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

- ip addr show

```
jgc@cis106:~$ ip addr show
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enp0s1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 52:c4:15:43:4b:fe brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.161/24 brd 192.168.1.255 scope global dynamic noprefixroute enp0s1
        valid_lft 80532sec preferred_lft 80532sec
    inet6 fe80::50c4:15ff:fe43:4bfe/64 scope link
        valid_lft forever preferred_lft forever
```

How do you enable the Ubuntu Firewall?

```
jgc@cis106:~$ sudo ufw enable
[sudo] password for jgc:
Firewall is active and enabled on system startup
jgc@cis106:~$
```

- sudo ufw enable

How do you check if the Ubuntu Firewall is running?

- sudo ufw status

```
jgc@cis106:~$ sudo ufw status
Status: active

To Action From
--
Apache ALLOW Anywhere
Apache (v6) ALLOW Anywhere (v6)
```

How do you disable the Ubuntu Firewall?

```
jgc@cis106:~$ sudo ufw disable
Firewall stopped and disabled on system startup
jgc@cis106:~$
```

- sudo ufw disable

How do you add Apache to the Firewall?

```
jgc@cis106:~$ sudo ufw allow 'Apache'
Skipping adding existing rule
Skipping adding existing rule (v6)
```

- sudo ufw allow 'Apache'

What is the command you used to install Apache?

- `sudo apt install apache2 -y`

```
jgc@cis106:~$ sudo apt install apache2 -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
apache2 is already the newest version (2.4.58-1ubuntu8.5).
The following package was automatically installed and is no longer required:
  libboost-program-options1.83.0
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 148 not upgraded.
```

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

- `sudo systemctl status apache2`

```
jgc@cis106:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Tue 2024-12-10 00:06:47 UTC; 50min ago
     Docs: https://httpd.apache.org/docs/2.4/
   Process: 11500 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
  Main PID: 11505 (apache2)
    Tasks: 55 (limit: 4542)
   Memory: 3.7M (peak: 6.0M swap: 1.6M swap peak: 1.6M)
      CPU: 335ms
   CGroup: /system.slice/apache2.service
           └─11505 /usr/sbin/apache2 -k start
             └─11507 /usr/sbin/apache2 -k start
               └─11508 /usr/sbin/apache2 -k start

Dec 10 00:06:47 cis106 systemd[1]: Starting apache2.service - The Apache HTTP Server...
Dec 10 00:06:47 cis106 apachectl[11504]: AH00558: apache2: Could not reliably determine the server's fully
Dec 10 00:06:47 cis106 systemd[1]: Started apache2.service - The Apache HTTP Server.
lines 1-17/17 (END)
```

What is the command you use to stop Apache?

- `sudo systemctl stop apache2`

What is the command you use to restart Apache?

- `sudo systemctl restart apache2`

What is the command used to test Apache configuration?

- `sudo apache2ctl configtest`

```
Syntax OK
```

```
jgc@cis106:~$
```

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

- `apache2 -v`

```
jgc@cis106:~$ apache2 -v
Server version: Apache/2.4.58 (Ubuntu)
Server built: 2024-10-02T12:40:51
```

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

1. Check Apache's service status **Command:** `sudo systemctl status apache2` **Description:** Displays whether Apache is running or stopped and shows any recent issues with the service.
2. Test Apache configuration for errors **Command:** `sudo apachectl configtest` **Description:** Checks Apache's configuration files for syntax errors.
3. Check Apache's error logs **Command:** `sudo tail -n 10 /var/log/apache2/error.log` **Description:** Shows the last 10 entries in the error log
4. Restart Apache service **Command:** `sudo systemctl restart apache2` **Description:** Restarts the Apache service to apply configuration changes or recover from errors.
5. View system logs for Apache **Command:** `sudo journalctl -u apache2` **Description:** Displays systemd logs specifically related to Apache.

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

- Apache log files are a very helpful resource for troubleshooting. Apache will also output errors related to configuration, built-in modules, and other debugging information to its log files. **Example:** to view the last two lines of the error log using tail

```
jgc@cis106:~$ sudo tail -n 2 /var/log/apache2/error.log
[sudo] password for jgc:
[Tue Dec 10 00:59:07.191034 2024] [mpm_event:notice] [pid 15120:tid 267420588425248] AH00489: Apache/2.4.58
(Ubuntu) configured -- resuming normal operations
[Tue Dec 10 00:59:07.191108 2024] [core:notice] [pid 15120:tid 267420588425248] AH00094: Command line: '/usr
/sbin/apache2' _
```