A Study on Virtualization Software for Company X

Introduction

Company X is seeking to replace current MacBooks with new MacBook Pros. For testing purposes, virtualization software will be required. Five virtualization software available on OS X were compared for their performance, functionality, and price.

Problem Description

An operating system (OS) is a system software that manages all programs in a computer [1]. The main operating systems are Windows, Mac OS X, and Linux.

Virtualization software allows a PC to run two or more operating systems [2]. The "guest machine" created through the virtualization software runs a complete operating system on top of the original operating system, the "host".

Company X is a small, local software development company with fifteen programmers. All developments only occur at the workplace during working hours. With current laptops becoming incapable of handling graphic demanding application development, there is the need for replacement. Since all applications are developed on OS X, every employee will be provided with a new MacBook Pro with a 2.9GHz quad-core 7th-generation Intel Core i7 processor, 16gb RAM, 512gb SSD, and a Radeon Pro 560 graphics card with 4GB memory [3]. Windows OS will be run through virtualization software on the new MacBook Pros for testing cross-platform compatibility, and previous versions of OS X will be run for testing backward compatibility.

Evaluation of the 5 systems

Product	Parallels Desktop	VMware Fusion 10	Veertu	Oracle VM VirtualBox	Boot Camp
Performance (Out of 10)	9	8	8	6	10
Supports Windows guest machines *	✓	✓	✓	✓	✓
Supports OS X guest machines *	✓	✓	✓	✓	-

Drag/Drop Files Between Guest and Host *	✓	✓	-	✓	-
Shortcut on Host Opens App on Guest *	✓	✓	-	-	-
Guest Desktop Mirrors Host Desktop *	✓	✓	-	-	-
Saves Snapshots of Guests *	✓	✓	-	✓	-
Price	**$$$$**	**$$$**	**$$**	-	-

*** Data from PCMAG [4]**

Performance

Boot Camp is the best performer of the group, having the ability to devote full processor power and memory to the running OS [5]; however, Boot Camp is not a true virtualization software, but a multi-boot assistant that allows a user to run one OS alongside another. For virtualization software, informal tests by PCMAG editor Edward Mendelson [6], show Oracle's VM VirtualBox to be lacking in speed on both booting and running applications when compared to Parallels desktop, Veertu, and VMware Fusion 10 [6]. Features such as screen resizing on a Windows guest looked jagged and distorted on VirtualBox, whereas resizing was done smoothly on Parallels Desktop and VMware Fusion [6]. Informal tests between Parallels and Fusion showed that Parallels 12 (at 13 seconds) was almost three times faster than Fusion (at 35 seconds) at starting Windows and was four times faster at shutting down Windows [7]. On real-world application running, Parallels and Fusion proved to be about the same speed [7].

Guest OS Support

All four virtualization software except Boot Camp, support Windows, Linux, and OS X guest machine creations. Boot Camp guest machine support is limited to Windows 7 or newer OSes.

Functionality

VMware Fusion 10 and Parallels desktop provide similar functionality in that both software provides an option to launch an application on the guest machine directly from a shortcut on the Dock of the host as if native to OS X [7]. Both also provide a "display mode" that hides the desktop of the Windows guest machine and only displays the application currently in use [8]. As well, the guest desktop can mirror the host desktop such that a modification on the host is automatically mirrored by the guest machine [7].

Parallels, Fusion, and VirtualBox allow dragging and dropping of files between guest and host machines, allowing for quick and easy transfers [7]. Veertu makes up for this missing functionality by allowing a Windows guest machine to access one folder and its subfolders while allowing a Linux guest machine access to the entire OS X host system [7]. Boot Camp does not support any form of file transfer between OSes.

A snapshot is a copy of a virtual machine at a certain point in time [8]. Using snapshots as a point for recovery can be useful for situations when software testing involves a constant need for new copies of the software, or when there is the need to return to a previous working stage of development. Parallels, Fusion, and VirtualBox provide snapshot functionality.

Veertu is very limited in functionality. Simple functionalities such as resizing a window on a Windows guest by dragging the window borders, and using the command key on OS X as the windows key on Windows guest are not present [9]. Further lacking in functionality, Boot Camp does not offer any of the functionalities of traditional virtualization software.

Price

At $99.99 USD per year [10], Parallels Desktop is the most expensive virtualization software in terms of long-term cost, whereas VMware fusion 10 pro at $159.99 USD [11] is the most costly upfront. Veertu costs $39.99 USD [9] and Oracle's VM VirtualBox can be downloaded free under GPLv2 license [12]. Boot Camp comes preinstalled on OS X.

Conclusion

At $159.99 USD, VMware Fusion 10 pro is the most expensive in upfront costs; however, the costs are greatly justified when compared to the competition for value and functionality. Fusion provides all the functionalities required for Company X, such as excellent, near native performance, the ability to support all versions of Windows and OS X, the ability for easy transfer of files, and the ability for easy system recovery. With vSphere Connectivity, employees can connect to vCenter, ESXi or Workstation Pro servers to control and configure virtual machines on other Macs and thereby conduct collaborative development with employees worldwide [13], making the software suitable for future, international expansions.

Sources

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