

Wind River Hypervisor Fundamentals

Wind River Education Services 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 by our experts.

Course Description

The Wind River Hypervisor Fundamentals course covers concepts of virtualization and explores features required to meet the challenges of virtualization for embedded devices. Participants learn about different types of virtualization and the benefits and costs associated with each implementation. In particular, the course focuses on Wind River Hypervisor, which builds a distributed computing system with almost zero overhead. Participants explore how to share resources, exchange data, and synchronize tasks running on different partitions. Lastly, the course focuses on the development cycle of complex multi-core, multi-OS designs with the Wind River Workbench development suite. The lab exercises emphasize the market-leading multi-core architectures (Intel and Freescale) and give the student an appreciation of the similarities and differences between the architectures.

After taking this course, participants will be able to do the following:

- Describe the multi-core processor architecture and how virtualization can optimize this platform, providing security and reliability at the same time.
- Distinguish between server hypervisor requirements and embedded hypervisors.
- Explain real-time characteristics of virtualized platforms.
- Describe the Wind River Hypervisor shell environment, XML configuration, and hypercall interface.
- Use the Workbench debugger to analyze Wind River Hypervisor guest operating systems.
- Debug over proxy connections.
- Configure Wind River Linux and VxWorks to run in a virtualized environment with efficient inter-guest communication.
- Bring up multiple OSes on the Intel x86 dual core and Freescale MPC8572 processors.
- Use the multi-OS IPC (MIPC) library.
- Use the MIPC network device to implement a shared memory backplane.
- Estimate a migration effort.

Course Title:	Wind River Hypervisor Fundamentals
Duration:	Two days
Format:	Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available
Price:	Contact your local sales representative

Products Supported

- Wind River Hypervisor 1.1
- VxWorks 6.8
- Wind River Linux 3.0.2

Who Should Attend

- Application engineers
- System integrators and architects

Prerequisite Skills

- One year of C programming
- Functional knowledge of UNIX
- Basic VxWorks API knowledge
- Real-time programming basics

Prerequisite Courses

- Multi-core Technologies and Designing for Concurrency
- VxWorks 6.x and Workbench Fundamentals
- Wind River Linux and Workbench Fundamentals

Related Courses

- VxWorks 6.x Asymmetric Multiprocessing (AMP)
- VxWorks 6.x Symmetric Multiprocessing (SMP)

Course Format

- This two-day, instructor-led course consists of lectures and lab sessions.
- Students receive personal guidance from expert Wind River instructors.
- Students use Wind River Hypervisor, VxWorks, and Wind River Linux to gain experience with the topics presented.
- Lab sessions allow hands-on application of course concepts.

Global Reach of Wind River Education Services

With more than 20 years of device software experience, we provide education services in every region of the world. You can rely on our expertise—acquired by 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 Rapid Integration and Mentoring programs provide coaching from a seasoned expert who can increase your team's productivity and reduce your project's risk. An experienced engineering specialist will review your specific goals, project environment, and challenges and address productivity obstacles. Whether you need assistance with product installation and configuration, advice on development workflow, debug assistance, 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.

Syllabus

Day 1

Virtualization

- What Is Virtualization?
- History of Virtualization
- Advantages of Virtualization
- Why Multi-core Loves Virtualization
- Device Market Requirements for Virtualization

Wind River Hypervisor

- Architectural Design
- Platform Variants Supported
- Contexts, Threads, and Virtual Boards
- Basic Interfaces and Capabilities
- Supported Virtual BSPs

Multi-OS Inter-process Communication (MIPC)

- Introduction to MIPC
- Basic Configuration, Interfaces, Devices, and Capabilities

Day 2

Paravirtualization

- Paravirtualization in Wind River Hypervisor
- Using VxWorks as a Guest on Wind River Hypervisor
- Using Linux as a Guest on Wind River Hypervisor

Migrating to the Hypervisor Platform

- Migration Strategy
- Application Migration
- Scheduling Considerations
- Interrupt Considerations
- Debug, Optimize, and Test

Wind River Hypervisor Tools

- Installation
- Hypervisor Projects
- Linux Guest Projects
- VxWorks Guest Projects
- Debugging with Workbench
- Analysis Tools

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