Linux KVM

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Agenda

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- KVM : what is it ?

- Installation

- Demo

- Questions

About me!

KVM ?

- Linux Kernel-based Virtual Machine

- Open source complete virtualization on x86 hardware.

- Full support of major operating systems

- Convert Linux kernel into bare metal hypervisor

- Full support since Linux 2.6.20 (2007/02/05)

Who is involved ?

- Open Virtualization Alliance (OVA)

  - IBM, Intel, NetApp, RedHat

- Many more participation members and supporting organizations

  - HP, ARM,PROXMOX….

KVM Features

- Intel-based (VT) , AMD-based (SVM) hosts

- Live migration of guest

- SMP Hosts/Guests

- CPU/PCI Hotplug support

- Nested virtualization (Inception)

- Snapshots

- Start, stop, reboot, pause/resume of guest

Supported Guests

- www.linux-kvm.org/page/Guest_Support_Status

- Windows, linux, unix guests (32bit and 64bit)

KVM Role

- exposes /dev/kvm to userspace

- setup guest VM's address space

  - bootstrap using SeaBios

- guest simulated I/O

- map guest's video back to the host

Userspace

- Modified version of QEMU

- QEMU: Quick Emulator

  - Open source hosted Hypervisor

  - Emulates CPU via binary translation

  - Support for various architectures (IA-32,x86_64, MIPS, ARM....)

Installation

- Enable Virtualization support in the bios

- Verify host CPU capability: Intel-VT or AMD-V

    - egrep -c '(vmx|svm)' /proc/cpuinfo

- Install needed packages

    - qemu-kvm qemu-system libvirt-bin ubuntu-vm-builder bridge-utils

Installation (cont'd)

- Configure bridge networking (NAT default)

- /etc/network/interfaces

  - iface eth0 inet manual

  - auto br0

  - iface br0 intet static

    - address 192.168.0.3

    - gateway 192.168.0.1

    - bridge_ports eth0

    - bridge_fd 2

    - bridge_hello 2

    - bridge_maxage 12

    - bridge_stp off

Management Tools

- virt-manager - GUI

- virsh - CLI

  - list vms : virsh list --all

  - start a vm: virsh start WinXp

  - shutdown a vm: virsh shutdown WinXp

- ubuntu-vm-builder

DEMO ???

Questions ?

References

- http://www.linux-kvm.org/

- https://openvirtualizationalliance.org/

- https://help.ubuntu.com/community/KVM/Installation

- http://www.redhat.com/en/technologies/virtualization