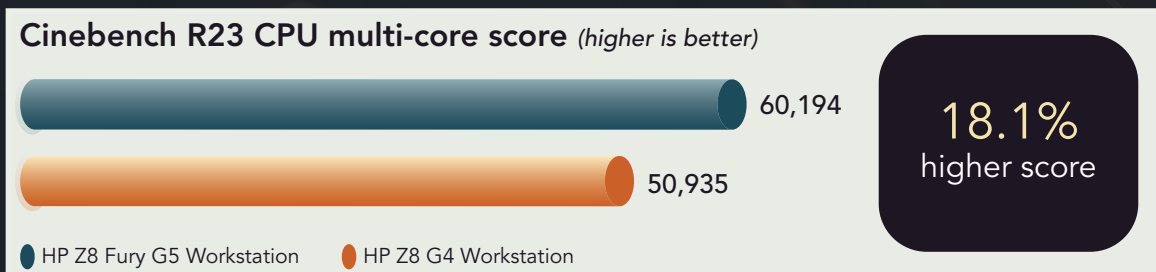


Figure 2: Cinebench R23 CPU multi-core scores. Higher is better. Source: Principled Technologies.

From architectural design to data science research

To measure performance in cutting-edge areas such as augmented reality and machine learning, the Geekbench 6 Pro GPU Compute benchmarks use popular, real-world applications and claim to use realistic data sets.⁶

The HP Z8 Fury G5 Workstation received higher scores in all three Geekbench 6 Pro comparisons we ran. In particular, the higher GPU Compute OpenCL score highlights how well the HP Z8 Fury G5 Workstation handled computational tasks such as identifying objects, blurring backgrounds, running a particle physics simulation, and synthesizing images.⁷

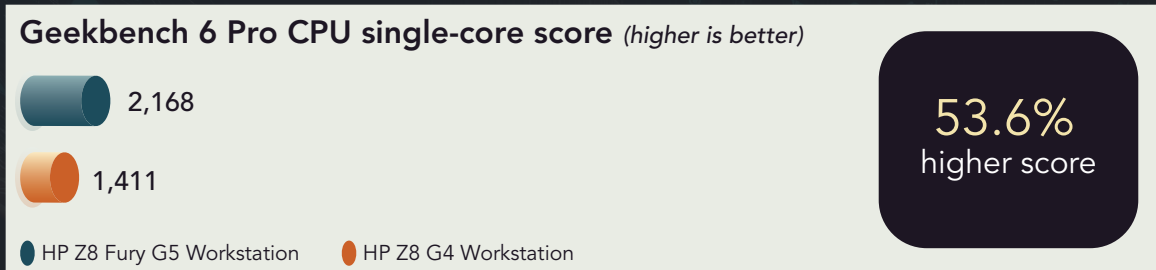


Figure 3: Geekbench 6 Pro CPU single-core scores. Higher is better. Source: Principled Technologies.

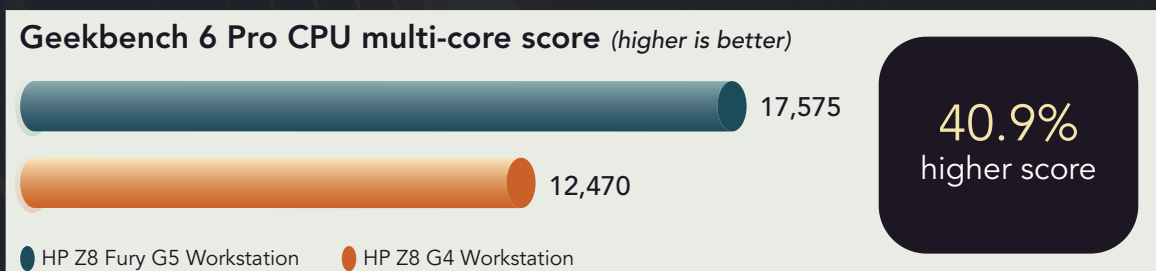


Figure 4: Geekbench 6 Pro CPU multi-core scores. Higher is better. Source: Principled Technologies.

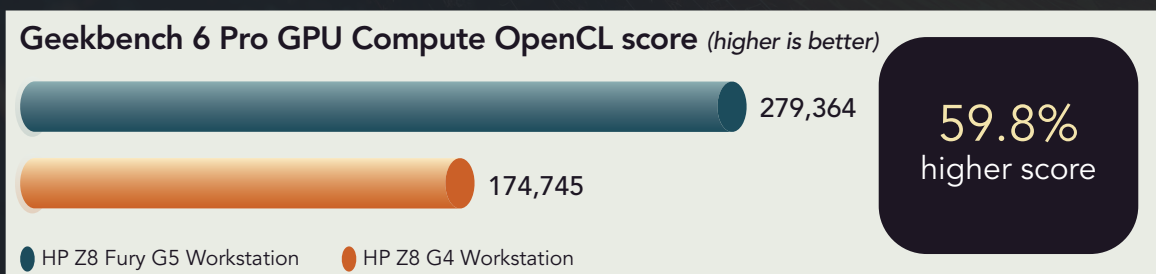


Figure 5: Geekbench 6 Pro GPU Compute scores. Higher is better. Source: Principled Technologies.

From building virtual worlds to deep learning

While you may not utilize Blender or Adobe Creative Cloud applications every day, these intensive graphic sprints provide you with a snapshot of how much better the HP Z8 Fury G5 Workstation handles resource-intensive applications and complex workflows than its G4 predecessor. This improvement is due in large part to the single 56-core Intel Xeon w9-3495X processor and four NVIDIA RTX 6000 graphics cards.

We chose content creation workloads that stressed the workstations in a variety of ways. This provides you with a more complete picture of the two systems' capabilities.

3D rendering tasks

In 3D rendering, a higher number of samples translates to a cleaner picture—but the trade-off is typically longer rendering times. In both the Maxon Redshift and Blender 3.6 GPU rendering benchmark comparisons, the HP Z8 Fury G5 Workstation Desktop PC blew past that potential bottleneck.

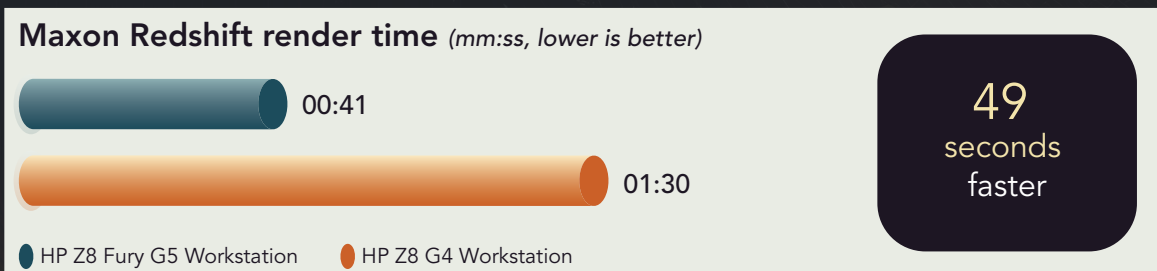


Figure 6: Maxon Redshift render times. Lower is better. Source: Principled Technologies.

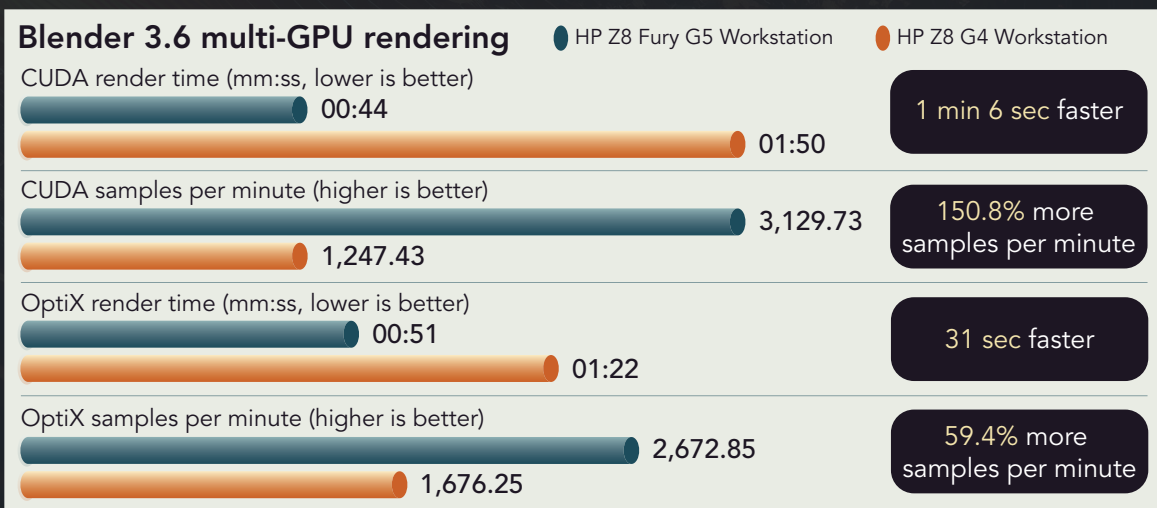


Figure 7: Blender 3.6 ray-tracing render times and samples per minute with 200% resolution, 256 samples (2,304 total samples). Less time is better and higher rates of samples per minute are better. Source: Principled Technologies.

Content creation tasks

People in many industries use Adobe Creative Cloud applications. The HP Z8 Fury G5 Workstation outperformed its predecessor in an array of Adobe Creative Cloud comparisons.

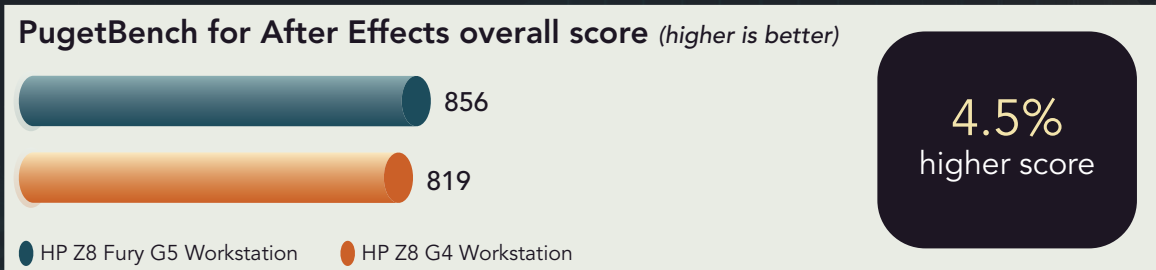


Figure 8: PugetBench for Adobe After Effects® overall scores. Higher is better. Source: Principled Technologies.

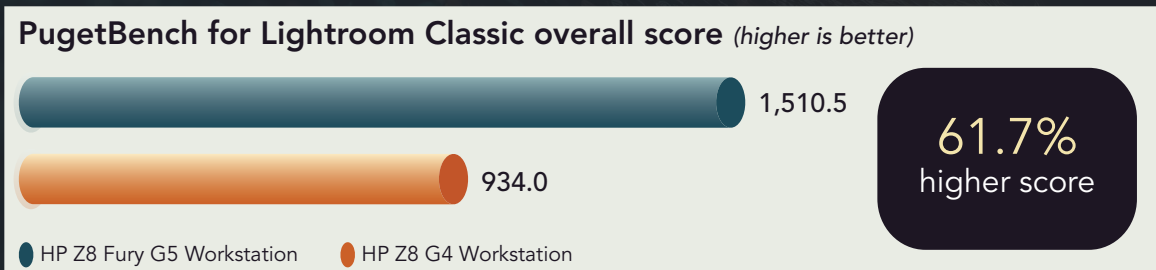


Figure 9: PugetBench for Adobe Lightroom® Classic overall scores. Higher is better. Source: Principled Technologies.

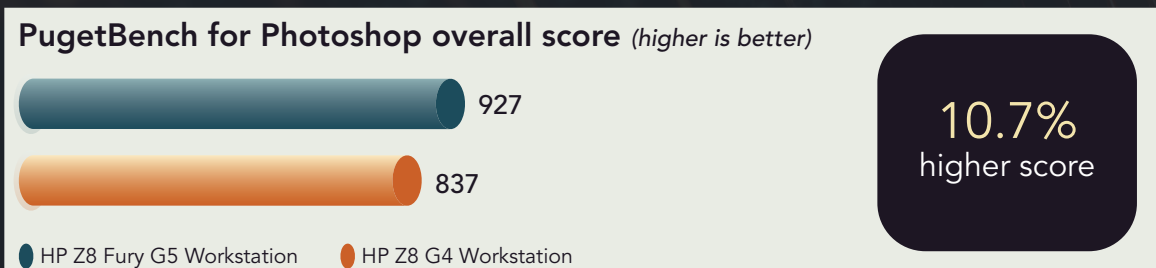


Figure 10: PugetBench for Adobe Photoshop® overall scores. Higher is better. Source: Principled Technologies.

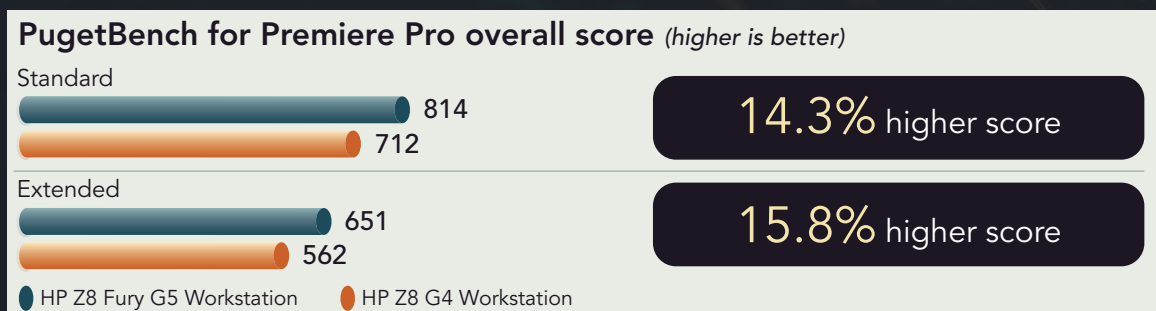


Figure 11: PugetBench for Adobe Premiere® Pro standard and extended overall scores. Higher is better. Source: Principled Technologies.

General productivity tasks

On the surface, the CrossMark Pro benchmark measures common user performance and responsiveness by modeling real-world applications—however, it goes deeper than that. The CrossMark Pro benchmark also “scales similarly to real applications across CPU frequency, cores and threads, system memory, storage, GPU, and other capabilities.”⁸ This scalability aspect gives creative and technical professionals a better idea of how the systems we tested can handle increasingly complex day-to-day activities. The benchmark itself contains sub-scenarios that model multi-tasking, email creation/management, document/photo/video editing, scientific simulations, forecasting spreadsheets, and web browsing capabilities.⁹

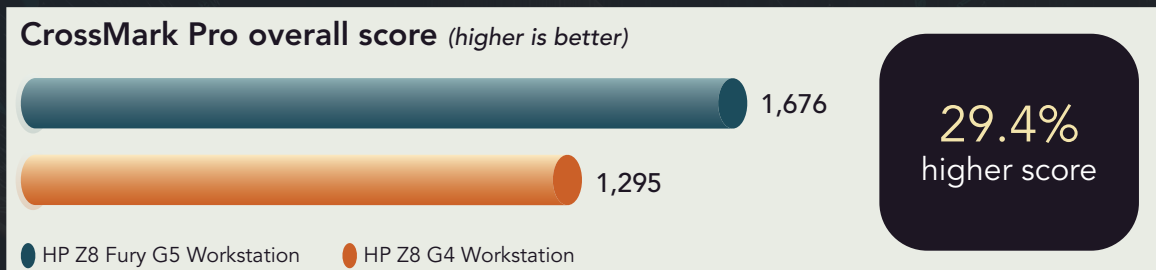


Figure 12: CrossMark Pro overall scores. Higher is better. Source: Principled Technologies.

About the Intel Xeon W-3400 processor architecture

According to Intel, this new line of desktop workstation processors, which includes the Xeon w9-3495X we tested, are purpose-built for media and entertainment creatives as well as engineering and data science professionals. With the “breakthrough new compute architecture, faster cores and new embedded multi-die interconnect bridge (EMIB) packaging, the Xeon W-3400 and W-2400 series of processors enable unprecedented scalability for increased performance.”¹⁰

To learn more about the Intel Xeon W9-3495X processor in the HP Z8 Fury G5 Workstation we tested, visit <https://www.intel.com/content/www/us/en/products/sku/233483/intel-xeon-w93495x-processor-105m-cache-1-90-ghz/specifications.html>.

Conclusion

Powerful workstations are more important than ever for companies preparing for the future by embracing big data solutions, leveraging cloud computing technologies, and training or processing algorithms. Our content creation benchmark results show that creative and technical professionals can get more done in less time by upgrading to the new HP Z8 Fury G5 Workstation.

1. HP, "HP Z8 Fury," accessed August 22, 2023, <https://www.hp.com/us-en/workstations/z8-fury.html>.
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4. Maxon, "Cinebench," accessed August 22, 2023, <https://www.maxon.net/en/cinebench>.
5. Maxon, "Cinema 4D," accessed August 22, 2023, <https://www.maxon.net/en/cinema-4d>.
6. Geekbench, "Introducing Geekbench 6," accessed August 22, 2023, <https://www.geekbench.com>.
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Read the science behind this report at <https://facts.pt/s4BKsvo>



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This project was commissioned by HP.