

# TOTALVIEW® TotalView Debugger

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## TotalView® Debugger

A comprehensive debugging solution for demanding multi-core applications, TotalView is powerful and easy-to-use, dramatically reducing debugging time and enhancing developer productivity. Created by TotalView Technologies, the industry's leading provider of debugging software tools, TotalView supports multiple platforms, compilers, and programming languages.

Built to handle the complexities of the world's most demanding applications, TotalView is capable of scaling from one to thousands of processes or threads with applications distributed over multiple machines or processors. TotalView's intuitive GUI provides enhanced graphical representations that enable users to quickly isolate problems and identify root causes.

With five flexible licensing options that meet an organization's evolving needs, the award-winning debugging technology of TotalView is available to software development teams of all sizes.



TotalView is part of the TotalView Technologies Multi-Core Debugging Framework. This Framework defines the five core technologies required to develop the next generation of multi-threaded, multi-process applications (and introduces a comprehensive, integrated set of software development tools designed to simplify multi-core debugging to improve development productivity and quality.)



### TotalView Debugger Benefits

- *Intuitive user interface and easy-to-learn features enable developers of all levels to analyze and debug complex multi-process and multi-threaded applications.*
- *Multi-platform compatibility means that developers do not need to learn a different tool for each project.*
- *Unique time-saving features enhance developer productivity and shorten the application development cycle by simplifying the process of debugging complex applications.*
- *Scalable, robust solution ensures consistently accurate and reliable results when debugging challenging applications that require massive amounts of data, millions of lines of code, and extensive parallelism.*
- *Non-intrusive memory debugging solution minimally impacts application performance.*
- *Architected to debug programs on small workstations running a couple of processes to super-computers running thousands — and everything in between.*



## Newest Features for TotalView Debugger

- **C++ Breakpoint Extensions.** Set breakpoints on all the methods of a class, all instances of overloaded functions, all virtual functions in a class hierarchy.
- **Shared Library Breakpoint Extensions.** Set breakpoints in libraries that have not yet been loaded.
- **Attach to Many Processes at One Time.** Attach to one or many arbitrary or unrelated processes in the new program dialog box.
- **Improved Source Code Search Path.** A more powerful mechanism is now provided to specify the path in which TotalView should look for files.
- **C++ Class Static Members.** View C++ class static members in the data window when viewing any instance of the object. Lists of instances display the static member variable only once.
- **Apple DWARF Support.** Debug code generated on Darwin by compilers that produced DWARF embedded in object files debug output.

## TotalView Debugger Features

TotalView has a variety of enhanced product features:

**Multiple Licensing Models** — TotalView has five licensing models that enable development groups of all sizes to use its powerful capabilities:

- TotalView Individual is ideal for individual developers, students, or mobile users working on programs with up to 16 processes and threads on a specified one- or two-processor workstation or laptop.
- TotalView Team provides application-oriented licensing based on the number of processes being simultaneously debugged on a specific platform, regardless of the number of users, threads, or processors on the machine.
- TotalView Team Plus extends team licensing to be platform independent.
- TotalView Enterprise uses the traditional TotalView network floating licensing model, providing machine-oriented licensing that allows a specified number of concurrent users to debug their programs on machines with a specified number of processors on a given platform.
- TotalView Rental provides a large-scale license for TotalView Enterprise or TotalView Team license on a time-limited basis, in monthly increments.

**Built-in Memory Debugging** — TotalView has a built-in “lightweight” memory debugger that helps users find leaks, track heap allocations and deallocations, and get usage information anytime. It is less intrusive than other memory debugging tools — programs being memory debugged by TotalView run at nearly full speed. There is no need for a cumbersome binary or source code instrumentation process. A graphical heap browser makes it easy to interpret heap activity and status, and advanced filtering capabilities allow developers to exclude unnecessary information. In addition, developers can save, retrieve, and compare current and saved memory states.

**For more information visit [www.totalviewtech.com](http://www.totalviewtech.com).**

**Explore Complex Data** — TotalView provides comprehensive and flexible tools for developers to explore large and complex data sets. The TotalView data window lets users browse complex structures and arrays. Powerful slicing and filtering lets developers manage arrays of thousands or even millions of elements. Data watch points give answers to questions about how data is changing. Built in graphical visualization gives a quick view of subtle or complex numerical data

**Advanced Management of C++ Code** — TotalView deftly manages the hierarchies, templates, scoping, and nesting inherent in sophisticated C++ code. Programmers can call C++ functions interactively or in breakpoints and watchpoints. Users can understand program behavior by setting breakpoints in one or multiple templates, all methods of a class, or all virtual functions in a class hierarchy. STL data can be presented in readable form using the STLView.

**Advanced Management of Fortran Code** — Fortran programmers faced with developing large and complex applications or integrating legacy codes with newer applications benefit from advanced and reliable Fortran support. TotalView supports Fortran 90 features including modules, assumed shape arrays, common blocks, user defined types. In addition, TotalView seamlessly supports mixed Fortran and C/C++ code.

**Enhanced Parallel & Thread Support** — TotalView has numerous advanced features tailored to multiple parallel models, including MPI, OpenMP, UPC, Global Arrays, threads, and more. For example, barrier breakpoints help synchronize processes and threads. The MPI Message Queue Graph visualizes a program's interprocess communication, making communication problems easy to find. The call graph visualizes the stacks of multiple processes or threads.

In multi-process, multi threaded programs timing matters. Race conditions and other timing problems are difficult to solve. TotalView gives the programmer complete control over the sequence of thread execution, which takes solving race conditions from an exercise in frustration to a disciplined repeatable process.

**Test Bug Fixes without Recompiling** — Developers can test bug fixes on the fly, without the aggravation of rewriting and recompiling code. Using evaluation points, snippets of code can be attached to a source line and executed automatically when the program reaches that source line.

**Multi-Platform and OS Support** — Easy to learn and use, TotalView supports multiple platforms, including Linux, UNIX, and Mac OS X, eliminating the frustrations of working with and learning how to use multiple debuggers.

**Multiple Programming Languages** — TotalView is the market and performance leader in debugging C/C++, Fortran, and MPI/Open MP applications.

## TotalView Technologies

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