



**FOR IMMEDIATE RELEASE**

**FIRST SILICON SOLUTIONS (FS2®) AND MIPS TECHNOLOGIES  
OFFER COMPREHENSIVE GDB/GNU EJTAG DEBUG  
and PDTrace SOLUTION**

*FS2's EJTAG-based In-Target System Analyzer interfaces with the GDB/Insight debugger to provide a completely integrated environment for MIPS embedded software developers.*

**PORTLAND, OR and MOUNTAIN VIEW, CA, November 19, 2003** – First Silicon Solutions and MIPS Technologies today announced the availability of a free software enhancement that interfaces FS2's ISA-MIPS System Analyzer EJTAG probe with the GDB/Insight debugger distributed by MIPS Technologies as part of the company's GNU-based MIPS® SDE toolchain. The software is included with the FS2 ISA-MIPS System Analyzer and will also be available at no charge as an upgrade for existing customers. This software enhancement allows access to all functions of the FS2 System Analyzer from the GDB/Insight user interface. Additionally, the technology implements new windows in GDB/Insight for configuring hardware breakpoints, triggers and displays real-time trace information from a MIPS-Based™ core.

**FS2 Responds To Rapid Adoption of GNU Tools with Seamless GDB Integration**

The FSF Open Source GNU compiler has seen rapid growth among designers using the industry-standard MIPS architecture. MIPS Technologies is a long-time leader in the development of GNU-based compiler technology and supplies it to their customer base as downloads from their website. FS2 has seamlessly integrated the FS2 ISA-MIPS System Analyzer tools with the GDB/Insight debugger. This was achieved by working with MIPS Technologies to develop windows specific to the MIPS EJTAG debug and PDTrace tracing features.

According to Rick Leatherman, President and CEO of FS2, "Our market research indicates that over 50% of designers using the MIPS architecture use GNU compilers. Enabling GDB to support EJTAG hardware assisted debugging with additions like complex triggers and real-time trace windows provides a seamless toolchain for GNU users. Effective immediately, all FS2 tools for the MIPS architecture will include this support at no extra charge."

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“Support for the GNU toolchain is a very important part of the MIPS architecture’s value proposition,” said Mike Uhler, CTO at MIPS Technologies. “Extending GDB to support EJTAG trigger and PDTrace facilities enhances the toolchain not only in its effectiveness in addressing time to market issues but in its low cost per development seat. We welcome FS2’s efforts in this area.”

### **FS2 In-Target System Analyzer Supports all Cores from MIPS Technologies.**

The FS2 In-Target System Analyzer (ISA) probe supports all MIPS Technologies cores, including those with the MIPS PDTrace architecture that interfaces to a Trace Control Block (TCB) for collecting real-time trace. Two versions of the tools are available, the ISA-MIPS and the ISA-MIPS/T probes. The FS2 ISA-MIPS probe supports on-chip trace requiring some resources in the SoC to capture and store trace messages on-chip. This solution utilizes the standard 14-pin EJTAG debug connector. The ISA-MIPS/T probe supports both on-chip and off-chip trace capture. In the off-chip trace capture mode, the system streams compressed trace data off the SoC device where it is stored in special trace memory hardware in the FS2 system analyzer probe. The ISA-MIPS/T requires a 38-pin Mictor target connection. The ISA-MIPS and the ISA-MIPS/T probe software includes an MDI (Microprocessor Debug Interface) compliant layer to support EJTAG debugging as well as the hardware Trigger and Trace features. Once installed, MIPS SDE’s GDB/Insight acts as both the source level debugger and the controlling GUI for the FS2 tools.

### **MIPS Tools with GDB/Insight Provide Powerful Debug Capability**

The MIPS SDE toolchain combines the popular FSF Open Source GNU tools with MIPS Technologies’ proprietary runtime libraries that are pre-configured to many of its popular evaluation boards. This enables MIPS software developers to create their own proprietary applications without incorporating GPL code in their application at link-time. The MIPS SDE supports all current variations of the MIPS architecture, including MIPS Technologies’ MIPS32™ and MIPS64® Instruction Set Architectures plus the MIPS16e™, SmartMIPS™ and MIPS-3D™ extensions. A version of the MIPS SDE is available to MIPS Technologies’ licensees and MIPS SDE customers through the company’s Website.

### **FS2 System Analyzer Probe Enables Improved Trace Display**

The MIPS SDE toolchain now includes built-in support for generating the symbol file used by the FS2 software to provide symbolic trace features. The FS2 Trace window provides symbolic lookup in the form of source line insertions for matching source-to-execution addresses and variable name

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insertions when a load or store address matches a variable name. The window also implements a number of filters to allow the viewing of just the information the user wants to see. For example, disassembled instructions can be filtered out, so the trace displays only source lines in code leading up to a break or trigger. Load/store instructions can also be selectively included (or removed) from the display, so one can see the cause for branches in the executed code.

### **About First Silicon Solutions (FS2)**

FS2 provides silicon IP and design services featuring OCI<sup>®</sup> (On-Chip Instrumentation). This includes custom development tools for programming, testing and debug of FPGA, SoC, SOPC, ASSP and ASIC devices. FS2 products help silicon vendors and their customers develop and more effectively market their products, reducing development cycles, and allowing them to focus on delivering all the potential of the system on silicon. Additional information is available at <http://www.fs2.com>

### **About MIPS Technologies**

MIPS Technologies, Inc. (Nasdaq: MIPS) is a leading provider of industry-standard processor architectures and cores for digital consumer and business applications. The company drives the broadest architectural alliance that is delivering 32- and 64-bit embedded RISC solutions. The company licenses its intellectual property to semiconductor companies, ASIC developers and system OEMs. MIPS Technologies and its licensees offer the widest range of robust, scalable processors in standard, custom, semi-custom and application-specific products. The company is based in Mountain View, Calif., and can be reached at +1 (650) 567-5000 or <http://www.mips.com>

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