

Администрирование сетевых подсистем

Базовая настройка HTTP-сервера Apache

Метвалли Ахмед Фарг Набеев

21 сентября 2025

Российский университет дружбы народов, Москва, Россия

Цели и задачи работы

Приобретение практических навыков по установке и базовому конфигурированию HTTP-сервера Apache и настройке виртуального хостинга.

Выполнение лабораторной работы

Установка HTTP-сервера

```
[sudo] password for ahmedfarg:
[root@server.ahmedfarg.net ~]# LANG=C yum grouplist
Extra Packages for Enterprise Linux 10 - x86_64
Extra Packages for Enterprise Linux 10 - x86_64
Rocky Linux 10 - BaseOS
Rocky Linux 10 - BaseOS
Rocky Linux 10 - AppStream
Rocky Linux 10 - AppStream
Rocky Linux 10 - CRB
Rocky Linux 10 - CRB
Rocky Linux 10 - Extras
Rocky Linux 10 - Extras
Available Environment Groups:
  Server
  Minimal Install
  Workstation
  KDE Plasma Workspaces
  KDE Plasma Mobile
  Custom Operating System
  Virtualization Host
Installed Environment Groups:
  Server with GUI
Installed Groups:
  Container Management
  Development Tools
  Headless Management
Available Groups:
  Desktop accessibility
  KDE Applications
```

104 kB/s		38 kB	00:00
4.0 MB/s		4.7 MB	00:01
10 kB/s		3.9 kB	00:00
22 MB/s		18 MB	00:00
16 kB/s		3.9 kB	00:00
3.5 MB/s		2.1 MB	00:00
8.4 kB/s		3.9 kB	00:00
1.6 MB/s		494 kB	00:00
12 kB/s		3.1 kB	00:00
19 kB/s		4.9 kB	00:00

Рис. 1: Результат yum grouplist

```
root@server:~ -- sudo -i

Running scriptlet: httpd-filessystem-2.4.63-1.el10_0.2.noarch 1/14
Installing      : httpd-filessystem-2.4.63-1.el10_0.2.noarch 1/14
Installing      : apr-1.7.5-2.el10.x86_64 2/14
Installing      : apr-util-lmdb-1.6.3-21.el10.x86_64 3/14
Installing      : apr-util-openssl-1.6.3-21.el10.x86_64 4/14
Installing      : apr-util-1.6.3-21.el10.x86_64 5/14
Installing      : httpd-tools-2.4.63-1.el10_0.2.x86_64 6/14
Installing      : httpd-core-2.4.63-1.el10_0.2.x86_64 7/14
Installing      : mod_http2-2.0.29-2.el10_0.1.x86_64 8/14
Installing      : mod_lua-2.4.63-1.el10_0.2.x86_64 9/14
Installing      : rocky-logos-httpd-100.4-7.el10.noarch 10/14
Installing      : httpd-2.4.63-1.el10_0.2.x86_64 11/14
Running scriptlet: httpd-2.4.63-1.el10_0.2.x86_64 11/14
Installing      : httpd-manual-2.4.63-1.el10_0.2.noarch 12/14
Installing      : mod_fcgid-2.3.9-35.el10.x86_64 13/14
Installing      : mod_ssl-1:2.4.63-1.el10_0.2.x86_64 14/14
Running scriptlet: httpd-2.4.63-1.el10_0.2.x86_64 14/14
Running scriptlet: mod_ssl-1:2.4.63-1.el10_0.2.x86_64 14/14

Installed:
  apr-1.7.5-2.el10.x86_64
  apr-util-lmdb-1.6.3-21.el10.x86_64
  httpd-2.4.63-1.el10_0.2.x86_64
  httpd-filessystem-2.4.63-1.el10_0.2.noarch
  httpd-tools-2.4.63-1.el10_0.2.x86_64
  mod_http2-2.0.29-2.el10_0.1.x86_64
  mod_lua-2.4.63-1.el10_0.2.x86_64
  mod_ssl-1:2.4.63-1.el10_0.2.x86_64
  apr-util-1.6.3-21.el10.x86_64
  apr-util-openssl-1.6.3-21.el10.x86_64
  httpd-core-2.4.63-1.el10_0.2.x86_64
  httpd-manual-2.4.63-1.el10_0.2.noarch
  mod_fcgid-2.3.9-35.el10.x86_64
  mod_lua-2.4.63-1.el10_0.2.x86_64
  rocky-logos-httpd-100.4-7.el10.noarch

Complete!
[root@server.ahmedfarg.net ~]#
```

Рис. 2: Установка httpd

```
gent civilization-iv civilization-v cockpit collectd condor-collector cratedb ctdb dds dds-multicast dds-unicast d
hcp dhcpcv6 dhcpcv6-client distcc dns dns-over-quic dns-over-tls docker-registry docker-swarm dropbox-lansync elasti
csearch etcd-client etcd-server factorio finger foreman foreman-proxy freeipa-4 freeipa-ldap freeipa-ldaps freeipa
-replication freeipa-trust ftp galera ganglia-client ganglia-master git gpsd grafana gre high-availability http ht
tp3 https ident imap imaps iperf2 iperf3 ipfs ipp ipp-client ipsec irc ircs iscsi-target isns jenkins kadmin kdeco
nnect kerberos kibana klogin kpasswd kprop kshell kube-api kube-apiserver kube-control-plane kube-control-plane-se
cure kube-controller-manager kube-controller-manager-secure kube-nodeport-services kube-scheduler kube-scheduler-s
ecure kube-worker kubelet kubelet-readonly kubelet-worker ldap ldaps libvirt libvirt-tls lightning-network llmnr l
lmnr-client llmnr-tcp llmnr-udp managesieve matrix mdns memcache minecraft minidlna mndp mongodb mosh mountd mpd m
qtt mqtt-tls ms-wbt mssql murmur mysql nbd nebula need-for-speed-most-wanted netbios-ns netdata-dashboard nfs nfs3
nmea-0183 nripe ntp nut opentelemetry openvpn ovirt-imageio ovirt-storageconsole ovirt-vmconsole plex pncd pmproxy
pmwebapi pmwebapis pop3 pop3s postgresql privoxy prometheus prometheus-node-exporter proxy-dhcp ps2link ps3netsrv
ptp pulseaudio puppetmaster quassel radius radsec rdp redis redis-sentinel rootd rpc-bind rquotad rsh rsyncd rtsp
salt-master samba samba-client samba-dc sane settlers-history-collection sip sips slimevr slp smtp smtp-submissio
n smtps snmp snmptls snmptls-trap snmptrap spideroak-lansync spotify-sync squid ssdp ssh statsrv steam-lan-transfe
r steam-streaming stellaris stronghold-crusader stun stuns submission supertuxkart svdrp svn syncthing syncthing-g
ui syncthing-relay synergy syscomlan syslog syslog-tls telnet tentacle terraria tftp tile38 tinc tor-socks transmi
ssion-client turn turns upnp-client vdsim vnc-server vrrp warpinator wbem-http wbem-https wireguard ws-discovery ws
-discovery-client ws-discovery-host ws-discovery-tcp ws-discovery-udp wsdd wsdd-http wsman wsmans xdmcp xmpp-bosh
xmpp-client xmpp-local xmpp-server zabbix-agent zabbix-java-gateway zabbix-server zabbix-trapper zabbix-web-servic
e zero-k zerotier
[root@server.ahmedfarg.net ~]# firewall-cmd --add-service=http
success
[root@server.ahmedfarg.net ~]# firewall-cmd --add-service=http --permanent
success
[root@server.ahmedfarg.net ~]# systemctl enable httpd
Created symlink '/etc/systemd/system/multi-user.target.wants/httpd.service' → '/usr/lib/systemd/system/httpd.servi
ce'.
[root@server.ahmedfarg.net ~]# systemctl start httpd
[root@server.ahmedfarg.net ~]#
```

Рис. 3: firewall-cmd настройка

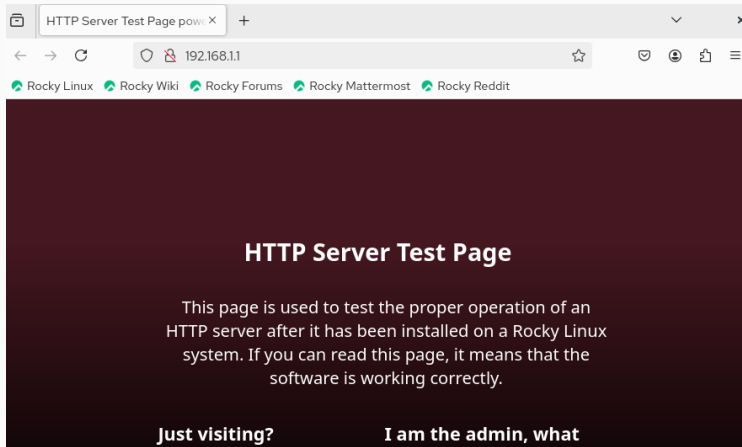


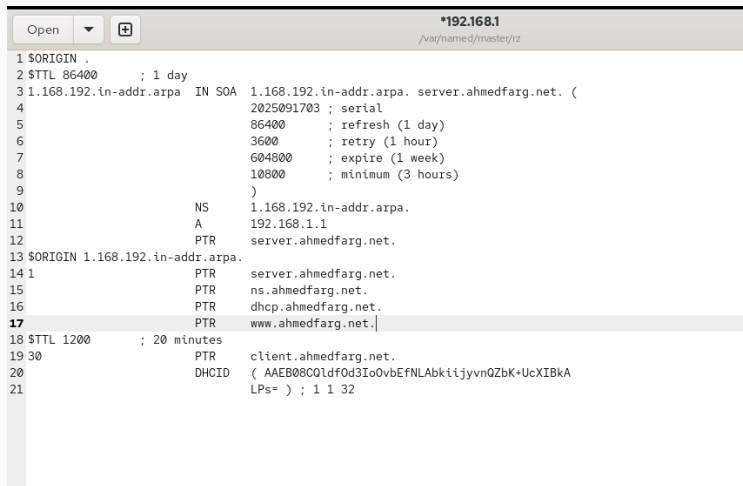
Рис. 4: Тестовая страница Apache


```
[root@server.ahmedfarg.net ~]#  
[root@server.ahmedfarg.net ~]# tail -f /var/log/httpd/error_log  
[Sat Sep 20 09:56:39.367210 2025] [suexec:notice] [pid 17320:tid 17320] AH01232: suEXEC mechanism enabled (wrapper  
: /usr/sbin/suexec)  
[Sat Sep 20 09:56:39.375760 2025] [lbmethod_heartbeat:notice] [pid 17320:tid 17320] AH02282: No slotmem from mod_h  
eartmonitor  
[Sat Sep 20 09:56:39.377259 2025] [systemd:notice] [pid 17320:tid 17320] SELinux policy enabled; httpd running as  
context system_u:system_r:httpd_t:s0  
[Sat Sep 20 09:56:39.378551 2025] [mpm_event:notice] [pid 17320:tid 17320] AH00489: Apache/2.4.63 (Rocky Linux) Op  
enSSL/3.2.2 mod_fcgid/2.3.9 configured -- resuming normal operations  
[Sat Sep 20 09:56:39.378561 2025] [core:notice] [pid 17320:tid 17320] AH00094: Command line: '/usr/sbin/httpd -D F  
OREGROUND'  
^C  
[root@server.ahmedfarg.net ~]# tail -f /var/log/httpd/access_log  
192.168.1.30 - - [20/Sep/2025:09:59:51 +0000] "GET / HTTP/1.1" 403 7620 "-" "Mozilla/5.0 (X11; Linux x86_64; rv:12  
8.0) Gecko/20100101 Firefox/128.0"  
192.168.1.30 - - [20/Sep/2025:09:59:51 +0000] "GET /icons/poweredby.png HTTP/1.1" 200 15443 "http://192.168.1.1/"  
"Mozilla/5.0 (X11; Linux x86_64; rv:128.0) Gecko/20100101 Firefox/128.0"  
192.168.1.30 - - [20/Sep/2025:09:59:51 +0000] "GET /poweredby.png HTTP/1.1" 200 5714 "http://192.168.1.1/" "Mozill  
a/5.0 (X11; Linux x86_64; rv:128.0) Gecko/20100101 Firefox/128.0"  
192.168.1.30 - - [20/Sep/2025:09:59:51 +0000] "GET /favicon.ico HTTP/1.1" 404 196 "http://192.168.1.1/" "Mozilla/5  
.0 (X11; Linux x86_64; rv:128.0) Gecko/20100101 Firefox/128.0"
```

Рис. 5: Просмотр логов httpd

Рис. 6: Остановка службы named

Настройка виртуального хостинга



```
1 $ORIGIN .
2 $TTL 86400      ; 1 day
3 1.168.192.in-addr.arpa  IN SOA  1.168.192.in-addr.arpa. server.ahmedfarg.net. (
4                                2025091703 ; serial
5                                86400      ; refresh (1 day)
6                                3600       ; retry (1 hour)
7                                604800     ; expire (1 week)
8                                10800      ; minimum (3 hours)
9                                )
10                             NS      1.168.192.in-addr.arpa.
11                             A       192.168.1.1
12                             PTR     server.ahmedfarg.net.
13 $ORIGIN 1.168.192.in-addr.arpa.
14 1                             PTR   server.ahmedfarg.net.
15                             PTR     ns.ahmedfarg.net.
16                             PTR     dhcp.ahmedfarg.net.
17                             PTR     www.ahmedfarg.net.
18 $TTL 1200        ; 20 minutes
19 30                             PTR   client.ahmedfarg.net.
20                             DHCID  ( AAEB08CQldf0d3IoOvbEfNLABkiiyvvnQZbK+UcXIBkA
21                             LPs= ) ; 1 1 32
```

Рис. 7: Файл прямой зоны



The image shows a text editor window with a title bar that includes an 'Open' button, a dropdown arrow, and a '+' icon. The title text is 'www.ahmedfarg.net.conf' with the path '/etc/httpd/conf.d' below it. The editor contains the following XML-like configuration for a VirtualHost:

```
1 <VirtualHost *:80>
2     ServerAdmin webmaster@ahmedfarg.net
3     DocumentRoot /var/www/html/www.ahmedfarg.net
4     ServerName www.ahmedfarg.net
5     ErrorLog logs/www.ahmedfarg.net-error_log
6     CustomLog logs/www.ahmedfarg.net-access_log
7 </VirtualHost>
```

Рис. 8: Файл обратной зоны

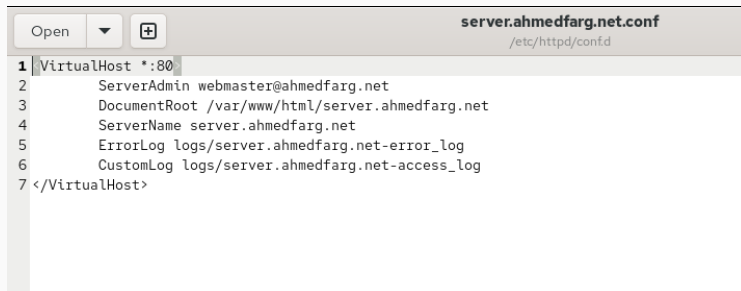


Рис. 9: Конфигурация www.ahmedfarg.net

Конфигурация виртуальных хостов

```
[root@server.ahmedfarg.net ~]#  
[root@server.ahmedfarg.net ~]# systemctl stop named  
[root@server.ahmedfarg.net ~]# gedit /var/named/master/fz/ahmedfarg.net  
[root@server.ahmedfarg.net ~]#  
[root@server.ahmedfarg.net ~]# gedit /var/named/master/rz/192.168.1  
[root@server.ahmedfarg.net ~]# systemctl start named  
[root@server.ahmedfarg.net ~]# cd /etc/httpd/conf.d/  
[root@server.ahmedfarg.net conf.d]# touch server.ahmedfarg.net.conf  
[root@server.ahmedfarg.net conf.d]# touch www.ahmedfarg.net.conf  
[root@server.ahmedfarg.net conf.d]# gedit server.ahmedfarg.net.conf  
[root@server.ahmedfarg.net conf.d]# gedit www.ahmedfarg.net.conf  
[root@server.ahmedfarg.net conf.d]# gedit server.ahmedfarg.net.conf  
[root@server.ahmedfarg.net conf.d]#  
[root@server.ahmedfarg.net conf.d]# cd /var/www/html  
[root@server.ahmedfarg.net html]# mkdir server.ahmedfarg.net  
[root@server.ahmedfarg.net html]# touch index.html  
[root@server.ahmedfarg.net html]# gedit index.html  
[root@server.ahmedfarg.net html]# mv index.html server.ahmedfarg.net/  
[root@server.ahmedfarg.net html]# gedit server.ahmedfarg.net/index.html  
[root@server.ahmedfarg.net html]# mkdir www.ahmedfarg.net  
[root@server.ahmedfarg.net html]# touch www.ahmedfarg.net/index.html  
[root@server.ahmedfarg.net html]# gedit www.ahmedfarg.net/index.html  
[root@server.ahmedfarg.net html]#
```

Рис. 10: Конфигурация server.ahmedfarg.net

```
[root@server.ahmedfarg.net html]# gedit /etc/httpd/conf.d/server.ahmedfarg.net.conf
[root@server.ahmedfarg.net html]# gedit /etc/httpd/conf.d/www.ahmedfarg.net.conf
[root@server.ahmedfarg.net html]#
[root@server.ahmedfarg.net html]#
[root@server.ahmedfarg.net html]# systemctl restart httpd
[root@server.ahmedfarg.net html]# systemctl status httpd
● httpd.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/httpd.service; enabled; preset: disabled)
   Active: active (running) since Sat 2025-09-20 10:14:47 UTC; 2s ago
 Invocation: 4bd1d93af8cc4c03a6588a4106550fb9
    Docs: man:httpd.service(8)
 Main PID: 20191 (httpd)
   Status: "Started, listening on: port 443, port 80"
    Tasks: 178 (limit: 10381)
  Memory: 16.2M (peak: 16.6M)
     CPU: 46ms
   CGroup: /system.slice/httpd.service
           └─20191 /usr/sbin/httpd -DFOREGROUND
             └─20192 /usr/sbin/httpd -DFOREGROUND
               └─20193 /usr/sbin/httpd -DFOREGROUND
                 └─20194 /usr/sbin/httpd -DFOREGROUND
                   └─20195 /usr/sbin/httpd -DFOREGROUND
                     └─20196 /usr/sbin/httpd -DFOREGROUND

Sep 20 10:14:47 server.ahmedfarg.net systemd[1]: Starting httpd.service - The Apache HTTP Server...
Sep 20 10:14:47 server.ahmedfarg.net (httpd)[20191]: httpd.service: Referenced but unset environment variable enva>
Sep 20 10:14:47 server.ahmedfarg.net httpd[20191]: Server configured, listening on: port 443, port 80
Sep 20 10:14:47 server.ahmedfarg.net systemd[1]: Started httpd.service - The Apache HTTP Server.
lines 1-22/22 (END)
```

Рис. 11: Создание каталогов и файлов

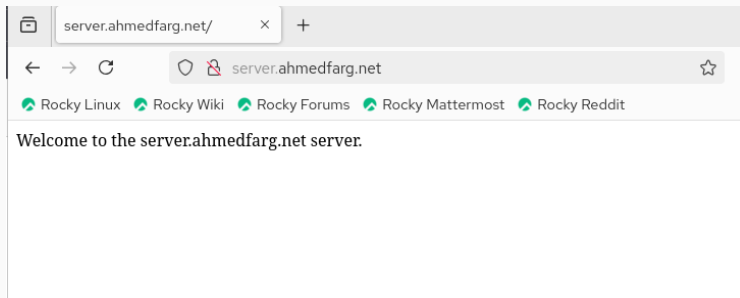


Рис. 12: Статус Apache

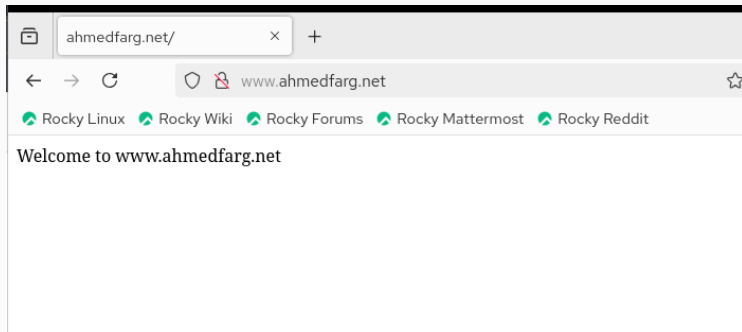


Рис. 13: Тестовая страница server.ahmedfarg.net

```
[root@server.ahmedfarg.net html]#  
[root@server.ahmedfarg.net html]# cd /vagrant/provision/server/  
[root@server.ahmedfarg.net server]# mkdir -p /vagrant/provision/server/http/etc/httpd/conf.d  
[root@server.ahmedfarg.net server]# mkdir -p /vagrant/provision/server/http/var/www/html  
[root@server.ahmedfarg.net server]# cp -R /etc/httpd/conf.d/* /vagrant/provision/server/http/etc/httpd/conf.d/  
[root@server.ahmedfarg.net server]# cp -R /var/www/html/* /vagrant/provision/server/http/var/www/html/  
[root@server.ahmedfarg.net server]# cp -R /var/named/* /vagrant/provision/server/dns/var/named/  
cp: overwrite '/vagrant/provision/server/dns/var/named/data/named.run'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/dynamic/managed-keys.bind.jnl'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/ahmedfarg.net.jnl'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/master/fz/ahmedfarg.net'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/master/rz/192.168.1.jnl'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/named.ca'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/named.empty'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/named.localhost'? y  
cp: overwrite '/vagrant/provision/server/dns/var/named/named.loopback'? y  
[root@server.ahmedfarg.net server]# touch http.sh  
[root@server.ahmedfarg.net server]#
```

Рис. 14: Тестовая страница www.ahmedfarg.net

```
1  #!/bin/bash
2  echo "Provisioning script $0"
3  echo "Install needed packages"
4  dnf -y groupinstall "Basic Web Server"
5  echo "Copy configuration files"
6  cp -R /vagrant/provision/server/http/etc/httpd/* /etc/httpd
7  cp -R /vagrant/provision/server/http/var/www/* /var/www
8  chown -R apache:apache /var/www
9  restorecon -vR /etc
10 restorecon -vR /var/www
11 echo "Configure firewall"
12 firewall-cmd --add-service=http
13 firewall-cmd --add-service=http --permanent
14 echo "Start http service"
15 systemctl enable httpd
16 systemctl start httpd
17
```

Рис. 15: Копирование конфигурации в Vagrant

Выводы по проделанной работе

HTTP-сервер Apache был успешно установлен и сконфигурирован.
Настроен виртуальный хостинг для доменных имён **server.ahmedfarg.net** и **www.ahmedfarg.net**, созданы тестовые страницы и проверена доступность в браузере.
Конфигурация автоматизирована с помощью скрипта *http.sh* и Vagrant.