

Lab03 Download and compile the latest linux kernel

软件学院 2018级 1813075 刘茵

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Target

I .Preprations

view the current linux kernel version

II.Download and compile the latest linux kernel

- 1.Download the latest linux kernel
- 2.config the latest linux kernel
3. compile the latest linux kernel (long wait)
4. boot ubuntu with the latest linux kernel

Target

- Download the latest linux kernel
- config the latest linux kernel
- compile the latest linux kernel
- boot ubuntu with the latest linux kernel

I .Preprations

1. install related software package

```
sudo apt-get update
sudo apt-get upgrade

sudo apt-get install build-essential
```

```
liuyin1813075@echo-virtual-machine:~$ sudo apt-get install build-essential
正在读取软件包列表... 完成
正在分析软件包的依赖关系树
正在读取状态信息... 完成
build-essential 已经是最新版 (12.8ubuntu1)。
升级了 0 个软件包，新安装了 0 个软件包，要卸载 0 个软件包，有 0 个软件包未被升级。
```

```
sudo apt-get install wget
```

```
liuyin1813075@echo-virtual-machine:~$ sudo apt-get install wget
正在读取软件包列表... 完成
正在分析软件包的依赖关系树
正在读取状态信息... 完成
wget 已经是最新版 (1.20.3-1ubuntu1)。
wget 已设置为手动安装。
升级了 0 个软件包，新安装了 0 个软件包，要卸载 0 个软件包，有 0 个软件包未被升级。
```

```
sudo apt-get install gnome-core-devel
```

```
sudo apt-get install pkg-config
```

```
sudo apt-get install libgtk2.0-dev
```

```
sudo apt-get install libcanberra-gtk-module
```

```
sudo apt-get install glade libglade2-dev
```

```
sudo apt-get install flex bison
```

```
sudo apt-get install libssl-dev
```

```
sudo apt-get install libelf-dev
```

```
sudo apt-get install libncurses-dev
```

view the current linux kernel version

```
uname -a
```

```
liuyin1813075@echo-virtual-machine:~$ uname -a
Linux echo-virtual-machine 5.4.0-52-generic #57-Ubuntu SMP Thu Oct 15 10:57:00
UTC 2020 x86_64 x86_64 x86_64 GNU/Linux
```

Linux内核版本

II.Download and compile the latest linux kernel

1.Download the latest linux kernel

① `cd ~` `pwd` #返回根目录

② `wget -c http://mirror.bjtu.edu.cn/kernel/linux/kernel/v5.x/linux-5.8.15.tar.xz` #断点续传命令`wget -c`，国内源下载Linux内核

③ `tar xvJf linux-5.8.15.tar.xz` #解压缩

④`sudo ln -s pwd /linux-5.8.15 /usr/src/linux`

- `ln -s`它的功能是为某一个文件在另外一个位置建立一个同名的链接，这个命令最常用的参数是-s,具体用法是：`ln -s 源文件 目标文件`

2.config the latest linux kernel

```
cd /usr/src/linux
cp /boot/config-`uname -r` .config #复制

make oldconfig
make gconfig
```

3. compile the latest linux kernel (long wait)

compile the latest linux kernel

```
make -j4
```

install the latest linux kernel

```
sudo make modules_install
```

```
INSTALL sound/usb/snd-usb-lcd.ko
INSTALL sound/usb/usx2y/snd-usb-us122l.ko
INSTALL sound/usb/usx2y/snd-usb-usx2y.ko
INSTALL sound/x86/snd-hdmi-lpe-audio.ko
INSTALL sound/xen/snd_xen_front.ko
DEPMOD 5.8.15
```

```
sudo make install
```

```
找到 initrd 镜像: /boot/initrd.img-5.4.0-51-generic
找到 Linux 镜像: /boot/vmlinuz-5.4.0-48-generic
找到 initrd 镜像: /boot/initrd.img-5.4.0-48-generic
Found memtest86+ image: /boot/memtest86+.elf
Found memtest86+ image: /boot/memtest86+.bin
完成
```

4. boot ubuntu with the latest linux kernel

```
sudo reboot
uname -a
```

```
liuyin1813075@echo-virtual-machine:~$ uname -a  
Linux echo-virtual-machine 5.8.15 #1 SMP Fri Oct 23 14:55:39 CST  
2020 x86_64 x86_64 x86_64 GNU/Linux
```