
marp: true
title: Marp
paginate: true
backgroundColor: grey

Лабораторная работа №1

Установка и конфигурация операционной системы на виртуальную машину

дисциплина: Информационная безопасность

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Группа: НПИбд-01-21

Цель работы.


Целью данной работы является приобретение практических навыков установки операционной системы на виртуальную машину, настройки минимально необходимых для дальнейшей работы сервисов.

Задачи.

1. Установить и настроить виртуальную машину Rocky Linux.
 2. Установить имя пользователя и название хоста и проверить корректность проведённой установки.
 3. Получить информацию с помощью команды dmesg:
 1. Версия ядра Linux (Linux version).
 2. Частота процессора (Detected Mhz processor).
 3. Модель процессора (CPU0).
 4. Объем доступной оперативной памяти (Memory available).
 5. Тип обнаруженного гипервизора (Hypervisor detected).
 6. Тип файловой системы корневого раздела.
 7. Последовательность монтирования файловых систем.
-

1 задание

Установка и настройка виртуальной машины:



Create Virtual Machine

?

✕

Virtual machine Name and Operating System

Please choose a descriptive name and destination folder for the new virtual machine. The name you choose will be used throughout VirtualBox to identify this machine. Additionally, you can select an ISO image which may be used to install the guest operating system.

Name:

kdkoyjfmam

✓

Folder:

C:\Users\Kirill\VirtualBox VMs

▼

ISO Image:

<not selected>

▼

Edition:

▼

Type:

Linux

▼

64

Version:

Red Hat (64-bit)

▼

☐ Skip Unattended Installation

ⓘ No ISO image is selected, the guest OS will need to be installed manually.


Help

Expert Mode

Back

Next

Cancel



Create Virtual Machine

?

✕

Summary

The following table summarizes the configuration you have chosen for the new virtual machine. When you are happy with the configuration press Finish to create the virtual machine. Alternatively you can go back and modify the configuration.

✱ Machine Name and OS Type

Machine Namekdkoyjfmam

Machine FolderC:\Users\Kirill\VirtualBox VMs/kdkoyjfmam

ISO Image

Guest OS TypeRed Hat (64-bit)

■ Hardware

Base Memory4096

Processor(s)2

EFI Enablefalse

■ Disk

Disk Size40.00 GB

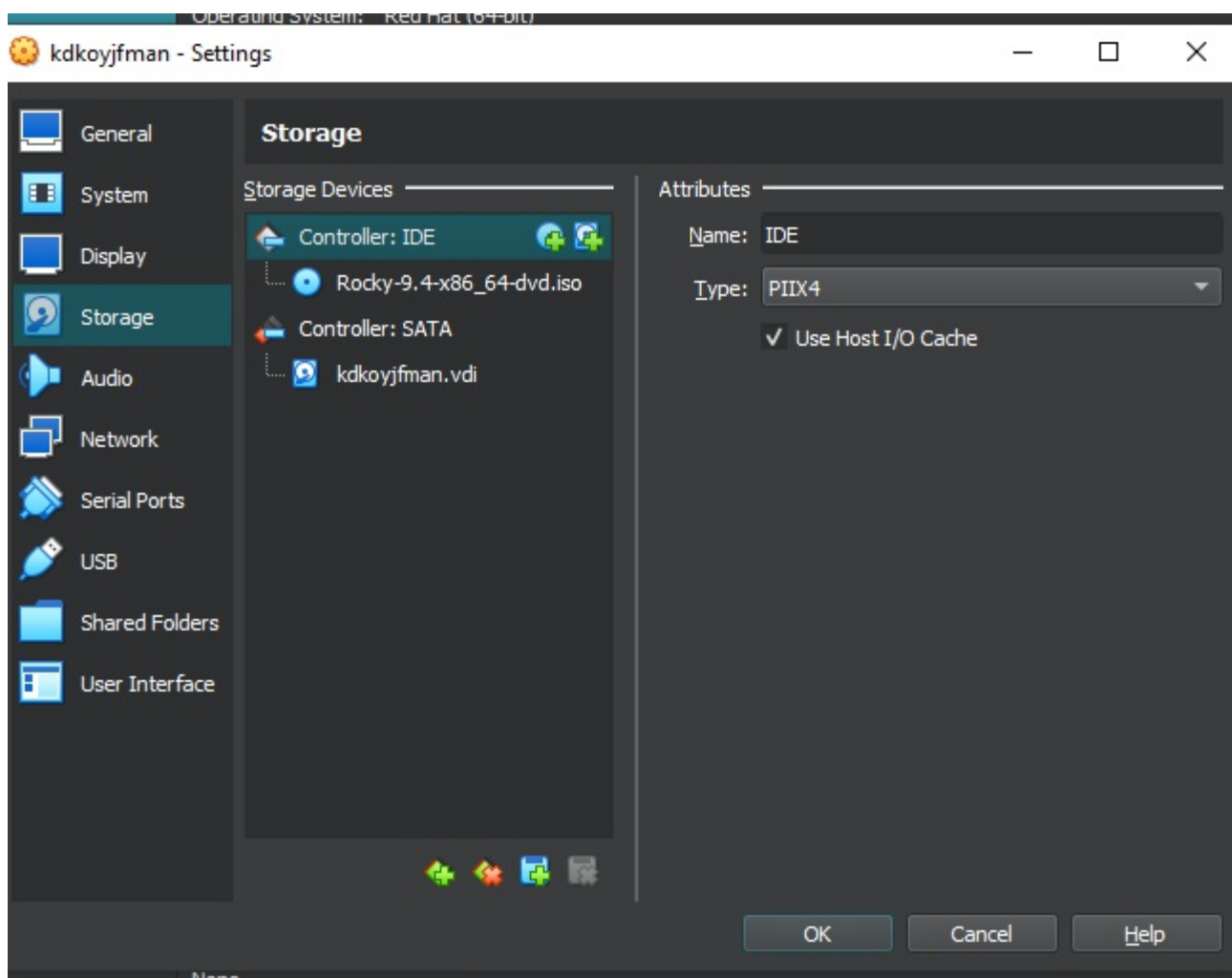
Pre-allocate Full Sizefalse

Help

Back

Finish

Cancel





New



Add



Settings



Discard



Start



General

Name: kdkoyjfmán
Operating System: Red Hat (64-bit)



System

Base Memory: 4096 MB
Processors: 2
Boot Order: Floppy, Optical, Hard Disk
Acceleration: Nested Paging, PAE/NX, KVM Paravirtualization



Display

Video Memory: 16 MB
Graphics Controller: VMSVGA
Remote Desktop Server: Disabled
Recording: Disabled



Storage

Controller: IDE
IDE Primary Device 0: [Optical Drive] Rocky-9.4-x86_64-dvd.iso (10.17 GB)
Controller: SATA
SATA Port 0: kdkoyjfmán.vdi (Normal, 40.00 GB)



Audio

Host Driver: Default
Controller: ICH AC97



Network

Adapter 1: Intel PRO/1000 MT Desktop (NAT)



USB

USB Controller: OHCI, EHCI
Device Filters: 0 (0 active)



Shared folders

None



Description

None

Запустили виртуальную машину и произвели её основную настройку перед установкой:

SOFTWARE SELECTION

ROCKY LINUX 9.4 INSTALLATION

Done

us

Help!

Base Environment

☒ **Server with GUI**
An integrated, easy-to-manage server with a graphical interface.

☐ **Server**
An integrated, easy-to-manage server.

☐ **Minimal Install**
Basic functionality.

☐ **Workstation**
Workstation is a user-friendly desktop system for laptops and PCs.

☐ **Custom Operating System**
Basic building block for a custom Rocky Linux system.

☐ **Virtualization Host**
Minimal virtualization host.

Additional software for Selected Environment

☐ **Virtualization Client**
Clients for installing and managing virtualization instances.

☐ **Virtualization Hypervisor**
Smallest possible virtualization host installation.

☐ **Virtualization Tools**
Tools for offline virtual image management.

☐ **Basic Web Server**
These tools allow you to run a Web server on the system.

☐ **Legacy UNIX Compatibility**
Compatibility programs for migration from or working with legacy UNIX environments.

☐ **Console Internet Tools**
Console internet access tools, often used by administrators.

☐ **Container Management**
Tools for managing Linux containers

☒ **Development Tools**
A basic development environment.

☐ **.NET Development**
Tools to develop and/or run .NET applications

☐ **Graphical Administration Tools**
Graphical system administration tools for managing many aspects of a system.

☐ **Headless Management**
Tools for managing the system without an attached graphical console.

☐ **RPM Development Tools**
Tools used for building RPMs, such as rpmbuild.

☐ **Scientific Support**
Tools for mathematical and scientific computations, and parallel computing.

☐ **Security Tools**
Security tools for integrity and trust verification.

☐ **Smart Card Support**
Support for using smart card authentication.

☐ **System Tools**
Tools for system management and maintenance.

File Machine View Input Devices Help

KDUMP

Done

Kdump is a kernel crash dumping mechanism. In the event of a system crash, kdump will capture information from your system and store it in a file. This information can be used to debug the system. You will require reserving a portion of system memory that will be unavailable for other uses.

☐ Enable kdump

NETWORK & HOST NAME

ROCKY LINUX 9.4 INSTALLATION

Done

us

Help!

Ethernet (enp0s3)
Intel Corporation 82540EM Gigabit Ethernet Controller (PRO/1000 MT Desktop Adapter)

Ethernet (enp0s3)
Connected

Hardware Address 08:00:27:0F:4E:2E
Speed 1000 Mb/s
IP Address 10.0.2.15/24
Default Route 10.0.2.2
DNS 192.168.1.1

Configure...

Host Name: kdkoyfman.localdomain

Apply

Current host name: kdkoyfman.localdomain

File Machine view Input Devices Help

ROOT PASSWORD

Done

The root account is used for administering the system. Enter a password for the root user.

Root Password:

••••••••

Strong

Confirm:

••••••••

☐ Lock root account

☐ Allow root SSH login with password

kdkoyjman [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

CREATE USER


Done

Full name kdkoyjman


User name kdkoyjman

☒ Make this user administrator

☒ Require a password to use this account

Password ●●●●●●●● 

Strong

Confirm password ●●●●●●●● 

Advanced...

kdkoyjman [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

Rocky Linux

INSTALLATION PROGRESS

ROCKY LINUX 9.4 INSTALLATION

us

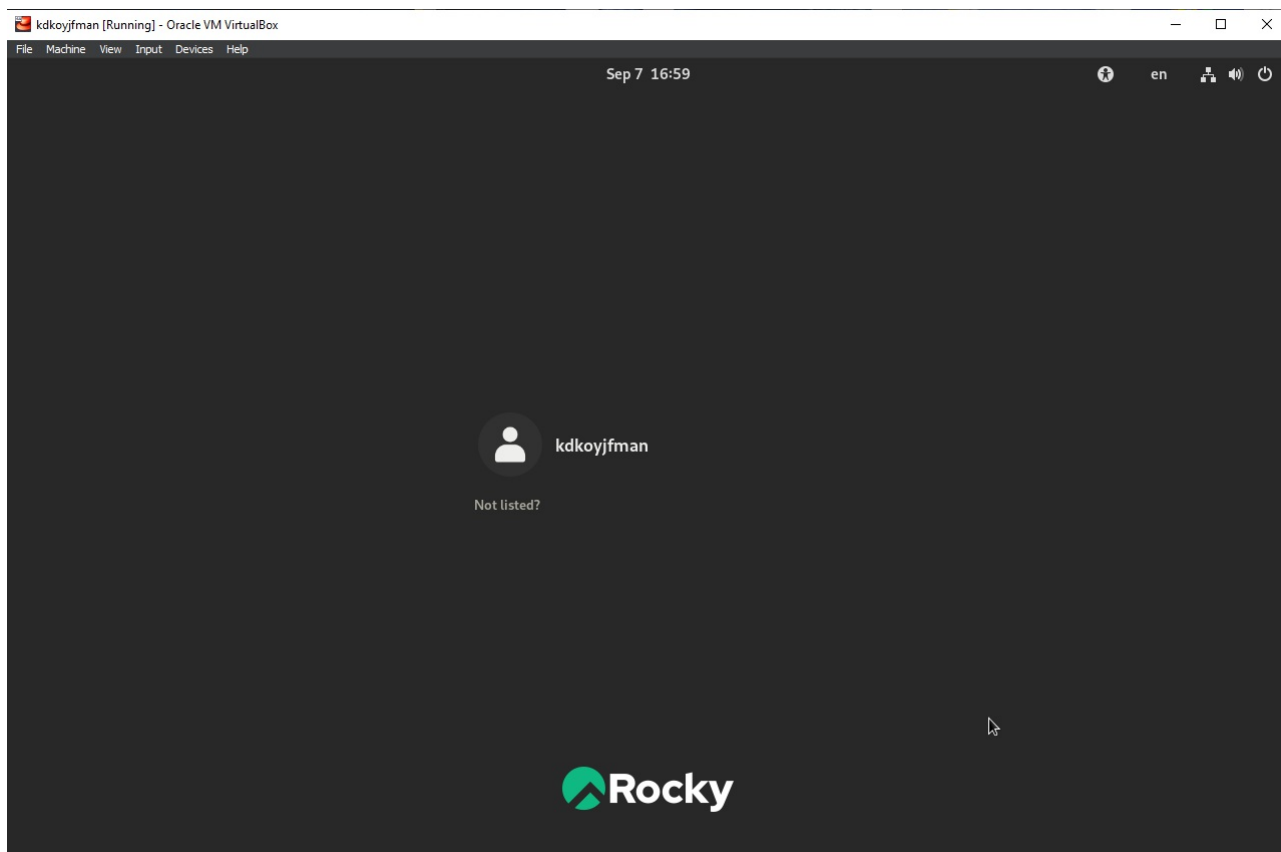
Complete!

Rocky Linux is now successfully installed and ready for you to use!
Go ahead and reboot your system to start using it!

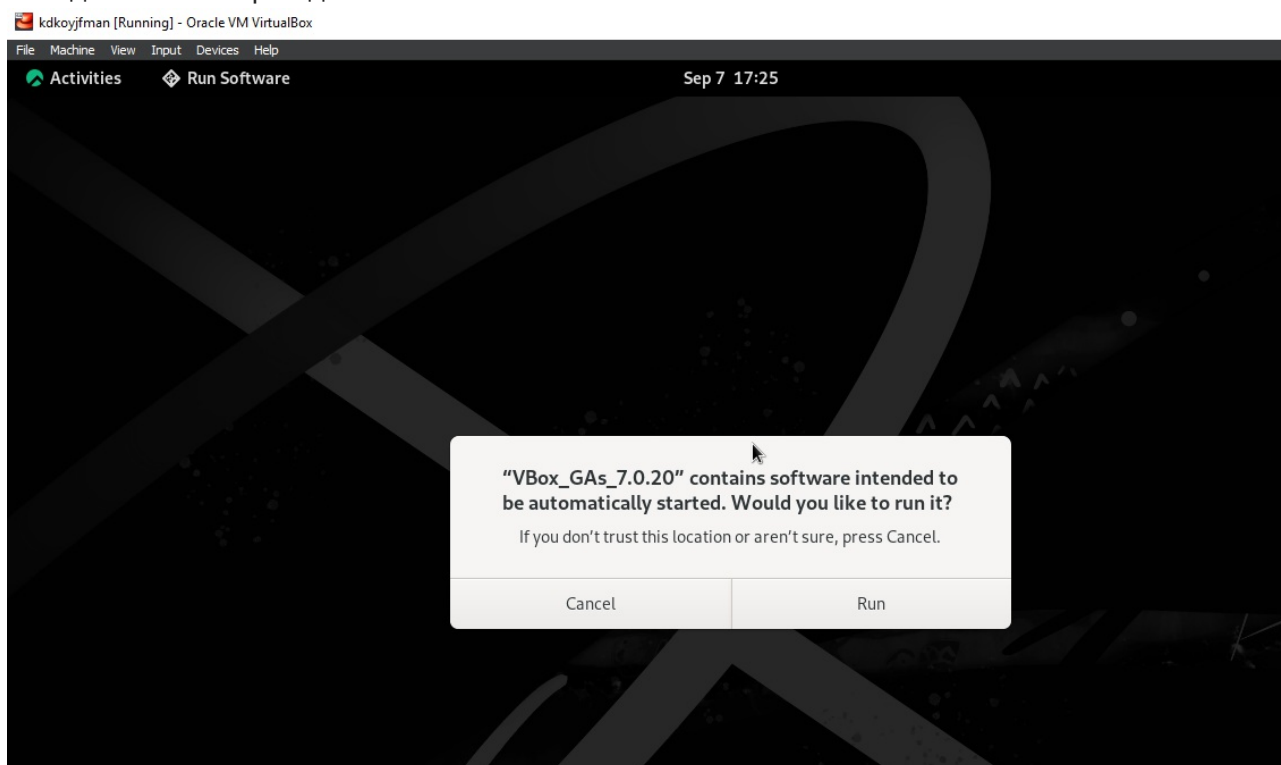
Reboot System

Use of this product is subject to the license agreement found at </usr/share/rocky-release/EULA>

Right Ctrl



И подключили образ диска гостевой ОС:




```
VirtualBox Guest Additions installation
Verifying archive integrity... 100% MD5 checksums are OK. All good.
Uncompressing VirtualBox 7.0.20 Guest Additions for Linux 100%
VirtualBox Guest Additions installer
Copying additional installer modules ...
Installing additional modules ...
VirtualBox Guest Additions: Starting.
VirtualBox Guest Additions: Setting up modules
VirtualBox Guest Additions: Building the VirtualBox Guest Additions kernel
modules. This may take a while.
VirtualBox Guest Additions: To build modules for other installed kernels, run
VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup <version>
VirtualBox Guest Additions: or
VirtualBox Guest Additions: /sbin/rcvboxadd quicksetup all
VirtualBox Guest Additions: Building the modules for kernel
5.14.0-427.33.1.el9_4.x86_64.
VirtualBox Guest Additions: reloading kernel modules and services
VirtualBox Guest Additions: kernel modules and services 7.0.20 r163906 reloaded
VirtualBox Guest Additions: NOTE: you may still consider to re-login if some
user session specific services (Shared Clipboard, Drag and Drop, Seamless or
Guest Screen Resize) were not restarted automatically
Press Return to close this window...
```

2 задание

```
root@kdkoyjfman:~
[kdkoyjfman@kdkoyjfman ~]$ su -
Password:
[root@kdkoyjfman ~]# hostnamectl
  Static hostname: kdkoyjfman.localdomain
        Icon name: computer-vm
        Chassis: vm
        Machine ID: 132684facdd34c4e88d4256cd5615a4a
        Boot ID: b12a97684df44e31b957a7f270f344d9
  Virtualization: oracle
Operating System: Rocky Linux 9.4 (Blue Onyx)
        CPE OS Name: cpe:/o:rocky:rocky:9::baseos
        Kernel: Linux 5.14.0-427.33.1.el9_4.x86_64
  Architecture: x86-64
Hardware Vendor: innotek GmbH
Hardware Model: VirtualBox
Firmware Version: VirtualBox
[root@kdkoyjfman ~]#
```

3 задание

Наконец, воспользовались командой `dmesg` для получения необходимой информации:

```
root@kdkoyjman:~  
[root@kdkoyjman ~]# dmesg | less  
[root@kdkoyjman ~]# dmesg  
0.000000 Linux version 5.14.0-427.33.1.el9_4.x86_64 (mockbuild@iad1-prod-build001.bld.equ.rockylinux.org) (gcc (GCC) 11.4.1 20231218 (Red Hat 11.4.1-3), GNU  
24  
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.co  
0.000000 Command line: BOOT_IMAGE=(hd0,msdos1)/vmlinuz-5.14.0-427.33.1.el9_4.x86_64 root=/dev/mapper/rL10-root ro resume=/dev/mapper/rL10-swap rd.lvm.lv=de  
64G-:512M  
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 0x000000000009f000-0x000000000009ffff] reserved  
0.000000 BIOS-e820: [mem 0x0000000000100000-0x00000000000fffff] usable  
0.000000 BIOS-e820: [mem 0x000000000dffff0000-0x000000000dfffff] ACPI data  
0.000000 BIOS-e820: [mem 0x00000000fec00000-0x00000000fec00fff] reserved  
0.000000 BIOS-e820: [mem 0x00000000fee00000-0x00000000fee00fff] reserved  
0.000000 BIOS-e820: [mem 0x00000000fffc0000-0x00000000fffcfffff] reserved  
0.000000 BIOS-e820: [mem 0x0000000100000000-0x000000011fffff] usable  
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  
0.000000 kvm-clock: using sched offset of 4627957561 cycles  
0.000000 clocksource: kvm-clock: mask: 0xffffffffffffffff max_cycles: 0x1cd42e4dffb, max_idle_ns: 881590591483 ns  
0.000000 tsc: Detected 3494.400 MHz processor  
0.000548 e820: update [mem 0x00000000-0x00000fff] usable ==> reserved  
0.000542 e820: remove [mem 0x000a0000-0x000fffff] usable  
0.000546 last_pfn = 0x120000 max_arch_pfn = 0x40000000  
0.000551 MTRRs disabled by BIOS  
0.000553 x86/PAT: Configuration [0-7]: WB WC UC- UC WB WP UC- WT  
0.000568 last_pfn = 0xdfff0 max_arch_pfn = 0x40000000  
0.000605 found SMP MP-table at [mem 0x0009ffff-0x0009ffff]  
0.000616 Incomplete global flushes, disabling PCID  
0.000724 RAMDISK: [mem 0x313d8000-0x349e3fff]  
0.000727 ACPI: Early table checksum verification disabled  
0.000730 ACPI: RSDP 0x00000000000E0000 000024 (v02 VBOX )  
0.000733 ACPI: XSDT 0x00000000DFF0030 00003C (v01 VBOX VBOXXSDT 00000001 ASL 00000061)  
0.000736 ACPI: FACP 0x00000000DFF00F0 0000F4 (v04 VBOX VBOXFACP 00000001 ASL 00000061)  
0.000740 ACPI: DSDT 0x00000000DFF0610 002353 (v02 VBOX VBOXBIOS 00000002 INTL 20100528)  
0.000742 ACPI: FACS 0x00000000DFF0200 000040  
0.000743 ACPI: FACS 0x00000000DFF0200 000040  
0.000745 ACPI: APIC 0x00000000DFF0240 00005C (v02 VBOX VBOXAPIC 00000001 ASL 00000061)  
0.000746 ACPI: SSDT 0x00000000DFF02A0 00036C (v01 VBOX VBOXCPU0 00000002 INTL 20100528)  
0.000748 ACPI: Reserving FACP table memory at [mem 0xdfff0f0-0xdfff01e3]  
0.000749 ACPI: Reserving DSDT table memory at [mem 0xdfff0610-0xdfff2962]
```

```
[root@kdkoyjman ~]# dmesg | grep -i "Linux version"  
[ 0.000000] Linux version 5.14.0-427.33.1.el9_4.x86_64 (mockbuild@iad1-prod-build001.bld.equ.rockylinux.org) (gcc (GCC) 11.4.1 20231218 (Red Hat 11.4.1-3), GNU ld version 2.35.2-43.el9) #1 SMP PREEMPT_DYNAMIC Wed Aug 28 17:34:59 UTC 2024  
[root@kdkoyjman ~]#
```

```
[root@kdkoyjman ~]# dmesg | grep -i "Mhz"  
[ 0.000007] tsc: Detected 3494.400 MHz processor
```

```
[root@kdkoyjman ~]# dmesg | grep -i "CPU0"  
[ 0.296428] smpboot: CPU0: 13th Gen Intel(R) Core(TM) i5-13600K (family: 0x6, model: 0xb7, stepping: 0x1)  
[root@kdkoyjman ~]#
```

```
[root@kdkoyjman ~]# dmesg | grep -i "Memory"  
[ 0.000748] ACPI: Reserving FACP table memory at [mem 0xdfff0f0-0xdfff01e3]  
[ 0.000749] ACPI: Reserving DSDT table memory at [mem 0xdfff0610-0xdfff2962]  
[ 0.000749] ACPI: Reserving FACS table memory at [mem 0xdfff0200-0xdfff023f]  
[ 0.000749] ACPI: Reserving FACS table memory at [mem 0xdfff0200-0xdfff023f]  
[ 0.000750] ACPI: Reserving APIC table memory at [mem 0xdfff0240-0xdfff029b]  
[ 0.000750] ACPI: Reserving SSDT table memory at [mem 0xdfff02a0-0xdfff060b]  
[ 0.002710] Reserving 256MB of memory at 3312MB for crashkernel (System RAM: 4095MB)  
[ 0.002723] Early memory node ranges  
[ 0.062593] PM: hibernation: Registered nosave memory: [mem 0x00000000-0x00000fff]  
[ 0.062594] PM: hibernation: Registered nosave memory: [mem 0x0009f000-0x0009ffff]  
[ 0.062595] PM: hibernation: Registered nosave memory: [mem 0x000a0000-0x000aefff]  
[ 0.062595] PM: hibernation: Registered nosave memory: [mem 0x000f0000-0x000fffff]  
[ 0.062595] PM: hibernation: Registered nosave memory: [mem 0xdfff0000-0xdfffffff]  
[ 0.062596] PM: hibernation: Registered nosave memory: [mem 0xe0000000-0xfefbffff]  
[ 0.062596] PM: hibernation: Registered nosave memory: [mem 0xfec00000-0xfec0ffff]  
[ 0.062596] PM: hibernation: Registered nosave memory: [mem 0xfec01000-0xfedfffff]  
[ 0.062597] PM: hibernation: Registered nosave memory: [mem 0xfec00000-0xfec0ffff]  
[ 0.062597] PM: hibernation: Registered nosave memory: [mem 0xfec01000-0xfefbffff]  
[ 0.062597] PM: hibernation: Registered nosave memory: [mem 0xfec00000-0xfec0ffff]  
[ 0.153835] Memory: 3367496K/4193848K available (16384K kernel code, 5626K rwdata, 11756K rodata, 3892K init, 5956K bss, 508128K reserved, 0K cma-reserved)
```

```
[root@kdkoyjman ~]# dmesg | grep -i "Hypervisor"  
[ 0.000000] Hypervisor detected: KVM  
[ 1.726421] vmwgfx 0000:00:02.0: [drm] *ERROR* vmwgfx seems to be running on an unsupported hypervisor.  
[root@kdkoyjman ~]#
```

```
[root@kdkoyjfm ~]# dmesg | grep -i "filesystem"
[ 2.584490] XFS (dm-0): Mounting V5 Filesystem 0f8492e8-607f-4b8b-9d4b-2c0f4ed6d5fa
[ 3.838118] XFS (sda1): Mounting V5 Filesystem 52e54008-bc54-4f8b-bead-53a1ff93afc3
[root@kdkoyjfm ~]#
```

```
[root@kdkoyjfm ~]# dmesg | grep -i "mount"
[ 0.177307] Mount-cache hash table entries: 8192 (order: 4, 65536 bytes, linear)
[ 0.177312] Mountpoint-cache hash table entries: 8192 (order: 4, 65536 bytes, linear)
[ 2.584490] XFS (dm-0): Mounting V5 Filesystem 0f8492e8-607f-4b8b-9d4b-2c0f4ed6d5fa
[ 2.590787] XFS (dm-0): Ending clean mount
[ 3.154662] systemd[1]: Set up automount Arbitrary Executable File Formats File System Automount Point.
[ 3.164396] systemd[1]: Mounting Huge Pages File System...
[ 3.166706] systemd[1]: Mounting POSIX Message Queue File System...
[ 3.167345] systemd[1]: Mounting Kernel Debug File System...
[ 3.168017] systemd[1]: Mounting Kernel Trace File System...
[ 3.187471] systemd[1]: Starting Remount Root and Kernel File Systems...
[ 3.194525] systemd[1]: Mounted Huge Pages File System.
[ 3.196705] systemd[1]: Mounted POSIX Message Queue File System.
[ 3.196969] systemd[1]: Mounted Kernel Debug File System.
[ 3.202687] systemd[1]: Mounted Kernel Trace File System.
[ 3.838118] XFS (sda1): Mounting V5 Filesystem 52e54008-bc54-4f8b-bead-53a1ff93afc3
[ 3.848817] XFS (sda1): Ending clean mount
```

Спасибо за внимание!