

# AMD Reference Configuration: Altair on Supermicro H13 Hyper Servers

## AMD® Value Proposition for Altair®

**Better performance with 4<sup>th</sup>Gen AMD EPYC™ CPUs vs. 3<sup>rd</sup>Gen AMD EPYC™ CPUs**

- Up to about 124% faster<sup>1</sup> for Altair® AcuSolve®\*
- Up to about 65% faster<sup>1</sup> for Altair® OptiStruct®\*
- Up to about 97% faster<sup>1</sup> for Altair® Radioss®\*

\* 2P 64-core 4th Gen AMD EPYC™ 9554 vs. 2P 32-core 3rd Gen AMD EPYC™ 75F3

## Supermicro H13 Hyper Servers for Altair



2U A+ Server 2125HS-TNR (NVMe/SAS/SATA)



2U A+ Server 2025HS-TNR (NVMe/SAS/SATA)

### Performance node, [Supermicro H13 Hyper Servers](#)

- 2U Rack Server
- Dual AMD EPYC 9004 Series Processors
- Up to 6TB DDR5-4800MHz in 24 DIMMS
- Flexible NVMe, SAS, and SATA drive options
- Configurable PCIe 5.0 expansion capabilities with CXL™ 1.1+ memory expansion
- AIOM slots with OCP 3.0 support
- Titanium-Level efficiency power supplies

Radioss and AcuSolve users benefit from AMD EPYC processors with 3D V-Cache™ technology, providing triple the L3 cache compared to the regular 4<sup>th</sup> Gen EPYC CPUs.

## Supermicro H13 Hyper compute node systems configurations with AMD processors for Altair

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

**Table 1: Sample Supermicro H13 Hyper servers configurations for Altair AcuSolve**

	Server/Processor	Memory	Storage/Network
<b>Air Cooled</b>	<ul style="list-style-type: none"> <li>• Dual Socket AS -2125HS-TNR</li> <li>• 2x EPYC 9684X</li> <li>• 192 cores/node</li> <li>• 2.55 GHz - 3.70 GHz</li> <li>• L3 Cache of 1152MB</li> <li>• TDP 400W</li> </ul>	<ul style="list-style-type: none"> <li>• 24x DIMM slots, DDR5-4800MHz memory, support up to 6 TB</li> </ul>	<ul style="list-style-type: none"> <li>• 24x 2.5" hot-swap NVMe/SATA/SAS drive bays</li> <li>• 2x NVMe (PCIe 3.0 x4, Boot drive only)</li> <li>• 1 AIOM/OCP NIC 3.0 Slot</li> </ul>

## Why run Altair applications on AMD processors?

Companies are investing in high-performance compute infrastructure with the best-performing processors to maximize the value of game-changing Altair applications. The 4<sup>th</sup> Gen AMD EPYC processors deliver the optimal architecture for Altair 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) by using fewer servers to do the same work, helping reduce power and lower related emissions.

## How does AMD improve Altair applications' performance?

Compared to the prior generation, the new AMD EPYC 4th Gen processors achieve better performance<sup>1</sup> for Altair applications 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 Altair applications with AMD compilers and libraries can help enhance performance further.

Table 2 shows recommendations for structural analysis using implicit Finite Element Analysis (FEA), like OptiStruct. Supermicro servers with lower-core count EPYC processors with high frequencies with support for AVX-512 instructions help efficiently utilize per-core software licenses and offer very high performance per core.

**Table 2: Sample Supermicro H13 Hyper servers configurations for Altair OptiStruct**

	Server/Processor	Memory	Storage/Network
Air Cooled	<ul style="list-style-type: none"> <li>Dual Socket AS -2025HS-TNR</li> <li>2x EPYC 9354</li> <li>64 cores/node</li> <li>3.25 GHz - 3.80 GHz</li> <li>L3 Cache of 256MB</li> <li>TDP 280W</li> </ul>	<ul style="list-style-type: none"> <li>24x DIMM slots, DDR5-4800MHz memory, support up to 6 TB</li> </ul>	<ul style="list-style-type: none"> <li>12x 3.5" hot-swap NVMe/SATA/SAS drive bays</li> <li>2x NVMe (PCIe 3.0 x4, Boot drive only)</li> <li>1 AIOM/OCP NIC 3.0 Slot</li> </ul>

Table 3 shows recommendations for crash applications using explicit FEA like Radioss. Supermicro servers with medium-core count EPYC processors with high frequencies and high cache-per-core and support for AVX-512 instructions offer very high performance per core to help efficiently utilize per-core software licenses.

**Table 3: Sample Supermicro H13 Hyper servers configurations for Altair Radioss**

	Server/Processor	Memory	Storage/Network
Air Cooled	<ul style="list-style-type: none"> <li>Dual Socket AS -2025HS-TNR</li> <li>2x EPYC 9384X</li> <li>64 cores/node</li> <li>3.10 GHz - 3.90 GHz</li> <li>L3 Cache of 768MB</li> <li>TDP 320W</li> </ul>	<ul style="list-style-type: none"> <li>24x DIMM slots, DDR5-4800MHz memory, support up to 6 TB</li> </ul>	<ul style="list-style-type: none"> <li>12x 3.5" hot-swap NVMe/SATA/SAS drive bays</li> <li>2x NVMe (PCIe 3.0 x4, Boot drive only)</li> <li>1 AIOM/OCP NIC 3.0 Slot</li> </ul>

### Benefits: AMD CPU-based Supermicro H13 Hyper servers with Altair

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

### Key Contacts

		
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<sup>1</sup><https://www.amd.com/system/files/documents/epyc-9004-pb-altair-generational.pdf>