

Google Cloud Platform C3D Virtual Machines Powered by 4th Gen AMD EPYC™ Processors

New C3D virtual machines on Google Cloud run on AMD EPYC™ 9004 Series processors, providing a high-performance, feature-enhanced alternative for your most advanced, demanding enterprise workloads.

Virtual machine instances powered by AMD provide power efficient processing, improved performance and a range of options so you can optimize for costs.

IMPROVED VM PERFORMANCE, C3D VS. N2D VMs (16 vCPUs):

- > **~73% HIGHER** ON NGINX™
- > **~62% HIGHER** ON REDIS™
- > **~39% HIGHER** ON MYSQL™
- > **~41% HIGHER** ON SERVER-SIDE JAVA®
- > **~21% HIGHER** ON FFmpeg®

KEY FACTS:

C3D is the **new general-purpose machine type** available at Google Cloud, based on the 4th Gen AMD EPYC server processor.

C3D represents a generational and performance advancement over its predecessor, the N2D machine type, with **an average 47% improvement over N2D** across five industry standard benchmarks.¹

Like its predecessor, C3D applies to **broad use cases, with a wide range of configurations available**. With its higher performance, it can also address workloads requiring more processing power and provide consistent performance for many workloads.

C3D INSTANCES FROM GOOGLE CLOUD, POWERED BY AMD

C3D is a Google Compute Engine (GCE) machine type for your Google Cloud workloads, able to host a broad range of databases and applications. Designed to provide consistently improved performance with advanced VM options, the C3D machine series represents a significant step forward in Google Cloud's infrastructure offerings. C3D also supports Google Kubernetes Engine (GKE) for containerized workloads.

- 4th Gen AMD EPYC™ Series processors (formerly codenamed “Genoa”)
- Up to 360 vCPUs per VM
- NUMA-aligned VMs
- Up to 2.8 TB DDR5 memory
- Up to 100 Gbps standard networking (up to 200 Gbps at Tier_1)
- Local SSD (available on c3d-standard) with up to 12 TB
- Up to 350,000 IOPS and 5 GB/s with Hyperdisk Extreme

SELECTING C3D AS THE IDEAL VM FOR YOUR WORKLOAD

In most cases, C3D provides a performant and durable option for hosting workloads, and can be adapted for select compute-intensive applications as well as for other, broader purposes. C2D, on the other hand, presents options for workloads requiring more processing power, such as HPC. Meanwhile, N2D remains a viable option for currently running workloads that are less performance-sensitive or require a high degree of customization.



C3D PROVIDES AN AVERAGE
47% IMPROVEMENT
OVER N2D ACROSS FIVE
INDUSTRY STANDARD
BENCHMARKS.¹

AMD EPYC™ POWERED MACHINE FAMILIES ON GOOGLE CLOUD

C3D	N2D	T2D	C2D
GENERAL-PURPOSE			COMPUTE-INTENSIVE
4th Gen AMD EPYC, formerly codenamed “Genoa”	3rd Gen AMD EPYC, formerly codenamed “Rome” 2nd Gen AMD EPYC, formerly codenamed “Milan”	3rd Gen AMD EPYC, formerly codenamed “Milan”	3rd Gen AMD EPYC, formerly codenamed “Milan”
Consistently high performance	Flexible VM shapes	Single-threaded price/ performance for scale-out	Performance per core
Up to 360 vCPUs per VM	Up to 224 vCPUs per VM	Up to 60 vCPUs per VM	Up to 112 vCPUs per VM
	Confidential Computing option		Confidential Computing option
High-traffic web, app, and ad servers Medium to large databases In-memory caches Game servers Media streaming and transcoding Data analytics CPU-based inferencing	Low- to medium-traffic web and app servers Small to medium databases Business intelligence Desktop virtualization CRM Dev/test environment	Containerized microservices Compression/ decompression Image processing Data-logging processing Large-scale Java® applications	High-performance computing EDA/FEA/CFD Modeling and simulation Media transcoding High-performance game servers AI/ML

ADVANCE PERFORMANCE, SCALABILITY AND FLEXIBILITY WHILE PROTECTING YOUR BUDGET WITH C3D VIRTUAL MACHINES POWERED BY AMD.

FOR MORE INFORMATION, VISIT:

[AMD EPYC 9004 Series Processors Page](#)
[AMD EPYC and Google Cloud Instances Page](#)
[Google Cloud–AMD Technology Partnership Page](#)

TOGETHER WE ADVANCE_CLOUD COMPUTING

¹ MySQL, Redis, NGINX, server-side Java multi-instances, and FFmpeg comparison of Google Cloud C3D-standard 16 vCPU to N2D-standard 16 vCPU based on AMD testing on 10/5/23. Configurations both with 64GB running Ubuntu 22.04.3 LTS. Uplifts: MySQL 8.0.28 HammerDB 4.2 TPROC-C (+39% avg), Redis 7.2 get/set rps (+62% avg), NGINX 1.19-2 WRK 4.2 ops/sec (+73% avg), server-side Java® multi instances max-OPS (+41% avg) and FFmpeg 4.4.2.0 Ubuntu 22.04.1 h264-vp9, raw_h264, raw_vp9, vp9_h264 at 1080p frames/hr (+21% avg). Cloud performance results presented are based on the test date in the configuration. Results may vary due to changes to the underlying configuration, and other conditions such as the placement of the VM and its resources, optimizations by the cloud service provider, accessed cloud regions, co-tenants, and the types of other workloads exercised at the same time on the system. SP5C-005

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