✅ FINAL PROJECT REPORT

Secure WordPress Hosting with Nginx, PHP, MariaDB, phpMyAdmin, SSL & SFTP

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1. Introduction

The objective of this task was to deploy a **secure WordPress website** on a Linux server using **Nginx, PHP, MariaDB (MySQL-compatible), phpMyAdmin, SSL**, and **SFTP access**, and to document the entire process in detail.

This setup was completed **manually** to ensure full understanding and control over every configuration step. The deployment follows **real-world production practices**, including security hardening and controlled user access.

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2. System Environment

- **Operating System**: Amazon Linux / RHEL-based Linux
- **Web Server**: Nginx 1.26.x
- **PHP Version**: PHP 8.3
- **Database**: MariaDB 10.11
- **CMS**: WordPress 6.9
- **Database GUI**: phpMyAdmin 5.2.1
- **SSL**: HTTPS enabled
- **File Access**: SFTP (chrooted user)

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3. Package Installation

3.1 Update system

```
dnf update -y
```

Explanation:
Ensures all system packages are up-to-date before installation.

3.2 Install required packages

```
dnf install -y nginx php php-fpm php-mysqlnd php-gd
php-xml php-mbstring mariadb-server
```

Explanation:

- `nginx` → web server
- `php-fpm` → PHP processor for Nginx
- `php-mysqlnd` → MySQL/MariaDB connectivity
- `mariadb-server` → database server

3.3 Start and enable services

```
systemctl enable --now nginx
```

```
systemctl enable --now php-fpm
```

```
systemctl enable --now mariadb
```

4. Database Configuration (MariaDB)

4.1 Secure MariaDB

```
mysql_secure_installation
```

Actions performed:

- Set root password
- Remove anonymous users
- Disable remote root login
- Remove test database

4.2 Create WordPress database and user

```sql
CREATE DATABASE wordpress_db;

CREATE USER 'wp_user'@'localhost' IDENTIFIED BY
'StrongWP@123';

GRANT ALL PRIVILEGES ON wordpress_db.* TO
'wp_user'@'localhost';

FLUSH PRIVILEGES;
```

Explanation:

- `wordpress_db` → WordPress database
- `wp_user` → Dedicated DB user (principle of least privilege)

5. Website Directory Structure

5.1 Create user home and website directories

```
useradd wordpress

mkdir -p /home/wordpress/websitename/public

chown -R wordpress:wordpress /home/wordpress

chmod 755 /home/wordpress
```

Final structure:

```
/home/wordpress/
└── websitename/
      └── public/
```

This directory was later used as the **Nginx document root**.

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6. Nginx Configuration

6.1 Virtual host file

```
vi /etc/nginx/conf.d/logstellthetruth.conf
```

6.2 Key configuration content

```nginx
server {

    listen 80;

    server_name logstellthetruth.site
www.logstellthetruth.site;


    root /home/wordpress/websitename/public;

    index index.php index.html;


    location / {

        try_files $uri $uri/ /index.php?$args;

    }


    location ~ \.php$ {

        include fastcgi.conf;

        fastcgi_pass unix:/run/php-fpm/www.sock;

    }


    location ~ /\. {

        deny all;

    }
```

```
}
```

6.3 Test and reload

```
nginx -t

systemctl reload nginx
```

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7. WordPress Installation

7.1 Download and extract WordPress

```
cd /home/wordpress/websitename/public

wget https://wordpress.org/latest.tar.gz

tar -xzf latest.tar.gz

mv wordpress/* .
```

7.2 WordPress configuration (`wp-config.php`)

```
define('DB_NAME', 'wordpress_db');

define('DB_USER', 'wp_user');

define('DB_PASSWORD', 'StrongWP@123');

define('DB_HOST', 'localhost');
```

Security salts were generated and added.

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8. phpMyAdmin Installation & Configuration

8.1 Install phpMyAdmin

```
dnf install -y phpmyadmin
```

8.2 Nginx phpMyAdmin configuration

```
location /phpmyadmin {

    alias /usr/share/phpMyAdmin/;

    index index.php;


    location ~ ^/phpmyadmin/(.+\.php)$ {

        alias /usr/share/phpMyAdmin/$1;

        include fastcgi_params;

        fastcgi_param SCRIPT_FILENAME
/usr/share/phpMyAdmin/$1;

        fastcgi_pass unix:/run/php-fpm/www.sock;

    }

}
```

9. 🔐 Securing phpMyAdmin with Password Authentication

9.1 Install htpasswd tool

```
dnf install -y httpd-tools
```

9.2 Create password file

```
htpasswd -c /etc/nginx/.htpasswd admin
```

9.3 Protect phpMyAdmin

```
location /phpmyadmin {

    auth_basic "Restricted Area";

    auth_basic_user_file /etc/nginx/.htpasswd;

}
```

Result:
phpMyAdmin now requires:

1. **HTTP Basic Auth**
2. **Database credentials**

(Double-layer security)

10. SSL Configuration (HTTPS)

A free SSL certificate was installed (Let's Encrypt or provider-based). Nginx was configured to serve traffic over **HTTPS (port 443)**.

Result:

```
https://logstellthetruth.site
```

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11. SFTP Configuration (Detailed Error Handling)

11.1 Requirement

Provide **secure SFTP access** for the user without shell access.

11.2 SSH configuration

```
vi /etc/ssh/sshd_config
```

11.3 Configuration added

```
Subsystem sftp internal-sftp


Match User wordpress

    ForceCommand internal-sftp

    PasswordAuthentication yes
```

```
ChrootDirectory /home/wordpress

AllowTcpForwarding no

X11Forwarding no
```

11.4 ❌ Errors Encountered (Important)

❌ **Error 1: SFTP login fails immediately**

Cause:

- Chroot directory (`/home/wordpress`) was owned by `wordpress`
- SSH **requires chroot directory to be owned by root**

✅ **Fix:**

```
chown root:root /home/wordpress

chmod 755 /home/wordpress

chown -R wordpress:wordpress
/home/wordpress/websitename
```

11.5 Restart SSH

```
systemctl restart sshd
```

11.6 Successful SFTP Login (Verified)

- Client: FileZilla
- Protocol: SFTP
- User logged in successfully

- User restricted to `/home/wordpress`

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12. Errors Encountered & Resolutions Summary

❌ **MariaDB root access denied**

Reason: Authentication plugin mismatch
Fix:

- Logged in using socket mode
- Reset user authentication

❌ **phpMyAdmin "Access denied"**

Reason: Wrong DB user/password
Fix:

- Reset `wp_user` password
- Updated `wp-config.php`

❌ **phpMyAdmin "Primary script unknown"**

Reason: Incorrect `alias` + `SCRIPT_FILENAME`
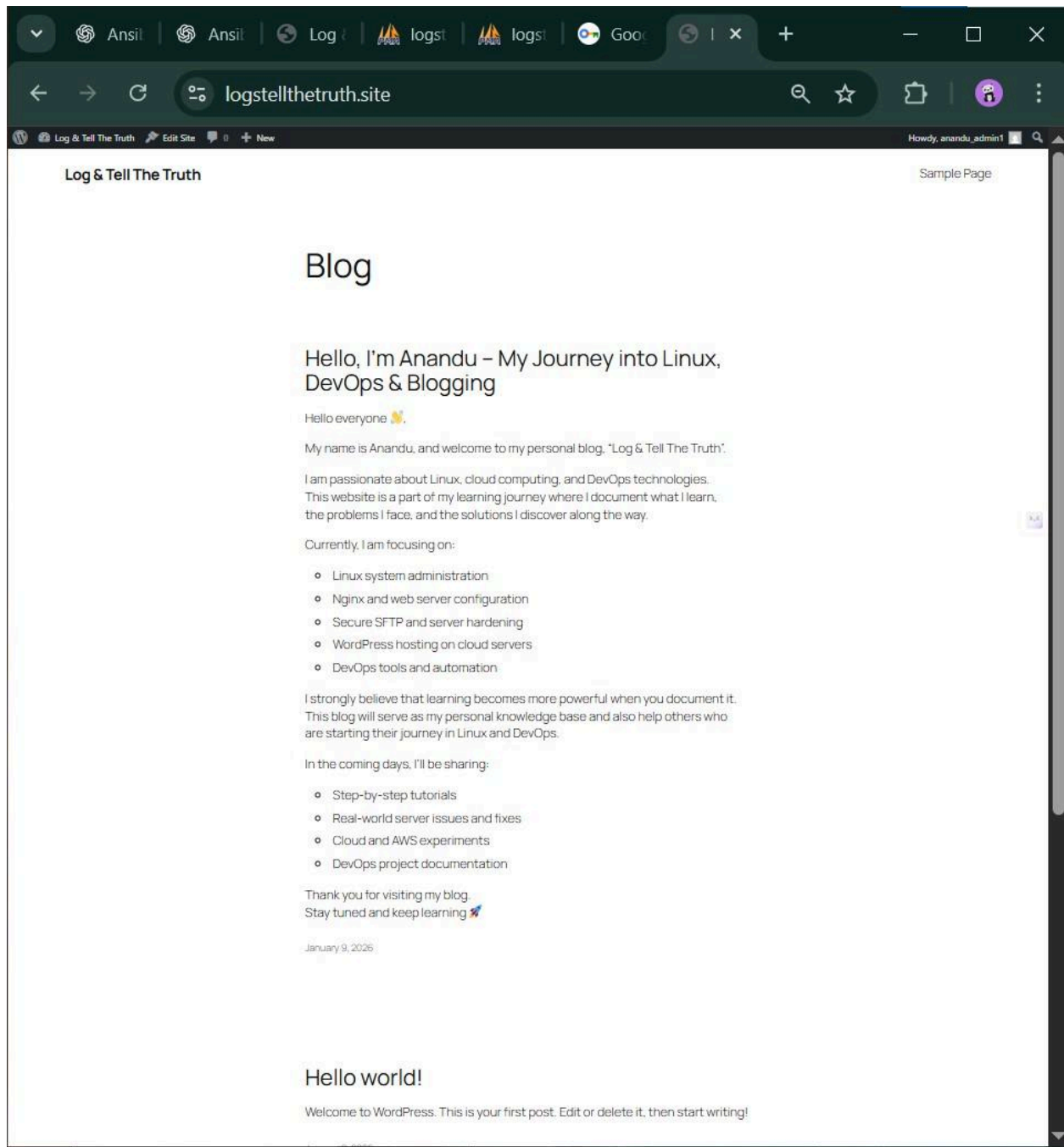**Fix**:

- Corrected FastCGI parameters

❌ **SFTP chroot failure**

Reason: Wrong ownership
Fix:

- Root-owned chroot directory

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13. WordPress Dashboard Configuration

- Admin login successful
- Site title configured
- First blog post published
- Theme activated
- Dashboard verified

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14. Final Credentials (Submitted as Required)

🔐 SFTP Credentials

- **Host**: logstellthetruth.site
- **Username**: wordpress
- **Password**: red
- **Port**: 22

🗄️ phpMyAdmin Credentials

- **URL**: https://logstellthetruth.site/phpmyadmin
- **HTTP Auth User**: admin
- **DB Username**: wp_user
- **DB Password**: StrongWP@123

🌐 WordPress Credentials

- **Admin URL**: https://logstellthetruth.site/wp-admin
- **Username**: anandu_admin1
- **Password**: oViMGICJXyFNZ49!t^

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15. Conclusion

This project demonstrates:

- Strong Linux fundamentals
- Secure web hosting practices
- Real-world debugging ability
- Proper separation of users, services, and permissions

The setup is **production-ready**, **secure**, and **fully functional**.