

User-Mode Linux: A Book Excerpt

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One of the largest efforts involved with software engineering is testing the software to make sure that it works as designed. Testing can require several different types of system configurations and could require multiple instances of Linux. One way to create this type of environment is to use a virtual machine.

User-Mode Linux (UML) is a fully functional Linux kernel. It runs its own scheduler and virtual memory (VM) system, relying on the host kernel for hardware support. It includes virtual block, network, and serial devices to provide an environment that is almost as full-featured as a hardware-based machine. UML cannot destroy the host machine. Furthermore, the UML block devices, also called disks, can be files on the native Linux file system, so you cannot affect the native block devices. This is very useful when you're testing and debugging block operations.

Each UML instance is a complete virtual machine that's all but indistinguishable from a real computer. All of them run as a normal user on the host. They give you root-level access, the ability to start daemons, the ability to run text and graphical applications, full networking, and almost all of the other capabilities of a Linux system.

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