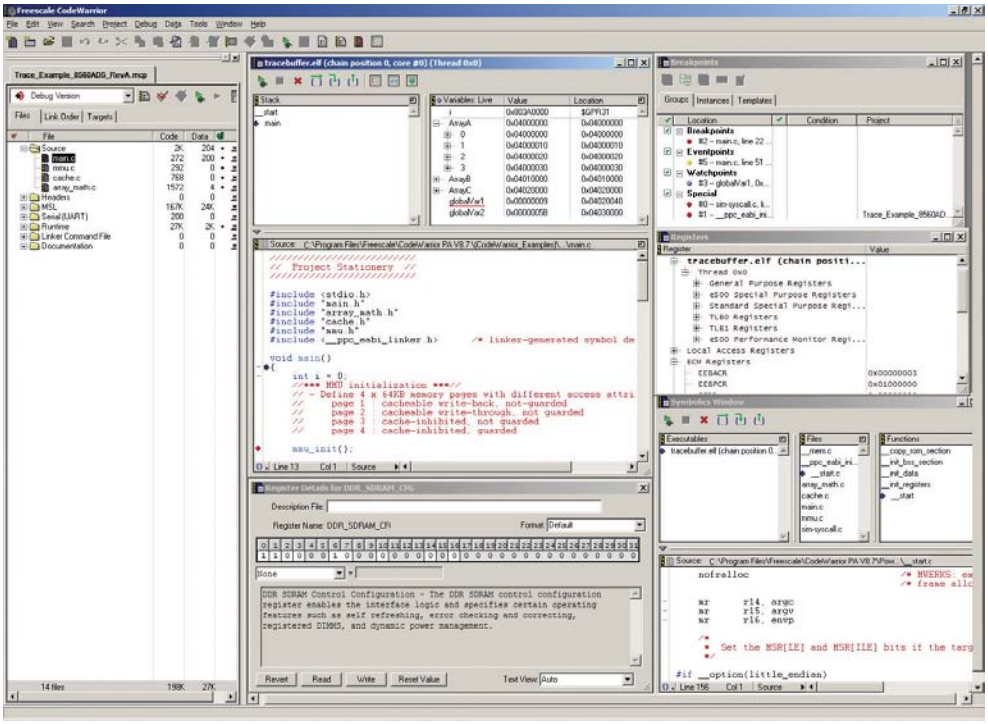
CodeWarrior® Development Studio

for Power Architecture™ Processors V8.8, Professional Edition (Windows-hosted)

and Linux Application Edition (Windows-hosted)

Overview

When building complex embedded devices, it is critical to select development tools that improve and enhance developer productivity, and CodeWarrior software tools deliver several advantages. The award-winning CodeWarrior® integrated development environment (IDE) provides a high-quality, full-featured development environment; it comes as a complete IDE designed for each stage of the development process – from board bring-up through embedded application development. State-of-the-art debugging technology, the simplicity of an intuitive development environment and robust run-control raise hardware board bring-up and C/C++ embedded application development to a new level. In addition, developers remain productive by using a consistent development environment across all supported workstations and personal computers. Just as importantly, as an integral part of Freescale, our unique knowledge and early access to Freescale silicon and designers, gives engineering managers comfort knowing that they can rely on CodeWarrior tools for early hardware support, products that take advantage of Power Architecture processors and the customer support required for the rigors of today's shorter project life cycles.



Highlights

- Highly efficient C/C++ compiler with cutting-edge optimization technology for fast, compact code
  - Complete control of code and data memory allocation
  - Options to pack or byte-swap structures to match existing data types
  - Supports position independent code (PIC) and position independent data (PID)
- Integrated hardware diagnostics for board level testing
- Faster, more intuitive flash programming supporting the latest devices
- Industrial-strength project manager eliminates complicated build scripts
- Integrated source-code navigation provides quick and easy access to functions and files
- Graphical source-level debugging solves complex problems quickly and easily

New Processors and Platforms Supported by Version 8.8

- MPC8313-RDB
- MPC8315-RDB
- MPC8323E-RDB
- MPC8349E-mITXE
- MPC8360-MDS-PB 2.1 Si
- MPC8360-RDK 2.1 Si
- MPC837x-MDS/RDB
- MPC8544DS 1.1 Si
- MPC8548CDS 2.1 Si
- MPC8568E-MDS 1.0/1.1 Si
- PPCEVAL-DS-8572 1.0 Si
- PCEVALHCPD-8610E
- MCEVALHPCN-8641D

Board Bring-Up

The CodeWarrior debugger provides complete control over all board settings, including initializing and saving register values and memory configuration. The debugger also includes a comprehensive set of hardware diagnostics and robust flash programming algorithms supporting an extensive list of flash devices.

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Hardware Diagnostics

The CodeWarrior Development Studio comes with diagnostics tests that determine if the basic hardware is functional. These tests include:

- Memory read/write: Perform diagnostic tests by writing and reading memory through a connecting probe
- Scope loop: Repeat memory reads and writes through a connecting probe
- Memory tests: Perform different tests on the hardware including:
  - Walking ones test
  - Address test
  - Bus noise test

Specify any combination of the tests and the number of passes. Results are displayed in a log window after all passes are complete.

Flash Programming

Program on-chip and off-chip flash devices from within the same graphical user interface used to troubleshoot the application. No boot code is required to run on the target system in order to use the programming features of the CodeWarrior flash programmer. Support is provided for hundreds of popular flash memory devices.

Search Engine and Text Editor

Fast, semantic code navigation makes it possible to find specific code structures among hundreds of directories and files quickly and easily. Seamless integration between the CodeWarrior search engine and the text editor allows code changes to reflect immediately in the browser without recompiling.

CodeWarrior Debugger

The CodeWarrior debugger packs a wide array of high-powered features designed to help the developer find and repair software defects quickly, while providing maximum control to debug complex hardware and software issues including:

- User-configurable workspaces: Focus on complex debugging tasks, each workspace contains just the set of views needed for the task at hand
- Hardware and unlimited software breakpoints
- Eventpoints: Perform a specified task when the program executes a specific line of source code or when an associated conditional expression evaluates to true. Set an eventpoint to perform a task (i.e., run a script, play a sound or collect trace data) for superior control over your code execution. Eventpoints can be:
  - Log Point–Logs a string or expression to a file and records messages to the Log window
  - Pause Point–Pauses execution to refresh debugger data–great for watching a variable change over time
  - Script Point–Runs a script or application
  - Skip Point–Skips execution of a line of source code
- Watchpoints: Set a watchpoint at a location in memory to halt program execution when that point in memory changes value or, for some devices, when the memory location is accessed. Then examine the call chain, check register and variable values, and step through your code
- Single-stepping: Step Into, Step Over and Step Out of functions
- Variable view on mouse over: When in the debugger, you can mouse over a variable in the source display and get the current value of that variable
- Display stack trace: The “Call Stack” view provides an easy display of all procedures (functions) active in the calling chain and enables the developer to follow the progress of a program through its hierarchical call structure
- Local variables display: View the variables local to the current function
- Memory view: Display and modify the contents of the target’s memory. Quickly find a value in memory, compare memory regions or upload and download memory to a file using this view
- Register view: View extensive information on CPU core and peripheral registers, as well as user-defined registers. The registers displayed can also include bit-level details for an English language equivalent of register contents
- Object file format: The CodeWarrior debugger supports STABS and ELF/DWARF formats
- Mixed language debugging: The CodeWarrior debugger supports mixed language debugging in C, C++ and Assembly language by automatically analyzing the file in view and adjusting the expression evaluation and data display accordingly
- Profile window: Improve the performance of your code by using the built-in profiler to analyze function performance
- Command-line window: Use the command-line interface together with various scripting engines, such as the Microsoft® Visual Basic®, the Java, TCL, Python and Perl to automate testing, standardize data-logging or uncover that hard-to-find problem
- Seamless integration with CodeWarrior USB and Ethernet TAPs. The CodeWarrior debugger is fully integrated with these hardware probes, resulting in optimized run-control with fast downloads. A target connection wizard simplifies and automates the task of defining new connection definitions based on hardware and communication parameters

CodeWarrior Build Tools (Compiler, Assembler, Linker)

The CodeWarrior compiler produces exceptionally fast, compact, EABI-compliant object code. Our proprietary optimization techniques enable the programmer to balance execution speed with code size while intelligent defaults can generate optimal code.

Key Features Include

- Standards conformance (ANSI and EABI) for maximum tool interoperability
- Complete control of code and data memory allocation
- Options to pack or byte-swap structures to match existing data types
- Supports position independent code (PIC) and data (PID)
- Board support routines for bare board applications (no OS)

Assembler: full-featured macro assembler that is invoked automatically by the project manager or as a complete standalone assembler for generating object modules

Linker: offers precise control over the allocation, placement and alignment of code and data in memory

System Requirements

- Hardware PC with 1.4 GHz
- Intel® Pentium®-compatible processor (or better)
- 512 MB RAM (1 GB recommended)
- CD-ROM drive
- Operating System Microsoft® Windows 2000 or Windows XP (Windows Vista support is planned for a future version. Contact Freescale for more information.)
- Free Disk Space 2 GB total, 500 MB on Windows system disk

Required Host-Target Interfaces:

- CodeWarrior USB TAP
  - CWH-UTP-PPCD-HE
  - CWH-UTP-PPCC-HE
- CodeWarrior Ethernet TAP
  - CWH-ETP-JTAG-HE
  - CWH-ETP-DPI-HE

Product Support

- Program provides online help and documentation
- New product purchase includes one-year technical support which can be renewed

Part Numbers

- CWS-PPC-CMWFL-CX – Professional Edition, single seat license
- CWS-PPC-LINWH-CX – Linux Application Edition, single seat license

Supported Freescale Processors

- 7xx, 74xx, 8xx, 82xx, 83xx, 85xx and 86xx

Linux Application Edition Features

The CodeWarrior Development Studio, Linux Application Edition offers the following subset of features from the Professional Edition:

- Compiler and linker:
  - Supports GNU compiler collection
  - Ability to integrate alternative GNU compilers
- Application debug
  - Serial connectivity
  - Networking connectivity
- Full multi-threading/multi-tasking application debugging
  - Individually control threads
  - Follow fork/child debugging
  - Full multi-process debug from one IDE
  - Step one thread while all others are stopped
  - Process and thread list

NOTE: For Kernel-level debugging, CodeWarrior Development Studio Linux Platform Edition is required.

Learn More: For current information about Freescale products and documentation, please visit **www.freescale.com**.

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