

## DIAMOND SOFTWARE DEVELOPMENT TOOLS PRODUCT BRIEF

### FEATURES

- Xtensa® Xplorer™ – Diamond Edition (Xplorer DE) – Full graphical user interface (GUI)
- XCC -Optimizing C/C++ Compiler
- ISS, linker, debugger
- Multiple processor support
- Project management tools
- Performance analysis tools
- TurboXim for fast functional simulation

### BENEFITS

- Easy to use Xplorer-DE Graphical User Interface based on Eclipse platform that is familiar to many developers
- Advanced optimizing compiler that generates high-performance and small code size
- Compiler offers state of the art inter-procedural and alias analysis
- Automatic vectorization of operations for Diamond Standard 45CK core
- Automatic VLIW instruction bundling for multi-issue Diamond cores
- Cycle-accurate instruction set simulator (ISS) provides detailed pipeline information
- One toolchain supports all Diamond Standard cores
- Based on familiar GNU toolchain

### Advanced Development Tools for Tensilica's Diamond Standard Processors

**The Diamond Standard Processor software development tools are a comprehensive collection of code generation and analysis tools for the Diamond Standard Processor family. Included in this full GUI-based environment are a complete compiler toolchain, instruction set simulator, performance analysis tools and project management tools.**

Xtensa Xplorer – Diamond Edition (Xplorer-DE) is a fully integrated graphical user interface that incorporates all the software development tools for the Diamond Standard processors. Users can use Xplorer DE to create, build, simulate, profile, debug, and analyze code targeted for the Diamond Standard Processor family. Furthermore, Xplorer DE is based on the popular and familiar Eclipse platform. Xplorer DE contains extensive context-sensitive help, along with tutorials and sample workspaces that enable developers to quickly start developing code for the Diamond processors. Built-in project management and version control mechanisms eliminates the need to maintain makefiles and provides a clean environment for new project builds.

Tensilica's XCC C/C++ compiler is an optimizing compiler with advanced optimizations such as profile-directed feedback compilation, inter-procedural analysis and optimizations, alias analysis, function in-lining, software pipelining, static single assignment (SSA) optimizations, and code generation techniques to reduce code size. Based on industry standard benchmarks, the XCC compiler generates the highest code density when compared to compilers for other 32-bit RISC architectures.

The rest of the software development toolchain is based on standard GNU tools. The compiler front-end remains similar to the preprocessor in the GCC compiler – hence the flags for the preprocessor remain the same. The assembler and linker also utilize the same flags as the GNU versions of the tools.

The GUI based debugger allows full system visibility into a developer's project. Source/assembly and hardware registers are visible while debugging an application. Multiple views of various system aspects can be simultaneously displayed within the Xplorer DE environment. The debugger interoperates seamlessly with the other development tools (compiler toolchain, instruction set simulator) to allow rapid code development for Diamond Standard processor systems.

The Xplorer DE environment enables graphical visualization of profiling results generated by Tensilica's pipeline-accurate ISS. Code developers can hence view accurate performance modeling information such as cache performance, cycle counts, branch penalties, exceptions, pipeline views, and tracing in tabular and graphical views.

For users performing chip-level system simulations, Tensilica and its partners provide a plethora of options for C-based and System-C based modeling. For very fast C modeling of Tensilica-processor based subsystems, the Xtensa Modeling Protocol (XTMP) option for the Xtensa ISS enables rapid assembly of models of one or more Diamond Standard processors. Or users can choose to use Tensilica's Xtensa System-C (XTSC) modeling API for System-C compliant C model creation. In addition, Diamond Standard processor models are available for all the leading commercial EDA system modeling and system virtual prototyping tools, including CoWare's Platform Architect toolset, ARM's RealView SOC Designer, and VaST's CoMET system engineering environment.

Additionally, an option from Tensilica, Xtensa Modeling Protocol (XTMP) application programming interface (API) is available to simulate systems that consist of multiple Diamond or Xtensa® processors.

This software development environment is a complete GUI-based collection of tools for developers creating code for systems based on the Diamond Standard processors. From project implementation to code generation to analysis, the Diamond software tools enable developers to achieve a quick time-to-market while employing one of the most efficient 32-bit architectures available today. Diamond Standard processors lower total system costs and help design teams achieve rapid system development.

## Xplorer Software Development Environment

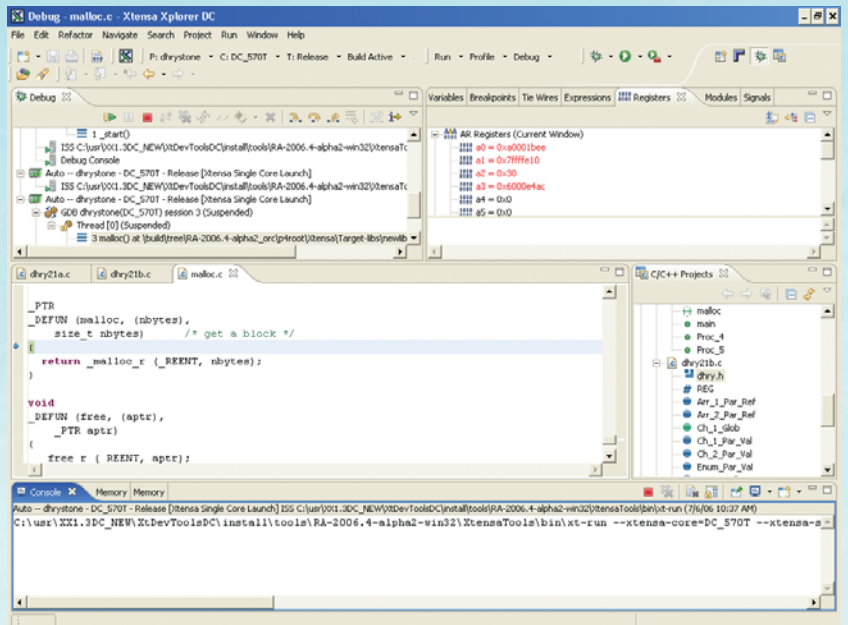


Figure 1: Xplorer Debug Window

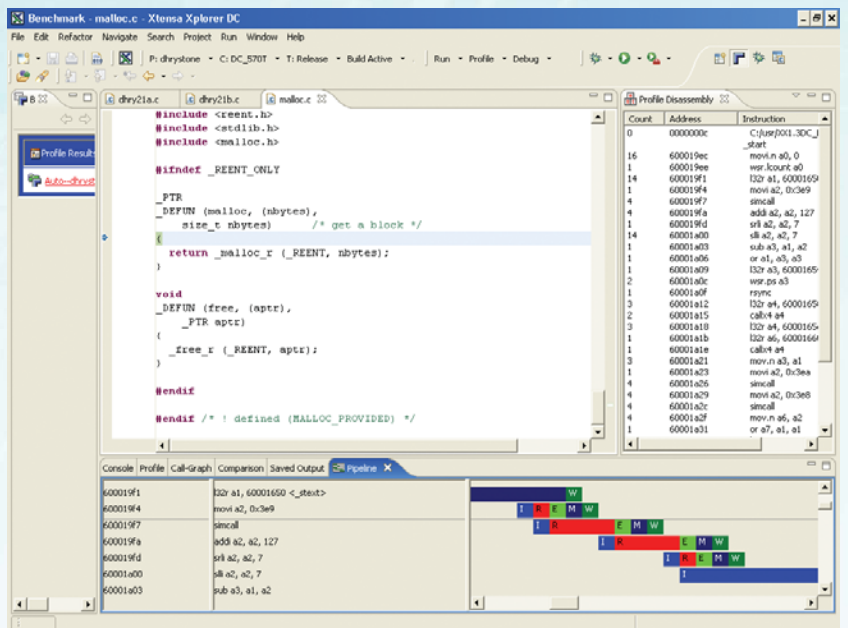


Figure 2: Xplorer Code Profiling Window



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