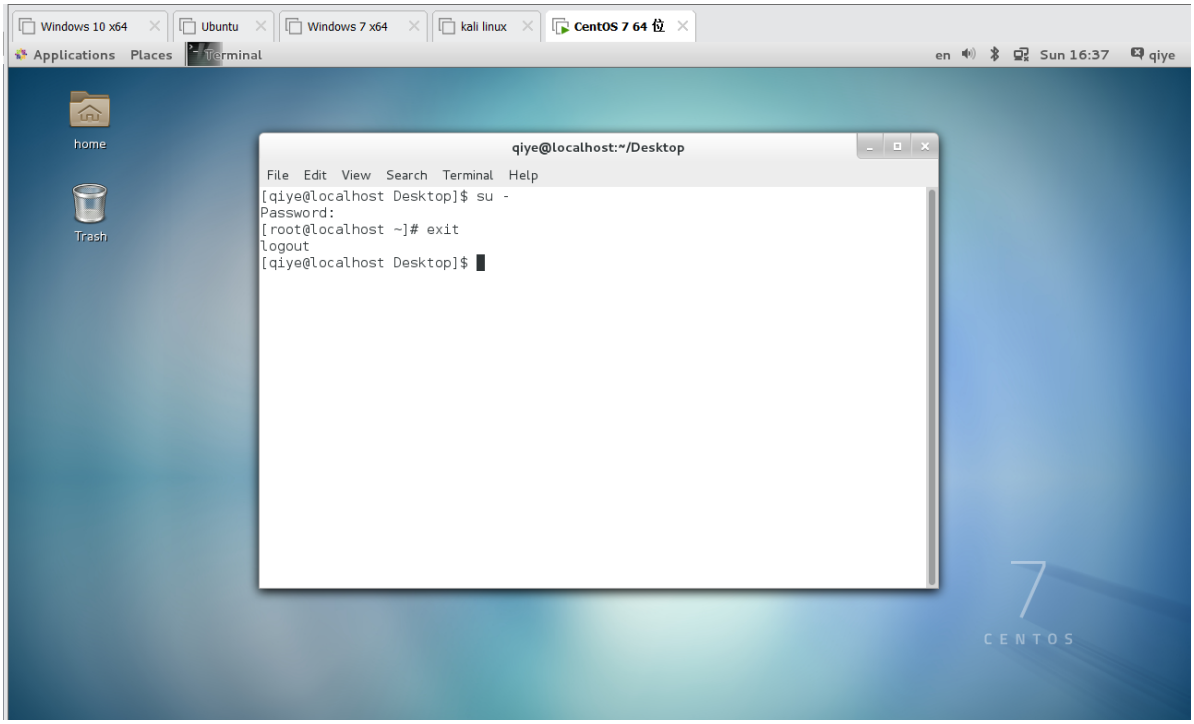
实训

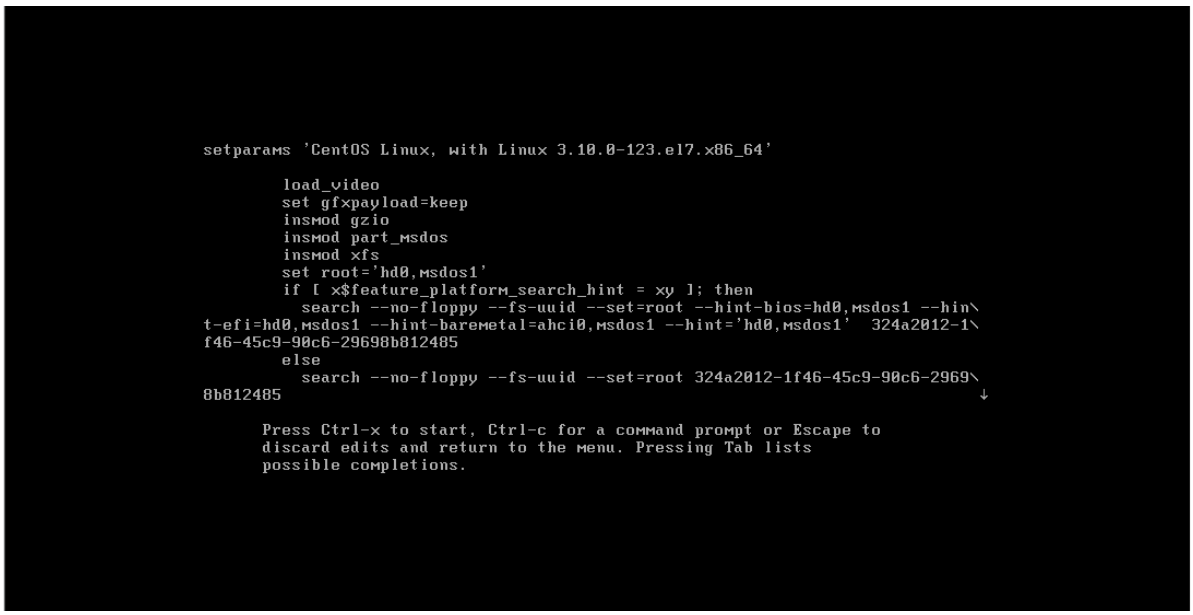
GRUB2的使用

1.忘记root密码怎么办?

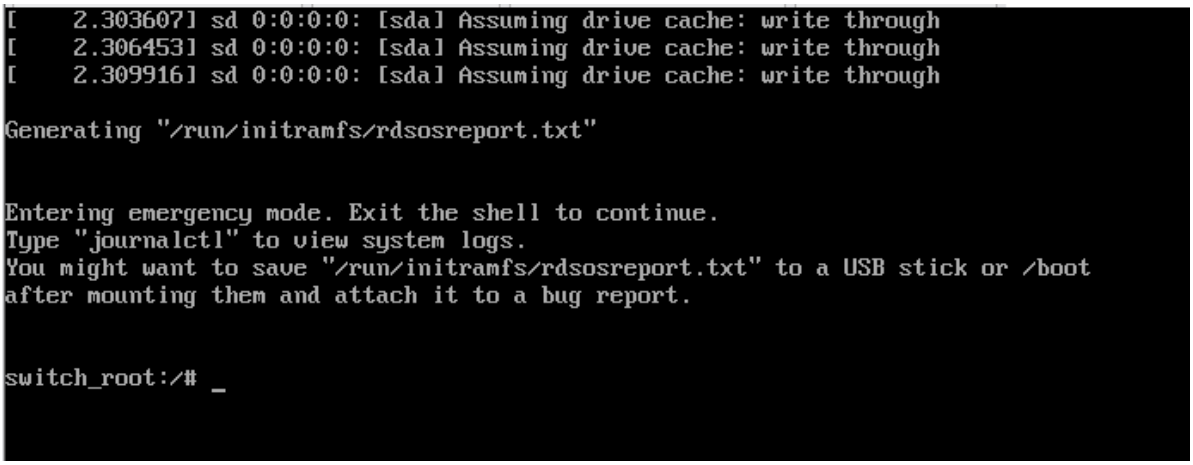
首先，我们先把root密码忘了，然后重启（reboot）



在GRUB2启动屏显时，按下e键进入编辑模式



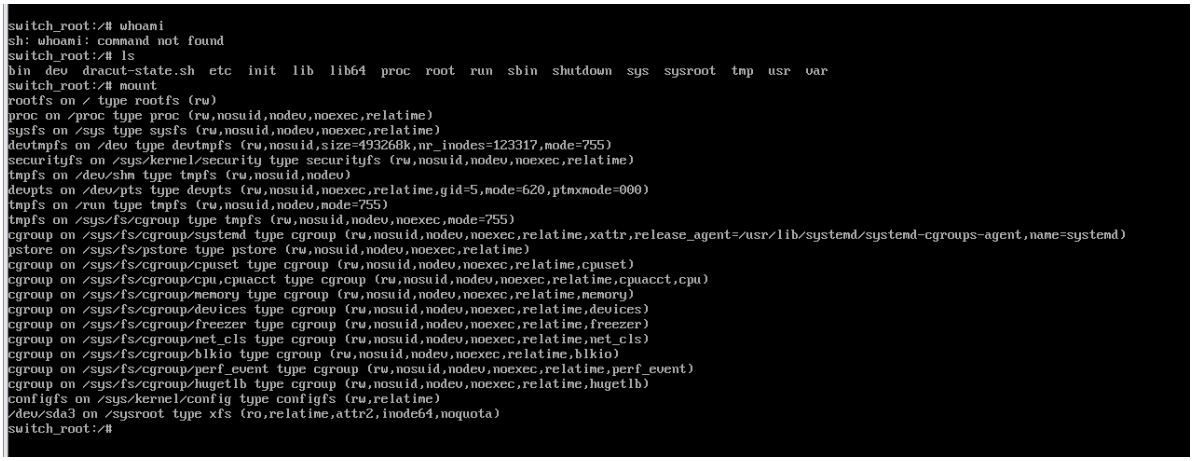
然后我们定位到linux16开头的行，按下end键直接来这段命令的末尾，
并增加 rd.break，ctrl+x一下



进入emergency mode界面
我有个信息收集的习惯，先fuzz一下
命令如下：

```
whoami
ls
mount
```

可以发现的是，当前是无用户情况的系统调试界面,而且xfs是只读



那就以读写的形式挂载给我改下密码：

```
mount -o remount,rw /sysroot      #以读写方式重新挂载系统分区至/sysroot
chroot /sysroot       #改变根目录至/sysroot
```

```
switch_root:/# pwd
/
switch_root:/# id
sh: id: command not found
switch_root:/# id root
sh: id: command not found
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/# mount -o remount,rw /sysroot
switch_root:/# chroot /sysroot
sh-4.2# whoami
root
sh-4.2#
```

可以发现，我们通过改变根目录方式来使用root用户，那么改变密码也成为可能
本菜鸡只会两种改变密码的命令：

```
echo 123 | passwd --stdin root          //本次实训所用
passwd root
```

```
switch_root:/# id
sh: id: command not found
switch_root:/# id root
sh: id: command not found
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/#
switch_root:/# mount -o remount,rw /sysroot
switch_root:/# chroot /sysroot
sh-4.2# whoami
root
sh-4.2# echo 123 | passwd --stdin root
Changing password for user root.
passwd: all authentication tokens updated successfully.
sh-4.2#
```

SELinux 它是一个安全增强系统, 其内部有许多安全策略
针对一些操作, 如果你做了这些操作, 没有得到策略的放行, 它会给你禁止掉
比如你使用单用修改root密码是不被策略放行的
怎么让 SELinux 策略放行呢?

```
      ⚪"touch /.autorelabel" 创建这样一个文件其实就是在告诉SELinux放行这个策略,就是通知一下
      ⚪直接关闭掉 SELinux
```

参考：https://blog.csdn.net/songhaixing2/article/details/109780512

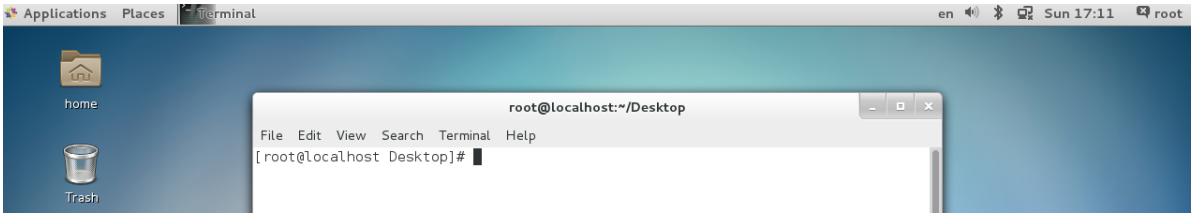
由于使用了SElinux，必须运行：

```
touch /.autorelabel
```

否则系统无法正常使用

```
Changing password for user root.
passwd: all authentication tokens updated successfully.
sh-4.2# touch /.autorelabel
sh-4.2# exit
exit
switch_root:/# reboot
```

退出当前用户，重启system
登录root，密码123（原密码为：qiye）



可以发现成功登录root，ya☆da☆ze!

2.加把安全锁

用安全角度来看，能够使用GRUB2直接修改root密码，无疑是一种提权方法，是一种安全漏洞
这就相当于，只要别人知道你家地址，便能直接进你家，所以就常识而言，为了安全，加把锁很重要

使用grub2-mkpasswd-pbkdf2 命令生成加密口令
这里密码为：qiye

```
[root@localhost Desktop]# grub-mkpasswd-pbkdf2
bash: grub-mkpasswd-pbkdf2: command not found...
[root@localhost Desktop]# grub2-mkpasswd-pbkdf2
Enter password:
Reenter password:
PBKDF2 hash of your password is grub.pbkdf2.sha512.10000.3D4FFC21A4D44D1B2431F43
2DB4CF66DA084DDD74B993391FC9A180E80C721EFBD08DFA053F523B9327BD681FCC93234E340BEE
4AFDBFD22FE11C015C1A529E0.43D70C0A2973F87652326D5F39C9783383A7EA09C06E2776B8CC4C
51BAAF5466244C3172C84C893343925695B97C622137CFAAF309CF6281AA275BEB03717738
[root@localhost Desktop]#
```

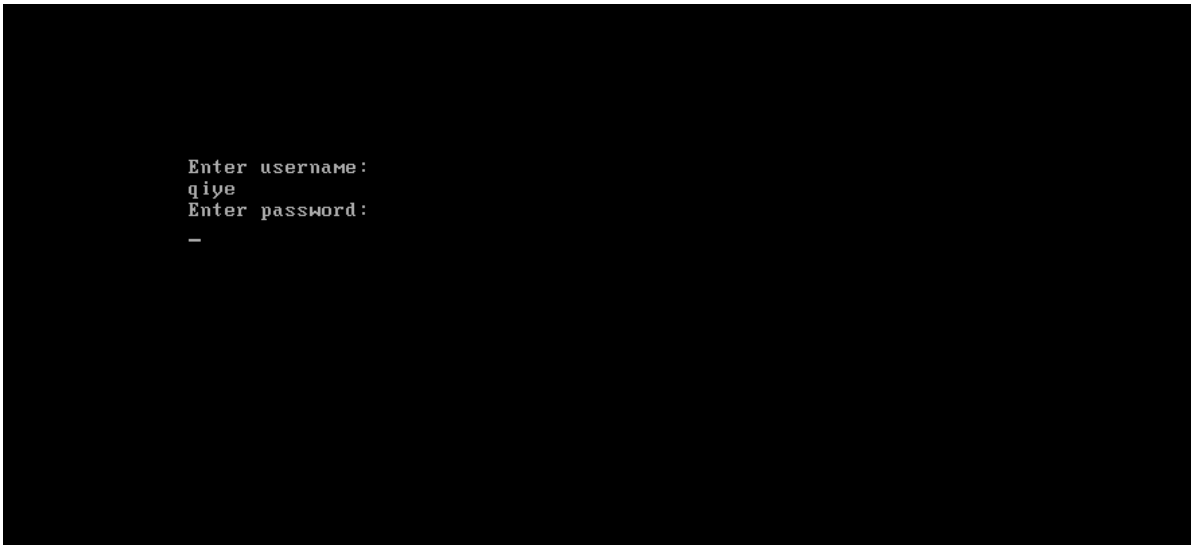
既然是通过grub2修改的密码，那就修改他的配置文件/boot/grub2/grub.cfg
为了方便操作，新开一个终端窗口：

```
vim /boot/grub2/grub.cfg
```

可以看到，配置文件已经注释出界面顺序（太贴心了，嘤嘤嘤），我们把锁加到### BEGIN /etc/grub.d/10_linux ###下面，menuentry那一行的上面：

```
# unavailable.
else
  set timeout=5
fi
### END /etc/grub.d/00_header ###

### BEGIN /etc/grub.d/10_linux ###
set superusers="qiye"
password_pbkdf2 qiye grub.pbkdf2.sha512.10000.3D4FFC21A4D44D1B2431F432DB4CF66DA0
84DDD74B993391FC9A180E80C721EFBD08DFA053F523B9327BD681FCC93234E340BEE4AFDBFD22FE
11C015C1A529E0.43D70C0A2973F87652326D5F39C9783383A7EA09C06E2776B8CC4C51BAAF54662
44C3172C84C893343925695B97C622137CFAAF309CF6281AA275BEB03717738
menuentry 'CentOS Linux, with Linux 3.10.0-123.el7.x86_64' --class centos --clas
s gnu-linux --class gnu --class os --unrestricted $menuentry_id_option 'gnulinux
-3.10.0-123.el7.x86_64-advanced-ea4f0718-db92-4c4c-bb69-3ad522c637b1' {
        load_video
        set gfxpayload=keep
        insmod gzio
        insmod part_msdos
        insmod xfs
        set root='hd0,msdos1'
        if [ x$feature_platform_search_hint = xy ]; then
@
                                                      73,303        58%
```

保存退出，一样reboot重启，再次进入gurb2界面



- 输入用户：qiye
- 密码：qiye

发现可以打开GURB2界面，ya☆da☆ze!

3.修复MBR

主引导记录，也叫主引导扇区

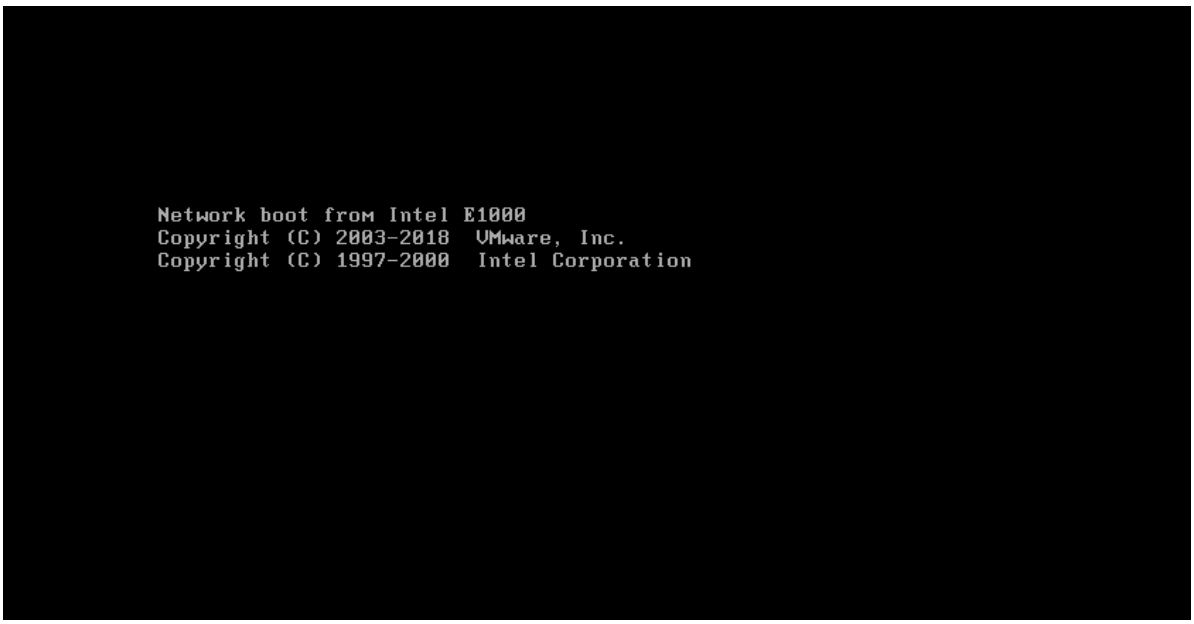
Linux是文件型的操作系统，所有的信息和数据都以文件形式保存于系统中，但是并不是所有的数据，主
引导记录就不是以文件的形式保存，无法进行备份，只能通过 dd 命令备份

- **先进行备份，再破坏**

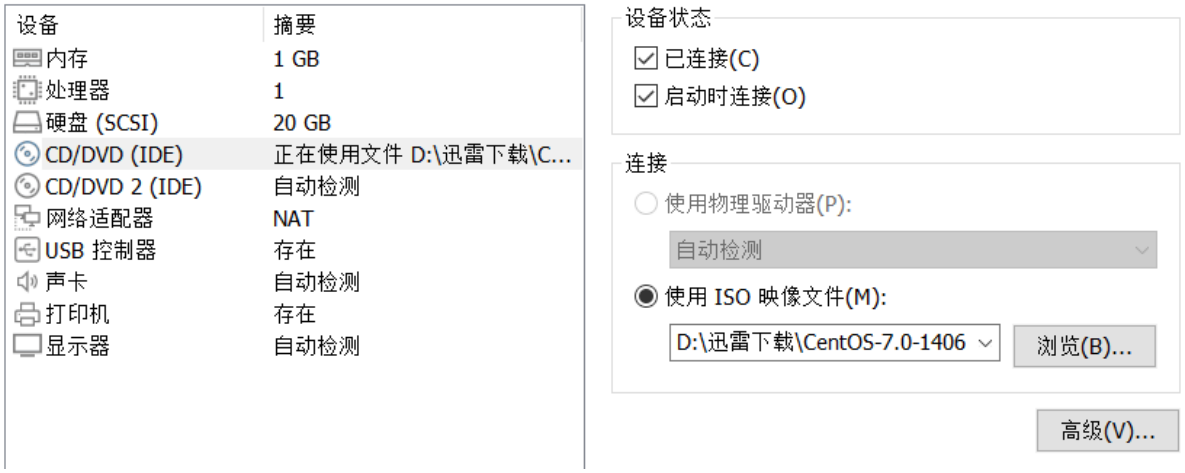
  使用 dd 命令，将 sda 的 MBR 进行备份
  用 zero设备生成 446 字节的 “0” 写入 MBR
  重启后发现系统已坏

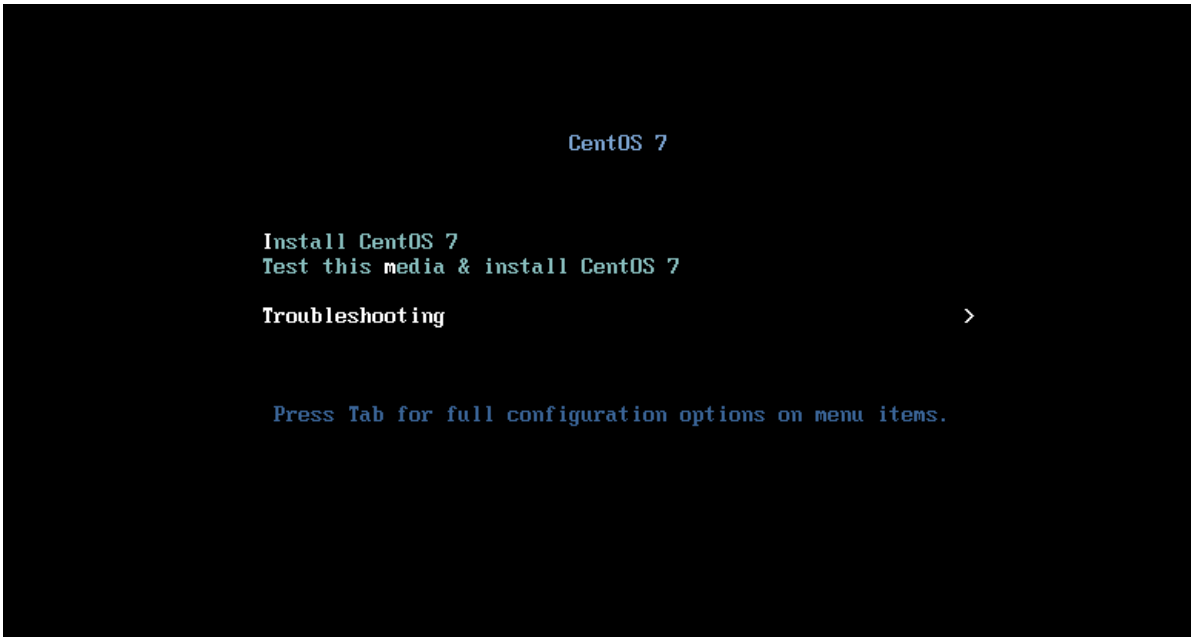
```
#备份
[root@localhost ~]# dd if=/dev/sda of=/root/mbr.bak count=1 bs=512
1+0 records in
1+0 records out
512 bytes (512 B) copied, 0.000676292 s, 757 kB/s

#破坏
[root@localhost ~]# dd if=/dev/zero of=/dev/sda count=1 bs=446
1+0 records in
1+0 records out
446 bytes (446 B) copied, 0.000305554 s, 1.5 MB/s
```

重启后，发现无法正常启动

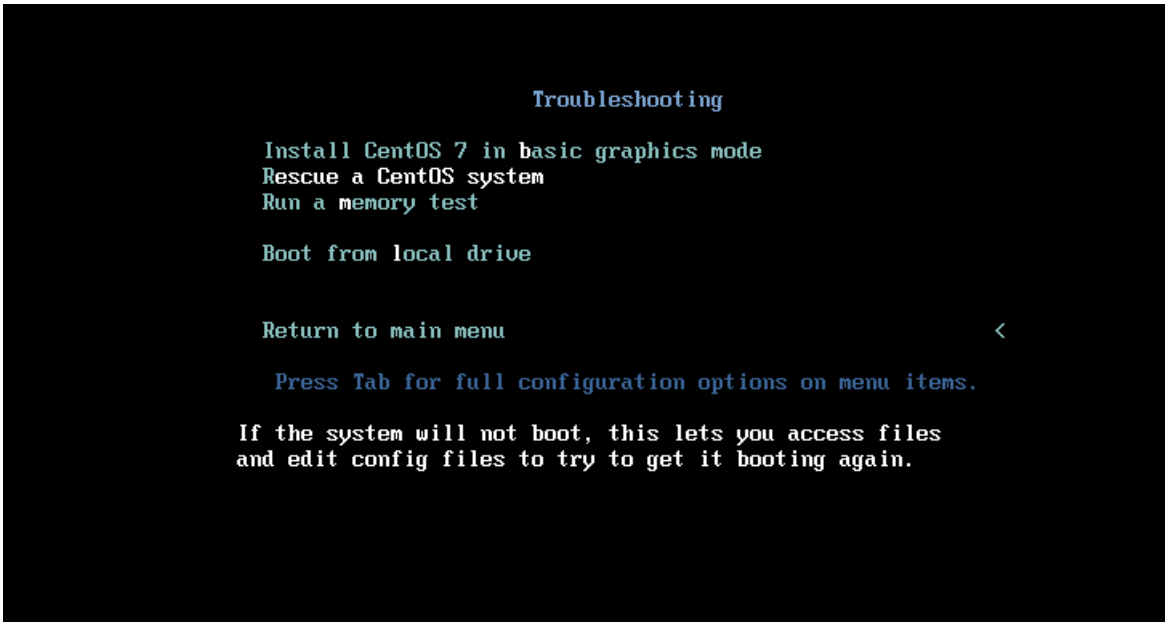


- **连接镜像光盘，在光盘引导界面选择 Troubleshooting**



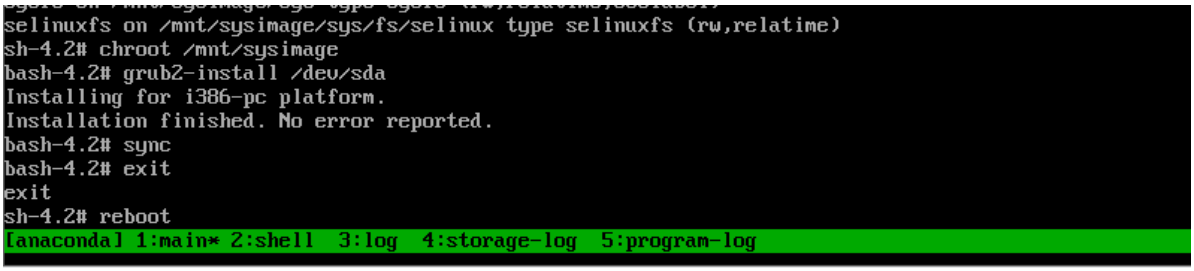


- **选择救援模式 Rescue a Centos system**



- **选择Continue，以 rw 模式挂载分区**

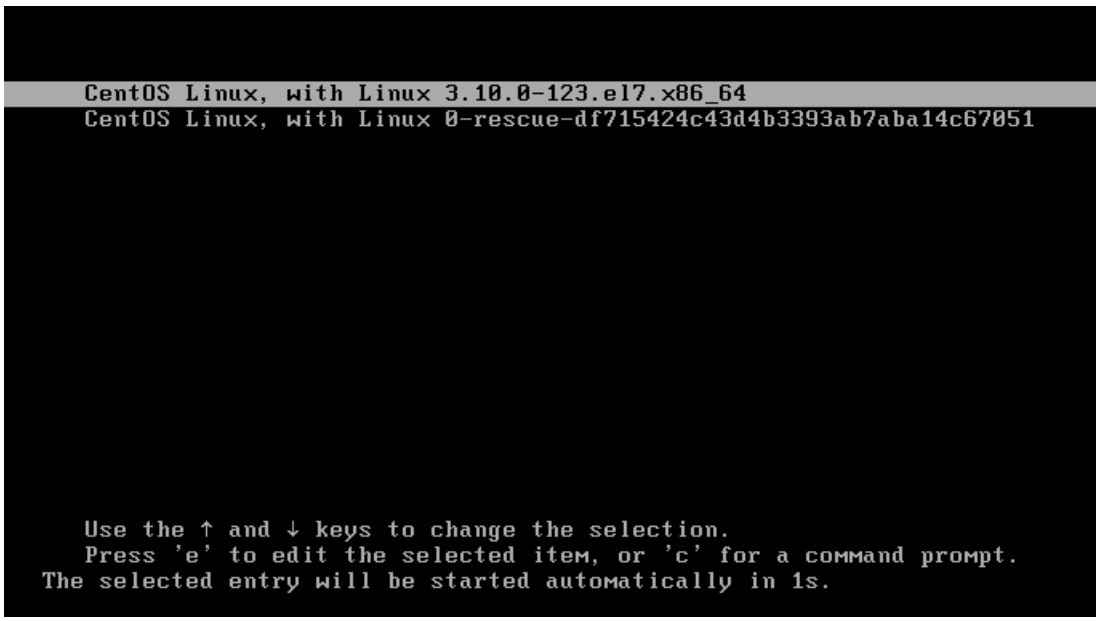
grub2-install 命令重建 Bootloader，随后 sync 写入硬盘，reboot 重启系统



进入挂载文档，重新安装 Bootloader，sync写入硬盘，reboot重启system

```
sh-4.2# chroot /mnt/sysimage
sh-4.2# grub2-install /dev/sda
sh-4.2# sync
sh-4.2# exit
sh-4.2# reboot
```

完成！（我好菜，都是跟着文档来着）



4.修复GRUB

我们设想，有没有一种可能，grub配置文件丢失，开机直接登录，显然这是不可能的，它会直接进入grub界面，
直接让你调试解决

总之，乱来前能快照就快照（不能过度依靠），然后必须备份

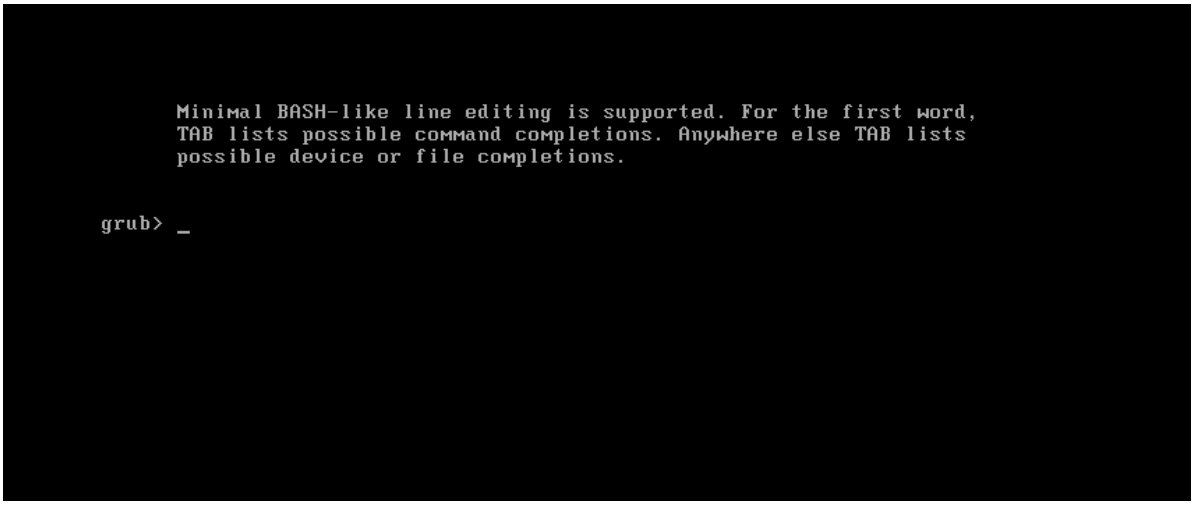
```
#备份
[root@localhost ~]# mkdir grub2.bak
[root@localhost ~]# chmod 777 grub2.bak/
[root@localhost ~]# cp -rp /boot/grub2/* ./grub2.bak/
[root@localhost ~]# ls grub2.bak/
device.map  fonts  grub.cfg  grubenv  i386-pc  locale  themes
[root@localhost ~]#
#删除
[root@localhost ~]# rm /boot/grub2/grub.cfg
rm: remove regular file ‘/boot/grub2/grub.cfg’? y
[root@localhost ~]# reboot
```

最好在确认一下，磁盘分区：

```
df -h
```

```
[qiye@localhost 桌面]$ df -h
文件系统        容量  已用  可用 已用% 挂载点
/dev/sda3        18G  3.4G   15G   20% /
devtmpfs        482M     0  482M    0% /dev
tmpfs           490M  148K  490M    1% /dev/shm
tmpfs           490M  7.0M  483M    2% /run
tmpfs           490M     0  490M    0% /sys/fs/cgroup
/dev/sda1       297M  106M  192M   36% /boot
/dev/sr0        6.6G  6.6G     0  100% /run/media/qiye/CentOS 7 x86_64
[qiye@localhost 桌面]$
```

开始重启：



重启后，进入grub状态，一下调试参数：

小心版本问题啊，建议linux16 /vm 直接Tab出来就行

initrd16 /init 也一样

```
grub> insmod xfs

grub> set root='hd0,msdos1'    #你的/boot分区/dev/sda1,没错hd0对于sda，msdos1对应/dev/sda1

grub> linux16 /vmlinuz-3.10.0-123.el7.x86_64

root=/dev/sda3

grub> initrd16 /initramfs-3.10.0-123.el7.x86_64.img

grub> boot
```

关于root=/dev/sda3：

我的系统分区位于/dev/sda3,不能搞错绝对路径！！！！

恢复Grub

```
[root@localhost ~]# cp ./grub2.bak/grub.cfg /boot/grub2/

[root@localhost ~]# reboot
```

能够正常重启!

DHCP服务器的配置与使用

1.安装DHCP服务

检查是否有安装DHCP，若无提示，则未安装

```
rpm -qa dhcp
```

关闭防火墙及SELinux策略

```
[root@localhost ~]# systemctl stop firewalld.service

[root@localhost ~]# setenforce 0
```

安装dhcp服务

```
#挂载镜像
[root@localhost ~]# mkdir /mnt/cdrom
[root@localhost ~]# mount /dev/cdrom /mnt/cdrom/
mount: /dev/sr0 is write-protected, mounting read-only
[root@localhost ~]# cd /mnt/cdrom/
[root@localhost cdrom]# ls
CentOS_BuildTag  GPL       LiveOS    RPM-GPG-KEY-CentOS-7
EFI              images    Packages  RPM-GPG-KEY-CentOS-Testing-7
EULA             isolinux  repodata  TRANS.TBL
[root@localhost cdrom]# cd Packages/

#在包内查找dhcp安装包
[root@localhost Packages]# ls | grep  dhcp
dhcp-4.2.5-27.el7.centos.x86_64.rpm
dhcp-common-4.2.5-27.el7.centos.x86_64.rpm
dhcp-devel-4.2.5-27.el7.centos.i686.rpm
dhcp-devel-4.2.5-27.el7.centos.x86_64.rpm
dhcp-libs-4.2.5-27.el7.centos.i686.rpm
dhcp-libs-4.2.5-27.el7.centos.x86_64.rpm

#安装dhcp
[root@localhost Packages]# rpm -ivh dhcp-4.2.5-27.el7.centos.x86_64.rpm
warning: dhcp-4.2.5-27.el7.centos.x86_64.rpm: Header V3 RSA/SHA256 Signature, key
ID f4a80eb5: NOKEY
Preparing...                          ################################# [100%]
Updating / installing...
   1:dhcp-12:4.2.5-27.el7.centos      ################################# [100%]
[root@localhost Packages]# rpm -qa dhcp
dhcp-4.2.5-27.el7.centos.x86_64

#yum下载安装也行
wget -o /etc/yum.repos.d/CentOS-Base.repo
https://mirrors.aliyun.com/repo/Centos-7.repo
yum install dhcp
```

再次检查dhcp

```
[root@localhost Packages]# rpm -qa dhcp
dhcp-4.2.5-27.el7.centos.x86_64
```

2.DHCP的配置

更新本地网卡ip配置（我这网卡名就很离谱。）

```
[root@localhost Packages]# dhclient
[root@localhost Packages]# ifconfig
eno16777736: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.241.144  netmask 255.255.255.0  broadcast 192.168.241.255
        ether 00:0c:29:e0:c1:21  txqueuelen 1000  (Ethernet)
```

```
        RX packets 631  bytes 40374 (39.4 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 18  bytes 3110 (3.0 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 0  (Local Loopback)
        RX packets 930  bytes 80828 (78.9 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 930  bytes 80828 (78.9 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

找到dhcp配置文件

```
[root@localhost Packages]# find /* -name dhcpd.conf
/etc/dhcp/dhcpd.conf
```

然后出了一堆问题，解决起来真的是。。。怀疑人生啊

1.配置静态ip

```
vim /etc/sysconfig/network-scripts/ifcfg-eno16777736
```

```
HWADDR=00:0C:29:E0:C1:21
TYPE=Ethernet
BOOTPROTO=static
DEFROUTE=yes
PEERDNS=yes
PEERROUTES=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_PEERDNS=yes
IPV6_PEERROUTES=yes
IPV6_FAILURE_FATAL=no
NAME=eno16777736
UUID=118af5e5-92de-42b0-a1c6-619c8d9d6c81
DEVICE=eno16777736
ONBOOT=yes
IPADDR=192.168.111.111
NETMASK=255.255.255.0
GATEWAY=192.168.111.2
DNS1=114.114.114.144
DNS2=8.8.8.8
~
"/etc/sysconfig/network-scripts/ifcfg-eno16777736" 22L, 416C
```

```
#检查ip是否正确
[root@localhost ~]# ifconfig
eno16777736: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.111.111  netmask 255.255.255.0  broadcast 192.168.111.255
        inet6 fe80::20c:29ff:fee0:c121  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:e0:c1:21  txqueuelen 1000  (Ethernet)
        RX packets 34  bytes 2994 (2.9 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 34  bytes 4361 (4.2 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

2.配置dhcp文件

在/etc/dhcp/dhcpd.conf增加以下：

```
vim /etc/dhcp/dhcpd.conf
```

```
subnet 192.168.111.0 netmask 255.255.255.0 {
    range 192.168.111.100 192.168.111.200;
    option domain-name-servers 192.168.111.1;
    option domain-name "qiye";
    option routers 192.168.111.1;
    option broadcast-address 192.168.111.255;
    default-lease-time 600;
    max-lease-time 7200;
}
```

subnet 后面接是的是你ip的网段，不是你的ip，且后面数值都应该是跟你同个网段的ip

```
#启动dhcp服务
systemctl status dhcpd
```

```
# 重启DHCP服务

[root@localhost ~]# systemctl restart dhcpd.service

# 查看DHCP状态
[root@localhost ~]# netstat -luntp | grep dhcp
udp        0      0 0.0.0.0:67              0.0.0.0:*
12514/dhcpd
```

修改虚拟网络配置

在一台被我渗透了无数遍的靶机win7上，终于。。。。。

给win7配置一个nice的IP地址（192.168.111.114）

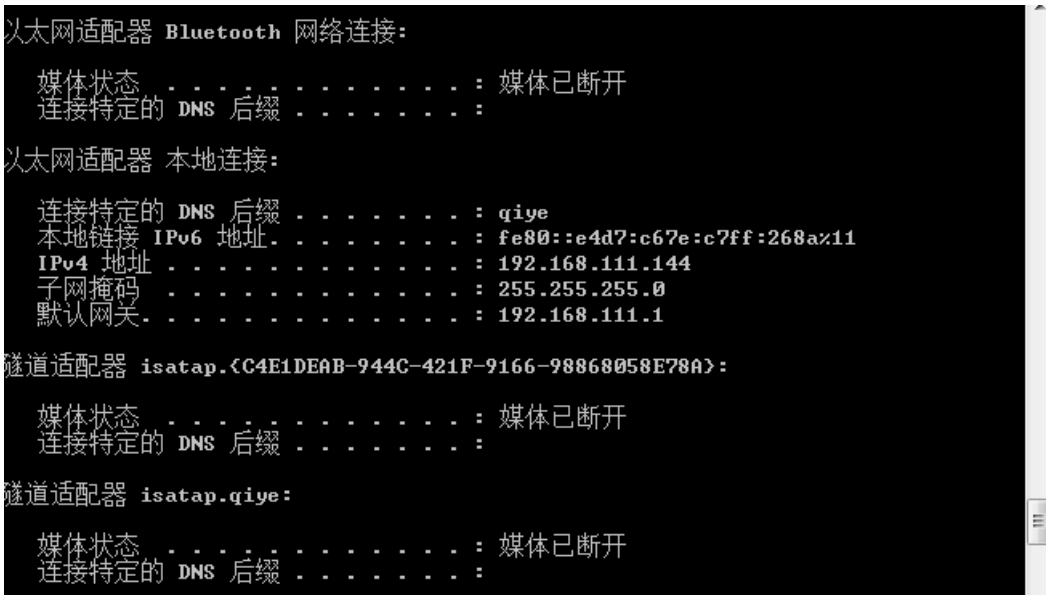
```
vim /etc/dhcp/dhcpd.conf
```

```
subnet 192.168.111.0 netmask 255.255.255.0 {
    range 192.168.111.100 192.168.111.200;
    option domain-name-servers 192.168.111.1;
```

```
    option domain-name "qiye";
    option routers 192.168.111.1;
    option broadcast-address 192.168.111.255;
    default-lease-time 600;
    max-lease-time 7200;
}

# 增加一行
host boss {
    hardware ethernet 00:0C:29:5A:D5:EB;
    fixed-address 192.168.111.144;
}
```

重启服务

```
[root@localhost ~]# systemctl restart dhcpd.service
```



Linux发送，给我的ubuntu配置ip和主机名

```
host qiye {
hardware ethernet 00:0c:29:2d:61:0b;
fixed-address 192.168.111.141;
option host-name "qiye_handsome_boy";
}
```

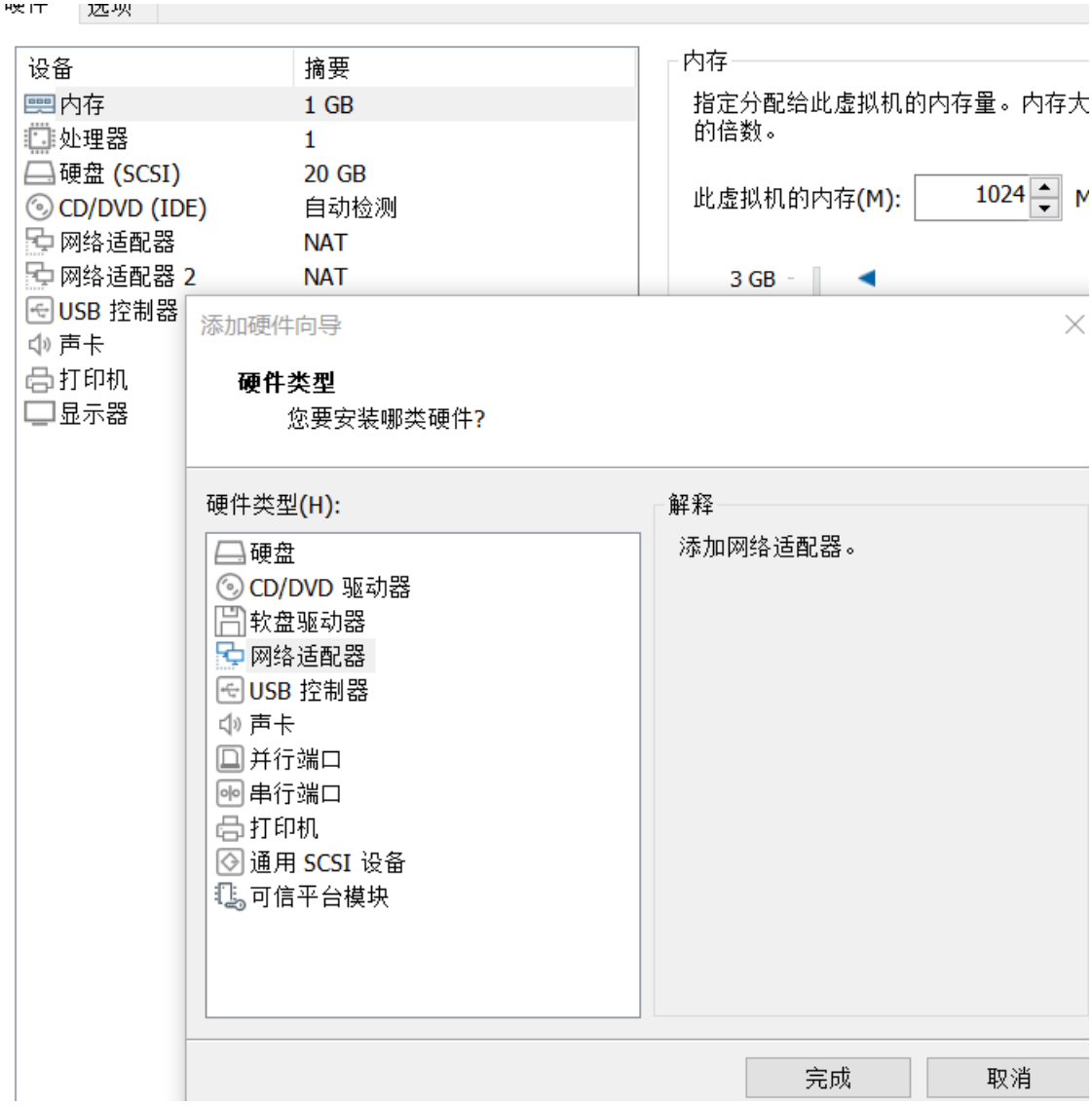
```
subnet 192.168.111.0 netmask 255.255.255.0 {
range 192.168.111.100 192.168.111.200;
option domain-name-servers 192.168.111.1;
option domain-name "qiye";
option routers 192.168.111.1;
option broadcast-address 192.168.111.255;
default-lease-time 600;
max-lease-time 7200;
}

host win7 {
    hardware ethernet 00:0C:29:5A:D5:EB;
    fixed-address 192.168.111.144;
}

host qiye {
 hardware ethernet 00:0c:29:2d:61:0b;
 fixed-address 192.168.111.141;
 option host-name "qiye_handsome_boy";
}
```

```
[root@localhost ~]# dhclient -d eno16777736
Internet Systems Consortium DHCP Client 4.2.5
Copyright 2004-2013 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/

Listening on LPF/eno16777736/00:0c:29:e0:c1:21
Sending on   LPF/eno16777736/00:0c:29:e0:c1:21
Sending on   Socket/fallback
DHCPDISCOVER on eno16777736 to 255.255.255.255 port 67 interval 4
(xid=0xa56da87)
DHCPREQUEST on eno16777736 to 255.255.255.255 port 67 (xid=0xa56da87)
DHCPOFFER from 192.168.111.111
DHCPACK from 192.168.111.111 (xid=0xa56da87)
hostname: the specified hostname is invalid
See -nc option in dhclient(8) man page.
bound to 192.168.111.141 -- renewal in 245 seconds.
```

ip能成功，主机名硬是改不出来。。

3.超级作用域

新增网卡



新建一个网卡静态配置文件（建议拷过来）

修改网卡mac地址、注释UUID，把新网卡的配置内容更新过来

```
HWADDR=00:0c:29:e0:c1:2b
TYPE=Ethernet
BOOTPROTO=static
DEFROUTE=yes
PEERDNS=yes
PEERROUTES=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=yes
IPV6_DEFROUTE=yes
IPV6_PEERDNS=yes
IPV6_PEERROUTES=yes
IPV6_FAILURE_FATAL=no
NAME=eno33554984
#UUID=118af5e5-92de-42b0-a1c6-619c8d9d6c81
DEVICE=eno33554984
ONBOOT=yes
IPADDR=192.168.112.111
NETMASK=255.255.255.0
GATEWAY=192.168.111.2
DNS1=114.114.114.144
DNS2=8.8.8.8

"ifcfg-eno33554984" 23L, 418C
```

```
# 重启网络服务
[root@localhost dhcp]# systemctl restart network.service
```

```
root@localhost ~]# ifconfig
eno16777736: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.111.111  netmask 255.255.255.0  broadcast 192.168.111.255
        inet6 fe80::20c:29ff:fee0:c121  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:e0:c1:21  txqueuelen 1000  (Ethernet)
        RX packets 247  bytes 45094 (44.0 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 185  bytes 20921 (20.4 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

eno33554984: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.112.111  netmask 255.255.255.0  broadcast 192.168.112.255
        inet6 fe80::20c:29ff:fee0:c12b  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:e0:c1:2b  txqueuelen 1000  (Ethernet)
        RX packets 85  bytes 23056 (22.5 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 54  bytes 9468 (9.2 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

修改dhcp配置（最好不要重复的mac地址，不然配置生效的是后一个）

```
vim /etc/dhcp/dhcpd.conf
```

新增

```
subnet 192.168.112.0 netmask 255.255.255.0 {
range 192.168.112.100 192.168.112.200;
option domain-name-servers 192.168.112.1;
option domain-name "qiye";
option routers 192.168.112.1;
option broadcast-address 192.168.112.255;
default-lease-time 600;
max-lease-time 7200;
}

host ubuntu {
    hardware ethernet 00:0c:29:2d:61:0b;
    fixed-address 192.168.112.144;
}
```

可以发现，ubuntu已经跟换到112段

```
root@ubuntu:/home/qiye/Desktop# ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.112.144  netmask 255.255.255.0  broadcast 192.168.112.255
        inet6 fe80::7e36:1937:[illegible]0a6:7902  prefixlen 64  scopeid 0x20<link>
        ether 00:0c:29:2d:61:0b  txqueuelen 1000  (Ethernet)
        RX packets 225  bytes 34704 (34.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1169  bytes 125832 (125.8 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 9309  bytes 670887 (670.8 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 9309  bytes 670887 (670.8 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

未完待续~~