



Google Cloud VM Performance: Built on 4th Gen Intel® Xeon® Scalable processors

New general purpose (C3) and high-performance (H3) instances are powered by 4th Gen Intel® Xeon® Scalable processors

Get higher bandwidth and more consistent performance

Intel continues to advance and optimize virtual machine (VM) instances for cloud-based workloads. Powered by 4th Gen Intel® Xeon® Scalable processors, Google Cloud's new general purpose (C3) and high-performance (H3) instances leverage the latest compute, networking, and storage innovations to provide superior performance for a wide range of workloads.

Choose the right VM for every workload

Two VM families, each with a variety of shapes, enable the right instance selection for each application. C3 instances deliver consistently high performance and cost efficiency for general purpose workloads. H3 instances provide ultra-high bandwidth and extra-large memory for the most demanding workloads.

C3 target applications:

- High traffic, web, app and ad servers
- Databases and caches
- Game servers
- Data analytics
- Media streaming and transcoding
- Network appliances
- CPU-based ML training and inference

H3 target applications:

- HPC workloads
- Computational fluid dynamics, crash safety, genomics, and financial modeling
- General scientific and engineering computing

Cutting-edge performance, by the numbers

Compared with their N2 predecessors, the new C3 instances deliver:

20%
higher bandwidth¹

35%
better price-performance ratio²

38%
lower energy consumption per watt³

50%
faster memory⁴



Accelerate AI/ML workloads

C3 and H3 are the only cloud-based VMs that offer Intel AMX, a new built-in accelerator that improves the performance of AI/ML workloads. Speeding up deep-learning training and inference by 12x compared to AVX-512, Intel AMX is ideal for workloads like natural-language processing, recommendation systems, and image recognition.⁵

Leverage Google Cloud Hyperdisk storage

C3 and H3 also support Google Cloud Hyperdisk, a scalable, high-performance storage service with a comprehensive suite of data persistence and management capabilities. C3 VMs with Google Cloud Hyperdisk deliver 4x higher throughput and 10x higher IOPS compared with previous generation C2 instances, providing the storage performance necessary for scale-out workloads.⁶



We ran a benchmark using our traditional renderers through the C2 and C3 instances. We compared the results and immediately saw a 25 to 30 percent quicker render time on C3 instances. It's a win-win - better performance for cheaper. Who wouldn't buy that?"

– Tom Taylor, Founder, Gunpowder⁷

➔ Get started today

To learn more about the new C3 and H3 instances, visit <https://cloud.google.com/intel>.

To get started with Google Cloud or migrate to the latest VMs, visit <https://console.cloud.google.com/welcome/new>.

USE CASES

SUSE achieves 1.5x performance boost and 52% better cost efficiency with C3

Open-source software company SUSE tested server workloads on the latest Google Cloud C3 instances. Benchmarks showed a 1.5x performance increase and 52% better cost efficiency with C3 compared to previous generation N2 instances.⁸

Gunpowder sees >50% cost improvement with C3

Digital VFX service and technology provider Gunpowder recently tested the performance and cost efficiency of the latest C3 VMs. Benchmarks showed accelerated rendering times and lower cost – as much as 52% better performance per dollar – with C3 compared to previous generation C2 instances.⁹

^{1,2} <https://cloud.google.com/blog/products/compute/introducing-c3-machines-with-googles-custom-intel-ipu>

^{3,4} <https://community.intel.com/t5/Blogs/Tech-Innovation/Cloud/More-Performance-and-Less-Environmental-Impact-New-Google-Cloud/post/1546305>

⁵ See [A16] and [A17] at [intel.com/processorclaims](https://www.intel.com/processorclaims): 4th Gen Intel® Xeon® Scalable processors. Results may vary.

⁶ <https://cloud.google.com/blog/products/compute/introducing-c3-machines-with-googles-custom-intel-ipu>

⁷ <https://www.intel.com/content/www/us/en/customer-spotlight/stories/gunpowder-customer-story.html>

⁸ <https://www.intel.com/content/www/us/en/partner/showcase/google/suse-google-white-paper.html>

⁹ <https://www.intel.com/content/www/us/en/customer-spotlight/stories/gunpowder-customer-story.html>



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