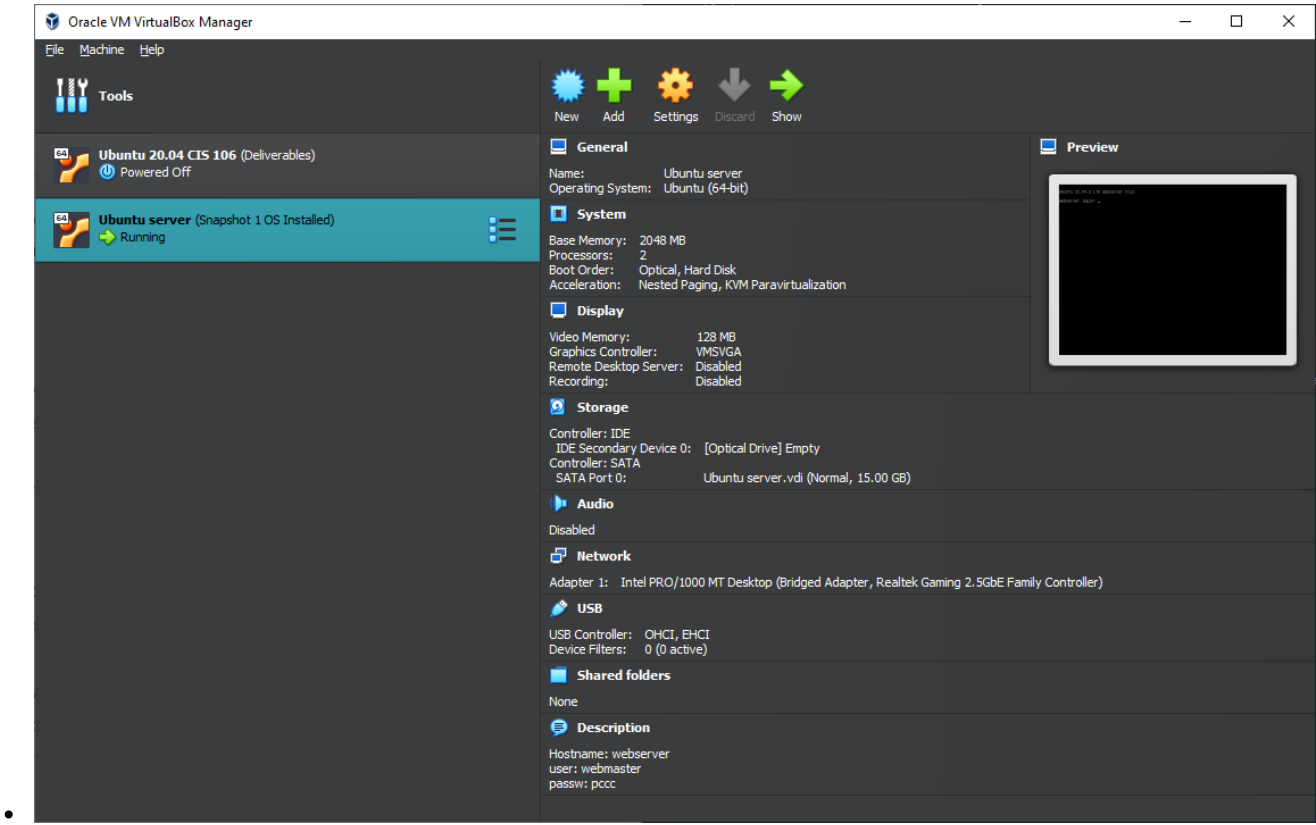
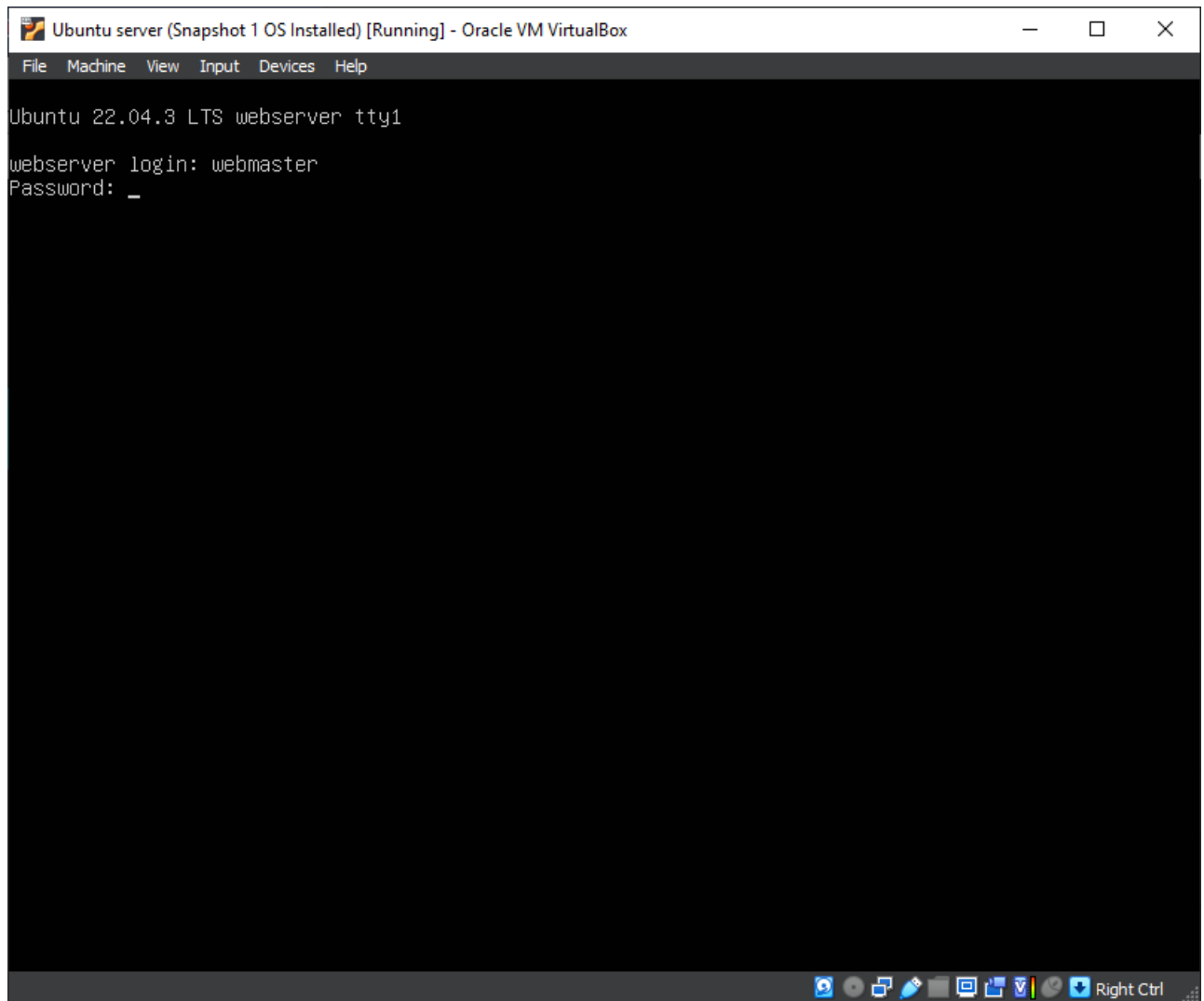


Deliverable 2

1. What are the server hardware specifications (virtual machine settings)?



2. What is Ubuntu server log in screen?

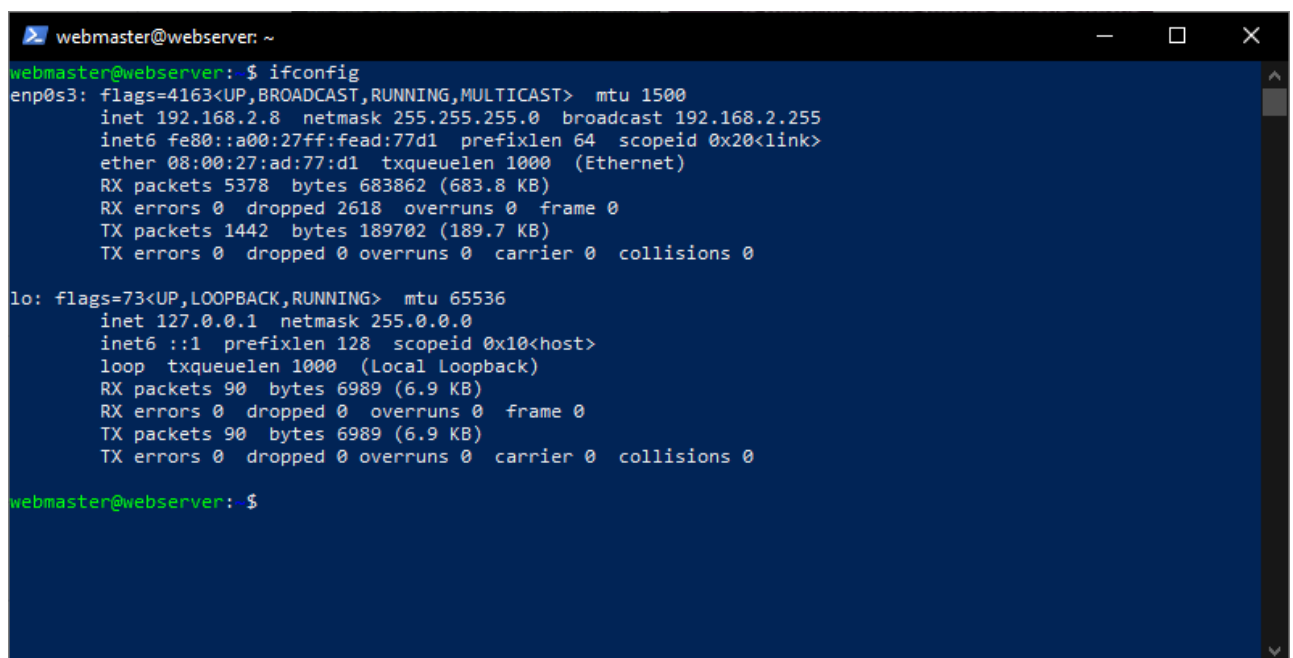


```
Ubuntu server (Snapshot 1 OS Installed) [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

Ubuntu 22.04.3 LTS webserver tty1

webserver login: webmaster
Password: _
```

3. What is the IP address of your Ubuntu Server Virtual Machine?



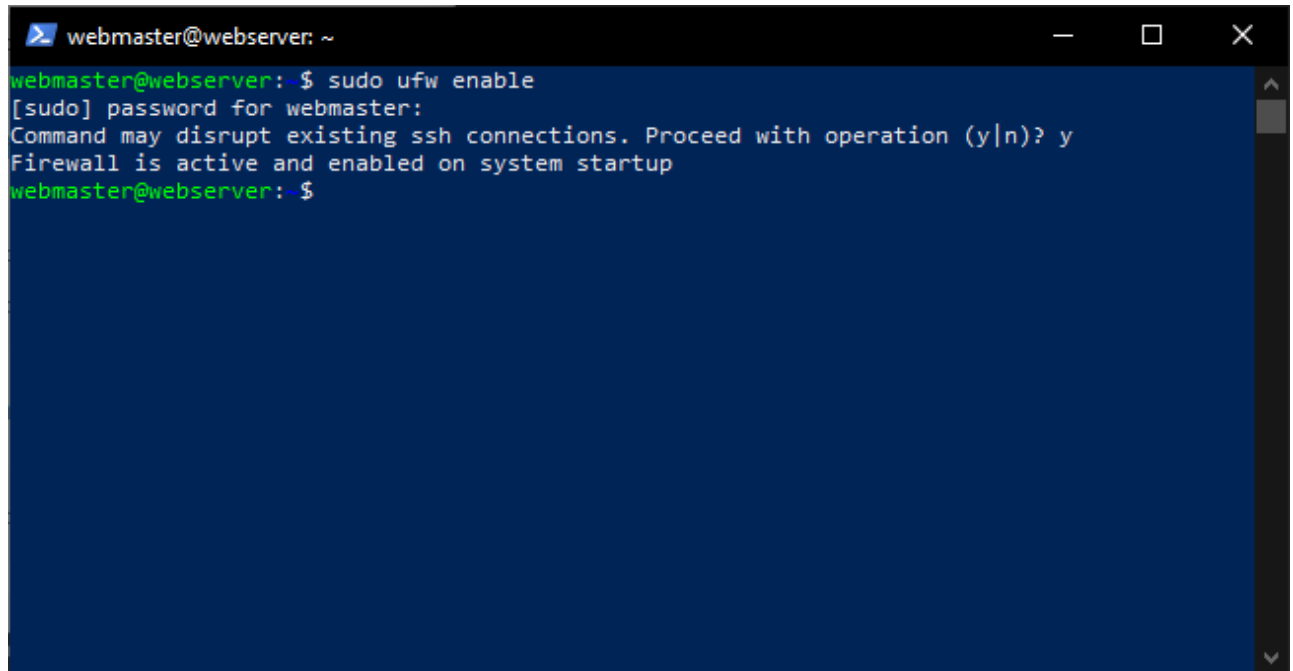
```
webmaster@webserver: ~
webmaster@webserver: $ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.2.8 netmask 255.255.255.0 broadcast 192.168.2.255
    inet6 fe80::a00:27ff:fead:77d1 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:ad:77:d1 txqueuelen 1000 (Ethernet)
    RX packets 5378 bytes 683862 (683.8 KB)
    RX errors 0 dropped 2618 overruns 0 frame 0
    TX packets 1442 bytes 189702 (189.7 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 90 bytes 6989 (6.9 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 90 bytes 6989 (6.9 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

webmaster@webserver: $
```

• `ifconfig`

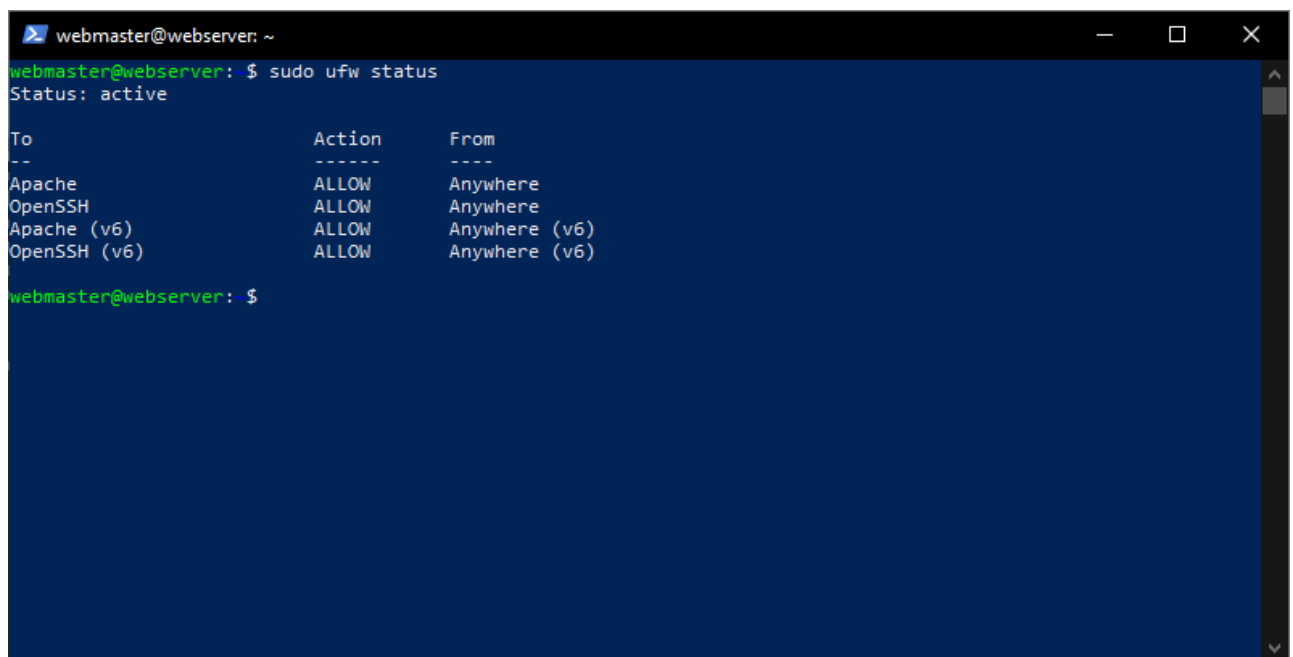
4. How do you enable the Ubuntu Firewall?



```
webmaster@webserver: ~  
webmaster@webserver: $ sudo ufw enable  
[sudo] password for webmaster:  
Command may disrupt existing ssh connections. Proceed with operation (y|n)? y  
Firewall is active and enabled on system startup  
webmaster@webserver:~$
```

-
- `sudo ufw enable`

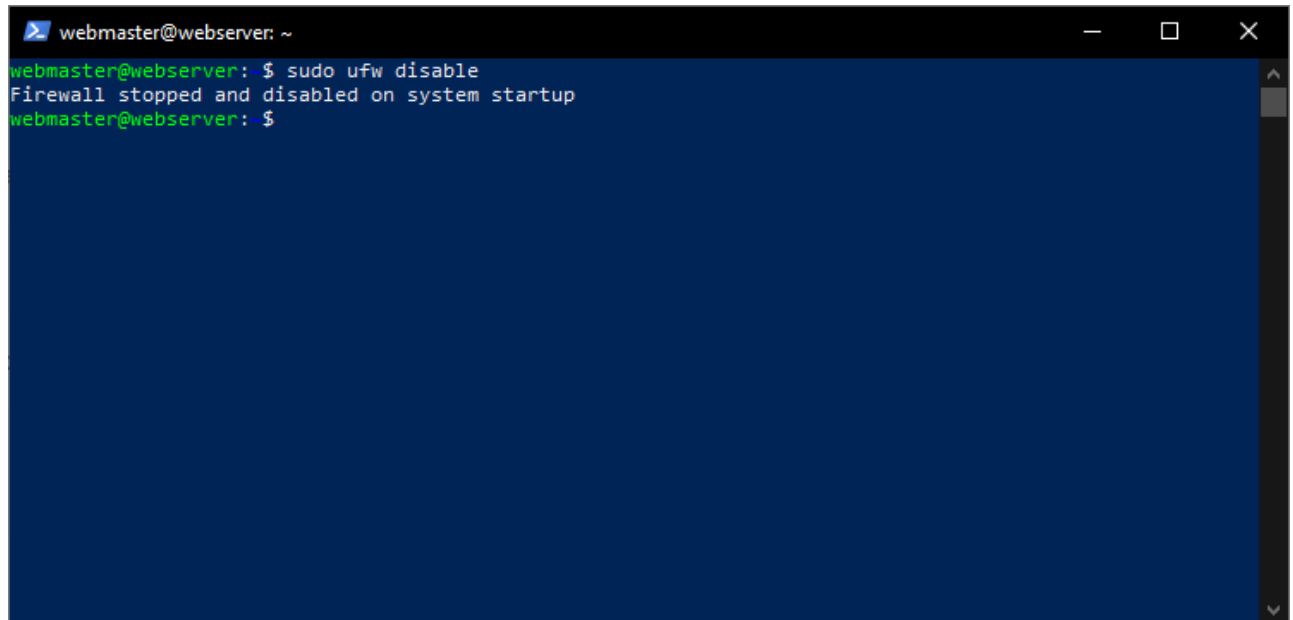
5. How do you check if the Ubuntu Firewall is running?



```
webmaster@webserver: ~  
webmaster@webserver: $ sudo ufw status  
Status: active  
  
To Action From  
--  
Apache ALLOW Anywhere  
OpenSSH ALLOW Anywhere  
Apache (v6) ALLOW Anywhere (v6)  
OpenSSH (v6) ALLOW Anywhere (v6)  
  
webmaster@webserver:~$
```

-
- `sudo ufw status`

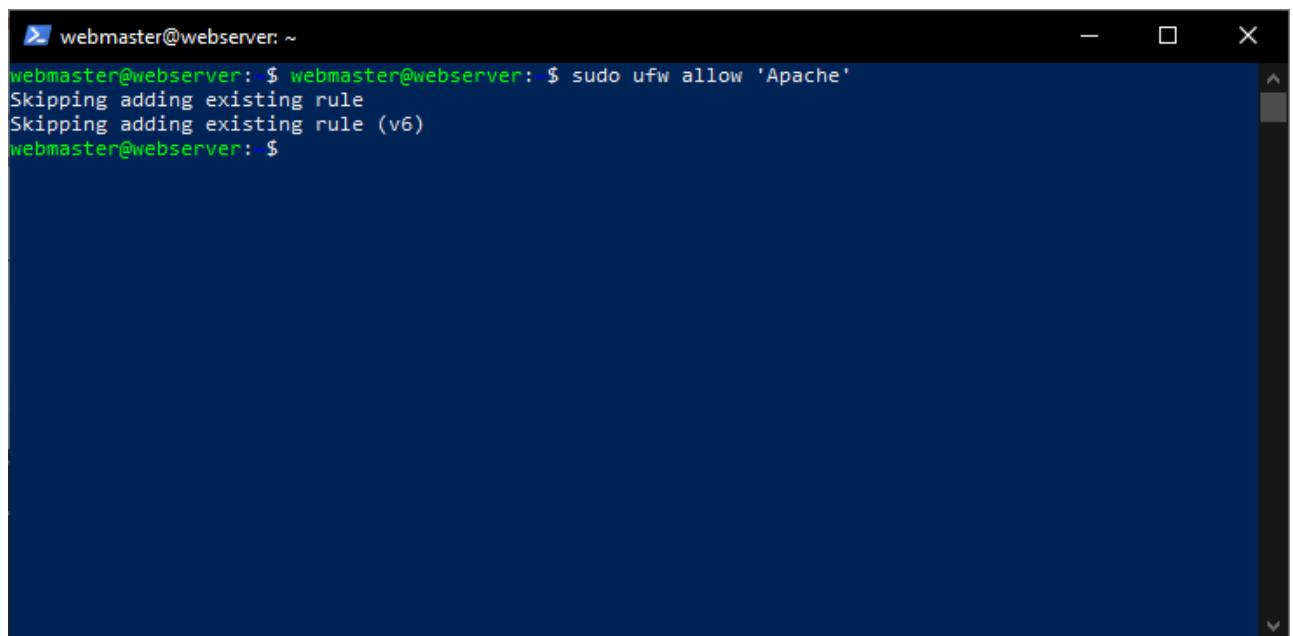
6. How do you disable the Ubuntu Firewall?

A terminal window titled 'webmaster@webserver: ~' with standard window controls. The prompt is 'webmaster@webserver:~\$'. The command 'sudo ufw disable' has been entered, and the output is 'Firewall stopped and disabled on system startup'. The prompt is now 'webmaster@webserver:~\$'.

```
webmaster@webserver: ~
webmaster@webserver:~$ sudo ufw disable
Firewall stopped and disabled on system startup
webmaster@webserver:~$
```

-
- `sudo ufw disable`

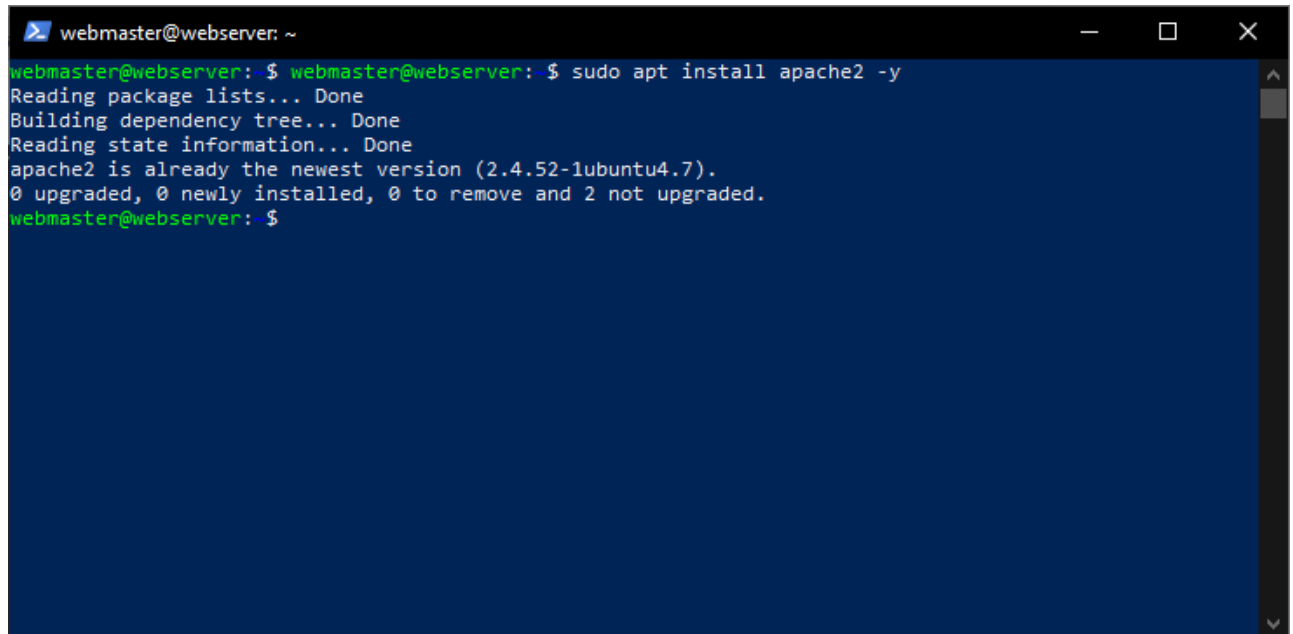
7. How do you add Apache to the Firewall?

A terminal window titled 'webmaster@webserver: ~' with standard window controls. The prompt is 'webmaster@webserver:~\$'. The command 'sudo ufw allow 'Apache'' has been entered, and the output is 'Skipping adding existing rule' followed by 'Skipping adding existing rule (v6)'. The prompt is now 'webmaster@webserver:~\$'.

```
webmaster@webserver: ~
webmaster@webserver:~$ sudo ufw allow 'Apache'
Skipping adding existing rule
Skipping adding existing rule (v6)
webmaster@webserver:~$
```

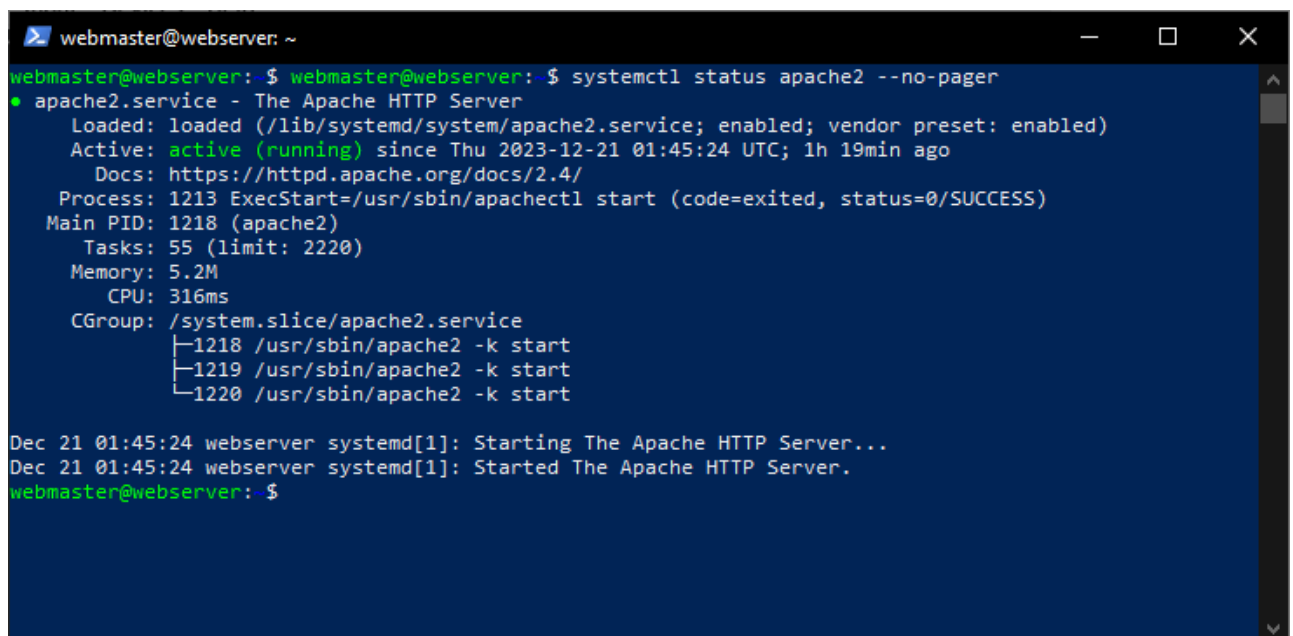
-
- `sudo ufw allow 'Apache'`

8. What is the command you used to install Apache?

A terminal window titled 'webmaster@webserver: ~' showing the command 'sudo apt install apache2 -y' being executed. The output indicates that Apache2 is already the newest version (2.4.52-1ubuntu4.7) and that 0 packages were upgraded, 0 newly installed, 0 to be removed, and 2 not upgraded. The prompt returns to 'webmaster@webserver: \$'.

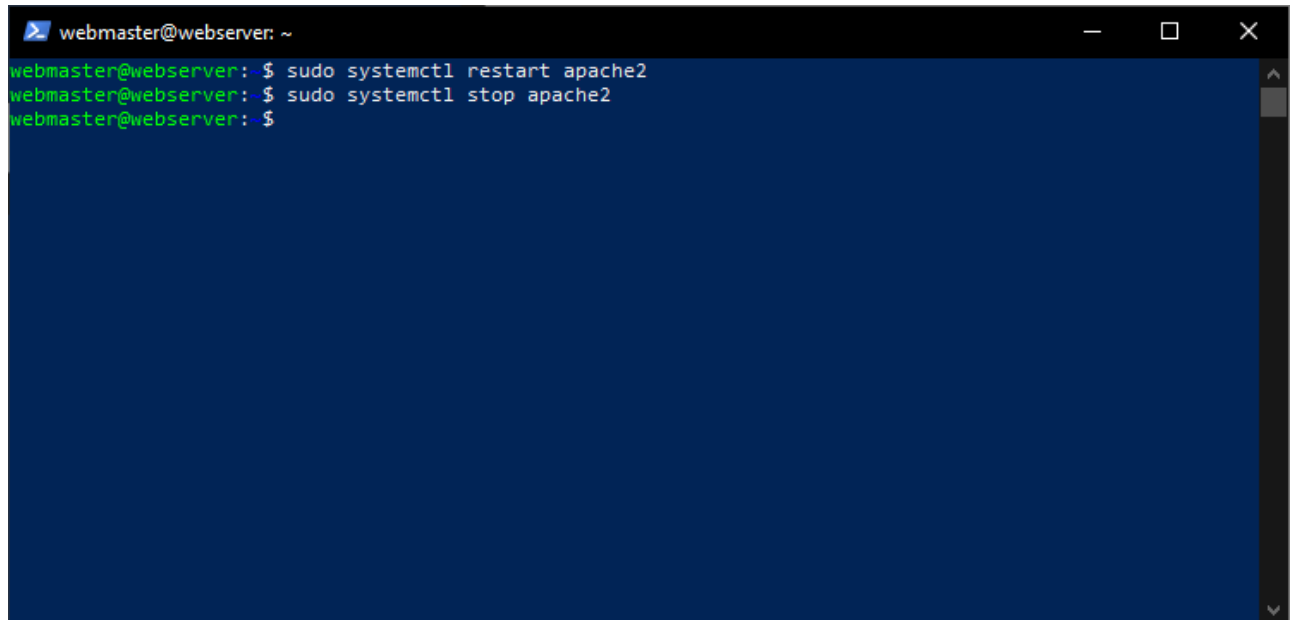
-
- `sudo apt install apache2 -y`

9. What is the command you use to check if Apache is running?

A terminal window titled 'webmaster@webserver: ~' showing the command 'systemctl status apache2 --no-pager' being executed. The output shows that the 'apache2.service' is 'active (running)' since Thu 2023-12-21 01:45:24 UTC. It lists the process as '1213 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)' and shows the main PID as 1218. It also displays memory usage (5.2M) and CPU usage (316ms). The CGroup is '/system.slice/apache2.service' with three child processes: '1218 /usr/sbin/apache2 -k start', '1219 /usr/sbin/apache2 -k start', and '1220 /usr/sbin/apache2 -k start'. At the bottom, it shows logs for 'Starting The Apache HTTP Server...' and 'Started The Apache HTTP Server.' followed by the prompt 'webmaster@webserver: \$'.

-
- `systemctl status apache2 --no-pager`

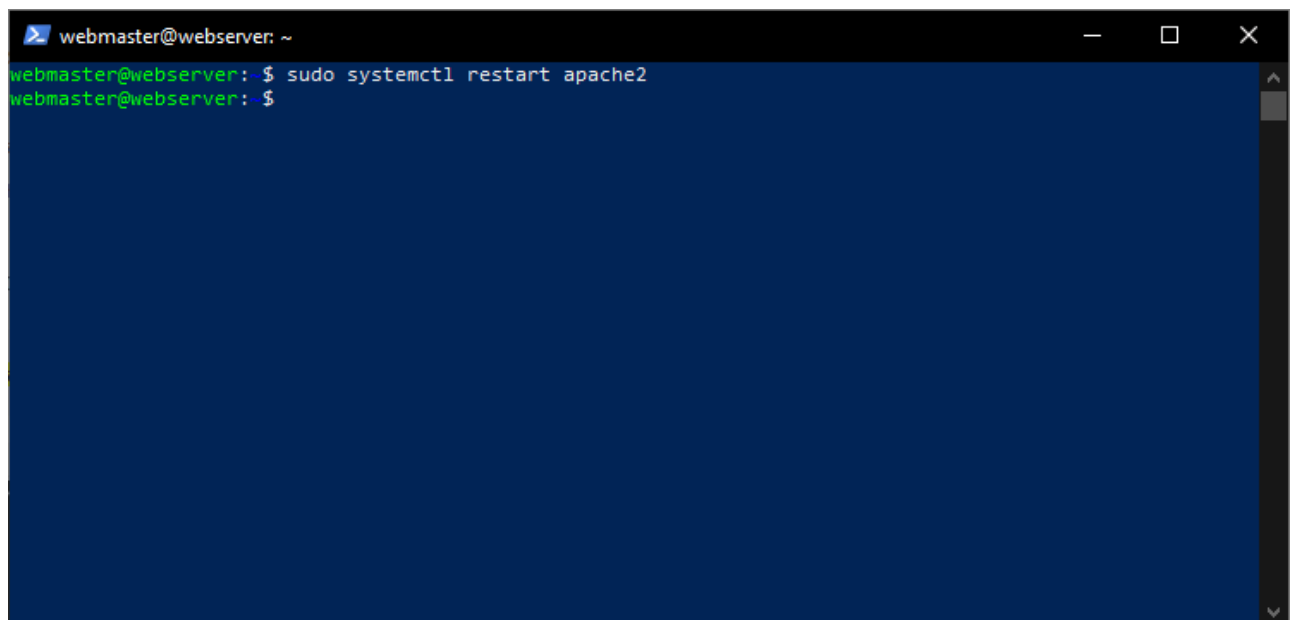
10. What is the command you use to stop Apache?

A terminal window titled 'webmaster@webserver: ~' with a dark blue background. It shows three commands entered: 'sudo systemctl restart apache2', 'sudo systemctl stop apache2', and a blank prompt. The window has standard Linux window controls (minimize, maximize, close) in the top right corner.

```
webmaster@webserver: ~
webmaster@webserver:~$ sudo systemctl restart apache2
webmaster@webserver:~$ sudo systemctl stop apache2
webmaster@webserver:~$
```

- `sudo system stop apache2`

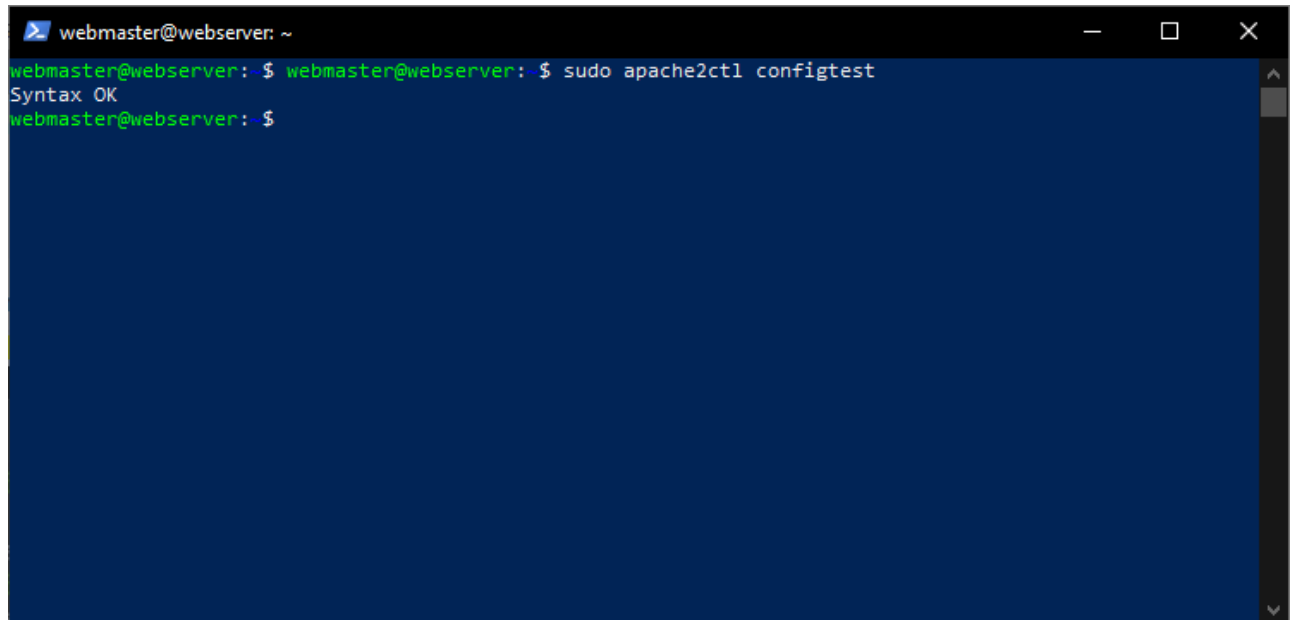
11. What is the command you use to restart Apache?

A terminal window titled 'webmaster@webserver: ~' with a dark blue background. It shows the command 'sudo systemctl restart apache2' entered, followed by a blank prompt. The window has standard Linux window controls in the top right corner.

```
webmaster@webserver: ~
webmaster@webserver:~$ sudo systemctl restart apache2
webmaster@webserver:~$
```

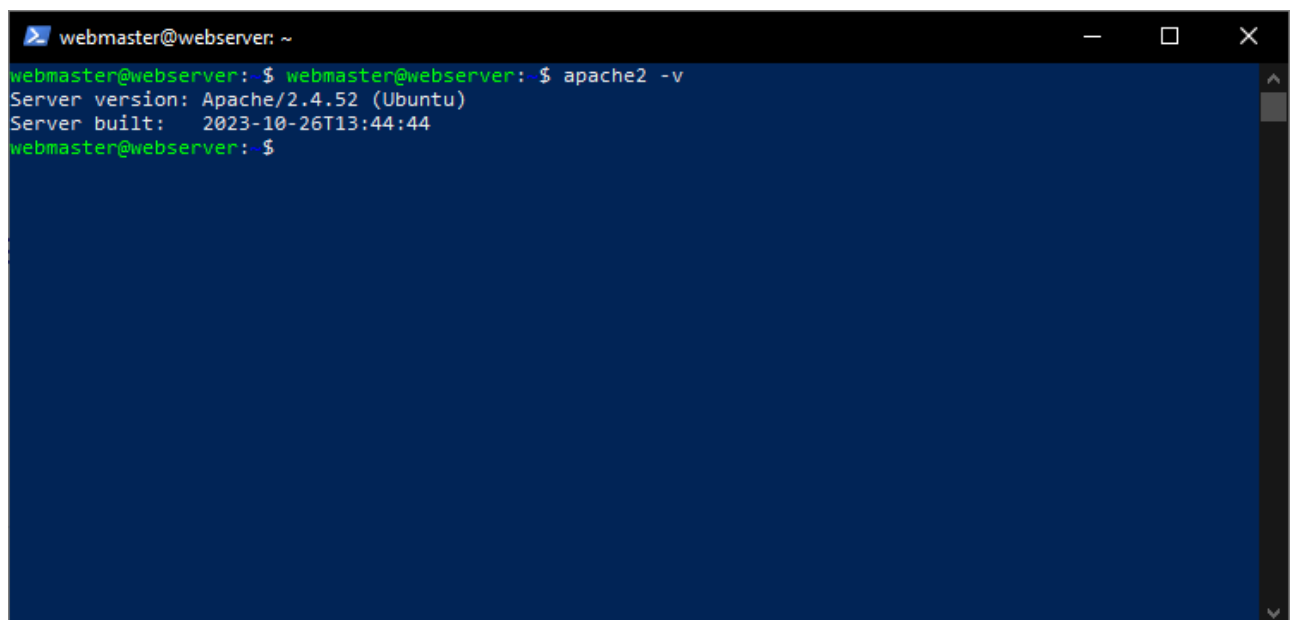
- `sudo system restart apache2`

12. What is the command used to test Apache configuration?

A terminal window titled 'webmaster@webserver: ~' with standard window controls. The prompt is 'webmaster@webserver:~\$'. The command 'sudo apache2ctl configtest' has been entered and executed. The output is 'Syntax OK' on the next line. The prompt is now 'webmaster@webserver:~\$'.

- `sudo apache2ctl configtest`

13. What is the command used to check the installed version of Apache?

A terminal window titled 'webmaster@webserver: ~' with standard window controls. The prompt is 'webmaster@webserver:~\$'. The command 'apache2 -v' has been entered and executed. The output is 'Server version: Apache/2.4.52 (Ubuntu)' followed by 'Server built: 2023-10-26T13:44:44' on the next line. The prompt is now 'webmaster@webserver:~\$'.

- `apache2 -v`

14. What are the most common commands to troubleshoot Apache errors? Provide a brief description of each command.

- `systemctl`
 - Used to control and interact with Linux services via the `systemd` service manager.
- `journalctl`
 - Used to query and view the logs that are generated by `systemd`.
- `apachectl`
 - When troubleshooting, this command is used to check Apache's configuration.

15. Which are Apache Log Files, and what are they used for? Provide examples and screenshots.

- These logs are separate from Apache's request and error logs. journalctl displays logs from systemd that describe the Apache service itself, from startup to shutdown, along with any process errors that may be encountered along the way.

```
webmaster@webserver:~$ sudo journalctl -u apache2.service --since today --no-pager
[sudo] password for webmaster:
Dec 21 01:19:54 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 01:19:54 webserver apachectl[1584]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:19:54 webserver systemd[1]: Started The Apache HTTP Server.
Dec 21 01:23:23 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 21 01:23:23 webserver apachectl[2140]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:23:23 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 21 01:23:23 webserver systemd[1]: Stopped The Apache HTTP Server.
Dec 21 01:23:23 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 01:23:23 webserver apachectl[2146]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:23:23 webserver systemd[1]: Started The Apache HTTP Server.
Dec 21 01:25:11 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 21 01:25:11 webserver apachectl[2250]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:25:12 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 21 01:25:12 webserver systemd[1]: Stopped The Apache HTTP Server.
-- Boot 5144a43b9edf44b998bec17933164fd --
Dec 21 01:29:06 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 01:29:06 webserver apachectl[752]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:29:06 webserver systemd[1]: Started The Apache HTTP Server.
Dec 21 01:32:16 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 21 01:32:16 webserver apachectl[1208]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:32:16 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 21 01:32:16 webserver systemd[1]: Stopped The Apache HTTP Server.
-- Boot f42bc30ad62d41b09d468f79639175d9 --
Dec 21 01:32:47 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 01:32:48 webserver apachectl[753]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:32:48 webserver systemd[1]: Started The Apache HTTP Server.
Dec 21 01:45:24 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 21 01:45:24 webserver apachectl[1208]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 01:45:24 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 21 01:45:24 webserver systemd[1]: Stopped The Apache HTTP Server.
Dec 21 01:45:24 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 01:45:24 webserver systemd[1]: Started The Apache HTTP Server.
Dec 21 03:06:46 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 21 03:06:46 webserver apachectl[1208]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 03:06:46 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 21 03:06:46 webserver systemd[1]: Stopped The Apache HTTP Server.
Dec 21 03:06:46 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 03:06:46 webserver systemd[1]: Started The Apache HTTP Server.
Dec 21 03:07:47 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 21 03:07:47 webserver apachectl[1208]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
Dec 21 03:07:47 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 21 03:07:47 webserver systemd[1]: Stopped The Apache HTTP Server.
Dec 21 03:08:10 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 21 03:08:10 webserver systemd[1]: Started The Apache HTTP Server.
webmaster@webserver:~$
```