



# WIND RIVER LINUX LTS CLI ESSENTIALS

## COURSE DESCRIPTION

The Wind River® Linux LTS CLI Essentials course provides engineers with a fast, cost-effective way to acquire the skills necessary to configure and utilize components of Wind River Linux, using command-line techniques exclusively.

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

- Configure, build, and validate a Wind River Linux kernel and file system
- Use layers and templates effectively
- Install and build run-time and kernel packages
- Design, develop, integrate, debug, build, and test applications in a target-host development environment with Linux

## PRODUCTS SUPPORTED

- Wind River Linux LTS 18
- The following targets are available: QEMU simulated target (Intel® x86-64)

## COURSE FORMAT

- This three-day expert-led course consists of lectures and lab sessions.
- Attendees use Wind River Linux LTS to gain experience with the topics presented, using command-line interface techniques.
- Participants examine and exercise simulated targets in hands-on labs.
- Participants receive individual guidance from an expert engineer who has extensive experience with Wind River technologies.

## AUDIENCE

- Developers who are getting started with the Yocto Project and Wind River Linux
- New project members on teams already using the Yocto Project and Wind River Linux
- Managers who want to get a quick understanding of Wind River Linux components
- Senior engineers or managers who want to evaluate Wind River Linux technology

Course title:	<b>Wind River Linux LTS CLI Essentials</b>
Duration:	Three days
Format:	Instructor-led lectures and hands-on lab sessions; instructor-led Live Remote delivery available
Format:	<b>Day 1:</b> Introduction to Embedded Linux; Introduction to Wind River Linux; Target Management; Application Development <b>Day 2:</b> Application Development (cont'd); Kernel Development <b>Day 3:</b> Software Management; Layers and Templates

## PREREQUISITE SKILLS

- Basic understanding of operating systems and debugging techniques
- Understanding of makefiles
- Functional knowledge of Linux
- One year of C or C++ programming experience on Linux/UNIX

## PREREQUISITE COURSES

- Introduction to Linux

## RELATED COURSES

- Wind River Linux User Space Programming
- Wind River Linux BSP
- Wind River Linux Device Drivers

## SYLLABUS

### Day 1

#### INTRODUCTION TO EMBEDDED LINUX

- Overview of Linux

- Linux boot process
- Linux user space
- Cross development
- Open source software licenses
- **LAB: Getting Started with the Wind River Linux Lab Environment**

## INTRODUCTION TO WIND RIVER LINUX

- Overview
- Wind River Linux platform
- Creating a build environment
- Build environment structure
- Building target images
- Optimizing builds
- Package revision management
- **LAB: Managing a Build Environment from the Command Line**
- **LAB: Customizing the Target Image**

## TARGET MANAGEMENT

- Hardware targets
- Cross development workflow
- Deploying to hardware targets
- Simulating a target with QEMU
- **LAB: Managing Simulated Targets from the Command Line**

## APPLICATION DEVELOPMENT

- Application development workflow
- Migrating applications to a build environment
- Application debugging

### Day 2

#### APPLICATION DEVELOPMENT (CONT'D)

- **LAB: Building Applications from the Command Line**
- **LAB: Debugging Applications with GDB**
- **LAB: Debugging a Program Crash with GDB**
- **LAB: Profiling CPU Usage**
- **LAB: Profiling Memory Usage**
- **LAB: Analyzing Code Coverage**

## KERNEL DEVELOPMENT

- Configuring the kernel

- Building the kernel
- Kernel modules
- Kernel debugging
- **LAB: Developing the Kernel**
- **LAB: Managing Kernel Modules**
- **LAB: Developing Kernel Modules**

### Day 3

#### SOFTWARE MANAGEMENT

- Overview
- Build lifecycle
- Managing packages
- Integrating new software
- Recipes
- **LAB: Managing Packages**
- **LAB: Patching Packages**
- **LAB: Writing a Recipe**
- **LAB: Integrating Applications with the devtool Tool**

#### LAYERS AND TEMPLATES

- Layers
- Anatomy of a layer
- Templates
- Layer and template processing
- **LAB: Creating Layers**
- **LAB: Managing Layers and Templates**

## GLOBAL REACH OF WIND RIVER EDUCATION SERVICES

With more than 30 years of experience delivering software for the intelligent edge, 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](http://www.windriver.com/education).

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