

Лабораторная работа №1

Основы информационной безопасности

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Вводная часть

Установка Rocky Linux.

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

- Процессор **pandoc** для входного формата Markdown
- Результирующие форматы
 - pdf
 - html
- Автоматизация процесса создания: **Makefile**

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
```

Содержание исследования

Загружаю установленную систему .

```
vbeknazarova@localhost:~ — less      vbeknazarova@localhost:~      vbeknazarova@localhost:~
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 20230605 (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 Catalog, https://catalog.redha
.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=1G-4G:192M,4G-64G:256M,64G-15
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 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 0x0000000000000000-0x0000000000009fbff] usable
0.000000] BIOS-e820: [mem 0x0000000000009fc00-0x0000000000009ffff] reserved
0.000000] BIOS-e820: [mem 0x000000000000f0000-0x000000000000ffffff] reserved
0.000000] BIOS-e820: [mem 0x00000000001000000-0x00000000007ffefffff] usable
0.000000] BIOS-e820: [mem 0x00000000007fff0000-0x00000000007ffffffff] ACPI data
0.000000] BIOS-e820: [mem 0x00000000fec000000-0x00000000fec00ffff] reserved
0.000000] BIOS-e820: [mem 0x00000000fee000000-0x00000000fee00ffff] reserved
0.000000] BIOS-e820: [mem 0x00000000fffc00000-0x00000000fffffffff] 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
0.000003] kvm-clock: using sched offset of 5791412854 cycles
0.000005] clocksource: kvm-clock: mask: 0xffffffffffffffff max_cycles: 0x1cd42e4dffb, max_idle_ns: 881590591483 ns
0.000007] tsc: Detected 2419.202 MHz processor
0.000860] e820: update [mem 0x000000000-0x00000ffff] usable ==> reserved
0.000862] e820: remove [mem 0x000a00000-0x000ffffff] usable
0.000866] last_pfn = 0x7ffff max_arch_pfn = 0x400000000
0.000875] Disabled
0.000875] x86/PAT: MTRRs disabled, skipping PAT initialization too.
0.000877] CPU MTRRs all blank - virtualized system.
0.000878] x86/PAT: Configuration [0-7]: WB WT UC- UC WB WT UC- UC
0.000977] found SMP MP-table at [mem 0x000000000-0x00000ffff]
```

1. Анализирую последовательность загрузки системы

```
[vbeknazarova@localhost ~]$ dmesg | "Linux version"
bash: Linux version: command not found...
[vbeknazarova@localhost ~]$ dmesg | grep "Linux version"
[    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 20230605 (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
```

Рис. 2: Анализ работы системы

2. Версия ядра .

```
[vbeknazarova@localhost ~]$ dmesg | grep "MHz"
[    0.000007] tsc: Detected 2419.202 MHz processor
[    2.641464] e1000 0000:00:03.0 eth0: (PCI:33MHz:32-bit) 08:00:27:17:86:c0
```

Рис. 3: Версия ядра

3. Частота процессора .

```
vbeknazarova@localhost ~]$ dmesg | grep -i "CPU0"  
[    0.189364] smpboot: CPU0: 11th Gen Intel(R) Core(TM) i5-1135G7 @ 2.40GHz (family: 0x6, model: 0x8c, stepping: 0x1)
```

Рис. 4: Процессор

4. Модель процессора .

```
[vbeznazarova@localhost ~]$ dmesg | grep -i "Memory"
[ 0.001080] ACPI: Reserving FACP table memory at [mem 0x7fff00f0-0x7fff01e3]
[ 0.001081] ACPI: Reserving DSDT table memory at [mem 0x7fff0610-0x7fff2962]
[ 0.001082] ACPI: Reserving FACS table memory at [mem 0x7fff0200-0x7fff023f]
[ 0.001082] ACPI: Reserving FACS table memory at [mem 0x7fff0200-0x7fff023f]
[ 0.001083] ACPI: Reserving APIC table memory at [mem 0x7fff0240-0x7fff0293]
[ 0.001083] ACPI: Reserving SSDT table memory at [mem 0x7fff02a0-0x7fff060b]
[ 0.001322] Reserving 192MB of memory at 1840MB for crashkernel (System RAM: 2047MB)
[ 0.001335] Early memory node ranges
[ 0.013156] PM: hibernation: Registered nosave memory: [mem 0x00000000-0x00000fff]
[ 0.013158] PM: hibernation: Registered nosave memory: [mem 0x0009f000-0x0009ffff]
[ 0.013158] PM: hibernation: Registered nosave memory: [mem 0x000a0000-0x000effff]
[ 0.013159] PM: hibernation: Registered nosave memory: [mem 0x000f0000-0x000fffff]
[ 0.029985] Memory: 199352K/2096696K available (16384K kernel code, 5596K rwddata, 11444K rodata, 3824K init, 18424K bss, 354372K reserved, 0K cma-reserved)
[ 0.087028] Freeing SMP alternatives memory: 36K
[ 0.217618] x86/mm: Memory block size: 128MB
[ 0.532938] Non-volatile memory driver v1.3
[ 1.080895] Freeing initrd memory: 57248K
[ 1.311001] Freeing unused decrypted memory: 2036K
[ 1.311838] Freeing unused kernel image (initmem) memory: 3824K
[ 1.313965] Freeing unused kernel image (rodata/data gap) memory: 844K
[ 2.234897] vmwgfx 0000:00:02.0: [drm] Legacy memory limits: VRAM = 16384 kB, FIFO = 2048 kB, surface = 507904 kB
[ 2.234901] vmwgfx 0000:00:02.0: [drm] Maximum display memory size is 16384 kiB
```

Рис. 5: Память

5. Объем доступной оперативной памяти.

```
[vbeknazarova@localhost ~]$ dmesg | grep -i "Memory"
[ 0.001080] ACPI: Reserving FACP table memory at [mem 0x7fff00f0-0x7fff01e3]
[ 0.001081] ACPI: Reserving DSDT table memory at [mem 0x7fff0610-0x7fff2962]
[ 0.001082] ACPI: Reserving FACS table memory at [mem 0x7fff0200-0x7fff023f]
[ 0.001082] ACPI: Reserving FACS table memory at [mem 0x7fff0200-0x7fff023f]
[ 0.001083] ACPI: Reserving APIC table memory at [mem 0x7fff0240-0x7fff0293]
[ 0.001083] ACPI: Reserving SSDT table memory at [mem 0x7fff02a0-0x7fff060b]
[ 0.001322] Reserving 192MB of memory at 1840MB for crashkernel (System RAM: 2047MB)
[ 0.001335] Early memory node ranges
[ 0.013156] PM: hibernation: Registered nosave memory: [mem 0x00000000-0x00000fff]
[ 0.013158] PM: hibernation: Registered nosave memory: [mem 0x0009f000-0x0009ffff]
[ 0.013158] PM: hibernation: Registered nosave memory: [mem 0x000a0000-0x000effff]
[ 0.013159] PM: hibernation: Registered nosave memory: [mem 0x000f0000-0x000fffff]
[ 0.029985] Memory: 199352K/2096696K available (16384K kernel code, 5596K rwddata, 11444K rodata, 3824K init, 18424K bss, 354372K reserved, 0K cma-reserved)
[ 0.087028] Freeing SMP alternatives memory: 36K
[ 0.217618] x86/mm: Memory block size: 128MB
[ 0.532938] Non-volatile memory driver v1.3
[ 1.080895] Freeing initrd memory: 57248K
[ 1.311001] Freeing unused decrypted memory: 2036K
[ 1.311838] Freeing unused kernel image (initmem) memory: 3824K
[ 1.313965] Freeing unused kernel image (rodata/data gap) memory: 844K
[ 2.234897] vmwgfx 0000:00:02.0: [drm] Legacy memory limits: VRAM = 16384 kB, FIFO = 2048 kB, surface = 507904 kB
[ 2.234901] vmwgfx 0000:00:02.0: [drm] Maximum display memory size is 16384 kiB
```

Рис. 6: Объем

6. Тип обнаруженного гипервизора.

```
[vbeknazarova@localhost ~]$ dmesg | grep -i "Hypervisor"
[    0.000000] Hypervisor detected: KVM
[    0.071363] GDS: Unknown: Dependent on hypervisor status
```

Рис. 7: Гипервизор

7. Тип файловой системы корневого раздела.

```
[vbeknazarova@localhost ~]$ dmesg | grep -i "Filesystem"
[   3.044031] XFS (dm-0): Mounting V5 Filesystem
[   5.216649] XFS (sda1): Mounting V5 Filesystem
```

Рис. 8: Корневой раздел

8. Последовательность монтирования файловых систем.

```
[vbeknazarova@localhost ~]$ dmesg | grep -i "mount"
[ 0.069305] Mount-cache hash table entries: 4096 (order: 3, 32768 bytes, linear)
[ 0.069309] Mountpoint-cache hash table entries: 4096 (order: 3, 32768 bytes, linear)
[ 3.044031] XFS (dm-0): Mounting V5 Filesystem
[ 3.843913] systemd[1]: Set up automount Arbitrary Executable File Formats File System Automount Point.
[ 3.852301] systemd[1]: Mounting Huge Pages File System...
[ 3.865515] systemd[1]: Mounting POSIX Message Queue File System...
[ 3.867805] systemd[1]: Mounting Kernel Debug File System...
[ 3.869200] systemd[1]: Mounting Kernel Trace File System...
[ 3.939372] systemd[1]: Starting Remount Root and Kernel File Systems...
[ 3.989395] systemd[1]: Mounted Huge Pages File System.
[ 5.216649] XFS (sda1): Mounting V5 Filesystem
[vbknazarova@localhost ~]$
```

Рис. 9: Монтирование

В ходе выполнения лабораторной работы я установила Rocky Linux.

Я приобрела практические навыки установки и конфигурации операционной системы на виртуальную машину.