LAMP as a Website Development and Hosting Environment

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Abstract: Web site development and hosting evolved over the past decade. The different technologies, languages, development and production tools have made it difficult for CIO's and system administrators to choose the right website development and hosting environment. Questions such as: which operating system is the best to be used? What webserver to use? What is the best programming language? And what is the optima database platform to adopt? This study shall answer these questions by introducing the LAMP platform as the optimal free open source solution used by many online businesses, websites and applications.

Keywords: LAMP, Linux, Apache, MySQL, PHP, toals, platform

INTRODUCTION

Managing and running a webserver is not an easy task. It requires lots of expertise and knowledge in several fields including operating systems, web services, databases and programming languages (Cecchet *et al.*, 2002; Bass *et al.*, 2013). In addition to the technical aspect of the formula there is the managerial decision making and backing for the platform to be used. Cost is a major factor that determines which platform to use and which one to avoid (Jamjoom and Shin, 2003). Availability of support is another aspect that is genuinely inspected before choosing the right vendor.

Several shared webhosting companies provide the LAMP platform as a default installation for all clients (Amza *et al.*, 2002a). LAMP stands for and is an acronym referring to the use of Linux operating system on top of that running Apache webserver and implementing the MySQL database management system using the PhPMyAmin for customization and database administration and finally using the PHP programming language (Cecchet *et al.*, 2002; Ramana, 2004).

There are other webhosting and development platforms which rely on Unix and Windows operating systems (Amza *et al.*, 2002a, b). Some of them use internet information server as a webserver and base their applications on SQL server database and active server pages. Other databases such as PostgreSQL and ORACLE are also used by website developers. These solutions, however are not free as the LAMP platform (Amza *et al.*, 2002b). It requires licensing agreements and the payment of fixed fees to the service and software providers.

This study shall introduce LAMP as a webhosting and development platform and is envisioned to provide managers and system administrators with the recommendation to choose the LAMP platform to host their company's websites and applications (Panteleenko and Freeh, 2003).

LAMP: The term lamp is not widely known in the business world. Few developers understand what the term means (Ramana, 2004). It is simply the collection of the first letters of the each of the technologies and software used in building the platform. LAMP is short of four open source software components: Linux, Apache, MySQL and PHP. They are arranged as they are usually installed in stacks on the host server (Bass *et al.*, 2003).

The first stack is the installation of the Linux operating system on the host machine. After installation and configuration of the operating system the Apache layers is add for providing web services through the HTTP protocol (Cecchet *et al.*, 2002). Then, the MySQL database software is installed as the relational database management system used for storing applications data and finally the PHP is installed as a programming language of choice that is easily integrated with the rest of the installed three stacks (Amza *et al.*, 2002).

Lamp is best platform for building dynamic websites and applications. It is designed to allow for the script to reside on the server and once triggered it is executed on the server and the HTML code is redirected to the client machine (Ramana, 2004). In the process PHP connects to the MySQL database to create tables, add records, delete records, retrieve and store data and information (Panteleenko and Freeh, 2003).
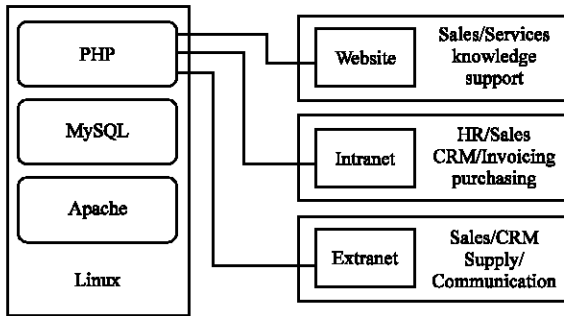
Fig. 1: Lamp stack

Since, the components of LAMP are Open Source Software free platform. Linux Kernel supports different webservers in addition to Apache such as Cherokee, Nginx and Lighttpd. It also supports Common Gateway Interface-CGI scripting such as Perl, PHP and Python (Cecchet *et al.*, 2002). On the database level it support working with Drizzle, MariaDB and MySQL to name a few. Linux also supports Squid, Pollpo and Traffic server with reference to the Web cache tools (Cecchet *et al.*, 2002).

Although, LAMP is referring to a generic stack of software tools, it's strength is in its modularity. The LAMP platform has gain wide acceptance, since, it is free open source software platform so the entire software stack is available for free for download online (Amza *et al.*, 2002a).

The LAMP platform is optimal solution for a large list of open source software that can be used on top of the LAMP stack. Content management systems are a good example of the type of software that relies on the LAMP stack. Applications such as WordPress, Joomla and Moodle all need LAMP stack to function (Ramana, 2004).

LAMP stack is also available on removable storage devices such as USB sticks and can be downloaded as a bundle for testing purposes and even to run on microsoft windows operating system (Jamjoom and Shin, 2003). Wampserver and Xampp are two examples of testing platforms for LAMP that can be installed and used on Microsoft Windows.

The LAMP stack is ideal for hosting websites, Intranets and Extranets (Fig. 1). Its support for PHP, Pearl, Python allow organizations to develop websites that provide online sales, customer service, help desk support and knowledgebase for its publicly available information.

LAMP is also used as Intranet platform. Its dynamic functionality allows organizations to run enterprise services that span the entire organization including HR, sales and crm, knowledge management, payroll, invoicing and purchasing activities among others.

In an extranet setting LAMP is perfect for supporting CRM operations, sales transactions, manage supplier's relations and support external communications (Panteleenko and Freeh, 2003). It is by far a very dynamic and intuitive platform for website developers and users alike.

LAMP OS-LINUX

Linux operating system was developed by a group of volunteer developers from all over the world. It was designed to mimic UNIX operation system. It was built as a free open source software system. It follows the GPL agreement that means it can be distributed and used form free. Linux is distributed under several flavors but the core Linux kernel is intact in all versions (Bass *et al.*, 2013).

There are readily available software packages that install the LAMP platform in one installation including the Linux operation system. The popularity of Linux and its success is contributed to its success on the first Mars mission (Cecchet *et al.*, 2002). The ROVER which was sent to collect and move on Mars surface was equipped with Linux as an operating system. NASA needed to restart the ROVER on arrival and after one hour of sending the restart order the ROVER sent its first transmission to earth from Mars and this was a huge success from Linux.

LAMP WEBSERVER-APACHE

The main webserver that any package comes supplied with is the Apache webserver. Apache provides the HTTP services for webhosts and allow for connecting and communication between clients and servers online (Amza *et al.*, 2002; Jamjoom and Shin, 2003). It is the most popular webserver available online and for free. Apache is open source free webserver software that support server side scripting languages including MySQL and PHP.

LAMP DATABASE-MYSQL

All web applications need some sort of databases to store its data and content. MySQL database is the database of choice form may web developers and system administrators. It is a relational database management system that supports large scale online applications. It supports huge number of records and can store very large scale information. The DBMS is multithreaded and

multiuser SQL system (Ramana, 2004). Its open source software that is available for free under the General Public License agreement. MySQL database is managed through a PhpMyAdmin application where users can interact and perform several tasks easily and without writing a single line of code (Amza *et al.*, 2002).

LAMP programing language-PHO: PHP is a unique programming language that is easy to use and deploy by system administrators and programmers (Amza *et al.*, 2002). It is the final stack in the LAMP stacks. It is a server side scripting language optimized for developing websites and applications. PHP is the core of many websites, however now programming language can generate website pages without the integration of HTML the Hyper Text Markup Language (Jamjoom and Shin, 2003).

PHP as part of the LAMP installation allows for a client machine to send a request to the server and ask for a file to be executed (Bass *et al.*, 2003). The server in this case the Apache through HTTP executes the PHP file on the server allowing it to access databases (MySQL database) for read and write operations and return the results as HTML code to the client machine to be displayed on the user's machine through a browser of choice (Cecchet *et al.*, 2002).

PHP is a free programming language but does not fall under the GNU license agreement for several considerations by the owners.

CONCLUSION

The LAMP stack solution proved to be a reliable installation that serve very large scale website hits and guarantee optimal server uptime. The system provides excellent load balance and is considered a leader in providing high availability of services provided by LAMP instances. LAMP platform is the optimal solution for system administrators and information system professionals, since it provides great performance and smooth handling of realtionl databases and very high web traffic and requests.

This study concludes that by using the LAMP platform as the optimal free open source solution the software of choice for any server is going to be Linux as an operating system, Apache as an HTTP server, MySQL for database management and finally PHP as programming a language.

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