

Part 1: MediaWiki Setup on LAMP Stack (Linux, Apache, MySQL, PHP)

Overview:

This document provides a detailed, beginner-friendly step-by-step guide to installing MediaWiki on a Virtual Machine using the LAMP stack. If installation fails on Linux, a fallback using WAMP on Windows is also documented. Additionally, we implement a backup strategy to secure MediaWiki data.

A. SETUP PHASE

1. Create the Virtual Machine

- **Tool Used:** VirtualBox (Free and open-source)
- **OS ISO Used:** Ubuntu Server (LTS version recommended)

Step-by-step Guide: Download and Install VirtualBox and Ubuntu ISO (For Windows Users)

Step 1: Download and Install VirtualBox on Windows

- Visit the official website: <https://www.virtualbox.org>
- Click on "Downloads" from the left menu.
- Under "VirtualBox platform packages", click **Windows hosts** to download the `.exe` installer.
- Run the downloaded file and follow the installation wizard (keep default settings unless you know what to change).
- After installation, launch VirtualBox from the Start menu.
- Download and install the VirtualBox software by running the installer and following the prompts.

Step 2: Download Ubuntu Server ISO

- Visit: <https://ubuntu.com/download/server>
 - Click on "Download Ubuntu Server 22.04 LTS" (or the latest LTS version available).
 - Choose the manual server installation ISO.
 - Save the `.iso` file to a known location (e.g., Downloads folder) — you will use this file to boot your VM. (used later as the installation disk for the virtual machine).
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2. Set Up the Virtual Machine in VirtualBox

Steps:

1. Open VirtualBox and click **New**.
2. Name the VM (e.g., UbuntuServer).

3. Set **Type** to Linux and **Version** to Ubuntu (64-bit).
 4. Allocate memory: Minimum 2048 MB (2 GB).
 5. Create a virtual hard disk (VDI) with at least 20 GB of dynamically allocated storage.
 6. Select the newly created VM, click **Settings > Storage**.
 7. Under "Controller: IDE", click the empty CD icon and then click the disk icon to "Choose a disk file..."
 8. Select the downloaded Ubuntu Server ISO.
 9. Start the VM and follow the on-screen instructions:
 10. Choose language, keyboard, region
 11. Set up a user and password
 12. Configure storage and allow automatic installation if prompted
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3. Install Apache, MySQL, PHP (LAMP Stack)

Login to the VM terminal and execute:

```
sudo apt update
sudo apt install apache2 mysql-server php libapache2-mod-php php-mysql php-intl
php-xml php-mbstring php-apcu php-json php-curl php-gd php-cli unzip wget -y
```

Explanation:

- Installs Apache for serving web pages.
- Installs MySQL for MediaWiki's database.
- Installs PHP and required extensions.

4. Download and Configure MediaWiki

```
cd /var/www/html
sudo wget https://releases.wikimedia.org/mediawiki/1.41/mediawiki-1.41.1.tar.gz
sudo tar -xvzf mediawiki-1.41.1.tar.gz
sudo mv mediawiki-1.41.1 mediawiki
sudo chown -R www-data:www-data /var/www/html/mediawiki
```

Explanation:

- Downloads MediaWiki.
- Extracts and places it in the web directory.
- Sets the correct permissions.

5. Create MySQL Database

```
sudo mysql -u root -p
```

Inside MySQL prompt:

```
CREATE DATABASE wikidb;  
CREATE USER 'wikiuser'@'localhost' IDENTIFIED BY 'password';  
GRANT ALL PRIVILEGES ON wikidb.* TO 'wikiuser'@'localhost';  
FLUSH PRIVILEGES;  
EXIT;
```

6. Complete MediaWiki Setup via Browser

- Open browser: `http://<VM-IP>/mediawiki`
- Follow the on-screen setup wizard:
- Provide DB details (wikidb, wikiuser, password)
- Set up admin user and site name
- Download `LocalSettings.php` file
- Place the file into `/var/www/html/mediawiki/`

```
sudo mv ~/Downloads/LocalSettings.php /var/www/html/mediawiki/  
sudo chown www-data:www-data /var/www/html/mediawiki/LocalSettings.php
```

7. (Optional) If Linux Fails: Use WAMP on Windows

Steps:

1. Download WAMP from <https://www.wampserver.com/>
2. Install and start services.
3. Place MediaWiki folder in `C:\wamp64\www\mediawiki`
4. Open `http://localhost/mediawiki` in browser
5. Follow same steps as above for setup.

B. BACKUP MECHANISM SETUP

1. What Needs to be Backed Up?

- MediaWiki Database (MySQL)
- Uploaded files and configuration (LocalSettings.php, images folder, extensions, etc.)

2. Backup Strategy

- **Type:** Daily Incremental Backup
- **Method:** Shell script + Cron Job

3. Steps to Create Backup Script

Create a backup folder:

```
mkdir ~/mediawiki-backups
```

Create backup script:

```
nano ~/mediawiki-backups/backup.sh
```

Contents of backup.sh:

```
#!/bin/bash
BACKUP_DIR=~/mediawiki-backups/$(date +%F)
mkdir -p "$BACKUP_DIR"

# Backup MySQL database
mysqldump -u root -pYOURPASSWORD wikidb > "$BACKUP_DIR/wikidb.sql"

# Backup mediawiki folder
cp -r /var/www/html/mediawiki "$BACKUP_DIR/mediawiki"
```

Make it executable:

```
chmod +x ~/mediawiki-backups/backup.sh
```

4. Automate with Cron

```
crontab -e
```

Add this line for daily backup at 2AM:

```
0 2 * * * /home/youruser/mediawiki-backups/backup.sh
```

C. ARCHITECTURE DIAGRAM

[Architecture Description]

- **Client Browser** → accesses MediaWiki using IP/domain
- **Apache Web Server** → serves the PHP MediaWiki pages
- **PHP Engine** → interprets MediaWiki PHP scripts
- **MySQL Database** → stores page content, user data, and settings
- **Backup System** → daily job saves database + uploads

[User]

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[Browser] → [Apache Server + PHP] → [MediaWiki Engine] ↔ [MySQL DB]

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[Backup Script + Cron]

D. TROUBLESHOOTING TIPS

1. Apache Not Working:

2. Restart: `sudo systemctl restart apache2`

3. Check status: `sudo systemctl status apache2`

4. PHP Not Executing:

5. Check module: `php -v`

6. Ensure libapache2-mod-php is installed

7. MySQL Login Fails:

8. Check password and user permissions

9. Reset MySQL root password if forgotten

10. MediaWiki Setup Page Not Loading:

11. Ensure MediaWiki is in correct web root

12. Check VM IP: `ip a`

13. Check firewall or port settings

14. Cannot Upload Files:

15. Check folder permissions for `images/`

16. Add file types to `LocalSettings.php`

E. RESTORE GUIDE

To restore from a backup:

```
# Restore database
mysql -u root -p wikidb < /path/to/backup/wikidb.sql

# Restore MediaWiki files
cp -r /path/to/backup/mediawiki /var/www/html/
```

Make sure to reconfigure `LocalSettings.php` if needed.

Conclusion

This guide ensures a full deployment of MediaWiki on a Linux-based VM using LAMP stack, and offers a reliable daily backup system. The setup process is also documented for WAMP in case Linux installation fails. Clear troubleshooting and restore instructions help maintain continuity and disaster recovery readiness.