Intel® Parallel Studio XE is a comprehensive suite of development tools that make it fast and easy to build modern code that gets every last ounce of performance out of the newest Intel® processors. This tool-packed suite simplifies creating code with the latest techniques in vectorization, multi-threading, multi-node, and memory optimization. Get powerful, consistent programming with Intel® Advanced Vector Extensions 512 (Intel® AVX-512) instructions for Intel® Xeon® and Xeon Phi™ processors, plus support for the latest standards and integrated development environments (IDEs). New features include the combined performance snapshot feature of Intel® VTune™ Amplifier that shows MPI, CPU, and FPU memory use; the roofline analysis feature of Intel® Advisor to find high-impact but under-optimized loops; high-performance Python* to accelerate HPC—and more.

Who Needs It?
- C, C++, Fortran, and Python* software developers building HPC, enterprise, and cloud solutions
- Developers looking to maximize their software's performance on current and future Intel® platforms.

What it Does
- Creates faster code 1. Boost application performance that scales on current and future Intel® platforms with industry-leading compilers, numerical libraries, performance profilers, and code analyzers.
- Builds code faster. Simplify the process of creating fast, scalable, and reliable parallel code.
- Delivers priority support. Connect directly to Intel's engineers for confidential answers to technical questions, access older versions of the products, and receive free updates for a year. Paid license required.

What's New
- Boost application efficiency and performance for Intel Xeon and Xeon Phi processors using Intel® AVX-512 instructions.
- Find high-impact but under-optimized loops using Intel® Advisor's roofline analysis.
- Accelerate HPC with high-performance Python.
- Easily access the latest Intel® Performance Libraries and Intel® Distribution for Python via APT GET*, YUM*, and Conda*.
- Stay up-to-date with the latest standards and IDEs including full C++14, initial C++17 draft, full Fortran 2008, and initial Fortran 2015 draft language support; Initial OpenMP 5.0 draft; Python 2.7 and 3.6; and Microsoft Visual Studio* 2017 integration.
- Quickly spot high-payoff opportunities for faster code using the combined performance snapshot feature of Intel VTune Amplifier for MPI, CPU, FPU, and memory use.
- New, broader redistribution rights for Intel Performance Libraries and Intel Distribution for Python.
INTEL® C++ COMPILER
• Use industry-leading, standards-based C/C++ tools to speed application performance.
• Experience seamless compatibility with popular compilers, development environments, and operating systems.
• Get superior vectorization and parallelization capabilities (including Intel® AVX 512 instructions) using the latest OpenMP* 5.0 parallel programming model.

Build with the Composer Edition
• Improve performance¹ with a simple recompile using industry-leading, standards-driven C++ and Fortran compilers.
• Simplify adding parallelism with built-in, intuitive, parallel models and vectorization support.
• Drop in advanced libraries optimized for the latest hardware.
• Accelerate HPC with high-performance Python, powered by native Intel® Performance Libraries, in an integrated distribution package.

Choose Your Edition
Confidential Support and One Year of Updates Included
Every paid version of Intel® Software Development Products automatically includes priority support at our Online Service Center for at least one year from your date of purchase. You can extend it at a reduced rate.² You get:
• Free access to all new product updates and continued access to and support for older versions of the product.
• Direct and private interaction with Intel's engineers. Submit confidential inquiries and code samples.
• Responsive help with your technical questions and other product needs for both new and older versions.
• Community product forums covering all of Intel's software development products.
• Access to a vast library of self-help documents that build off decades of experience creating high-performance code.

INTEL® C++ COMPILER
• Use industry-leading, standards-based C/C++ tools to speed application performance.
• Experience seamless compatibility with popular compilers, development environments, and operating systems.
• Get superior vectorization and parallelization capabilities (including Intel® AVX 512 instructions) using the latest OpenMP* 5.0 parallel programming model.
**INTEL® FORTRAN COMPILER**
- Deliver superior Fortran application performance.
- Get extensive support for the latest Fortran standards (including full Fortran 2008 and initial Fortran 2015), with backwards compatibility to FORTRAN 77.
- Boost SIMD vectorization and threading capabilities (including Intel® AVX 512 instructions) using the latest OpenMP parallel programming model.

**INTEL® DISTRIBUTION FOR PYTHON**
- Delivers faster Python application performance in an easy, integrated distribution for Windows*, macOS*, and Linux*.
- Accelerates NumPy*/SciPy*/scikit-learn* packages with native Intel Performance Libraries such as Intel® Math Kernel Library for multi-threaded performance benefits.

**INTEL® MATH KERNEL LIBRARY**
- Fastest and most-used math library for Intel® and compatible processors.
- Highly tuned for best performance on today's and future Intel platforms.
- De facto standard APIs for simple code integration.
INTEL® DATA ANALYTICS ACCELERATION LIBRARY (INTEL® DAAL)

• Helps applications deliver better predictions faster; analyzes larger data sets with the same compute resources.

• Optimizes data ingestion and algorithmic compute together for highest performance.

• Supports offline, streaming, and distributed usage models to meet a range of application needs.

INTEL® INTEGRATED PERFORMANCE PRIMITIVES

• Deliver highly optimized image and signal processing, data compression, and cryptography applications using Intel® Streaming SIMD Extensions and Intel® Advanced Vector Extensions instruction sets.

• Multi-core, multi-OS, and multi-platform ready. Plug in and use APIs to quickly improve application performance.

• Reduces development time and costs.

INTEL® THREADING BUILDING BLOCKS

• Specify tasks instead of manipulating threads. Intel® Threading Building Blocks (Intel® TBB) maps your logical tasks onto threads with full support for nested parallelism.

• Intel TBB uses proven, efficient parallel patterns and work-stealing to load balance and cut task execution time.

• Licensed versions are available for Linux, Windows, and macOS. Compatible with multiple compilers and Intel processors.
Analyze with the Professional Edition
Includes everything in the Composer Edition, plus:

- **Advanced performance profiler** to tune application performance of the CPU, threading, memory, and storage
- **Vectorization and threading advisor** to optimize vectorization and quickly prototype threading designs
- **Memory and thread debugger** to efficiently find memory errors and intermittent threading errors

INTEL® VTUNE AMPLIFIER

- Accurately profile C, C++, Fortran, Python, Go*, Java*, or a mix of coding languages.
- Provides diverse data to optimize for CPU, memory, and storage.
- Delivers fast answers. Rich analysis turns data into insight that saves time optimizing code.
Analyze with the Professional Edition (Continued)

INTEL® ADVISOR

• Vectorize and thread your code—or performance dies on modern processors.
• Get trip counts, data dependencies, memory access patterns, and more.
• Follow an easy optimization workflow with tips for faster code.
• Find high-impact but under-optimized loops using powerful roofline analysis.

INTEL® INSPECTOR

• Debug memory and threading errors.
• Save money. Find the root cause of memory and threading errors early—before you release.
• Save time. Quickly debug intermittent races and deadlocks.
• Save effort. No special builds—just use your normal build.

Scale with the Cluster Edition

Includes everything in the Professional Edition, plus tools to:

• **Accelerate** applications’ performance on Intel® architecture-based clusters with multiple fabric flexibility.
• **Profile** MPI applications to quickly finding bottlenecks, achieving high performance for parallel cluster applications.
• **Verify** that cluster components continue working together throughout the cluster life cycle.
INTEL® MPI LIBRARY

- Boost distributed application performance.
- Enable your MPI applications to perform better on Intel architecture-based clusters with multiple-fabric flexibility.
- Delivers sustained scalability—low latencies, higher bandwidth, and increased processes.
- Supports Intel® multicore and many-core systems.

INTEL® TRACE ANALYZER AND COLLECTOR

- Profile and analyze MPI applications for performance.
- Scalable, with low overhead and effective visualization.
- Flexible to fit your workflow: Compile, link, or run.
- Support for OpenSHMEM*.

INTEL® CLUSTER CHECKER

- Ensure high-performance, reliable HPC platforms with an advanced cluster diagnostic expert system tool.
- Simpler diagnosis of issues to improve cluster functionality and performance.
- Integrates into other software using an API.
- Comprehensive cluster environment checking, extensible with custom tests.
## License Options

Each software purchase has a perpetual license with no timeout. Two licensing models are available:

- **Named user licenses** price products per named user.
- **Floating licenses** can be shared by multiple users simultaneously on several systems, managed from a licensing server. Two- or five-seat licenses are available. When a license is released from one user, another user can request it.

Discounted pricing for academia and free versions for students, educators, and open source contributors are available.

## Specifications at a Glance

<table>
<thead>
<tr>
<th>Processors</th>
<th>Supports multiple generations of Intel and compatible processors including, but not limited to, Intel® Core™ processors, Intel Xeon processors, and Intel Xeon Phi processors and coprocessors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages</td>
<td>• Supports processors including, but not limited to, Intel® Core™, Xeon®, and Xeon Phi™ processor/co-processor families. • C, C++, Fortran, Python®, C#, Go®, and OpenSHMEM®</td>
</tr>
<tr>
<td>Operating Systems</td>
<td>Windows, Linux, and macOS</td>
</tr>
<tr>
<td>Development Environment</td>
<td>• Compatible with compilers from Microsoft, GCC, Intel, and others that follow established language standards. • Integrates with Microsoft Visual Studio® (Windows*), Eclipse (Linux*) and XCode® (macOS).</td>
</tr>
<tr>
<td>Details</td>
<td>See software.intel.com/articles/intel-parallel-studio-xe-release-notes</td>
</tr>
</tbody>
</table>

1 Intel® Data Analytics Acceleration Library and Intel® VTune™ Amplifier only.  
2 Intel® Advisor and Intel VTune Amplifier only.  
3 Intel® Vtune Amplifier only.  
4 Intel Trace Analyzer and Collector only.

## What's Included

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Build</td>
<td>Intel® C++ Compiler</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Fortran Compiler</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Distribution for Python</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Math Kernel Library</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Data Analytics Acceleration Library</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Threading Building Blocks</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Integrated Performance Primitives</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Analyze</td>
<td>Intel® VTune™ Amplifier</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Advisor</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Inspector</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Scale</td>
<td>Intel® MPI Library</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Trace Analyzer and Collector</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Intel® Cluster Checker</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>Rogue Wave® ISML Library</td>
<td>Bundled and Add-On</td>
<td>Add-on</td>
</tr>
<tr>
<td></td>
<td>Operating System (Development Environment)</td>
<td>Windows* (Visual Studio®), Linux* (GNU), mac OS* (XCode®)</td>
<td>Windows (Visual Studio), Linux (GNU)</td>
</tr>
</tbody>
</table>

1 Available with a single language (C++ or Fortran) or both languages.  
2 Available on Windows®, Linux®, and macOS.  
3 Available bundled in a suite or as a standalone.  
4 Available as an add-on to any Windows® Fortran suite or bundled with a version of the Composer Edition.  
5 Available as a single language suite.