

Ex. No.: 12

Date: 11.5.24

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
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`

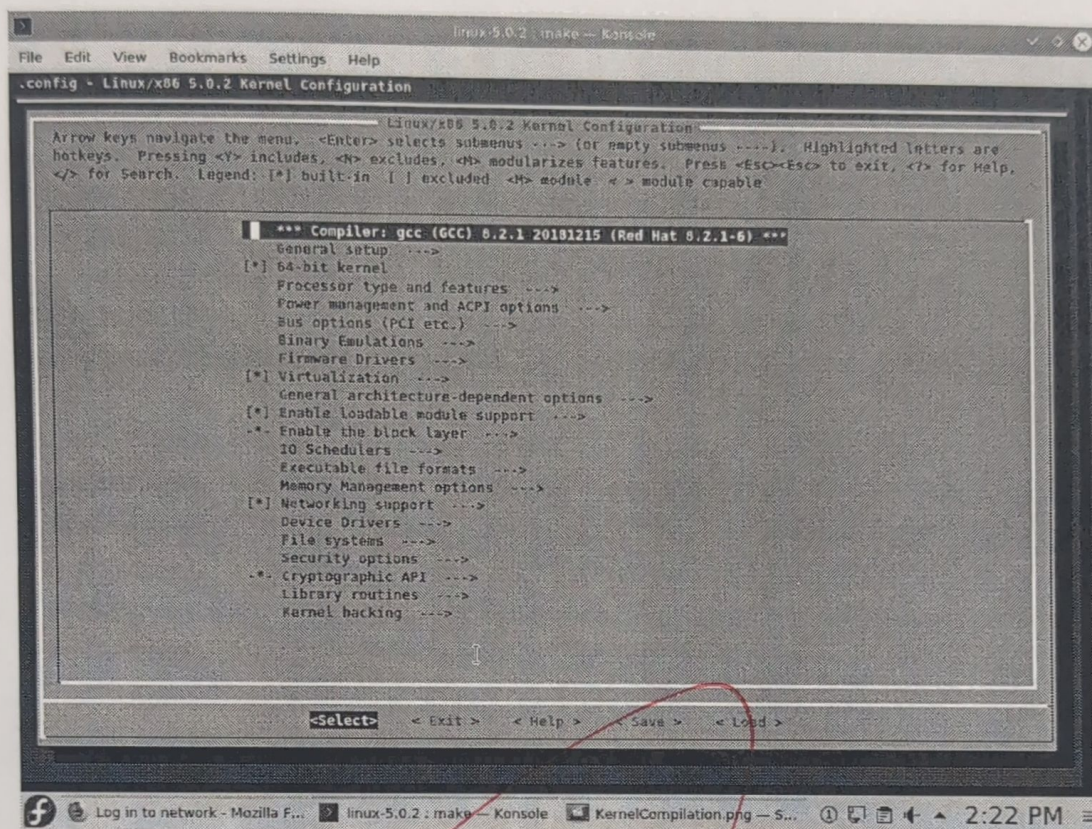
13. Install Kernel and its modules

```
[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
ACPIAME-KIOSPPY_V6_4.40-2011-01-20-EN.iso  ltpm-528.005.iso
linux-5.0.2.tar.gz                          virtiofsd-6.0-0.0.4-12x13-Fedora-1.000-54.rpm xenialpop7.9-def1.iso
[root@localhost Downloads]# cd ../src/kernels/
[root@localhost kernels]# ls
1.18.18.750-1-29.200.54 linux-5.0.2 lsmux-5.0.2.far
[root@localhost kernels]# cd linux-5.0.2/
[root@localhost linux-5.0.2]# ls
arch      CONFIG Documentation fs       lib     kernel  MAINTAINERS modules.order samples scripts src
block    CREDITS drivers include kbuild   lib     Makefile  bit      scripts tools
crypto  crypto firmware init      Kconfig  libc6Etc mnt      README   shlibary x86
[root@localhost linux-5.0.2]# make
CALL scripts/checksyscalls.sh
DESCEND objtool
CC      init/main.o
CMA      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.o
CC [M] arch/x86/kernel/apic.o
CC [M] arch/x86/kernel/acpi/boot.o
CC [M] arch/x86/kernel/apic.o
CC [M] arch/x86/kernel/cpumask.o
CC [M] arch/x86/kernel/cpu/mshv.o
CC [M] arch/x86/kernel/hypervisor.o
CC [M] arch/x86/kernel/page_track.o
CC [M] arch/x86/kernel/debugfs.o
LD [M] arch/x86/kernel/vmlinux.o
CC [M] arch/x86/kernel/vmx/vmx.o
AS [M] arch/x86/kernel/vmx/vmlauncher.o
```

RESULT

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The following software has been installed and customized successfully.

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