Working with KVM Hypervisors

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KVM Features

Xen	KVM
Controls hardware	Controls software tools

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Controls hardware	Controls software tools
HVM and PV	Only HVM
	Leverages QEMU as emulator
	Requires integrated hardware virtualization

KVM Resources

/etc/libvirt/qemu	.XML definition files
/var/lib/libvirt/images	OS host source files
/var/log/libvirt/qemu	Logs
~/.virtinst/	Logs

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KVM Management Tools: libvirt

KVM Managers

- libvirt (virsh)
- virt-manager
  - Non-GUI version; including virt-install
- vmbuilder
- KVM

KVM Management Tools: virt-manager

virt-install Parameters

```
sudo virt-install -n ubuntu-vm \
 --connect qemu:///system \
 --description "Ubuntu 14.04 VM" \
 --os-type=Linux \
 --ram=1024 \
 --vcpus=2 \
 --disk path=/var/lib/libvirt/images/ubuntu-vm.img,bus=virtio,size=4 \
 --graphics none \
 --location /home/ubuntu/ubuntu-14.04.4-server-amd64.iso \
 --extra-args='console=tty0 console=ttyS0,115200n8 serial' \
 --network bridge:virbr0
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KVM Management Tools: vmbuilder

vmbuilder Parameters

```
sudo vmbuilder kvm ubuntu \
    --name new-ubuntu-vm \
    --suite trusty \
    --flavour virtual \
    --addpkg=linux-image-generic \
    --addpkg=unattended-upgrades \
    --addpkg openssh-server \
    --addpkg=acpid \
    --arch amd64 \
    --libvirt qemu:///system \
    --user ubuntu \
    --name mypassword \
    --hostname=test \
    --pass default
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vmbuilder
.cfg file

```
[DEFAULT]
arch = i386
ip = 10.0.4.100
part = vmbuilder.partition
user = ubuntu
name = ubuntu
pass = default
tmpfs = -
firstboot = boot.sh
firstlogin = login.sh

[ubuntu]
mirror = http://ca.archive.ubuntu.com/ubuntu/
suite = trusty
flavour = virtual
addpkg = openssh-server, apache2, apache2-utils, apache2.2-common,libapache2-mod-php5, php5-cli, php5-gd, php5-ldap, php5-mysql, mysql-server, unattended-upgrades, acpid
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mysql-server, unattended-upgrades, acpid
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KVM Management Tools: KVM

KVM Parameters

```
sudo kvm -name "my-VM" -M pc -m 768 \
-smp 2 -boot d \
-drive file=/var/lib/libvirt/images/my-ub,if=virtio,index=0,media=disk,format=raw \
-drive file=/home/ubuntu/ubuntu-14.04.4-server-amd64.iso,index=1,media=cdrom \
-net nic,model=virtio,macaddr=52:54:00:05:11:11 \
-net bridge,vlan=0,br=virbr0 \
-vga none -balloon virtio
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sudo kvm -name "my-VM" -M pc -m 768 \
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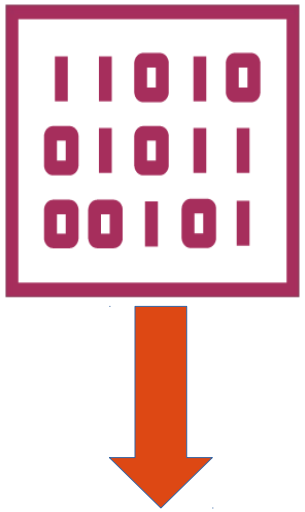
The KVM Process

STEP ONE:
Create or modify image with qemu-img



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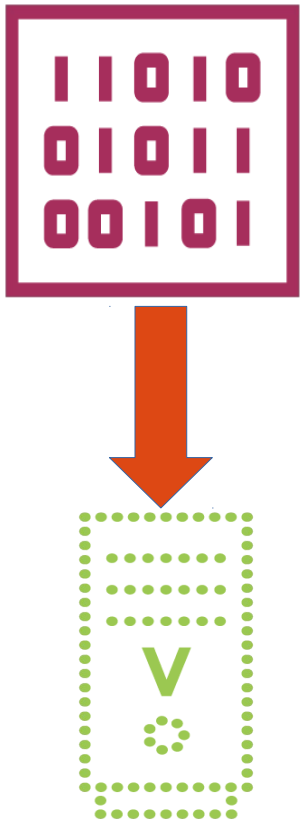

STEP TWO:
Use image to start installation with qemu-kvm

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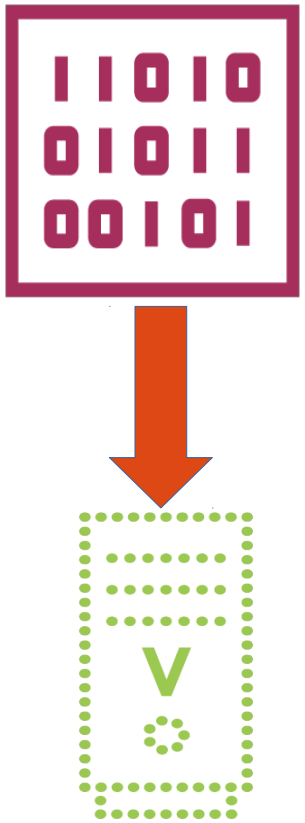

STEP TWO:
Use image to start installation with qemu-kvm

NOTE: qemu-kvm = qemu-system-x86_64 and the kvm wrapper

Access Console from Shell

Access KVM console:	CTRL+ALT and SHIFT+2
Close console:	SHIFT+1
Launch from command line:	qemu-system-x86_64 -monitor stdio

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KVM: Networking and Storage

/etc/network/
interfaces
Bridged
Configuration

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet manual

auto br0
iface br0 inet dhcp
        bridge_ports eth0
        bridge_stp off
        bridge_fd 0
        bridge_maxwait 0
```

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```

Add a Bridge to .XML Configuration

```
...
  <devices>
    <interface type='network'>
      <source network='default'/>
    </interface>
    ...
    <interface type='network'>
      <source network='default' portgroup='engineering'/>
      <target dev='vnet7'/>
      <mac address="00:11:22:33:44:55"/>
      <virtualport>
        <parameters instanceid='09b11c53-8b5c-4eeb-8f00-
d84eaa0aaa4f'/>
      </virtualport>


    </interface>
```

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      </virtualport>


    </interface>
```

Associate Bridge to Client

Use:

```
sudo qemu-system-x86_64 -net bridge,vlan=0,br=virbr0
```

Or:

```
sudo virt-install [...]--network bridge:virbr0
```

Sample Pool Entry from KVM .XML Configuration

```
<pool type="netfs">
        <name>virtimages</name>
        <source>
          <host name="nfs.example.com"/>
          <dir path="/home/datauser/current-files"/>
          <format type='nfs'/>
        </source>
        <target>
          <path>/var/current-files</path>
        </target>
      </pool>
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Valid KVM/libvirt Pool Types

Netfs	Network File System
DIR	Directory
ISCSI	iSCSI server
Logical	logical volume storage pool

KVM Storage

Review

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

modprobe kvm

modprobe kvm-intel

virsh list --all

virt-install -n ubuntu-vm ...

--extra-args='console=tty0 console=ttyS0,115200n8 serial'

virsh start ubuntu-vm

vmbuilder kvm ubuntu --name new-ubuntu-vm --suite trusty ...

vmbuilder kvm ubuntu -c my-guest-file.cfg

qemu-img create -f qcow2 /var/lib/libvirt/images/my-disk.img 6G

kvm -name "my-VM" -M pc -m 768 ...

qemu-system-x86_64 -monitor stdio

qemu-system-x86_64 -net bridge,vlan=0,br=virbr0

virsh pool-define ~/shared_files_disk.xml

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vmbuilder kvm ubuntu -c my-guest-file.cfg

qemu-img create -f qcow2 /var/lib/libvirt/images/my-disk.img 6G

kvm -name "my-VM" -M pc -m 768 ...

qemu-system-x86_64 -monitor stdio

qemu-system-x86_64 -net bridge,vlan=0,br=virbr0

virsh pool-define ~/shared_files_disk.xml

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