VXWORKS 7 BOARD SUPPORT PACKAGE AND DEVICE DRIVERS FOR POWERPC AND ARM-BASED BOARDS

COURSE DESCRIPTION
The VxWorks® 7 Board Support Package and Device Drivers for PowerPC and ARM-Based Boards course provides engineers with a fast, cost-effective way to acquire the knowledge necessary to port VxWorks to customer hardware.

After this course, participants will be able to perform the following:
• Define a board support package (BSP) development strategy
• Write and debug BSP initialization code
• Use Wind River® Workbench tools effectively to accelerate board bring-up
• Integrate device drivers, including interrupt management, clock support, and timestamps
• Supply the required BSP routines to complete a BSP that complies with Wind River standards
• Integrate a VxBus driver
• Package a BSP
• Create a VxWorks kernel image

Hands-on exercises are included, utilizing the Wind River Simics® virtual target.

PRODUCTS SUPPORTED
• VxWorks 7
• Wind River Workbench 4 for VxWorks 7

COURSE FORMAT
• This two-day expert-led course consists of lectures and lab sessions.
• Attendees use VxWorks 7, Workbench 4, and Simics to gain experience with the topics presented.
• Participants receive individual guidance from an expert engineer who has extensive experience with Wind River technologies.

AUDIENCE
• Developers planning to write a BSP for a new board on a supported architecture
• Device driver developers
• Application programmers interested in learning what occurs at the hardware level of a VxWorks image
• Senior engineers who will decide on a final production image of their product

PREREQUISITE SKILLS
• C programming, including experience with structures, pointers, pointers to structures, typedefs, macros, and bitwise operators
• Functional knowledge of Linux or Windows
• Experience using the Workbench Debugger to debug target code
PREREQUISITE COURSES
• Real-Time Programming for Embedded Systems
• VxWorks 7 and Workbench Essentials

RELATED COURSES
• VxWorks 6.9.x to VxWorks 7 Migration
• VxWorks 7 Board Support Package and Device Drivers for Intel-based Boards

SYLLABUS

Day 1
INTRODUCTION TO VXWORKS 7 BSP
• BSP overview
• BSP architecture
• BSP components
• Platform Support Library (PSL)
• BSP subsystem component
• Develop a new BSP based on supported processor families

U-BOOT BOOT LOADER
• U-Boot overview
• VxWorks and U-Boot
• Boot from network
• Boot from flash device
• LAB: Building a U-Boot boot loader

FLATTENED DEVICE TREE
• FDT overview
• FDT syntax
• FDT initialization
• VxWorks 7 FDT APIs
• Device discovery
• LAB: Porting a BSP by modifying Flattened Device Tree

PRE-KERNEL INITIALIZATION SEQUENCE
• Pre-kernel initialization overview
• BSP specific initialization
• BSP subsystem initialization
• Pre-kernel early debug options

KERNEL INITIALIZATION SEQUENCE
• Kernel initialization overview
• The kernelInit( ) function
• The usrRoot( ) function
• Hardware initialization
• LAB: Browsing VxWorks initialization code

Day 2
VXBUS AND DEVICE DRIVER FUNDAMENTALS
• VxBus architecture
• VxBus initialization sequence
• Device discovery
• Dealing with device interdependency

VXBUS DEVICE DRIVER
• Device driver methods
• Adding new methods
• Resource management
• Configuring with component descriptor file (CDF)
• Device instances
• Driver debug aids
• Device-specific classes
• LAB: Creating a VxWorks 7 VxBus device driver

DEVELOPING A BASIC VXWORKS IMAGE
• Creating a BSP layer
• Creating a BSP component descriptor file (CDF)
• Building VxWorks Source Build libraries
• Build VxWorks kernel image
• LAB: Building a VxWorks kernel image
GLOBAL REACH OF WIND RIVER EDUCATION SERVICES

With more than 30 years of device software experience, Wind River provides education services in every region of the world. Our private classes can be tailored to your needs by adding or removing topics from multiple courses. If you have more specific project challenges, Wind River Mentoring provides coaching by experienced engineers to help you integrate Wind River solutions into your environment. And when you’re too busy to attend a whole class, our On-Demand Learning options provide around-the-clock access to advanced and specialized topics. 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.

CONTACT US

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