ISSN: 2321-7782 (Online)

Volume 3, Issue 4, April 2015

International Journal of Advance Research in Computer Science and Management Studies

Research Article / Survey Paper / Case Study

Available online at: www.ijarcsms.com

A Survey on Content Management System

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Abstract: ***A content management system (CMS) is a computer application that allows organizing, editing and modifying content, deleting, publishing as well as maintenance from a central interface. In the current scenario, the amount of digital content is increasing at an accelerating speed. This content is distributed to a heterogeneous set of users' devices and handling the content manually is an unsustainable solution leading to an increasing set of problem. The development of content management system has largely increased the overall productivity and ease of website deployment and management. content management system are largely based on web programming/ scripting languages like PHP, ruby or python, where all of these are interpreted languages and trends to misbehave in managing a large volume of content. A solution to this problem would be to switch to a web programming language, which can be compiled. The HipHop Virtual Machine (HHVM) is a JIT compiler and runtime for PHP. By using HHVM as a source-to-source compiler, PHP code is translated into C++, compiled into a binary and run as an executable, as opposed to the PHP's usual execution path of PHP code being transformed into op-codes and interpreted. This paper discusses the various techniques used for managing the content.***

Keywords: CMS, HHVM, PHP, Cloud.

I. INTRODUCTION

A content management system basically reduces the overhead associated with managing the data. Today digital data is an integral part of our day to day life and plays a major role in making our life more comfortable and secure. But the amount of data is so large that makes it difficult to manage and the data should also be secure. If the data is not handled properly, it will lead to data loss. The challenge becomes higher, when the users having a heterogeneous set of devices ranging from lightweight mobile devices having very limited resources to sophisticated multiprocessor servers. Using a robust content management system, these challenges could be handled efficiently. A content management system allows organizations to collaboratively create, edit, manage and publish any type of digital information such as text, images, video, audio, etc. This kind of system is characterized by the need for efficient storage and retrieval of high volume of content under strict rules, controlling the sharing of information among users and organizations.

Most of the content management systems are typically built on a scripting language namely PHP or python, this had a downside. Since scripting languages are interpreted not compiled, hence making it slower than their compiled counter parts like

C++, C# or Java. Content management system deals with a huge amount of information on day to day basis and having an interpreted scripting language is a huge bottleneck to this type of system.

CMS have made web development and deploying web applications much easier and more flexible. Prior to this, consider the scenario where software developers had to manually integrate their code into the master branch of their software, and if something went wrong they had to manually try to resolve the issue. This made software development a lengthy process and localization of all the developers was required. CMS like version control system have re-engineered the process of software engineering. Now developers can make changes on their private branch and deploy them remotely to the master branch, which is easily handled by content management system like Github, solved the issue of localization of developers.

II. LITERATURE SURVEY

Yogesh Vedpathak [1] discussed on how CMS have made web development more flexible and easier to deploy, CMS allows to manage all aspects of a website, CMS have allowed users to deploy websites much quickly, and otherwise it takes a lot of time if one has to develop a website using available web technologies. Most of the CMS comes Search engine optimized, so the user doesn't have to worry about having their website optimized for google page rankings.

S.R. Subramanya et al., [2] discussed on deploying a website using current generation web technologies is a good start up to certain scale. Once this scale has been crossed, it becomes cumbersome to manage all the huge amount of content being generated. The analysts have predicted that the amount of content generated would accelerate in the near future, making website management a much more difficult task. There may be various types of content which is being generated like media, entertainment and business. Current generation technology is not sufficed to handle this content effectively. Some newer model to handle this growing content is required, which would manage the resources effectively that increases throughput in a cost effective fashion.

M. Hoffmann et al., [4] discussed about the internet was. It was just a bunch of computers networked together to communicate with each other. It's like a universe of information represented in the form of web pages or web objects. In the early days of World Wide Web, evolution of content became an important aspect. ecommerce websites got a major hit, as customers were not able to load their web pages or slow loading of e commerce sites which resulted in loss of sales and customer dissatisfaction, Evolutionary method to overcome this issue was to use more bandwidth and more processing power to provide Quality of Service. Currently Content Distribution Networks are widely use to distribute content over the internet to the client in an efficient and cost effective manner, which is both suffice and reliable.

L.R. Beaumont [3] discussed on Domain Name Server (DNS). DNS is typically designed to handle alphanumeric host names and translate it to its ip address. It plays a crucial role on the internet today. Without DNS, it would be hard to imagine how would anyone remember ip address of Google and Face book and other not so popular websites to access. The internet traffic is increasing in an accelerated manner, thus an efficient way to distribute the content over to the client side is needed. This requires the use of effective load balancing and web caching also relieving server congestion using multiple service nodes and other services like reserve proxy

Diptoneel Kayal [9] discussed that the amount of data generated every day is getting difficult to manage and requires an efficient mechanism to handle the data. The author says that this becomes more challenging when the data has to be processed for all types of devices like mobile, desktops and embedded systems, some of which have limited resources. The author suggested that good solution would be to integrate the cloud computing service to a content management system for various performance reasons like load balancing and distribution of content effectively. Cloud based content management system[CCMS] can be implemented using a private cloud computing architecture such as amazon EC2.

 ISSN: 2321-7782 (Online) ISSN: 2347-1778 (Print)

J. Benda et al., [13] says that currently php applications are interpreted, which make them sloppy and slow. The benefits of a compiled language are far greater than those interpreted ones. Compiled PHP applications can significantly increases the throughput of web applications.

Mark Williams et al., [14] discussed that scripting languages like PHP, ruby and python are widely used for web programming and are very much popular. They are easy to use, lightweight and open source. Although this comes with a cost, these scripting languages do not provide good performance and trends to break when we have to deal with a large amount of data. This problem can be easily resolved by compiling it.

Keith Adams et al [15] says that to achieve something like compiled PHP, there is a whole new compiler to be build and this is what the Facebook engineers have done. HHVM is a JIT, which is a runtime for PHP, which have led to the increase in throughput and efficiency of php without the loss of code compatibility.

Makitalo, N. [17] discussed about the current trend in data and how the data is being developed at an enormous rate. Hence to make the data more usable even in the most distributed environments, author has suggested to use visual REST (Representational state transfer) CMS. REST CMS abstracts away the physical structure and complicated processes from user perspective

C. D. Cranor et al., [18] explained about the new advances in the storage technology, which has made continuous amount of enormous data being stored on the devices. Such data remains challenging to handle due to the amount of the data generated. It is impossible to maintain this data without a proper CMS. Thus author has suggested about the spectrum CMS, which effectively maintains the data by removing the redundancies of the data and making it more easy to use.

Kai Cheng et al., [19] discussed about the need of management for the web cache data collected by local users in order to optimize the user experience. They proposed a multi-cache based content management scheme, in which web contents are distributed to several sub-caches. The author says that this scheme is suitable for managing large cache space and capable of performing data extraction on the caches.

P. Bolettieri et al., [20] presents the importance of metadata handling in a content management system. Handling metadata is very much important in order to process the type of data, which a CMS has to handle. Metadata also needs to be managed by a CMS for e-learning purposes to process the data and use it for user optimizing purposes to give the user his preferred choices.

A. Mauthe et al., [21] says that the task of content management is becoming a cornerstone for many operations in the media industry. As the data is very heterogeneous in nature, it considers the research and standardization efforts on which CMS are based. Thus, it brings together expertise from different domains, in particular the broadcast and IT domain, the user and system perspective, and professional products, research efforts, and standardization activities in the area of content management.

A. Spedalieri et al., [22] proposed the architecture for multimedia content management system in new generation service platforms. The outlined architecture is based on the requirements identified by the experts from the media industry. The proposed architecture has been structured into three main areas: content description, content protection, and content delivery and adaptation. The architecture also reflects emerging topics such as end-user content creation and multi-modal user interaction.

G. Amato et al., [23] discussed on MILOS Multimedia Content Management System: a general purpose software component tailored to support design and effective implementation of digital library applications. MILOS supports the storage and content based retrieval of any multimedia documents, whose descriptions are provided by using arbitrary metadata models represented in XML.

C. B¨ohm et al., [24] explained on increasing importance of managing content in medicine, CAD and geography. An important research issue in the field of multimedia content search is the content-based retrieval of similar multimedia objects

such as images, text, and videos. However, in contrast to searching data in a relational database, a content-based retrieval requires the search of similar objects as a basic functionality of the database system. The author specifies the current techniques that are used in order to extract the multimedia data from the database.

ACKNOWLEDGEMENT

The work reported in this paper is supported by the college through the TECHNICAL EDUCATION QUALITY IMPROVEMENT PROGRAMME [TEQIP-II] of the MHRD, Government of India.

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