

# **MEDIAWIKI INSTALLATION AND BACKUP SETUP ON LAMP VM**

VISMAYA PRABHAKAR

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# 1.Introduction

This document details the process of setting up a fully functional MediaWiki installation on a virtual machine running a Linux operating system with a LAMP stack. MediaWiki is an open-source wiki platform widely used in collaborative environments. The goal is to demonstrate the installation, configuration, and successful deployment of MediaWiki, as well as to implement a backup mechanism to safeguard the wiki's data and files. Throughout this process, I will detail each step taken, the reasoning behind it, and any obstacles encountered and how they were overcome. This thorough documentation will provide clear insights into the setup procedure and can serve as a professional reference for future installations.

The guide includes:

- VM setup
- Installation and configuration of Linux, Apache, MySQL, PHP
- Installing MediaWiki
- Setting up daily automated backups
- Troubleshooting and lessons learned

## **2. System Requirements**

### **Host System Requirements:**

- **Operating System:** Windows 10/11
- **RAM:** Minimum 4GB (2GB allocated to VM)
- **Storage:** 30GB free space
- **Processor:** 64-bit with virtualization support

### **Virtual Machine Specifications:**

- **OS:** Ubuntu Server 24.04 LTS
- **CPU:** 2 cores
- **RAM:** 2GB
- **Storage:** 20GB
- **Network:** NAT/Bridged Adapter

### **Software Requirements:**

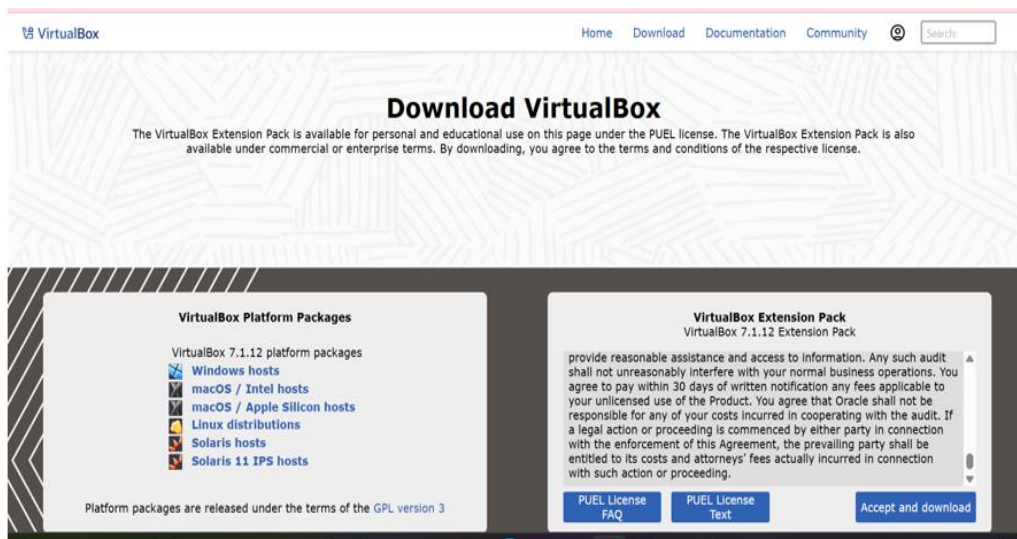
- VirtualBox 7.x
- Ubuntu Server ISO
- Web browser for testing

## 3. VIRTUAL MACHINE SETUP

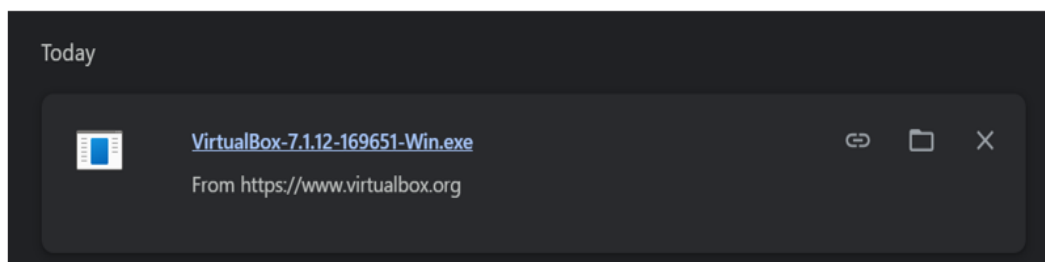
### 3.1 Choose and Create VM

#### Step 1: Download and Install VirtualBox on Windows

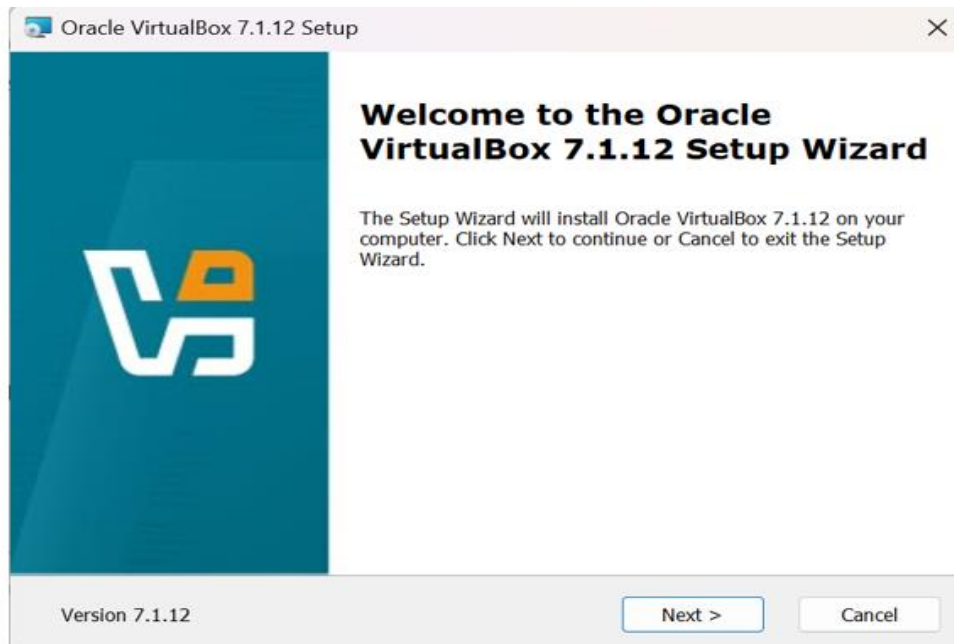
- Visit the official website: <https://www.virtualbox.org>
- Click on "**Downloads**" from the left menu.



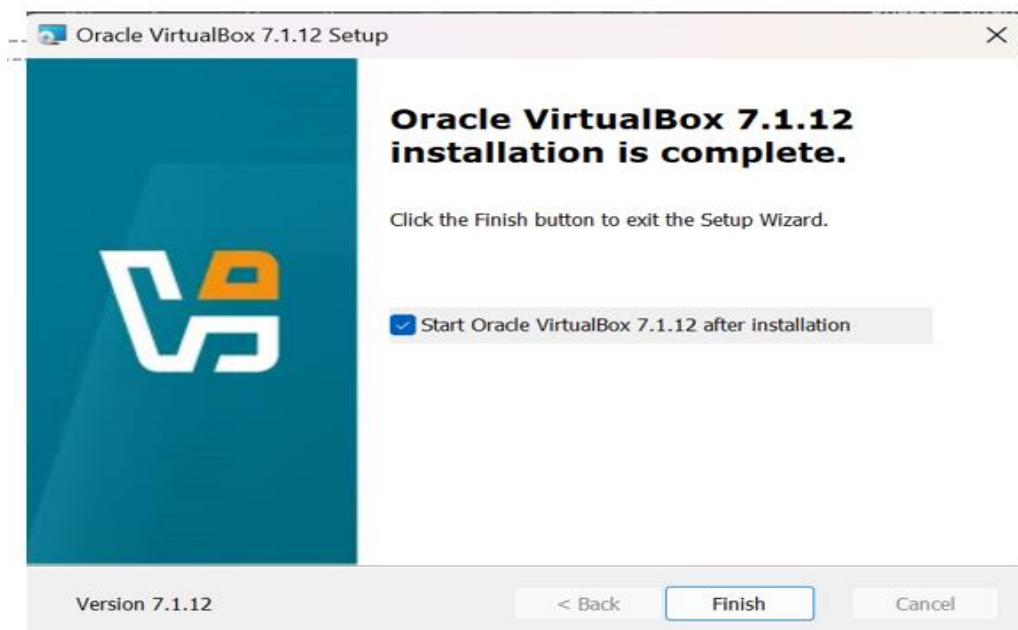
- Under "**VirtualBox platform packages**", click **Windows hosts** to download the .exe installer.



- Run the downloaded file and follow the installation wizard (keep default settings unless you know what to change).



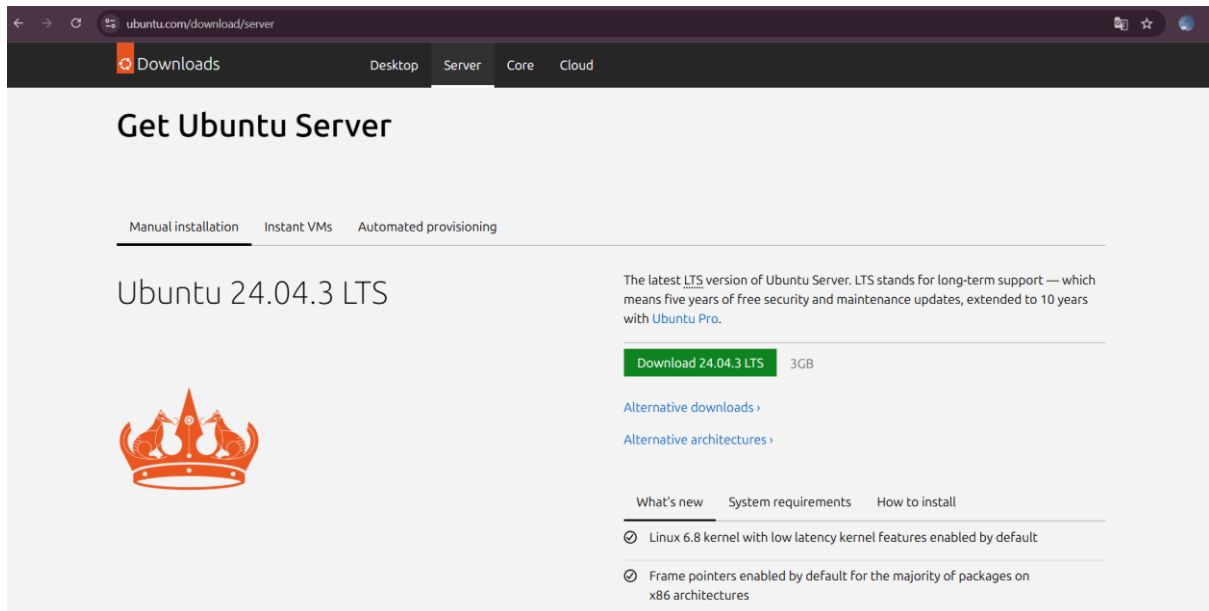
- After installation, launch VirtualBox from the Start menu.
- Download and install the VirtualBox software by running the installer and following the prompts.



## 3.2: Download Ubuntu Server ISO

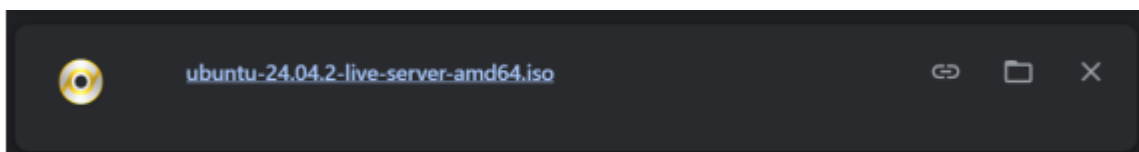
Visit: <https://ubuntu.com/download/server>

Click on "Download Ubuntu Server 24.04.3 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).

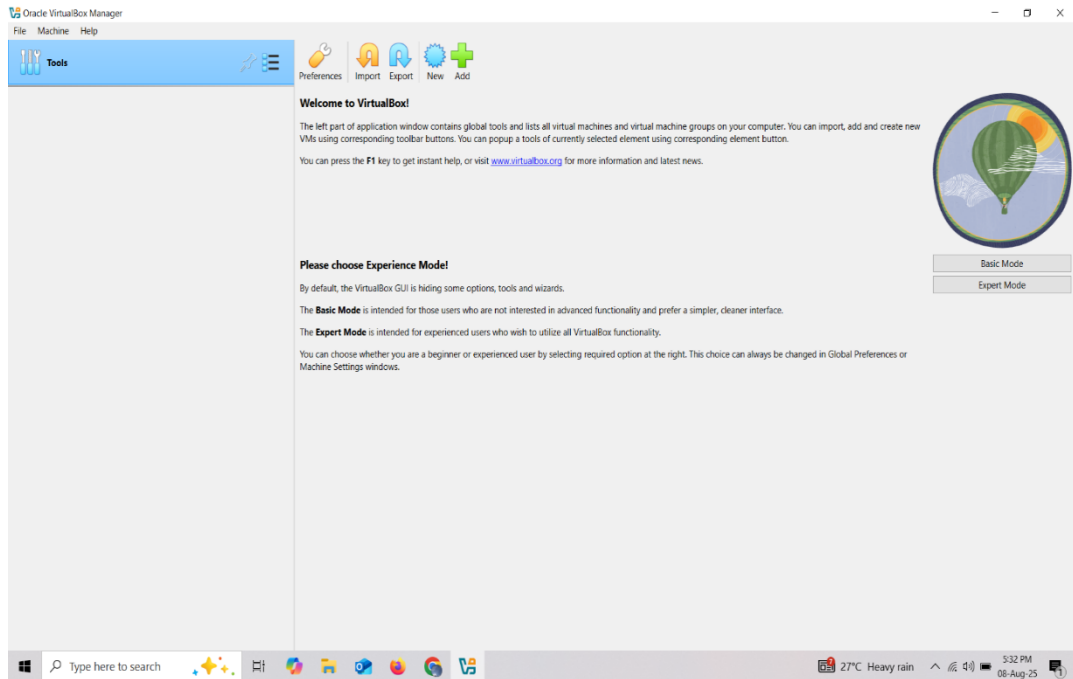


**After downloading the .iso file:**

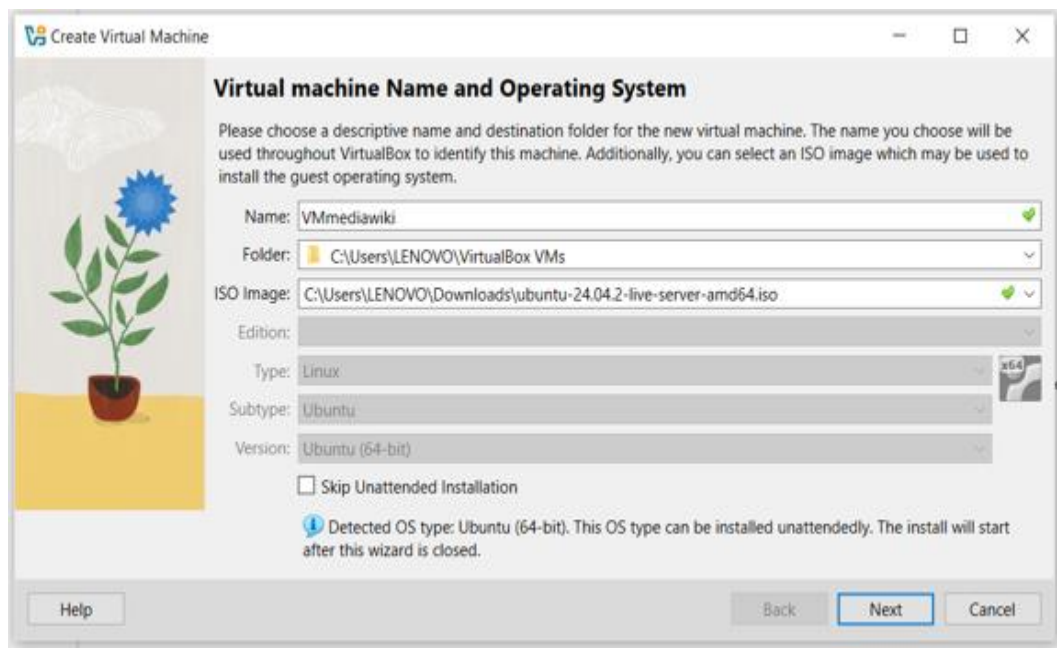
**Set Up the Virtual Machine in VirtualBox**

Steps:

1. Open VirtualBox and click New.

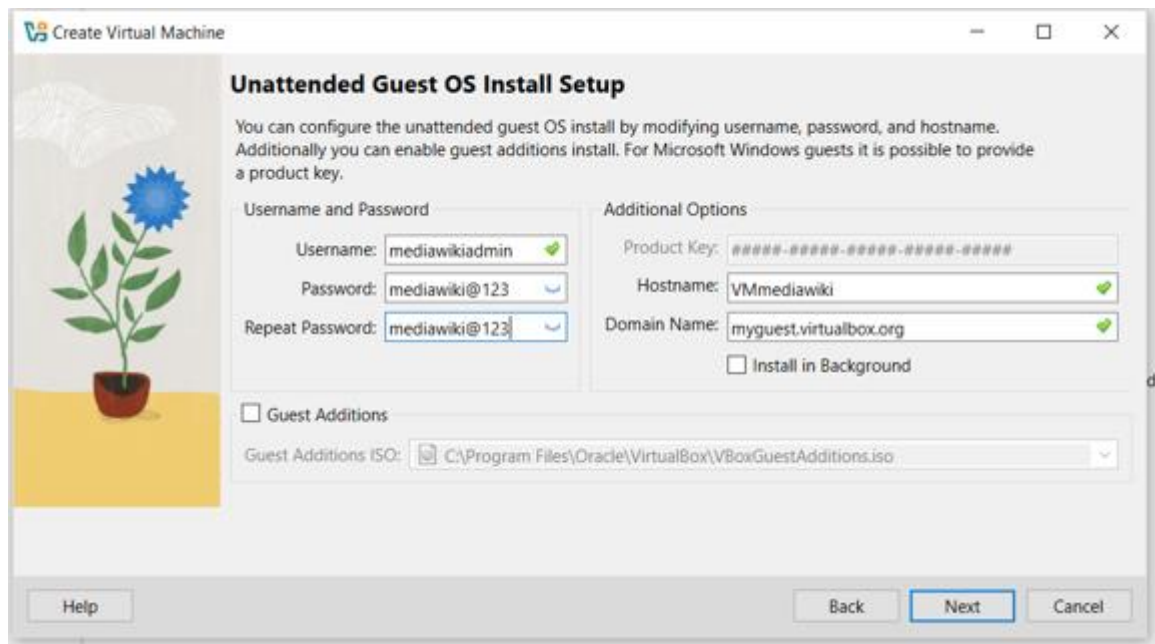


2. Name the VM (e.g., mediawikivm).
3. Set Type to Linux and Version to Ubuntu (64-bit).



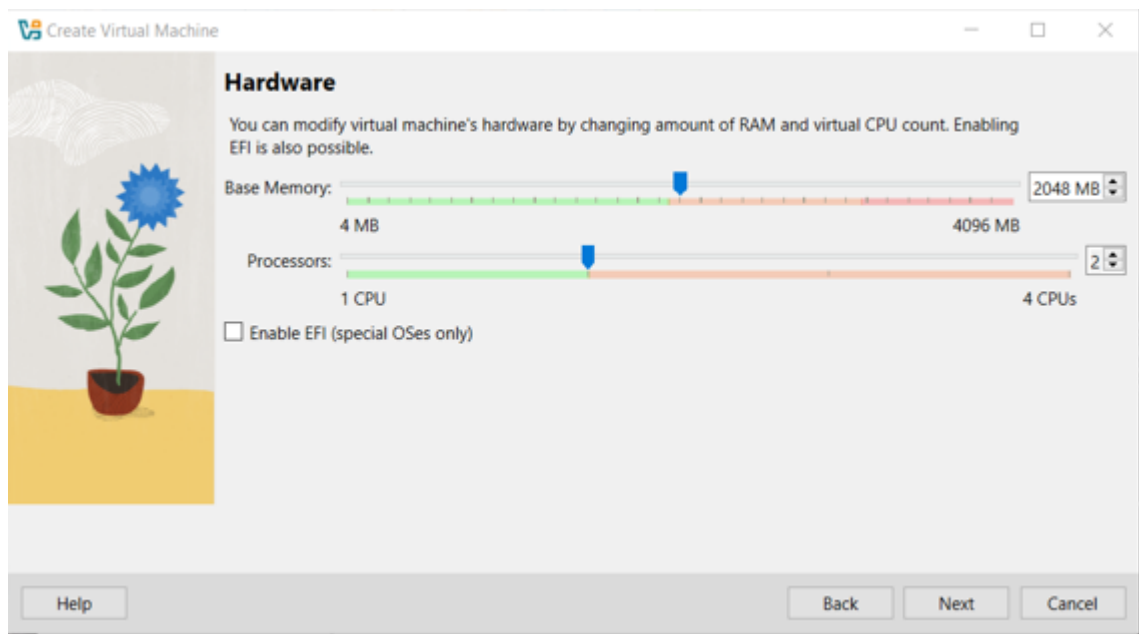


4. Set the username and password.

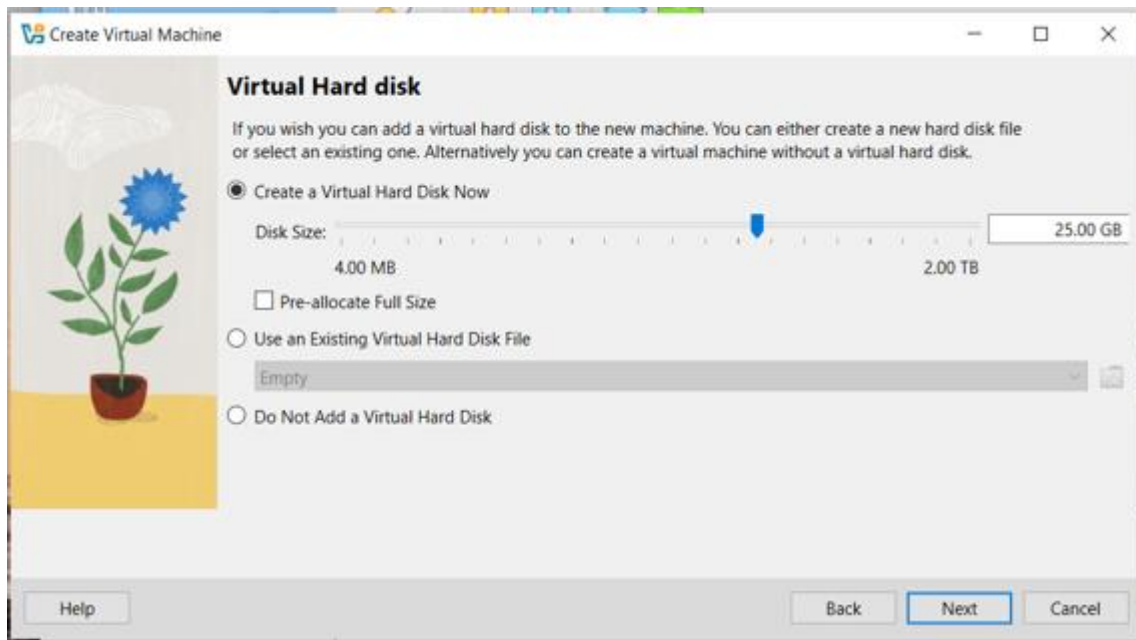


5. Allocate memory: Minimum 2048 MB (2 GB).

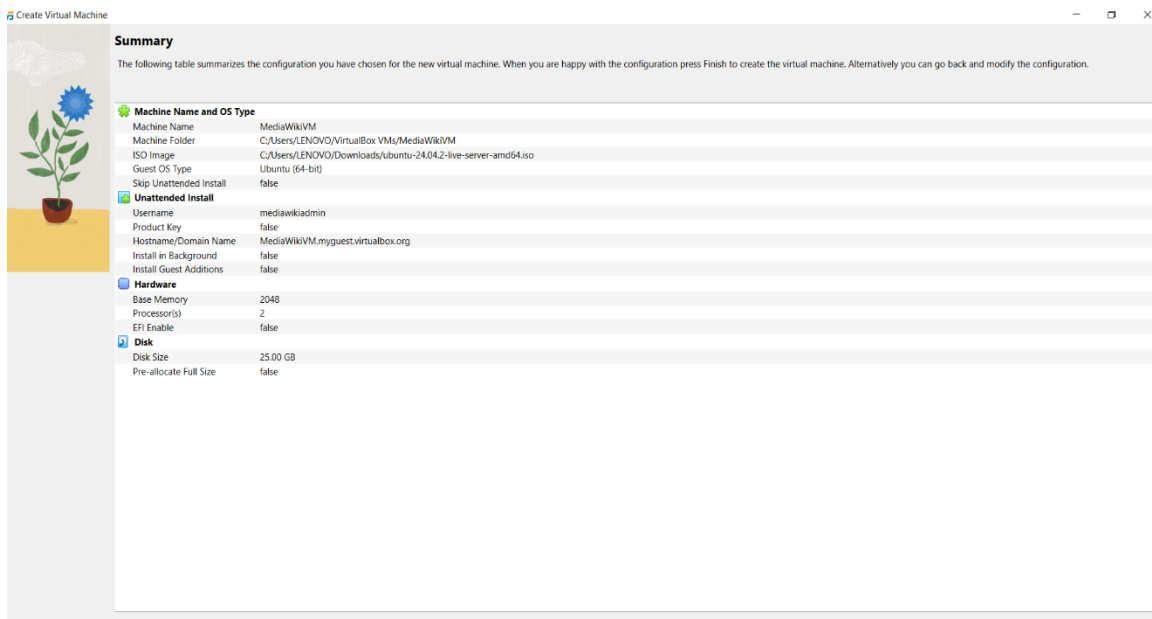
6. Allocate CPU: 2 cores.



7. Create a virtual hard disk (VDI) with at least 25 GB of dynamically allocated storage.



8. Click next and read the summary of the specifications, then click finish.

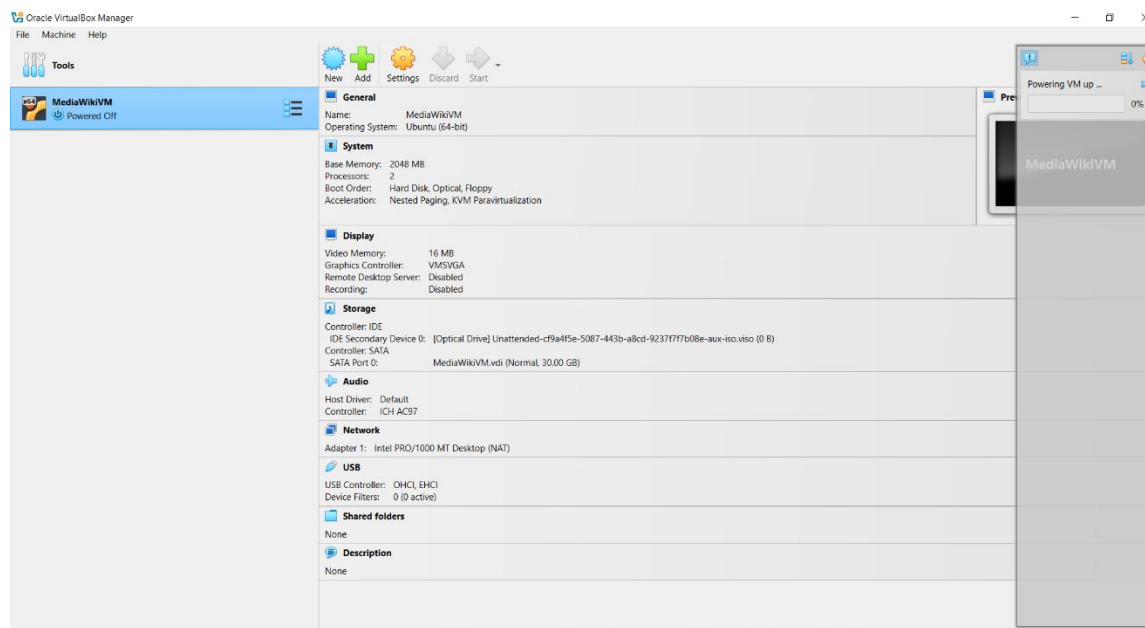


9.And then it will take us to the Virtual box Launch Home screen.

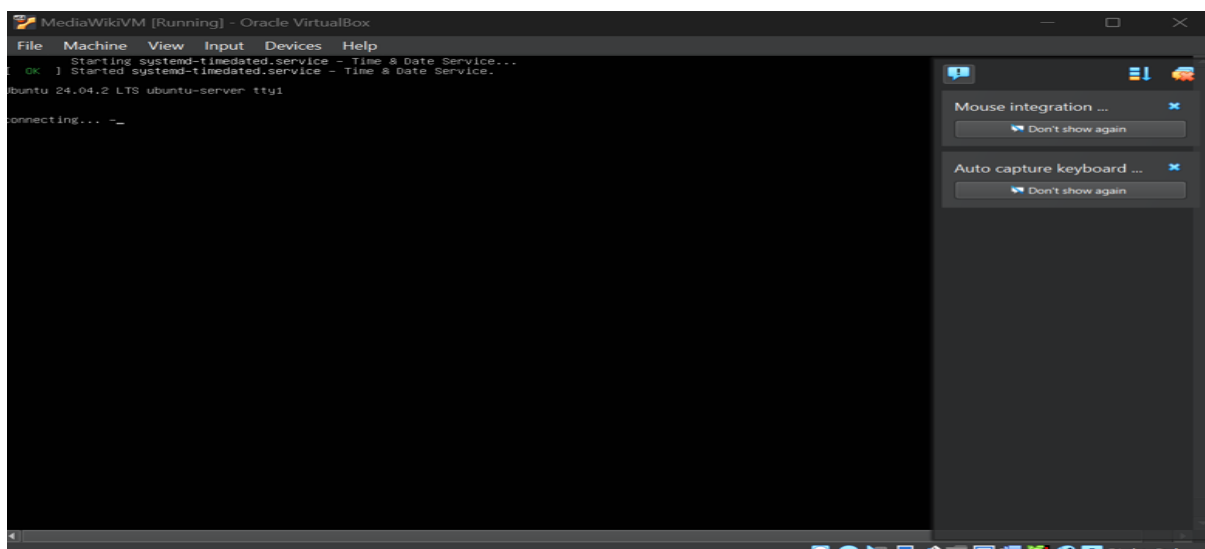
10.Select the newly created VM, click Settings > Storage.

11.Under "Controller: IDE", click the empty CD icon and then click the disk icon to "Choose a disk file..."

12.Select the downloaded Ubuntu Server ISO.

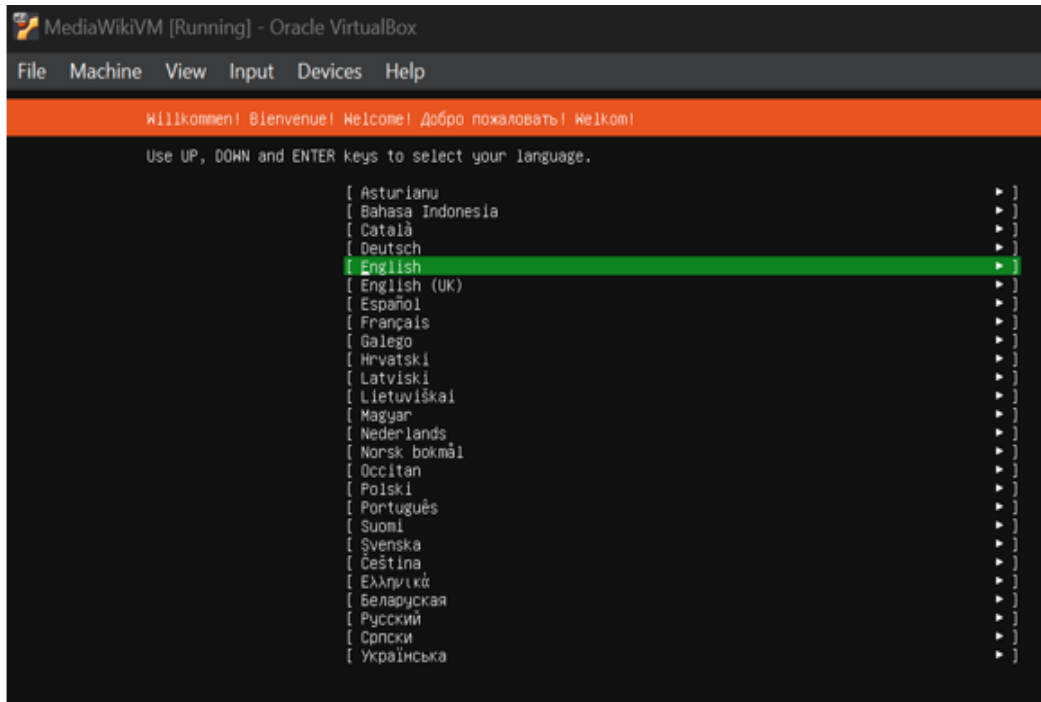


13.Start the VM and follow the on-screen instructions:

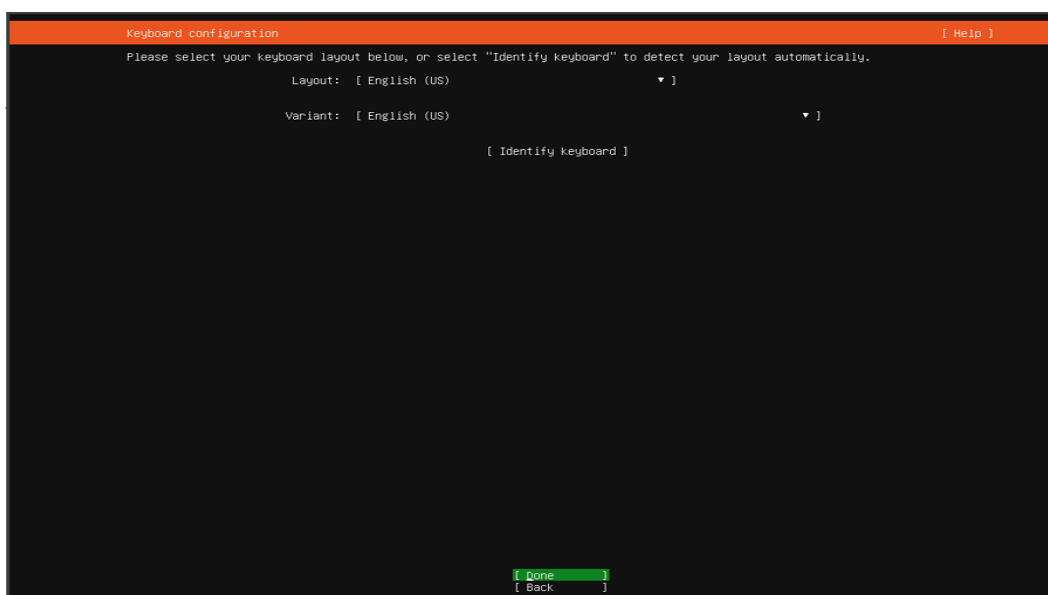


## Boot from ISO and follow installation:

1. Language Selection:
2. - Choose: English

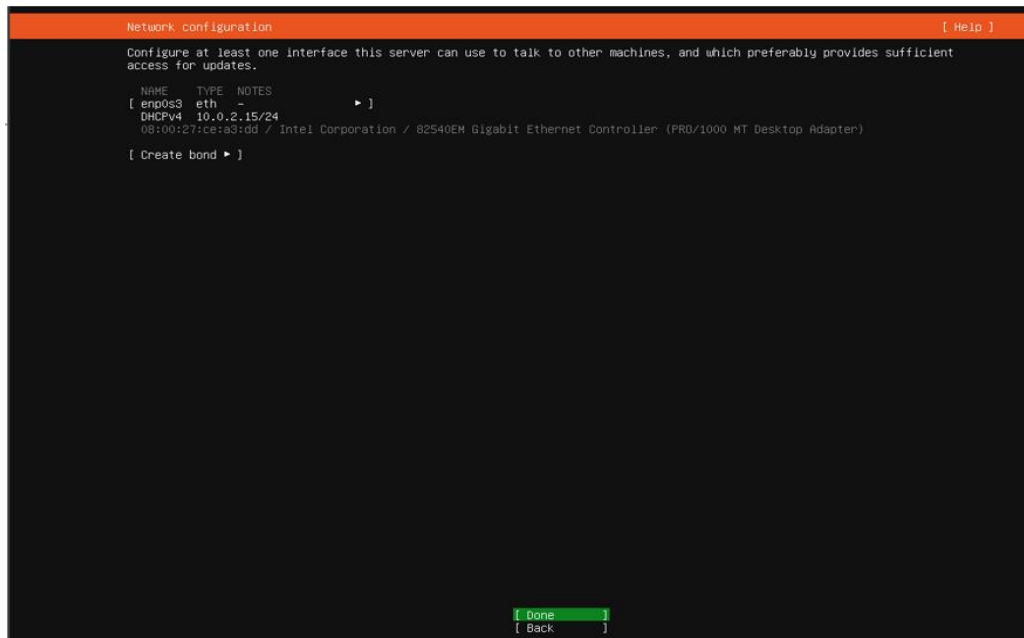


3. Keyboard Configuration:
4. Select your keyboard layout (usually English (US)) → Press Enter.



## 5. Network Configuration:

6. - If it detects your internet, just press Done to continue.

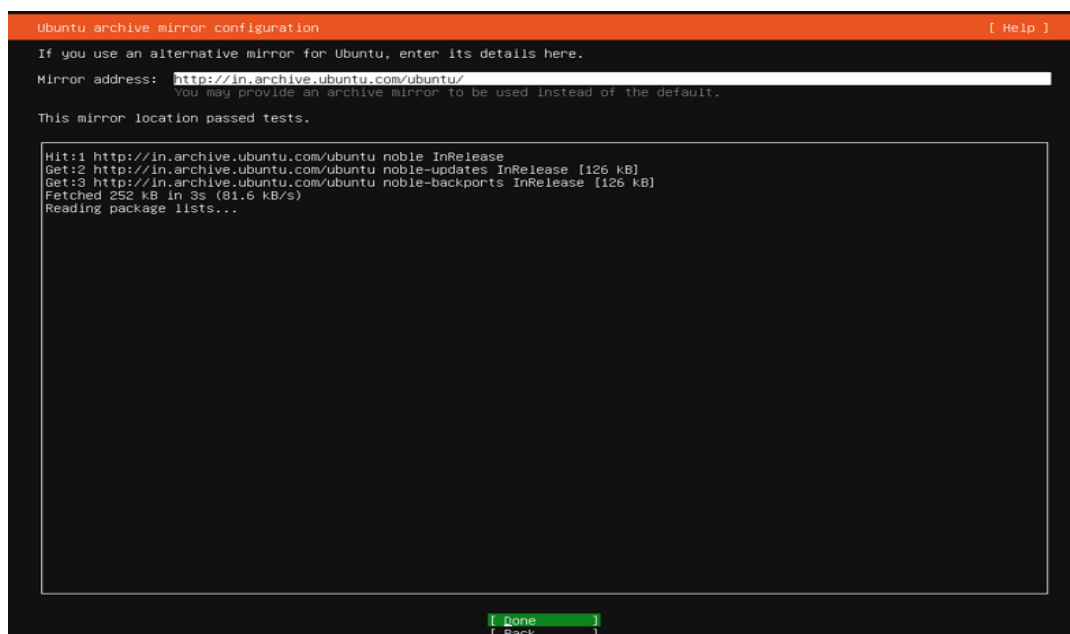


## 7. Proxy Configuration:

8. - Leave blank (no proxy)

## 9. Mirror Configuration:

10. - Accept default Ubuntu archive mirror



11. **Storage Configuration:**
12. Guided Storage Configuration:
13. - Use entire disk: ✓
14. - Set up disk as LVM group: ✓
15. Partition Layout (Auto-generated):

Select the 30 GB virtual disk you created → Press Enter, Confirm changes → Select Continue

Storage configuration summary → Press Enter and Continue

16. **Profile Setup:**
17. Server Profile Configuration:
18. - Your name: mediawiki.admin
19. - Server name: mediawiki-server
20. - Username: wikiuser
21. - Password: [Strong Password - Document Securely]

Profile configuration [ Help ]

Enter the username and password you will use to log in to the system. You can configure SSH access on a later screen, but a password is still needed for sudo.

Your name: mediawiki-admin

Your servers name: mediawikiserver  
The name it uses when it talks to other computers.

Pick a username: wikiuser

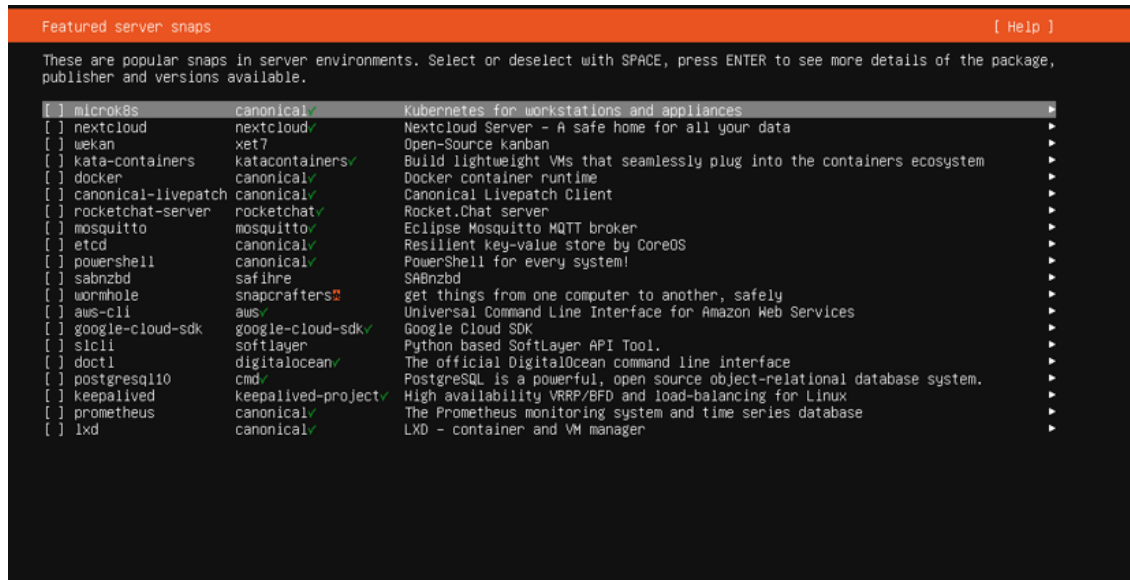
Choose a password: \*\*\*\*\*

Confirm your password: \*\*\*\*\*

[ Done ]

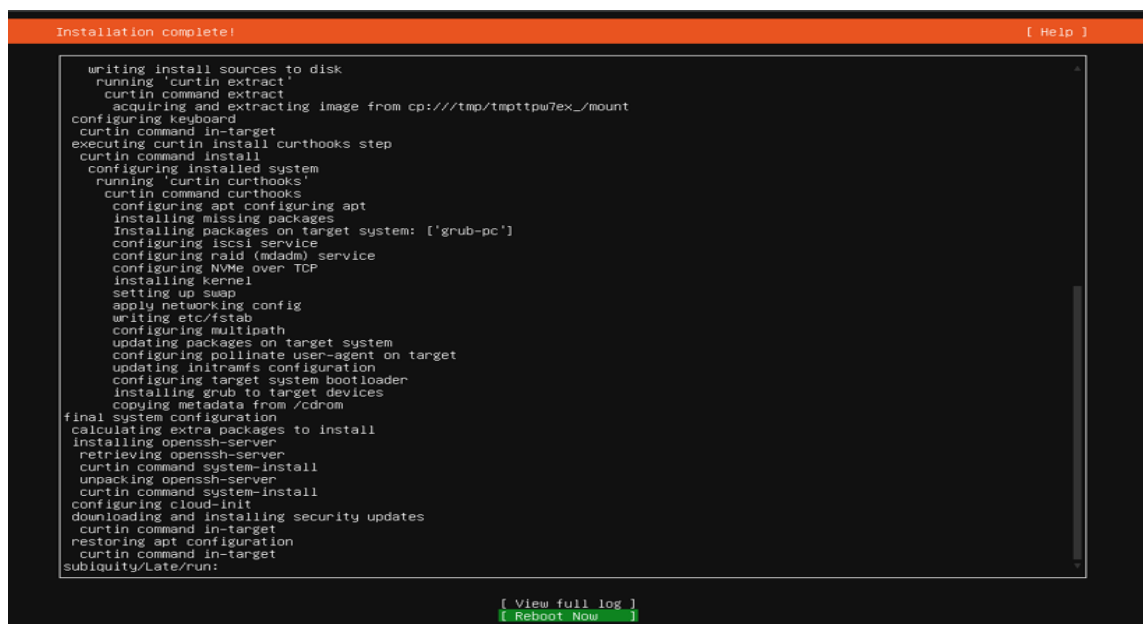
## Featured Server Snap:

## 22. Additional Packages:



You can skip unless you want specific software pre-installed.

23. - Install minimal system



Wait while it installs Ubuntu Server (~5–15 min).

## Complete Installation

### 1. Installation Progress:

- Wait for package installation completion
- System will automatically reboot
- Remove installation media when prompted

### 2. First Login:

3. Username: admin

4. Password: [Previously configured password]

```
Ubuntu 24.04.2 LTS mediawikiserver tty1
mediawikiserver login: wikiuser
Password:
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-71-generic x86_64)

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

System information as of Fri Aug  8 09:16:01 AM UTC 2025

System load:          0.05
Usage of /:            38.8% of 13.67GB
Memory usage:         6%
Swap usage:           0%
Processes:            112
Users logged in:      0
IPv4 address for enp0s3: 10.0.2.15
IPv6 address for enp0s3: fd17:625c:f037:2:a00:27ff:fece:a3dd

Expanded Security Maintenance for Applications is not enabled.

88 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

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

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

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

wikiuser@mediawikiserver:~$ _
```



## **Advanced VM Configuration**

### **Steps: System Settings**

1. **Access VM Settings (VM → Settings)**
2. **Motherboard Settings:**
  - Boot Order: Optical, Hard Disk (Network disabled)
3. **Network Configuration:**
4. Adapter 1:
5. - Enable Network Adapter: ✓
6. - Attached to: NAT
7. - Adapter Type: Intel PRO/1000 MT Desktop
8. - Advanced → Port Forwarding:
9. \* Rule Name: HTTP-MediaWiki
10. \* Protocol: TCP
11. \* Host Port: 8080
12. \* Guest Port: 80

## 4. LAMP Stack Installation

### 4.1 Update System

#### System Preparation and Updates

##### Step 1: Complete System Update

- In your VM terminal, run:

\$ sudo apt update && sudo apt upgrade -y

```
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

```
wikiuser@mediawikiserver:~$ sudo apt update && sudo apt upgrade -y_
```

- This step is required to identify or check the system and ensure the packages are installed and up-to-date.

```
Installing new version of config file /etc/apparmor.d/ubuntu_pro_apt_news ...
Installing new version of config file /etc/apparmor.d/ubuntu_pro_esm_cache ...
Installing new version of config file /etc/apt/apt.conf.d/20apt-esm-hook.conf ...
Setting up ubuntu-pro-client-l10n (36ubuntu0~24.04) ...
Setting up initramfs-tools (0.142ubuntu25.5) ...
update-initramfs: deferring update (trigger activated)
Setting up ubuntu-drivers-common (1:0.9.7.6ubuntu3.2) ...
Setting up software-properties-common (0.99.49.2) ...
Setting up cryptsetup-initramfs (2:2.7.0-1ubuntu4.2) ...
update-initramfs: deferring update (trigger activated)
Setting up python3-distupgrade (1:24.04.27) ...
Setting up liblvm2cmd2.03:amd64 (2.03.16-3ubuntu3.2) ...
Setting up ubuntu-release-upgrader-core (1:24.04.27) ...
Setting up dmideventd (2:1.02.185-3ubuntu3.2) ...
dm-event.service is a disabled or a static unit not running, not starting it.
Setting up python3-update-manager (1:24.04.12) ...
Setting up lvm2 (2.03.16-3ubuntu3.2) ...
Setting up update-manager-core (1:24.04.12) ...
Setting up update-notifier-common (3.192.68.2) ...
update-notifier-download.service is a disabled or a static unit not running, not starting it.
update-notifier-motd.service is a disabled or a static unit not running, not starting it.
Processing triggers for libc-bin (2.39-0ubuntu0.5) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for dbus (1.14.10-4ubuntu4.1) ...
Processing triggers for install-info (7.1-3build2) ...
Processing triggers for initramfs-tools (0.142ubuntu25.5) ...
update-initramfs: Generating /boot/initrd.img-6.8.0-71-generic
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
systemctl restart multipathd.service polkit.service udisks2.service

Service restarts being deferred:
systemctl restart ModemManager.service
/etc/needrestart/restart.d/dbus.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
wikiuser @ session #2: apt[1570], login[1119]
wikiuser @ user manager service: systemd[1219]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
wikiuser@mediawikiserver:~$
```

## 4.2 Install Apache

### Apache Web Server Installation and Configuration

#### Step 1: Install Apache

# Install Apache web server

To install Apache web server on Linux system we use the package manager, run the below mentioned commands.

\$sudo apt install apache2 -y

```
wikiuser@mediawikiserver:~$ sudo apt install apache2 -y
```

```
Enabling module authz_core.
Enabling module authz_host.
Enabling module authn_core.
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module runtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /usr/lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /usr/lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36.2-6) ...
Processing triggers for man-db (2.12.0-4build2) ...
Processing triggers for libc-bin (2.39-0ubuntu8.5) ...
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...

Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
wikiuser @ session #2: login[1119]
wikiuser @ user manager service: systemd[1219]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

#### Step 2: Configure Apache Service

# Enable Apache to start on boot

`$sudo systemctl enable apache2`

`# Start Apache service`

`$sudo systemctl start apache2`

`# Check service status`

`$sudo systemctl status apache2`

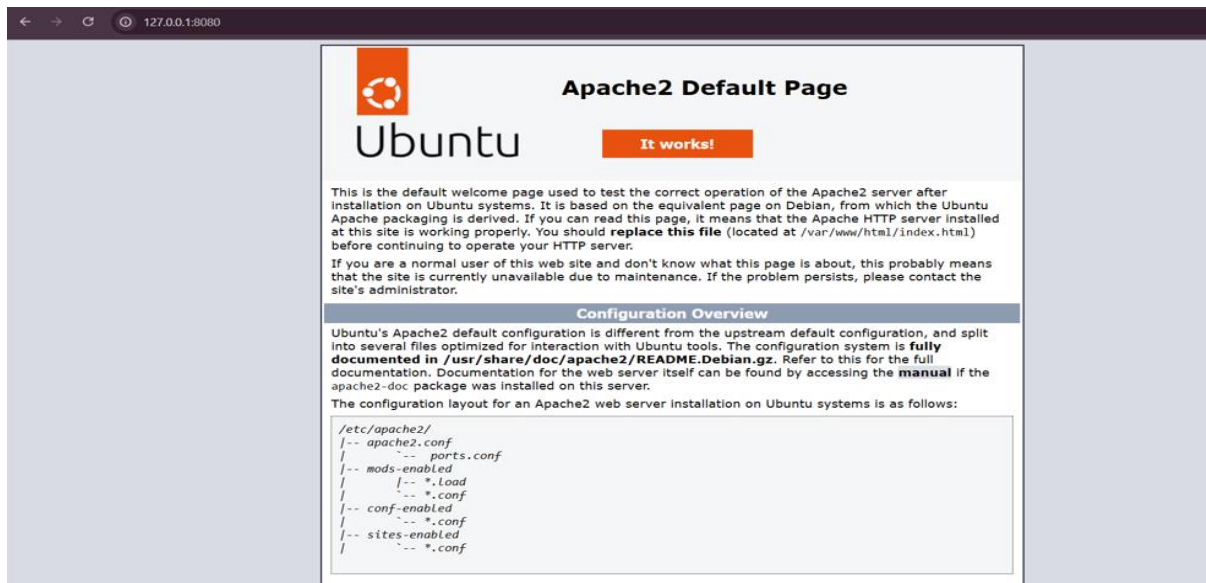
```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
wikiuser@mediawikiserver:~$ sudo systemctl start apache2
[sudo] password for wikiuser:
wikiuser@mediawikiserver:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
wikiuser@mediawikiserver:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-08-08 09:36:41 UTC; 20min ago
     Docs: https://httpd.apache.org/docs/2.4/
    Main PID: 16350 (apache2)
      Tasks: 55 (limit: 4605)
    Memory: 5.2M (peak: 5.5M)
       CPU: 752ms
    CGroup: /system.slice/apache2.service
           └─16350 /usr/sbin/apache2 -k start
             └─16352 /usr/sbin/apache2 -k start
               └─16353 /usr/sbin/apache2 -k start

Aug 08 09:36:41 mediawikiserver systemd[1]: Starting apache2.service - The Apache HTTP Server...
Aug 08 09:36:41 mediawikiserver apachectl[16349]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set
Aug 08 09:36:41 mediawikiserver systemd[1]: Started apache2.service - The Apache HTTP Server.
lines 1-16/16 (END)
```

## Step 3: Test Apache Installation

# Test Apache locally

- Next, we can test by opening your VM's IP in a browser — if you see the “Apache2 Ubuntu Default Page,” the web server is ready.



## 4.3 Install MySQL

### MySQL Database Server Installation

#### Step 1: Install MySQL Server

# Install MySQL server package

- To install MySQL open terminal and run the following commands.

```
$sudo apt install mysql-server -y
```



- After installation, check the status of mysql:

**\$ sudo systemctl status mysql**

```
Aug 08 12:02:17 mediawikiserver systemd[1]: Started apache2.service - The Apache HTTP Server.
wikiusers@mediawikiserver:~$ sudo apt install mysql-server -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libbcgi-fast-perl libbcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7t64 libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-par
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libprotobuf-l
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server-8.0
  mysql-server-core-8.0
Suggested packages:
  libdata-dump-perl libipc-sharedcache-perl libio-compress-brotli-perl libbusiness-isbn-perl libregexp-ipv6-perl libwww-perl mailx tinyc
The following NEW packages will be installed:
  libbcgi-fast-perl libbcgi-pm-perl libclone-perl libencode-locale-perl libevent-pthreads-2.1-7t64 libfcgi-bin libfcgi-perl libfcgi0t64 libhtml-par
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl liblwp-mediatypes-perl libmecab2 libprotobuf-l
  libtimedate-perl liburi-perl mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0 mysql-common mysql-server mysql-
  mysql-server-core-8.0
0 upgraded, 28 newly installed, 0 to remove and 0 not upgraded.
Need to get 29.6 MB of archives.
After this operation, 243 MB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu noble/main amd64 mysql-common all 5.8+1.1.0build1 [6,746 B]
Get:2 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 mysql-client-core-8.0 amd64 8.0.42-0ubuntu0.24.04.2 [2,728 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 mysql-client-8.0 amd64 8.0.42-0ubuntu0.24.04.2 [22.4 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu noble/main amd64 libevent-pthreads-2.1-7t64 amd64 2.1.12-stable-9ubuntu2 [7,982 B]
```

## Step 2: Secure MySQL Installation

**# Run security script**

**sudo mysql\_secure\_installation**

**# Follow prompts:**

**# VALIDATE PASSWORD COMPONENT: n**

**# Remove anonymous users: y**

**# Disallow root login remotely: y**

**# Remove test database: y**

**# Reload privilege tables: y**

## Step 3: Configure MySQL Service

**# Enable MySQL to start on boot**

```
sudo systemctl enable mysql
```

```
# Start MySQL service
```

```
sudo systemctl start mysql
```

```
wikiuser@mediawikiserver:~$ sudo systemctl start mysql
wikiuser@mediawikiserver:~$ sudo systemctl enable mysql
Synchronizing state of mysql.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable mysql
wikiuser@mediawikiserver:~$ sudo mysql_secure_installation

Securing the MySQL server deployment.

Connecting to MySQL using a blank password.

VALIDATE PASSWORD COMPONENT can be used to test passwords
and improve security. It checks the strength of password
and allows the users to set only those passwords which are
secure enough. Would you like to setup VALIDATE PASSWORD component?

Press y|Y for Yes, any other key for No: n
```

## MySQL Root Access Configuration

### Step 3: Configure Root User

```
# Access MySQL as root
```

```
$sudo mysql
```

```
# Configure root user authentication
```

```
$ALTER USER 'root'@'localhost' IDENTIFIED WITH
mysql_native_password BY 'SecureRootPassword123!';
```

```
$FLUSH PRIVILEGES;
```

```
$EXIT;
```

```
# Test root login
```

```
$mysql -u root -p
```

```
# Enter password: SecureRootPassword123!
```

```
Press y|Y for Yes, any other key for No: n
Skipping password set for root as authentication with auth_socket is used by default.
If you would like to use password authentication instead, this can be done with the "ALTER_USER" command.
See https://dev.mysql.com/doc/refman/8.0/en/alter-user.html#alter-user-password-management for more information.

By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) : y
Success.

Normally, root should only be allowed to connect from
'localhost'. This ensures that someone cannot guess at
the root password from the network.

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : y
Success.

By default, MySQL comes with a database named 'test' that
anyone can access. This is also intended only for testing,
and should be removed before moving into a production
environment.

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : y
- Dropping test database...
Success.

- Removing privileges on test database...
Success.

Reloading the privilege tables will ensure that all changes
made so far will take effect immediately.

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : y
Success.

All done!
wikiluser@mediawikiserver:~$
```

## 4.4 Install PHP

### PHP Installation and Configuration

#### Step 1: Install PHP and Extensions

```
# Install PHP and required modules for MediaWiki
```

- To install PHP open terminal and run the below command.

```
$ sudo apt install php -y
```



```
wikiuser@mediawikiserver:~$ sudo apt install php libapache2-mod-php php-mysql php-xml php-mbstring php-intl php-gd php-cli unzip -y
[sudo] password for wikiuser:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libapache2-mod-php8.3 php-common php8.3 php8.3-cli php8.3-common php8.3-gd php8.3-intl php8.3-mbstring php8.3-mysql php8.3-openssl php8.3-readline
  php8.3-xml
Suggested packages:
  php-pear zip
The following NEW packages will be installed:
  libapache2-mod-php libapache2-mod-php8.3 php php-cli php-common php-gd php-intl php-mbstring php-mysql php-xml php8.3 php8.3-cli php8.3-common php8.3-gd
  php8.3-intl php8.3-mbstring php8.3-mysql php8.3-openssl php8.3-readline php8.3-xml unzip
0 upgraded, 21 newly installed, 0 to remove and 0 not upgraded.
Need to get 6,063 kB of archives.
After this operation, 25.8 MB of additional disk space will be used.
Get:1 http://in.archive.ubuntu.com/ubuntu noble/main amd64 php-common all 2:93ubuntu2 [13.9 kB]
Get:2 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-common amd64 8.3.6-0ubuntu0.24.04.5 [740 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-openssl amd64 8.3.6-0ubuntu0.24.04.5 [371 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-readline amd64 8.3.6-0ubuntu0.24.04.5 [13.5 kB]
Get:5 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 php8.3-cli amd64 8.3.6-0ubuntu0.24.04.5 [1,915 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu noble-updates/main amd64 libapache2-mod-php8.3 amd64 8.3.6-0ubuntu0.24.04.5 [1,851 kB]
45% [6 libapache2-mod-php8.3 0 B/1,851 kB 0%]
```

## # Restart Apache to load new PHP configuration

Type the command:

`$sudo systemctl restart apache2`

For checking the status:

`$sudo systemctl status apache2`

```
wikiuser@mediawikiserver:~$ sudo systemctl restart apache2
wikiuser@mediawikiserver:~$ sudo systemctl status apache2
[sudo] password for wikiuser:
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Fri 2025-08-08 12:52:24 UTC; 2h 59min ago
     Docs: https://httpd.apache.org/docs/2.4/
  Process: 12466 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
 Main PID: 12469 (apache2)
    Tasks: 6 (limit: 4605)
   Memory: 13.1M (peak: 13.3M)
      CPU: 475ms
   CGroup: /system.slice/apache2.service
           └─12469 /usr/sbin/apache2 -k start
             └─12471 /usr/sbin/apache2 -k start
               └─12472 /usr/sbin/apache2 -k start
                 └─12473 /usr/sbin/apache2 -k start
                   └─12474 /usr/sbin/apache2 -k start
                     └─12475 /usr/sbin/apache2 -k start

Aug 08 12:52:24 mediawikiserver systemd[1]: Starting apache2.service - The Apache HTTP Server...
Aug 08 12:52:24 mediawikiserver apachectl[12468]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set
Aug 08 12:52:24 mediawikiserver systemd[1]: Started apache2.service - The Apache HTTP Server.
wikiuser@mediawikiserver:~$
```

## Step 2: Test PHP Installation

# Create PHP info file for testing

```
echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php
```

```
wikiuser@mediawikiserver:~$ echo "<?php phpinfo(); ?>" | sudo tee /var/www/html/info.php
<?php phpinfo(); ?>
wikiuser@mediawikiserver:~$ ls -l /var/www/html/
total 16
-rw-r--r-- 1 root root 10671 Aug  8 09:36 index.html
-rw-r--r-- 1 root root   20 Aug  8 15:59 info.php
wikiuser@mediawikiserver:~$
```

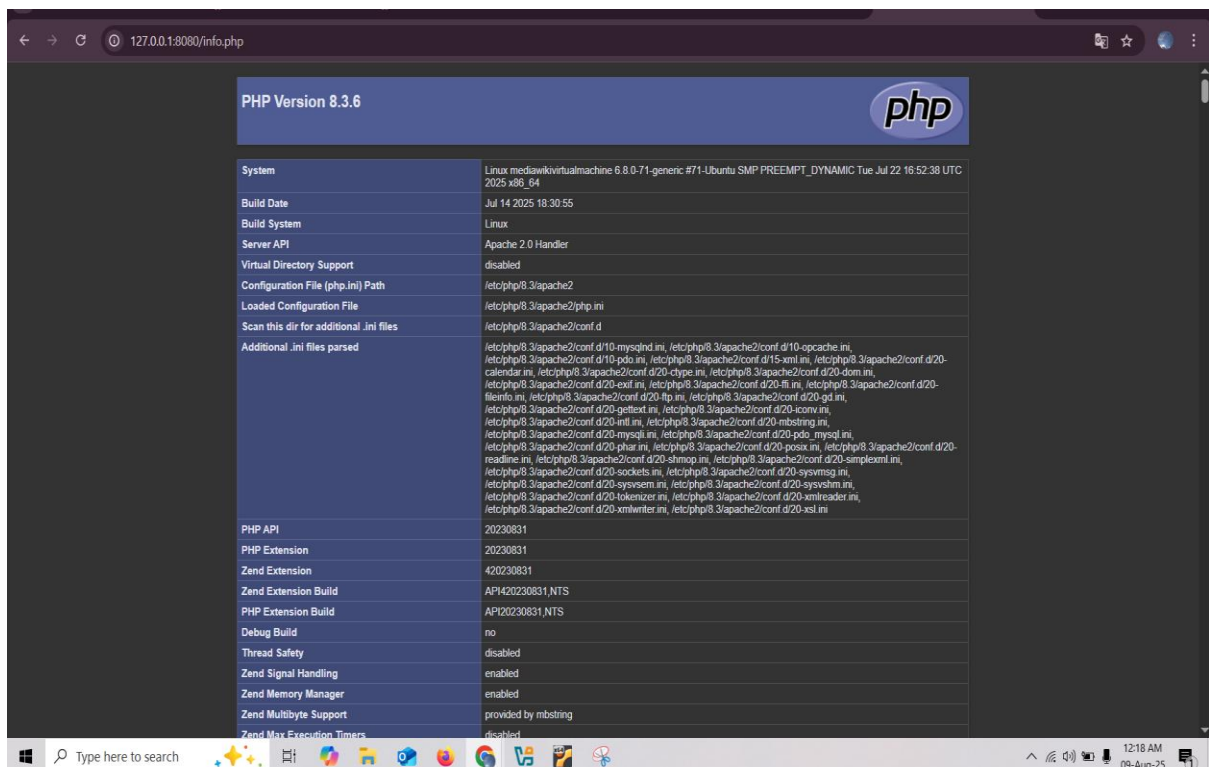
# Restart Apache to load new PHP configuration

```
sudo systemctl restart apache2
```

## Step 3: Web-based PHP Testing

# Access via port forwarding from host browser:

# <http://localhost:8080/info.php>



## 5. Database Configuration

### MediaWiki Database Setup

#### Database and User Creation

##### Step 1: Create MediaWiki Database

# Login to MySQL as root

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

Execute the following SQL commands:

- Create a new database named 'wikidb' for MediaWiki.

```
$ CREATE DATABASE wikidb;
```

- Create a new MySQL user 'wikiuser' with a secure password.

```
$ CREATE USER 'wikiuser'@'localhost' IDENTIFIED BY  
'strongpassword';
```

- Give full access to 'wikiuser' on the 'wikidb' database.

```
$ GRANT ALL PRIVILEGES ON wikidb.* TO  
'wikiuser'@'localhost';
```

- Apply changes and exit the MySQL console.

```
$ FLUSH PRIVILEGES;
```

```
$ EXIT;
```

```
wikiuser@mediawikiserver:/tmp$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.42-0ubuntu0.24.04.2 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> CREATE DATABASE wikidb;
Query OK, 1 row affected (0.14 sec)

mysql> CREATE USER 'wikiuser'@'localhost' IDENTIFIED BY 'password';
Query OK, 0 rows affected (0.06 sec)

mysql> GRANT ALL PRIVILEGES ON wikidb.* TO 'wikiuser'@'localhost';
Query OK, 0 rows affected (0.06 sec)

mysql> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.04 sec)

mysql> EXIT;
Bye
wikiuser@mediawikiserver:/tmp$ _
```

## 6. MediaWiki Installation

### 6.1 Download and Extract

#### MediaWiki Source Download

##### Step 1: Download MediaWiki

# Navigate to temporary directory

```
cd /tmp
```

# Download latest stable MediaWiki

```
wget https://releases.wikimedia.org/mediawiki/1.39/mediawiki-1.39.5.tar.gz
```

```
wikiuser@mediawikiserver:~$ cd /tmp
wikiuser@mediawikiserver:/tmp$ wget https://releases.wikimedia.org/mediawiki/1.42/mediawiki-1.42.1.tar.gz
--2025-08-08 16:11:57-- https://releases.wikimedia.org/mediawiki/1.42/mediawiki-1.42.1.tar.gz
Resolving releases.wikimedia.org (releases.wikimedia.org)... 103.102.166.224, 2001:df2:e500:edia::1
Connecting to releases.wikimedia.org (releases.wikimedia.org)|103.102.166.224|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 89149379 (85M) [application/x-gzip]
Saving to: 'mediawiki-1.42.1.tar.gz'

mediawiki-1.42.1.tar.gz      100%[=====] 85.02M  4.70MB/s  in 23s

2025-08-08 16:12:21 (3.70 MB/s) - 'mediawiki-1.42.1.tar.gz' saved [89149379/89149379]

wikiuser@mediawikiserver:/tmp$
```

## Step 2: Extract and Install MediaWiki

# Extract MediaWiki archive

```
$tar -xzf mediawiki-1.39.5.tar.gz
```

# Move to web directory

```
$sudo mv mediawiki-1.39.5 /var/www/html/mediawiki
```

# Set proper ownership

```
$sudo chown -R www-data:www-data /var/www/html/mediawiki
```

# Set appropriate permissions

```
sudo chmod -R 755 /var/www/html/mediawiki
```

# Verify installation

```
ls -la /var/www/html/mediawiki/
```

```
wikiuser@mediawikiserver:/tmp$ sudo mv mediawiki-1.42.1 /var/www/html/mediawiki
wikiuser@mediawikiserver:/tmp$ sudo chown -R www-data:www-data /var/www/html/mediawiki
wikiuser@mediawikiserver:/tmp$ sudo chmod -R 755 /var/www/html/mediawiki
wikiuser@mediawikiserver:/tmp$ sudo systemctl restart apache2
```

## 6.2 Complete Web Installation

### MediaWiki Web-based Setup

#### Step 1: Access MediaWiki Setup

1. Open web browser and navigate to:
  - Local VM: <http://localhost/mediawiki/>
  - From host (port forwarding):  
<http://localhost:8080/mediawiki/>
2. Click "set up the wiki" link



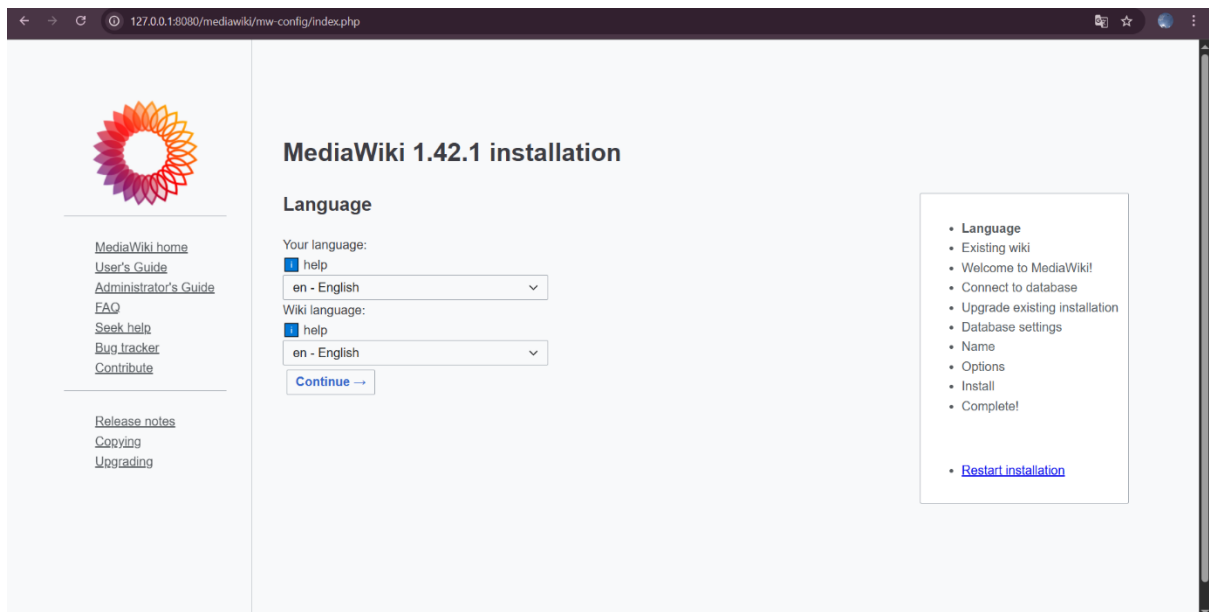
#### Step 2: Follow Setup Wizard

##### Language Selection:

Wiki language: English

Your language: English

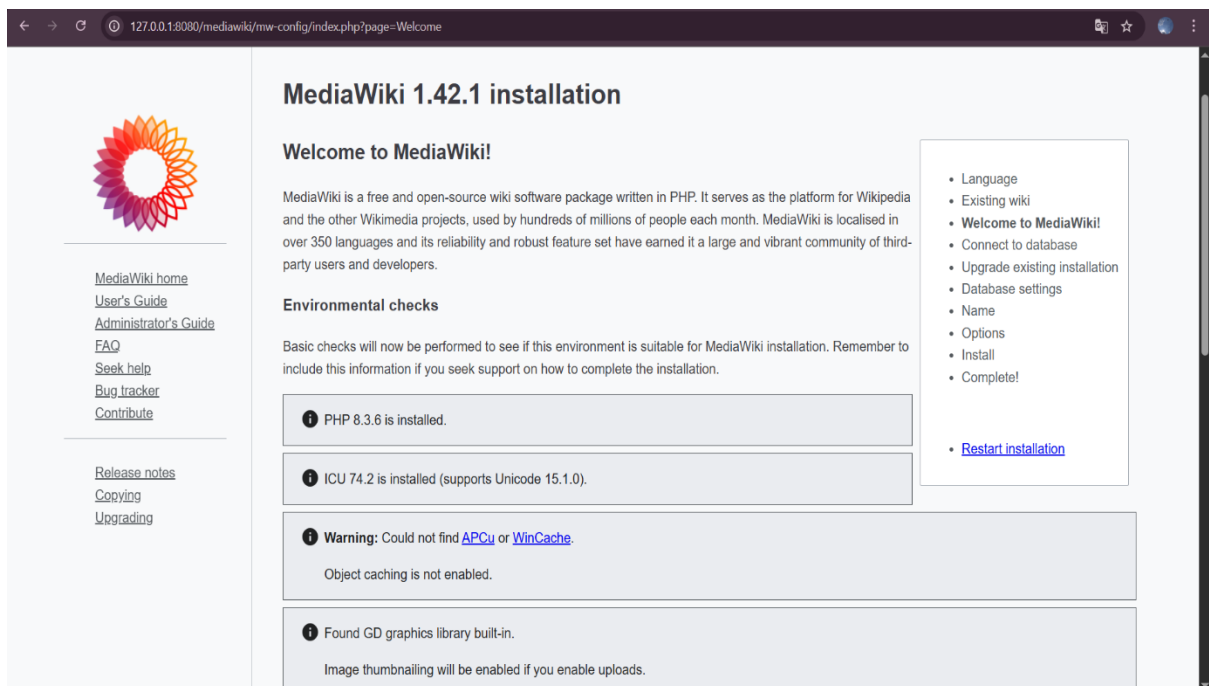
→ Continue



The screenshot shows the MediaWiki 1.42.1 installation page. On the left is a sidebar with the MediaWiki logo and links: MediaWiki home, User's Guide, Administrator's Guide, FAQ, Seek help, Bug tracker, and Contribute. Below these are links for Release notes, Copying, and Upgrading. The main content area is titled 'MediaWiki 1.42.1 installation' and has a 'Language' section. It asks for 'Your language:' and 'Wiki language:', both with a dropdown menu set to 'en - English' and a 'Continue →' button. On the right, a box lists the installation steps: Language, Existing wiki, Welcome to MediaWiki!, Connect to database, Upgrade existing installation, Database settings, Name, Options, Install, Complete!, and a 'Restart installation' link.

## Environment Check:

- Verify all requirements show green checkmarks:
  - PHP 7.4.x ✓
  - MySQL connectivity ✓
  - Required PHP extensions ✓



The screenshot shows the 'Environmental checks' section of the MediaWiki 1.42.1 installation. The page title is 'MediaWiki 1.42.1 installation' and the subtitle is 'Welcome to MediaWiki!'. A paragraph describes MediaWiki as a free and open-source wiki software package. The 'Environmental checks' section states that basic checks will be performed to see if the environment is suitable. Below this are four check boxes: 'PHP 8.3.6 is installed.', 'ICU 74.2 is installed (supports Unicode 15.1.0).', 'Warning: Could not find APCu or WinCache. Object caching is not enabled.', and 'Found GD graphics library built-in. Image thumbnailing will be enabled if you enable uploads.' On the right, a box lists the installation steps: Language, Existing wiki, Welcome to MediaWiki!, Connect to database, Upgrade existing installation, Database settings, Name, Options, Install, Complete!, and a 'Restart installation' link.

- → Continue

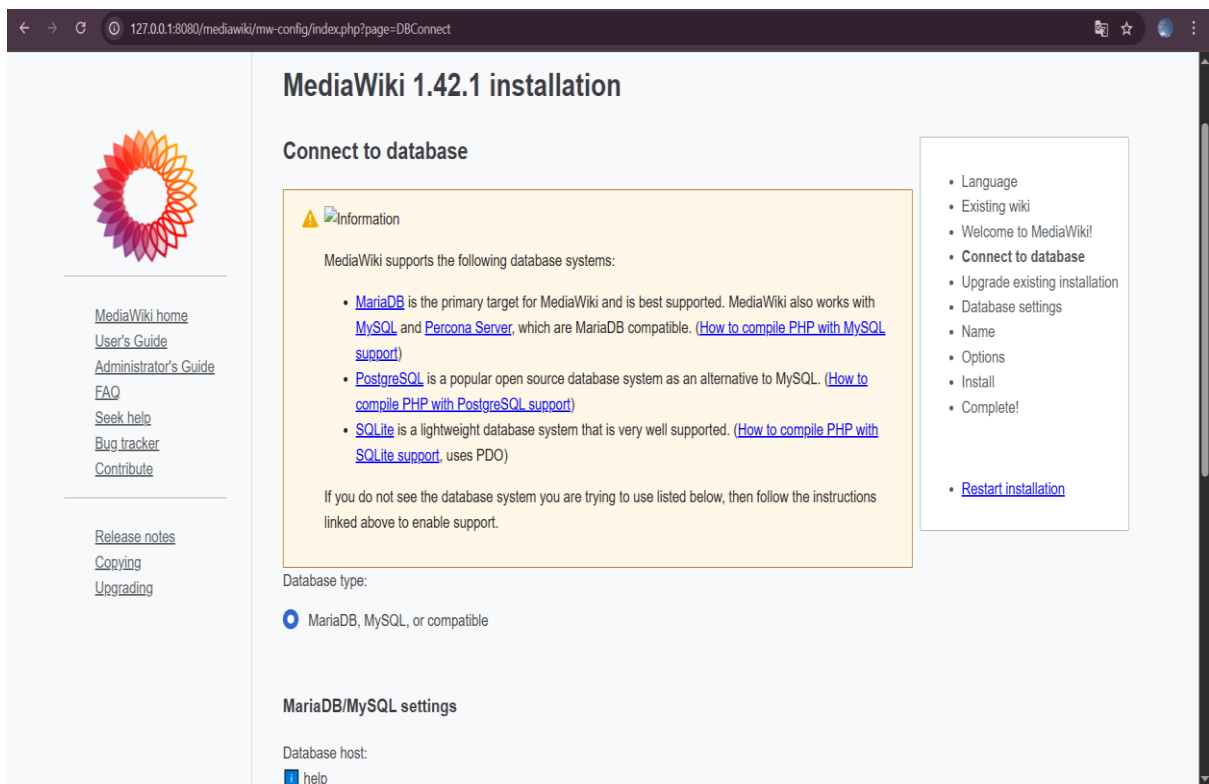
## Database Configuration:

### Database Settings:

- Database type: MySQL (or compatible)
- Database host: localhost
- Database name: mediawiki\_db
- Database table prefix: mw\_
- Database username: mediawiki\_user
- Database password: MediaWikiSecurePass123!

### Advanced Settings:

- Database character set: UTF-8
- Storage engine: InnoDB



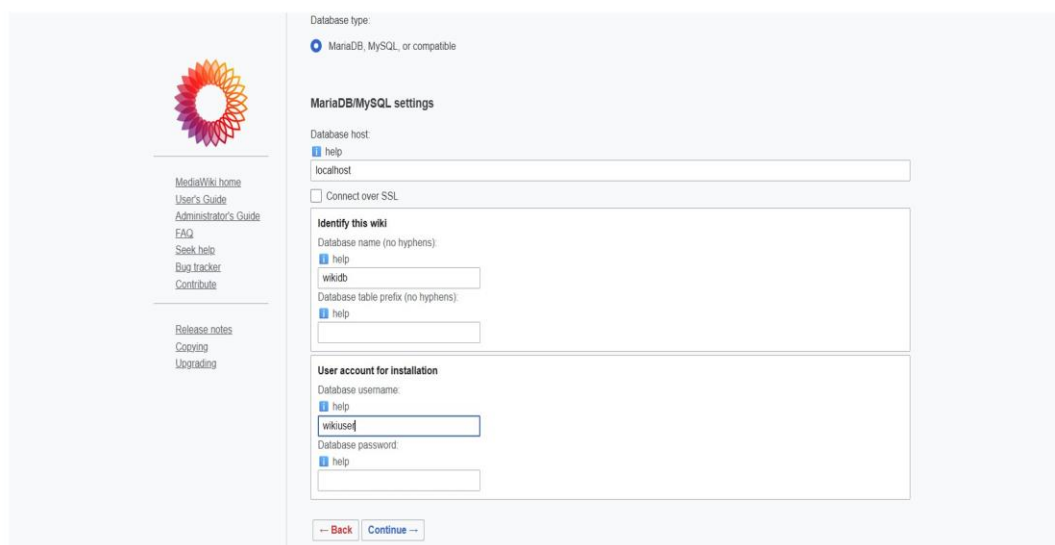


→ Continue

## Database Settings:

### Installation Options:

- Use same account for installation: Yes
- Create database if it doesn't exist: No (already created)



The screenshot shows the MediaWiki database settings installation screen. On the left is a sidebar with the MediaWiki logo and links: [MediaWiki home](#), [User's Guide](#), [Administrator's Guide](#), [FAQ](#), [Seek help](#), [Bug tracker](#), [Contribute](#), [Release notes](#), [Coping](#), and [Upgrading](#). The main content area is titled 'Database type:' with a radio button selected for 'MariaDB, MySQL, or compatible'. Below this is the 'MariaDB/MySQL settings' section. It includes a 'Database host:' field with a 'help' link and the value 'localhost'. There is an unchecked checkbox for 'Connect over SSL'. The 'Identify this wiki' section has a 'Database name (no hyphens):' field with a 'help' link and the value 'wikidb', and a 'Database table prefix (no hyphens):' field with a 'help' link and an empty field. The 'User account for installation' section has a 'Database username:' field with a 'help' link and the value 'wikiseid', and a 'Database password:' field with a 'help' link and an empty field. At the bottom are '-- Back' and 'Continue -->' buttons.

→ Continue

## Name and Administrator Account:

### Wiki Configuration:

- Name of wiki: [Company Name] Knowledge Base
- Project namespace: Same as wiki name

### Administrator Account:

- Username: admin
- Password: [Strong Administrator Password]
- Password confirm: [Repeat Password]
- Email address: [admin@company.local](mailto:admin@company.local)

MediaWiki 1.42.1 installation

**Name**

Name of wiki:

Project namespace:

☒ Same as the wiki name:

☐ Project

☐ Other (specify)

**Administrator account**

Your username:

Password:

Password again:

Email address:

☐ Subscribe to the [release announcements mailing list](#).

[Restart installation](#)

→ Continue

## Options:

### Additional Settings:

- Ask me more questions: No (use defaults)
- Email settings: Skip for now
- Extensions: Skip for now
- Images and file uploads: Enable file uploads ✓
- Logo: Skip (can be configured later)
- Advanced configuration: Skip



[MediaWiki home](#)  
[User's Guide](#)  
[Administrator's Guide](#)  
[FAQ](#)  
[Seek help](#)  
[Bug tracker](#)  
[Contribute](#)

[Release notes](#)  
[Copying](#)  
[Upgrading](#)

## MediaWiki 1.42.1 installation

### Install


 Information  
 By pressing "Continue →", you will begin the installation of MediaWiki. If you still want to make changes, press "← Back".

[← Back](#)
[Continue →](#)

- Language
- Existing wiki
- Welcome to MediaWiki!
- Connect to database
- Upgrade existing installation
- Database settings
- Name
- Options
- **Install**
- Complete!

[Restart installation](#)

→ Continue




[MediaWiki home](#)  
[User's Guide](#)  
[Administrator's Guide](#)  
[FAQ](#)  
[Seek help](#)  
[Bug tracker](#)  
[Contribute](#)

[Release notes](#)  
[Copying](#)  
[Upgrading](#)

## MediaWiki 1.42.1 installation

### Install

- Setting up database... done
- Creating tables, step one... done
- Creating database user... done
- Creating tables, step two... done
- Populating default interwiki table... done
- Initializing statistics... done
- Generating secret keys... done
- Prevent running unneeded updates... done
- Restoring MediaWiki services... done
- Creating administrator user account... done
- Creating main page with default content... done

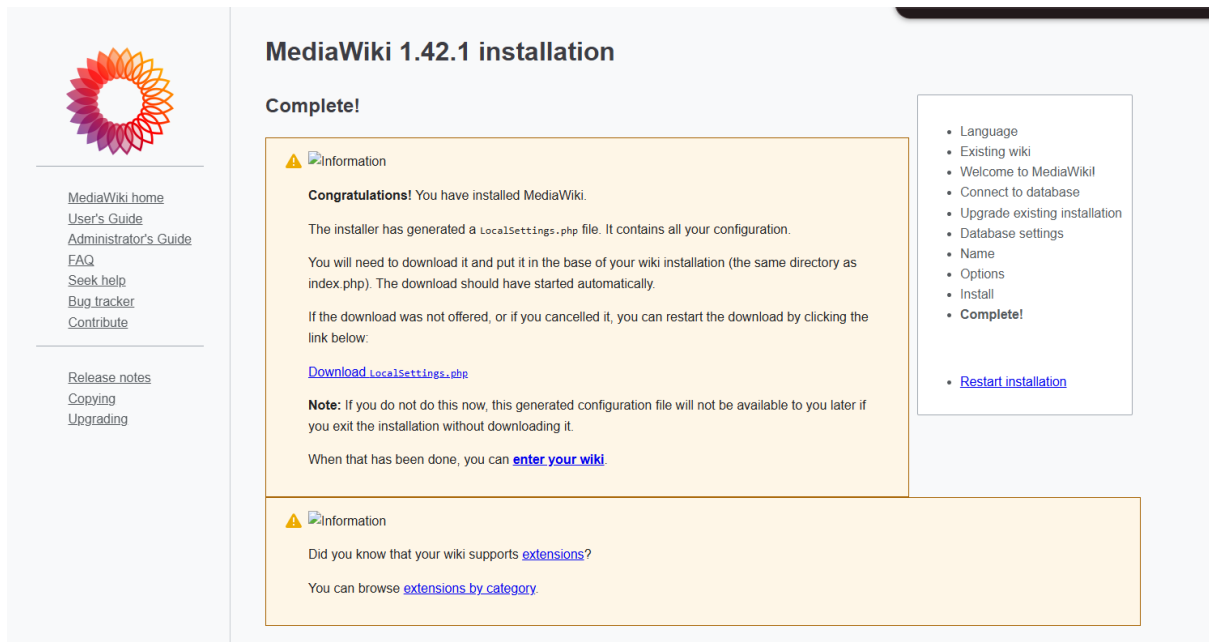
 Database was successfully set up

[Continue →](#)

- Language
- Existing wiki
- Welcome to MediaWiki!
- Connect to database
- Upgrade existing installation
- Database settings
- Name
- Options
- **Install**
- Complete!

[Restart installation](#)

→ Continue



Installation completed.

### Step 3: Download and Install LocalSettings.php

1. **Download LocalSettings.php** file when prompted
2. **Transfer file to VM using one of these methods:**

#### Method A: Shared Folder (Recommended)

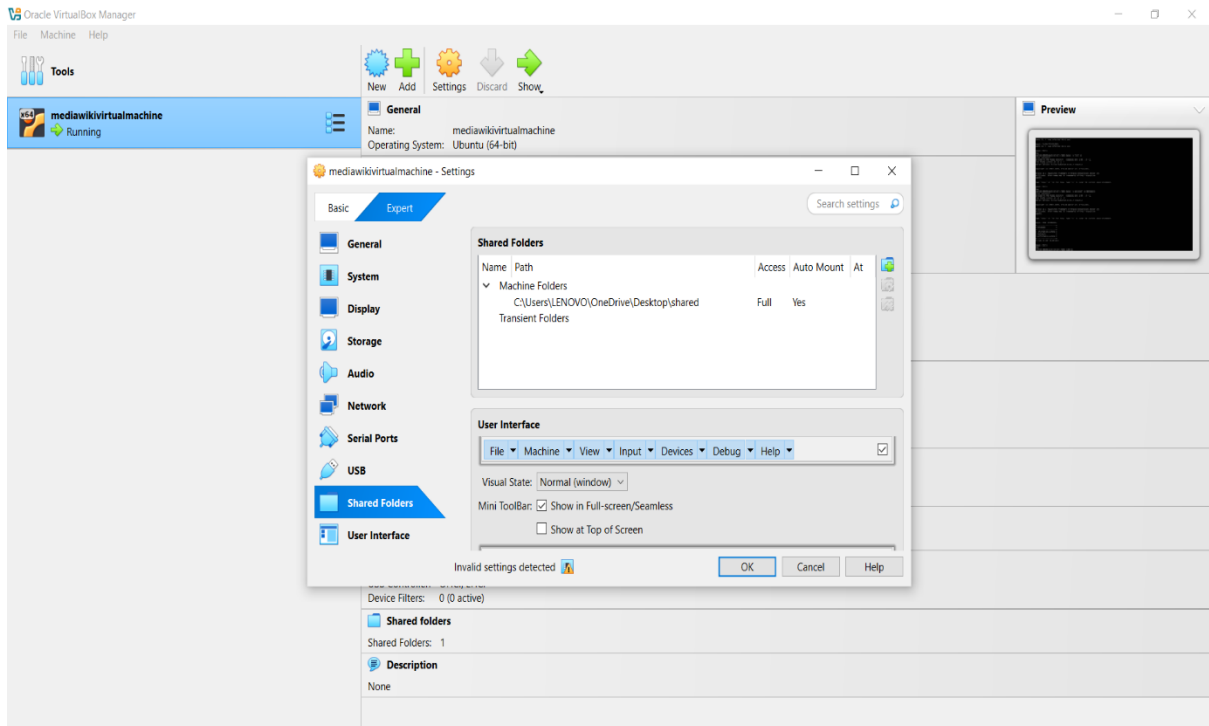
# On host: Create shared folder

# 1. Create folder on Desktop: VM-Shared

# 2. Copy LocalSettings.php to this folder

# 3. In VirtualBox: Devices → Shared Folders → Shared Folder Settings

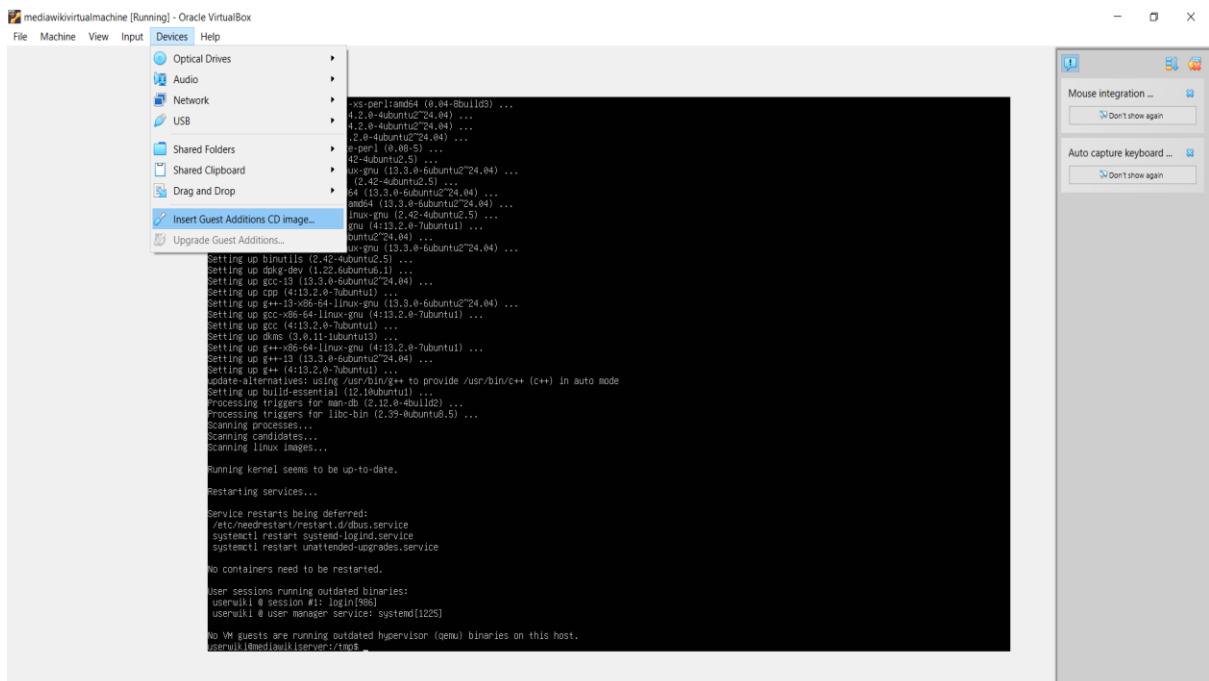
# 4. Add folder: Path=Desktop\VM-Shared, Name=shared, Auto-mount=✓



# In VM: Install Guest Additions

\$sudo apt install build-essential dkms linux-headers-\$(uname -r) -y

# Insert Guest Additions CD via VirtualBox menu



\$sudo mkdir /mnt/cdrom

\$sudo mount /dev/cdrom /mnt/cdrom

\$cd /mnt/cdrom

\$sudo ./VBoxLinuxAdditions.run

# Reboot VM

sudo reboot

# After reboot, copy LocalSettings.php

```
Ubuntu 24.04.3 LTS mediawikiserver tty1
mediawikiserver login: userwiki
Password:
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.8.0-71-generic x86_64)

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

System information as of Sat Aug  9 09:14:57 AM UTC 2025

System load:        1.01
Usage of /:         50.8% of 11.21GB
Memory usage:       28%
Swap usage:         0%
Processes:          126
Users logged in:    0
IPv4 address for enp0s3: 10.0.2.15
IPv6 address for enp0s3: fd17:625c:f037:2:a00:27ff:fe89:5575

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

userwiki@mediawikiserver:~$ ls /media/sf_shared/
LocalSettings.php
userwiki@mediawikiserver:~$ sudo cp /media/sf_shared/LocalSettings.php /var/www/html/mediawiki/
[sudo] password for userwiki:
Sorry, try again.
[sudo] password for userwiki:
userwiki@mediawikiserver:~$ sudo chown www-data:www-data /var/www/html/mediawiki/LocalSettings.php
userwiki@mediawikiserver:~$
```

\$sudo cp /media/sf\_shared/LocalSettings.php  
/var/www/html/mediawiki/

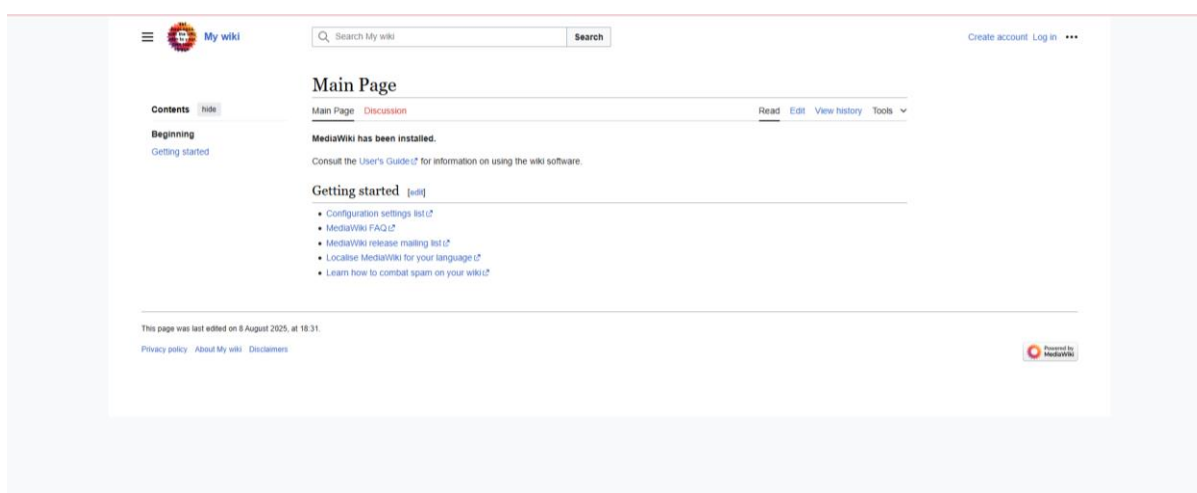
\$sudo chown www-data:www-data  
/var/www/html/mediawiki/LocalSettings.php

\$sudo chmod 644 /var/www/html/mediawiki/LocalSettings.php

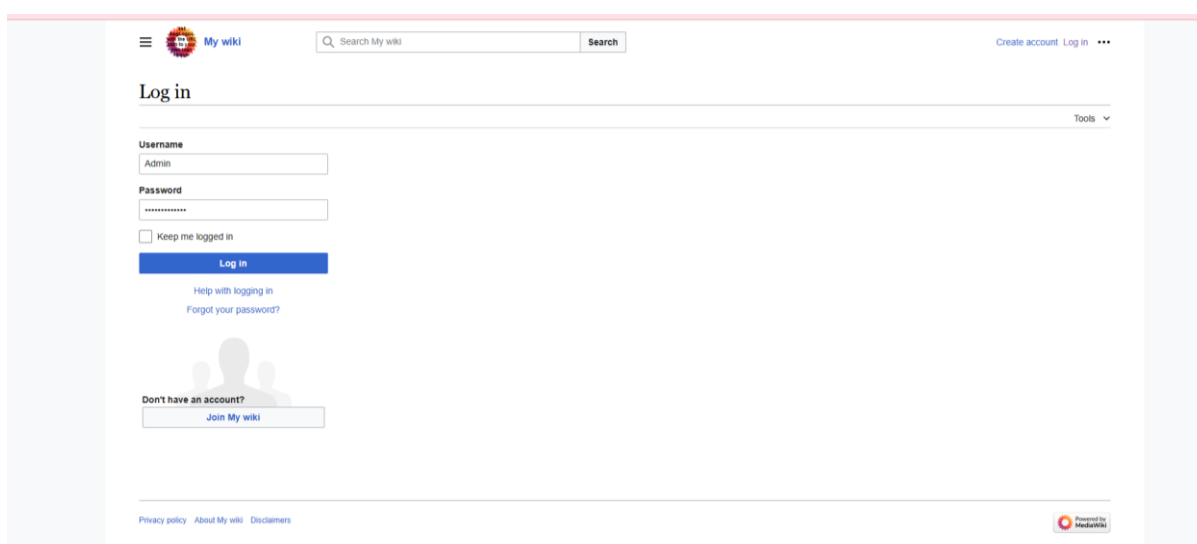
```
wikiuser@mediawikiserver:/tmp$ sudo mkdir -p /mnt/Downloads
[sudo] password for wikiuser:
wikiuser@mediawikiserver:/tmp$ sudo mount -t vboxsf Downloads /mnt/Downloads
wikiuser@mediawikiserver:/tmp$ sudo cp /mnt/Downloads/LocalSettings.php /var/www/html/mediawiki/
wikiuser@mediawikiserver:/tmp$ sudo chown www-data:www-data /var/www/html/mediawiki/LocalSettings.php
chown: invalid group: 'www-data:www-data'
wikiuser@mediawikiserver:/tmp$ sudo chown www-data:www-data /var/www/html/mediawiki/LocalSettings.php
wikiuser@mediawikiserver:/tmp$ sudo chmod 644 /var/www/html/mediawiki/LocalSettings.php
```

- After this in the mediawiki site main page do rest of the setup:

Type <http://127.0.0.1:8080/mediawiki/index.php> in the local machine.



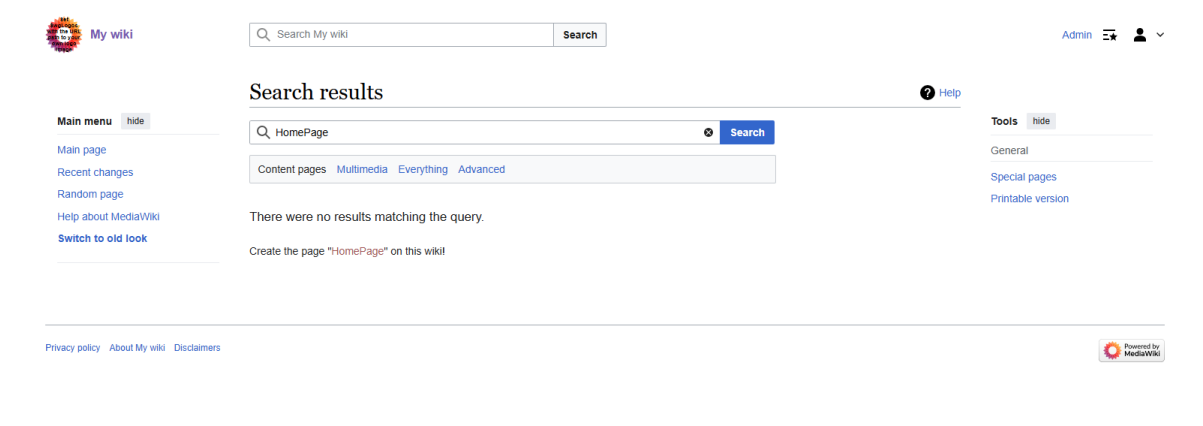
- Login by giving the Admin username and password



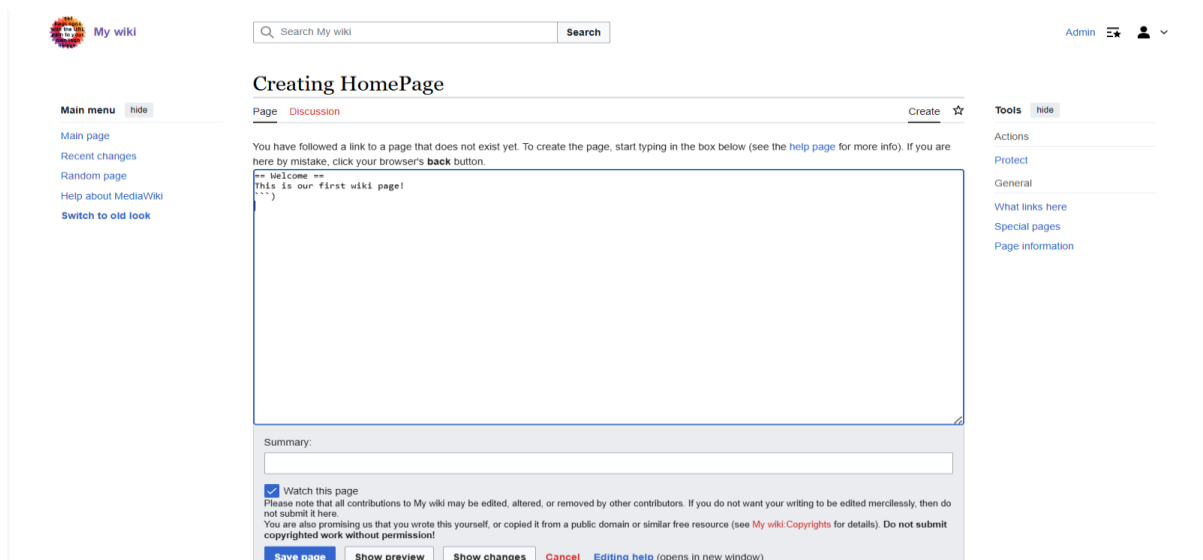
## Create Your First Wiki Page

- In the search bar, type a page name (example: HomePage) and press Enter.
- MediaWiki will say the page doesn't exist — click Create this page.
- Type your content  
example:

== Welcome == This is our first wiki page!

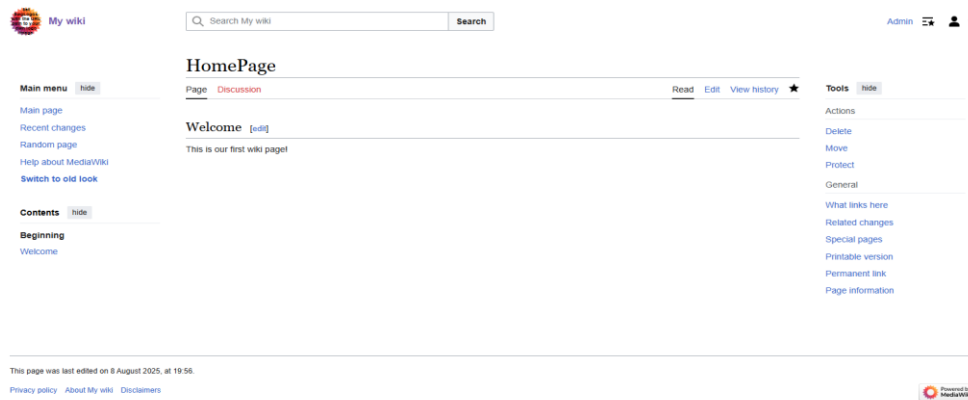


- Save the home page.



- Mediawiki home page is created.





## 7.If Linux Fails: Use WAMP on Windows

Steps:

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

## 8. Backup Mechanism Setup

### 8.1 Backup Components

#### Backup Strategy Overview

##### Components Requiring Backup:

1. **Database Content:** Complete MediaWiki database with all articles, users, and metadata
2. **File Uploads:** User-uploaded images and media files
3. **Configuration Files:** LocalSettings.php and custom configurations
4. **Apache Configuration:** Virtual host and custom Apache settings

##### Backup Requirements:

- **Frequency:** Daily automated backups
- **Retention Policy:** 7 daily, 4 weekly, 12 monthly backups
- **Storage Location:** /opt/backups/ with organized subdirectories
- **Verification:** Automated backup integrity checking
- **Logging:** Comprehensive backup operation logging

## Backup Mechanism Setup

### Understanding Backup Requirements

Backing up MediaWiki involves safeguarding both the database and the wiki's files. The database stores all page content, user data, and metadata, while the file system contains uploaded images and configuration files (notably LocalSettings.php). Losing either would cause loss of data or service interruption.

## 8.2 Writing a Backup Script

I created a shell script `/usr/local/bin/backup_mediawiki.sh` to automate backup creation:

### 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 "
```

```
GNU nano 7.2 /home/wikiuser/mediawiki-backups/backup.sh *
#!/bin/bash
BACKUP_DIR=~/.mediawiki-backups/$(date +%F)
mkdir -p "$BACKUP_DIR"

# Backup MySQL database
mysqldump -u root -pmediawiki@123 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`

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

# Backup MySQL database
mysqldump -u root -pmediawiki@123 wikidb > "$BACKUP_DIR/wikidb.sql"

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

```
wikiuser@mediawikiserver:/tmp$ chmod +x ~/.mediawiki-backups/backup.sh
wikiuser@mediawikiserver:/tmp$
```

## 8.3 Scheduling the Backup

To automate backups, I scheduled the script via cron. I edited the root user's crontab with:

### Automate with Cron

`$ crontab-e`

```
wikiuser@mediawikiserver:/tmp$ crontab -e
no crontab for wikiuser - using an empty one

Select an editor. To change later, run 'select-editor'.
 1. /bin/nano          <---- easiest
 2. /usr/bin/vim.basic
 3. /usr/bin/vim.tiny
 4. /bin/ed

Choose 1-4 [1]:
```

- **Add this line for daily backup at 2AM:**

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

- **To view the logs run**

`$ ls -l /home/wikiuser/mediawiki-backups`

```
wikiuser@mediawikiserver:/tmp$ sudo ls -l /home/wikiuser/mediawiki-backups
total 24
drwxrwxr-x  2 wikiuser wikiuser 4096 Aug  9 11:43 2025-08-09
-rw-rw-r--  1 wikiuser wikiuser 1089 Aug  9 13:17 backup.log
-rwxrwxr-x  1 wikiuser wikiuser  889 Aug  9 13:48 backup.sh
drwxr-xr-x 14 wikiuser wikiuser 4096 Aug  9 12:32 mediawiki_2025-08-09_12-31-57
drwxr-xr-x 14 wikiuser wikiuser 4096 Aug  9 12:37 mediawiki_2025-08-09_12-37-04
drwxr-xr-x 14 wikiuser wikiuser 4096 Aug  9 13:17 mediawiki_2025-08-09_13-17-01
-rw-rw-r--  1 wikiuser wikiuser   0 Aug  9 12:32 wiki_db_2025-08-09_12-31-57.sql
-rw-rw-r--  1 wikiuser wikiuser   0 Aug  9 12:37 wiki_db_2025-08-09_12-37-04.sql
-rw-rw-r--  1 wikiuser wikiuser   0 Aug  9 13:17 wiki_db_2025-08-09_13-17-01.sql
wikiuser@mediawikiserver:/tmp$
```

This instructs the system to run the backup script every day at 2:00 AM and logs output for review.

## 9. Troubleshooting and Lessons Learned

### Common Issues and Solutions

Issue	Possible Cause	Solution
Apache service not starting	Port 80 already in use	Stop conflicting service ( <code>\$ sudo systemctl stop apache2</code> on other instance) or change Apache port in <code>/etc/apache2/ports.conf</code>
MediaWiki page not loading	Apache or MySQL service stopped	Restart services: <code>\$ sudo systemctl restart apache2 mysql</code>
“Error establishing a database connection”	Incorrect DB username/password in <code>LocalSettings.php</code>	Update credentials in <code>LocalSettings.php</code> and verify MySQL user permissions
phpinfo() not displaying	PHP module not installed or enabled	Install PHP: <code>\$ sudo apt install php libapache2-mod-php</code> and restart Apache
Images not uploading	images/ folder permissions issue	Grant correct permissions: <code>\$ sudo chown -R www-data:www-data /var/www/html/mediawiki/images</code>
Backup script fails	Missing mysqldump or permission error	Install MySQL client tools, ensure DB user has SELECT privilege
Restore fails	Incorrect backup file path or corrupted file	Verify file path and integrity; re-run backup and restore
WAMP not running on Windows	Port conflict or missing dependencies	Change Apache/MySQL ports in WAMP settings and restart services

## Lessons Learned

During the setup, several issues were encountered and resolved:

- **Missing PHP extensions** caused errors during MediaWiki setup; installing php-mbstring and php-intl resolved these.
- **File permissions** needed correction for Apache's user (www-data) to access the MediaWiki directory properly.
- **MySQL connection issues** were due to incorrect credentials or the MySQL service not running; verifying status and correct credentials fixed this.
- **Apache errors (403 or 500)** were resolved by checking error logs at /var/log/apache2/error.log and correcting configuration issues.
- Testing backups by restoring on a test VM confirmed their validity.

These lessons highlight the importance of verifying prerequisites and carefully reviewing logs when errors occur.

## 10.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.



## **11. Conclusion**

This document detailed a comprehensive approach to installing and configuring MediaWiki on a Linux VM with a LAMP stack, followed by establishing an automated backup strategy. The instructions included all critical steps, from VM preparation to web installation and backup automation, with troubleshooting tips and alternative solutions for Windows environments.

By following this guide, one can deploy a secure, scalable, and maintainable wiki system suitable for collaborative knowledge sharing within organizations.

## 12. Appendix: Commands Summary

```
$sudo apt update && sudo apt upgrade -y
```

```
$sudo apt install apache2 mysql-server php libapache2-mod-php php-mysql php-intl php-mbstring php-xml php-gd php-curl -y
```

```
$sudo mysql_secure_installation
```

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

```
$CREATE DATABASE mediawiki;
```

```
$CREATE USER 'wikiuser'@'localhost' IDENTIFIED BY 'StrongPassword123!';
```

```
$GRANT ALL PRIVILEGES ON mediawiki.* TO 'wikiuser'@'localhost';
```

```
$FLUSH PRIVILEGES;
```

```
$EXIT;
```

```
$cd /var/www/html
```

```
$sudo wget https://releases.wikimedia.org/mediawiki/1.39/mediawiki-1.39.3.tar.gz
```

```
$sudo tar -xvzf mediawiki-1.39.3.tar.gz
```

```
$sudo mv mediawiki-1.39.3 mediawiki
```

```
$sudo chown -R www-data:www-data mediawiki
```

```
$sudo nano /etc/apache2/sites-available/mediawiki.conf
```

```
# (Paste apache config here)
```

```
$sudo a2ensite mediawiki
```

```
$sudo a2enmod rewrite
```

```
$sudo systemctl restart apache2
```

```
$sudo chmod +x /usr/local/bin/backup_mediawiki.sh
```

```
$sudo crontab -e
```

```
# Add cron job for backup script
```