Курс «Анализ, оптимизация и аварийные работы в Linux»

Методические указания по выполнению работы. Часть 1.

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Задача:

1. Прислать скриншот сборки пакетов.

Требования к хост системе:

- оперативная память 4 ГБ, количество процессоров 2;
- диск 50 ГБ, разметка диска:
  - part1: +1M, ef02, grub;
  - part2: +1G, 8200, swap;
  - part3: +5G, 8300, root;
  - part4: все остальное пространство, 8300.

1. **Установка KVM в Ubuntu 20.04.**
   Установка KVM (Kernel Virtual Module) описана по ссылке:
   https://losst.ru/ustanovka-kvm-ubuntu-16-04

1.1. Проверяем поддерживает ли процессор аппаратное ускорение виртуализации от Intel-VT или AMD-V следующей командой:

```
user@host:~$ egrep -c '(vmx|svm)' /proc/cpuinfo
```

```
anton@ux58:~$ egrep -c '(vmx|svm)' /proc/cpuinfo
16
anton@ux58:~$
```

Если в результате будет возвращено 0 – значит процессор не поддерживает аппаратную виртуализацию, если 1 или больше – значит поддерживает, можно использовать KVM.

1.2. Устанавливаем KVM:

```
user@host:~$ sudo apt install qemu qemu-kvm libvirt-daemon
libvirt-clients bridge-utils virt-manager
```

1.3. Добавляем пользователя в группу libvirt:

```
user@host:~$ sudo gpasswd -a $USER libvirt
```

1.4. Проверяем статус сервиса libvirt:

```
user@host:~$ sudo systemctl status libvirtd
```

```
anton@ux58:~$ systemctl status libvirtd
● libvirtd.service - Virtualization daemon
     Loaded: loaded (/lib/systemd/system/libvirtd.service; enabled; vendor preset: enabled)
     Active: active (running) since Thu 2022-09-22 19:56:39 MSK; 1 day 23h ago
TriggeredBy: ● libvirtd-admin.socket
             ● libvirtd.socket
             ● libvirtd-ro.socket
       Docs: man:libvirtd(8)
             https://libvirt.org
   Main PID: 1010 (libvirtd)
      Tasks: 19 (limit: 32768)
     Memory: 74.8M
     CGroup: /system.slice/libvirtd.service
             ├─1010 /usr/sbin/libvirtd
             ├─1338 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/vm-net.conf --le>
             └─1339 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/vm-net.conf --le>
```

1.5. Проверяем правильно ли все установили:

```
user@host:~$ kvm-ok
```

Если ошибок нет, то увидим следующее сообщение:

```
anton@ux58:~$ kvm-ok
INFO: /dev/kvm exists
KVM acceleration can be used
anton@ux58:~$
```

1.6. Установка KVM завершена, перезагружаем систему:

```
user@host:~$ reboot
```

1.7. Создадим новую сеть в KVM.

1.7.1. Посмотрим список действующих сетей:

```
user@host:~$ virsh net-list
```

```
anton@cmvb:~$ virsh net-list
 Name      State    Autostart   Persistent
----------------------------------------
 default   active   yes         yes

anton@cmvb:~$
```

1.7.2. Остановим сеть default:

```
user@host:~$ virsh net-destroy default
```

```
anton@cmvb:~$ virsh net-destroy default
Network default destroyed

anton@cmvb:~$ virsh net-list
 Name   State   Autostart   Persistent
--------------------------------------

anton@cmvb:~$
```

1.7.3. Удалим сеть default:

```
user@host:~$ virsh net-undefine default
```

```
anton@cmvb:~$ virsh net-undefine default
Network default has been undefined

anton@cmvb:~$
```

1.7.4. Создадим файл vm-net.xml для новой сети vm-net:

```
user@host:~$ vim vm-net.xml

<network>
   <name>vm-net</name>
   <forward mode="nat"/>
   <bridge  name="vm-net0" stp="on" delay="0"/>
   <ip address="10.100.10.1" netmask="255.255.255.192">
      <dhcp>
         <range start="10.100.10.12" end="10.100.10.62"/>
      </dhcp>
   </ip>
</network>
```

1.7.5. Создадим новую сеть на основе файла vm-net.xml:

```
user@host:~$ virsh net-define vm-net.xml
```

1.7.6. Запустим созданную сеть:

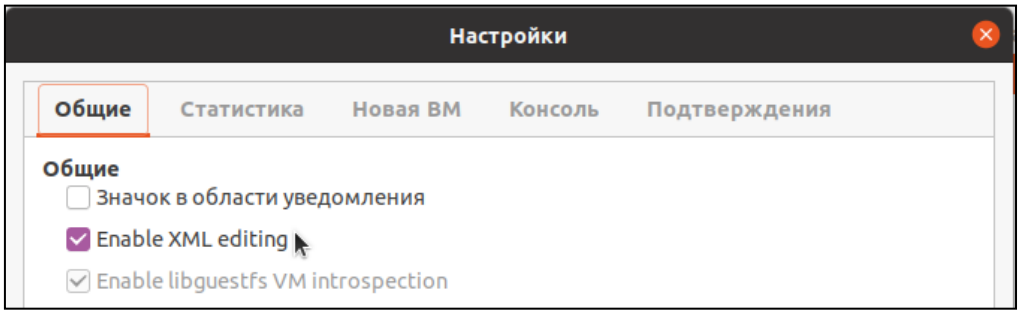
```
user@host:~$ virsh net-start vm-net
```

1.7.7. Добавим сеть в автозапуск:

```
user@host:~$ virsh net-autostart my-net
```

Настройка сети для KVM закончена.

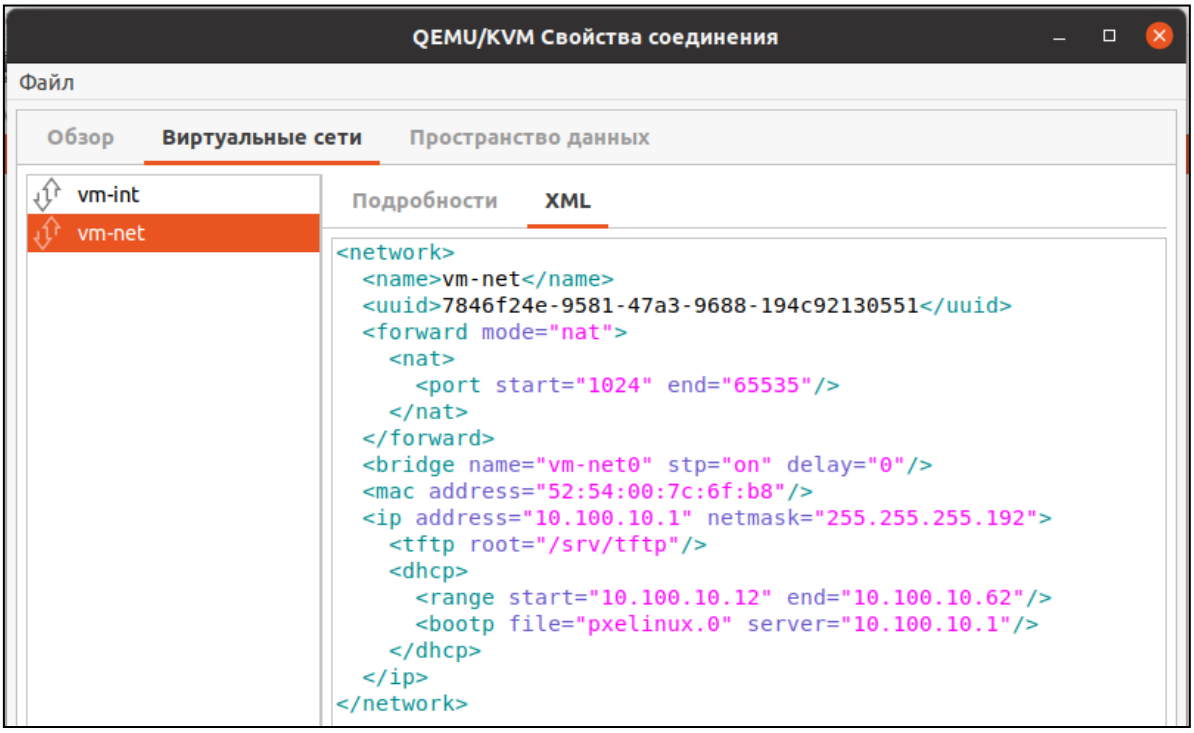
2. **Создание новой виртуальной машины в GUI Virtual Manager.**
   Для создания новой виртуальной машины (ВМ) будем использовать установочный образ для загрузки по сети.
   Образ можно скачать по ссылке: https://vcp.meganet.ru/dists/gb/tftp/tftp.tar.gz и распаковать в папку **/srv/tftp**.
   Далее внесем изменения в файл **vm-net.xml**. Это можно сделать в самом Менеджере ВМ, в пункте меню **Правка – Параметры**, поставив галочку напротив **Enable XML editing**.



Далее переходим **Правка – Свойства подключения – Виртуальные сети**.

Выбираем нашу сеть **vm-net** и вкладку **XML**, добавляем следующие строки:

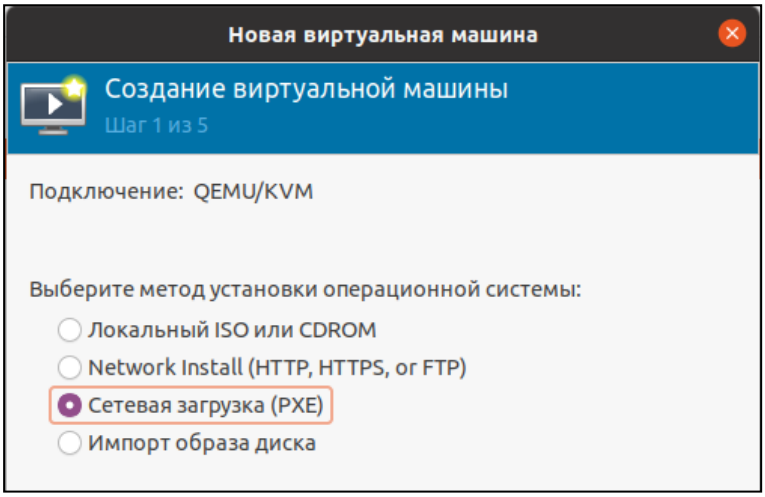
```
<network>
   <name>vm-net</name>
   <forward mode="nat"/>
   <bridge  name="vm-net0" stp="on" delay="0"/>
   <ip address="10.100.10.1" netmask="255.255.255.192">
      <tftp root="/srv/tftp"/>
      <dhcp>
         <range start="10.100.10.12" end="10.100.10.62"/>
         <boot file="pxelinux.0" server=10.100.10.1"/>
      </dhcp>
   </ip>
</network>
```



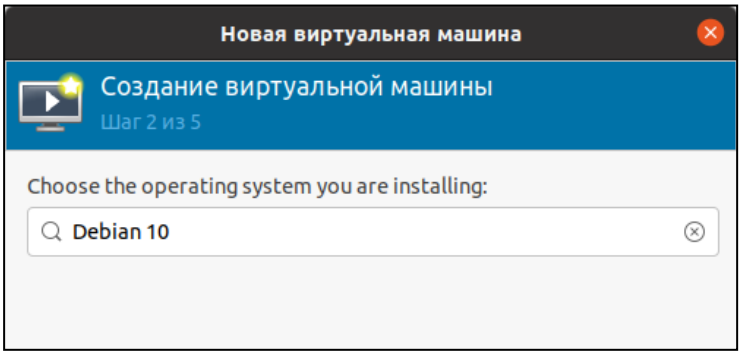
Нажимаем кнопку **Применить**.

Создаем новую ВМ: **Файл – Создать виртуальную машину**

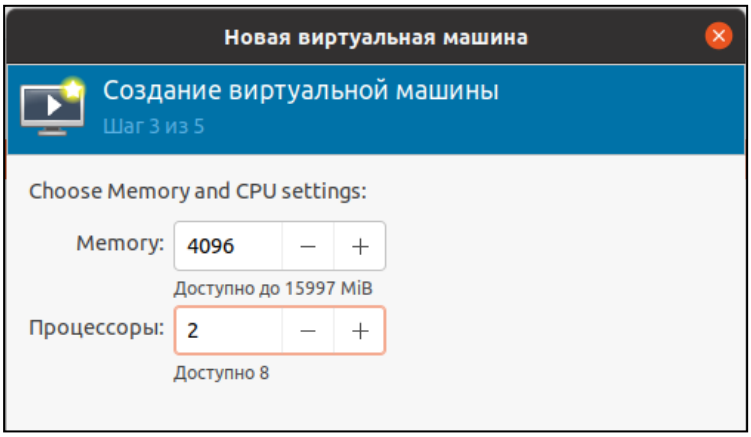
Шаг 1. Выбираем **Сетевая загрузка (PXE)**



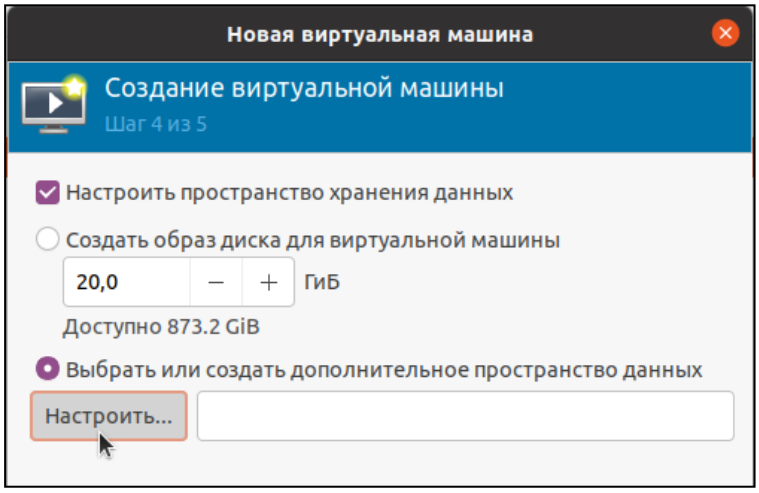
Шаг 2. Выбираем операционную систему, пишем: **Debian 10**



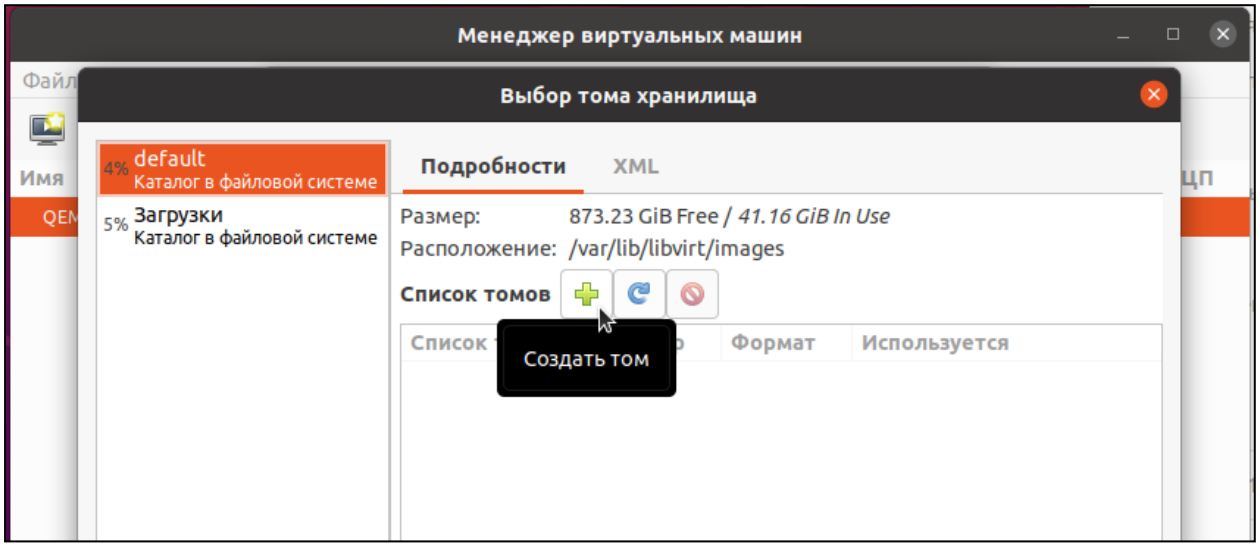
Шаг 3. Указываем размер оперативной памяти и количество процессоров: **4096** и **2**



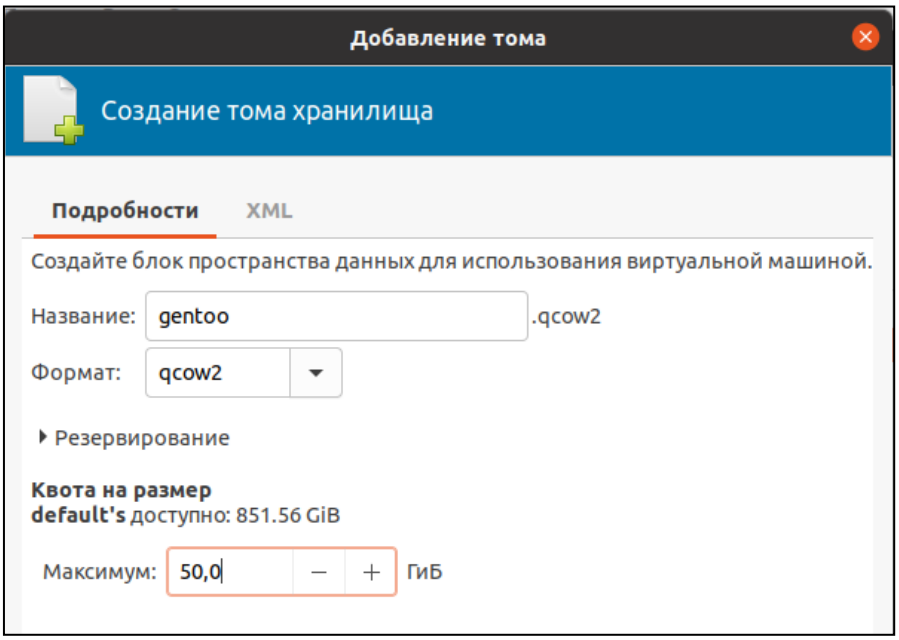
Шаг 4. Создаем дополнительное пространство данных



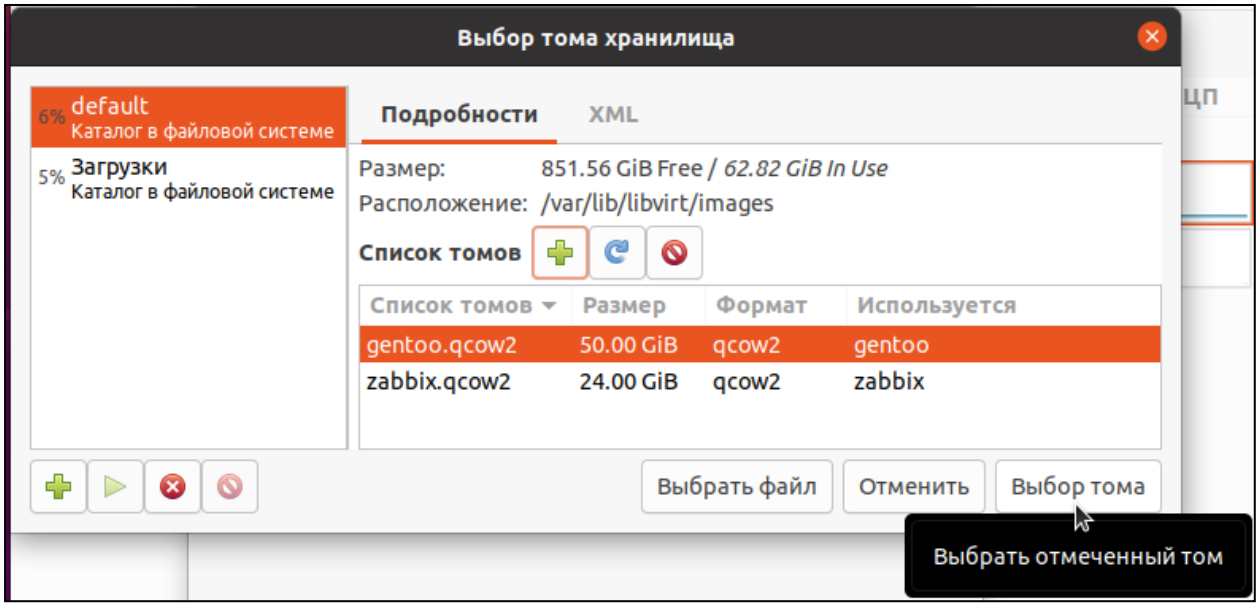
Создаем новый том хранилища:

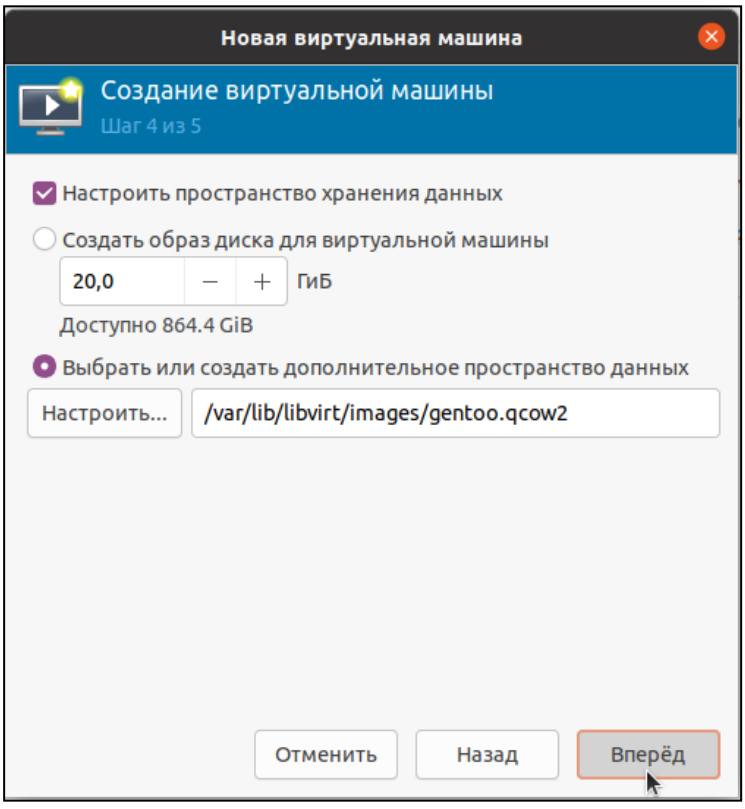


Указываем название тома и размер: **gentoo, 50**

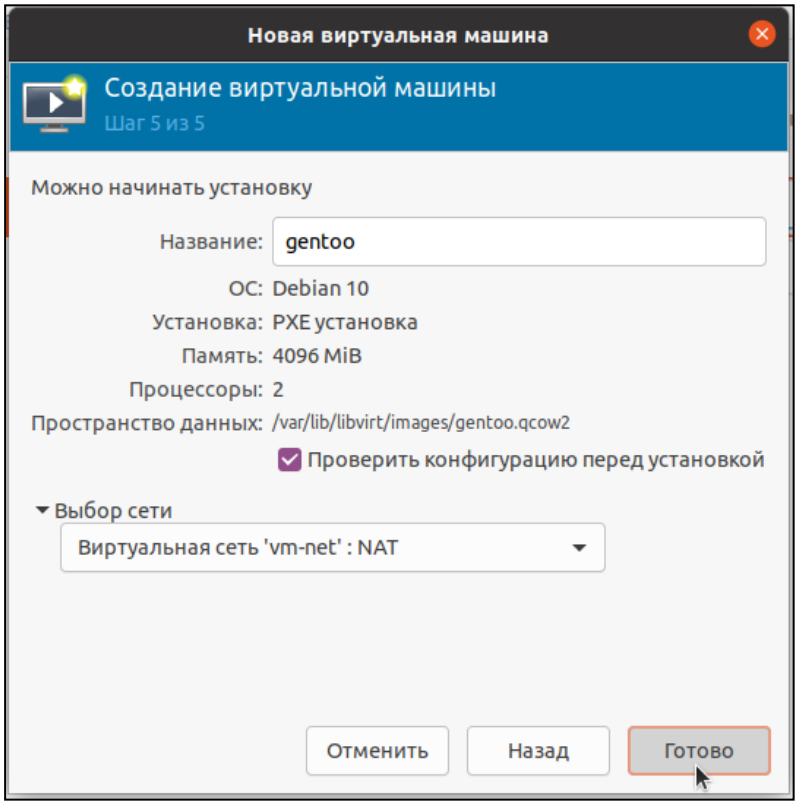


Далее выбираем созданный том: **gentoo.qcow2**

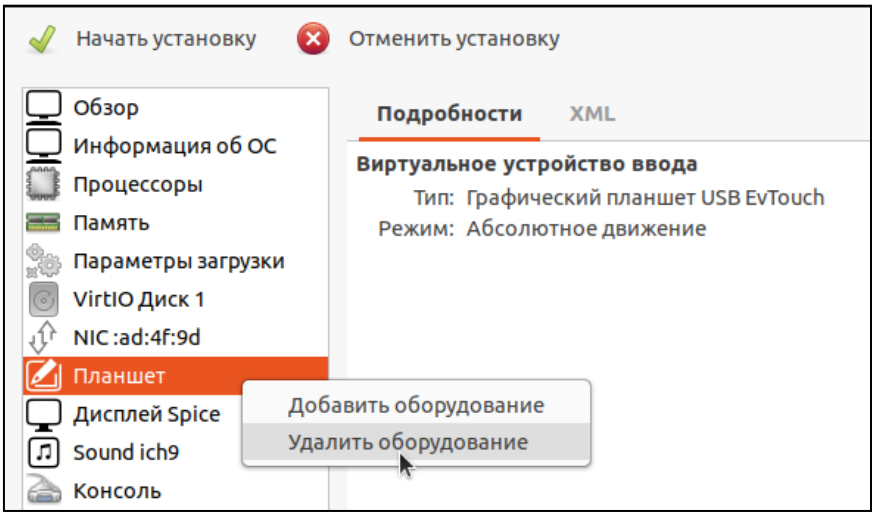




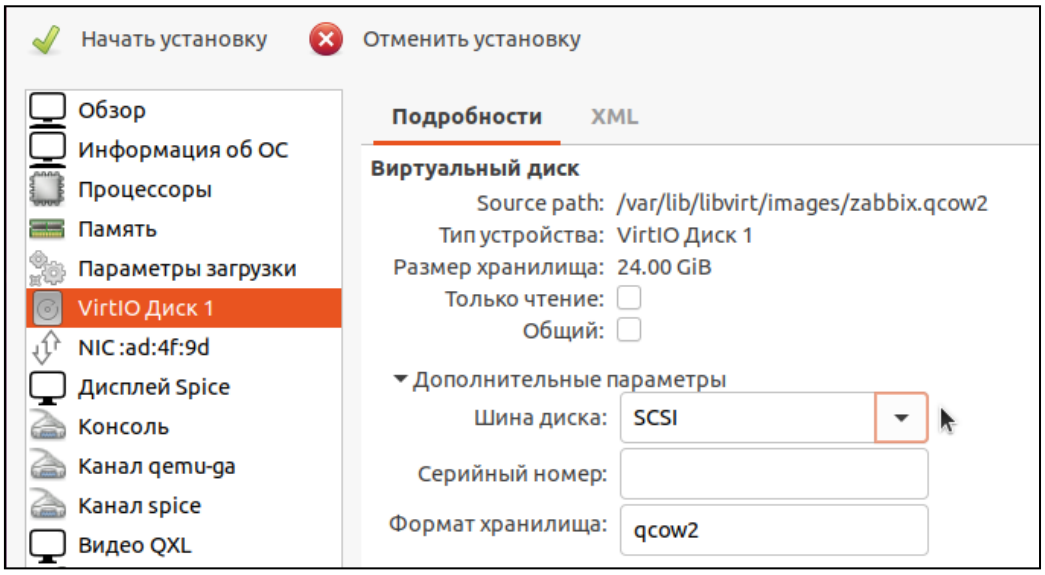
Шаг 5. Указываем название ВМ: **gentoo**.
Ставим галочку напротив **Проверить конфигурацию перед установкой**.
В пункте **Выбор сети** выбираем нашу сеть **vm-net**.



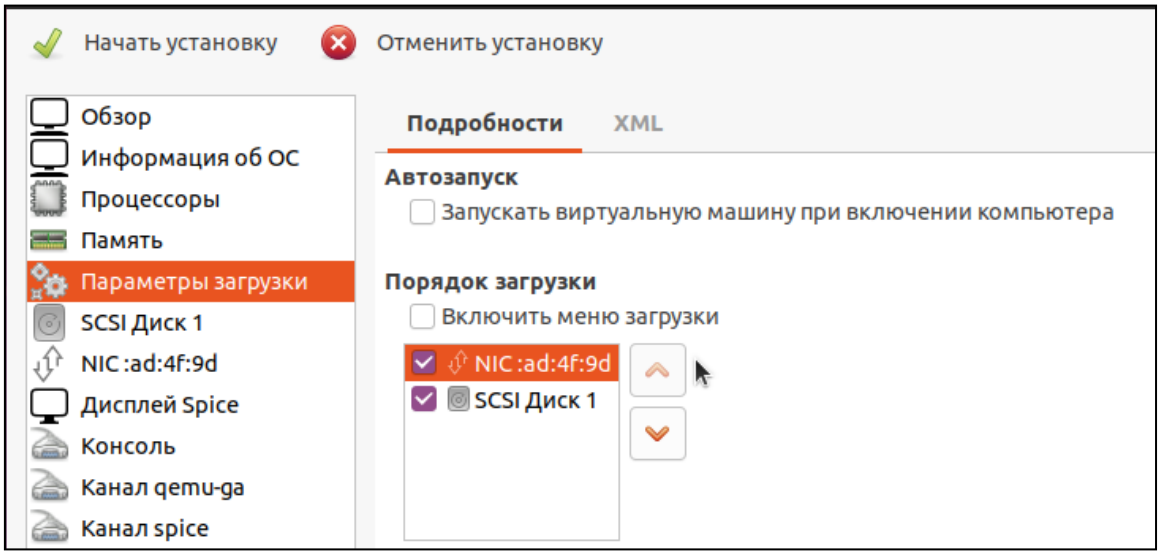
В конфигурации ВМ удаляем из оборудования **Планшет** и **Sound ich9**:



Для оборудования **Virtio Диск 1** устанавливаем параметр **Шина диска: SCSI**, нажимаем кнопку **Применить**.



В пункте **Параметры загрузки** ставим галочку напротив сетевого адаптера **NIC** и поднимаем его вверх в очереди загрузки, нажимаем кнопку **Применить**.

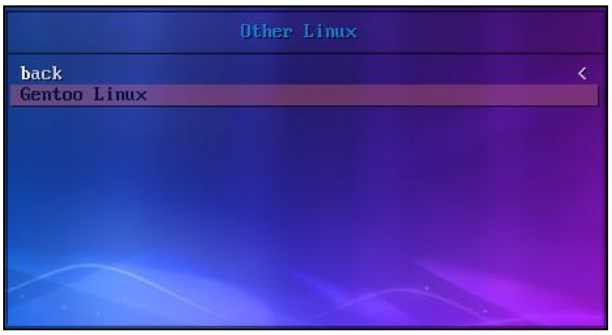


Нажимаем кнопку **Начать установку**.

3. Загрузка Gentoo.

После нажатия кнопки **Начать установку** начнется загрузка образа по сети, который мы распаковали в папку **/srv/tftp**.

В появившемся меню выбираем **Other Linux** и далее **Gentoo Linux**.



После загрузки Gentoo Linux вводим команду:

```
livecd ~ # gdisk /dev/sda
```

В утилите **gdisk** вводим команду **n**:

```
livecd ~ # gdisk /dev/sda
GPT fdisk (gdisk) version 1.0.3

Partition table scan:
  MBR: not present
  BSD: not present
  APM: not present
  GPT: not present

Creating new GPT entries.

Command (? for help): n
```

Нам необходимо создать 4 раздела:

1) grub (нажимаем Enter, Enter, вводим значение **+1M**, вводим значение **ef02**);

```
Command (? for help): n
Partition number (1-128, default 1):
First sector (34-104857566, default = 2048) or {+-}size{KMGTP}:
Last sector (2048-104857566, default = 104857566) or {+-}size{KMGTP}: +1M
Current type is 'Linux filesystem'
Hex code or GUID (L to show codes, Enter = 8300): ef02
Changed type of partition to 'BIOS boot partition'
```

2) swap (нажимаем Enter, Enter, вводим значение **+1G**, вводим значение **8200**);

```
Command (? for help): n
Partition number (2-128, default 2):
First sector (34-104857566, default = 4096) or {+-}size{KMGTP}:
Last sector (4096-104857566, default = 104857566) or {+-}size{KMGTP}: +1G
Current type is 'Linux filesystem'
Hex code or GUID (L to show codes, Enter = 8300): 8200
Changed type of partition to 'Linux swap'
```

3) root (нажимаем Enter, Enter, вводим значение **+5G**, вводим значение **8300**);

```
Command (? for help): n
Partition number (3-128, default 3):
First sector (34-104857566, default = 2101248) or {+-}size{KMGTP}:
Last sector (2101248-104857566, default = 104857566) or {+-}size{KMGTP}: +5G
Current type is 'Linux filesystem'
Hex code or GUID (L to show codes, Enter = 8300): 8300
Changed type of partition to 'Linux filesystem'
```

4) (нажимаем Enter, Enter, Enter, Enter).

```
Command (? for help): n
Partition number (4-128, default 4):
First sector (34-104857566, default = 12587008) or {+-}size{KMGTP}:
Last sector (12587008-104857566, default = 104857566) or {+-}size{KMGTP}:
Current type is 'Linux filesystem'
Hex code or GUID (L to show codes, Enter = 8300):
Changed type of partition to 'Linux filesystem'
```

Сохраняем изменения командой **w**:

```
Command (? for help): w

Final checks complete. About to write GPT data. THIS WILL OVERWRITE EXISTING
PARTITIONS!!

Do you want to proceed? (Y/N): Y
OK; writing new GUID partition table (GPT) to /dev/sda.
The operation has completed successfully.
livecd ~ # _
```

Проверяем внесенные изменения:

```
livecd ~ # gdisk /dev/sda
```

Вводим команду **p**:

```
Command (? for help): p
Disk /dev/sda: 104857600 sectors, 50.0 GiB
Model: QEMU HARDDISK
Sector size (logical/physical): 512/512 bytes
Disk identifier (GUID): BAD200F8-9CB9-4EE3-84C5-992CC7995047
Partition table holds up to 128 entries
Main partition table begins at sector 2 and ends at sector 33
First usable sector is 34, last usable sector is 104857566
Partitions will be aligned on 2048-sector boundaries
Total free space is 2014 sectors (1007.0 KiB)

Number  Start (sector)    End (sector)  Size       Code  Name
   1            2048            4095   1024.0 KiB  EF02  BIOS boot partition
   2            4096         2101247   1024.0 MiB  8200  Linux swap
   3         2101248        12587007   5.0 GiB     8300  Linux filesystem
   4        12587008       104857566   44.0 GiB    8300  Linux filesystem
```

Для выхода из меню вводим команду **q**.

Зададим пароль для пользователя **root**:

```
livecd ~ # passwd root
```

```
Command (? for help): q
livecd ~ # passwd root
New password:
Retype new password:
passwd: password updated successfully
livecd ~ # _
```

Запускаем службу **SSH**:

```
livecd ~ # /etc/init.d/sshd start
```

```
livecd ~ # /etc/init.d/sshd start
ssh-keygen: generating new host keys: RSA DSA ECDSA ED25519
 * Starting sshd ...                                              [ ok ]
livecd ~ # _
```

Проверяем доступные сетевые адаптеры:

```
livecd ~ # ip a
```

```
livecd ~ # ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defaul
t qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 brd 127.255.255.255 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP gr
oup default qlen 1000
    link/ether 52:54:00:64:4a:63 brd ff:ff:ff:ff:ff:ff
    inet 10.100.10.23/26 brd 10.100.10.63 scope global noprefixroute eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::5054:ff:fe64:4a63/64 scope link
       valid_lft forever preferred_lft forever
3: bond0: <NO-CARRIER,BROADCAST,MULTICAST,MASTER,UP> mtu 1500 qdisc noqueue stat
e DOWN group default qlen 1000
    link/ether 92:22:75:8a:bb:e7 brd ff:ff:ff:ff:ff:ff
livecd ~ # _
```

Из терминала хост-системы подключимся к ВМ по ssh:

```
root@host:~# ssh 10.100.10.23
```

```
root@ux58:~# ssh 10.100.10.23
The authenticity of host '10.100.10.23 (10.100.10.23)' can't be established.
ECDSA key fingerprint is SHA256:xnREzlk1aZSVyOK3w7hy8OyNNm/stIPASDVG5ZJUx7E.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '10.100.10.23' (ECDSA) to the list of known hosts.
Password:
Welcome to the Gentoo Linux Minimal Installation CD!

The root password on this system has been auto-scrambled for security.

If any ethernet adapters were detected at boot, they should be auto-configured
if DHCP is available on your network.  Type "net-setup eth0" to specify eth0 IP
address settings by hand.

Check /etc/kernels/kernel-config-* for kernel configuration(s).
The latest version of the Handbook is always available from the Gentoo web
site by typing "links https://wiki.gentoo.org/wiki/Handbook".

To start an ssh server on this system, type "/etc/init.d/sshd start".  If you
need to log in remotely as root, type "passwd root" to reset root's password
to a known value.

Please report any bugs you find to https://bugs.gentoo.org. Be sure to include
detailed information about how to reproduce the bug you are reporting.
Thank you for using Gentoo Linux!

livecd ~ #
```

Вводим следующие команды:

```
livecd ~ # gdisk -l /dev/sda
```

```
livecd ~ # gdisk -l /dev/sda
GPT fdisk (gdisk) version 1.0.3

Partition table scan:
  MBR: protective
  BSD: not present
  APM: not present
  GPT: present

Found valid GPT with protective MBR; using GPT.
Disk /dev/sda: 104857600 sectors, 50.0 GiB
Model: QEMU HARDDISK
Sector size (logical/physical): 512/512 bytes
Disk identifier (GUID): BAD200F8-9CB9-4EE3-84C5-992CC7995047
Partition table holds up to 128 entries
Main partition table begins at sector 2 and ends at sector 33
First usable sector is 34, last usable sector is 104857566
Partitions will be aligned on 2048-sector boundaries
Total free space is 2014 sectors (1007.0 KiB)

Number  Start (sector)    End (sector)  Size       Code  Name
   1            2048            4095   1024.0 KiB  EF02  BIOS boot partition
   2            4096         2101247   1024.0 MiB  8200  Linux swap
   3         2101248        12587007   5.0 GiB     8300  Linux filesystem
   4        12587008       104857566   44.0 GiB    8300  Linux filesystem
livecd ~ #
```

Инициализируем раздел подкачки:

```
livecd ~ # mkswap -f /dev/sda2
```

```
livecd ~ # mkswap -f /dev/sda2
Setting up swapspace version 1, size = 1024 MiB (1073737728 bytes)
no label, UUID=ac0e0b5a-2502-48b4-9855-ef8176860b4e
```

Создадим раздел **sda3** с файловой системой **Ext4** и меткой **tmp**:

```
livecd ~ # mkfs.ext4 -L tmp /dev/sda3
```

```
livecd ~ # mkfs.ext4 -L tmp /dev/sda3
mke2fs 1.43.9 (8-Feb-2018)
Discarding device blocks: done
Creating filesystem with 1310720 4k blocks and 327680 inodes
Filesystem UUID: 15f73177-acdb-4b26-b12d-8219b5a7d673
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done
```

Создадим раздел **sda4** с файловой системой **Ext4** и меткой **root**:

```
livecd ~ # mkfs.ext4 -L root /dev/sda4
```

```
livecd ~ # mkfs.ext4 -L root /dev/sda4
mke2fs 1.43.9 (8-Feb-2018)
Discarding device blocks: done
Creating filesystem with 11533819 4k blocks and 2883584 inodes
Filesystem UUID: a6726bcb-382d-497c-808f-dca70cdee668
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624, 11239424

Allocating group tables: done
Writing inode tables: done
Creating journal (65536 blocks): done
Writing superblocks and filesystem accounting information: done

livecd ~ #
```

Примонтируем раздел:

```
livecd ~ # mount /dev/sda4 /mnt/gentoo
```

Введем следующие команды:

```
livecd ~ # cd /mnt/gentoo
livecd /mnt/gentoo # mkdir tmp
livecd /mnt/gentoo # mount /dev/sda3 tmp
```

Скачаем дистрибутив Gentoo по следующей ссылке:

https://mirror.yandex.ru/gentoo-distfiles/releases/amd64/autobuilds/current-stage3-amd64-systemd/stage3-amd64-systemd-20221127T170156Z.tar.xz

```
livecd /mnt/gentoo # wget https://mirror.yandex.ru/gentoo-
distfiles/releases/amd64/autobuilds/current-stage3-amd64-
systemd/stage3-amd64-systemd-20221127T170156Z.tar.xz
```

```
livecd /mnt/gentoo # wget https://mirror.yandex.ru/gentoo-distfiles/releases/amd64/autobuilds/current-st
age3-amd64-systemd/stage3-amd64-systemd-20221127T170156Z.tar.xz
--2022-12-02 19:10:27--  https://mirror.yandex.ru/gentoo-distfiles/releases/amd64/autobuilds/current-sta
ge3-amd64-systemd/stage3-amd64-systemd-20221127T170156Z.tar.xz
Resolving mirror.yandex.ru... 213.180.204.183, 2a02:6b8::183
Connecting to mirror.yandex.ru|213.180.204.183|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 262764972 (251M) [application/octet-stream]
Saving to: 'stage3-amd64-systemd-20221127T170156Z.tar.xz'

stage3-amd64-systemd-2022 100%[===================================>] 250.59M  4.52MB/s    in 63s

2022-12-02 19:11:30 (3.98 MB/s) - 'stage3-amd64-systemd-20221127T170156Z.tar.xz' saved [262764972/262764
972]

livecd /mnt/gentoo #
```

Распаковываем архив:

```
livecd /mnt/gentoo # tar -xvpf stage3-amd64-systemd-
20221127T170156Z.tar.xz
```

После распаковки архива, файл можно удалить:

```
livecd /mnt/gentoo # rm -rf stage3-amd64-systemd-
20221127T170156Z.tar.xz
```

Введем следующие команды:

```
livecd /mnt/gentoo # mount -o bind /dev dev
livecd /mnt/gentoo # mount -o bind /dev/pts dev/pts
livecd /mnt/gentoo # mount -o bind /dev/shm dev/shm
livecd /mnt/gentoo # mount -t proc proc proc
livecd /mnt/gentoo # mount -t sysfs sysfs sys
livecd /mnt/gentoo # cd /
livecd / # chroot /mnt/gentoo /bin/bash --login
livecd / # export PS1="( chroot ) $PS1"
( chroot ) livecd / # cat > /etc/resolv.conf
nameserver 8.8.8.8
( chroot ) livecd / # ping ya.ru
```

```
livecd /mnt/gentoo # rm -rf stage3-amd64-systemd-20221127T170156Z.tar.xz
livecd /mnt/gentoo # mount -o bind /dev dev
livecd /mnt/gentoo # mount -o bind /dev/pts dev/pts
livecd /mnt/gentoo # mount -o bind /dev/shm dev/shm
livecd /mnt/gentoo # mount -t proc proc proc
livecd /mnt/gentoo # mount -t sysfs sysfs sys
livecd /mnt/gentoo # cd /
livecd / # chroot /mnt/gentoo /bin/bash --login
livecd / # export PS1="( chroot ) $PS1"
( chroot ) livecd / # cat > /etc/resolv.conf
nameserver 8.8.8.8
( chroot ) livecd / # ping ya.ru
PING ya.ru (87.250.250.242) 56(84) bytes of data.
64 bytes from ya.ru (87.250.250.242): icmp_seq=1 ttl=246 time=34.4 ms
64 bytes from ya.ru (87.250.250.242): icmp_seq=2 ttl=246 time=36.5 ms
64 bytes from ya.ru (87.250.250.242): icmp_seq=3 ttl=246 time=35.4 ms
64 bytes from ya.ru (87.250.250.242): icmp_seq=4 ttl=246 time=34.2 ms
^C
--- ya.ru ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3027ms
rtt min/avg/max/mdev = 34.243/35.132/36.530/0.922 ms
( chroot ) livecd / #
```

Обновим репозиторий:

```
( chroot ) livecd / # emerge --sync
```

Итог выполнения команды:

```
.....
/var/db/repos/gentoo/profiles/updates/1Q-2021.....
/var/db/repos/gentoo/profiles/updates/4Q-2019.....
/var/db/repos/gentoo/profiles/updates/4Q-2020.....
/var/db/repos/gentoo/profiles/updates/2Q-2020.....
/var/db/repos/gentoo/profiles/updates/1Q-2022..
/var/db/repos/gentoo/profiles/updates/1Q-2019.............
/var/db/repos/gentoo/profiles/updates/2Q-2022............
/var/db/repos/gentoo/profiles/updates/1Q-2020...........
/var/db/repos/gentoo/profiles/updates/2Q-2018................
/var/db/repos/gentoo/profiles/updates/2Q-2021.....
/var/db/repos/gentoo/profiles/updates/1Q-2017.........................
/var/db/repos/gentoo/profiles/updates/1Q-2018.................
/var/db/repos/gentoo/profiles/updates/3Q-2018..
/var/db/repos/gentoo/profiles/updates/4Q-2021.....................................................
.............
@###


 * IMPORTANT: 8 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.


Action: sync for repo: gentoo, returned code = 0


( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # emerge -vp eix
```

```
( chroot ) livecd / # emerge -vp eix

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

Calculating dependencies... done!
[ebuild  N     ] app-shells/push-3.4::gentoo  3 KiB
[ebuild  N     ] app-shells/quoter-4.2::gentoo  11 KiB
[ebuild  N     ] app-portage/eix-0.36.5::gentoo  USE="nls -debug -doc -sqlite" 626 KiB

Total: 3 packages (3 new), Size of downloads: 639 KiB

 * IMPORTANT: 8 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # emerge eix
```

Итог выполнения команды:

```
>>> Installing (3 of 3) app-portage/eix-0.36.5::gentoo

>>> Recording app-portage/eix in "world" favorites file...

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

 * IMPORTANT: 8 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # eix-update
```

```
( chroot ) livecd / # eix-update
Reading Portage settings...
Building database (/var/cache/eix/portage.eix)...
[0] "gentoo" /var/db/repos/gentoo/ (cache: metadata-md5-or-flat)
     Reading category 170|170 (100) Finished
Applying masks...
Calculating hash tables...
Writing database file /var/cache/eix/portage.eix...
Database contains 19564 packages in 170 categories
( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # eix vim
```

Находи строку **app-editors/vim** и копируем ее:

```
* app-editors/pyvim
     Available versions:  3.0.2 ~3.0.3^t {test PYTHON_TARGETS="python3_8 python3_9 python3_10 python3_11
"}
     Homepage:            https://pypi.org/project/pyvim/ https://github.com/prompt-toolkit/pyvim
     Description:         An implementation of Vim in Python

* app-editors/vim
     Available versions:  9.0.0099-r1 ~9.0.0399 ~9.0.0655-r1 ~9.0.0828-r1 **9999*l {X acl crypt cscope d
ebug gpm lua minimal nls perl python racket ruby selinux sound tcl terminal vim-pager LUA_SINGLE_TARGET=
"lua5-1 lua5-3 lua5-4 luajit" PYTHON_SINGLE_TARGET="python3_8 python3_9 python3_10 python3_11"}
     Homepage:            https://vim.sourceforge.io/ https://github.com/vim/vim
     Description:         Vim, an improved vi-style text editor
```

Введем следующую команду:

```
( chroot ) livecd / # emerge app-editors/vim
```

```
>>> Installing (5 of 5) app-vim/gentoo-syntax-2::gentoo
 * Updating documentation tags in /usr/share/vim/vim90
 *
 * This plugin provides documentation via vim's help system. To
 * view it, use:
 *     :help gentoo-syntax
 *
 * This plugin makes use of filetype settings. To enable these,
 * add lines like:
 *     filetype plugin on
 *     filetype indent on
 * to your ~/.vimrc file.
 *

 * Messages for package app-vim/gentoo-syntax-2:

 *
 * This plugin provides documentation via vim's help system. To
 * view it, use:
 *     :help gentoo-syntax
 *
 * This plugin makes use of filetype settings. To enable these,
 * add lines like:
 *     filetype plugin on
 *     filetype indent on
 * to your ~/.vimrc file.
 *

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

 * IMPORTANT: 8 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # eselect editor list
```

```
( chroot ) livecd / # eselect editor list
Available targets for the EDITOR variable:
  [1]   nano
  [2]   ex
  [3]   vi
  [ ]   (free form)
( chroot ) livecd / #
```

```
( chroot ) livecd / # eselect editor set 3
```

```
( chroot ) livecd / # eselect editor set 3
Setting EDITOR to vi ...
Run ". /etc/profile" to update the variable in your shell.
( chroot ) livecd / #
```

Нажимаем **Ctrl+d** и вводим следующие команды:

```
livecd / # chroot /mnt/gentoo /bin/bash --login
livecd / # export PS1="( chroot ) $PS1"
```

```
( chroot ) livecd / #
logout
livecd / # chroot /mnt/gentoo /bin/bash --login
livecd / # export PS1="( chroot ) $PS1"
( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # emerge -vp --depclean
```

```
>>> These are the packages that would be unmerged:


!!! 'app-editors/nano' (virtual/editor) is part of your system profile.
!!! Unmerging it may be damaging to your system.


 app-editors/nano
    selected: 6.4
   protected: none
     omitted: none

All selected packages: =app-editors/nano-6.4

>>> 'Selected' packages are slated for removal.
>>> 'Protected' and 'omitted' packages will not be removed.

Packages installed:   299
Packages in world:    2
Packages in system:   43
Required packages:    298
Number to remove:     1
( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # emerge --depclean
```

```
All selected packages: =app-editors/nano-6.4

>>> 'Selected' packages are slated for removal.
>>> 'Protected' and 'omitted' packages will not be removed.

>>> Waiting 5 seconds before starting...
>>> (Control-C to abort)...
>>> Unmerging in: 5 4 3 2 1
>>> Unmerging (1 of 1) app-editors/nano-6.4...
Packages installed:   298
Packages in world:    2
Packages in system:   43
Required packages:    298
Number removed:       1

 * Regenerating GNU info directory index...
 * Processed 91 info files.

 * IMPORTANT: 8 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # eselect profile list
( chroot ) livecd / # eselect profile set 10
```

Отредактируем файл **/etc/portage/make.conf**:

```
USE="-ldap -bluetooth -gnome -gtk perl python ssl
networkmanager dbus gold idn vim-syntax alsa curl lzma lzo lz4
kms sqlite"

COMMON_FLAGS="-O2 -pipe"
CFLAGS="${COMMON_FLAGS}"
CXXFLAGS="${COMMON_FLAGS}"
FCFLAGS="${COMMON_FLAGS}"
FFLAGS="${COMMON_FLAGS}"

ACCEPT_LICENSE="*"
```

```
  INPUT_DEVICES="libinput"

  LINGUAS="en ru"
  L10N="en ru"

  ALSA_CARDS="hda-intel"
  VIDEO_CARDS="qxl"

  PYTHON_TARGETS="python3_10"
  GRUB_PLATFORMS="pc"

  # NOTE: This stage was built with the bindist Use flag
enabled

  # This sets the language of build output to English.
  # Please keep this setting intact when reporting bugs.
  LC_MESSAGES=C

  MAKEOPTS="-j2"
```

```
# 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.

USE="-ldap -bluetooth -gnome -gtk perl python ssl networkmanager dbus gold idn vim-syntax alsa curl lzma
 lzo lz4 kms sqlite"

COMMON_FLAGS="-O2 -pipe"
CFLAGS="${COMMON_FLAGS}"
CXXFLAGS="${COMMON_FLAGS}"
FCFLAGS="${COMMON_FLAGS}"
FFLAGS="${COMMON_FLAGS}"

ACCEPT_LICENSE="*"

INPUT_DEVICES="libinput"

LINGUAS="en ru"
L10N="en ru"

ALSA_CARDS="hda-intel"
VIDEO_CARDS="qxl"

PYTHON_TARGETS="python3_10"
GRUB_PLATFORMS="pc"

# NOTE: This stage was built with the bindist Use flag enabled

# This sets the language of build output to English.
# Please keep this setting intact when reporting bugs.
LC_MESSAGES=C

MAKEOPTS="-j2"
~
~
~
"/etc/portage/make.conf" 33L, 811B                                    33,14         All
```

Введем следующую команду:

```
( chroot ) livecd / # emerge -evp @system
```

```
[ebuild   R    ] sys-process/psmisc-23.4-r1::gentoo  USE="X* ipv6 nls (-selinux) -test" 362 KiB
[ebuild   R    ] virtual/editor-0-r3::gentoo  0 KiB

Total: 467 packages (4 upgrades, 171 new, 1 in new slot, 291 reinstalls), Size of downloads: 1188299 KiB

 * IMPORTANT: 8 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

( chroot ) livecd / #
```

Введем следующую команду:

```
( chroot ) livecd / # emerge -e @system
```

Итог выполнения команды:

```
 * You can find additional opt-viewer utility scripts in:
 *   /usr/lib/llvm/15/share/opt-viewer
 * To use these scripts, you will need Python along with the following
 * packages:
 *   dev-python/pygments (for opt-viewer)
 *   dev-python/pyyaml (for all of them)

 * Messages for package net-wireless/wpa_supplicant-2.10-r1:

 * Unable to find kernel sources at /usr/src/linux
 * Unable to calculate Linux Kernel version for build, attempting to use running version
 * If this is a clean installation of wpa_supplicant, you have to create
 * a configuration file named /etc/wpa_supplicant/wpa_supplicant.conf An
 * example configuration file is available for reference in
 * /usr/share/doc/wpa_supplicant-2.10-r1/
 *
 * (Note: Above message is only printed the first time package is
 * installed. Please look at /usr/share/doc/wpa_supplicant-2.10-r1/README.gentoo*
 * for future reference)
 * WARNING: You are building with TKIP support disabled, which is recommended since
 * this protocol is deprecated and insecure.  If you still need to connect to
 * TKIP-enabled networks, you may turn this flag back on.  With this flag off,
 * TKIP-enabled networks, including mixed mode TKIP/AES-CCMP will not even show up
 * as available.  If your network is missing you may wish to USE=tkip

 * Messages for package sys-libs/gpm-1.20.7-r5:

 * Unable to find kernel sources at /usr/src/linux
 * Unable to calculate Linux Kernel version for build, attempting to use running version

 * Regenerating GNU info directory index...
 * Processed 99 info files.

 * IMPORTANT: 8 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

( chroot ) livecd / #
```