

Ex. No.: 12
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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: make - Korosko
File Edit View Bookmarks Settings Help
.coefig - Linux/5.0.2 Kernel Configuration

Linux/5.0.2 Kernel Configuration
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are
hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help,
</> for Search. Legend: [*] built-in [ ] excluded <M> module < > module capable

*** Compiler: gcc (GCC) 5.2.3 20160215 (Red Hat 5.2.1-6) ***
General setup --->
[*] 64-bit kernel
Processor type and features --->
Power management and ACPI options --->
Bus options (PCI etc.) --->
Binary Emulations --->
Firmware Drivers --->
[*] Virtualization --->
General architecture-dependent options --->
[*] Enable loadable module support --->
-- Enable the block layer --->
IS Schedulers --->
Executable file formats --->
Memory Management options --->
[*] Networking support --->
Device Drivers --->
File systems --->
Security options --->
-- Cryptographic API --->
Library routines --->
Kernel hacking --->

Select Exit Help Save Load
```

