**WorkShop 1:** Compiling a New Kernel

## 1- Obtaining kernel sources and patches

The first thing you need to do to compile a new Linux kernel is obtain the source code for one. The main place to find kernel sources is from the Linux Kernel Archives (kernel.org). But here, find the downloaded kernel and the patches on your system or take it from your teacher.

***Put the linux-2.6.27.tar.bz2 and patch-2.6.27.62.bz2 on /tmp/src directory of your machine.***

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## 2- Unpacking and patching the kernel

***# cd /tmp/src/***

***# tar jxvf /tmp/src/linux-2.6.27.tar.bz2***

***# bunzip patch-2.6.27.62.bz2***

***# cd linux-2.6.27***

***# patch –p1< /tmp/src/patch-2.6.27.62***

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## 3- Configuring the compilation

Once you have obtained and unpacked your kernel sources, you will want to configure your target kernel. Technically, you can also manually edit the file .config, but in practice doing so is rarely desirable. So use the make menuconfig to built the .config file.

***# make menuconfig***

Note: If there is any dependencies for running the make menuconfig, first resolve them and then run the make menuconfig.

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## 4- Cleans up prior object files

Cleans up prior object files, a good idea especially if this is not your first compilation of a given kernel tree.

***# make clean***

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## 5- Build the base kernel

***# make bzImage***

The vmlinuz (base kernel file) is created on /usr/src/linux/arch/x86/boot/bzImage directory. Manually copy it on /boot directory.

***# cp /usr/src/linux/arch/x86/boot/bzImage /boot/vmlinuz-2.6.27.62.el5***

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## 6- Build all the loadable kernel modules

***# make modules***

## 7- Install all the loadable kernel modules

***# make modules_install***

It installs all the built modules to a directory such as /lib/modules/2.6.27.62/, where the directory leaf is named after the kernel version.

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## 8- Creating an initial ramdisk

Creating an initial ramdisk image is performed with the command mkinitrd. Consult the manpage on your specific Linux distribution for the particular options given to the mkinitrd command.

***# cd /lib/modules***
***# mkinitrd /boot/initrd-2.6.27.62.img 2.6.27.62***

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## 9- Copy System.map to boot directory

System.map file is a symbol table used by the kernel.

***# cp System.map /boot/System.map-2.6.27.62.el5***

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## 10- Configure the boot loader

Backup the boot loader configuration (/etc/grub.conf on redhat) and then add the following value to it.

***# cp /etc/grub.conf /etc/grub.conf.bk***

***# Vi /etc/grub.conf***

Add the following on /etc/grub.conf

***Title CentOs (2.6.27.62.el5)***

***root (hd0,0)***

***kernel /vmlinuz-2.6.27.62.el5***

***initrd /initrd-2.6.27.62.img***

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## 11- Booting the system with new kernel.

Now chose the new title on your boot loader to test the processes.