

Лабораторная работа №1

Основы информационной безопасности

Галиева Аделина Руслановна

17 февраля 2024

Российский университет дружбы народов, Москва, Россия

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 0x000a00000-0x000ffff] 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.