Lenovo ThinkSystem SR645 and SR665 with AMD EPYC 7003 Series Processors with AMD 3D V-Cache Technology

Article

AMD recently released the world's first data center CPU using 3D die stacking, the 3rd Gen AMD EPYC™ processors with AMD 3D V-Cache™ technology, codenamed "Milan-X". Built on the "Zen 3" core architecture, these processors expand the 3rd Gen EPYC CPU family and can deliver a performance uplift across a variety of targeted technical computing workloads versus comparable, non-stacked 3rd Gen AMD EPYC processors.

These new processors can now be configured with the Lenovo ThinkSystem SR665 and ThinkSystem SR645 servers

Figure 1. Lenovo ThinkSystem SR645 now support "Milan-X" processors

AMD EPYC 7003 Series Processors with AMD 3D V-Cache Technology

These new processors feature the industry's largest L3 cache, delivering the same socket, software compatibility and modern security features as 3rd Gen AMD EPYC CPUs while providing outstanding performance for technical computing workloads such as computational fluid dynamics (CFD), finite element analysis (FEA), electronic design automation (EDA) and structural analysis.

These workloads are critical design tools for companies that must model the complexities of the physical world to create simulations that test and validate engineering designs for some of the world's most innovative products. As technical computing applications iterate on the most challenging design problems, they move a lot of data between the cores and memory; with the large L3 cache in Milan X, more data can be stored closer to the cores enabling performance increases.

Available in four SKUs and ranging from 16 to 64 cores, the new processors feature 768 megabytes of L3 cache. Faster, better CPU cores with ZEN 3 leadership core density per server and the new 3D V cache technology combined to deliver the best performance for technical computing. This performance translates directly to a competitive advantage for advanced digital design companies. Giving them more design iterations per day leads to better quality products and faster market time, delivering a competitive business advantage.

The four EPYC processor models are listed in the following table.

Table 1. AMD EPYC 7003 Series Processors with AMD 3D V-Cache Technology ("Milan-X")

EPYC model	Cores / Threads	Base Frequency	Max Boost Frequency	L3 Cache	Memory channels	Memory bus	TDP
7373X	16 / 32	3.05 GHz	3.8 GHz	768 MB	8	3200 MHz	240 W
7473X	24 / 48	2.8 GHz	3.7 GHz	768 MB	8	3200 MHz	240 W
7573X	32 / 64	2.8 GHz	3.6 GHz	768 MB	8	3200 MHz	280 W
7773X	64 / 128	2.2 GHz	3.5 GHz	768 MB	8	3200 MHz	280 W

By choosing ThinkSystem SR645 or SR665 with one of these new processors, IT leaders can select a server infrastructure that will enable them to shorten design cycles, build better products, save money, and deliver the energy efficiency needed to help meet enterprise sustainability goals.

The SR665 also now supports the AMD EPYC 7003 Series Processors with AMD 3D V-Cache Technology ("Milan-X").

Figure 2. Lenovo ThinkSystem SR665

Performance benchmarks using AMD EPYC 7003 Series Processors with AMD 3D V-Cache

The Lenovo ThinkSystem SR645 has achieved 4 world records configured with the new AMD EPYC 7003 Series Processors with AMD 3D V-Cache technology.

Two performance world records with new 2-socket results of the SPEChpc 2021 Small benchmark, achieving the following scores:

SPEChpc_2021_sml_base = 0.687
SPEChpc_2021_sml_peak = 0.687

Two performance world records with new 2-socket results of the SPEChpc 2021 Tiny benchmark, achieving the following scores:

SPEChpc_2021_tny_base = 6.73
SPEChpc_2021_tny_peak = 6.73

Conclusion

If you are working with technical computing workloads, consider incorporating servers that feature 3rd Gen AMD EPYC processors with AMD 3D V-Cache technology into your computing stack.

Lenovo ThinkSystem SR645 and SR665 servers are great offerings to take advantage of both the reliability and performance of a Lenovo server and the latest technology with AMD's 3rd Gen EPYC processors with AMD 3D V-Cache.

Related product families

Product families related to this document are the following:

- ThinkSystem SR665 Server
- ThinkSystem SR645 Server

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