

How To Build a LAMP Server

(Linux, Apache, MySQL, PHP)

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Volume One: Install and Configure the Software Stack

This book is about setting up a LAMP (Linux, Apache, MySQL, PHP) web server. It covers all of the necessary tasks, and explains all of the important aspects of each part of the stack along the way.

This first part, Volume One, can be used as a direct guide for installing the software, but it aims to also help the reader to understand the nuances of the software being installed, with helpful advice about the structure and setup of the system, and about ensuring maintainability as well as securing the overall system.

LAMP is actually a coming together of four entirely unrelated software projects, which share a similar ecosystem and development culture, and which work together particularly well. Each part is Free or Open Source software, developed in the open and actively updated independently of the others. The interfaces between the elements are well defined however, so they continue to work well together in spite of there being no centralized control whatsoever. This also means that any of the elements can be replaced by equivalents - most often the "P", which can be PHP, Perl or Python, and the "L", which can be Linux, Windows (WAMP), Solaris (SAMP), one of the BSD-based Unices (such as OAMP for OpenBSD), or even Mac OSX (MAMP). The Database and Web Server layer can be replaced too, though this is less often seen.

Whilst not a PHP or MySQL tutorial, Volume Two also shows how to structure and set up a simple database and write the PHP code to manipulate that database. The resulting code as well as configuration files are also available for download for free from <http://steve-parker.org/code/kindle/lamp/>.

Feedback is always most welcome: Please contact lamp@steve-parker.org with any comments.

Chapter 1 - Install the Linux Operating System

The first step is to install the Linux-based operating system. Nothing special is required here, the LAMP stack will run on any typical distribution; we are using CentOS 6.4. Red Hat Enterprise Linux, Oracle Enterprise Linux, or Scientific Linux are all equivalent as far as this document is concerned. They differ in terms of support contracts and availability of media and documentation, but technically they are the same. Red Hat 5 is also largely similar as far as this document is concerned, but Red Hat 6 is a more up-to-date alternative if you can get it. Red Hat 7 is different in some details but essentially the same for these purposes. We will do a basic "*minimal*" OS installation, using a disk layout suitable for a LAMP server.



Red Hat Enterprise Linux is available from redhat.com. Workalikes are available from CentOS.org, oracle.com/linux and scientificlinux.org.

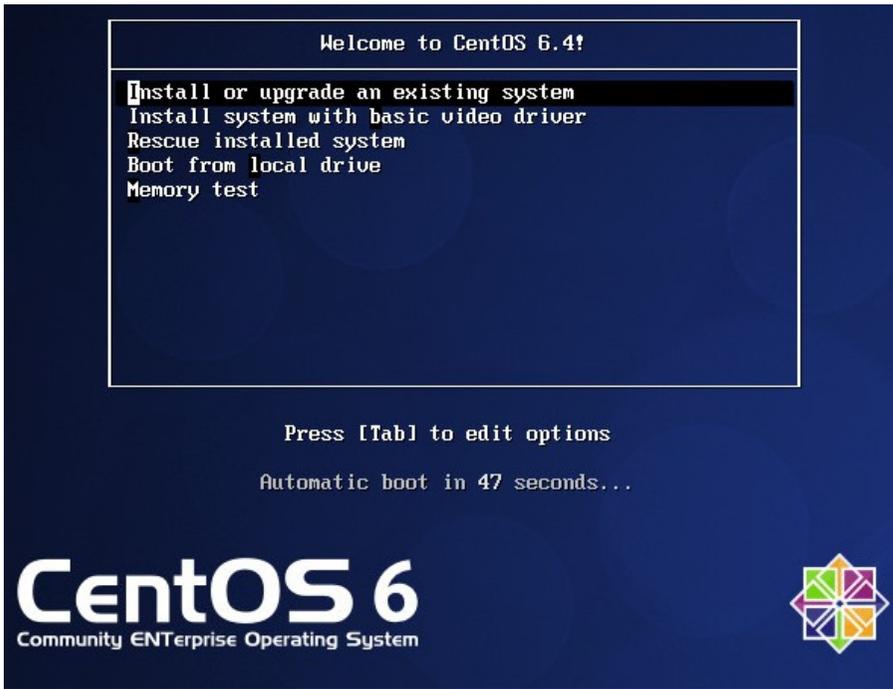
Then we will secure and configure the OS as necessary.

First, install the DVD-ROM into the drive, or present it via VMWare, VirtualBox or whatever virtualisation is being used. On booting, you should get the Red Hat boot screen.



Branding: Here I'm using CentOS; the only difference is the branding, all of the actual software is identical.

If you don't get this screen, go into the BIOS (or UEFI) and check the boot device order.



Choose "**Install or upgrade an existing system**". If you choose the text-based installer, you will not be able to set up an LVM-managed disk configuration, so choose the default graphical installation if possible. For a minute or so, a a black-and-white screen shows the installer starting up:

```
Loading vmlinuz.....  
Loading initrd.img .....
```

This is followed by lots of scrolling text as various parts of the system are initialized. Then you will be offered the opportunity to check the integrity of the media you are about to install from. This used to be a very useful facility, particularly when burnable media was new, and internet connections were particularly unreliable. It can be worth doing, particularly if you are not certain of the quality of the media you are using. Otherwise, you can skip this stage.

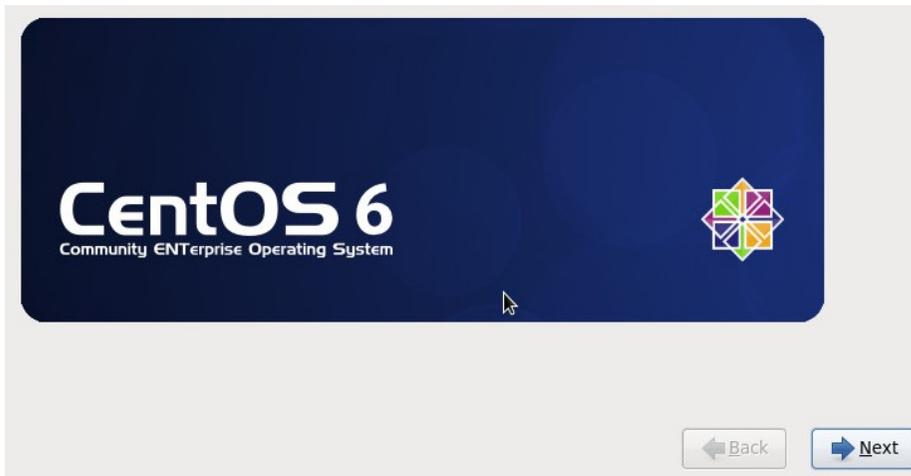


Press the <TAB> key to highlight the "Skip" button, and press either **Enter** or the space bar to select the option you want. Since there are only two choices here, it can be hard to tell which is the highlighted option - the first screenshot shows "OK" highlighted, and the second shows "Skip" highlighted.



At this point, assuming you have chosen the default graphical install option, the display may flicker for a short while as it detects your

hardware and determines a suitable (probably not optimal, but at least workable) resolution for your graphics device. Shortly afterwards, you should see the CentOS (or Red Hat) welcome screen.



Choose a Language

Click **Next**, and go on to select your preferred **Language** and **Keyboard layout**.



What language would you like to use during the installation process?

- Bulgarian (Български)
- Catalan (Català)
- Chinese(Simplified) (中文 (简体))
- Chinese(Traditional) (中文 (正體))
- Croatian (Hrvatski)
- Czech (Čeština)
- Danish (Dansk)
- Dutch (Nederlands)
- English (English)
- Estonian (eesti keel)
- Finnish (suomi)
- French (Français)
- German (Deutsch)
- Greek (Ελληνικά)
- Gujarati (ગુજરાતી)
- Hebrew (עברית)
- Hindi (हिन्दी)

← Back

Next →

Press **Back** and **Next** to navigate between the different screens.



Select the appropriate keyboard for the system.

- Portuguese
- Romanian
- Russian
- Serbian
- Serbian (latin)
- Slovak (qwerty)
- Slovenian
- Spanish
- Swedish
- Swiss French
- Swiss French (latin1)
- Swiss German
- Swiss German (latin1)
- Turkish
- U.S. English
- U.S. International
- Ukrainian
- United Kingdom

← Back

Next →

Storage Selection

Next comes the first part of the Storage setup of the installation routine. This detects available storage devices, and formats them if necessary. Don't worry; it will always provide you with information about devices and ask for confirmation before formatting anything. If you are doing a test install on a dedicated machine, it is fine to go with the default. Otherwise, take particular care at this stage of the installation.

First, the installer checks the state of all disks it can find. The first part of this requires you to tell the installer what type of devices you will be installing onto. If you are unsure, "**Basic Storage Devices**" is almost certain to be the right answer. If you need the SAN options, then the actual process will be specific to your environment, and you will likely have existing procedures in place for performing Operating System installations onto those devices.

What type of devices will your installation involve?

Basic Storage Devices

- Installs or upgrades to typical types of storage devices. If you're not sure which option is right for you, this is probably it.

Specialized Storage Devices

- Installs or upgrades to enterprise devices such as Storage Area Networks (SANs). This option will allow you to add FCoE / iSCSI / zFCP disks and to filter out devices the installer should ignore.

The installer will detect the disks available, and may well warn about the state of new, unformatted disks. In this example, I have presented it with a blank VMWare virtual disk, which - for all the installer knows - could be something important that it simply failed to recognize, so it plays safe and asks you what to do with the disk.



If SAN devices may be mapped to the system, be **very careful** before clicking on "**Yes, discard any data**", and **extra care** before doing so with the "**Apply my choice to all devices with undetected partitions or filesystems**" box checked!



Host Name

At this stage, the installer takes a short break from the storage setup, and asks you to provide a name for the server.



The default of `localhost.localdomain` is not very descriptive; I have named this server as `lamp.example.com`.

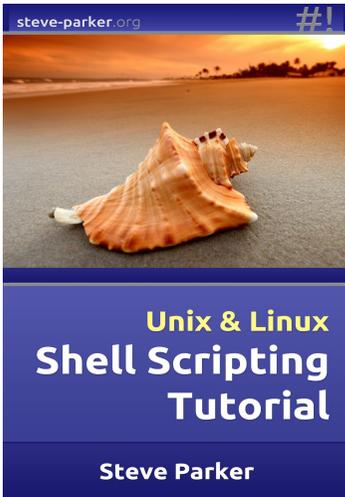


Please name this computer. The hostname identifies the computer on a network.

Hostname:

If you want to set up a static IP address, this is also the place to do that. Click the "**Network**" button (not shown here) at the bottom of the same screen, and you can set an IP address, network gateway, and so on. It is very easy to change the network configuration later by editing a couple of text files, so instead we will show how to set up your networking preferences once the installation has completed.

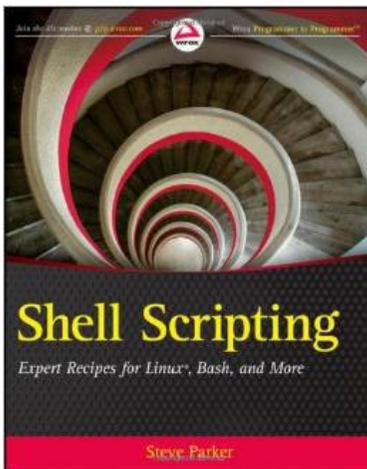
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