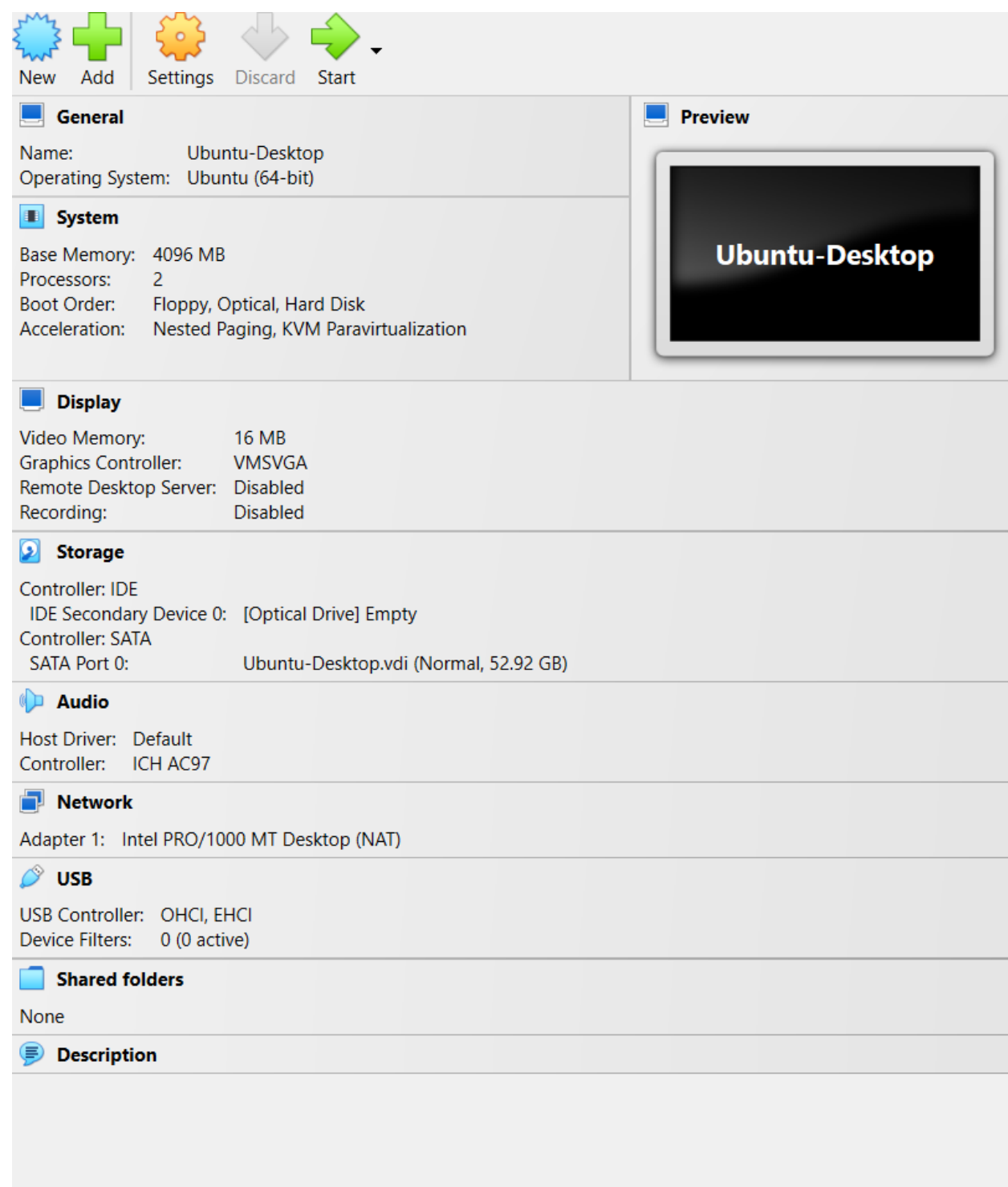


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# Deliverable 2 Submission

## Questions

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



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

```
Ubuntu 24.04.2 LTS webmaster tty1
webmaster login: webmaster
Password:
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-58-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Thu Apr 17 04:39:01 AM UTC 2025

System load:          0.0
Usage of /:           44.4% of 9.75GB
Memory usage:         10%
Swap usage:           0%
Processes:            130
Users logged in:      1
IPv4 address for enp0s3: 10.0.2.15
IPv6 address for enp0s3: fd17:625c:f037:2:a00:27ff:fea5:86d2

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

webmaster@webmaster:~$
```

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

The IP address is: 10.0.2.15

## 4. How do you enable the Ubuntu Firewall?

I can enable the Ubuntu Firewall with the following command: `sudo ufw enable`

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

I can check the status of Apache to make sure it is running with the following command: `systemctl status --no-pager`

## 6. How do you disable the Ubuntu Firewall?

I can disable the ubuntu Firewall with the following command: `sudo ufw disable`

7. How do you add Apache to the Firewall?

```
I can add Apache to the Firewall with the following command: sudo ufw allow 'Apache'
```

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

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

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

```
sudo systemctl status apache2
```

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

```
sudo systemctl stop apache2
```

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

```
sudo systemctl restart apache2
```

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

```
sudo apache2ctl configtest
```

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

```
apache2 -v
```

## How to Troubleshoot Common Apache Errors

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

Command	Description
systemctl status apache2	Shows the current status of the Apache service. It helps check if Apache is active, failed, or stopped.
sudo journalctl -xe	Displays system logs, including Apache-related entries. Useful when apache2 fails to start.
sudo apachectl configtest	Tests the Apache configuration for syntax errors. If there are no issues, it returns Syntax OK.
sudo apachectl -t	Similar to configtest; it checks for syntax errors and displays the line/file if there are issues.
tail -f /var/log/apache2/error.log	Streams real-time Apache error logs. Helps track what's going wrong as it happens.

Command	Description
df -h and free -m	Shows available disk space and memory—important when services fail due to low system resources.

2. Which are the common Apache Log Files, and what are they used for? Provide examples and screenshots of where they are located in you server, you can use any of he following commands: *cat,head,tail*

Log File	Location	Purpose
access.log	/var/log/apache2/access.log	Stores all incoming requests: IP address, requested URL, HTTP status codes, browser used. Useful for traffic analysis.
error.log	/var/log/apache2/error.log	Logs errors, failed requests, permission issues, module problems, etc. Critical for troubleshooting.
other_vhost_access.log	/var/log/apache2/other_vhost_access.log	Logs access to virtual hosts (used when multiple websites are hosted on the same server).

Examples and Screenshots

```
cat /var/log/apache2/error.log
webmaster@webmaster:~$ cat /var/log/apache2/error.log
[Thu Apr 17 03:11:33.682944 2025] [mpm_event:notice] [pid 14699:tid 140136481249152] AH00489: Apache/2.4.58 (Ubuntu) configured -- r
[Thu Apr 17 03:11:33.683041 2025] [core:notice] [pid 14699:tid 140136481249152] AH00094: Command line: '/usr/sbin/apache2'
[Thu Apr 17 03:17:57.772708 2025] [mpm_event:notice] [pid 14699:tid 140136481249152] AH00492: caught SIGWINCH, shutting down gracefu
[Thu Apr 17 03:17:57.834836 2025] [mpm_event:notice] [pid 15235:tid 139899313985408] AH00489: Apache/2.4.58 (Ubuntu) configured -- r
[Thu Apr 17 03:17:57.834929 2025] [core:notice] [pid 15235:tid 139899313985408] AH00094: Command line: '/usr/sbin/apache2'
[Thu Apr 17 03:24:03.268955 2025] [mpm_event:notice] [pid 15235:tid 139899313985408] AH00492: caught SIGWINCH, shutting down gracefu
[Thu Apr 17 03:24:03.337250 2025] [mpm_event:notice] [pid 15322:tid 126373199189888] AH00489: Apache/2.4.58 (Ubuntu) configured -- r
[Thu Apr 17 03:24:03.337346 2025] [core:notice] [pid 15322:tid 126373199189888] AH00094: Command line: '/usr/sbin/apache2'
[Thu Apr 17 03:42:34.300188 2025] [mpm_event:notice] [pid 15322:tid 126373199189888] AH00492: caught SIGWINCH, shutting down gracefu
[Thu Apr 17 03:42:34.375985 2025] [mpm_event:notice] [pid 15438:tid 131368260642688] AH00489: Apache/2.4.58 (Ubuntu) configured -- r
[Thu Apr 17 03:42:34.378797 2025] [core:notice] [pid 15438:tid 131368260642688] AH00094: Command line: '/usr/sbin/apache2'
[Thu Apr 17 03:43:03.466139 2025] [mpm_event:notice] [pid 15438:tid 131368260642688] AH00492: caught SIGWINCH, shutting down gracefu
[Thu Apr 17 03:43:17.291070 2025] [mpm_event:notice] [pid 15514:tid 131634933462912] AH00489: Apache/2.4.58 (Ubuntu) configured -- r
[Thu Apr 17 03:43:17.292780 2025] [core:notice] [pid 15514:tid 131634933462912] AH00094: Command line: '/usr/sbin/apache2'
[Thu Apr 17 03:49:02.520169 2025] [mpm_event:notice] [pid 15514:tid 131634933462912] AH00492: caught SIGWINCH, shutting down gracefu
[Thu Apr 17 04:23:36.379440 2025] [mpm_event:notice] [pid 926:tid 130678958999424] AH00489: Apache/2.4.58 (Ubuntu) configured -- res
```

head /var/log/apache2/access.log

```
Ubuntu-Server [Running] - Oracle VirtualBox
File Machine View Input Devices Help

webmaster@webmaster:~$ head /var/log/apache2/access.log
10.0.2.2 - - [17/Apr/2025:05:32:42 +0000] "GET / HTTP/1.1" 200 3460 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/135.0.0.0 Safari/537.36"
10.0.2.2 - - [17/Apr/2025:05:32:42 +0000] "GET /icons/ubuntu-logo.png HTTP/1.1" 200 3607 "http://127.0.0.1:8080/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/135.0.0.0 Safari/537.36"
10.0.2.2 - - [17/Apr/2025:05:32:42 +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/135.0.0.0 Safari/537.36"
10.0.2.2 - - [17/Apr/2025:05:33:36 +0000] "-" 408 0 "-" "-"
10.0.2.2 - - [17/Apr/2025:05:53:33 +0000] "GET / HTTP/1.1" 200 719 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/135.0.0.0 Safari/537.36"
10.0.2.2 - - [17/Apr/2025:05:53:33 +0000] "GET /favicon.ico HTTP/1.1" 404 489 "http://localhost:8080/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/135.0.0.0 Safari/537.36"
10.0.2.2 - - [17/Apr/2025:05:54:25 +0000] "-" 408 0 "-" "-"
10.0.2.2 - - [17/Apr/2025:05:54:25 +0000] "-" 408 0 "-" "-"
webmaster@webmaster:~$
```

tail /var/log/apache2/error.log

```
Ubuntu-Server [Running] - Oracle VirtualBox
File Machine View Input Devices Help

webmaster@webmaster:~$ tail /var/log/apache2/error.log
[Thu Apr 17 06:07:11.159513 2025] [core:notice] [pid 974:tid 138482819438464] AH00094: Command line: '/usr/sbin/apache2'
[Thu Apr 17 06:07:47.974934 2025] [mpm_event:notice] [pid 974:tid 138482819438464] AH00492: caught SIGWINCH, shutting down gracefully
[Fri Apr 18 03:06:34.430850 2025] [mpm_event:notice] [pid 983:tid 129408252368768] AH00489: Apache/2.4.58 (Ubuntu) configured -- resuming normal operations
[Fri Apr 18 03:06:34.435086 2025] [core:notice] [pid 983:tid 129408252368768] AH00094: Command line: '/usr/sbin/apache2'
[Fri Apr 18 03:11:17.411390 2025] [mpm_event:notice] [pid 983:tid 129408252368768] AH00492: caught SIGWINCH, shutting down gracefully
[Fri Apr 18 03:28:47.592156 2025] [mpm_event:notice] [pid 956:tid 139892782294912] AH00489: Apache/2.4.58 (Ubuntu) configured -- resuming normal operations
[Fri Apr 18 03:28:47.617608 2025] [core:notice] [pid 956:tid 139892782294912] AH00094: Command line: '/usr/sbin/apache2'
[Fri Apr 18 03:43:57.513806 2025] [mpm_event:notice] [pid 956:tid 139892782294912] AH00492: caught SIGWINCH, shutting down gracefully
[Sun Apr 20 22:59:08.903156 2025] [mpm_event:notice] [pid 968:tid 140032064685952] AH00489: Apache/2.4.58 (Ubuntu) configured -- resuming normal operations
[Sun Apr 20 22:59:08.912691 2025] [core:notice] [pid 968:tid 140032064685952] AH00094: Command line: '/usr/sbin/apache2'
webmaster@webmaster:~$
```