Workbench On-Chip Debugging for VxWorks and Linux

Wind River Education enables you to unleash the power of Wind River’s technology. Our training and mentoring empower developers with the knowledge and proficiency required to program and manage device software faster and more reliably. Reduce your project risks and shorten your development timelines by equipping your engineers with the right training from our experts.

Course Description
The Workbench On-Chip Debugging for VxWorks and Linux course provides engineers with a fast, cost-effective way to acquire the skills necessary to debug applications with Wind River Workbench, utilizing on-chip debugging capabilities.

After this course, participants will be able to:
- Debug U-Boot and VxWorks boot ROM.
- Debug the Wind River Linux and VxWorks boot loader, kernel, kernel module, and user mode applications.
- Debug, build, and test custom flash drivers.
- Use on-chip debugging views.
- Debug applications in OS and non-OS context.
- Use Wind River ICE, Wind River ICE 2, and Wind River Probe.
- Locate root problems for common difficulties, including RAM access, flash programming, and debug mode failures.

Products Supported
- Wind River Workbench
- Wind River On-Chip Debugging
- Wind River ICE/ICE 2
- Wind River Probe
- Wind River Linux 2.0.2
- VxWorks 6.7
- Earlier product releases; topics may vary by product release

Who Should Attend
- Developers who work with Workbench On-Chip Debugging
- New project members on teams using Wind River on-chip debugging products

<table>
<thead>
<tr>
<th>Course Title:</th>
<th>Workbench On-Chip Debugging for VxWorks and Linux</th>
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<tbody>
<tr>
<td>Duration:</td>
<td>Two days</td>
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<tr>
<td>Format:</td>
<td>Instructor-led lectures and hands-on lab sessions</td>
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<tr>
<td>Price:</td>
<td>Contact your local sales representative</td>
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- Senior engineers who want to evaluate Wind River on-chip debugging technology
- Firmware developers

Prerequisite Skills
- One year of C programming
- Basic understanding of hardware design
- Basic understanding of operating systems and debugging techniques
- Functional knowledge of UNIX/Linux

Prerequisite Courses
- Real-Time Programming for Embedded Systems
- Introduction to Linux

Related Courses
- Wind River Linux 4.x and Workbench Essentials
- VxWorks 6.x and Workbench Essentials
- Wind River Linux Board Support Package
- VxWorks 6.x Board Support Package
- Wind River Linux 3.0 for Intermediate Platform Developers
- Linux Device Drivers
- VxWorks 6.x Device Drivers

Course Format
- This two-day expert-led course consists of lectures and lab sessions.
- Attendees use Wind River Workbench On-Chip Debugging, Wind River ICE/ICE 2, Wind River Probe, Wind River Linux 2.0.2, and VxWorks 6.7 to gain experience with the topics presented.
Global Reach of Wind River Education Services

With more than 30 years of device software experience, we provide education services in every region of the world. You can rely on our expertise—acquired delivering hundreds of classes each year to thousands of students—to provide a highly effective learning experience, wherever your developers are located.

Private Classes

Private classes are conducted at your location, scheduled for your convenience. Private classes include the use of a preconfigured laboratory environment that may consist of a connection to a remote lab environment or equipment that we bring to your facility. Private classes can be tailored to your specific needs by adding or removing topics from multiple courses, maximizing the benefit of your time in class.

Mentoring

Our Mentoring programs are provided by experienced engineers whose coaching can increase your team’s productivity while reducing your project’s risk.

Whether you need assistance with product installation and configuration, advice on development workflow, or optimization best practices, mentoring can shorten your trial-and-error cycle, document recommended procedures, and ensure your developers are using tools and technology efficiently. If you have limited time to resolve a particular issue, a Wind River expert can evaluate your system and development environment, and assist you in building a debug framework, instrumenting code, verifying software updates, and general hands-on debugging.

All of our education services are led by expert engineers who are closely connected to the Wind River technical community for access to specific expertise.

Syllabus

Day 1

Introduction
- Software Bug
- Embedded Debugging—A Challenge?
- Hardware and Software Connections
- Monitor/Agent
- In-Circuit Emulator
- Background Debug Mode
- Joint Test Action Group
- Wind River On-Chip Debugging Hardware
- Wind River On-Chip Debugging Hardware—Comparison

Wind River Probe Overview and Setup
- Overview
- Adapter Module
- Connecting Wind River Probe
- Creating a Connection
- License Key

Wind River ICE and Wind River ICE 2 Overview and Setup
- Overview
- Personality Module
- Connecting Wind River ICE
- Networking Setup
- Telnet/FTP Setup
- Creating a Connection
- Firmware Update
- License Key

Workbench On-Chip Debugging Views
- On-Chip Debugging Perspective
- On-Chip Debugging Views
- Run Control

In-Depth Debugging
- CF Options
- Register File
- Flash Driver
- Flash Programming

Troubleshooting
- Introduction
- Board Initialization
- Flash Programming

Day 2

Custom Flash Driver
- Flash Driver by On-Chip Debugging Command Shell
- Flash Driver
- Custom Flash Driver Template
- Custom Flash Driver Setup

Standalone-RAM-Debugging Lab

Linux
- U-Boot Debugging Lab
- Linux Kernel Debugging Lab
- Linux User-Mode Debugging Lab
- Linux Kernel Module Debugging Lab
- Linux Kernel Module Debugging Lab

VxWorks
- U-Boot Debugging Lab
- VxWorks Boot ROM Debugging Lab
- VxWorks Kernel Debugging Lab
- Custom Flash Driver Lab