

Performance Snapshot

3rd Generation Intel® Xeon® Scalable Processors for HPC in Life Sciences

Intel has engaged with the global open source software community for 20+ years to optimize key life sciences codes for Intel® Xeon® Scalable processors.

1 oneAPI

Using Intel® oneAPI's open, unified programming model together with [Intel® oneAPI Toolkits for HPC](#) (built on familiar, proven CPU tools), developers can more easily optimize bioinformatics applications for Intel-based HPC systems.

Powering Scientific Discovery with Intel

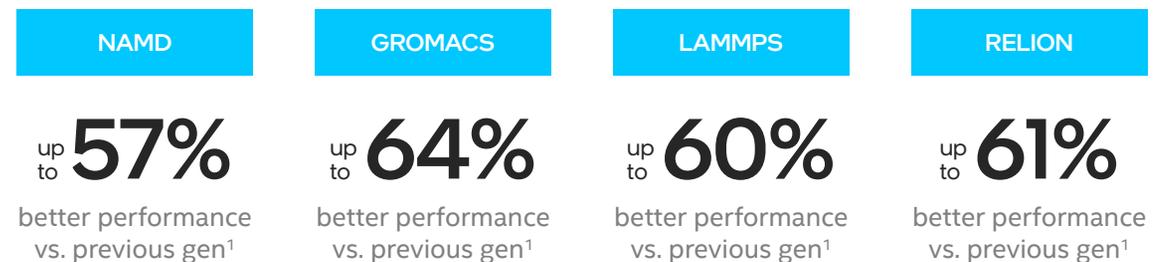
From genomics to cryo-EM to molecular modeling, high-performance computing (HPC) helps scientists leverage larger datasets and AI-driven methods to increase the pace of discovery. Accelerating both traditional simulation applications as well as deep-learning-infused workloads means researchers can increase the scope of research while still hitting critical timelines.

3rd Generation Intel® Xeon® Scalable Processors power life sciences and bioinformatics applications across a range of scientific disciplines to help research teams reach life-changing insights faster.

Performance Results

Life sciences applications across a range of fields perform better on 3rd Generation Intel® Xeon® Scalable Processors than previous generations.¹ Many applications take advantage of Intel® AVX-512 to accelerate processing, for dramatic gains compared to AVX2. Increased core counts, memory bandwidth, and instructions per clock also power performance gains for a range of workloads.

In addition, software developers using Intel® oneAPI cross-architecture toolkits can more easily optimize their applications for Intel® Xeon® Scalable processors, taking performance beyond what's possible out of the box. For example, our optimized version of NAMD performs 54%² better than the non-optimized version running on the same Intel® Xeon® Scalable processor.



Value & Benefits

Better-performing applications deliver a range of benefits for life sciences organizations of all kinds:

- **Computational researchers** get results faster and can increase scope of data-driven research
- **HPC solution architects** increase system value and business impact, and can free up time on their systems for new projects
- **Developers** can realize the full value of hardware, and develop and deploy their software with peace of mind.
- **Business leaders** deliver reduced time to market for new treatments and support for improved, faster diagnoses and patient outcomes

Performance Results:

1 See [108] at www.intel.com/3gen-xeon-config. Results may vary.

2 See [107] at www.intel.com/3gen-xeon-config. Results may vary.

Performance varies by use, configuration and other factors. Learn more at www.intel.com/PerformanceIndex. Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

Intel contributes to the development of benchmarks by participating in, sponsoring, and/or contributing technical support to various benchmarking groups, including the BenchmarkXPRT Development Community administered by Principled Technologies. Your costs and results may vary. Intel technologies may require enabled hardware, software or service activation. Some results may have been estimated or simulated. Intel does not control or audit third-party data. You should consult other sources to evaluate accuracy. All product plans and roadmaps are subject to change without notice. Statements in this document that refer to future plans or expectations are forward-looking statements. These statements are based on current expectations and involve many risks and uncertainties that could cause actual results to differ materially from those expressed or implied in such statements. For more information on the factors that could cause actual results to differ materially, see our most recent earnings release and SEC filings at www.intc.com.

Key Features

See how 3rd Generation Intel® Xeon® Scalable Processors compare to the previous generation:

- Up to 40 cores per socket
- 8 DDR4 3200 MT/s memory channels
- Configured to support up to 6TB of system memory, per processor
- Support for Intel® Optane™ Persistent Memory 200 Series
- Built-in HPC and AI acceleration with Intel® AVX-512 and Intel® Deep Learning Boost
- Enhanced performance with Intel's latest CPU microarchitecture
- PCIe Gen4 support with 64 lanes/socket, 16 GT/s acceleration
- Built-in Intel® Speed Select Technology for granular control over CPU performance

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Contact your Intel account executive for details on 3rd generation Intel® Xeon® Scalable processor performance for your specific workloads and environment.

3rd generation Intel® Xeon® Scalable processors resources for HPC

- [Product Brief:](#) 3rd Generation Intel® Xeon® Scalable Processors for HPC
- [Product Infographic:](#) 3rd Generation Intel® Xeon® Scalable Processors for HPC
- [Performance Infographic:](#) HPC applications on 3rd generation Intel® Xeon® Scalable Processors

Intel HPC resources for Life Sciences

- [Article:](#) NAMD Optimizations Yield 80% Speedup
- [Research Spotlight:](#) COVID-19 Research with TACC and UCSD
- [Video:](#) Unleashing a New Era of Structural Biology with RELION

Intel® Select Solutions for Life Sciences

Intel has collaborated with the Broad Institute to develop Intel® Select Solutions for Genomics Analytics, a suite of optimized software, along with reference architectures for turnkey configuration, setup, and deployment to run genomics analysis that is qualified for GATK pipelines, Cromwell, and GenomicsDB.

For more information, read our [Intel® Select Solutions for Genomics Analytics](#)

