

Wind River Probe

Today's average device has a million lines of code. Within the next two years, that number will grow to 2 million. As applications get bigger and microprocessors become faster and more complex, developers must gain access to the core processor and its peripherals. They need to see what's going on inside.

Wind River Probe enables engineers to see what's happening in the system every step of the way, from board bring-up to production and test. Businesses can standardize on a common, smart, and powerful debugging tool throughout the development process, freeing engineering bandwidth for product innovation. Your entire organization will profit from shorter development cycles, higher product quality, reduced cost, and shorter time-to-market.

Wind River Probe is a USB connectivity solution for developers who want to reliably connect their host development environments to their target under development. Using the on-chip debugging capabilities available in most embedded microprocessors, Wind River Probe enables developers to connect to

the target via the JTAG, EJTAG, XDP, or BDM interface and communicate information to and from the host PC through a USB 1.x- and 2.0-compliant interface.

Wind River Probe has the following features:

- USB 2.0 compliance
- No external power supply needed
- Simple plug-and-play host connection
- Extensible support of ARM, ColdFire, Intel, MIPS, and Power architectures
- Support for Linux and Windows hosts
- Adapts to custom hardware

Components

USB Connectivity

Combining USB 2.0 compliance with Wind River's JTAG Accelerator technology ensures a fast download speed to the target using Wind River Probe, as well as the improved ability to utilize the full JTAG scan chain. This provides developers with a more responsive debug interface compared with parallel port interface-based probes and products compliant only with USB 1.x. The improved download speed offers users more development iterations per day, in



Figure 1: Wind River Probe

addition to a more responsive and generally improved debug experience. The USB connector provides a smaller, easy to plug and play connection method that is more reliable than parallel port connections. Wind River Probe also eliminates the need for an external power supply.

JTAG Connector

Wind River Probe provides industry-leading JTAG performance. Able to support up to 100MHz JTAG clock speeds, it far surpasses the requirements for any device software CPU products available today—so this product will support new silicon from major CPU vendors for years to come. Probe supports I/O voltage tracking from 0.9v to 3.3v, so it can automatically plug and play from one device to another. Hot insertion lets users plug and play on the target board without altering the target state: Developers no longer need to reset or power cycle the target board once a connection is made or removed. In addition, Wind River Probe is adaptable to the target board under development—it can provide slew rate control, JTAG clock skew control, and programmable target termination control.

Debug Connector

Wind River Probe supports a next-generation debug interface connector manufactured by Samtec. The Samtec connector provides better electrical and

Table of Contents

Components	1
USB Connectivity.....	1
JTAG Connector	1
Debug Connector	1
Host Software Support	2
Wind River Workbench.....	2
On-Chip Debugging API	2
Technical Specifications.....	3
Supported Architectures.....	3
Host OS Support	3

Professional Services	3
Workbench Services	3
Installation and Orientation	4
Education Services	4
Personalized Learning	
Program	4
Public Courses	4
Onsite Education	4
Support Services	5
How to Purchase Wind River	
Solutions	5

Embedded Tools, Ihr langjähriger Partner für alle Wind River Entwicklungswerkzeuge
Wind River-Compiler, -Workbench, -Probe, -ICE, -ICE2



WIND RIVER

physical JTAG connections that support high-speed processors through a high-speed impedance-controlled connector. The connector also supports keying to prevent illegal insertion, support for EMI shielding if desired, and hot swap capability based on its integrated ground capability. This connector is provided in a footprint similar in size to that of the 16-pin JTAG connectors in common use.

Customers can deploy the new Samtec connector on their own hardware to take full advantage of this leading interconnect system. For designs that do not use the Samtec connector, Wind River Probe offers adapters to interface with traditional JTAG/EJTAG/XDP/BDM connectors.

Host Software Support

Wind River Probe is supported by the following Wind River software debuggers and APIs.

Wind River Workbench

Wind River Probe is fully compatible with Wind River Workbench, the industry-leading, open, extensible development suite. Wind River Workbench On-Chip Debugging is specifically configured to meet the needs of developers early in the device software development cycle—handling initial board bring-up and

validation, developing device drivers, incorporating low-level software capabilities, and developing C/C++ applications. Workbench On-Chip Debugging offers a feature-rich development suite optimized for the capabilities of JTAG-based debugging using Wind River ICE 2 and Wind River Probe JTAG debug units.

Wind River Workbench contains the following components:

- Standards-based Eclipse framework
- Development environment: build system, project manager, editor, symbol browser, and static analysis

- Multi-context-aware debugger: target connection support via on-chip debugging and agent-based solutions (agent solutions provided with Wind River platform products)
- Target OS awareness for VxWorks and Wind River Linux, supporting both kernel- and user-mode debugging for Linux
- On-chip debugging target connection plug-in (TCP) and on-chip debugging connection to Wind River Probe; includes on-chip debugging views and capabilities
- Instruction set simulator (for supported architectures)
- Compilers available from Wind River for use with Workbench:
 - Wind River Diab Compiler: best-in-class optimizing compiler
 - Wind River GCC Compiler for VxWorks
 - Wind River GCC Compiler for Linux

On-Chip Debugging API

Wind River On-Chip Debugging API provides C/C++ and Visual Basic programmers with direct access to Wind River Probe or Wind River ICE 2 JTAG debug units. This access can be utilized by engineers in the manufacturing environment for flash programming and gaining access to the built-in diagnostic features available in Wind River Probe. Access can also be used as an interface to customize software GUIs.

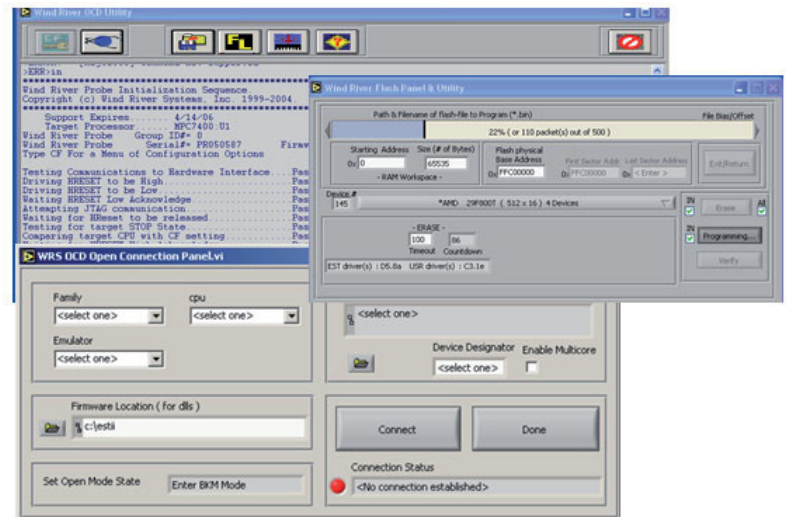


Figure 3: On-Chip Debugging API with On-Chip Debugging Utility

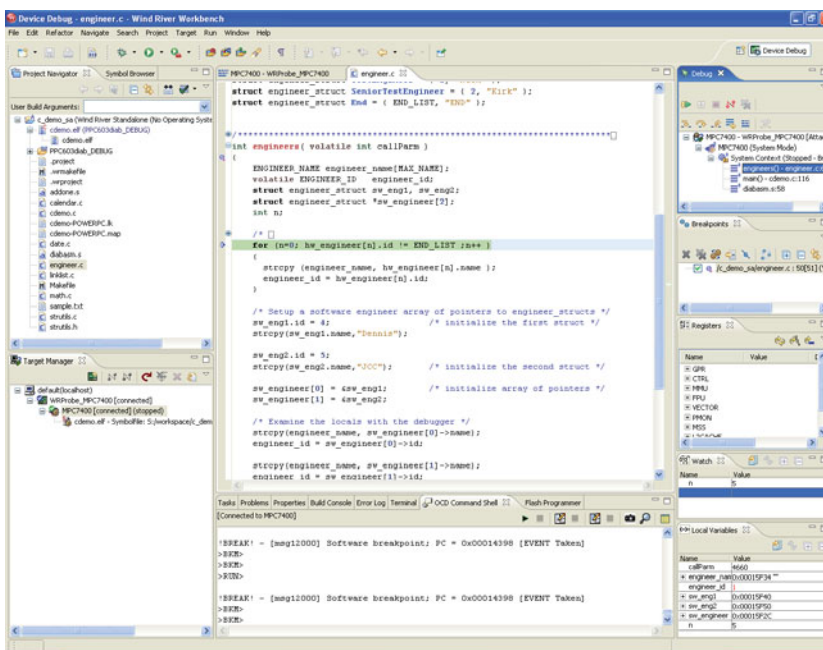


Figure 2: Wind River Workbench

WIND RIVER

Technical Specifications

- USB host connection
- Single-core, single-thread debug operation
- Extensible support for additional processor families and processor architectures
- JTAG/EJTAG/XDP/BDM-run control and program download
- Built-in hardware diagnostics
- Flash memory programming
- Source-level debugging via Wind River's hardware-optimized software debuggers
- Support for the usage of Memory Management Units (MMUs) to create virtual memory or protected applications
- Support for VxWorks, Wind River Linux, and open source Linux 2.6 kernels
- Internal register configuration
- Additional custom registers
- Open API

Supported Architectures

Wind River Probe supports single-core and single-thread debug operations (even on multi-core devices). For details on currently supported processors, refer to the processor support matrix at www.windriver.com/products/OCD/. Wind River is continually adding new processor support. If you do not see your processor listed, contact your Wind River sales representative.

Host OS Support (When Used with Wind River Workbench On-Chip Debugging 3.3.2 or Wind River On-Chip Debugging API 3.9.6)

- Fedora Core 13, 32-bit x86 and 64-bit x86-64
- Red Hat Enterprise Linux Workstation 6 (Update 1), 32-bit x86 and 64-bit x86-64
- Red Hat Enterprise Linux Workstation 5.0-5.7, 32-bit x86 and 64-bit x86-64

- Red Hat Enterprise Linux Workstation 4 (Update 9), 32-bit x86
- Ubuntu Desktop 10.04, 32-bit x86-32 and 64-bit x86-64
- SUSE Linux Enterprise Desktop 11.0, 32-bit x86-32 and 64-bit, x86-64
- OpenSUSE 11.2, 32-bit x86-32 and 64-bit x86-64
- Windows XP Professional with Service Pack 3, 32-bit x86
- Windows 7 with Service Pack 1, 32-bit x86 and 64-bit x86

Professional Services

Wind River Professional Services helps companies to reduce risk and improve competitiveness. Our team delivers device software expertise within structured engagements that directly address key development challenges and contribute to the success of our clients. Our track record of timely delivery and in-depth understanding of market and technology dynamics makes Wind River a valuable implementation partner for clients worldwide. Based on our commercial-grade project methodology, service offerings include device design, BSP and driver optimization, software system and middleware integration, and legacy application and infrastructure migration.

Workbench Services

Whether you select Wind River Probe with Wind River Workbench On-Chip Debugging as a standalone product or as part of our platform solutions, Wind River Professional Services knows how to jump-start your development efforts. Even if you opt for a non-Wind River platform, Linux distribution, host operating system, or target architecture, we can help.

Wind River Probe Processor Family Support

<p>ARM</p> <p>ARM9 ARM11 ARM Cortex-A8 ARM Cortex-A9* ARM CoreTile Express A9x4 ARM Cortex-M3 ST Micro SPEAr1310</p> <p>ATMEL AT9x* Cavium Econa* Freescale i.MX* Marvell* TI OMAP*</p> <p>ColdFire</p> <p>MCF52xx MCF53xx MCF54xx MCF544xx</p> <p>MIPS</p> <p>MIPS 4Kc, 4Km, 4Kp, 4KEc MIPS 5Kc, 5Kf MIPS 20Kc MIPS 24kc, 24kf MIPS 25Kf MIPS 74k* Broadlight BL23570R</p> <p>Altera MP32* Broadcom BCM11xx*, BCM12xx*, BCM14xx* Broadcom BCM33xx*, BCM35xx* Broadcom BCM47xx*</p>	<p>MIPS (continued)</p> <p>Broadcom BCM5300x Broadcom BCM53xx*, BCM5621x*, BCM58xx* Broadcom BCM63xx*, BCM65xx* Broadcom BCM70xx*, BCM71xx* Broadcom BCM73xx*, BCM74xx* Cavium OCTEON CN3xxx* Cavium OCTEON Plus CN5xxx* Cavium OCTEON 2 CN6xxx* NEC VR41xx*, VR54xx*, VR55xx*, VR77xx* NetLogic (RMI) AU1x00* (formerly AMD Alchemy) NetLogic (RMI) XLR*, XLS* Philips PR19xx*, PR39xx*, PR44xx* Philips PNX30xx*, PNX73xx*, Philips PNX83xx*, PNX85xx* PMC-Sierra RM79xx*, RM9xxx* Toshiba TX49xx* Wintegra Winpath*</p> <p>Intel Architecture</p> <p>Intel Atom* Intel Core 2* Duo Intel Core i3* Intel Core i5* Intel Core i7* Intel Xeon*</p>	<p>XScale</p> <p>Intel IXP4xx* Intel IXP2xxx* Intel IOP3xx* Marvell PXA*</p> <p>Power Architecture (PowerPC)</p> <p>AMCC PPC403* AMCC PPC405* AMCC PPC440* AMCC PPC460* CPU Tech Acalis CPU872 LSI Axxia ACP3442 LSI Axxia ACP3448 Freescale PPC5xx* Freescale MPC512x* Freescale MPC52xx* Freescale MPC55xx*, MPC56xx* Freescale/IBM PPC6xx* Freescale/IBM PPC7xx* Freescale MPC74xx* Freescale MPC8xx* Freescale MPC82xx* Freescale MPC83xx* Freescale MPC85xx* Freescale MPC86xx* Freescale QorIQ P1xxx* Freescale QorIQ P2xxx* Freescale QorIQ P3xxx* Freescale QorIQ P4080* Freescale QorIQ P5xxx* P.A. Semi PA6T-1682M ST Microelectronics SPC560xxx* Xilinx Virtex-II Pro X2VP* Xilinx Virtex-4 XC4V*</p>
--	--	--

*Specific processors only; for details on currently supported processors, refer to the processor support matrix at www.windriver.com/products/OCD/. If you do not see your processor listed, contact your Wind River sales representative.