

Администрирование сетевых подсистем

Лабораторная работа №13

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Информация

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Цель работы

Приобретение навыков настройки сервера NFS для удалённого доступа к ресурсам.

Выполнение лабораторной работы

```
[user@server ~]$ sudo -i
[sudo] password for user:
[root@server ~]# dnf -y install nfs-utils
Last metadata expiration check: 0:20:31 ago on Thu 12 Feb 2026 04:53:07 PM MSK
.
Dependencies resolved.
=====
| Package           | Arch | Version      | Repository | Size |
|=====|
| Installing:      |
|   nfs-utils       | x86_64 | 1:2.5.4-38.el9 | baseos     | 432 k |
| Upgrading:        |
|   libipa_hbac    | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 33 k  |
|   libldb          | x86_64 | 4.22.4-6.el9   | baseos     | 181 k |
|   libismbclient   | x86_64 | 4.22.4-6.el9   | baseos     | 74 k  |
|   libssss_certmap | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 88 k  |
|   libssss_idmap   | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 39 k  |
|   libssss_nss_idmap | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 43 k  |
|   libssss_sudo    | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 33 k  |
|   libtalloc        | x86_64 | 2.4.3-1.el9   | baseos     | 33 k  |
|   libtdb           | x86_64 | 1.4.13-1.el9  | baseos     | 53 k  |
|   libtevent         | x86_64 | 0.16.2-1.el9  | baseos     | 58 k  |
|   libwbclient      | x86_64 | 4.22.4-6.el9  | baseos     | 42 k  |
|   samba-client-libs | x86_64 | 4.22.4-6.el9  | baseos     | 5.3 M |
|   samba-common     | noarch | 4.22.4-6.el9  | baseos     | 173 k |
|   samba-common-libs | x86_64 | 4.22.4-6.el9  | baseos     | 104 k |
|   ssqd             | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 25 k  |
|   sssd-ad          | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 217 k |
|   sssd-client      | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 158 k |
|   sssd-common      | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 1.6 M |
|   sssd-common-pac  | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 94 k  |
|   sssd-ipa          | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 286 k |
|   sssd-kcm          | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 107 k |
|   sssd-krb5         | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 70 k  |
|   sssd-krb5-common | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 92 k  |
|   sssd-ldap         | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 159 k |
|   sssd-proxy        | x86_64 | 2.9.7-4.el9_7.1 | baseos     | 70 k  |
| Installing dependencies: |
|   gssproxy          | x86_64 | 0.8.4-7.el9    | baseos     | 108 k |
```

Рис. 1: Установка nfs-utils на сервер

Выполнение лабораторной работы

```
[root@server ~]# semanage fcontext -a -t nfs_t "/srv/nfs(/.*)?"  
[root@server ~]# 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 ~]# systemctl start nfs-server.service  
[root@server ~]# 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 ~]# █
```

Рис. 2: Работа с контекстом безопасности и запуск NFS

Выполнение лабораторной работы

```
[root@server ~]# firewall-cmd --add-service=nfs  
success  
[root@server ~]# firewall-cmd --add-service=nfs --permanent  
success  
[root@server ~]# firewall-cmd --reload  
success  
[root@server ~]#
```

Рис. 3: Настройка межсетевого экрана

Выполнение лабораторной работы

```
[root@server ~]# firewall-cmd --get-services
RH-Satellite-6 RH-Satellite-6-capsule afp amanda-client amanda-k5-client amqp
amqps apcupsd audit ausweisapp2 bacula bacula-client bareos-director bareos-f
ledaemon bareos-storage bb bgp bitcoin bitcoin-rpc bitcoin-testnet bitcoin-tes
tnet-rpc bittorrent-lsd ceph ceph-exporter ceph-mon cfengine checkmk-agent coc
kpit collectd condor-collector cratedb ctdb dds dds-multicast dds-unicast dhcpc
dhcpcv6 dhcpcv6-client distcc dns dns-over-tls docker-registry docker-swarm dro
pbox-lansync elasticsearch etcd-client etcd-server finger foreman foreman-prox
y freeipa-4 freeipa-ldap freeipa-ldaps freeipa-replication freeipa-trust ftp g
aleria ganglia-client ganglia-master git gpsd grafana gre high-availability htt
p https https ident imap imaps ipfs ipp ipp-client ipsec irc ircs iscsi-target
isns jenkins kadmin kdeconnect kerberos kibana Klogind kpasswd kprop kshell ku
be-api kube-apiserver kube-control-plane kube-control-plane-secure kube-contro
ller-manager kube-controller-manager-secure kube-nodeport-services kube-schedu
ler kube-scheduler-secure kube-worker kubelet-kubebuilder-readonly kubebuilder-worker
ldap ldaps libvirt libvirt-tls lightning-network llmnr llmnr-client llmnr-tcp
llmnr-udp manageservice matrix mdns memcache minidlna mongodb mosh mountd mqtt m
qtt-tls ms-wbt mssql murmur mysql nbd nebula netbios-ns netdata-dashboard nfs
nfs3 nmea-0183 nrpe ntp nut openvpnf ovirt-imageio ovirt-storageconsole ovirt-v
mconsole plex pmcd pmproxy pmwebapi pmwebapis pop3 pop3s postgresql privoxy pr
ometheus prometheus-node-exporter proxy-dhcp ps2link ps3netsrv ptp pulseaudio pr
uppetmaster quassel radius rdp redis redis-sentinel rpc-bind rquotad rsh rsyn
cd rtsp salt-master samba samba-client samba-dc sane sip slp smtp sntp sntp-su
bmission smtptp snmp snmptrap snmptrap spideroak-lansync spotify-sy
nchrony squid ssdp ssh ssh-custome steam-streaming svdrp svr syncthing syncthing-gui
syncthing-relay synergy syslog syslog-tls telnet tentacle tftp tile38 tinc to
r-socks transmission-client upnp-client vdsm vnc-server warpinator wbem-htp w
bem-https wireguard ws-discovery ws-discovery-client ws-discovery-tcp ws-discov
ery-udp wsman wsman xdmcpp xmpp-bosh xmpp-client xmpp-local xmpp-server zabbix
x-agent zabbix-server zerotier
[root@server ~]# firewall-cmd --add-service=mountd --add-service=rpc-bind
success
[root@server ~]# firewall-cmd --add-service=mountd --add-service=rpc-bind --pe
rmanent
success
[root@server ~]# firewall-cmd --reload
success
[root@server ~]# █
```

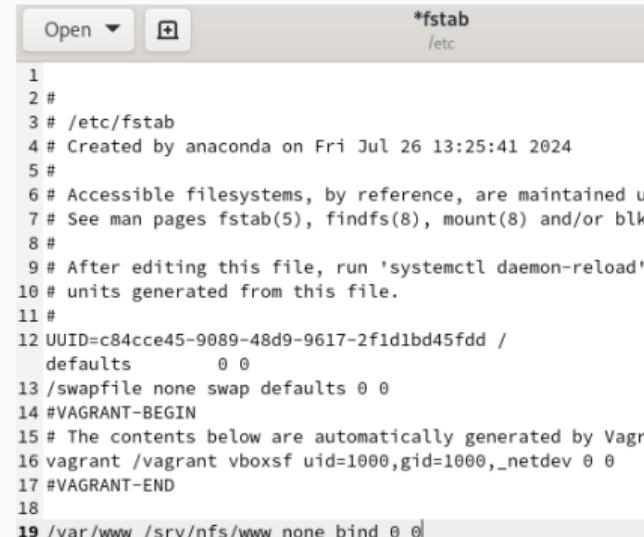
Рис. 4: Добавление служб rpc-bind и mountd на сервере

Выполнение лабораторной работы

```
[root@client ~]# showmount -e server.user.net
clnt_create: RPC: Unknown host
[root@client ~]#
```

Рис. 5: Неудачная попытка подключения удалённого ресурса

Выполнение лабораторной работы

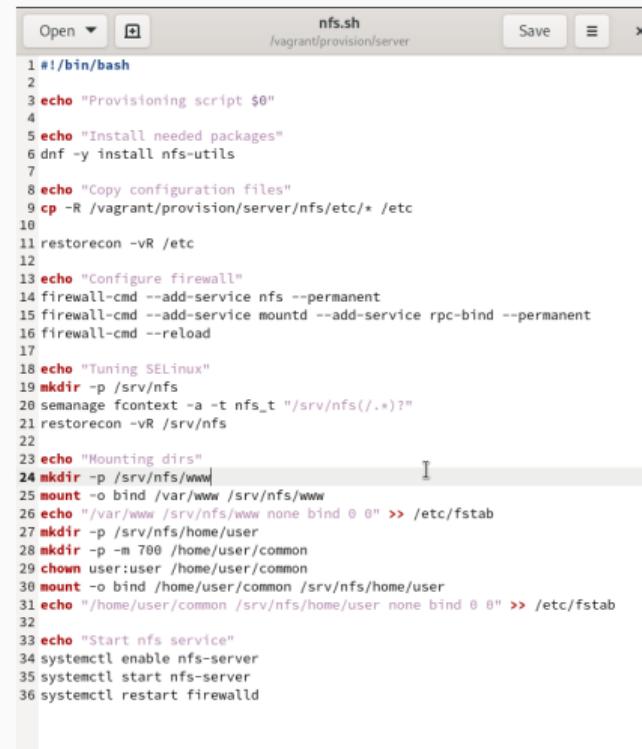


The screenshot shows a terminal window with the title bar "fstab" and the path "/etc". The window contains the contents of the /etc/fstab file. A cursor is visible at the end of line 19, indicating that a new entry is being added.

```
1
2 #
3 # /etc/fstab
4 # Created by anaconda on Fri Jul 26 13:25:41 2024
5 #
6 # Accessible filesystems, by reference, are maintained under
7 # See man pages fstab(5), findfs(8), mount(8) and/or blkid(8)
8 #
9 # After editing this file, run 'systemctl daemon-reload'
10 # units generated from this file.
11 #
12 UUID=c84cce45-9089-48d9-9617-2f1d1bd45fdd /
13     defaults          0 0
14 /swapfile none swap defaults 0 0
15 #VAGRANT-BEGIN
16 vagrant /vagrant vboxsf uid=1000,gid=1000,_netdev 0 0
17 #VAGRANT-END
18
19 /var/www /srv/nfs/www none bind 0 0
```

Рис. 6: Добавление записи в fstab

Выполнение лабораторной работы

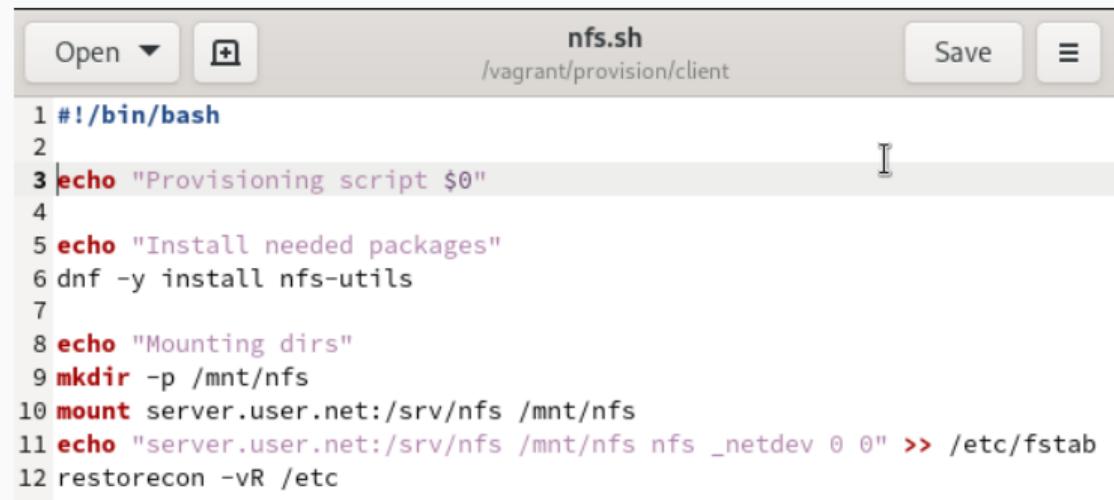


The screenshot shows a terminal window titled "nfs.sh" with the path "/vagrant/provision/server". The window contains a shell script named "nfs.sh" with the following content:

```
1 #!/bin/bash
2
3 echo "Provisioning script $0"
4
5 echo "Install needed packages"
6 dnf -y install nfs-utils
7
8 echo "Copy configuration files"
9 cp -R /vagrant/provision/server/nfs/etc/* /etc
10
11 restorecon -vR /etc
12
13 echo "Configure firewall"
14 firewall-cmd --add-service nfs --permanent
15 firewall-cmd --add-service mountd --add-service rpc-bind --permanent
16 firewall-cmd --reload
17
18 echo "Tuning SELinux"
19 mkdir -p /srv/nfs
20 semanage fcontext -a -t nfs_t "/srv/nfs(/.*)?"
21 restorecon -vR /srv/nfs
22
23 echo "Mounting dirs"
24 mkdir -p /srv/nfs/www
25 mount -o bind /var/www /srv/nfs/www
26 echo "/var/www /srv/nfs/www none bind 0 0" >> /etc/fstab
27 mkdir -p /srv/nfs/home/user
28 mkdir -p -m 700 /home/user/common
29 chown user:user /home/user/common
30 mount -o bind /home/user/common /srv/nfs/home/user
31 echo "/home/user/common /srv/nfs/home/user none bind 0 0" >> /etc/fstab
32
33 echo "Start nfs service"
34 systemctl enable nfs-server
35 systemctl start nfs-server
36 systemctl restart firewalld
```

Рис. 7: nfs.sh на сервере

Выполнение лабораторной работы



The screenshot shows a terminal window with the following interface elements:

- Top left: "Open" button with a dropdown arrow.
- Top center: File name "nfs.sh" and path "/vagrant/provision/client".
- Top right: "Save" button and a menu icon.

The terminal content displays a bash script named "nfs.sh" with the following code:

```
1 #!/bin/bash
2
3 echo "Provisioning script $0"
4
5 echo "Install needed packages"
6 dnf -y install nfs-utils
7
8 echo "Mounting dirs"
9 mkdir -p /mnt/nfs
10 mount server.user.net:/srv/nfs /mnt/nfs
11 echo "server.user.net:/srv/nfs /mnt/nfs nfs _netdev 0 0" >> /etc/fstab
12 restorecon -vR /etc
```

Рис. 8: nfs.sh на клиенте

Выполнение лабораторной работы

```
server.vm.provision "server nfs",
|           |   type: "shell",
|           |   preserve_order: true,
|           |   path: "provision/server/nfs.sh"
```

Рис. 9: Строки в Vagrantfile для сервера

Выполнение лабораторной работы

```
client.vm.provision "client nfs",  
  type: "shell",  
  preserve_order: true,  
  path: "provision/client/nfs.sh"
```

Рис. 10: Строки в Vagrantfile для клиента

Выводы

Во время выполнения данной лабораторной работы я освоил практические навыки настройки сервера NFS для удалённого доступа к ресурсам.