Курс «Анализ, оптимизация и аварийные работы в Linux»

Методические указания по выполнению работы. Часть 3.

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Задача:

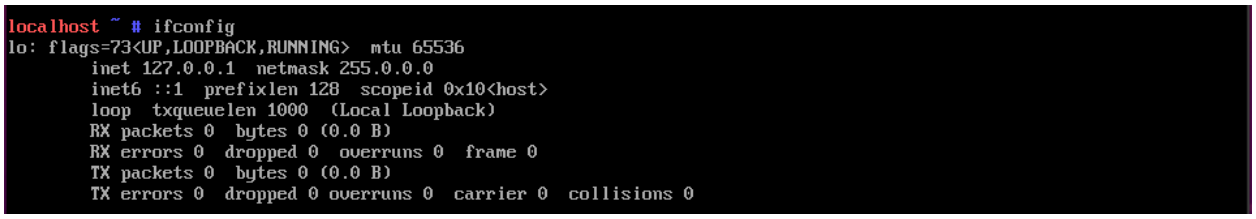
1. Используя команду **eix**, найти и собрать недостающие пакеты: **NetworkManager**, **Dolphin**.
2. Решить проблему с драйвером **qxl** для запуска в ВМ **qemu/kvm**.
3. Показать скриншот запущенной системы входа **sddm**.
4. Показать скриншот вывода команды **uname -a** в консоле запущенного **Display Manager**, например **KDE**.

1. Поиск и решение проблем.

Запускаем ВМ. Заходим в консоль, авторизуемся.

Проверяем **IP** нашей ВМ:

```
localhost ~ # ifconfig
```



Видим, что ip не назначен, исправляем это:

```
localhost ~ # ifconfig -a
localhost ~ # ifconfig enp3s0 10.100.10.23/26
localhost ~ # route add default gw 10.100.10.1
localhost ~ # ping ya.ru
```

```
localhost ~ # ifconfig -a
enp3s0: flags=4098<BROADCAST,MULTICAST>  mtu 1500
        ether 52:54:00:85:9c:66  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

localhost ~ # ifconfig enp3s0 10.100.10.23/26
localhost ~ # route add default gw 10.100.10.1
localhost ~ # 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=34.1 ms
64 bytes from ya.ru (87.250.250.242): icmp_seq=2 ttl=246 time=34.2 ms
64 bytes from ya.ru (87.250.250.242): icmp_seq=3 ttl=246 time=34.0 ms
^C
--- ya.ru ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 34.046/34.141/34.242/0.080 ms
localhost ~ #
```

Проверим, запущена ли служба **SSH**:

```
localhost ~ # ps -aux | grep ssh
```

```
localhost ~ # ps -aux | grep ssh
root        1007  0.0  0.1   6852  5404 ?        Ss   Dec08   0:00 sshd: /usr/sbin/sshd -D -e [listener]
0 of 10-100 startups
root        2129  0.0  0.1   9604  7724 ?        Ss   Dec12   0:00 sshd: tech [priv]
tech        2132  0.0  0.1   9604  4976 ?        S    Dec12   0:00 sshd: tech@pts/1
root       19875  0.0  0.0 221932  1956 pts/1    S+   20:20   0:00 grep --colour=auto ssh
localhost ~ #
```

Служба ssh запущена, можно подключиться к ВМ с хост машины:

```
user@host:~$ ssh -l tech 10.100.10.23
```

Далее попробуем запустить **Xorg** - сервер оконной системы X Window server:

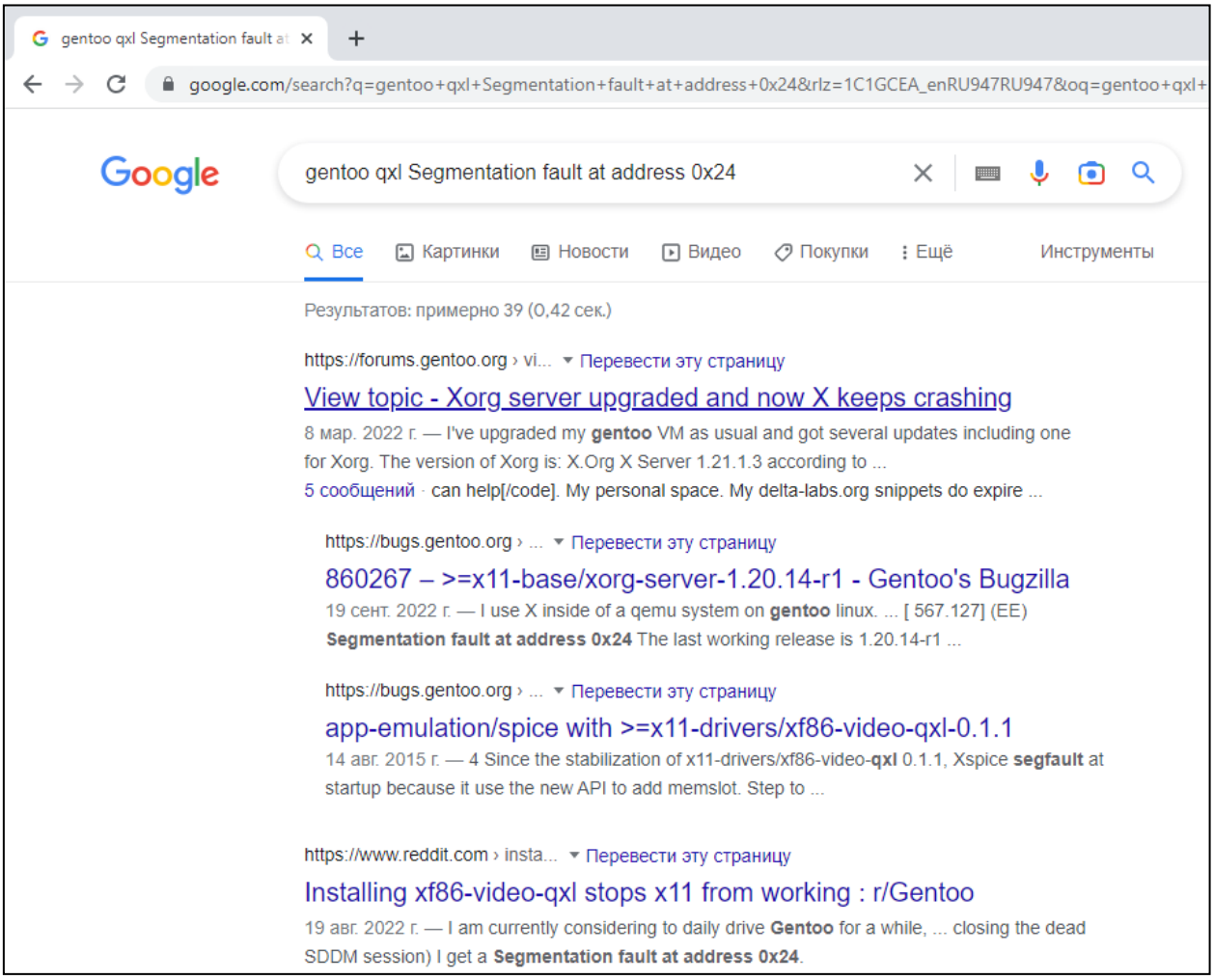
```
localhost ~ # X
```

```
localhost ~ # X

X.Org X Server 1.21.1.4
X Protocol Version 11, Revision 0
Current Operating System: Linux localhost 5.15.75-gentoo-x86_64 #1 SMP Tue Dec 6 15:53:46 -00 2022 x86_64
Kernel command line: BOOT_IMAGE=/boot/vmlinuz-5.15.75-gentoo-x86_64 root=UUID=1484fdd8-4f65-4dbd-8b4d-810
db8f037e2 ro init=/lib/systemd/systemd

Current version of pixman: 0.40.0
        Before reporting problems, check http://wiki.x.org
        to make sure that you have the latest version.
Markers: (--) probed, (**) from config file, (==) default setting,
        (++) from command line, (!!) notice, (II) informational,
        (WW) warning, (EE) error, (NI) not implemented, (??) unknown.
(==) Log file: "/var/log/Xorg.0.log", Time: Mon Dec 12 21:25:16 2022
(==) Using system config directory "/usr/share/X11/xorg.conf.d"
resizing surface0 to 16777216
memory space from 0x7f10810dd000 to 0x7f10840da000
memory space from 0x7f107c0dd000 to 0x7f10800dd000
(EE)
```

```
(EE) Backtrace:
(EE) 0: X (xorg_backtrace+0x5b) [0x55c754e096fb]
(EE) 1: X (0x55c754ccf000+0x13e3a5) [0x55c754e0d3a5]
(EE) 2: /lib64/libc.so.6 (0x7f10848b1000+0x37c70) [0x7f10848e8c70]
(EE) 3: X (xf86InitViewport+0x49) [0x55c754e246b9]
(EE) 4: X (InitOutput+0xb44) [0x55c754e2a734]
(EE) 5: X (0x55c754ccf000+0x76774) [0x55c754d45774]
(EE) 6: /lib64/libc.so.6 (0x7f10848b1000+0x2320a) [0x7f10848d420a]
(EE) 7: /lib64/libc.so.6 (__libc_start_main+0x7c) [0x7f10848d42bc]
(EE) 8: X (_start+0x21) [0x55c754d09ab1]
(EE)
(EE) Segmentation fault at address 0x24
(EE)
Fatal server error:
(EE) Caught signal 11 (Segmentation fault). Server aborting
(EE)
(EE)
Please consult the The X.Org Foundation support
         at http://wiki.x.org
 for help.
(EE) Please also check the log file at "/var/log/Xorg.0.log" for additional information.
(EE)
(EE) Server terminated with error (1). Closing log file.
Aborted (core dumped)
localhost ~ #
```

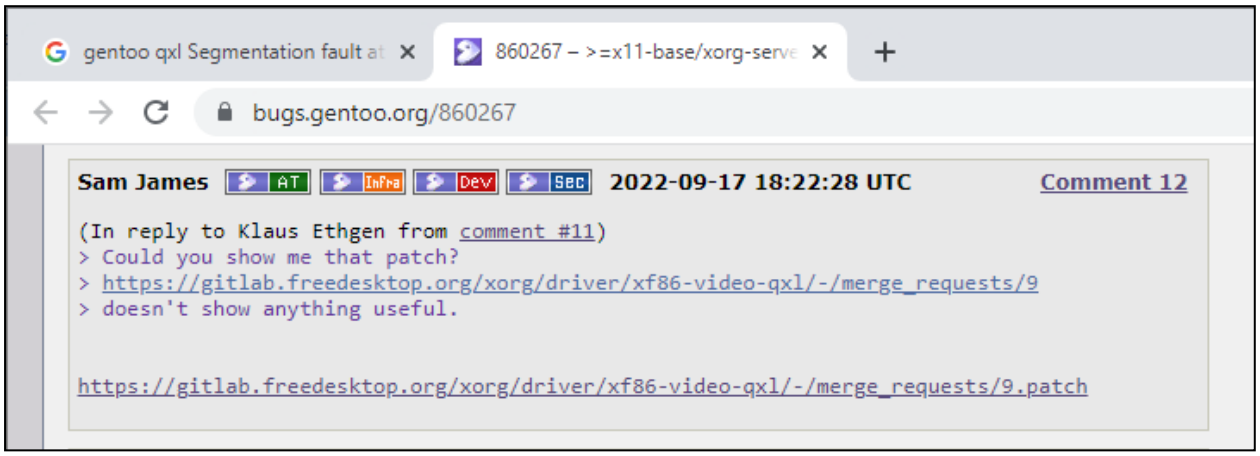
И получаем ошибку: **Segmentation fault at address 0x24**.

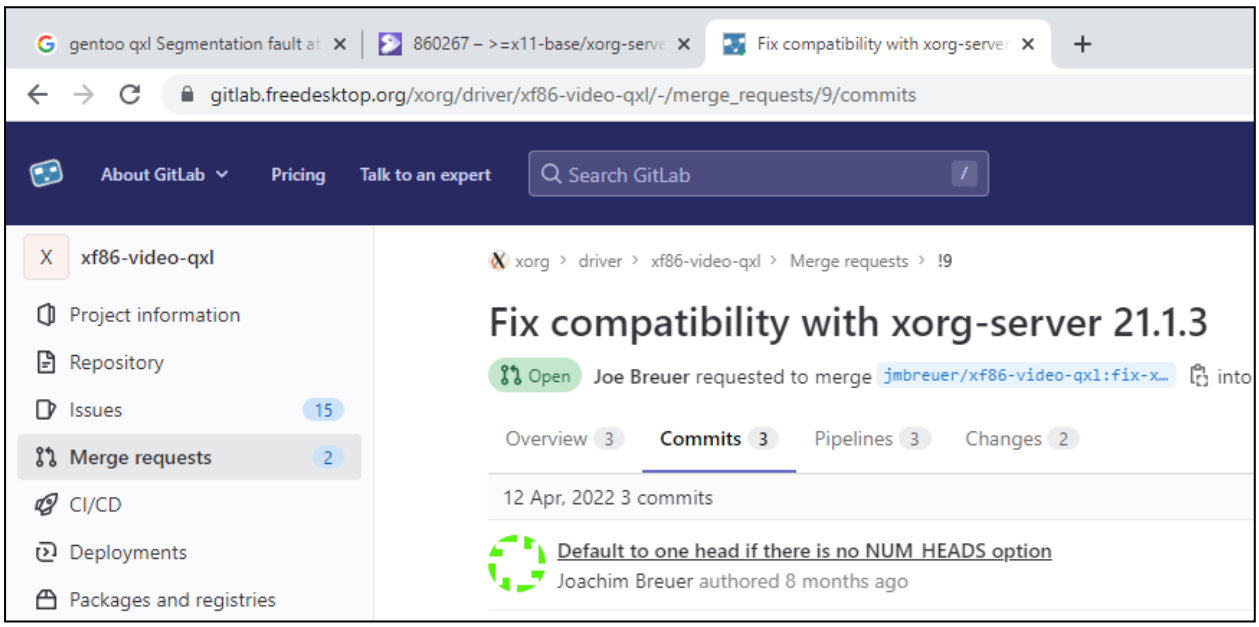
Копируем текст ошибки и идем искать в Интернет.



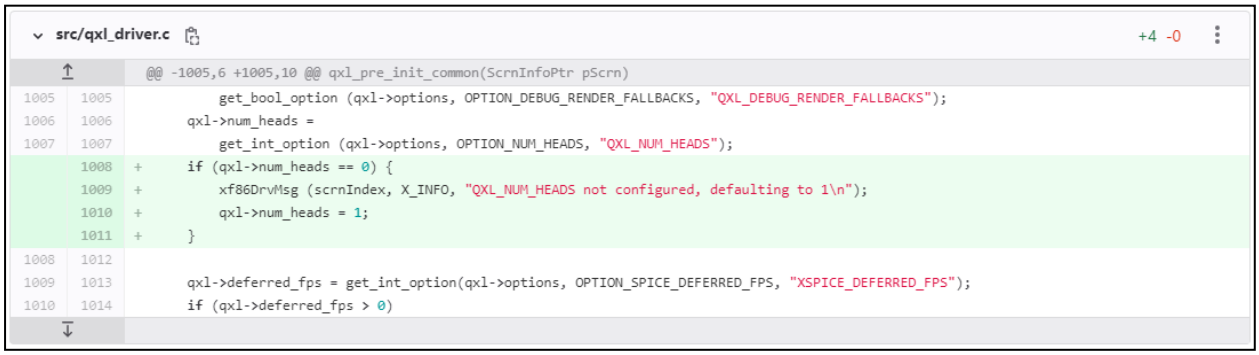
Переходим по второй ссылке: http://bugs.gentoo.org

Находим следующий комментарий:



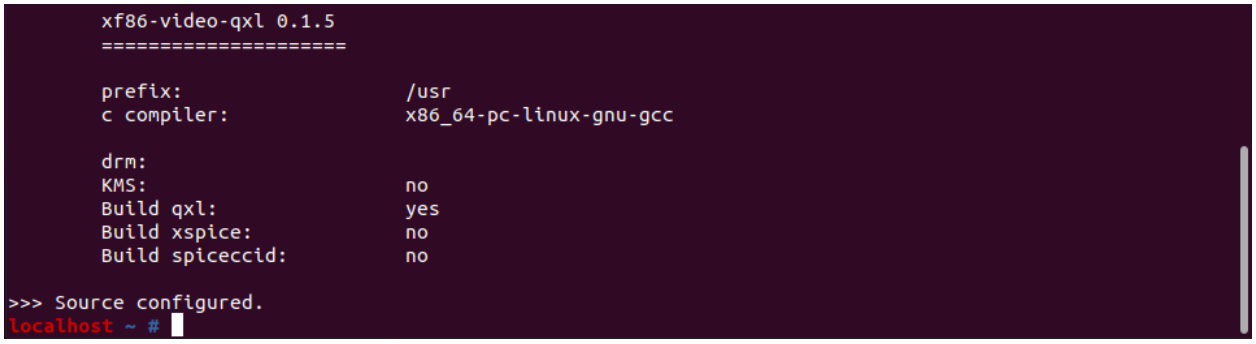


И код, который необходимо будет внести в файл **src/qxl_driver.c**:

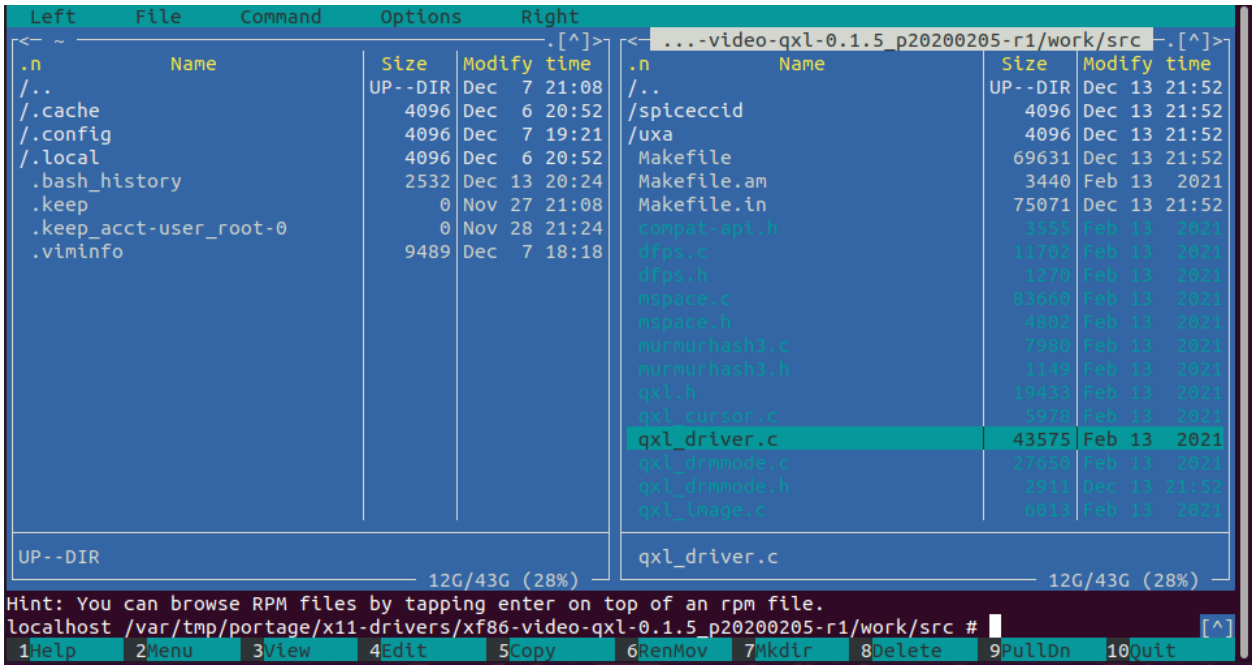


Далее приступаем к внесению изменений в драйвер **qxl**:

```
localhost ~ # ebuild /var/db/repos/gentoo/x11-drivers/xf86-video-qxl/xf86-video-qxl-0.1.5_p20200205-r1.ebuild configure
```

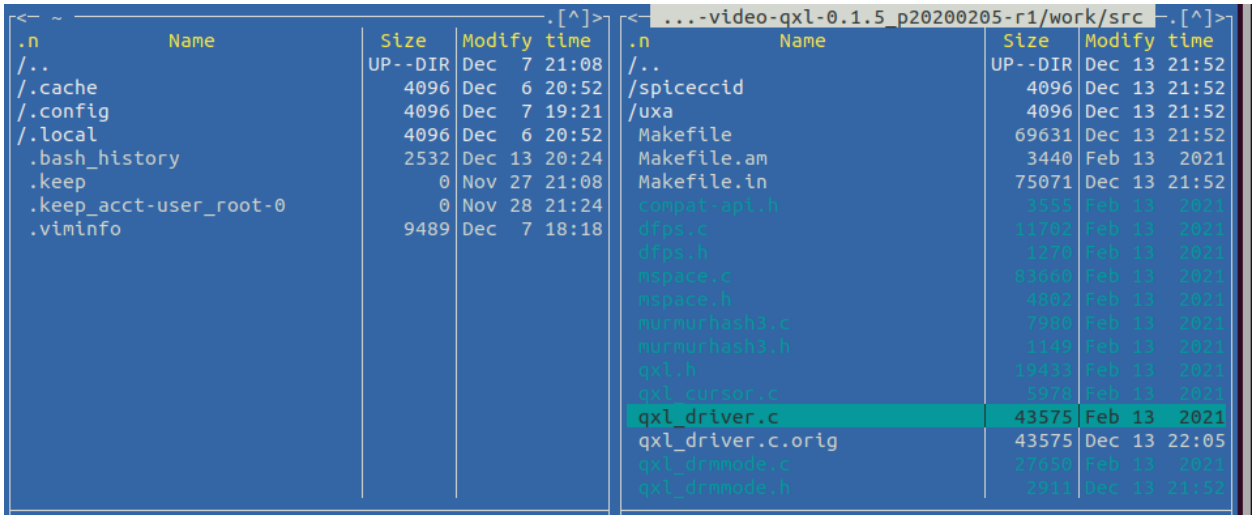


Далее запускаем **MC** (Midnight Commander) и переходим в директорию: **/var/tmp/portage/x11-drivers/xf86-video-qxl-0.1.5_p20200205-r1/work/src**



Сделаем копию данного файла:

```
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-
0.1.5_p20200205-r1/work/src # cp qxl_driver.c qxl_driver.c.orig
```



Открываем драйвер **qxl_driver.c** на редактирование:

```
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-
0.1.5_p20200205-r1/work/src # vim qxl_driver.c
```

В редакторе набираем **:1007** и вставляем после этой строки код:

```
    if (qxl->num_heads == 0) {
        xf86DrvMsg (scrnIndex, X_INFO, "QXL_NUM_HEADS not
configured, defaulting to 1\n");
        qxl->num_heads = 1;
    }
```

```
    qxl->enable_image_cache =
        get_bool_option (qxl->options, OPTION_ENABLE_IMAGE_CACHE, "QXL_ENABLE_IMAGE_CACHE");
    qxl->enable_fallback_cache =
        get_bool_option (qxl->options, OPTION_ENABLE_FALLBACK_CACHE, "QXL_ENABLE_FALLBACK_CACHE");
    qxl->enable_surfaces =
        get_bool_option (qxl->options, OPTION_ENABLE_SURFACES, "QXL_ENABLE_SURFACES");
    qxl->debug_render_fallbacks =
        get_bool_option (qxl->options, OPTION_DEBUG_RENDER_FALLBACKS, "QXL_DEBUG_RENDER_FALLBACKS");
    qxl->num_heads =
        get_int_option (qxl->options, OPTION_NUM_HEADS, "QXL_NUM_HEADS");
    if (qxl->num_heads == 0) {
        xf86DrvMsg (scrnIndex, X_INFO, "QXL_NUM_HEADS not configured, defaulting to 1\n");
        qxl->num_heads = 1;
    }

    qxl->deferred_fps = get_int_option(qxl->options, OPTION_SPICE_DEFERRED_FPS, "XSPICE_DEFERRED_FPS");
    if (qxl->deferred_fps > 0)
        xf86DrvMsg(scrnIndex, X_INFO, "Deferred FPS: %d\n", qxl->deferred_fps);
    else
        xf86DrvMsg(scrnIndex, X_INFO, "Deferred Frames: Disabled\n");

    xf86DrvMsg (scrnIndex, X_INFO, "Offscreen Surfaces: %s\n",
                qxl->enable_surfaces ? "Enabled" : "Disabled");
    xf86DrvMsg (scrnIndex, X_INFO, "Image Cache: %s\n",
                qxl->enable_image_cache ? "Enabled" : "Disabled");
    xf86DrvMsg (scrnIndex, X_INFO, "Fallback Cache: %s\n",
                qxl->enable_fallback_cache ? "Enabled" : "Disabled");

    return TRUE;
out:
-- INSERT --                                                    1012,1        65%
```

Далее переходим выше на одну директорию и сравниваем наши файлы с помощью утилиты **diff**:

```
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-
0.1.5_p20200205-r1/work # diff -u src/qxl_driver.c
src/qxl_driver.c.orig
```

```
localhost ~ # mc

localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-0.1.5_p20200205-r1/work # diff -u src/qxl_driver.c
src/qxl_driver.c.orig
--- src/qxl_driver.c    2022-12-13 22:25:45.608000000 -0000
+++ src/qxl_driver.c.orig       2022-12-13 22:05:28.176000000 -0000
@@ -1005,10 +1005,6 @@
         get_bool_option (qxl->options, OPTION_DEBUG_RENDER_FALLBACKS, "QXL_DEBUG_RENDER_FALLBACKS");
     qxl->num_heads =
         get_int_option (qxl->options, OPTION_NUM_HEADS, "QXL_NUM_HEADS");
-    if (qxl->num_heads == 0) {
-        xf86DrvMsg (scrnIndex, X_INFO, "QXL_NUM_HEADS not configured, defaulting to 1\n");
-        qxl->num_heads = 1;
-    }

     qxl->deferred_fps = get_int_option(qxl->options, OPTION_SPICE_DEFERRED_FPS, "XSPICE_DEFERRED_FPS");
     if (qxl->deferred_fps > 0)
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-0.1.5_p20200205-r1/work #
```

Так как нам необходимо добавить строки в оригинальный файл, поменяем их местами:

```
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-
0.1.5_p20200205-r1/work # diff -u src/qxl_driver.c.orig
src/qxl_driver.c
```

```
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-0.1.5_p20200205-r1/work # diff -u src/qxl_driver.c.
orig src/qxl_driver.c
--- src/qxl_driver.c.orig       2022-12-13 22:05:28.176000000 -0000
+++ src/qxl_driver.c    2022-12-13 22:25:45.608000000 -0000
@@ -1005,6 +1005,10 @@
         get_bool_option (qxl->options, OPTION_DEBUG_RENDER_FALLBACKS, "QXL_DEBUG_RENDER_FALLBACKS");
     qxl->num_heads =
         get_int_option (qxl->options, OPTION_NUM_HEADS, "QXL_NUM_HEADS");
+    if (qxl->num_heads == 0) {
+        xf86DrvMsg (scrnIndex, X_INFO, "QXL_NUM_HEADS not configured, defaulting to 1\n");
+        qxl->num_heads = 1;
+    }

     qxl->deferred_fps = get_int_option(qxl->options, OPTION_SPICE_DEFERRED_FPS, "XSPICE_DEFERRED_FPS");
     if (qxl->deferred_fps > 0)
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-0.1.5_p20200205-r1/work #
```

Результат сравнения перенаправим в отдельный файл:

```
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-
0.1.5_p20200205-r1/work # diff -u src/qxl_driver.c.orig
src/qxl_driver.c > ~/0001_qxl_head_fix.patch
```

Переходим в домашнюю директорию и открываем файл **0001_qxl_head_fix.patch** на редактирование:

```
localhost /var/tmp/portage/x11-drivers/xf86-video-qxl-
0.1.5_p20200205-r1/work # cd ~
localhost ~ # vim 0001_qxl_head_fix.patch
```

Вносим следующие изменения в первые две строки:

```
--- a/src/qxl_driver.c  2022-12-13 22:05:28.176000000 -0000
+++ b/src/qxl_driver.c  2022-12-13 22:25:45.608000000 -0000
@@ -1005,6 +1005,10 @@
         get_bool_option (qxl->options, OPTION_DEBUG_RENDER_FALLBACKS, "QXL_DEBUG_RENDER_FALLBACKS");
     qxl->num_heads =
         get_int_option (qxl->options, OPTION_NUM_HEADS, "QXL_NUM_HEADS");
+    if (qxl->num_heads == 0) {
+        xf86DrvMsg (scrnIndex, X_INFO, "QXL_NUM_HEADS not configured, defaulting to 1\n");
+        qxl->num_heads = 1;
+    }

     qxl->deferred_fps = get_int_option(qxl->options, OPTION_SPICE_DEFERRED_FPS, "XSPICE_DEFERRED_FPS");
     if (qxl->deferred_fps > 0)
~
```

Переходим в директорию **/etc/portage** и создаем в ней директорию **patches**:

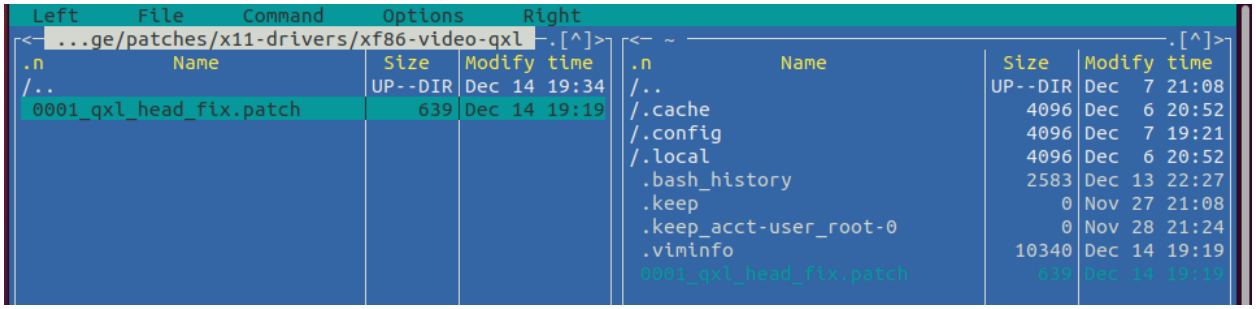
```
localhost /etc/portage # mkdir patches
```

```
  Left      File      Command      Options      Right
┌<─ /etc/portage ─────────────────────.[^]>┐┌<─ ~ ──────────────────────────────.[^]>┐
│.n              Name          │  Size │Modify time ││.n              Name          │  Size │Modify time │
│/..                           │UP--DIR│Dec 12 19:49││/..                           │UP--DIR│Dec  7 21:08│
│~make.profile                 │     82│Nov 28 20:50││/.cache                       │   4096│Dec  6 20:52│
│/package.accept_keywords      │   4096│Nov 27 21:30││/.config                      │   4096│Dec  7 19:21│
│/package.mask                 │   4096│Nov 27 21:30││/.local                       │   4096│Dec  6 20:52│
│/package.use                  │   4096│Dec 12 19:43││ .bash_history                │   2583│Dec 13 22:27│
│/patches                      │   4096│Dec 14 19:25││ .keep                        │      0│Nov 27 21:08│
│/profile                      │   4096│Nov 26 17:05││ .keep_acct-user_root-0       │      0│Nov 28 21:24│
│/savedconfig                  │   4096│Dec  4 20:44││ .viminfo                     │  10340│Dec 14 19:19│
│ make.conf                    │    811│Nov 28 20:54││ 0001_qxl_head_fix.patch      │    639│Dec 14 19:19│
```

Переходим в директорию **patches** и создаем в ней структуру директорий:

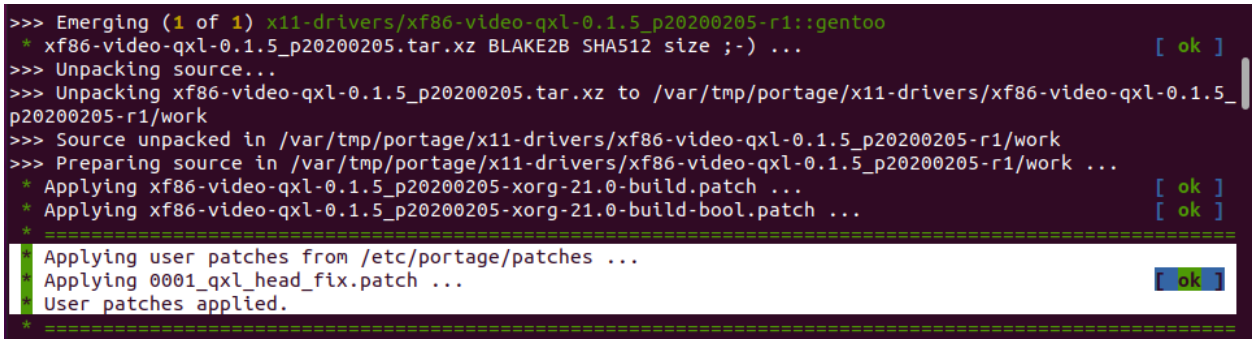
```
localhost /etc/portage/patches # mkdir -p x11-drivers/xf86-
video-qxl
```

Копируем наш патч в директорию **/etc/portage/patches/x11-drivers/xf86-video-qxl**:



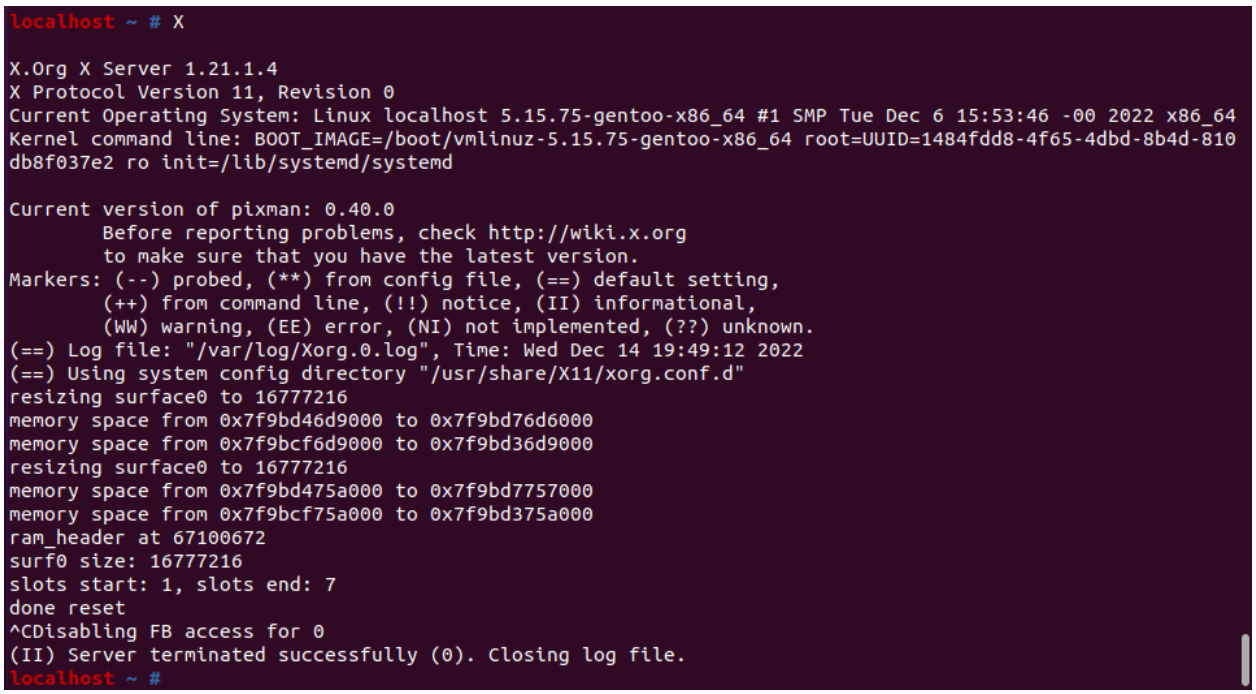
Выполним установку пакета **x11-drivers/xf86-video-qxl**:

```
localhost ~ # emerge x11-drivers/xf86-video-qxl
```



Видим, что наш патч применился.

Пробуем запустить **Xorg**:

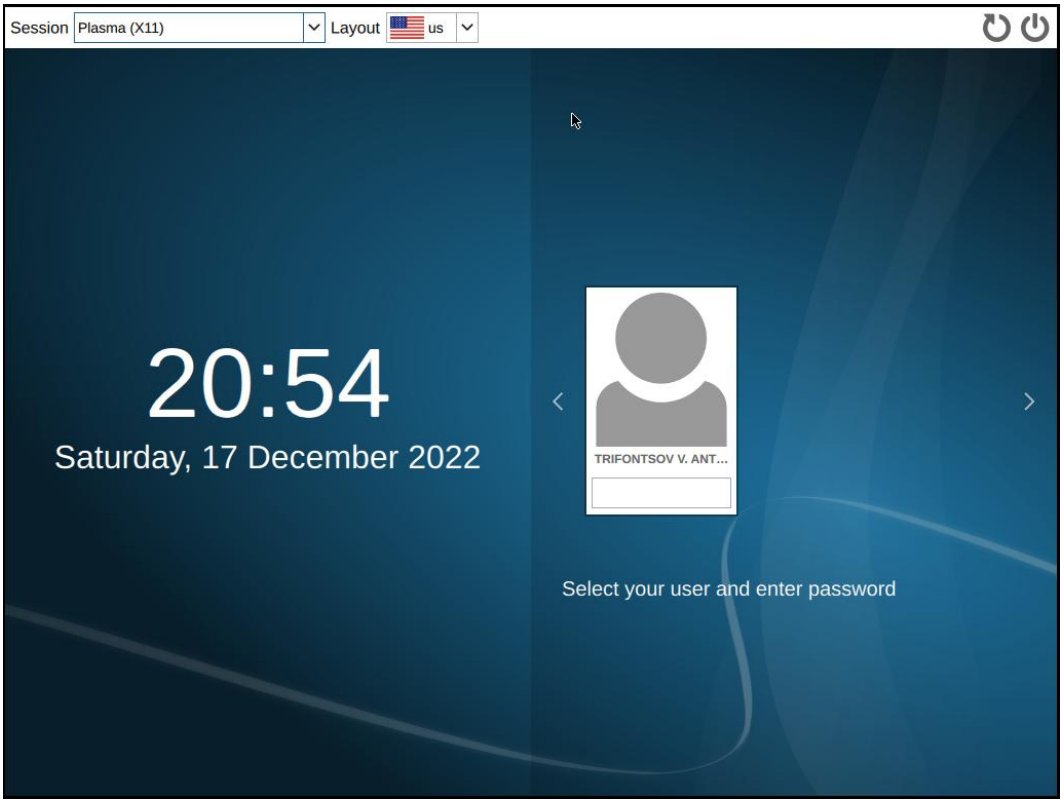


Видим, что команда выполнена без ошибок, сервер **Xorg** запустился. При этом экран ВМ станет черным.

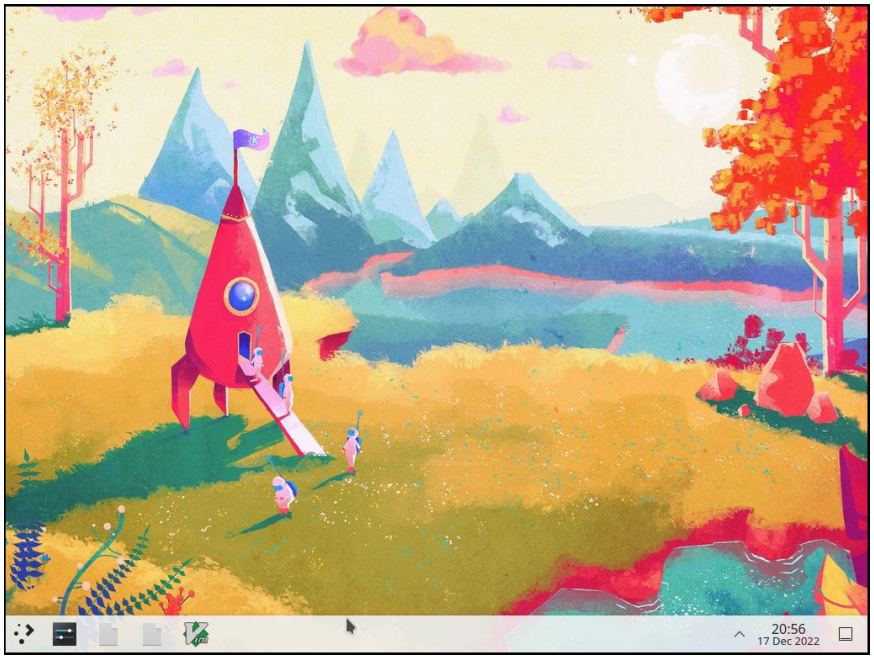
Запускаем **sddm**:

```
localhost ~ # systemctl start sddm
```

В результате выполнения команды, на экране ВМ увидим окно входа в операционную систему:



Обратите внимание, что в окне **Session** должно быть установлено значение **Plasma (X11)**. Вводим пароль учетной записи.



Далее необходимо установить русский язык в систему.

Останавливаем **sddm**:

```
localhost ~ # systemctl stop sddm
```

Для русской консоли необходимо установить следующий пакет:

```
localhost ~ # eix terminus
```

```
localhost ~ # eix terminus
* media-fonts/terminus-font
     Available versions:  4.49.1 {X a-like-o +center-tilde distinct-l +otf pcf-8bit +pcf-unicode +psf quo
te ru-dv +ru-g ru-i ru-k}
     Homepage:            http://terminus-font.sourceforge.net/
     Description:         A clean fixed font for the console and X11

localhost ~ #
```

```
localhost ~ # emerge -vp media-fonts/terminus-font
```

```
localhost ~ # emerge -vp media-fonts/terminus-font

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

Calculating dependencies... done!
[ebuild  N     ] x11-apps/bdftopcf-1.1-r1::gentoo  148 KiB
[ebuild  N     ] media-fonts/terminus-font-4.49.1::gentoo  USE="X center-tilde otf pcf-unicode psf ru-g -
a-like-o -distinct-l -pcf-8bit -quote -ru-dv -ru-i -ru-k" 634 KiB

Total: 2 packages (2 new), Size of downloads: 781 KiB

 * IMPORTANT: 3 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

localhost ~ #
```

Видим, что нам потребуются следующие ключи: **-ru-dv -ru-i -ru-k**

Вводим следующую команду:

```
localhost ~ # la –la /etc/portage/package.use/package.use
```

```
localhost ~ # ls -la /etc/portage/package.use/package.use
-rw-r--r-- 1 root root 22 Dec 12 19:43 /etc/portage/package.use/package.use
localhost ~ #
```

Добавим в файл следующую строку:

```
localhost ~ # vim /etc/portage/package.use/package.use

media-fonts/terminus-font ru-dv ru-i ru-k
```

```
net-misc/dhcp -server


media-fonts/terminus-font ru-dv ru-i ru-k
~
~
~
~
~
-- INSERT --                                                    4,42          All
```

Еще раз проверяем какие пакеты с какими ключами будут установлены:

```
localhost ~ # emerge -vp media-fonts/terminus-font
```

```
localhost ~ # emerge -vp media-fonts/terminus-font

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

Calculating dependencies... done!
[ebuild  N     ] x11-apps/bdftopcf-1.1-r1::gentoo  148 KiB
[ebuild  N     ] media-fonts/terminus-font-4.49.1::gentoo  USE="X center-tilde otf pcf-unicode psf ru-dv
ru-g ru-i ru-k -a-like-o -distinct-l -pcf-8bit -quote" 634 KiB

Total: 2 packages (2 new), Size of downloads: 781 KiB

 * IMPORTANT: 3 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

localhost ~ #
```

Видим, что наши ключи **-ru-dv -ru-i -ru-k** добавились.

Устанавливаем пакет:

```
localhost ~ # emerge media-fonts/terminus-font
```

```
>>> Installing (2 of 2) media-fonts/terminus-font-4.49.1::gentoo
 * The following fontconfig configuration files have been installed:
 *
 *   75-yes-terminus.conf
 *
 * Use `eselect fontconfig` to enable/disable them.
 * Updating global fontcache ...                                                    [ ok ]

>>> Recording media-fonts/terminus-font in "world" favorites file...

 * Messages for package media-fonts/terminus-font-4.49.1:

 * The following fontconfig configuration files have been installed:
 *
 *   75-yes-terminus.conf
 *
 * Use `eselect fontconfig` to enable/disable them.

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

 * IMPORTANT: 3 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

localhost ~ #
```

Проверим текущие параметры региональных настроек:

```
localhost ~ # locale
```

```
localhost ~ # locale
LANG=C.UTF8
LC_CTYPE="C.UTF8"
LC_NUMERIC="C.UTF8"
LC_TIME="C.UTF8"
LC_COLLATE="C.UTF8"
LC_MONETARY="C.UTF8"
LC_MESSAGES="C.UTF8"
LC_PAPER="C.UTF8"
LC_NAME="C.UTF8"
LC_ADDRESS="C.UTF8"
LC_TELEPHONE="C.UTF8"
LC_MEASUREMENT="C.UTF8"
LC_IDENTIFICATION="C.UTF8"
LC_ALL=
localhost ~ #
```

Изменим региональные настройки для России:

```
localhost ~ # eselect locale list ru_RU
localhost ~ # eselect locale set 639
localhost ~ # . /etc/profile
```

```
localhost ~ # eselect locale list | grep ru_RU
  [636] ru_RU
  [637] ru_RU.iso88595
  [638] ru_RU.koi8r
  [639] ru_RU.utf8
localhost ~ # eselect locale set 639
Setting LANG to ru_RU.utf8 ...
Run ". /etc/profile" to update the variable in your shell.
localhost ~ # . /etc/profile
```

```
localhost ~ # locale
LANG=ru_RU.utf8
LC_CTYPE="ru_RU.utf8"
LC_NUMERIC="ru_RU.utf8"
LC_TIME="ru_RU.utf8"
LC_COLLATE="ru_RU.utf8"
LC_MONETARY="ru_RU.utf8"
LC_MESSAGES="ru_RU.utf8"
LC_PAPER="ru_RU.utf8"
LC_NAME="ru_RU.utf8"
LC_ADDRESS="ru_RU.utf8"
LC_TELEPHONE="ru_RU.utf8"
LC_MEASUREMENT="ru_RU.utf8"
LC_IDENTIFICATION="ru_RU.utf8"
LC_ALL=
localhost ~ #
```

Видим, что настройки изменились.

Далее необходимо изменить временную зону:

```
localhost ~ # date
Сб 17 дек 2022 22:26:50 -00
localhost ~ #
```

Для этого создадим символическую ссылку на следующий файл:

```
localhost ~ # ln -sfv /usr/share/zoneinfo/Europe/Moscow
/etc/localtime
```

```
localhost ~ # date
Сб 17 дек 2022 22:34:46 -00
localhost ~ # ln -sfv /usr/share/zoneinfo/Europe/Moscow /etc/localtime
'/etc/localtime' -> '/usr/share/zoneinfo/Europe/Moscow'
```

Проверяем еще раз:

```
localhost ~ # date
Вс 18 дек 2022 01:34:56 MSK
localhost ~ #
```

Видим, что временная зона установлена по Москве.

Далее изменим название нашей машины:

```
localhost ~ # vim /etc/hostname
```

```
gentoo-pc
~
~
~
~
~
~
-- ВСТАВКА --                                    1,10          Весь
```

Сохраняем изменения и перезагружаем систему:

```
localhost ~ # reboot
```

```
This is gentoo-pc.unknown_domain (Linux x86_64 5.15.75-gentoo-x86_64) 01:48:27

gentoo-pc login: [    8.261197] input: ImExPS/2 Generic Explorer Mouse as /devices/platform/i8042/serio1/input/input3
tech
Password:
Last login: Sun Dec 18 00:25:41 MSK 2022 from 10.100.10.1 on pts/0
tech@gentoo-pc ~ $ sudo su -
******:
********** **** * *******: ** *** 18 00:25:51 MSK 2022 ** pts/0
gentoo-pc ~ #
```

Видим, что название поменялось, но не отображаются русские символы (вместо них квадратики), исправим этот недостаток.

Получим ip адрес и подключимся к ВМ с хост машины:

```
gentoo-pc ~ # ip a
gentoo-pc ~ # dhclient enp3s0
gentoo-pc ~ # ip a
```

```
gentoo-pc ~ # ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp3s0: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 52:54:00:85:9c:66 brd ff:ff:ff:ff:ff:ff
gentoo-pc ~ # dhclient enp3s0
Failed to set DNS configuration: Unit dbus-org.freedesktop.resolve1.service not found.
gentoo-pc ~ # ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp3s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 52:54:00:85:9c:66 brd ff:ff:ff:ff:ff:ff
    inet 10.100.10.56/26 brd 10.100.10.63 scope global enp3s0
       valid_lft forever preferred_lft forever
    inet6 fe80::5054:ff:fe85:9c66/64 scope link
       valid_lft forever preferred_lft forever
gentoo-pc ~ #
```

Создадим файл **/etc/vconsole.conf** со следующими параметрами:

```
gentoo-pc ~ # vim /etc/vconsole.conf

FONT=ter-u16b
```

```
FONT=ter-u16b
~
~
~
~
~
-- ВСТАВКА --                                                    1,14          Весь
```

Добавляем в автозагрузку службу **systemd-vconsole-setup**, запускаем её и смотрим статус:

```
gentoo-pc ~ # systemctl enable systemd-vconsole-setup
gentoo-pc ~ # systemctl start systemd-vconsole-setup
gentoo-pc ~ # systemctl status systemd-vconsole-setup
```

```
gentoo-pc ~ # systemctl enable systemd-vconsole-setup
The unit files have no installation config (WantedBy=, RequiredBy=, Also=,
Alias= settings in the [Install] section, and DefaultInstance= for template
units). This means they are not meant to be enabled using systemctl.

Possible reasons for having this kind of units are:
• A unit may be statically enabled by being symlinked from another unit's
  .wants/ or .requires/ directory.
• A unit's purpose may be to act as a helper for some other unit which has
  a requirement dependency on it.
• A unit may be started when needed via activation (socket, path, timer,
  D-Bus, udev, scripted systemctl call, ...).
• In case of template units, the unit is meant to be enabled with some
  instance name specified.
gentoo-pc ~ # systemctl start systemd-vconsole-setup
gentoo-pc ~ # systemctl status systemd-vconsole-setup
● systemd-vconsole-setup.service - Setup Virtual Console
     Loaded: loaded (/lib/systemd/system/systemd-vconsole-setup.service; static)
     Active: active (exited) since Sun 2022-12-18 02:16:15 MSK; 5s ago
       Docs: man:systemd-vconsole-setup.service(8)
             man:vconsole.conf(5)
    Process: 1118 ExecStart=/lib/systemd/systemd-vconsole-setup (code=exited, status=0/SUCCESS)
   Main PID: 1118 (code=exited, status=0/SUCCESS)
        CPU: 42ms

дек 18 02:16:15 gentoo-pc systemd[1]: Starting Setup Virtual Console...
дек 18 02:16:15 gentoo-pc systemd[1]: Finished Setup Virtual Console.
gentoo-pc ~ #
```

Переходим в ВМ:

```
tech@gentoo-pc ~ $ sudo su -
Пароль:
Последний вход в систему: Вс дек 18 01:59:26 MSK 2022 на pts/0
gentoo-pc ~ #
```

Видим, что изменения применились.

Проверим статус службы **NetworkManager**:

```
gentoo-pc ~ # systemctl status NetworkManager
```

```
gentoo-pc ~ # systemctl status NetworkManager
○ NetworkManager.service - Network Manager
     Loaded: loaded (/lib/systemd/system/NetworkManager.service; disabled; preset: disabled)
     Active: inactive (dead)
       Docs: man:NetworkManager(8)
gentoo-pc ~ #
```

Видим, что служба не запущена. Добавляем её в автозагрузку и запускаем:

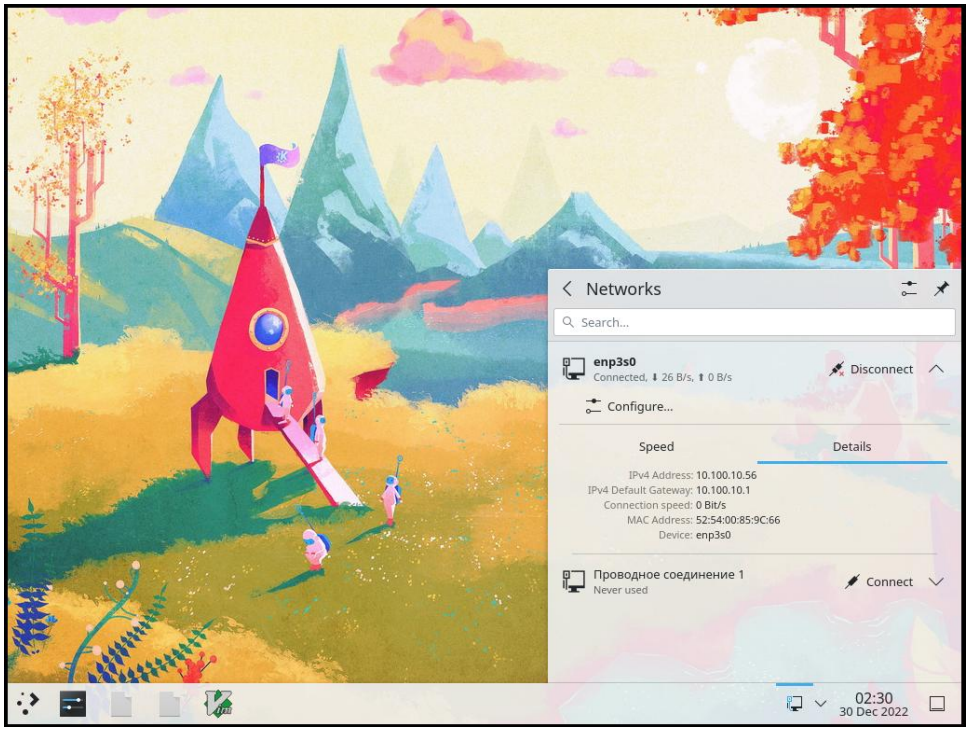
```
gentoo-pc ~ # systemctl enable NetworkManager
gentoo-pc ~ # systemctl start NetworkManager
```

```
gentoo-pc ~ # systemctl enable NetworkManager
Created symlink /etc/systemd/system/multi-user.target.wants/NetworkManager.service → /lib/systemd/system/
NetworkManager.service.
Created symlink /etc/systemd/system/dbus-org.freedesktop.nm-dispatcher.service → /lib/systemd/system/Netw
orkManager-dispatcher.service.
Created symlink /etc/systemd/system/network-online.target.wants/NetworkManager-wait-online.service → /lib
/systemd/system/NetworkManager-wait-online.service.
gentoo-pc ~ # systemctl start NetworkManager
gentoo-pc ~ #
```

Запускаем **sddm** и добавляем его в автозагрузку:

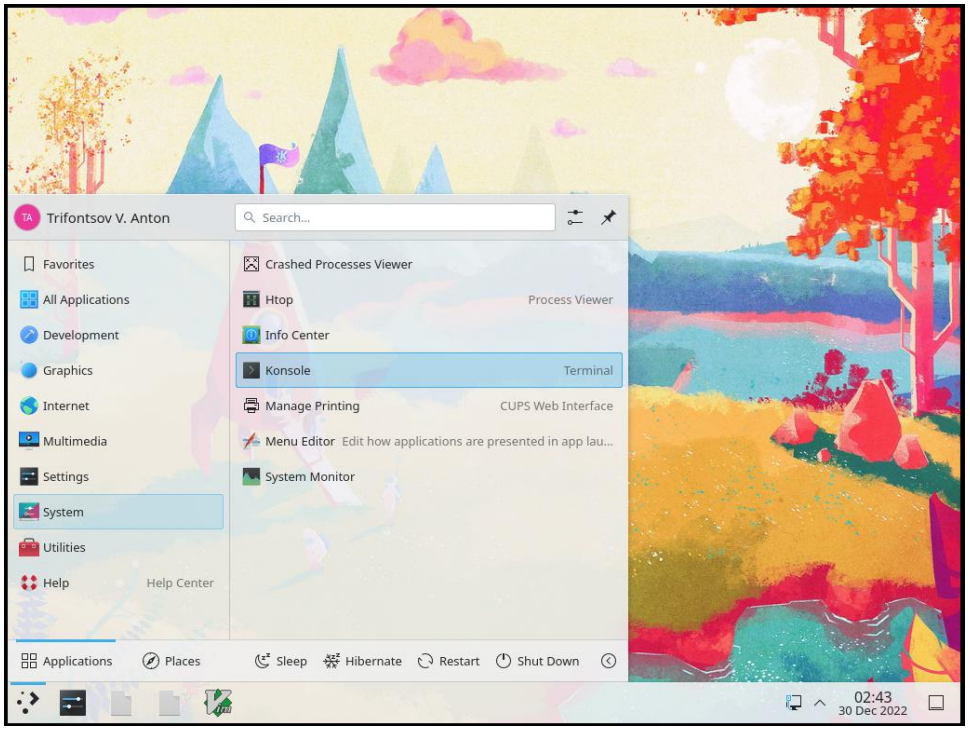
```
gentoo-pc ~ # systemctl start sddm
gentoo-pc ~ # systemctl enable sddm
```

Вводим пароль от учетной записи в окне входа.



Видим, что у нас появилась сеть.

Запускаем консоль терминала.



В консоли терминала выполним команду **uname -a**:

```
gentoo-pc ~ # uname -a
```

```
gentoo-pc ~ # uname -a
Linux gentoo-pc 5.15.75-gentoo-x86_64 #1 SMP Tue Dec 6 15:53:46 -00 2022 x86_64 Intel Core i7 9xx (Nehalem Core i7, IBRS upd
ate) GenuineIntel GNU/Linux
gentoo-pc ~ #
```

Установим утилиту для создания снимков экрана – **spectacle**:

```
gentoo-pc ~ # eix spectacle
gentoo-pc ~ # emerge -vp spectacle
gentoo-pc ~ # emerge spectacle
```

```
tech@gentoo-pc ~ $ sudo su -
Password:
Last login: Sun Dec 18 02:17:58 MSK 2022 on tty1
gentoo-pc ~ # eix spectacle
* kde-apps/spectacle
     Доступные версии:      (5) 22.04.3^t ~22.08.3^t
       {+annotate debug +handbook share test}
     Домашняя страница:     https://apps.kde.org/spectacle/
     Описание:              Screenshot capture utility

gentoo-pc ~ # emerge -vp spectacle
 * Last emerge --sync was Пн 28 ноя 2022 23:10:01.

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

Calculating dependencies... done!
[ebuild  N     ] media-libs/kcolorpicker-0.1.6::gentoo  USE="-test" 12 KiB
[ebuild  N     ] media-libs/kimageannotator-0.5.3::gentoo  USE="-test" 215 KiB
[ebuild  N     ] kde-apps/spectacle-22.04.3:5::gentoo  USE="annotate handbook -debug -share -test" 1 234 KiB

Total: 3 packages (3 new), Size of downloads: 1 461 KiB

 * IMPORTANT: 3 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.

gentoo-pc ~ # emerge spectacle
```

Установим файловый менеджер **Dolphin**, используемый в среде рабочего стола KDE:

```
gentoo-pc ~ # eix dolphin
gentoo-pc ~ # emerge -vp kde-apps/dolphin
gentoo-pc ~ # emerge kde-apps/dolphin
```

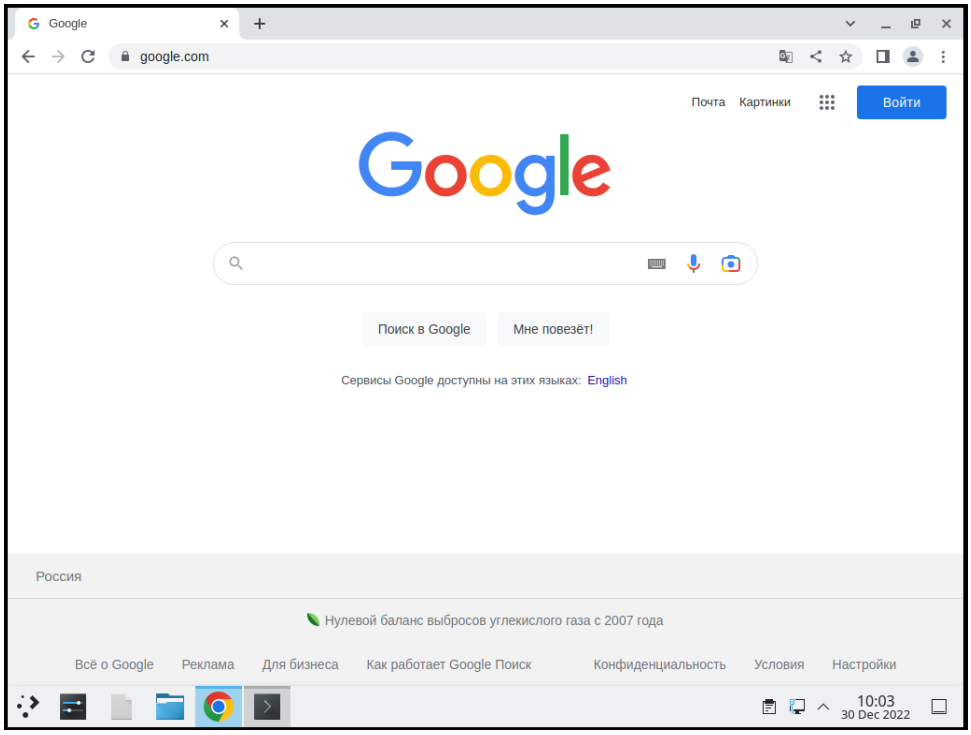
После установки **Dolphin**, нам предлагают установить дополнительные пакеты, в частности архиватор **ark:5**. Устанавливаем его:

```
gentoo-pc ~ # emerge kde-apps/ark:5
```

```
 * Messages for package kde-apps/dolphin-22.04.3:

 * Install additional packages for optional runtime features:
 *   kde-apps/ark:5 for compress/extract and other actions
 *   kde-apps/kleopatra:5 for crypto actions
 *   kde-apps/ffmpegthumbs:5 for video file thumbnails
 *   kde-apps/thumbnailers:5 for graphics file thumbnails

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

 * IMPORTANT: 3 news items need reading for repository 'gentoo'.
 * Use eselect news read to view new items.
```

Установим браузер, например, **Google Chrome**:

```
gentoo-pc ~ # eix google
gentoo-pc ~ # emerge www-client/google-chrome
```



Установим офисный пакет **LibreOffice**:

```
gentoo-pc ~ # eix libreoffice
gentoo-pc ~ # emerge app-office/libreoffice-bin
```