JISHA

Xen Deployment Tool

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Xen Architecture

- **Domain 0**
  - `xend`
  - `xenstored`
  - `xenconsoled`

- **Hypervisor**

- **Guest OS**
  - Paravirtualized Kernel

- **XenBus**

- **Hardware**
Xen Hypervisor
Installation
Xen Hypervisor Installation

1. Start off with a basic Linux installation and the GRUB bootloader
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3. Build Xen hypervisor kernel from scratch or download prebuilt
4. Modify `/etc/grub.conf` to boot using the hypervisor kernel
/etc/grub.conf

default=0
timeout=5
splashimage=(hd0,0)/boot/grub/splash.xpm.gz
hiddenmenu
title Fedora Core (2.6.15-1.1955_FC5smp)
  root (hd0,0)
  kernel /boot/vmlinuz-2.6.15-1.1955_FC5smp ro root=LABEL=/1
  initrd /boot/initrd-2.6.15-1.1955_FC5smp.img
title Fedora Core (2.6.15-1.1955_FC5hypervisor)
  root (hd0,0)
  kernel /boot/Xen.gz-2.6.15-1.1955_FC5
  module /boot/vmlinuz-2.6.15-1.1955_FC5hypervisor ro root=LABEL=/1
  module /boot/initrd-2.6.15-1.1955_FC5hypervisor.img
Guest Image Creation
Fedora Core 4
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1. Create the image
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1. Create the image
2. Format the image
Guest Image Creation
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4. Build bare bones /dev tree
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5. Create /mnt/guest/etc/fstab
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5. Create /mnt/guest/etc/fstab
6. Mount proc filesystem /mnt/guest/proc
Guest Image Creation
Fedora Core 4

1. Create the image
2. Format the image
3. Mount the image
4. Build bare bones /dev tree
5. Create /mnt/guest/etc/fstab
6. Mount proc filesystem /mnt/guest/proc
7. Install base operating system
Guest Image Creation
Fedora Core 4

1. Create the image
2. Format the image
3. Mount the image
4. Build bare bones /dev tree
5. Create /mnt/guest/etc/fstab
6. Mount proc filesystem /mnt/guest/proc
7. Install base operating system
8. Unmount image
Booting the Guest Image
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• Create configuration file to go along with an image, i.e. centos.cfg

```python
name = "CentOS"
kernel = "/boot/vmlinuz-2.6-XenU"
memory = "256"
disk = [ 'file:/mnt/images/centos,xvda,w' ]
vif = [ 'mac=00:16:3e:33:63:0a' ]
```
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- Use xm tool to start the guest domain

```bash
# xm create centos
```
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  ➡ DNS Server, Web Server, DB Server, etc.
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• Images can be pre-made for a variety of configurations

➡ DB Server, Web Server, DNS Server, etc.

• The user only needs to supply a suitable kernel
Introducing Jisha

Automatic Deployment Of Guest Images
Overview

- Images are advertised over RSS 2.0 feeds
- Developed in Ruby
- Uses libvirt API to interact with Xend
Previous Work

- Motivated by initial specification work done on Xen-get
- Xen-get is not in active development
- Xen-get is python based
Jisha In Action

Host Running Xen & Jisha

Image Server

RSS FEED

RSS FEED
1. User invokes Jisha to build image description cache from feeds listed in feeds.cfg
2. User invokes Jisha to install an image listed in a feed

Host Running
Xen & Jisha

Request Image Over FTP or HTTP

Image Bytes

Image Server

Image Server
3. Jisha starts guest domain with a call to libvirt `virDomainCreateLinux(virConnectPtr conn, const char * xmlDesc, unsigned int flags)`
RSS 2.0 Image Feeds

<rss version="2.0" xmlns:jisha="http://localhost/jisha/rss">

...<item>
<title>CentOS-4.2</title>
<link>http://jailtime.org/lib/exe/fetch.php?cache=cache&media=download%3Acentos%3Acentos-4.2.20060210.img.tgz</link>
<jisha:date>02-11-2006</jisha:date>
<jisha:image_size>86081280</jisha:image_size>
<jisha:distro>CentOS</jisha:distro>
<jisha:md5>82e9392b43a33a311a8569238bd48b30</jisha:md5>
<description>This image is compliments of www.jailtime.org. Packages included: aaa_base, aaa_elflibs, acct...</description>
</item>
...

Example Usage
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- Update image description cache from feeds listed in feeds.cfg

```bash
# ./jisha update
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  ```
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- Search for a particular image
  
  ```
  # ./jisha search <search_string>
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- Search for a particular image
  ```bash
  # ./jisha search <search_string>
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- Install an image
  ```bash
  # ./jisha install <image_name>
  ```
**Example Usage**

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  ```
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- Search for a particular image
  
  ```
  # ./jisha search <search_string>
  ```

- Install an image
  
  ```
  # ./jisha install <image_name>
  ```

- Remove an image
  
  ```
  # ./jisha remove <image_name>
  ```
IA32 Protection Modes

- Ring 0: Xen
- Ring 1: Guest OS
- Ring 2
- Ring 3: User Space