

# AMD Reference Configuration: Siemens Simcenter STAR-CCM+ on Lenovo

## AMD® Value Proposition for Simcenter STAR-CCM+™

### Better performance with 4<sup>th</sup>Gen AMD EPYC™ CPUs over the previous 3<sup>rd</sup> generation CPUs

- Up to ~1.50x<sup>1</sup> the problems solved/day with 4th Gen AMD EPYC CPUs than 3rd Gen EPYC – both on 32 cores.\*
- 4th Gen AMD EPYC processors with 64- and 96-core counts provide even higher performance uplifts<sup>1</sup>.

\*2P 32-core 4th Gen EPYC 9374F vs. 2P 3rd Gen 32-core EPYC 75F3

### Lenovo ThinkSystem™ SR645 V3 for Simcenter STAR-CCM+



#### Designed for flexibility – Can act as:

- Head/Visualization Node
- Performance Compute Node

#### Performance without compromise

- 1U Rack Server
- 4th Generation AMD EPYC Processors
- Up to 24x TruDDR5 4800MHz memory
- Optional Lenovo Neptune™ liquid cooling for higher-performance CPUs.

### Lenovo® compute node systems configurations with AMD processors for Simcenter STAR-CCM+

Table 1 shows recommendations for Computational Fluid Dynamics (CFD) applications like Simcenter STAR-CCM+. Lenovo ThinkSystem™ servers with 4<sup>th</sup> Gen EPYC processors with 12 memory channels and support for AVX-512 instructions can deliver high throughput per node for Computational Fluid Dynamics (CFD) applications like Simcenter STAR-CCM+ since they benefit from multicore parallelism and greater memory bandwidth.

**Table 1: Sample Lenovo ThinkSystem™ configurations for CFD (Simcenter STAR-CCM+)**

Performance Goal	Server/Processor	Memory	Storage/Network
Optimized Speed	<ul style="list-style-type: none"> <li>• SR645 V3 (1U)</li> <li>• 2x EPYC 9554 CPUs</li> <li>• 64 Cores</li> <li>• 3.10 GHz   3.75 GHz</li> <li>• L3 Cache of 256MB</li> </ul>	<ul style="list-style-type: none"> <li>• 768GB Total RAM</li> <li>• 24x 32GB DDR5 4800MHz 2R DIMMs</li> </ul>	<ul style="list-style-type: none"> <li>• 1x480GB SATA Read Intensive</li> <li>• 1 InfiniBand HDR100/Ethernet 100Gb 1-port adaptor</li> </ul>
Optimize Throughput	<ul style="list-style-type: none"> <li>• SR645 V3 (1U)</li> <li>• 2x EPYC 9374F CPUs</li> <li>• 32 Cores</li> <li>• 3.85 GHz   4.30 GHz</li> <li>• L3 Cache of 256MB</li> </ul>	<ul style="list-style-type: none"> <li>• 384GB Total RAM</li> <li>• 24x 16GB DDR5 4800MHz 2R DIMMs</li> </ul>	<ul style="list-style-type: none"> <li>• 1x480GB SATA Read Intensive</li> <li>• 1 InfiniBand HDR100/Ethernet 100Gb 1-port adaptor</li> </ul>
Optimized Performance per Dollar and Watt	<ul style="list-style-type: none"> <li>• SR645 V3 (1U)</li> <li>• 2x EPYC 9334 CPUs</li> <li>• 32 Cores</li> <li>• 2.70 GHz   3.90 GHz</li> <li>• L3 Cache of 128MB</li> </ul>	<ul style="list-style-type: none"> <li>• 384GB Total RAM</li> <li>• 24x 16GB DDR5 4800MHz 2R DIMMs</li> </ul>	<ul style="list-style-type: none"> <li>• 1x480GB SATA Read Intensive</li> <li>• 1 InfiniBand HDR100/Ethernet 100Gb 1-port adaptor</li> </ul>

### Why run Simcenter STAR-CCM+ applications on AMD processors?

Companies are investing in high-performance compute infrastructure with the best-performing processors to maximize the value of game-changing Simcenter STAR-CCM+. The 4<sup>th</sup> Gen AMD EPYC processors deliver the optimal architecture for Simcenter STAR-CCM+ and help reduce constraints on the number, size, and complexity of simulation models while helping provide faster time to results. In addition, with AMD CPU-based systems, engineers can improve design quality and prototype performance and significantly reduce total cost of ownership (TCO) using fewer servers to do the same work, helping reduce power and lower related emissions.

### How does AMD improve Simcenter STAR-CCM+ applications' performance?

Compared to the prior generation, the new AMD EPYC 4th Gen 9004 processors achieve better performance for Simcenter STAR-CCM+ with up to 50% more cores, higher frequencies, support for AVX-512 instructions, more memory bandwidth, and faster PCIe® and Infinity Fabric™ data transfer rate. In addition, optimizing Simcenter STAR-CCM+ applications with AMD compilers and libraries can help enhance performance further.

## Benefits: AMD CPU-based Lenovo ThinkSystem™ servers with Simcenter STAR-CCM+

- **Validated and optimized** solution with compute, storage, software, services, and financial options
- **On-site install, start-up, and integration services** delivered by Lenovo or a certified Lenovo business partner
- **Remote management** is available with proactive monitoring and remediation of any Simcenter STAR-CCM+ operational issues.

### Key Contacts

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<sup>1</sup>[Source: Simcenter STAR-CCM+® Technical Computing Summary Brief.](https://www.amd.com/system/files/documents/epyc-9004-pb-simcenter-star-ccm-generational.pdf)  
<https://www.amd.com/system/files/documents/epyc-9004-pb-simcenter-star-ccm-generational.pdf>