

I would like to advise following tutorial is for beginners who has no idea setting up an KVM I it made simple just to give you an idea on setting from scratch, from there you guys can grow...sorry if my explanations isn't up to the par but I hope it helps you understand.

**KVM (Kernel-based Virtual Machine)** is a full virtualization solution for Linux on x86 hardware containing virtualization extensions Intel VT or AMD-V. However, this tutorial is tested on both CentOS and RHEL 64 bit with Intel i7 CPU (with Intel VT) and 64 bit kernels with SELinux running in Disabled mode.

Before heading further deep I would like to share my current network setup with you guys

```
[root@localhost ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 10
    link/ether 00:0c:29:eb:3e:b5 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.100/24 brd 192.168.0.255 scope global noprefixroute ens33
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:feeb:3eb5/64 scope link
        valid_lft forever preferred_lft forever
[root@localhost ~]# cat /etc/sysconfig/network-scripts/ifcfg-ens33
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
IPADDR=192.168.0.100
PREFIX=24
GATEWAY=192.168.0.1
DNS1=0.0.0.0
DNS2=0.0.4.4
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=no
NAME=ens33
UUID=bc7efb23-7eb7-42af-8dfd-77bb34372b40
DEVICE=ens33
ONBOOT=yes
[root@localhost ~]# _
```

Lets Start!!!

Verify whether KVM is supported (KVM is a virtual machine software based on x86 virtualization extension technology) (Intel VT or AMD-V)

**lsmod | grep kvm**

```
[root@localhost ~]# lsmod | grep kvm
kvm_intel          188740  0
kvm                637289  1 kvm_intel
irqbypass         13503   1 kvm
[root@localhost ~]#
```

**vi /etc/sysconfig/selinux** (SELINUX=enforcing in /etc/sysconfig/selinux to **SELINUX=disabled**) and save changes

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=disabled_
# SELINUXTYPE= can take one of three values:
#   targeted - Targeted processes are protected,
#   minimum - Modification of targeted policy. Only selected processes are protected.
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted
```

Installing KVM environment

Adopt yum Install kvm Foundation Package and Management Tools

**yum install -y qemu-kvm libvirt libvirt-python libguestfs-tools virt-install python-virtinst virt-manager bridge-utils** (Press Enter once your done)

```
[root@localhost ~]# yum install -y qemu-kvm libvirt libvirt-python libguest-tools virt-install python-virtinst virt-manager bridge-utils_
```

Packages will start downloading and installing

```
spice-gtk3                x86_64      0.35-5.el7_9.1      updates      87 k
spice-server              x86_64      0.14.0-9.el7_9.1    updates      405 k
tcp_wrappers              x86_64      7.6-77.el7          base         78 k
trousers                  x86_64      0.3.14-2.el7        base         289 k
unbound-libs              x86_64      1.6.6-5.el7_8       base         406 k
usbredir                  x86_64      0.7.1-3.el7         base         47 k
virt-manager-common       noarch      1.5.0-7.el7         base         1.2 M
vte-profile               x86_64      0.52.4-1.el7        base         7.1 k
vte291                    x86_64      0.52.4-1.el7        base         250 k
xkeyboard-config          noarch      2.24-1.el7          base         834 k
xml-common                noarch      0.6.3-39.el7        base         26 k
xorg-x11-server-utils     x86_64      7.7-20.el7          base         178 k
xorg-x11-xauth            x86_64      1:1.0.9-1.el7       base         30 k
xorg-x11-xinit            x86_64      1.3.4-2.el7         base         58 k
yajl                      x86_64      2.0.4-4.el7         base         39 k

Transaction Summary
=====
Install 6 Packages (+238 Dependent packages)

Total download size: 90 M
Installed size: 267 M
Downloading packages:
(1/244): adwaita-icon-theme-3.28.0-1.el7.noarch.rpm | 11 MB 00:00:02
(2/244): at-spi2-atk-2.26.2-1.el7.x86_64.rpm | 81 kB 00:00:00
(3/244): at-spi2-core-2.28.0-1.el7.x86_64.rpm | 158 kB 00:00:00
(4/244): atk-2.28.1-2.el7.x86_64.rpm | 263 kB 00:00:00
(5/244): augeas-libs-1.4.0-10.el7.x86_64.rpm | 357 kB 00:00:00
(6/244): autogen-libopts-5.18-5.el7.x86_64.rpm | 66 kB 00:00:00
(7/244): avahi-libs-0.6.31-20.el7.x86_64.rpm | 62 kB 00:00:00
(8/244): boost-iostreams-1.53.0-28.el7.x86_64.rpm | 61 kB 00:00:00
(9/244): boost-random-1.53.0-28.el7.x86_64.rpm | 39 kB 00:00:00
(10/244): boost-system-1.53.0-28.el7.x86_64.rpm | 40 kB 00:00:00
(11/244): boost-thread-1.53.0-28.el7.x86_64.rpm | 58 kB 00:00:00
(12/244): bridge-utils-1.5-9.el7.x86_64.rpm | 32 kB 00:00:00
(13/244): bzip2-1.0.6-13.el7.x86_64.rpm | 52 kB 00:00:00
(15/244): cairo-1.15.12-4.el7.x86_6 14% [===- | 2.6 MB/s | 13 MB 00:00:29 ETA
```

Once done restart the host to load the kvm module by issuing **reboot** command

```
[root@localhost ~]# reboot_
```

Once the machine is up issue the following command to verify libvirt is running

**systemctl status libvirt** ( verify if its on running state if it isn't issue following command **systemctl start libvirt** )

```
[root@localhost ~]# systemctl status libvirt
■ libvirt.service - Virtualization daemon
   Loaded: loaded (/usr/lib/systemd/system/libvirt.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2021-04-11 17:48:42 +08; 1min 7s ago
     Docs: man:libvirt(8)
           https://libvirt.org
  Main PID: 1142 (libvirt)
    Tasks: 19 (limit: 32768)
   CGroup: /system.slice/libvirt.service
           └─1142 /usr/sbin/libvirt
             └─1657 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/default.conf --leasefile...
             └─1659 /usr/sbin/dnsmasq --conf-file=/var/lib/libvirt/dnsmasq/default.conf --leasefile...

Apr 11 17:48:43 localhost.localdomain dnsmasq[1657]: started, version 2.76 cachesize 150
Apr 11 17:48:43 localhost.localdomain dnsmasq[1657]: compile time options: IPv6 GNU-getopt DBus...fy
Apr 11 17:48:43 localhost.localdomain dnsmasq-dhcp[1657]: DHCP, IP range 192.168.122.2 -- 192.1...1h
Apr 11 17:48:43 localhost.localdomain dnsmasq-dhcp[1657]: DHCP, sockets bound exclusively to in...r0
Apr 11 17:48:43 localhost.localdomain dnsmasq[1657]: reading /etc/resolv.conf
Apr 11 17:48:43 localhost.localdomain dnsmasq[1657]: using nameserver 8.8.8.8#53
Apr 11 17:48:43 localhost.localdomain dnsmasq[1657]: using nameserver 8.8.4.4#53
Apr 11 17:48:43 localhost.localdomain dnsmasq[1657]: read /etc/hosts - 2 addresses
Apr 11 17:48:43 localhost.localdomain dnsmasq[1657]: read /var/lib/libvirt/dnsmasq/default.addn...es
Apr 11 17:48:43 localhost.localdomain dnsmasq-dhcp[1657]: read /var/lib/libvirt/dnsmasq/default...le
Hint: Some lines were ellipsized, use -l to show in full.
[root@localhost ~]# systemctl is-enabled libvirt
enabled
[root@localhost ~]# _
```

Issue the following command to enable the service always **systemctl is-enabled libvirt**

```
[root@localhost ~]# systemctl is-enabled libvirt
enabled
[root@localhost ~]# _
```

Now we are set go!!!

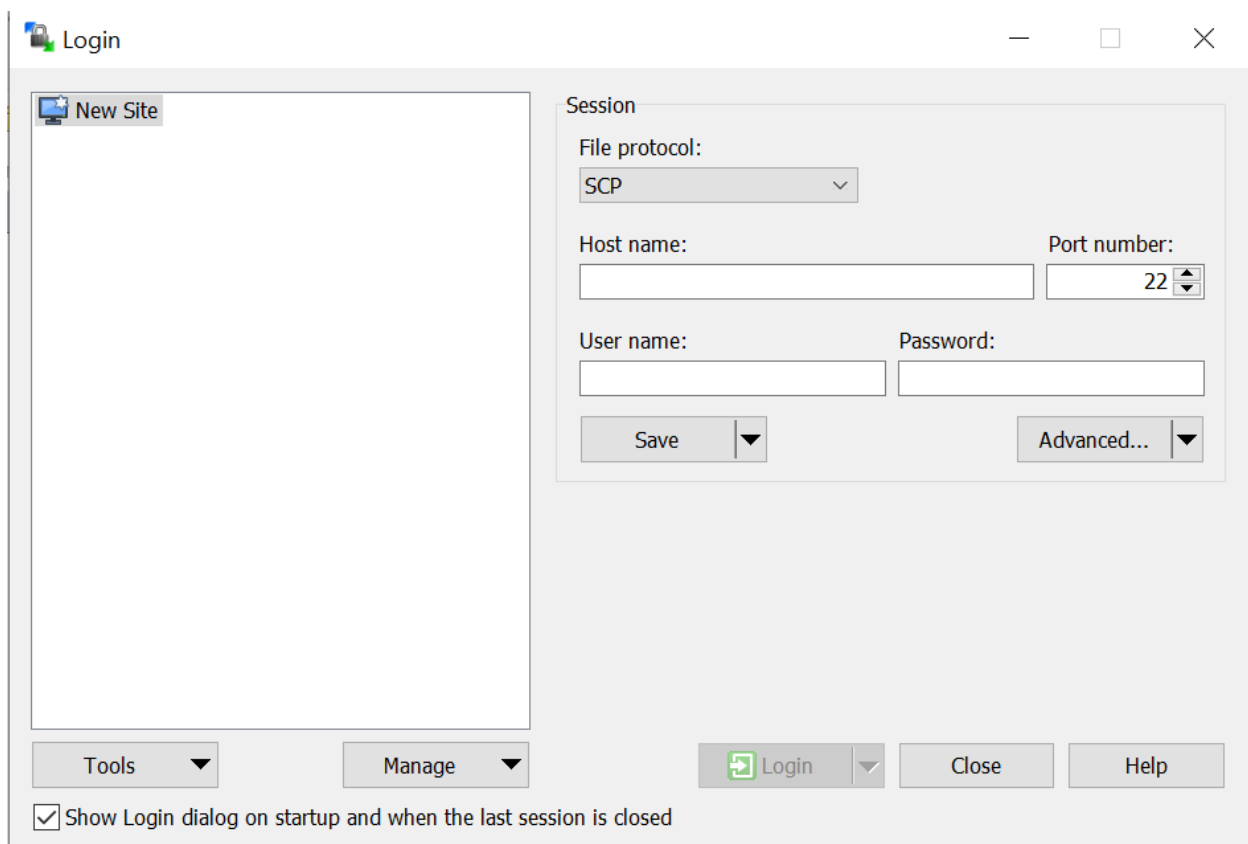
Before that I would like to explain to you guys on the next command before issuing it since im working with headless server I won't be using graphical install...sorry ya guys

```
virt-install --virt-type=kvm --name=(name of the vm) --vcpus=(number of cpu) --memory=(ram)
--location=(location of the iso) --disk path=(location where the vm is stored). qcow2, size=(number gb
allocated for vm), format=qcow2 --network bridge=br0 --graphics none --extra-args='console=ttyS0'
--force
```

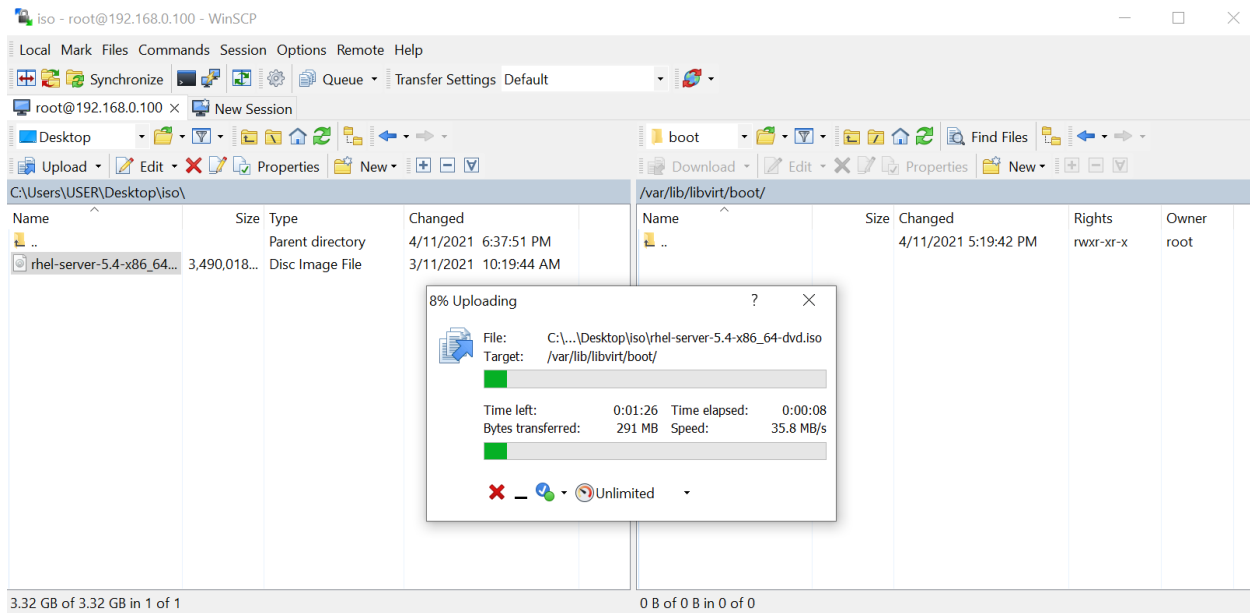
But before that I missed on uploading the iso to do this you'll need to download winscp

Use file protocol **SCP**

**In my case hostname would be my server's ip**



Copy iso to the following path **/var/lib/libvirt/boot/**



Once you have copied the iso we move to our next step to configure the network since I have single network card I would replicate a bridge the picture below shows current config

```
[root@localhost ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:eb:3e:b5 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.100/24 brd 192.168.0.255 scope global noprefixroute ens33
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:feeb:3eb5/64 scope link
        valid_lft forever preferred_lft forever
[root@localhost ~]# cat /etc/sysconfig/network-scripts/ifcfg-ens33
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
IPADDR=192.168.0.100
PREFIX=24
GATEWAY=192.168.0.1
DNS1=8.8.8.8
DNS2=8.8.4.4
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=no
NAME=ens33
UUID=bc7efb23-7eb7-42af-8dfd-77bb34372b40
DEVICE=ens33
ONBOOT=yes
[root@localhost ~]#
```

Now vi `/etc/sysconfig/network-scripts/ifcfg-ens33` and edit as below save changes

```
TYPE=Ethernet
BOOTPROTO=none
NAME=ens33
DEVICE=ens33
ONBOOT=yes
BRIDGE="br0"
```

Again vi `/etc/sysconfig/network-scripts/ifcfg-br0` there wont be any data but you'll need to fill it up accordingly to your ip configuration save changes

```
TYPE=Bridge
BOOTPROTO=static
NAME=br0
DEVICE=br0
ONBOOT=yes
IPADDR=192.168.0.100
PREFIX=24
GATEWAY=192.168.0.1
DNS1=8.8.8.8
DNS2=8.8.4.4
```

Then issue following command **systemctl restart network** for it to take effect on changes and run **ip a** to verify **br0** is up with the configured ip in my case its **192.168.0.100**

```
[root@localhost ~]# systemctl restart network
[root@localhost ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast master br0 state UP group default qlen 1000
    link/ether 00:0c:29:eb:3e:b5 brd ff:ff:ff:ff:ff:ff
3: virbr0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default qlen 1000
    link/ether 52:54:00:f2:a6:61 brd ff:ff:ff:ff:ff:ff
    inet 192.168.122.1/24 brd 192.168.122.255 scope global virbr0
        valid_lft forever preferred_lft forever
4: virbr0-nic: <BROADCAST,MULTICAST> mtu 1500 qdisc pfifo_fast master virbr0 state DOWN group default qlen 1000
    link/ether 52:54:00:f2:a6:61 brd ff:ff:ff:ff:ff:ff
7: br0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
    link/ether 00:0c:29:eb:3e:b5 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.100/24 brd 192.168.0.255 scope global noprefixroute br0
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:feeb:3eb5/64 scope link
        valid_lft forever preferred_lft forever
[root@localhost ~]#
```

Now back to track

Issue the following command below to create vm in the KVM

**virt-install**

**--virt-type=kvm --name=RHEL5-4**

**--vcpus=1--memory=2048**

**--location=/var/lib/libvirt/boot/rhel-server-5.4-x86\_64-dvd.iso**


**--disk path=/var/lib/libvirt/images/RHEL5-4.qcow2,size=20,format=qcow2**

**--network bridge=br0**

**--graphics none**

**--extra-args='console=ttyS0' --force**

you'll need to do it in a line as per the picture below, I suggest you write in a notepad as a single line verify and then copy paste it...Press Enter!!!

A terminal window titled 'root@localhost/' showing the execution of the virt-install command. The command is: virt-install --virt-type=kvm --name=RHEL5-4 --vcpus=1 --memory=2048 --location=/var/lib/libvirt/boot/rhel-server-5.4-x86\_64-dvd --disk path=/var/lib/libvirt/images/RHEL5-4.qcow2,size=20,format=qcow2 --network bridge=br0 --graphics none --extra-args='console=ttyS0' --force. The command is entered on a single line and is followed by a green cursor.

```
root@localhost /[#  
[root@localhost /]# virt-install --virt-type=kvm --name=RHEL5-4 --vcpus=1 --memory=2048 --location=/var/lib/libvirt/boot/rhel-server-5.4-x86_64-dvd --disk path=/var/lib/libvirt/images/RHEL5-4.qcow2,size=20,format=qcow2 --network bridge=br0 --graphics none --extra-args='console=ttyS0' --force
```

Viola it has started

A terminal window titled 'root@localhost/' showing the progress of the anaconda installer. The output includes various system initialization messages and the start of the anaconda installer. The text is as follows:

```
md: bitmap version 4.39  
TCP bic registered  
Initializing IPsec netlink socket  
NET: Registered protocol family 1  
NET: Registered protocol family 17  
ACPI: (supports S5)  
Initializing network drop monitor service  
Freeing unused kernel memory: 208k freed  
Write protecting the kernel read-only data: 496k  
  
Greetings.  
anaconda installer init version 11.1.2.195 starting  
mounting /proc filesystem... done  
creating /dev filesystem... done  
mounting /dev/pts (unix98 pts) filesystem... done  
mounting /sys filesystem... done  
input: AT Translated Set 2 keyboard as /class/input/input0  
anaconda installer init version 11.1.2.195 using a serial console  
trying to remount root filesystem read write... done  
mounting /tmp as ramfs... done  
input: ImExPS/2 Generic Explorer Mouse as /class/input/input1  
running install...  
running /sbin/loader
```



It'll prompt following installation

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ CD Found +-----+
|
| To begin testing the CD media before
| installation press OK.
|
| Choose Skip to skip the media test
| and start the installation.
|
| +----+ +----+
| | OK | | Skip |
| +----+ +----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Installing you vm select ok

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Red Hat Enterprise Linux Server +-----+
|
| Welcome to Red Hat Enterprise Linux Server!
|
|
| +----+
| | OK |
| +----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Press enter

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Language Selection +-----+
|
| What language would you like to use
| during the installation process?
|
|      Catalan      ^
|      Chinese(Simplified) :
|      Chinese(Traditional) #
|      Croatian      :
|      Czech         :
|      Danish        :
|      Dutch         :
|      English       v
|
|      +----+      +-----+
|      | OK |      | Back |
|      +----+      +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Select skip and tab to ok and press enter

```
root@localhost:/
No video hardware found, assuming headless
Welcome to Red Hat Enterprise Linux Server

+-----+ Installation Number +-----+
|
| Would you like to enter an Installation Number (sometimes
| called Subscription Number) now? This feature enables the
| installer to access any extra components included with your
| subscription. If you skip this step, additional components
| can be installed manually later.
|
| See http://www.redhat.com/InstNum/ for more information.
|
| ( ) Installation Number _____
| (* ) Skip entering Installation Number
|
|      +----+      +-----+
|      | OK |      | Back |
|      +----+      +-----+
|
+-----+
```

Skip this option as I do not have any subscription

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Skip +-----+
|
| If you cannot locate the Installation Number, consult
| http://www.redhat.com/InstNum/
|
|          +-----+          +-----+
|          | Back |          | Skip |
|          +-----+          +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

In the part below please select yes as might look back at my command (--disk path=/var/lib/libvirt/images/RHEL5-4.qcow2,size=20,format=qcow2) yup that's my 20GB

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Warning +-----+
|
| The partition table on device hda ^
| (QEMU HARDDISK 20473 MB) was      #
| unreadable.                       :
| To create new partitions it must  :
| be initialized, causing the loss  :
| of ALL DATA on this drive.       :
|                                   :
| This operation will override any  :
| previous installation choices     :
| about which drives to ignore.     :
|                                   :
| Would you like to initialize this v
|
|          +-----+          +-----+
|          | Yes |          | No |
|          +-----+          +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Confirmation on the disk press ok

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Partitioning Type +-----+
|
| Installation requires partitioning of your hard drive. The
| default layout is reasonable for most users. You can either
| choose to use this or create your own.
|
| Remove all partitions on selected drives and create default layout.
| Remove linux partitions on selected drives and create default layout.
| Use free space on selected drives and create default layout.
| Create custom layout.
|
| Which drive(s) do you want to use for this installation?
| [*] hda 20473 MB (QEMU HARDDISK) ^
|                                     #
|
| +----+ +-----+
| | OK | | Back |
| +----+ +-----+
|
+-----+

<Space>,<+>,<-> selection | <F2> Add drive | <F12> next screen
```

Ok for this as well

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Warning +-----+
|
| You have chosen to remove all Linux
| partitions (and ALL DATA on them) on
| the following drives:
|
| hda (QEMU HARDDISK 20473 MB)
|
| Are you sure you want to do this?
|
| +----+ +-----+
| | No | | Yes |
| +----+ +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Since im using an older version you might need to create a partition and press ok

```
Welcome to Red Hat Enterprise Linux Server

+-----+ Partitioning +-----+
| Device      | Start | End  | Size  | Type   | Mount Point | ^ | | | | | | | | | | | |
| /dev/hda    |       |      |       |        |              | # |
| Free space  |      1 | 2611 | 20480M | Free space |              | : |
|              |       |      |       |        |              | : |
|              |       |      |       |        |              | : |
|              |       |      |       |        |              | : |
|              |       |      |       |        |              | : |
|              |       |      |       |        |              | v |
| +-----+ | +-----+ | +-----+ | +-----+ | +-----+ | +-----+ |
| | New |   | | Edit |   | | Delete |   | | RAID |   | | OK |   | | Back |   |
| +-----+ | +-----+ | +-----+ | +-----+ | +-----+ | +-----+ |

F1-Help  F2-New  F3-Edit  F4-Delete  F5-Reset  F12-OK
```


Select Grub Bootloader and ok

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Boot Loader Configuration +-----+
| Which boot loader would you like to use? |
| (* ) Use GRUB Boot Loader               |
| ( ) No Boot Loader                     |
| +-----+                               |
| | OK |                               | +-----+ |
| +-----+                               | +-----+ |

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Ok for this

 root@localhost:~

```
Welcome to Red Hat Enterprise Linux Server

+-----+ Boot Loader Configuration +-----+
|
| A few systems will need to pass special options to the kernel
| at boot time for the system to function properly. If you need
| to pass boot options to the kernel, enter them now. If you
| don't need any or aren't sure, leave this blank.
|
| console=ttyS0_____
|
| [ ] Force use of LBA32 (not normally required)
|
| +----+ +-----+
| | OK | | Back |
| +----+ +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Im not going to setup password for this but you if you want too but make sure you remember

 root@localhost:~

```
Welcome to Red Hat Enterprise Linux Server

+-----+ Boot Loader Configuration +-----+
|
| A boot loader password prevents users from passing
| arbitrary options to the kernel. For highest
| security, we recommend setting a password, but this
| is not necessary for more casual users.
|
| [ ] Use a GRUB Password
|
| Boot Loader Password: _____
| Confirm:                _____
|
| +----+ +-----+
| | OK | | Back |
| +----+ +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Select ok for this

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Boot Loader Configuration +-----+
|
| The boot manager Red Hat Enterprise Linux Server uses
| can boot other operating systems as well. You need to
| tell me what partitions you would like to be able to
| boot and what label you want to use for each of them.
|
| Default  Boot label          Device
| ☒ *      Red Hat Enterprise Linux Server /dev/hda1
|
|                                     ^
|                                     :
|                                     #
|                                     v
|
|      +----+          +-----+          +-----+
|      | OK |          | Edit |          | Back |
|      +----+          +-----+          +-----+
|
+-----+

<Space> select | <F2> select default | <F4> delete | <F12> next screen
```

Select ok for this as well

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Boot Loader Configuration +-----+
|
| Where do you want to install the boot loader?
|
| ☒ /dev/hda      Master Boot Record (MBR)
| /dev/hda1      First sector of boot partition
|
|      +----+          +-----+
|      | OK |          | Back |
|      +----+          +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

You can configure network now if you want or you could do it manually later as well

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Configure Network Interface +-----+
|
| Would you like to configure the eth0
| network interface in your system?
|
|          +-----+          +-----+
|          | Yes |          | No |
|          +-----+          +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Select your Time Zone in my case im in Malaysia Kuala Lumpur

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Time Zone Selection +-----+
|
| What time zone are you located in?
|
| [*] System clock uses UTC
|
| Asia/Kashgar          ^
| Asia/Kathmandu        :
| Asia/Kolkata          #
| Asia/Krasnoyarsk      :
| Asia/Kuala_Lumpur     v
|
|          +-----+          +-----+
|          | OK |          | Back |
|          +-----+          +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```



This is your server password make sure you remember when you set it

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Root Password +-----+
|
| Pick a root password. You must type it
| twice to ensure you know what it is and
| didn't make a mistake in typing. Remember
| that the root password is a critical part
| of system security!
|
| Password: 
| Password (confirm): 
|
|          +----+          +-----+
|          | OK |          | Back |
|          +----+          +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

And the next screen it'll be package selection menu selection is up to you once done press ok

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Package selection +-----+
|
| The default installation of Red Hat Enterprise
| Linux Server includes a set of software applicable
| for general internet usage. What additional tasks
| would you like your system to include support for?
|
|          [*] Software Development
|          [ ] Web server
|
|          [ ☐ ] Customize software selection
|
|          +----+          +-----+
|          | OK |          | Back |
|          +----+          +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

Press ok

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Installation to begin +-----+
|
| A complete log of your installation will
| be in /root/install.log after rebooting
| your system. You may want to keep this
| file for later reference.
|
|      +----+      +-----+
|      | OK  |      | Back  |
|      +----+      +-----+
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

And it'll start installation

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Formatting +-----+
|
| Formatting / file system...
|
|                        58%
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

And we wait for completion

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

+-----+ Package Installation +-----+
|
|  Name   : libgnomeprint22-2.12.1-10.el5-x86_64
|  Size   : 1462k
|  Summary: Printing library for GNOME.
|
|
|                                     100%
|
|                                     Packages      Bytes      Time
|  Total   :                               1234      2492M    0:05:58
|  Completed:                             969      1851M    0:04:26
|  Remaining:                             265       641M    0:01:32
|
|                                     74%
|
+-----+

<Tab>/<Alt-Tab> between elements | <Space> selects | <F12> next screen
```

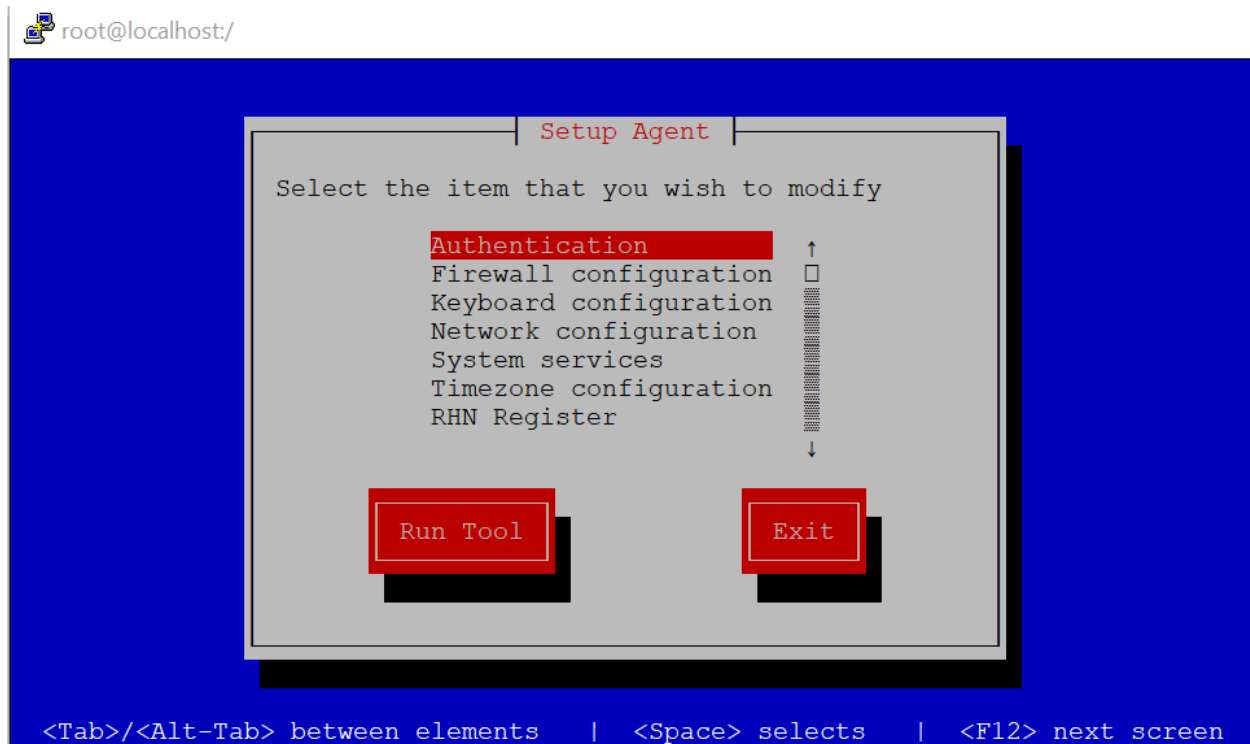
Finally enter to reboot

```
root@localhost:/
Welcome to Red Hat Enterprise Linux Server

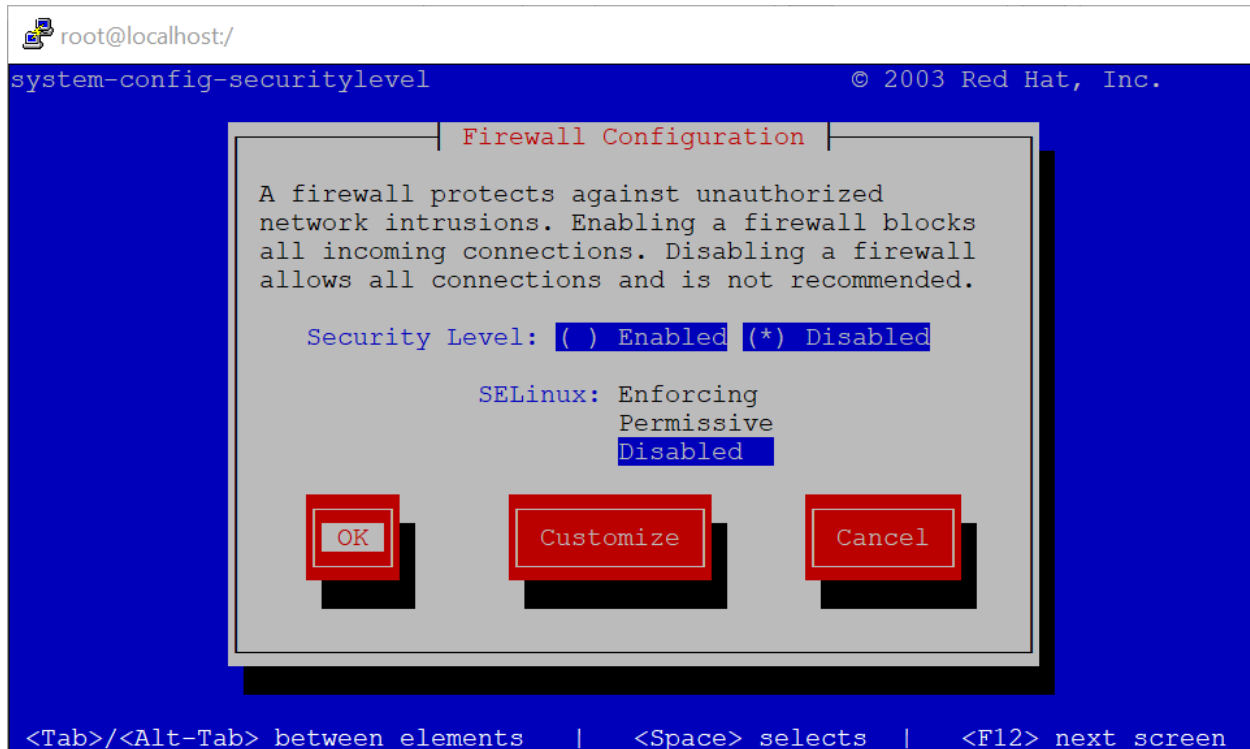
+-----+ Complete +-----+
|
|  Congratulations, your Red Hat Enterprise Linux Server
|  installation is complete.
|
|  Remove any media used during the installation process
|  and press <Enter> to reboot your system.
|
|                                     +-----+
|                                     | Reboot |
|                                     +-----+
|
+-----+

<Enter> to reboot
```

Since im installing RHEL older version installations methods might differ



I just need you guys to follow this for the vm and then exit



And your set to go ignore the error login root and password

```
root@localhost:/  
  
[ OK ]  
Starting smartd: hdb: drive_cmd: status=0x41 { DriveReady Error }  
hdb: drive_cmd: error=0x04 { AbortedCommand }  
ide: failed opcode was: 0xec  
[ OK ]  
  
Red Hat Enterprise Linux Server release 5.4 (Tikanga)  
Kernel 2.6.18-164.el5 on an x86_64  
  
rhel5-4 login: 
```


Login and vi /etc/sysconfig/network-scripts/ifcfg-eth0 add the following details as below

```
root@localhost:  
# Realtek Semiconductor Co., Ltd. RTL-8139/8139C/8139C+  
DEVICE=eth0  
BOOTPROTO=static  
BROADCAST=192.168.0.255  
HWADDR=52:54:00:FD:20:F4  
IPADDR=192.168.0.101  
NETMASK=255.255.255.0  
NETWORK=192.168.0.0  
ONBOOT=yes  
~  
~  
~
```

Try pinging from KVM Server to VM

```
[root@localhost ~]# cat /etc/centos-release
CentOS Linux release 7.9.2009 (Core)
[root@localhost ~]# ping 192.168.0.101
PING 192.168.0.101 (192.168.0.101) 56(84) bytes of data.
64 bytes from 192.168.0.101: icmp_seq=1 ttl=64 time=2.92 ms
64 bytes from 192.168.0.101: icmp_seq=2 ttl=64 time=0.736 ms
^C
--- 192.168.0.101 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 0.736/1.829/2.922/1.093 ms
[root@localhost ~]#
```

And ping from VM to KVM Server

 root@localhost:/

```
[root@rhel5-4 ~]# cat /etc/redhat-release
Red Hat Enterprise Linux Server release 5.4 (Tikanga)
[root@rhel5-4 ~]# ping 192.168.0.100
PING 192.168.0.100 (192.168.0.100) 56(84) bytes of data.
64 bytes from 192.168.0.100: icmp_seq=1 ttl=64 time=1.05 ms
64 bytes from 192.168.0.100: icmp_seq=2 ttl=64 time=2.55 ms
64 bytes from 192.168.0.100: icmp_seq=3 ttl=64 time=1.11 ms
64 bytes from 192.168.0.100: icmp_seq=4 ttl=64 time=1.17 ms

--- 192.168.0.100 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3002ms
rtt min/avg/max/mdev = 1.054/1.474/2.554/0.625 ms
[root@rhel5-4 ~]#
```

Now that is done you have successfully setup a KVM server and VM

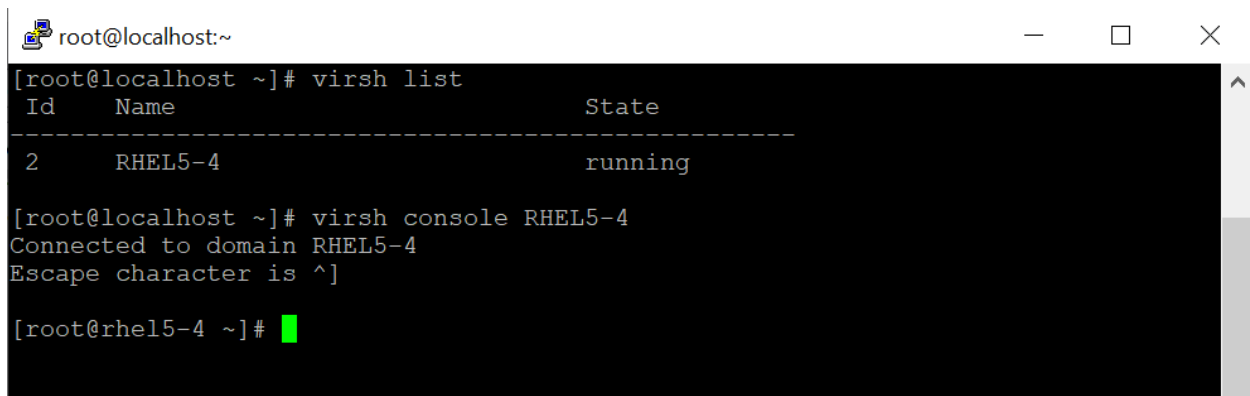
To verify list of VM you have in your KVM Server issue the following commands as below **virsh list** or **virsh list --all**

```
[root@localhost ~]# virsh list
Id      Name
-----
 2      RHEL5-4
         running

[root@localhost ~]# virsh list --all
Id      Name
-----
 2      RHEL5-4
         running

[root@localhost ~]#
```

Connect to a VM issue the following command **virsh console vm-name** in my case its **RHEL5-4**



```
root@localhost:~
[root@localhost ~]# virsh list
Id      Name
-----
 2      RHEL5-4
         running

[root@localhost ~]# virsh console RHEL5-4
Connected to domain RHEL5-4
Escape character is ^]

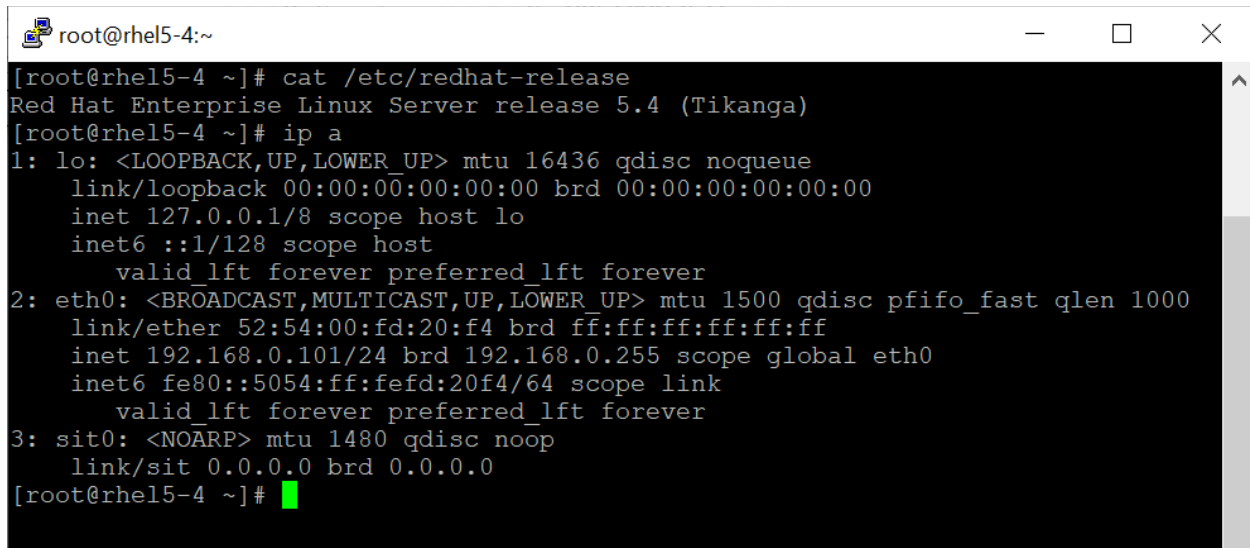
[root@rhel5-4 ~]#
```

In case if there's an issue connecting try killing the session and reconnect back by issuing **ps aux | grep console** and kill the session by process number **kill -9 4617**

```
[root@localhost ~]# ps aux | grep console
root      4016  0.0  1.3 655304 79152 pts/0    S1+   21:25   0:01 /usr/bin/python2 /usr/share/virt-m
anager/virt-install --virt-type=kvm --name=RHEL5-4 --vcpus=1 --memory=2048 --location=/var/lib/libvi
rt/boot/rhel-server-5.4-x86_64-dvd.iso --disk path=/var/lib/libvirt/images/RHEL5-4.qcow2,size=20,for
mat=qcow2 --network bridge=br0 --graphics none --extra-args=console=ttyS0 --force
root      4617  0.0  0.1 347384  6900 pts/0    S1+   22:10   0:00 virsh --connect qemu:///system con
sole RHEL5-4
root      5211  0.0  0.0 112812   968 tty1     S+    23:04   0:00 grep --color=auto console
[root@localhost ~]# kill -9 4617
[root@localhost ~]# virsh list --all
Id      Name
-----
 2      RHEL5-4
         running

[root@localhost ~]# ps aux | grep console
root      5224  0.0  0.0 112800   964 tty1     S+    23:05   0:00 grep --color=auto console
[root@localhost ~]#
```

If you get the steps right you could ssh directly into the VM itself



```
root@rhel5-4:~  
[root@rhel5-4 ~]# cat /etc/redhat-release  
Red Hat Enterprise Linux Server release 5.4 (Tikanga)  
[root@rhel5-4 ~]# ip a  
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 16436 qdisc noqueue  
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00  
    inet 127.0.0.1/8 scope host lo  
    inet6 ::1/128 scope host  
        valid_lft forever preferred_lft forever  
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast qlen 1000  
    link/ether 52:54:00:fd:20:f4 brd ff:ff:ff:ff:ff:ff  
    inet 192.168.0.101/24 brd 192.168.0.255 scope global eth0  
    inet6 fe80::5054:ff:fefd:20f4/64 scope link  
        valid_lft forever preferred_lft forever  
3: sit0: <NOARP> mtu 1480 qdisc noop  
    link/sit 0.0.0.0 brd 0.0.0.0  
[root@rhel5-4 ~]#
```