

Лабораторная работа №1

Основы информационной безопасности

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Информация

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Создание презентации

- Pandoc: преобразователь текстовых файлов
- Сайт: <https://pandoc.org/>
- Репозиторий: <https://github.com/jgm/pandoc>

- Использование LaTeX
- Пакет для презентации: beamer
- Тема оформления: **metropolis**

```
slide_level: 2  
aspectratio: 169  
section-titles: true  
theme: metropolis
```

- Используется фреймворк `reveal.js`
- Используется тема `beige`

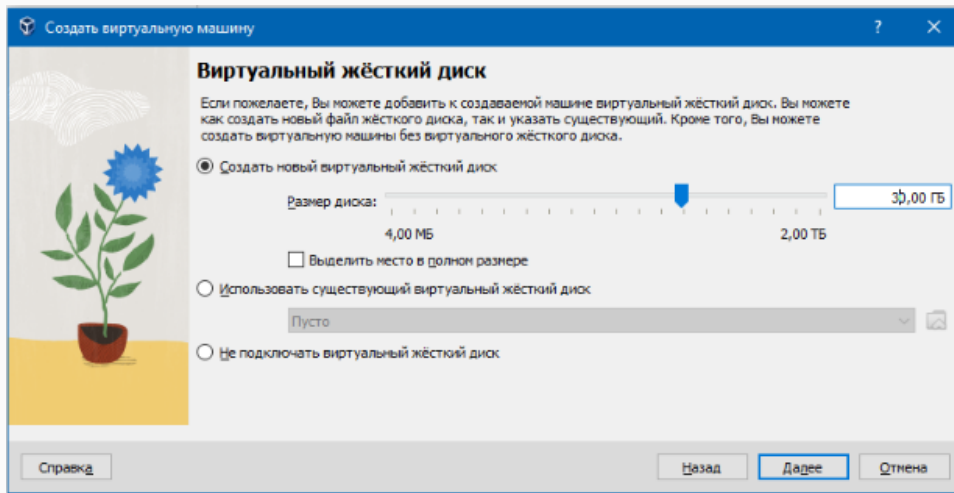
- Тема задаётся в файле **Makefile**

```
REVEALJS_THEME = beige
```

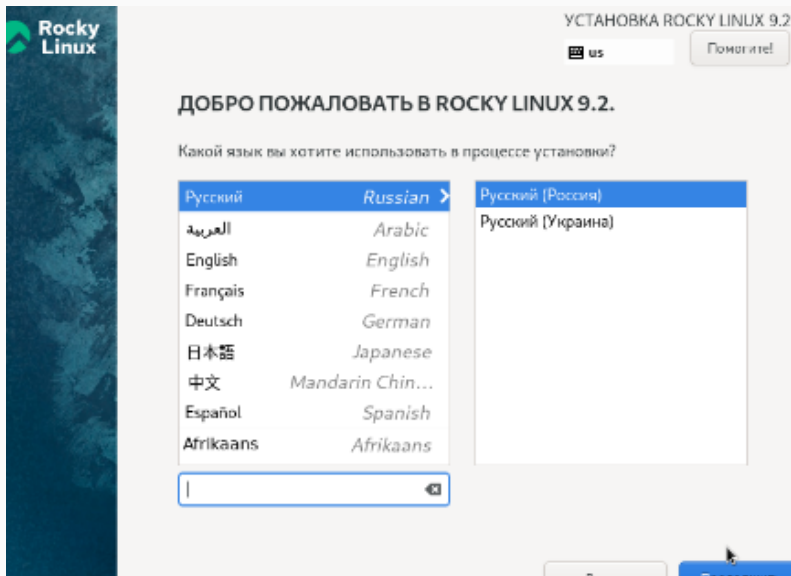
Элементы презентации

- приобретение практических навыков установки операционной системы на виртуальную машину
- настройки минимально необходимых для дальнейшей работы сервисов

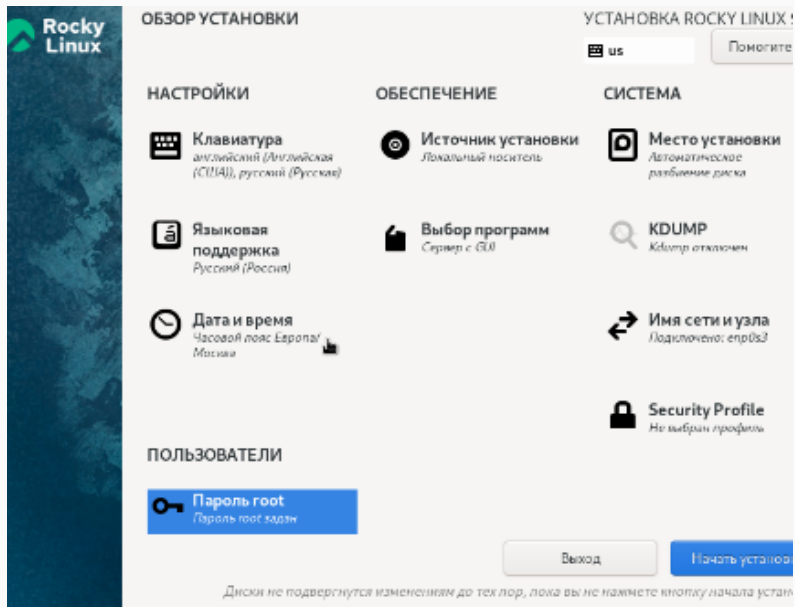
1. Создаю виртуальную машину и задаю конфигурацию жесткого диска



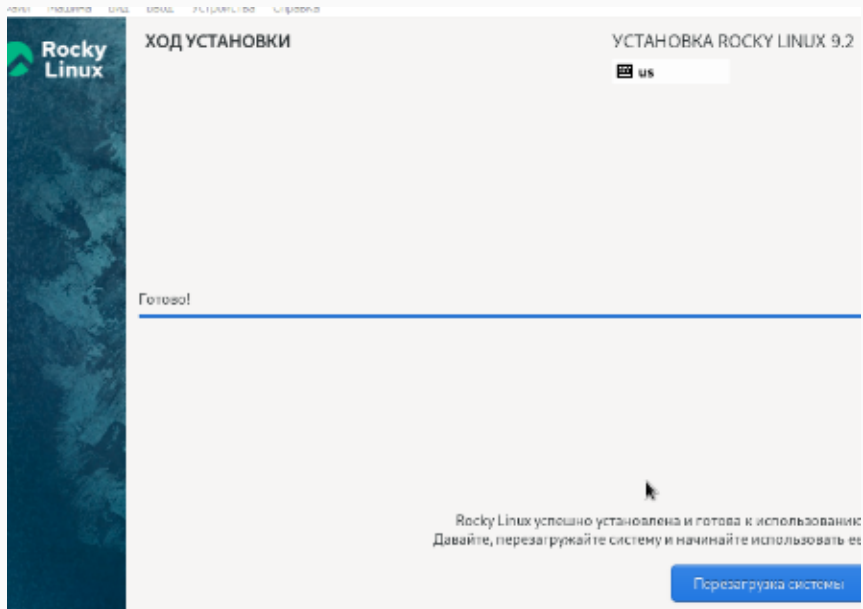
2. Добавляю новый привод оптического диска и выбираю образ. Запускаю виртуальную машину и начинаю ее настройку с языка для интерфейса



3. Указываю параметры установки

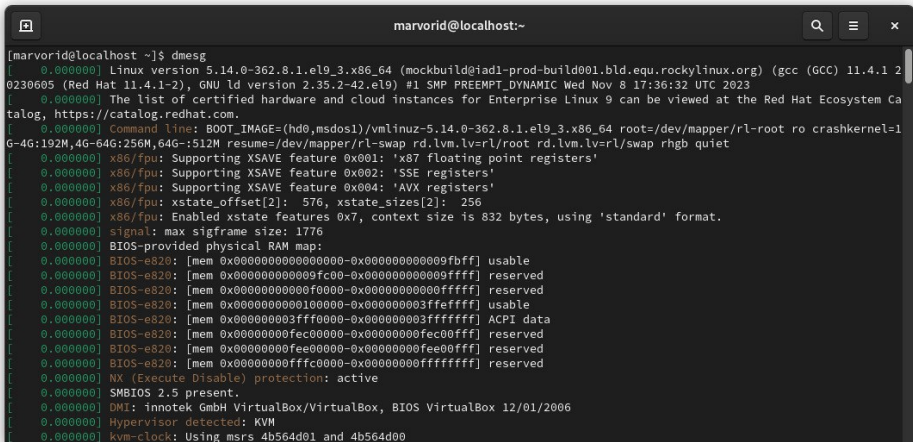


4. Перехожу к этапу установки и дожидаясь его завершения



5. Загружаю с жесткого диска установленную систему и перехожу к выполнению задания.

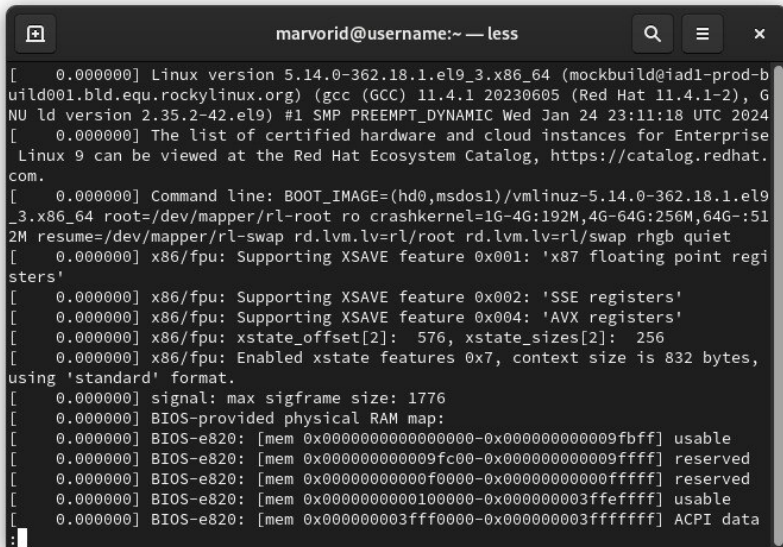
Ввожу команду dmesg

A terminal window titled 'marvorid@localhost:~' with search, menu, and close buttons in the title bar. The terminal shows the output of the 'dmesg' command. The output includes Linux version information (5.14.0-362.8.1.el9_3.x86_64), the list of certified hardware and cloud instances for Enterprise Linux 9, the command line used for booting, and various hardware and system initialization messages such as x86/fpu support for XSAVE features, BIOS-provided physical RAM map, and SMBIOS 2.5 present.

```
[marvorid@localhost ~]$ dmesg
[ 0.000000] Linux version 5.14.0-362.8.1.el9_3.x86_64 (mockbuild@iad1-prod-build001.bld.equ.rockylinux.org) (gcc (GCC) 11.4.1 2
0230605 (Red Hat 11.4.1-2), GNU ld version 2.35.2-42.el9) #1 SMP PREEMPT_DYNAMIC Wed Nov 8 17:36:32 UTC 2023
[ 0.000000] The list of certified hardware and cloud instances for Enterprise Linux 9 can be viewed at the Red Hat Ecosystem Ca
talog, https://catalog.redhat.com.
[ 0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-5.14.0-362.8.1.el9_3.x86_64 root=/dev/mapper/rl-root ro crashkernel=1
G-4G:192M,4G-64G:256M,64G--:512M resume=/dev/mapper/rl-swap rd.lvm.lv=rl/root rd.lvm.lv=rl/swap rhgb quiet
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[ 0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[ 0.000000] x86/fpu: xstate_offset[2]: 576, xstate_sizes[2]: 256
[ 0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes, using 'standard' format.
[ 0.000000] signal: max sigframe size: 1776
[ 0.000000] BIOS-provided physical RAM map:
[ 0.000000] BIOS-e820: [mem 0x0000000000000000-0x000000000009fbff] usable
[ 0.000000] BIOS-e820: [mem 0x000000000009fc00-0x000000000009ffff] reserved
[ 0.000000] BIOS-e820: [mem 0x00000000000f0000-0x00000000000fffff] reserved
[ 0.000000] BIOS-e820: [mem 0x0000000000100000-0x00000000003fffff] usable
[ 0.000000] BIOS-e820: [mem 0x0000000003fff0000-0x0000000003ffffff] ACPI data
[ 0.000000] BIOS-e820: [mem 0x00000000fec00000-0x00000000fec00fff] reserved
[ 0.000000] BIOS-e820: [mem 0x00000000fee00000-0x00000000fee00fff] reserved
[ 0.000000] BIOS-e820: [mem 0x00000000fffc0000-0x00000000ffffff] reserved
[ 0.000000] NX (Execute Disable) protection: active
[ 0.000000] SMBIOS 2.5 present.
[ 0.000000] DMI: innotek GmbH VirtualBox/VirtualBox, BIOS VirtualBox 12/01/2006
[ 0.000000] Hypervisor detected: KVM
[ 0.000000] kvm-clock: Using msrs 4b564d01 and 4b564d00
```


Рис. 5: команда dmesg

6. Вводим команду dmesg | less

A terminal window titled 'marvorid@username:~ — less' displays the output of the 'dmesg' command. The output is paginated by the 'less' command. The visible text includes kernel version information (5.14.0-362.18.1.el9_3.x86_64), hardware details, and BIOS memory map information. The terminal has a dark background with light-colored text. The window title bar shows the user's name and the command being run. The 'less' command is indicated by the title and the vertical scrollbar on the right.

```
marvorid@username:~ — less
[    0.000000] Linux version 5.14.0-362.18.1.el9_3.x86_64 (mockbuild@iad1-prod-b
uild001.bld.equ.rockylinux.org) (gcc (GCC) 11.4.1 20230605 (Red Hat 11.4.1-2), G
NU ld version 2.35.2-42.el9) #1 SMP PREEMPT_DYNAMIC Wed Jan 24 23:11:18 UTC 2024
[    0.000000] The list of certified hardware and cloud instances for Enterprise
Linux 9 can be viewed at the Red Hat Ecosystem Catalog, https://catalog.redhat.com.
[    0.000000] Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-5.14.0-362.18.1.el9
_3.x86_64 root=/dev/mapper/rl-root ro crashkernel=1G-4G:192M,4G-64G:256M,64G-:51
2M resume=/dev/mapper/rl-swap rd.lvm.lv=rl/root rd.lvm.lv=rl/swap rhgb quiet
[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point regi
sters'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[    0.000000] x86/fpu: xstate_offset[2]: 576, xstate_sizes[2]: 256
[    0.000000] x86/fpu: Enabled xstate features 0x7, context size is 832 bytes,
using 'standard' format.
[    0.000000] signal: max sigframe size: 1776
[    0.000000] BIOS-provided physical RAM map:
[    0.000000] BIOS-e820: [mem 0x0000000000000000-0x00000000000009fbff] usable
[    0.000000] BIOS-e820: [mem 0x00000000000009fc00-0x00000000000009ffff] reserved
[    0.000000] BIOS-e820: [mem 0x0000000000000f0000-0x0000000000000fffff] reserved
[    0.000000] BIOS-e820: [mem 0x000000000000100000-0x0000000000003fffff] usable
[    0.000000] BIOS-e820: [mem 0x0000000000003fff0000-0x0000000000003fffffff] ACPI data
:
```

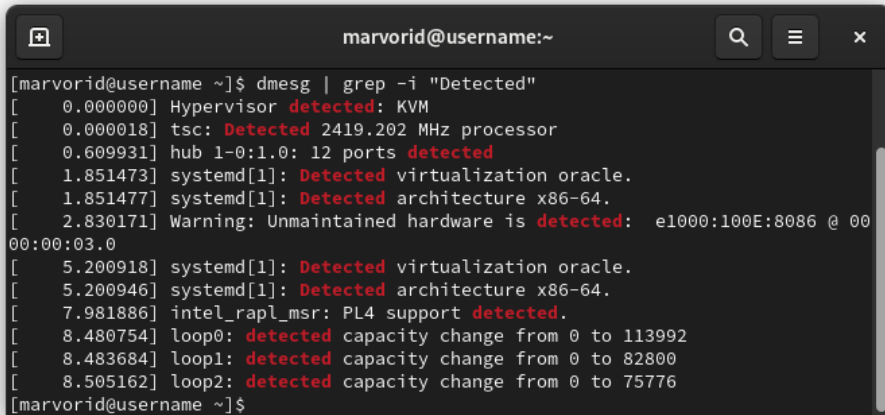
7. Узнаем версию ядра Linux (Linux version).



```
marvorid@username:~  
[marvorid@username ~]$ dmesg | grep -i "Linux version"  
[    0.000000] Linux version 5.14.0-362.18.1.el9_3.x86_64 (mockbuild@iad1-prod-build001.bld.equ.rockylinux.org) (gcc (GCC) 11.4.1 20230605 (Red Hat 11.4.1-2), GNU ld version 2.35.2-42.el9) #1 SMP PREEMPT_DYNAMIC Wed Jan 24 23:11:18 UTC 2024  
[marvorid@username ~]$
```

Рис. 7: команда dmesg

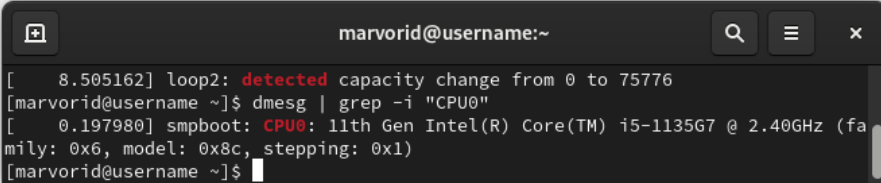
8. Узнаем частоту процессора (Detected Mhz processor)



```
marvorid@username:~  
[marvorid@username ~]$ dmesg | grep -i "Detected"  
[ 0.000000] Hypervisor detected: KVM  
[ 0.000018] tsc: Detected 2419.202 MHz processor  
[ 0.609931] hub 1-0:1.0: 12 ports detected  
[ 1.851473] systemd[1]: Detected virtualization oracle.  
[ 1.851477] systemd[1]: Detected architecture x86-64.  
[ 2.830171] Warning: Unmaintained hardware is detected: e1000:100E:8086 @ 00  
00:00:03.0  
[ 5.200918] systemd[1]: Detected virtualization oracle.  
[ 5.200946] systemd[1]: Detected architecture x86-64.  
[ 7.981886] intel_rapl_msr: PL4 support detected.  
[ 8.480754] loop0: detected capacity change from 0 to 113992  
[ 8.483684] loop1: detected capacity change from 0 to 82800  
[ 8.505162] loop2: detected capacity change from 0 to 75776  
[marvorid@username ~]$
```

Рис. 8: команда dmesg

9. Модель процессора (CPU0)

A terminal window with a dark background. The title bar shows 'marvorid@username:~' and standard window controls. The terminal displays kernel messages from dmesg, with 'CPU0' highlighted in red. The output shows a capacity change and then the CPU model: 11th Gen Intel(R) Core(TM) i5-1135G7.

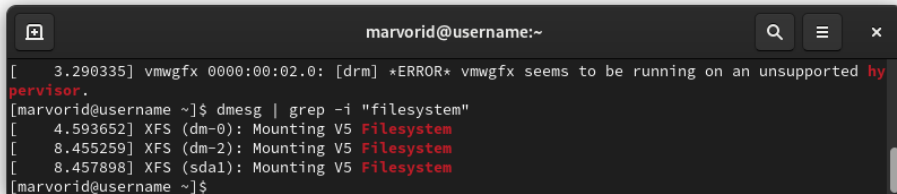
```
marvorid@username:~  
[ 8.505162] loop2: detected capacity change from 0 to 75776  
[marvorid@username ~]$ dmesg | grep -i "CPU0"  
[ 0.197980] smpboot: CPU0: 11th Gen Intel(R) Core(TM) i5-1135G7 @ 2.40GHz (family: 0x6, model: 0x8c, stepping: 0x1)  
[marvorid@username ~]$
```

Рис. 9: команда dmesg

10. Объем доступной оперативной памяти (Memory available).

```
marvorid@username:~  
[marvorid@username ~]$ dmesg | grep -i "Memory"  
[ 0.001867] ACPI: Reserving FACP table memory at [mem 0x3fff00f0-0x3fff01e3]  
[ 0.001868] ACPI: Reserving DSDT table memory at [mem 0x3fff0470-0x3fff2794]  
[ 0.001869] ACPI: Reserving FACS table memory at [mem 0x3fff0200-0x3fff023f]  
[ 0.001869] ACPI: Reserving FACS table memory at [mem 0x3fff0200-0x3fff023f]  
[ 0.001870] ACPI: Reserving APIC table memory at [mem 0x3fff0240-0x3fff0293]  
[ 0.001871] ACPI: Reserving SSDT table memory at [mem 0x3fff02a0-0x3fff046b]  
[ 0.002180] Reserving 192MB of memory at 592MB for crashkernel (System RAM: 1023MB)  
[ 0.002196] Early memory node ranges  
[ 0.003233] PM: hibernation: Registered nosave memory: [mem 0x00000000-0x00000fff]  
[ 0.003235] PM: hibernation: Registered nosave memory: [mem 0x0009f000-0x0009ffff]  
[ 0.003235] PM: hibernation: Registered nosave memory: [mem 0x000a0000-0x000effff]  
[ 0.003236] PM: hibernation: Registered nosave memory: [mem 0x000f0000-0x000fffff]  
[ 0.021097] Memory: 260860K/1048120K available (16384K kernel code, 5596K rwddata, 11460K rodat  
a, 3824K init, 18412K bss, 334344K reserved, 0K cma-reserved)  
[ 0.091474] Freeing SMP alternatives memory: 36K  
[ 0.200772] x86/mm: Memory block size: 128MB  
[ 0.551332] Non-volatile memory driver v1.3  
[ 1.465721] Freeing initrd memory: 55140K  
[ 1.761252] Freeing unused decrypted memory: 2036K  
[ 1.762129] Freeing unused kernel image (initmem) memory: 3824K  
[ 1.763401] Freeing unused kernel image (rodata/data gap) memory: 828K  
[ 3.290381] vmwgfx 0000:00:02.0: [drm] Legacy memory limits: VRAM = 16384 kB, FIFO = 2048 kB,  
surface = 507904 kB  
[ 3.290385] vmwgfx 0000:00:02.0: [drm] Maximum display memory size is 16384 kiB  
[marvorid@username ~]$
```

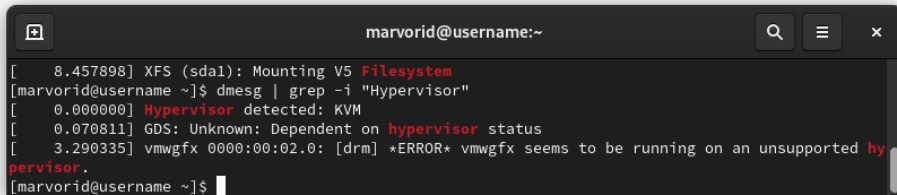
11. Тип обнаруженного гипервизора (Hypervisor detected).



```
marvorid@username:~  
[ 3.290335] vmwgfx 0000:00:02.0: [drm] *ERROR* vmwgfx seems to be running on an unsupported hypervisor.  
[marvorid@username ~]$ dmesg | grep -i "filesystem"  
[ 4.593652] XFS (dm-0): Mounting V5 Filesystem  
[ 8.455259] XFS (dm-2): Mounting V5 Filesystem  
[ 8.457898] XFS (sda1): Mounting V5 Filesystem  
[marvorid@username ~]$
```

Рис. 11: команда dmesg

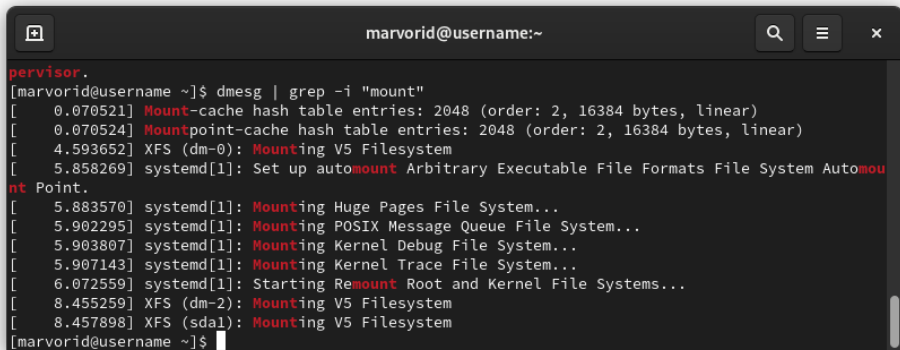
12. Тип файловой системы корневого раздела



```
marvolid@username:~  
[ 8.457898] XFS (sda1): Mounting V5 Filesystem  
[marvolid@username ~]$ dmesg | grep -i "Hypervisor"  
[ 0.000000] Hypervisor detected: KVM  
[ 0.070811] GDS: Unknown: Dependent on hypervisor status  
[ 3.290335] vmwgfx 0000:00:02.0: [drm] *ERROR* vmwgfx seems to be running on an unsupported hypervisor.  
[marvolid@username ~]$
```

Рис. 12: команда dmesg

13. Последовательность монтирования файловых систем.



```
marvorid@username:~  
pervisor.  
[marvorid@username ~]$ dmesg | grep -i "mount"  
[ 0.070521] Mount-cache hash table entries: 2048 (order: 2, 16384 bytes, linear)  
[ 0.070524] Mountpoint-cache hash table entries: 2048 (order: 2, 16384 bytes, linear)  
[ 4.593652] XFS (dm-0): Mounting V5 Filesystem  
[ 5.858269] systemd[1]: Set up automount Arbitrary Executable File Formats File System Automount Point.  
[ 5.883570] systemd[1]: Mounting Huge Pages File System...  
[ 5.902295] systemd[1]: Mounting POSIX Message Queue File System...  
[ 5.903807] systemd[1]: Mounting Kernel Debug File System...  
[ 5.907143] systemd[1]: Mounting Kernel Trace File System...  
[ 6.072559] systemd[1]: Starting Remount Root and Kernel File Systems...  
[ 8.455259] XFS (dm-2): Mounting V5 Filesystem  
[ 8.457898] XFS (sda1): Mounting V5 Filesystem  
[marvorid@username ~]$
```

Рис. 13: команда dmesg

- Мы приобрели практические навыки установки операционной системы на виртуальную машину.

- Запоминается последняя фраза. © Штирлиц

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