International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 2 Issue 9, September - 2013

Multi-User Web Operating System in Cloud Environment

Mr. VENU .M [1]
Student (M.Tech.)

Prof. CH. Madhu Babu [2]
Professor

Ms. Pallavi Lanke [3]
Assistant Professor

Computer Science & Engineering Department
Padmasri Dr. B.V. Raju Institute of Technology
Vishnupur, Narsapur, Hyderabad, Andhra Pradesh, India.

Abstract

Multi-User Web Operating System in Cloud Environment is an experimental multi-user and cross-browser Web Desktop Environment, Web Operating System in a private cloud environment. It is also a good development framework for web applications and social networking platforms written in Perl and PHP. Multi-User Web Operating System includes a set of web applications, including a user management, web file management, UI Management, Content Management and database management. Use Multi-User Web OS in full screen mode or in a window mode on the fly.
The paper describes an overview of Multi-User Web Operating System in Cloud Environment that offers application platform that fits perfectly within an organization's IT stack, between the infrastructure and the application layers in a graphic user interface. It runs on an organization's private cloud web servers and creates a private cloud that is accessed by the client desktops via multiple browsers.

1. Introduction

Multi-User Web Operating System in Cloud Environment is a multi-user system based Cloud Computing Operating System includes collaboration tools such as forms, editors, instant messengers and let you access to the various functionalities and features such as folders, calendar, files, UI Customization, office tools, etc. User can use it personally on a computer or user can use it for collaborative mode of work in an organization or an educational institution and user can share the data among the other users within organization.
Multi-User Web Operating System in Cloud Environment is comes with Live Collaboration engine and live collaboration tools in a cloud environment which allows users to work collaboratively with other users simultaneously in the same document in same sessions.
Users can host Multi-User Web Operating System on standalone pc or a standalone web server and make the Cloud system to access user's data anywhere.
Multi-User Web Operating System in Cloud Environment only needs HTTP Apache Tomcat server, PHP5+ and MySQL5+ database server to run on a standalone webserver.

With the Multi-User Web Operating System, you can build your own private Cloud Desktop environment today. If you don't have web hosting space or Webserver anywhere then you can create free account on Multi-User Web Operating System free public web server and start your own cloud right away with instant access.

Multi-User Web Operating System in also has a integrated applications bundle that includes applications such as Word Processor, Instant Messenger, Public Server, Web Browser, Calendar, web Mail Client, UI Manager, Files Manager and Spreadsheets. However, the important element of Multi-User Web Operating System is built-in with the secure cloud privacy - Multi-User Web Operating System is the Safe and secure Cloud Computing system because

users can host it anywhere such as organizations, Institutions etc. Cloud Privacy is a paramount especially in private cloud computing environment where there has been no research to back it.

In general, deploying the Multi-User Web Operating System in the Cloud Environment with multi-User support is the bold initiative that is definitely bound to promote the technological innovations.

In education sector Multi-User Web Operating System in Cloud Environment is an excellent tool that can be easily designed, implemented, customized and deployed in education environment to complement the eLearning tools such as Learning Management System. The design, development, implementation, deployment and maintenance of the desktop cloud solution service that is capable of bringing enhancements such as delivering security and flexibility while reducing the investment costs and complexity associated with the current IT solutions.

Multi-User Web Operating System is an open source standalone web application which is free to use. For example, a department of an organization can install to all its Desktop and notebook computers and then integrate all the activities details, syllabus details, Course details and lab material downloads. Courses can be customized as student group activities can be enrolled in existing groups. Multi-User Web Operating System private cloud has the flexibility and capability to provide the standalone platform for testing the solution and providing the knowledgebase about the IT integration in the classrooms.

When fully deployed, the students will have access to the education materials to the academic courses on the web cloud. Students can collaborate with the other students using the social network connectivity such as instant web messenger, student communities, video conferences and forums. By using the current solution, teachers or instructors will be able to completely focus on the course content, materials and rather than addressing the students and solving or troubleshooting the IT issues. Parents, Site Visitors or Faculties will be able to support the students with their education.
Multi-User Web Operating System standalone web application in Cloud Environment supports the multi-user access for registered users in an organization and anonymous visitors with limited access, which is viewable on cross-browser Web Desktop Environment and supports the multiple browsers such as Mozilla Firefox, Google Chrome, Internet Explorer, Opera etc.

2. Requirement Analysis

Multi-User Web Operating System is flexible to deploy on both Linux environment and Windows environment. Can be hosted on local host destination or local host personal computer and can also be hosted on shared web hosting environment, as like open source technologies. Web OS is easy to deploy on any webserver such as Internet Information Services (IIS 8.0) and Apache Tomcat Web Server. Deploying Web OS needs pre-requisites to be installed on the hosting environment such as Server based Operating System(i.e., Linux or Windows), Standalone Webserver, MySQL database server, PHPMyAdmin for managing and organizing the databases in GUI Mode, PHP extensions, Perl script support and PHP runnable environment for windows or Linux and WebDAV.

Table: 1 Requirements

Operating System : Windows Server 2012 or Any Linux OS
Database : MYSQL 6.0
Database Manager : PHPMyAdmin 4.0.6
PHP Environment Installer: PHP 5.5.3
Web server : APACHE 2.2.15 / IIS 8.0 with Perl support
Web Browser : Supports all Web Browsers

3. Configuration of Pre-Requisites

Install all the pre-requisites and software packages required for deploying Multi-User Web Operating System in cloud Environment. Check the installed packages, webhosting environment, cloud environment and database servers by testing them individually. Once the test is

successful, Multi-User Web Operating System is ready for deployment.

4. Architecture

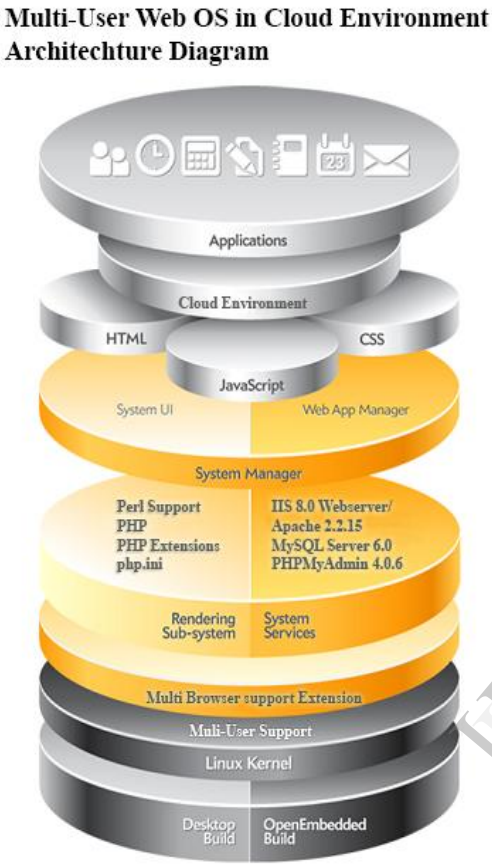

Figure: 1 Multi-User WebOS Architecture

5. Hands-on Experience

In this current session, it's assumed that you have installed Windows OS or Linux OS. You will be required to know how to install webserver(i.e., IIS 8.0 or Apache Server) on your desktop, PHP Installer 5, PHP Extensions is enabled, MySQL Server 6, LAMP or WAMP Configuration which is required by Multi-User Web Operating System.

Configure the MySQL Server and use it to create "WebOS" database, required for installing Multi-User cloud computing Web operating system. Install pre-requisites and also configure the pre-requisites in the current system. Install the required software and packages for Multi-User Web Operating System installation.

Run the web server and launch the installation page to define and configure the SQL Database connections and server web connections and then proceed for the installation.

Once you're done with the installation and configuration, the Multi-User Web Operating System package is ready for deployment. Deploy the package by proceeding next installation page in the web hosting environment to finish the current installation. Multi-User Web Operating System is highly recommended that you install a firewall protection for your network environment.

6. WebOS Web Engine

The WebOS Web Engine is VDI (Virtual desktop infrastructure) Virtualizing into HTML5 in various web browsers. It also virtualizes on premise Legacy drives, legacy web Applications, Web Office and other local productivity Applications for remote delivery into Multi-User WebOS into Web Desktop Interface. WebOS virtualization solution is well suited to the Desktop as a Service.

High performance depends on the latency of bandwidth consumption. User experience remains excellent for the device or system connected with 3G Connectivity and 4G Connectivity. As 2G Connectivity is not feasible with the Multi-user WebOS.

Web OS Server, Data Servers, Applications Servers, VDI (Virtual Desktop Environment Infrastructure), Cloud Desktop Environment, Virtual Desktop Interface and web desktop interface all together is called Web Engine.

WebOS Web Engine is capable of managing multiple Web pages at a time and it is a non-visual object. It loads Web pages in seconds by sending the server requests in 10ms, applies styles can be created for document models to runs JavaScript on webpages. It establishes connectivity to enable two-way communication between the WebOS app and the JavaScript of the webpage.

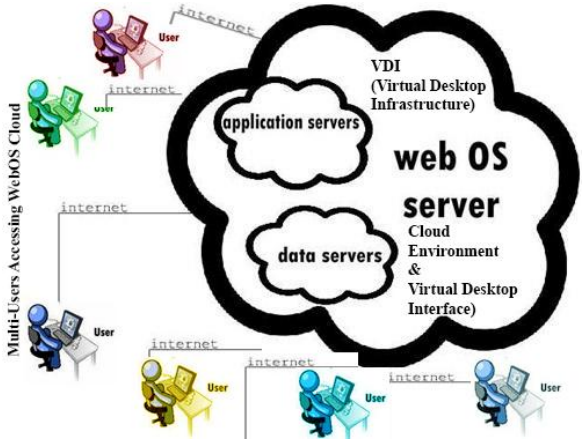

Figure: 2 WebOS Server (Web Engine Mode)

7. The Key Benefits

Table: 2 Benefits

No-Agent	Pre-installed software on the local computer is not required
Multi device Compatibility	Compatible with all devices such as Netbooks, Notebooks, pc's, tablets and smartphones pc's, tablets and smartphones which is shipped with html5 compatible browsers
Inexpensive OS	Multi-User WebOS Web Engine is built on top of Open Source stack source
Works on slow connections	Web engine sends identifies the connectivity and sends the low graphical images and image data with the little bandwidth consumption
Multimedia Compatibility ready	With the virtualization process video is extracted for direct streaming into the web browser
Compatible with Multi OS	Can run on both Windows OS and Linux OS

8. Technology

8.1 Multi-User WebOS is built for:

1. Maximum Performance
2. High security
3. High Scalability
4. High Compatibility

Multi-User WebOS is built on web technologies such as PERL, HTML5, PHP, Open Source GUI, Open Source VDI and JavaScript. It delivers the outstanding performance because of its kernel is compiled in C++ for more efficiency. WebOS runs on fully clustered architecture and contains an open source framework to ensure that all operations is secure.

- **In Technical View:**

WebOS System structure

WebOS system is divided into multiple components that will run on JavaScript, HTML5 &PHP.

Apps is divided into two parts:

1. First part runs on the client desktop system in a Web browser

2. Second part is interpreted by the PHP interpreter (Webserver).

The app will run on client side with the user interface using the PHP & JavaScript.

- **Performance View:**

The adoption of workspace in virtualization is made, a question that often arises about the performance issue. Connecting the web apps from the private cloud is a very good option, but another question arises that "Is it as smooth as a traditional client-server for the user model?

Firstly, most of the frontend activities takes place within the local web browser: moving mouse, minimizing or maximizing a window, typing etc. The users will experience no latency issues in the most repetitive tasks in daily routine.

Secondly, Multi-User WebOS architecture separates the different main tasks, the possibility of dedicating the separate servers in a current cloud environment if the load becomes more intense.

Finally, the Multi-User WebOS kernel is compiled in C++ for maximizing the speed and performance of Web Operating System. Server Requests are answered in 10 ms on average.

- **RIA Framework for WebOS:**

Multi-User WebOS in Cloud Environment RIA framework is a great resource to have the new custom applications be developed to cover the organization needs and to leverage the native functions on the system.

The Multi-user WebOS in Cloud requires programming languages such as HTML5, PHP, Perl and JavaScript for app development. GUI window for Web OS developed using high-level JavaScript libraries. For developing GUIs java swing etc. web toolkits are used. It also uses communication among libraries to exchange the messages and AJAX Requests to run the PHP functions defined in application.

Applications in WebOS is an independent component that deploys the WebOS APIs by using the RIA development environment in Linux or Windows OS.

- **Security:**

The WebOS appliance has the host protection, with the help of zero outside dependencies. For this reason, for managing the security solution for channels via SSL and SSH. The configuration of the custom SSL certificates and backup management system points are created. Integration of firewalls in the cloud web server, security script modules, by enabling SSH and installing the SSL 256bit provides the extended protection to the Multi-User WebOS in Cloud Environment.

- **Functionalities:**

Multi-User Web OS in Cloud functions like Virtual Desktop Management, Web Desktop Management, user management, file sharing services, real-time alerts, real-time notifications, real-time instant chats, forums, communities, database management, Moderator Management, Application Installation management, User Profile Management etc. Allows the multi-user simultaneously in the same session time and no downtimes in terms of bandwidth. Allows 'n' number of users. File synchronization is made easy for instant and faster access to the web desktop.

Multi-User WebOS detects the device type automatically when the user is logged-in, pushing the web desktop interface that best fits both the user interface and the device.

8.2 Characteristics:

- Multi-User WebOS with multiple applications can be accessed at once by the Muti-Users in the same single session.
- Multi-User webOS can display the list of apps such as calendars, mailboxes, browsers, office tools etc. can be viewed in the single common layer.
- Combined Messaging exchange is clearly possible in WebOS. It lets you to view all the conversations with the same person in a single screen in a web chat console, chat can be initiated among the users in an organization.
- Multi-User WebOS is also compatible with low bandwidth network connectivity.
- WebOS include an integrated Web browser that is compatible with the video formats like .AVI, .MPEG, MP4, Flash etc.

- Compatible with Android device, Windows Mobile Device, Netbooks, Notebooks, Personal Desktops etc.

9. Conclusion

In this current paper, we have presented the theme of Web Operating System that is built on cloud environment that allows the multi-users access simultaneously in the same session time on the web desktop. Discussed on overview of Multi-User WebOS in Cloud environment, its requirement analysis, Hands-on Experience, Configuration methods, architectural view, various functionalities, characteristics, performance optimization, WebOS Web Engine working process, key benefits and deployment of WebOS in Cloud environment where some additional constraints and key points are highlighted.

This clearly explains that how Multi-User WebOS in Cloud Environment is designed, developed, configured, implemented, deployed and hosted in the Linux or Windows Operating System with the help of standalone Webserver (i.e., Apache or IIS). It also describes that how multi-users can be accessed with the registered accounts or user credentials to access the web desktop simultaneously in the same session time.

Multi-User WebOS is based on DaaS Model (Desktop as a Service), it is a solution especially offered for educational institutions and private organizations that who want to run the web desktop in cloud environment in a standalone Webserver.

10. References

[1] Oliver Krone, Simon Schubiger, "WebRes: Towards a Web Operating System" 2nd-5th March 1999, pp 418-429.

[2] José Aguilar, Niriaska Perozo, Edgar Ferrer, Juan Vizcarrondo, "Architecture of a Web Operating System Based on Multiagent Systems" Volume 3681, September 14-16, 2005. pp 700-706.

[3] Sujin O, Woochun Jun, Le Gruenwald, Sukki Hong, "A Web-Based System to Teach Computer Operating System Theories and Usage to Elementary School Students" Volume 2783, August 18-20, 2003. pp 473-484.

[4] Oliver Krone, Alex Josef, "Using Corba in the Web Operating System", Volume 1830, June 19–21, 2000. pp 133-141.