# **Web Solution With Wordpress**

In this project, you will have a feel of what it means to implement a basic web solution while also focusing on storage management.

At the end of this project, you will…

1. Enjoy the experience of how computers network with each other, and how to troubleshoot simple networking issues that may arise.
2. Have a solid grasp of Storage Management with hands On experience with disk Partitioning & Logical Volume Management (LVM)

As a **DevOps** engineer, Linux administration is one of the day to day core functions, and a solid grasp of this skill goes a long way to determine how successful you will be.

**Project 6** is designed to get your hands really dirty on Linux, by getting you to implement a web solution using **Wordpress**.

WordPress is a free and open-source content management system written in **PHP** and paired with **MySQL** or **MariaDB** as its backend Relational Database Management System (RDBMS).

Generally, web, or mobile solutions are implemented based on what is called the **Three-tier Architecture**.

**Three-tier Architecture** is a client-server software architecture pattern that comprise of 3 separate layers.

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1. **Presentation Layer** (PL): This is the user interface such as the client server or browser on your laptop.
2. **Business Layer** (BL): This is the backend program that implements business logic. Application or Webserver
3. **Data Access or Management Layer** (DAL): This is the layer for computer data storage and data access. [Database Server](https://www.computerhope.com/jargon/d/database-server.htm) or File System Server such as [FTP server](https://titanftp.com/2018/09/11/what-is-an-ftp-server/), or [NFS Server](https://searchenterprisedesktop.techtarget.com/definition/Network-File-System)

In this project, you will have the hands-on experience that showcases **Three-tier Architecture** while also ensuring that the disks used to store files on the Linux servers are adequately partitioned and managed through programs such as gdisk and LVM respectively.

## **Your 3-Tier Setup**

1. A Laptop or PC to serve as the client
2. A Linux Server to serve as the web server (This is where you will install Wordpress)
3. A Linux server to serve as the database server

***Use Centos for this project***

Lets get started

## **Step 1 — Prepare the Web Server**

1. Add 3 disks from virtual box to the Linux server. ***Determine the size of each disk yourself***
2. Open up the Linux terminal to begin configuration
3. Use df -h command to have a view and familiarise yourself with the disk configuration on the server
4. Use gdisk utility to create a single partition on each of the 3 disks
5. Use lsblk utility to view the newly configured partition on each of the 3 disks.
6. Use lvmdiskscan utility to check for available storage for LVM
7. Use pvcreate utility to mark the disks as LVM physical volumes
8. Use vgcreate utility to add the PVs to a volume group. Name the VG **webdata-vg**
9. Use lvcreate utility to create 2 logical volumes. **apps-lv** (***Use half of the PV size***), and **logs-lv** ***Use the remaining space of the PV size***. **NOTE**: apps-lv will be used to store data for the Website while, logs-lv will be used to store data for logs.

Confirm the entire setup and explore the below commands  
sudo vgdisplay -v *#view complete setup - VG, PV, and LV*

sudo lvs *#view logical volume summary*

sudo lsblk

1. Use mkfs.ext4 to format the logical volume with Ext4 filesystem
2. Create **/var/www/html** directory to store website files
3. Create **/home/recovery/logs** to store backup of log data
4. Mount **/var/www/html** on **apps-lv** logical volume
5. Use rsync utility to backup all the files in the log directory **/var/log** into **/home/recovery/logs** (*This is required before mounting the file system*)
6. Mount **/var/log** on **logs-lv** logical volume. (*Note that all the existing data on /var/log will be deleted. That is why step 15 above is very crucial*)
7. Restore log files back into **/var/log** directory.
8. Update /etc/fstab file so that the mount configuration will persist upon restart of the server.

## **Step 2 — Prepare the Database Server**

Configure a second server in Virtual Box

1. Add 3 disks from virtual box to the Linux server. ***Determine the size of each disk yourself***
2. Open up the Linux terminal to begin configuration
3. Use df -h command to have a view and familiarise yourself with the disk configuration on the server
4. Use gdisk utility to create a single partition on each of the 3 disks
5. Use lsblk utility to view the newly configured partition on each of the 3 disks.
6. Use lvmdiskscan utility to check for available storage for LVM
7. Use pvcreate utility to mark the disks as LVM physical volumes
8. Use vgcreate utility to add the PVs to a volume group. Name the VG **dbdata-vg**
9. Use lvcreate utility to create 2 logical volumes. **db-lv** (***Use half of the PV size***), and **logs-lv** ***Use the remaining space of the PV size***. **NOTE**: db-lv will be used to store database files while, logs-lv will be used to store data for logs.

Confirm the entire setup and explore the below commands  
sudo vgdisplay -v *#view complete setup - VG, PV, and LV*

sudo lvs *#view logical volume summary*

sudo lsblk

1. Use mkfs.ext4 to format the logical volume with Ext4 filesystem
2. Create **/db** directory to store database files
3. Create **/home/recovery/logs** to store backup of log data
4. Mount **/db** on **db-lv** logical volume
5. Use rsync utility to backup all the files in the log directory **/var/log** into **/home/recovery/logs** (*This is required before mounting the file system*)
6. Mount **/var/log** on **logs-lv** logical volume. (*Note that all the existing data on /var/log will be deleted. That is why step 15 above is very crucial*)
7. Restore log files back into **/var/log** directory.
8. Update /etc/fstab file so that the mount configuration will persist upon restart of the server.

## **Step 3 — Install Wordpress**

## **Step 4 — Install MySQL**

## **Step 5 — Configure wordpress to connect to remote database.**

## **Instructions On How To Submit Your Work For Review And Feedback**

Follow the steps below to submit your work for review