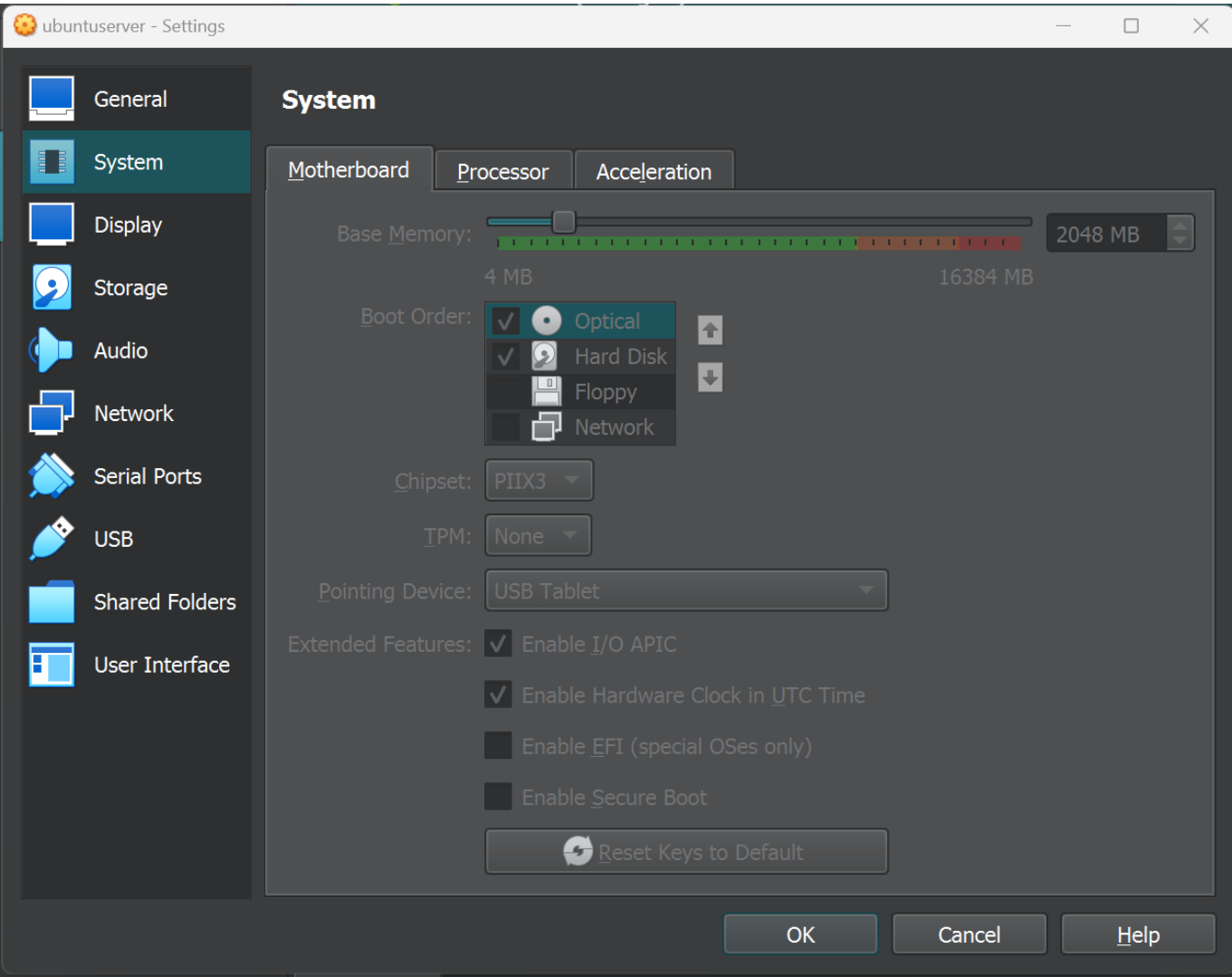
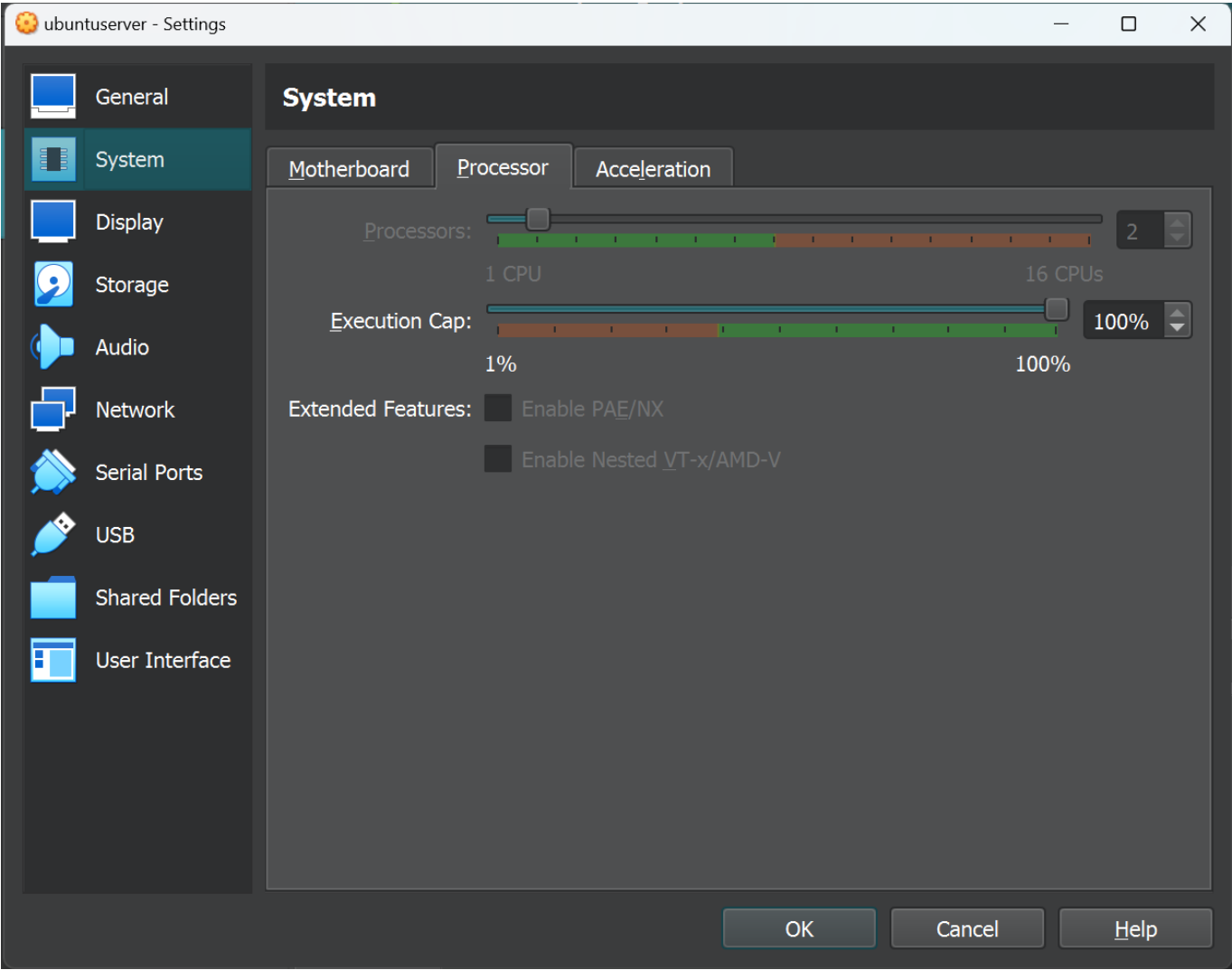


# Deliverable 2

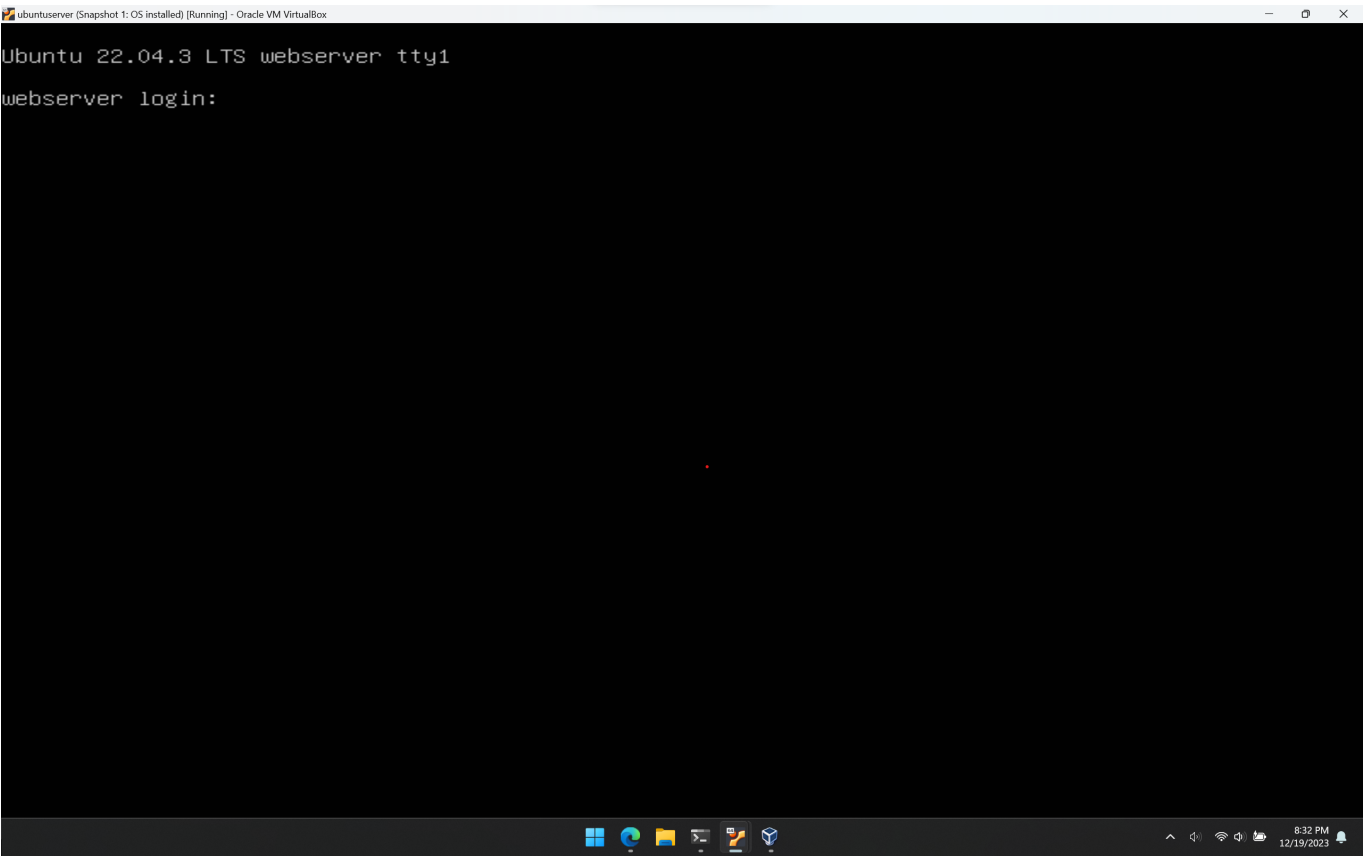
## Questions

What are the server hardware specifications?

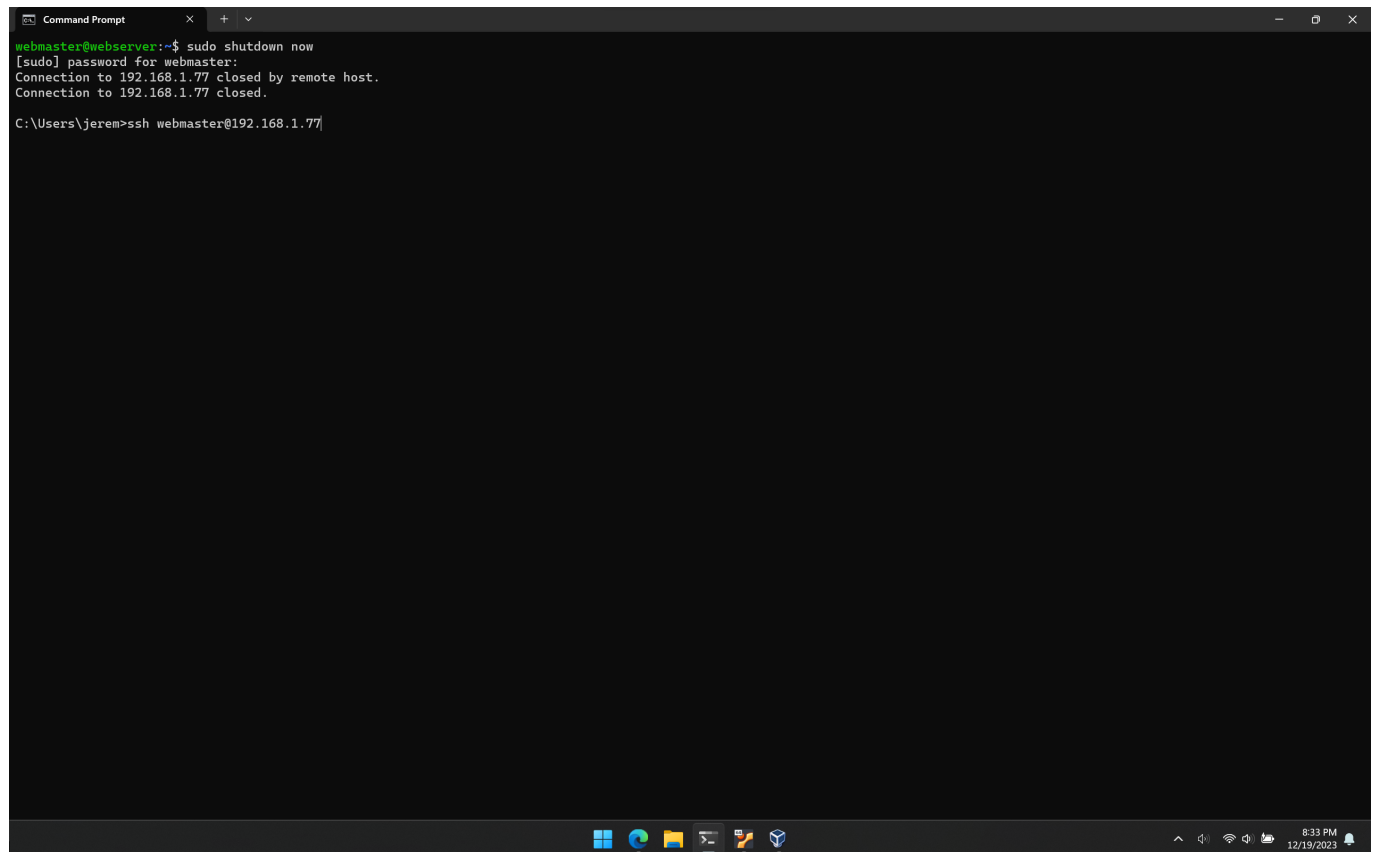




What is Ubuntu server login screen?



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



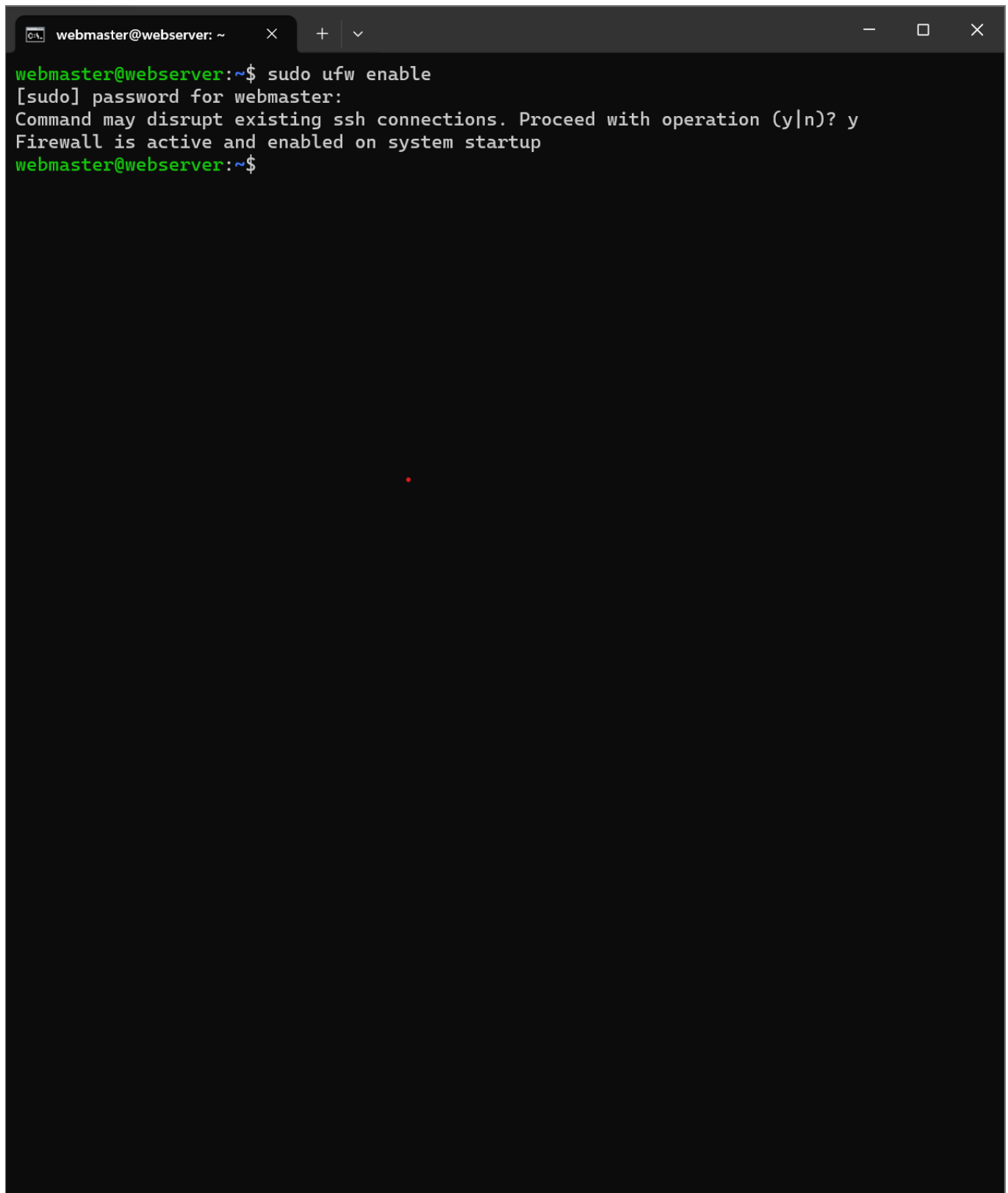
The screenshot shows a Windows Command Prompt window titled "Command Prompt". The terminal output is as follows:

```
webmaster@webserver:~$ sudo shutdown now
[sudo] password for webmaster:
Connection to 192.168.1.77 closed by remote host.
Connection to 192.168.1.77 closed.

C:\Users\jerem>ssh webmaster@192.168.1.77
```

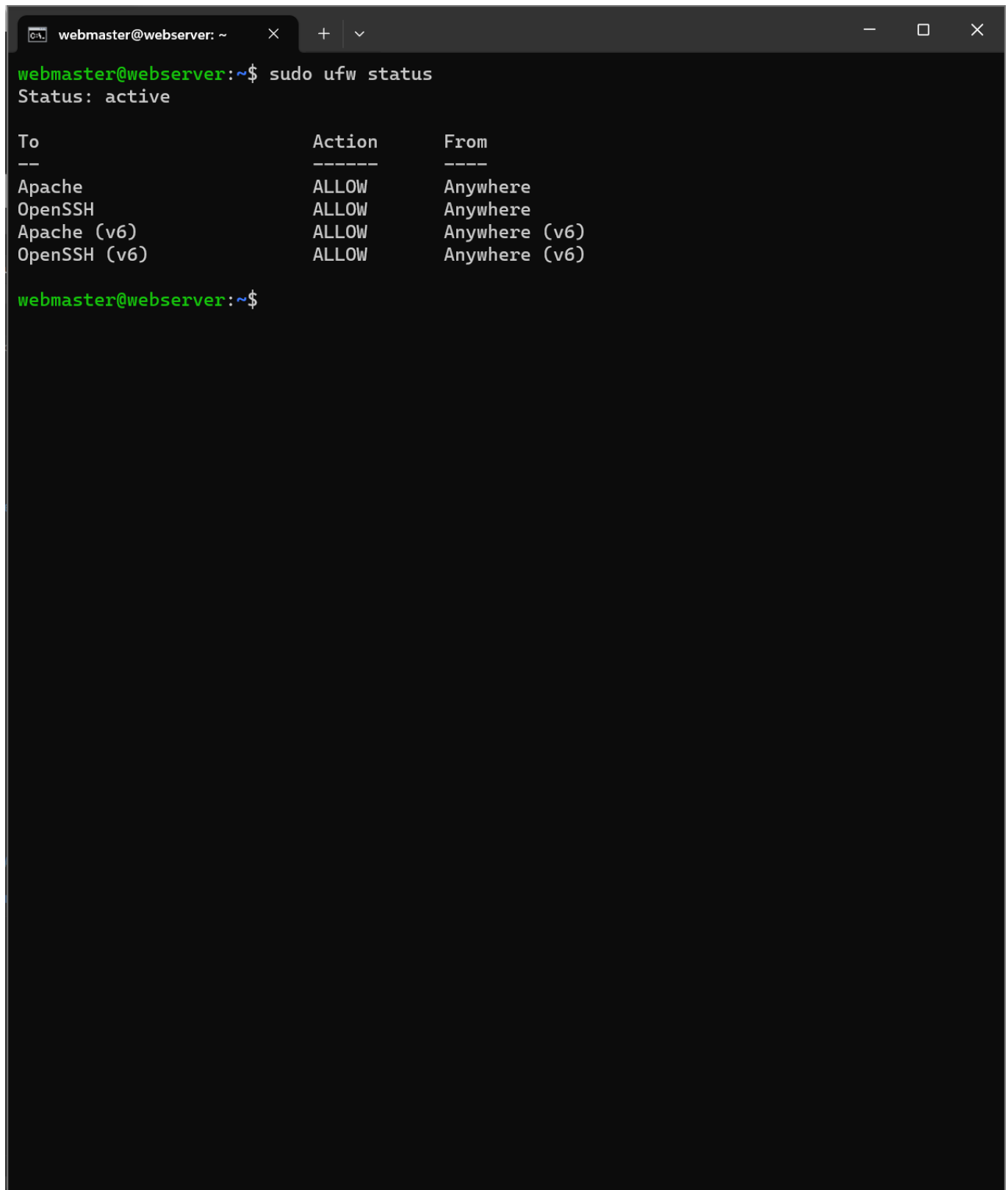
The terminal window is dark-themed. The Windows taskbar is visible at the bottom, showing the Start button, several application icons, and the system tray with the date and time (8:33 PM, 12/19/2023).

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:~$
```

How do you check if the Ubuntu Firewall is running?

A terminal window titled 'webmaster@webserver: ~' with standard window controls. The user has entered the command 'sudo ufw status'. The output shows the firewall is active and lists four rules: Apache, OpenSSH, Apache (v6), and OpenSSH (v6), all allowing traffic from anywhere.

```
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)

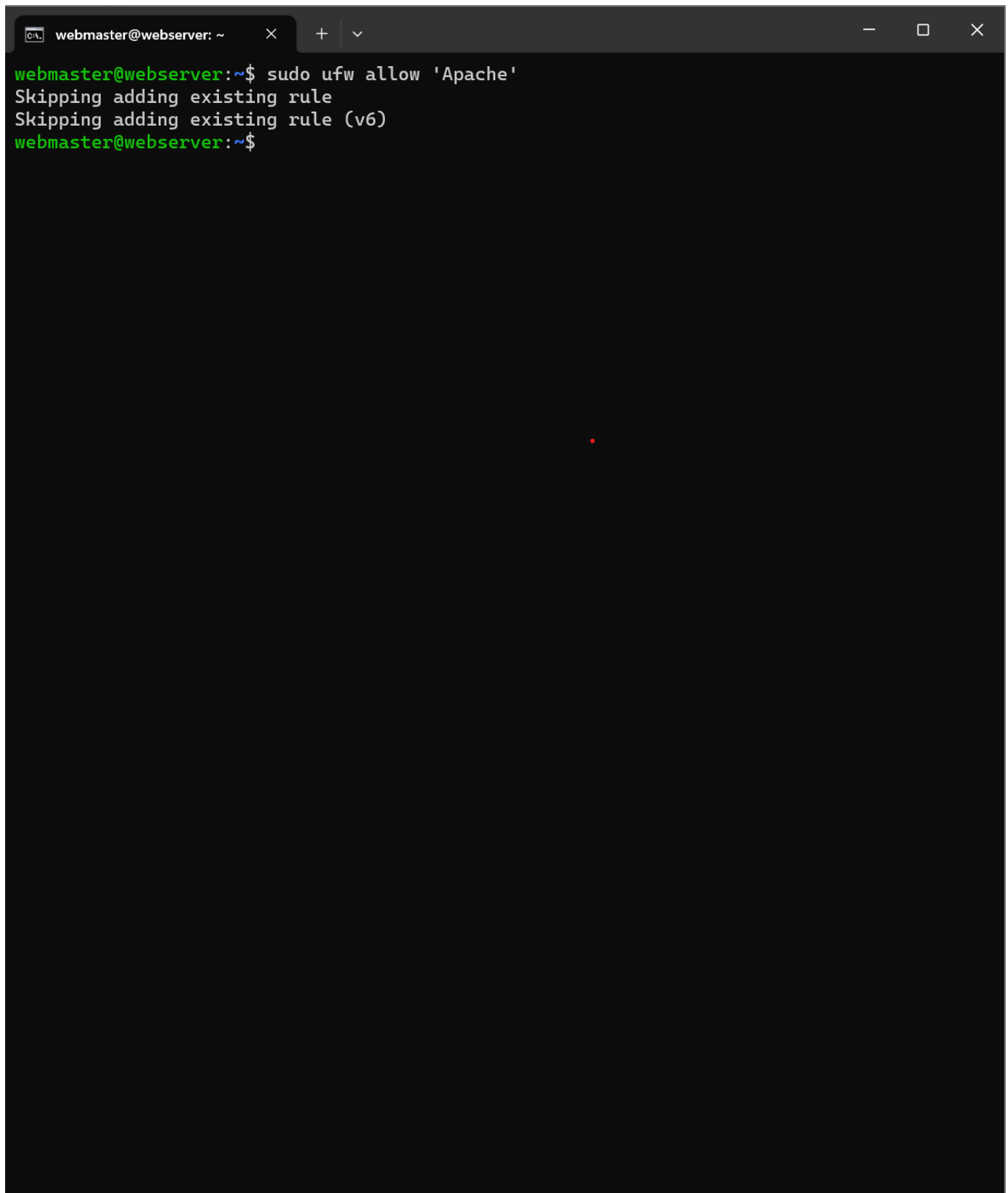
webmaster@webserver: ~$
```

How do you disable the Ubuntu Firewall?

A terminal window with a dark background. The title bar shows 'webmaster@webserver: ~' and standard window controls. The terminal text is as follows:

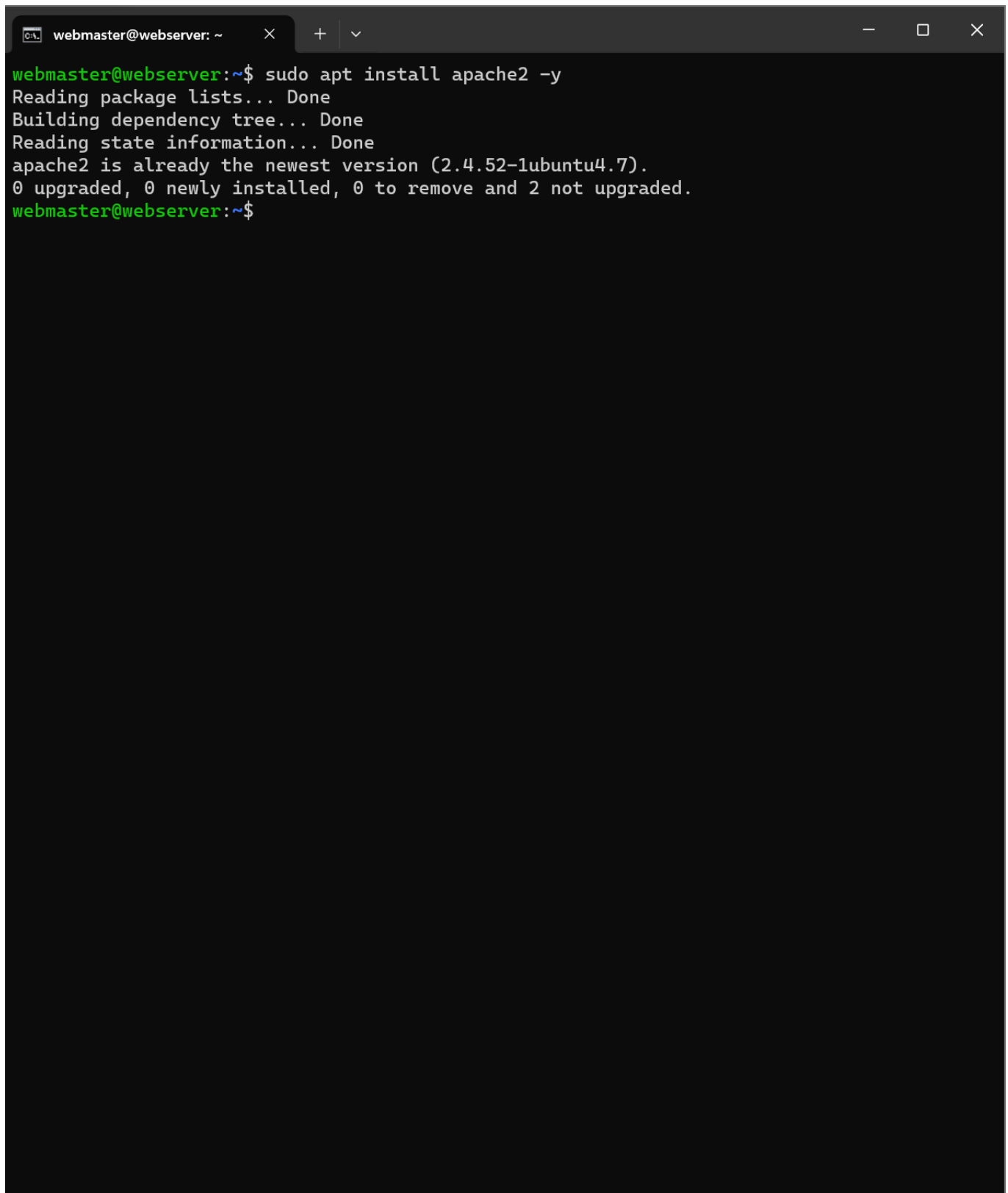
```
webmaster@webserver:~$ sudo ufw disable
Firewall stopped and disabled on system startup
webmaster@webserver:~$
```

How do you add Apache to the Firewall?

A terminal window with a dark background. The title bar shows 'webmaster@webserver: ~' and standard window controls. The prompt is 'webmaster@webserver:~\$'. The command 'sudo ufw allow 'Apache'' has been entered. The output shows 'Skipping adding existing rule' and 'Skipping adding existing rule (v6)'. The prompt is now 'webmaster@webserver:~\$'.

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

What is the command you used to install Apache?

A terminal window with a dark background and light green text. The window title bar shows 'webmaster@webserver: ~' and standard window controls. The terminal output shows 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 no packages were upgraded, newly installed, or to be removed, with 2 packages not being upgraded. The prompt returns to 'webmaster@webserver:~\$'.

```
webmaster@webserver:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.52-1ubuntu4.7).
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
webmaster@webserver:~$
```

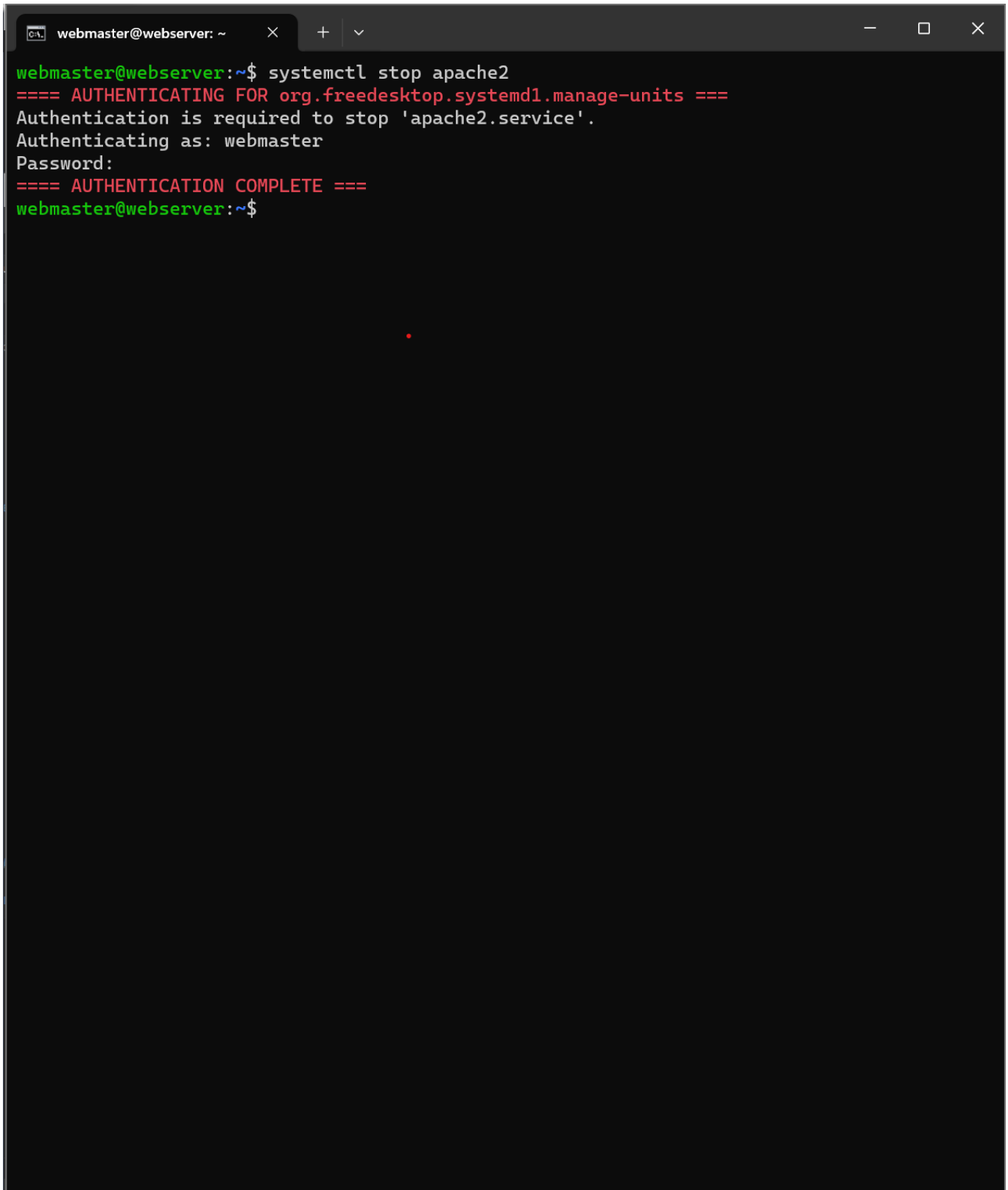
What is the command you use to check if Apache is running?



```
webmaster@webserver: ~$ systemctl status apache2 --no-pager
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabl
ed)
   Active: active (running) since Wed 2023-12-20 01:31:50 UTC; 8min ago
     Docs: https://httpd.apache.org/docs/2.4/
  Process: 702 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
 Main PID: 777 (apache2)
    Tasks: 55 (limit: 2220)
   Memory: 7.4M
      CPU: 91ms
   CGroup: /system.slice/apache2.service
           └─777 /usr/sbin/apache2 -k start
             └─778 /usr/sbin/apache2 -k start
               └─779 /usr/sbin/apache2 -k start

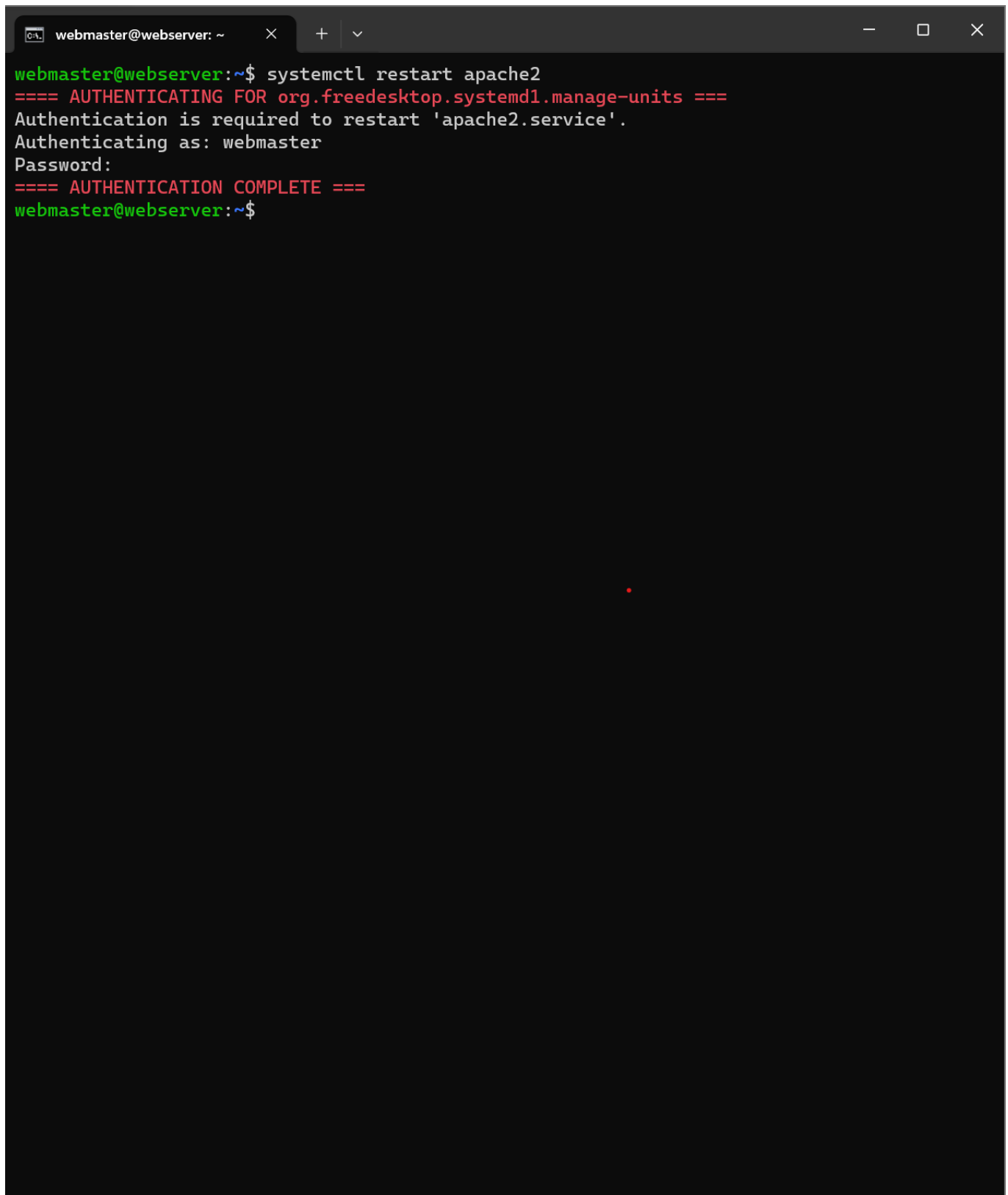
Dec 20 01:31:50 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 20 01:31:50 webserver systemd[1]: Started The Apache HTTP Server.
webmaster@webserver:~$
```

What is the command you use to stop Apache?

A terminal window titled 'webmaster@webserver: ~' with standard window controls. The terminal shows the command 'systemctl stop apache2' being executed. It prompts for authentication, showing 'Authentication is required to stop 'apache2.service'.' and 'Authenticating as: webmaster'. After a password is entered (indicated by dots), it shows '==== AUTHENTICATION COMPLETE ===' and returns to the prompt 'webmaster@webserver:~\$'.

```
webmaster@webserver:~$ systemctl stop apache2
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ====
Authentication is required to stop 'apache2.service'.
Authenticating as: webmaster
Password:
==== AUTHENTICATION COMPLETE ====
webmaster@webserver:~$
```

What is the command you use to restart Apache?



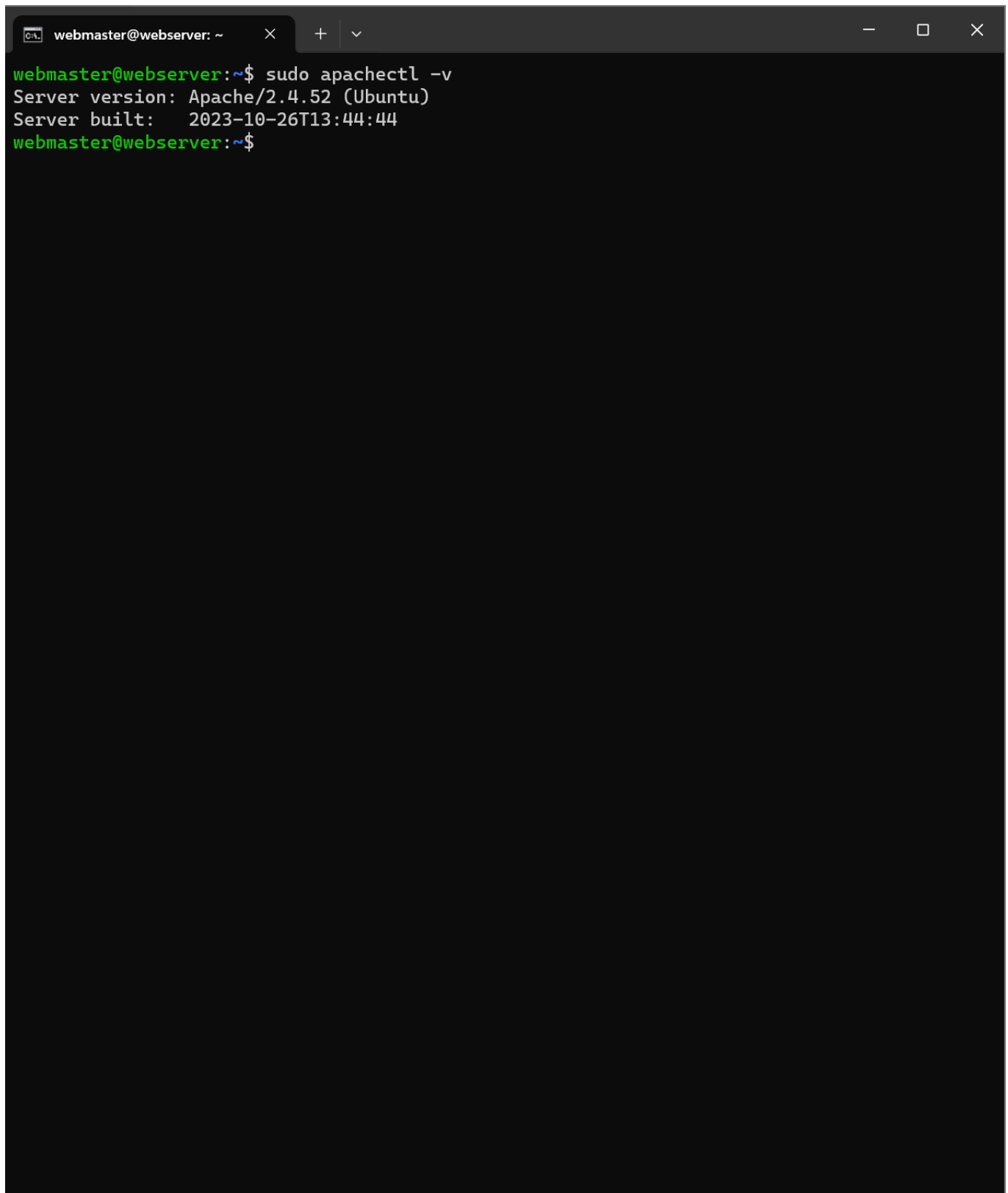
```
webmaster@webserver: ~  
webmaster@webserver:~$ systemctl restart apache2  
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ===  
Authentication is required to restart 'apache2.service'.  
Authenticating as: webmaster  
Password:  
==== AUTHENTICATION COMPLETE ===  
webmaster@webserver:~$
```

What is the command used to test Apache configuration?

A terminal window with a dark background. The title bar shows 'webmaster@webserver: ~' and standard window controls. The terminal text shows a user running 'sudo apache2ctl configtest', which returns 'Syntax OK'.

```
webmaster@webserver: ~$ sudo apache2ctl configtest
Syntax OK
webmaster@webserver: ~$
```

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

A terminal window with a dark background. The title bar shows 'webmaster@webserver: ~' and standard window controls. The prompt is 'webmaster@webserver:~\$'. The command 'sudo apachectl -v' has been entered and executed. The output shows the Apache version and build information.

```
webmaster@webserver:~$ sudo apachectl -v
Server version: Apache/2.4.52 (Ubuntu)
Server built:   2023-10-26T13:44:44
webmaster@webserver:~$
```

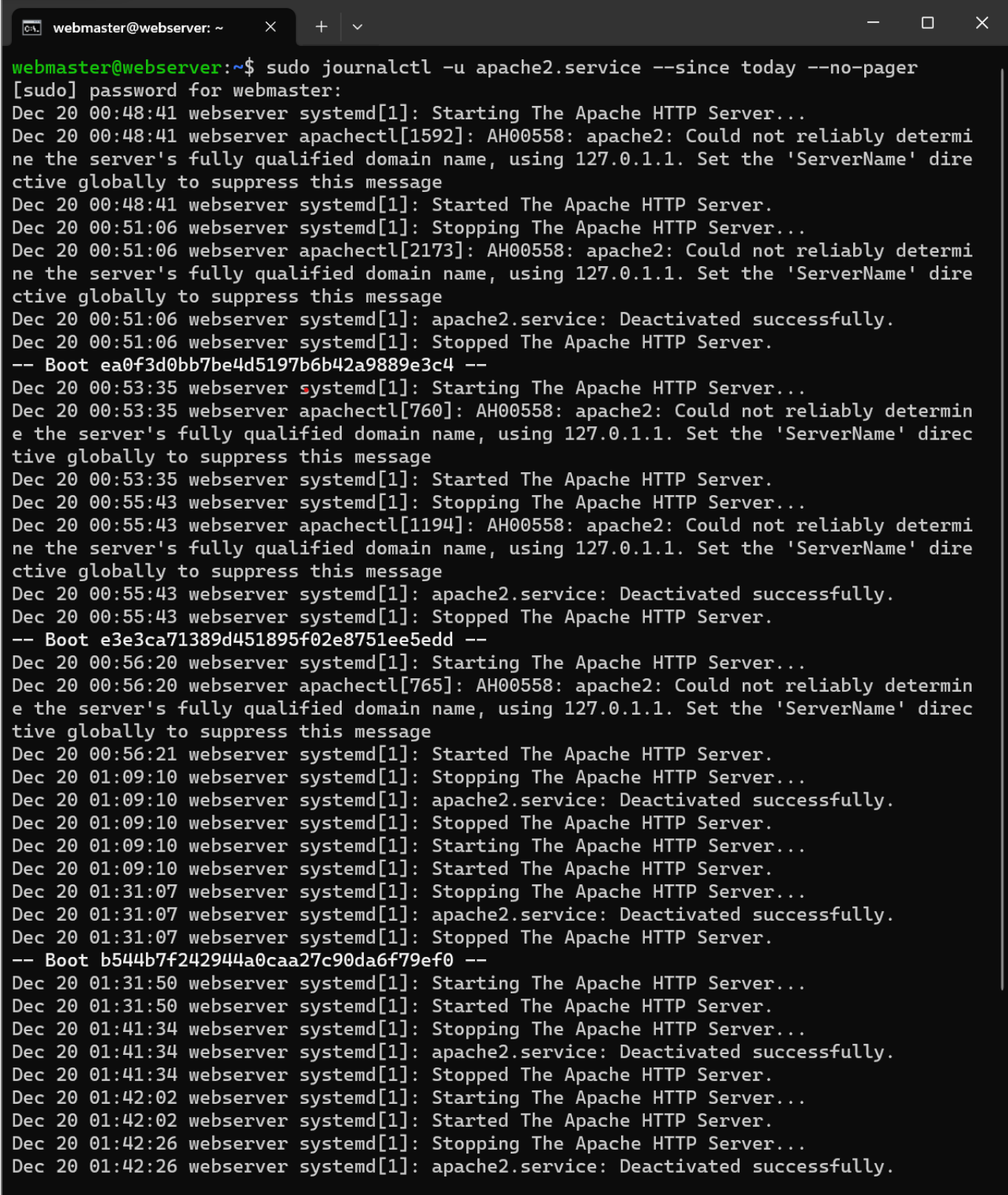
What are the most command commands to troubleshoot Apache errors? Provide a brief description of each command.

Command	Description
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.

## What are Apache Log Files, and what are they used for? Provide examples and screenshots

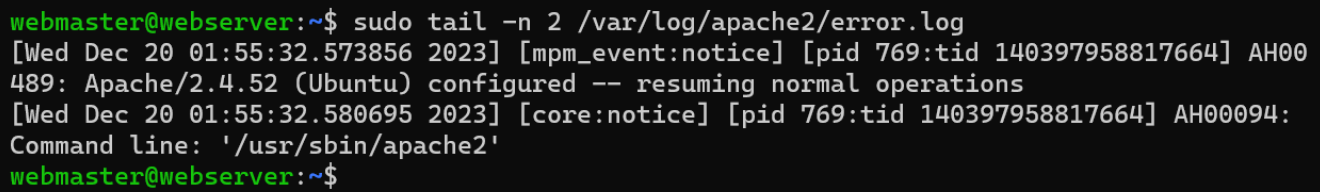
Apache log files are troubleshooting files that contain configuration, built-in modules, and other debugging information.

### Example 1: Using journalctl to display logs from systemd



```
webmaster@webserver: ~$ sudo journalctl -u apache2.service --since today --no-pager
[sudo] password for webmaster:
Dec 20 00:48:41 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 20 00:48:41 webserver apachectl[1592]: 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 20 00:48:41 webserver systemd[1]: Started The Apache HTTP Server.
Dec 20 00:51:06 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 20 00:51:06 webserver apachectl[2173]: 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 20 00:51:06 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 20 00:51:06 webserver systemd[1]: Stopped The Apache HTTP Server.
-- Boot ea0f3d0bb7be4d5197b6b42a9889e3c4 --
Dec 20 00:53:35 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 20 00:53:35 webserver apachectl[760]: 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 20 00:53:35 webserver systemd[1]: Started The Apache HTTP Server.
Dec 20 00:55:43 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 20 00:55:43 webserver apachectl[1194]: 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 20 00:55:43 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 20 00:55:43 webserver systemd[1]: Stopped The Apache HTTP Server.
-- Boot e3e3ca71389d451895f02e8751ee5edd --
Dec 20 00:56:20 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 20 00:56:20 webserver apachectl[765]: 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 20 00:56:21 webserver systemd[1]: Started The Apache HTTP Server.
Dec 20 01:09:10 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 20 01:09:10 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 20 01:09:10 webserver systemd[1]: Stopped The Apache HTTP Server.
Dec 20 01:09:10 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 20 01:09:10 webserver systemd[1]: Started The Apache HTTP Server.
Dec 20 01:31:07 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 20 01:31:07 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 20 01:31:07 webserver systemd[1]: Stopped The Apache HTTP Server.
-- Boot b544b7f242944a0caa27c90da6f79ef0 --
Dec 20 01:31:50 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 20 01:31:50 webserver systemd[1]: Started The Apache HTTP Server.
Dec 20 01:41:34 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 20 01:41:34 webserver systemd[1]: apache2.service: Deactivated successfully.
Dec 20 01:41:34 webserver systemd[1]: Stopped The Apache HTTP Server.
Dec 20 01:42:02 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 20 01:42:02 webserver systemd[1]: Started The Apache HTTP Server.
Dec 20 01:42:26 webserver systemd[1]: Stopping The Apache HTTP Server...
Dec 20 01:42:26 webserver systemd[1]: apache2.service: Deactivated successfully.
```

## Example 2: Using tail to display error logs from error.log



A terminal window titled 'webmaster@webserver: ~' with standard window controls. The terminal shows the command `sudo tail -n 2 /var/log/apache2/error.log` being executed. The output displays two log entries from the Apache error log, including timestamps, log levels, and process IDs. The prompt returns to `webmaster@webserver:~$` after the command is run.

```
webmaster@webserver:~$ sudo tail -n 2 /var/log/apache2/error.log
[Wed Dec 20 01:55:32.573856 2023] [mpm_event:notice] [pid 769:tid 140397958817664] AH00
489: Apache/2.4.52 (Ubuntu) configured -- resuming normal operations
[Wed Dec 20 01:55:32.580695 2023] [core:notice] [pid 769:tid 140397958817664] AH00094:
Command line: '/usr/sbin/apache2'
webmaster@webserver:~$
```