

# WIND RIVER

## Wind River ICE 2

Global competitive economic forces are pressuring development teams to introduce new products in shorter time schedules, with increased differentiation and with higher quality. Wind River ICE 2 provides a high-quality, high-performance, cost-effective JTAG emulator that enables developers to move quickly from hardware bring-up to application development on a broad range of the industry's 32- and 64-bit single and multicore system-on-chip (SoC) solutions.

With more complex devices, demand for new features, lines of code growing well into the millions, and no sign of time-to-market pressures subsiding, leading semiconductor vendors are making investments in the JTAG control block on their SoCs, providing more debugging horsepower and capability to both hardware and software developers.

Built on a high-performance hardware and software platform, Wind River ICE 2 provides differentiated value through open and extensible interfaces and capabilities. It supports the debug of complex multicore designs and provides advanced hardware and software diagnostic and analysis capabilities for 32- and 64-bit single and multicore systems and SoCs.

### Advanced Diagnostics and Debugging

Wind River ICE 2 enables developers to quickly connect and take control of their target with its advanced hardware diagnostics, preconfigured target register files, bit-level register details, and run control support that leverages the broad range of debug capabilities provided by today's leading SoCs. These capabilities enable developers to move quickly from hardware design and layout to platform and application development by simplifying the verification and debugging processes related to early hardware bring-up, firmware, boot loader, and BSP development. Wind River ICE 2 also provides leading-edge download speeds to help improve developer productivity and provide a more responsive debugging experience.

### Complex 64-Bit and Multicore Debugging Support

Wind River ICE 2, with its ability to simultaneously debug up to 16 homogenous or heterogeneous cores, provides support for the most complex AMP and SMP multicore environments in the industry today. Wind River ICE 2 is built on a high-performance hardware platform that will be able to scale to meet the needs of advanced multicore systems and SoC well into the future.

Wind River ICE 2 features Wind River's JTAG Server and JTAG Accelerator technology, which enables developers to do the following:

- Access a single device on the scan chain, or multiple devices simultaneously, to provide synchronous start and stop
- Set breakpoints within a single microprocessor to halt the execution of multiple microprocessors



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- Make JTAG debugging connections to many microprocessors, regardless of their architecture
- Establish and remove connections without affecting any microprocessor or device on the scan chain

### Flexible and Extensible Solution

Wind River ICE 2 provides a scalable and cost-effective platform to any size development team. Wind River ICE 2 provides internal software trace support for industry-leading SoCs, enabling developers to access advanced SoC debug capabilities for monitoring and debugging traffic on SoC internal system bus fabrics. The integration with Wind River Trace 2 enables developers to add on advanced hardware trace capabilities to debug complex system faults, even those that may cause the target to crash. Wind River ICE 2 works across a broad range of processor families, shortening the ramp-up time for developers who are migrating to projects that make use of new devices or architectures.

### Support of Distributed Development Organizations

Wind River ICE 2 supports a 10/100/1000 Mbps Ethernet connection, enabling it to be located on your desk next to your target device or in the lab: down the hall, across campus, in another state, or anywhere on the planet. With this level of flexibility, developers are able to access target devices, run diagnostic tests, verify software execution and performance, and debug any issues that occur, regardless of their proximity to their device under test. As the trend toward outsourcing and decentralized and distributed engineering teams grows, Wind River ICE 2 enables enterprise development teams to work synergistically in the most efficient ways possible.

## Full Integration with Industry-Leading Technologies

Wind River ICE 2 is fully integrated with Wind River Workbench, the industry's award-winning Eclipse-based development environment that brings together hardware and software development debugging and analysis tools into a standards-based Eclipse framework. The tool also supports other leading debugging tool options provided by Wind River, including Wind River On-Chip Debugging API, and integrates with the new Wind River Trace 2.

## Features

Wind River ICE 2 lets you control a target by using the on-chip debugging services embedded in the microprocessor of that target. It operates effectively as a standalone system, communicating with the on-chip debugging services resident in the microcode of the chip. Wind River ICE 2 includes the following features:

- **Multicore debugging:** Enables users to identify and control 128 heterogeneous or homogeneous devices on a single scan chain using JTAG Server
- **JTAG Server:** Provides the ability to simultaneously debug up to 16 cores on a single SoC or scan chain ring
- **High-performance JTAG:** Eliminates slow download times and run control with 100MHz JTAG clock speed when developing with on-chip debugging microprocessors
- **High-speed Ethernet connection:** Provides high-speed download to the target with 10/100/1000 Mbps Ethernet
- **LCD status for improved usability:** Provides developers with real-time on-chip debug status information on a display in the unit
- **On-chip debug target run control:** Allows users to start and stop the target, set internal hardware and software breakpoints, take a target snapshot, reset the target, step one statement or instruction into function calls, and step over or out of a function
- **Built-in hardware diagnostics:** Includes a comprehensive suite of RAM tests, scope loops, and cyclic redundancy check (CRC) tests
- **Target console port:** Permits remote monitoring of applications and the serial port by channeling the serial port back through the network to the host
- **Additional custom registers:** Supports 32 custom register groups, with a total of 960 custom registers
- **Flexible boot options:** Provides three booting options—dynamic boot allows developers to boot the device without the application loaded; static boot loads a default target driver when Wind River ICE 2 is booted; remote booting allows Wind River ICE 2 to boot from firmware via TFTP from a remote host
- **Wind River ICE 2 firmware update:** Sends new firmware to the debugger unit for future expansion and upgrades using Firmware Update Utility in Wind River Workbench

## Technical Specifications

### Host OS Support

- Red Hat Enterprise Linux 4, 32-bit, x86
- Red Hat Enterprise Linux 5, 32-bit, x86
- Red Hat Enterprise Linux Workstation 5, 64-bit, x86-64
- Fedora Core 7, 32-bit, x86
- OpenSUSE Linux 10.2, 32-bit, x86
- SUSE Linux Enterprise Desktop 10, 32-bit, x86
- Solaris 9 and 10, 32-bit, SPARC
- Windows XP Professional with Service Pack 2, 32-bit, x86
- Windows Vista, 32-bit, x86

### Host Operating System Requirements

Specific host OS system requirements depend on the host software connected to Wind River ICE 2. Refer to product information for Wind River Workbench and Wind River On-Chip Debugging API for more details.

### Target OS Support

Wind River ICE 2 provides support for the following target operating systems:

- VxWorks 6.3 and higher
- VxWorks 5.5
- Wind River Linux, Wind River Real-Time Core for Linux
- Open source Linux kernels version 2.4.26 and above, and version 2.6.x.
- Express Logic's ThreadX 4.0 and 5.0

Customizable target OS awareness capability for Wind River Workbench, On-Chip Debugging Edition enables support for other target operating systems.

### Processors and Operating Systems

Wind River ICE 2 supports a wide range of processors and operating systems. Supported operating systems include Wind River's industry-leading VxWorks and Wind River Linux, in addition to kernel.org Linux and ThreadX. Visit <http://www.windriver.com/products/product-notes/workbench-on-chip-debugging-product-note.pdf> for a current list. Other commercial operating systems and in-house proprietary operating systems can be integrated by Wind River Professional Services.

### How to Purchase Wind River Solutions

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