

Лабораторная работа 9

Управление SELinux

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Цель работы

Получить навыки работы с контекстом безопасности и политиками SELinux.

1. Управление режимами SELinux
2. Восстановление контекста безопасности
3. Настройка SELinux для веб-сервера
4. Управление переключателями SELinux

Статус SELinux

```
Activities Terminal Sep 8 19:47 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sestatus -v
SELinux status: enabled
SELinuxfs mount: /sys/fs/selinux
SELinux root directory: /etc/selinux
Loaded policy name: targeted
Current mode: enforcing
Mode from config file: enforcing
Policy MLS status: enabled
Policy deny_unknown status: allowed
Memory protection checking: actual (secure)
Max kernel policy version: 33

Process contexts:
Current context: unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
Init context: system_u:system_r:init_t:s0
/usr/sbin/sshd system_u:system_r:sshd_t:s0-s0:c0.c1023

File contexts:
Controlling terminal: unconfined_u:object_r:user_devpts_t:s0
/etc/passwd system_u:object_r:passwd_file_t:s0
/etc/shadow system_u:object_r:shadow_t:s0
/bin/bash system_u:object_r:shell_exec_t:s0
/bin/login system_u:object_r:login_exec_t:s0
/bin/sh system_u:object_r:bin_t:s0 -> system_u:object_r:shell_exec_t:s0
/sbin/getty system_u:object_r:getty_exec_t:s0
/sbin/init system_u:object_r:bin_t:s0 -> system_u:object_r:init_exec_t:s0
/usr/sbin/sshd system_u:object_r:sshd_exec_t:s0
[root@ndbaranov ~]# getenforce
Enforcing
[root@ndbaranov ~]# setenforce 0
[root@ndbaranov ~]# getenforce
Permissive
[root@ndbaranov ~]# nano /etc/sysconfig/selinux
[root@ndbaranov ~]#
```

Проверка режима getenforce

```
Activities Terminal Sep 8 19:47 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sestatus -v
SELinux status: enabled
SELinuxfs mount: /sys/fs/selinux
SELinux root directory: /etc/selinux
Loaded policy name: targeted
Current mode: enforcing
Mode from config file: enforcing
Policy MLS status: enabled
Policy deny_unknown status: allowed
Memory protection checking: actual (secure)
Max kernel policy version: 33

Process contexts:
Current context: unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
Init context: system_u:system_r:init_t:s0
/usr/sbin/sshd system_u:system_r:sshd_t:s0-s0:c0.c1023

File contexts:
Controlling terminal: unconfined_u:object_r:user_devpts_t:s0
/etc/passwd system_u:object_r:passwd_file_t:s0
/etc/shadow system_u:object_r:shadow_t:s0
/bin/bash system_u:object_r:shell_exec_t:s0
/bin/login system_u:object_r:login_exec_t:s0
/bin/sh system_u:object_r:bin_t:s0 -> system_u:object_r:shell_exec_t:s0
/sbin/getty system_u:object_r:getty_exec_t:s0
/sbin/init system_u:object_r:bin_t:s0 -> system_u:object_r:init_exec_t:s0
/usr/sbin/sshd system_u:object_r:sshd_exec_t:s0
[root@ndbaranov ~]# getenforce
Enforcing
[root@ndbaranov ~]# setenforce 0
[root@ndbaranov ~]# getenforce
Permissive
[root@ndbaranov ~]# nano /etc/sysconfig/selinux
[root@ndbaranov ~]#
```

Переключение в Permissive

```
Activities Terminal Sep 8 19:47 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sestatus -v
SELinux status: enabled
SELinuxfs mount: /sys/fs/selinux
SELinux root directory: /etc/selinux
Loaded policy name: targeted
Current mode: enforcing
Mode from config file: enforcing
Policy MLS status: enabled
Policy deny_unknown status: allowed
Memory protection checking: actual (secure)
Max kernel policy version: 33

Process contexts:
Current context: unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
Init context: system_u:system_r:init_t:s0
/usr/sbin/sshd system_u:system_r:sshd_t:s0-s0:c0.c1023

File contexts:
Controlling terminal: unconfined_u:object_r:user_devpts_t:s0
/etc/passwd system_u:object_r:passwd_file_t:s0
/etc/shadow system_u:object_r:shadow_t:s0
/bin/bash system_u:object_r:shell_exec_t:s0
/bin/login system_u:object_r:login_exec_t:s0
/bin/sh system_u:object_r:bin_t:s0 -> system_u:object_r:shell_exec_t:s0
/sbin/getty system_u:object_r:getty_exec_t:s0
/sbin/init system_u:object_r:bin_t:s0 -> system_u:object_r:init_exec_t:s0
/usr/sbin/sshd system_u:object_r:sshd_exec_t:s0
[root@ndbaranov ~]# getenforce
Enforcing
[root@ndbaranov ~]# setenforce 0
[root@ndbaranov ~]# getenforce
Permissive
[root@ndbaranov ~]# nano /etc/sysconfig/selinux
[root@ndbaranov ~]#
```

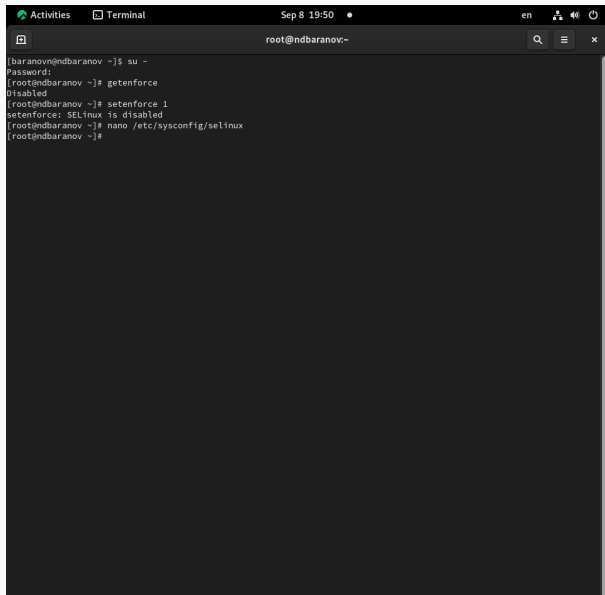
Изменение конфигурации SELinux



```
GNU nano 5.6.1 /etc/sysconfig/selinux Modified
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
# See also:
# https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/9/html/using_selinux/changing_selinux_state
#
# NOTE: Up to RHEL 8 release included, SELINUX=disabled would also
# fully disable SELinux during boot. If you need a system with SELinux
# fully disabled instead of SELinux running with no policy loaded, you
# need to pass selinux=0 to the kernel command line. You can use grubby
# to persistently set the bootloader to boot with selinux=0:
#
#   grubby --update-kernel ALL --args selinux=0
#
# To revert back to SELinux enabled:
#
#   grubby --update-kernel ALL --remove-args selinux
#
SELINUX=disabled
# SELINUXTYPE= can take one of these three values:
#   targeted - Targeted processes are protected.
#   minimum - Modification of targeted policy. Only selected processes are protected.
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted

^G Help      ^O Write Out  ^W Where Is   ^K Cut        ^J Execute
^X Exit      ^R Read File  ^A Replace    ^U Paste      ^D Justify
^_          ^I Location   ^C Location   ^-U Undo
^_          ^-E Redo
```

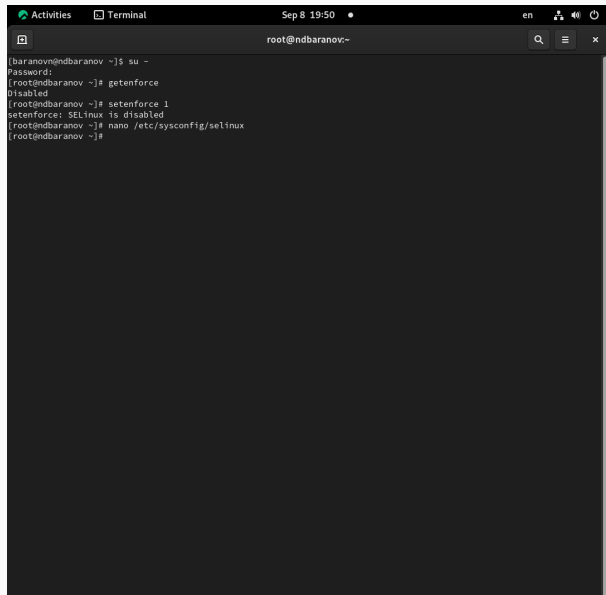

Установка disabled



A terminal window titled "Terminal" with a search bar and window controls. The prompt is "root@ndbaranov:~". The user enters "su -", followed by "Password:". Then they enter "getenforce", which outputs "Disabled". Next, they enter "setenforce 1", which outputs "setenforce: SELinux is disabled". Finally, they enter "nano /etc/sysconfig/selinux".

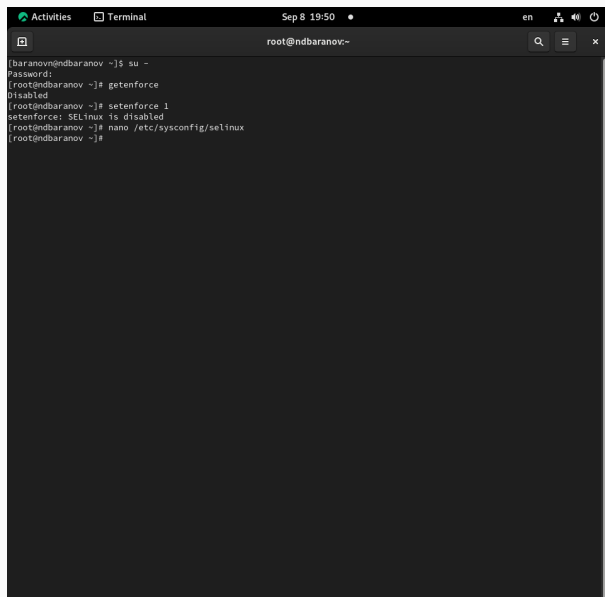
```
(baranov@ndbaranov ~)$ su -  
Password:  
(root@ndbaranov ~)# getenforce  
Disabled  
(root@ndbaranov ~)# setenforce 1  
setenforce: SELinux is disabled  
(root@ndbaranov ~)# nano /etc/sysconfig/selinux  
(root@ndbaranov ~)#
```

Проверка после перезагрузки

A terminal window titled 'Terminal' with a date and time of 'Sep 8 19:50'. The prompt is 'root@ndbaranov:~'. The user has executed a series of commands to manage SELinux: 'su -' to become root, 'getenforce' showing 'Disabled', 'setenforce 1' to enable it, and 'nano /etc/sysconfig/selinux' to edit the configuration file.

```
(baranov@ndbaranov ~)$ su -  
Password:  
(root@ndbaranov ~)# getenforce  
Disabled  
(root@ndbaranov ~)# setenforce 1  
setenforce: SELinux is disabled  
(root@ndbaranov ~)# nano /etc/sysconfig/selinux  
(root@ndbaranov ~)#
```

Попытка изменения режима при disabled



A terminal window titled 'Terminal' with a search bar and window controls. The prompt is 'root@ndbaranov:~'. The user runs 'su -' and enters a password. Then they run 'getenforce' which outputs 'Disabled'. Next, they run 'setenforce 1' which outputs 'setenforce: SELinux is disabled'. Finally, they run 'nano /etc/sysconfig/selinux' and the prompt returns to the root user.

```
(baranov@ndbaranov ~)$ su -  
Password:  
(root@ndbaranov ~)# getenforce  
Disabled  
(root@ndbaranov ~)# setenforce 1  
setenforce: SELinux is disabled  
(root@ndbaranov ~)# nano /etc/sysconfig/selinux  
(root@ndbaranov ~)#
```

Восстановление enforcing



The screenshot shows a terminal window with the title bar "Activities Terminal" and the date "Sep 8 19:50". The prompt is "root@ndbaranov:~". The terminal displays the contents of the file "/etc/sysconfig/selinux" using the nano 5.6.1 editor. The file contains instructions on how to configure SELinux, including the values for SELINUX= (enforcing, permissive, disabled) and SELINUXTYPE= (targeted, minimum, mls). The current configuration is SELINUX=enforcing and SELINUXTYPE=targeted. The terminal also shows a search bar at the top right and a status bar at the bottom with various keyboard shortcuts.

```
GNU nano 5.6.1 /etc/sysconfig/selinux

# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
# See also:
# https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/9/html/using_selinux/changing_selinux_state
#
# NOTE: Up to RHEL 8 release included, SELINUX=disabled would also
# fully disable SELinux during boot. If you need a system with SELinux
# fully disabled instead of SELinux running with no policy loaded, you
# need to pass selinux=0 to the kernel command line. You can use grubby
# to persistently set the bootloader to boot with selinux=0:
#
#   grubby --update-kernel ALL --args selinux=0
#
# To revert back to SELinux enabled:
#
#   grubby --update-kernel ALL --remove-args selinux
#
SELINUX=enforcing
# SELINUXTYPE= can take one of these three values:
#   targeted - Targeted processes are protected.
#   minimum - Modification of targeted policy. Only selected processes are protected.
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Read 29 lines.

Help Exit Write Out Read File Where Is Replace Cut Paste Execute Justify Location Go To Line Undo Redo

Проверка enforcing после перезагрузки

```
Activities Terminal Sep 8 19:53 en root@ndbaranov:~
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# sestatus -v
SELinux status: enabled
SELinuxfs mount: /sys/fs/selinux
SELinux root directory: /etc/selinux
Loaded policy name: targeted
Current mode: enforcing
Mode from config file: enforcing
Policy MLS status: enabled
Policy deny_unknown status: allowed
Memory protection checking: actual (secure)
Max kernel policy version: 33

Process contexts:
Current context: unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
Init context: system_u:system_r:init_t:s0
/usr/sbin/sshd system_u:system_r:sshd_t:s0-s0:c0.c1023

File contexts:
Controlling terminal: unconfined_u:object_r:user_devpts_t:s0
/etc/passwd system_u:object_r:passwd_file_t:s0
/etc/shadow system_u:object_r:shadow_t:s0
/bin/bash system_u:object_r:shell_exec_t:s0
/bin/login system_u:object_r:login_exec_t:s0
/bin/sh system_u:object_r:bin_t:s0 -> system_u:object_r:shell_exec_t:s0
/sbin/agetty system_u:object_r:getty_exec_t:s0
/sbin/init system_u:object_r:bin_t:s0 -> system_u:object_r:init_exec_t:s0
/usr/sbin/sshd system_u:object_r:sshd_exec_t:s0
[root@ndbaranov ~]#
```

Контекст файла /etc/hosts

```
Activities Terminal Sep 8 19:56 en
root@ndbaranov:~
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# cp /etc/hosts ~/
[root@ndbaranov ~]# ls -Z ~/hosts
unconfined_u:object_r:admin_home_t:s0 ~/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'?
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'? y
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:admin_home_t:s0 /etc/hosts
[root@ndbaranov ~]# restorecon -v /etc/hosts
Relabeled /etc/hosts from unconfined_u:object_r:admin_home_t:s0 to unconfined_u:object_r:net_conf_t:s0
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# touch /.autorelabel
[root@ndbaranov ~]#
```

Копирование файла и контекст

```
Activities Terminal Sep 8 19:56 en root@ndbaranov:~
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# cp /etc/hosts ~/
[root@ndbaranov ~]# ls -Z ~/hosts
unconfined_u:object_r:admin_home_t:s0 ~/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'?
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'? y
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:admin_home_t:s0 /etc/hosts
[root@ndbaranov ~]# restorecon -v /etc/hosts
Relabeled /etc/hosts from unconfined_u:object_r:admin_home_t:s0 to unconfined_u:object_r:net_conf_t:s0
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# touch /.autorelabel
[root@ndbaranov ~]#
```

Перезапись файла и проверка контекста

```
Activities Terminal Sep 8 19:56 en root@ndbaranov:~
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# cp /etc/hosts ~/
[root@ndbaranov ~]# ls -Z ~/hosts
unconfined_u:object_r:admin_home_t:s0 ~/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'?
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'? y
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:admin_home_t:s0 /etc/hosts
[root@ndbaranov ~]# restorecon -v /etc/hosts
Relabeled /etc/hosts from unconfined_u:object_r:admin_home_t:s0 to unconfined_u:object_r:net_conf_t:s0
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# touch /.autorelabel
[root@ndbaranov ~]#
```


Восстановление контекста restorecon

```
Activities Terminal Sep 8 19:56 en root@ndbaranov:~
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# cp /etc/hosts ~/
[root@ndbaranov ~]# ls -Z ~/hosts
unconfined_u:object_r:admin_home_t:s0 ~/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'?
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'? y
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:admin_home_t:s0 /etc/hosts
[root@ndbaranov ~]# restorecon -v /etc/hosts
Relabeled /etc/hosts from unconfined_u:object_r:admin_home_t:s0 to unconfined_u:object_r:net_conf_t:s0
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# touch /.autorelabel
[root@ndbaranov ~]#
```

Массовое восстановление /.autorelabel

```
Activities Terminal Sep 8 19:56 en root@ndbaranov:~
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# cp /etc/hosts ~/
[root@ndbaranov ~]# ls -Z ~/hosts
unconfined_u:object_r:admin_home_t:s0 ~/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'?
[root@ndbaranov ~]# ls -Z /etc/hosts
system_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# mv ~/hosts /etc
mv: overwrite '/etc/hosts'? y
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:admin_home_t:s0 /etc/hosts
[root@ndbaranov ~]# restorecon -v /etc/hosts
Relabeled /etc/hosts from unconfined_u:object_r:admin_home_t:s0 to unconfined_u:object_r:net_conf_t:s0
[root@ndbaranov ~]# ls -Z /etc/hosts
unconfined_u:object_r:net_conf_t:s0 /etc/hosts
[root@ndbaranov ~]# touch /.autorelabel
[root@ndbaranov ~]#
```

Установка httpd и lynx

```
Activities Terminal Sep 8 20:00 en
root@ndbaranov:web

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# dnf -y install httpd
^Last metadata expiration check: 2:09:20 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Package httpd-2.4.62-4.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ndbaranov ~]# dnf -y install lynx
Last metadata expiration check: 2:09:34 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Dependencies resolved.
=====
Package Architecture Version Repository Size
=====
Installing:
lynx x86_64 2.8.9-20.el9 appstream 1.5 M
Transaction Summary
=====
Install 1 Package

Total download size: 1.5 M
Installed size: 6.1 M
Downloading Packages:
lynx-2.8.9-20.el9.x86_64.rpm 266 kB/s | 1.5 MB 00:05
-----
Total 137 kB/s | 1.5 MB 00:11
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : lynx-2.8.9-20.el9.x86_64 1/1
Installing : lynx-2.8.9-20.el9.x86_64 1/1
Running scriptlet: lynx-2.8.9-20.el9.x86_64 1/1
Verifying : lynx-2.8.9-20.el9.x86_64 1/1

Installed:
lynx-2.8.9-20.el9.x86_64

Complete!
[root@ndbaranov ~]# mkdir /web
[root@ndbaranov ~]# cd /web
[root@ndbaranov web]# touch index.html
[root@ndbaranov web]#
```

Создание каталога /web

```
Activities Terminal Sep 8 20:00 en
root@ndbaranov:/web

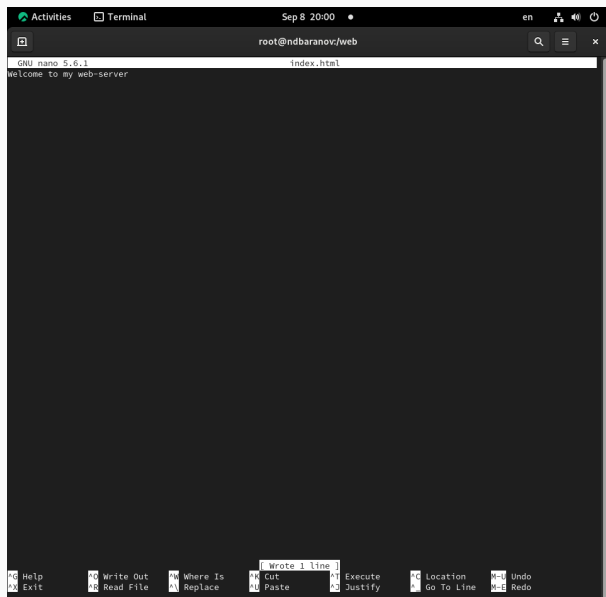
[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# dnf -y install httpd
^Last metadata expiration check: 2:09:20 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Package httpd-2.4.62-4.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ndbaranov ~]# dnf -y install lynx
Last metadata expiration check: 2:09:34 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Dependencies resolved.
=====
Package Architecture Version Repository Size
=====
Installing:
lynx x86_64 2.8.9-20.el9 appstream 1.5 M
Transaction Summary
=====
Install 1 Package

Total download size: 1.5 M
Installed size: 6.1 M
Downloading Packages:
lynx-2.8.9-20.el9.x86_64.rpm 266 kB/s | 1.5 MB 00:05
-----
Total 137 kB/s | 1.5 MB 00:11
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : lynx-2.8.9-20.el9.x86_64 1/1
Installing : lynx-2.8.9-20.el9.x86_64 1/1
Running scriptlet: lynx-2.8.9-20.el9.x86_64 1/1
Verifying : lynx-2.8.9-20.el9.x86_64 1/1

Installed:
lynx-2.8.9-20.el9.x86_64

Complete!
[root@ndbaranov ~]# mkdir /web
[root@ndbaranov ~]# cd /web
[root@ndbaranov web]# touch index.html
[root@ndbaranov web]#
```

Создание index.html

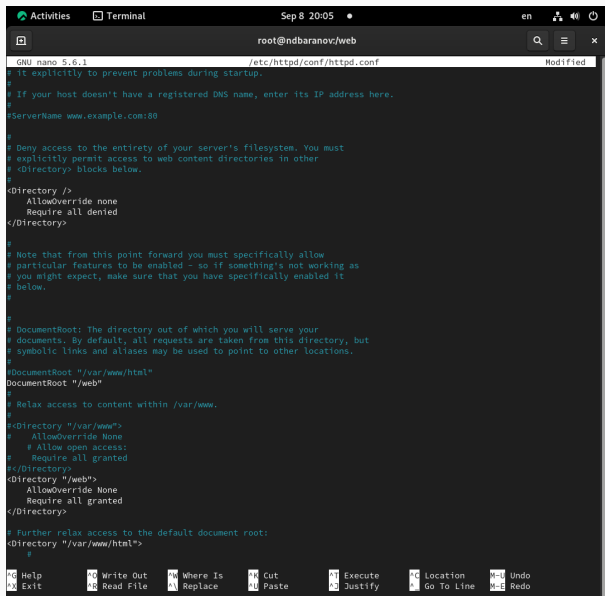


The screenshot shows a terminal window titled "Terminal" with the date and time "Sep 8 20:00". The prompt is "root@ndbaranov:/web". A nano text editor window is open, editing "index.html". The editor shows "GNU nano 5.6.1" and the text "Welcome to my web-server". The bottom status bar of the nano editor displays various keyboard shortcuts: "G Help", "X Exit", "O Write Out", "R Read File", "W Where Is", "A Replace", "C Cut", "U Paste", "E Execute", "J Justify", "L Location", "G Go To Line", "U Undo", and "R Redo". A small tooltip "Wrote 1 line" is visible above the "C" shortcut.

```
root@ndbaranov:/web
GNU nano 5.6.1 index.html
Welcome to my web-server

G Help      O Write Out  W Where Is  C Cut        E Execute
X Exit      R Read File  A Replace   U Paste      J Justify
              L Location  G Go To Line U Undo
              R Redo
```

Настройка httpd.conf



```
GNU nano 5.6.1 /etc/httpd/conf/httpd.conf Modified
#
# it explicitly to prevent problems during startup.
#
# If your host doesn't have a registered DNS name, enter its IP address here.
#
#ServerName www.example.com:80
#
#
# Deny access to the entirety of your server's filesystem. You must
# explicitly permit access to web content directories in other
# <Directory> blocks below.
#
<Directory />
    AllowOverride none
    Require all denied
</Directory>
#
# Note that from this point forward you must specifically allow
# particular features to be enabled - so if something's not working as
# you might expect, make sure that you have specifically enabled it
# below.
#
# DocumentRoot: The directory out of which you will serve your
# documents. By default, all requests are taken from this directory, but
# symbolic links and aliases may be used to point to other locations.
#
#DocumentRoot "/var/www/html"
DocumentRoot "/web"
#
# Relax access to content within /var/www.
#
<Directory "/var/www">
    # AllowOverride None
    # Allow open access:
    # Require all granted
</Directory>
<Directory "/web">
    AllowOverride None
    Require all granted
</Directory>
# Further relax access to the default document root:
<Directory "/var/www/html">
    #
```

Запуск службы httpd

```
Activities Terminal Sep 8 20:05 en
root@ndbaranov/web

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# dnf -y install httpd
^C(last metadata expiration check: 2:09:20 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Package httpd-2.4.62-4.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ndbaranov ~]# dnf -y install lynx
Last metadata expiration check: 2:09:34 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Dependencies resolved.
=====
Package Architecture Version Repository Size
=====
Installing:
lynx x86_64 2.8.9-20.el9 appstream 1.5 M
Transaction Summary
=====
Install 1 Package

Total download size: 1.5 M
Installed size: 6.1 M
Downloading Packages:
lynx-2.8.9-20.el9.x86_64.rpm 266 kB/s | 1.5 MB 00:05
-----
Total 137 kB/s | 1.5 MB 00:11
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing : lynx-2.8.9-20.el9.x86_64 1/1
Installing : lynx-2.8.9-20.el9.x86_64 1/1
Running scriptlet: lynx-2.8.9-20.el9.x86_64 1/1
Verifying : lynx-2.8.9-20.el9.x86_64 1/1

Installed:
lynx-2.8.9-20.el9.x86_64

Complete!
[root@ndbaranov ~]# mkdir /web
[root@ndbaranov ~]# cd /web
[root@ndbaranov web]# touch index.html
[root@ndbaranov web]# nano /etc/httpd/conf/httpd.conf
[root@ndbaranov web]# systemctl start httpd
[root@ndbaranov web]# systemctl enable httpd
[root@ndbaranov web]#
```

Настройка контекста для /web

```
Activities Terminal Sep 8 20:06 en
root@ndbaranov/web

*(Last metadata expiration check: 2:09:20 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Package httpd-2.4.62-4.el9.x86_64 is already installed.
Dependencies resolved.
Nothing to do.
Complete!
[root@ndbaranov ~]# dnf -y install lynx
Last metadata expiration check: 2:09:34 ago on Mon 08 Sep 2025 05:49:52 PM MSK.
Dependencies resolved.
=====
Package Architecture Version Repository Size
=====
Installing:
lynx x86_64 2.8.9-20.el9 appstream 1.5 M
=====

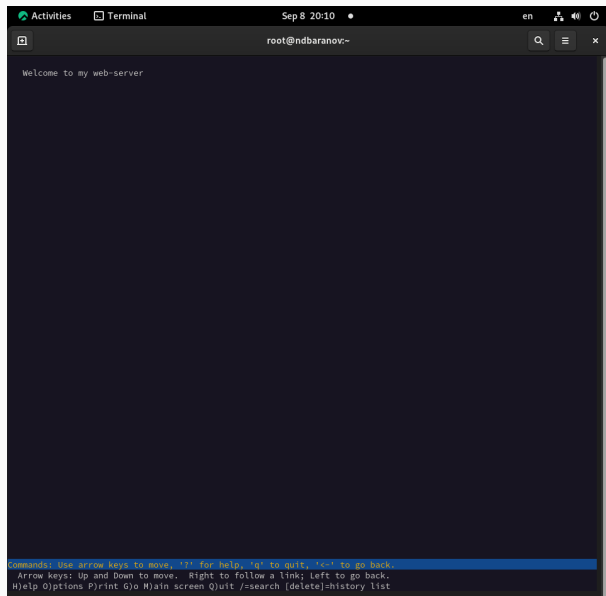
Transaction Summary
=====
Install 1 Package

Total download size: 1.5 M
Installed size: 6.1 M
Downloading Packages:
lynx-2.8.9-20.el9.x86_64.rpm 266 kB/s | 1.5 MB 00:05
-----
Total 137 kB/s | 1.5 MB 00:11
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing :
Installing : lynx-2.8.9-20.el9.x86_64 1/1
Running scriptlet: lynx-2.8.9-20.el9.x86_64 1/1
Verifying : lynx-2.8.9-20.el9.x86_64 1/1

Installed:
lynx-2.8.9-20.el9.x86_64

Complete!
[root@ndbaranov ~]# mkdir /web
[root@ndbaranov ~]# cd /web
[root@ndbaranov web]# touch index.html
[root@ndbaranov web]# nano /etc/httpd/conf/httpd.conf
[root@ndbaranov web]# systemctl start httpd
[root@ndbaranov web]# systemctl enable httpd
[root@ndbaranov web]# semanage fcontext -a -t httpd_sys_content_t "/web(/.*)?"
[root@ndbaranov web]# restorecon -R -v /web
Relabeled /web from unconfined_u:object_r:default_t:s0 to unconfined_u:object_r:httpd_sys_content_t:s0
Relabeled /web/index.html from unconfined_u:object_r:default_t:s0 to unconfined_u:object_r:httpd_sys_content_t:s0
[root@ndbaranov web]#
```


Проверка доступа к веб-странице



The screenshot shows a terminal window with a dark background. At the top, there is a header bar with the text "Activities", "Terminal", and "Sep 8 20:10". Below this, there is a search bar with the text "root@ndbaranov:~". The main area of the terminal displays "Welcome to my web-server". At the bottom, there is a blue bar containing the following text: "Commands: Use arrow keys to move, '?' for help, 'q' to quit, 'c-b' to go back. Arrow keys: Up and Down to move. Right to follow a link; Left to go back. H)elp O)ptions P)rint G)o H)ain screen Q)uit /=search [delete]=history list".

```
Activities Terminal Sep 8 20:10 en [search] [menu] [close]
root@ndbaranov:~
Welcome to my web-server

Commands: Use arrow keys to move, '?' for help, 'q' to quit, 'c-b' to go back.
Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o H)ain screen Q)uit /=search [delete]=history list
```

Просмотр переключателей FTP

```
Activities Terminal Sep 8 20:12 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# getsebool -a | grep ftp
ftpd_anon_write --> off
ftpd_connect_all_unreserved --> off
ftpd_connect_db --> off
ftpd_full_access --> off
ftpd_use_cifs --> off
ftpd_use_fusefs --> off
ftpd_use_nfs --> off
ftpd_use_passive_mode --> off
httpd_can_connect_ftp --> off
httpd_enable_ftp_server --> off
tftp_anon_write --> off
tftp_home_dir --> off
[root@ndbaranov ~]# semanage boolean -l | grep ftpd_anon
ftpd_anon_write (off, off) Allow ftpd to anon write
[root@ndbaranov ~]# setsebool ftpd_anon_write on
[root@ndbaranov ~]# getsebool ftpd_anon_write
ftpd_anon_write --> on
[root@ndbaranov ~]# semanage boolean -l | grep ftpd_anon
ftpd_anon_write (on, off) Allow ftpd to anon write
[root@ndbaranov ~]# setsebool -P ftpd_anon_write on
[root@ndbaranov ~]# semanage boolean -l | grep ftpd_anon
ftpd_anon_write (on, on) Allow ftpd to anon write
[root@ndbaranov ~]#
```

Изменение ftpd_anon_write

```
Activities Terminal Sep 8 20:12 en
root@ndbaranov:~

[baranov@ndbaranov ~]$ su -
Password:
[root@ndbaranov ~]# getsebool -a | grep ftp
ftpd_anon_write --> off
ftpd_connect_all_unreserved --> off
ftpd_connect_db --> off
ftpd_full_access --> off
ftpd_use_cifs --> off
ftpd_use_fusefs --> off
ftpd_use_nfs --> off
ftpd_use_passive_mode --> off
httpd_can_connect_ftp --> off
httpd_enable_ftp_server --> off
tftp_anon_write --> off
tftp_home_dir --> off
[root@ndbaranov ~]# semanage boolean -l | grep ftpd_anon
ftpd_anon_write (off , off) Allow ftpd to anon write
[root@ndbaranov ~]# setsebool ftpd_anon_write on
[root@ndbaranov ~]# getsebool ftpd_anon_write
ftpd_anon_write --> on
[root@ndbaranov ~]# semanage boolean -l | grep ftpd_anon
ftpd_anon_write (on , off) Allow ftpd to anon write
[root@ndbaranov ~]# setsebool -P ftpd_anon_write on
[root@ndbaranov ~]# semanage boolean -l | grep ftpd_anon
ftpd_anon_write (on , on) Allow ftpd to anon write
[root@ndbaranov ~]#
```

- Изучены режимы работы SELinux (Enforcing, Permissive, Disabled)
- Освоены методы восстановления контекста безопасности
- Настроен Apache с нестандартным каталогом /web
- Изучена работа с переключателями SELinux для FTP