

An overview on PHP

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1. Management Summary

PHP is at the forefront of Web 2.0 and Service Oriented Architectures enabler technologies along with other open source projects MySQL, Apache or JBoss. With ten years of development behind it, PHP is a relatively young programming language. Nevertheless, millions of developers world-wide use PHP to develop systems that power over 20 million websites. PHP is endorsed not only by its large open source community, but also by leading players and analysts in the IT market such as IBM, Oracle and Microsoft. PHP is ideal for Enterprise applications as it is easy to learn yet robust and flexible enough to power business critical applications.

2. Introduction

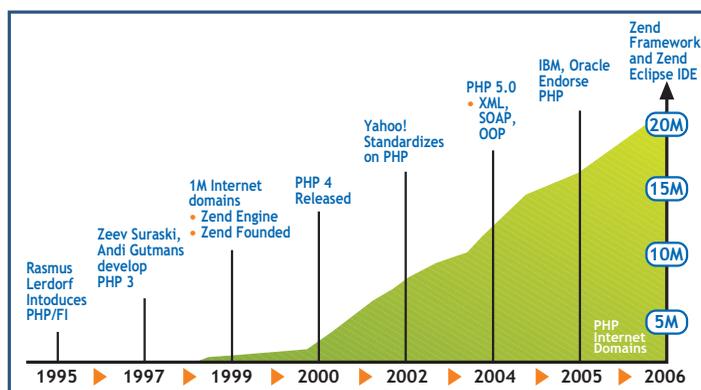
PHP is an important player in the software development market. Its popularity with both private software developers and corporate IT departments is having a growing impact on the market for commercial software as well. While PHP is heavily used in the development of web based software, it is not limited to this field. It is also used quite frequently to tie together different existing applications or application modules. Such is the case with Yahoo that uses PHP to "glue" together code written in different languages. The purpose of this paper is to summarize the history of PHP and offer an overview of its current status and market. We will then highlight the advantages of adopting PHP at the Enterprise level and how programmers and IT managers can benefit. Finally, we will give an outlook on the future development of PHP.

3. Overview

a. The History of PHP

The development of PHP started in 1995: Rasmus Lerdorf created a personal collection of Perl¹ scripts and transferred them into a package written in C. This package was called Personal Home Page tools, or PHP for short. On June 8th, 1995 this package was published as PHP/FI, where FI stood for Form Interpreter. PHP/FI

showed great similarities to Perl, while attempting to be much simpler to use. More than two years later, Rasmus Lerdorf published a more advanced version of the increasingly popular software called PHP 2.0 (or PHP/FI 2).



PHP – a success story

In 1997, Zeev Suraski and Andi Gutmans began a complete re-write of PHP to make the language more powerful for eCommerce applications. They co-operated with Rasmus Lerdorf and changed the meaning of PHP to "PHP: Hypertext Preprocessor".² Their efforts resulted in PHP 3.0 and were published in June of 1998. This collaboration gave PHP strong extensibility features that made it very easy to write additions and extensions for the language. At this point, initial buds of object orientation were integrated in the language's syntax.

The dramatic growth of the WWW in the late 90s, created an enormous demand for scripting languages for dynamic website development. With the release of PHP 3, the Internet community found a tool that was easier to learn and handle than Perl (the de-facto standard at the time) and PHP rapidly became the language of choice for dynamic content. By the end of 1998, the install base for PHP reached several hundred thousand websites.

During the next two years, Zeev Suraski and Andi Gutmans, developed PHP 4. When it was published in May 2000, the main new features included simple object orientation and session handling capabilities. To increase the performance and stability of PHP execution on the server, the Zend Engine 1 was introduced as the heart of PHP installation. In May 2000, the number of domains that use PHP reached 2 million³.

¹ Pearl is a scripting language that originated in 1987. See <http://www.perl.org/> for more details.

² This is a recursive acronym, comparable to GNU (GNU is not Unix)

³ All domain and server figures are from PHP.net/Netcraft if not noted otherwise.

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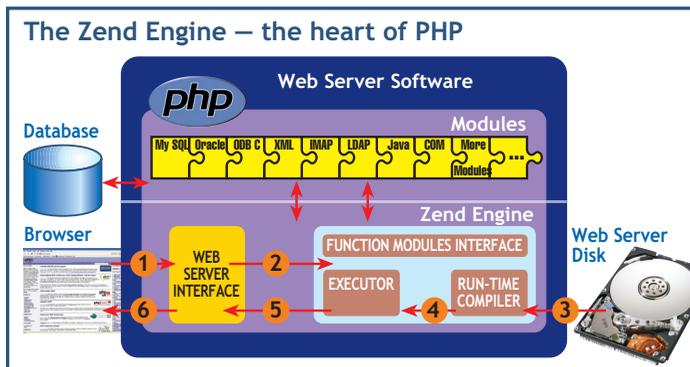
The PHP community, with the strong participation of Zeev Suraski and Andi Gutmans spent the next four years creating PHP 5. This long development cycle was mainly due to a very extensive testing phase. When PHP 5 was finally released in the summer of 2004, together with the Zend Engine 2 it introduced major enhancements: such as full support for object orientation, XML⁴ integration, and the SOAP⁵ protocol. By the summer of 2004, PHP had grown to an install base of more than 16 million domains.

The transition from PHP 4 usage to PHP 5 was slow in the beginning, however this changed with the release of PHP 5.1 in late 2005. In addition to smaller enhancements, PHP 5.1 brought a database abstraction layer called PDO⁶. PDO makes it much easier to use PHP with various databases from different vendors. By the end of 2005, PHP adoption soared to more than 23 million domains.

b. PHP today

Today, PHP is a full featured comprehensive programming language with solid object orientation support. While it was called a scripting language in the past, today it is more referred to as a dynamic programming language. Unlike traditional programming languages such as C/C++, PHP does not have to be compiled. Instead the source code is interpreted at runtime.

The Zend Engine acts as a runtime interpreter that compiles the code in real time.



Zend Engine

Historically, interpreted languages suffered from lower performance (as compared with compiled languages). The PHP community has worked hard to overcome these issues, and today, it is possible for properly configured interpreted languages to approach execution speeds of compiled languages.

One of the major advantages PHP offers is **platform independence**. Currently, the list of supported operating systems includes Linux (for various CPU architectures), Microsoft Windows, Mac OS X, Sun's Solaris (SPARC and Intel), IBM AIX, HP-UX, FreeBSD, Novell Netware, SGI IRIX, IBM AS/400, OS/2 and RISC OS. Since the Zend Engine is open source, it is straightforward to compile it for additional operating systems. It is no surprise that there are adaptations for all common UNIX versions, as well as for exotic environments like Amiga or BeOS. Platform independence has a second facet: most PHP applications can therefore be used on every computer or internet capable device.

Another benefit of PHP is **flexibility**. Since no compilation is needed, it is easy to make changes or bug fixes within minutes and to deploy new versions of the program frequently. Additionally, it is **easy to prototype** new applications and concepts; typically compared to C or Java, PHP application development takes 50% of the time.

Whilst PHP5 includes SQLite database as a standard install for rapid prototyping, PHP applications usually store their data in external databases, such as MySQL, Oracle or IBM DB2. PHP5 incorporates a database abstraction layer "PDO" for developing applications that support multiple databases.

As PDO currently supports most of the commercial databases on the market and is part of an open source project, other drivers can be easily added as new technologies emerge.

Since PHP is an open source language, all information on how the language works, its syntax and the inner functions of the Zend Engine are publicly available and can be used free of charge under the PHP license. This is a BSD-style license, there are no licensing fees related to using PHP or the Zend Engine in applications whether commercial or otherwise and there are no limitations on commercial use as there are with other open source projects released under the GPL license.

c. The people behind PHP

The development of PHP is driven by the PHP Group, a community of developers that contribute to the various parts and modules of PHP. The PHP Group is also the official licensor of PHP. It is hard to give an exact number of how many people work on PHP, since literally anyone can contribute to the project. It is easier to make a rough distinction between the people working on the core language and the Zend Engine and the larger number of people working on individual PHP extensions and libraries. There are also several companies, whose staff contributes to the development of PHP. Among those involved, Zend Technologies founded by Zeev Suraski and Andi Gutmans, Yahoo, ezSystems, OmniTI and others.

d. The PHP market

PHP ranks among the most popular programming languages today and since 2004 is the undisputed leader in the web programming market. According to a recent survey from Nexen.net, PHP has a market share of more than 30 percent⁷. The number of internet sites using PHP is around 20 million. However, this figure does not take into consideration the growing number of internal corporate servers used for intranet applications or development purposes - statistics about this usage is still unclear. There are more than 15.000 worldwide users of Zend Technologies' commercial products.

The total number of professional software developers worldwide is estimated to be about seven million. According to a recent survey of the popular UK-based IT news site, The Register, it is estimated that more than 2.5 million of them have experience with PHP programming. More and more universities are taking into account PHP's growing role and their syllabi offer relevant courses. In the summer of 2004 Zend Technologies established a certification program together with Pearson-VUE. More than 1,000 PHP developers have become Zend Certified Engineers (ZCE) since then.

⁴ Extensible Markup Language

⁵ Simple Object Access Protocol

⁶ PHP Data Objects

⁷ Source: http://www.nexen.net/chiffres_cles/phpversion/php_statistics_for_june_2006.php

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PHP's penetration and market shares differ from region to region. Since the basic combination of Linux, Apache, MySQL and PHP (without additional commercial tools) provides an almost enterprise grade application platform without any licensing costs, PHP's market share is very high in developing countries. The Ukraine and Sao Tomé for example lead the list of countries with the highest market share for PHP with 69.7 and 68.2 percent respectively⁸. In the leading industrial nations, USA, Germany and Japan hold largest PHP markets, followed by France, UK, Canada, Italy and The Netherlands.

There are a vast number of PHP programs available. A considerable part of them deal with dynamic website content management(CMS⁹) such as Typo3, ezPublish, Drupal and Joomla, eCommerce systems like Oxidesales, OS Commerce and Zen Cart, blog software like Wordpress, Serendipity, WIKIS like Tiki, Mediawiki (Wikipedia) or discussion forum applications like phpBB, vBulletin and FUDforum.

e. What analysts and press say about PHP

Forrester Research evaluated 13 leading open source software projects using approximately 40 criteria and found that six of the projects stand out as examples of excellence and are ready for corporate use¹⁰. PHP was the only dynamic programming language in this group and stood beside MySQL, Eclipse, Apache HTTP Server, Apache Tomcat, and the JBoss Application Server. US magazine eWeek attested that the LAMP-stack (and PHP in particular) gives excellent performance compared with commercial alternatives like Microsoft's. Net: "This stack's performance numbers suggest what many who have been using PHP for some time now (including some of the busiest blogs on the Web) know to be true – that a pure LAMP-based PHP system can easily handle enterprise-class traffic and loads."¹¹

4. Enterprise adoption of PHP

Like many open source technologies, PHP was initially popular for non-commercial purposes. However, over the past 5 years, more and more companies have begun using PHP, mostly for their websites or web shops. Today, with the move towards SOA¹² and Web services, PHP, with its robust XML capabilities and native Web services handling is a popular solution for internal and mission-critical applications. Even though some corporations can be reluctant to use open source new technologies for business critical applications and tend to trust their established vendors, several legitimate arguments illustrate, that PHP is a viable technology alternative for the enterprise sector.

a. A mature, proven and performing platform

With more than ten years of constant development, PHP is no longer a newcomer. Millions of developers world-wide use PHP full time to develop systems for over 20 million websites and applications. Whenever a new version of the language and its core components is published, it goes through a rigid public beta testing especially at commercial vendors like Zend. In addition, Zend provides enterprise-grade official support programs for PHP.

One of the main issues discussed regarding PHP is how it performs compared to other programming platforms, Due to the nature of a non-compiled language; PHP will never be as fast as compiled applications that are tuned for a specific combination of operating system and hardware. It is therefore unlikely that we will see

any first person shooters or video editing applications made with PHP anytime soon.

But for many computing purposes, the pure application performance is of secondary interest and issues such as code maintainability, portability, availability of skilled developers and total cost of ownership are the main drivers of the business case to use PHP.

For example, PHP is often used in SOAs, where a large number of applications and modules work together and communicate with each other over an Enterprise Service Bus (ESB)¹³. Here the speed of the individual modules is not as important because they often have to wait on Input from either the user or other applications. PHP is also very often used for content-related applications like web shops or CMS; here speed of the application (or better: the speed experience of the user) is often limited by the network connection and its bandwidth. Since PHP can be used in tight integration with databases and also Java, a popular practice is to use PHP for modelling the application in terms of processes and business logic, but shift the major part of heavy transactional work into modules written in Java or into the database level. For additional performance, it is also possible to write C code PHP extensions for specific tasks.

When talking about performance in conjunction with PHP, one should not only consider the processing speed but rather factors like scalability or the ability to cache content. With PHP and a number of open source and commercial tools, it is possible to create web-applications that can handle several thousand simultaneous requests.

b. Platform and vendor independence

Another important factor for enterprises to consider is PHP's platform and vendor independence. Due to negative experiences, many customers seek to avoid vendor-lock-in or platform-lock-in situations. As described above, PHP is developed by an independent group of developers that are not affiliated with one specific company. In addition, PHP is free and open source and it runs on virtually any software platform.

The value is obvious: Companies can use PHP in almost every system environment without licensing costs. They can also move their PHP applications from one system platform to another without large modifications and again without licensing costs. They can even use entry-level freeware development tools.

The low (or better no) entry costs make it very attractive especially for smaller companies to start their first experiences with PHP. They can prototype everything for free on a LAMP system, e.g. on an old server or even a PC. As their PHP application becomes more sophisticated, they can scale move it to a more professional environment and can invest in additional commercial tools for developing, deployment and management.

8 Source: http://www.nexen.net/chiffres_cles/phpversion/php_statistics_for_june_2006.php#adoption
 9 Content Management System
 10 Source: "The Forrester Wave Project Summary, Q2 2006".
<http://www.forrester.com/Research/Document/Excerpt/0,7211,36338,00.html>
 11 Source: <http://www.eweek.com/article2/0,1895,1983364,00.asp>
 12 Service Oriented Architecture
 13 Enterprise Service Bus

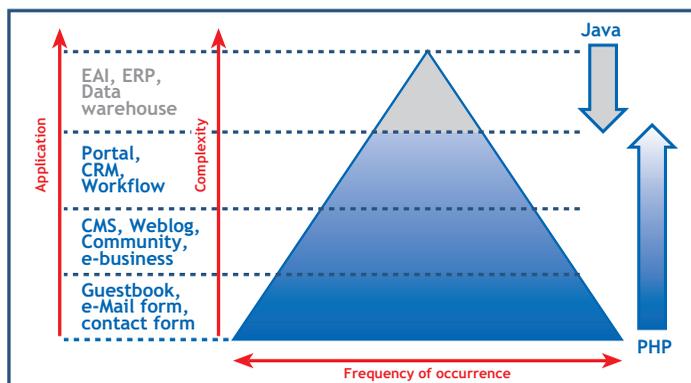
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c. Supported by leading players in the market

Even though more and more companies are trying to hedge against vendor or platform lock-ins, they still desire a technology that has the support and endorsement from large IT vendors. Since they often use enterprise applications from the large companies such as IBM, Oracle, Microsoft and SAP, they want to ensure that the offered technology is accepted, supported and coherent with the rest of their technology strategy. For this reason Zend Technologies has strategic technology cooperation with IBM, Oracle and Microsoft to ensure that their customers can continue to leverage on their existing technology investments with PHP.

5. The future of PHP

In the past PHP open source principles have put greater overhead on individual developer choices. Unlike Java, every developer had the possibility to do as they pleased since there was little language and systems standardization. Over the past 18 months this gap has been minimized by the introduction of a set of best practices and standardizations and will continue this orientation in future with the growth of PHP frameworks such as Zend Framework.



Technology follows requirement

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Past conceptions held that PHP was only capable of elementary tasks such as guest books, simple Web sites etc. However PHP is also increasingly used for other types of applications up to a certain level of complexity. The important benefit of PHP is that it does not go around the function range of an application, but rather around the complexity of the connections in application. Therefore large applications can also be written with PHP, as long as they are divided into components. As this method of development is becoming more in demand by Ajax and SOA in the IT surrounding fields, PHP will consequently advance into additional domains. As a result, PHP goes hand in hand with the IT trends to divide large applications into small services and is clearly in line with the direction of IT management strategies in large enterprises.

Bearing in mind the advantages of PHP and the technology evangelism activities of Zend Technologies' it seems a logical consequence that PHP would receive a strong endorsement from the IT industry

Zend cooperates with Sun Microsystems to optimize the PHP/Java interoperability. By collaborating with IBM and Oracle, Zend has created **Zend Core™**, stable and supported stacks of PHP and database drivers designed for their major databases. Intel and SAP demonstrated their trust in the PHP market by investing into Zend Technologies through their venture capital funds. Finally, Microsoft, realizes the potential of PHP and has announced a technical collaboration to improve Interoperability of PHP on the Windows Server Platform.

PHP will increase in importance in Enterprise environments while keeping a leading position as an easy to use programming language for web applications.

About Zend Technologies

Zend Technologies Inc., the PHP Company, is the leading provider of products and services for developing, deploying and managing business-critical PHP applications. PHP is used by more than twenty-two million Web sites and has quickly become the most popular language for building dynamic web applications. www.zend.com

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