Wind River Education Services enables clients to unleash the power of Wind River tools by creating developers skilled in our technology. We provide the knowledge you need to meet your commitments and exceed your company’s expectations. With Wind River Education Services, you will develop, run, and manage your application software faster, better, at lower cost, and more reliably.

Course Description

The VxWorks 6.x Device Drivers training workshop provides engineers with a fast, cost-effective way to develop device drivers using both legacy VxWorks and VxBus device driver models.

After taking this workshop, students will have the knowledge and skills to do the following:

- Optimize the development of a new device driver from scratch
- Use coding conventions for ease of debugging and driver portability
- Utilize common techniques for driver development
- Write Standard VxWorks I/O drivers
- Distinguish between legacy VxWorks and VxBus drivers and determine which driver model is appropriate for a particular application
- Design and integrate custom VxBus drivers
- Migrate proprietary and legacy drivers to VxBus

Products Supported

- VxWorks 6.6
- Wind River Workbench 3.0

Who Should Attend

Developers needing to learn either the legacy or VxBus VxWorks device driver models

Prerequisite Skills

- Three to five years OS/programming experience
- One year embedded device programming experience
- Familiarity with device drivers
- Basic understanding of reading and writing device registers

Prerequisite Courses

- Real-Time Programming for Embedded Systems
- VxWorks 6.x and Workbench Fundamentals
- VxWorks 5 to 6.x Migration

Related Courses

- VxWorks 6.x Board Support Package
- VxWorks 6.x Symmetric Multiprocessing
- Workbench On-Chip Debugging Fundamentals for VxWorks
- VxBus Device Driver for Existing VxWorks 6.x Driver Developers

Course Format

- Our four-day instructor-led courses consist of lectures and lab sessions.
- Students gain hands-on experience and receive personal guidance from expert Wind River instructors.
- Students examine details of the Wind River Workbench environment, focusing on the most commonly used areas.
- Specific questions are addressed.
- Lab sessions allow hands-on application of course concepts.

Global Reach of Wind River Education Services

- 4,000 students per year
- 400 classes delivered per year
- 36 instructors worldwide
- Access to 200 subject-matter experts
- 24 training centers worldwide
- More than 20 years of device software experience

Courses are conducted at your location and include the use of laptops and target boards. Courses can be tailored to your specific needs by adding or removing topics from one or multiple courses. Visit education.windriver.com for registration and schedule information.
Skills and Topics

- Understanding VxWorks Driver Models
  - VxWorks, Targets, and Wind River Workbench Basics
  - Overview of Buses, Controllers, and Bridges
  - Driver Classification
  - Introduction to VxWorks and VxBus Driver Models
- Common Driver Development
  - Using Workbench Tools to Understand and Manipulate Devices/Registers
  - Developing Source Code Based on Basic Device Access Routines
  - Using VxWorks API to Design and Distinguish Between Polling and Interrupt-Driven Devices
- Legacy VxWorks Driver Model
  - Understand VxWorks Standard I/O
  - Driver Initialization
  - Techniques for Manipulating I/O Devices
- VxBus Driver Model
  - VxBus General Overview
  - Designing a Custom VxBus-Based Driver
  - Driver Organization and Initialization
  - Integrating a VxBus Driver into VxWorks
- Migration to VxBus
  - Migration of Existing VxWorks Drivers to the VxWorks VxBus Driver Model
  - Porting of Proprietary OS Drivers to the VxBus Driver Model

Syllabus

Day 1

VxWorks Device Drivers, Getting Started
- Overview
- Driver Models
- Driver Resources
- Device Design Considerations
- Sample Drivers
- Getting Started Lab: Booting, Shells

Driver Design Guidelines
- Overview
- Access Macros
- Debugging
- Control Structures
- Driver Example
- Common Driver Interactions Lab

Interrupts and Polling
- Overview
- Interrupt Handling
- Polling
- Design Considerations
- Interrupts and Polling Lab

Day 2

VxWorks I/O Interface
- Introduction
- Standard I/O
- Support Routines
- Supporting select()
- Example: lptDrv
- I/O Device Lab
- VxWorks I/O Interface Lab

Serial Drivers
- Overview
- ttyDrv
- Driver Routines
- Initialization
- Supporting the WDB Agent

Block Drivers
- Overview
- Enabling XBD
- XBD Components
- XBD Block Driver Lab

Day 3

Introduction to the VxBus Model
- Introduction to VxBus
- Terminology
- Driver Organization
- VxBus Methods
- Introduction to the VxBus Lab

VxBus Configuration and Initialization
- Services Available to VxBus Drivers
- BSP Configuration
- Show Routines
- Driver Initialization Sequence
- Integrating a VxBus Driver Lab

Day 4

VxBus Class-Specific Drivers
- Interrupt Handling
- Interrupt Controllers
- PLB and PCI Busses
- VxBus-Compliant Serial Drivers
- VxBus-Compliant Network Drivers
- VxBus-Compliant Timer Drivers
- Migrating a Timer Driver Lab

Migration to VxBus
- Generic Migration Strategy
- Porting OS Agnostic Drivers to VxBus
- Migrating a Legacy LED Driver to VxBus Lab