VxWorks 6.9 and Workbench Essentials

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 VxWorks 6.9 and Workbench Essentials training course provides engineers with a fast, cost-effective way to acquire the skills necessary to develop real-time applications with VxWorks and Wind River Workbench.

After this course, participants will be able to:
- Design and develop real-time applications in kernel and user modes.
- Debug, build, and test real-time applications in a target-host development environment with Workbench and VxWorks.

Products Supported
- VxWorks 6.9 and later
- Wind River Workbench 3.3
- Earlier product releases (topics may vary)

Who Should Attend
- Anyone who will receive Workbench and VxWorks 6.9 within 60 days
- Developers who work with Workbench and VxWorks
- New project members on teams already using Wind River products
- Senior engineers who want to evaluate VxWorks technology

Prerequisite Skills
- One year of C programming
- Basic understanding of operating systems and debugging techniques

Prerequisite Courses
- None

Related Courses
- Workbench On-Chip Debugging for VxWorks and Linux
- VxWorks 6.x Board Support Package

Course Title: VxWorks 6.9 and Workbench Essentials
Duration: Four days
Format: Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available
Price: Contact your local sales representative

- VxWorks 6.x Device Drivers
- Wind River Tileon Graphics Suite Essentials
- Platform for Network Equipment, VxWorks Edition

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. Visit education.windriver.com for registration and schedule information.
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

Getting Started
- Product Overview
- Workbench 3.x Features
- Product Delivery, Installation, and Licensing
- Host Support
- VxWorks 6.x Features

Using the VxWorks Simulator
- Introduction to VxSim
- Remote Systems Target Server Connections
- VxWorks Simulator Configuration
- Connecting to VxSim
- Wind Debug Agent (WDB)
- VxWorks Simulator VxSim Lab

Hardware Target Connection
- Terms and Concepts
- Host to Target Connection
- Hands-on: Getting Started (Hardware, Wind River Simics, or VxSim Target)

Managing Projects in Wind River Workbench
- Introduction to Projects and Workspaces
- VxWorks Image Projects
- Kernel Configuration
- ROMFS
- Configuring Application Projects
- Working Sets
- Import and Export
- Build Properties, Specifications, and Output
- Hands-on: Project Management

Using VxWorks Shells
- Introduction to VxWorks Shells
- Host Shell Commands, Help, and Usage
- Command-Line History and Editing
- Host Shell Configuration

Day 2

Debugging in Wind River Workbench
- Debugger Overview
- Setting Breakpoints
- Task Mode, System Mode Debugging
- GUI and Usage
- Hands-on: Debugger

Real-Time Multitasking
- Real-Time Requirements
- Task States
- Task Control
- POSIX Support
- System Tasks
- Hands-on: Multitasking

VxWorks Events
- Event Register
- Event Handling
- Task Synchronization
- Hands-on: Events

Day 3

Semaphores
- Semaphores and Synchronization
- Events and Semaphores
- Mutual Exclusion Semaphores
- Hands-on: Semaphores

Inter-task Communication
- Shared Memory
- Message Queues
- Message Queue Events
- Pipes
- Hands-on: Inter-task Communication

Memory
- Memory Maps and Pools
- Memory Allocation
- Memory Management Routines
- Partition Management
- Hands-on: Memory

Real-Time Processes (RTPs)
- RTP Model and MMU
- Memory Allocation
- RTP Execution and Life Cycle
- Debugging RTPs
- Shared Library Usage
- Public and Private Objects
- Design Considerations
- Hands-on: Real-Time Processes
Day 4

Exceptions, Interrupts, and Timers
- Exception Handling and Signals
- Interrupt Service Routines
- Timers and the System Clock
- Watchdog Timers
- Polling
- Auxiliary Clock
- Hands-on: Exceptions, Interrupts, and Timers

Error Detection and Reporting
- Error Reporting Framework
- Persistent Memory
- Error Detection and Reporting Configuration
- Error Records
- Hands-on: Error Detection and Reporting

System Viewer
- System Viewer
- System Viewer Configuration, Management, and Use
- Triggering Interface
- User Events
- Hands-on: System Viewer

Appendix (Provided as Reference)
- VxWorks Source Builds
- VxWorks Dprintf
- VxWorks Overlapped Memory
- VxWorks Message Channels
- 64-bit VxWorks

Optional Modules (Available for Tailored Courses)
- VxWorks TIPC Basics
- VxWorks Kprintf
- VxWorks Core Dumps