

# 5 REASONS WHY AMD EPYC™ DELIVERS VALUE FOR HPC IN MANUFACTURING

## AT A GLANCE

Accelerate timelines while helping improve design quality with high-performance computing (HPC) powered by AMD EPYC™ CPUs. Our breakthrough processing technology gives you a competitive advantage by enabling you to innovate more and release products faster.

**1**

### EXPLORE MORE DESIGNS

With the high throughput of AMD EPYC™ processors, you can run multiple simulations and expand your design explorations, helping improve your final product and reduce the number of prototypes required to get there.

**2**

### GET OPTIMAL PERFORMANCE

Both AMD EPYC™ processors and AMD Instinct™ accelerators are optimized for many commercial and open-source applications, so you get exceptional performance to accelerate your designs helping you deliver products faster.

**3**

### GO TO MARKET FASTER

Lightning-fast results mean you can finalize designs and release products faster than your competitors.

**4**

### SOLVE BIGGER PROBLEMS

Scale compute power to improve simulation fidelity to increase the size of design simulations, so you can take on more complex challenges.

**5**

### CHOOSE YOUR DEPLOYMENT

Whether you deploy on-prem, public cloud, or hybrid, there are AMD EPYC™ processor-based HPC platforms available from leading OEMs and public cloud providers to fit your IT strategy. Deploy confidently with the advanced security features of AMD Infinity Guard, built into every AMD EPYC™ processor.<sup>1</sup>

*Continue reading for more technical detail*

## TECHNICAL DEEP DIVE

### EXCEPTIONAL PERFORMANCE

2nd and 3rd Gen AMD EPYC™ processors offer outstanding memory bandwidth, L3 cache, and PCIe® 4 I/O for exceptional performance. Whether you need the highest throughput, max per-socket performance, or top per-core performance, AMD EPYC™ CPUs surpass competitive offerings.<sup>2,3,4</sup>

### MASSIVE THROUGHPUT

Being able to run more simulations with 3rd Gen AMD EPYC™ processors compared to using the latest 3rd Gen Intel Xeon Scalable CPUs helps you deliver products faster.

- Analyze product structures up to 1.33x max the performance per core running implicit FEA workloads (~1.05x overall average).<sup>5</sup>
- Assess crash or drop tests up to 1.99x max the performance per core running explicit FEA workloads (~1.59x overall average).<sup>6</sup>

### OPTIMIZED ARCHITECTURES

AMD EPYC™ processors are designed with large caches and memory bandwidth that are optimized for many commercial and open-source applications.

### FASTER TIME TO VALUE

We collaborate with ISVs to help ensure AMD EPYC™ CPUs are backed by a strong ecosystem. So, you get market-ready HPC solutions, on-prem or in the cloud, to help you achieve faster time to value.

- **Altair Radioss™**  
Up to 34% max faster per core (17% overall average) than Intel® Xeon® (2x AMD EPYC 75F3 versus 2x Intel® Xeon® Platinum 8362)<sup>7</sup>
- **Ansys CFX®**  
Up to 40% max faster per core (36% overall average) than Intel® Xeon® (2x AMD EPYC 75F3 versus 2x Intel® Xeon® Platinum 8362)<sup>8</sup>

LEARN MORE ABOUT AMD EPYC™ PROCESSOR-BASED HPC SOLUTIONS FOR MANUFACTURING

## AMD FOR HPC

AMD continues to provide industry-leading performance for HPC workloads, empowering designers and engineers to iterate, innovate, and impact the world faster.<sup>3</sup> We are committed to helping you push the boundaries of what's possible. [Learn more](#)



<sup>1</sup> AMD Infinity Guard features vary by EPYC™ Processor generations. Infinity Guard security features must be enabled by server OEMs and/or Cloud Service Providers to operate.

Check with your OEM or provider to confirm support of these features. Learn more about Infinity Guard at <https://www.amd.com/en/technologies/infinity-guard>. GD-183

<sup>2</sup> Results as of 04/14/2021 using SPECrate®2017\_fp\_base. The AMD EPYC 7763 scored 651, <http://www.spec.org/cpu2017/results/res2021q1/cpu2017-20210219-24944.html> which is 19% higher than the previous highest 2P score, EPYC 7662s and a score of 546, <https://spec.org/cpu2017/results/res2020q2/cpu2017-20200427-22094.pdf>. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information. MLN-019A

<sup>3</sup> As of 04/14/2021 based on SPECrate®2017\_fp\_base on 04/14/2021, a server powered by one 64c AMD EPYC 7763 CPUs has a score of 328, <http://www.spec.org/cpu2017/results/res2021q1/cpu2017-20210219-24939.html> which is higher than any currently posted SPEC score/chip (socket). SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information. MLN-072A

<sup>4</sup> Based on SPECrate®2017\_fp\_base on 07/06/2021, a server powered by two 8c AMD EPYC 72F3 CPU has scored 247, <http://spec.org/cpu2017/results/res2021q3/cpu2017-20210621-27506.html> with a per core score of 15.4 which is a higher per core floating point base performance score than any currently posted in any SPEC.org publication. SPEC®, SPECrate® and SPEC CPU® are registered trademarks of the Standard Performance Evaluation Corporation. See [www.spec.org](http://www.spec.org) for more information. MLN-058B

<sup>5</sup> ANSYS® Mechanical® 2021 R2 comparison based on AMD internal testing as of 09/27/2021 measuring the average of all Release 2019 R2 test case simulations using a server with 2x AMD EPYC 75F3 versus 2x Intel Xeon Platinum 8380. Steady state thermal analysis of a power supply module 5.3M (cg1) is max result. Results may vary. MLN-130A

<sup>6</sup> ANSYS® LS-DYNA® version 2021 comparison based on AMD internal testing as of 07/15/2021 measuring the average time to run the 3cars, car2car, & neon test case simulations using a server with 2x AMD EPYC 75F3 utilizing 1TB (16x 64 GB DDR4-3200) versus 2x Intel Xeon Platinum 8380 utilizing 1TB (16x 64 GB DDR4-3200). 3cars is max result. Results may vary. MLN-082A

<sup>7</sup> Altair™ Radioss™ comparison based on AMD internal testing as of 09/27/2021 measuring the time to run the neon, t10m, and venbatt test case simulations using a server with 2x AMD EPYC 75F3 versus 2x Intel Xeon Platinum 8362. Neon crash impact is the max result test case. Results may vary. MLN-075A

<sup>8</sup> ANSYS® CFX® 2021.1 comparison based on AMD internal testing as of 09/27/2021 measuring the average time to run the Release 14.0 test case simulations (converted to jobs/day - higher is better) using a server with 2x AMD EPYC 75F3 utilizing 1TB (16x 64 GB DDR4-3200) versus 2x Intel Xeon Platinum 8362 utilizing 1TB (16x 64 GB DDR4-3200). Results may vary. MLN-080B