Netkiller Linux Basics 手札

Debian Family(Ubuntu) Handbook

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文档出处: http://netkiller.sourceforge.net/ | http://netkiller.github.com

文档最近一次更新于 Thu Dec 1 12:48:17 UTC 2011

内容摘要

对初学Linux的爱好者忠告

玩Linux最忌reboot（重新启动）这是windows玩家坏习惯

Linux只要接上电源你就不要再想用reboot,shutdown,halt,poweroff命令,Linux系统和应用软件一般备有reload,reconfigure,restart/start/stop...不需要安装软件或配置服务器后使用reboot重新引导计算机

在Linux系统里SIGHUP信号被定义为刷新配置文件,有些程序没有提供reload参数,你可以给进程发送HUP信号,让它刷新配置文件,而不用restart.通过pkill,killall,kill 都可以发送HUP信号例如: pkill -HUP httpd

下面是我多年积累下来的经验总结，整理成文档供大家参考:

Netkiller Architect 手札	Netkiller Linux 手札	Netkiller Developer 手札	Netkiller Database 手札
Netkiller Debian 手札	Netkiller CentOS 手札	Netkiller FreeBSD 手札	Netkiller Shell 手札
Netkiller Web 手札	Netkiller Monitoring 手札	Netkiller Storage 手札	Netkiller Mail System 手札
Netkiller MySQL 手札	Netkiller LDAP 手札	Netkiller Security 手札	Netkiller Version 手札
Netkiller Intranet 手札	Netkiller Cisco IOS 手札	Netkiller Writer 手札	Netkiller Studio Linux 手札

鸣谢

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1. 内容简介

当前文档档容比较杂，涉及内容广泛。

慢慢我会将其中章节拆成新文档.

文档内容简介:

1. Network
2. Security
3. Web Application
4. Database
5. Storage And Backup/Restore
6. Cluster
7. Developer

1.1. Audience(读者对象)

This book is intended primarily for Linux system administrators who are familiar with the following activities:

Audience

1. Linux system administration procedures, including kernel configuration
2. Installation and configuration of cluster, such as load balancing, High Availability,
3. Installation and configuration of shared storage networks, such as Fibre Channel SANs
4. Installation and configuration of web server, such as apache, nginx, lighttpd, tomcat/resin ...

本文档的读者对象:

文档面向有所有读者。您可以选读您所需要的章节,无需全篇阅读,因为有些章节不一定对你有用,用得着就翻来看看,暂时用不到的可以不看.

大体分来读者可以分为几类:

1. 架构工程师
2. 系统管理员
3. 系统支持,部署工程师

不管是谁,做什么的,我希望通过阅读这篇文档都能对你有所帮助。

1.2. 写给读者

欢迎提出宝贵的建议,如有问题请到 邮件列表 讨论

为什么写这篇文章

有很多想法,工作中也用不到所以未能实现，所以想写出来,和大家分享.有一点写一点,写得也不好,只要能看懂就行,就当学习笔记了.

开始零零碎碎写过一些文档，也向维基百科供过稿，但维基经常被ZF封锁，后来发现sf.net可以提供主机存放文档，便做了迁移。并开始了我的写作生涯。

这篇文档是作者8年来对工作的总结,是作者一点一滴的积累起来的，有些笔记已经丢失，所以并不完整。

因为工作太忙整理比较缓慢。目前的工作涉及面比较窄所以新文档比较少。

我现在花在技术上的时间越来越少，兴趣转向摄影，无线电。也想写写摄影方面的心得体会。

写作动力:

曾经在网上看到外国开源界对中国的评价，中国人对开源索取无度，但贡献却微乎其微.这句话一直记在我心中，发誓要为中国开源事业做我仅有的一点微薄贡献

另外写文档也是知识积累，还可以增加在圈内的影响力.

人跟动物的不同,就是人类可以把自己学习的经验教给下一代人.下一代在上一代的基础上再创新,不断积累才有今天.

所以我把自己的经验写出来,可以让经验传承

没有内容的章节:

目前我自己一人维护所有文档，写作时间有限，当我发现一个好主题就会加入到文档中，待我有时间再完善章节，所以你会发现很多章节是空无内容的.

文档目前几乎是流水帐试的写作，维护量很大，先将就着看吧.

我想到哪写到哪,你会发现文章没一个中心,今天这里写点,明天跳过本章写其它的.
文中例子绝对多,对喜欢复制然后粘贴朋友很有用,不用动手写,也省时间.
理论的东西,网上大把,我这里就不写了,需要可以去网上查.
我爱写错别字,还有一些是打错的,如果发现请指正.
文中大部分试验是在Debian/Ubuntu/Redhat AS上完成.

1.3. 获得文档

1.3.1. PDF

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1.3.2. EPUB

http://netkiller.sourceforge.net/technology.html

1.3.3. 获得光盘介质

如有特别需要，请联系我

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2. 作者简介

主页地址：http://netkiller.sourceforge.net, http://netkiller.github.com/

陈景峰 (ㄔㄣˊ ㄐㄧㄥˇ ㄈㄥ)

Nickname：netkiller | English name: Neo chen | Nippon name: ちんけいほう (音訳) | Korean name: | Thailand name:

IT民工， UNIX like Evangelist, 业余无线电爱好者（呼号：BG7NYT）,户外运动以及摄影爱好者。

《PostgreSQL实用实例参考》，《Postfix 完整解决方案》，《Netkiller Linux 手札》的作者

2001年来深圳进城打工,成为一名外来务工者.

2002年我发现不能埋头苦干,埋头搞技术是不对的,还要学会"做人".

2003年这年最惨,公司拖欠工资16000元,打过两次官司2005才付清.

2004年开始加入分布式计算团队,目前成绩

2004-10月开始玩户外和摄影

2005-6月成为中国无线电运动协会会员

2006年单身生活了这么多年,终于找到归宿.

2007物价上涨,金融危机，休息了4个月（其实是找不到工作）

2008终于找到英文学习方法，， 《Netkiller Developer 手札》，《Netkiller Document 手札》

2008-8-8 08:08:08 结婚,后全家迁居湖南省常德市

2009《Netkiller Database 手札》,年底拿到C1驾照

2010对电子打击乐产生兴趣，计划学习爵士鼓

2011 职业生涯路上继续打怪升级

2.1. 联系作者

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注：请不要问我安装问题!

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写给火腿:

欢迎无线电爱好者和我QSO,我的QTH在深圳宝安区龙华镇溪山美地12B7CD,设备YAESU FT-50R,FT-60R,FT-7800 144-430双段机,拉杆天线/GP天线 Nagoya MAG-79EL-3W/Yagi

如果这篇文章对你有所帮助,请寄给我一张QSL卡片,qrz.cn or qrz.com or hamcall.net

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Best Regards, VY 73! OP. BG7NYT

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第 1 章 Introduction

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1. Distribution Version

Debian/Ubuntu

http://www.ubuntu.com

Gentoo

http://www.gentoo.org/

Scientific Linux (SL)

http://www.scientificlinux.org/

CentOS

http://www.centos.org/

Debian/Ubuntu适合做实验，快速安装定制，Gentoo适合DIY

如果是企业服务器还是建议使用CentOS，Scientific Linux

2. Distribution information

To find your Ubuntu version: lsb_release -a

```
[root@localhost ~]# lsb_release -a
LSB Version:    :core-3.1-ia32:core-3.1-noarch:graphics-3.1-ia32:graphics-3.1-
noarch
Distributor ID: CentOS
Description:    CentOS release 5.2 (Final)
Release:        5.2
Codename:       Final


neo@netkiller:~$ lsb_release -a

No LSB modules are available.
Distributor ID: Ubuntu
Description:    Ubuntu 8.04.1
Release:        8.04
Codename:       hardy
```

```
$ head -n1 /etc/issue
Ubuntu 10.04 LTS \n \l
```

3. Linux Installation

3.1. HDD Partition

partition

表 1.1. Linux partition

volume	size
/boot	500M
/	50G
/opt	remainder
swap	memory * 2

部分 I. System Administrator

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第 2 章 Kernel

```
wget -q -c http://www.kernel.org/pub/linux/kernel/v3.0/linux-3.0.1.tar.bz2
tar jxvf linux-3.0.1.tar.bz2

cd linux-3.0.1
make clean
make mrproper
make menuconfig
make
make modules_install
make install
```

第 3 章 System Infomation

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1. Cpu Bit

```
neo@netkiller:~$ uname -a
Linux netkiller 2.6.28-15-server #52-Ubuntu SMP Wed Sep 9 11:34:09 UTC 2009
x86_64 GNU/Linux

neo@netkiller:~$ getconf LONG_BIT
64
```

第 4 章 shutdown

```
shutdown -h now
shutdown -h 10:00       10点关机
shutdown -h +10         10mins后关机
shutdown -r now         reboot at once
shutdown -r +30         'System will reboot in 30mins'
shutdown -k             'System will reboot'
```

第 5 章 Profile

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1. shell

```
$ chsh /bin/bash
```

第 6 章 Device information

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1. dmesg - print or control the kernel ring buffer

dmesg

```
neo@shenzhen:~/doc/Linux/xhtml$ dmesg
```

2. smartctl - Control and Monitor Utility for SMART Disks

```
# smartctl -i /dev/sda
smartctl version 5.38 [x86_64-redhat-linux-gnu] Copyright (C) 2002-8 Bruce Allen
Home page is http://smartmontools.sourceforge.net/

=== START OF INFORMATION SECTION ===
Model Family:     Western Digital Caviar Second Generation Serial ATA family
Device Model:     WDC WD1600AAJS-75M0A0
Serial Number:    WD-WCAV35616755
Firmware Version: 02.03E02
User Capacity:    160,000,000,000 bytes
Device is:        In smartctl database [for details use: -P show]
ATA Version is:   8
ATA Standard is:  Exact ATA specification draft version not indicated
Local Time is:    Wed May  5 13:05:18 2010 CST
SMART support is: Available - device has SMART capability.
SMART support is: Enabled
```

如果 SMART support is: Disabled 使用下面命令启用

```
# smartctl --smart=on --offlineauto=on --saveauto=on /dev/hdb
```

健康情况

```
# smartctl -H /dev/sda
smartctl version 5.38 [x86_64-redhat-linux-gnu] Copyright (C) 2002-8 Bruce Allen
Home page is http://smartmontools.sourceforge.net/

=== START OF READ SMART DATA SECTION ===
SMART overall-health self-assessment test result: PASSED
```

PASSED，这表示硬盘健康状态良好,Failure 最好立刻给服务器更换硬盘

3. lspci - list all PCI devices

```
$ lspci
00:00.0 Host bridge: Intel Corporation 82945G/GZ/P/PL Memory Controller Hub (rev
02)
00:02.0 VGA compatible controller: Intel Corporation 82945G/GZ Integrated Graphics
Controller (rev 02)
00:1b.0 Audio device: Intel Corporation 82801G (ICH7 Family) High Definition
Audio Controller (rev 01)
00:1c.0 PCI bridge: Intel Corporation 82801G (ICH7 Family) PCI Express Port 1
(rev 01)
00:1c.2 PCI bridge: Intel Corporation 82801G (ICH7 Family) PCI Express Port 3
(rev 01)
00:1c.3 PCI bridge: Intel Corporation 82801G (ICH7 Family) PCI Express Port 4
(rev 01)
00:1d.0 USB Controller: Intel Corporation 82801G (ICH7 Family) USB UHCI
Controller #1 (rev 01)
00:1d.1 USB Controller: Intel Corporation 82801G (ICH7 Family) USB UHCI
Controller #2 (rev 01)
00:1d.2 USB Controller: Intel Corporation 82801G (ICH7 Family) USB UHCI
Controller #3 (rev 01)
00:1d.3 USB Controller: Intel Corporation 82801G (ICH7 Family) USB UHCI
Controller #4 (rev 01)
00:1d.7 USB Controller: Intel Corporation 82801G (ICH7 Family) USB2 EHCI
Controller (rev 01)
00:1e.0 PCI bridge: Intel Corporation 82801 PCI Bridge (rev e1)
00:1f.0 ISA bridge: Intel Corporation 82801GB/GR (ICH7 Family) LPC Interface
Bridge (rev 01)
00:1f.1 IDE interface: Intel Corporation 82801G (ICH7 Family) IDE Controller (rev
01)
00:1f.2 IDE interface: Intel Corporation 82801GB/GR/GH (ICH7 Family) SATA IDE
Controller (rev 01)
00:1f.3 SMBus: Intel Corporation 82801G (ICH7 Family) SMBus Controller (rev 01)
01:00.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL8111/8168B PCI
Express Gigabit Ethernet controller (rev 02)
04:00.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL-8139/8139C/8139C+
(rev 10)
```

```
$ lspci -tv
-[0000:00]-+-00.0  Intel Corporation 82945G/GZ/P/PL Memory Controller Hub
           +-02.0  Intel Corporation 82945G/GZ Integrated Graphics Controller
           +-1b.0  Intel Corporation N10/ICH 7 Family High Definition Audio
Controller
           +-1c.0-[0000:01]----00.0  Realtek Semiconductor Co., Ltd.
RTL8111/8168B PCI Express Gigabit Ethernet controller
           +-1c.2-[0000:02]--
           +-1c.3-[0000:03]--
           +-1d.0  Intel Corporation N10/ICH7 Family USB UHCI Controller #1
           +-1d.1  Intel Corporation N10/ICH 7 Family USB UHCI Controller #2
           +-1d.2  Intel Corporation N10/ICH 7 Family USB UHCI Controller #3
           +-1d.3  Intel Corporation N10/ICH 7 Family USB UHCI Controller #4
           +-1d.7  Intel Corporation N10/ICH 7 Family USB2 EHCI Controller
           +-1e.0-[0000:04]----00.0  Realtek Semiconductor Co., Ltd. RTL-
8139/8139C/8139C+
           +-1f.0  Intel Corporation 82801GB/GR (ICH7 Family) LPC Interface
Bridge
           +-1f.1  Intel Corporation 82801G (ICH7 Family) IDE Controller
           +-1f.2  Intel Corporation N10/ICH7 Family SATA IDE Controller
           \-1f.3  Intel Corporation N10/ICH 7 Family SMBus Controller
```

4. dmidecode - DMI table decoder

dmidecode

```
# dmidecode |more

# dmidecode 2.2
SMBIOS 2.4 present.
62 structures occupying 3161 bytes.
Table at 0xCFFBC000.
Handle 0xDA00
        DMI type 218, 11 bytes.
        OEM-specific Type
                Header And Data:
                        DA 0B 00 DA B2 00 17 00 0E 20 00
Handle 0x0000
        DMI type 0, 24 bytes.
        BIOS Information
                Vendor: Dell Inc.
                Version: 1.2.0
                Release Date: 10/18/2006
                Address: 0xF0000
                Runtime Size: 64 kB
                ROM Size: 1024 kB
                Characteristics:
                        ISA is supported
                        PCI is supported
                        PNP is supported
                        BIOS is upgradeable
                        BIOS shadowing is allowed
                        ESCD support is available
                        Boot from CD is supported
                        Selectable boot is supported
                        EDD is supported
                        Japanese floppy for Toshiba 1.2 MB is supported (int 13h)
                        5.25"/360 KB floppy services are supported (int 13h)
                        5.25"/1.2 MB floppy services are supported (int 13h)
                        3.5"/720 KB floppy services are supported (int 13h)
                        Print screen service is supported (int 5h)
                        8042 keyboard services are supported (int 9h)
                        Serial services are supported (int 14h)
                        Printer services are supported (int 17h)
                        CGA/mono video services are supported (int 10h)
                        ACPI is supported
                        USB legacy is supported
                        BIOS boot specification is supported
                        Function key-initiated network boot is supported
```

5. 鉴别eth(x)

简单的方法：
一个插网线，一个不插，运行 `mii-tool` 或 `ethtool eth0`，看状态是否连接

另一种方法是：
`tail -f /var/log/messages`，当你向其中一个网口做插拔网线的动作时，屏幕上会看到提示信息

最好的方法是将mac地址写在启动脚本内.

6. usb device

lsusb

```
neo@netkiller:~$ lsusb
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 005 Device 002: ID 0dda:0301 Integrated Circuit Solution, Inc. MP3 Player
Bus 005 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 004 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 003 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
Bus 002 Device 001: ID 1d6b:0001 Linux Foundation 1.1 root hub
```

```
$ lsusb -tv
/:  Bus 05.Port 1: Dev 1, Class=root_hub, Driver=uhci_hcd/2p, 12M
/:  Bus 04.Port 1: Dev 1, Class=root_hub, Driver=uhci_hcd/2p, 12M
/:  Bus 03.Port 1: Dev 1, Class=root_hub, Driver=uhci_hcd/2p, 12M
/:  Bus 02.Port 1: Dev 1, Class=root_hub, Driver=uhci_hcd/2p, 12M
/:  Bus 01.Port 1: Dev 1, Class=root_hub, Driver=ehci_hcd/8p, 480M
```

```
$ sudo lsusb -v

Bus 005 Device 001: ID 0000:0000
Device Descriptor:
  bLength                18
  bDescriptorType         1
  bcdUSB               2.00
  bDeviceClass            9 Hub
  bDeviceSubClass         0 Unused
  bDeviceProtocol         1 Single TT
  bMaxPacketSize0        64
  idVendor           0x0000
  idProduct          0x0000
  bcdDevice            2.06
  iManufacturer           3 Linux 2.6.24-22-generic ehci_hcd
  iProduct                2 EHCI Host Controller
  iSerial                 1 0000:00:1d.7
  bNumConfigurations      1
  Configuration Descriptor:
    bLength                 9
    bDescriptorType         2
    wTotalLength           25
    bNumInterfaces          1
    bConfigurationValue     1
    iConfiguration          0
    bmAttributes         0xe0
      Self Powered
      Remote Wakeup
    MaxPower                0mA
    Interface Descriptor:
      bLength                 9
      bDescriptorType         4
      bInterfaceNumber        0
      bAlternateSetting       0
      bNumEndpoints           1
      bInterfaceClass         9 Hub
      bInterfaceSubClass      0 Unused
      bInterfaceProtocol      0 Full speed (or root) hub
      iInterface              0
      Endpoint Descriptor:
        bLength                 7
        bDescriptorType         5
        bEndpointAddress     0x81  EP 1 IN
        bmAttributes            3
          Transfer Type            Interrupt
          Synch Type               None
```

```
          Usage Type               Data
        wMaxPacketSize     0x0004  1x 4 bytes
        bInterval              12
Hub Descriptor:
  bLength              11
  bDescriptorType      41
  nNbrPorts             8
  wHubCharacteristic 0x000a
    No power switching (usb 1.0)
    Per-port overcurrent protection
    TT think time 8 FS bits
  bPwrOn2PwrGood       10 * 2 milli seconds
  bHubContrCurrent      0 milli Ampere
  DeviceRemovable    0x00 0x00
  PortPwrCtrlMask    0xff 0xff
 Hub Port Status:
   Port 1: 0000.0100 power
   Port 2: 0000.0100 power
   Port 3: 0000.0100 power
   Port 4: 0000.0100 power
   Port 5: 0000.0100 power
   Port 6: 0000.0100 power
   Port 7: 0000.0100 power
   Port 8: 0000.0100 power
Device Status:     0x0003
  Self Powered
  Remote Wakeup Enabled

Bus 004 Device 001: ID 0000:0000
Device Descriptor:
  bLength                18
  bDescriptorType         1
  bcdUSB               1.10
  bDeviceClass            9 Hub
  bDeviceSubClass         0 Unused
  bDeviceProtocol         0 Full speed (or root) hub
  bMaxPacketSize0        64
  idVendor           0x0000
  idProduct          0x0000
  bcdDevice            2.06
  iManufacturer           3 Linux 2.6.24-22-generic uhci_hcd
  iProduct                2 UHCI Host Controller
  iSerial                 1 0000:00:1d.3
  bNumConfigurations      1
  Configuration Descriptor:
    bLength                 9
    bDescriptorType         2
    wTotalLength           25
    bNumInterfaces          1
    bConfigurationValue     1
    iConfiguration          0
    bmAttributes         0xe0
      Self Powered
      Remote Wakeup
    MaxPower                0mA
    Interface Descriptor:
      bLength                 9
      bDescriptorType         4
      bInterfaceNumber        0
      bAlternateSetting       0
      bNumEndpoints           1
      bInterfaceClass         9 Hub
      bInterfaceSubClass      0 Unused
      bInterfaceProtocol      0 Full speed (or root) hub
      iInterface              0
      Endpoint Descriptor:
        bLength                 7
        bDescriptorType         5
        bEndpointAddress     0x81  EP 1 IN
        bmAttributes            3
          Transfer Type            Interrupt
          Synch Type               None
          Usage Type               Data
        wMaxPacketSize     0x0002  1x 2 bytes
        bInterval             255
Hub Descriptor:
  bLength               9
  bDescriptorType      41
  nNbrPorts             2
  wHubCharacteristic 0x000a
    No power switching (usb 1.0)
    Per-port overcurrent protection
  bPwrOn2PwrGood        1 * 2 milli seconds
  bHubContrCurrent      0 milli Ampere
```

```
  DeviceRemovable    0x00
  PortPwrCtrlMask    0xff
 Hub Port Status:
   Port 1: 0000.0100 power
   Port 2: 0000.0100 power
Device Status:     0x0003
  Self Powered
  Remote Wakeup Enabled

Bus 003 Device 001: ID 0000:0000
Device Descriptor:
  bLength                18
  bDescriptorType         1
  bcdUSB               1.10
  bDeviceClass            9 Hub
  bDeviceSubClass         0 Unused
  bDeviceProtocol         0 Full speed (or root) hub
  bMaxPacketSize0        64
  idVendor           0x0000
  idProduct          0x0000
  bcdDevice            2.06
  iManufacturer           3 Linux 2.6.24-22-generic uhci_hcd
  iProduct                2 UHCI Host Controller
  iSerial                 1 0000:00:1d.2
  bNumConfigurations      1
  Configuration Descriptor:
    bLength                 9
    bDescriptorType         2
    wTotalLength           25
    bNumInterfaces          1
    bConfigurationValue     1
    iConfiguration          0
    bmAttributes         0xe0
      Self Powered
      Remote Wakeup
    MaxPower                0mA
    Interface Descriptor:
      bLength                 9
      bDescriptorType         4
      bInterfaceNumber        0
      bAlternateSetting       0
      bNumEndpoints           1
      bInterfaceClass         9 Hub
      bInterfaceSubClass      0 Unused
      bInterfaceProtocol      0 Full speed (or root) hub
      iInterface              0
      Endpoint Descriptor:
        bLength                 7
        bDescriptorType         5
        bEndpointAddress     0x81  EP 1 IN
        bmAttributes            3
          Transfer Type            Interrupt
          Synch Type               None
          Usage Type               Data
        wMaxPacketSize     0x0002  1x 2 bytes
        bInterval             255
Hub Descriptor:
  bLength                9
  bDescriptorType       41
  nNbrPorts              2
  wHubCharacteristic 0x000a
    No power switching (usb 1.0)
    Per-port overcurrent protection
  bPwrOn2PwrGood         1 * 2 milli seconds
  bHubContrCurrent       0 milli Ampere
  DeviceRemovable    0x00
  PortPwrCtrlMask    0xff
 Hub Port Status:
   Port 1: 0000.0100 power
   Port 2: 0000.0100 power
Device Status:     0x0003
  Self Powered
  Remote Wakeup Enabled

Bus 002 Device 001: ID 0000:0000
Device Descriptor:
  bLength                18
  bDescriptorType         1
  bcdUSB               1.10
  bDeviceClass            9 Hub
  bDeviceSubClass         0 Unused
  bDeviceProtocol         0 Full speed (or root) hub
  bMaxPacketSize0        64
  idVendor           0x0000
```

```
  idProduct          0x0000
  bcdDevice            2.06
  iManufacturer           3 Linux 2.6.24-22-generic uhci_hcd
  iProduct                2 UHCI Host Controller
  iSerial                 1 0000:00:1d.1
  bNumConfigurations      1
  Configuration Descriptor:
    bLength                 9
    bDescriptorType         2
    wTotalLength           25
    bNumInterfaces          1
    bConfigurationValue     1
    iConfiguration          0
    bmAttributes         0xe0
      Self Powered
      Remote Wakeup
    MaxPower                0mA
    Interface Descriptor:
      bLength                 9
      bDescriptorType         4
      bInterfaceNumber        0
      bAlternateSetting       0
      bNumEndpoints           1
      bInterfaceClass         9 Hub
      bInterfaceSubClass      0 Unused
      bInterfaceProtocol      0 Full speed (or root) hub
      iInterface              0
      Endpoint Descriptor:
        bLength                 7
        bDescriptorType         5
        bEndpointAddress     0x81  EP 1 IN
        bmAttributes            3
          Transfer Type            Interrupt
          Synch Type               None
          Usage Type               Data
        wMaxPacketSize     0x0002  1x 2 bytes
        bInterval             255
Hub Descriptor:
  bLength               9
  bDescriptorType      41
  nNbrPorts             2
  wHubCharacteristic 0x000a
    No power switching (usb 1.0)
    Per-port overcurrent protection
  bPwrOn2PwrGood        1 * 2 milli seconds
  bHubContrCurrent      0 milli Ampere
  DeviceRemovable    0x00
  PortPwrCtrlMask    0xff
 Hub Port Status:
   Port 1: 0000.0100 power
   Port 2: 0000.0100 power
Device Status:     0x0003
  Self Powered
  Remote Wakeup Enabled

Bus 001 Device 001: ID 0000:0000
Device Descriptor:
  bLength                18
  bDescriptorType         1
  bcdUSB               1.10
  bDeviceClass            9 Hub
  bDeviceSubClass         0 Unused
  bDeviceProtocol         0 Full speed (or root) hub
  bMaxPacketSize0        64
  idVendor           0x0000
  idProduct          0x0000
  bcdDevice            2.06
  iManufacturer           3 Linux 2.6.24-22-generic uhci_hcd
  iProduct                2 UHCI Host Controller
  iSerial                 1 0000:00:1d.0
  bNumConfigurations      1
  Configuration Descriptor:
    bLength                 9
    bDescriptorType         2
    wTotalLength           25
    bNumInterfaces          1
    bConfigurationValue     1
    iConfiguration          0
    bmAttributes         0xe0
      Self Powered
      Remote Wakeup
    MaxPower                0mA
    Interface Descriptor:
      bLength                 9
```

```
      bDescriptorType         4
      bInterfaceNumber        0
      bAlternateSetting       0
      bNumEndpoints           1
      bInterfaceClass         9 Hub
      bInterfaceSubClass      0 Unused
      bInterfaceProtocol      0 Full speed (or root) hub
      iInterface              0
      Endpoint Descriptor:
        bLength                 7
        bDescriptorType         5
        bEndpointAddress     0x81  EP 1 IN
        bmAttributes            3
          Transfer Type            Interrupt
          Synch Type               None
          Usage Type               Data
        wMaxPacketSize     0x0002  1x 2 bytes
        bInterval             255
Hub Descriptor:
  bLength               9
  bDescriptorType      41
  nNbrPorts             2
  wHubCharacteristic 0x000a
    No power switching (usb 1.0)
    Per-port overcurrent protection
  bPwrOn2PwrGood        1 * 2 milli seconds
  bHubContrCurrent      0 milli Ampere
  DeviceRemovable    0x00
  PortPwrCtrlMask    0xff
 Hub Port Status:
   Port 1: 0000.0100 power
   Port 2: 0000.0100 power
Device Status:     0x0003
  Self Powered
  Remote Wakeup Enabled
```

7. SCSI

```
# cat /proc/scsi/scsi
Attached devices:
Host: scsi0 Channel: 02 Id: 00 Lun: 00
  Vendor: DELL     Model: PERC H700        Rev: 2.10
  Type:   Direct-Access                    ANSI SCSI revision: 05
Host: scsi0 Channel: 02 Id: 01 Lun: 00
  Vendor: DELL     Model: PERC H700        Rev: 2.10
  Type:   Direct-Access                    ANSI SCSI revision: 05
```

8. HBA

```
# dmesg | grep QLogic
QLogic Fibre Channel HBA Driver: 8.03.01.05.06.0-k8
 QLogic Fibre Channel HBA Driver: 8.03.01.05.06.0-k8
  QLogic QLE2562 - PCI-Express Dual Channel 8Gb Fibre Channel HBA
 QLogic Fibre Channel HBA Driver: 8.03.01.05.06.0-k8
  QLogic QLE2562 - PCI-Express Dual Channel 8Gb Fibre Channel HBA


# dmesg | grep qla
qla2xxx 0000:04:00.0: PCI INT A -> GSI 38 (level, low) -> IRQ 38
qla2xxx 0000:04:00.0: Found an ISP2532, irq 38, iobase 0xffffc90016e76000
qla2xxx 0000:04:00.0: irq 61 for MSI/MSI-X
qla2xxx 0000:04:00.0: irq 62 for MSI/MSI-X
qla2xxx 0000:04:00.0: Configuring PCI space...
qla2xxx 0000:04:00.0: setting latency timer to 64
qla2xxx 0000:04:00.0: Configure NVRAM parameters...
qla2xxx 0000:04:00.0: Verifying loaded RISC code...
qla2xxx 0000:04:00.0: firmware: requesting ql2500_fw.bin
qla2xxx 0000:04:00.0: FW: Loading via request-firmware...
qla2xxx 0000:04:00.0: Allocated (64 KB) for FCE...
qla2xxx 0000:04:00.0: Allocated (64 KB) for EFT...
qla2xxx 0000:04:00.0: Allocated (1350 KB) for firmware dump...
qla2xxx 0000:04:00.0: Unable to read FCP priority data.
scsi0 : qla2xxx
qla2xxx 0000:04:00.0:
qla2xxx 0000:04:00.1: PCI INT B -> GSI 45 (level, low) -> IRQ 45
qla2xxx 0000:04:00.1: Found an ISP2532, irq 45, iobase 0xffffc90016e06000
qla2xxx 0000:04:00.1: irq 63 for MSI/MSI-X
qla2xxx 0000:04:00.1: irq 64 for MSI/MSI-X
qla2xxx 0000:04:00.1: Configuring PCI space...
qla2xxx 0000:04:00.1: setting latency timer to 64
qla2xxx 0000:04:00.1: Configure NVRAM parameters...
qla2xxx 0000:04:00.1: Verifying loaded RISC code...
qla2xxx 0000:04:00.1: FW: Loading via request-firmware...
qla2xxx 0000:04:00.1: Allocated (64 KB) for FCE...
qla2xxx 0000:04:00.1: Allocated (64 KB) for EFT...
qla2xxx 0000:04:00.1: Allocated (1350 KB) for firmware dump...
qla2xxx 0000:04:00.1: Unable to read FCP priority data.
scsi1 : qla2xxx
qla2xxx 0000:04:00.1:
qla2xxx 0000:04:00.0: LIP reset occurred (f700).
qla2xxx 0000:04:00.1: LIP reset occurred (f700).
qla2xxx 0000:04:00.0: LOOP UP detected (8 Gbps).
qla2xxx 0000:04:00.1: LOOP UP detected (8 Gbps).
```

9. kudzu - detects and configures new and/or changed hardware on a system

```
# kudzu -p | more
```

network

```
# kudzu --class=network -p
```

第 7 章 Locale

目录

1. time zone

选择用户时区

```
$ tzselect
Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
 1) Africa
 2) Americas
 3) Antarctica
 4) Arctic Ocean
 5) Asia
 6) Atlantic Ocean
 7) Australia
 8) Europe
 9) Indian Ocean
10) Pacific Ocean
11) none - I want to specify the time zone using the Posix TZ format.
#?
```

tzconfig

```
netkiller@shenzhen:~$ tzconfig
Your current time zone is set to US/Eastern
Do you want to change that? [n]: y

Please enter the number of the geographic area in which you live:


        1) Africa                       7) Australia

        2) America                      8) Europe

        3) US time zones                9) Indian Ocean

        4) Canada time zones            10) Pacific Ocean

        5) Asia                         11) Use System V style time zones

        6) Atlantic Ocean               12) None of the above


Then you will be shown a list of cities which represent the time zone
in which they are located. You should choose a city in your time zone.

Number: 5

Aden Almaty Amman Anadyr Aqtau Aqtobe Ashgabat Ashkhabad Baghdad Bahrain
Baku Bangkok Beirut Bishkek Brunei Calcutta Choibalsan Chongqing Chungking
Colombo Dacca Damascus Dhaka Dili Dubai Dushanbe Gaza Harbin Hong_Kong
Hovd Irkutsk Istanbul Jakarta Jayapura Jerusalem Kabul Kamchatka Karachi
Kashgar Katmandu Krasnoyarsk Kuala_Lumpur Kuching Kuwait Macao Macau
Magadan Makassar Manila Muscat Nicosia Novosibirsk Omsk Oral Phnom_Penh
Pontianak Pyongyang Qatar Qyzylorda Rangoon Riyadh Riyadh87 Riyadh88
```

```
Riyadh89 Saigon Sakhalin Samarkand Seoul Shanghai Singapore Taipei
Tashkent Tbilisi Tehran Tel_Aviv Thimbu Thimphu Tokyo Ujung_Pandang
Ulaanbaatar Ulan_Bator Urumqi Vientiane Vladivostok Yakutsk Yekaterinburg
Yerevan

Please enter the name of one of these cities or zones
You just need to type enough letters to resolve ambiguities
Press Enter to view all of them again
Name: [] Harbin
Your default time zone is set to 'Asia/Harbin'.
Local time is now:      Tue Mar 11 10:46:46 CST 2008.
Universal Time is now:  Tue Mar 11 02:46:46 UTC 2008.
```

tzdata

dpkg-reconfigure tzdata

```
$ sudo dpkg-reconfigure tzdata
```

上一页 9. kudzu - detects and configures new and/or changed hardware on a system

上一级

起始页

下一页 2. to change system date/time

2. to change system date/time

date

e.g. date -s month/day/year

```
# date -s 1/18/2008
```

time

e.g. date -s hour:minute:second

```
# date -s 11:12:00
```

writing CMOS

```
# clock -w
```

2.1. NTP Server

更新网络时间

ntpdate - client for setting system time from NTP servers

```
$ sudo ntpdate asia.pool.ntp.org
21 May 10:34:18 ntpdate[6687]: adjust time server 203.185.69.60 offset 0.031079
sec
$ sudo hwclock -w
```

3. Language

默认语言

```
export LANG=en_US
export LC_ALL=en_US
```

永久更改

```
sudo vi /etc/default/locale

LANG="en_US.UTF-8"
LANGUAGE="en_US:en"
```

改为中文环境

```
sudo apt-get install language-support-zh
LANG="zh_CN.UTF-8"
LANGUAGE="zh_CN:zh"
```

第 8 章 console / terminal

目录

1. serial console

gurb

```
$ sudo vim /boot/grub/menu.lst

title           Ubuntu 8.04.1, kernel 2.6.24-21-generic
root            (hd0,5)
kernel          /boot/vmlinuz-2.6.24-21-generic root=UUID=3d5dd6c0-bbd2-4ddf-
9b71-1c7b78e8de3b ro quiet splash

console=tty0 console=ttyS0,38400
initrd          /boot/initrd.img-2.6.24-21-generic
quiet
```

tty6

```
$ sudo vim /etc/event.d/tty6

respawn
#exec /sbin/getty 38400 tty6
exec /sbin/getty -L /dev/ttyS0 38400 vt100
```

other terminal: VT100, VT220, VT320, VT420

securetty

```
$ cat /etc/securetty
# for people with serial port consoles
ttyS0
```

2. console timeout

查看当前的$TMOUT环境变量设置

```
echo $TMOUT
```

TMOUT=3600

export TMOUT

```
netkiller@Linux-server:~$ sudo dpkg-reconfigure en_US.UTF-8
```

3. TUI (Text User Interface)

SVGATextMode

```
$ sudo apt-get install svgatextmode
$ SVGATextMode 80x25x9
```

4. framebuffer

在grub.conf中的kernel行后面写上vga=0x317就行了，也可以用vga=ask，让系统启动的时候询问你用多大的分辨率

第 9 章 Harddisk

目录

主分区最多4个

逻辑分区:

-
- SCSI 最多 16 个
- IDE 最多 63 个

1. 查看分区分区 UUID

```
$ blkid
/dev/sda1: UUID="a457213b-e72d-4c9c-953d-b438ec554d3c" SEC_TYPE="ext2" TYPE="ext3"
/dev/sda5: UUID="cc2c1be9-a6e0-4494-a5f0-76b39d3fc1f0" TYPE="swap"
/dev/sda6: UUID="3c9a1484-1295-4fb9-9c94-f9c69ae7e770" TYPE="ext3"
/dev/sda7: UUID="ade7b5e7-a311-45de-9b24-e16be73de715" TYPE="swap"

$ ls -l /dev/disk/by-uuid
total 0
lrwxrwxrwx 1 root root 10 2009-07-11 00:52 3c9a1484-1295-4fb9-9c94-f9c69ae7e770 -
> ../../sda6
lrwxrwxrwx 1 root root 10 2009-07-11 00:52 a457213b-e72d-4c9c-953d-b438ec554d3c -
> ../../sda1
lrwxrwxrwx 1 root root 10 2009-07-11 00:52 ade7b5e7-a311-45de-9b24-e16be73de715 -
> ../../sda7
lrwxrwxrwx 1 root root 10 2009-07-11 00:52 cc2c1be9-a6e0-4494-a5f0-76b39d3fc1f0 -
```

```
> ../../sda5
```

2. Label

2.1. Ext2

e2label - Change the label on an ext2/ext3 filesystem

2.1.1. 查看卷标

```
# e2label /dev/sda1
/boot
```

2.1.2. 更改卷标

```
# man e2label
# e2label /dev/sda5 /www

# e2label /dev/sda5
/www
```

测试

```
# mount /app
```

3. 临时增加 swap 分区

```
dd if=/dev/zero of=/root/swap0 bs=1M count=2048
mkswap /root/swap0
swapon /root/swap0
```

4. Show partition

show all of disk and partition

```
neo@master:~$ sudo sfdisk -s
/dev/sda:   8388608
/dev/sdb:   2097152
total: 10485760 blocks
```

or

```
neo@master:~$ sudo fdisk -l

Disk /dev/sda: 8589 MB, 8589934592 bytes
255 heads, 63 sectors/track, 1044 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Disk identifier: 0x000301bd

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1         993     7976241   83  Linux
/dev/sda2             994        1044      409657+   5  Extended
/dev/sda5             994        1044      409626   82  Linux swap / Solaris

Disk /dev/sdb: 2147 MB, 2147483648 bytes
255 heads, 63 sectors/track, 261 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Disk identifier: 0x00000000

Disk /dev/sdb doesn't contain a valid partition table
neo@master:~$
```

show partition /dev/sda

```
neo@master:~$ sudo fdisk -l /dev/sda

Disk /dev/sda: 8589 MB, 8589934592 bytes
255 heads, 63 sectors/track, 1044 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Disk identifier: 0x000301bd

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1         993     7976241   83  Linux
/dev/sda2             994        1044      409657+   5  Extended
/dev/sda5             994        1044      409626   82  Linux swap / Solaris
neo@master:~$
```

5. Create partition

```
$ sudo cfdisk /dev/sdb
```

```
Command (m for help): p

Disk /dev/sda: 146.1 GB, 146163105792 bytes
255 heads, 63 sectors/track, 17769 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1          25      200781   83  Linux
/dev/sda2              26        3849    30716280   83  Linux
/dev/sda3            3850       17769   111812400   83  Linux

Command (m for help): d
Partition number (1-4): 3

Command (m for help): n
Command action
   e   extended
   p   primary partition (1-4)
p
Partition number (1-4): 3
First cylinder (3850-17769, default 3850):
Using default value 3850
Last cylinder or +size or +sizeM or +sizeK (3850-17769, default 17769): +32000M

Command (m for help): p

Disk /dev/sda: 146.1 GB, 146163105792 bytes
255 heads, 63 sectors/track, 17769 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes

   Device Boot      Start         End      Blocks   Id  System
/dev/sda1   *           1          25      200781   83  Linux
/dev/sda2              26        3849    30716280   83  Linux
/dev/sda3            3850        7740    31254457+  83  Linux
```

6. Clone partition

/dev/sda 克隆到 /dev/sdb

```
$ sudo dd if=/dev/sda of=/dev/sdb
```

备份 mbr 主引导记录

```
$ dd if=/dev/sda of=/root/disk.mbr bs=512 count=1
```

```
$ dd if=/root/disk.mbr of=/dev/sda bs=512 count=1
```

软盘镜像

```
$ dd if=/dev/fd0 of=floppy.img bs=1440k
```

7. Format partition

format /dev/sdb1

7.1. ext3

```
neo@master:~$ sudo mkfs.ext3 /dev/sdb1
```

7.2. ReiserFS

you also can using other file system

reiserfs

```
neo@master:~$ sudo mkfs.reiserfs /dev/sdb1
```

8. estimate disk / directory / file space usage

total for a directory

```
du -h --max-depth=0
```

9. Convert from ext3 to ext4 File system

step 1

```
$ sudo tune2fs -O extents,uninit_bg,dir_index /dev/sda7
tune2fs 1.41.4 (27-Jan-2009)

Please run e2fsck on the filesystem.
```

step 2

```
$ sudo e2fsck -fD /dev/sda7
e2fsck 1.41.4 (27-Jan-2009)
/dev/sda7 is mounted.

WARNING!!!  Running e2fsck on a mounted filesystem may cause
SEVERE filesystem damage.

Do you really want to continue (y/n)? yes

/dev/sda7: recovering journal
Pass 1: Checking inodes, blocks, and sizes
Pass 2: Checking directory structure
Pass 3: Checking directory connectivity
Pass 3A: Optimizing directories
Pass 4: Checking reference counts
Pass 5: Checking group summary information
Block bitmap differences:  -3913734 +3925302
Fix<y>? yes


/dev/sda7: ***** FILE SYSTEM WAS MODIFIED *****
/dev/sda7: 77282/2293760 files (15.7% non-contiguous), 4584313/9163066 blocks
```

step 3

```
$ sudo cp /etc/fstab /etc/fstab.old
$ sudo vim /etc/fstab

# /dev/sda7
UUID=16089544-6fbf-400e-a63a-fa6159e271e5 /home           ext4
relatime,errors=remount-ro 0 1
```

step 4

```
$ sudo reboot
```

10. GPT

```
$ sudo parted /dev/sda
GNU Parted 2.3
Using /dev/sda
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted)
```

10.1. 查看分区

```
(parted) print
Model: DELL PERC 6/i (scsi)
Disk /dev/sda: 2498GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt

Number  Start   End     Size    File system     Name     Flags
 1      1049kB  50.0GB  50.0GB  ext4                     boot
 2      50.0GB  66.0GB  16.0GB  linux-swap(v1)
 3      66.0GB  2498GB  2432GB  ext4            /backup
```

空闲空间

```
(parted) print free
Model: DELL PERC 6/i (scsi)
Disk /dev/sda: 2498GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt

Number  Start   End     Size    File system     Name     Flags
        17.4kB  1049kB  1031kB  Free Space
 1      1049kB  50.0GB  50.0GB  ext4                     boot
 2      50.0GB  66.0GB  16.0GB  linux-swap(v1)
 3      66.0GB  2498GB  2432GB  ext4            /backup
        2498GB  2498GB  1032kB  Free Space
```

10.2. 创建分区

```
(parted) mkpart
Partition name?  []? /www
File system type?  [ext2]?
Start? 10GB
End? 50GB
```

例 9.1. GPT Example

```
(parted) print devices
/dev/sdb (9999GB)
/dev/sda (2498GB)

(parted) select /dev/sdb
Using /dev/sdb

(parted) mklabel gpt
Warning: The existing disk label on /dev/sdb will be destroyed and all data on
this disk will be
lost. Do you want to continue?
Yes/No? yes
```

```
(parted) mkpart
Partition name?  []? /md1200
File system type?  [ext2]? ext4
Start? 0GB
End? 9999GB

(parted) print list
Model: DELL PERC H800 (scsi)
Disk /dev/sdb: 9999GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt

Number  Start   End     Size    File system  Name     Flags
 1      1049kB  9999GB  9999GB               /md1200


Model: DELL PERC 6/i (scsi)
Disk /dev/sda: 2498GB
Sector size (logical/physical): 512B/512B
Partition Table: gpt

Number  Start   End     Size    File system     Name     Flags
 1      1049kB  50.0GB  50.0GB  ext4                     boot
 2      50.0GB  66.0GB  16.0GB  linux-swap(v1)
 3      66.0GB  2498GB  2432GB  ext4            /backup


(parted)
```

10.3. 退出

```
(parted) quit
```

10.4. mount

```
neo@backup:~$ sudo blkid
[sudo] password for neo:
/dev/sda1: UUID="2fc411ec-9f6e-4e04-9270-11d23a9b0668" TYPE="ext4"
/dev/sda2: UUID="f5175b7a-4c87-471c-ab9f-9d601bc5e6e2" TYPE="swap"
/dev/sda3: UUID="3217bdd9-1beb-494a-a428-8d1c09eaa1af" TYPE="ext4"

neo@backup:~$ sudo vim /etc/fstab
UUID=3217bdd9-1beb-494a-a428-8d1c09eaa1af /backup ext4 errors=remount-ro 0
1
```

11. loop devices

If you are using the loadable module you must have the module loaded first with the command:

```
$ sudo modprobe loop
```

The following commands can be used as an example of using the loop device.

```
$ dd if=/dev/zero of=file bs=1k count=100
100+0 records in
100+0 records out
102400 bytes (102 kB) copied, 0.00126554 s, 80.9 MB/s

$ sudo losetup /dev/loop0 file

$ sudo mkfs.ext3 /dev/loop0
mke2fs 1.40.8 (13-Mar-2008)
Filesystem label=
OS type: Linux
Block size=1024 (log=0)
Fragment size=1024 (log=0)
16 inodes, 100 blocks
5 blocks (5.00%) reserved for the super user
First data block=1
1 block group
8192 blocks per group, 8192 fragments per group
16 inodes per group

Writing inode tables: done

Filesystem too small for a journal
Writing superblocks and filesystem accounting information: done

This filesystem will be automatically checked every 24 mounts or
180 days, whichever comes first.  Use tune2fs -c or -i to override.
```

mount loop device

```
$ sudo mkdir /mnt/loop
$ sudo mount /dev/loop0 /mnt/loop
```

Now! you can using it as harddisk.

umount loop device

```
$ sudo umount /mnt/loop/
$ sudo losetup -d /dev/loop0
```

Maybe also encryption modules are needed.

```
$ sudo modprobe cryptoloop
$ sudo modprobe des
```

enable data encryption

```
$ dd if=/dev/zero of=encryption_file bs=1k count=100
100+0 records in
100+0 records out
```

```
102400 bytes (102 kB) copied, 0.00130537 s, 78.4 MB/s

$ sudo losetup -e des /dev/loop0 encryption_file
```

If you are using the loadable module you may remove the module with the command

```
$ sudo rmmod loop des cryptoloop
```

11.1. losetup - set up and control loop devices

EXAMPLE

```
       If you are using the loadable module you must have the module loaded first
with the command

              # insmod loop.o

       Maybe also encryption modules are needed.

              # insmod des.o # insmod cryptoloop.o

       The following commands can be used as an example of using the loop device.

              # dd if=/dev/zero of=/file bs=1k count=100
              # losetup -e des /dev/loop0 /file
              Password:
              Init (up to 16 hex digits):
              # mkfs -t ext2 /dev/loop0 100
              # mount -t ext2 /dev/loop0 /mnt
               ...
              # umount /dev/loop0
              # losetup -d /dev/loop0

       If you are using the loadable module you may remove the module with the
command

              # rmmod loop
```

第 10 章 Removable Storage

目录

eject - eject removable media

```
$ eject
```

1. usb flash

mount NTFS filesystem

```
sudo mount -t ntfs-3g /dev/sdb1 /mnt/usbflash/ -o force
```

2. CD / DVD

2.1. Mount an ISO file

To mount the ISO image file.iso to the mount point /media/cdrom use this :

```
$ mount -o loop -t iso9660 file.iso /media/cdrom
```

2.2. create iso file from CD

```
$ dd if=/dev/cdrom of=isofile.iso
```

2.3. burner

2.4. ISO Mirror

```
$ mkisofs -V LABEL -r /mnt/cdrom | gzip > cdrom.iso.gz
```

mount iso file

```
$ mount -t iso9660 -o loop cdrom.iso /mnt/cdrom
```

第 11 章 File System

目录

1. Mount partition

1.1. Mount

```
sudo mount /dev/sdb1 /mnt/mount1
```

支持UTF-8

```
mount -o iocharset=utf8 /dev/sda5 /mnt/usb
```

1.2. Umount

umount - unmount file systems

```
sudo umount /mnt/mount1
```

1.3. bind directory

```
mount --bind /foo /home/neo/foo
```

挂载目录将不能被删除，但目录下文件可以删除

```
# rm -rf /home/neo/foo
rm: cannot remove directory '/home/neo/foo': Device or resource busy
```

/etc/fstab

```
/foo /home/neo/foo    none    bind    0 0
```

1.4. /etc/fstab

```
# <file system> <mount point>   <type>  <options>       <dump>  <pass>
```

mount point

该字段描述希望的文件系统加载的目录，对于swap设备，该字段为none

file system

例如/dev/cdrom或/dev/sdb,除了使用设备名，你可以使用设备的UUID或设备的卷标签，例如，LABAL=root 或 UUID=7f91104e-8187-4ccf-8215-6e2e641f32e3

type

定义了该设备上的文件系统,系统可用文件系统

```
$ cat /proc/filesystems
nodev   sysfs
nodev   rootfs
nodev   bdev
nodev   proc
nodev   cgroup
nodev   cpuset
nodev   tmpfs
nodev   devtmpfs
nodev   debugfs
nodev   securityfs
nodev   sockfs
nodev   pipefs
nodev   anon_inodefs
nodev   inotifyfs
nodev   devpts
        ext3
        ext2
        ext4
nodev   ramfs
nodev   hugetlbfs
nodev   ecryptfs
nodev   fuse
        fuseblk
nodev   fusectl
nodev   mqueue
nodev   rpc_pipefs
nodev   nfs
nodev   nfs4
        reiserfs
        xfs
        jfs
        msdos
        vfat
        ntfs
        minix
        hfs
        hfsplus
        qnx4
        ufs
        btrfs
        iso9660
```

options

```
选项                    含义
ro      以只读模式加载该文件系统
sync    不对该设备的写操作进行缓冲处理，这可以防止在非正常关机时情况下破坏文件系统，但是却降低了计算机速度
user    允许普通用户加载该文件系统
quota    强制在该文件系统上进行磁盘定额限制
noauto  不再使用mount -a命令（例如系统启动时）加载该文件系统
noatime/nodiratime        禁止更新访问时间
```

dump

dump - 该选项被"dump"命令使用来检查一个文件系统应该以多快频率进行转储，若不需要转储就设置该字段

为0

pass

该字段被fsck命令用来决定在启动时需要被扫描的文件系统的顺序，根文件系统"/"对应该字段的值应该为1，其他文件系统应该为2。若该文件系统无需在启动时扫描则设置该字段为0

noatime/nodiratime

```
/dev/sda2 /data ext3 defaults 0 2
/dev/sda2 /data ext3 defaults,noatime,nodiratime 0 2
```

```
mount -o remount /data
mount -o noatime -o nodiratime -o remount /data
```

2. RAM FS

```
# mkdir -p /mnt/ram1
# mount -t ramfs none /mnt/ram1 -o maxsize=10000
```

3. tmpfs

```
# mkdir -p /mnt/tmpfs
# mount tmpfs /mnt/tmpfs -t tmpfs
# mount tmpfs /mnt/tmpfs -t tmpfs -o size=32m
```

4. ftp fs

安装

```
sudo apt-get install curlftpfs
```

挂载

```
sudo curlftpfs ftp://username:password@172.16.0.1 /mnt/ftp
```

卸载

```
sudo fusermount -u /mnt/ftp
```

权限设置

```
sudo curlftpfs -o rw,allow_other,uid=500,gid=500 ftp://neo:chen@172.16.1.1
/mnt/ftp
sudo curlftpfs ftp://host/sub_dir mount_point -o user="ftp_username:ftp_password",
uid=user_id, gid=group_id, allow_other
```

fstab 开机自动挂载

```
sudo echo "curlftpfs#username:password@172.16.0.1 /mnt/ftp fuse
allow_other,uid=userid,gid=groupid 0 0" >> /etc/fstab
```

5. SSHFS (sshfs - filesystem client based on SSH File Transfer Protocol)

```
$ sudo apt-get install sshfs
$ sudo sshfs root@172.16.0.5:/home/neo /mnt
$ sudo fusermount -u /mnt
```

第 12 章 Networking

目录

1. Hostname

1.1. /etc/hostname

```
# cat /etc/hostname
web1.example.com
```

1.2. /etc/host.conf

解析顺序配置文件

```
[root@development bin]# cat /etc/host.conf
order hosts,bind
```

首先在/etc/hosts文件中寻找，如果不存在，再去DNS服务器中寻找

1.3. /etc/hosts

IP地址后面TAB符，然后写主机地址

```
127.0.0.1       localhost.localdomain localhost
::1             localhost6.localdomain6 localhost6
192.168.1.10    development.example.com development
```

1.4. hosts.allow / hosts.deny

/etc/hosts.allow 和 /etc/hosts.deny

许可IP／禁止IP，相当于黑白名单

1.5. /etc/resolv.conf

```
search example.com
nameserver 208.67.222.222
nameserver 208.67.220.220
```

2. Network adapter

ethtool eth1

```
neo@shenzhen:~/doc/Linux/xhtml$ sudo ethtool eth1
Settings for eth1:
        Supported ports: [ TP MII ]
        Supported link modes:   10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
        Supports auto-negotiation: Yes
        Advertised link modes:  10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
        Advertised auto-negotiation: Yes
        Speed: 100Mb/s
        Duplex: Full
        Port: MII
        PHYAD: 32
        Transceiver: internal
        Auto-negotiation: on
        Supports Wake-on: pumbg
        Wake-on: d
        Current message level: 0x00000007 (7)
        Link detected: yes
```

mii-tool

```
neo@shenzhen:~/doc/Linux/xhtml$ sudo mii-tool
eth1: negotiated 100baseTx-FD, link ok
```

3. Ethernet Interfaces

restart

```
sudo /etc/init.d/networking restart
```

3.1. ifquery

```
$ sudo ifquery --list
lo
eth0
eth1
```

3.2. DHCP

DHCP

```
sudo vi /etc/network/interfaces

# The primary network interface - use DHCP to find our address
auto eth0
iface eth0 inet dhcp
```

3.3. Static IP

Static IP

```
# The primary network interface
auto eth0
iface eth0 inet static
address 192.168.3.90
gateway 192.168.3.1
netmask 255.255.255.0
network 192.168.3.0
broadcast 192.168.3.255
```

Setting up Second IP address or Virtual IP address in Ubuntu

```
sudo vi /etc/network/interfaces

auto eth0:1
iface eth0:1 inet static
address 192.168.1.60
netmask 255.255.255.0
network x.x.x.x
broadcast x.x.x.x
gateway x.x.x.x
```

4. Mask

举例说明该算法。
例：给定一 class c address : 192.168.5.0 ，要求划分20个子网，每个子网5个主机。
解：因为4 <5 < 8 ，用256－8＝248 ---->即是所求的子网掩码，对应的子网数也就出来了。这是针对C类地址。
针对B类地址的做法。对于B类地址，假如主机数小于或等于254，与C类地址算法相同。对于主机数大于254的，如需主机 700台，50个子网（相当大了），512 < 700< 1024
256－（1024/256）=256－4＝252 ---->即是所求的子网掩码，对应的子网数也就出来了。上面256－4中的4（2的2次幂）是指主机数用2进制表示时超过8位的位数，即超过2位，掩码为剩余的前6位，即子网数为2（6）－2＝62个。

```
Append :Host/Subnet Quantities Table

------------------------------------------------------------------------
Class A                    Effective  Effective
# bits         Mask         Subnets     Hosts
-------  ---------------  ---------  ---------
  2      255.192.0.0            2      4194302
  3      255.224.0.0            6      2097150
  4      255.240.0.0           14      1048574
  5      255.248.0.0           30       524286
  6      255.252.0.0           62       262142
  7      255.254.0.0          126       131070
  8      255.255.0.0          254        65536
  9      255.255.128.0        510        32766
  10     255.255.192.0       1022        16382
  11     255.255.224.0       2046         8190
  12     255.255.240.0       4094         4094
  13     255.255.248.0       8190         2046
  14     255.255.252.0      16382         1022
  15     255.255.254.0      32766          510
  16     255.255.255.0      65536          254
  17     255.255.255.128   131070          126
  18     255.255.255.192   262142           62
  19     255.255.255.224   524286           30
  20     255.255.255.240  1048574           14
  21     255.255.255.248  2097150            6
  22     255.255.255.252  4194302            2

Class B                    Effective  Effective
# bits         Mask         Subnets     Hosts
-------  ---------------  ---------  ---------
  2      255.255.192.0          2      16382
  3      255.255.224.0          6       8190
  4      255.255.240.0         14       4094
  5      255.255.248.0         30       2046
  6      255.255.252.0         62       1022
  7      255.255.254.0        126        510
  8      255.255.255.0        254        254
  9      255.255.255.128      510        126
  10     255.255.255.192     1022         62
  11     255.255.255.224     2046         30
  12     255.255.255.240     4094         14
  13     255.255.255.248     8190          6
  14     255.255.255.252    16382          2

Class C                    Effective  Effective
# bits         Mask         Subnets     Hosts
-------  ---------------  ---------  ---------
  2      255.255.255.192        2         62
  3      255.255.255.224        6         30
  4      255.255.255.240       14         14
  5      255.255.255.248       30          6
```

```
  6       255.255.255.252     62          2

*Subnet all zeroes and all ones excluded.
*Host all zeroes and all ones excluded.
```

5. Gateway

default gateway

```
$ sudo route add default gw 172.16.0.1
```

```
$ sudo ip route default via 172.16.0.1 dev eth0
```

6. Configuring Name Server Lookups

Setting up DNS

```
When it comes to DNS setup Ubuntu doesn't differ from other distributions. You
can add hostname and IP addresses to the file /etc/hosts for static lookups.

To cause your machine to consult with a particular server for name lookups you
simply add their addresses to /etc/resolv.conf.

For example a machine which should perform lookups from the DNS server at IP
address 192.168.3.2 would have a resolv.conf file looking like this

sudo vi /etc/resolv.conf

enter the following details

search test.com
nameserver 192.168.3.2
```

```
domain domain.com
search www.domain.com domain.com
nameserver 202.96.128.86
nameserver 202.96.134.133
```

7. sysctl

enable IP forwarding

```
neo@shenzhen:~$ sysctl net.ipv4.ip_forward
net.ipv4.ip_forward = 1
```

```
# enable IP forwarding
echo 1 > /proc/sys/net/ipv4/ip_forward
```

ubuntu

```
sysctl -w net.ipv4.ip_forward=1
```

8. bonding

绑定的前提条件：芯片组型号相同，而且网卡应该具备自己独立的BIOS芯片。

#vi ifcfg-bond0

```
# cat ifcfg-bond0
DEVICE=bond0
BOOTPROTO=static
IPADDR=172.16.0.1
NETMASK=255.255.252.0
BROADCAST=172.16.3.254
ONBOOT=yes
TYPE=Ethernet
```

这里要主意，不要指定单个网卡的IP 地址、子网掩码。将上述信息指定到虚拟适配器(bonding)中即可

```
[root@rhas-13 network-scripts]# cat ifcfg-eth0
DEVICE=eth0
ONBOOT=yes
BOOTPROTO=dhcp

[root@rhas-13 network-scripts]# cat ifcfg-eth1
DEVICE=eth1
ONBOOT=yes
BOOTPROTO=dhcp
```

编辑 /etc/modules.conf 文件，加入如下一行内容，以使系统在启动时加载bonding模块，对外虚拟网络接口设备为 bond0.加入下列两行:

* /etc/modules.conf 文件已经不再使用

```
cat >> /etc/modprobe.d/bonding.conf <<EOF
alias bond0 bonding
options bond0 miimon=100 mode=1
EOF
```

说明：miimon是用来进行链路监测的。比如:miimon=100，那么系统每100ms监测一次链路连接状态，如果有一条线路不通就转入另一条线路；mode的值表示工作模式，他共有0，1,2,3四种模式，常用的为0,1两种。mode=0表示load balancing (round-robin)为负载均衡方式，两块网卡都工作。mode=1表示fault-tolerance (active-backup)提供冗余功能，工作方式是主备的工作方式,也就是说默认情况下只有一块网卡工作,另一块做备份。bonding只能提供链路监测，即从主机到交换机的链路是否接通。如果只是交换机对外的链路down掉了，而交换机本身并没有故障，那么bonding会认为链路没有问题而继续使用。

vi /etc/rc.d/rc.local

```
ifenslave bond0 eth0 eth1
route add -net 172.31.3.254 netmask 255.255.255.0 bond0
```

到这时已经配置完毕 重新启动机器。重启会看见以下信息就表示配置成功了

```
.................
Bringing up interface bond0 OK
Bringing up interface eth0 OK
```

```
Bringing up interface eth1 OK
.............
```

mode=1工作在主备模式下,这时eth1作为备份网卡是no arp的 [root@rhas-13 network-scripts]# ifconfig 验证网卡的配置信息

那也就是说在主备模式下,当一个网络接口失效时(例如主交换机掉电等),不回出现网络中断, 系统会按照cat /etc/rc.d/rc.local里指定网卡的顺序工作,机器仍能对外服务,起到了失效保护的功能。在mode=0 负载均衡工作模式,他能提供两倍的带宽,下我们来看一下网卡的配置信息:

在这种情况下出现一块网卡失效,仅仅会是服务器出口带宽下降,也不会影响网络使用。通过查看bond0的工作状态查询能详细的掌握bonding的工作状态

Linux下通过网卡邦定技术既增加了服务器的可靠性,又增加了可用网络带宽,为用户提供不间断的关键服务。

8.1. Ubuntu

ifenslave

```
apt-get install ifenslave-2.6
```

/etc/modules

```
bonding
```

modprobe bonding

/etc/modprobe.d/aliases

```
alias bond0 bonding
options bonding mode=0 miimon=100

or

options bonding mode=1 miimon=100 downdelay=200 updelay=200
```

例 12.1. bonding example

/etc/network/interfaces

```
auto lo
iface lo inet loopback

iface eth0 inet dhcp
iface eth1 inet dhcp

auto bond0
iface bond0 inet static
address 172.16.0.1
netmask 255.255.255.0
gateway 172.16.0.254
up ifenslave bond0 eth0 eth1
down ifenslave -d bond0 eth0 eth1
```

9. Finding optimal MTU

```
$ ping -c 1 -s $((1500-28)) -M do www.debian.org
PING www.debian.org (140.112.8.139) 1472(1500) bytes of data.
1480 bytes from linux3.cc.ntu.edu.tw (140.112.8.139): icmp_seq=1 ttl=47 time=52.7
ms

--- www.debian.org ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 52.778/52.778/52.778/0.000 ms
```

Try 1454 instead of 1500

第 13 章 syslog, klogctl - read and/or clear kernel message ring buffer; set console_loglevel

目录

1. /etc/sysconfig/syslog

enables logging from remote machines

```
# vim /etc/sysconfig/syslog

#SYSLOGD_OPTIONS="-m 0"
SYSLOGD_OPTIONS="-r -m 0"
```

```
# /etc/init.d/syslog restart
Shutting down kernel logger:                               [  OK  ]
Shutting down system logger:                               [  OK  ]
Starting system logger:                                    [  OK  ]
Starting kernel logger:                                    [  OK  ]
```

2. /etc/syslog.conf

```
*.*                     @172.16.0.9
```

所有日志将被重定向到172.16.0.9

```
[root@dev1 test]# service syslog restart
Shutting down kernel logger:                               [  OK  ]
Shutting down system logger:                               [  OK  ]
Starting system logger:                                    [  OK  ]
Starting kernel logger:                                    [  OK  ]
[root@dev1 test]#
```

3. logger

日志的级别

```
emerg 系统已经不可用，级别为紧急
alert 警报，需要立即处理和解决
crit 既将发生，得需要预防。事件就要发生
warnig 警告
err 错误信息，普通的错误信息
notice 提醒信息，很重要的信息
info 通知信息，属于一般信息
debug 这是调试类信息
```

```
#vi /etc/syslog.conf

# Log anything (except mail) of level info or higher.
# Don't log private authentication messages!
*.info;mail.none;authpriv.none;cron.none;local1.none;local3.none /var/log/messages

#my log
local3.* /var/log/my.log
```

```
# service syslog restart
Shutting down kernel logger:                               [  OK  ]
Shutting down system logger:                               [  OK  ]
Starting system logger:                                    [  OK  ]
Starting kernel logger:                                    [  OK  ]
```

```
ping 192.168.0.1 | logger -it logger_test -p local3.notice
```

```
# cat /var/log/my.log
Jan 12 18:06:03 dev1 logger_test[10991]: PING 192.168.0.1 (192.168.0.1) 56(84)
bytes of data.
Jan 12 18:06:03 dev1 logger_test[10991]: 64 bytes from 192.168.0.1: icmp_seq=1
ttl=64 time=0.746 ms
Jan 12 18:06:04 dev1 logger_test[10991]: 64 bytes from 192.168.0.1: icmp_seq=2
ttl=64 time=0.713 ms
Jan 12 18:06:05 dev1 logger_test[10991]: 64 bytes from 192.168.0.1: icmp_seq=3
ttl=64 time=0.924 ms
Jan 12 18:06:06 dev1 logger_test[10991]: 64 bytes from 192.168.0.1: icmp_seq=4
ttl=64 time=0.819 ms
Jan 12 18:06:08 dev1 logger_test[10991]: 64 bytes from 192.168.0.1: icmp_seq=5
ttl=64 time=0.667 ms
Jan 12 18:06:09 dev1 logger_test[10991]: 64 bytes from 192.168.0.1: icmp_seq=6
ttl=64 time=0.626 ms
Jan 12 18:06:10 dev1 logger_test[10991]: 64 bytes from 192.168.0.1: icmp_seq=7
ttl=64 time=0.665 ms
```

4. To Log Messages Over UDP Network

第 14 章 logrotate - rotates, compresses, and mails system logs

目录

logrotate 是linux系统自带的日志分割与压缩程序，通过crontab每日运行一次。

```
$ cat /etc/cron.daily/logrotate
#!/bin/sh

test -x /usr/sbin/logrotate || exit 0
/usr/sbin/logrotate /etc/logrotate.conf
```

1. /etc/logrotate.conf

```
$ cat /etc/logrotate.conf
# see "man logrotate" for details
# rotate log files weekly
weekly

# keep 4 weeks worth of backlogs
rotate 4

# create new (empty) log files after rotating old ones
create

# uncomment this if you want your log files compressed
#compress

# packages drop log rotation information into this directory
include /etc/logrotate.d

# no packages own wtmp, or btmp -- we'll rotate them here
/var/log/wtmp {
    missingok
    monthly
    create 0664 root utmp
    rotate 1
}

/var/log/btmp {
    missingok
    monthly
    create 0660 root utmp
    rotate 1
}

# system-specific logs may be configured here
```

2. /etc/logrotate.d/

2.1. apache2

```
$ cat /etc/logrotate.d/apache2
/var/log/apache2/*.log {
        weekly
        missingok
        rotate 52
        compress
        delaycompress
        notifempty
        create 640 root adm
        sharedscripts
        postrotate
                if [ -f "`. /etc/apache2/envvars ; echo ${APACHE_PID_FILE:-
/var/run/apache2.pid}`" ]; then
                        /etc/init.d/apache2 reload > /dev/null
                fi
        endscript
}
```

```
/var/log/httpd/*log {
    missingok
    notifempty
    sharedscripts
    postrotate
        /sbin/service httpd reload > /dev/null 2>/dev/null || true
    endscript
}
```

2.2. mysql

```
$ cat /etc/logrotate.d/mysql-server
# - I put everything in one block and added sharedscripts, so that mysql gets
#   flush-logs'd only once.
#   Else the binary logs would automatically increase by n times every day.
# - The error log is obsolete, messages go to syslog now.
/var/log/mysql.log /var/log/mysql/mysql.log /var/log/mysql/mysql-slow.log {
        daily
        rotate 7
        missingok
        create 640 mysql adm
        compress
        sharedscripts
        postrotate
                test -x /usr/bin/mysqladmin || exit 0
                # If this fails, check debian.conf!
                MYADMIN="/usr/bin/mysqladmin --defaults-
file=/etc/mysql/debian.cnf"
                if [ -z "`$MYADMIN ping 2>/dev/null`" ]; then
                  # Really no mysqld or rather a missing debian-sys-maint user?
                  # If this occurs and is not a error please report a bug.
                  #if ps cax | grep -q mysqld; then
                  if killall -q -s0 -umysql mysqld; then
                    exit 1
                  fi
                else
```

```
                  $MYADMIN flush-logs
                fi
        endscript
}
```

2.3. cacti

```
/var/log/cacti/*.log {
        weekly
        missingok
        rotate 52
        compress
        notifempty
        create 640 www-data www-data
        sharedscripts
}
```

第 15 章 remote syslog

目录

1. syslog-ng

2. rsyslog

www.rsyslog.com

第 16 章 Service

目录

1. update-rc.d - install and remove System-V style init script links

for example:

```
Insert links using the defaults:
   update-rc.d foobar defaults
Equivalent command using explicit argument sets:
   update-rc.d foobar start 20 2 3 4 5 . stop 20 0 1 6 .
More typical command using explicit argument sets:
   update-rc.d foobar start 30 2 3 4 5 . stop 70 0 1 6 .
Insert links at default runlevels when B requires A
   update-rc.d script_for_A defaults 80 20
   update-rc.d script_for_B defaults 90 10
Insert a link to a service that (presumably) will not be needed by any other
daemon
   update-rc.d top_level_app defaults 98 02
Insert links for a script that requires services that start/stop at sequence
number 20
   update-rc.d script_depends_on_svc20 defaults 21 19
Remove all links for a script (assuming foobar has been deleted already):
   update-rc.d foobar remove
Example of disabling a service:
   update-rc.d -f foobar remove
   update-rc.d foobar stop 20 2 3 4 5 .
Example of a command for installing a system initialization-and-shutdown script:
   update-rc.d foobar start 45 S . stop 31 0 6 .
Example of a command for disabling a system initialization-and-shutdown script:
   update-rc.d -f foobar remove
   update-rc.d foobar stop 45 S .
```

set default

```
update-rc.d nginx defaults
```

remove

```
update-rc.d -f lighttpd remove
$ sudo update-rc.d -f avahi-daemon remove
```

2. invoke-rc.d - executes System-V style init script actions

```
$ sudo invoke-rc.d mysql restart
```

3. runlevel

```
$ runlevel
N 2

# runlevel
N 3
```

```
$ sudo vim /etc/init.d/rcS
#! /bin/sh
#
# rcS
#
# Call all S??* scripts in /etc/rcS.d/ in numerical/alphabetical order
#

exec /etc/init.d/rc S
```

the default is S (/etc/rcS.d/)

the redhat linux in the /etc/inittab

switch runlevel

```
/etc/init.d/rc 3
```

4. sysv-rc-conf

(ubuntu下sysv-rc-conf命令等同redhat下chkconfig命令)

```
sysv-rc-conf gmond on
sysv-rc-conf --list gmond
```

5. xinetd - replacement for inetd with many enhancements

```
$ sudo apt-get install xinetd
```

5.1. tftpd

```
apt-get install xinetd
apt-get install tftpd tftp
```

/etc/xinetd.d/tftp

```
service tftp
{
        disable=no
        socket_type=dgram
        protocol =udp
        wait=yes
        user=root
        server=/usr/sbin/in.tftpd
        server_args =-s /home/neo/tftpboot -c
        per_source=11
        cps=100 2
        flags=IPv4
}
```

6. Scheduled Tasks

6.1. crontab - maintain crontab files for individual users

To see what crontabs are currently running on your system, you can open a terminal and run:

```
$  crontab -l
# m h  dom mon dow   command
#* */30 * * * /home/neo/dyndns
```

if you want to see root user, please add 'sudo' in the prefix.

To edit the list of cron jobs you can run:

```
$ crontab -e
```

As you can see there are 5 stars. The stars represent different date parts in the following order:

1. minute (from 0 to 59)
2. hour (from 0 to 23)
3. day of month (from 1 to 31)
4. month (from 1 to 12)
5. day of week (from 0 to 6) (0=Sunday)

By default cron jobs sends a email to the user account executing the cronjob. If this is not needed put the following command At the end of the cron job line .

```
>/dev/null 2>&1
```

6.2. at, batch, atq, atrm - queue, examine or delete jobs for later execution

部分 II. System Management Commands

目录

第 17 章 Help Commands

目录

1. man - an interface to the on-line reference manuals

1.1. manpath.config

```
cat /etc/manpath.config
```

1.2. 查看man手册位置

```
$ man -aw ls
/usr/share/man/man1/ls.1.gz
```

1.3. 指定手册位置

```
man -M /home/mysql/man mysql
```

第 20 章 package / compress and decompress

目录

1. tar — The GNU version of the tar archiving utility

1.1. tar examples

tar

```
tar -cvf foo.tar foo/
       tar contents of folder foo in foo.tar

tar -xvf foo.tar
       extract foo.tar
```

1.2. gzip

gzip/gunzip

```
tar -zcvf foo.tar foo/
       tar contents of folder foo in foo.tar.gz

tar -xvzf foo.tar.gz
       extract gzipped foo.tar.gz
```

```
# ls access.2010-{10,11}-??.log
access.2010-10-01.log  access.2010-10-17.log  access.2010-11-02.log  access.2010-
11-18.log
access.2010-10-02.log  access.2010-10-18.log  access.2010-11-03.log  access.2010-
11-19.log
access.2010-10-03.log  access.2010-10-19.log  access.2010-11-04.log  access.2010-
11-20.log
access.2010-10-04.log  access.2010-10-20.log  access.2010-11-05.log  access.2010-
11-21.log
access.2010-10-05.log  access.2010-10-21.log  access.2010-11-06.log  access.2010-
11-22.log
access.2010-10-06.log  access.2010-10-22.log  access.2010-11-07.log  access.2010-
```

```
11-23.log
access.2010-10-07.log  access.2010-10-23.log  access.2010-11-08.log  access.2010-
11-24.log
access.2010-10-08.log  access.2010-10-24.log  access.2010-11-09.log  access.2010-
11-25.log
access.2010-10-09.log  access.2010-10-25.log  access.2010-11-10.log  access.2010-
11-26.log
access.2010-10-10.log  access.2010-10-26.log  access.2010-11-11.log  access.2010-
11-27.log
access.2010-10-11.log  access.2010-10-27.log  access.2010-11-12.log  access.2010-
11-28.log
access.2010-10-12.log  access.2010-10-28.log  access.2010-11-13.log  access.2010-
11-29.log
access.2010-10-13.log  access.2010-10-29.log  access.2010-11-14.log  access.2010-
11-30.log
access.2010-10-14.log  access.2010-10-30.log  access.2010-11-15.log
access.2010-10-15.log  access.2010-10-31.log  access.2010-11-16.log
access.2010-10-16.log  access.2010-11-01.log  access.2010-11-17.log
# gzip access.2010-{10,11}-??.log
```

```
# ls access.2010-{0?,10,11}-??.log
access.2010-08-28.log  access.2010-10-02.log  access.2010-10-13.log  access.2010-
10-27.log  access.2010-11-06.log  access.2010-11-17.log  access.2010-11-26.log
access.2010-08-31.log  access.2010-10-03.log  access.2010-10-14.log  access.2010-
10-28.log  access.2010-11-08.log  access.2010-11-18.log  access.2010-11-27.log
access.2010-09-24.log  access.2010-10-04.log  access.2010-10-15.log  access.2010-
10-29.log  access.2010-11-09.log  access.2010-11-19.log  access.2010-11-28.log
access.2010-09-25.log  access.2010-10-06.log  access.2010-10-17.log  access.2010-
10-30.log  access.2010-11-10.log  access.2010-11-20.log  access.2010-11-29.log
access.2010-09-26.log  access.2010-10-07.log  access.2010-10-19.log  access.2010-
10-31.log  access.2010-11-11.log  access.2010-11-21.log  access.2010-11-30.log
access.2010-09-27.log  access.2010-10-08.log  access.2010-10-20.log  access.2010-
11-02.log  access.2010-11-12.log  access.2010-11-22.log
access.2010-09-29.log  access.2010-10-09.log  access.2010-10-22.log  access.2010-
11-03.log  access.2010-11-14.log  access.2010-11-23.log
access.2010-09-30.log  access.2010-10-10.log  access.2010-10-23.log  access.2010-
11-04.log  access.2010-11-15.log  access.2010-11-24.log
access.2010-10-01.log  access.2010-10-12.log  access.2010-10-25.log  access.2010-
11-05.log  access.2010-11-16.log  access.2010-11-25.log
# gzip access.2010-{0?,10,11}-??.log &
```

1.3. b2zip

b2zip

```
tar -jcvf foo.tar.bz2 foo/
       tar contents of folder foo in foo.tar.bz2

tar -jxvf foo.tar.bz2
       extract b2zip foo.tar.bz2
```

compress

compress/uncompress

```
tar -Zcvf foo.tar.Z foo/
       tar contents of folder foo in foo.tar.Z

tar -Zxvf foo.tar.Z
       extract compress foo.tar.Z
```

1.5. tar: Removing leading '/' from member names

-P, --absolute-names don't strip leading '/'s from file names

```
$ tar -czvPf neo.tar.gz /home/neo/

$ tar -xzvPf neo.tar.gz
```

1.6. -C, --directory=DIR

-C, --directory=DIR change to directory DIR

```
tar -xzvf neo.tar.gz -C /
```

1.7. --exclude

排除neo目录

```
tar --exclude /home/neo -zcvf myfile.tar.gz /home/* /etc
```

1.8. -T

```
find . -name "*.jpg" -print >list
tar -T list -czvf picture.tar.gz

find /etc/ | tar czvf xxx1.tar.gz -T -
```

1.9. 日期过滤

打包 2010/08/01 之后的文件和目录

```
tar -N '2010/08/01' -zcvf home.tar.gz /home
```

1.10. 保留权限

```
tar -zxvpf /tmp/etc.tar.gz /etc
```

1.11. -r, --append

追加最近7天更改过的文件

```
find / -type f -mtime -7 | xargs tar -rf weekly_incremental.tar
```

1.12. 远程传输

tar -jcpvf - file | ssh remote "tar -jxpvf -"

```
tar -jcpvf - file.php | ssh root@172.16.3.1 "tar -jxpvf -"
```

2. aptitude

管理软件包

```
neo@kerberos:~$ tasksel
neo@kerberos:~$ aptitude
```

3. Automatic Updates

```
sudo apt-get install unattended-upgrades
```

/etc/apt/apt.conf.d/50unattended-upgrades

```

```

Notifications

```
sudo apt-get install apticron
```

/etc/apticron/apticron.conf

```
EMAIL="root@example.com"
```

4. dpkg

4.1. Status

系统上装了哪些软件包

要查看 Debian 系统上安装的所有软件包的状态, 运行

```
dpkg --list
```

输出每个软件包的一行简单介绍, 2字符的状态标志, 包名, 所安装版本, 和简要描述.

查看以 "foo" 开头的软件包的状态, 执行:

```
dpkg --list 'foo*'
```

要得到某个软件包的更详细信息, 执行:

```
dpkg --status packagename
```

List of installed software packages

```
$ dpkg-query -W
```

Description of installed software packages

```
$ dpkg -l
```

找出一个文件的归属包

```
dpkg --search cachemgr
squid3-cgi: /usr/lib/cgi-bin/cachemgr3.cgi
squid3-cgi: /usr/share/man/man8/cachemgr3.cgi.8.gz
squid3-cgi: /etc/squid3/cachemgr.conf
```

4.2. dpkg-reconfigure

```
$ sudo dpkg-reconfigure package
```

5. Upgrading

升级到最新开发版

5.1. GUI

```
update-manager --devel-release
```

5.2. CLI

```
$ sudo do-release-upgrade

$ lsb_release -a
```

升级到最新开发版

```
vim /etc/update-manager/release-upgrades 文件，把里面的
Prompt=lts
改为
Prompt=normal
```

```
sudo do-release-upgrade -d
```

5.3. CDROM

```
$ sudo mount -t iso9660 -o loop ~/maverick-alternate-i386.iso /cdrom
$ sudo /cdrom/cdromupgrade
```

第 19 章 Directory and File System Related

目录

1. dirname

```
$ dirname /usr/bin/find
/usr/bin
```

2. filename

```
$ basename /usr/bin/find
find
```

2.1. 排除扩展名

```
file=test.txt
b=${file%.*}
echo $b
```

```
$ for file in *.JPG;do mv $file ${file%.*}.jpg;done
```

2.2. 取扩展名

```
file=test.txt
b=${file##*.}
echo $b
```

3. test - check file types and compare values

```
test -x /usr/bin/munin-cron && /usr/bin/munin-cron
```

4. stat

modification time（mtime，修改时间）：当该文件的“内容数据”更改时，会更新这个时间。内容数据指的是文件的内容，而不是文件的属性。
status time（ctime，状态时间）：当该文件的”状态（status）”改变时，就会更新这个时间，举例，更改了权限与属性，就会更新这个时间。
access time（atime，存取时间）：当“取用文件内容”时，就会更新这个读取时间。举例来使用cat去读取该文件，就会更新atime了。

```
[root@apache www]# stat index.html
  File: `index.html'
  Size: 145355          Blocks: 296        IO Block: 4096   regular file
Device: fd01h/64769d    Inode: 15861815    Links: 1
Access: (0755/-rwxr-xr-x)  Uid: (  502/  upuser)   Gid: (  502/  upuser)
Access: 2010-10-28 11:09:52.000000000 +0800
Modify: 2010-10-28 10:23:13.000000000 +0800
Change: 2010-10-28 10:23:13.000000000 +0800
```

5. mkdir - make directories

```
mkdir -p /tmp/test/{aaa,bbb,ccc,ddd}

mkdir -p /tmp/test/{aaa,bbb,ccc,ddd}/{eee,fff}

mkdir -p
/tmp/test/{2008,2009,2010,2011}/{01,02,03,04,05,06,07,08,09,10,11,12}/{1,2,3,4,5,6,7,8,9,10,
```

6. rename

批量更改扩展名

```
rename 's/\.png/\.PNG/' *.png

rename '/\.mp3/\.MP3/' *.mp3
rename .mp3 .MP3 *.mp3

rename GIF gif *.GIF
```

```
for file in *.GIF
do
        mv $file ${file%.*}.gif
done
```

7. touch

创建空文件，修改文件日期时间

```
touch [-acdmt] 文件
参数:
-a : 仅修改access time。
-c : 仅修改时间，而不建立文件。
-d : 后面可以接日期，也可以使用 --date="日期或时间"
-m : 仅修改mtime。
-t : 后面可以接时间，格式为 [YYMMDDhhmm]

# touch filename
# touch -d 20050809 filename
# touch -t 0507150202 bashrc
# touch -d "2 days ago" bashrc
# touch --date "2011-06-03" filename
```

8. ls - list directory contents

```
$ ls
$ ls ~
$ ls -l
$ ls -a
$ ls -1
$ ls -F
bg7nyt.txt*  Desktop/    Firefox_wallpaper.png  Music/     public_html@  Videos/
bg7nyt.wav*  Documents/  Mail/                   nat.txt*   script/
workspace/
BOINC/       Examples@   mbox                    Pictures/  Templates/
```

{}通配符

```
ls {*.py,*.php,*.{sh,shell}}
```

take a look at below

```
alias l='ls -CF'
alias la='ls -A'
alias ll='ls -l'
alias ls='ls --color=auto'
```

9. cp - copy files and directories

9.1. copy directories recursively

```
cp -r /etc/* ~/myetc
```

9.2. overwrite an existing file

```
# alias cp
alias cp='cp -i'

# unalias cp
# alias cp
-bash: alias: cp: not found
```

10. rm - remove files or directories

10.1. -bash: /bin/rm: Argument list too long

```
ls -1 | xargs rm -f
find . -name 'spam-*' | xargs rm
find . -exec rm {} \;

ls | xargs -n 10 rm -fr # 10个为一组
```

10.2. zsh: sure you want to delete all the files in /tmp [yn]?

```
yes | rm -i file
```

11. df - report file system disk space usage

```
neo@netkiller:~$ df -lh
Filesystem            Size  Used Avail Use% Mounted on
/dev/sda1              19G  3.1G   15G  17% /
none                  996M  224K  996M   1% /dev
none                 1000M     0 1000M   0% /dev/shm
none                 1000M  520K 1000M   1% /var/run
none                 1000M     0 1000M   0% /var/lock
none                 1000M     0 1000M   0% /lib/init/rw
/dev/sda6              19G   13G  4.5G  75% /home
/dev/sda10            556M  178M  351M  34% /boot
/dev/sda7              46G  4.4G   40G  10% /var
/dev/sda8             367G   60G  289G  18% /opt
/dev/sda9             6.5G  143M  6.0G   3% /tmp
```

12. du - estimate file space usage

```
neo@netkiller:~$ sudo du -sh /usr/local
63M     /usr/local
```

13. tac - concatenate and print files in reverse

```
$ tac /etc/issue
Kernel \r on an \m
CentOS release 5.4 (Final)
```

14. find - search for files in a directory hierarchy

14.1. name

Find every file under directory /usr ending in "stat".

```
$ find /usr -name *stat
/usr/src/linux-headers-2.6.24-22-generic/include/config/cpu/freq/stat
/usr/bin/lnstat
/usr/bin/sar.sysstat
/usr/bin/mpstat
/usr/bin/rtstat
/usr/bin/nstat
/usr/bin/lpstat
/usr/bin/ctstat
/usr/bin/stat
/usr/bin/kpsestat
/usr/bin/pidstat
/usr/bin/iostat
/usr/bin/vmstat
/usr/lib/sysstat
/usr/share/doc/sysstat
/usr/share/gnome/help/battstat
/usr/share/omf/battstat
/usr/share/zsh/help/stat
/usr/share/zsh/4.3.4/functions/Completion/Unix/_diffstat
/usr/share/zsh/4.3.4/functions/Completion/Zsh/_stat
/usr/share/zsh/4.3.4/functions/Zftp/zfstat
```

```
find  \( -iname '*.jpg' -o -iname '*.png' -o -iname '*.gif'  \)

find /www/images -type f \( -iname '*.js' -o -iname '*.css' -o -iname '*.html' \)
| xargs tar -czf ~/images.tgz
```

14.2. regex

```
find . -regex ".*\.\(jpg\|png\)"
```

下面regex与name作用相同

```
find . -regex ".*\.\(txt\|sh\)"
find . -name "*.sh" -o -name "*.txt"
```

14.3. user

Find every file under /home and /var/www owned by the user neo.

```
$ find /home -user neo
$ find /var/www -user neo
$ find . -user nobody -iname '*.php'
```

14.4. perm

```
find ./ -perm -7 -print | xargs chmod o-w
find . -perm -o=w
```

14.5. type

14.5.1. 分别设置文件与目录的权限

```
find /usr/www/phpmyadmin -type d -exec chmod 755 {} \;
find /usr/www/phpmyadmin -type f -exec chmod 644 {} \;
```

14.6. -delete

```
# find /var/spool/clientmqueue/ -type f -delete
```

14.7. exec

替换文本

```
# find ./ -exec grep str1 ‘{}’ \; -exec sed -i.bak s/str1/str2/g ‘{}’ \;
```

```
find -exec ls -l {} \; | grep '2011-01-18'
```

14.8. xargs

```
find /etc -type f|xargs md5sum
```

```
find ./ -name "*html" | xargs -n 1 sed -i -e 's/aaa/bbb/g'
```

```
find /tmp -name core -type f -print | xargs /bin/rm -f
find . -type f -exec file '{}' \;
```

14.9. 排除目录

```
find /usr/local -path "/usr/local/share" -prune -o -print

find /usr/local \( -path /usr/local/bin -o -path /usr/local/sbin \) -prune -o -
print

find /usr/local \(-path /usr/local/dir1 -o -path /usr/local/file1 \) -prune -o -
name "temp" -print
```

查找当前目录下的php文件,排除子目录templates_c, caches

```
find . \( -path ./templates_c -o -path ./caches \) -prune -o -name "*.php" -print
```

14.10. -mtime / -mmin

3天前

```
find . -type f -mtime -3
```

```
# find . -mmin +5 -mmin -10
```

例 19.1. backup(find + tar)

```
find / -type f -mtime -7 | xargs tar -rf weekly_incremental.tar
```

```
gzip weekly_incremental.tar
```

14.11. --newer

```
tar --newer="2011-07-04" -zcvf backup.tar.gz /var/www/
tar cvzf foo.tgz /bak -N "2004-03-03 16:49:17"
```

14.12. -print / -printf

```
[root@scientific ~]# find / -maxdepth 1 -name '[!.]*' -printf 'Name: %16f Size:
%6s\n'
Name:                / Size:   4096
Name:             misc Size:      0
Name:            media Size:   4096
Name:             home Size:   4096
Name:              dev Size:   3840
Name:              net Size:      0
Name:             proc Size:      0
Name:             sbin Size:  12288
Name:             root Size:   4096
Name:              lib Size:   4096
Name:           cgroup Size:   4096
Name:              srv Size:   4096
Name:              mnt Size:   4096
Name:              etc Size:  12288
Name:              usr Size:   4096
Name:            lib64 Size:  12288
Name:             boot Size:   1024
Name:              var Size:   4096
Name:          selinux Size:      0
Name:              opt Size:   4096
Name:              tmp Size:   4096
Name:       lost+found Size:  16384
Name:              sys Size:      0
Name:              bin Size:   4096

# find /etc/ -type f -printf "%CY-%Cm-%Cd %Cr %8s %f\n"
```

2. cpio - copy files to and from archives

```
find /opt -print | cpio -o > opt.cpio

find . -type f -name '*.sh' -print | cpio -o | gzip >sh.cpio.gz

cpio –i < opt.cpio
```

3. zip, zipcloak, zipnote, zipsplit - package and compress (archive) files

*.zip

zip/unzip file[.zip]

4. RAR

```
sudo apt-get install rar unrar
```

5. 7-Zip

http://www.7-zip.org/

```
$ sudo apt-get install p7zip
```

第 21 章 Process

目录

1. top - display Linux tasks

```
$ top
top - 22:30:02 up 14:24,  1 user,  load average: 0.17, 0.15, 0.10
Tasks: 240 total,   2 running, 238 sleeping,   0 stopped,   0 zombie
Cpu0  :  2.0%us,  4.1%sy,  0.0%ni, 92.9%id,  1.0%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu1  :  1.5%us,  3.7%sy,  0.1%ni, 94.6%id,  0.0%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu2  :  2.2%us,  5.6%sy,  0.0%ni, 92.2%id,  0.0%wa,  0.0%hi,  0.0%si,  0.0%st
Cpu3  :  2.1%us,  6.3%sy,  0.0%ni, 91.6%id,  0.0%wa,  0.0%hi,  0.0%si,  0.0%st
Mem:   2048012k total,  1138504k used,   909508k free,   139292k buffers
Swap:  1951856k total,        0k used,  1951856k free,   603728k cached

  PID USER      PR  NI  VIRT  RES  SHR S %CPU %MEM    TIME+  COMMAND
 4686 neo       20   0 19264 1440  980 R   11  0.1   0:00.10 top
 4698 neo       20   0  9440 1572 1044 S   11  0.1   0:00.27 sitemaps
    6 root      RT  -5     0    0    0 S    4  0.0   0:14.38 migration/1
    1 root      20   0 19320 1600 1132 S    0  0.1   0:01.50 init
    2 root      15  -5     0    0    0 S    0  0.0   0:00.00 kthreadd
    3 root      RT  -5     0    0    0 S    0  0.0   0:10.41 migration/0
```

2. ps - report a snapshot of the current processes

ps aux

```
$ ps aux
USER       PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.0   4020   888 ?        Ss   08:50   0:01 /sbin/init
root         2  0.0  0.0      0     0 ?        S<   08:50   0:00 [kthreadd]
root         3  0.0  0.0      0     0 ?        S<   08:50   0:00 [migration/0]
root         4  0.0  0.0      0     0 ?        S<   08:50   0:00 [ksoftirqd/0]
root         5  0.0  0.0      0     0 ?        S<   08:50   0:00 [watchdog/0]
root         6  0.0  0.0      0     0 ?        S<   08:50   0:00 [migration/1]
root         7  0.0  0.0      0     0 ?        S<   08:50   0:00 [ksoftirqd/1]
root         8  0.0  0.0      0     0 ?        S<   08:50   0:00 [watchdog/1]
root         9  0.0  0.0      0     0 ?        S<   08:50   0:00 [migration/2]
root        10  0.0  0.0      0     0 ?        S<   08:50   0:00 [ksoftirqd/2]
root        11  0.0  0.0      0     0 ?        S<   08:50   0:00 [watchdog/2]
root        12  0.0  0.0      0     0 ?        S<   08:50   0:00 [migration/3]
root        13  0.0  0.0      0     0 ?        S<   08:50   0:00 [ksoftirqd/3]
root        14  0.0  0.0      0     0 ?        S<   08:50   0:00 [watchdog/3]
root        15  0.0  0.0      0     0 ?        S<   08:50   0:00 [events/0]
root        16  0.0  0.0      0     0 ?        S<   08:50   0:00 [events/1]
root        17  0.0  0.0      0     0 ?        S<   08:50   0:00 [events/2]
root        18  0.0  0.0      0     0 ?        S<   08:50   0:00 [events/3]
root        19  0.0  0.0      0     0 ?        S<   08:50   0:00 [khelper]
root        54  0.0  0.0      0     0 ?        S<   08:50   0:00 [kblockd/0]
root        55  0.0  0.0      0     0 ?        S<   08:50   0:00 [kblockd/1]
root        56  0.0  0.0      0     0 ?        S<   08:50   0:00 [kblockd/2]
root        57  0.0  0.0      0     0 ?        S<   08:50   0:00 [kblockd/3]
root        60  0.0  0.0      0     0 ?        S<   08:50   0:00 [kacpid]
root        61  0.0  0.0      0     0 ?        S<   08:50   0:00 [kacpi_notify]
root       136  0.0  0.0      0     0 ?        S<   08:50   0:00 [kseriod]
root       193  0.0  0.0      0     0 ?        S    08:50   0:00 [pdflush]
root       194  0.0  0.0      0     0 ?        S    08:50   0:00 [pdflush]
root       195  0.0  0.0      0     0 ?        S<   08:50   0:00 [kswapd0]
root       238  0.0  0.0      0     0 ?        S<   08:50   0:00 [aio/0]
root       239  0.0  0.0      0     0 ?        S<   08:50   0:00 [aio/1]
root       240  0.0  0.0      0     0 ?        S<   08:50   0:00 [aio/2]
root       241  0.0  0.0      0     0 ?        S<   08:50   0:00 [aio/3]
root      1468  0.0  0.0      0     0 ?        S<   08:50   0:00 [ksuspend_usbd]
root      1471  0.0  0.0      0     0 ?        S<   08:50   0:00 [khubd]
root      1559  0.0  0.0      0     0 ?        S<   08:50   0:00 [ata/0]
root      1560  0.0  0.0      0     0 ?        S<   08:50   0:00 [ata/1]
root      1561  0.0  0.0      0     0 ?        S<   08:50   0:00 [ata/2]
root      1562  0.0  0.0      0     0 ?        S<   08:50   0:00 [ata/3]
root      1563  0.0  0.0      0     0 ?        S<   08:50   0:00 [ata_aux]
root      1743  0.0  0.0      0     0 ?        S<   08:50   0:00 [scsi_eh_0]
root      1744  0.0  0.0      0     0 ?        S<   08:50   0:00 [scsi_eh_1]
root      1878  0.0  0.0      0     0 ?        S<   08:50   0:00 [scsi_eh_2]
root      1879  0.0  0.0      0     0 ?        S<   08:50   0:00 [scsi_eh_3]
root      2508  0.0  0.0      0     0 ?        S<   08:50   0:00 [kjournald]
root      2707  0.0  0.0  17188  1284 ?        S<s  08:50   0:00 /sbin/udevd --
daemon
root      3055  0.0  0.0      0     0 ?        S<   08:50   0:00 [kpsmoused]
dhcp      4223  0.0  0.0  15108   840 ?        S<s  08:50   0:00 dhclient3 -e
IF_METRIC=100 -pf /var
root      4311  0.0  0.0      0     0 ?        S<   08:50   0:00 [kjournald]
root      4585  0.0  0.0   3864   596 tty4     Ss+  08:50   0:00 /sbin/getty
38400 tty4
root      4586  0.0  0.0   3864   596 tty5     Ss+  08:50   0:00 /sbin/getty
38400 tty5
root      4588  0.0  0.0   3864   592 tty2     Ss+  08:50   0:00 /sbin/getty
38400 tty2
root      4591  0.0  0.0   3864   596 tty3     Ss+  08:50   0:00 /sbin/getty
38400 tty3
root      4592  0.0  0.0  45700  1328 ttyS0    Ss   08:50   0:00 /bin/login --
root      4792  0.0  0.0  13076  1752 ?        Ss   08:50   0:00 /usr/sbin/acpid
-c /etc/acpi/events
root      4859  0.0  0.0      0     0 ?        S<   08:50   0:00 [kondemand/0]
```

```
root      4860  0.0  0.0      0     0 ?        S<   08:50   0:00 [kondemand/1]
root      4861  0.0  0.0      0     0 ?        S<   08:50   0:00 [kondemand/2]
root      4862  0.0  0.0      0     0 ?        S<   08:50   0:00 [kondemand/3]
syslog    4926  0.0  0.0  12296   784 ?        Ss   08:50   0:00 /sbin/syslogd -u
syslog
root      4980  0.0  0.0   8132   592 ?        S    08:50   0:00 /bin/dd bs 1 if
/proc/kmsg of /var/
klog      4982  0.0  0.1   6184  2876 ?        Ss   08:50   0:00 /sbin/klogd -P
/var/run/klogd/kmsg
108       5004  0.0  0.0  21320  1104 ?        Ss   08:50   0:00 /usr/bin/dbus-
daemon --system
root      5020  0.0  0.1  40112  2084 ?        Ss   08:50   0:00
/usr/sbin/NetworkManager --pid-file
root      5034  0.0  0.0  24128  1256 ?        Ss   08:50   0:00
/usr/sbin/NetworkManagerDispatcher
root      5047  0.0  0.0  35192  1220 ?        Ss   08:50   0:00 /usr/bin/system-
tools-backends
root      5069  0.0  0.0  50916  1204 ?        Ss   08:50   0:00 /usr/sbin/sshd
avahi     5090  0.0  0.0  29708  1508 ?        Ss   08:50   0:00 avahi-daemon:
running [netkiller.lo
avahi     5091  0.0  0.0  29580   508 ?        Ss   08:50   0:00 avahi-daemon:
chroot helper
postgres  5117  0.0  0.3 101164  6196 ?        S    08:50   0:01
/usr/lib/postgresql/8.3/bin/postgre
postgres  5121  0.0  0.0 101164  1624 ?        Ss   08:50   0:00 postgres: writer
process
postgres  5122  0.0  0.0 101164  1436 ?        Ss   08:50   0:00 postgres: wal
writer process
postgres  5123  0.0  0.0 101304  1684 ?        Ss   08:50   0:00 postgres:
autovacuum launcher proce
postgres  5124  0.0  0.0  71628  1432 ?        Ss   08:50   0:00 postgres: stats
collector process
root      5167  0.0  0.1  72312  2704 ?        Ss   08:50   0:00 /usr/sbin/cupsd
115       5423  0.0  0.0  47552  1052 ?        Ss   08:50   0:00 /usr/sbin/exim4
-bd -q30m
gnump3d   5431  0.0  0.8  54728 17744 ?        S    08:50   0:00 /usr/bin/perl -w
/usr/bin/gnump3d
root      5481  0.0  0.0  10444   888 ?        S    08:50   0:00 /usr/bin/rsync -
-no-detach --daemon
root      5500  0.0  0.0  54048  1484 ?        Ss   08:50   0:00 /usr/sbin/nmbd -
D
root      5502  0.0  0.1  74548  2788 ?        Ss   08:50   0:00 /usr/sbin/smbd -
D
root      5573  0.0  0.0  19332   940 ?        Ss   08:50   0:00 /usr/sbin/xinetd
-pidfile /var/run/
root      5574  0.0  0.0   6272   840 ?        Ss   08:50   0:00 /usr/sbin/dhcdbd
--system
111       5593  0.0  0.2  35804  4396 ?        Ss   08:50   0:00 /usr/sbin/hald
root      5596  0.0  0.1  30528  2384 ?        Ssl  08:50   0:00
/usr/sbin/console-kit-daemon
root      5658  0.0  0.0  17820  1164 ?        S    08:50   0:00 hald-runner
root      5660  0.0  0.0  74548  1280 ?        S    08:50   0:00 /usr/sbin/smbd -
D
root      5690  0.0  0.0  19928  1148 ?        S    08:50   0:00 hald-addon-
input: Listening on /dev
111       5693  0.0  0.0  16672   992 ?        S    08:50   0:00 hald-addon-
acpi: listening on acpid
root      5722  0.0  0.0  13532  1300 ?        Ss   08:50   0:00 /usr/sbin/hcid -
x -s
root      5730  0.0  0.0      0     0 ?        S<   08:50   0:00 [btaddconn]
root      5732  0.0  0.0      0     0 ?        S<   08:50   0:00 [btdelconn]
root      5744  0.0  0.0  13428  1352 ?        S    08:50   0:00
/usr/lib/bluetooth/bluetoothd-servi
root      5745  0.0  0.0  13352  1140 ?        S    08:50   0:00
/usr/lib/bluetooth/bluetoothd-servi
root      5755  0.0  0.0      0     0 ?        S<   08:50   0:00 [krfcommd]
root      5791  0.0  0.0 116168  1860 ?        Ss   08:50   0:00 /usr/sbin/gdm
nagios    5847  0.0  0.0  34276  1852 ?        SNsl 08:50   0:00
/usr/sbin/nagios2 -d /etc/nagios2/n
daemon    5884  0.0  0.0  16428   432 ?        Ss   08:50   0:00 /usr/sbin/atd
root      5898  0.0  0.0  18616   980 ?        Ss   08:50   0:00 /usr/sbin/cron
www-data  5929  0.0  0.1  58976  2380 ?        S    08:50   0:00
/usr/sbin/lighttpd -f /etc/lighttpd
www-data  5940  0.0  0.2  83492  6124 ?        Ss   08:50   0:00 /usr/bin/php-cgi
www-data  5967  0.0  0.2  83492  6124 ?        Ss   08:50   0:00 /usr/bin/php-cgi
root      6016  0.0  0.0   3864   592 tty1     Ss+  08:50   0:00 /sbin/getty
38400 tty1
www-data  6022  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
www-data  6023  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
www-data  6024  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
www-data  6025  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
www-data  6026  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
www-data  6027  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
www-data  6028  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
```

```
www-data  6029  0.0  0.1  83492  2764 ?        S    08:50   0:00 /usr/bin/php-cgi
root      6058  0.0  0.0 116168  1840 ?        T    08:50   0:00 /usr/sbin/gdm
root      6062  0.0  0.0      0     0 ?        Z    08:50   0:00 [kill] <defunct>
root      6102  0.0  0.0  17336   920 ?        S    08:50   0:00 xinit
/etc/gdm/failsafeXinit /etc/X
root      6104  0.0  0.3  76076  7644 tty7     S<s+ 08:50   0:01 /usr/bin/X :0 -
auth /var/lib/gdm/:0
root      6111  0.0  0.0   3944   584 ?        S    08:51   0:00 /bin/sh
/etc/gdm/failsafeXinit /etc
root      6112  0.0  0.2 126768  5000 ?        S    08:51   0:00 /usr/bin/gksu -u
root /usr/bin/xfai
root      6114  0.0  0.2  41308  5516 ?        S    08:51   0:00
/usr/lib/libgconf2-4/gconfd-2 5
neo       6115  0.0  0.1  20944  3888 ttyS0    S    08:51   0:00 -bash
root      6131  0.0  1.0 156296 21096 ?        S    08:51   0:00 /usr/bin/python
/usr/bin/xfailsafed
neo       6164  0.0  0.1  74896  3664 ?        S    08:52   0:00 /usr/sbin/smbd -
D
neo       7949  0.0  0.0   8696  1268 ttyS0    S+   11:19   0:00 man ps
neo       7957  0.0  0.0   9552  1008 ttyS0    S+   11:19   0:00 pager -s
root      7971  0.0  0.1  70028  3028 ?        Ss   11:20   0:00 sshd: neo [priv]
neo       7978  0.0  0.0  70028  1716 ?        S    11:20   0:00 sshd: neo@pts/0
neo       7979  0.2  0.1  20944  3852 pts/0    Ss   11:20   0:00 -bash
neo       8006  0.0  0.0  15064  1092 pts/0    R+   11:22   0:00 ps aux
```

ps ax

```
neo@netkiller:~$ ps ax
  PID TTY      STAT   TIME COMMAND
    1 ?        Ss     0:01 /sbin/init
    2 ?        S<     0:00 [kthreadd]
    3 ?        S<     0:00 [migration/0]
    4 ?        S<     0:00 [ksoftirqd/0]
    5 ?        S<     0:00 [watchdog/0]
    6 ?        S<     0:00 [migration/1]
    7 ?        S<     0:00 [ksoftirqd/1]
    8 ?        S<     0:00 [watchdog/1]
    9 ?        S<     0:00 [migration/2]
   10 ?        S<     0:00 [ksoftirqd/2]
   11 ?        S<     0:00 [watchdog/2]
   12 ?        S<     0:00 [migration/3]
   13 ?        S<     0:00 [ksoftirqd/3]
   14 ?        S<     0:00 [watchdog/3]
   15 ?        S<     0:00 [events/0]
   16 ?        S<     0:00 [events/1]
   17 ?        S<     0:00 [events/2]
   18 ?        S<     0:00 [events/3]
   19 ?        S<     0:00 [khelper]
   54 ?        S<     0:00 [kblockd/0]
   55 ?        S<     0:00 [kblockd/1]
   56 ?        S<     0:00 [kblockd/2]
   57 ?        S<     0:00 [kblockd/3]
   60 ?        S<     0:00 [kacpid]
   61 ?        S<     0:00 [kacpi_notify]
  136 ?        S<     0:00 [kseriod]
  193 ?        S      0:00 [pdflush]
  194 ?        S      0:00 [pdflush]
  195 ?        S<     0:00 [kswapd0]
  238 ?        S<     0:00 [aio/0]
  239 ?        S<     0:00 [aio/1]
  240 ?        S<     0:00 [aio/2]
  241 ?        S<     0:00 [aio/3]
 1468 ?        S<     0:00 [ksuspend_usbd]
 1471 ?        S<     0:00 [khubd]
 1559 ?        S<     0:00 [ata/0]
 1560 ?        S<     0:00 [ata/1]
 1561 ?        S<     0:00 [ata/2]
 1562 ?        S<     0:00 [ata/3]
 1563 ?        S<     0:00 [ata_aux]
 1743 ?        S<     0:00 [scsi_eh_0]
 1744 ?        S<     0:00 [scsi_eh_1]
 1878 ?        S<     0:00 [scsi_eh_2]
 1879 ?        S<     0:00 [scsi_eh_3]
 2508 ?        S<     0:00 [kjournald]
 2707 ?        S<s    0:00 /sbin/udevd --daemon
 3055 ?        S<     0:00 [kpsmoused]
 4223 ?        S<s    0:00 dhclient3 -e IF_METRIC=100 -pf
/var/run/dhclient.eth0.pid -lf /var/lib/dh
 4311 ?        S<     0:00 [kjournald]
```

```
 4585 tty4     Ss+    0:00 /sbin/getty 38400 tty4
 4586 tty5     Ss+    0:00 /sbin/getty 38400 tty5
 4588 tty2     Ss+    0:00 /sbin/getty 38400 tty2
 4591 tty3     Ss+    0:00 /sbin/getty 38400 tty3
 4592 ttyS0    Ss     0:00 /bin/login --
 4792 ?        Ss     0:00 /usr/sbin/acpid -c /etc/acpi/events -s
/var/run/acpid.socket
 4859 ?        S<     0:00 [kondemand/0]
 4860 ?        S<     0:00 [kondemand/1]
 4861 ?        S<     0:00 [kondemand/2]
 4862 ?        S<     0:00 [kondemand/3]
 4926 ?        Ss     0:00 /sbin/syslogd -u syslog
 4980 ?        S      0:00 /bin/dd bs 1 if /proc/kmsg of /var/run/klogd/kmsg
 4982 ?        Ss     0:00 /sbin/klogd -P /var/run/klogd/kmsg
 5004 ?        Ss     0:00 /usr/bin/dbus-daemon --system
 5020 ?        Ss     0:00 /usr/sbin/NetworkManager --pid-file
/var/run/NetworkManager/NetworkManage
 5034 ?        Ss     0:00 /usr/sbin/NetworkManagerDispatcher --pid-file
/var/run/NetworkManager/Net
 5047 ?        Ss     0:00 /usr/bin/system-tools-backends
 5069 ?        Ss     0:00 /usr/sbin/sshd
 5090 ?        Ss     0:00 avahi-daemon: running [netkiller.local]
 5091 ?        Ss     0:00 avahi-daemon: chroot helper
 5117 ?        S      0:01 /usr/lib/postgresql/8.3/bin/postgres -D
/var/lib/postgresql/8.3/main -c c
 5121 ?        Ss     0:00 postgres: writer process
 5122 ?        Ss     0:00 postgres: wal writer process
 5123 ?        Ss     0:00 postgres: autovacuum launcher process
 5124 ?        Ss     0:00 postgres: stats collector process
 5167 ?        Ss     0:00 /usr/sbin/cupsd
 5423 ?        Ss     0:00 /usr/sbin/exim4 -bd -q30m
 5431 ?        S      0:00 /usr/bin/perl -w /usr/bin/gnump3d
 5481 ?        S      0:00 /usr/bin/rsync --no-detach --daemon --config
/etc/rsyncd.conf
 5500 ?        Ss     0:00 /usr/sbin/nmbd -D
 5502 ?        Ss     0:00 /usr/sbin/smbd -D
 5573 ?        Ss     0:00 /usr/sbin/xinetd -pidfile /var/run/xinetd.pid -
stayalive -inetd_compat
 5574 ?        Ss     0:00 /usr/sbin/dhcdbd --system
 5593 ?        Ss     0:00 /usr/sbin/hald
 5596 ?        Ssl    0:00 /usr/sbin/console-kit-daemon
 5658 ?        S      0:00 hald-runner
 5660 ?        S      0:00 /usr/sbin/smbd -D
 5690 ?        S      0:00 hald-addon-input: Listening on /dev/input/event3
/dev/input/event2
 5693 ?        S      0:00 hald-addon-acpi: listening on acpid socket
/var/run/acpid.socket
 5722 ?        Ss     0:00 /usr/sbin/hcid -x -s
 5730 ?        S<     0:00 [btaddconn]
 5732 ?        S<     0:00 [btdelconn]
 5744 ?        S      0:00 /usr/lib/bluetooth/bluetoothd-service-audio
 5745 ?        S      0:00 /usr/lib/bluetooth/bluetoothd-service-input
 5755 ?        S<     0:00 [krfcommd]
 5791 ?        Ss     0:00 /usr/sbin/gdm
 5847 ?        SNsl   0:00 /usr/sbin/nagios2 -d /etc/nagios2/nagios.cfg
 5884 ?        Ss     0:00 /usr/sbin/atd
 5898 ?        Ss     0:00 /usr/sbin/cron
 5929 ?        S      0:00 /usr/sbin/lighttpd -f /etc/lighttpd/lighttpd.conf
 5940 ?        Ss     0:00 /usr/bin/php-cgi
 5967 ?        Ss     0:00 /usr/bin/php-cgi
 6016 tty1     Ss+    0:00 /sbin/getty 38400 tty1
 6022 ?        S      0:00 /usr/bin/php-cgi
 6023 ?        S      0:00 /usr/bin/php-cgi
 6024 ?        S      0:00 /usr/bin/php-cgi
 6025 ?        S      0:00 /usr/bin/php-cgi
 6026 ?        S      0:00 /usr/bin/php-cgi
 6027 ?        S      0:00 /usr/bin/php-cgi
 6028 ?        S      0:00 /usr/bin/php-cgi
 6029 ?        S      0:00 /usr/bin/php-cgi
 6058 ?        T      0:00 /usr/sbin/gdm
 6062 ?        Z      0:00 [kill] <defunct>
 6102 ?        S      0:00 xinit /etc/gdm/failsafeXinit
/etc/X11/xorg.conf.failsafe with-gdm -- /usr
 6104 tty7     S<s+   0:01 /usr/bin/X :0 -auth /var/lib/gdm/:0.Xauth -nolisten
tcp vt7 -br -once -co
 6111 ?        S      0:00 /bin/sh /etc/gdm/failsafeXinit
/etc/X11/xorg.conf.failsafe with-gdm
 6112 ?        S      0:00 /usr/bin/gksu -u root /usr/bin/xfailsafedialog
 6114 ?        S      0:00 /usr/lib/libgconf2-4/gconfd-2 5
 6115 ttyS0    S      0:00 -bash
 6131 ?        S      0:00 /usr/bin/python /usr/bin/xfailsafedialog
 6164 ?        S      0:00 /usr/sbin/smbd -D
 7949 ttyS0    S+     0:00 man ps
 7957 ttyS0    S+     0:00 pager -s
```

```
 7971 ?        Ss     0:00 sshd: neo [priv]
 7978 ?        S      0:00 sshd: neo@pts/0
 7979 pts/0    Ss     0:00 -bash
 7997 pts/0    R+     0:00 ps ax
```

ps axww

```
$ ps axww
  PID TTY      STAT   TIME COMMAND
    1 ?        Ss     0:01 /sbin/init
    2 ?        S<     0:00 [kthreadd]
    3 ?        S<     0:00 [migration/0]
    4 ?        S<     0:00 [ksoftirqd/0]
    5 ?        S<     0:00 [watchdog/0]
    6 ?        S<     0:00 [migration/1]
    7 ?        S<     0:00 [ksoftirqd/1]
    8 ?        S<     0:00 [watchdog/1]
    9 ?        S<     0:00 [migration/2]
   10 ?        S<     0:00 [ksoftirqd/2]
   11 ?        S<     0:00 [watchdog/2]
   12 ?        S<     0:00 [migration/3]
   13 ?        S<     0:00 [ksoftirqd/3]
   14 ?        S<     0:00 [watchdog/3]
   15 ?        S<     0:00 [events/0]
   16 ?        S<     0:00 [events/1]
   17 ?        S<     0:00 [events/2]
   18 ?        S<     0:00 [events/3]
   19 ?        S<     0:00 [khelper]
   54 ?        S<     0:00 [kblockd/0]
   55 ?        S<     0:00 [kblockd/1]
   56 ?        S<     0:00 [kblockd/2]
   57 ?        S<     0:00 [kblockd/3]
   60 ?        S<     0:00 [kacpid]
   61 ?        S<     0:00 [kacpi_notify]
  136 ?        S<     0:00 [kseriod]
  193 ?        S      0:00 [pdflush]
  194 ?        S      0:00 [pdflush]
  195 ?        S<     0:00 [kswapd0]
  238 ?        S<     0:00 [aio/0]
  239 ?        S<     0:00 [aio/1]
  240 ?        S<     0:00 [aio/2]
  241 ?        S<     0:00 [aio/3]
 1468 ?        S<     0:00 [ksuspend_usbd]
 1471 ?        S<     0:00 [khubd]
 1559 ?        S<     0:00 [ata/0]
 1560 ?        S<     0:00 [ata/1]
 1561 ?        S<     0:00 [ata/2]
 1562 ?        S<     0:00 [ata/3]
 1563 ?        S<     0:00 [ata_aux]
 1743 ?        S<     0:00 [scsi_eh_0]
 1744 ?        S<     0:00 [scsi_eh_1]
 1878 ?        S<     0:00 [scsi_eh_2]
 1879 ?        S<     0:00 [scsi_eh_3]
 2508 ?        S<     0:00 [kjournald]
 2707 ?        S<s    0:00 /sbin/udevd --daemon
 3055 ?        S<     0:00 [kpsmoused]
 4223 ?        S<s    0:00 dhclient3 -e IF_METRIC=100 -pf
/var/run/dhclient.eth0.pid -lf /var/lib/dhcp3/dhclient.eth0.leases eth0
 4311 ?        S<     0:00 [kjournald]
 4585 tty4     Ss+    0:00 /sbin/getty 38400 tty4
 4586 tty5     Ss+    0:00 /sbin/getty 38400 tty5
 4588 tty2     Ss+    0:00 /sbin/getty 38400 tty2
 4591 tty3     Ss+    0:00 /sbin/getty 38400 tty3
 4592 ttyS0    Ss     0:00 /bin/login --
 4792 ?        Ss     0:00 /usr/sbin/acpid -c /etc/acpi/events -s
/var/run/acpid.socket
 4859 ?        S<     0:00 [kondemand/0]
 4860 ?        S<     0:00 [kondemand/1]
 4861 ?        S<     0:00 [kondemand/2]
 4862 ?        S<     0:00 [kondemand/3]
 4926 ?        Ss     0:00 /sbin/syslogd -u syslog
 4980 ?        S      0:00 /bin/dd bs 1 if /proc/kmsg of /var/run/klogd/kmsg
 4982 ?        Ss     0:00 /sbin/klogd -P /var/run/klogd/kmsg
 5004 ?        Ss     0:00 /usr/bin/dbus-daemon --system
 5020 ?        Ss     0:00 /usr/sbin/NetworkManager --pid-file
/var/run/NetworkManager/NetworkManager.pid
 5034 ?        Ss     0:00 /usr/sbin/NetworkManagerDispatcher --pid-file
/var/run/NetworkManager/NetworkManagerDispatcher.pid
 5047 ?        Ss     0:00 /usr/bin/system-tools-backends
```

```
 5069 ?        Ss     0:00 /usr/sbin/sshd
 5090 ?        Ss     0:00 avahi-daemon: running [netkiller.local]
 5091 ?        Ss     0:00 avahi-daemon: chroot helper
 5117 ?        S      0:01 /usr/lib/postgresql/8.3/bin/postgres -D
/var/lib/postgresql/8.3/main -c
config_file=/etc/postgresql/8.3/main/postgresql.conf
 5121 ?        Ss     0:00 postgres: writer process
 5122 ?        Ss     0:00 postgres: wal writer process
 5123 ?        Ss     0:00 postgres: autovacuum launcher process
 5124 ?        Ss     0:00 postgres: stats collector process
 5167 ?        Ss     0:00 /usr/sbin/cupsd
 5423 ?        Ss     0:00 /usr/sbin/exim4 -bd -q30m
 5431 ?        S      0:00 /usr/bin/perl -w /usr/bin/gnump3d
 5481 ?        S      0:00 /usr/bin/rsync --no-detach --daemon --config
/etc/rsyncd.conf
 5500 ?        Ss     0:00 /usr/sbin/nmbd -D
 5502 ?        Ss     0:00 /usr/sbin/smbd -D
 5573 ?        Ss     0:00 /usr/sbin/xinetd -pidfile /var/run/xinetd.pid -
stayalive -inetd_compat
 5574 ?        Ss     0:00 /usr/sbin/dhcdbd --system
 5593 ?        Ss     0:00 /usr/sbin/hald
 5596 ?        Ssl    0:00 /usr/sbin/console-kit-daemon
 5658 ?        S      0:00 hald-runner
 5660 ?        S      0:00 /usr/sbin/smbd -D
 5690 ?        S      0:00 hald-addon-input: Listening on /dev/input/event3
/dev/input/event2
 5693 ?        S      0:00 hald-addon-acpi: listening on acpid socket
/var/run/acpid.socket
 5722 ?        Ss     0:00 /usr/sbin/hcid -x -s
 5730 ?        S<     0:00 [btaddconn]
 5732 ?        S<     0:00 [btdelconn]
 5744 ?        S      0:00 /usr/lib/bluetooth/bluetoothd-service-audio
 5745 ?        S      0:00 /usr/lib/bluetooth/bluetoothd-service-input
 5755 ?        S<     0:00 [krfcommd]
 5791 ?        Ss     0:00 /usr/sbin/gdm
 5847 ?        SNsl   0:00 /usr/sbin/nagios2 -d /etc/nagios2/nagios.cfg
 5884 ?        Ss     0:00 /usr/sbin/atd
 5898 ?        Ss     0:00 /usr/sbin/cron
 5929 ?        S      0:00 /usr/sbin/lighttpd -f /etc/lighttpd/lighttpd.conf
 5940 ?        Ss     0:00 /usr/bin/php-cgi
 5967 ?        Ss     0:00 /usr/bin/php-cgi
 6016 tty1     Ss+    0:00 /sbin/getty 38400 tty1
 6022 ?        S      0:00 /usr/bin/php-cgi
 6023 ?        S      0:00 /usr/bin/php-cgi
 6024 ?        S      0:00 /usr/bin/php-cgi
 6025 ?        S      0:00 /usr/bin/php-cgi
 6026 ?        S      0:00 /usr/bin/php-cgi
 6027 ?        S      0:00 /usr/bin/php-cgi
 6028 ?        S      0:00 /usr/bin/php-cgi
 6029 ?        S      0:00 /usr/bin/php-cgi
 6058 ?        T      0:00 /usr/sbin/gdm
 6062 ?        Z      0:00 [kill] <defunct>
 6102 ?        S      0:00 xinit /etc/gdm/failsafeXinit
/etc/X11/xorg.conf.failsafe with-gdm -- /usr/bin/X :0 -auth /var/lib/gdm/:0.Xauth
-nolisten tcp vt7 -br -once -config /etc/X11/xorg.conf.failsafe
 6104 tty7     S<s+   0:01 /usr/bin/X :0 -auth /var/lib/gdm/:0.Xauth -nolisten
tcp vt7 -br -once -config /etc/X11/xorg.conf.failsafe
 6111 ?        S      0:00 /bin/sh /etc/gdm/failsafeXinit
/etc/X11/xorg.conf.failsafe with-gdm
 6112 ?        S      0:00 /usr/bin/gksu -u root /usr/bin/xfailsafedialog
 6114 ?        S      0:00 /usr/lib/libgconf2-4/gconfd-2 5
 6115 ttyS0    S      0:00 -bash
 6131 ?        S      0:00 /usr/bin/python /usr/bin/xfailsafedialog
 6164 ?        S      0:00 /usr/sbin/smbd -D
 7949 ttyS0    S+     0:00 man ps
 7957 ttyS0    S+     0:00 pager -s
 7971 ?        Ss     0:00 sshd: neo [priv]
 7978 ?        S      0:00 sshd: neo@pts/0
 7979 pts/0    Ss     0:00 -bash
 8012 pts/0    R+     0:00 ps axww
```

ps auxf

```
www-data 18743  0.0  0.1  82520  3776 ?        S<   11:18   0:02
/usr/sbin/lighttpd -f /etc/lighttpd/lighttpd.conf
www-data 18744  0.0  0.4 240904  9376 ?        S<s  11:18   0:00  \_
/usr/bin/php-cgi
www-data 18748  0.0  0.2 240904  4296 ?        S<   11:18   0:00      \_
```

```
/usr/bin/php-cgi
www-data 18749  0.0  0.2 240904  4296 ?        S<   11:18   0:00      \_
/usr/bin/php-cgi
www-data 18750  0.0  0.2 240904  4296 ?        S<   11:18   0:00      \_
/usr/bin/php-cgi
```

2.1. ps axef

```
[root@development ~]# ps -ef
UID        PID  PPID  C STIME TTY          TIME CMD
```

```
# ps axef
```

2.2. ps -eo pid,cmd

```
$ ps -eo pid,cmd
```

2.3. ps jax

```
# ps jax
 PPID   PID  PGID   SID TTY      TPGID STAT   UID   TIME COMMAND
    0     1     1     1 ?           -1 Ss       0   1:18 /sbin/init
    0     2     0     0 ?           -1 S        0   0:00 [kthreadd]
    2     3     0     0 ?           -1 S        0   3:32 [ksoftirqd/0]
    2     4     0     0 ?           -1 S        0  14:15 [migration/0]
    2     5     0     0 ?           -1 S        0   0:00 [watchdog/0]
    2     6     0     0 ?           -1 S        0  16:12 [migration/1]
    2     7     0     0 ?           -1 S        0   3:00 [ksoftirqd/1]
    2     8     0     0 ?           -1 S        0   0:00 [watchdog/1]
    2     9     0     0 ?           -1 S        0   1:01 [migration/2]
    2    10     0     0 ?           -1 S        0   3:40 [ksoftirqd/2]
    2    11     0     0 ?           -1 S        0   0:00 [watchdog/2]
    2    12     0     0 ?           -1 S        0   0:44 [migration/3]
    2    13     0     0 ?           -1 S        0   3:08 [ksoftirqd/3]
    2    14     0     0 ?           -1 S        0   0:00 [watchdog/3]
    2    15     0     0 ?           -1 S        0  28:37 [events/0]
    2    16     0     0 ?           -1 S        0  25:09 [events/1]
    2    17     0     0 ?           -1 S        0  65:53 [events/2]
    2    18     0     0 ?           -1 S        0  68:14 [events/3]
    2    19     0     0 ?           -1 S        0   0:00 [cpuset]
    2    20     0     0 ?           -1 S        0   0:00 [khelper]
    2    21     0     0 ?           -1 S        0   9:49 [netns]
    2    22     0     0 ?           -1 S        0   0:00 [async/mgr]
    2    23     0     0 ?           -1 S        0   0:00 [pm]
    2    25     0     0 ?           -1 S        0   0:43 [sync_supers]
    2    26     0     0 ?           -1 S        0   1:18 [bdi-default]
    2    27     0     0 ?           -1 S        0   0:00 [kintegrityd/0]
    2    28     0     0 ?           -1 S        0   0:00 [kintegrityd/1]
    2    29     0     0 ?           -1 S        0   0:00 [kintegrityd/2]
    2    30     0     0 ?           -1 S        0   0:00 [kintegrityd/3]
    2    31     0     0 ?           -1 S        0   0:40 [kblockd/0]
    2    32     0     0 ?           -1 S        0   0:38 [kblockd/1]
    2    33     0     0 ?           -1 S        0   0:24 [kblockd/2]
    2    34     0     0 ?           -1 S        0   0:24 [kblockd/3]
    2    35     0     0 ?           -1 S        0   0:00 [kacpid]
    2    36     0     0 ?           -1 S        0   0:00 [kacpi_notify]
    2    37     0     0 ?           -1 S        0   0:00 [kacpi_hotplug]
    2    38     0     0 ?           -1 S        0   0:00 [ata_aux]
    2    39     0     0 ?           -1 S        0   0:00 [ata_sff/0]
    2    40     0     0 ?           -1 S        0   0:00 [ata_sff/1]
    2    41     0     0 ?           -1 S        0   0:00 [ata_sff/2]
    2    42     0     0 ?           -1 S        0   0:00 [ata_sff/3]
    2    43     0     0 ?           -1 S        0   0:00 [khubd]
    2    44     0     0 ?           -1 S        0   0:00 [kseriod]
    2    45     0     0 ?           -1 S        0   0:00 [kmmcd]
    2    46     0     0 ?           -1 S        0   0:06 [khungtaskd]
    2    47     0     0 ?           -1 S        0 329:34 [kswapd0]
    2    48     0     0 ?           -1 SN       0   0:00 [ksmd]
    2    49     0     0 ?           -1 S        0   0:00 [aio/0]
    2    50     0     0 ?           -1 S        0   0:00 [aio/1]
    2    51     0     0 ?           -1 S        0   0:00 [aio/2]
    2    52     0     0 ?           -1 S        0   0:00 [aio/3]
```

```
    2    53     0     0 ?           -1 S        0   0:00 [ecryptfs-kthrea]
    2    54     0     0 ?           -1 S        0   0:00 [crypto/0]
    2    55     0     0 ?           -1 S        0   0:00 [crypto/1]
    2    56     0     0 ?           -1 S        0   0:00 [crypto/2]
    2    57     0     0 ?           -1 S        0   0:00 [crypto/3]
    2    62     0     0 ?           -1 S        0   0:00 [scsi_eh_0]
    2    63     0     0 ?           -1 S        0   0:00 [scsi_eh_1]
    2    66     0     0 ?           -1 S        0   0:00 [kstriped]
    2    67     0     0 ?           -1 S        0   0:00 [kmpathd/0]
    2    68     0     0 ?           -1 S        0   0:00 [kmpathd/1]
    2    69     0     0 ?           -1 S        0   0:00 [kmpathd/2]
    2    70     0     0 ?           -1 S        0   0:00 [kmpathd/3]
    2    71     0     0 ?           -1 S        0   0:00 [kmpath_handlerd]
    2    72     0     0 ?           -1 S        0   0:00 [ksnapd]
    2    73     0     0 ?           -1 S        0   0:00 [kondemand/0]
    2    74     0     0 ?           -1 S        0   0:00 [kondemand/1]
    2    75     0     0 ?           -1 S        0   0:00 [kondemand/2]
    2    76     0     0 ?           -1 S        0   0:00 [kondemand/3]
    2    77     0     0 ?           -1 S        0   0:00 [kconservative/0]
    2    78     0     0 ?           -1 S        0   0:00 [kconservative/1]
    2    79     0     0 ?           -1 S        0   0:00 [kconservative/2]
    2    80     0     0 ?           -1 S        0   0:00 [kconservative/3]
    2   205     0     0 ?           -1 S        0   0:00 [scsi_eh_2]
    2   255     0     0 ?           -1 S        0   0:00 [scsi_eh_3]
    2   283     0     0 ?           -1 S        0   0:00 [usbhid_resumer]
    2   289     0     0 ?           -1 S        0   4:24 [jbd2/sda1-8]
    2   290     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   291     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   292     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   293     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    1   337   336   336 ?           -1 S        0   0:31 upstart-udev-bridge --
daemon
    1   343   343   343 ?           -1 S<s      0   0:20 udevd --daemon
    2   598     0     0 ?           -1 S        0   0:00 [kpsmoused]
    2   603     0     0 ?           -1 S        0   8:21 [edac-poller]
    1   675   675   675 ?           -1 Ss       1   0:00 portmap
    2   692     0     0 ?           -1 S        0   0:00 [radeon/0]
    2   693     0     0 ?           -1 S        0   0:00 [radeon/1]
    2   694     0     0 ?           -1 S        0   0:00 [radeon/2]
    2   695     0     0 ?           -1 S        0   0:00 [radeon/3]
    2   697     0     0 ?           -1 S        0   0:00 [ttm_swap]
    1   698   698   698 ?           -1 Ss     112   0:00 rpc.statd -L
    2   700     0     0 ?           -1 S        0   0:00 [rpciod/0]
    2   701     0     0 ?           -1 S        0   0:00 [rpciod/1]
    2   702     0     0 ?           -1 S        0   0:00 [rpciod/2]
    2   703     0     0 ?           -1 S        0   0:00 [rpciod/3]
    2   714     0     0 ?           -1 S<       0   0:25 [kslowd000]
    2   715     0     0 ?           -1 S<       0   0:20 [kslowd001]
    2   814     0     0 ?           -1 S        0 102:38 [flush-8:0]
    2   823     0     0 ?           -1 S        0  12:12 [jbd2/sda3-8]
    2   824     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   825     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   826     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   827     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   880     0     0 ?           -1 S        0  30:54 [jbd2/sdb1-8]
    2   881     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   882     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   883     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    2   884     0     0 ?           -1 S        0   0:00 [ext4-dio-unwrit]
    1   944   894   894 ?           -1 Sl     101   2:08 rsyslogd -c4
    2   958     0     0 ?           -1 S        0   0:00 [nfsiod]
    1   960   960   960 ?           -1 Ss       0   0:40 /usr/sbin/sshd
    1   972   972   972 ?           -1 Ss       0   0:02 rpc.idmapd
    1   975   975   975 tty4       975 Ss+      0   0:00 /sbin/getty -8 38400
tty4
    1   992   992   992 tty5       992 Ss+      0   0:00 /sbin/getty -8 38400
tty5
    1   997   997   997 tty3       997 Ss+      0   0:00 /sbin/getty -8 38400
tty3
    1  1000  1000  1000 tty6      1000 Ss+      0   0:00 /sbin/getty -8 38400
tty6
    1  1009  1009  1009 ?           -1 Ss       1   0:00 atd
    1  1058  1058  1058 ?           -1 Ss     106  20:42 /usr/sbin/nrpe -c
/etc/nagios/nrpe.cfg -d
    1  1081  1081  1081 ?           -1 Ss       0  14:35 /usr/sbin/munin-node
    2  1087     0     0 ?           -1 S        0   0:00 [lockd]
    2  1088     0     0 ?           -1 S        0   0:06 [nfsd4]
    2  1089     0     0 ?           -1 S        0   0:00 [nfsd4_callbacks]
    2  1090     0     0 ?           -1 S        0   1:29 [nfsd]
    2  1091     0     0 ?           -1 S        0   1:29 [nfsd]
    2  1092     0     0 ?           -1 S        0   1:34 [nfsd]
    2  1093     0     0 ?           -1 S        0   1:35 [nfsd]
    2  1094     0     0 ?           -1 S        0   1:31 [nfsd]
    2  1095     0     0 ?           -1 S        0   1:31 [nfsd]
```

```
    2  1096     0     0 ?           -1 S        0   1:30 [nfsd]
    2  1097     0     0 ?           -1 S        0   1:30 [nfsd]
    1  1101  1101  1101 ?           -1 Ss       0   0:11 /usr/sbin/rpc.mountd --
manage-gids
    1  1500  1499  1499 ?           -1 S      105  39:47 /usr/sbin/snmpd -Lsd -Lf
/dev/null -u snmp -g snmp -I -smux -p /var/run/snmpd.pid
    1  2066  2066  2066 tty2      2066 Ss+      0   0:00 /sbin/getty -8 38400
tty2
    1  2068  2068  2068 tty1      2068 Ss+      0   0:00 /sbin/getty -8 38400
tty1
    1  5243  5243  5243 ?           -1 Ss       0   0:15 /usr/sbin/vsftpd
    1  6058  6058  6058 ?           -1 Ss       0   0:00 /bin/sh -c test -x
/usr/sbin/anacron || ( cd / && run-parts --report /etc/cron.daily )
 6058  6060  6058  6058 ?           -1 S        0   0:00 run-parts --report
/etc/cron.daily
 6060  6062  6058  6058 ?           -1 Z        0   0:00 [apt] <defunct>
    1  8627  8627  8627 ?           -1 Ss     115  12:06 /usr/sbin/gmond
    1  8674  8674  8674 ?           -1 Ssl    102   0:09 /usr/sbin/named -u bind
    1  9027  9027  9027 ?           -1 Ss       0   0:02 cron
    2 12690     0     0 ?           -1 S        0   0:00 [xfs_mru_cache]
    2 12691     0     0 ?           -1 S        0   0:00 [xfslogd/0]
    2 12692     0     0 ?           -1 S        0   0:00 [xfslogd/1]
    2 12693     0     0 ?           -1 S        0   0:00 [xfslogd/2]
    2 12694     0     0 ?           -1 S        0   0:00 [xfslogd/3]
    2 12695     0     0 ?           -1 S        0   0:00 [xfsdatad/0]
    2 12696     0     0 ?           -1 S        0   0:00 [xfsdatad/1]
    2 12697     0     0 ?           -1 S        0   0:00 [xfsdatad/2]
    2 12698     0     0 ?           -1 S        0   0:00 [xfsdatad/3]
    2 12699     0     0 ?           -1 S        0   0:00 [xfsconvertd/0]
    2 12700     0     0 ?           -1 S        0   0:00 [xfsconvertd/1]
    2 12701     0     0 ?           -1 S        0   0:00 [xfsconvertd/2]
    2 12702     0     0 ?           -1 S        0   0:00 [xfsconvertd/3]
    2 12710     0     0 ?           -1 S        0   0:00 [jfsIO]
    2 12711     0     0 ?           -1 S        0   0:00 [jfsCommit]
    2 12712     0     0 ?           -1 S        0   0:00 [jfsCommit]
    2 12713     0     0 ?           -1 S        0   0:00 [jfsCommit]
    2 12714     0     0 ?           -1 S        0   0:00 [jfsCommit]
    2 12715     0     0 ?           -1 S        0   0:00 [jfsSync]
    1 13841 13841 13841 ?           -1 Ss    1000 249:23 ./boinc --daemon
    1 14479 14479 14479 ?           -1 Ss       0   0:10 /usr/lib/postfix/master
14479 14481 14479 14479 ?           -1 S      111   0:02 qmgr -l -t fifo -u
17136 16953 17136 17136 ?           -1 S        0  27:11 smbd -F
    1 17136 17136 17136 ?           -1 Ss       0   0:16 smbd -F
    1 17143 17143 17143 ?           -1 Ss       0  14:42 nmbd -D
17136 17145 17136 17136 ?           -1 S        0   0:00 smbd -F
    1 18572 18566 18566 ?           -1 S        0   0:03 rsync -auz -e ssh
root@172.16.2.10:/www/* /md1200/www/Thursday/
18572 18616 18566 18566 ?           -1 S        0   0:02 ssh -l root 172.16.2.10
rsync --server --sender -ulogDtprze.iLsf . /www/*
13841 19071 13841 13841 ?           -1 SNl   1000  87:53
../../projects/setiathome.berkeley.edu/setiathome-5.28.x86_64-pc-linux-gnu
13841 19072 13841 13841 ?           -1 SNl   1000  88:08
../../projects/setiathome.berkeley.edu/setiathome-5.28.x86_64-pc-linux-gnu
13841 19073 13841 13841 ?           -1 SNl   1000  88:04
../../projects/setiathome.berkeley.edu/setiathome-5.28.x86_64-pc-linux-gnu
13841 19074 13841 13841 ?           -1 SNl   1000  87:42
../../projects/setiathome.berkeley.edu/setiathome-5.28.x86_64-pc-linux-gnu
    1 22633 22632 22632 ?           -1 SN     114   0:00 /usr/sbin/zabbix_agentd
22633 22635 22632 22632 ?           -1 SN     114 483:39 /usr/sbin/zabbix_agentd
22633 22636 22632 22632 ?           -1 SN     114  45:23 /usr/sbin/zabbix_agentd
22633 22637 22632 22632 ?           -1 SN     114  44:51 /usr/sbin/zabbix_agentd
22633 22638 22632 22632 ?           -1 SN     114  44:45 /usr/sbin/zabbix_agentd
22633 22639 22632 22632 ?           -1 SN     114  45:02 /usr/sbin/zabbix_agentd
22633 22640 22632 22632 ?           -1 SN     114  44:36 /usr/sbin/zabbix_agentd
22633 22641 22632 22632 ?           -1 SN     114   6:09 /usr/sbin/zabbix_agentd
14479 25203 14479 14479 ?           -1 S      111   0:00 pickup -l -t fifo -u -c
    1 27680 27680 27680 ?           -1 Ss     113  14:34 /usr/sbin/ntpd -p
/var/run/ntpd.pid -g -u 113:122
  960 28801 28801 28801 ?           -1 Ss       0   0:00 sshd: root@pts/0
28801 28866 28866 28866 pts/0    29991 Ss       0   0:00 -bash
  343 29055   343   343 ?           -1 S<       0   0:19 udevd --daemon
28866 29991 29991 28866 pts/0    29991 S+       0   0:00 ssh 172.16.1.3
  960 29992 29992 29992 ?           -1 Ss       0   0:00 sshd: root@pts/1
29992 30057 30057 30057 pts/1    30109 Ss       0   0:00 -bash
30057 30109 30109 30057 pts/1    30109 R+       0   0:00 ps jax
```

2.4. zombie process

```
ps aux | awk '{ print $8 " " $2 }' | grep -w Z
```

3. mpstat

```
# mpstat -P ALL 60
Linux 2.6.18-194.el5 (localhost)        09/20/2010

05:48:55 PM  CPU   %user   %nice    %sys %iowait    %irq   %soft  %steal   %idle
intr/s
05:49:55 PM  all   17.42    0.00    0.25    0.21    0.04    0.34    0.00   81.74
2622.21
05:49:55 PM    0    5.85    0.00    0.27    0.25    0.00    0.05    0.00   93.58
1000.50
05:49:55 PM    1    7.55    0.00    0.15    0.33    0.02    0.07    0.00   91.88
7.54
05:49:55 PM    2   13.64    0.00    0.23    0.03    0.00    0.10    0.00   86.00
0.00
05:49:55 PM    3   14.05    0.00    0.23    0.45    0.00    0.08    0.00   85.18
0.00
05:49:55 PM    4    7.72    0.00    0.20    0.28    0.00    0.05    0.00   91.74
9.59
05:49:55 PM    5    2.83    0.00    0.13    0.02    0.00    0.05    0.00   96.97
0.00
05:49:55 PM    6   11.79    0.00    0.22    0.28    0.02    0.25    0.00   87.45
90.90
05:49:55 PM    7   75.96    0.00    0.60    0.02    0.25    2.05    0.00   21.12
1513.67

05:49:55 PM  CPU   %user   %nice    %sys %iowait    %irq   %soft  %steal   %idle
intr/s
05:50:55 PM  all    8.49    0.00    0.85    0.25    0.03    0.21    0.00   90.17
2193.66
05:50:55 PM    0    2.33    0.00    0.28    0.18    0.00    0.02    0.00   97.18
1000.67
05:50:55 PM    1    2.05    0.00    0.27    0.55    0.02    0.03    0.00   97.08
8.60
05:50:55 PM    2    2.85    0.00    0.73    0.38    0.00    0.10    0.00   95.93
0.00
05:50:55 PM    3    2.67    0.00    2.18    0.12    0.00    0.02    0.00   95.02
0.00
05:50:55 PM    4    4.77    0.00    0.67    0.58    0.02    0.03    0.00   93.93
11.29
05:50:55 PM    5    1.63    0.00    1.42    0.13    0.00    0.02    0.00   96.80
0.00
05:50:55 PM    6    2.20    0.00    0.58    0.00    0.05    0.18    0.00   96.98
245.62
05:50:55 PM    7   49.41    0.00    0.63    0.08    0.17    1.28    0.00   48.42
927.50

05:50:55 PM  CPU   %user   %nice    %sys %iowait    %irq   %soft  %steal   %idle
intr/s
05:51:55 PM  all   36.61    0.00    0.46    0.19    0.06    0.64    0.00   62.03
3566.81
05:51:55 PM    0   25.53    0.00    0.43    0.03    0.00    0.23    0.00   73.77
1000.52
05:51:55 PM    1   17.64    0.00    0.33    0.28    0.02    0.12    0.00   81.61
7.75
05:51:55 PM    2   40.56    0.00    0.48    0.30    0.00    0.30    0.00   58.35
0.00
05:51:55 PM    3   46.88    0.00    0.52    0.15    0.00    0.27    0.00   52.18
0.00
05:51:55 PM    4   29.60    0.00    0.45    0.52    0.00    0.22    0.00   69.21
8.99
05:51:55 PM    5   10.72    0.00    0.37    0.17    0.00    0.12    0.00   88.63
0.00
05:51:55 PM    6   40.83    0.00    0.48    0.05    0.03    0.35    0.00   58.25
111.15
05:51:55 PM    7   81.11    0.00    0.63    0.02    0.42    3.57    0.00   14.25
2438.40
```

4. pstree - display a tree of processes

```
$ pstree
init─┬─NetworkManager
     ├─NetworkManagerD
     ├─acpid
     ├─atd
     ├─avahi-daemon───avahi-daemon
     ├─console-kit-dae───61*[{console-kit-dae}]
     ├─cron
     ├─cupsd
     ├─dbus-daemon
     ├─dd
     ├─dhcdbd
     ├─dhclient3
     ├─exim4
     ├─gconfd-2
     ├─gdm───gdm───kill
     ├─5*[getty]
     ├─gnump3d
     ├─hald───hald-runner─┬─hald-addon-acpi
     │                    └─hald-addon-inpu
     ├─hcid───2*[bluetoothd-serv]
     ├─klogd
     ├─lighttpd───2*[php-cgi───4*[php-cgi]]
     ├─login───bash───pstree
     ├─nmbd
     ├─postgres───4*[postgres]
     ├─rsync
     ├─smbd───2*[smbd]
     ├─sshd
     ├─syslogd
     ├─system-tools-ba
     ├─udevd
     ├─xinetd
     └─xinit─┬─Xorg
             └─sh───gksu───xfailsafedialog
```

5. pid

```
$ pgrep lighttpd
6045
```

pkill

```
$ sudo pkill lighttpd
```

kill TTY

```
[root@development ~]# w
 16:07:37 up 1 day,  6:23,  6 users,  load average: 0.00, 0.06, 0.26
USER     TTY      FROM              LOGIN@   IDLE   JCPU   PCPU WHAT
develope pts/0    192.168.3.33     16:01    5:45   0.01s  0.01s -bash
jeecen   pts/1    192.168.3.129    09:30    7:40   0.00s  0.00s -bash
jeson    pts/2    192.168.3.101    11:27   42:47   0.03s  0.03s -bash
develope pts/3    192.168.3.31     16:03    4:33   0.00s  0.00s -bash
root     pts/5    172.16.0.1       14:55    1:03m  0.01s  0.01s -bash
root     pts/6    172.16.0.1       15:47    0.00s  0.03s  0.00s w
[root@development ~]# pkill -kill -t pts/3
```

6. jobs

6.1. &

usage: command &

```
$ grep -r 'neo' / > result &
[1] 10414
```

6.2. Ctrl + Z

```
vim

$ vim

[2]+  Stopped                 vim


mutt

$ mutt

[3]+  Stopped                 mutt
```

6.3. jobs

```
$ jobs
[1]   Running                 grep -r 'neo' / > result &
[2]-  Stopped                 vim
[3]+  Stopped                 mutt
```

6.4. fg / bg

usage: fg [job_spec]

```
$ fg 2
```

usage: bg [job_spec ...]

```
$ cp -r /usr/ /tmp/
Ctrl + Z
[1]+  Stopped                 cp -r /usr/ /tmp/

$ bg
[1]+ cp -r /usr/ /tmp/ &

$ fg
cp -r /usr/ /tmp/
```

6.5. nohup - run a command immune to hangups, with output to a non-tty

```
nohup command > myout.file 2>&1 &
nohup command >/dev/null 2>/dev/null &
nohup command &>/dev/null
```

You may using 'jobs' to display task.

and using 'fg %n' to close that.

---

7. ionice - get/set program io scheduling class and priority

```
EXAMPLES
       # ionice -c3 -p89

       Sets process with PID 89 as an idle io process.

       # ionice -c2 -n0 bash

       Runs 'bash' as a best-effort program with highest priority.

       # ionice -p89

       Returns the class and priority of the process with PID 89.
```

第 22 章 Authentication

目录

1. User

1.1. Add a new user

```
$ adduser neo
```

1.2. remove an existed user

remove an existed user, but keeping directory /home/neo

```
$ userdel neo
```

delete user's directory under /home when removing an existed user

```
$ userdel -r neo
```

1.3. usermod - modify a user account

```
usermod -G group -a user

[root@scientific ~]# groupadd vm
[root@scientific ~]# adduser xen
[root@scientific ~]# usermod -G vm -a xen
[root@scientific ~]# usermod -G vm -a kvm
[root@scientific ~]# id xen
uid=501(xen) gid=502(xen) groups=502(xen),501(vm)
```

1.4. lock / unlock

```
passwd -l neo
```

```
passwd -u neo
```

1.4.1. /etc/passwd

```
[root@test ~]# cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
news:x:9:13:news:/etc/news:
uucp:x:10:14:uucp:/var/spool/uucp:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
gopher:x:13:30:gopher:/var/gopher:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:99:99:Nobody:/:/sbin/nologin
nscd:x:28:28:NSCD Daemon:/:/sbin/nologin
vcsa:x:69:69:virtual console memory owner:/dev:/sbin/nologin
pcap:x:77:77::/var/arpwatch:/sbin/nologin
rpc:x:32:32:Portmapper RPC user:/:/sbin/nologin
mailnull:x:47:47::/var/spool/mqueue:/sbin/nologin
smmsp:x:51:51::/var/spool/mqueue:/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/var/empty/sshd:/sbin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
nfsnobody:x:4294967294:4294967294:Anonymous NFS User:/var/lib/nfs:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
avahi:x:70:70:Avahi daemon:/:/sbin/nologin
haldaemon:x:68:68:HAL daemon:/:/sbin/nologin
avahi-autoipd:x:100:102:avahi-autoipd:/var/lib/avahi-autoipd:/sbin/nologin
neo:x:500:500::/home/neo:/bin/bash
mysql:x:501:501::/home/mysql:/bin/bash
```

2. Group

2.1. Add a new group

```
$ groupadd newgroup
```

2.2. Add a user to the group

```
$ groupadd mygroup
$ sudo usermod -a -G mygroup user
```

2.3. /etc/group

```
[root@test ~]# cat /etc/group
root:x:0:root
bin:x:1:root,bin,daemon
daemon:x:2:root,bin,daemon
sys:x:3:root,bin,adm
adm:x:4:root,adm,daemon
tty:x:5:
disk:x:6:root
lp:x:7:daemon,lp
mem:x:8:
kmem:x:9:
wheel:x:10:root
mail:x:12:mail
news:x:13:news
uucp:x:14:uucp
man:x:15:
games:x:20:
gopher:x:30:
dip:x:40:
ftp:x:50:
lock:x:54:
nobody:x:99:
users:x:100:
nscd:x:28:
floppy:x:19:
vcsa:x:69:
pcap:x:77:
utmp:x:22:
utempter:x:35:
slocate:x:21:
audio:x:63:
rpc:x:32:
mailnull:x:47:
smmsp:x:51:
ecryptfs:x:101:
sshd:x:74:
rpcuser:x:29:
nfsnobody:x:4294967294:
dbus:x:81:
avahi:x:70:
haldaemon:x:68:
avahi-autoipd:x:102:
neo:x:500:
mysql:x:501:
```

第 23 章 Permission

目录

1. umask

```
[root@development ~]# umask
0022
[root@development ~]# umask -S
u=rwx,g=rx,o=rx
```

设置

```
umask 002
```

2. Access Permissions

2.1. chown - change file owner and group

chown - change file owner and group

```
[root@test ~]# touch test
[root@test ~]# adduser neo
[root@test ~]# chown neo test
[root@test ~]# ll test
-rw-r--r-- 1 neo root 0 Apr 19 18:15 test
```

2.2. chgrp - change group ownership

chgrp - change group ownership

```
# chgrp daemon -R *

# ll
drwxrwxr-x  3 neo  daemon      4096 Apr 16 18:23 user
```

2.3. chmod - change file access permissions

option

```
u = user
g = group
o = other
a = all

r = 4
w = 2
x = 1
```

```
[root@test ~]# ll test
-rwxr--r-- 1 neo root 0 Apr 19 18:15 test
[root@test ~]# chmod g=x test
[root@test ~]# ll test
-rwx--xr-- 1 neo root 0 Apr 19 18:15 test
[root@test ~]# chmod go+w test
[root@test ~]# ll test
-rwx-wxrw- 1 neo root 0 Apr 19 18:15 test
[root@test ~]# chmod u-wx test
[root@test ~]# ll test
-r---wxrw- 1 neo root 0 Apr 19 18:15 test
[root@test ~]# chmod u=rwx test
[root@test ~]# ll test
-rwx-wxrw- 1 neo root 0 Apr 19 18:15 test
[root@test ~]# chmod a=rwx test
[root@test ~]# ll test
-rwxrwxrwx 1 neo root 0 Apr 19 18:15 test
```

3. chattr - change file attributes on a Linux second extended file system

```
[root@development ~]# chattr +i /etc/passwd
[root@development ~]# lsattr /etc/passwd
----i-------- /etc/passwd
```

```
[root@development ~]# chattr -i /etc/passwd
[root@development ~]# lsattr /etc/passwd
------------ /etc/passwd
```

4. su - run a shell with substitute user and group IDs

Change the effective user id and group id to that of USER.

```
[neo@development ~]$ su - root
```

```
[neo@development ~]$ su root -c "rm -rf linux/"
```

4.1. sudo, sudoedit - execute a command as another user

```
debian:~# apt-get install sudo
```

/etc/sudoers

```
# /etc/sudoers
#
# This file MUST be edited with the 'visudo' command as root.
#
# See the man page for details on how to write a sudoers file.
#

Defaults        env_reset

# Host alias specification

# User alias specification

# Cmnd alias specification

# User privilege specification
root    ALL=(ALL) ALL

# Uncomment to allow members of group sudo to not need a password
# (Note that later entries override this, so you might need to move
# it further down)
%sudo ALL=NOPASSWD: ALL
```

sudo group

```
neo@debian:/etc/mysql$ cat /etc/group | grep 'sudo'
sudo:x:27:neo
```

ubuntu NOPASSWD

```
%admin ALL=(ALL)ALL
改为
%admin ALL=(ALL) NOPASSWD: NOPASSWD: ALL
```

5. ACL - Access Control List

```
$ sudo modprobe loop
$ dd if=/dev/zero of=file bs=1k count=100
$ sudo losetup /dev/loop0 file
$ sudo mkfs.ext3 /dev/loop0
$ sudo mkdir /mnt/loop
$ sudo mount -o rw,acl /dev/loop0 /mnt/loop/
$ sudo chown neo.neo -R /mnt/loop
$ cd /mnt/loop/
```

5.1. getfacl - get file access control lists

UGO

```
$ touch file
$ ls -l file
-rw-r--r-- 1 neo neo 0 2008-12-22 15:28 file
```

ACL

```
$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
group::r--
other::r--
```

display the default access control list only

```
neo@netkiller:/mnt/loop$ getfacl  dir
# file: dir
# owner: neo
# group: neo
user::rwx
group::r-x
other::r-x
default:user::rwx
default:user:svnroot:rw-
default:group::r-x
default:group:nagios:rw-
default:mask::rwx
default:other::r-x

neo@netkiller:/mnt/loop$ getfacl -d dir
# file: dir
# owner: neo
# group: neo
user::rwx
user:svnroot:rw-
group::r-x
group:nagios:rw-
mask::rwx
other::r-x
```

recurse into subdirectories

```
$ getfacl -R dir
# file: dir
```

```
# owner: neo
# group: neo
user::rwx
group::r-x
other::r-x
default:user::rwx
default:user:svnroot:rw-
default:group::r-x
default:group:nagios:rw-
default:mask::rwx
default:other::r-x

# file: dir/file1
# owner: neo
# group: neo
user::rw-
user:svnroot:rw-
group::r-x                      #effective:r--
group:nagios:rw-
mask::rw-
other::r--
```

5.2. setfacl - set file access control lists

5.2.1. set

add a user svnroot to file

```
neo@netkiller:/mnt/loop$ setfacl -m u:svnroot:rw file
```

if you can see a '+' at last, it's successed

```
$ ls -l file
-rw-rw-r--+ 1 neo neo 0 2008-12-22 15:44 file
```

let me see acl.

```
neo@netkiller:/mnt/loop$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
user:svnroot:rw-
group::r--
mask::rw-
other::r--
```

add a user cvsroot to file again

```
neo@netkiller:/mnt/loop$ setfacl -m u:cvsroot:rw file
neo@netkiller:/mnt/loop$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
user:cvsroot:rw-
user:svnroot:rw-
group::r--
mask::rw-
other::r--
```

add a user and group for that

```
neo@netkiller:/mnt/loop$ setfacl -m u:gnump3d:rwx,g:nagios:r file
neo@netkiller:/mnt/loop$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
user:gnump3d:rwx
```

```
user:cvsroot:rw-
user:svnroot:rw-
group::r--
group:nagios:r--
mask::rwx
other::r--
```

modify the current ACL(s) of file(s)

```
neo@netkiller:/mnt/loop$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
user:svnroot:rw-
group::r--
mask::rw-
other::r--

neo@netkiller:/mnt/loop$ setfacl -m u:svnroot:r-x file
neo@netkiller:/mnt/loop$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
user:svnroot:r-x
group::r--
mask::r-x
other::r--
```

5.2.2. default

```
neo@netkiller:/mnt/loop$ setfacl -d -m u:svnroot:rw dir/
neo@netkiller:/mnt/loop$ getfacl dir/
# file: dir
# owner: neo
# group: neo
user::rwx
group::r-x
other::r-x
default:user::rwx
default:user:svnroot:rw-
default:group::r-x
default:mask::rwx
default:other::r-x

neo@netkiller:/mnt/loop$ setfacl -d -m g:nagios:rw dir/
neo@netkiller:/mnt/loop$ getfacl dir/
# file: dir
# owner: neo
# group: neo
user::rwx
group::r-x
other::r-x
default:user::rwx
default:user:svnroot:rw-
default:group::r-x
default:group:nagios:rw-
default:mask::rwx
default:other::r-x
```

the file1 will inherit acl by default.

```
neo@netkiller:/mnt/loop$ touch dir/file1
neo@netkiller:/mnt/loop$ getfacl dir/file1
# file: dir/file1
# owner: neo
# group: neo
user::rw-
user:svnroot:rw-
group::r-x                      #effective:r--
group:nagios:rw-
mask::rw-
other::r--
```

5.2.3. remove

remove entries from the ACL(s) of file(s)

```
neo@netkiller:/mnt/loop$ setfacl -x u:cvsroot file
neo@netkiller:/mnt/loop$ setfacl -x g:nagios file
neo@netkiller:/mnt/loop$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
user:gnump3d:rwx
user:svnroot:rw-
group::r--
mask::rwx
other::r--
```

remove all extended ACL entries

```
neo@netkiller:/mnt/loop$ setfacl -b file
neo@netkiller:/mnt/loop$ getfacl file
# file: file
# owner: neo
# group: neo
user::rw-
group::r--
other::r--
```

5.3. backup and restore

backup

```
$ getfacl -R dir > dir.acl
```

restore

```
$ setfacl --restore dir.acl
```

第 24 章 TUI

目录

1. tmux

http://tmux.sourceforge.net/

2. htop - interactive process viewer

3. elinks

4. chat

finch,irssi

部分 III. X Window

目录

http://www.freedesktop.org

第 25 章 install x window

```
# yum groupinstall "X Window System" Desktop "Desktop Platform" Font
```

修改/etc/inittab文件id:5:initdefault:

目录

1. 取消开机启动画面

splash 改为 nosplash

```
sudo vim /boot/grub/menu.lst
```

```
title           Ubuntu 8.10, kernel 2.6.24-22-generic
root            (hd0,0)
kernel          /boot/vmlinuz-2.6.24-22-generic root=UUID=66320533-a53d-4740-b7f0-ed0c294802ea ro
quiet splash
initrd          /boot/initrd.img-2.6.24-22-generic
quiet
```

2. Automatic login

```
$ sudo vim gdm.conf-custom

[daemon]
AutomaticLoginEnable=true
AutomaticLogin=neo
TimedLogin=neo
```

3. fonts 字体

```
# mkdir -p /usr/share/fonts/zh_CN/TrueType/
# cp -r Fonts/* /usr/share/fonts/zh_CN/TrueType/
# chmod 644 /usr/share/fonts/zh_CN/TrueType/*
# cd /usr/share/fonts/zh_CN/TrueType/
# mkfontscale
# mkfontdir
# fc-cache /usr/share/fonts/zh_CN/TrueType/
```

4. disable x window

```
$ sudo chmod 600 /etc/init.d/gdm
```

第 27 章 X Terminal

目录

1. tsclient - Terminal Server Client supporting XDMCP, VNC and RDP

1.1. VNC

让tsclient支持vnc协议

```
sudo apt-get install xtightvncviewer
```

1.2. xdmcp

让tsclient支持xdmcp协议

```
sudo apt-get install xnest
```

2. vinagre - a remote desktop viewer for the GNOME Desktop

```
$ vinagre
```

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3. rdesktop - A Remote Desktop Protocol client

http://www.rdesktop.org/

$ rdesktop -g 800x600 -d 16 yourdomain.com/ip address

下载 http://www.cendio.se/files/thinlinc/seamlessrdp/seamlessrdp.zip，并解压到C盘根目录下，C:\seamlessrdp，然后就登出；

```
rdesktop -A -s "c:\seamlessrdp\seamlessrdpshell.exe C:\Program Files\Internet Explorer\iexplore.exe" 192.168.0.10:3389 -u administrator -p 123456
```

即可打开IE

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2. vinagre - a remote desktop viewer for the GNOME Desktop

起始页

4. TightVNC

4. TightVNC

http://www.tightvnc.com/

第 28 章 X Window System

目录

1. Fluxbox

http://www.fluxbox.org/

2. LXDE

http://www.lxde.org

3. Xfce

http://www.xfce.org/

4. Xming X Server for Windows

http://sourceforge.net/projects/xming/

第 29 章 X Application Software

目录

1. Firefox

配置firefox选项

在Firefox的地址栏中输入about:config

2. Download Software

```
- Downloader for X
- MultiGet
```

3. PAC Manager

https://sourceforge.net/projects/pacmanager/files/

4. LibreOffice

5. VYM (View Your Mind)

```
yum install vym
```

6. greenshot

http://sourceforge.net/projects/greenshot/

```
greenshot
```

第 30 章 Office

目录

1. Calc

1.1. 函数

字符串拼接

```
=CONCATENATE("text1";A1;"text2";D2)
```

```
="text1"&A1
```

第 31 章 Open Source Distributed Computing

目录

1. Boinc (berkeley 分布式计算平台)

下载Boinc

$ wget http://boinc.berkeley.edu/dl/boinc_5.6.4_i686-pc-linux-gnu.sh

```
netkiller@Linux-server:~$ wget http://boinc.berkeley.edu/dl/boinc_5.6.4_i686-pc-
linux-gnu.sh
--11:02:36--  http://boinc.berkeley.edu/dl/boinc_5.6.4_i686-pc-linux-gnu.sh
           => `boinc_5.6.4_i686-pc-linux-gnu.sh'
Resolving boinc.berkeley.edu... 128.32.18.189
Connecting to boinc.berkeley.edu|128.32.18.189|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3,205,541 (3.1M) [application/x-sh]

100%[====================================>] 3,205,541      8.95K/s    ETA 00:00

11:08:45 (8.53 KB/s) - `boinc_5.6.4_i686-pc-linux-gnu.sh' saved [3205541/3205541]
```

$ chmod +x boinc_5.6.4_i686-pc-linux-gnu.sh$ ./boinc_5.6.4_i686-pc-linux-gnu.sh

```
netkiller@Linux-server:~$ chmod +x boinc_5.6.4_i686-pc-linux-gnu.sh
netkiller@Linux-server:~$ ./boinc_5.6.4_i686-pc-linux-gnu.sh
use /home/netkiller/BOINC/run_manager to start BOINC
netkiller@Linux-server:~$ ls
BOINC  boinc_5.6.4_i686-pc-linux-gnu.sh  public_html  www
netkiller@Linux-server:~$ cd BOINC/
netkiller@Linux-server:~/BOINC$ ls
binstall.sh  boincmgr            boincmgr.8x8.png  run_client
boinc        boincmgr.16x16.png  ca-bundle.crt     run_manager
boinc_cmd    boincmgr.32x32.png  locale
netkiller@Linux-server:~/BOINC$
```

添加项目

```
$ ./boinc --attach_project http://setiathome.berkeley.edu/
3d996959b1f88df43048f87c3c0c999f
```

运行Boinc

./boinc -daemon -no_gui_rpc

1.1. rc.local

```
/home/neo/BOINC/run_client --daemon
```

2. ubuntu apt-get 安装

```
netkiller@shenzhen:~/BOINC$ apt-cache search boinc
boinc-app-seti - SETI@home application for the BOINC client
boinc-client - core client for the BOINC distributed computing infrastructure
boinc-dev - development files to build applications for BOINC projects
boinc-manager - GUI to control and monitor the BOINC core client
kboincspy - monitoring utility for the BOINC client
kboincspy-dev - development files for KBoincSpy plugins
netkiller@shenzhen:~/BOINC$

安装
netkiller@shenzhen:~/BOINC$ sudo apt-get install boinc-client

拷贝现有的account文件
netkiller@shenzhen:~/BOINC$ cp account_* /var/lib/boinc-client/

重新启动
netkiller@shenzhen:~/BOINC$ /etc/init.d/boinc-client restart
```

3. boinccmd

```
# ./boinccmd

usage: boinccmd [--host hostname] [--passwd passwd] command

Commands:
 --lookup_account URL email passwd
 --create_account URL email passwd name
 --project_attach URL auth          attach to project
 --join_acct_mgr URL name passwd    attach account manager
 --quit_acct_mgr                    quit current account manager
 --get_state                        show entire state
 --get_results                      show results
 --get_simple_gui_info              show status of projects and active results
 --get_file_transfers               show file transfers
 --get_project_status               show status of all attached projects
 --get_disk_usage                   show disk usage
 --get_proxy_settings
 --get_messages [ seqno ]           show messages > seqno
 --get_message_count                show largest message seqno
 --get_host_info
 --version, -V                      show core client version
 --result url result_name op        job operation
   op = suspend | resume | abort | graphics_window | graphics_fullscreen
 --project URL op                   project operation
   op = reset | detach | update | suspend | resume | nomorework | allowmorework
 --file_transfer URL filename op    file transfer operation
   op = retry | abort
 --set_run_mode mode duration       set run mode for given duration
   mode = always | auto | never
 --set_gpu_mode mode duration       set GPU run mode for given duration
   mode = always | auto | never
 --set_network_mode mode duration
 --set_proxy_settings
 --run_benchmarks
 --read_global_prefs_override
 --quit
 --read_cc_config
 --set_debts URL1 std1 ltd1 [URL2 std2 ltd2 ...]
 --get_project_config URL
 --get_project_config_poll
 --network_available
 --get_cc_status
```

3.1. attach_project

添加计算项目

```
$ ./boinc --attach_project http://setiathome.berkeley.edu/
3d996959b1f88df43048f87c3c0c999f
$ ./boinc --attach_project www.worldcommunitygrid.org
dad152cf8f8fbdc52b04d4eeaa43e1ca
$ ./boinc --attach_project http://climateprediction.net/
4070a202cd5a559ec9d044cffc156fa4
$ ./boinc --attach_project http://einstein.phys.uwm.edu/
f9d5ee6d433a6949599f91dd7d9ceb8e
$ ./boinc --attach_project http://milkyway.cs.rpi.edu/milkyway/
f2fa96fb4f72df925cba92c34031768d
$ ./boinc --attach_project http://boinc.iaik.tugraz.at/sha1_coll_search/
0017d38d9c4a944caa8dad0b82b3f6a6
$ ./boinc --attach_project http://lhcathome.cern.ch/lhcathome/
132e3b1b159af3c36c98056f9197dd8a
$ ./boinc --attach_project http://boinc.bakerlab.org/rosetta/
6ed4722aa62a9df5dd341e0b3b77d812
```

```
./boinccmd --project_attach http://einstein.phys.uwm.edu/
f9d5ee6d433a6949599f91dd7d9ceb8e
./boinccmd --project_attach http://boinc.bakerlab.org/rosetta/
6ed4722aa62a9df5dd341e0b3b77d812
```

3.2. nomorework | allowmorework 禁止下载任务 / 允许下载任务

```
./boinccmd --project http://boinc.bakerlab.org/rosetta/ nomorework
./boinccmd --project http://milkyway.cs.rpi.edu/milkyway/ nomorework
./boinccmd --project http://einstein.phys.uwm.edu/ nomorework
./boinccmd --project http://setiathome.berkeley.edu/ nomorework
```

```
./boinccmd --project http://setiathome.berkeley.edu/ allowmorework
```

附录 A. 附录

目录

1. Linux 下载排名

http://distrowatch.com/

附录 B. 历史记录

修订历史

修订 1.0 2009-11-01

- 这篇文档出自《Netkiller Linux 手札》的系统配置篇
- 考虑到《Netkiller Linux 手札》过于臃肿，故将ubuntu linux系统配置部分分离出来作为系统篇。而《Netkiller Linux 手札》专注于各种服务器的配置。