Netkiller Linux Storage 手札

File System, Network File System, Distributed Filesystem...

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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

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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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Download PDF Document 下载PDF文档2

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

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网易泡泡：很少开

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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ZONE CQ24 ITU44 ShenZhen, China

Best Regards, VY 73! OP. BG7NYT

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第 1 章 Logical Volume Manager (LVM)

目录

vg,lv命名规则，建议采用：

1. /dev/vg00/lvol00

2. /dev/VolGroup00/LogVol00

lvm 创建流程 pvcreate - vgcreate - lvcreate

```
# pvcreate /dev/sdb4
  Physical volume "/dev/sdb4" successfully created

# vgcreate vg1 /dev/sdb4
  Volume group "vg1" successfully created

# lvcreate -l 10239 -n lv0 vg1
  Logical volume "lv0" created
```

1. 物理卷管理（physical volume）

1.1. pvcreate

将整个硬盘划为物理卷

```
# pvcreate /dev/hdb
```

将单个分区创建为物理卷的命令为:

```
# pvcreate /dev/hda5
```

实例

```
# pvcreate /dev/sdb4
  Physical volume "/dev/sdb4" successfully created
```

1.2. pvdisplay

```
# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sdb4
  VG Name               vg1
  PV Size               1.02 TiB / not usable 4.90 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              267301
  Free PE               257062
  Allocated PE          10239
  PV UUID               g2xLQ8-7tgm-iNZc-8dVq-vo3z-CFJp-LryYAs
```

1.3. pvs

```
# pvs
  PV         VG   Fmt  Attr PSize PFree
  /dev/sdb4  vg1  lvm2 a-   1.02t 1004.15g
```

---

2. 卷组管理（Volume Group）

2.1. vgcreate

```
# vgcreate vg1 /dev/sdb4
  Volume group "vg1" successfully created
```

2.2. vgdisplay

```
# vgdisplay
  --- Volume group ---
  VG Name               vg1
  System ID
  Format                lvm2
  Metadata Areas        1
  Metadata Sequence No  2
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                1
  Open LV               0
  Max PV                0
  Cur PV                1
  Act PV                1
  VG Size               1.02 TiB
  PE Size               4.00 MiB
  Total PE              267301
  Alloc PE / Size       10239 / 40.00 GiB
  Free  PE / Size       257062 / 1004.15 GiB
  VG UUID               Kxd02t-mFtJ-nThA-Lciy-zI2A-Dwzq-2nJoVh
```

2.3. vgs

```
# vgs
  VG   #PV #LV #SN Attr   VSize VFree
  vg1    1   1   0 wz--n- 1.02t 1004.15g
```

2.4. vgchange

激活卷组

```
# vgchange -a y vg1
```

2.5. vgextend

```
vgextend vg1 /dev/sdb3
```

```
# vgdisplay
  --- Volume group ---
  VG Name               vg1
  System ID
  Format                lvm2
  Metadata Areas        1
  Metadata Sequence No  2
  VG Access             read/write
  VG Status             resizable
```

```
  MAX LV                0
  Cur LV                1
  Open LV               0
  Max PV                0
  Cur PV                1
  Act PV                1
  VG Size               1.02 TiB
  PE Size               4.00 MiB
  Total PE              267301
  Alloc PE / Size       10239 / 40.00 GiB
  Free  PE / Size       257062 / 1004.15 GiB
  VG UUID               Kxd02t-mFtJ-nThA-Lciy-zI2A-Dwzq-2nJoVh

# vgs
  VG   #PV #LV #SN Attr   VSize VFree
  vg1    1   1   0 wz--n- 1.02t 1004.15g

# vgextend vg1 /dev/sdb3
  No physical volume label read from /dev/sdb3
  Physical volume "/dev/sdb3" successfully created
  Volume group "vg1" successfully extended

# vgdisplay
  --- Volume group ---
  VG Name               vg1
  System ID
  Format                lvm2
  Metadata Areas        2
  Metadata Sequence No  3
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                1
  Open LV               0
  Max PV                0
  Cur PV                2
  Act PV                2
  VG Size               1.51 TiB
  PE Size               4.00 MiB
  Total PE              395303
  Alloc PE / Size       10239 / 40.00 GiB
  Free  PE / Size       385064 / 1.47 TiB
  VG UUID               Kxd02t-mFtJ-nThA-Lciy-zI2A-Dwzq-2nJoVh

# vgs
  VG   #PV #LV #SN Attr   VSize VFree
  vg1    2   1   0 wz--n- 1.51t 1.47t

  # pvdisplay
  --- Physical volume ---
  PV Name               /dev/sdb4
  VG Name               vg1
  PV Size               1.02 TiB / not usable 4.90 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              267301
  Free PE               257062
  Allocated PE          10239
  PV UUID               g2xLQ8-7tgm-iNZc-8dVq-vo3z-CFJp-LryYAs

  --- Physical volume ---
  PV Name               /dev/sdb3
  VG Name               vg1
  PV Size               500.01 GiB / not usable 1.12 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              128002
  Free PE               128002
  Allocated PE          0
  PV UUID               77RRJm-e4iz-Zfos-ZYHT-XEBa-AZ7D-Yd7fdU
```

2.6. vgreduce

```
# vgreduce vg1 /dev/sdb3
  Removed "/dev/sdb3" from volume group "vg1"

# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sdb4
  VG Name               vg1
```

```
  PV Size               1.02 TiB / not usable 4.90 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              267301
  Free PE               257062
  Allocated PE          10239
  PV UUID               g2xLQ8-7tgm-iNZc-8dVq-vo3z-CFJp-LryYAs

  "/dev/sdb3" is a new physical volume of "500.01 GiB"
  --- NEW Physical volume ---
  PV Name               /dev/sdb3
  VG Name
  PV Size               500.01 GiB
  Allocatable           NO
  PE Size               0
  Total PE              0
  Free PE               0
  Allocated PE          0
  PV UUID               77RRJm-e4iz-Zfos-ZYHT-XEBa-AZ7D-Yd7fdU
```

3. 逻辑卷管理（logical volume）

3.1. lvcreate

创建1000M逻辑卷

```
# lvcreate -l 1000 -n lv0 vg1
  Logical volume "lv0" created

# ls /dev/vg1/lv0
```

使用-L参数

```
# lvcreate -L 100G -n lv3 vg1
  Logical volume "lv3" created
```

3.1.1. snapshot

```
# lvcreate --size 16m --snapshot --name snap0 /dev/vg1/lv0
  Logical volume "snap0" created

# find /dev/vg1/
/dev/vg1/
/dev/vg1/snap0
/dev/vg1/lv3
/dev/vg1/lv1
/dev/vg1/lv0
```

3.2. lvdisplay

```
# lvdisplay
  --- Logical volume ---
  LV Name                /dev/vg1/lv0
  VG Name                vg1
  LV UUID                DyvPgz-VFjs-gu58-mxNX-ybCm-tcUP-kKk90y
  LV Write Access        read/write
  LV Status              available
  # open                 0
  LV Size                40.00 GiB
  Current LE             10239
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:0

  --- Logical volume ---
  LV Name                /dev/vg1/lv1
  VG Name                vg1
  LV UUID                8Nbuio-w2CH-euVD-9LNB-3Dcd-frS0-Cm3EBD
  LV Write Access        read/write
  LV Status              available
  # open                 0
  LV Size                3.91 GiB
  Current LE             1000
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:1
```

3.3. lvremove

```
# lvcreate -l 1000 -n lv1 vg1
  Logical volume "lv1" created

# lvdisplay
  --- Logical volume ---
  LV Name                /dev/vg1/lv0
  VG Name                vg1
  LV UUID                DyvPgz-VFjs-gu58-mxNX-ybCm-tcUP-kKk90y
  LV Write Access        read/write
  LV Status              available
  # open                 0
  LV Size                40.00 GiB
  Current LE             10239
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:0

  --- Logical volume ---
  LV Name                /dev/vg1/lv1
  VG Name                vg1
  LV UUID                8Nbuio-w2CH-euVD-9LNB-3Dcd-frS0-Cm3EBD
  LV Write Access        read/write
  LV Status              available
  # open                 0
  LV Size                3.91 GiB
  Current LE             1000
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:1


# lvremove /dev/vg1/lv1
Do you really want to remove active logical volume lv1? [y/n]: y
  Logical volume "lv1" successfully removed

# lvdisplay
  --- Logical volume ---
  LV Name                /dev/vg1/lv0
  VG Name                vg1
  LV UUID                DyvPgz-VFjs-gu58-mxNX-ybCm-tcUP-kKk90y
  LV Write Access        read/write
  LV Status              available
  # open                 0
  LV Size                40.00 GiB
  Current LE             10239
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:0
```

3.3.1. snapshot

```
# lvremove /dev/vg1/snap0
Do you really want to remove active logical volume snap0? [y/n]: y
  Logical volume "snap0" successfully removed
```

4. Format

```
# mkfs.ext4 /dev/vg1/lv0
mke2fs 1.41.12 (17-May-2010)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
2621440 inodes, 10484736 blocks
524236 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=4294967296
320 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
        4096000, 7962624

Writing inode tables: done
Creating journal (32768 blocks): done
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.
```

5. mount

5.1. lv

```
# mkdir /mnt/lv0
# mount /dev/vg1/lv0 /mnt/lv0
```

5.2. snapshot

```
# find /dev/vg1/
/dev/vg1/
/dev/vg1/snap0
/dev/vg1/lv3
/dev/vg1/lv1
/dev/vg1/lv0

# mkdir /mnt/snap0
# mount /dev/vg1/snap0 /mnt/snap0
```

6. snapshot backup

dump + restore

```
1.挂载备份源www
mount /dev/vg1/www /www

2.创建快照
lvcreate -L 16m -p r -s -n www-backup /dev/vg1/www

3.挂载快照
mkdir /mnt/www-backup
mount -o ro /dev/vg1/www-backup /mnt/www-backup

4.备份快照
dump -0u -f /tmp/www-backup.dump /mnt/www-backup

5.删除快照
umount /mnt/www-backup
lvremove /dev/vg1/www-backup

6.重做www
umount /www
mkfs.ext4 /dev/vg1/www
mount /dev/vg1/www /www

7.恢复快照
cd /www
restore -rf /tmp/www-backup.dump
```

dd

```
# mount -o remount,ro /dev/VolGroup00/LogVol01
# lvcreate -L500M -s -n backup /dev/VolGroup00/LogVol01
# dd if=/dev/VolGroup00/backup of=/mnt/VolGroup01/LogVol01/
# mount -o remount,rw /dev/VolGroup00/LogVol01
# umount /mnt/VolGroup01/LogVol01
# lvremove /dev/VolGroup00/backup
```

第 2 章 Download Tools

目录

1. wget - retrieves files from the web

wget各种选项分类列表

```
* 启动
-V, –version 显示wget的版本后退出
-h, –help 打印语法帮助
-b, –background 启动后转入后台执行
-e, –execute=COMMAND 执行`.wgetrc’格式的命令，wgetrc格式参见/etc/wgetrc或~/.wgetrc
* 记录和输入文件
-o, –output-file=FILE 把记录写到FILE文件中
-a, –append-output=FILE 把记录追加到FILE文件中
-d, –debug 打印调试输出
-q, –quiet 安静模式(没有输出)
-v, –verbose 冗长模式(这是缺省设置)
-nv, –non-verbose 关掉冗长模式，但不是安静模式
-i, –input-file=FILE 下载在FILE文件中出现的URLs
-F, –force-html 把输入文件当作HTML格式文件对待
-B, –base=URL 将URL作为在-F -i参数指定的文件中出现的相对链接的前缀
–sslcertfile=FILE 可选客户端证书
–sslcertkey=KEYFILE 可选客户端证书的KEYFILE
–egd-file=FILE 指定EGD socket的文件名
* 下载
–bind-address=ADDRESS 指定本地使用地址(主机名或IP，当本地有多个IP或名字时使用)
-t, –tries=NUMBER 设定最大尝试链接次数(0 表示无限制).
-O –output-document=FILE 把文档写到FILE文件中
-nc, –no-clobber 不要覆盖存在的文件或使用.#前缀
-c, –continue 接着下载没下载完的文件
–progress=TYPE 设定进程条标记
-N, –timestamping 不要重新下载文件除非比本地文件新
-S, –server-response 打印服务器的回应
–spider 不下载任何东西
-T, –timeout=SECONDS 设定响应超时的秒数
-w, –wait=SECONDS 两次尝试之间间隔SECONDS秒
–waitretry=SECONDS 在重新链接之间等待1…SECONDS秒
–random-wait 在下载之间等待0…2*WAIT秒
-Y, –proxy=on/off 打开或关闭代理
-Q, –quota=NUMBER 设置下载的容量限制
–limit-rate=RATE 限定下载输率
* 目录
-nd –no-directories 不创建目录
-x, –force-directories 强制创建目录
-nH, –no-host-directories 不创建主机目录
-P, –directory-prefix=PREFIX 将文件保存到目录 PREFIX/…
–cut-dirs=NUMBER 忽略 NUMBER层远程目录
* HTTP 选项
–http-user=USER 设定HTTP用户名为 USER.
–http-passwd=PASS 设定http密码为 PASS.
-C, –cache=on/off 允许/不允许服务器端的数据缓存 (一般情况下允许).
-E, –html-extension 将所有text/html文档以.html扩展名保存
–ignore-length 忽略 `Content-Length’头域
–header=STRING 在headers中插入字符串 STRING
–proxy-user=USER 设定代理的用户名为 USER
```

```
–proxy-passwd=PASS 设定代理的密码为 PASS
–referer=URL 在HTTP请求中包含 `Referer: URL’头
-s, –save-headers 保存HTTP头到文件
-U, –user-agent=AGENT 设定代理的名称为 AGENT而不是 Wget/VERSION.
–no-http-keep-alive 关闭 HTTP活动链接 (永远链接).
–cookies=off 不使用 cookies.
–load-cookies=FILE 在开始会话前从文件 FILE中加载cookie
–save-cookies=FILE 在会话结束后将 cookies保存到 FILE文件中
* FTP 选项
-nr, –dont-remove-listing 不移走 `.listing’文件
-g, –glob=on/off 打开或关闭文件名的 globbing机制
–passive-ftp 使用被动传输模式 (缺省值).
–active-ftp 使用主动传输模式
–retr-symlinks 在递归的时候，将链接指向文件(而不是目录)
* 递归下载
-r, –recursive 递归下载－－慎用!
-l, –level=NUMBER 最大递归深度 (inf 或 0 代表无穷).
–delete-after 在现在完毕后局部删除文件
-k, –convert-links 转换非相对链接为相对链接
-K, –backup-converted 在转换文件X之前，将之备份为 X.orig
-m, –mirror 等价于 -r -N -l inf -nr.
-p, –page-requisites 下载显示HTML文件的所有图片
* 递归下载中的包含和不包含(accept/reject)
-A, –accept=LIST 分号分隔的被接受扩展名的列表
-R, –reject=LIST 分号分隔的不被接受的扩展名的列表
-D, –domains=LIST 分号分隔的被接受域的列表
–exclude-domains=LIST 分号分隔的不被接受的域的列表
–follow-ftp 跟踪HTML文档中的FTP链接
–follow-tags=LIST 分号分隔的被跟踪的HTML标签的列表
-G, –ignore-tags=LIST 分号分隔的被忽略的HTML标签的列表
-H, –span-hosts 当递归时转到外部主机
-L, –relative 仅仅跟踪相对链接
-I, –include-directories=LIST 允许目录的列表
-X, –exclude-directories=LIST 不被包含目录的列表
-np, –no-parent 不要追溯到父目录
```

```
setlocal ENABLEDELAYEDEXPANSION
for /l %%i in (1001,1,1162) do for /l %%j in (101,1,112) do @(
                          set s=%%i
                          set t=%%j
                          wget -O !s:~1,3!!t:~1,2!.jpg
hxxp://www.sergeaura.net/TGP/!s:~1,3!/images/!t:~1,2!.jpg)
endlocal
```

-np 的作用是不遍历父目录

-nd 不重新创建目录结构。

--accept=iso 仅下载所有扩展名为 iso 的文件

-i filename.txt 此命令常用于批量下载的情形，把所有需要下载文件的地址放到 filename.txt 中，然后 wget 就会自动为你下载所有文件了。

-c 选项的作用为断点续传。

$ wget -m -k (-H) http://www.example.com/ 该命令可用来镜像一个网站，wget 将对链接进行转换。如果网站中的图像是放在另外的站点，那么可以使用 -H 选项。

1.1. 下载所有图片

```
wget --reject=htm,html,txt --accept=jpg,gif -p -m -H http://www.example.com
wget --domains=example.com --reject=htm,html,txt --accept=jpg,gif -p -m -H
http://www.example.com
```

1.2. mirror

```
wget -m -e robots=off http://www.example.com/

wget -m -e robots=off -U "Mozilla/5.0 (Windows; U; Windows NT 5.1; zh-CN;
rv:1.9.1.6) Gecko/20091201 Firefox/3.5.6" "http://www.example.com/"
```

1.3. reject

```
wget -m --reject=gif http://target.web.site/subdirectory
```

1.4. ftp 下载

```
wget -q -c -m -P /backup/logs/cdn -nH  ftp://user:passwd@localhost/
```

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6. snapshot backup

起始页

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2. axel - A light download accelerator - Console version

2. axel - A light download accelerator - Console version

axel

```
sudo apt-get install axel
```

第 3 章 FTP (File Transfer Protocol)

目录

参考http://netkiller.8800.org/article/ftpserver/

1. lftp

1.1. pget

多线程下载

```
lftp -c 'pget http://url.example.com/file.ext' # 默认5个线程
lftp -c 'pget -n 10 http://url.example.com/file.ext'
```

1.2. lftp 批处理

```
lftp $HOSTADDR<<FTPCMD
cd $REMOTEPATH
lcd $DESTPATH
nlist > $DYNAFILE
quit
FTPCMD
```

2. ncftp

```
sudo apt-get install ncftp
ncftp ftp://neo@127.0.0.1
```

2.1. batch command

batch ftp command

```
neo@netkiller:~$ cat upload
#!/bin/bash

ncftp ftp://netkiller:******@netkiller.hikz.com/www/book/linux <<END_SCRIPT
put /home/neo/workspace/Development/public_html/book/linux/*.html
```

2.2. ncftpget

```
  ncftpget ftp.freebsd.org . /pub/FreeBSD/README.TXT /pub/FreeBSD/index.html
  ncftpget ftp.gnu.org /tmp '/pub/gnu/README.*'
  ncftpget ftp://ftp.freebsd.org/pub/FreeBSD/README.TXT
  ncftpget -R ftp.ncftp.com /tmp /ncftp  (ncftp is a directory)
  ncftpget -u gleason -p my.password Bozo.probe.net . '/home/mjg/.*rc'
  ncftpget -u gleason Bozo.probe.net . /home/mjg/foo.txt  (prompt for password)
  ncftpget -f Bozo.cfg '/home/mjg/.*rc'
  ncftpget -c ftp.freebsd.org /pub/FreeBSD/README.TXT | /usr/bin/more
  ncftpget -c ftp://ftp.freebsd.org/pub/FreeBSD/README.TXT | /usr/bin/more
  ncftpget -a -d /tmp/debug.log -t 60 ftp.wustl.edu . '/pub/README*'
```

2.3. ncftpput

```
$ ncftpput -R -u netkiller -p password netkiller.hikz.com /home/netkiller/www
~/public_html/*
```

3. FileZilla

http://filezilla-project.org/

4. vsftpd - The Very Secure FTP Daemon

```
$ sudo apt-get install vsftpd
```

test

```
[08:25:37 jobs:0] $ ncftp ftp://127.0.0.1
NcFTP 3.2.1 (Jul 29, 2007) by Mike Gleason (http://www.NcFTP.com/contact/).
Connecting to 127.0.0.1...
(vsFTPd 2.0.7)
Logging in...
Login successful.
Logged in to 127.0.0.1.
Current remote directory is /.
ncftp / >
```

enable local user

```
$ sudo vim /etc/vsftpd.conf

# Uncomment this to allow local users to log in.
local_enable=YES
chroot_local_user=YES

$ sudo /etc/init.d/vsftpd reload
```

testing for local user

```
$ ncftp ftp://neo@127.0.0.1/
NcFTP 3.2.1 (Jul 29, 2007) by Mike Gleason (http://www.NcFTP.com/contact/).
Connecting to 127.0.0.1...
(vsFTPd 2.0.7)
Logging in...
Password requested by 127.0.0.1 for user "neo".

    Please specify the password.

Password: *******

Login successful.
Logged in to 127.0.0.1.
Current remote directory is /home/neo.
ncftp /home/neo >
```

4.1. chroot

4.1.1. local user

chroot 所有本地用户

```
chroot_local_user=YES
```

4.1.2. /etc/vsftpd/chroot_list

受限用户用户添加到文件vsftpd.chroot_list

```
chroot_list_enable=YES
chroot_list_file=/etc/vsftpd/chroot_list
```

注意：每行一个用户名

4.2. test

```
adduser -o --home /www --shell /sbin/nologin --uid 99 --gid 99 --group nobody www
echo "www:chen" | chpasswd
echo www > /etc/vsftpd/chroot_list
ncftp ftp://www:chen@172.16.0.1
```

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下一页 5. ProFTPD + MySQL / OpenLDAP 用户认证

6. Pure-FTPd + LDAP + MySQL + PGSQL + Virtual-Users + Quota

参考 http://netkiller.sourceforge.net/pureftpd/

第 4 章 File Synchronize

目录

1. 跨服务器文件传输

1.1. scp - secure copy (remote file copy program)

限速1M

```
# scp -l 1000 /www/index.html root@172.16.0.1:/www
```

1.2. nc - TCP/IP swiss army knife

tar 通过nc发送到另一端

```
# Server
$ tar cf - win98 | nc -l -p 5555

# Backup Machine
nc server_ip/server_doman_name 5555 | tar xf -
```

2. rsync - fast remote file copy program (like rcp)

rsync is an open source utility that provides fast incremental file transfer. rsync is freely available under the GNU General Public License version 2 and is currently being maintained by Wayne Davison.

2.1. 安装Rsync与配置守护进程

2.1.1. install with source

过程 4.1. rsync

1. 安装rsync

   在AS3 第二张CD上找到rsync-2.5.6-20.i386.rpm

```
[root@linuxas3 root]# cd /mnt
[root@linuxas3 mnt]# mount cdrom
[root@linuxas3 mnt]# cd cdrom/RedHat/RPMS
[root@linuxas3 RPMS]# rpm -ivh rsync-2.5.6-20.i386.rpm
```

2. 配置/etc/rsyncd.conf

   在rh9,as3系统上rsync安装后,并没有创建rsyncd.conf文档，要自己创建rsyncd.conf文档

```
[root@linuxas3 root]# vi /etc/rsyncd.conf

uid=nobody
gid=nobody
max connections=5
use chroot=no
log file=/var/log/rsyncd.log
pid file=/var/run/rsyncd.pid
lock file=/var/run/rsyncd.lock
#auth users=root
secrets file=/etc/rsyncd.passwd

[postfix]
path=/var/mail
comment = backup mail
ignore errors
read only = yes
list = no
auth users = postfix

[netkiller]
path=/home/netkiller/web
comment = backup 9812.net
ignore errors
read only = yes
list = no
auth users = netkiller

[pgsqldb]
path=/var/lib/pgsql
comment = backup postgresql database
ignore errors
read only = yes
list = no
```

   a. 选项说明

```
uid = nobody
gid = nobody
use chroot = no          # 不使用chroot
max connections = 4      # 最大连接数为4
pid file = /var/run/rsyncd.pid            #进程ID文件
lock file = /var/run/rsync.lock
log file = /var/log/rsyncd.log     # 日志记录文件
secrets file = /etc/rsyncd.pwd     # 认证文件名,主要保存用户密码，权限建议设
为600，所有者root

[module]            # 这里是认证的模块名，在client端需要指定
path = /var/mail    # 需要做镜像的目录
comment = backup xxxx # 注释
ignore errors          # 可以忽略一些无关的IO错误
read only = yes        # 只读
list = no              # 不允许列文件
auth users = postfix  # 认证的用户名，如果没有这行，则表明是匿名

[other]
path = /path/to...
comment = xxxxx
```

b. 密码文件

在server端生成一个密码文件/etc/rsyncd.pwd

```
[root@linuxas3 root]# echo postfix:xxx >>/etc/rsyncd.pwd
[root@linuxas3 root]# echo netkiller:xxx >>/etc/rsyncd.pwd
[root@linuxas3 root]# chmod 600 /etc/rsyncd.pwd
```

c. 启动rsync daemon

```
[root@linuxas3 root]# rsync --daemon
```

3. 添加到启动文件

```
echo "rsync --daemon" >> /etc/rc.d/rc.local
[  OK  ]
```

cat /etc/rc.d/rc.local 确认一下

4. 测试

```
[root@linux docbook]#  rsync rsync://netkiller.8800.org/netkiller
[root@linux tmp]# rsync rsync://netkiller@netkiller.8800.org/netkiller
Password:

[chen@linux temp]$  rsync -vzrtopg --progress --delete
postfix@netkiller.8800.org::postfix /tmp
Password:
```

2.1.2. install with aptitude

过程 4.2. installation setp by setp

1. installation

```
$ sudo apt-get install rsync
```

2. enable

```
$ sudo vim /etc/default/rsync

RSYNC_ENABLE=true
```

3. config /etc/rsyncd.conf

```
$ sudo vim /etc/rsyncd.conf

uid=nobody
gid=nobody
max connections=5
use chroot=no
pid file=/var/run/rsyncd.pid
lock file=/var/run/rsyncd.lock
log file=/var/log/rsyncd.log
#auth users=root
secrets file=/etc/rsyncd.secrets

[neo]
path=/home/neo/www
comment = backup neo
ignore errors
read only = yes
list = no
auth users = neo

[netkiller]
path=/home/netkiller/public_html
comment = backup netkiller
ignore errors
read only = yes
list = no
auth users = netkiller

[mirror]
path=/var/www/netkiller.8800.org/html/
comment = mirror netkiller.8800.org
exclude = .svn
ignore errors
read only = yes
list = yes

[music]
path=/var/music
comment = backup music database
ignore errors
read only = yes
list = no

[pgsqldb]
path=/var/lib/pgsql
comment = backup postgresql database
ignore errors
read only = yes
list = no
auth users = neo,netkiller
```

4. /etc/rsyncd.secrets

```
$ sudo vim  /etc/rsyncd.secrets

neo:123456
netkiller:123456
```

```
$ sudo chmod 600 /etc/rsyncd.secrets
```

5. start

```
$ sudo /etc/init.d/rsync start
```

6. test

```
$ rsync -vzrtopg --progress --delete neo@localhost::neo /tmp/test1/
$ rsync -vzrtopg --progress --delete localhost::music /tmp/test2/
```

7. firewall

```
$ sudo ufw allow rsync
```

2.1.3. xinetd

```
yum install xinetd
```

```
cat /etc/xinetd.d/rsync
# default: off
# description: The rsync server is a good addition to an ftp server, as it \
#       allows crc checksumming etc.
service rsync
{
        disable = yes
        flags           = IPv6
        socket_type     = stream
        wait            = no
        user            = root
        server          = /usr/bin/rsync
        server_args     = --daemon
        log_on_failure  += USERID
}
```

```
chkconfig xinetd on
/etc/init.d/xinetd restart
```

2.2. rsyncd.conf

```
# Minimal configuration file for rsync daemon
# See rsync(1) and rsyncd.conf(5) man pages for help

# This line is required by the /etc/init.d/rsyncd script
pid file = /var/run/rsyncd.pid
port = 873
address = 192.168.1.171
#uid = nobody
#gid = nobody
uid = root
gid = root

use chroot = yes
read only = yes


#limit access to private LANs
hosts allow=192.168.1.0/255.255.255.0 10.0.1.0/255.255.255.0
hosts deny=*

max connections = 5
motd file = /etc/rsyncd/rsyncd.motd

#This will give you a separate log file
#log file = /var/log/rsync.log

#This will log every file transferred - up to 85,000+ per user, per sync
#transfer logging = yes

log format = %t %a %m %f %b
syslog facility = local3
timeout = 300

[home]
path = /home
list=yes
ignore errors
auth users = linux
secrets file = /etc/rsyncd/rsyncd.secrets
comment = linuxsir home
exclude =   beinan/  samba/

[beinan]
path = /opt
list=no
ignore errors
```

```
comment = optdir
auth users = beinan
secrets file = /etc/rsyncd/rsyncd.secrets

[www]
path = /www/
ignore errors
read only = true
list = false
hosts allow = 172.16.1.1
hosts deny = 0.0.0.0/32
auth users = backup
secrets file = /etc/backserver.pas


[web_user1]
path = /home/web_user1/
ignore errors
read only = true
list = false
hosts allow = 202.99.11.121
hosts deny = 0.0.0.0/32
uid = web_user1
gid = web_user1
auth users = backup
secrets file = /etc/backserver.pas


[pub]
        comment = Random things available for download
        path = /path/to/my/public/share
        read only = yes
        list = yes
        uid = nobody
        gid = nobody
        auth users = pub
        secrets file = /etc/rsyncd.secrets
```

2.3. upload

```
$ rsync -v -u -a --delete --rsh=ssh --stats localfile
username@hostname:/home/username/
```

for example:

I want to copy local workspace of eclipse directory to another computer.

```
$ rsync -v -u -a --delete --rsh=ssh --stats workspace
neo@192.168.245.131:/home/neo/
```

2.4. download

```
$ rsync -v -u -a --delete --rsh=ssh --stats neo@192.168.245.131:/home/neo/* /tmp/
```

2.5. mirror

rsync使用方法

rsync rsync://认证用户@主机/模块

```
rsync -vzrtopg --progress --delete 认证用户@主机::模块 /mirror目录
```

2.6. step by step to learn rsync

1. transfer file from src to dest directory

```
neo@netkiller:/tmp$ mkdir rsync
neo@netkiller:/tmp$ cd rsync/
neo@netkiller:/tmp/rsync$ ls
```

```
neo@netkiller:/tmp/rsync$ mkdir src dest
neo@netkiller:/tmp/rsync$ echo file1 > src/file1
neo@netkiller:/tmp/rsync$ echo file2 > src/file2
neo@netkiller:/tmp/rsync$ echo file3 > src/file3
```

2. skipping directory

```
neo@netkiller:/tmp/rsync$ mkdir src/dir1
neo@netkiller:/tmp/rsync$ mkdir src/dir2
neo@netkiller:/tmp/rsync$ rsync src/* dest/
skipping directory src/dir1
skipping directory src/dir2
```

3. recurse into directories

```
neo@netkiller:/tmp/rsync$ rsync -r src/* dest/
neo@netkiller:/tmp/rsync$ ls dest/
dir1  dir2  file1  file2  file3
```

4. backup

```
neo@netkiller:/tmp/rsync$ rsync -r --backup --suffix=.2008-11-21 src/* dest/
neo@netkiller:/tmp/rsync$ ls dest/
dir1  dir2  file1  file1.2008-11-21  file2  file2.2008-11-21  file3
file3.2008-11-21
neo@netkiller:/tmp/rsync$
```

backup-dir

```
neo@netkiller:/tmp/rsync$ rsync -r --backup --suffix=.2008-11-21 --backup-
dir mybackup src/* dest/
neo@netkiller:/tmp/rsync$ ls dest/
dir1  dir2  file1  file1.2008-11-21  file2  file2.2008-11-21  file3
file3.2008-11-21  mybackup
neo@netkiller:/tmp/rsync$ ls dest/mybackup/
file1.2008-11-21  file2.2008-11-21  file3.2008-11-21
```

```
rsync -r --backup --suffix=.2008-11-21 --backup-dir ../mybackup src/* dest/
neo@netkiller:/tmp/rsync$ ls
dest  mybackup  src
neo@netkiller:/tmp/rsync$ ls src/
dir1  dir2  file1  file2  file3
```

5. update

```
neo@netkiller:/tmp/rsync$ rm -rf dest/*
neo@netkiller:/tmp/rsync$ rsync -r -u src/* dest/
neo@netkiller:/tmp/rsync$ echo netkiller>>src/file2
neo@netkiller:/tmp/rsync$ rsync -v -r -u src/* dest/
building file list ... done
file2

sent 166 bytes  received 42 bytes  416.00 bytes/sec
total size is 38  speedup is 0.18
```

update by time and size

```
neo@netkiller:/tmp/rsync$ echo Hi>src/dir1/file1.1
neo@netkiller:/tmp/rsync$ rsync -v -r -u src/* dest/
building file list ... done
dir1/file1.1

sent 166 bytes  received 42 bytes  416.00 bytes/sec
total size is 41  speedup is 0.20
```

6. --archive

```
rsync -a src/ dest/
```

7. --compress

```
rsync -a -z src/ dest/
```

8. --delete

src

```
svn@netkiller:~$ ls src/
dir1  dir2  file1  file2  file3
```

dest

```
neo@netkiller:~$ rsync -v -u -a --delete -e ssh
svnroot@127.0.0.1:/home/svnroot/src /tmp/dest
svnroot@127.0.0.1's password:
receiving file list ... done
created directory /tmp/dest
src/
src/file1
src/file2
src/file3
src/dir1/
src/dir2/

sent 104 bytes  received 309 bytes  118.00 bytes/sec
total size is 0  speedup is 0.00
```

src

```
svn@netkiller:~$ rm -rf src/file2
svn@netkiller:~$ rm -rf src/dir2
```

dest

```
neo@netkiller:~$ rsync -v -u -a --delete -e ssh
svnroot@127.0.0.1:/home/svnroot/src /tmp/dest
svnroot@127.0.0.1's password:
receiving file list ... done
deleting src/dir2/
deleting src/file2
src/

sent 26 bytes  received 144 bytes  68.00 bytes/sec
total size is 0  speedup is 0.00
```

2.7. rsync examples

http://samba.anu.edu.au/rsync/examples.html

例 4.1. examples

2.7.1. backup to a central backup server with 7 day incremental

例 4.2. backup to a central backup server with 7 day incremental

```
#!/bin/sh

# This script does personal backups to a rsync backup server. You will end up
# with a 7 day rotating incremental backup. The incrementals will go
# into subdirectories named after the day of the week, and the current
# full backup goes into a directory called "current"
# tridge@linuxcare.com

# directory to backup
BDIR=/home/$USER

# excludes file - this contains a wildcard pattern per line of files to exclude
EXCLUDES=$HOME/cron/excludes

# the name of the backup machine
BSERVER=owl

# your password on the backup server
export RSYNC_PASSWORD=XXXXXX


############################################################################

BACKUPDIR=`date +%A`
OPTS="--force --ignore-errors --delete-excluded --exclude-from=$EXCLUDES
      --delete --backup --backup-dir=/$BACKUPDIR -a"

export PATH=$PATH:/bin:/usr/bin:/usr/local/bin

# the following line clears the last weeks incremental directory
[ -d $HOME/emptydir ] || mkdir $HOME/emptydir
rsync --delete -a $HOME/emptydir/ $BSERVER::$USER/$BACKUPDIR/
rmdir $HOME/emptydir

# now the actual transfer
rsync $OPTS $BDIR $BSERVER::$USER/current
```

2.7.2. backup to a spare disk

例 4.3. backup to a spare disk

```
I do local backups on several of my machines using rsync. I have an
extra disk installed that can hold all the contents of the main
disk. I then have a nightly cron job that backs up the main disk to
the backup. This is the script I use on one of those machines.

    #!/bin/sh

    export PATH=/usr/local/bin:/usr/bin:/bin

    LIST="rootfs usr data data2"

    for d in $LIST; do
        mount /backup/$d
        rsync -ax --exclude fstab --delete /$d/ /backup/$d/
        umount /backup/$d
    done

    DAY=`date "+%A"`

    rsync -a --delete /usr/local/apache /data2/backups/$DAY
    rsync -a --delete /data/solid /data2/backups/$DAY



The first part does the backup on the spare disk. The second part
backs up the critical parts to daily directories.  I also backup the
critical parts using a rsync over ssh to a remote machine.
```

2.7.3. mirroring vger CVS tree

例 4.4. mirroring vger CVS tree

```
The vger.rutgers.edu cvs tree is mirrored onto cvs.samba.org via
anonymous rsync using the following script.

    #!/bin/bash

    cd /var/www/cvs/vger/
    PATH=/usr/local/bin:/usr/freeware/bin:/usr/bin:/bin

    RUN=`lps x | grep rsync | grep -v grep | wc -l`
    if [ "$RUN" -gt 0 ]; then
            echo already running
            exit 1
    fi

    rsync -az vger.rutgers.edu::cvs/CVSROOT/ChangeLog $HOME/ChangeLog

    sum1=`sum $HOME/ChangeLog`
    sum2=`sum /var/www/cvs/vger/CVSROOT/ChangeLog`

    if [ "$sum1" = "$sum2" ]; then
            echo nothing to do
            exit 0
    fi

    rsync -az --delete --force vger.rutgers.edu::cvs/ /var/www/cvs/vger/
    exit 0

Note in particular the initial rsync of the ChangeLog to determine if
anything has changed. This could be omitted but it would mean that the
rsyncd on vger would have to build a complete listing of the cvs area
at each run. As most of the time nothing will have changed I wanted to
save the time on vger by only doing a full rsync if the ChangeLog has
changed. This helped quite a lot because vger is low on memory and
generally quite heavily loaded, so doing a listing on such a large
tree every hour would have been excessive.
```

2.7.4. automated backup at home

例 4.5. automated backup at home

```
I use rsync to backup my wifes home directory across a modem link each
night. The cron job looks like this

    #!/bin/sh
    cd ~susan
    {
    echo
    date
    dest=~/backup/`date +%A`
    mkdir $dest.new
    find . -xdev -type f \( -mtime 0 -or -mtime 1 \) -exec cp -aPv "{}"
    $dest.new \;
    cnt=`find $dest.new -type f | wc -l`
    if [ $cnt -gt 0 ]; then
      rm -rf $dest
      mv $dest.new $dest
    fi
    rm -rf $dest.new
    rsync -Cavze ssh . samba:backup
    } >> ~/backup/backup.log 2>&1


note that most of this script isn't anything to do with rsync, it just
creates a daily backup of Susans work in a ~susan/backup/ directory so
she can retrieve any version from the last week. The last line does
```

```
the rsync of her directory across the modem link to the host
samba. Note that I am using the -C option which allows me to add
entries to .cvsignore for stuff that doesn't need to be backed up.
```

2.7.5. Fancy footwork with remote file lists

例 4.6. Fancy footwork with remote file lists

```
One little known feature of rsync is the fact that when run over a
remote shell (such as rsh or ssh) you can give any shell command as
the remote file list. The shell command is expanded by your remote
shell before rsync is called. For example, see if you can work out
what this does:

        rsync -avR remote:'`find /home -name "*.[ch]"`' /tmp/

note that that is backquotes enclosed by quotes (some browsers don't
show that correctly).
```

2.8. rsync for windows

http://www.rsync.net/resources/howto/windows_rsync.html

2.9. 多进程 rsync 脚本

```
#!/usr/bin/perl

my $path = "/data";           #本地目录
my $ip="172.16.xxx.xxx";      #远程目录
my $maxchild=5;               #同时并发的个数

open FILE,"ls $path|";
while()
{

        chomp;
        my $filename = $_;
        my $i = 1;
        while($i<=1){
                my $un = `ps -ef |grep rsync|grep -v grep |grep avl|wc -l`;
                $i =$i+1;
                if( $un < $maxchild){
                        system("rsync -avl --size-only $path/$_   $ip:$path &") ;
                }else{
                        sleep 5;
                        $i = 1;
                }
        }
}
```

2.10. 数度限制

限制为 100k Bytes/s

```
rsync -auvzP--bwlimit=100 /www/* root@172.16.0.1/www
```

3. tsync

homepage: http://tsyncd.sourceforge.net/

4. Unison File Synchronizer

If you are looking for a tool to sync your laptop with your workstation, you better have a look at Unison.

homepage: http://www.cis.upenn.edu/~bcpierce/unison/

installation

```
$ sudo apt-get install unison
```

4.1. local

dir to dir

```
unison dir1 dir2
```

4.2. remote

ssh

```
unison dir1 ssh://username@remotehostname(ip)//absolute/path/to/dir2
```

socket

target host

```
# unison -socket NNNN
```

source host

```
# unison dir1 socket://remotehost(ip):port//absolute/path/to/dir2
```

4.3. config

create a config file under '.unison' directory.

```
vim ~/.unison/config.prf

root = /var/www
root = ssh://netkiller@netkiller.8800.org//var/www
force = /var/www
ignore = Path templates_compiled
ignore = Name tmp/*.pdf
auto = true
log = true
logfile = /home/netkiller/.unison/netkiller.8800.org.log
```

5. csync2 - cluster synchronization tool

homepage: http://oss.linbit.com/

5.1. server

过程 4.3. Install and setup csync2 on Ubuntu

1. installation

```
$ sudo apt-get install csync2 sqlite3 openssl xinetd
```

The following line will be added to your /etc/inetd.conf file:

```
$ cat /etc/inetd.conf
csync2          stream  tcp     nowait  root    /usr/sbin/csync2
csync2 -i
```

If you are indeed using xinetd, you will have to convert the above into /etc/xinetd.conf format, and add it manually.

```
service csync2
{
        disable = no
        protocol = tcp
        socket_type = stream
        wait = no
        user = root
        server = /usr/sbin/csync2
        server_args = -i
}
```

/etc/services

```
$ cat /etc/services |grep csync2
csync2          30865/tcp                       # cluster synchronization
tool
```

2. create a self-signed SSL certificate for csync2

```
sudo openssl genrsa -out /etc/csync2_ssl_key.pem 1024
sudo openssl req -new -key /etc/csync2_ssl_key.pem -out
/etc/csync2_ssl_cert.csr
sudo openssl x509 -req -days 600 -in /etc/csync2_ssl_cert.csr -signkey
/etc/csync2_ssl_key.pem -out /etc/csync2_ssl_cert.pem
```

```
$ sudo csync2 -k /etc/csync2_ssl_cert.key
```

3. After having done everything, we are now going to configure Csync2 so that we can determine which files are going to be synchronized.

For this example, we are going to synchronize /etc/apache2 and /etc/mysql. For that we open /etc/csync2.cfg and we configure it like this:

```
$ sudo vim /etc/csync2.cfg
# please see the REAMDE file how to configure csync2

group testing #group name, we can have multiple groups
{
    host master; #master server
    host (slave); #slave server
    #host (node1);

    key /etc/csync2_ssl_cert.key;

    include /etc/apache2/;
    include /home/neo;

    backup-directory /var/backups/csync2;
    backup-generations 3;
    auto none; #no automatic sync
}
```

4. hosts

```
$ sudo vim /etc/hosts
192.168.245.131 slave
```

5. restart

```
$ sudo /etc/init.d/xinetd restart
```

5.2. node

过程 4.4. node

1. login to slave node

```
neo@slave:~$ sudo vim /etc/hosts
192.168.245.129 master
```

2. install

```
$ sudo apt-get install csync2 xinetd
```

3. copy config file from master

```
neo@slave:~$  sudo scp root@master:/etc/csync2* /etc/
```

4. restart

```
neo@slave:~$ sudo /etc/init.d/xinetd restart
```

5.3. test

过程 4.5. testing

1. master

```
neo@master:/etc/apache2$ sudo touch test.master
neo@master:/etc/apache2$ sudo csync2 -x
```

2. node

```
neo@slave:/etc/apache2$ ls test.master -l
-rw-r--r-- 1 root root 0 2008-10-31 06:37 test.master
```

5.4. Advanced Configuration

例 4.7. /etc/csync2.cfg

```
$ sudo cat /etc/csync2.cfg

# please see the REAMDE file how to configure csync2
# group name, we can have multiple groups

group www {
    host master;
    host (slave);

    key /etc/csync2_ssl_cert.key;

    include /etc/apache2/;
    include /etc/csync2.cfg;
    include /var/www;
    include %homedir%/neo;
    exclude %homedir%/neo/temp;
    exclude *~ .*;

action
{
        pattern /etc/apache2/httpd.conf;
        pattern /etc/apache2/sites-available/*;
        exec "/usr/sbin/apache2ctl graceful";
        logfile "/var/log/csync2_action.log";
        do-local;
}

    backup-directory /var/backups/csync2;
    backup-generations 3;
    auto none;
}

prefix homedir
{
        on *: /home;
}
```

5.5. 编译安装

过程 4.6.

- ```
  # yum install byacc -y
  ```

  ```
  # tar zxvf librsync-0.9.7.tar.gz
  # cd librsync-0.9.7
  ./configure --prefix=/usr/local/librsync-0.9.7
  # make && make install
  ```

  ```
  # www.sqlite.org
  # wget http://www.sqlite.org/sqlite-3.7.2.tar.gz
  # tar zxvf sqlite-3.7.2.tar.gz
  ```

  ```
  # www.gnu.org/software/gnutls/
  # wget http://ftp.gnu.org/pub/gnu/gnutls/gnutls-2.10.1.tar.bz2
  # tar jxvf gnutls-2.10.1.tar.bz2
  ```

  ```
  # wget http://oss.linbit.com/csync2/csync2-1.34.tar.gz
  ```
  ```

```
# tar csync2-1.34.tar.gz
# ./configure --prefix=/usr/local/csync2-1.34 --with-librsync-
source=/usr/local/src/librsync-0.9.7.tar.gz --with-libsqlite-
source=/usr/local/src/sqlite-3.7.2.tar.gz --disable-gnutls
```

6. synctool

synctool 是一个集群管理工具，用来在集群中的所有节点间进行保证配置文件的同步。节点可以是一个逻辑组和类的一部分，它们可能需要部分的配置文件。synctool 守护进程可以根据配置更改而对应用进行重启，还包括执行一些其他的管理任务。 新版本增加了一个新的工具 synctool-scp ，你可以使用这个工具来将文件复制到集群中的所有节点。

第 5 章 File Share

目录

1. NFSv4

1.1. Installation

1.1.1. NFSv4 server

```
sudo apt-get install nfs-kernel-server
```

Configuration

```
vim /etc/exports
/www     *(ro,sync,no_root_squash)
/home    *(rw,sync,no_root_squash)
/export       192.168.1.0/24(rw,fsid=0,insecure,no_subtree_check,async)
```

```
/export/users 192.168.1.0/24(rw,nohide,insecure,no_subtree_check,async)
```

To start the NFS server

```
sudo /etc/init.d/nfs-kernel-server start
```

1.1.2. NFSv4 client

```
sudo apt-get install nfs-common
```

NFSv3

```
sudo mount example.hostname.com:/www /www
```

NFSv4

```
# mount -t nfs4 -o proto=tcp,port=2049 nfs-server:/ /mnt
# mount -t nfs4 -o proto=tcp,port=2049 nfs-server:/users /home/users
```

NFS Client Configuration

```
vim /etc/fstab
example.hostname.com:/ubuntu /local/ubuntu nfs rsize=8192,wsize=8192,timeo=14,intr
```

1.2. exports

1.2.1. Permission

```
/etc/exports为:

/tmp     *(rw,no_root_squash)

/home/public 192.168.0.*(rw)   *(ro)

/home/test  192.168.0.100(rw)

/home/linux  *.example.com(rw,all_squash,anonuid=40,anongid=40)
```

1.2.2. Parameters

General Options

```
ro                      只读访问
rw                      读写访问
rsize                                   同时传输(读 )的数据块大小
wsize                                   同时传输(写)的数据块大小

sync                    所有数据在请求时写入共享
async                   NFS在写入数据前可以相应请求

secure                  NFS通过1024以下的安全TCP/IP端口发送
insecure                NFS通过1024以上的端口发送
wdelay                  如果多个用户要写入NFS目录，则归组写入（默认）
no_wdelay               如果多个用户要写入NFS目录，则立即写入，当使用async时，无需此设置。
hide                    在NFS共享目录中不共享其子目录
no_hide                 共享NFS目录的子目录
subtree_check           如果共享/usr/bin之类的子目录时，强制NFS检查父目录的权限（默认）
no_subtree_check        和上面相对，不检查父目录权限
```

User ID Mapping

```
all_squash              共享文件的UID和GID映射匿名用户anonymous，适合公用目录。
```

```
no_all_squash               保留共享文件的UID和GID（默认）
root_squash                 root用户的所有请求映射成如anonymous用户一样的权限（默认）
no_root_squas               root用户具有根目录的完全管理访问权限
anonuid=xxx                 指定NFS服务器/etc/passwd文件中匿名用户的UID
anongid=xxx                 指定NFS服务器/etc/passwd文件中匿名用户的GID
```

1.2.3. 实例参考

只读挂载

```
172.16.2.5:/   /www/images   nfs4
ro,rsize=8192,wsize=8192,timeo=15,intr,noac
```

2. Samba

2.1. install

环境 ubuntu 8.10

```
$ sudo apt-get install samba
```

查看Samba 服务器的端口

```
neo@shenzhen:~$ sudo netstat -tlnp |grep smb
tcp        0      0 0.0.0.0:139             0.0.0.0:*               LISTEN
4480/smbd
tcp        0      0 0.0.0.0:445             0.0.0.0:*               LISTEN
4480/smbd
neo@shenzhen:~$
```

防火墙

```
neo@shenzhen:~$ iptables -L
```

iptables -L

2.2. smb.conf

security = share|user 共享|用户模式

```
comment = 描述
valid users = '%S'登录用户, 'neo'允许neo访问
read only = 'No'读写模式, 'Yes'只读模式
browseable = 'No'不显示, 'Yes'显示
```

2.2.1. Security consideration

```
[global]
interfaces = lo, eth0
bind interfaces only = true
```

2.3. by Example

Backup the /etc/samba/smb.conf file:

```
sudo cp /etc/samba/smb.conf /etc/samba/smb.conf.original
```

2.3.1. share

security = share

```
[tmp]
   comment = test
   writable = yes
```

```
   locking = yes
   path = /tmp
   public = yes

[neo]
   comment = neo
   writable = yes
   locking = yes
   path = /home/neo/
   public = yes

[htdocs]
   comment = neo
   writable = yes
   locking = yes
   path = /opt/lampp/htdocs
   public = yes
```

2.3.2. user

```
sudo cp /etc/samba/smb.conf /etc/samba/smb.conf.original
```

```
security = user
```

add user

```
sudo useradd -s /bin/true neo
sudo smbpasswd -L -a neo
```

enable

```
sudo smbpasswd -L -e neo
```

del user

```
sudo smbpasswd -L -x neo
```

2.3.3. test

测试配置文件是否正确

```
$ testparm
```

查看共享目录

```
$ smbclient -L localhost -N

Domain=[WORKGROUP] OS=[Unix] Server=[Samba 3.3.2]

        Sharename       Type      Comment
        ---------       ----      -------
        print$          Disk      Printer Drivers
        developer       Disk      Development
        IPC$            IPC       IPC Service (ubuntu server (Samba, Ubuntu))
Domain=[WORKGROUP] OS=[Unix] Server=[Samba 3.3.2]

        Server               Comment
        ---------            -------
        PRINTSERVER
        UBUNTU               ubuntu server (Samba, Ubuntu)

        Workgroup            Master
        ---------            -------
        WORKGROUP            PRINTSERVER
```

```
```

Windows 访问测试

```
C:\>net view \\192.168.3.40
在 \\192.168.3.40 的共享资源

ubuntu server (Samba, Ubuntu)

共享名       类型   使用为   注释

-------------------------------------------------------------
developer   Disk   Development
命令运行完毕，但发生一个或多个错误。
```

2.4. nmblookup - NetBIOS over TCP/IP client used to lookup NetBIOS names

```
$ nmblookup -A 172.16.0.5
Looking up status of 172.16.0.5
        USER            <00> -          B <ACTIVE>
        WORKGROUP       <00> - <GROUP> B <ACTIVE>
        USER            <20> -          B <ACTIVE>
        WORKGROUP       <1e> - <GROUP> B <ACTIVE>
        WORKGROUP       <1d> -          B <ACTIVE>
        ..__MSBROWSE__. <01> - <GROUP> B <ACTIVE>

        MAC Address = 00-25-64-A7-18-97
```

2.5. smbfs/smbmount/smbumount

```
sudo apt-get install smbfs
```

smbmount

```
$ sudo mkdir /mnt/winfs
$ sudo smbmount //172.16.0.92/tmp /mnt/winfs
$ ls /mnt/winfs/
```

使用neo帐号登录

```
$ sudo smbmount //172.16.0.92/tmp /mnt/winfs -o username=neo
```

mount

```
$ mount -t smbfs -o username=jwhittal \\\\172.16.1.3\\c$ /mnt/thumb
```

linux 不再使用smbfs, 替换为 cifs

```
$ mount -t cifs //192.168.0.2/ /mnt/
```

2.6. smbclient - ftp-like client to access SMB/CIFS resources on servers

```
$ sudo apt-get install smbclient
```

2.6.1. 显示共享目录

$ smbclient -L 172.16.1.3

```
neo@netkiller:~$ smbclient -L 172.16.0.1
```

```
Enter neo's password:
Domain=[WORKGROUP] OS=[Unix] Server=[Samba 3.4.0]

        Sharename       Type      Comment
        ---------       ----      -------
        IPC$            IPC       IPC Service (netkiller server (Samba, Ubuntu))
        www             Disk      www diretcory
        print$          Disk      Printer Drivers
        neo             Disk      Home Directories
Domain=[WORKGROUP] OS=[Unix] Server=[Samba 3.4.0]

        Server               Comment
        ---------            -------
        DEBIAN               debian server
        NETKILLER            netkiller server (Samba, Ubuntu)

        Workgroup            Master
        ---------            -------
        WORKGROUP            DEBIAN
```

2.6.2. 访问共享资源

访问developer共享目录

```
$ smbclient //localhost/developer

Enter neo's password:
Domain=[WORKGROUP] OS=[Unix] Server=[Samba 3.3.2]
Server not using user level security and no password supplied.
smb: \> ls
  .                                   D        0  Thu Oct 29 02:05:37 2009
  ..                                  D        0  Thu Oct 22 05:27:16 2009
  ofcard.php                          1104  Tue Oct 27 02:00:49 2009
  index.html                           580  Thu Oct 29 02:05:37 2009
  webapps                             D        0  Wed Oct 28 06:04:08 2009
  ecmall                              D        0  Thu Oct 22 00:00:12 2009
  doc                                 D        0  Wed Oct 28 06:04:09 2009
  supersite                           D        0  Thu Oct 22 03:35:08 2009
  empire                              D        0  Thu Oct 22 02:56:12 2009
  discuz                              D        0  Wed Oct 21 22:04:29 2009
  resin-data                          D        0  Wed Oct 28 06:21:02 2009
  phpMyAdmin                          D        0  Sat Oct 24 09:02:29 2009
  empirecms6                          D        0  Thu Oct 22 04:12:44 2009
  ecshop                              D        0  Wed Oct 21 21:56:40 2009
  watchdog-data                       D        0  Wed Oct 28 06:07:19 2009
  ucenter                             D        0  Wed Oct 21 22:41:58 2009
  ecshop.old                          D        0  Fri Oct 23 11:35:39 2009
  magento                             D        0  Tue Oct  6 19:19:54 2009
  weberp                              D        0  Fri Oct 23 05:21:33 2009

                61335 blocks of size 131072. 41655 blocks available
smb: \>
```

2.6.3. 用户登录

使用用户Neo登录

```
$ smbclient //localhost/developer -U neo

Enter neo's password:
Domain=[UBUNTU] OS=[Unix] Server=[Samba 3.3.2]
smb: \> ls
  .                                   D        0  Thu Oct 29 03:13:31 2009
  ..                                  D        0  Thu Oct 22 05:27:16 2009
  ofcard.php                          1104  Tue Oct 27 02:00:49 2009
  index.html                           676  Thu Oct 29 03:13:31 2009
  webapps                             D        0  Wed Oct 28 06:04:08 2009
  ecmall                              D        0  Thu Oct 22 00:00:12 2009
  doc                                 D        0  Wed Oct 28 06:04:09 2009
  supersite                           D        0  Thu Oct 22 03:35:08 2009
  empire                              D        0  Thu Oct 22 02:56:12 2009
  discuz                              D        0  Wed Oct 21 22:04:29 2009
  resin-data                          D        0  Wed Oct 28 06:21:02 2009
  phpMyAdmin                          D        0  Sat Oct 24 09:02:29 2009
  empirecms6                          D        0  Thu Oct 22 04:12:44 2009
  ecshop                              D        0  Wed Oct 21 21:56:40 2009
  watchdog-data                       D        0  Wed Oct 28 06:07:19 2009
```

```
  ucenter                             D        0  Wed Oct 21 22:41:58 2009
  ecshop.old                          D        0  Fri Oct 23 11:35:39 2009
  magento                             D        0  Tue Oct  6 19:19:54 2009
  weberp                              D        0  Fri Oct 23 05:21:33 2009

                61335 blocks of size 131072. 41654 blocks available
smb: \> quit
```

2.7. smbtar - shell script for backing up SMB/CIFS shares directly to UNIX tape drives

2.8. FAQ

2.8.1. smbd/service.c:make_connection_snum(1013)

```
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
[2010/05/17 17:26:08, 0] smbd/service.c:make_connection_snum(1013)
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
[2010/05/17 17:26:08, 0] smbd/service.c:make_connection_snum(1013)
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
[2010/05/17 17:26:11, 0] smbd/service.c:make_connection_snum(1013)
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
[2010/05/17 17:26:13, 0] smbd/service.c:make_connection_snum(1013)
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
[2010/05/17 17:26:13, 0] smbd/service.c:make_connection_snum(1013)
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
[2010/05/17 17:26:13, 0] smbd/service.c:make_connection_snum(1013)
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
[2010/05/17 17:26:13, 0] smbd/service.c:make_connection_snum(1013)
  '/www' does not exist or permission denied when connecting to [www] Error was
Permission denied
```

关闭 SELinux

第 6 章 Distributed Filesystem

目录

1. DRBD (Distributed Replicated Block Device)

Homepage: http://www.drbd.org/

实验环境需要两台电脑，如果你没有，建议你使用VMware，并且为每一个虚拟机添加两

块硬盘。

实验环境

1. master: 192.168.0.1 DRBD:/dev/sdb
2. slave: 192.168.0.2 DRBD:/dev/sdb

1.1. disk and partition

Each of the following steps must be completed on both nodes

show all of disk and partition

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

create a new partition on the disk /dev/sdb

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

you must have extended partition

check partition

```
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

   Device Boot      Start         End      Blocks   Id  System
/dev/sdb1               1         261     2096451    5  Extended
/dev/sdb5               1         261     2096419+  83  Linux
```

format /dev/sdb1

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

you also can using other file system

reiserfs

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

I suggest you using reiserfs.

1.2. Installation

Each of the following steps must be completed on both nodes

search drbd8-utils package

```
neo@master:~$ apt-cache search drbd
drbd8-utils - RAID 1 over tcp/ip for Linux utilities
drbd0.7-module-source - RAID 1 over tcp/ip for Linux module source
drbd0.7-utils - RAID 1 over tcp/ip for Linux utilities
drbdlinks - Manages symlinks into a shared DRBD partition
```

installation

```
neo@master:~$ sudo apt-get install drbd8-utils
```

to add modules from the Linux Kernel

```
neo@master:~$ sudo modprobe drbd
neo@master:~$ lsmod |grep drbd
drbd                  213000  0
cn                      9632  1 drbd
```

1.3. configure

Each of the following steps must be completed on both nodes

backup configure file

```
neo@master:~$ sudo cp /etc/drbd.conf /etc/drbd.conf.old
```

edit /etc/drbd.conf

```
global {
  usage-count yes;
}
common {
  protocol C;
}
resource r0 {
  on master {
    device    /dev/drbd0;
    disk      /dev/sdb5;
    address   192.168.0.1:7789;
    meta-disk internal;
  }
  on slave {
    device    /dev/drbd0;
    disk      /dev/sdb5;
    address   10.1.1.32:7789;
    meta-disk internal;
  }
}
```

1.4. Starting

Each of the following steps must be completed on both nodes.

```
neo@master:~$ sudo drbdadm create-md r0
neo@master:~$ sudo drbdadm attach r0
neo@master:~$ sudo drbdadm connect r0
neo@master:~$ sudo drbdadm -- --overwrite-data-of-peer primary r0

neo@slave:~$ sudo drbdadm create-md r0
neo@slave:~$ sudo drbdadm attach r0
neo@slave:~$ sudo drbdadm connect r0
```

master

```
```

```
neo@master:~$ sudo drbdadm create-md r0
v08 Magic number not found
md_offset 2146725888
al_offset 2146693120
bm_offset 2146627584

Found some data
 ==> This might destroy existing data! <==

Do you want to proceed?
[need to type 'yes' to confirm] yes

v07 Magic number not found
v07 Magic number not found
v08 Magic number not found
Writing meta data...
initialising activity log
NOT initialized bitmap
New drbd meta data block sucessfully created.
success
```

slave

```
neo@slave:~# sudo drbdadm create-md r0
v08 Magic number not found
md_offset 2146725888
al_offset 2146693120
bm_offset 2146627584

Found some data
 ==> This might destroy existing data! <==

Do you want to proceed?
[need to type 'yes' to confirm] yes

v07 Magic number not found
v07 Magic number not found
v08 Magic number not found
Writing meta data...
initialising activity log
NOT initialized bitmap
New drbd meta data block sucessfully created.
success
```

status

```
neo@master:~$ cat /proc/drbd
version: 8.0.11 (api:86/proto:86)
GIT-hash: b3fe2bdfd3b9f7c2f923186883eb9e2a0d3a5b1b build by phil@mescal, 2008-02-
12 11:56:43
 0: cs:StandAlone st:Primary/Unknown ds:UpToDate/DUnknown   r---
    ns:0 nr:0 dw:0 dr:0 al:0 bm:0 lo:0 pe:0 ua:0 ap:0
        resync: used:0/31 hits:0 misses:0 starving:0 dirty:0 changed:0
        act_log: used:0/127 hits:0 misses:0 starving:0 dirty:0 changed:0
 1: cs:Connected st:Secondary/Secondary ds:Diskless/Inconsistent C r---
    ns:0 nr:0 dw:0 dr:0 al:0 bm:0 lo:0 pe:0 ua:0 ap:0
```

1.5. Using

master

```
neo@master:~$ sudo drbdadm primary all
neo@master:~$ sudo mkfs.reiserfs /dev/drbd0
neo@master:~$ sudo mkdir /mnt/drbd0
neo@master:~$ sudo mount /dev/drbd0 /mnt/drbd0/
neo@master:~$ sudo touch /mnt/drbd0/helloworld.tmp
neo@master:~$ df -h
Filesystem            Size  Used Avail Use% Mounted on
/dev/sda1             7.6G  1.3G  6.0G  18% /
varrun                125M  216K  125M   1% /var/run
varlock               125M  8.0K  125M   1% /var/lock
udev                  125M   60K  125M   1% /dev
```

```
devshm                125M     0  125M   0% /dev/shm
/dev/drbd0            2.0G   33M  2.0G   2% /mnt/drbd0
neo@master:~$ sudo dd if=/dev/zero of=/mnt/drbd0/tempfile1.tmp bs=104857600
count=1
1+0 records in
1+0 records out
104857600 bytes (105 MB) copied, 0.564911 s, 186 MB/s
neo@master:~$ sudo umount /mnt/drbd0/
neo@master:~$ sudo drbdadm secondary all
```

slave

```
neo@slave:~$ sudo drbdadm primary all
neo@slave:~$ sudo mkdir /mnt/drbd0
neo@slave:~$ sudo mount /dev/drbd0 /mnt/drbd0/
neo@slave:~$ ls /mnt/drbd0/
helloworld.tmp  tempfile1.tmp
```

---

2. Network Block Device protocol

2.1. nbd-server - Network Block Device protocol - server

```
apt-get install nbd-server

# modprobe nbd
# mkdir -p /home/exported
# dd if=/dev/zero of=/home/exported/trial.img count=256 bs=1024k
# mkfs.ext3 /home/exported/trial.img

# nbd-server 1234 /home/exported/trial.img

# touch /root/empty
# nbd-server 1234 /home/exported/trial.img -C /root/empty
```

2.2. nbd-client - Network Block Device protocol - client

```
# apt-get install nbd-client


# nbd-client mine.my.flat 1234 /dev/nbd0
Negotiation: ..size = 262144KB
bs=1024, sz=262144

# mkdir /mnt/remote
# mount /dev/nbd0 /mnt/remote
# for i in $(seq 1 100) ; do echo $i > /mnt/remote/$i; done

# umount /mnt/remote

root@vain:~#  nbd-client 127.0.0.1 1234 /dev/nbd0
root@vain:~# mkdir /tmp/foo
root@vain:~#  mount /dev/nbd0 /tmp/foo
root@vain:~#  ls /tmp/foo/
1    14  2   25  30  36  41  47  52  58  63  69  74  8   85  90  96
10   15  20  26  31  37  42  48  53  59  64  7   75  80  86  91  97
100  16  21  27  32  38  43  49  54  6   65  70  76  81  87  92  98
11   17  22  28  33  39  44  5   55  60  66  71  77  82  88  93  99
12   18  23  29  34  4   45  50  56  61  67  72  78  83  89  94
13   19  24  3   35  40  46  51  57  62  68  73  79  84  9   95  lost+found
```

3. GridFS

http://www.mongodb.org/display/DOCS/GridFS

GridFS 类似 MogileFS

3.1. nginx-gridfs

http://github.com/mdirolf/nginx-gridfs

4. Moose File System

http://www.moosefs.org/

4.1. Master server installation

```
groupadd mfs
useradd -g mfs mfs
cd /usr/local/src
wget
http://pro.hit.gemius.pl/hitredir/id=nXCV9nrckU2Et.zoR5kxdXZJLQq1fqbG4AIiq5K95Gz.07/url=moos
1.6.19.tar.gz
tar zxvf mfs-1.6.19.tar.gz
cd mfs-1.6.19
./configure --prefix=/srv/mfs \
--with-default-user=mfs \
--with-default-group=mfs \
--disable-mfschunkserver \
--disable-mfsmount

make
make install
```

```
cd /srv/mfs/etc/
cp /srv/mfs/var/mfs/metadata.mfs.empty /srv/mfs/var/mfs/metadata.mfs

cp mfsexports.cfg.dist mfsexports.cfg
cp mfsmaster.cfg.dist mfsmaster.cfg
cp mfsmetalogger.cfg.dist mfsmetalogger.cfg
vim mfsmaster.cfg
```

```
WORKING_USER = mfs
WORKING_GROUP = mfs
SYSLOG_IDENT = mfsmaster
LOCK_MEMORY = 0
NICE_LEVEL = -19

EXPORTS_FILENAME = /srv/mfs/etc/mfsexports.cfg

DATA_PATH = /srv/mfs/var/mfs

BACK_LOGS = 50

REPLICATIONS_DELAY_INIT = 300
REPLICATIONS_DELAY_DISCONNECT = 3600

MATOML_LISTEN_HOST = *
MATOML_LISTEN_PORT = 9419

MATOCS_LISTEN_HOST = *
MATOCS_LISTEN_PORT = 9420

MATOCU_LISTEN_HOST = *
MATOCU_LISTEN_PORT = 9421

CHUNKS_LOOP_TIME = 300
CHUNKS_DEL_LIMIT = 100
CHUNKS_WRITE_REP_LIMIT = 1
CHUNKS_READ_REP_LIMIT = 5

REJECT_OLD_CLIENTS = 0

# deprecated, to be removed in MooseFS 1.7
# LOCK_FILE = /srv/mfs/var/run/mfs/mfsmaster.lock
```

```
echo "192.168.3.10        mfsmaster" >> /etc/hosts
```

```
# /srv/mfs/sbin/mfsmaster start
working directory: /srv/mfs/var/mfs
lockfile created and locked
initializing mfsmaster modules ...
loading sessions ... ok
sessions file has been loaded
exports file has been loaded
loading metadata ...
create new empty filesystemmetadata file has been loaded
no charts data file - initializing empty charts
master <-> metaloggers module: listen on *:9419
master <-> chunkservers module: listen on *:9420
main master server module: listen on *:9421
mfsmaster daemon initialized properly
```

```
# /srv/mfs/sbin/mfscgiserv
starting simple cgi server (host: any , port: 9425 , rootpath:
/srv/mfs/share/mfscgi)
```

http://192.168.3.10:9425/

4.2. Backup server (metalogger) installation

```
groupadd mfs
useradd -g mfs mfs
cd /usr/local/src
wget
http://pro.hit.gemius.pl/hitredir/id=nXCV9nrckU2Et.zoR5kxdXZJLQq1fqbG4AIiq5K95Gz.07/url=moos
1.6.19.tar.gz
tar zxvf mfs-1.6.19.tar.gz
cd mfs-1.6.19
./configure --prefix=/srv/mfs \
--with-default-user=mfs \
--with-default-group=mfs \
--disable-mfschunkserver \
--disable-mfsmount

make
make install

cd /srv/mfs/etc/
cp mfsmetalogger.cfg.dist mfsmetalogger.cfg
vim mfsmetalogger.cfg
```

```
WORKING_USER = mfs
WORKING_GROUP = mfs
SYSLOG_IDENT = mfsmetalogger
LOCK_MEMORY = 0
NICE_LEVEL = -19

DATA_PATH = /srv/mfs/var/mfs

BACK_LOGS = 50
META_DOWNLOAD_FREQ = 24

MASTER_RECONNECTION_DELAY = 5

MASTER_HOST = mfsmaster
MASTER_PORT = 9419

MASTER_TIMEOUT = 60

# deprecated, to be removed in MooseFS 1.7
# LOCK_FILE = /srv/mfs/var/run/mfs/mfsmetalogger.lock
```

```
echo "192.168.3.10        mfsmaster" >> /etc/hosts
```

```
# /srv/mfs/sbin/mfsmetalogger start
working directory: /srv/mfs/var/mfs
lockfile created and locked
initializing mfsmetalogger modules ...
mfsmetalogger daemon initialized properly
```

4.3. Chunk servers installation

```
groupadd mfs
useradd -g mfs mfs
cd /usr/local/src
wget
http://pro.hit.gemius.pl/hitredir/id=nXCV9nrckU2Et.zoR5kxdXZJLQq1fqbG4AIiq5K95Gz.07/url=moos
1.6.19.tar.gz
tar zxvf mfs-1.6.19.tar.gz
cd mfs-1.6.19

./configure --prefix=/srv/mfs \
--with-default-user=mfs \
--with-default-group=mfs \
--disable-mfsmaster \
--disable-mfsmount

make
make install

cd /srv/mfs/etc/
cp mfschunkserver.cfg.dist mfschunkserver.cfg
cp mfshdd.cfg.dist mfshdd.cfg
vim mfschunkserver.cfg
```

```
WORKING_USER = mfs
WORKING_GROUP = mfs
SYSLOG_IDENT = mfschunkserver
LOCK_MEMORY = 0
NICE_LEVEL = -19

DATA_PATH = /srv/mfs/var/mfs

MASTER_RECONNECTION_DELAY = 5

BIND_HOST = *
MASTER_HOST = mfsmaster
MASTER_PORT = 9420

MASTER_TIMEOUT = 60

CSSERV_LISTEN_HOST = *
CSSERV_LISTEN_PORT = 9422
CSSERV_TIMEOUT = 5

HDD_CONF_FILENAME = /srv/mfs/etc/mfshdd.cfg
HDD_TEST_FREQ = 10

# deprecated, to be removed in MooseFS 1.7
# LOCK_FILE = /srv/mfs/var/run/mfs/mfschunkserver.lock
# BACK_LOGS = 50
```

```
cat >> /srv/mfs/etc/mfshdd.cfg <<EOF
/mnt/mfschunks
EOF

chown -R mfs:mfs /mnt/mfschunks
```

```
echo "192.168.3.10        mfsmaster" >> /etc/hosts
```

```
# /srv/mfs/sbin/mfschunkserver start
working directory: /srv/mfs/var/mfs
lockfile created and locked
initializing mfschunkserver modules ...
hdd space manager: scanning folder /mnt/mfschunks/ ...
hdd space manager: scanning complete
hdd space manager: /mnt/mfschunks/: 0 chunks found
hdd space manager: scanning complete
main server module: listen on *:9422
no charts data file - initializing empty charts
mfschunkserver daemon initialized properly
```

http://192.168.3.10:9425/mfs.cgi?sections=CS

http://192.168.3.10:9425/mfs.cgi?sections=HD

4.4. Users’ computers installation

```
yum install fuse-devel

cd /usr/local/src
wget
http://pro.hit.gemius.pl/hitredir/id=nXCV9nrckU2Et.zoR5kxdXZJLQq1fqbG4AIiq5K95Gz.07/url=moos
1.6.19.tar.gz
tar zxvf mfs-1.6.19.tar.gz
cd mfs-1.6.19
./configure --prefix=/srv/mfs \
 --with-default-user=mfs \
--with-default-group=mfs \
--disable-mfsmaster \
--disable-mfschunkserver

make
make install
```

mount

```
mkdir -p /mnt/mfs
modprobe fuse
/srv/mfs/bin/mfsmount /mnt/mfs -H 192.168.3.10
```

```
# df /mnt/mfs
Filesystem           1K-blocks      Used Available Use% Mounted on
mfs#192.168.3.10:9421
                       6085120         0   6085120   0% /mnt/mfs
```

umount

```
umount /mnt/mfs
```

4.5. Testing MFS

mfs client

```
[root@dev4 ~]# mkdir -p /mnt/mfs/neo
[root@dev4 ~]# touch test /mnt/mfs/
[root@dev4 ~]# touch /mnt/mfs/neo/test
[root@dev4 ~]# touch /mnt/mfs/helloworld
```

write testing

```
# time dd if=/dev/zero of=sometestfile bs=1024 count=100000
```

mfs chunk server

```
# ls /mnt/mfschunks/
00  07  0E  15  1C  23  2A  31  38  3F  46  4D  54  5B  62  69  70  77  7E  85
8C  93  9A  A1  A8  AF  B6  BD  C4  CB  D2  D9  E0  E7  EE  F5  FC
01  08  0F  16  1D  24  2B  32  39  40  47  4E  55  5C  63  6A  71  78  7F  86
8D  94  9B  A2  A9  B0  B7  BE  C5  CC  D3  DA  E1  E8  EF  F6  FD
02  09  10  17  1E  25  2C  33  3A  41  48  4F  56  5D  64  6B  72  79  80  87
8E  95  9C  A3  AA  B1  B8  BF  C6  CD  D4  DB  E2  E9  F0  F7  FE
03  0A  11  18  1F  26  2D  34  3B  42  49  50  57  5E  65  6C  73  7A  81  88
8F  96  9D  A4  AB  B2  B9  C0  C7  CE  D5  DC  E3  EA  F1  F8  FF
04  0B  12  19  20  27  2E  35  3C  43  4A  51  58  5F  66  6D  74  7B  82  89
90  97  9E  A5  AC  B3  BA  C1  C8  CF  D6  DD  E4  EB  F2  F9
05  0C  13  1A  21  28  2F  36  3D  44  4B  52  59  60  67  6E  75  7C  83  8A
91  98  9F  A6  AD  B4  BB  C2  C9  D0  D7  DE  E5  EC  F3  FA
06  0D  14  1B  22  29  30  37  3E  45  4C  53  5A  61  68  6F  76  7D  84  8B
92  99  A0  A7  AE  B5  BC  C3  CA  D1  D8  DF  E6  ED  F4  FB
```

---

5. GlusterFS

http://www.gluster.org/

```
$ apt-cache search glusterfs
glusterfs-client - clustered file-system (client package)
glusterfs-dbg - GlusterFS debugging symbols
glusterfs-examples - example files for the glusterfs server and client
glusterfs-server - clustered file-system (server package)
libglusterfs-dev - GlusterFS development libraries and headers (development files)
libglusterfs0 - GlusterFS libraries and translator modules
```

5.1. glusterfs-server

```
$ sudo apt-get install glusterfs-server
$ sudo cp /etc/glusterfs/glusterfsd.vol /etc/glusterfs/glusterfsd.vol.orig
```

```
$ cat /etc/glusterfs/glusterfsd.vol
### file: server-volume.vol.sample

######################################
###  GlusterFS Server Volume File  ##
######################################

#### CONFIG FILE RULES:
### "#" is comment character.
### - Config file is case sensitive
### - Options within a volume block can be in any order.
### - Spaces or tabs are used as delimitter within a line.
### - Multiple values to options will be : delimitted.
### - Each option should end within a line.
### - Missing or commented fields will assume default values.
### - Blank/commented lines are allowed.
### - Sub-volumes should already be defined above before referring.

### Export volume "brick" with the contents of "/home/export" directory.
volume brick
  type storage/posix                   # POSIX FS translator
  option directory /home/export        # Export this directory
end-volume

### Add network serving capability to above brick.
volume server
  type protocol/server
  option transport-type tcp
# option transport-type unix
# option transport-type ib-sdp
# option transport.socket.bind-address 192.168.1.10     # Default is to listen on
all interfaces
# option transport.socket.listen-port 6996              # Default is 6996

# option transport-type ib-verbs
# option transport.ib-verbs.bind-address 192.168.1.10     # Default is to listen
on all interfaces
# option transport.ib-verbs.listen-port 6996              # Default is 6996
# option transport.ib-verbs.work-request-send-size  131072
# option transport.ib-verbs.work-request-send-count 64
# option transport.ib-verbs.work-request-recv-size  131072
# option transport.ib-verbs.work-request-recv-count 64

# option client-volume-filename /etc/glusterfs/glusterfs-client.vol
  subvolumes brick
# NOTE: Access to any volume through protocol/server is denied by
# default. You need to explicitly grant access through # "auth"
# option.
  option auth.addr.brick.allow * # Allow access to "brick" volume
```

```
end-volume
```

```
$ sudo mkdir /home/export
$ sudo /etc/init.d/glusterfs-server start
$ sudo /etc/init.d/glusterfs-server status
 * GlusterFS server is running.
```

5.2. glusterfs-client

```
$ sudo apt-get install glusterfs-client
$ sudo cp /etc/glusterfs/glusterfs.vol /etc/glusterfs/glusterfs.vol.orig
```

```
# cat /etc/glusterfs/glusterfs.vol
### file: client-volume.vol.sample

######################################
###  GlusterFS Client Volume File  ##
######################################

#### CONFIG FILE RULES:
### "#" is comment character.
### - Config file is case sensitive
### - Options within a volume block can be in any order.
### - Spaces or tabs are used as delimitter within a line.
### - Each option should end within a line.
### - Missing or commented fields will assume default values.
### - Blank/commented lines are allowed.
### - Sub-volumes should already be defined above before referring.

### Add client feature and attach to remote subvolume
volume client
  type protocol/client
  option transport-type tcp
# option transport-type unix
# option transport-type ib-sdp
  option remote-host 192.168.80.1         # IP address of the remote brick
# option transport.socket.remote-port 6996              # default server port is
6996

# option transport-type ib-verbs
# option transport.ib-verbs.remote-port 6996              # default server port is
6996
# option transport.ib-verbs.work-request-send-size  1048576
# option transport.ib-verbs.work-request-send-count 16
# option transport.ib-verbs.work-request-recv-size  1048576
# option transport.ib-verbs.work-request-recv-count 16

# option transport-timeout 30          # seconds to wait for a reply
                                       # from server for each request
  option remote-subvolume brick        # name of the remote volume
end-volume

### Add readahead feature
#volume readahead
#  type performance/read-ahead
#  option page-size 1MB     # unit in bytes
#  option page-count 2       # cache per file  = (page-count x page-size)
#  subvolumes client
#end-volume

### Add IO-Cache feature
#volume iocache
#  type performance/io-cache
#  option page-size 256KB
#  option page-count 2
#  subvolumes readahead
#end-volume

### Add writeback feature
#volume writeback
#  type performance/write-behind
#  option aggregate-size 1MB
#  option window-size 2MB
#  option flush-behind off
#  subvolumes iocache
#end-volume
```

```
mkdir /mnt/glusterfs

glusterfs -f /etc/glusterfs/glusterfs.vol /mnt/glusterfs
or
mount -t glusterfs /etc/glusterfs/glusterfs.vol /mnt/glusterfs
```

fstab

```
/etc/glusterfs/glusterfs.vol  /mnt/glusterfs  glusterfs  defaults  0  0
```

5.3. Testing

client

```
touch /mnt/glusterfs/test1
touch /mnt/glusterfs/test2
```

server

```
# ll /mnt/glusterfs
total 0
-rw-r--r-- 1 root root 0 Jun 16 11:57 test1
-rw-r--r-- 1 root root 0 Jun 16 11:57 test2
```

5.4. RAID

http://www.gluster.com/community/documentation/index.php/GlusterFS_User_Guide

http://www.gluster.com/community/documentation/index.php/Storage_Server_Installation_and_Configuration

ref:http://www.howtoforge.com/high-availability-storage-cluster-with-glusterfs-on-ubuntu-p2

5.4.1. Mirror

例 6.1. Mirror

```
glusterfs-volgen --name store1 --raid 1 gluster1:/home/export gluster2:/home/export
```

5.4.2. Strip

例 6.2. Strip

```
glusterfs-volgen --name store1 --raid 0 gluster1:/home/export gluster2:/home/export
```

5.5. Filesystem Administration

```

# /etc/init.d/glusterd start

gluster peer probe gluster1
gluster peer probe gluster2

# gluster peer status
Number of Peers: 3

Hostname: gluster1
```

```
Uuid: 195c5908-750f-4051-accc-697ab72fa3f2
State: Probe Sent to Peer (Connected)

Hostname: gluster2
Uuid: 5f9887a9-da15-443f-aab1-5d9952247507
State: Probe Sent to Peer (Connected)

# gluster peer detach gluster3
Detach successful
```

To create a new volume

```
gluster volume create test-volume gluster1:/exp3 gluster2:/exp4
```

6. Lustre

6. Lustre

7. Hadoop - HDFS

http://hadoop.apache.org/

java

```
$ sudo apt-get install openjdk-6-jre-headless

$ sudo vim /etc/profile.d/java.sh
################################################
### Java environment by neo
################################################
export JAVA_HOME=/usr
export JRE_HOME=/usr
export PATH=$PATH:/usr/local/apache-tomcat/bin/:/usr/local/jetty-
6.1.18/bin:/usr/local/apache-nutch/bin
export CLASSPATH="./:/usr/share/java/:/usr/local/apache-
solr/example/multicore/lib"
export JAVA_OPTS="-Xms128m -Xmx1024m"
```

过程 6.1. Master configure

1. Download and Installing Software

```
$ cd /usr/local/src/
$ wget http://apache.etoak.com/hadoop/core/hadoop-0.20.0/hadoop-0.20.0.tar.gz
$ tar zxvf hadoop-0.20.0.tar.gz
$ sudo cp -r hadoop-0.20.0 ..
$ sudo ln -s hadoop-0.20.0 hadoop
$ cd hadoop
```

2. Configuration

hadoop-env.sh

```
$ vim conf/hadoop-env.sh
export JAVA_HOME=/usr
```

conf/core-site.xml

```
$ vim conf/core-site.xml

<configuration>
  <property>
    <name>fs.default.name</name>
    <value>hdfs://localhost:9000</value>
  </property>
</configuration>
```

conf/hdfs-site.xml

```
$ vim conf/hdfs-site.xml

<configuration>
  <property>
    <name>dfs.replication</name>
    <value>1</value>
  </property>
</configuration>
```

conf/mapred-site.xml

```
$ vim conf/mapred-site.xml

<configuration>
  <property>
    <name>mapred.job.tracker</name>
    <value>localhost:9001</value>
  </property>
</configuration>
```

3. Setup passphraseless ssh

```
Now check that you can ssh to the localhost without a passphrase:
$ ssh localhost

If you cannot ssh to localhost without a passphrase, execute the following
commands:
$ ssh-keygen -t dsa -P '' -f ~/.ssh/id_dsa
$ cat ~/.ssh/id_dsa.pub >> ~/.ssh/authorized_keys
```

4. Execution

```
 Format a new distributed-filesystem:
$ bin/hadoop namenode -format

Start the hadoop daemons:
$ bin/start-all.sh

When you're done, stop the daemons with:
$ bin/stop-all.sh
```

5. Monitor

Browse the web interface for the NameNode and the JobTracker; by default they are available at:

- NameNode - http://localhost:50070/
- JobTracker - http://localhost:50030/

6. Test

```
$ bin/hadoop dfs -mkdir test
$ echo helloworld > testfile
$ bin/hadoop dfs -copyFromLocal testfile test/
$ bin/hadoop dfs -ls
Found 1 items
drwxr-xr-x   - neo supergroup          0 2009-07-10 14:18 /user/neo/test

$ bin/hadoop dfs -ls test

$ bin/hadoop dfs –cat test/file
```

过程 6.2. slave config

1. SSH

```
$ scp neo@master:~/.ssh/id_dsa.pub .ssh/master.pub
$ cat .ssh/master.pub >> .ssh/authorized_keys
```

2. Hadoop

```
$ scp neo@master:/usr/local/hadoop /usr/local/hadoop
```

8. MogileFS

http://www.danga.com/mogilefs/

9. Ceph

http://ceph.newdream.net/

10. Kosmos distributed file system (KFS)

http://kosmosfs.sourceforge.net/

11. Coda

12. OpenAFS

http://www.openafs.org/

13. fam & imon

第 7 章 inotify

目录

$ ls -ld /proc/sys/fs/inotify/*

1. inotify-tools

Installation

ubuntu

```
sudo apt-get install inotify-tools
```

centos

```
yum install inotify-tools
```

inotifywait -r -m $HOME

监控登录过程

```
neo@master:~$ inotifywait -r  -m $HOME
Setting up watches.  Beware: since -r was given, this may take a while!
Watches established.
/home/neo/ OPEN .profile
/home/neo/ ACCESS .profile
/home/neo/ CLOSE_NOWRITE,CLOSE .profile
/home/neo/ OPEN .bashrc
/home/neo/ ACCESS .bashrc
/home/neo/ CLOSE_NOWRITE,CLOSE .bashrc
/home/neo/ OPEN .bash_history
/home/neo/ ACCESS .bash_history
/home/neo/ CLOSE_NOWRITE,CLOSE .bash_history
/home/neo/ OPEN .bash_history
/home/neo/ ACCESS .bash_history
/home/neo/ CLOSE_NOWRITE,CLOSE .bash_history
```

create a new file helloworld.txt

```
/home/neo/ CREATE helloworld.txt
/home/neo/ OPEN helloworld.txt
/home/neo/ MODIFY helloworld.txt
/home/neo/ CLOSE_WRITE,CLOSE helloworld.txt
```

cat a file using cat helloworld.txt

```
/home/neo/ OPEN,ISDIR
/home/neo/ CLOSE_NOWRITE,CLOSE,ISDIR
/home/neo/ OPEN,ISDIR
/home/neo/ CLOSE_NOWRITE,CLOSE,ISDIR
/home/neo/ OPEN helloworld.txt
```

```
/home/neo/ ACCESS helloworld.txt
/home/neo/ CLOSE_NOWRITE,CLOSE helloworld.txt
```

delete a file helloworld.txt

```
/home/neo/ OPEN,ISDIR
/home/neo/ CLOSE_NOWRITE,CLOSE,ISDIR
/home/neo/ OPEN,ISDIR
/home/neo/ CLOSE_NOWRITE,CLOSE,ISDIR
/home/neo/ DELETE helloworld.txt
```

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13. fam & imon

起始页

下一页
2. Incron - cron-like daemon which handles filesystem events

2. Incron - cron-like daemon which handles filesystem events

3. inotify-tools + rsync

1. -m 是保持一直监听
2. -r 是递归查看目录
3. -q 是打印出事件～
4. -e create,move,delete,modify 监听 创建 移动 删除 写入 事件

```
inotifywait -mrq --event create,delete,modify,move --format '%w %e' /your_path |
while read w e; do
    if [ "$e" = "IGNORED" ]; then
        continue
    fi
    rsync -az --delete $w username@your_ip:$w
done
```

```
#!/bin/sh
# A slightly complex but actually useful example
inotifywait -mrq --timefmt '%d/%m/%y %H:%M' --format '%T %f' \
-e close_write /home/billy | while read date time file; do
    rsync /home/billy/${file} rsync://billy@example.com/backup/${file} && \
    echo "At ${time} on ${date}, file ${file} was backed up via rsync"
done
```

```
[root@development ~]# cat inotify-rsync
#!/bin/bash
# $Id$ #
# Author neo<openunix@163.com> #

# monitor path
monitor_path=cms
#inotifywait path
INOTIFYWAIT=inotifywait

# rsync image file
function images {
        local file=$1
        rsync -az --delete $file /tmp/images/$file
#       rsync ${file} ${rsync_url}/${file}
}

# rsync html file
function html {
        local file=$1
        rsync -az --delete $file /tmp/$file
}


$INOTIFYWAIT -mrq --event close_write --format '%w%f %e' $monitor_path | while
read file event; do
    if [ "$event" = "CLOSE_WRITE,CLOSE" ]; then
        ext=$(echo $file | awk -F'.' '{print $2}')
        if [ $ext = 'jpg' ]; then
                images $file
        fi
        if [ $ext = 'html' ]; then
                html $file
        fi
```

```
    fi
done &
```

上一页
2. Incron - cron-like daemon which handles filesystem events

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起始页

下一页
4. pyinotify

4. pyinotify

```
[root@development ~]# easy_install pyinotify
[root@development ~]# yum install gcc
[root@development ctypes-1.0.2]# python setup.py install
```

第 8 章 Network Storage - Openfiler

目录

Openfiler is a powerful, intuitive browser-based network storage software distribution. Openfiler delivers file-based Network Attached Storage and block-based Storage Area Networking in a single framework.

openfiler 的官方网站

过程 8.1. Openfiler Storage Control Center

1. 登录管理界面

```
https://<ip address>:446/
```

初始帐号和密码是: openfiler/password

2. 首先要修改默认密码

Accounts->Admin Password

```
Current Password:  password
New Password:  新密码
Confirm New Password:  确认密码
```

Submit 提交

1. Accounts

- 用户认证

openfiler.ldif

```
dn: ou=people,dc=bg7nyt,dc=cn
ou: people
objectClass: organizationalUnit

dn: ou=Idmap,dc=bg7nyt,dc=cn
ou: Idmap
objectClass: organizationalUnit
```

添加people组织单元

```
[chenjingfeng@backup ldap]$ ldapadd -x -D "cn=root,dc=bg7nyt,dc=cn" -W -f
openfiler.ldif
Enter LDAP Password:
adding new entry "ou=people,dc=bg7nyt,dc=cn"

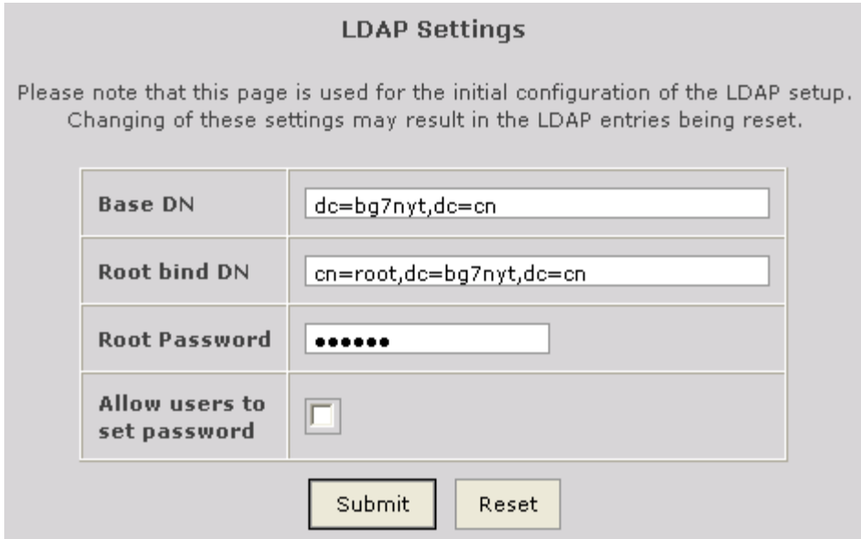
adding new entry "ou=Idmap,dc=bg7nyt,dc=cn"
```

a. Accounts->Authentication

Use LDAP: 打勾

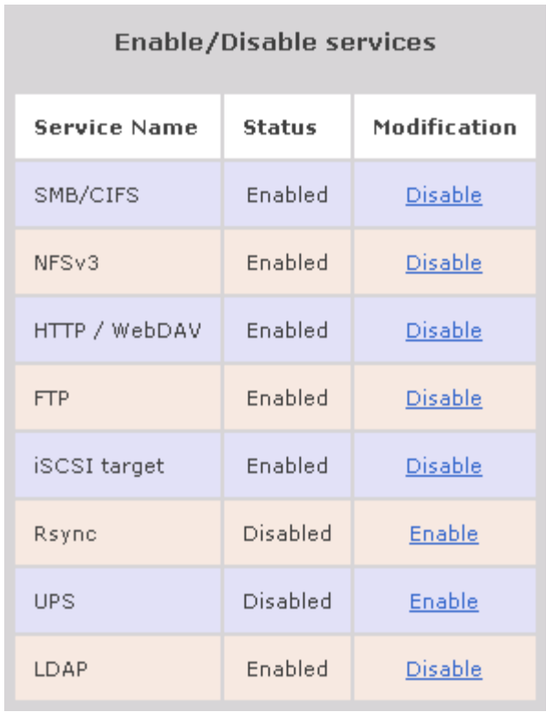
```
Server:  ldap.bg7nyt.cn
Base DN:  dc=bg7nyt,dc=cn
Root bind DN:  cn=root,dc=bg7nyt,dc=cn
Root bind Password:  你的密码
```

b. Services->LDAP Settings




```
Base DN:  dc=bg7nyt,dc=cn
Root bind DN:  cn=root,dc=bg7nyt,dc=cn
Root Password:  你的密码
```

c. Services->Enable/Disable



d. Accounts->Account Administration

i. Group Administration

```
Group Name: nfs
```

ii. User Administration

```
Username: 用户名
Password: 密码
Retype password: 确认密码
Primary Group: 用户组
```

查看组织单元：ou=people,dc=bg7nyt,dc=cn

```
[chenjingfeng@backup ldap]$ ldapsearch -x -b
'ou=people,dc=bg7nyt,dc=cn'
# extended LDIF
#
# LDAPv3
# base <ou=people,dc=bg7nyt,dc=cn> with scope sub
# filter: (objectclass=*)
# requesting: ALL
#

# people, bg7nyt.cn
dn: ou=people,dc=bg7nyt,dc=cn
ou: people
objectClass: organizationalUnit

# neo, People, bg7nyt.cn
dn: uid=neo,ou=People,dc=bg7nyt,dc=cn
objectClass: inetOrgPerson
objectClass: posixAccount
homeDirectory: /dev/null
loginShell: /bin/false
cn: neo
givenName: neo
sn: neo
uid: neo
uidNumber: 500
gidNumber: 500

# search result
search: 2
result: 0 Success

# numResponses: 3
# numEntries: 2
```

2. Volumes

- 卷管理 [Volumes]

  我这里是使用VMware做的试验,在VMware中增加一些硬盘即可.

  a. Volumes -> Physical Storage Mgmt.

Physical Storage Management

Edit Disk	Type	Description	Size	Label type	Partitions
/dev/sda	SCSI	VMware, VMware Virtual S	8.00 GB	msdos	3 (view)
/dev/sdb	SCSI	VMware, VMware Virtual S	8.00 GB	gpt	0 (view)
/dev/sdc	SCSI	VMware, VMware Virtual S	8.00 GB	gpt	0 (view)
/dev/sdd	SCSI	VMware, VMware Virtual S	8.00 GB	gpt	0 (view)

```
Edit Disk Type Description Size Label type Partitions
/dev/sda SCSI VMware, VMware Virtual S 8.00 GB msdos 3 (view)
/dev/sdb SCSI VMware, VMware Virtual S 8.00 GB gpt 0 (view)
/dev/sdc SCSI VMware, VMware Virtual S 8.00 GB gpt 0 (view)
/dev/sdd SCSI VMware, VMware Virtual S 8.00 GB gpt 0 (view)
...
```

openfiler安装在/dev/sda,/dev/sda硬盘空间不用太大,单独给openfiler使用.建议做RAID 1(硬件RAID卡或服务器主版提供的RAID)

其它硬盘是用于存储的硬盘,如果有条件这些硬盘组也最好做成硬RAID,没有条件我们可以在openfiler中做软件RAID.

点击"Edit Disk"列表内硬盘标签,之后可以看到"Create a partition in /dev/sdb"

Create a partition in /dev/sdb

You can use ranges within the following extents:

Mode	Starting cylinder	Ending cylinder	Space
Primary	1	1044	8.00 GB

Mode	Partition Type	Starting cylinder	Ending cylinder	Size	Create	Reset
Primary	Physical volume	1	1044	8 GB	Create	Reset

```
Mode: Primary
Partition Type: [Physical volume] / [RAID array member]
Starting cylinder: 1
Ending cylinder Size: 1044
Size: 自动产生
```

单击"Create"创建分区

Edit partitions in /dev/sdb (1044 cylinders with "gpt" label)

Device	Type	Number	Start cyl	End cyl	Blocks	Size	Type	Delete
/dev/sdb1	Linux Physical Volume (0x8e)	1	1	1044	8384495	8.00 GB	Primary	Delete

Back to the list of physical storage devices

Back to the list of physical storage devices

如果没有特别需求,不需要创建多个分区.

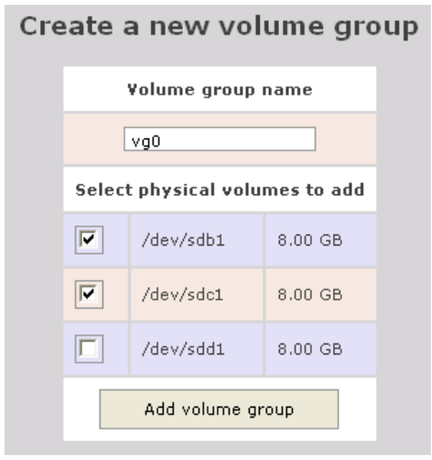
```
Edit partitions in /dev/sdb (1044 cylinders with "gpt" label)

Device Type Number Start cyl End cyl Blocks Size Type Delete
/dev/sdb1 Linux Physical Volume (0x8e) 1 1 10 78831 76.98 MB Primary Delete
/dev/sdb2 Linux Physical Volume (0x8e) 2 10 100 721920 705.00 MB Primary Delete
/dev/sdb3 Linux Physical Volume (0x8e) 3 100 200 801792 783.00 MB Primary Delete
/dev/sdb4 Linux Physical Volume (0x8e) 4 200 300 802816 784.00 MB Primary Delete
/dev/sdb5 Linux Physical Volume (0x8e) 5 300 400 801792 783.00 MB Primary Delete
```

b. Volumes->Volume Group Mgmt.

Volume Group 可以实现动态扩展空间,注意如果在使用中有一个成员盘损坏,你将无法恢复数据.

应急使用可以,不建议长期使用.




```
Volume group name: vg0
Select physical volumes to add: 在列表前面打勾
/dev/sdb1 8.00 GB
/dev/sdc1 8.00 GB
```

单击"Add volume group"创建vg0

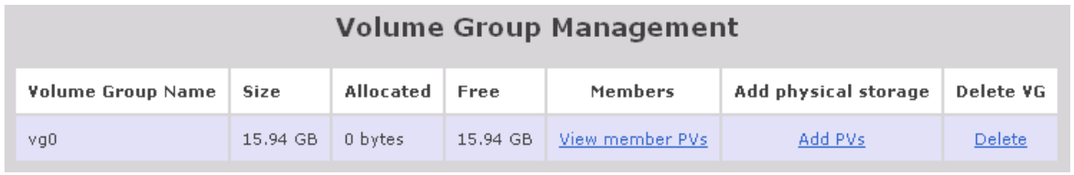
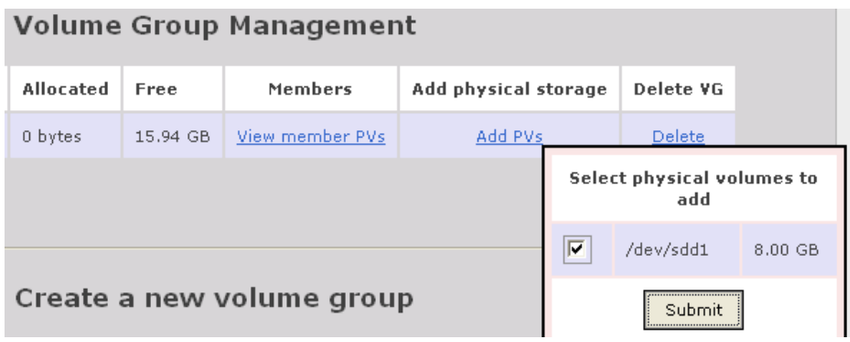


表 8.1. Volume Group Management

Volume Group Name	Size	Allocated	Free	Members	Add physical storage	Delete VG
vg0	15.94 GB	0 bytes	15.94 GB	View member	PVs Add	PVs Delete

扩展Volume Group单击[PVs Add]按钮

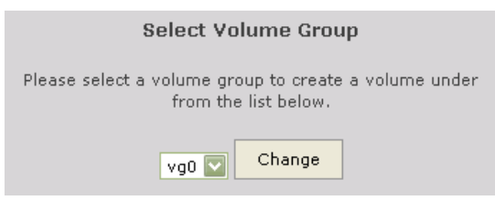


分区列表前面打勾

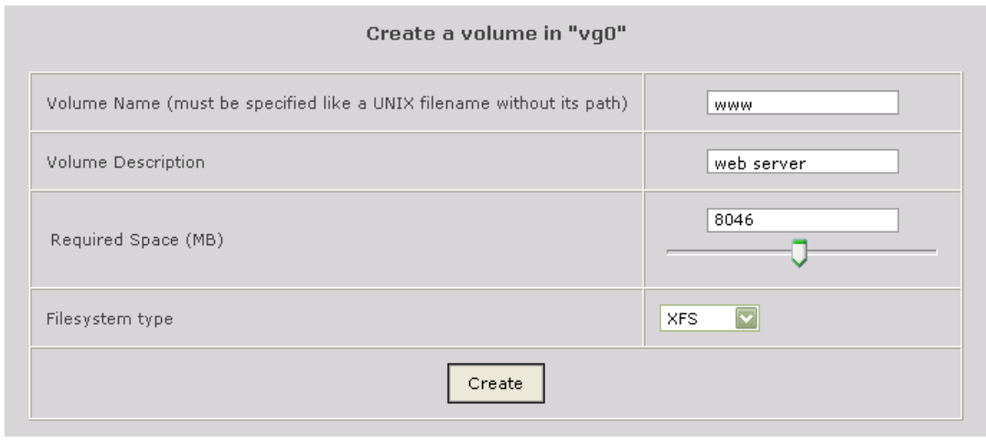
[Submit]提交

c. Volumes -> Create New Volume

选择VG

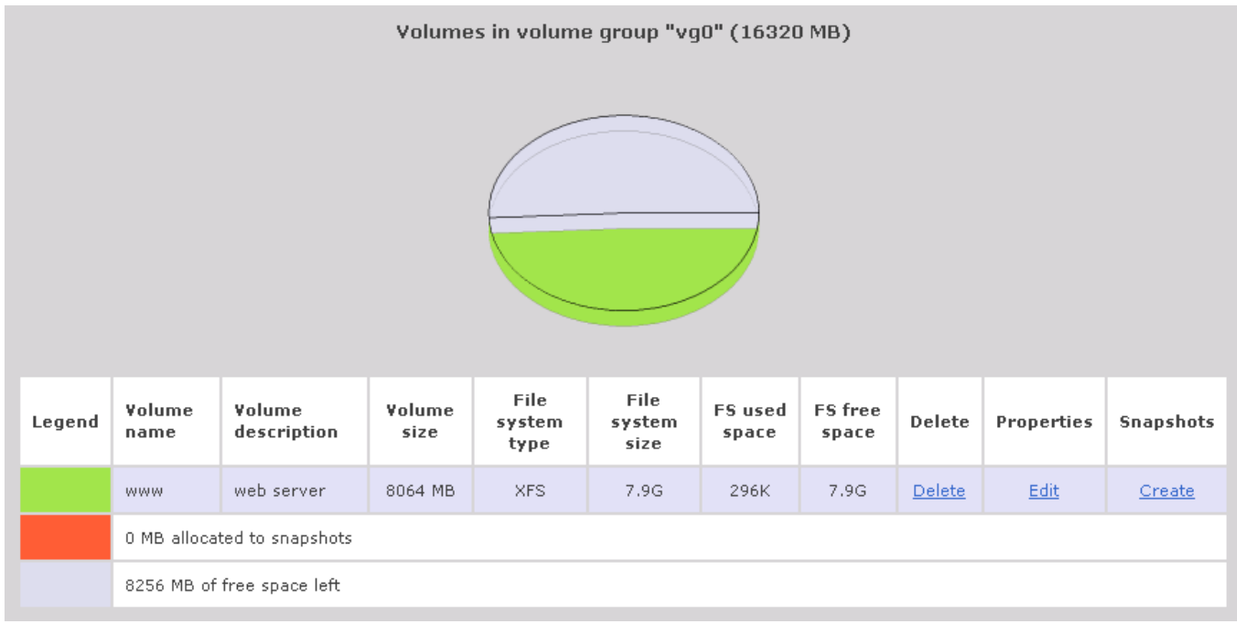


创建卷




```
Volume Name: 卷名
Volume Description: 描述
Required Space (MB): 配额
Filesystem type: 文件系统
```

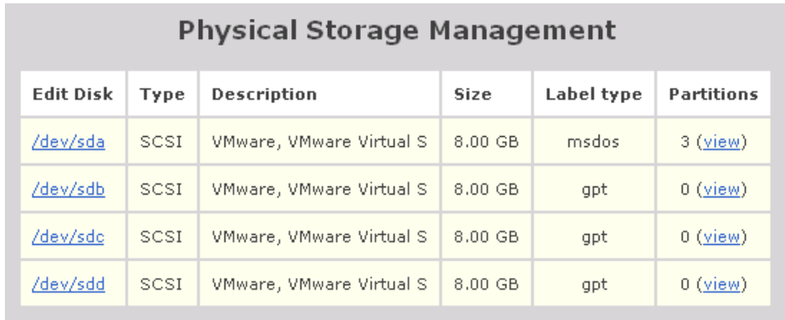
单击[Create]按钮



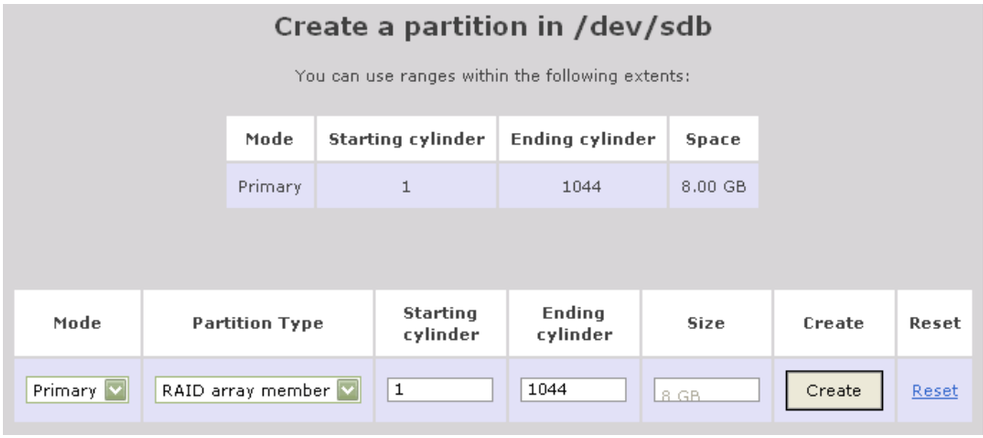
2.1. RAID

Openfiler提供软RAID.

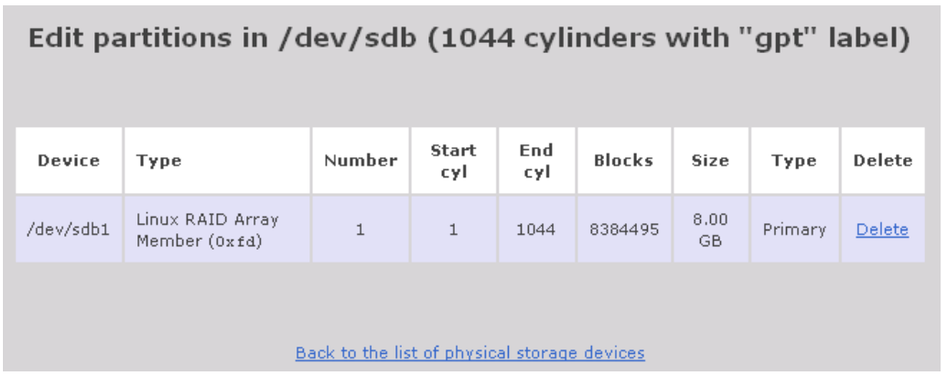
1. Volumes -> Physical Storage Mgmt.



点击"Edit Disk"列表内硬盘标签,之后可以看到"Create a partition in /dev/sdb"

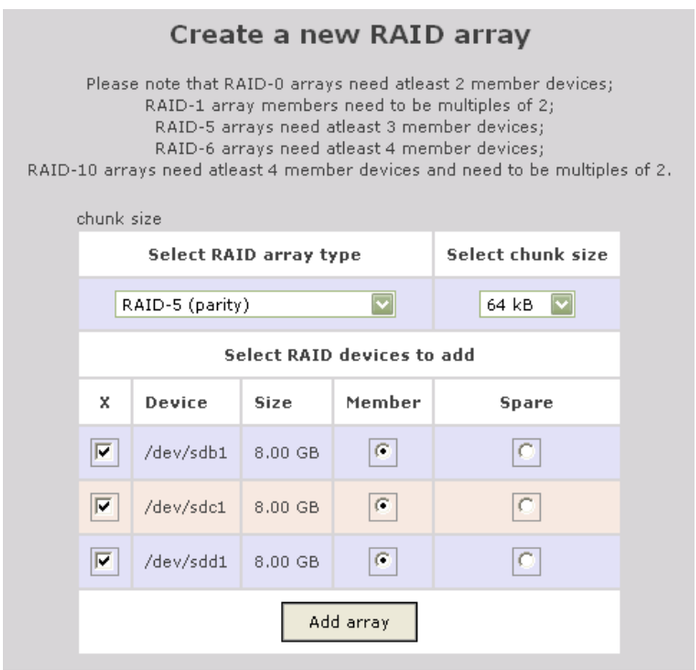


单击[Create]按钮创建RAID组成员



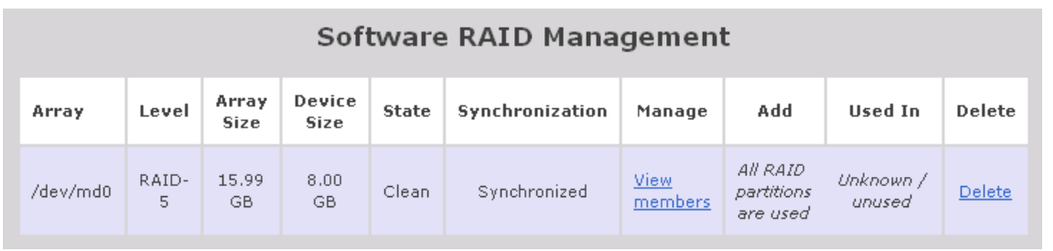
单击[Back to the list of physical storage devices]返回到 "Physical Storage Management"

2. Volumes -> Software RAID Mgmt.




```
Select RAID array type: RAID(0,1,5,6,10)
Select chunk size: 这可以针对你的需求做优化
Select RAID devices to add: 打勾选择
```

单击[Add array]创建RAID



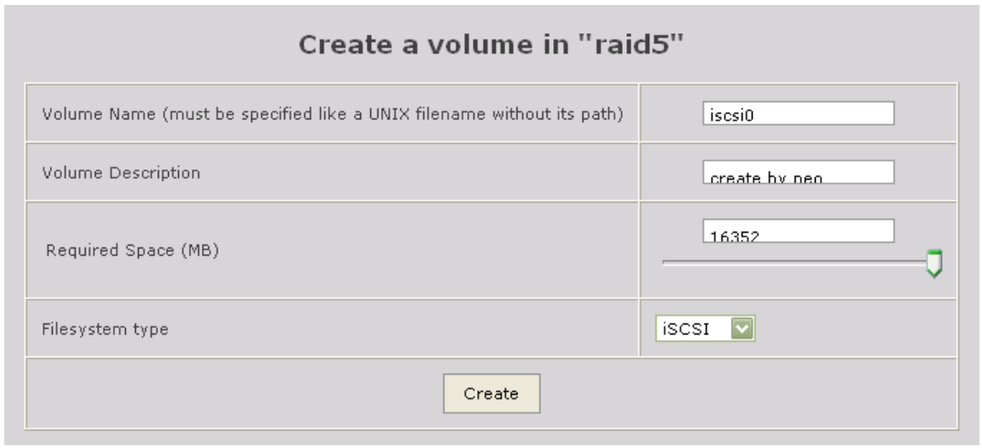
RAID创建完成后,就可以卷组和卷

Volumes -> Volume Group Mgmt. -> Create New Volume

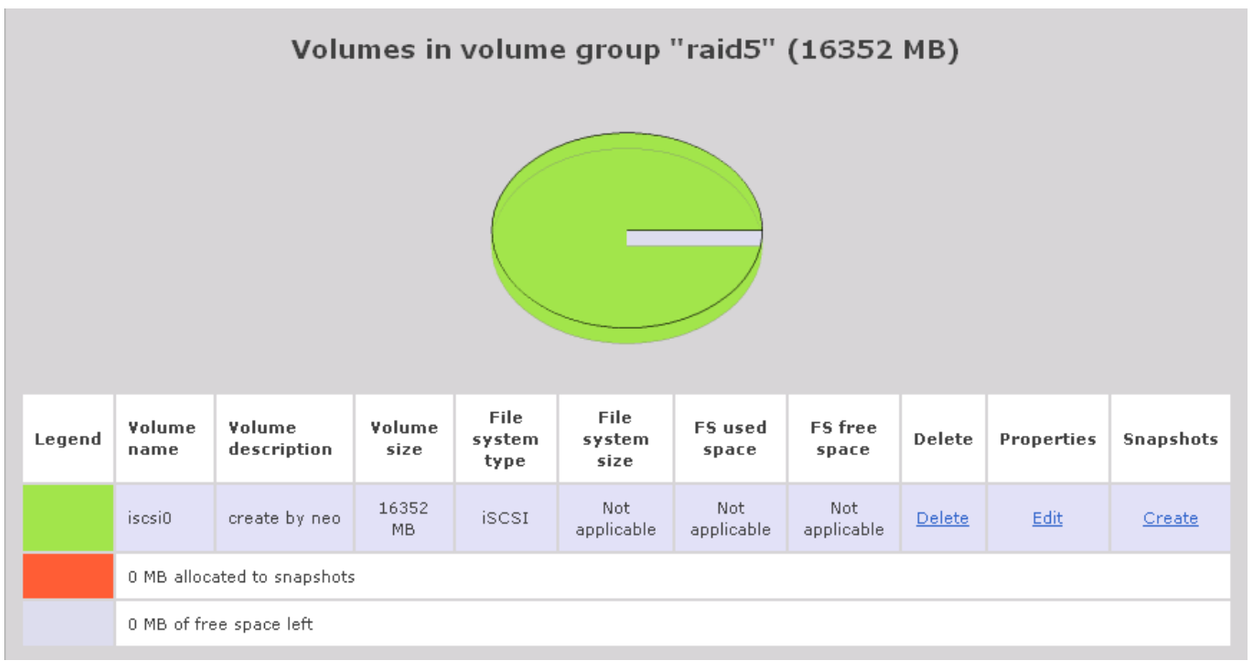
RAID 6 采用双校验盘最少4块硬盘

2.2. iSCSI

Volumes -> Create New Volume



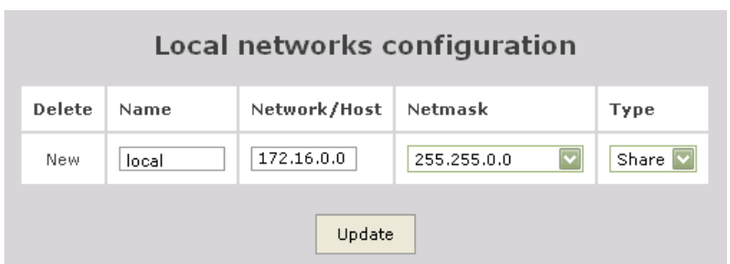
单击[Create]按钮



单击[Update]按钮

Services -> Enable/Disable -> iSCSI target 确认已经 Enable

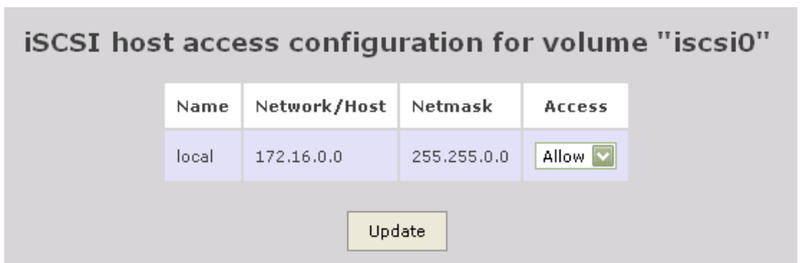
General -> Local Networks



单击[Update]按钮

Volumes -> List of Existing Volumes -> Select Volume Group

单击 iScsi 卷列表 Properties 下的 [Edit] 连接



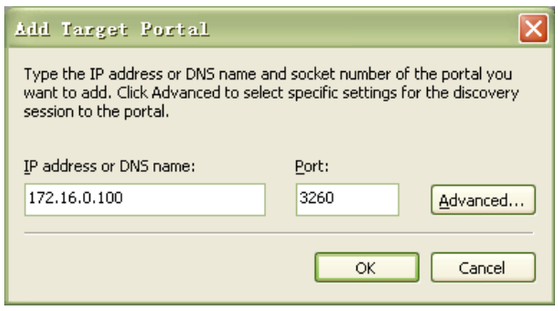
默认是:Deny, 修为Allow

2.2.1. Microsoft iSCSI Software Initiator

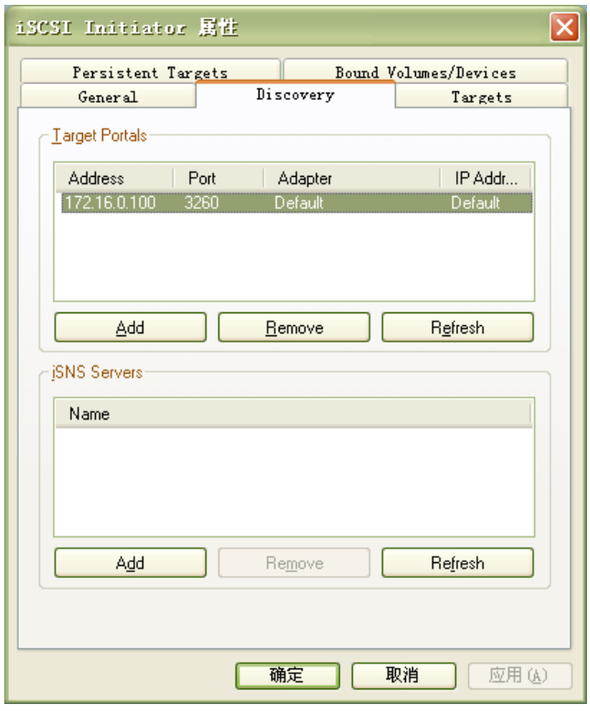
开始菜单 找到 Microsoft iSCSI Initiator 并运行

单击 Discovery 选项卡

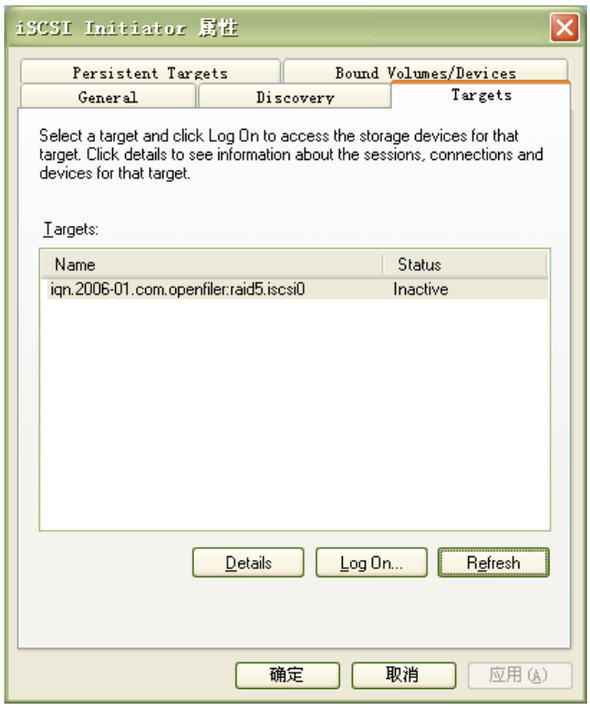
单击 [Add] 按钮



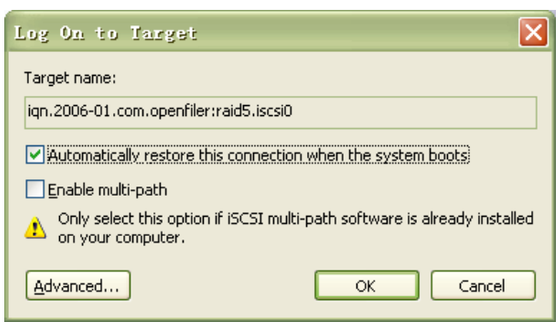
单击 [OK] 按钮



单击 Targets 选项卡



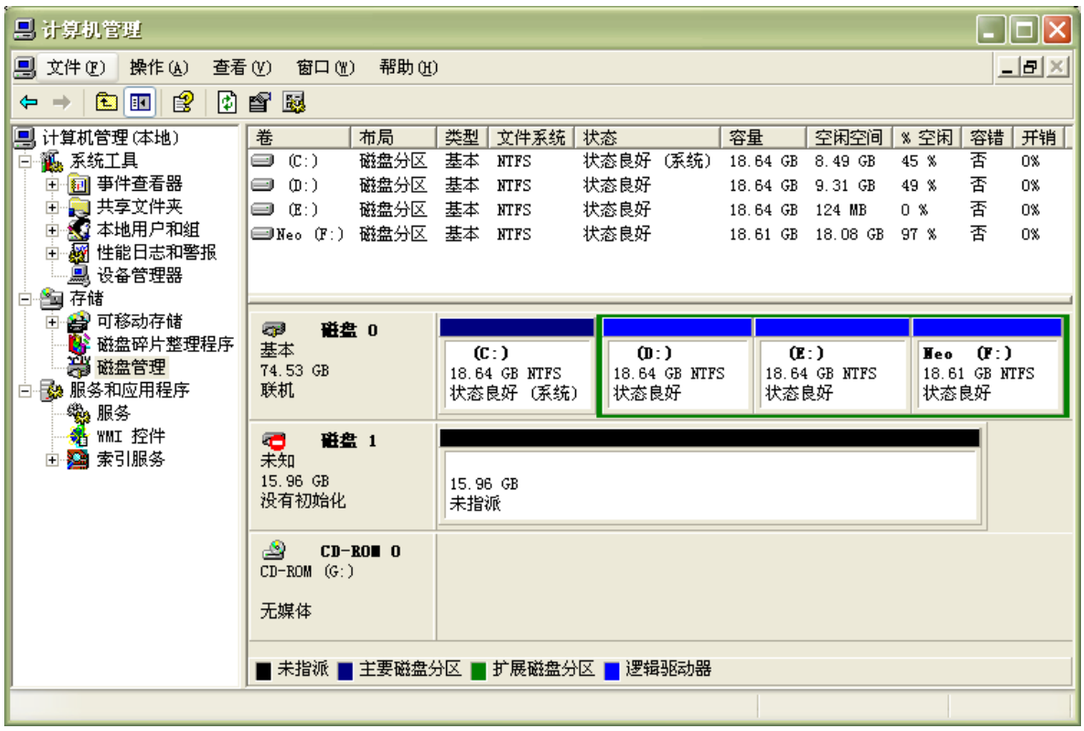
单击 [Refresh] 按钮 -> [Log On...]



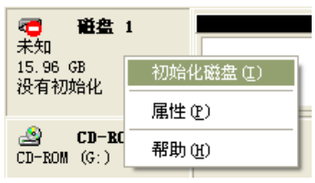
单击 [OK] 按钮

完成Initiator设置

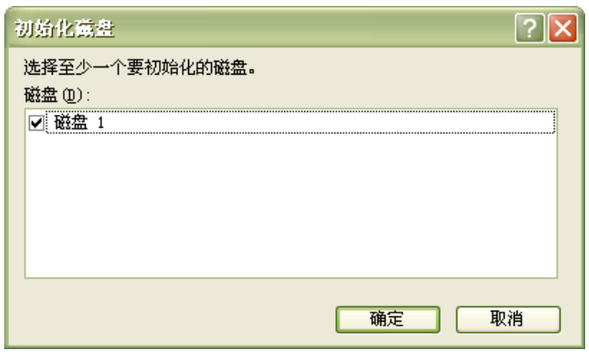
我的电脑 -> 单击鼠标右键 -> 管理



初始化硬盘



选择硬盘



初始化完成，红色图标消失后你就可以对磁盘分区，挂载卷，格式化。

使用 iSCSI 与使用本地磁盘完全一样。

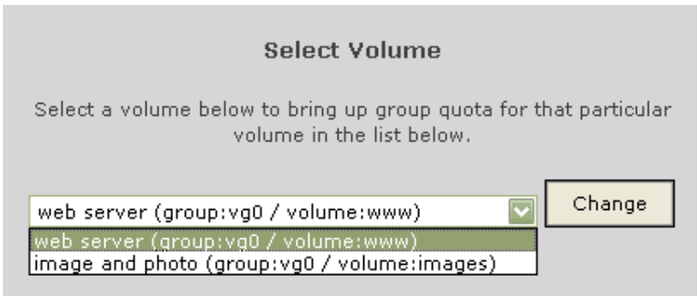
Status -> iSCSI

3. Quota

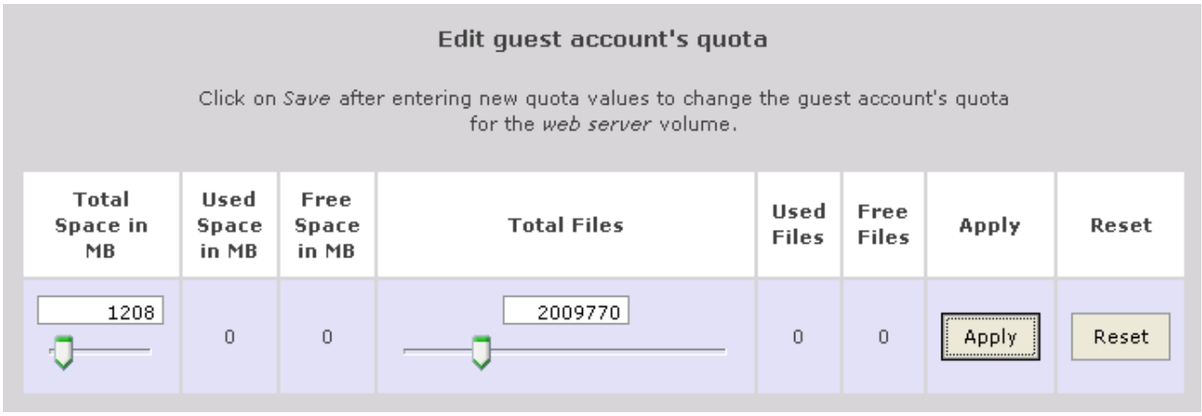
- 注意

有些文件系统不支持Quota

a. Quota -> Guest Quota



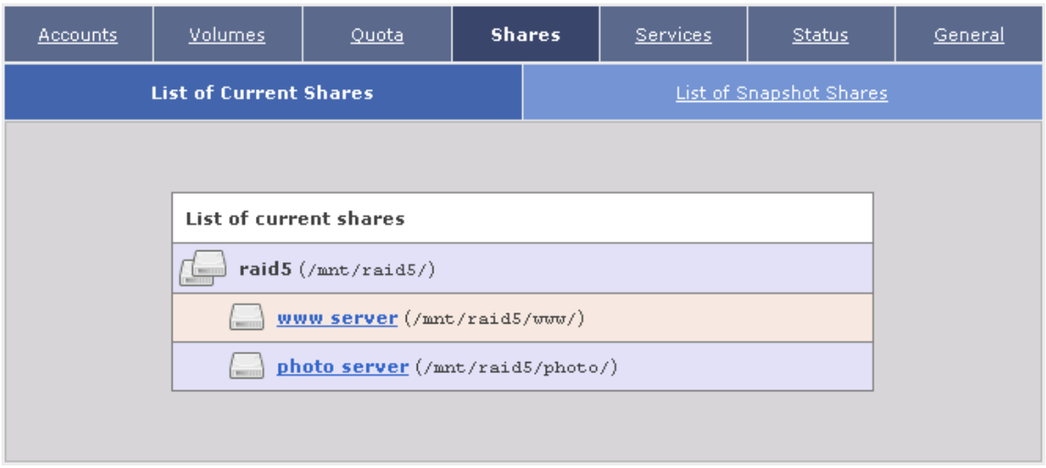
单击[Change]按钮



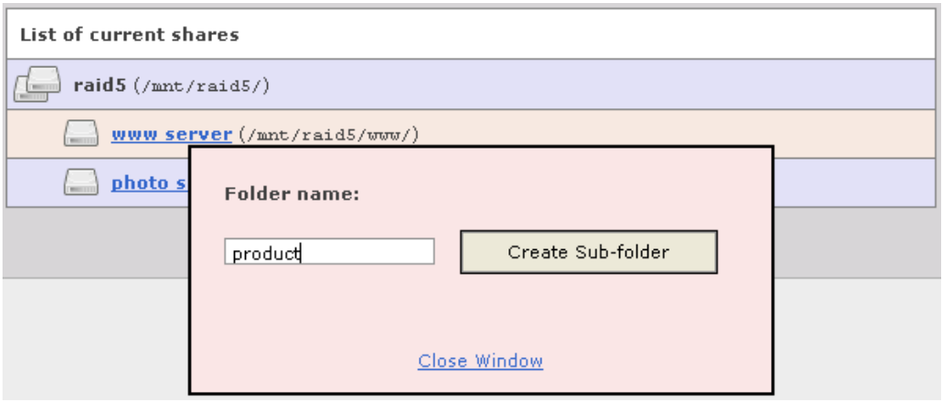
单击[Apply]按钮

4. Shares

- Shares

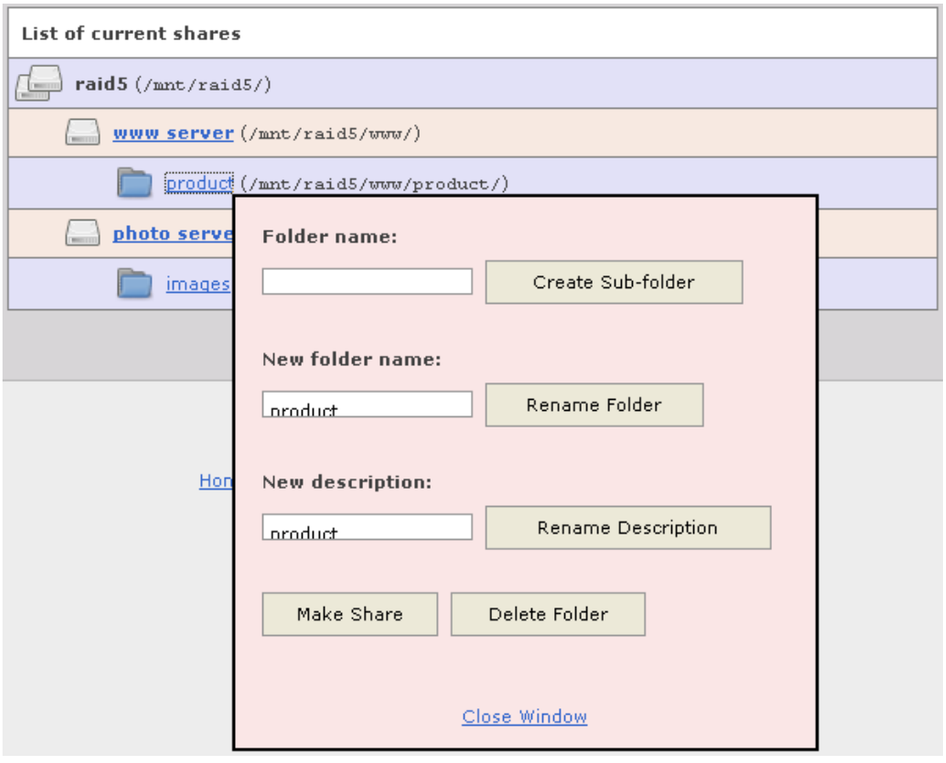


单击列表内的连接.

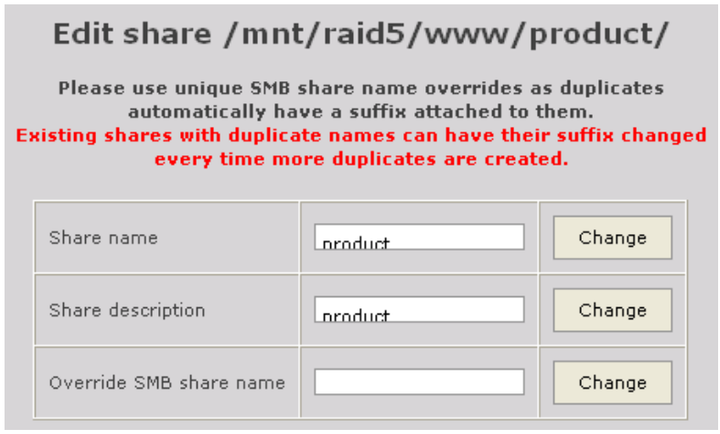



```
Folder name: 输入文件夹名
```

单击 [Create Sub-folder] 按钮 创建文件夹

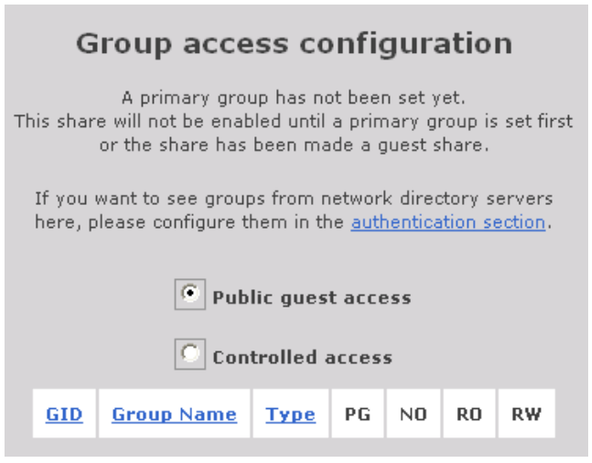


```
Share name: 输入共享名
Share description: 描述
Override SMB share name:
```



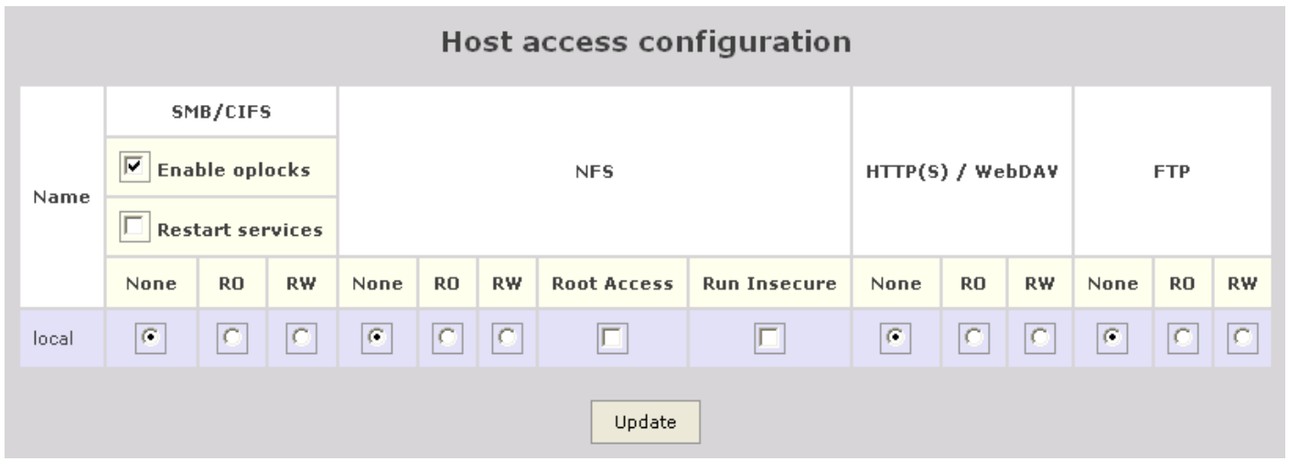
单击[Change]按钮 修改

组的权限制



单击[Update]按钮

主机访问权限配置



单击[Update]按钮

第 9 章 Backup / Restore

目录

1. 备份策略

1.1. Incremental backup

1.2. Differential backup

2. Bacula, the Open Source, Enterprise ready, Network Backup Tool for Linux, Unix, Mac and Windows.

http://www.bacula.org/

ubuntu 10.10

```
neo@backup:~$ apt-cache search bacula
bacula - network backup, recovery and verification - meta-package
bacula-client - network backup, recovery and verification - client meta-package
bacula-common - network backup, recovery and verification - common support files
bacula-common-mysql - network backup, recovery and verification - MySQL common
files
bacula-common-pgsql - network backup, recovery and verification - PostgreSQL
common files
bacula-common-sqlite3 - network backup, recovery and verification - SQLite v3
common files
bacula-console - network backup, recovery and verification - text console
bacula-director-common - network backup, recovery and verification - Director
common files
bacula-director-mysql - network backup, recovery and verification - MySQL storage
for Director
bacula-director-pgsql - network backup, recovery and verification - PostgreSQL
storage for Director
bacula-director-sqlite3 - network backup, recovery and verification - SQLite 3
storage for Director
bacula-fd - network backup, recovery and verification - file daemon
bacula-sd - network backup, recovery and verification - storage daemon
bacula-sd-mysql - network backup, recovery and verification - MySQL SD tools
bacula-sd-pgsql - network backup, recovery and verification - PostgreSQL SD tools
bacula-sd-sqlite3 - network backup, recovery and verification - SQLite 3 SD tools
bacula-server - network backup, recovery and verification - server meta-package
bacula-console-qt - Bacula Administration Tool Console
bacula-director-sqlite - network backup, recovery and verification - SQLite 2
director transition
bacula-doc - Documentation for Bacula
bacula-sd-sqlite - network backup, recovery and verification - SQLite SD tools
bacula-traymonitor - network backup, recovery and verification - tray monitor
```

2.1. Install Backup Server

过程 9.1.

1. 安装bacula服务器

```
$ sudo apt-get install bacula
```

启动脚本.

```
neo@backup:/etc/bacula$ ls -1 /etc/init.d/bacula-*
/etc/init.d/bacula-director
/etc/init.d/bacula-fd
/etc/init.d/bacula-sd
```

Bacula Config files

```
neo@backup:~$ ls -1 /etc/bacula/
bacula-dir.conf
```

```
bacula-fd.conf
bacula-sd.conf
bconsole.conf
common_default_passwords
scripts
```

Checking Bacula Daemons Status

```
neo@backup:~$ ps auwx | grep bacula
bacula   25044  0.0  0.1  72624  2092 ?        Ssl  14:55   0:00
/usr/sbin/bacula-sd -c /etc/bacula/bacula-sd.conf -u bacula -g tape
root     25659  0.0  0.0  60068  1376 ?        Ssl  14:56   0:00
/usr/sbin/bacula-fd -c /etc/bacula/bacula-fd.conf
bacula   29551  0.0  0.1  87672  3096 ?        Ssl  15:48   0:00
/usr/sbin/bacula-dir -c /etc/bacula/bacula-dir.conf -u bacula -g bacula
neo      30344  0.0  0.0   7748   876 pts/0    S+   15:57   0:00 grep --
color=auto bacula
```

2. bconsole

```
neo@backup:/etc/bacula$ sudo bconsole
Connecting to Director localhost:9101
1000 OK: backup.xiu.com-dir Version: 5.0.2 (28 April 2010)
Enter a period to cancel a command.
*help
  Command       Description
  =======       ===========
  add           Add media to a pool
  autodisplay   Autodisplay console messages
  automount     Automount after label
  cancel        Cancel a job
  create        Create DB Pool from resource
  delete        Delete volume, pool or job
  disable       Disable a job
  enable        Enable a job
  estimate      Performs FileSet estimate, listing gives full listing
  exit          Terminate Bconsole session
  gui           Non-interactive gui mode
  help          Print help on specific command
  label         Label a tape
  list          List objects from catalog
  llist         Full or long list like list command
  messages      Display pending messages
  memory        Print current memory usage
  mount         Mount storage
  prune         Prune expired records from catalog
  purge         Purge records from catalog
  python        Python control commands
  quit          Terminate Bconsole session
  query         Query catalog
  restore       Restore files
  relabel       Relabel a tape
  release       Release storage
  reload        Reload conf file
  run           Run a job
  status        Report status
  setdebug      Sets debug level
  setip         Sets new client address -- if authorized
  show          Show resource records
  sqlquery      Use SQL to query catalog
  time          Print current time
  trace         Turn on/off trace to file
  unmount       Unmount storage
  umount        Umount - for old-time Unix guys, see unmount
  update        Update volume, pool or stats
  use           Use catalog xxx
  var           Does variable expansion
  version       Print Director version
  wait          Wait until no jobs are running

When at a prompt, entering a period cancels the command.

*
```

3. 修改配置文件，增加备份策略.

   备份配置文件，以免把文件改坏。

```
root@backup:~# cd /etc/bacula/
root@backup:/etc/bacula# mkdir original
root@backup:/etc/bacula# cp *.conf original/
root@backup:/etc/bacula#
```

bacula-dir.conf

```
root@backup:/etc/bacula# vim bacula-dir.conf
Job {
  Name = "BackupClient2"
  Client = web-fd
  JobDefs = "DefaultJob"
}
```

2.2. Install Backup Client

- ```
  neo@web:~$ sudo apt-get install bacula-client
  ```
  ```

3. Amanda: Open Source Backup

http://www.amanda.org/

Amanda is the most popular open source backup and recovery software in the world. Amanda protects more than half a million of servers and desktops running various versions of Linux, UNIX, BSD, Mac OS-X and Microsoft Windows operating systems worldwide.

4. Opendedup

http://www.opendedup.org/