Мандатное разграничение прав в Linux

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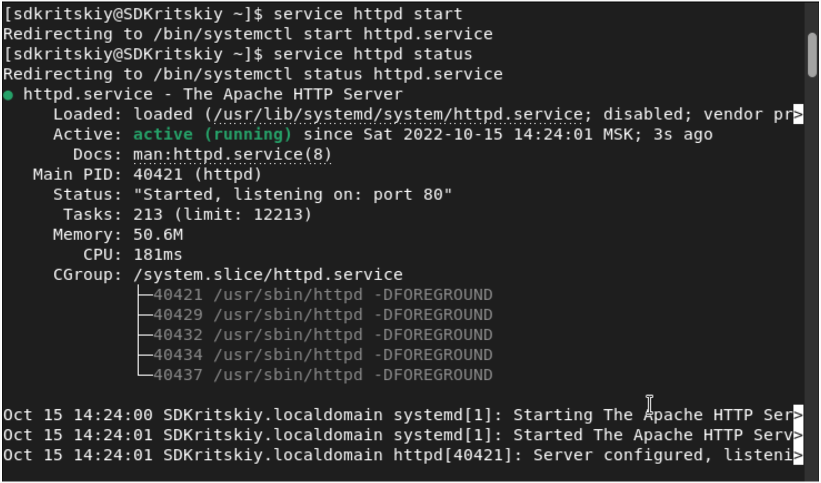
Цель работы

Развить навыки администрирования ОС Linux. Получить первое практическое знакомство с технологией SELinux. Проверить работу SELinx на практике совместно с веб-сервером Apache.

Ход выполнения работы

Начало работы

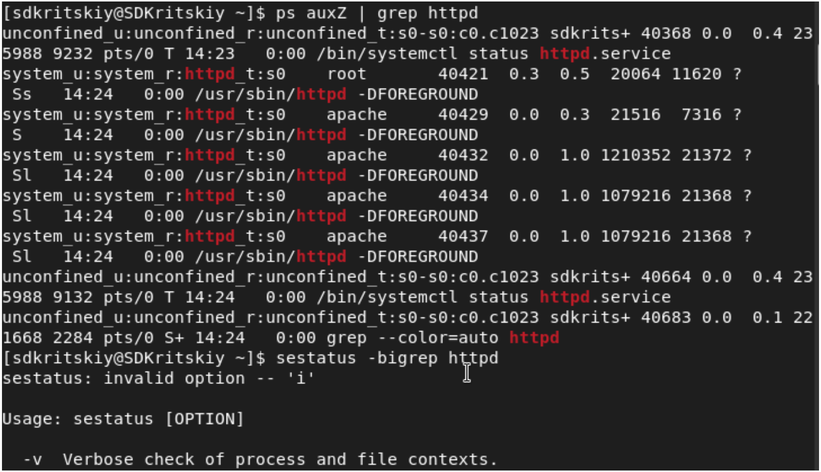


```
[sdkritskiy@SDKritskiy ~]$ service httpd start
Redirecting to /bin/systemctl start httpd.service
[sdkritskiy@SDKritskiy ~]$ service httpd status
Redirecting to /bin/systemctl status httpd.service
● httpd.service - The Apache HTTP Server
     Loaded: loaded (/usr/lib/systemd/system/httpd.service; disabled; vendor pr>
     Active: active (running) since Sat 2022-10-15 14:24:01 MSK; 3s ago
       Docs: man:httpd.service(8)
   Main PID: 40421 (httpd)
     Status: "Started, listening on: port 80"
      Tasks: 213 (limit: 12213)
     Memory: 50.6M
        CPU: 181ms
     CGroup: /system.slice/httpd.service
             ├─40421 /usr/sbin/httpd -DFOREGROUND
             ├─40429 /usr/sbin/httpd -DFOREGROUND
             ├─40432 /usr/sbin/httpd -DFOREGROUND
             ├─40434 /usr/sbin/httpd -DFOREGROUND
             └─40437 /usr/sbin/httpd -DFOREGROUND

Oct 15 14:24:00 SDKritskiy.localdomain systemd[1]: Starting The Apache HTTP Ser>
Oct 15 14:24:01 SDKritskiy.localdomain systemd[1]: Started The Apache HTTP Serv>
Oct 15 14:24:01 SDKritskiy.localdomain httpd[40421]: Server configured, listeni>
```

Рис. 1: Запуск сервера

Начало работы



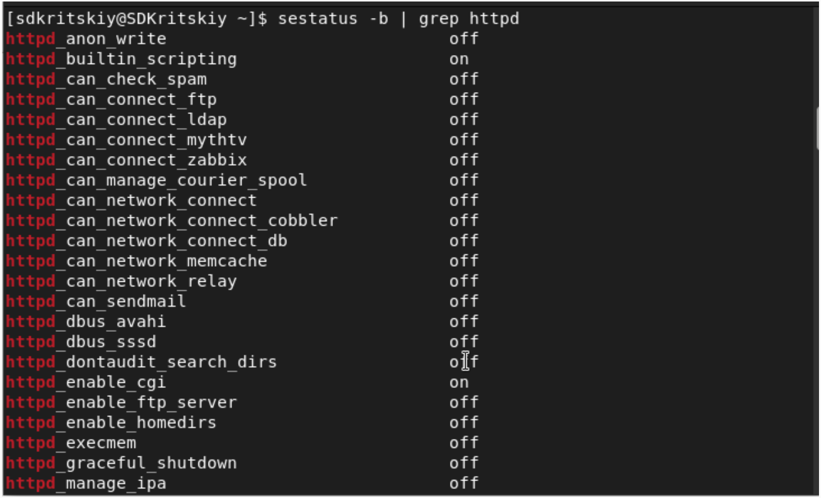
```
[sdkritskiy@SDKritskiy ~]$ ps auxZ | grep httpd
unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023 sdkrits+ 40368 0.0  0.4 23
5988 9232 pts/0 T 14:23   0:00 /bin/systemctl status httpd.service
system_u:system_r:httpd_t:s0    root       40421  0.3  0.5  20064 11620 ?
 Ss   14:24   0:00 /usr/sbin/httpd -DFOREGROUND
system_u:system_r:httpd_t:s0    apache     40429  0.0  0.3  21516  7316 ?
 S    14:24   0:00 /usr/sbin/httpd -DFOREGROUND
system_u:system_r:httpd_t:s0    apache     40432  0.0  1.0 1210352 21372 ?
 Sl   14:24   0:00 /usr/sbin/httpd -DFOREGROUND
system_u:system_r:httpd_t:s0    apache     40434  0.0  1.0 1079216 21368 ?
 Sl   14:24   0:00 /usr/sbin/httpd -DFOREGROUND
system_u:system_r:httpd_t:s0    apache     40437  0.0  1.0 1079216 21368 ?
 Sl   14:24   0:00 /usr/sbin/httpd -DFOREGROUND
unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023 sdkrits+ 40664 0.0  0.4 23
5988 9132 pts/0 T 14:24   0:00 /bin/systemctl status httpd.service
unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023 sdkrits+ 40683 0.0  0.1 22
1668 2284 pts/0 S+ 14:24   0:00 grep --color=auto httpd
[sdkritskiy@SDKritskiy ~]$ sestatus -bigrep httpd
sestatus: invalid option -- 'i'

Usage: sestatus [OPTION]

  -v  Verbose check of process and file contexts.
```

Рис. 2: Поиск Apache

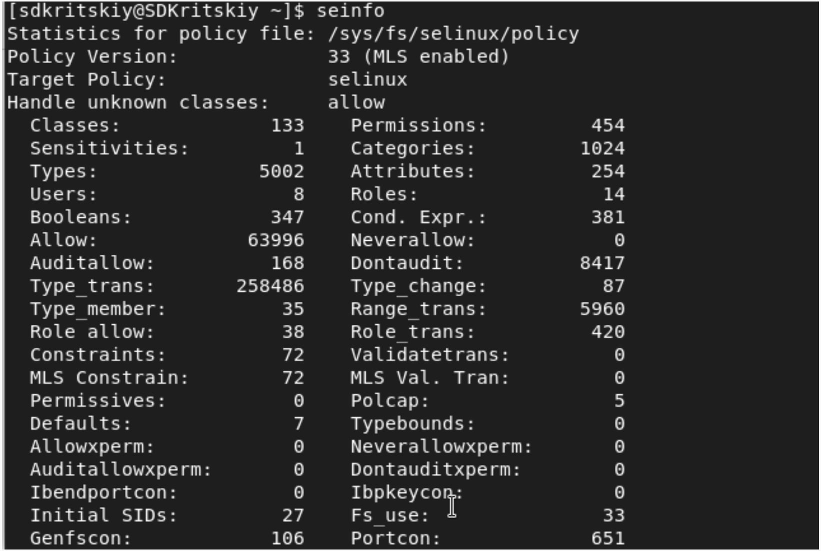
Начало работы



```
[sdkritskiy@SDKritskiy ~]$ sestatus -b | grep httpd
httpd_anon_write                            off
httpd_builtin_scripting                     on
httpd_can_check_spam                        off
httpd_can_connect_ftp                       off
httpd_can_connect_ldap                      off
httpd_can_connect_mythtv                    off
httpd_can_connect_zabbix                    off
httpd_can_manage_courier_spool              off
httpd_can_network_connect                   off
httpd_can_network_connect_cobbler           off
httpd_can_network_connect_db                off
httpd_can_network_memcache                  off
httpd_can_network_relay                     off
httpd_can_sendmail                          off
httpd_dbus_avahi                            off
httpd_dbus_sssd                             off
httpd_dontaudit_search_dirs                 off
httpd_enable_cgi                            on
httpd_enable_ftp_server                     off
httpd_enable_homedirs                       off
httpd_execmem                               off
httpd_graceful_shutdown                     off
httpd_manage_ipa                            off
```

Рис. 3: КСостояние переключателей SELinux

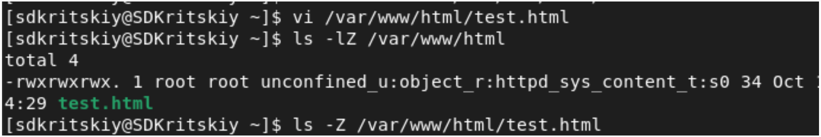
Начало работы



```
[sdkritskiy@SDKritskiy ~]$ seinfo
Statistics for policy file: /sys/fs/selinux/policy
Policy Version:             33 (MLS enabled)
Target Policy:              selinux
Handle unknown classes:     allow
  Classes:             133    Permissions:         454
  Sensitivities:         1    Categories:         1024
  Types:              5002    Attributes:          254
  Users:                 8    Roles:                14
  Booleans:            347    Cond. Expr.:         381
  Allow:             63996    Neverallow:            0
  Auditallow:          168    Dontaudit:          8417
  Type_trans:       258486    Type_change:          87
  Type_member:          35    Range_trans:        5960
  Role allow:           38    Role_trans:          420
  Constraints:          72    Validatetrans:         0
  MLS Constrain:        72    MLS Val. Tran:         0
  Permissives:           0    Polcap:                5
  Defaults:              7    Typebounds:            0
  Allowxperm:            0    Neverallowxperm:       0
  Auditallowxperm:       0    Dontauditxperm:        0
  Ibendportcon:          0    Ibpkeycon:             0
  Initial SIDs:         27    Fs_use:               33
  Genfscon:            106    Portcon:             651
```

Рис. 4: С

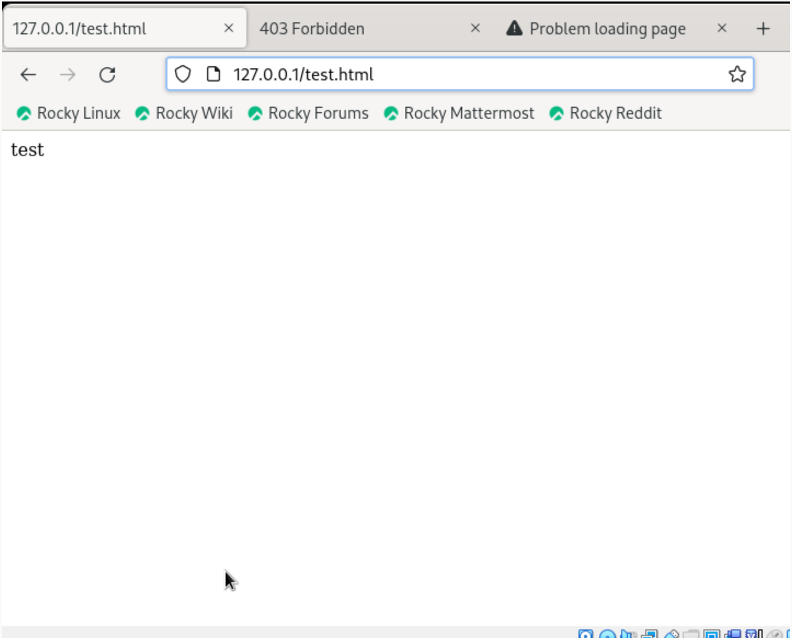
Создание веб-страницы



```
[sdkritskiy@SDKritskiy ~]$ vi /var/www/html/test.html
[sdkritskiy@SDKritskiy ~]$ ls -lZ /var/www/html
total 4
-rwxrwxrwx. 1 root root unconfined_u:object_r:httpd_sys_content_t:s0 34 Oct 1
4:29 test.html
[sdkritskiy@SDKritskiy ~]$ ls -Z /var/www/html/test.html
```

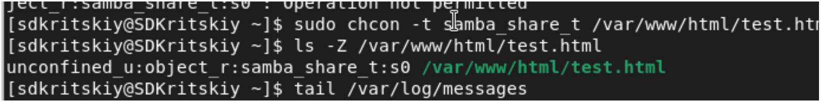
Рис. 5: Контекст файла с веб-страницей

Создание веб-страницы



test

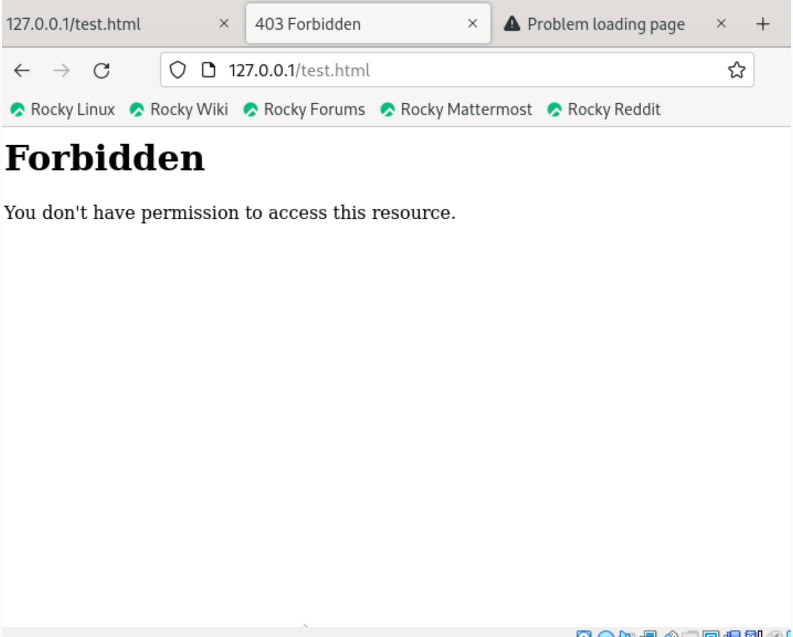
Изменение конфигурации сервера и страницы



```
ject_r:samba_share_t:s0 : Operation not permitted
[sdkritskiy@SDKritskiy ~]$ sudo chcon -t samba_share_t /var/www/html/test.htm
[sdkritskiy@SDKritskiy ~]$ ls -Z /var/www/html/test.html
unconfined_u:object_r:samba_share_t:s0 /var/www/html/test.html
[sdkritskiy@SDKritskiy ~]$ tail /var/log/messages
```

Рис. 7: Изменение контекста

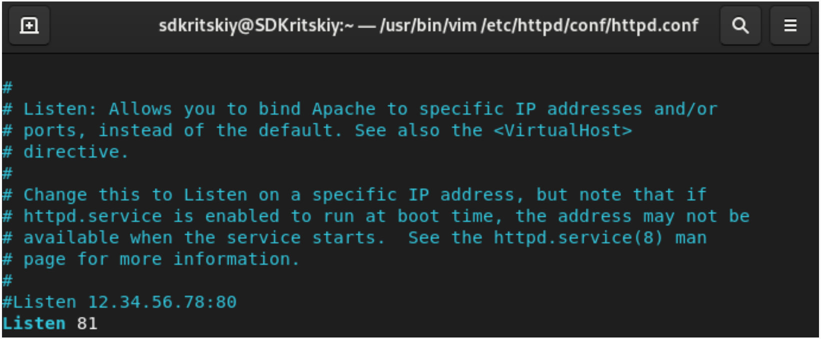
Изменение конфигурации сервера и страницы



Forbidden

You don't have permission to access this resource.

Изменение конфигурации сервера и страницы

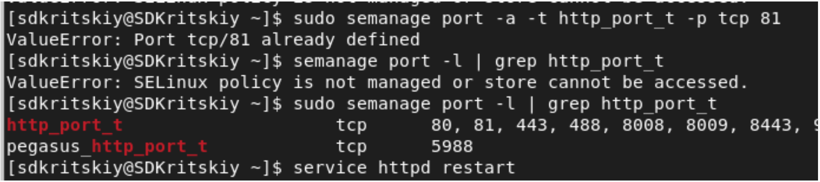


sdkritskiy@SDKritskiy:~ — /usr/bin/vim /etc/httpd/conf/httpd.conf

```
#
# Listen: Allows you to bind Apache to specific IP addresses and/or
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on a specific IP address, but note that if
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts.  See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
Listen 81
```

Рис. 9: Указание 81 порта

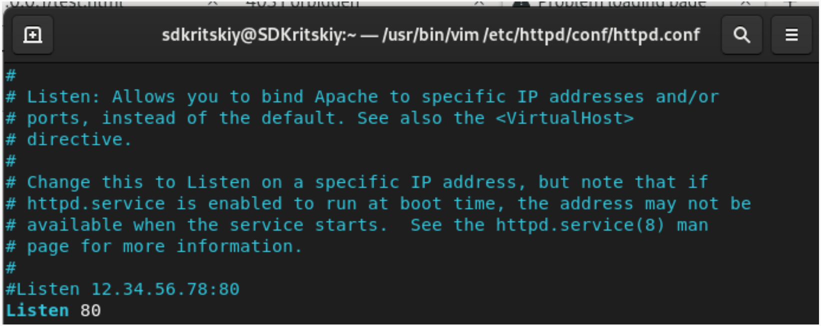
Изменение конфигурации сервера и страницы



```
[sdkritskiy@SDKritskiy ~]$ sudo semanage port -a -t http_port_t -p tcp 81
ValueError: Port tcp/81 already defined
[sdkritskiy@SDKritskiy ~]$ semanage port -l | grep http_port_t
ValueError: SELinux policy is not managed or store cannot be accessed.
[sdkritskiy@SDKritskiy ~]$ sudo semanage port -l | grep http_port_t
http_port_t                    tcp      80, 81, 443, 488, 8008, 8009, 8443, 9
pegasus_http_port_t            tcp      5988
[sdkritskiy@SDKritskiy ~]$ service httpd restart
```

Рис. 10: Прослушивание 81 порта

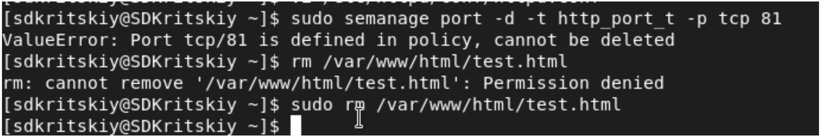
Возвращение к исходным настройкам


sdkritskiy@SDKritskiy:~ — /usr/bin/vim /etc/httpd/conf/httpd.conf

```
#
# Listen: Allows you to bind Apache to specific IP addresses and/or
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on a specific IP address, but note that if
# httpd.service is enabled to run at boot time, the address may not be
# available when the service starts.  See the httpd.service(8) man
# page for more information.
#
#Listen 12.34.56.78:80
Listen 80
```

Рис. 11: Указание 80 порта

Возвращение к исходным настройкам



```
[sdkritskiy@SDKritskiy ~]$ sudo semanage port -d -t http_port_t -p tcp 81
ValueError: Port tcp/81 is defined in policy, cannot be deleted
[sdkritskiy@SDKritskiy ~]$ rm /var/www/html/test.html
rm: cannot remove '/var/www/html/test.html': Permission denied
[sdkritskiy@SDKritskiy ~]$ sudo rm /var/www/html/test.html
[sdkritskiy@SDKritskiy ~]$ 
```

Рис. 12: Удаление страницы и 81 порта

Вывод

Я развил навыки администрирования ОС Linux, получил первое практическое знакомство с технологией SELinux и проверил работу SELinx на практике совместно с веб-сервером Apache.