

**Ex. No.: 12**

**Date: 25-05-2024**

### **CUSTOMIZATION OF LINUX KERNEL**

**Aim:**

To download the vanilla Linux kernel from repository and customize to our requirements.

**Customization Steps:**

1. Download the vanilla kernel from [www.kernel.org](http://www.kernel.org)
2. Switch to root user using the command `[root@localhost os]#su`
3. Use dnf to install kernel-devel package  
`[root@localhost os]#dnf install kernel-devel`
4. Install gcc development tools  
`[root@localhost os]#dnf group install "Development Tools"`
5. Install additional software packages  
`[root@localhost os]#dnf install ncurses-devel bison flex elfutils-libelf-devel openssl-devel`
6. Copy the downloaded kernel source to `/usr/src/kernels`  
`[root@localhost os]#cp linux-5.0.0.tar.xz /usr/src/kernels`
7. Go to kernel source directory  
`[root@localhost os]#cd /usr/src/kernels`
8. Extract the downloaded vanilla kernel  
`[root@localhost os]#unxz linux-5.0.2.tar.xz`  
`[root@localhost os]#tar xvf linux-5.0.2.tar`
9. Remove all old configuration files  
`[root@localhost os]#make mrproper`
10. Configure the Kernel  
`[root@localhost os]#make menuconfig`
11. Build the Kernel (For faster build use `-j 2` option)  
`[root@localhost os]#make all`

12.Remove all temporary files

```
[root@localhost os]#make clean
```

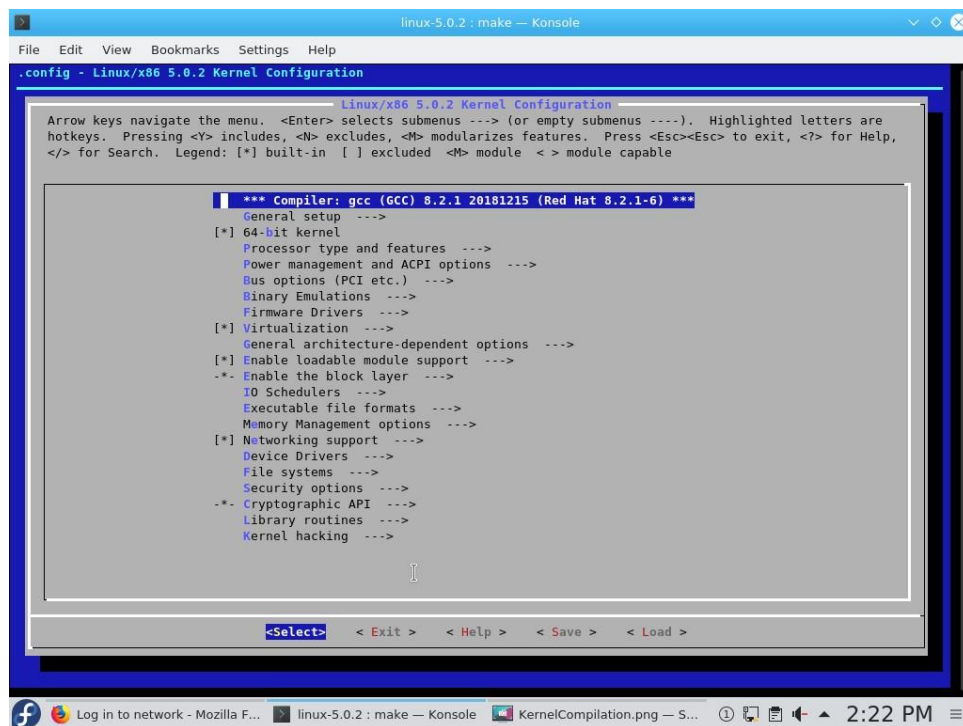
13.Install Kernel and its modules

```
[root@localhost os]#make modules_install
```

```
[root@localhost os]#make install
```

14.Reboot the system

**Output:**



```
linux-5.0.2 : bash — Konsole
File Edit View Bookmarks Settings Help
[root@localhost ~]# cd Downloads/
[root@localhost Downloads]# ls
ADRIANE-KNOPPIX_V6.4.4CD-2011-01-30-EN.iso  lupu-528.005.iso  xenialpup-7.5-uefi.iso
linux-5.0.2.tar.xz  VirtualBox-6.0-6.0.4_128413_fedora29-1.x86_64.rpm
[root@localhost Downloads]# cd /usr/src/kernels
[root@localhost kernels]# ls
4.18.16-300.fc29.x86_64  linux-5.0.2  linux-5.0.2.tar
[root@localhost kernels]# cd linux-5.0.2/
[root@localhost linux-5.0.2]# ls
arch  COPYING  Documentation  fs  ipc  kernel  MAINTAINERS  modules.order  samples  sound  virt
block  CREDITS  drivers  include  Kbuild  lib  Makefile  net  scripts  tools
certs  crypto  firmware  init  Kconfig  LICENSES  mm  README  security  usr
[root@localhost linux-5.0.2]# make
  CALL scripts/checksyscalls.sh
  DESCEND  objtool
  CC      init/main.o
  CHK     include/generated/compile.h
  UPD     include/generated/compile.h
  CC      init/version.o
  CC      init/do_mounts.o
  CC      init/do_mounts_initrd.o
  CC      init/do_mounts_md.o
  CC      init/initramfs.o
  CC      init/calibrate.o
  CC      init/init_task.o
  AR      init/built-in.a
  CC [M]  arch/x86/kvm/lapic.o
  CC [M]  arch/x86/kvm/i8254.o
  CC [M]  arch/x86/kvm/ioapic.o
  CC [M]  arch/x86/kvm/irq_comm.o
  CC [M]  arch/x86/kvm/cpuid.o
  CC [M]  arch/x86/kvm/pmu.o
  CC [M]  arch/x86/kvm/mtrr.o
  CC [M]  arch/x86/kvm/hyperv.o
  CC [M]  arch/x86/kvm/page_track.o
  CC [M]  arch/x86/kvm/debugfs.o
  LD [M]  arch/x86/kvm/kvm.o
  CC [M]  arch/x86/kvm/vmx.o
  AS [M]  arch/x86/kvm/vmx/vmenter.o
```

## RESULT

Hence a Linux Kernel has been downloaded from the official source and is successfully customized to our requirements and installed in the Linux.