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Stage 2 Getting Started with the Kernel

Objectives

- Obtaining the Kernel Source
- Kernel Source Tree
- Building the Kernel
- Different Nature

Obtaining the Kernel Source

- <http://www.kernel.org/>
 - #tar xvjf linux-x.y.z.tar.bz2
 - #tar xvzf linux-x.y.z.tar.gz
 - #patch p1 < ../patch-x.y.z
 - Lab
 - #cd linux-2.6.38.2
 - #for i in \$(ls ../xen-patches-2.6.38-2/*); do
 - #do patch -p1 < ../xen-patches-2.6.38-2/"\$i"; done
- <http://vault.centos.org/6.3/updates/Source/SPackages/>
 - #rpm -ivh kernel.src.rpm
 - #rpmbuild -ba kernel.spec
- wget <http://www.kernel.org/pub/linux/kernel/v2.6/linux-2.6.31.8.tar.bz2>
- Note:
 - Every company has customized kernel package.

Kernel Source Tree

- Arch Architecture-specific source
- Crypto CryptoAPI
- Drivers Device drivers
- Documentation Kernel source documentation
- Fs The VFS and the individual file systems
- Include Kernel headers
- Init Kernel boot and initialization
- Ipc Interprocess communication code
- Kernel Core subsystems, such as the scheduler
- Lib Helper routines
- Mm Memory management subsystem and the VM
- Net Networking subsystem
- Scripts Scripts used to build the kernel
- Security Linux Security Module
- Sound Sound subsystem
- Usr Early user-space code (called initramfs)

Building the Kernel

- #make menuconfig
- #make config
- #make xconfig
- #make defconfig
- #make clean
- #make distclean
- #make
- # make modules
- #make modules_install
- #make install
- #/sbin/depmod 2.6.31.8
- #make -jn

Different Nature

- The kernel does not have access to the C library.
- The kernel is coded in GNU C.
- The kernel lacks memory protection like user-space.
- The kernel cannot easily use floating point.
- The kernel has a small fixed-size stack.
- Because the kernel has asynchronous interrupts, is preemptive, and supports SMP, synchronization and concurrency are major concerns within the kernel.
- Portability is important.
- Lab
 - [/root/workspace/labs/Foundation](#)



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Thank you!



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