

Лабораторная работа № 13

Настройка NFS

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1. Информация

2. Вводная часть

3. Выполнение заданий

4. Выводы

Раздел 1

1. Информация

1.1 Докладчик

► Митрофанов Тимур Александрович

1.1 Докладчик

- ▶ Митрофанов Тимур Александрович
- ▶ Российский университет дружбы народов им. П. Лумумбы

Раздел 2

2. Вводная часть

2.1 Цели и задачи

Цель - приобретение навыков настройки сервера NFS для удалённого доступа к ресурсам.

1. Установите и настройте сервер NFSv4.

2.1 Цели и задачи

Цель - приобретение навыков настройки сервера NFS для удалённого доступа к ресурсам.

1. Установите и настройте сервер NFSv4.
2. Подмонтируйте удалённый ресурс на клиенте.

2.1 Цели и задачи

Цель - приобретение навыков настройки сервера NFS для удалённого доступа к ресурсам.

1. Установите и настройте сервер NFSv4.
2. Подмонтируйте удалённый ресурс на клиенте.
3. Подключите каталог с контентом веб-сервера к дереву NFS

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2. Подмонтируйте удалённый ресурс на клиенте.
3. Подключите каталог с контентом веб-сервера к дереву NFS
4. Подключите каталог для удалённой работы вашего пользователя к дереву NFS

2.1 Цели и задачи

Цель - приобретение навыков настройки сервера NFS для удалённого доступа к ресурсам.

1. Установите и настройте сервер NFSv4.
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3. Подключите каталог с контентом веб-сервера к дереву NFS
4. Подключите каталог для удалённой работы вашего пользователя к дереву NFS
5. Напишите скрипты для Vagrant, фиксирующие действия по установке и настройке сервера NFSv4 во внутреннем окружении виртуальных машин `server` и `client`. Соответствующим образом внесите изменения в `Vagrantfile`

Раздел 3

3. Выполнение заданий

3.1 слайд 1

```

root@server:/vagrant/provision/server - sudo -i

[root@server.tamirofanov.net server]# dnf -y install nfs-utils
Rocky Linux 10 - BaseOS                               3.0 kB/s | 4.3 kB    00:01
Rocky Linux 10 - AppStream                             9.1 kB/s | 4.3 kB    00:00
Rocky Linux 10 - CRB                                   7.5 kB/s | 4.3 kB    00:00
Rocky Linux 10 - Extras                               530 B/s | 3.1 kB    00:05
Dependencies resolved.
=====
Package                                Architecture      Version            Repository          Size
=====
Installing:
nfs-utils                               x86_64            1:2.8.3-0.el10    baseos              475 k
Upgrading:
libipa_hbac                             x86_64            2.11.1-2.el10_1.1 baseos              34 k
libldb                                   x86_64            4.22.4-106.el10   baseos             181 k
libsmbclient                            x86_64            4.22.4-106.el10   baseos              75 k
libsss_certmap                           x86_64            2.11.1-2.el10_1.1 baseos              81 k
libsss_idmap                             x86_64            2.11.1-2.el10_1.1 baseos              41 k
libsss_nss_idmap                         x86_64            2.11.1-2.el10_1.1 baseos              44 k
libsss_sudo                              x86_64            2.11.1-2.el10_1.1 baseos              33 k
libtalloc                                x86_64            2.4.3-100.el10    baseos              33 k
libtdb                                    x86_64            1.4.13-100.el10   baseos              55 k
libtevent                                x86_64            0.16.2-100.el10   baseos              50 k
libwbclient                              x86_64            4.22.4-106.el10   baseos              43 k
samba-client-libs                        x86_64            4.22.4-106.el10   baseos              5.3 M
samba-common                             noarch            4.22.4-106.el10   baseos              174 k
samba-common-libs                       x86_64            4.22.4-106.el10   baseos              104 k
sssd                                      x86_64            2.11.1-2.el10_1.1 baseos              25 k
sssd-ad                                  x86_64            2.11.1-2.el10_1.1 baseos             195 k
sssd-client                              x86_64            2.11.1-2.el10_1.1 baseos             152 k
sssd-common                              x86_64            2.11.1-2.el10_1.1 baseos             1.5 M
sssd-common-pac                          x86_64            2.11.1-2.el10_1.1 baseos              89 k
sssd-ipa                                 x86_64            2.11.1-2.el10_1.1 baseos             274 k
sssd-kcm                                 x86_64            2.11.1-2.el10_1.1 baseos             103 k
sssd-krb5                                 x86_64            2.11.1-2.el10_1.1 baseos              62 k
sssd-krb5-common                         x86_64            2.11.1-2.el10_1.1 baseos              93 k
sssd-ldap                                 x86_64            2.11.1-2.el10_1.1 baseos             132 k
sssd-proxy                               x86_64            2.11.1-2.el10_1.1 baseos              70 k
Installing dependencies:
gssproxy                                 x86_64            0.9.2-10.el10     baseos             111 k
libev                                     x86_64            4.33-14.el10      baseos              52 k
libnfsidmap                              x86_64            1:2.8.3-0.el10    baseos              61 k

```

3.2 слайд 2

```
[root@server.tamitrofanov.net server]#  
[root@server.tamitrofanov.net server]# mkdir -p /srv/nfs  
[root@server.tamitrofanov.net server]#
```

Рисунок 2: создание каталога

3.3 слайд 3

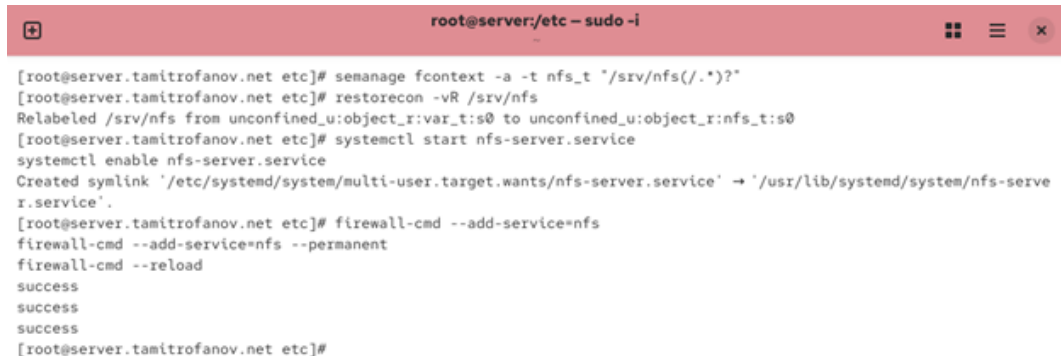


The screenshot shows a terminal window with a pink title bar. The title bar contains a square icon with a plus sign on the left and the text "root@server:/etc – sudo -i" on the right. Below the title bar is a black terminal area. The first line of the terminal shows "GNU nano 8.1" on the left and "exports" on the right. The second line shows the text "/srv/nfs *(ro)" followed by a black cursor block.

```
root@server:/etc – sudo -i
GNU nano 8.1 exports
/srv/nfs *(ro)
```

Рисунок 3: изменение файла

3.4 слайд 4



```
root@server:/etc – sudo -i

[root@server.tamitrofanov.net etc]# semanage fcontext -a -t nfs_t "/srv/nfs(/.*)?"
[root@server.tamitrofanov.net etc]# restorecon -vR /srv/nfs
Relabeled /srv/nfs from unconfined_u:object_r:var_t:s0 to unconfined_u:object_r:nfs_t:s0
[root@server.tamitrofanov.net etc]# systemctl start nfs-server.service
systemctl enable nfs-server.service
Created symlink '/etc/systemd/system/multi-user.target.wants/nfs-server.service' → '/usr/lib/systemd/system/nfs-server.service'.
[root@server.tamitrofanov.net etc]# firewall-cmd --add-service=nfs
firewall-cmd --add-service=nfs --permanent
firewall-cmd --reload
success
success
success
[root@server.tamitrofanov.net etc]#
```

Рисунок 4: Настройка NSF

3.5 слайд 5

```


root@client:/vagrant/provision/client -- sudo -i

[root@client tamitrofanov.net client]# dnf -y install nfs-utils
Rocky Linux 10 - BaseOS                               1.8 kB/s | 4.3 kB      00:02
Rocky Linux 10 - AppStream                             2.7 kB/s | 4.3 kB      00:01
Rocky Linux 10 - CRB                                   6.8 kB/s | 4.3 kB      00:00
Rocky Linux 10 - Extras                               537 B/s | 3.1 kB      00:05
Dependencies resolved.

=====
Package                                Architecture      Version           Repository        Size
=====
Installing:
nfs-utils                               x86_64            1:2.8.3-0.el10   baseos            475 k
Upgrading:
libipa_hbac                             x86_64            2.11.1-2.el10_1.1 baseos            34 k
libldb                                  x86_64            4.22.4-106.el10  baseos            181 k
libsmbclient                           x86_64            4.22.4-106.el10  baseos            75 k
libsss_certmap                          x86_64            2.11.1-2.el10_1.1 baseos            81 k
libsss_idmap                            x86_64            2.11.1-2.el10_1.1 baseos            41 k
libsss_nss_idmap                        x86_64            2.11.1-2.el10_1.1 baseos            44 k
libsss_sudo                             x86_64            2.11.1-2.el10_1.1 baseos            33 k
libtalloc                               x86_64            2.4.3-100.el10   baseos            33 k
libtdb                                   x86_64            1.4.13-100.el10  baseos            55 k
libtevent                               x86_64            0.16.2-100.el10  baseos            50 k
libwbclient                             x86_64            4.22.4-106.el10  baseos            43 k
samba-client-libs                       x86_64            4.22.4-106.el10  baseos            5.3 M
samba-common                            noarch            4.22.4-106.el10  baseos            174 k
samba-common-libs                       x86_64            4.22.4-106.el10  baseos            104 k
sssd                                     x86_64            2.11.1-2.el10_1.1 baseos            25 k
sssd-ad                                 x86_64            2.11.1-2.el10_1.1 baseos            195 k
sssd-client                             x86_64            2.11.1-2.el10_1.1 baseos            152 k
sssd-common                             x86_64            2.11.1-2.el10_1.1 baseos            1.5 M
sssd-common-pac                         x86_64            2.11.1-2.el10_1.1 baseos            89 k
sssd-ipa                                 x86_64            2.11.1-2.el10_1.1 baseos            274 k
sssd-kcm                                 x86_64            2.11.1-2.el10_1.1 baseos            103 k
sssd-krb5                               x86_64            2.11.1-2.el10_1.1 baseos            62 k
sssd-krb5-common                       x86_64            2.11.1-2.el10_1.1 baseos            93 k
sssd-ldap                               x86_64            2.11.1-2.el10_1.1 baseos            132 k
sssd-proxy                              x86_64            2.11.1-2.el10_1.1 baseos            70 k
Installing dependencies:
gssproxy                                x86_64            0.9.2-10.el10    baseos            111 k
libev                                    x86_64            4.33-14.el10     baseos            52 k

```

3.6 слайд 6



A terminal window with a red title bar. The title bar contains a plus icon on the left and the text `root@client:/vagrant/provision/client – sudo -i` on the right. The terminal content shows a user at a shell prompt running the command `showmount -e server.tamitrofanov.net`. The output is `clnt_create: RPC: Unable to receive`. The prompt returns to `[root@client.tamitrofanov.net client]#` with a black cursor.

```
root@client:/vagrant/provision/client – sudo -i

[root@client.tamitrofanov.net client]# showmount -e server.tamitrofanov.net
clnt_create: RPC: Unable to receive
[root@client.tamitrofanov.net client]#
```

Рисунок 6: Проверка удалённых ресурсов

3.7 слайд 7



```
root@server/etc ~ sudo -i
[root@server.tamitrafanov.net etc]# systemctl stop firewalld.service
[root@server.tamitrafanov.net etc]#

root@client/vagrant/provision/client ~ sudo -i
[root@client.tamitrafanov.net client]# showmount -e server.tamitrafanov.net
Export list for server.tamitrafanov.net:
/rrc/mfs *
```

Рисунок 7: отключение службы и повторная проверка

3.8 слайд 8

```
[root@server.tamitrofanov.net etc]# systemctl start firewalld  
[root@server tamitrofanov net etc]#
```

Рисунок 8: запуск межсетевого экрана

3.9 слайд 9

```

root@server:/etc - sudo -i

[root@server.tamitrofanov.net etc]# lsof | grep TCP
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/1001/gvfs
Output information may be incomplete.
lsof: WARNING: can't stat() fuse.portal file system /run/user/1001/doc
Output information may be incomplete.

```

systemd	1	root	216u	IPv6	8268	0t0	TCP *:websm (LISTEN)
systemd	1	root	404u	IPv4	51393	0t0	TCP *:sunrpc (LISTEN)
systemd	1	root	407u	IPv6	51407	0t0	TCP *:sunrpc (LISTEN)
cupsd	1223	root	7u	IPv6	10886	0t0	TCP localhost:ipp (LI
STEN)							
cupsd	1223	root	8u	IPv4	10887	0t0	TCP localhost:ipp (LI
STEN)							
sshd	1229	root	7u	IPv4	10870	0t0	TCP *:down (LISTEN)
sshd	1229	root	8u	IPv6	10872	0t0	TCP *:down (LISTEN)
sshd	1229	root	9u	IPv4	10874	0t0	TCP *:ssh (LISTEN)
sshd	1229	root	10u	IPv6	10876	0t0	TCP *:ssh (LISTEN)
named	1328	named	27u	IPv4	11019	0t0	TCP localhost:domain
(LISTEN)							
named	1328	named	29u	IPv4	11020	0t0	TCP localhost:domain
(LISTEN)							
named	1328	named	33u	IPv6	11023	0t0	TCP localhost:domain
(LISTEN)							
named	1328	named	34u	IPv6	11024	0t0	TCP localhost:domain
(LISTEN)							
named	1328	named	35u	IPv4	11047	0t0	TCP localhost:rndc (L
ISTEN)							
named	1328	named	36u	IPv4	11048	0t0	TCP localhost:rndc (L
ISTEN)							
named	1328	named	37u	IPv6	11049	0t0	TCP localhost:rndc (L
ISTEN)							
named	1328	named	38u	IPv6	11050	0t0	TCP localhost:rndc (L
ISTEN)							
named	1328	named	41u	IPv4	11174	0t0	TCP server.tamitrofan
ov.net:domain (LISTEN)							
named	1328	named	42u	IPv4	11175	0t0	TCP server.tamitrofan
ov.net:domain (LISTEN)							
named	1328	named	45u	IPv4	11183	0t0	TCP www.tamitrofanov.
net:domain (LISTEN)							
named	1328	named	46u	IPv4	11184	0t0	TCP www.tamitrofanov.
net:domain (LISTEN)							
named	1328 1330 isc-net-0	named	27u	IPv4	11019	0t0	TCP localhost:domain

3.10 слайд 10

```
[root@server.tamitrofanov.net etc]# lsof | grep TCP
lsof: WARNING: can't stat() fuse.gvfsd-fuse file system /run/user/1001/gvfs
Output information may be incomplete.
lsof: WARNING: can't stat() fuse.portal file system /run/user/1001/doc
Output information may be incomplete.
```

systemd	1	root	216u	IPv6	8268	0t0	TCP *:websm (LISTEN)
systemd	1	root	404u	IPv4	51393	0t0	TCP *:sunrpc (LISTEN)
systemd	1	root	407u	IPv6	51407	0t0	TCP *:sunrpc (LISTEN)
cupsd	1223	root	7u	IPv6	10886	0t0	TCP localhost:ipp (LI
cupsd	1223	root	8u	IPv4	10887	0t0	TCP localhost:ipp (LI
sshd	1229	root	7u	IPv4	10870	0t0	TCP *:down (LISTEN)
sshd	1229	root	8u	IPv6	10872	0t0	TCP *:down (LISTEN)
sshd	1229	root	9u	IPv4	10874	0t0	TCP *:ssh (LISTEN)
sshd	1229	root	10u	IPv6	10876	0t0	TCP *:ssh (LISTEN)
named	1328	named	27u	IPv4	11019	0t0	TCP localhost:domain
named	1328	named	29u	IPv4	11020	0t0	TCP localhost:domain
named	1328	named	33u	IPv6	11023	0t0	TCP localhost:domain
named	1328	named	34u	IPv6	11024	0t0	TCP localhost:domain
named	1328	named	35u	IPv4	11047	0t0	TCP localhost:rndc (L
named	1328	named	36u	IPv4	11048	0t0	TCP localhost:rndc (L
named	1328	named	37u	IPv6	11049	0t0	TCP localhost:rndc (L
named	1328	named	38u	IPv6	11050	0t0	TCP localhost:rndc (L
named	1328	named	41u	IPv4	11174	0t0	TCP server.tamitrofan
ov.net:domain (LISTEN)	1328	named	42u	IPv4	11175	0t0	TCP server.tamitrofan
ov.net:domain (LISTEN)	1328	named	45u	IPv4	11183	0t0	TCP www.tamitrofanov.
net:domain (LISTEN)	1328	named	46u	IPv4	11184	0t0	TCP www.tamitrofanov.
net:domain (LISTEN)	1328	named	27u	IPv4	11019	0t0	TCP localhost:domain

3.11 слайд 11

The image shows two terminal windows side-by-side. The left window is titled 'root@server:~# sudo -i' and shows the execution of firewall rules and a long list of installed services. The right window is titled 'root@client:~/vagrant/provision/client - sudo -i' and shows the execution of 'showmount' commands to check NFS shares on both the server and client.

```

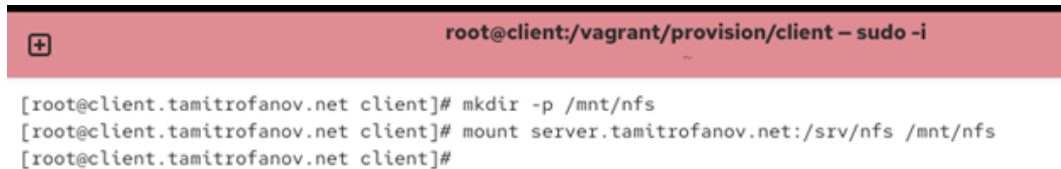
root@server:~# sudo -i
[root@server tamirofanov.net ~]# firewall-cmd --get-services
firewall-cmd --add-service=mounted --add-service=rpc-bind
firewall-cmd --add-service=mounted --add-service=rpc-bind --permanent
firewall-cmd --reload
0-A0 0H-Satellite-6 0H-Satellite-6-capsule afp aliv amanda-client amanda-k5-client amqp amqps anno-1002 anno-1000 apc
upod asoqnet audit auserisapp2 bacula bacula-client bareos-director bareos-filedemon bareos-storage bb bgo bitcoin b
itcoin-ape bitcoin-testnet bitcoin-testnet-rpc bittorrent-lad ceph ceph-exporter ceph-mon cfengine checkmk-agent civil
ization-tv civilization-v cockpit collectd conder-collector coredb ctdb dds dds-multicast dds-unicast dhcp dhcpcd d
hcpv6-client distcc dms dms-over-usb dms-over-tls docker-registery docker-swarm dropbox-lanync elasticsearch etcd-cl
ient etcd-server factorio finger foreman foreman-proxy freeipa-4 freeipa-ldap freeipa-ldaps freeipa-replication freei
pa-trust ftp galera ganglia-client ganglia-master git gssd grafana gro high-availability http http3 https libnet lmap
lmap3 lparf2 lparf3 lparf4 lpar lpar-client lparsec lrc lrcs lrcsl-target lsns jenkins kademlia kdeconnect kerberos kibana kl
ogin kpassd kpass kshell kube-api kube-apiserver kube-control-plane kube-control-plane-secure kube-controller-manage
r kube-controller-manager-secure kube-nodeport-services kube-scheduler kube-scheduler-secure kube-watcher kubelet kube
let-randomly kubetlet-worker ldap ldaps libvirt libvirt-tls lightning-network llmnr llmnr-client llmnr-top llmnr-udp m
anagerieve matrix ndms nmcacsa minecraft minidfs mdp mongod mosh mounts mpd mygt mygt-tls ms-wbt msogl muser mys
ql nbd nebula need-for-speed-most-wanted netbios-na netdata-dashboard nfs nfal news-0183 ntp ntp nut opentelemetry o
penvpn ovirt-linergis ovirt-storageconsole ovirt-vmconsole plex pncd ppcosky pwebapi pwebapi3 pop3 pop3s postgresql
privacy prometheus prometheus-node-exporter proxy-dhcp pa2link palmetary php pulseaudio puppetmaster quassel radium r
adsec rdp redis redis-sentinel rood rpc-bind rquoted rsh rshd rtp salt-master samba samba-client samba-da sane sa
tellite-history-collection sip sipx alimov sip smtp-submission smtps smtp amptla amptla-trap ampttrap apidocss
k-lanync sportify-sync squid sntp sah sah-custom statcrv steam-lan-transfer steam-streaming stellaris stronghold-crus
ader stun stuna subversion supermarket svdp svn syncthing syncthing-gui syncthing-relay synergy syncroscan symling sy
slog-tls telnet tentacle terraria tfp3 ttle3d tinc tui-socks transmission-client turn turns upnp-client vdm vnc-srv
er vrrp wampserver when-http when-https wireguard ws-discovery ws-discovery-client ws-discovery-host ws-discovery-top
ws-discovery-udp wdd wdd-http wman wman3 xdhcp xmpc xmpc-client xmpc-local xmpc-server xablix-agent xablix-
java-gateway xablix-server xablix-trapper xablix-web-service zero-k zerotier
success
success
success
[root@server tamirofanov.net ~]#
  
```

```

root@client:~/vagrant/provision/client - sudo -i
[root@client tamirofanov.net ~]# showmount -e server.tamirofanov.net
Export list for server.tamirofanov.net:
/srv/nfs
[root@client tamirofanov.net ~]# showmount -e server.tamirofanov.net
Export list for server.tamirofanov.net:
/srv/nfs
[root@client tamirofanov.net ~]# showmount -e server.tamirofanov.net
Export list for server.tamirofanov.net:
/srv/nfs
[root@client tamirofanov.net ~]# showmount -e server.tamirofanov.net
Export list for server.tamirofanov.net:
/srv/nfs
[root@client tamirofanov.net ~]#
  
```

Рисунок 11: внесение изменений в межсетевую экран и проверка подключения

3.12 слайд 12



```
root@client:/vagrant/provision/client – sudo -i

[root@client.tamitrofanov.net client]# mkdir -p /mnt/nfs
[root@client.tamitrofanov.net client]# mount server.tamitrofanov.net:/srv/nfs /mnt/nfs
[root@client.tamitrofanov.net client]#
```

Рисунок 12: создание каталога и его подмотирование

3.13 слайд 13

```

root@client:/vagrant/provision/client – sudo -i

GNU nano 8.1 /etc/fstab

#
# /etc/fstab
# Created by anaconda on Sat Sep 20 17:08:23 2025
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
UUID=a8de40f1-a92a-422a-a590-a19810b43a5a / xfs defaults 0 0
UUID=d5d1fd40-cd70-4c22-8ec3-0e1b29dacabb /boot xfs defaults 0 0
UUID=F834-EEBC /boot/efi vfat umask=0077,shortname=winnt 0 2
UUID=b2e22971-264a-42e6-ad2c-488751d06ff5 /home xfs defaults 0 0
UUID=58013f04-006f-4c74-a438-a9579b359256 none swap defaults 0 0
#VAGRANT-BEGIN
# The contents below are automatically generated by Vagrant. Do not modify.
vagrant /vagrant vboxsf uid=1000,gid=1000,_netdev 0 0
#VAGRANT-END

server.tamitrofanov net:/srv/nfs /mnt/nfs nfs _netdev 0 0

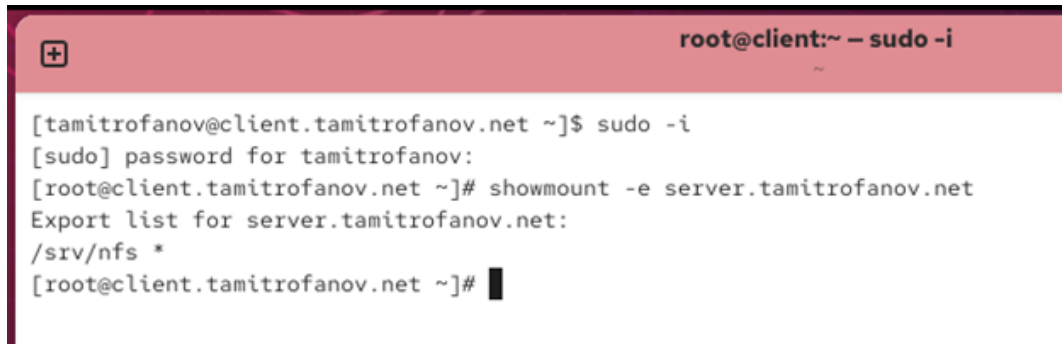
```

3.14 слайд 14

```
[root@client.tamitrofanov.net client]#  
[root@client.tamitrofanov.net client]# systemctl status remote-fs.target  
● remote-fs.target - Remote File Systems  
   Loaded: loaded (/usr/lib/systemd/system/remote-fs.target; enabled; preset: enabled)  
   Active: active since Fri 2025-11-28 20:16:00 MSK; 21h ago  
   Invocation: c06e0933baa04aacbcd0d0ce520e35d4  
   Docs: man:systemd.special(7)  
  
Nov 28 20:16:00 client.tamitrofanov.net systemd[1]: Reached target remote-fs.target - Remote File Systems.  
[root@client.tamitrofanov.net client]# █
```

Рисунок 14: systemctl status remote-fs.target

3.15 слайд 15

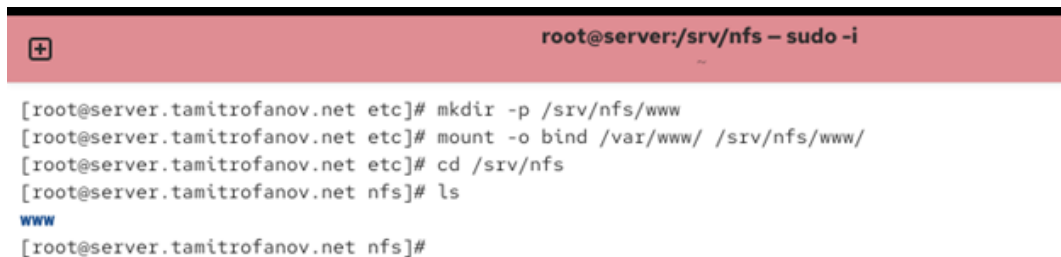


```
root@client:~ – sudo -i

[tamitrofanov@client.tamitrofanov.net ~]$ sudo -i
[sudo] password for tamitrofanov:
[root@client.tamitrofanov.net ~]# showmount -e server.tamitrofanov.net
Export list for server.tamitrofanov.net:
/srv/nfs *
[root@client.tamitrofanov.net ~]#
```

Рисунок 15: доп проверка успешного подключения

3.16 слайд 16



```
root@server:/srv/nfs – sudo -i

[root@server.tamitrofanov.net etc]# mkdir -p /srv/nfs/www
[root@server.tamitrofanov.net etc]# mount -o bind /var/www/ /srv/nfs/www/
[root@server.tamitrofanov.net etc]# cd /srv/nfs
[root@server.tamitrofanov.net nfs]# ls
www
[root@server.tamitrofanov.net nfs]#
```

Рисунок 16: Создание общего каталога с контентом веб сервера

3.17 слайд 17



A terminal window with a pink title bar. The title bar contains a plus icon on the left and the text "root@client:/mnt/nfs – sudo -i" on the right. The terminal content shows a sequence of commands and their output:

```
[root@client.tamitrofanov.net ~]# cd /mnt/nfs
[root@client.tamitrofanov.net nfs]# ls
www
[root@client.tamitrofanov.net nfs]#
```

Рисунок 17: Проверка на клиенте

3.18 слайд 18

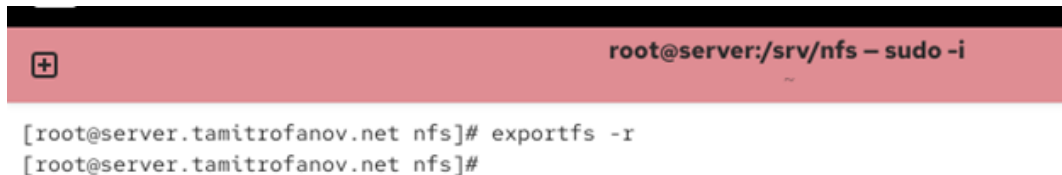


The screenshot shows a terminal window with a pink title bar. The title bar contains a plus icon on the left and the text "root@server:/srv/nfs – sudo -i" on the right. Below the title bar is a black bar with "GNU nano 8.1" on the left and "/etc/exports" on the right. The main area of the terminal shows the text of the /etc/exports file: "/srv/nfs *(ro)" followed by a new line starting with "/srv/nfs/www 192.168.0.0/16(rw)". A black cursor is positioned at the end of the second line.

```
root@server:/srv/nfs – sudo -i
GNU nano 8.1 /etc/exports
/srv/nfs *(ro)
/srv/nfs/www 192.168.0.0/16(rw)
```

Рисунок 18: изменение файла

3.19 слайд 19

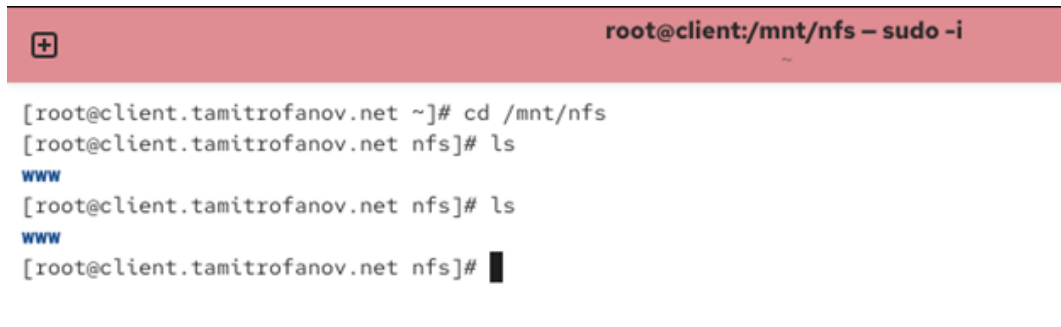


A terminal window with a red title bar. The title bar contains a plus icon on the left and the text 'root@server:/srv/nfs – sudo -i' on the right. The terminal content shows two lines of text: '[root@server.tamitrofanov.net nfs]# exportfs -r' followed by a new line '[root@server.tamitrofanov.net nfs]#'.

```
root@server:/srv/nfs – sudo -i  
[root@server.tamitrofanov.net nfs]# exportfs -r  
[root@server.tamitrofanov.net nfs]#
```

Рисунок 19: экспорт файлов

3.20 слайд 20



A terminal window with a red title bar. The title bar contains a plus icon on the left and the text 'root@client:/mnt/nfs – sudo -i' on the right. The terminal content shows a series of commands and their outputs:

```
[root@client.tamitrofanov.net ~]# cd /mnt/nfs
[root@client.tamitrofanov.net nfs]# ls
www
[root@client.tamitrofanov.net nfs]# ls
www
[root@client.tamitrofanov.net nfs]#
```

Рисунок 20: проверка клиента

3.21 слайд 21

```
root@server:/srv/nfs - sudo -i

GNU nano 8.1 /etc/fstab

#
# /etc/fstab
# Created by anaconda on Sat Sep 20 17:08:23 2025
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
UUID=a8de40f1-a92a-422a-a590-a19810b43a5a / xfs defaults 0 0
UUID=d5d1fd40-cd70-4c22-8ec3-0e1b29dacabb /boot xfs defaults 0 0
UUID=F834-EEBC /boot/efi vfat umask=0077,shortname=winnt 0 2
UUID=b2e22971-264a-42e6-ad2c-488751d06ff5 /home xfs defaults 0 0
UUID=58013f04-006f-4c74-a438-a9579b359256 none swap defaults 0 0
#VAGRANT-BEGIN
# The contents below are automatically generated by Vagrant. Do not modify.
vagrant /vagrant vboxsf uid=1000,gid=1000,_netdev 0 0
#VAGRANT-END
```

3.22 слайд 22



A terminal window with a dark title bar and a pink header bar. The header bar contains a plus icon on the left and the text 'root@server:/srv/nfs – sudo -i' on the right. The terminal shows the command 'exportfs -r' being executed in a shell with the prompt '[root@server.tamitrofanov.net nfs]#'. The output is '[root@server.tamitrofanov.net nfs]#'.

```
root@server:/srv/nfs – sudo -i

[root@server.tamitrofanov.net nfs]# exportfs -r
[root@server.tamitrofanov.net nfs]#
```

Рисунок 22: повторный экспорт файлов

3.23 слайд 23

```
[root@client.tamitrofanov.net nfs]#  
[root@client.tamitrofanov.net nfs]# ls  
www  
[root@client.tamitrofanov.net nfs]#
```

Рисунок 23: проверка клиента

3.24 слайд 24

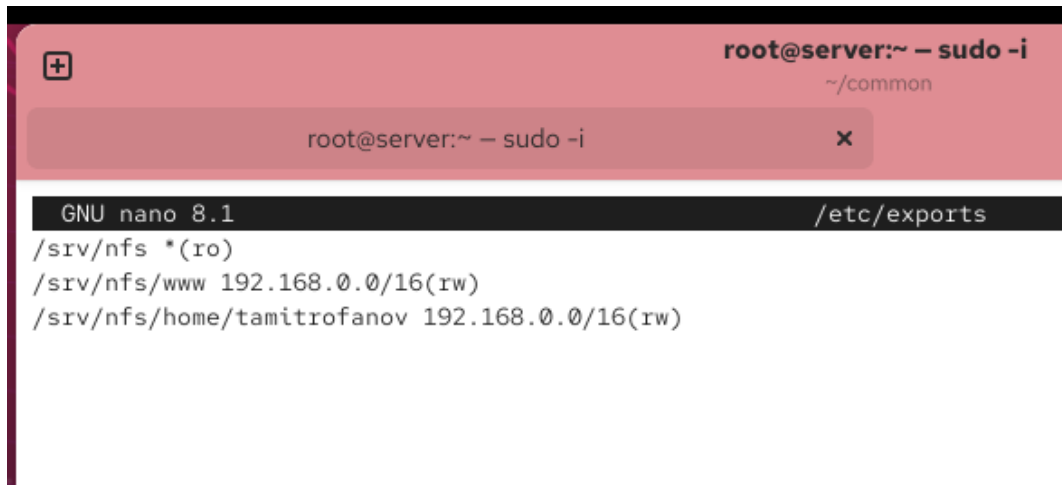


root@server:~ – sudo -i

~/common

```
[tamitrofanov@server.tamitrofanov.net common]$ mkdir -p -m 700 ~/common
cd ~/common
[tamitrofanov@server.tamitrofanov.net common]$ touch tamitrofanov@server.txt
[tamitrofanov@server.tamitrofanov.net common]$ ls
tamitrofanov@server.txt  user@server.txt
[tamitrofanov@server.tamitrofanov.net common]$ rm user@server.txt
[tamitrofanov@server.tamitrofanov.net common]$ ls
tamitrofanov@server.txt
[tamitrofanov@server.tamitrofanov.net common]$ mkdir -p /srv/nfs/home/tamitrofanov
mkdir: cannot create directory '/srv/nfs/home': Permission denied
[tamitrofanov@server.tamitrofanov.net common]$ ^C
[tamitrofanov@server.tamitrofanov.net common]$ sudo -i
[sudo] password for tamitrofanov:
[root@server.tamitrofanov.net ~]# mkdir -p /srv/nfs/home/tamitrofanov
[root@server.tamitrofanov.net ~]# mount -o bind /home/tamitrofanov/common /srv/nfs/home/tamitrofanov
mount: (hint) your fstab has been modified, but systemd still uses
the old version; use 'systemctl daemon-reload' to reload.
[root@server.tamitrofanov.net ~]# systemctl daemon-reload
```

3.25 слайд 25



A terminal window titled "root@server:~ – sudo -i" with a subtitle "~ /common". Below the title bar is a search bar containing "root@server:~ – sudo -i" and a close button "x". The main area shows the GNU nano 8.1 editor editing the file /etc/exports. The content of the file is as follows:

```
GNU nano 8.1 /etc/exports
/srv/nfs *(ro)
/srv/nfs/www 192.168.0.0/16(rw)
/srv/nfs/home/tamitrofanov 192.168.0.0/16(rw)
```

3.26 слайд 26

```
root@server:~ – sudo -i
~/common

GNU nano 8.1 /etc/fstab

#
# /etc/fstab
# Created by anaconda on Sat Sep 20 17:08:23 2025
#
# Accessible filesystems, by reference, are maintained under '/dev/disk/'.
# See man pages fstab(5), findfs(8), mount(8) and/or blkid(8) for more info.
#
# After editing this file, run 'systemctl daemon-reload' to update systemd
# units generated from this file.
#
UUID=a8de40f1-a92a-422a-a590-a19810b43a5a / xfs defaults 0 0
UUID=d5d1fd40-cd70-4c22-8ec3-0e1b29dacabb /boot xfs defaults 0 0
UUID=F834-EEBC /boot/efi vfat umask=0077,shortname=winnt 0 2
UUID=b2e22971-264a-42e6-ad2c-488751d06ff5 /home xfs defaults 0 0
UUID=58013f04-006f-4c74-a438-a9579b359256 none swap defaults 0 0
#VAGRANT-BEGIN
# The contents below are automatically generated by Vagrant. Do not modify.
vagrant /vagrant vboxsf uid=1000,gid=1000,_netdev 0 0
#VAGRANT-END

/var/www /srv/nfs/www none bind 0 0
```

3.27 слайд 27

A terminal window with a pink header bar. The header bar contains a plus icon on the left, the text 'root@server:~' on the right, and a partial path '~ /comm' below it. Below the header is a light pink bar with the text 'root@server:~ - sudo -i' and a close 'x' icon on the right. The main terminal area shows the command '[root@server.tamitrofanov.net ~]# exportfs -r' followed by a new prompt '[root@server.tamitrofanov.net ~]#' and a black cursor.

```
root@server:~  
~/comm  
root@server:~ - sudo -i  
[root@server.tamitrofanov.net ~]# exportfs -r  
[root@server.tamitrofanov.net ~]#
```

Рисунок 27: экспорт файлов

3.28 слайд 28

```
[root@client.tamitrofanov.net nfs]# ls  
home  www  
[root@client.tamitrofanov.net nfs]# █
```

Рисунок 28: проверка клиента

3.29 слайд 29



tamitrofanov@client:/mnt/nfs/home/tamitrofanov
/mnt/nfs/home/tamitrofanov

root@client:/mnt/nfs – sudo -i

tamitrofanov@client

```
[tamitrofanov@client.tamitrofanov.net ~]$ cd /mnt/nfs/home/tamitrofanov
touch tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ vim tamitrofanov@client.txt

[1]+  Stopped                  vim tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ vim tamitrofanov@client.txt

[2]+  Stopped                  vim tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ vim tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ cat tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ vim tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ cat tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ vim tamitrofanov@client.txt
[tamitrofanov@client.tamitrofanov.net tamitrofanov]$ cat tamitrofanov@client.txt
asdasdasdsadasdsadasdasd
```

3.30 слайд 30

```
[root@client.tamitrofanov.net nfs]#  
[root@client.tamitrofanov.net nfs]# cd /mnt/nfs/home/tamitrofanov  
-bash: cd: /mnt/nfs/home/tamitrofanov: Permission denied  
[root@client.tamitrofanov.net nfs]# █
```

Рисунок 30: экспорт файлов

3.31 слайд 31

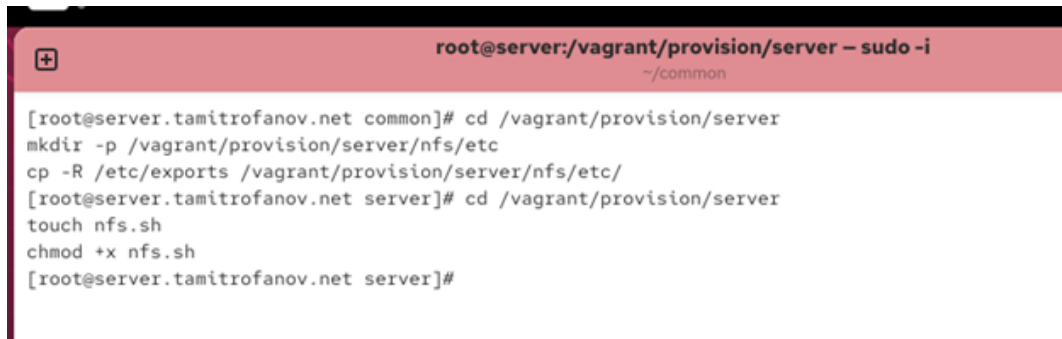


A terminal window titled "root@server:/home/tamitrofanov/common – sudo -i" with a sub-title "~ /common". The terminal shows the following commands and output:

```
[root@server.tamitrofanov.net ~]# cd /home/tamitrofanov/common
[root@server.tamitrofanov.net common]# ls
tamitrofanov@client.txt  tamitrofanov@server.txt
[root@server.tamitrofanov.net common]# cat tamitrofanov@client.txt
asdasdasdsadasdasdasd
[root@server.tamitrofanov.net common]#
```

Рисунок 31: проверка изменения файлов на сервере

3.32 слайд 32

A terminal window with a pink title bar. The title bar contains a plus icon on the left and the text 'root@server:/vagrant/provision/server – sudo -i' and '~/common' on the right. The terminal shows a series of commands and their outputs. The prompt changes from '[root@server.tamitrofanov.net common]#' to '[root@server.tamitrofanov.net server]#'.

```
[root@server.tamitrofanov.net common]# cd /vagrant/provision/server
mkdir -p /vagrant/provision/server/nfs/etc
cp -R /etc/exports /vagrant/provision/server/nfs/etc/
[root@server.tamitrofanov.net server]# cd /vagrant/provision/server
touch nfs.sh
chmod +x nfs.sh
[root@server.tamitrofanov.net server]#
```

Рисунок 32: Создание конфиг файла

3.33 слайд 33

A screenshot of a terminal window titled 'root@server:/vagrant/provision/server -- sudo -i'. The terminal shows a script being executed in a nano editor. The script performs several tasks: it sets the shell to /bin/bash, echoes a message, installs nfs-utils, copies configuration files from a vagrant directory to /etc, restores permissions on /etc, configures the firewall to allow nfs, mountd, and rpc-bind services, tunes SELinux, creates directories for /srv/nfs and /srv/nfs/www, sets file contexts, creates a user 'tamitrofanov' with a home directory, sets permissions, and mounts the common directory to the user's home. The script ends with an echo message to start the nfs service.

```
GNU nano 8.1                                nfs.sh                                Modified
#!/bin/bash
echo "Provisioning script $0"
echo "Install needed packages"
dnf -y install nfs-utils

echo "Copy configuration files"
cp -R /vagrant/provision/server/nfs/etc/* /etc

restorecon -vR /etc

echo "Configure firewall"
firewall-cmd --add-service nfs --permanent
firewall-cmd --add-service mountd --add-service rpc-bind --permanent
firewall-cmd --reload

echo "Tuning SELinux"
mkdir -p /srv/nfs
semanage fcontext -a -t nfs_t "/srv/nfs(/.*)?"
restorecon -vR /srv/nfs

echo "Mounting dirs"
mkdir -p /srv/nfs/www
mount -o bind /var/www /srv/nfs/www
echo "/var/www /srv/nfs/www none bind 0 0" >> /etc/fstab
mkdir -p /srv/nfs/home/tamitrofanov
mkdir -p -m 700 /home/tamitrofanov/common
chown user:user /home/tamitrofanov/common
mount -o bind /home/tamitrofanov/common /srv/nfs/home/tamitrofanov
echo "/home/tamitrofanov/common /srv/nfs/home/tamitrofanov none bind 0 0" >> /etc/fstab

echo "Start nfs service"
```

3.34 слайд 34



A terminal window with a pink header bar. The header bar contains a plus icon on the left and the text 'root@client:/vagrant/provision/cli' on the right. Below the header bar, there is a search bar with the text 'root@client:/vagrant/provision/client – sudo -i' and a close button 'x'. The terminal output shows the following commands and their results:

```
[root@client.tamitrofanov.net server]# cd /vagrant/provision/client
[root@client.tamitrofanov.net client]# cd /vagrant/provision/client
touch nfs.sh
chmod +x nfs.sh
```

Рисунок 34: Создание конфиг файла

3.35 слайд 35

root@client:/vagrant/provision/client – sudo -i



tamitrofanov@

GNU nano 8.1

nfs.sh

#!/bin/bash

echo "Provisioning script \$0"

echo "Install needed packages"

dnf -y install nfs-util

echo "Mounting dirs"

mkdir -p /mnt/nfs

mount server.tamitrofanov.net:/srv/nfs /mnt/nfs

echo "server.tamitrofanov.net:/srv/nfs /mnt/nfs nfs _netdev 0 0" >> /etc/fstab

restorecon -vR /etc

3.36 слайд 36

```
22 server.vm.provision "server nfs",  
23     type: "shell",  
24     preserve_order: true,  
25     path: "provision/server/nfs.sh"  
26
```

Рисунок 36: изменение внешнего конфиг файла для сервера

3.37 слайд 37

```
172 client.vm.provision "client nfs",  
173     type: "shell",  
174     preserve_order: true,  
175     path: "provision/client/nfs.sh"  
176
```

Рисунок 37: изменение внешнего конфиг файла для сервера

Раздел 4

4. Выводы

4.1 слайд 1

Сегодня я получил навыки настройки сервера NFS для удалённого доступа к ресурсам.