

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РФ

Федеральное государственное автономное образовательное учреждение высшего образования
«Национальный исследовательский университет ИТМО»

Факультет программной инженерии и компьютерной техники

Лабораторная работа №3.2
по дисциплине
“Технологии виртуализации”

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Задача

Ознакомиться с функционалом LXC & LDCX

Установка

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo snap install lxd
[sudo] password for rumskiy:
snap "lxd" is already installed, see 'snap help refresh'
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc list
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc list
+-----+-----+-----+-----+
| NAME | STATE | IPV4 | IPV6 | TYPE | SNAPSHOTS |
+-----+-----+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc --version
5.21.4 LTS
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

Настройка

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxd init
Error: Failed to connect to local LXD: Get "http://unix.socket/1.0": dial unix /var/snap/lxd/common/lxd/unix.socket: connect: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxd init
[sudo] password for rumskiy:
Would you like to use LXD clustering? (yes/no) [default=no]: no
Do you want to configure a new storage pool? (yes/no) [default=yes]: yes
Name of the new storage pool [default=default]: My_RAM_fs
Name of the storage backend to use (ceph, pure, zfs, dir, lvm, powerflex, btrfs) [default=zfs]:
Create a new ZFS pool? (yes/no) [default=yes]: yes
Would you like to use an existing empty block device (e.g. a disk or partition)? (yes/no) [default=no]:
Size in GiB of the new loop device (1GiB minimum) [default=5GiB]:
Would you like to connect to a MAAS server? (yes/no) [default=no]:
Would you like to create a new local network bridge? (yes/no) [default=yes]:
What should the new bridge be called? [default=lxdbr0]:
What IPv4 address should be used? (CIDR subnet notation, "auto" or "none") [default=auto]:
What IPv6 address should be used? (CIDR subnet notation, "auto" or "none") [default=auto]:
Would you like the LXD server to be available over the network? (yes/no) [default=no]: yes
Address to bind LXD to (not including port) [default=all]:
Port to bind LXD to [default=8443]:
Would you like stale cached images to be updated automatically? (yes/no) [default=yes]:
Would you like a YAML "lxd init" preseed to be printed? (yes/no) [default=no]:
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

Конфигурация компонентов

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc profile list
+-----+-----+
| NAME | DESCRIPTION | USED BY |
+-----+-----+
| default | Default LXD profile | 0 |
+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc network list
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc network list
+-----+-----+-----+-----+-----+
| NAME | TYPE | MANAGED | IPV4 | IPV6 | DESCRIPTION | USED BY | STATE |
+-----+-----+-----+-----+-----+
| docker0 | bridge | NO | | | 0 | |
+-----+-----+-----+-----+-----+
| enp0s3 | physical | NO | | | 0 | |
+-----+-----+-----+-----+-----+
| lxdbr0 | bridge | YES | 10.138.209.1/24 | fd42:deb4:517c:4182::1/64 | 1 | CREATED |
+-----+-----+-----+-----+-----+
| virbr0 | bridge | NO | | | 0 | |
+-----+-----+-----+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc storage list
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc storage list
+-----+-----+-----+-----+
| NAME | DRIVER | SOURCE | DESCRIPTION | USED BY | STATE |
+-----+-----+-----+-----+
| My_RAM_fs | zfs | /var/snap/lxd/common/lxd/disks/My_RAM_fs.img | 1 | CREATED |
+-----+-----+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

Создание контейнеров

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc launch ubuntu:22.04 Apache
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc launch ubuntu:22.04 Apache
[sudo] password for rumskiy:
Launching Apache
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc launch ubuntu:22.04 Chrome
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc launch ubuntu:22.04 Chrome
Launching Chrome
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc launch ubuntu:22.04 MC
Launching MC
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc start Apache
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc start Apache
Error: The instance is already running
Try `lxc info --show-log Apache` for more info
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc start MC
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc start MC
Error: The instance is already running
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc list
+-----+-----+-----+-----+-----+-----+
| NAME | STATE | IPV4 | IPV6 | TYPE | SNAPSHOTS |
+-----+-----+-----+-----+-----+-----+
| Apache | RUNNING | 10.138.209.104 (eth0) | fd42:deb4:517c:4182:216:3eff:fee8:9ef1 (eth0) | CONTAINER | 0 |
+-----+-----+-----+-----+-----+-----+
| Chrome | RUNNING | 10.138.209.123 (eth0) | fd42:deb4:517c:4182:216:3eff:fe2e:4cf7 (eth0) | CONTAINER | 0 |
+-----+-----+-----+-----+-----+-----+
| MC | RUNNING | 10.138.209.46 (eth0) | fd42:deb4:517c:4182:216:3eff:fec6:8277 (eth0) | CONTAINER | 0 |
+-----+-----+-----+-----+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc list -c 4
+-----+
| IPV4 |
+-----+
| 10.138.209.46 (eth0) |
+-----+
| 10.138.209.104 (eth0) |
+-----+
| 10.138.209.123 (eth0) |
+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc list status=STOPPED
+-----+-----+-----+-----+
| NAME | STATE | IPV4 | IPV6 | TYPE | SNAPSHOTS |
+-----+-----+-----+-----+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc delete MC --force
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ lxc list -c t
Error: LXD unix socket "/var/snap/lxd/common/lxd/unix.socket" not accessible: permission denied
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo !!
sudo lxc list -c t
+-----+
| TYPE |
+-----+
| CONTAINER |
+-----+
| CONTAINER |
+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

Конфигурация

Три контейнера

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc launch ubuntu:22.04 Big
Launching Big
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc launch ubuntu:22.04 Medium
Launching Medium
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc launch ubuntu:22.04 Small
Launching Small
```

info Big

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc info Big
Name: Big
Status: RUNNING
Type: container
Architecture: x86_64
PID: 55009
Created: 2025/12/21 10:33 UTC
Last Used: 2025/12/21 10:33 UTC

Resources:
  Processes: 36
  Disk usage:
    root: 2.41MiB
  Disk total:
    root: 2.41MiB
  CPU usage:
    CPU usage (in seconds): 12
  Memory usage:
    Memory (current): 152.44MiB
  Network usage:
    lo:
      Type: loopback
      State: UP
      MTU: 65536
      Bytes received: 1.21kB
      Bytes sent: 1.21kB
      Packets received: 12
      Packets sent: 12
      IP addresses:
        inet: 127.0.0.1/8 (local)
        inet6: ::1/128 (local)
    eth0:
      Type: broadcast
      State: UP
      Host interface: veth94141db3
      MAC address: 00:16:3e:69:ec:5a
      MTU: 1500
      Bytes received: 23.32kB
      Bytes sent: 9.95kB
      Packets received: 90
      Packets sent: 66
      IP addresses:
        inet: 10.138.209.108/24 (global)
        inet6: fd42:deb4:517c:4182:216:3eff:fe69:ec5a/64 (global)
        inet6: fe80::216:3eff:fe69:ec5a/64 (link)
```

info Medium

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc info Medium
Name: Medium
Status: RUNNING
Type: container
Architecture: x86_64
PID: 55917
Created: 2025/12/21 10:33 UTC
Last Used: 2025/12/21 10:33 UTC

Resources:
  Processes: 36
  Disk usage:
    root: 2.41MiB
  Disk total:
    root: 2.41MiB
  CPU usage:
    CPU usage (in seconds): 10
  Memory usage:
    Memory (current): 155.30MiB
  Network usage:
    eth0:
      Type: broadcast
      State: UP
      Host interface: veth55c1637c
      MAC address: 00:16:3e:3d:28:ac
      MTU: 1500
      Bytes received: 23.32kB
      Bytes sent: 10.25kB
      Packets received: 97
      Packets sent: 69
      IP addresses:
        inet: 10.138.209.125/24 (global)
        inet6: fd42:deb4:517c:4182:216:3eff:fe3d:28ac/64 (global)
        inet6: fe80::216:3eff:fe3d:28ac/64 (link)
    lo:
      Type: loopback
      State: UP
      MTU: 65536
      Bytes received: 1.22kB
      Bytes sent: 1.22kB
      Packets received: 12
      Packets sent: 12
      IP addresses:
        inet: 127.0.0.1/8 (local)
        inet6: ::1/128 (local)
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

info Small

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc info Small
Name: Small
Status: RUNNING
Type: container
Architecture: x86_64
PID: 56819
Created: 2025/12/21 10:33 UTC
Last Used: 2025/12/21 10:33 UTC

Resources:
  Processes: 37
  Disk usage:
    root: 2.41MiB
  Disk total:
    root: 2.41MiB
  CPU usage:
    CPU usage (in seconds): 13
  Memory usage:
    Memory (current): 153.83MiB
  Network usage:
    eth0:
      Type: broadcast
      State: UP
      Host interface: veth9baae62c
      MAC address: 00:16:3e:3e:16:46
      MTU: 1500
      Bytes received: 20.98kB
      Bytes sent: 10.05kB
      Packets received: 80
      Packets sent: 66
      IP addresses:
        inet: 10.138.209.35/24 (global)
        inet6: fd42:deb4:517c:4182:216:3eff:fe3e:1646/64 (global)
        inet6: fe80::216:3eff:fe3e:1646/64 (link)
    lo:
      Type: loopback
      State: UP
      MTU: 65536
      Bytes received: 1.22kB
      Bytes sent: 1.22kB
      Packets received: 12
      Packets sent: 12
      IP addresses:
        inet: 127.0.0.1/8 (local)
        inet6: ::1/128 (local)
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

Работа с Big

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc stop Big
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc config set Big limits.cpu 2
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc config set Big limits.memory 300MiB
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc info Big
Name: Big
Status: STOPPED
Type: container
Architecture: x86_64
Created: 2025/12/21 10:33 UTC
Last Used: 2025/12/21 10:33 UTC
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc start Big
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc exec Big -- free -h
              total        used         free       shared  buff/cache   available
Mem:       300Mi       86Mi      141Mi       0.0Ki       71Mi      213Mi
Swap:          0B          0B          0B
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

Работа с Medium

До изменения объёма ОЗУ

```
rumskiy@WS-RAM-ubuntu: ~/Desktop/VM_LABS/lab3/3.2$ sudo lxc exec Medium -- top
[sudo] password for rumskiy:

top - 10:47:28 up 13 min, 0 users, load average: 8.47, 5.48, 2.77
Tasks: 21 total, 1 running, 20 sleeping, 0 stopped, 0 zombie
%Cpu(s): 41.3 us, 34.1 sy, 0.0 ni, 15.8 id, 3.4 wa, 0.0 hi, 5.4 si, 0.0 st
MiB Mem : 7941.9 total, 7758.8 free, 102.2 used, 80.9 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 7839.5 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
27043 root 20 0 1547236 48480 14944 S 28.2 0.6 0:03.73 snapd
  1 root 20 0 167260 9552 5200 S 3.7 0.1 0:29.15 systemd
  335 message+ 20 0 8600 3040 2528 S 0.7 0.0 0:03.22 dbus-daemon
  342 root 20 0 1242648 19744 8800 S 0.7 0.2 0:02.81 snap
  58 root 20 0 31552 9616 8720 S 0.3 0.1 0:00.77 systemd-journal
  100 root 20 0 11104 3748 2468 S 0.0 0.0 0:00.10 systemd-udevd
  300 systemd+ 20 0 16128 5896 5000 S 0.0 0.1 0:00.03 systemd-network
  302 systemd+ 20 0 26332 10736 5788 S 0.0 0.1 0:00.08 systemd-resolve
  334 root 20 0 7288 1564 1436 S 0.0 0.0 0:00.00 cron
  340 root 20 0 33152 15504 6672 S 0.0 0.2 0:00.05 networkd-dispat
  341 syslog 20 0 152772 3652 2628 S 0.0 0.0 0:00.32 rsyslogd
  345 root 20 0 15052 5388 4492 S 0.0 0.1 0:01.07 systemd-logind
  347 root 20 0 41376 22452 8648 S 0.0 0.3 0:00.23 python3
  353 root 20 0 6220 1464 1336 S 0.0 0.0 0:00.00 getty
  361 root 20 0 15440 6028 4492 S 0.0 0.1 0:00.00 sshd
  369 root 20 0 110316 17048 8856 S 0.0 0.2 0:00.03 unattended-upgr
  370 root 20 0 235464 5684 4484 S 0.0 0.1 0:00.02 polkitd
  1058 root 20 0 227888 1300 1044 S 0.0 0.0 0:01.97 snapfuse
25894 root 20 0 10796 2504 1992 R 0.0 0.0 0:00.02 top
  27182 root 20 0 227756 1192 1064 S 0.0 0.0 0:00.00 snapfuse
  27259 root 20 0 227888 1204 1076 S 0.0 0.0 0:00.00 snapfuse
```

После

```
rumskiy@WS-RAM-ubuntu: ~/Desktop/VM_LABS/lab3/3.2
rumskiy@WS-RAM-ubuntu: ~/Desktop/VM_LABS/lab3/3.2$ sudo lxc exec Medium -- top
[sudo] password for rumskiy:

top - 10:48:28 up 14 min, 0 users, load average: 7.65, 5.80, 3.05
Tasks: 19 total, 1 running, 18 sleeping, 0 stopped, 0 zombie
%Cpu(s): 17.3 us, 15.6 sy, 0.0 ni, 61.0 id, 4.2 wa, 0.0 hi, 2.0 si, 0.0 st
MiB Mem : 200.0 total, 20.0 free, 104.1 used, 75.9 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 95.8 avail Mem

 PID USER      PR  NI    VIRT    RES   SHR S %CPU %MEM TIME+ COMMAND
29466 root      20   0 1547492 51708 15204 S 23.7 25.2 0:05.98 snapd
 342 root      20   0 1242648 19744 8800 S  0.7  9.6 0:02.98 snap
    1 root      20   0 167264  9552 5200 S  0.0  4.7 0:32.05 systemd
   58 root      20   0 31552  9744 8848 S  0.0  4.8 0:00.83 systemd-journal
100 root      20   0 11104  3748 2468 S  0.0  1.8 0:00.11 systemd-udevd
300 systemd+  20   0 16128  5896 5000 S  0.0  2.9 0:00.03 systemd-network
302 systemd+  20   0 26332 10736 5788 S  0.0  5.2 0:00.08 systemd-resolve
334 root      20   0 7288  1564 1436 S  0.0  0.8 0:00.00 cron
335 message+ 20   0  8600  3040 2528 S  0.0  1.5 0:03.51 dbus-daemon
340 root      20   0 33152 15504 6672 S  0.0  7.6 0:00.05 networkd-dispatcher
341 syslog    20   0 152772  3652 2628 S  0.0  1.8 0:00.35 rsyslogd
345 root      20   0 15052  5388 4492 S  0.0  2.6 0:01.18 systemd-logind
347 root      20   0 41376 22452 8648 S  0.0 11.0 0:00.23 python3
353 root      20   0 6220  1464 1336 S  0.0  0.7 0:00.00 getty
361 root      20   0 15440  6028 4492 S  0.0  2.9 0:00.00 sshd
369 root      20   0 110316 17048 8856 S  0.0  8.3 0:00.03 unattended-upgrader
370 root      20   0 235464  5684 4484 S  0.0  2.8 0:00.02 polkitd
1058 root     20   0 227888 1300 1044 S  0.0  0.6 0:02.14 snapfuse
25894 root    20   0 10796  2504 1992 R  0.0  1.2 0:00.05 top
```

Работа с Small

До изменения объёма ОЗУ

```
rumskiy@WS-RAM-ubuntu: ~/Desktop/VM_LABS/lab3/3.2
top - 10:52:30 up 18 min, 0 users, load average: 5.06, 5.69, 3.66
Tasks: 21 total, 1 running, 20 sleeping, 0 stopped, 0 zombie
%Cpu(s): 36.0 us, 33.3 sy, 0.0 ni, 18.5 id, 5.6 wa, 0.0 hi, 6.5 si, 0.0 st
MiB Mem : 150.0 total, 15.8 free, 105.5 used, 28.7 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 44.3 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
38887 root 20 0 1473504 43804 6140 S 31.0 28.5 0:03.59 snapd
1 root 20 0 167320 7600 3248 S 3.0 4.9 0:42.23 systemd
335 message+ 20 0 8696 1896 1384 S 0.7 1.2 0:04.71 dbus-daemon
58 root 20 0 31544 4332 3436 S 0.3 2.8 0:01.18 systemd-journal
342 root 20 0 1242648 12944 2128 S 0.3 8.4 0:03.81 snap
100 root 20 0 11104 2296 1016 S 0.0 1.5 0:00.14 systemd-udevd
300 systemd+ 20 0 16128 2856 1960 S 0.0 1.9 0:00.05 systemd-network
302 systemd+ 20 0 26332 6860 1888 S 0.0 4.5 0:00.10 systemd-resolve
334 root 20 0 7288 840 712 S 0.0 0.5 0:00.00 cron
340 root 20 0 33152 10668 1836 S 0.0 6.9 0:00.05 networkd-dispat
341 syslog 20 0 152772 1912 1144 S 0.0 1.2 0:00.44 rsyslogd
345 root 20 0 15052 2512 1744 S 0.0 1.6 0:01.55 systemd-logind
347 root 20 0 41376 15892 1956 S 0.0 10.3 0:00.27 python3
362 root 20 0 15440 3148 1612 S 0.0 2.0 0:00.00 sshd
363 root 20 0 6220 740 612 S 0.0 0.5 0:00.00 agetty
368 root 20 0 110316 10092 1900 S 0.0 6.6 0:00.04 unattended-upgr
375 root 20 0 235468 3536 2280 S 0.0 2.3 0:00.04 polkitd
1057 root 20 0 302652 1148 764 S 0.0 0.7 0:02.52 snapfuse
38526 root 20 0 10796 2364 1724 R 0.0 1.5 0:00.01 top
39023 root 20 0 152992 1208 1080 S 0.0 0.8 0:00.00 snapfuse
39099 root 20 0 227888 1248 992 S 0.0 0.8 0:00.00 snapfuse
```

После

```
rumskiy@WS-RAM-ubuntu: ~/Desktop/VM_LABS/lab3/3.2
top - 10:53:38 up 19 min, 0 users, load average: 5.15, 5.54, 3.74
Tasks: 20 total, 2 running, 18 sleeping, 0 stopped, 0 zombie
%Cpu(s): 12.0 us, 10.5 sy, 0.0 ni, 73.0 id, 2.5 wa, 0.0 hi, 1.9 si, 0.0 st
MiB Mem : 800.0 total, 668.0 free, 73.9 used, 58.1 buff/cache
MiB Swap: 0.0 total, 0.0 free, 0.0 used. 725.9 avail Mem

PID USER PR NI VIRT RES SHR S %CPU %MEM TIME+ COMMAND
42038 root 20 0 1102156 17060 10532 S 1.0 2.1 0:00.03 snapd
1 root 20 0 167320 7604 3252 S 0.3 0.9 0:45.18 systemd
342 root 20 0 1242648 13072 2256 S 0.3 1.6 0:03.99 snap
58 root 20 0 31544 4716 3820 S 0.0 0.6 0:01.26 systemd-journal
100 root 20 0 11104 2428 1148 S 0.0 0.3 0:00.15 systemd-udevd
300 systemd+ 20 0 16128 3120 2224 S 0.0 0.4 0:00.05 systemd-network
302 systemd+ 20 0 26332 7312 2340 S 0.0 0.9 0:00.10 systemd-resolve
334 root 20 0 7288 976 848 S 0.0 0.1 0:00.00 cron
335 message+ 20 0 8696 1768 1256 S 0.0 0.2 0:05.02 dbus-daemon
340 root 20 0 33152 10668 1836 S 0.0 1.3 0:00.05 networkd-dispat
341 syslog 20 0 152772 1912 1144 S 0.0 0.2 0:00.47 rsyslogd
345 root 20 0 15052 2512 1744 S 0.0 0.3 0:01.66 systemd-logind
347 root 20 0 41376 15892 1956 S 0.0 1.9 0:00.29 python3
362 root 20 0 15440 3148 1612 S 0.0 0.4 0:00.00 sshd
363 root 20 0 6220 740 612 S 0.0 0.1 0:00.00 agetty
368 root 20 0 110316 10092 1900 S 0.0 1.2 0:00.04 unattended-upgr
375 root 20 0 235468 3280 2024 S 0.0 0.4 0:00.04 polkitd
1057 root 20 0 302652 1148 764 S 0.0 0.1 0:02.63 snapfuse
41800 root 20 0 10796 2568 1928 R 0.0 0.3 0:00.00 top
42044 root 20 0 1732 284 284 R 0.0 0.0 0:00.00 systemctl
```

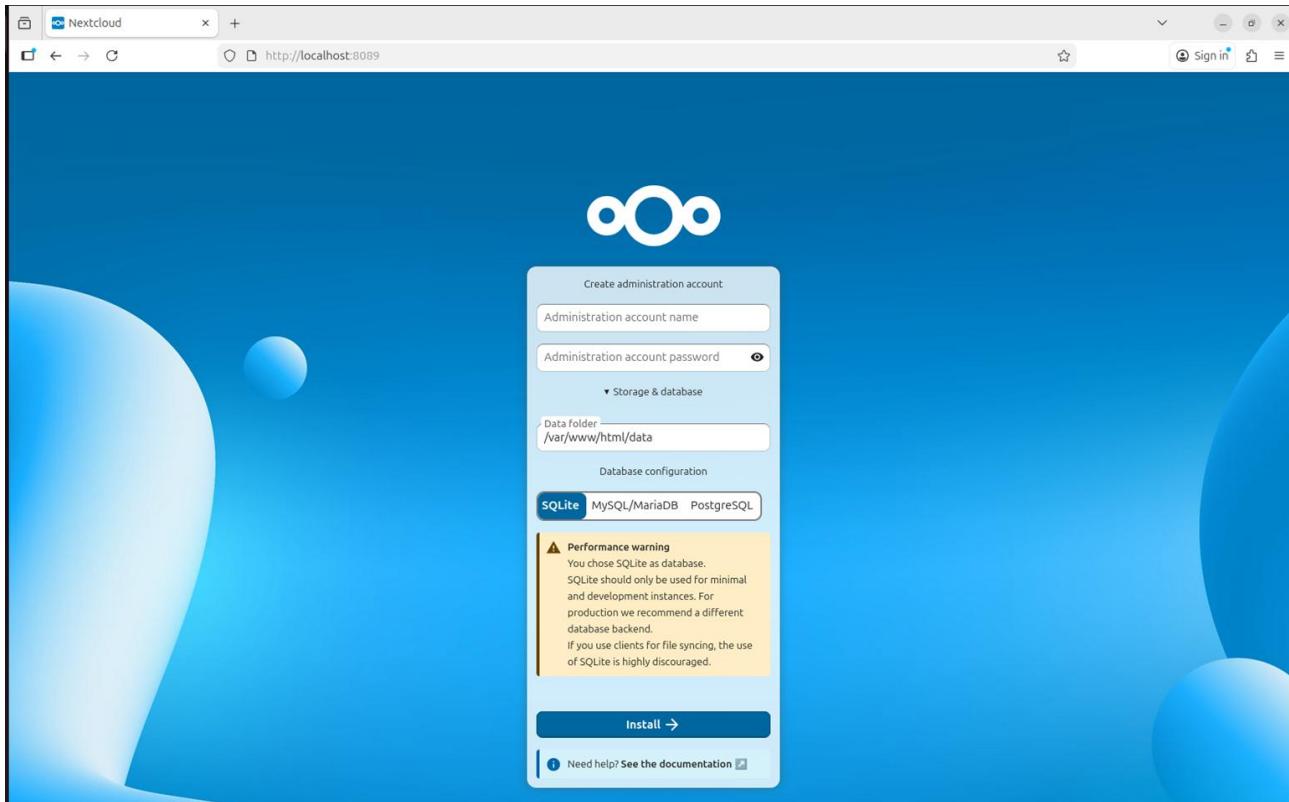
Описание

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc config set Small user.description "Контейнер Small для ЛР №3.2"
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc list -c n,user.description
+-----+-----+
| NAME | USER DESCRIPTION |
+-----+-----+
| Apache |
+-----+-----+
| Big |
+-----+-----+
| Chrome |
+-----+-----+
| Medium |
+-----+-----+
| Small | Контейнер Small для ЛР №3.2 |
+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

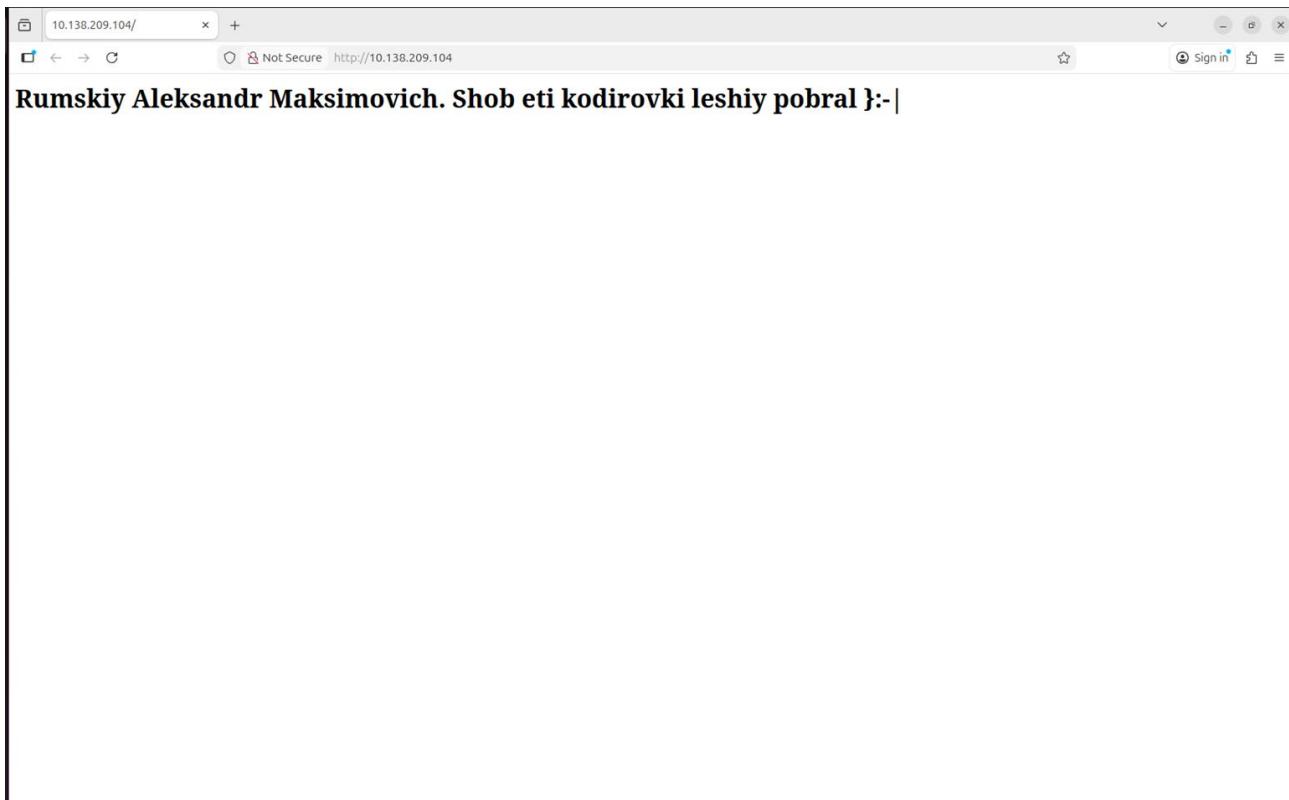
Смена имени

```
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc stop Small
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc rename Small BigBig
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$ sudo lxc list -c n,user.description
+-----+-----+
| NAME | USER DESCRIPTION |
+-----+-----+
| Apache |
+-----+-----+
| Big |
+-----+-----+
| BigBig | Контейнер Small для ЛР №3.2 |
+-----+-----+
| Chrome |
+-----+-----+
| Medium |
+-----+-----+
rumskiy@WS-RAM-ubuntu:~/Desktop/VM_LABS/lab3/3.2$
```

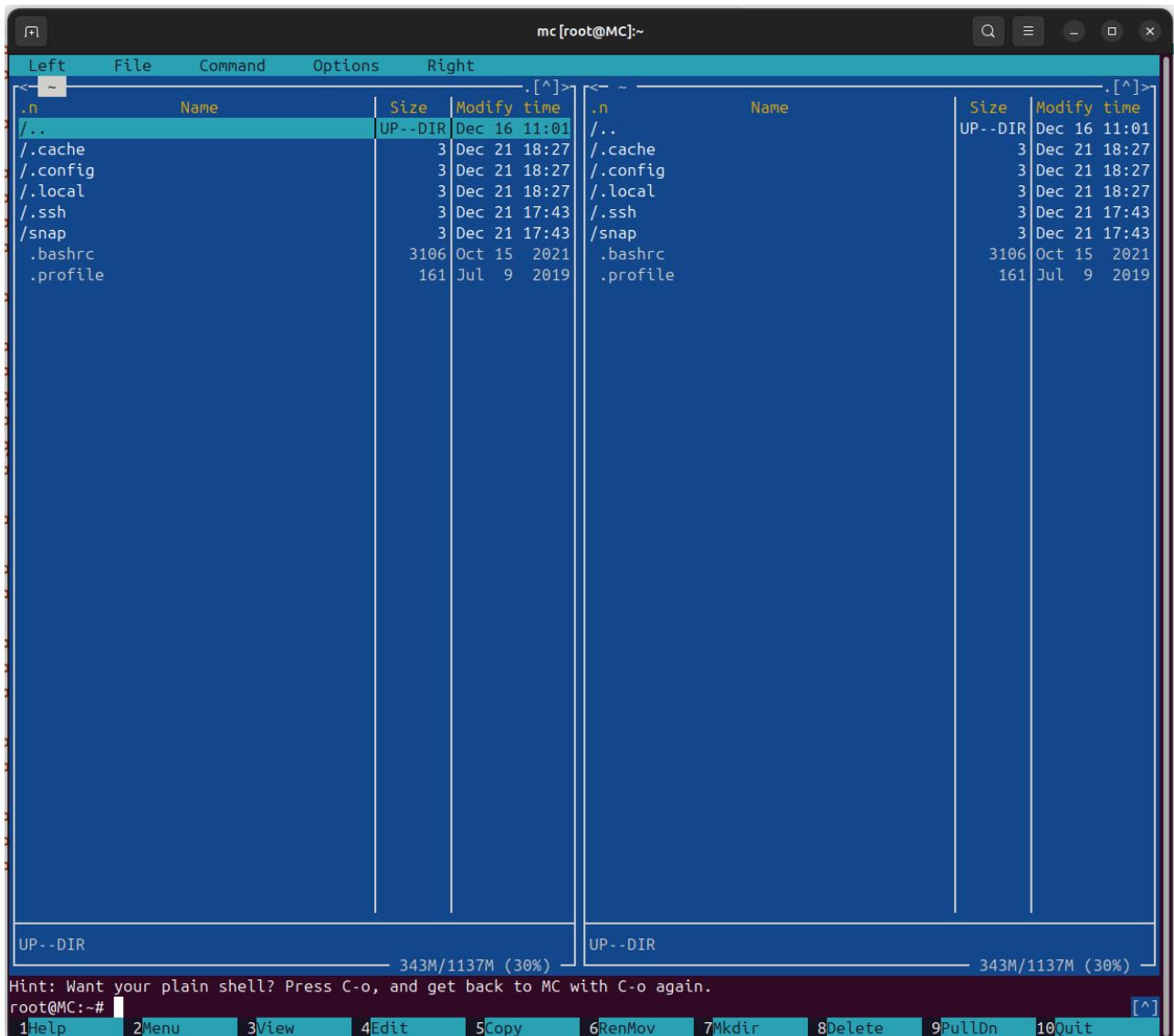
NextCloud



Apache



MidnightCommander



Вывод

В ходе данной лабораторной работы я ознакомился с утилитами создания и управления линукс контейнерами lxd и lxc. Изучил основные команды, методы конфигурации характеристик машин и сетей.