



Deliverable 2

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

 Preview

 General

Name: Debian 13 Web Server

Operating System: Debian (64-bit)


 System

Base Memory: 4096 MB

Processors: 2

Boot Order: Optical, Hard Disk

Acceleration: Nested Paging, KVM Paravirtualization

 Display


Video Memory: 128 MB

Graphics Controller: VMSVGA

3D Acceleration: Enabled

Remote Desktop Server: Disabled

Recording: Disabled


 Storage

Controller: IDE


IDE Primary Device 0: [Optical Drive] Empty

Controller: SATA


SATA Port 0: Debian 13 Web Server.vdi (Normal, 50.00 GB)

 Audio

Disabled


 Network

Adapter 1: Intel PRO/1000 MT Desktop (Bridged Adapter, Realtek RTL8852BE WiFi 6 802.11ax PCIe Adapter)

 USB

USB Controller: OHCI, EHCI

Device Filters: 0 (0 active)

 Shared folders

None

 Description

Hostname: cis1066-webserver

Username: map

Password: pccc

2. What is the Debian Login Screen?

```

Debian 13 Web Server [Running] - Oracle VirtualBox
File Machine View Input Devices Help

Debian GNU/Linux 13 webserver tty1
webserver login: map
Password:
Login incorrect

webserver login: map
Password:
Linux webserver 6.12.57+deb13-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.12.57-1 (2025-11-05) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
map@webserver:~$

```

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

```

Debian 13 Web Server [Running] - Oracle VirtualBox
File Machine View Input Devices Help

Debian GNU/Linux 13 webserver tty1
webserver login: map
Password:
Login incorrect

webserver login: map
Password:
Linux webserver 6.12.57+deb13-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.12.57-1 (2025-11-05) x86_64

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permitted by applicable law.
map@webserver:~$ ip addr
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: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 08:00:27:4c:c6:6b brd ff:ff:ff:ff:ff:ff
    altname enx0800274cc66b
    inet 192.168.1.158/24 brd 192.168.1.255 scope global dynamic noprefixroute enp0s3
        valid_lft 85656sec preferred_lft 74929sec
    inet6 2600:4040:af7d:d000:a00:27ff:fe4c:c66b/64 scope global dynamic mngtmpaddr proto kernel_ra
        valid_lft 7171sec preferred_lft 7171sec
    inet6 2600:4040:af7d:d000:979f:80c5:6ed1:f38e/64 scope global dynamic mngtmpaddr noprefixroute
        valid_lft 7171sec preferred_lft 7171sec
    inet6 fe80::928:479e:4a79:10ac/64 scope link
        valid_lft forever preferred_lft forever
map@webserver:~$ _

```

4. How do you work with the Firewall in Debian?

Command name: ufw

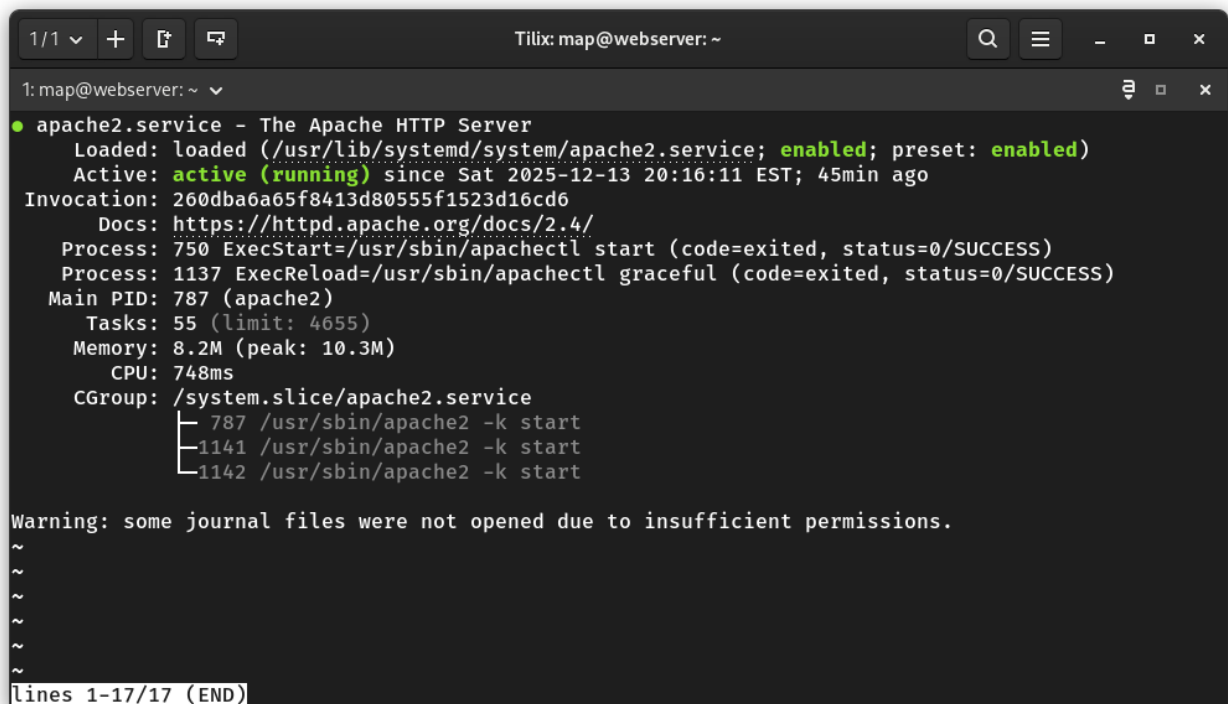
- **Description:** ufw is used to manage firewalls rules that control incoming and out going network traffic on a debian system.

- **Formula/Syntax:** `ufw + option + argument`
- **Examples:**
 - How do you check if the Firewall is running?
 - By using the command `systemctl status ufw`
 - How do you disable the Firewall?
 - By using the command `sudo ufw disable`
 - How do you add Apache to the Firewall?
 - By using the command `sudo ufw allow 'WWW Full`

5. What different commands do we use to work with Apache?

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

- The command is: `systemctl status apache2`
- Description: The `systemctl status apache2` command checks the current status of the Apache web server service. It shows whether Apache is running, stopped, or has encountered errors, along with recent log messages and service information.

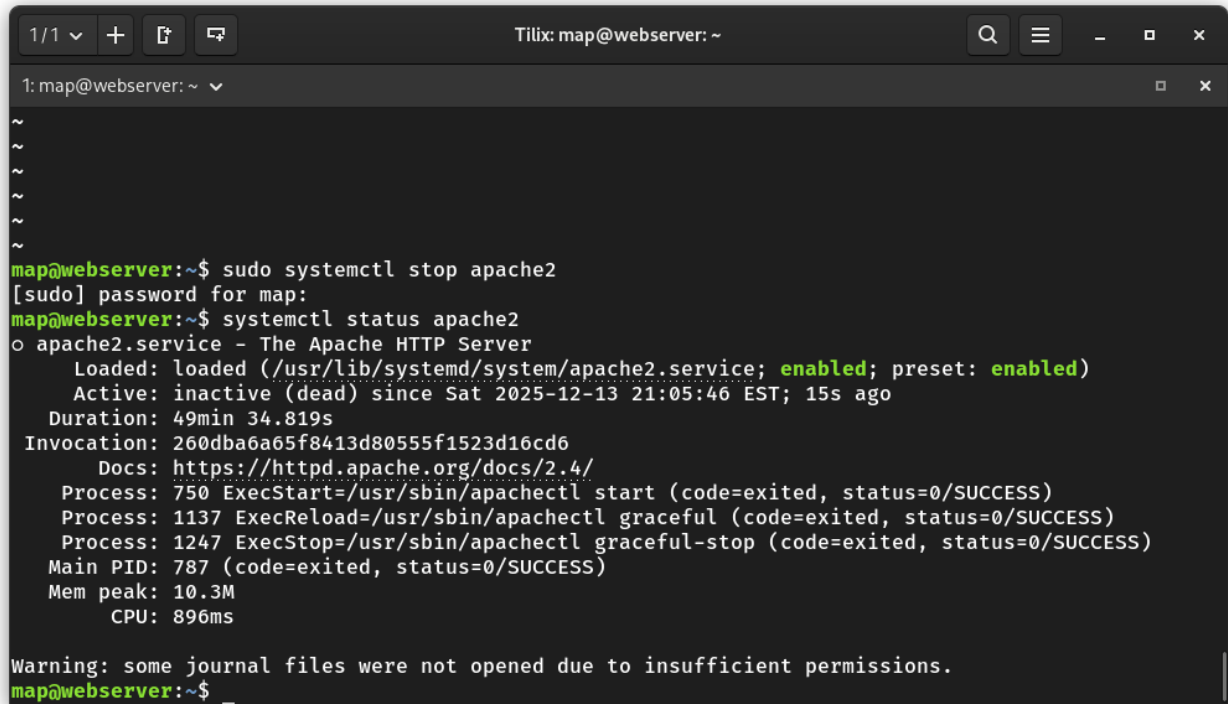


```
1/1 v + [ ] [ ] Tilix: map@webserver: ~
1: map@webserver: ~ v
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Sat 2025-12-13 20:16:11 EST; 45min ago
 Invocation: 260dba6a65f8413d80555f1523d16cd6
    Docs: https://httpd.apache.org/docs/2.4/
   Process: 750 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Process: 1137 ExecReload=/usr/sbin/apachectl graceful (code=exited, status=0/SUCCESS)
  Main PID: 787 (apache2)
    Tasks: 55 (limit: 4655)
   Memory: 8.2M (peak: 10.3M)
      CPU: 748ms
   CGroup: /system.slice/apache2.service
           └─ 787 /usr/sbin/apache2 -k start
              1141 /usr/sbin/apache2 -k start
              1142 /usr/sbin/apache2 -k start

Warning: some journal files were not opened due to insufficient permissions.
~
~
~
~
~
lines 1-17/17 (END)
```

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

- The command is: `sudo systemctl stop apache2`
- Description: The `sudo systemctl stop apache2` command stops the Apache web server service. Once stopped, Apache will no longer accept or respond to web requests until it is started again.

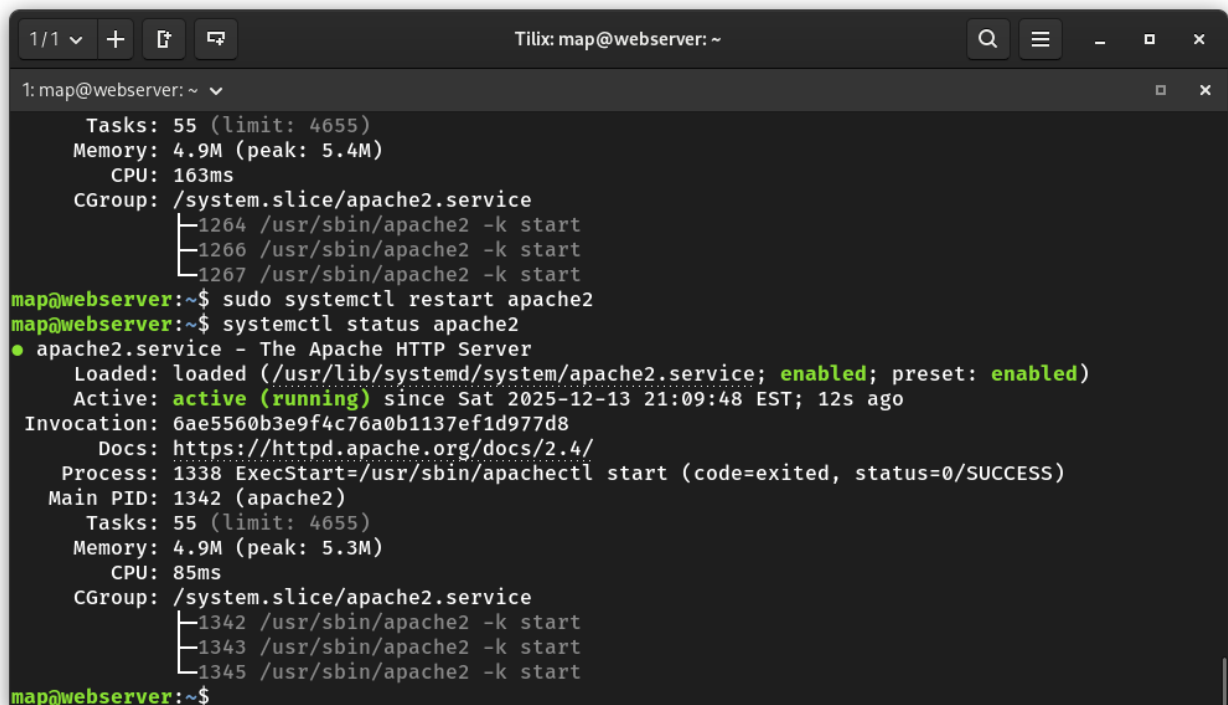
A terminal window titled 'Tilix: map@webserver: ~' showing a user named 'map' at a machine named 'webserver'. The user has entered the command 'sudo systemctl stop apache2'. The terminal shows the password prompt '[sudo] password for map:' and then the output of 'systemctl status apache2'. The output indicates that the service is 'inactive (dead)' and provides details about its configuration, including the loaded service file, active state, duration, invocation ID, documentation, process details, main PID, and memory/CPU usage. A warning message at the bottom states: 'Warning: some journal files were not opened due to insufficient permissions.'

```
1/1 v + [ ] [ ]
Tilix: map@webserver: ~
1: map@webserver: ~ v
~
~
~
~
~
map@webserver:~$ sudo systemctl stop apache2
[sudo] password for map:
map@webserver:~$ systemctl status apache2
○ apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: inactive (dead) since Sat 2025-12-13 21:05:46 EST; 15s ago
     Duration: 49min 34.819s
  Invocation: 260dba6a65f8413d80555f1523d16cd6
     Docs: https://httpd.apache.org/docs/2.4/
    Process: 750 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
    Process: 1137 ExecReload=/usr/sbin/apachectl graceful (code=exited, status=0/SUCCESS)
    Process: 1247 ExecStop=/usr/sbin/apachectl graceful-stop (code=exited, status=0/SUCCESS)
   Main PID: 787 (code=exited, status=0/SUCCESS)
     Mem peak: 10.3M
        CPU: 896ms

Warning: some journal files were not opened due to insufficient permissions.
map@webserver:~$ _
```

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

- The command is: `sudo systemctl restart apache2`
- Description: The `sudo systemctl restart apache2` command restarts the Apache web server service.

A terminal window titled 'Tilix: map@webserver: ~' showing the same user 'map' at 'webserver'. The user has entered 'sudo systemctl restart apache2'. The terminal shows the password prompt and then the output of 'systemctl status apache2'. The output indicates that the service is now 'active (running)' and provides details about its configuration, including the loaded service file, active state, duration, invocation ID, documentation, process details, main PID, tasks, memory/CPU usage, and CGroup. The CGroup section shows the hierarchy of processes: 1264, 1266, and 1267 for the previous state, and 1342, 1343, and 1345 for the current state.

```
1/1 v + [ ] [ ]
Tilix: map@webserver: ~
1: map@webserver: ~ v
Tasks: 55 (limit: 4655)
Memory: 4.9M (peak: 5.4M)
CPU: 163ms
CGroup: /system.slice/apache2.service
├─1264 /usr/sbin/apache2 -k start
├─1266 /usr/sbin/apache2 -k start
└─1267 /usr/sbin/apache2 -k start
map@webserver:~$ sudo systemctl restart apache2
map@webserver:~$ systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Sat 2025-12-13 21:09:48 EST; 12s ago
     Invocation: 6ae5560b3e9f4c76a0b1137ef1d977d8
     Docs: https://httpd.apache.org/docs/2.4/
    Process: 1338 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 1342 (apache2)
     Tasks: 55 (limit: 4655)
    Memory: 4.9M (peak: 5.3M)
         CPU: 85ms
     CGroup: /system.slice/apache2.service
            └─1342 /usr/sbin/apache2 -k start
               └─1343 /usr/sbin/apache2 -k start
                  └─1345 /usr/sbin/apache2 -k start
map@webserver:~$ _
```

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

- The command is: `sudo apache2ctl configtest`
- Description: The `sudo apache2ctl configtest` command checks Apache configuration files for syntax errors. It verifies that the configuration is valid before restarting Apache and helps prevent the service

from failing due to misconfiguration.



```
1/1 v + [ ] [ ] Tilix: map@webserver: ~
1: map@webserver: ~ v
map@webserver:~$ sudo apache2ctl configtest
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
Syntax OK
map@webserver:~$ _
```

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

- The command is: `/usr/sbin/apache2 -v`
- Description: The `/usr/sbin/apache2 -v` command displays the installed version of the Apache web server, including the version number and build information.



```
1/1 v + [ ] [ ] Tilix: map@webserver: ~
1: map@webserver: ~ v
map@webserver:~$ /usr/sbin/apache2 -v
Server version: Apache/2.4.65 (Debian)
Server built: 2025-07-29T17:52:31
map@webserver:~$ _
```

6. What are some common configuration files for Apache?

- The command is: `sudo less /etc/apache2/apache2.conf`
- Description: The `sudo less /etc/apache2/apache2.conf` command opens the main Apache configuration file in read-only mode, allowing the administrator to view and review Apache settings without modifying

- Description: The commands cat, less, head, and tail are commonly used to review log files. They allow an administrator to view the entire file, scroll through large logs, or display the beginning and end of a log file for quick inspection. \