

??? 13, 2009 ??? sunchiahome

?????????? virtual Macine ?,?????? virt-manager ??????? virt-install.????? virt-manager ???????, virt-install
?????? <http://benjr.tw/?q=node/366>

```
[root@benjr ~]# virt-manager
```

???????????? "New" ????? Virtual Machine.???? Virtual Machine ??????

- 1.name
- 2.Virtualization Method
- 3.Installation Method
- 4.virtual machine sotrage
- 5.Network
- 6.Memory and CPU

1.name

???????? virtual machine ????,????????????????'_' , '! ?? '-! ??????????.

??? Virtual Machine ???????? Virtual Machine ? Guest OS.???? virtual machine.Host(???) ??????????????
Guest(???) ?????????? Host(???) ?????????,???????????????????? Host(???) ?????????????? Guest(???)?? Host ? Guest ?
?????????????

2.Virtualization Method

????? RHEL 5 update 4 KVM ?????? Virtual machine ???? FV,??????? virtual machine ?????? FV(Fully
Virtualized),???????? CPU ??????,??????? CPU ??? AMD-V Pacifica (Flag ? svm) ,Intel VT (flag ? vmx) ,???? BIOS
?? CPU virtualization ??????.

CPU architecture ????? i686 ?? x86_64 ??????????????????,??? Hypervisor ?????? KVM ?????? QEMU ?????????
QEMU ? User mode emulation ??????????????????

3.Installation Method

Virtual Machine ???????????? 1.Local install media(ISO image or CD-ROM) 2.Network install tree (HTTP,

FTP , or NFS) 3.Network boot (PXE)

?????? **ISO image or CDROM** ??????? ISO image ?? CDROM ??? Guest OS ?

- ISO

????????? ISO ??? Guest OS,?? (CD-ROM ?? DVD-ROM) ???..?? ISO ?????.

Linux System:

1. Linux ??? dd ?????????????????? ISO ??? #mount ??? #umount ?????????????

```
[root@benjr ~]# dd if=/dev/cdrom of=/path/cding_filename.iso
```

if: ??????????????

of: ??????? ISO ??

Windows System:

Windows ??????? ISO ?????????????????? winimage ?????????? <http://www.winimage.com/> WinImage ??
? Disk ->Create CD-ROM ISO image... ??? ISO ?.

??? ISO ??? Guest OS ???.

- **CD-ROM or DVD**

??? Host ????? CD-ROM ?? DVD ?????????????????? Host ????? Virtual Machine ???.

- **Network install tree (HTTP, FTP , or NFS)**

- ? **Install Media URL**

- ? **Kickstart URL**

- ? **Kernel parameters**

? Installation Source ??????????????????(Install Media URL)????? Kickstart URL ???, ??? Kernel parameters .

- ? **Install Media URL** ?????????????????? nfs,http ?? ftp ??? ??????:
 NFS: nfs://server:/path
 HTTP: <http://server/path>
 FTP: <ftp://server/path>
 ?????????? Guest OS ?????????? Server ?.????? /var/ftp ???,????? nfs,http ?? ftp ?????.
 1.?? OS ????????.
 2.? FTP ???
 ??? ftp ???????

```
[root@benjr ~]# chkconfig vsftpd on
[root@benjr ~]# service vsftpd restart
```

- 3.? NFS ???
 ?? "/etc/exports" ?? "/var/ftp/" ???(????????????????????,??FTP???????)

????????????? nfs,http ?? ftp ???.

? kernel parameters

????????? PXE ?????? Boot: ?????? Kernel parameters ?????? Xen ????? Guest OS ????? Boot: ??????????. ??????????. Kernel parameters ??????????????: http://www.kernel.org/pub/linux/kern...n_pdf/ch09.pdf

• Network PXE boot

????? FV-Virtual machine ? PXE(Preboot eXecution Environment) ?????,????????? Guest OS ? Linux base ?????????? PXE + DHCP Service(????????? Linux Server ??????) ????? FV-Virtual machine ??????,Linux PXE ?????????? <http://benjr.tw/?q=node/30>.

????????? Guest OS ? windows base ?????????? Windows ??? Microsoft® Windows® Remote Installation Services(RIS) ?? Deployment Services (WDS) ???.

???KVM FV-Fully Virtualized ??? Guest OS ??????????????????.

- Linux ? Debian , Fedora , Red Hat Enterprise Linux ?? Suse Linux Enterprise Server.
- Windows ?????????? XP , Vista ?????????????? 2000 , 2003 , 2008

- ??? MS-DOS , Novell Netware ,Free BSD , Open BSD ?? Sun Solaris

4.virtual machine sotrage

??? virtual machine ??????????.????????????????????????????????.

- **virtual disk - disk partition**

??? **partition** ??????????,?????????????.???????????? partition.

- virtual disk - nonsparse image

???????? partition ,? **?(images)** ??????????.???????????? partition ??.

- **virtual disk - sparse image**

?????(images) ???????,??????????????,??????????!?????????????.??????????????,
?????? **sparse image** ?????, Guest ?????!

5.Network

? RHEL5 update4 KVM ??? Virtual machine ? Network ????? 1.Virtual network 2.Shared physical device ???
 ??? Virtual network.

???? RHEL5 update 4 KVM ?????????? bridge,? QEMU ????? virbr0 ??? Virtual machine ??????????
 Virtual network .

- **Virtual network - virbr0**

- 1.QEMU ??? Linux ??? bridge ??? "virbr0" .virbr0 ????? NAT ??,???? NAT + DHCP ???,??
 Virtual machine ??? virbr0 ?????????? (private IP).??? 192.168.122.2 ~ 192.168.122.254 (????????????
 ? DHCP ??? IP ??).
- 2.???? default gateway ? 192.168.122.1/24 ,???????? Virtual Machine ????????????? NAT ?????????.
3. ????? NAT ??? Virtual Machine ?????????? private ???,???????????? Virtual Machine ?????.

????? Qemu ???????????? /etc/libvirt/qemu/networks/default.xml

```
<network>
<name>default</name>
<uuid>49a0ceb-5662-4a61-8149-98ea750d393b</uuid>
<bridge name="virbr0" />
<forward/>
<ip address="192.168.122.1" netmask="255.255.255.0">
  <dhcp>
    <range start="192.168.122.2" end="192.168.122.254" />
  </dhcp>
</ip>
</network>
```

??? ip address ? default gateway IP,range ??DHCP clients ???????,????????????.

- **Shared physical device**

???????? "Shared physical device" ??????????????.????? Virtual machine ?????????????????? Hub ?? Switch ?,????
 ??? IP ??????. ? Linux ?????????????????? Bridge mode,??????? NIC Adapter ports ?????????? Bridge(Switch) ???????,
 ??????????????????,????? Linux ??? switch ????.
 ??? Linux ??????????:????????????????????????????????????? Bridge ????.????????????????????????? NIC ??? NIC ?????? bridge ???
 ????.

1.???? eth0 ?????? bridge(bri0)

```
[root@benjr ~]# ifconfig eth0 0.0.0.0
[root@benjr ~]# brctl addbr bri0
[root@benjr ~]# brctl addif bri0 eth0
```

2.???? eth ?????? bridge ?.

```
[root@benjr ~]# brctl show
bridge name   bridge id           STP enabled  interfaces
bri0          8000.001517785dd6   no           eth0
virbr0        8000.000000000000   yes
```

3.???? IP ,?????????.

```
[root@benjr ~]# ifconfig bri0 192.8.1.3
[root@benjr ~]# ifconfig bri0
bri0  Link encap:Ethernet HWaddr 00:15:17:78:5D:D6
      inet addr:192.8.1.3 Bcast:192.8.1.255 Mask:255.255.255.0
      inet6 addr: fe80::215:17ff:fe78:5dd6/64 Scope:Link
      UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
      RX packets:14767 errors:0 dropped:0 overruns:0 frame:0
      TX packets:34 errors:0 dropped:0 overruns:0 carrier:0
      collisions:0 txqueuelen:0
      RX bytes:679328 (663.4 KiB) TX bytes:9626 (9.4 KiB)
```

4.?? Allow IP forwarding

```
[root@benjr ~]# vi /etc/sysctl.conf
net.ipv4.ip_forward = 1
[root@benjr ~]#sysctl -p
```

??????? eth0(brio) ? Virtual Machine ?????!!????????? /etc/rc.local,????????????.

5.reload libvirt

```
[root@benjr ~]# service libvirtd reload
```

???? Virtual Machine ?????? "Shared physical device" ?? libvirtd ??????????.

- Set fixed MAC address for your virtual system

?? MAC address ,????????????? mac ???????????. mac :XY:XX:XX:XX:XX:XX ,mac ??16?????
X ??????16??(0~9,A,B,C,D,E,F), Y ?????? 2, 6, A ? E.

6.Memory and CPU

????????? Virtual machine ? Memory ?? CPU ???.

CPU:

CPU ?????????????????????? CPU ??????????????????,Virtual machine ?? CPU ,?????????????Virtual machine ?
vcpu ?????????? CPU ?????????????? "#xm" ??????????.

Memory:

???????????????????????? "Total memory on host machine",???????????? Virtual machine ??????.????????????????????,VM
Max Memory ?? VM Startup Memory

1.VM Max Memory

???? Virtual machine ??????????????,????????????????????????,???????? VM Startup Memory ??,???????????? VM Startup
Memory ?????? Virtual machine ??????????,???????????? VM Max Memory ???,?? VM Max Memory ??????????????.?
???????????? MBytes

???????? #xm mem-set / mem-max ??????,???? /etc/xen/ ???,???? virt-manager ??????,??????????????.

2. VM Startup Memory

?? Virtual machine ??????????,????? MBytes