Отчет о настройке SSH-соединений между хостом и виртуальными машинами

1. Настроить SSH-соединение с хоста на VM1.
2. Настроить SSH-соединение с VM1 на хост.
3. Настроить SSH-соединение с VM2 на VM1.
4. Ограничить SSH-доступ с VM2 на хост.

Этапы

1. Установка и настройка SSH-сервера на хост
2. Установка и настройка SSH-сервера на VM1 и VM2

File   Machine   View   Input   Devices   Help

Oct 16 18:44

user@vm-lu-1: ~

```
user@vm-lu-1:~$ sudo systemctl status ssh
[sudo] password for user:
● ssh.service - OpenBSD Secure Shell server
     Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: enabled)
     Active: active (running) since Wed 2024-10-16 18:20:30 UTC; 20min ago
TriggeredBy: ● ssh.socket
       Docs: man:sshd(8)
             man:sshd_config(5)
    Process: 13459 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 13461 (sshd)
      Tasks: 1 (limit: 2278)
     Memory: 1.3M (peak: 4.2M)
        CPU: 177ms
     CGroup: /system.slice/ssh.service
             └─13461 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Oct 16 18:20:30 vm-lu-1 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Oct 16 18:20:30 vm-lu-1 sshd[13461]: Server listening on :: port 22.
Oct 16 18:20:30 vm-lu-1 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Oct 16 18:21:04 vm-lu-1 sshd[13466]: Accepted password for user from 192.168.100.29 port 56228 ssh2
Oct 16 18:21:04 vm-lu-1 sshd[13466]: pam_unix(sshd:session): session opened for user user(uid=1000) by user(uid=0)
Oct 16 18:26:33 vm-lu-1 sshd[13671]: Accepted password for user from 192.168.100.31 port 34380 ssh2
Oct 16 18:26:33 vm-lu-1 sshd[13671]: pam_unix(sshd:session): session opened for user user(uid=1000) by user(uid=0)
user@vm-lu-1:~$
```

Right Ctrl

File   Machine   View   Input   Devices   Help

Oct 16 18:44

user@vm-lu-3: ~

```
user@vm-lu-3:~$ sudo systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
     Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: enabled)
     Active: active (running) since Wed 2024-10-16 18:11:39 UTC; 33min ago
TriggeredBy: ● ssh.socket
       Docs: man:sshd(8)
             man:sshd_config(5)
   Main PID: 1057 (sshd)
      Tasks: 1 (limit: 2278)
     Memory: 2.1M (peak: 2.3M)
        CPU: 28ms
     CGroup: /system.slice/ssh.service
             └─1057 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Oct 16 18:11:39 vm-lu-3 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Oct 16 18:11:39 vm-lu-3 sshd[1057]: Server listening on :: port 22.
Oct 16 18:11:39 vm-lu-3 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
user@vm-lu-3:~$
```

Right Ctrl

hara@hara-nuc: ~

```
hara@hara-nuc:~$ sudo systemctl status ssh
[sudo] password for hara:
● ssh.service - OpenBSD Secure Shell server
     Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: enabled)
     Active: active (running) since Wed 2024-10-16 17:33:02 CEST; 3h 6min ago
TriggeredBy: ● ssh.socket
       Docs: man:sshd(8)
             man:sshd_config(5)
    Process: 7339 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 7341 (sshd)
      Tasks: 1 (limit: 18976)
     Memory: 1.4M (peak: 5.0M)
        CPU: 134ms
     CGroup: /system.slice/ssh.service
             └─7341 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Oct 16 17:33:02 hara-nuc systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Oct 16 17:33:02 hara-nuc sshd[7341]: Server listening on :: port 22.
Oct 16 17:33:02 hara-nuc systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Oct 16 20:24:31 hara-nuc sshd[13204]: Accepted password for hara from 192.168.100.32 port 35072 ssh2
Oct 16 20:24:31 hara-nuc sshd[13204]: pam_unix(sshd:session): session opened for user hara(uid=1000) by hara(uid=0)
Oct 16 20:27:49 hara-nuc sshd[13425]: Accepted password for hara from 192.168.100.31 port 48788 ssh2
Oct 16 20:27:49 hara-nuc sshd[13425]: pam_unix(sshd:session): session opened for user hara(uid=1000) by hara(uid=0)
hara@hara-nuc:~$
```

3. Настройка SSH-соединений

Подключение с хоста на VM1, с VM1 на хост, с VM2 на VM1

  ssh &lt;username&gt;@&lt;vm1-ip&gt;

  Результат

**vm-lu-1 [Running] - Oracle VirtualBox**

File  Machine  View  Input  Devices  Help

Oct 16 18:50

hara@hara-nuc: ~

```
        Memory: 1.3M (peak: 4.2M)
          CPU: 177ms
        CGroup: /system.slice/ssh.service
                └─13461 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Oct 16 18:20:30 vm-lu-1 systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Oct 16 18:20:30 vm-lu-1 sshd[13461]: Server listening on :: port 22.
Oct 16 18:20:30 vm-lu-1 systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Oct 16 18:21:04 vm-lu-1 sshd[13466]: Accepted password for user from 192.168.100.29 port 56228 ssh2
Oct 16 18:21:04 vm-lu-1 sshd[13466]: pam_unix(sshd:session): session opened for user user(uid=1000) by user(uid=0)
Oct 16 18:26:33 vm-lu-1 sshd[13671]: Accepted password for user from 192.168.100.31 port 34380 ssh2
Oct 16 18:26:33 vm-lu-1 sshd[13671]: pam_unix(sshd:session): session opened for user user(uid=1000) by user(uid=0)
user@vm-lu-1:~$ ssh hara@192.168.100.29
hara@192.168.100.29's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-45-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

38 updates can be applied immediately.
35 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Wed Oct 16 20:27:49 2024 from 192.168.100.31
hara@hara-nuc:~$
```

Right Ctrl

---

**vm-lu-3 [Running] - Oracle VirtualBox**

File  Machine  View  Input  Devices  Help

Oct 16 18:50

user@vm-lu-1: ~

```
user@vm-lu-3:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:97:f6:85 brd ff:ff:ff:ff:ff:ff
    inet 192.168.100.31/24 brd 192.168.100.255 scope global dynamic noprefixroute enp0s3
       valid_lft 84109sec preferred_lft 84109sec
    inet6 fe80::a00:27ff:fe97:f685/64 scope link
       valid_lft forever preferred_lft forever
user@vm-lu-3:~$ ssh user@192.168.100.32
user@192.168.100.32's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-47-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

*** System restart required ***
Last login: Wed Oct 16 18:46:24 2024 from 192.168.100.29
user@vm-lu-1:~$
```

Right Ctrl

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**user@vm-lu-1: ~**

```
    Process: 7339 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 7341 (sshd)
      Tasks: 1 (limit: 18976)
     Memory: 1.4M (peak: 5.0M)
        CPU: 134ms
     CGroup: /system.slice/ssh.service
             └─7341 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

Oct 16 17:33:02 hara-nuc systemd[1]: Starting ssh.service - OpenBSD Secure Shell server...
Oct 16 17:33:02 hara-nuc sshd[7341]: Server listening on :: port 22.
Oct 16 17:33:02 hara-nuc systemd[1]: Started ssh.service - OpenBSD Secure Shell server.
Oct 16 20:24:31 hara-nuc sshd[13204]: Accepted password for hara from 192.168.100.32 port 35072 ssh2
Oct 16 20:24:31 hara-nuc sshd[13204]: pam_unix(sshd:session): session opened for user hara(uid=1000) by hara(uid=0)
Oct 16 20:27:49 hara-nuc sshd[13425]: Accepted password for hara from 192.168.100.31 port 48788 ssh2
Oct 16 20:27:49 hara-nuc sshd[13425]: pam_unix(sshd:session): session opened for user hara(uid=1000) by hara(uid=0)
hara@hara-nuc:~$ ssh user@192.168.100.32
user@192.168.100.32's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-47-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

*** System restart required ***
Last login: Wed Oct 16 18:26:33 2024 from 192.168.100.31
user@vm-lu-1:~$
```
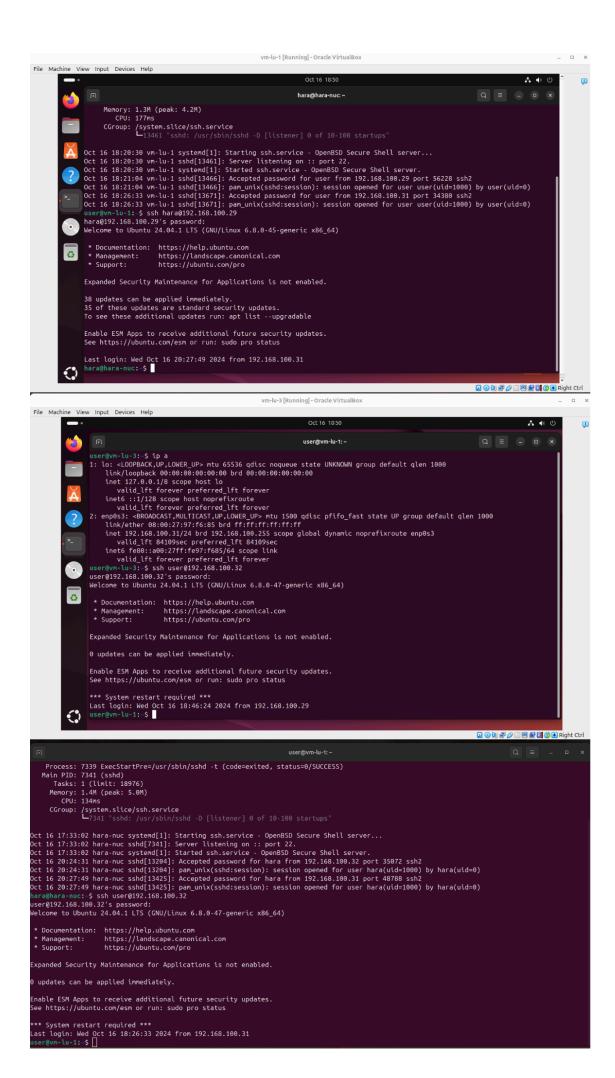
## 4. Ограничение SSH-доступа с использованием iptables



```
(Reading database ... 196943 files and directories currently installed.)
Removing ufw (0.36.2-6) ...
Skip stopping firewall: ufw (not enabled)
Selecting previously unselected package netfilter-persistent.
(Reading database ... 196848 files and directories currently installed.)
Preparing to unpack .../netfilter-persistent_1.0.20_all.deb ...
Unpacking netfilter-persistent (1.0.20) ...
Setting up netfilter-persistent (1.0.20) ...
Created symlink /etc/systemd/system/multi-user.target.wants/netfilter-persistent.service → /usr/lib/systemd/system/netfilter-persistent.servic
e.
Processing triggers for man-db (2.12.0-4build2) ...
hara@hara-nuc:~$ sudo iptables-save > /etc/iptables/rules.v4
bash: /etc/iptables/rules.v4: No such file or directory
hara@hara-nuc:~$ sudo iptables -A INPUT -p tcp -s 192.168.100.32 --dport 22 -j ACCEPT
hara@hara-nuc:~$ sudo iptables -A INPUT -p tcp -s 192.168.100.31 --dport 22 -j DROP
hara@hara-nuc:~$ sudo iptables -A OUTPUT -p tcp -s 192.168.100.32 --dport 22 -j ACCEPT
hara@hara-nuc:~$ sudo netfilter-persistent save
hara@hara-nuc:~$ sudo iptables -L
Chain INPUT (policy ACCEPT)
target     prot opt source               destination
ACCEPT     tcp  --  192.168.100.32       anywhere             tcp dpt:ssh
DROP       tcp  --  192.168.100.31       anywhere             tcp dpt:ssh
ACCEPT     tcp  --  192.168.100.32       anywhere             tcp dpt:ssh
DROP       tcp  --  192.168.100.31       anywhere             tcp dpt:ssh

Chain FORWARD (policy ACCEPT)
target     prot opt source               destination

Chain OUTPUT (policy ACCEPT)
target     prot opt source               destination
ACCEPT     tcp  --  192.168.100.32       anywhere             tcp dpt:ssh
ACCEPT     tcp  --  192.168.100.32       anywhere             tcp dpt:ssh
hara@hara-nuc:~$
```