

# The Experience in Integrating VMware Software in Implementing the Server Operating System Course

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**Abstract:** *Server Operating System is a course that needs actual use of hardware specifically the server. As of the moment, it is not possible to have this kind of setup in the University of Makati. University professors found a way by using virtualization softwares to resolve the problem. The experience of using VMware software is the purpose of this research. Virtualization software may be difficult for starters but learning it can be as easy as 1-2-3. Experiences of integrating these softwares in a class may be different for each student. Questionnaires were created for the students in order to get data.*

## 1. Introduction

VMware Workstation is becoming popular because of its features. It allows an operating system to be installed and simulated on a computer without doing the typical operating system installation. It will only consume few gigabytes in storage, making more space for other files. Multiple operating systems can be installed making the software more convenient to use.

According to Vangie Beal, virtualization means to create a virtual version of a device or a resource such as a server, a storage device, a network or even an operating system where the framework divides the resource into one or more execution environments. Devices, software applications, and human users are able to interact with the virtual resource as if it is a real single logical resource. The term virtualization has become a popular term, and as a result it is now associated with a number of computing technologies.

In order to experience the Integrating VMware Software in the Server Operating System Course, the students were given instructional materials such as installers and laboratory activities. The ISO software, VMware Software, Server OS (Windows 2003 and 2008, Client OS (Windows XP and Windows 7) were installed before implementing the VMware activities. There were three participants per team in conducting the laboratory activities such as network connections, sharing of files, creating users groups, organization unit (OU), Group Policy

Object (GPO), creating active directory, Domain name service (DNS), Domain Host Configuration Protocol (DHCP).

## 2. Statement of the Problem

The main purpose of the study is to evaluate the experience of integrating VMware software in implementing the server operating system course. It specifically aims in answering the following questions:

1. Is using simulation software helpful in learning the server operating system course?
2. Is the VMware software user-friendly and easy to use?
3. Which part of VMware simulation activities are easy and difficult to use?

## 3. Research Objectives

This study aims to achieve the following objectives:

1. To assess and document whether VMware software is helpful for the students of the server operating system course through a survey.
2. To evaluate the use of simulation software like VMware.
3. To identify which simulation activities are easy and difficult to perform using VMware.

## 4. Conceptual Framework

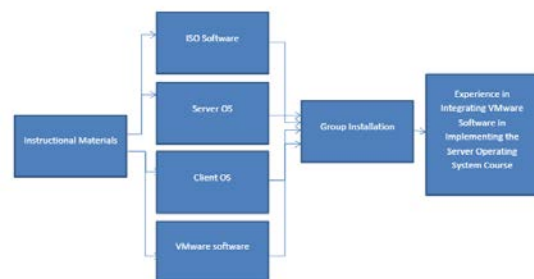


Figure 1. Conceptual Framework of the study

Instructional materials like ISO Software, Server OS, Client OS, and VMware Workstation are needed for the server operating system course. The ISO software will be used to convert operating system files into .iso format. Server operating systems like Windows 2003 and Windows 2008 are used for the course. Client operating systems like Windows XP and Windows 7 are also used. The VMware Workstation is the simulation software used.

### 5. Methodology

The respondents of this study are the students of University of Makati (2<sup>nd</sup> Year Bachelor of Science in Computer Science Major in Network Administration of two sections A and B). The students had series of activities like network connections, sharing of files, creating users groups, organization unit (OU), Group Policy Object (GPO), creating active directory, Domain name service (DNS), Domain Host Configuration Protocol (DHCP).

### 6. Results

The researchers evaluated the VMware software by distributing surveys to the 2<sup>nd</sup> Year students of Network Administration of the University of Makati. Table 1 shows that most of the respondents (53.3% and 46.7% respectively) confirmed that using simulation software is helpful in learning server operating system.

**Table 1 Question #1: Using simulation software will be helpful in learning the server administration course??**

Response	Frequency	Percent
Strongly Agree	16	53.3
Agree	14	46.7
Not Agree	0	0
Strongly Not Agree	0	0
Total	30	100.0

Table 2 shows that all of the respondents (33.3% Strongly Agree and 66.7% Agree respectively) confirmed that using virtual machine software are easy to install.

**Table 2 Question #2: The VMware software is easy to install?**

Response	Frequency	Percent
Strongly Agree	10	33.3
Agree	20	66.7

Not Agree	0	0
Strongly Not Agree	0	0
Total	30	100.0

Table 3 shows that all of the respondents (13.3% Strongly Agree, 66.7% Agree, and 20.0% Not Agree respectively) confirmed that using virtual machine software is fast and accurate.

**Table 3 Question #3: The VMware software connection is fast and accurate**

Response	Frequency	Percent
Strongly Agree	4	13.3
Agree	20	66.7
Not Agree	6	20.0
Strongly Not Agree	0	0
Total	30	100.0

Table 4 shows that all of the respondents (13.3% strongly Agree, 66.7% Agree, and 20.0% Not Agree respectively) confirmed that using virtual machine software is user-friendly.

**Table 4 Question #4: The VMware is user-friendly simulator software**

Response	Frequency	Percent
Strongly Agree	4	13.3
Agree	20	66.7
Not Agree	6	20.0
Strongly Not Agree	0	0
Total	30	100.0

Table 5 shows that all of the respondents (20% strongly Agree, 70% Agree, and 10% Not Agree respectively) confirmed that using virtual machine It is easy to create Group policy (GPO) in VMware than creating in physical machine.

**Table 5 Question #5: It is easy to create Group policy (GPO) in VMware than creating in physical machine?**

Response	Frequency	Percent
Strongly Agree	6	20.0
Agree	21	70.0
Not Agree	3	10.0
Strongly Not Agree	0	0
Total	30	100.0

Table 6 shows that all of the respondents (16.7% strongly Agree, 73.3% Agree, and 10% Not Agree respectively) confirmed that the respondent prefer to use VMware software rather than physical machine.

**Table 6 Question #6: “I prefer to use VMware software rather than physical machine “?”**

Response	Frequency	Percent
Strongly Agree	5	16.7
Agree	22	73.3
Not Agree	3	10.0
Strongly Not Agree	0	0
Total	30	100.0

Table 7 shows that all of the respondents (56.7% strongly Agree, 40% Agree, and 3.3% Not Agree respectively) confirmed that the respondent prefer to use both simulation VMware and physical machine.

**Table 7 Question #7: I prefer to use both simulation VMware and physical machine”?”**

Response	Frequency	Percent
Strongly Agree	17	56.7
Agree	12	40.0
Not Agree	1	3.3
Strongly Not Agree	0	0
Total	30	100.0

Table 8 shows that all of the respondents (16.7% installation, 66.7% network configuration, create group, OU 6.7%, and 10% create GPO respectively) confirmed that the respondent in using VMware software the network configuration is hard to implement.

**Table 8 Question #8: Which part of VMware simulation activity is hard to implement?**

Response	Frequency	Percent
Installation	5	16.7
Network Configuration	20	66.7
Creating group, OU	2	6.7
Create GPO	3	10.0
Total	30	100

Table 8.0 shows that all of the respondents (36.7% installation, 23.3% network configuration, create group, OU 33.3%, and 6.7% create GPO respectively) confirmed that the respondent in using VMware software the create user, and OU is easy to implement. This indicates that the students are very much familiar with the use of VMware.

**Table 9 Question #9:Which part of VMware simulation activity is easy to implement?**

Response	Frequency	Percent
Installation	11	36.7
Network Configuration	7	23.3
Create User, OU	10	33.3
Create GPO	2	6.7
Total	30	100.0

## 7. Discussion

Students were asked via survey to evaluate their experience in using simulation software like VMware Workstation. The results indicated that all students confirmed that using simulation software helped them in understanding the Server Operating System course.

The researchers used the experimental method in their study. As per data, the students noted that the VMware software is fast to use and easy to navigate. The easiest activity for the course is the Installation of client and server operating system using VMware, whereas, the most difficult part is the Network Configuration. It is also noticeable that there's a 10 percent share in the group that still prefers the hardware simulation versus the software.

A study found that VMware is an excellent tool for creating kernel-development environments for students. University. (Nieh, J., & Leonard, O. C, 2000). Virtualization platforms offer the capability to integrate advanced topics into courses in a way that gives students control so that they can perform hands-on activities that would be infeasible on shared physical computers (*Journal of Information Systems Education*, Lunsford, D. L. (2009).

## **8. Conclusion and Recommendation**

VMware software provided a tool that helped students in learning the Server Operating System course using simulation. The following objectives set by the researchers were met: (a) to assess and document whether VMware software is helpful for the students of the server operating system course through a survey, (b) to identify which simulation activities are easy and difficult to perform using VMware, and (c) to evaluate the use of simulation software like VMware. The VMware software is user-friendly and easy to use. The researchers were able to identify which part of VMware simulation activities are easy and difficult to use. The experience in using software simulation is helpful in learning the said course.

The researchers recommend creating a manual in order to easily understand the use of the VMware software. It's also best if the students will apply the virtual to physical simulation, and will use the other virtual software in learning Web server like Virtual box.

## **9. Acknowledgements**

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## **10. References**

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