virtual Machine

Rohani Abd Haziz/s per 1st Affiliation (Author)
line 1 (Fakulti Teknologi dan Sains Maklumat): dept. name of organization
Jabatan Sains Dan Pengurusan Sistem, Universiti Kebangsaan Malaysia
Malaysia
anizz98@yahoo.com

Abstract

Virtualization is a proven software technology that is rapidly transforming the IT landscape and fundamentally changing the way that people compute. Todays powerful x86 computer hardware was designed to run a single operating system and a single application. This leaves most machines vastly underutilized. Virtualization lets you run multiple virtual machines on a single physical machine, sharing the resources of that single computer across multiple environments. Different virtual machines can run different operating systems and multiple applications on the same physical computer. While others are leaping aboard the virtualization bandwagon now, VMware is the market leader in virtualization. The technology is production-proven, used by more than 150,000 customers, including 100Virtualizing your IT infrastructure lets you reduce IT costs while increasing the efficiency, utilization, and flexibility of your existing assets. Around the world, companies of every size benefit from VMware virtualization. Thousands of organizationsincluding all of the Fortune 100use VMware virtualization solutions. See how virtualizing 100

How Does Virtualization Works? The VMware virtualization platform is built on a business-ready architecture. Use software such as VMware vSphere and VMware ESXi (a free download) to transform or virtualize the hardware resources of an x86-based computerincluding the CPU, RAM, hard disk and network controllerto create a fully functional virtual machine that can run its own operating system and applications just like a real computer. Each virtual machine contains a complete system, eliminating potential conflicts. VMware virtualization works by inserting a thin layer of software directly on the computer hardware or on a host operating system. This contains a virtual machine monitor or hypervisor that allocates hardware resources dynamically and transparently. Multiple operating systems run concurrently on a single physical computer and share hardware resources with each other. By encapsulating an entire machine, including CPU, memory, operating system, and network devices, a virtual machine is completely compatible with all standard x86 operating systems, applications, and device drivers. You can safely run several operating systems and applications at the same time on a single computer, with each having access to the resources it needs when it needs them

1. Introduction

Virtualization dramatically improves the efficiency and availability of resources and applications in your organization. Internal resources are underutilized under the old one server, one application model and IT admins spend too much time managing servers rather than innovating. An automated datacenter, built on a VMware virtualization platform, lets you respond to market dynamics faster and more efficiently than ever before. VMware vSphere delivers resources, applicationseven serverswhen and where theyre needed. VMware customers typically save 50-70

Run multiple operating systems on a single computer including Windows, Linux and more.

Let your Mac run Windows creating a virtual PC environment for all your Windows applications.

Reduce capital costs by increasing energy efficiency and requiring less hardware and increasing your server to admin ratio

Ensure your enterprise applications perform with the highest availability and performance

Build up business continuity through improved disaster recovery solutions and deliver high availability throughout the datacenter

Improve enterprise desktop management / control with faster deployment of desktops and fewer support calls due to application conflicts

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1.1. Top 5 Reasons to Adopt Virtualization Software

Get more out of your existing resources: Pool common infrastructure resources and break the legacy one application to one server model with server consolidation.

Reduce datacenter costs by reducing your physical infrastructure and improving your server to admin ratio: Fewer

servers and related IT hardware means reduced real estate and reduced power and cooling requirements. Better management tools let you improve your server to admin ratio so personnel requirements are reduced as well.

Increase availability of hardware and applications for improved business continuity: Securely backup and migrate entire virtual environments with no interruption in service. Eliminate planned downtime and recover immediately from unplanned issues.

Gain operational flexibility: Respond to market changes with dynamic resource management, faster server provisioning and improved desktop and application deployment.

Improve desktop manageability and security: Deploy, manage and monitor secure desktop environments that users can access locally or remotely, with or without a network connection, on almost any standard desktop, laptop or tablet PC.

1.1.1. Subsection Heading Here. List of virtual machine software Process (Application) virtual machine software Common Language Infrastructure - C, Visual Basic .NET, J, C++/CLI (formerly Managed C++) Dalvik virtual machine - part of the Android mobile phone platform Dis - Inferno operating system and its Limbo programming language Dosbox EiffelStudio for the Eiffel programming language Erlang programming language Forth virtual machine - Forth Glulx - Glulx, Z-code Hec - Hasm Assembler Java Virtual Machine - Java, Nice, NetREXX Low Level Virtual Machine (LLVM) - currently C, C++, Stacker Lua Macromedia Flash Player - SWF MMIX - MMIXAL Neko virtual machine - currently Neko and haXe O-code machine - BCPL p-code machine - Pascal Parrot - Perl 6 Perl virtual machine - Perl CPython - Python YARV - Ruby MRI Rubinius - Ruby ScummVM - Scumm SECD machine - ISWIM, Lispkit Lisp Sed the stream-editor can also be seen as a VM with 2 storage spaces. Smalltalk virtual machine - Smalltalk SQLite virtual machine - SQLite opcodes Squeak virtual machine - Squeak SWEET16 Tamarin (JavaScript engine) - ActionScript VM in Flash 9 TrueType virtual machine - TrueType Valgrind - checking of memory accesses and leaks in x86/x86-64 code under Linux Virtual Processor (VP) from Tao Group (UK). VX32 virtual machine - application-level virtualization for native code Waba - Virtual machine for small devices, similar to Java Warren Abstract Machine - Prolog, CSC GraphTalk Z-machine - Z-Code Zend Engine - PHP libJIT Just-In-Time compilation library - libJIT bytecode System (Hardware) virtual machine software ATL (A MTL Virtual Machine) Bochs, portable open source x86 and AMD64 PCs emulator CoLinux Open Source Linux inside Windows CoWare Virtual Platform Denali, uses paravirtualization of x86 for running para-virtualized PC operating systems. eVM Virtualization Platform for Windows by TenAsys Hercules emulator, free System/370, ESA/390, z/Mainframe KVM LilyVM is a lightweight virtual machine An introduction Logical Domains Microsoft Virtual PC and Microsoft Virtual Server OKL4 from Open Kernel Labs Oracle VM OVPsim [1] is a freely available virtual platform simulator designed to simulate complex multiprocessor systems at very high speeds Parallels Workstation, provides virtualization of x86 for running unmodified PC operating systems Parallels Desktop for Mac, provides virtualization of x86 for running virtual machines on Mac OS X or higher QEMU, is a simulator based on a virtual machine. SheepShaver. Simics Sun xVM SVISTA Trango Virtual Processors twoOStwo User-mode Linux VirtualBox Virtual Iron (Virtual Iron 3.1) VM from IBM VMware (ESX Server, Fusion, Virtual Server, Workstation, Player and ACE) vSMP Foundation (From ScaleMP) Xen (Opensource) IBM POWER SYSTEMS OS-level virtualization software OpenVZ FreeVPS Linux-VServer FreeBSD Jails Solaris Containers AIX Workload Partitions

2. Conclusion

The main purpose of the Java Virtual Machine is to solve the problems with creating portable computer programs. The question is, does the JVM completely solve this problem. The answer is no...It does not completely solve this problem. However, it provides a good solution that is for the most part effective (although not 100 percent effective). Java has still achieved a relatively high degree of portability. The power of the Java has allowed people to develop many cross-platform applications and has proven to be a useful and powerful interpretation of a virtual machine.

Acknowledgment

References

[1] H. Kopka and P. W. Daly, *A Guide to LATEX*, 3rd ed. Harlow, England: Addison-Wesley, 1999.