



WIND RIVER LINUX BSP DEVELOPMENT

COURSE DESCRIPTION

The Wind River® Linux BSP Development course provides engineers with a fast, cost-effective way to acquire the knowledge necessary to develop new board support packages under Wind River Linux and/or migrate existing “vendor drop” BSPs into Wind River Linux.

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

- Understand what is required in getting a Linux kernel to load and boot
- Port Wind River Linux platform projects to new boards
- Debug the Linux kernel on new hardware

PRODUCTS SUPPORTED

- Wind River Linux 8.0
- Wind River Workbench 4.0
- The following targets are available:
 - QEMU simulated target (Intel® x86-64)

COURSE FORMAT

- This two-day instructor-led course consists of lectures and lab sessions.
- Students gain hands-on experience and receive personal guidance from expert Wind River instructors.
- Students examine and exercise simulated network topologies in hands-on labs.
- Specific questions are addressed.

AUDIENCE

- Developers who are planning to use Wind River Linux on an unsupported board (hardware architecture is supported)
- Developers interested in learning how embedded targets boot

PREREQUISITE SKILLS

- Understanding of embedded operating systems and debugging techniques
- Knowledge of how the Linux kernel works, including device drivers and user space interfaces
- One year of C programming experience on Linux/UNIX

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| Course title: | Wind River Linux BSP Development |
| Duration: | Two days |
| Format: | Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available |
| Content: | <p>Day 1: The Linux Boot Sequence; Wind River Linux Build System Overview; Configuring and Patching a Kernel</p> <p>Day 2: Wind River Linux BSP Overview; Creating Wind River Linux BSPs; Boot Time Debugging; Additional Considerations</p> |

PREREQUISITE COURSES

- Wind River Linux and Workbench Essentials

RELATED COURSES

- Linux Device Drivers

SYLLABUS

Day 1

THE LINUX BOOT SEQUENCE

- Overview
- Initializing a board
- Boot loaders
- Initializing the kernel
- Initializing user space
- **LAB: Getting Started with the Wind River Linux Lab Environment**

WIND RIVER LINUX BUILD SYSTEM OVERVIEW

- Overview
- Creating the build environment
- The build environment
- Building the project
- Packages
- Templates and layers
- **LAB: Managing a Build Environment from the Command Line**

CONFIGURING AND PATCHING A KERNEL

- Configuring a Linux kernel
- Kernel build system
- Kernel patches
- Managing a Wind River Linux kernel
- **LAB: Configuring and Patching the Kernel**
- **LAB: Managing Kernel Modules**
- **LAB: Developing Kernel Modules**

Day 2

WIND RIVER LINUX BSP OVERVIEW

- Role of a Wind River Linux BSP
- Wind River Linux BSP structure
- Setting up the build environment
- Configuring and patching a kernel
- Configuring user space
- **LAB: Developing the Kernel**

CREATING WIND RIVER LINUX BSPS

- BSP development overview
- Starting from scratch
- Starting with third-party code
- Enabling supported boards
- Cloning BSPs
- Packaging Wind River Linux BSPs
- **LAB: Creating a BSP**

BOOT TIME DEBUGGING

- Overview
- Hardware debugging
- KGDB
- printk()
- Other output mechanisms
- Conclusion
- **LAB: Configuring KGDB**
- **LAB: Kernel Debugging with GDB**

ADDITIONAL CONSIDERATIONS

- BSP documentation
- Boot loaders

- Legal requirements
- Validating a BSP
- **LAB: Validating the Kernel**

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

For more information about Wind River Education Services, visit www.windriver.com/education/.

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