

Network Virtualization: A survey of the Wintec EPG

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Introduction

Internal network (platform) virtualization is the creation of a virtual machine (VM) that appears to be another physical computer with an operating system. Multiple VMs can run on the same physical host. This reduces costs for an organisation that desires extended network functionality (Barkham et al., 2003).

Virtualisation, as a topic, is already integrated into a general Wintec School of IT degree networking paper. EPG ICT industry members have been surveyed to determine the current extent of virtualization implementation in their organisations. This poster focuses on an analysis of their responses and the options available, based on these results.

Content

Five EPG members from medium to large organisations responded. Responses from a retired member and a self-employed member have been excluded.

Table 1 gives an indication of the size of each organisation, based on the number of servers and desktops they have.

All respondents were using virtual servers at the time of

the survey, of which four (80%) respondents had at least five virtual servers. Two (40%) used at least 10 virtual desktops. One respondent, who did not use any virtual desktops, is looking to have 10 or more installed by the end of 2011.

Virtualization platforms were also surveyed. The results displayed in figure 1 indicate that VMware server was the most popular choice followed by Xen. Given the very small sample size, no firm conclusions can be drawn. Barkham et al (2003) highlight the efficiency of using Xen for virtualization. Neih & Leonard (2000) found that VMware is also effective in teaching the topic.

Four (80%) respondents are using Virtual Local Area Networks (VLANs). Four (80%) felt that it would be useful for graduates to possess virtualization knowledge and skills and the remaining respondent (20%) felt it would be very useful for them. There were no respondents who felt it would not be useful. Four (80%) felt that it would be somewhat helpful for a graduate with these knowledge and skills to get a job in their organisation and the remaining respondent (20%) felt it would not

help them.

Conclusion

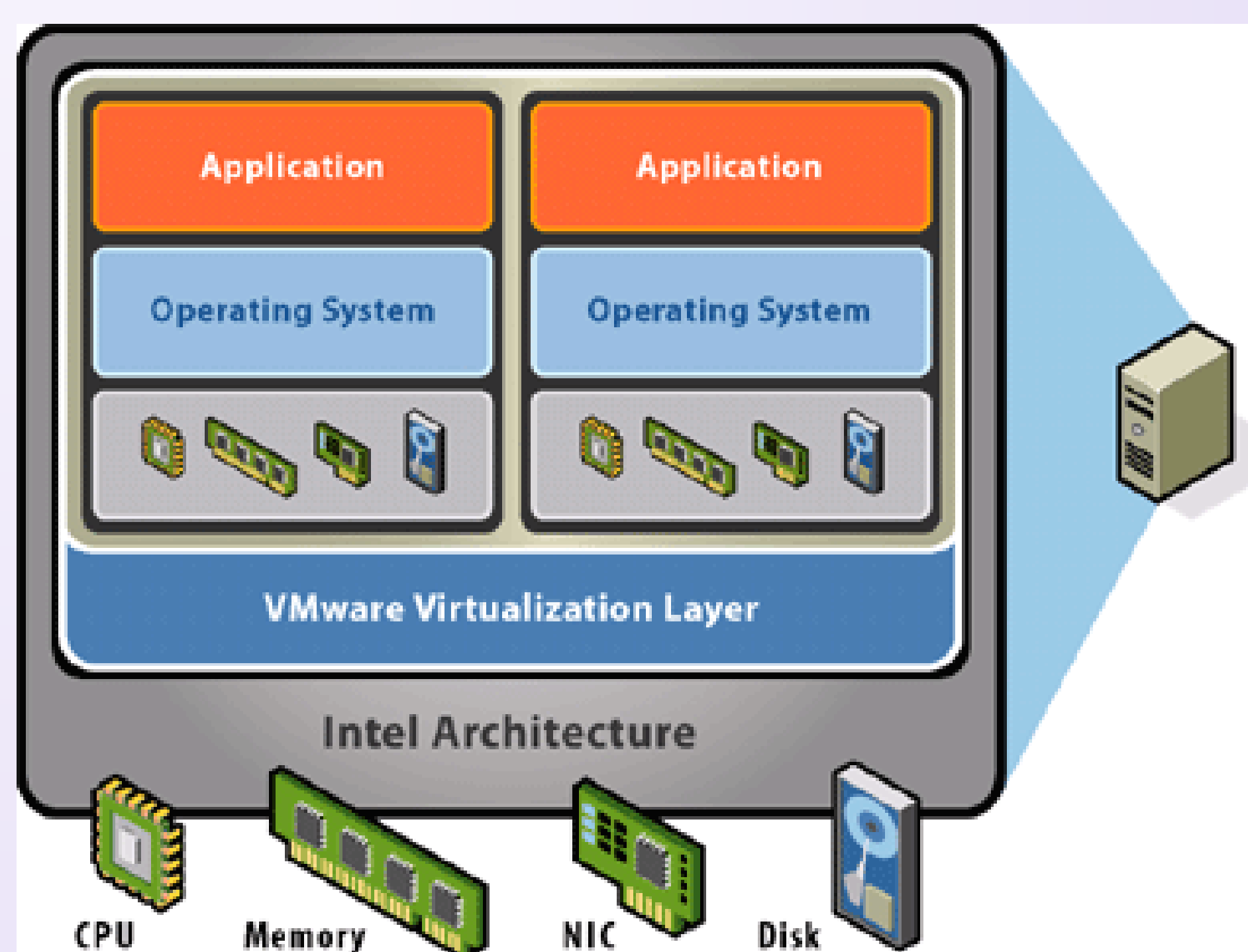
Platform virtualization is used significantly by all five survey respondents. VMware server appears to be the most popular software platform from these respondents, followed closely by Xen. The authors acknowledge the small sample size and plan to survey a larger sample size in the future. Given the wide adoption of virtualization from the respondents, this survey will be modified to include larger virtual server and desktop numbers. The results give an indication that it may be worthwhile for the Wintec School of IT to develop a seven credit, level six, module dedicated to this topic.

References

Barkham, P., Dragovic, B., Fraser, K., Hand, S., Harris, T. (2003). Xen and the art of virtualization. Proceedings of the 19th ACM symposium of Operating Systems principles. (pp. 164-177), New York, USA: ACM SOSP
Neih, J., Leonard, O. (2000). Examining VMWare. Dr Dobb's journal

Organisation	Number of servers	Number of Desktops
1	9	300
2	500	3000
3	378	6500
4	25	1000
5	100	500

Table 1. Number of servers and desktops at each organisation



http://www.cornerstone.it/solutions_server.php

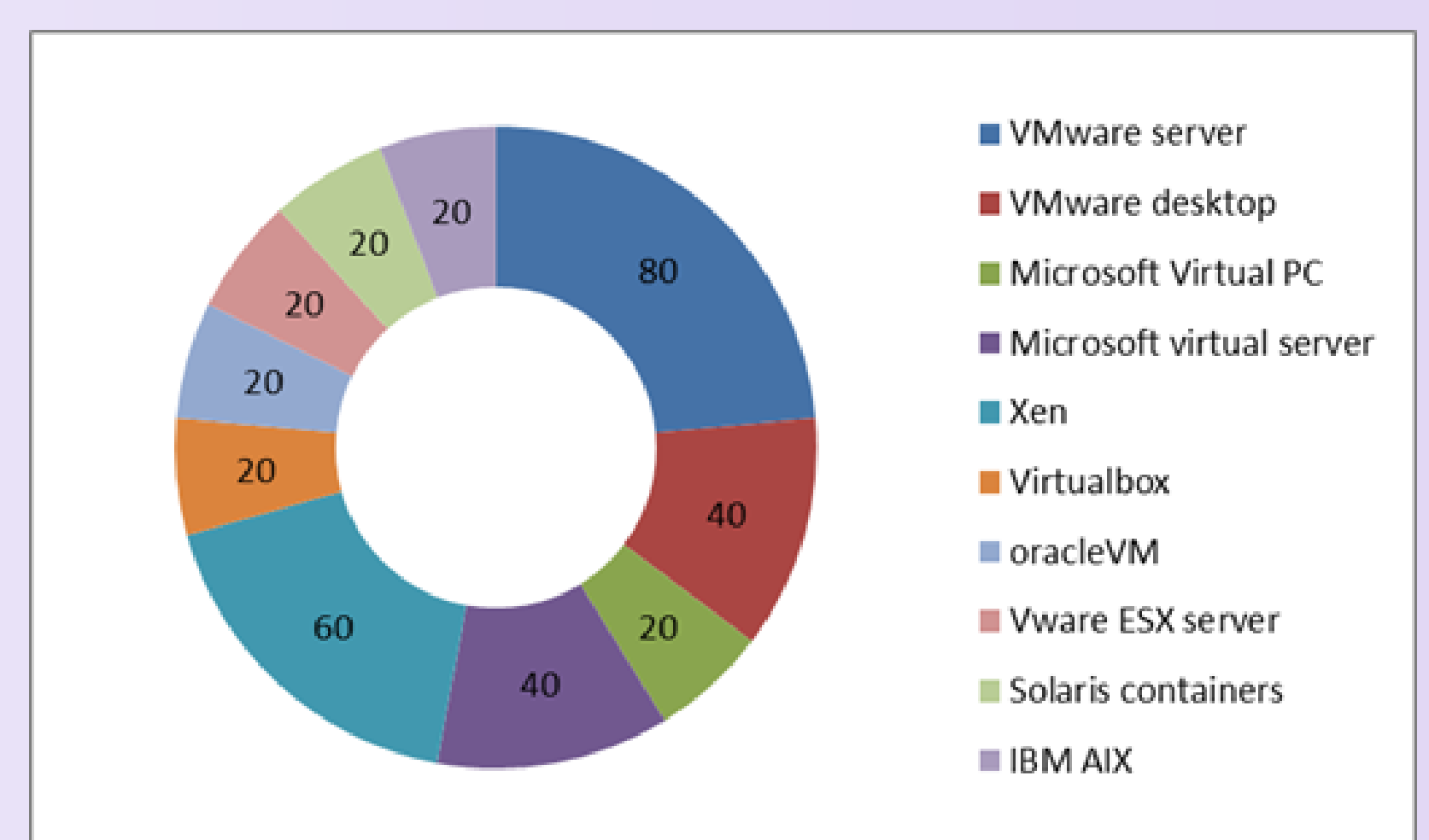


Fig 1. Percentage of virtualization platform usage from respondents

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PROJECT 1 Network Virtualisation

AIM
The student will be able to install and configure a virtual server on a removable drive with windows 7 as the host operating system

EQUIPMENT
PC, Removable Drive with Windows 7 Operating System, Windows server 2003 iso file and installation CD

TASKS

1. Download installation files
2. Install VMware player onto the removable drive
3. Create a virtual machine
4. Change virtual machine's physical settings
5. Change virtual machine's proxy settings
6. Install VMware tools
7. Set the IP address of the virtual machine
8. Join the virtual machine to the **rexnet** active directory domain
9. Set the VM to be a domain controller
10. Configure another terminal

Fig 2. Student practical exercise using VMware Player

WAIKATO INSTITUTE OF TECHNOLOGY (Wintec) Local Module

PRESCRIPTION: VM600 VIRTUALIZATION

AIM OF MODULE:	To provide students with the knowledge and skills required to install, configure and maintain virtual environments.
CREDITS:	7
STUDENT LEARNING HOURS:	70
CONTENT REVISED:	2011 (new)
PRESCRIPTION EXPIRY DATE:	Nov 2013
NOTE:	

TOPICS	Highest Skill Level				Suggested Assessment Percentage
	R	C	A	P	
1. Virtualization concepts, benefits and applications		*			15
2. Virtualization Application Overview		*			10
3. Hypervisors		*			5
4. Desktop Virtualization			*		10
5. Server Virtualization			*		10
6. Virtual Appliances		*			10
7. Paravirtualization		*			5
8. Virtual Machines			*		15
9. Storage & Application Virtualization		*			10
10. Security Implications of Virtualization		*			10
					100

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Fig 3. Wintec Diploma Module draft prescription

