Projekat
Instalacije Gentoo Linux-a

na srpskom jeziku

By Dušan Đorđević 81/14R

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Sadržaj

Uvod

Linux je operativni sistem otvorenog koda čiji je kernel napisao Linus Torvalds u C programskom jeziku koga je kasnije “comunity” razvio u današnji Linux. U današnjici, kao i pre, Linux je uvek bio besplatan, ali se koristi u mnogim granama industrije uključujući i vojnu zbog njegove adaptibilnosti, što se može videti iz raznih distro-a koje Linux operativni sistem pruža danas na tržištu.

Prvo što bi moglo da se kaže o Lunux-u je to da je besplatan, odnosno nije potrebno da se plati kako bi se koristio ovaj operativni sistem, dok ostali operativni sistemi kao što su MS-Windows ili komercijalna verzija unixa može koštati dosta novca. Drugo značenje besplatan je sloboda korišćenja Linux-a. Kada se dobije Linux takođe se dobije izvorni kôd Linuxa, tako da ga je moguće modifikovati.

On takođe uključuje mnogobrojne softverske aplikacije, programske jezike i programerske alate... Većina programa/softvera/operativnih sistema je u GNU General Public Licanse (GPL).

Veoma je važno da se odabere prava arhitektura prilikom skidanja minimal cd-a za instalaciju Gentoo Linuxa.
AMD 64 ne znači da je namenjen za AMD procesore već je tako nazvana 64 bitna arhitektura jer je AMD prvi napravio ovakav procesor dok se x86 arhitektura naziva po prvom intelovim procesoru 8086 ove arhitekture.
Pre instalacije važno je procitati uputstvo "Handbook" na oficijalnom sajtu, koji objašnjava detaljno kako uspešno instalirati Gantoo Linux.

Gentoo Linux je dostupan za više procesorskih arhitektura.
Arhitekture su vrste procesora koji podržavaju određene instrukcije. Dve najdostupnije arhitekture desktop procesora su x86 arhitektura i AMD64 arhitektura. Ali poštoji i dosta drugih arhitektura kao što su sparc, ppc, mips, arm, etc...

Pre nego što se započne instalacija treba videti koje hardverske karakteristike su preporučene za uspešnu instalaciju Gentoo-a na AMD64 box-u.

Gentoo Linux je drugačiji od ostalih Linux distribucija jer se razlikuje po slobodi korisničkih podešavanja sistema po sopstvenoj želji i potrebi.

Programi se kompajliraju specijalno za svaki računar. Zbog toga je mnogo bolja optimizacija i rad sa tim aplikacijama ali je potrebno dosta više vremena da se one pripreme za rad.

Takođe tokom instalacije je moguće da se podešava Linux kernel gde je moguće podesiti sve šta će sistem da podrži po posebnim potrebama hardvera i korisnika.

Gentoo je u nekim stvarima bolji, pruža punu kontrolu ali je teži za korišćenje i zahteva duže procese. Ako korisnik nema vremena ili strpljenja za Gentoo Linux definitivno treba da koristi drugu distribuciju.

Uz Gentoo Linux se može naučiti kako radi Linux sistem, Gentoo može da nauči korisnika kako se izgrađuje softver, kako se kompajlira iz izvornog koda, kako se konfigurišu tekstualni fajlovi u Linuxu i dosta drugih stvari.

Instalacija Gentoo Linux-a

Pritiskom na taster "F1" dobijaju se više opcija za butovanje.
nakon toga se unosi komanda:

 # Gentoo

Nakon svake otkucane komande na tastaturi komanda se aktivira pritiskom na taster "Enter".
Nakon unosa komande je Gentoo live u potpunosti butovan.

Podešavanje internet konekcije

Prvo što treba proveriti je da li je internet konekcija uspostavljena, to se proverava komandom:

 # ping -c 3 www.google.com

Zato što se pretpostavlja da je "Google" uvek aktivan sajt.
Ako nema konekcije, konekcija se podešava komandom:

 # ip link
 # ip link set enp0s3 up
 # ping -c 3 www.google.com

I ponovo se proverava konekcija, ako i to nije uspešno. Preporučuje se "handbook" sa oficijalnog sajta za rešavanje bilo kakvog problema.
Ako se u računaru koristi mrežna kartica koristi se komanda:

 # iwconfig enp0s3

Ako je internet konekcija uspešno podešena može da se nastavi dalje.
korišćenjem sledećih komandi:

 # ip link
 # dhcpcd enp0s3

Ove komande šalju na master dhcpcd proces i omogućavju internet konekciju kada se kasnije chroot-uje u novom ambijentu.

Formatiranje diska

Prvo je potrebno kreirati particije u kojima će se smestiti Gentoo sistem.
Pokretanje programa "parted" za formatiranje diska se vrši sledećom komandom:

 # parted -a optimal /dev/sda

Nakon toga se otvara program "parted" za manipulaciju lokalnim diskom.
Sledeća komanda kreira strukturu na lokalnom disku:

(parted) mklabel gpt

Komanda:

(parted) unit mib

se koristi da obeleži jedinicu koja se koristi za veličinu particija u ovom slučaju mb.
Određivanje tipa paraticije (po defaultu je obicno primary) i mogu se kreirati 4 particije ištog tipa, ako trebaju više moraju ostale biti pod tipom secundary.
Svaka particija u partedu se kreira komandom 'mkpart' uz argumente 'primary' ili 'secundary' dok se u produžetku upisuju vrednosti početka i završetka particije na lokalnom disku:

(parted) mkpart primary 1 3

Ime particije se dodeljuje komandom 'name' sa brojem u produžetku što označava kojoj particiji se dodeljuje ime i nakon toga ime particije.

(parted) name 1 grub

Podešavanje prve particije kao "bios_grub" se izvršava komandom:

(parted) set 1 bios_grub on

I nakon toga se proverava ispravnost kreiranih particija komandom:

(parted) print

Što ispisuje na ekranu sve particije po imenu sa svim potrebnim informacijama.
na isti način se kreiraju i ostale particije:

(parted) mkpart primary 3 131
(parted) name 2 boot
(parted) mkpart primary 131 -1
(parted) name 3 rootfs

Ako se koristi UEFI, da bi se podesilo boot-ovanje sa UEFI biosom koristi se komanda

(parted) set 2 boot on

```
rtt min/avg/max/mdev = 15.958/16.271/16.495/0.271 ms
livecd ~ # parted -a optimal /dev/sda
GNU Parted 3.2
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) mklabel gpt
Warning: The existing disk label on /dev/sda will be destroyed and all data on this disk will be lost. Do you want to continue
Yes/No? yes
(parted) unit MiB
(parted) mkpart primary 1 3
(parted) name 1 grub
(parted) set 1 bios_grub on
(parted) print
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 91212MiB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start    End      Size     File system  Name  Flags
 1      1.00MiB  3.00MiB  2.00MiB              grub  bios_grub

(parted) mkpart primary 3 131
(parted) name 2 boot
(parted) mkpart primary 131 -1
(parted) name 3 rootfs
(parted) set 2 boot on
(parted) print
Model: ATA VBOX HARDDISK (scsi)
Disk /dev/sda: 91212MiB
Sector size (logical/physical): 512B/512B
Partition Table: gpt
Disk Flags:

Number  Start    End       Size      File system  Name    Flags
 1      1.00MiB  3.00MiB   2.00MiB                grub    bios_grub
 2      3.00MiB  131MiB    128MiB                 boot    boot, esp
 3      131MiB   91211MiB  91080MiB               rootfs

(parted)  ^\Quit
livecd ~ # _
```

Iz parted-a se nakon završenog posla izlazi pritiskom na taster "q" pa zatim "enter".
Nakon toga se formatira file sistem za svaku particiju komandama:

 # mkfs.ext2 /dev/sda2
 # mkfs.ext4 /dev/sda3

Onda se mountuju:

 # mount /dev/sda3 /mnt/gentoo
 # mkdir /mnt/Gentoo/boot
 # mount /dev/sda2 /mnt/gentoo/boot

```
livecd ~ # mkfs.ext2 /dev/sda2
mke2fs 1.42.13 (17-May-2015)
Creating filesystem with 131072 1k blocks and 32768 inodes
Filesystem UUID: 91e77023-c1be-4c4b-9d50-e690102a559f
Superblock backups stored on blocks:
        8193, 24577, 40961, 57345, 73729

Allocating group tables: done
Writing inode tables: done
Writing superblocks and filesystem accounting information: done

livecd ~ # mkfs.ext2 /dev/sda3
mke2fs 1.42.13 (17-May-2015)
Creating filesystem with 2456576 4k blocks and 614400 inodes
Filesystem UUID: 34dae8c7-a729-47b6-80db-941d965d39b3
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632

Allocating group tables: done
Writing inode tables: done
Writing superblocks and filesystem accounting information: done

livecd ~ # mount /dev/sda3 /mnt/gentoo
livecd ~ # mkdir /mnt/gentoo/boot
livecd ~ # mount /dev/sda2 /mnt/gentoo/boot
livecd ~ # _
```

Podešavanje lokalnog vremena

Podešavanje se vrši komandom:

 # date 112916302016

Koristi se vojno odredjivanje vremena u formatu: mesec, dan, sati, minuti i godina..

```
livecd ~ # date 112916302016
Tue Nov 29 16:30:00 UTC 2016
livecd ~ # _
```

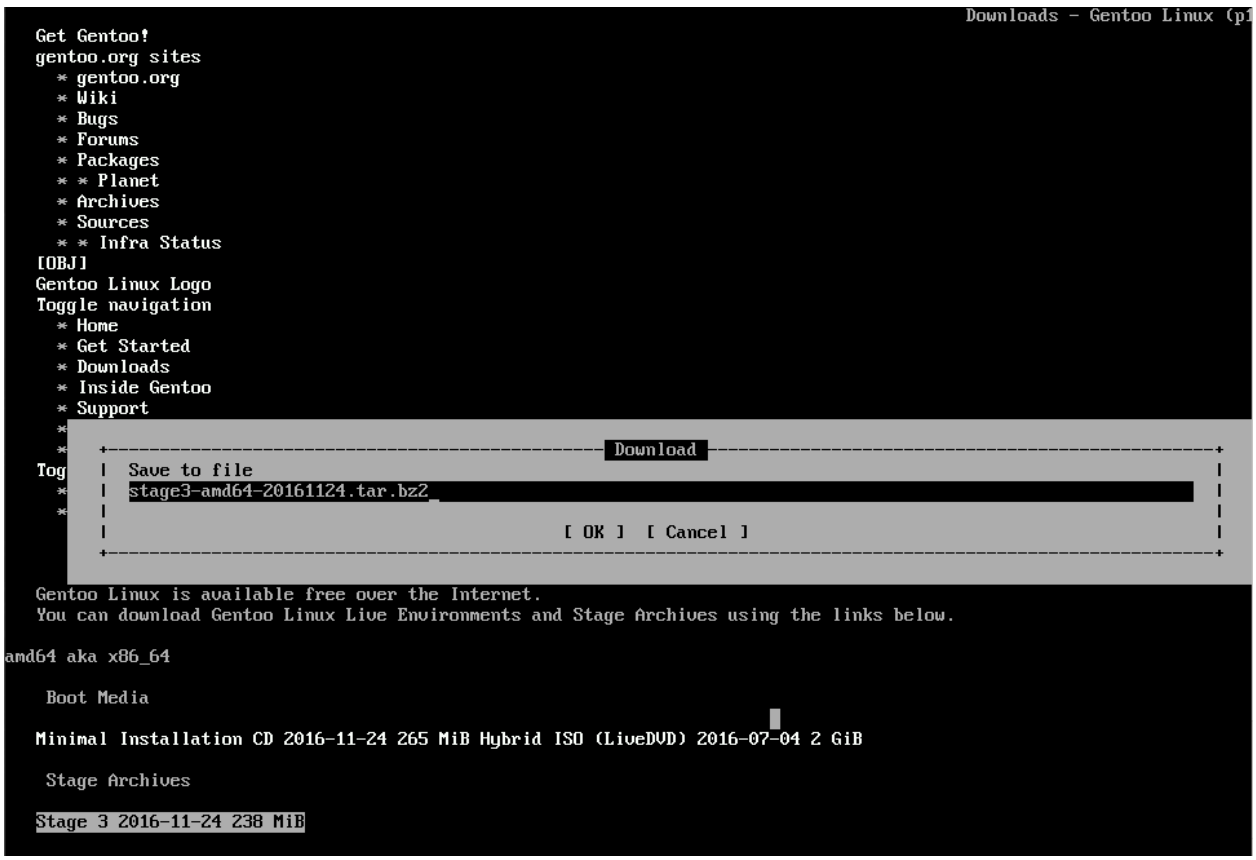
Skidanje stage3-tarball-a

Skidanje stage3-tarball paketa se vrši na sledeći način.
Prva komanda otvara /mnt/gentoo direktorijum u kom ce biti smesten "stage3" a druga komanda otvara neku vrstu web browsera u cli okruženju sa datom adresom gde se skida "stage 3".

 # cd /mnt/gentoo
 # links http://www.gentoo.org/downloads/mirrors/

```
livecd ~ # cd /mnt/gentoo
livecd gentoo # links http://www.gentoo.org/downloads/mirrors/
```

Treba se otvoriti "downloads" link i onda se izabere stage 3 za skidanje u folderu u kom se nalazimo "/mnt/gentoo".



Kada bude skinut "Stage 3" onda se listaju fajlovi komandom:
 # ls
I raspakuje se stage3:
 # tar xvjpf stage3-AMD64-*.tar.bz2 --xattrs

```
livecd gentoo # ls
boot  lost+found  stage3-amd64-20161124.tar.bz2
livecd gentoo # tar xvjpf stage3-amd64-20161124.tar.bz2
```

To su zapravo Linux alati drajveri i paketi programa, koji su potrebni da se izgradi kernel koji dolazi kasnije.

```
./usr/share/man/man3/SHA384.3ssl.bz2
./usr/share/man/man3/item_init.3x.bz2
./usr/share/man/man3/SSL_get_verify_mode.3ssl.bz2
./usr/share/man/man3/mq_getattr.3.bz2
./usr/share/man/man3/mvadd_wchstr.3x.bz2
./usr/share/man/man3/eventfd_read.3
./usr/share/man/man3/OPENSSL_VERSION_NUMBER.3ssl.bz2
./usr/share/man/man3/timerisset.3
./usr/share/man/man3/is_term_resized.3x.bz2
./usr/share/man/man3/SHA512_Update.3ssl.bz2
./usr/share/man/man3/SLIST_NEXT.3
./usr/share/man/man3/SSL_read.3ssl.bz2
./usr/share/man/man3/TLSv1_2_server_method.3ssl.bz2
./usr/share/man/man3/termios.3.bz2
./usr/share/man/man3/SSL_get_cipher_bits.3ssl.bz2
./usr/share/man/man3/i2d_CMS_ContentInfo.3ssl.bz2
./usr/share/man/man3/SSL_get_verify_depth.3ssl.bz2
./usr/share/man/man3/setbuf.3.bz2
./usr/share/man/man3/swab.3.bz2
./usr/share/man/man3/uuid_generate_time.3
./usr/share/man/man3/floorf.3
./usr/share/man/man3/acosh.3.bz2
./usr/share/man/man3/EC_get_builtin_curves.3ssl.bz2
./usr/share/man/man3/whline.3x.bz2
./usr/share/man/man3/mvwget_wstr.3x.bz2
./usr/share/man/man3/ASN1_STRING_print.3ssl.bz2
./usr/share/man/man3/BN_MONTRING_print.3ssl.bz2
./usr/share/man/man3/BN_MONT_CTX_new.3ssl.bz2
./usr/share/man/man3/TYPE_ALNUM.3x.bz2
./usr/share/man/man3/BIO_new_mem_buf.3ssl.bz2
./usr/share/man/man3/ripoffline.3x.bz2
./usr/share/man/man3/getbkgd.3x.bz2
./usr/share/man/man3/execlp.3
./usr/share/man/man3/mvwhline.3x.bz2
./usr/share/man/man3/EVP_DecryptInit_ex.3ssl.bz2
./usr/share/man/man3/BN_gcd.3ssl.bz2
./usr/share/man/man3/BN_mod_mul_montgomery.3ssl.bz2
./usr/share/man/man3/pipeline_commands.3.bz2
./usr/share/man/man3/EVP_rc2_64_cbc.3ssl.bz2
./usr/share/man/man3/flash.3x.bz2
./usr/share/man/man3/BN_get_word.3ssl.bz2
```

```
./sbin/ctrlaltdel
./sbin/tc
./sbin/fsck.minix
./sbin/mkfs.minix
./sbin/ss
./sbin/depmod
./sbin/rc
./sbin/reboot
./sbin/sln
./sbin/nameif
./sbin/blkdiscard
./sbin/fdisk
./sbin/routel
./sbin/fsck.ext2
./sbin/mii-tool
./sbin/init
./sbin/rc-sstat
./sbin/blockdev
./sbin/rtmon
./sbin/modprobe
./sbin/runlevel
./sbin/iptables-save
./sbin/killall5
./sbin/halt
./sbin/lsmod
./sbin/mke2fs
./sbin/switch_root
./sbin/pam_tally2
./sbin/unix_update
./sbin/ip6tables
./sbin/mkfs
./sbin/agetty
./sbin/arp
./sbin/udevd
./sbin/e2fsck
./sbin/fsck.cramfs
./sbin/e2image
./sbin/nologin
./sbin/ip6tables-restore
./sbin/consoletype
livecd gentoo #
```

Konfigurisanje make.conf

Nakon uspesnog raspakivanja "stage3" može se konfigurisati "make.conf" file sledećom komandom:

 # nano -w /mnt/Gentoo/etc/portage/make.conf

```
livecd gentoo # nano -w /mnt/gentoo/etc/portage/make.conf
```

"Nano" je besplatni text editor koji dolazi u svakoj Linux distribuciji, koristi graficki prikaz alata u terminalu sa napisanim precicama koje se lako koriste za kontrolu nad programom za editovanje texta.

```
^G Get Help  ^O Write Out  ^W Where Is  ^K Cut Text  ^T To Spell  ^Y Prev Page  M-\ First Line  M-W WhereIs Ne
^X Exit      ^R Read File  ^\ Replace   ^U Uncut Text ^C Cur Pos  ^V Next Page  M-/ Last Line  M-] To Bracket
```

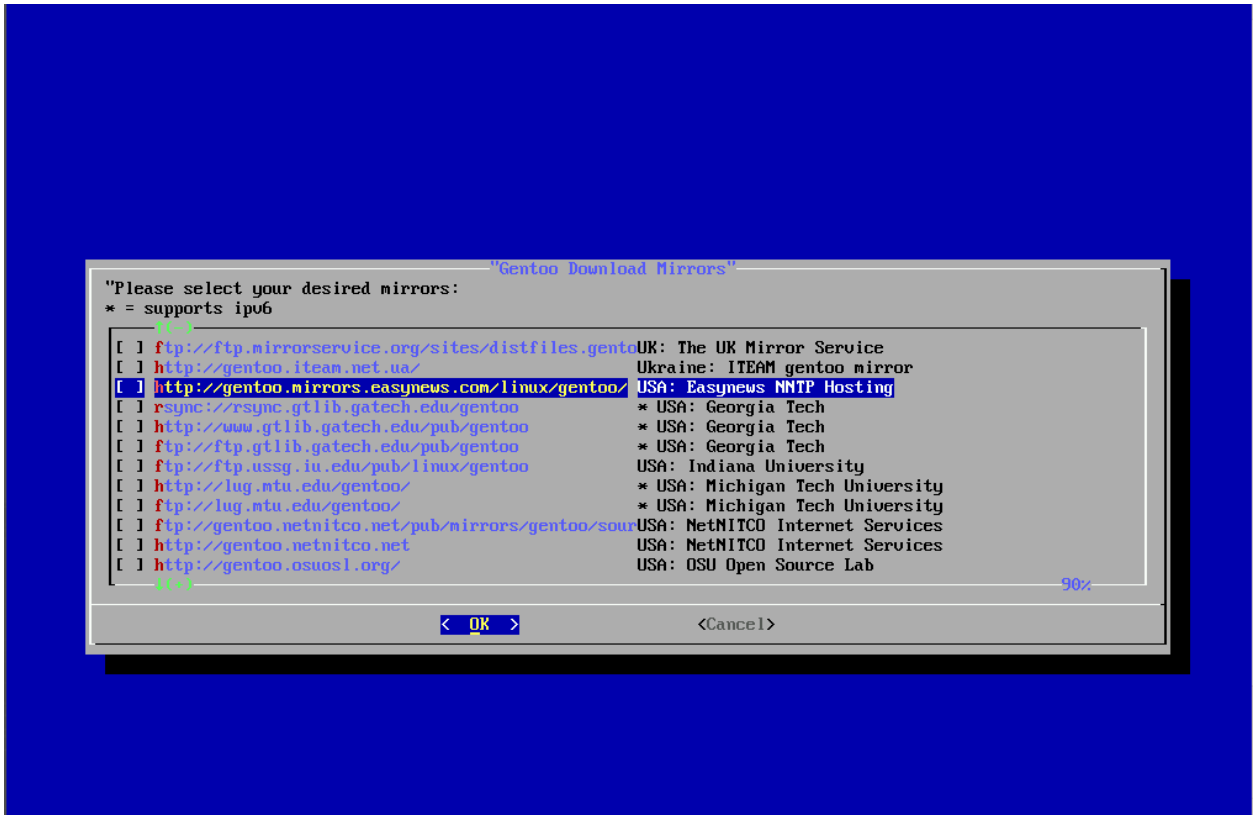
"make.conf" je konfiguracioni fajl sa dozvolama o podrsci koji Gentoo često koristi.
Tu se nalaze dozvole koje sistem treba da poseti da bi skinuo program. Ako se prijavi program za instalaciju i on nije prijavljen u "make.conf" a trebalo bi ga instalirati on se neće instalirati i neće biti podržan. Zbog toga se moraju menjati vrednosti u "make.conf"
kako bi stvari radile bolje.

```
 GNU nano 2.5.3                File: /mnt/gentoo/etc/portage/make.conf

# These settings were set by the catalyst build script that automatically
# built this stage.
# Please consult /usr/share/portage/config/make.conf.example for a more
# detailed example.
CFLAGS="-O2 -pipe"
CXXFLAGS="${CFLAGS}"
# WARNING: Changing your CHOST is not something that should be done lightly.
# Please consult http://www.gentoo.org/doc/en/change-chost.xml before changing.
CHOST="x86_64-pc-linux-gnu"
# These are the USE and USE_EXPAND flags that were used for
# buidling in addition to what is provided by the profile.
USE="bindist"
CPU_FLAGS_X86="mmx sse sse2"
PORTDIR="/usr/portage"
DISTDIR="${PORTDIR}/distfiles"
PKGDIR="${PORTDIR}/packages"
```

Ovom komandom se dodaju sajtovi koji se koriste za nadogradnju sistema.
 # mirrorselect -i -o >> /mnt/gentoo/etc/portage/make.conf

Otvara se mirror list prozor i ovde se selektuju "mirrors" koji su bliži, što može da ubrza skidanje fajlova za izgradnju programa i updejtovanje sistema.

```
livecd gentoo # mirrorselect -i -o >> /mnt/gentoo/etc/portage/make.conf
```



Markiraju se linkovi po želji pritiskom na taster 'space' i potvrđuje se pritiskom na taster 'enter'.
Oni se takođe dodaju u "make.conf" što govori komanda iznad.

 # mkdir /mnt/gentoo/etc/portage/repos.conf
 # cp /mnt/gentoo/usr/share/portage/config/repos.conf
/mnt/gentoo/etc/portage/repos.conf/gentoo.conf

Samo se kopiraju jedni kofiguracioni fajlovi na drugo mesto.

 # nano /mnt/Gentoo/etc/portage/repos.conf/gentoo.conf

i tu se vidi da je fajl uspešno kopiran.

```
 GNU nano 2.5.3                File: /mnt/gentoo/etc/portage/repos.conf/gentoo.conf

[DEFAULT]
main-repo = gentoo

[gentoo]
location = /usr/portage
sync-type = rsync
sync-uri = rsync://rsync.gentoo.org/gentoo-portage
auto-sync = yes

# for daily squashfs snapshots
#sync-type = squashdelta
#sync-uri = mirror://gentoo/../snapshots/squashfs
```

Posle "stage3tarbala" se dobija Gentoo Linux bez kernela to je zapravo "stage3" kada se chroot-uje u novom okruženju, onda može da se konfigurise kernel, to je veoma važan korak. Kopira se sledeće:

 # cp -L /etc/resolv.conf /mnt/gentoo/etc/

Ta komanda kopira network podešavanja u novom ambientu.
Nakon toga se mountuju neophodni fajlovi i folderi.

 # mount -t proc proc /mnt/gentoo/proc
 # mount --rbind /sys /mnt/gentoo/sys
 # mount --make-rslave /mnt/gentoo/sys
 # mount --rbind /dev /mnt/gentoo/dev
 # mount --make-rslave /mnt/gentoo/dev

```
livecd gentoo # cp -L /etc/resolv.conf /mnt/gentoo/etc/
livecd gentoo # mount -t proc proc /mnt/gentoo/proc
livecd gentoo # mount --rbind /sys /mnt/gentoo/sys
livecd gentoo # mount --make-rslave /mnt/gentoo/sys
livecd gentoo # mount --rbind /dev /mnt/gentoo/dev
livecd gentoo # mount --make-rslave /mnt/gentoo/dev
livecd gentoo #
```

Root-ovanje u novom ambijentu

da se rutuje novi ambijent koriste se sledeće komande
 # chroot /mnt/gentoo /bin/bash
 # source /etc/profile

```
livecd gentoo # chroot /mnt/gentoo /bin/bash
livecd / # source /etc/profile_
```

export PS1="(chroot) $PS1"

```
livecd / # export PS1="(chroot) $PS1"
(chroot) livecd / #
```

zbog konfiguracija portage je poželjna ponovna provera internet konekcije

ping -c 3 www.google.com

```
livecd / # export PS1="(chroot) $PS1"
(chroot) livecd / # ping -c 3 www.google.com
PING www.google.com (188.120.127.110) 56(84) bytes of data.
64 bytes from 188.120.127.110: icmp_seq=2 ttl=63 time=15.5 ms
64 bytes from 188.120.127.110: icmp_seq=3 ttl=63 time=15.9 ms
^C
--- www.google.com ping statistics ---
3 packets transmitted, 2 received, 33% packet loss, time 2012ms
rtt min/avg/max/mdev = 15.511/15.723/15.936/0.246 ms
(chroot) livecd / # emerge --sync
```

emerge --sync

ovde se koristi "emerge" nešto kao pacman u arch Linuxu samo što na Gentoo platformi ne poštoji pocket manager pa sve mora da se kompajlira sa source-a
[slika 24 25]

```
app-crypt/libsecret/libsecret-0.18.5.ebuild
app-crypt/libsecret/metadata.xml
app-crypt/libu2f-host/
app-crypt/libu2f-host/Manifest
app-crypt/libu2f-host/libu2f-host-1.1.1.ebuild
app-crypt/libu2f-host/libu2f-host-1.1.3.ebuild
app-crypt/libu2f-host/metadata.xml
app-crypt/libu2f-server/
app-crypt/libu2f-server/Manifest
app-crypt/libu2f-server/libu2f-server-1.0.1.ebuild
app-crypt/libu2f-server/metadata.xml
app-crypt/libu2f-server/files/
app-crypt/libu2f-server/files/libu2f-server-1.0.1-tests-fix.patch
app-crypt/libykneomgr/
app-crypt/libykneomgr/Manifest
app-crypt/libykneomgr/libykneomgr-0.1.8.ebuild
app-crypt/libykneomgr/metadata.xml
app-crypt/loop-aes-losetup/
app-crypt/loop-aes-losetup/Manifest
app-crypt/loop-aes-losetup/loop-aes-losetup-2.21.ebuild
app-crypt/loop-aes-losetup/loop-aes-losetup-2.26.ebuild
app-crypt/loop-aes-losetup/metadata.xml
app-crypt/mcrypt/
app-crypt/mcrypt/Manifest
app-crypt/mcrypt/mcrypt-2.6.8-r2.ebuild
app-crypt/mcrypt/metadata.xml
app-crypt/mcrypt/files/
app-crypt/mcrypt/files/mcrypt-2.6.7-qa.patch
app-crypt/mcrypt/files/mcrypt-2.6.8-format-string.patch
app-crypt/mcrypt/files/mcrypt-2.6.8-overflow.patch
app-crypt/mcrypt/files/mcrypt-2.6.8-segv.patch
app-crypt/mcrypt/files/mcrypt-2.6.8-sprintf.patch
app-crypt/mcrypt/files/mcrypt-2.6.8-stdlib.h.patch
app-crypt/md4sum/
app-crypt/md4sum/Manifest
app-crypt/md4sum/md4sum-0.02.03-r1.ebuild
app-crypt/md4sum/metadata.xml
app-crypt/md4sum/files/
app-crypt/md4sum/files/md4sum-fix-out-of-bounds-write.diff
app-crypt/md5deep/
app-crypt/md5deep/Manifest
```

```
xfce-extra/xfdashboard/
xfce-extra/xfdashboard/Manifest
xfce-extra/xfdashboard/metadata.xml
xfce-extra/xfdashboard/xfdashboard-0.4.0.ebuild
xfce-extra/xfswitch-plugin/
xfce-extra/xfswitch-plugin/Manifest
xfce-extra/xfswitch-plugin/metadata.xml
xfce-extra/xfswitch-plugin/xfswitch-plugin-0.0.1-r1.ebuild
xfce-extra/xfswitch-plugin/xfswitch-plugin-0.0.1-r2.ebuild

Number of files: 172,775 (reg: 145,239, dir: 27,536)
Number of created files: 144,327 (reg: 123,162, dir: 21,165)
Number of deleted files: 1 (reg: 1)
Number of regular files transferred: 123,162
Total file size: 249.55M bytes
Total transferred file size: 212.89M bytes
Literal data: 212.89M bytes
Matched data: 0 bytes
File list size: 4.18M
File list generation time: 0.001 seconds
File list transfer time: 0.000 seconds
Total bytes sent: 2.53M
Total bytes received: 222.70M

sent 2.53M bytes  received 222.70M bytes  1.34M bytes/sec
total size is 249.55M  speedup is 1.11
=== Sync completed for gentoo

Performing Global Updates
(Could take a couple of minutes if you have a lot of binary packages.)
  .='update pass'  *='binary update'  #='/var/db update'  @='/var/db move'
  s='/var/db SLOT move'  %='binary move'  S='binary SLOT move'
  p='update /etc/portage/package.*'
/usr/portage/profiles/updates/4Q-2016.....................................



 * IMPORTANT: 12 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

(chroot) livecd / #
```

Selektovanje osnovnog sistemskog profila

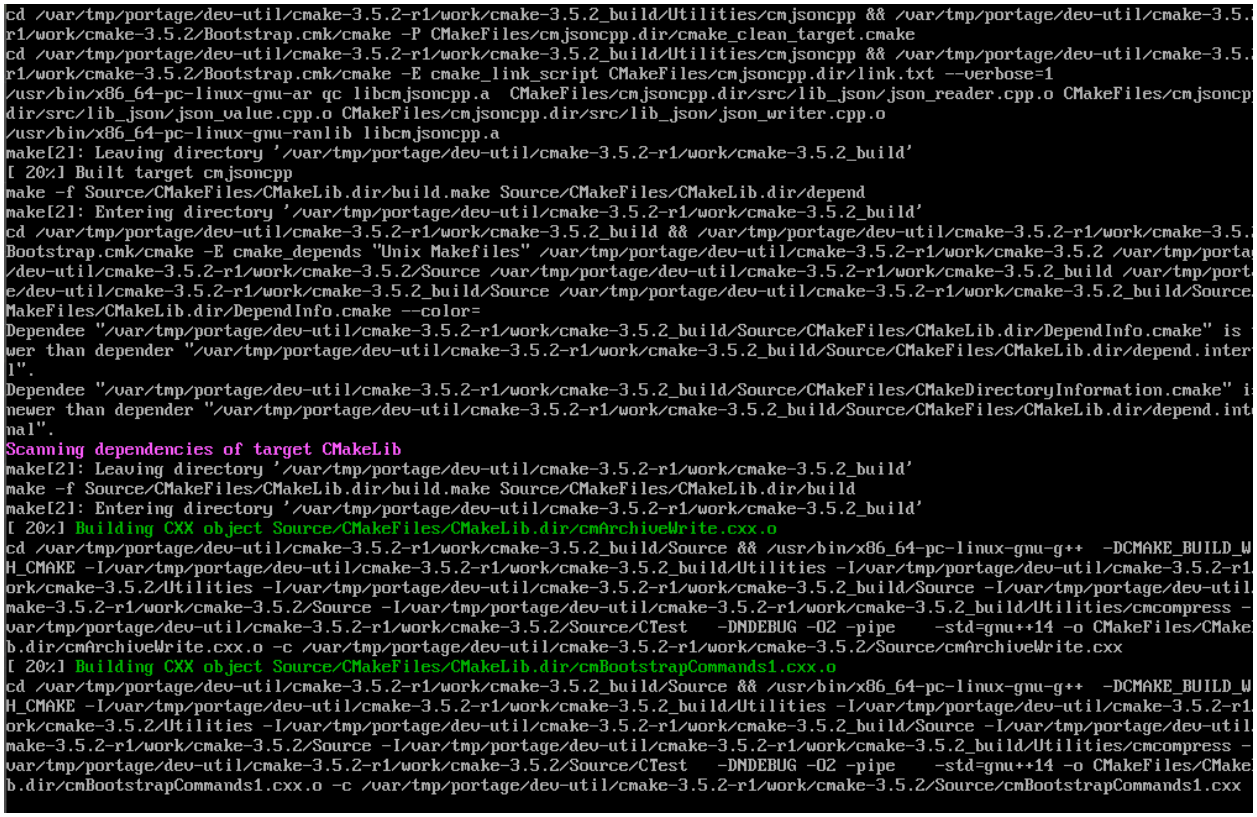
kad bude gotovo može da se predje na selektovanje osnovne sistemske konfiguracije

 # eselect profile list

selektovanje profila znači selktovati šta će biti kompajlirano iz ponudjenih profila u sistem

 # eselect profile set 1
 # emerge --ask --update --deep --newuse @world

```
(chroot) livecd / # eselect profile list
Available profile symlink targets:
  [1]   default/linux/amd64/13.0 *
  [2]   default/linux/amd64/13.0/selinux
  [3]   default/linux/amd64/13.0/desktop
  [4]   default/linux/amd64/13.0/desktop/gnome
  [5]   default/linux/amd64/13.0/desktop/gnome/systemd
  [6]   default/linux/amd64/13.0/desktop/kde
  [7]   default/linux/amd64/13.0/desktop/kde/systemd
  [8]   default/linux/amd64/13.0/desktop/plasma
  [9]   default/linux/amd64/13.0/desktop/plasma/systemd
  [10]  default/linux/amd64/13.0/developer
  [11]  default/linux/amd64/13.0/no-multilib
  [12]  default/linux/amd64/13.0/systemd
  [13]  default/linux/amd64/13.0/x32
  [14]  hardened/linux/amd64
  [15]  hardened/linux/amd64/selinux
  [16]  hardened/linux/amd64/no-multilib
  [17]  hardened/linux/amd64/no-multilib/selinux
  [18]  hardened/linux/amd64/x32
  [19]  hardened/linux/musl/amd64
  [20]  hardened/linux/musl/amd64/x32
  [21]  default/linux/uclibc/amd64
  [22]  hardened/linux/uclibc/amd64
(chroot) livecd / # eselect profile set 1
(chroot) livecd / # emerge --ask --update --deep --newuse @world_
```



onda sledi komanda za čišćenje nepotrebnih podataka:

 # emerge --depclean

Štelovanje sata po lokalnom vremenu

Štelovanje sata po lokalnom vremenu se vrši sledećim komandama:
 # ls /usr/share/zoneinfo
 # cd /usr/share/zoneinfo/Europe
 # ls
 # echo "Europe/Belgrade" > /etc/timezone

 # emerge --config sys-libs/timezone-data

Konfigurisanje lokacije:

nano -w /etc/locale.gen

```
(chroot) livecd Europe # emerge --config sys-libs/timezone-data


Configuring pkg...

 * Updating /etc/localtime with /usr/share/zoneinfo/Europe/Belgrade

(chroot) livecd Europe # nano -w /etc/locale.gen
```

Briše se samo znak "#" ispred lokacije koju zelimo da koristimo kako ne bi bila ignorisana dok ostale ostaju sa znakom "#" ispred koji označava da je taj red komentar i da se ignoriše.

```
  GNU nano 2.5.3                        File: /etc/locale.gen                                 Modified

# /etc/locale.gen: list all of the locales you want to have on your system.
# See the locale.gen(5) man page for more details.
#
# The format of each line:
# <locale name> <charset>
#
# Where <locale name> starts with a name as found in /usr/share/i18n/locales/.
# It must be unique in the file as it is used as the key to locale variables.
# For non-default encodings, the <charset> is typically appended.
#
# Where <charset> is a charset located in /usr/share/i18n/charmaps/ (sans any
# suffix like ".gz").
#
# All blank lines and lines starting with # are ignored.
#
# For the default list of supported combinations, see the file:
# /usr/share/i18n/SUPPORTED
#
# Whenever glibc is emerged, the locales listed here will be automatically
# rebuilt for you.  After updating this file, you can simply run `locale-gen`
# yourself instead of re-emerging glibc.

#en_US ISO-8859-1
en_US.UTF-8 UTF-8
#ja_JP.EUC-JP EUC-JP
#ja_JP.UTF-8 UTF-8
#ja_JP EUC-JP
#en_HK ISO-8859-1
#en_PH ISO-8859-1
#de_DE ISO-8859-1
#de_DE@euro ISO-8859-15
#es_MX ISO-8859-1
#fa_IR UTF-8
#fr_FR ISO-8859-1
#fr_FR@euro ISO-8859-15
#it_IT ISO-8859-1
```

locale-gen
eselect locale list
eselect locale set 3
env-update && source /etc/profile && export PS1="(chroot) $PS1"

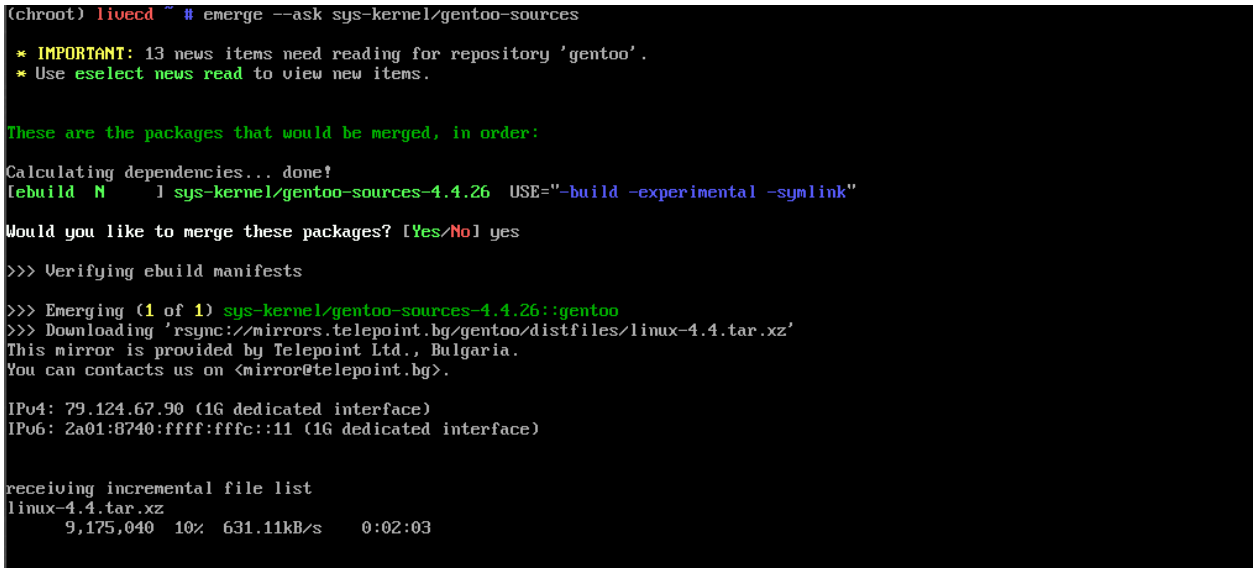
```
(chroot) livecd ~ # locale-gen
 * Generating 1 locales (this might take a while) with 1 jobs
 *  (1/1) Generating en_US.UTF-8 ...                                                    [ ok
 * Generation complete
(chroot) livecd ~ # eselect locale list
Available targets for the LANG variable:
  [1]   C
  [2]   POSIX
  [3]   en_US.utf8
  [ ]   (free form)
(chroot) livecd ~ # eselect locale set 3
Setting LANG to en_US.utf8 ...
Run ". /etc/profile" to update the variable in your shell.
(chroot) livecd ~ # env-update && source /etc/profile && export PS1="(chroot) $PS1"
>>> Regenerating /etc/ld.so.cache...
(chroot) livecd ~ # _
```

Konfiguracija kernela

Sada treba konfigurisati kernel, to je važna stavka jer tamo se konfiguriše šta će sistem biti nakon instalacije.

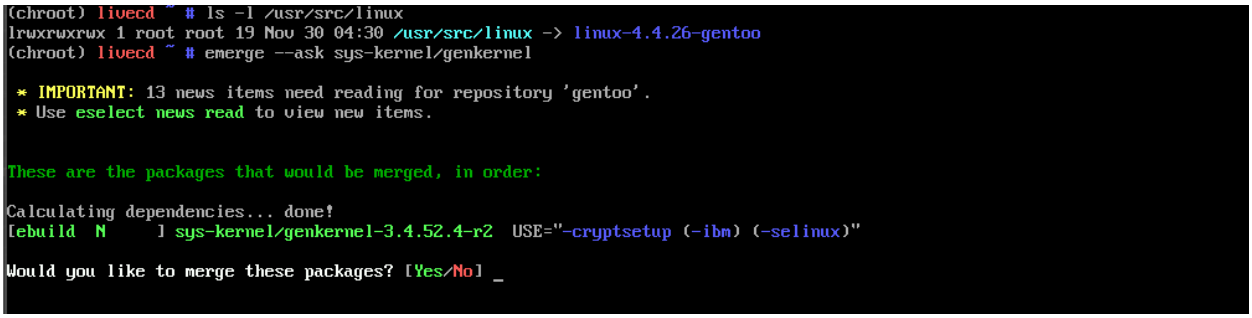
 # emerge --ask sys-kernel/gentoo-sources

ova komanda je jako važna i bez nje nije moguće uspešno konfigurisati kernel.



Ovde se bira između dva ponđena kernela, ručno podesivi ili "genkernel", "genkernel" je kernel koji je konfigurisan po nekim standardnim podešavanjima što je slično sa drugim Linux distribucijama.

 # ls -l /usr/src/linux
 # emerge --ask sys-kernel/genkernel



```
ecompressdir: bzip2 -9 /usr/share/man

>>> Installing (1 of 1) sys-kernel/genkernel-3.4.52.4-r2::gentoo

 * Documentation is available in the genkernel manual page
 * as well as the following URL:

 * https://www.gentoo.org/doc/en/genkernel.xml

 * This package is known to not work with reiser4.  If you are running
 * reiser4 and have a problem, do not file a bug.  We know it does not
 * work and we don't plan on fixing it since reiser4 is the one that is
 * broken in this regard.  Try using a sane filesystem like ext4.

 * The LUKS support has changed from versions prior to 3.4.4.  Now,
 * you use crypt_root=/dev/blah instead of real_root=luks:/dev/blah.


>>> Recording sys-kernel/genkernel in "world" favorites file...

 * Messages for package sys-kernel/genkernel-3.4.52.4-r2:

 * Documentation is available in the genkernel manual page
 * as well as the following URL:
 * https://www.gentoo.org/doc/en/genkernel.xml
 * This package is known to not work with reiser4.  If you are running
 * reiser4 and have a problem, do not file a bug.  We know it does not
 * work and we don't plan on fixing it since reiser4 is the one that is
 * broken in this regard.  Try using a sane filesystem like ext4.
 * The LUKS support has changed from versions prior to 3.4.4.  Now,
 * you use crypt_root=/dev/blah instead of real_root=luks:/dev/blah.
>>> Auto-cleaning packages...

>>> No outdated packages were found on your system.

 * GNU info directory index is up-to-date.

 * IMPORTANT: 13 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

(chroot) livecd ~ # _
```

emerge završava kompajliranje "genkernel-a"

Editovanje "fstab" fajla

Instalacija se nastavlja editovanjem fstab fajla. "fstab" je konfiguracioni fajl sa spiskom dostupnih uredjaja za boot-ovanje koji ce se koristiti u sistemu. "fstab" je važno pravilno konfigurisati jer od njega zavisi kasnije izgradnja "grub-a".

 # nano -w /etc/fstab

```
  GNU nano 2.5.3                          File: /etc/fstab

# /etc/fstab: static file system information.
#
# noatime turns off atimes for increased performance (atimes normally aren't
# needed); notail increases performance of ReiserFS (at the expense of storage
# efficiency).  It's safe to drop the noatime options if you want and to
# switch between notail / tail freely.
#
# The root filesystem should have a pass number of either 0 or 1.
# All other filesystems should have a pass number of 0 or greater than 1.
#
# See the manpage fstab(5) for more information.
#

# <fs>                  <mountpoint>    <type>          <opts>          <dump/pass>

# NOTE: If your BOOT partition is ReiserFS, add the notail option to opts.
/dev/BOOT               /boot           ext2            noauto,noatime  1 2
/dev/ROOT               /               ext3            noatime         0 1
/dev/SWAP               none            swap            sw              0 0
/dev/cdrom              /mnt/cdrom      auto            noauto,ro       0 0
/dev/fd0                /mnt/floppy     auto            noauto          0 0
```

```
 GNU nano 2.5.3                    File: /etc/fstab                          Modified

# /etc/fstab: static file system information.
#
# noatime turns off atimes for increased performance (atimes normally aren't
# needed); notail increases performance of ReiserFS (at the expense of storage
# efficiency).  It's safe to drop the noatime options if you want and to
# switch between notail / tail freely.
#
# The root filesystem should have a pass number of either 0 or 1.
# All other filesystems should have a pass number of 0 or greater than 1.
#
# See the manpage fstab(5) for more information.
#

# <fs>                  <mountpoint>    <type>          <opts>          <dump/pass>

# NOTE: If your BOOT partition is ReiserFS, add the notail option to opts.
/dev/sda2               /boot           ext2            defaults        0 2
/dev/ROOT               /               ext3            noatime         0 1
/dev/SWAP               none            swap            sw              0 0
/dev/cdrom              /mnt/cdrom      auto            noauto,ro       0 0
/dev/fd0                /mnt/floppy     auto            noauto          0 0
```

sada sistem zna gde se nalazi boot particija.

Generisanje kernela

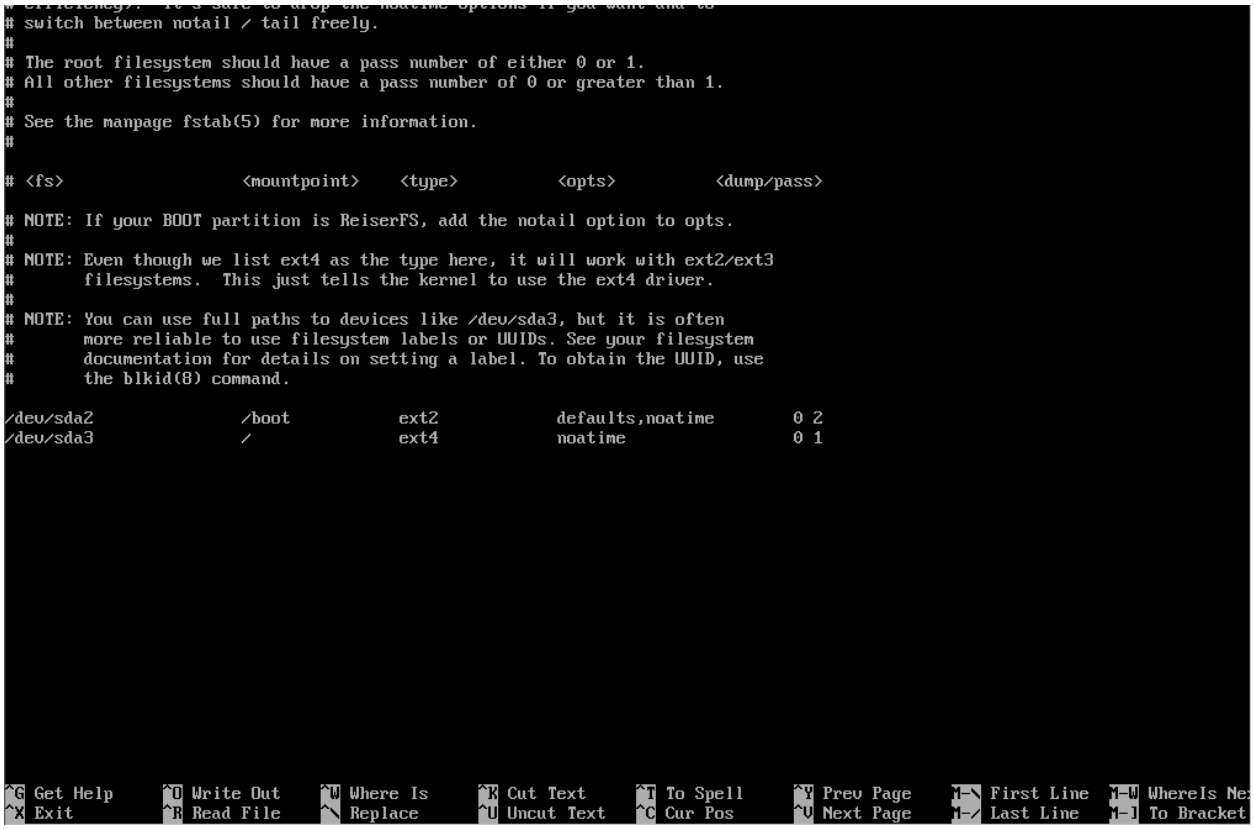
generisanje Linux kernela se vrši komandom:

 # genkernel all

```
(chroot) livecd ~ # genkernel all
* Gentoo Linux Genkernel; Version 3.4.52.4
* Running with options: all

* Using genkernel.conf from /etc/genkernel.conf
* Sourcing arch-specific config.sh from /usr/share/genkernel/arch/x86_64/config.sh ..
* Sourcing arch-specific modules_load from /usr/share/genkernel/arch/x86_64/modules_load ..

* Linux Kernel 4.4.26-gentoo for x86_64...
* .. with config file /usr/share/genkernel/arch/x86_64/generated-config
* kernel: Using config from /usr/share/genkernel/arch/x86_64/generated-config
* kernel: >> Running mrproper...
*         >> Running oldconfig...
* kernel: >> Cleaning...
*         >> Compiling 4.4.26-gentoo bzImage...
*         >> Installing firmware ('make firmware_install') due to CONFIG_FIRMWARE_IN_KERNEL != y...
*         >> Compiling 4.4.26-gentoo modules...
_
```

potrebno je malo više vremena da se to obavi.
sledeće je konfigurisanje sistema, to podrazumeva ponovo otvaranje fstab fajla i menjanje boot prioriteta i hardvera

 # nano -w /etc/fstab



Konfigurisanje network informacija i ime domena

Prvo treba promeniti 'hostname'

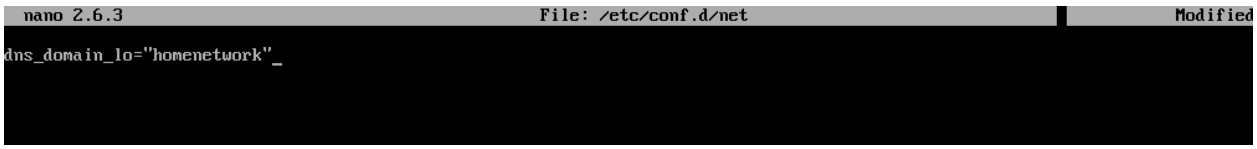
 # nano -w /etc/conf.d/hostname

U fajlu 'hostname' menjamo vrednost pod navodnicima "localhost" u ime po želji

 # nano -w /etc/conf.d/net

U "net" fajlu se upisuje:

dns_domain_lo="homenetwork"



 # emerge --ask --noreplace net-misc/netifrc

Ta komanda kompajlira network, onda se proverava vrsta interneta komandom kao na početku:

 # ip link

```
(chroot) livecd ~ # emerge --ask --noreplace net-misc/netifrc

 * IMPORTANT: 12 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.


These are the packages that would be merged, in order:

Calculating dependencies... done!


 * net-misc/netifrc

Would you like to add these packages to your world favorites? [Yes/No] yes
>>> Recording net-misc/netifrc in "world" favorites file...
(chroot) livecd ~ # ip link
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN mode DEFAULT group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP mode DEFAULT group default qlen 1000
    link/ether 08:00:27:74:18:eb brd ff:ff:ff:ff:ff:ff
(chroot) livecd ~ #
```

 # nano -w /etc/conf.d/net

I u "net" fajlu se nakon toga dodaje ime domena.

config_enp0s3="dhcp"

```
  nano 2.6.3                          File: /etc/conf.d/net                          Modified

dns_domain_lo="homenetwork"
config_enp0s3="dhcp"
```

Podešavanje konfiguracije interneta za boot

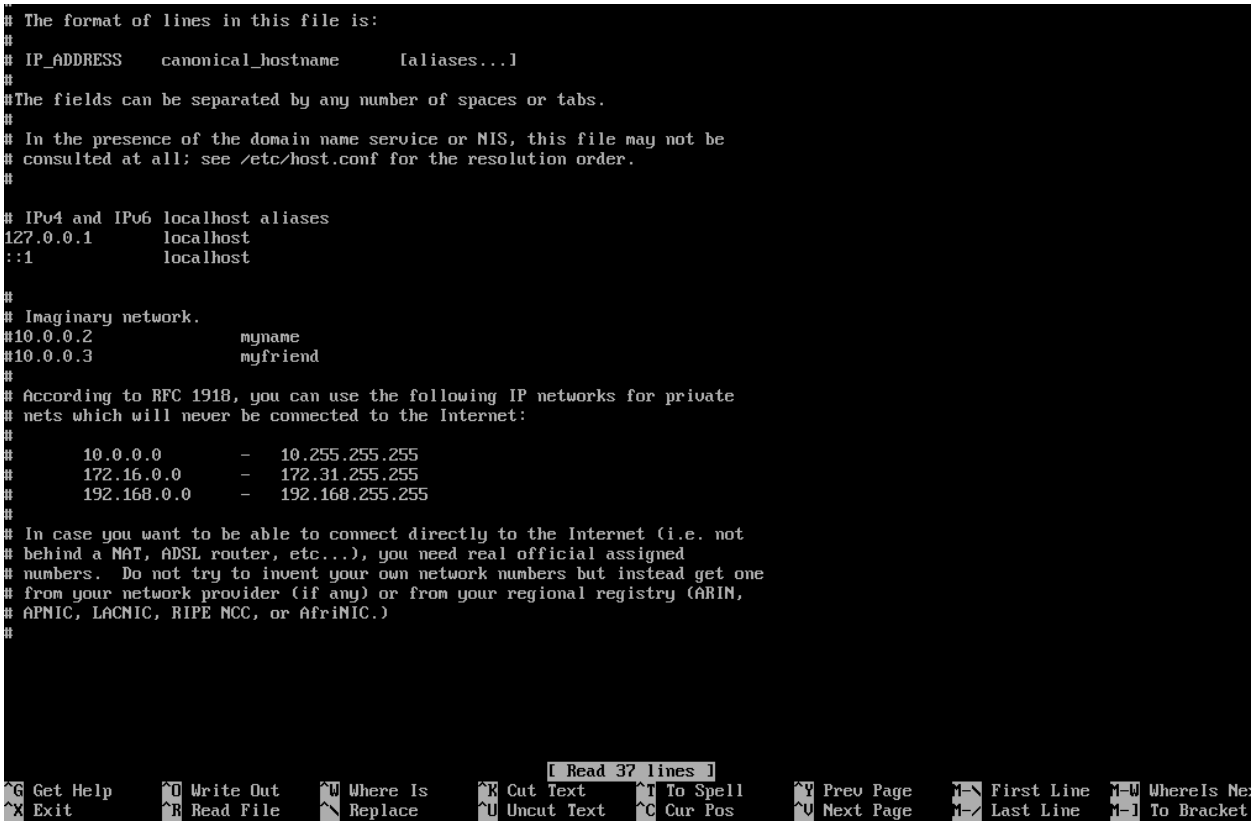
Podešavanje ove konfiguracije za internet je neophodna, kako bi uvek bila podešena kada se butuje sistem.

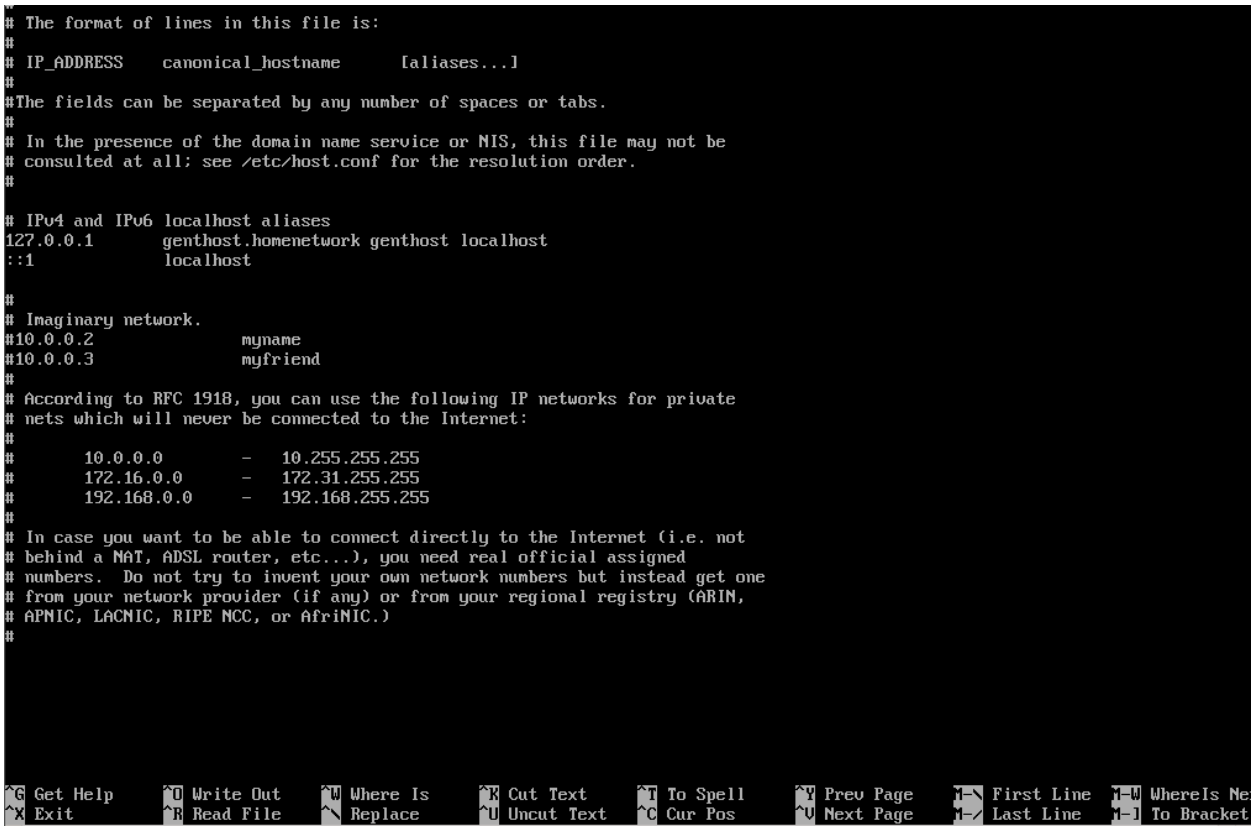
 # cd /etc/init.d
 # ln -s net.lo net.enp0s3
 # rc-update add net.enp0s3 default

```
(chroot) livecd ~ # cd /etc/init.d
(chroot) livecd init.d # ln -s net.lo net.enp0s3
(chroot) livecd init.d # rc-update add net.enp0s3 default
 * service net.enp0s3 added to runlevel default
(chroot) livecd init.d # _
```

hosts file se menja komandom:

 # nano -w /etc/hosts


#
The format of lines in this file is:
#
IP_ADDRESS   canonical_hostname   [aliases...]
#
#The fields can be separated by any number of spaces or tabs.
#
In the presence of the domain name service or NIS, this file may not be
consulted at all; see /etc/host.conf for the resolution order.
#
IPv4 and IPv6 localhost aliases
127.0.0.1   localhost
::1   localhost
#
Imaginary network.
#10.0.0.2   myname
#10.0.0.3   myfriend
#
According to RFC 1918, you can use the following IP networks for private
nets which will never be connected to the Internet:
#
10.0.0.0   -   10.255.255.255
172.16.0.0   -   172.31.255.255
192.168.0.0   -   192.168.255.255
#
In case you want to be able to connect directly to the Internet (i.e. not
behind a NAT, ADSL router, etc...), you need real official assigned
numbers. Do not try to invent your own network numbers but instead get one
from your network provider (if any) or from your regional registry (ARIN,
APNIC, LACNIC, RIPE NCC, or AfriNIC.)
#
[Read 37 lines]
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^T To Spell ^Y Prev Page M-\ First Line M-W WhereIs Ne
^X Exit   ^R Read File ^\ Replace   ^U Uncut Text ^C Cur Pos ^V Next Page M-/ Last Line   M-] To Bracket


The format of lines in this file is:
#
IP_ADDRESS   canonical_hostname   [aliases...]
#
#The fields can be separated by any number of spaces or tabs.
#
In the presence of the domain name service or NIS, this file may not be
consulted at all; see /etc/host.conf for the resolution order.
#
IPv4 and IPv6 localhost aliases
127.0.0.1   genthost.homenetwork genthost localhost
::1   localhost
#
Imaginary network.
#10.0.0.2   myname
#10.0.0.3   myfriend
#
According to RFC 1918, you can use the following IP networks for private
nets which will never be connected to the Internet:
#
10.0.0.0   -   10.255.255.255
172.16.0.0   -   172.31.255.255
192.168.0.0   -   192.168.255.255
#
In case you want to be able to connect directly to the Internet (i.e. not
behind a NAT, ADSL router, etc...), you need real official assigned
numbers. Do not try to invent your own network numbers but instead get one
from your network provider (if any) or from your regional registry (ARIN,
APNIC, LACNIC, RIPE NCC, or AfriNIC.)
#
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^T To Spell ^Y Prev Page M-\ First Line M-W WhereIs Ne
^X Exit   ^R Read File ^\ Replace   ^U Uncut Text ^C Cur Pos ^V Next Page M-/ Last Line   M-] To Bracket

Setovanje root pasword-a

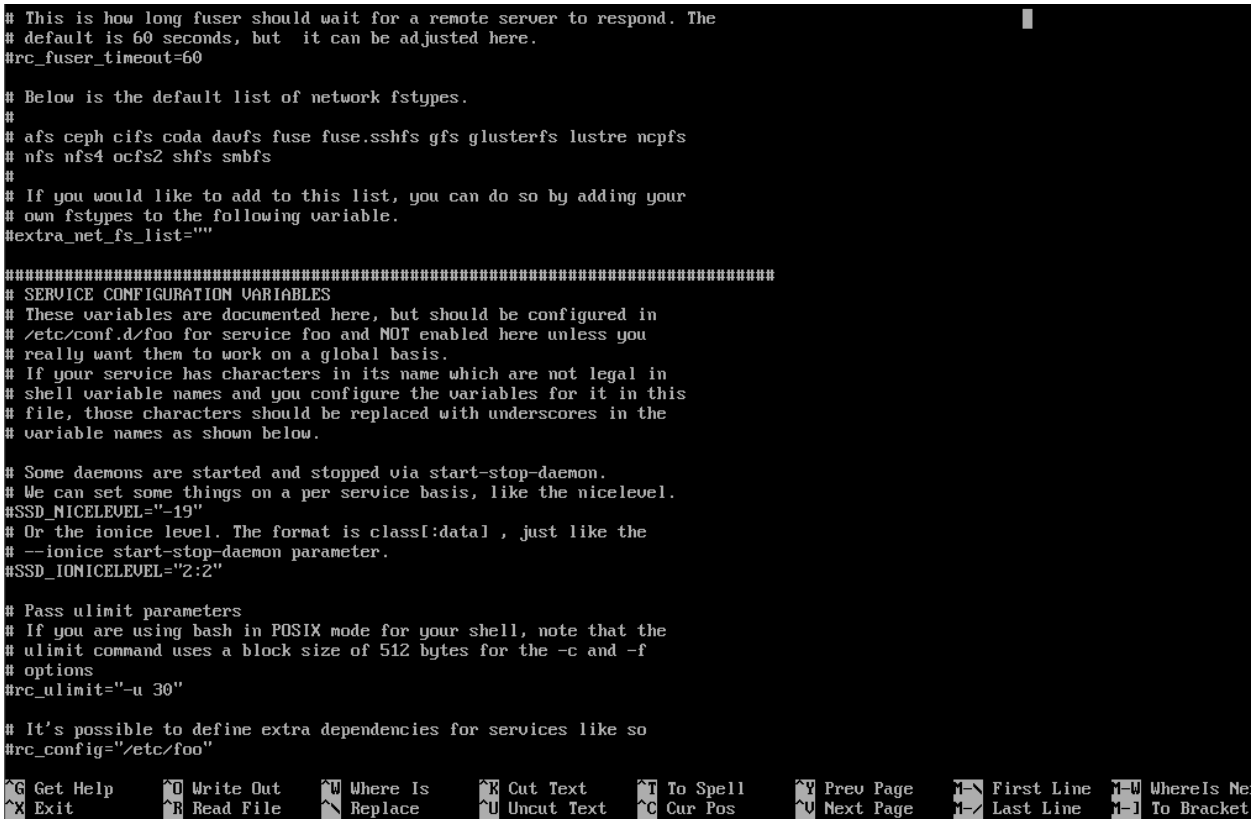
Nakon toga se setuje root pasword komandom:

 # passwd

init i boot konfigurisanje

 # nano -w /etc/rc.conf

ovde se ništa ne menja



Provera jezika tastature

 # nano -w /etc/conf.d/keymaps

ovde sve izgleda kako treba

```
 nano 2.6.3                                  File: /etc/conf.d/keymaps

# Use keymap to specify the default console keymap.  There is a complete tree
# of keymaps in /usr/share/keymaps to choose from.
keymap="us"

# Should we first load the 'windowkeys' console keymap?  Most x86 users will
# say "yes" here.  Note that non-x86 users should leave it as "no".
# Loading this keymap will enable VT switching (like ALT+Left/Right)
# using the special windows keys on the linux console.
windowkeys="YES"

# The maps to load for extended keyboards.  Most users will leave this as is.
extended_keymaps=""
#extended_keymaps="backspace keypad euro2"

# Tell dumpkeys(1) to interpret character action codes to be
# from the specified character set.
# This only matters if you set unicode="yes" in /etc/rc.conf.
# For a list of valid sets, run `dumpkeys --help`
dumpkeys_charset=""

# Some fonts map AltGr-E to the currency symbol instead of the Euro.
# To fix this, set to "yes"
fix_euro="NO"
```

Slede opcione komande
sitemski loger kada se podize sistem:

 # emerge --ask app-admin/sysklogd
 # rc-update add sysklogd default

nakon toga kompajliramo croniedion
 # emerge --ask sys-process/cronie
 # rc-update add cronie default

fajl indexing
 # emerge --ask sys-apps/mlocate

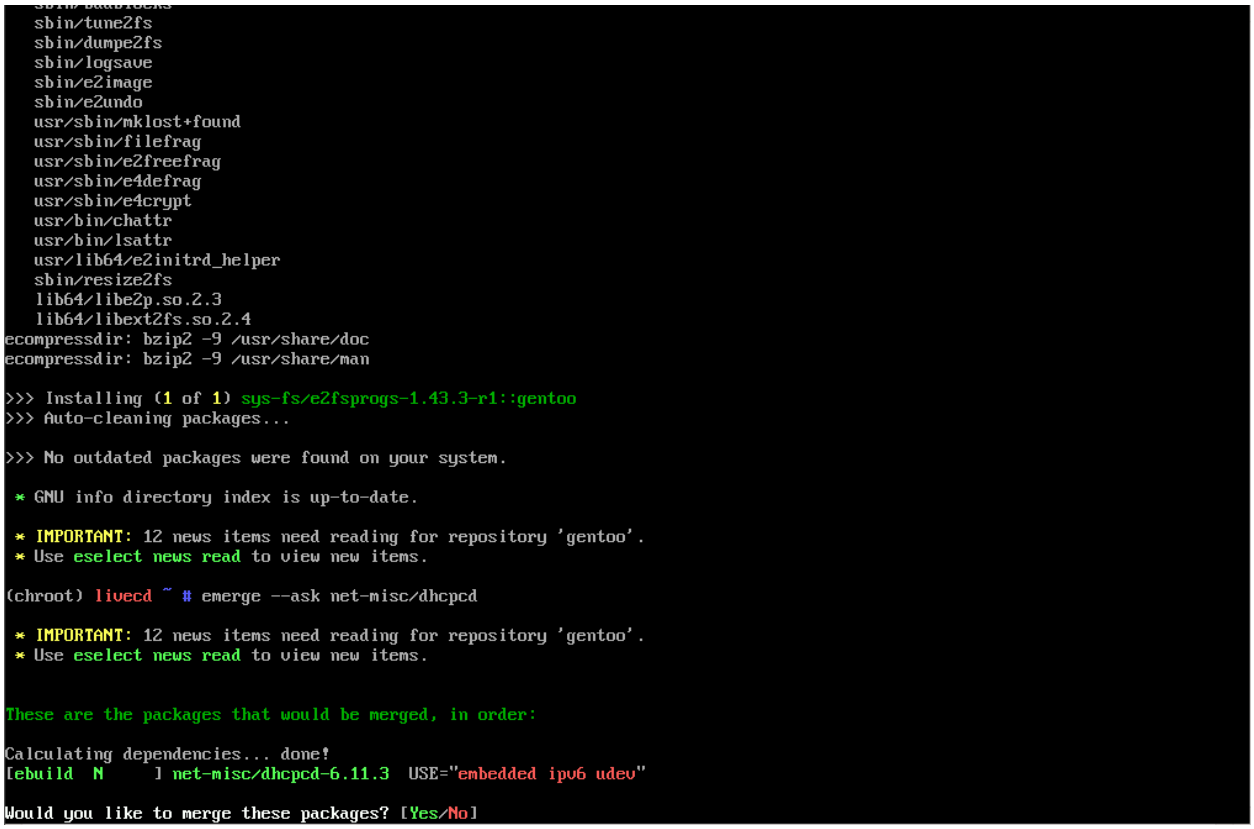
```
 * Final size of build directory: 1556 KiB
 * Final size of installed tree: 316 KiB

strip: x86_64-pc-linux-gnu-strip --strip-unneeded -R .comment -R .GCC.command.line -R .note.gnu.gold-version
   usr/bin/crontab
   usr/sbin/crond
ecompressdir: bzip2 -9 /usr/share/doc
ecompressdir: bzip2 -9 /usr/share/man

>>> Installing (2 of 2) sys-process/cronie-1.5.0-r1::gentoo
 * >>> SetGID: [chmod o-r] /usr/bin/crontab ...                                    [ ok

 * You may wish to read the Gentoo Linux Cron Guide, which can be
 * found online at:
 *      https://www.gentoo.org/doc/en/cron-guide.xml


>>> Recording sys-process/cronie in "world" favorites file...
>>> Auto-cleaning packages...

>>> No outdated packages were found on your system.

 * GNU info directory index is up-to-date.

 * IMPORTANT: 12 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

(chroot) livecd ~ # rc-update add cronie default
 * service cronie added to runlevel default
(chroot) livecd ~ # emerge --ask sys-apps/mlocate

 * IMPORTANT: 12 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.


These are the packages that would be merged, in order:

Calculating dependencies... done!
[ebuild  N     ] sys-apps/mlocate-0.26-r2  USE="nls (-selinux)"

Would you like to merge these packages? [Yes/No] _
```

sada treba izgraditi file tipove tj. file sistem

 # emerge --ask sys-fs/e2fsprogs

Ova komanda daje podršku za ext2, ext3 i ext4 to nam je potrebno zato što imamo "root" kao ext3 ili 4 i "boot" kao ext2 zato je neophodno da bi sistem razumeo ove tipove fajl sistema. Takođe je važno izgraditi i dhcpcd da bi radio internet.

 # emerge --ask net-misc/dhcpcd



```
 * failover support you may have configured in your net configuration.
 * This behaviour can be controlled with the noipv4ll configuration
 * file option or the -L command line switch.
 * See the dhcpcd and dhcpcd.conf man pages for more details.
 *
 * Dhcpcd has duid enabled by default, and this may cause issues
 * with some dhcp servers. For more information, see
 * https://bugs.gentoo.org/show_bug.cgi?id=477356
 *
 * If you activate the lookup-hostname hook to look up your hostname
 * using the dns, you need to install net-dns/bind-tools.

>>> Recording net-misc/dhcpcd in "world" favorites file...

 * Messages for package net-misc/dhcpcd-6.11.3:

 *
 * dhcpcd has zeroconf support active by default.
 * This means it will always obtain an IP address even if no
 * DHCP server can be contacted, which will break any existing
 * failover support you may have configured in your net configuration.
 * This behaviour can be controlled with the noipv4ll configuration
 * file option or the -L command line switch.
 * See the dhcpcd and dhcpcd.conf man pages for more details.
 *
 * Dhcpcd has duid enabled by default, and this may cause issues
 * with some dhcp servers. For more information, see
 * https://bugs.gentoo.org/show_bug.cgi?id=477356
 *
 * If you activate the lookup-hostname hook to look up your hostname
 * using the dns, you need to install net-dns/bind-tools.
>>> Auto-cleaning packages...

>>> No outdated packages were found on your system.

 * GNU info directory index is up-to-date.

 * IMPORTANT: 12 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

(chroot) livecd ~ #
```

Podešavanje "grub" i "bootloader-a"

"grub" i "bootloader" se podešavaju kako bi mogao da se startuje novi sistem posle restarta racunara.

 # emerge --ask sys-boot/grub:2

to će izgraditi grub2 boot loader. Kada bude završeno kompajliranje može se konfigurisati grub. "grub" fajl je vrlo lako konfigurisati sledećim komandama ali potrebno ga je prvo instalirati:

 # grub2-install /dev/sda

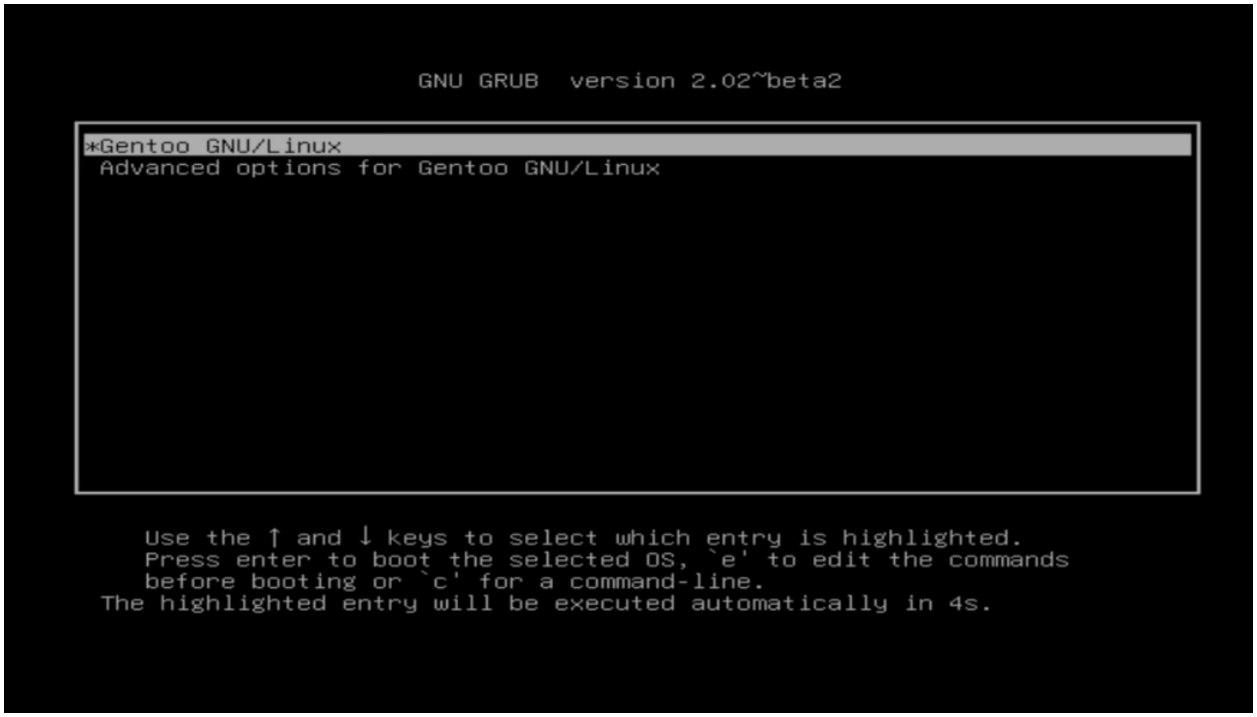
a onda konfigurisati u "grub.cfg" fajl.

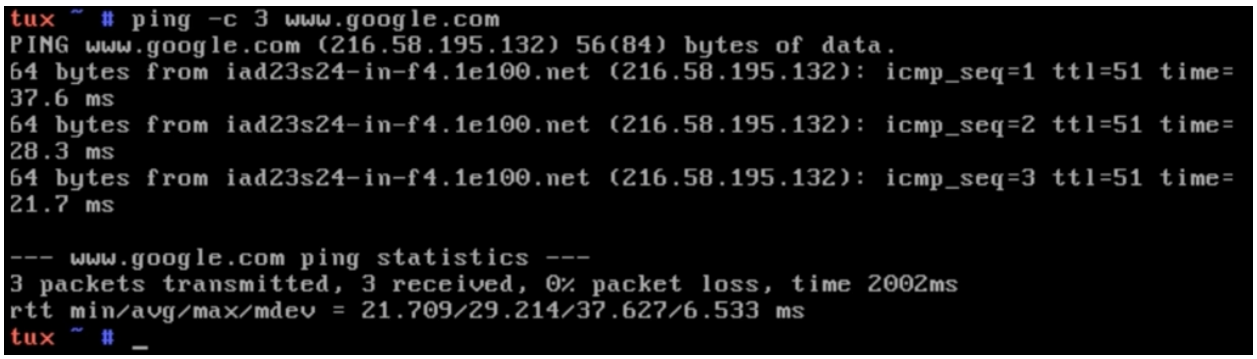
 # grub2-mkconfig -o /boot/grub/grub.cfg

```
(chrot) livecd ~ # grub2-install /dev/sda
Installing for i386-pc platform.
Installation finished. No error reported.
(chrot) livecd ~ # grub2-mkconfig -o /boot/grub/grub.cfg
Generating grub configuration file ...
Found linux image: /boot/kernel-genkernel-x86_64-4.4.6-gentoo
Found initrd image: /boot/initramfs-genkernel-x86_64-4.4.6-gentoo
done
(chrot) livecd ~ #
```

Instalacija Gentoo linuxa je završena sada može da se restartuje sa novim sistemom sledećim komandama:

exit
cd
umount -l /mnt/gentoo
umount -l /dev
umount -l /proc
reboot





Uspešno je instaliran i pokrenut Gentoo Linux u command line interfejsu.