Technical White Paper: RFATO23004

Compiling the Linux Kernel

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The Linux Kernel is something like the DOS "Command.com", except there's a lot more to it, and you can "compile" it to contain or leave features you want. (i.e. smaller is better, unless it doesn't do something you need).

Make sure you're root.
1) Type: cd /usr/src/linux

2) Type: make config
Answer questions (do a "?" for ones you're not sure about to get more info)

3) Type:

```
(make dep; make clean; make zImage) >& Makerrs &
```

4) You can check on progress with "tail -f Makerrs", hitting Ctl-C to get out of it. (You can also just hit "tail Makerrs" repeatedly, the "-f" just keeps you viewing new changes).

5) Wait till the compilation finishes. You'll see a notification if you're typing, and the tail of Makerrs will show something like:

```
tools/build bootsect setup compressed/vmlinux.out CURRENT > zImage
Root device is (8, 2)
Boot sector 512 bytes.
Setup is 4344 bytes.
System is 389 kB
sync
make[1]: Leaving directory `/usr/src/linux-2.0.34/arch/i386/boot'
```

IF YOU SEE ANY ERRORS, STOP. You have problems. Go no

further. Look to see what the problem is, go for help if you can't
figure it out.

6) do a "ls /boot" to see what kernels already exist (they traditionally
start with "vmlinuz-").

7) Pick a new name like "vmlinuz-new-test", and do:
    cp /usr/src/linux/arch/i386/boot/zImage /boot/vmlinuz-new-test

8) Type "ls -lt /usr/src" and see what soft link (shortcut) /usr/src/linux
is point to - if it's "linux-2.0.32", you're running kernel 2.0.32
for example. (The end of the Makerrs in step 5 usually tells you
the same thing)

9) Type "mv /lib/modules/2.0.32 /lib/modules/2.0.32-old" (or whatever
version you're running.

10) Type "make modules", and then "make modules_install".

11) Edit the /etc/lilo.conf file, copy the top 4 lines starting with "image="
(removing any initrd line) to above the first entry,
so you have something like:

```
image=/boot/vmlinuz-ps
label=linux-ps
root=/dev/sda2
read-only
image=/boot/vmlinuz-ps
label=linux-ps
root=/dev/sda2
read-only
```

12) Change lilo.conf to:

```
image=/boot/vmlinuz-newtest
label=linux-newtest
root=/dev/sda2
read-only
image=/boot/vmlinuz-ps
label=linux-ps
root=/dev/sda2
read-only
```

13) Type "/sbin/lilo". If this succeeds, you'll see something
like:

Added linux-newtest *
Added linux-ps
Added linux

The "*" means "the default startup kernel".

14) Reboot with: /usr/sbin/shutdown -r now
("-r" means "reboot")

15) When the LILO appears, you can either hit return, or if problems, hit Shift then Tab and type in the name of whatever kernel you want to use (generally if you're having problems, you want to use an older kernel to salvage your system).

16) If everything works, you're finished.