Xen: A Gentle Introduction

Presentation to Linux Users Victoria,
Tuesday July 3, 2007
Xen: A Gentle Introduction

Starting eshd.
sysctl: top level name 'hw' in 'hw.disknames' is invalid
Starting inetd:
Tue Nov 2 16:56:01 UTC 2004
NetBSD/i386 (demo-rb) (console)
login: root
Password:
Login incorrect
login:
login: root
Password:
Last login: Tue Oct 13 09:49:21 2004 on console
Nov 2 16:48:37 demo-rb login: ROOT LOGIN (root) ON console
The NetBSD Foundation, Inc. All rights reserved.
Copyright (c) 1982, 1983, 1984, 1985
The Regents of the University of California. All rights reserved.
Nov 2 16:48:37 demo-rb login: ROOT LOGIN (root) ON console
NetBSD ?? (UNKNOWN)
Welcome to NetBSD!

Welcome to KMail 1.6.2
KMail is a free email client designed to be fully functional.
Efficient Allocation of Scarce Resources

Three good reasons for virtualisation:
1) Server Consolidation
2) Hardware Independence
3) Multiple OS Configurations
Virtualisation and Emulation

1) Technology dates from the 1960s
2) P-Code, Java VM, MAME
3) Native virtualisation, Hardware-enabled virtualisation, Partial virtualisation, paravirtualisation, operating system virtualisation, application virtualisation
## Xen: A Gentle Introduction

### Xen and Its Friends

<table>
<thead>
<tr>
<th>Project</th>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Bochs</td>
<td>Emulation</td>
<td>LGPL</td>
</tr>
<tr>
<td>QEMU</td>
<td>Emulation</td>
<td>LGPL/GPL</td>
</tr>
<tr>
<td>VMware</td>
<td>Full virtualization</td>
<td>Proprietary</td>
</tr>
<tr>
<td>z/VM</td>
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<tr>
<td>Xen</td>
<td>Paravirtualization</td>
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<td>UML</td>
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<td>Linux-VServer</td>
<td>Operating system</td>
<td>GPL</td>
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<td>OpenVZ</td>
<td>Operating system</td>
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Xen's Structure

1) Xen is an open-source para-virtualizing virtual machine monitor (VMM)

2) A Xen system has multiple layers, the lowest and most privileged of which is Xen itself.

3) Xen may host multiple guest operating systems, each of which is executed within a secure virtual machine.

4) The first domain, domain 0 has special management privileges. Domain 0 builds and administers other domains and their virtual devices.
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Installation

1) Start with minimal O.S. install
2) Extract and Install Xen binary, or compile and build from source
   (http://www.xensource.com/downloads/)
3) Check GRUB; there should be a bootable, normal OS kernel to boot and a Xen-kernel
4) Detailed instructions
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Create Virtual Machines

1) Adopt configuration files for additional domains
   (/etc/xen/xmexample1, /etc/xen/xmexample2)

2) Use the create command, to start a domain with virtual machine ID 1 you should type:
   # xm create -c myvmconf vmid=1
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Examples of Xen's Koans

Xen will typically run on laptops, but....

Xen currently runs only on the x86 architecture, requiring a "P6" or newer processor...

You must disable hyperthreading in you BIOS else your Xen Kernel will reboot indefinitely

With an IntelVT enabled system ensure that the IntelVT capabilities are enabled via the BIOS and power-cycle the system
Acknowledgements

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Xen Wiki Source: http://wiki.xensource.com/

Xen Users Mailing List:
Subscriptions; http://lists.xensource.com/cgi-bin/mailman/listinfo/xen-users