**CentOS7 内核编译**

# 基本环境

操作系统：CentOS 7.8.2003 x86\_64

安装文件：CentOS-7-x86\_64-Minimal-2003.iso

硬件环境：AMD R7 2700，32GB RAM

# 工具准备

用root账户运行如下安装操作：

|  |
| --- |
| yum install rng-tools  yum install rpm-build redhat-rpm-config unifdef  yum install rpm-build redhat-rpm-config asciidoc bison hmaccalc patchutils perl-ExtUtils-Embed xmlto  yum install audit-libs-devel binutils-devel elfutils-devel elfutils-libelf-devel  yum install newt-devel python-devel zlib-devel  yum install gcc bc bison  yum -y groupinstall "development tools"  yum install java-1.8.0-openjdk-devel.x86\_64  yum install pciutils-devel.x86\_64  yum install pesign.x86\_64  yum install numactl-devel.x86\_64 ncurses-devel.x86\_64 python-docutils.noarch  yum install openssl-devel.x86\_64 |

# 源码下载

用普通用户下载和编译内核。

内核源码从<https://vault.centos.org>下载，选择相应版本的内核源码rpm文件。

标准发行版的内核在如下路径：

|  |
| --- |
| <https://vault.centos.org/7.8.2003/os/Source/SPackages/kernel-3.10.0-1127.el7.src.rpm> |

升级版本的内核在如下路径：

|  |
| --- |
| <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-3.10.0-1127.8.2.el7.src.rpm>  <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-3.10.0-1127.10.1.el7.centos.plus.src.rpm>  <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-3.10.0-1127.10.1.el7.src.rpm>  <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-3.10.0-1127.13.1.el7.src.rpm>  <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-3.10.0-1127.18.2.el7.centos.plus.src.rpm>  <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-3.10.0-1127.18.2.el7.src.rpm>  <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-3.10.0-1127.19.1.el7.src.rpm>  <https://vault.centos.org/7.8.2003/updates/Source/SPackages/kernel-4.18.0-193.1.2.el7.src.rpm> |

不同的内核编译时可能需要不同版本的工具包，下面只以标准发行版为准。

# 配置和编译

下面操作全部用普通用户进行。

安装内核源码包：

|  |
| --- |
| rpm -i kernel-3.10.0-1127.el7.src.rpm |

配置：

|  |
| --- |
| cd ~/rpmbuild/SPECS  rpmbuild -bp --target=$(uname -m) kernel.spec  cd ~/rpmbuild/BUILD/kernel-3.10.0-1127.el7/linux-3.10.0-1127.el7.x86\_64/  cp /boot/config-3.10.0-1127.el7.x86\_64 .config  make menuconfig |

可以修改General setup->Local version – append to kernel release，添加版本标识。

编译源码包：

|  |
| --- |
| make V=s -j8 |

编译成功后，会在目录中看到vmlinux文件，如果出错，可以用命令

|  |
| --- |
| make V=s -j1 |

查看错误并进行相应处理。

注意，不要用root用户编译，会出现很多问题。

# 编译驱动模块

# 安装

安装内核

|  |
| --- |
| make modules\_install  make install |

# 配置grub启动项

查看当前可用启动项列表

|  |
| --- |
| awk -F\' '$1=="menuentry " {print i++ " : " $2}' /boot/efi/EFI/centos/grub.cfg |

重建grub2的配置文件

|  |
| --- |
| grub2-mkconfig -o /boot/efi/EFI/centos/gurb.cfg |

选择下次开机时启动的内核

|  |
| --- |
| grub2-set-default “CentOS Linux (3.10.0-1127.el7.x86\_64) 7 (Core)” |

查看当前启动项

|  |
| --- |
| grub2-editenv list |