CodeWarrior™ Development Studio
for StarCore™ MSC Edition, v3.0

When building products based on today's increasingly sophisticated and feature-rich devices, developers need tools which help them efficiently build, debug, and analyze their complex development projects. Shrinking time to market is critical to success and leveraging the experience of silicon designers working along side tools developers decreases delay in your overall program. CodeWarrior™ Development Studio for StarCore™ MSC Edition combines a state-of-the-art development studio supporting the advanced debug and profiling capabilities inherent to Freescale's MSC81xx and MSC71xx processors with tools that are the outgrowth of close collaboration between DSP programmers, silicon and tools designers ensuring thorough support of on-chip resources and allowing you to leverage the silicon's powerful diagnostic resources.

The intuitive CodeWarrior Integrated Development Environment (IDE) is easy to navigate and provides a full-featured editor for creative applications. Once created, applications are built and downloaded to the target with the click of a button. By providing comprehensive visibility into the target processor, reliable control over program execution, and an intuitive interface for setting up complex debugging tasks, CodeWarrior allows you to spend less time debugging code and more time developing your product. Easily tune your system using CodeWarrior's substantial profiling capabilities to identify and alleviate bottlenecks, enabling you to hit your performance targets and ship your product faster.
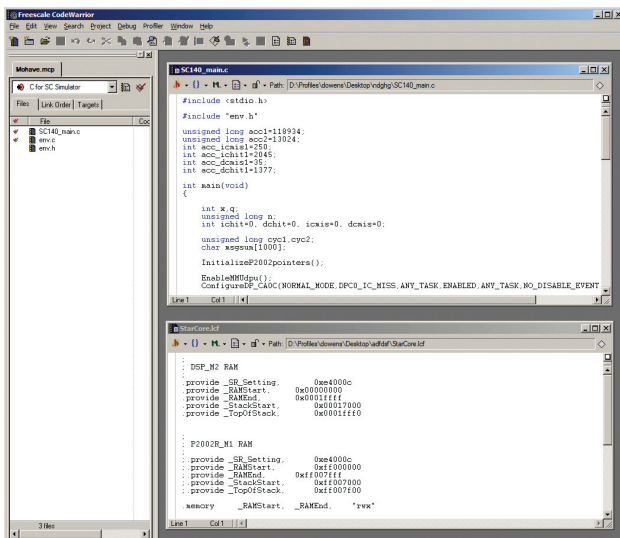

CodeWarrior IDE

Product Highlights

CodeWarrior Development Studio contains all of the tools needed to complete a major embedded development project. The tightly integrated components give the user a consistent and intuitive environment, enabling programmers to accelerate their development cycle.

> **Project Manager** - Provides top-level file management – quickly see the build relationships in your code

> **Source-Level Debugger** - High-performance graphical source-level debugger equipped with the latest features - shortens hardware bring-up and application development time

> **Source Browser** - Navigate code quickly for both C and C++ – find what you need, when you need it

> **CodeWarrior C/C++ Compiler Suite** - Industry-leading StarCore C/C++ CodeWarrior Compiler – quickly asses the trade-offs of code size and performance

> **Multicore Support** - Full support for multiple DSP cores including multicore run control, advanced breakpoint capabilities, and memory and register visibility for each core

> **Debug and Profiling Unit (DPU) Counters** - DPU counters enable profiling of a variety of platform events, such as cache hits/misses, core stalls, and cache thrash – quickly configure the various DPU counters

> **Simulation** – Integrated SC3X00 Platform and MSC8144 fast instruction set simulators and SC3X00 cycle accurate simulator. Integrated SC140 simulator for 1st generation StarCore. - Accelerates software development. Eases hardware needs across large teams. Includes Runsim for batch execution and profiling information.

> **SmartDSP OS** – Real-Time Operating System for 81xx and 71xx processor family that is light-weight and high performance (see separate fact sheet).

Supported Hosts – Windows XP/2000, Solaris 2.8/2.9 (Build tools only)

Supported Targets - MSC8144, MSC8122/26, MSC8103, MSC8101, MSC711X

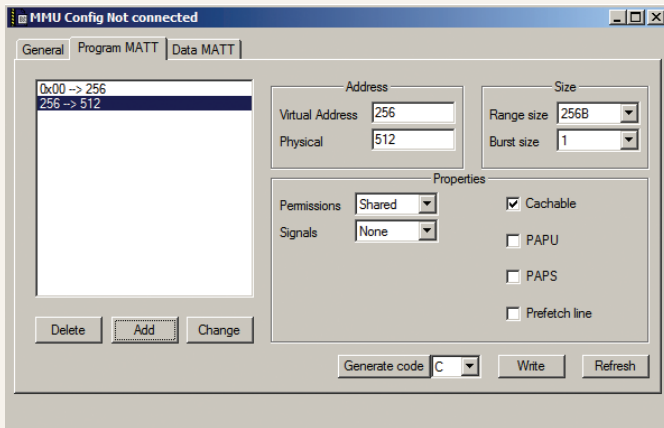**Supported Boards** – MSC8144ADS, MSC8122/26ADS, MSC8103ADS, MSC8101ADS, MSC711XADS, MSC711XEVM

Learn More

For more information about Freescale DSP products, please visit **www.freescale.com/DSP**

For more information about CodeWarrior products, please visit **www.freescale.com/codewarrior**

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MMU Configurator

Product Details

Integrated Development Environment (IDE)

> **Windows-Based Workspace Environment** - The CodeWarrior debugger's user configurable workspace allows developers to focus on complex debugging tasks. Each workspace contains just the set of views needed for the task at hand. If it is a source view, cache view or variables view, the developer views what they want, when they want it.

> **Project Stationery** - Example templates, called stationery, are provided as a starting place for the application and include a linker command file, target initialization files and project files - making it easy to get your project up and running.

> **External Build Support** – Allows users to conveniently build makefile projects outside of the IDE.

> **Text Editor** - Full-featured, user configurable, windowed text editor with syntax coloring, auto-indenting and more.

Full-Featured Debugger

The CodeWarrior Debugger provides a rich set of debugging features designed to help the developer quickly find and repair software defects, including:

> **Multicore Control** – With one CodeWarrior IDE, control the multiple cores within Freescale's MSC8144 and MSC8122/26 devices.

> **Display Stack Trace** - The "Call Stack" view provides an easy display of all functions active in the calling chain, and enables the developer to follow the progress of a program through its hierarchical call structure.

> **Memory View** - Memory view is the fastest way to display and modify the contents of target memory. Quickly find a value in memory, compare memory regions or upload and download memory to a file using this view.

> **Register view** - The register view provides extensive information on CPU and peripheral registers, as well as user-defined custom registers.

> **Cache View** - Use the Cache window to view Instruction and Data cache contents.

> **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.

> **Command-Line Window** – Automate testing, standardize data-logging or uncover that hard to find problem using the command-line interface together with various scripting engines, such as TCL and Perl.

> **MMU Configurator** - The Memory Management Unit (MMU) enables memory protection and allows different applications to share the same areas of memory. The MMU configurator allows you to set up a mapping for data and instruction addresses, then enable address translation. CodeWarrior provides a graphical MMU Config window, allowing the user to specify the mapping and then auto-generates the necessary initialization code.

> **Breakpoints & Watchpoints** - Hardware breakpoints, software breakpoints, and watchpoints are easily set or removed in source code, assembly or mixed-mode views.

> **Simulators**

▪ SC3X00 Platform Instruction Set Simulator with MMU. High performance and functional accurate.

▪ SC3X00 Core simulator with cycle accurate information.

▪ MSC8144 Instruction Set Simulator with 4-SC3X00 platform cores and QUICC Engine. High performance and functional accurate.

▪ Runsim tool for batch execution outside debug environment. Includes function-level profiling information.

Build Tools

Highly refined, global, local, CPU-specific, and application—specific (profile-driven) optimization techniques enable the programmer to fine-tune the compiler's output to match the application's requirements. Programmers can select various optimizations to balance execution speed with code size while intelligent defaults can generate efficient code with no user interaction.

> ANSI C/C++ Compatible

> StarCore™ ABI Compliant

> **Re-Entrant Runtime Libraries** – Efficient floating point libraries for fast execution of calculations.

> **Flexible Optimizations** - Apply size and/or speed optimizations globally, by file, or by function.

> **Custom Calling Conventions** – Define your own calling conventions for maximum flexibility and resource utilization.

Performance Analysis

> **Profiler** - Improve the performance of your application by using the Profiler to examine profile data collected from executing code.

RTOS Support

> SmartDSP OS Kernel Awareness available from Freescale (included)

> Enea OSE Kernel Awareness (available separately from Enea)

Host Operating System(s) Supported

> Windows 2000/XP – Complete toolchain

> Solaris 2.8/2.9 – Build Tools & Simulator Only

Minimum System Requirements

Windows®:

> 1.4 GHz Intel® Pentium® class processor or better

> Microsoft® Windows® 2000/XP

> 1 GB RAM

> 800 MB disk space

> CD-ROM drive for installation

Solaris™:

> 400 MHz Ultra SPARC® class workstation

> Solaris™ 2.8/2.9

> 512 MB RAM

> 600 MB disk space

> CD-ROM drive for installation

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