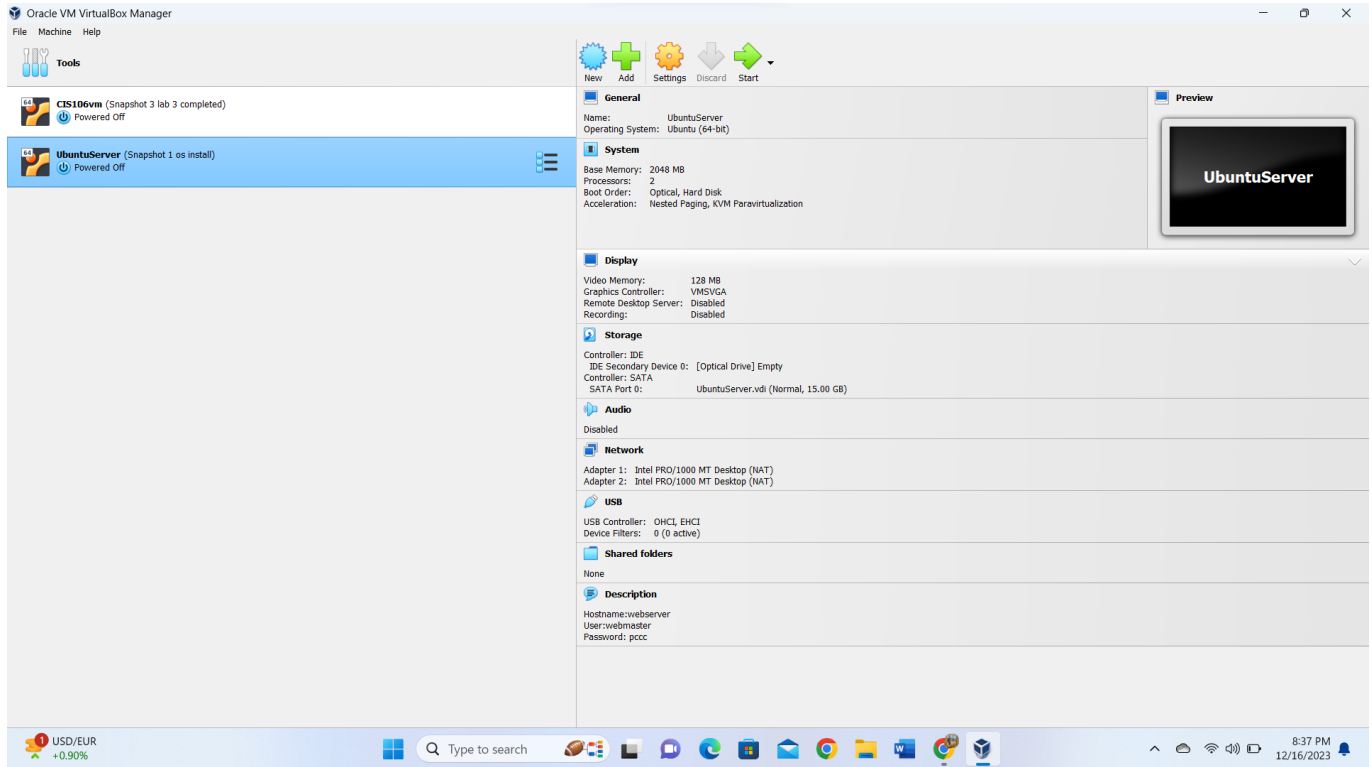
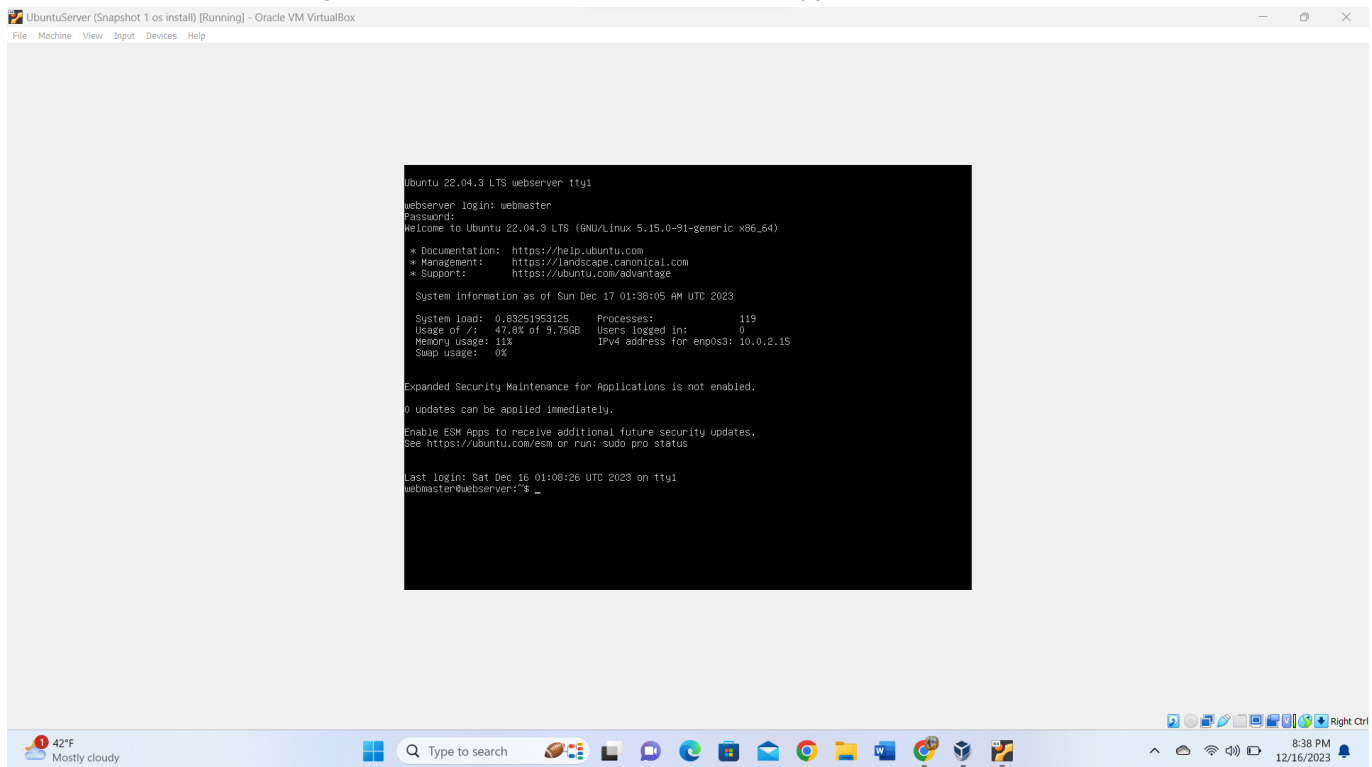


What are the server hardware specifications (virtual machine settings)? Take a screenshot - don't type it!



What is Ubuntu server log in screen? Take screenshot - do not type it!



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

10.0.2.15

IPv4 address for enp0s3: 10.0.2.15

How do you enable the Ubuntu Firewall?

```
sudo ufw enable
```

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

## How do you check if the Ubuntu Firewall is running?

```
sudo ufw status
```

```
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?

```
sudo ufw disable
```

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

## How do you add Apache to the Firewall?

```
sudo ufw allow 'Apache'
```

## What is the command you used to install Apache?

```
sudo apt install apache2 -y
```

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

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

```
webmaster@webserver:~$ sudo systemctl status apache2 --no-pager
• apache2.service - The Apache HTTP Server
  Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
  Active: active (running) since Mon 2023-12-18 15:25:33 UTC; 6min ago
  Docs: https://httpd.apache.org/docs/2.4/
  Main PID: 777 (apache2)
  Tasks: 55 (limit: 2220)
  Memory: 7.6M
  CPU: 74ms
  CGroup: /system.slice/apache2.service
          └─777 /usr/sbin/apache2 -k start
            └─780 /usr/sbin/apache2 -k start
              └─781 /usr/sbin/apache2 -k start

Dec 18 15:25:33 webserver systemd[1]: Starting The Apache HTTP Server...
Dec 18 15:25:33 webserver systemd[1]: Started The Apache HTTP Server.
webmaster@webserver:~$ _
```

## What is the command you use to stop Apache?

```
sudo systemctl stop apache2 --no-pager
```

## What is the command you use to restart Apache?

```
sudo systemctl restart apache2 --no-pager
```

```
webmaster@webserver:~$ sudo systemctl restart apache2 --no-pager
webmaster@webserver:~$
```

## What is the command used to test Apache configuration?

```
sudo apache2ctl configtest
```

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

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

```
apache2 -v
```

```
webmaster@webserver:~$ apache2 -v
Server version: Apache/2.4.52 (Ubuntu)
Server built: 2023-10-26T13:44:44
webmaster@webserver:~$
```

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

To inspect the state of the Apache processes on your system ***sudo systemctl status apache2.service -l --no-pager***

To inspect the systemd logs for Apache, you can use the journalctl command ***sudo journalctl -u apache2.service --since today --no-pager***

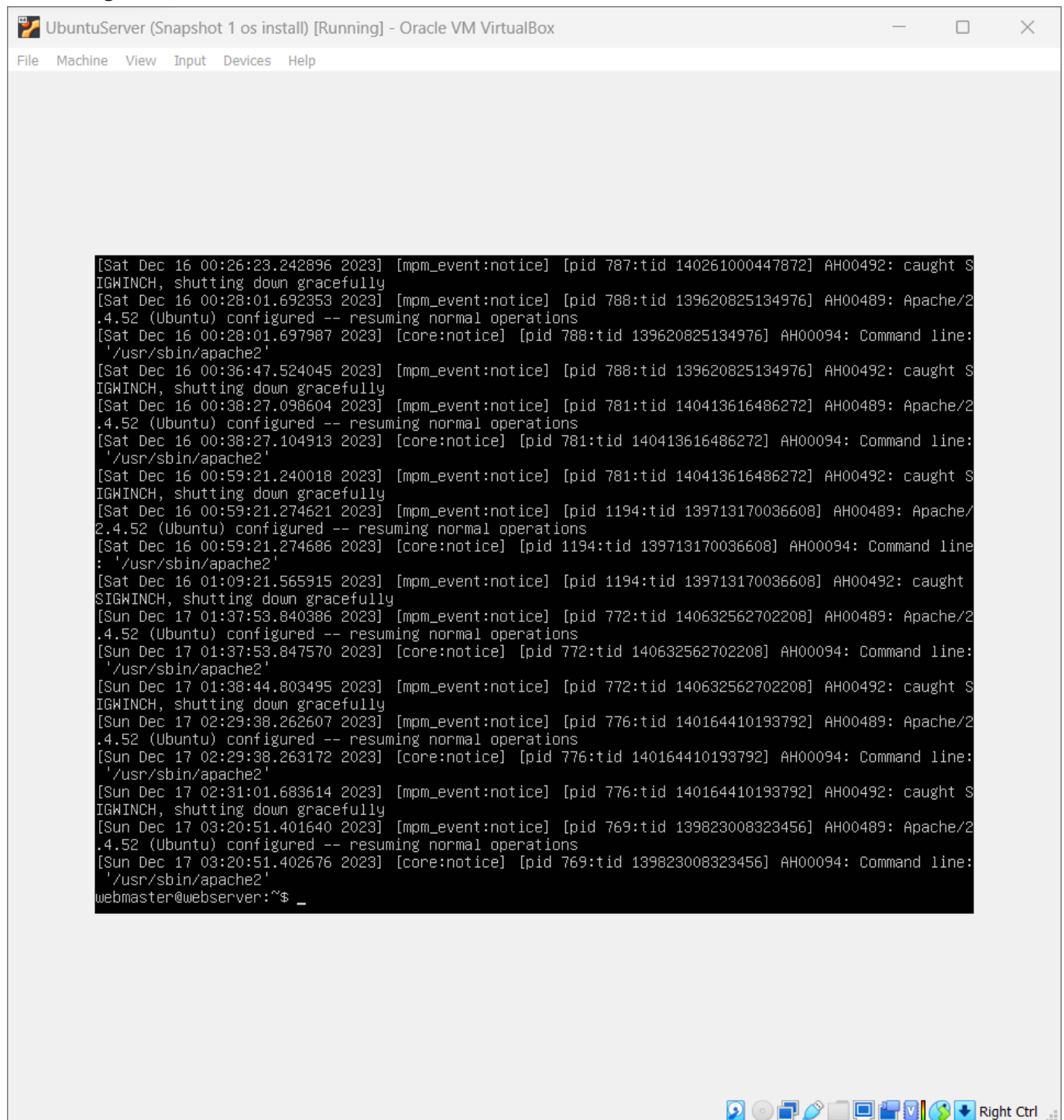
test your Apache configuration using the apachectl configtest command. ***sudo apachectl configtest***

To examine log files for errors

**`sudo tail -n 2 /var/log/apache2/error.log`**

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

**`sudo tail -n 2 /var/log/apache2/error.log`** Error Log: This includes server faults, script errors, and requests for missing files.

A screenshot of a terminal window titled "UbuntuServer (Snapshot 1 os install) [Running] - Oracle VM VirtualBox". The terminal displays the output of the command `sudo tail -n 2 /var/log/apache2/error.log`. The output shows several log entries from the Apache error log, including messages about SIGWINCH, graceful shutdowns, and configuration changes. The entries are timestamped and include process IDs and error codes. The terminal prompt is `webmaster@webserver:~$`.

```
[Sat Dec 16 00:26:23.242896 2023] [mpm_event:notice] [pid 787:tid 140261000447872] AH00492: caught S
IGWINCH, shutting down gracefully
[Sat Dec 16 00:28:01.692353 2023] [mpm_event:notice] [pid 788:tid 139620825134976] AH00489: Apache/2
.4.52 (Ubuntu) configured -- resuming normal operations
[Sat Dec 16 00:28:01.697987 2023] [core:notice] [pid 788:tid 139620825134976] AH00094: Command line:
'/usr/sbin/apache2'
[Sat Dec 16 00:36:47.524045 2023] [mpm_event:notice] [pid 788:tid 139620825134976] AH00492: caught S
IGWINCH, shutting down gracefully
[Sat Dec 16 00:38:27.098604 2023] [mpm_event:notice] [pid 781:tid 140413616486272] AH00489: Apache/2
.4.52 (Ubuntu) configured -- resuming normal operations
[Sat Dec 16 00:38:27.104913 2023] [core:notice] [pid 781:tid 140413616486272] AH00094: Command line:
'/usr/sbin/apache2'
[Sat Dec 16 00:59:21.240018 2023] [mpm_event:notice] [pid 781:tid 140413616486272] AH00492: caught S
IGWINCH, shutting down gracefully
[Sat Dec 16 00:59:21.274621 2023] [mpm_event:notice] [pid 1194:tid 139713170036608] AH00489: Apache/
2.4.52 (Ubuntu) configured -- resuming normal operations
[Sat Dec 16 00:59:21.274686 2023] [core:notice] [pid 1194:tid 139713170036608] AH00094: Command line
: '/usr/sbin/apache2'
[Sat Dec 16 01:09:21.565915 2023] [mpm_event:notice] [pid 1194:tid 139713170036608] AH00492: caught
SIGWINCH, shutting down gracefully
[Sun Dec 17 01:37:53.840386 2023] [mpm_event:notice] [pid 772:tid 140632562702208] AH00489: Apache/2
.4.52 (Ubuntu) configured -- resuming normal operations
[Sun Dec 17 01:37:53.847570 2023] [core:notice] [pid 772:tid 140632562702208] AH00094: Command line:
'/usr/sbin/apache2'
[Sun Dec 17 01:38:44.803495 2023] [mpm_event:notice] [pid 772:tid 140632562702208] AH00492: caught S
IGWINCH, shutting down gracefully
[Sun Dec 17 02:29:38.262607 2023] [mpm_event:notice] [pid 776:tid 140164410193792] AH00489: Apache/2
.4.52 (Ubuntu) configured -- resuming normal operations
[Sun Dec 17 02:29:38.263172 2023] [core:notice] [pid 776:tid 140164410193792] AH00094: Command line:
'/usr/sbin/apache2'
[Sun Dec 17 02:31:01.683614 2023] [mpm_event:notice] [pid 776:tid 140164410193792] AH00492: caught S
IGWINCH, shutting down gracefully
[Sun Dec 17 03:20:51.401640 2023] [mpm_event:notice] [pid 769:tid 139823008323456] AH00489: Apache/2
.4.52 (Ubuntu) configured -- resuming normal operations
[Sun Dec 17 03:20:51.402676 2023] [core:notice] [pid 769:tid 139823008323456] AH00094: Command line:
'/usr/sbin/apache2'
webmaster@webserver:~$
```

**`sudo tail -n 2 /var/log/apache2/access.log`** Access Log: records all requests received by the server. Each entry includes details like the client's IP address, request date/time, requested page, HTTP code, and more.

```
webmaster@webserver:~$ sudo cat /var/log/apache2/access.log
10.0.2.2 - - [16/Dec/2023:01:04:14 +0000] "GET / HTTP/1.1" 200 451 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.0.0 Safari/537.36"
10.0.2.2 - - [16/Dec/2023:01:04:14 +0000] "GET /favicon.ico HTTP/1.1" 404 489 "http://127.0.0.1:8080/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/120.0.0.0 Safari/537.36"
10.0.2.2 - - [16/Dec/2023:01:05:06 +0000] "-" 408 0 "-" "-"
webmaster@webserver:~$
```