

Server Hardware, LXC, Firewall, and Nginx Documentation

What are the server hardware specifications (LXC settings)?

My web server is running inside an **LXC container on Proxmox**, which uses shared kernel virtualization. Here are the specs:

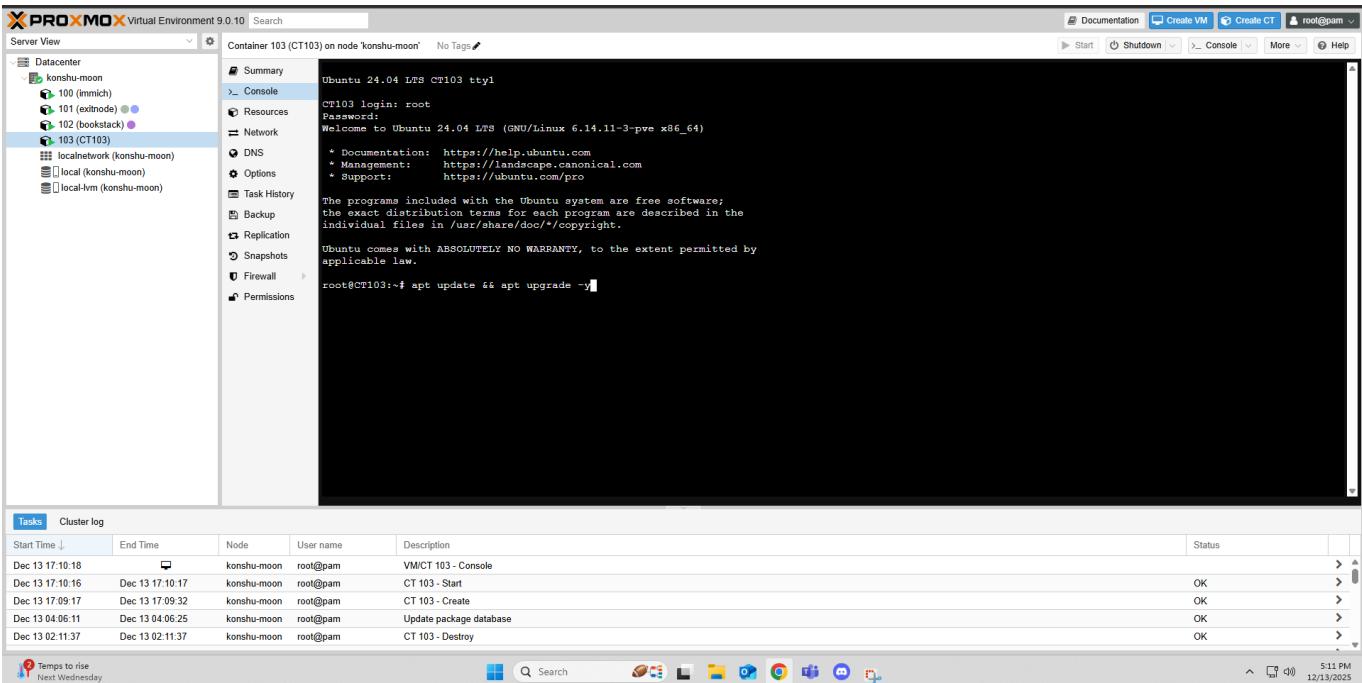
Start Time	End Time	Node	User name	Description	Status
Dec 13 04:06:11	Dec 13 04:06:25	konshu-moon	root@pam	Update package database	OK
Dec 13 02:11:37	Dec 13 02:11:37	konshu-moon	root@pam	CT 103 - Destroy	OK
Dec 13 02:11:26	Dec 13 02:11:27	konshu-moon	root@pam	CT 103 - Stop	OK
Dec 13 01:06:07	Dec 13 02:11:38	konshu-moon	root@pam	VM/CT 103 - Console	OK
Dec 13 01:06:05	Dec 13 01:06:07	konshu-moon	root@pam	CT 103 - Start	OK

- CPU:** 2 vCPU (enough for a static or low-traffic site)
- Memory:** 2 GB RAM
- Storage:** 30 GB disk
- Network:** Bridged network (`vmbr0`)
- Operating System:** Ubuntu 24.04 LTS

Because it is an LXC container, it is lightweight, boots fast, and uses fewer resources than a full virtual machine.

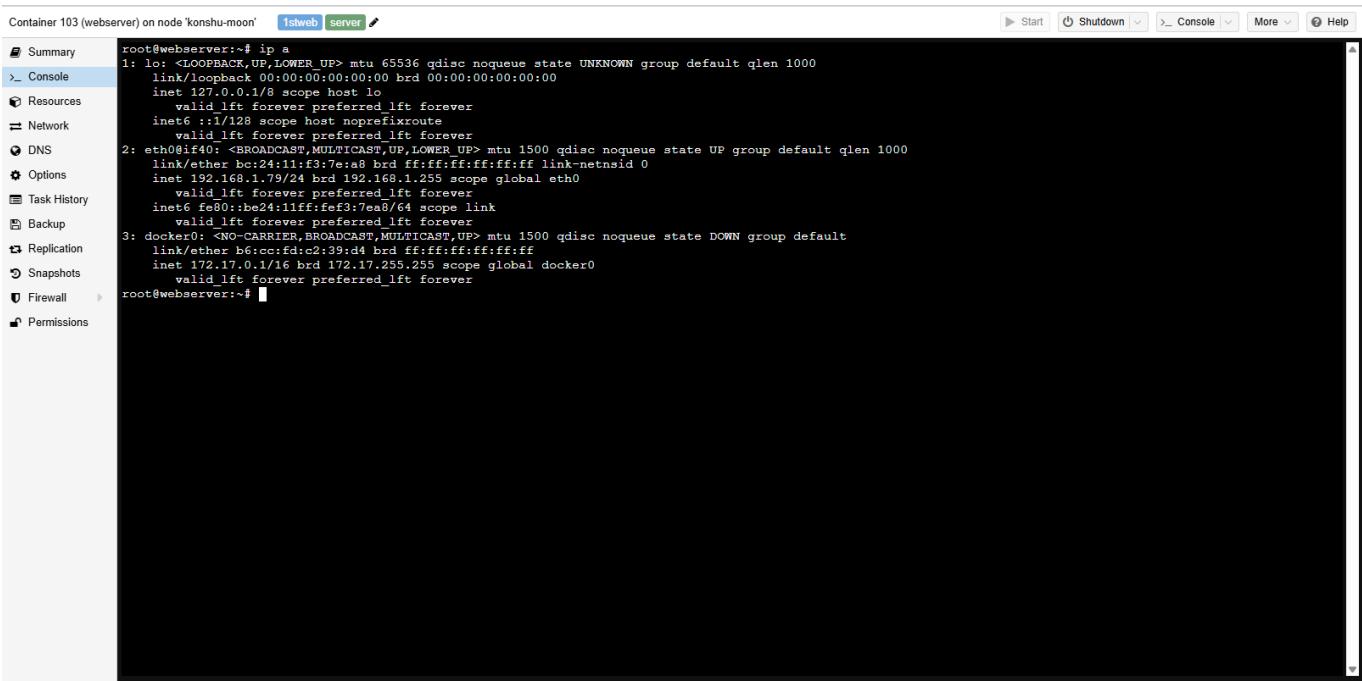
What is the lxc login screen?

Here we have the login screen for the container that holds our server, it will look different from what you have as I am running the instance on proxmox.



What is the IP address of your LXC server?

Inside the LXC container, you find the IP address using the command: `ip a`. This command lists all network interfaces and shows the IPv4 address assigned to the container. In this case, the LXC server is assigned a private LAN IP address (for example: `192.168.1.79/24`).

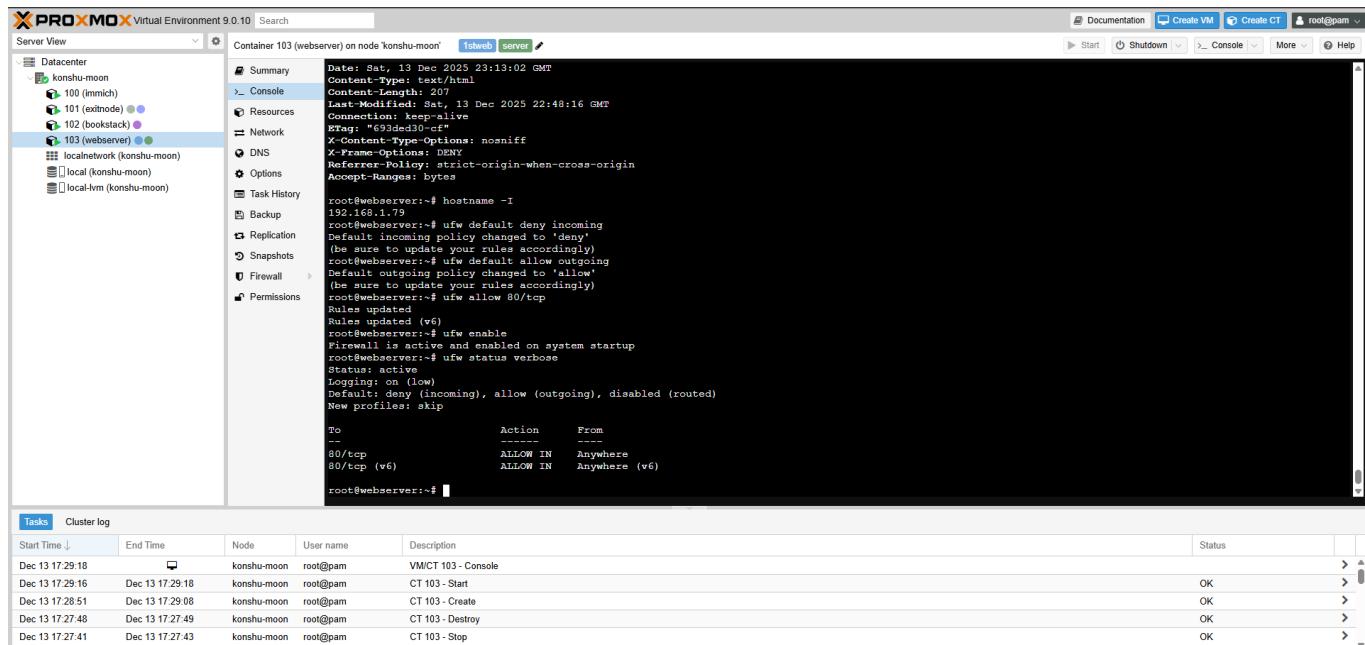


How do you work with the Firewall in Proxmox and the LXC?

Firewall management happens at **two layers**:

- Proxmox firewall (host / datacenter / node / container level)
- Firewall inside the LXC container (UFW)

Inside the LXC, you used **UFW (Uncomplicated Firewall)**, which is a frontend for `iptables`. UFW are rules that also come pre-installed in Ubuntu.



Common UFW commands

Here we have some commands that can be used for UFW and their explanations. I have also included a photo to show what some might look like in action.

```

root@webservice:~# ufw status
Status: active
To                         Action      From
--                         --         --
80/tcp                     ALLOW      Anywhere
443/tcp                    ALLOW      Anywhere
80/tcp (v6)                ALLOW      Anywhere (v6)
443/tcp (v6)               ALLOW      Anywhere (v6)

root@webservice:~# ufw disable
Firewall stopped and disabled on system startup
root@webservice:~# ufw enable
Firewall is active and enabled on system startup
root@webservice:~# ufw status
Status: active
To                         Action      From
--                         --         --
80/tcp                     ALLOW      Anywhere
443/tcp                    ALLOW      Anywhere
80/tcp (v6)                ALLOW      Anywhere (v6)
443/tcp (v6)               ALLOW      Anywhere (v6)

root@webservice:~#

```

Tasks Cluster log

Start Time	End Time	Node	User name	Description	Status
Dec 13 17:29:18		konshu-moon	root@pam	VMCT 103 - Console	OK
Dec 13 17:29:16	Dec 13 17:29:18	konshu-moon	root@pam	CT 103 - Start	OK
Dec 13 17:28:51	Dec 13 17:29:08	konshu-moon	root@pam	CT 103 - Create	OK
Dec 13 17:27:48	Dec 13 17:27:49	konshu-moon	root@pam	CT 103 - Destroy	OK
Dec 13 17:27:41	Dec 13 17:27:43	konshu-moon	root@pam	CT 103 - Stop	OK


```

If you like Certbot, please consider supporting our work by:
  * Donating to ISRG / Let's Encrypt: https://letsencrypt.org/donate
  * Donating to EFF: https://eff.org/donate-le

root@webservice:~# ufw status verbose
Status: active
Logging: on (low)
Default: deny (incoming), allow (outgoing), disabled (routed)
New profiles: skip

To                         Action      From
--                         --         --
80/tcp                     ALLOW IN   Anywhere
443/tcp                    ALLOW IN   Anywhere
80/tcp (v6)                ALLOW IN   Anywhere (v6)
443/tcp (v6)               ALLOW IN   Anywhere (v6)

root@webservice:~# ufw status verbose
Status: active
Logging: on (low)
Default: deny (incoming), allow (outgoing), disabled (routed)
New profiles: skip

To                         Action      From
--                         --         --
80/tcp                     ALLOW IN   Anywhere
443/tcp                    ALLOW IN   Anywhere
80/tcp (v6)                ALLOW IN   Anywhere (v6)
443/tcp (v6)               ALLOW IN   Anywhere (v6)

root@webservice:~# ss -tulpn | grep :443
tcp  LISTEN  0      0.0.0.0:443          0.0.0.0:*      users:(("nginx",pid=8754,fd=14),("nginx",pid=8753,fd=14))
tcp  LISTEN  0      ::1:443              [::]:*       users:(("nginx",pid=8754,fd=13),("nginx",pid=8753,fd=13))
root@webservice:~#

```

Tasks Cluster log

Start Time	End Time	Node	User name	Description	Status
Dec 13 17:29:18		konshu-moon	root@pam	VMCT 103 - Console	OK
Dec 13 17:29:16	Dec 13 17:29:18	konshu-moon	root@pam	CT 103 - Start	OK
Dec 13 17:28:51	Dec 13 17:29:08	konshu-moon	root@pam	CT 103 - Create	OK
Dec 13 17:27:48	Dec 13 17:27:49	konshu-moon	root@pam	CT 103 - Destroy	OK
Dec 13 17:27:41	Dec 13 17:27:43	konshu-moon	root@pam	CT 103 - Stop	OK

- **sudo ufw status**

- Shows whether the firewall is active and lists all current rules.

- **sudo ufw enable**

- Enables the firewall and starts enforcing rules.

- **sudo ufw disable**

- Disables the firewall and stops filtering traffic.

- **sudo ufw allow 80/tcp**

- Allows incoming HTTP traffic on port **80**.

- **sudo ufw allow 443/tcp**

- Allows incoming HTTPS traffic on port **443**.

- `sudo ufw deny 8000/tcp`
 - Blocks access to port **8000** from external sources.

How do you check if the Firewall is running?

`sudo ufw status`

How do you disable the Firewall?

`sudo ufw disable`

How do you add Nginx to the Firewall?

`sudo ufw allow 80/tcp sudo ufw allow 443/tcp`

Or:

`sudo ufw allow 'Nginx Full'`

The commands to check if the firewall is running or disabled are above but here is also a screenshot to show them.

```

root@webservice:~# ufw status
Status: active
To           Action      From
--           ----      --
80/tcp        ALLOW      Anywhere
443/tcp       ALLOW      Anywhere
80/tcp (v6)   ALLOW      Anywhere (v6)
443/tcp (v6)  ALLOW      Anywhere (v6)

root@webservice:~# ufw disable
Firewall stopped and disabled on system startup
root@webservice:~# ufw enable
Firewall is active and enabled on system startup
root@webservice:~# ufw status
Status: active
To           Action      From
--           ----      --
80/tcp        ALLOW      Anywhere
443/tcp       ALLOW      Anywhere
80/tcp (v6)   ALLOW      Anywhere (v6)
443/tcp (v6)  ALLOW      Anywhere (v6)

root@webservice:~#

```

What different commands do we use to work with Ngnix?

Down below you will see the commands that have been used.

Nginx service commands

`sudo systemctl start nginx sudo systemctl stop nginx sudo systemctl restart nginx sudo systemctl reload nginx sudo systemctl status nginx`

```

root@webserver:~# systemctl stop nginx
root@webserver:~# systemctl start nginx
root@webserver:~# systemctl restart nginx
root@webserver:~# systemctl reload nginx
root@webserver:~# systemctl status nginx
* nginx.service - nginx - high performance web server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
   Active: active (running) since Wed 2025-12-17 05:40:33 UTC; 14s ago
     Docs: http://nginx.org/en/docs/
   Process: 3634 ExecReload=/bin/sh -c /bin/kill -s HUP ${!}/bin/cat /run/nginx.pid
      Main PID: 3628 (nginx)
        Tasks: 3 (limit: 9224)
       Memory: 3.4M (peak: 6.1M)
          CPU: 1ms
         CGroup: /system.slice/nginx.service
             ├─3628 "nginx: master process /usr/sbin/nginx -c /etc/nginx/nginx.conf"
             ├─3637 "nginx: worker process"
             └─3638 "nginx: worker process"

Dec 17 05:40:33 webserver systemd[1]: Starting nginx.service - nginx - high performance web server...
Dec 17 05:40:33 webserver systemd[1]: Started nginx.service - nginx - high performance web server.
Dec 17 05:40:40 webserver systemd[1]: Reloading nginx.service - nginx - high performance web server...
Dec 17 05:40:40 webserver systemd[1]: Reloaded nginx.service - nginx - high performance web server.

root@webserver:~#

```

Test Nginx configuration

sudo nginx -t

Check Nginx version

nginx -v

Here we have the screenshot that displays nginx -t and nginx -v.

```

root@webserver:~# nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
root@webserver:~# nginx -v
nginx version: nginx/1.28.0
root@webserver:~#

```

Nginx configuration files

- `/etc/nginx/nginx.conf`
- `/etc/nginx/conf.d/*.conf`
- `/etc/nginx/sites-available/`
- `/etc/nginx/sites-enabled/`

Nginx logs

- `/var/log/nginx/access.log`
- `/var/log/nginx/error.log`

Review logs

```
cat /var/log/nginx/access.log cat /var/log/nginx/error.log tail -f /var/log/nginx/access.log grep error
/var/log/nginx/error.log
```

```
root@webserver:~# cat /var/log/nginx/access.log
172.71.144.36 - - [17/Dec/2025:00:00:49 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 301 169 "-" "http://zebramediai.com/wp-admin/setup-config.php" "2a06:98c0:3600:103"
172.71.144.37 - - [17/Dec/2025:00:00:50 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 404 153 "-" "http://zebramediai.com/wp-admin/setup-config.php" "2a06:98c0:3600:103"
172.71.144.63 - - [17/Dec/2025:00:01:02 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
8.129.70.53 - - [17/Dec/2025:00:04:07 +0000] "GET / HTTP/1.1" 301 169 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/122.0.0.0 Safari/537.36 Edg/122.0.0.0"
8.129.70.53 - - [17/Dec/2025:00:04:08 +0000] "GET / HTTP/1.1" 200 207 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/122.0.0.0 Safari/537.36 Edg/122.0.0.0"
79.124.40.174 - - [17/Dec/2025:00:04:10 +0000] "GET /actuator/gateway/routes HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
141.98.11.170 - - [17/Dec/2025:00:14:03 +0000] "GET / HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/90.0.4430.85 Safari/537.36 Edg/90.0.818.46"
204.76.203.212 - - [17/Dec/2025:00:15:06 +0000] "GET / HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/90.0.4430.85 Safari/537.36 Edg/90.0.818.46"
172.71.164.119 - - [17/Dec/2025:00:20:15 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 301 169 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.68.10.4 - - [17/Dec/2025:00:20:43 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.68.10.4 - - [17/Dec/2025:00:21:43 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 301 169 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.68.10.5 - - [17/Dec/2025:00:21:44 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.71.184.62 - - [17/Dec/2025:00:22:26 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.71.144.119 - - [17/Dec/2025:00:22:30 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 404 153 "-" "https://zebramediai.com/wp-admin/setup-config.php" "2a06:98c0:3600:103"
172.174.250.151 - - [17/Dec/2025:00:29:02 +0000] "GET /actuator/health HTTP/1.1" 404 153 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.127.0 Safari/537.36" "2a06:98c0:3600:103"
185.180.140.127 - - [17/Dec/2025:00:39:36 +0000] "GET / HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/60.0.3112.111 Safari/537.36"
172.238.19.62 - - [17/Dec/2025:00:44:08 +0000] "GET / HTTP/1.1" 200 207 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.69.50.219 - - [17/Dec/2025:00:47:31 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 404 153 "-" "https://zebramediai.com/wp-admin/setup-config.php" "2a06:98c0:3600:103"
172.68.10.5 - - [17/Dec/2025:00:48:27 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 404 153 "-" "https://zebramediai.com/wordpress/wp-admin/setup-config.php" "2a06:98c0:3600:103"
172.70.242.86 - - [17/Dec/2025:00:48:40 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 301 169 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.70.242.87 - - [17/Dec/2025:00:49:41 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.68.10.5 - - [17/Dec/2025:00:49:21 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 301 169 "-" "https://zebramediai.com/wordpress/wp-admin/setup-config.php" "2a06:98c0:3600:103"
```

A bonus screenshot I have here is being able to see a live log of who enters our site.

```
root@webserver:~# sudo tail -f /var/log/nginx/access.log
20.168.122.88 - - [17/Dec/2025:05:40:32 +0000] "GET /login HTTP/1.1" 404 153 "-" "Mozilla/5.0 zgrab/0.x" "-"
172.68.10.4 - - [17/Dec/2025:05:44:45 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 301 169 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
172.68.10.4 - - [17/Dec/2025:05:44:45 +0000] "GET /wp-admin/setup-config.php HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36" "2a06:98c0:3600:103"
43.166.244.192 - - [17/Dec/2025:05:46:22 +0000] "GET / HTTP/1.1" 301 169 "-" "Mozilla/5.0 (iPhone; CPU iPhone OS 13_2_3 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/13.0.3 Mobile/15E148 Safari/604.1"
43.166.244.192 - - [17/Dec/2025:05:46:22 +0000] "GET / HTTP/1.1" 200 207 "https://zebramediai.com" "Mozilla/5.0 (iPhone; CPU iPhone OS 13_2_3 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko) Version/13.0.3 Mobile/15E148 Safari/604.1"
162.166.94.104 - - [17/Dec/2025:05:46:37 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 404 153 "-" "https://zebramediai.com/wordpress/wp-admin/setup-config.php" "2a06:98c0:3600:103"
172.71.148.32 - - [17/Dec/2025:05:47:24 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 301 169 "-" "https://zebramediai.com/wordpress/wp-admin/setup-config.php" "2a06:98c0:3600:103"
172.71.148.32 - - [17/Dec/2025:05:47:24 +0000] "GET /wordpress/wp-admin/setup-config.php HTTP/1.1" 404 153 "-" "https://zebramediai.com/wordpress/wp-admin/setup-config.php" "2a06:98c0:3600:103"
204.76.203.212 - - [17/Dec/2025:05:55:11 +0000] "GET / HTTP/1.1" 404 555 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/90.0.4430.85 Safari/537.36 Edg/90.0.818.46"
24.47.42.191 - - [17/Dec/2025:05:57:16 +0000] "GET /apple-touch-icon-precomposed.png HTTP/1.1" 404 153 "-" "NetworkingExtension/8622.2.11.10.8 Network/5569.42.2 iOS/26.1"
24.47.42.191 - - [17/Dec/2025:05:57:16 +0000] "GET /favicon.ico HTTP/1.1" 404 153 "-" "NetworkingExtension/8622.2.11.10.8 Network/5569.42.2 iOS/26.1"
24.47.42.191 - - [17/Dec/2025:05:57:16 +0000] "GET /apple-touch-icon.png HTTP/1.1" 404 153 "-" "NetworkingExtension/8622.2.11.10.8 Network/5569.42.2 iOS/26.1"
```