

Лабораторная работа №4

Базовая настройка HTTP-сервера Apache

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Содержание

Цель работы

Приобрести практические навыки по установке и базовому конфигурированию HTTP-сервера Apache.

Задание

1. Установить необходимые для работы HTTP-сервера пакеты.
2. Запустить HTTP-сервер с базовой конфигурацией и проанализируйте его работу.
3. Настроить виртуальный хостинг.
4. Написать скрипт для Vagrant, фиксирующий действия по установке и настройке HTTP-сервера во внутреннем окружении виртуальной машины server. Соответствующим образом внесите изменения в Vagrantfile

Выполнение лабораторной работы

Установка HTTP-сервера

Загрузим операционную систему и перейдем в рабочий каталог с проектом: `cd C:\Users\dasha\work\study\tbmanturov\vagrant`

Запустим виртуальную машину server: `make server-up`.

На виртуальной машине server войдем под своим пользователем и откроем терминал. Перейдем в режим суперпользователя.

Установим из репозитория стандартный веб-сервер (HTTP-сервер и утилиты `httpd`, криптоутилиты и пр.):

[tbanuturo@server tbanuturo.net ~]\$ LANG=C yum grouplist	
Extra Packages for Enterprise Linux 10 - x86_64	1.9 MB/s 5.5 MB 00:02
Rocky Linux 10 - BaseOS	42 kB/s 1.8 MB 00:43
Rocky Linux 10 - AppStream	1.4 MB/s 1.9 MB 00:01
Rocky Linux 10 - CRB	388 kB/s 488 kB 00:01
Rocky Linux 10 - Extras	4.9 kB/s 4.7 kB 00:00
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	
KDE	
KDE Multimedia support	
KDE Mobile	
KDE PIM	
KDE Software Development	
KDE Frameworks 6 Software Development	
Legacy UNIX Compatibility	
Extra Packages for Enterprise Linux 10 - x86_64	

Вывод списка групп

[root@server tbanuturo.net ~]\$ df -y groupinstall 'Basic Web Server'	
Rocky Linux 10 - BaseOS	7.1 kB/s 4.3 kB 00:00
Rocky Linux 10 - BaseOS	42 kB/s 1.8 MB 00:43
Rocky Linux 10 - AppStream	8.9 kB/s 4.3 kB 00:00
Rocky Linux 10 - AppStream	1.3 MB/s 1.9 MB 00:01
Rocky Linux 10 - CRB	9.9 kB/s 4.3 kB 00:00
Rocky Linux 10 - CRB	356 kB/s 488 kB 00:01
Rocky Linux 10 - Extras	4.6 kB/s 3.1 kB 00:00
Rocky Linux 10 - Extras	6.0 kB/s 4.7 kB 00:00

Установка веб-сервера

Базовое конфигурирование НТТР-сервера

Внесем изменения в настройки межсетевого экрана узла server, разрешив работу с http:

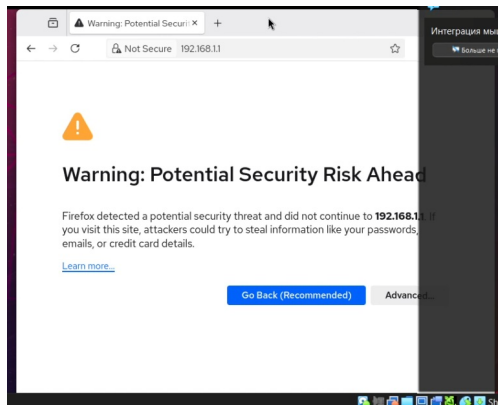
```

root@server tbanuturo.net ~# firewall-cmd --get-services
0-AD 80-Satellite-0 80-Satellite-0-capsule ufp alpr amanda-client amanda-45-client amqp amqp-anno-1000 anno-1000 apc
apod asmpet audit augeas2p2 bacula bacula-client bareos-director bareos-filerdemon bareos-storage bb bgo bitcoind b
btcpin-cpe bitcoin-testnet bitcoin-testnet-cpe bitcoinst-lad ceph ceph-exporter ceph-mon cfmconfig checkm-agent civi
lization-iv civilization-v cockpit collectd condor-collector createdb ctdb dds dds-multicast dds-unicast dhcp dhcpw d
hgw-d-client distcc dms dms-over-qlc dms-over-tls docker-registry docker-swarm dropbox-lampyc elasticsearch etcd-cl
ient etcd-server factorio finger Firewall Firewall-proxy Firewall-4 Firewall-Idm Firewall-Idm Firewall-replication freet
pa-trust ftp galeia ganglia-client ganglia-master git gssd grafana gre high-availability http https ident ismp
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ismp1828 ismp1829 ismp1830 ismp1831 ismp1832 ismp1833 ismp1834 ismp1835 ismp1836 ismp1837 ismp1838 ismp1839 ismp1840
ismp1841 ismp1842 ismp1843 ismp1844 ismp1845 ismp1846 ismp1847 ismp1848 ismp1849 ismp1850 ismp1851 ismp1852 ismp1853
ismp1854 ismp1855 ismp1856 ismp1857 ismp1858 ismp1859 ismp1860 ismp1861 ismp1862 ismp1863 ismp1864 ismp1865 ismp1866
ismp1867 ismp1868 ismp1869 ismp1870 ismp1871 ismp1872 ismp1873 ismp1874 ismp1875 ismp1876 ismp1877 ismp1878 ismp1879
ismp1880 ismp1881 ismp1882 ismp1883 ismp1884 ismp1885 ismp1886 ismp1887 ismp1888 ismp1889 ismp1890 ismp1891 ismp1892
ismp1893 ismp1894 ismp1895 ismp1896 ismp1897 ismp1898 ismp1899 ismp1900 ismp1901 ismp1902 ismp1903 ismp1904 ismp1905
ismp1906 ismp1907 ismp1908 ismp1909 ismp1910 ismp1911 ismp1912 ismp1913 ismp1914 ismp1915 ismp1916 ismp1917 ismp1918
ismp1919 ismp1920 ismp1921 ismp1922 ismp1923 ismp1924 ismp1925 ismp1926 ismp1927 ismp1928 ismp1929 ismp1930 ismp1931
ismp1932 ismp1933 ismp1934 ismp1935 ismp1936 ismp1937 ismp1938 ismp1939 ismp1940 ismp1941 ismp1942 ismp1943 ismp1944
ismp1945 ismp1946 ismp1947 ismp1948 ismp1949 ismp1950 ismp1951 ismp1952 ismp1953 ismp1954 ismp1955 ismp1956 ismp1957
ismp1958 ismp1959 ismp1960 ismp1961 ismp1962 ismp1963 ismp1964 ismp1965 ismp1966 ismp1967 ismp1968 ismp1969 ismp1970
ismp1971 ismp1972 ismp1973 ismp1974 ismp1975 ismp1976 ismp1977 ismp1978 ismp1979 ismp1980 ismp1981 ismp1982 ismp1983
ismp1984 ismp1985 ismp1986 ismp1987 ismp1988 ismp1989 ismp1990 ismp1991 ismp1992 ismp1993 ismp1994 ismp1995 ismp1996
ismp1997 ismp1998 ismp1999 ismp2000 ismp2001 ismp2002 ismp2003 ismp2004 ismp2005 ismp2006 ismp2007 ismp2008 ismp2009
ismp2010 ismp2011 ismp2012 ismp2013 ismp2014 ismp2015 ismp2016 ismp2017 ismp2018 ismp2019 ismp2020 ismp2021 ismp2022
ismp2023 ismp2024 ismp2025 ismp2026 ismp2027 ismp2028 ismp2029 ismp2030 ismp2031 ismp2032 ismp2033 ismp2034 ismp2035
ismp2036 ismp2037 ismp2038 ismp2039 ismp2040 ismp2041 ismp2042 ismp2043 ismp2044 ismp2045 ismp2046 ismp2047 ismp2048
ismp2049 ismp2050 ismp2051 ismp2052 ismp2053 ismp2054 ismp2055 ismp2056 ismp2057 ismp2058 ismp2059 ismp2060 ismp2061
ismp2062 ismp2063 ismp2064 ismp2065 ismp2066 ismp2067 ismp2068 ismp2069 ismp2070 ismp2071 ismp2072 ismp2073 ismp2074
ismp2075 ismp2076 ismp2077 ismp2078 ismp2079 ismp2080 ismp2081 ismp2082 ismp2083 ismp2084 ismp2085 ismp2086 ismp2087
ismp2088 ismp2089 ismp2090 ismp2091 ismp2092 ismp2093 ismp2094 ismp2095 ismp2096 ismp2097 ismp2098 ismp2099 ismp2100
ismp2101 ismp2102 ismp2103 ismp2104 ismp2105 ismp2106 ismp2107 ismp2108 ismp2109 ismp2110 ismp2111 ismp2112 ismp2113
ismp2114 ismp2115 ismp2116 ismp2117 ismp2118 ismp2119 ismp2120 ismp2121 ismp2122 ismp2123 ismp2124 ismp2125 ismp2126
ismp2127 ismp2128 ismp2129 ismp2130 ismp2131 ismp2132 ismp2133 ismp2134 ismp2135 ismp2136 ismp2137 ismp2138 ismp2139
ismp2140 ismp2141 ismp2142 ismp2143 ismp2144 ismp2145 ismp2146 ismp2147 ismp2148 ismp2149 ismp2150 ismp2151 ismp2152
ismp2153 ismp2154 ismp2155 ismp2156 ismp2157 ismp2158 ismp2159 ismp2160 ismp2161 ismp2162 ismp2163 ismp2164 ismp2165
ismp2166 ismp2167 ismp2168 ismp2169 ismp2170 ismp2171 ismp2172 ismp2173 ismp2174 ismp2175 ismp2176 ismp2177 ismp2178
ismp2179 ismp2180 ismp2181 ismp2182 ismp2183 ismp2184 ismp2185 ismp2186 ismp2187 ismp2188
```

```
[root@server.tbmanturov.net ~]# tail -f /var/log/httpd/error_log
[Tue Nov 18 16:31:05.67518 2025] [systemd:notice] [pid 31334:tid 31334] SELinux policy enabled; httpd running as co
text system_u:system_r:httpd_t:s0
[Tue Nov 18 16:31:05.682759 2025] [mpm_event:notice] [pid 31334:tid 31334] AH00489: Apache/2.4.63 (Rocky Linux) Open
SSL/3.2.2 configured -- resuming normal operations
[Tue Nov 18 16:31:05.682791 2025] [core:notice] [pid 31334:tid 31334] AH00094: Command line: '/usr/sbin/httpd -D FOR
GROKING'
[Wed Nov 26 08:44:15.683787 2025] [suexec:notice] [pid 6196:tid 6196] AH01232: suEXEC mechanism enabled (wrapper: /u
s/sbin/suexec)
[Wed Nov 26 08:44:15.684647 2025] [ssl:warn] [pid 6196:tid 6196] AH01882: Init: this version of mod_ssl was compiled
against a newer library (OpenSSL 3.5.1 1 Jul 2025 (OpenSSL 3.2.2 4 Jun 2024), version currently loaded is 0x30200020
- may result in undefined or erroneous behavior
[Wed Nov 26 08:44:15.714348 2025] [ssl:warn] [pid 6196:tid 6196] AH01882: Init: this version of mod_ssl was compiled
against a newer library (OpenSSL 3.5.1 1 Jul 2025 (OpenSSL 3.2.2 4 Jun 2024), version currently loaded is 0x30200020
- may result in undefined or erroneous behavior
[Wed Nov 26 08:44:15.715758 2025] [lbmethod_heartbeat:notice] [pid 6196:tid 6196] AH02282: No sloten from mod_heart
monitor
[Wed Nov 26 08:44:15.719816 2025] [systemd:notice] [pid 6196:tid 6196] SELinux policy enabled; httpd running as cont
xt system_u:system_r:httpd_t:s0
[Wed Nov 26 08:44:15.727549 2025] [mpm_event:notice] [pid 6196:tid 6196] AH00489: Apache/2.4.63 (Rocky Linux) OpenSSL
  
```

Лог ошибок и мониторинг доступа

На виртуальной машине client запустил браузер и в адресной строке ввел 192.168.1.1.



Тестовая страница

В браузере открылась тестовая страница HTTP-сервера, на которой написано сообщение: “Если вы можете это читать, то ПО работает корректно”. Следовательно, базовое конфигурирование HTTP-сервера выполнено правильно.

```
$TTL 1D
@      IN SOA      @ server.tbmanturov.net. (
        2024072700 ; serial
        1D         ; refresh
        1H         ; retry
        1W         ; expire
        3H )       ; minimum
NS     @
A      192.168.1.1
PTR    server.tbmanturov.net.
$ORIGIN 1.168.192.in-addr.arpa.
1      PTR    server.tbmanturov.net.
1      PTR    ns.tbmanturov.net.

1 PTR dhcp.tbmanturov.net
```

Результат мониторинга

Настройка виртуального хостинга для HTTP-сервера

Настроим виртуальный хостинг по двум DNS-адресам: server.tbmanturov.net и www.tbmanturov.net.

Для этого сначала остановим работу DNS-сервера для внесения изменений в файлы описания DNS-зон: `systemctl stop named`

Добавим запись для HTTP-сервера в конце файла прямой DNS-зоны `/var/named/master/fz/tbmanturov.net`:

```
$TTL 10
@      IN SOA      @ server.tbmanturov.net. (
        2024072700 ; serial
        1D         ; refresh
        1H         ; retry
        1W         ; expire
        3H )       ; minimum

NS     @
A      192.168.1.1
PTR    server.tbmanturov.net.
$ORIGIN 1.168.192.in-addr.arpa.
1      PTR        server.tbmanturov.net.
1      PTR        ns.tbmanturov.net.

1 PTR dhcp.tbmanturov.net
```

Файл прямой зоны

и в конце файла обратной зоны /var/named/master/rz/192.168.1:

```
[root@server.tbmanturov.net conf.d]# ls
autoindex.conf  manual.conf  README  userdir.conf  www.tbmanturov.net.conf
fcgid.conf      php.conf     ssl.conf  welcome.conf
[root@server.tbmanturov.net conf.d]# cat www.tbmanturov.net.conf
<VirtualHost *:80>
    ServerAdmin webmaster@tbmanturov.net
    DocumentRoot /var/www/html/www.tbmanturov.net
    ServerName www.tbmanturov.net
    ServerAlias www.tbmanturov.net
```

Файл обратной зоны

В обоих файлах изменим серийный номер файла зоны, указав текущую дату в нотации ГГГГММДДВВ. Также из соответствующих каталогов удалим файлы журналов DNS: tbmanturov.net.jnl и 192.168.1.jnl.

```
GNU nano 0.1 server.tbmanturov.net.conf
<VirtualHost *:80>
    ServerAdmin webmaster@user.net
    DocumentRoot /var/www/html/server.user.net
    ServerName server.user.net
    ErrorLog logs/server.user.net-error_log
    CustomLog logs/server.user.net-access_log combined
</VirtualHost>
```

Удаление файлов журналов DNS

Перезапустим DNS-сервер: `systemctl start named`

В каталоге /etc/httpd/conf.d создайте файлы server.tbmanturov.net.conf и www.tbmanturov.net.conf:

```
cd /etc/httpd/conf.d
touch server.tbmanturov.net.conf
touch www.tbmanturov.net.conf
```

Откроем на редактирование файл server.tbmanturov.net.conf и внесем следующее содержание:

```
GNU nano 0.1 server.tbmanturov.net.conf
<VirtualHost *:80>
    ServerAdmin webmaster@user.net
    DocumentRoot /var/www/html/server.user.net
    ServerName server.user.net
    ErrorLog logs/server.user.net-error_log
    CustomLog logs/server.user.net-access_log combined
</VirtualHost>
```

Редактирование файл server.tbmanturov.net.conf

Откроем на редактирование файл www.tbmanturov.net.conf и внесем следующее содержание:

```
GNU nano 8.1 www.tbmanturov.net.conf
<VirtualHost *:80>
    ServerAdmin webmaster@tbmanturov.net
    DocumentRoot /var/www/html/www.tbmanturov.net
    ServerName www.user.net
    ErrorLog logs/www.user.net-error_log
    CustomLog logs/www.user.net-access_log common
</VirtualHost>
```

Редактирование файл www.tbmanturov.net.conf

Скорректируем права доступа в каталог с веб-контентом: `chown -R apache:apache /var/www`

Восстановим контекст безопасности в SELinux и перезапустим HTTP-сервер.

```
[root@server.tbmanturov.net www.tbmanturov.net]# chown -R apache:apache /var/www
[root@server.tbmanturov.net www.tbmanturov.net]# restorecon -vR /etc
[root@server.tbmanturov.net www.tbmanturov.net]# restorecon -vR /var/named
[root@server.tbmanturov.net www.tbmanturov.net]# restorecon -vR /var/www
[root@server.tbmanturov.net www.tbmanturov.net]# systemctl restart httpd
[root@server.tbmanturov.net www.tbmanturov.net]#
```

Редактирование файла

Внесение изменений в настройки внутреннего окружения виртуальной машины

На виртуальной машине server перейдем в каталог для внесения изменений в настройки внутреннего окружения /vagrant/provision/server/, создадим в нём каталог http, в который поместим в соответствующие подкаталоги конфигурационные файлы HTTP-сервера. Заменяем конфигурационные файлы DNS-сервера. В каталоге /vagrant/provision/server создадим исполняемый файл http.sh. Открыв его на редактирование, пропишем в нём следующий скрипт:

```
43 path: "provision/default/01-hostname.sh"
44
45
46
47
48
49
50
51 config.vm.provision "common user",
52   type: "shell",
53   preserve_order: true,
54   path: "provision/default/01-user.sh"
55
56
57 ## Server configuration
58 config.vm.define "server", autostart: false do |server|
59   server.vm.box = "rockylinux10"
60   server.vm.hostname = "server"
61
62   server.vm.provision "server ssh",
63     type: "shell",
64     preserve_order: true,
65     path: "provision/server/ssh.sh"
66
67   server.vm.boot_timeout = 1440
68   server.vm.provision "server http",
69     type: "shell",
70     preserve_order: true,
71     path: "provision/server/http.sh"
72
73   server.vm.provision "server dns",
74     type: "shell",
75     preserve_order: true,
76     path: "provision/server/dns.sh"
```

Редактирование файла

Этот скрипт повторяет произведённые вами действия по установке и настройке HTTP-сервера.

Для отработки созданного скрипта во время загрузки виртуальных машин в конфигурационном файле Vagrantfile необходимо добавить в конфигурации сервера следующую запись:

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

Контрольные вопросы

1. Через какой порт по умолчанию работает Apache?

Сервер Apache по умолчанию настроен на ожидание входящих соединений через порт 80.

2. Под каким пользователем запускается Apache и к какой группе относится этот пользователь?

По умолчанию, Apache запускается от пользователя, называемого apache или www-data, в зависимости от операционной системы. Этот пользователь обладает минимальными привилегиями, что делает его безопасным для запуска веб-сервера. Группа www-data.

3. Где располагаются лог-файлы веб-сервера? Что можно по ним отслеживать?

Логи сервера, в том числе логи apache хранятся в каталоге /var/log/. Лог-файлы (файлы регистрации, журнальные файлы) на Linux - это текстовые файлы о событиях, произошедших на сайте: информация о параметрах посещений сайта и ошибках, которые возникали на нем.

4. Где по умолчанию содержится контент веб-серверов?

В каталоге /var/www/html

5. Каким образом реализуется виртуальный хостинг? Что он даёт?

Виртуальный хостинг реализуется путем размещения нескольких сайтов на одном физическом сервере. Веб-сервер использует виртуальные хосты (обычно на основе доменных имен) для определения, какой сайт обслуживать при запросе. Это позволяет разделить ресурсы сервера между разными сайтами и обеспечивает эффективное использование аппаратных ресурсов. Виртуальный хостинг позволяет размещать сайты с базовыми потребностями.

Выводы

В процессе выполнения лабораторной работы я приобрела практические навыки по установке и базовому конфигурированию HTTP-сервера Apache.