

Samba 3 as NT 4 Primary Domain Controller

Or doing the Samba domain style

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Chapter 1

Introduction

This tutorial will teach you everything you will need to know to setup a Samba based NT 4 Primary Domain Controller for small businesses.

Note that most console outputs were copied verbatim, but not all. Some console outputs had too much irrelevant information, in such case the output was sanitized.

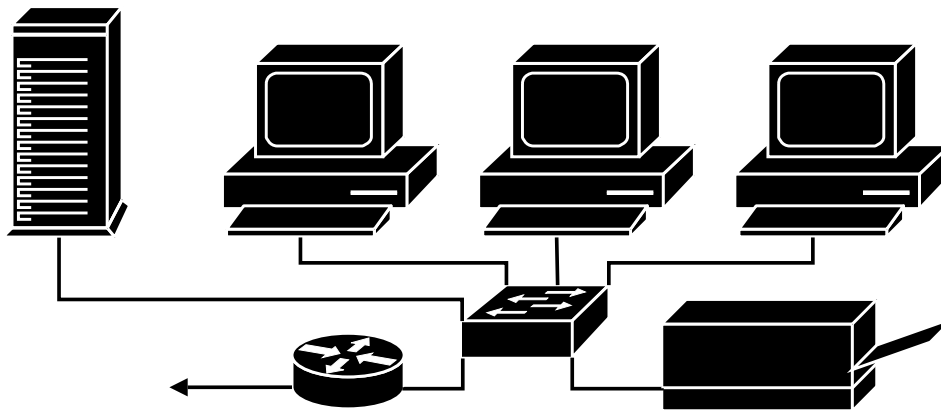
Also bear in mind that this tutorial was made for experienced Linux users. If you doubt your Linux related skills I would really advise against using this tutorial. Even more so in a production environment.

Beware that this is still very much a work in progress.

Chapter 2

The case

A small local company called Johnson & Co has installed a new network infrastructure. The new infrastructure looks like this:



Your task will be to install their new Samba server. You were given the following objectives:

- All users must have roaming profiles.
- All users must belong to a workgroup.
- All workgroups must have a common file area, where all it's members can share documents.
- Consideration was given to purchase Adobe Acrobat, a cheaper alternative would be welcome.

Good luck!

Chapter 3

Installation

For this tutorial I chose to use CentOS Linux 3.3. I have chosen CentOS because it's a derivative of Red Hat Enterprise Linux 3. And such a distribution would most likely be deployed in a real enterprise.

I will not go through every bit of the installation procedure, you'll be expected to make sensible choices along the way. Always make notes of what you have done!

3.1 Partitioning

When asked, choose to do manual partitioning with Disk Druid. Below you will see a table of what your partitions should look like.

partition	size	filesystem	mount point
/dev/sda1	128MiB	ext3	/boot
/dev/sda2	512MiB	swap	
/dev/sda3	4096MiB	ext3	/
/dev/sda4	max	Extended Partition	
/dev/sda5	max	Physical Volume (LVM)	

I've mounted /boot onto a separate partition because to protect it's integrity. The /boot partition always has next to zero disk activity, so it's chances of recovery are greater if it's a separate partition.

The swap partition should be about twice the amount of RAM you have, note that this is nothing more than a guideline.

For the root partition, just make sure you have more than enough space for all the software you're installing.

Some may think it wise to put /var/log on a separate partition also, so if you have the space you may want to do so.

All space we have left will be made into a LVM Physical Volume, so we can divide that space later when our system is already running.

3.2 Bootloader

Choose the GRUB bootloader, it will do fine. GRUB also tends to be a bit more flexible in emergencies. It allows it's configuration to be temporarily changed at boot time, which can be a lifesaver!

3.3 Network

Network configuration would be quite straight forward, assign the server a static IP address. An example is given below:

eth0	
Activate on boot	Yes
IP Address	192.168.2.10
Netmask	255.255.255.0
Default Gateway	192.168.2.1
Primary Nameserver	192.168.2.1

3.4 Packages

We will be needing the following package groups:

- Editors
- Text-based Internet
- Authoring and Publishing
- Windows File Server
- Network Servers
- Development Tools
- Kernel Development
- System Tools
- Printing Support

3.5 Update

After the installation has completed, the first order of business would be to make sure all our software is up to date.

```
# rpm --import http://mirror.centos.org/centos-3/RPM-GPG-KEY-CentOS-3
# yum update
Gathering header information file(s) from server(s)
Server: CentOS-3.3 - Addons
Server: CentOS-3.3 - Base
Server: CentOS-3.3 - Extras
Server: CentOS-3.3 - Updates
Finding updated packages
Downloading needed headers
squirrelmail-0-1.4.3-0.e3 100% |=====| 28 kB 00:00
kernel-hugemem-0-2.4.21-2 100% |=====| 40 kB 00:00
kernel-0-2.4.21-27.EL.ath 100% |=====| 43 kB 00:00
kernel-unsupported-0-2.4. 100% |=====| 45 kB 00:00
kernel-hugemem-unsupporte 100% |=====| 49 kB 00:00
kernel-BOOT-0-2.4.21-27.E 100% |=====| 35 kB 00:00
kernel-smp-0-2.4.21-27.EL 100% |=====| 44 kB 00:00
kernel-unsupported-0-2.4. 100% |=====| 45 kB 00:00
kernel-smp-unsupported-0- 100% |=====| 45 kB 00:00
kernel-smp-unsupported-0- 100% |=====| 45 kB 00:00
kernel-smp-0-2.4.21-27.EL 100% |=====| 43 kB 00:00
kernel-doc-0-2.4.21-27.EL 100% |=====| 45 kB 00:00
kernel-0-2.4.21-27.EL.i58 100% |=====| 43 kB 00:00
kernel-unsupported-0-2.4. 100% |=====| 45 kB 00:00
No Packages Available for Update
No actions to take
```

Chapter 4

General configuration

4.1 secure shell

CentOS starts the ssh daemon by default. We want to add a warning for anybody who tries to login through ssh. First we must make a banner file, called `/etc/ssh/sshd_banner`:

```
This is a private system. Do not attempt to login unless you
are an authorized user. Any authorized or unauthorized access
and use may be monitored and can result in criminal or civil
prosecution under applicable law.
```

Then edit `/etc/ssh/sshd_config` to include the following statement:

```
Banner /etc/ssh/sshd_banner
```

Next restart the sshd service:

```
# service sshd restart
Stopping sshd:           [ OK ]
Starting sshd:          [ OK ]
```

4.2 S.M.A.R.T. monitoring

CentOS includes a S.M.A.R.T. monitoring daemon, which will keep your harddisks conditions in check. And reports when anything goes wrong. First you need to add all you're harddisks to the `/etc/smartd.conf` file in the following fashion:

```
/dev/sda -H -m root@localhost.localdomain
```

Next we need to activate the S.M.A.R.T. monitoring daemon, and make sure it activates on reboot.

```
# service smartd start
Starting smartd: [ OK ]
# chkconfig --list smartd
smartd          0:off  1:off  2:off  3:off  4:off  5:off  6:off
# chkconfig --level 2345 smartd on
```

4.3 hardware sensors

Most recently bought computers should have temperature sensors onboard, the `lm_sensors` package gives you the ability to view that information. You will also need the `kernel-unsupported` package which contain all driver modules which Redhat does not support.

```
# yum install lm_sensors kernel-unsupported
```

After installing these packages proceed as following:

```
[root@localhost root]# sensors-detect
We can start with probing for (PCI) I2C or SMBus adapters.
You do not need any special privileges for this.
Do you want to probe now? (YES/no): YES
Probing for PCI bus adapters...
Use driver 'i2c-piix4' for device 00:04.3: Intel 82371AB PIIX4 ACPI
Use driver 'i2c-matroxfb' for device 01:00.0: MGA G100 [Productiva] AGP
Probe succesfully concluded.

We will now try to load each adapter module in turn.
Load 'i2c-piix4' (say NO if built into your kernel)? (YES/no): YES
Module loaded successfully.
Load 'i2c-matroxfb' (say NO if built into your kernel)? (YES/no): YES
Module loaded successfully.
Do you now want to be prompted for non-detectable adapters? (yes/NO): NO
To continue, we need module 'i2c-dev' to be loaded.
If it is built-in into your kernel, you can safely skip this.
i2c-dev is not loaded. Do you want to load it now? (YES/no): YES
Module loaded succesfully.

Next adapter: SMBus PIIX4 adapter at e800 (Non-I2C SMBus adapter)
Do you want to scan it? (YES/no/selectively): YES

Some chips are also accessible through the ISA bus. ISA probes are
typically a bit more dangerous, as we have to write to I/O ports to do
this. Do you want to scan the ISA bus? (YES/no): YES

I will now generate the commands needed to load the I2C modules.
Sometimes, a chip is available both through the ISA bus and an I2C bus.
ISA bus access is faster, but you need to load an additional driver module
for it. If you have the choice, do you want to use the ISA bus or the
I2C/SMBus (ISA/smbus)? SMBus

Do you want to generate /etc/sysconfig/lm_sensors? (YES/no): YES
Copy prog/init/lm_sensors.init to /etc/rc.d/init.d/lm_sensors
for initialization at boot time.
```

Now you have finished detecting all sensors present in your machine. Next we're going to make sure all sensor drivers are loaded at boot time:

```
# cp /usr/share/doc/lm_sensors-2.6.5/lm_sensors.init /etc/init.d/lm_sensors
# service lm_sensors start
Starting up sensors:
# chkconfig --add lm_sensors
# chkconfig --level 2345 lm_sensors on
```

Dependant on what hardware you have, you can check your sensors like this:

```
# sensors
lm78-j-i2c-0-2d
Adapter: SMBus PIIX4 adapter at e800
Algorithm: Non-I2C SMBus adapter
VCore 1:  +2.83 V (min = +2.88 V, max = +3.52 V)  ALARM
VCore 2:  +2.81 V (min = +2.88 V, max = +3.52 V)  ALARM
+3.3V:    +3.50 V (min = +2.97 V, max = +3.63 V)
+5V:      +5.04 V (min = +4.50 V, max = +5.48 V)
+12V:     +12.20 V (min = +10.79 V, max = +13.11 V)
-12V:     -11.82 V (min = -13.18 V, max = -10.78 V)
-5V:      -4.95 V (min = -5.48 V, max = -4.50 V)
fan1:     0 RPM (min = 3000 RPM, div = 2)         ALARM
fan2:     0 RPM (min = 3000 RPM, div = 2)         ALARM
fan3:     0 RPM (min = 3000 RPM, div = 2)         ALARM
temp:     +18.0C (limit = +60C, hysteresis = +50C)
vid:      +3.20 V

eeprom-i2c-0-52
Adapter: SMBus PIIX4 adapter at e800
Algorithm: Non-I2C SMBus adapter
Memory type:          SDRAM DIMM SPD
SDRAM Size (MB):      256

eeprom-i2c-0-53
Adapter: SMBus PIIX4 adapter at e800
Algorithm: Non-I2C SMBus adapter
Memory type:          SDRAM DIMM SPD
SDRAM Size (MB):      256

eeprom-i2c-1-50
Adapter: DDC:fb0 #0 on i2c-matroxfb
Algorithm: Bit-shift algorithm
```

4.4 microcode update

All Intel microprocessors since the Pentium Pro have been able to receive newer firmware, also called microcode in the microprocessor business.

Note that the microcode is placed into volatile RAM, so you can never permanently damage your processor with a microcode update. This also implies that the update must be uploaded to the processor at every boot.

```
# service microcode_ctl start
Applying Intel IA32 Microcode update:          [ OK ]
```

```
# dmesg | grep microcode
microcode: CPU0 updated from revision 0xc to 0x13, date = 02062001
# chkconfig --level 2345 microcode_ctl on
# chkconfig --list microcode_ctl
microcode_ctl 0:off 1:off 2:on 3:on 4:on 5:on 6:off
```

4.5 ecc support

CentOS Linux also support monitoring Error Correcting Code memory, here is how you can use it:

```
# modprobe ecc
# dmesg | grep ECC
ECC: monitor version 0.14 (Oct 10 2001)
```

4.6 serial console

In an emergency situation it might be handy to be able to login through a serial console. You can accomplish that, by adding the following lines to your `/etc/inittab`:

```
# Run serial gettys in standard runlevels
s0:2345:respawn:/sbin/agetty -L 9600 ttyS0 vt100
s1:2345:respawn:/sbin/agetty -L 9600 ttyS1 vt100
```

This will allow you to login as a normal user. If you wish to be able to login as root through the serial consoles, you need to add the console to your `/etc/securetty`:

```
/dev/ttyS0
/dev/ttyS1
```

Now you'll be able to use HyperTerminal or Commi to login with the following settings:

Baud rate	9600
Data bits	8
Stop bits	1
Parity	None
Flow control	Hardware

Chapter 5

NTP

To neatly synchronize the time across the entire network we can utilize the Network Time Protocol.

You can use the configuration file below (called `/etc/ntp.conf`) as a guideline, please do not use it exactly like this, many NTP server administrators like to be notified before you use them. Please select your server from <http://ntp.isc.org/bin/view/Servers/StratumTwoTimeServers> and notify the appropriate administrator you intend to use their time server.

```
restrict default ignore
restrict 127.0.0.1
restrict 192.168.2.0 mask 255.255.255.0 notrust nomodify notrap

server ntp1.theinternetone.net
server ntp2.theinternetone.net
server ntp3.theinternetone.net

server 127.127.1.0
fudge 127.127.1.0 stratum 10

driftfile /var/lib/ntp/drift
broadcastdelay 0.008

authenticate yes

keys /etc/ntp/keys
```

Now we must make sure `ntpd` starts at every boot:

```
# service ntpd start
Starting ntpd: [ OK ]
# chkconfig --list ntpd
ntpd 0:off 1:off 2:off 3:off 4:off 5:off 6:off
# chkconfig --level 2345 ntpd on
```

Chapter 6

DHCP

The easiest way to assign IP addresses to multiple workstations is to use the Dynamic Host Client Protocol Daemon. You can use the sample configuration below:

```
ddns-update-style none;

default-lease-time 28800;
max-lease-time 43200;

subnet 192.168.2.0 netmask 255.255.255.0 {
    range dynamic-bootp 192.168.2.100 192.168.2.199;
    option subnet-mask 255.255.255.0;

    option routers 192.168.2.1;
    option domain-name-servers 192.168.2.1;

    option ntp-servers 192.168.2.10;

    option netbios-name-servers 192.168.2.10;
    option netbios-node-type 8;

    allow unknown-clients;

    host hplj {
        hardware ethernet AE:89:F3:A7:03:34;
        fixed-address 192.168.2.20;
    }
}
```

Next we'll need to start the DHCP Daemon and make sure it starts at every reboot.

```
# service dhcpd start
Starting dhcpd: [ OK ]
# chkconfig --list dhcpd
dhcpd 0:off 1:off 2:off 3:off 4:off 5:off 6:off
# chkconfig --level 2345 dhcpd on
```

Chapter 7

Samba

7.1 Preparing diskspace

During the installation we already made one Physical Volume partition.

```
# vgcreate samba /dev/sda5
vgcreate -- INFO: using default physical extent size 32 MB
vgcreate -- INFO: maximum logical volume size is 2 Terabyte
vgcreate -- doing automatic backup of volume group "samba"
vgcreate -- volume group "samba" successfully created and activated
# lvcreate -L 128M samba -n netlogon
# lvcreate -L 320M samba -n profiles
# lvcreate -L 3200M samba -n homes
# lvcreate -L 1024M samba -n applications
# lvcreate -L 320M samba -n common
# mkfs -t ext3 /dev/samba/netlogon
# mkfs -t ext3 /dev/samba/profiles
# mkfs -t ext3 /dev/samba/homes
# mkfs -t ext3 /dev/samba/applications
# mkfs -t ext3 /dev/samba/common
```

Then we need to add those mount points to our `/etc/fstab`:

<code>/dev/samba/netlogon</code>	<code>/var/lib/samba/netlogon</code>	<code>ext3 defaults</code>	<code>0 0</code>
<code>/dev/samba/profiles</code>	<code>/var/lib/samba/profiles</code>	<code>ext3 defaults,usrquota,grpquota</code>	<code>0 0</code>
<code>/dev/samba/homes</code>	<code>/var/lib/samba/homes</code>	<code>ext3 defaults,usrquota,grpquota</code>	<code>0 0</code>
<code>/dev/samba/applications</code>	<code>/var/lib/samba/applications</code>	<code>ext3 defaults</code>	<code>0 0</code>
<code>/dev/samba/common</code>	<code>/var/lib/samba/common</code>	<code>ext3 defaults,usrquota,grpquota</code>	<code>0 0</code>

Now, we can't mount them yet, because our mount points do not yet exist. But we can quickly remedy that situation:

```
# mkdir -p /var/lib/samba
# mkdir -p /var/lib/samba/netlogon
# mkdir -p /var/lib/samba/profiles
# mkdir -p /var/lib/samba/homes
# mkdir -p /var/lib/samba/applications
# mkdir -p /var/lib/samba/common
```

```
# mount -a
# df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/sda3       4.0G  1.8G  2.0G  48% /
/dev/sda1       122M   14M  102M  13% /boot
none           125M    0  125M   0% /dev/shm
/dev/samba/netlogon 124M  4.1M  114M   4% /var/lib/samba/netlogon
/dev/samba/profiles 310M  8.1M  286M   3% /var/lib/samba/profiles
/dev/samba/homes 3.1G   33M  2.9G   2% /var/lib/samba/homes
/dev/samba/applications 1008M  33M  925M   4% /var/lib/samba/applications
/dev/samba/common 310M  8.1M  286M   3% /var/lib/samba/common
```

7.2 Quota

In the previous section we already made sure that our filesystems were ready for use with linux quota's. Now we only have to active the linux quota subsystem.

```
# quotacheck -avug
quotacheck: Scanning /dev/samba/profiles [/var/lib/samba/profiles] done
quotacheck: Checked 2 directories and 0 files
quotacheck: Old file not found.
quotacheck: Old file not found.
quotacheck: Scanning /dev/samba/homes [/var/lib/samba/homes] done
quotacheck: Checked 2 directories and 0 files
quotacheck: Old file not found.
quotacheck: Old file not found.
quotacheck: Scanning /dev/samba/common [/var/lib/samba/common] done
quotacheck: Checked 2 directories and 0 files
quotacheck: Old file not found.
quotacheck: Old file not found.
```

7.3 Configuration

All general configuration of Samba can be found in `/etc/samba/smb.conf`.

```
# Global parameters
[global]
    workgroup = JOHNSON
    interfaces = eth0, lo
    bind interfaces only = Yes
    passdb backend = tdbsam
    username map = /etc/samba/smbusers
    log level = 1
    syslog = 0
    log file = /var/log/samba/%m.log
    max log size = 100
    smb ports = 139 445
    name resolve order = wins bcast hosts
    time server = Yes
    show add printer wizard = No
    add machine script = /usr/sbin/useradd -g computers -d /dev/null -s /bin/false %u
    logon script = netlogon.bat
```

```
logon path = \\%L\profiles$\%U
logon drive = Q:
logon home = \\%L\%U
domain logons = Yes
preferred master = Yes
wins support = Yes
utmp = Yes
map acl inherit = Yes
veto files = /lost+found/aquota.user/aquota.group/
veto oplock files = /*.mdb/

[netlogon]
comment = Netlogon
path = /var/lib/samba/netlogon
guest ok = Yes
locking = No

[profiles$]
comment = Profiles
path = /var/lib/samba/profiles
read only = No
create mask = 0600
force create mode = 0600
directory mask = 0700
force directory mode = 0700
profile acls = Yes

[homes]
comment = Homes
valid users = %S
read only = No
create mask = 0600
force create mode = 0600
directory mask = 0700
force directory mode = 0700
browseable = No

[applications]
comment = Applications
path = /var/lib/samba/applications
read only = No
create mask = 0644
force create mode = 0644
directory mask = 0755
force directory mode = 0755

[common]
comment = Common
path = /var/lib/samba/common
read only = No
create mask = 0640
force create mode = 0640
directory mask = 0750
force directory mode = 0750

[printers]
comment = Printers
path = /var/spool/samba
guest ok = Yes
printable = Yes
use client driver = Yes
```

```
default devmode = Yes
browseable = No
```

It is considered good practise to maintain two versions of the smb.conf file. One called (for example) smb.conf.full and the normal smb.conf. The smb.conf.full file may contain elaborate comments, so keep everything clear, then we use testparm to filter them out for the file Samba actually uses for it's settings:

```
# testparm smb.conf.full > smb.conf
Load smb config files from smb.conf.full
Processing section "[netlogon]"
Processing section "[profiles$]"
Processing section "[homes]"
Processing section "[applications]"
Processing section "[printers]"
Loaded services file OK.
Server role: ROLE_DOMAIN_PDC
Press enter to see a dump of your service definitions
```

7.4 Group mappings

Because Windows and Unix user and group permission scheme's are very different Samba needs to maintain a translation table. This translation table already exists but is incomplete. Use the following commands to make it whole:

```
# groupadd -r computers
# net groupmap add ntgroup="Domain Computers" unixgroup=computers
No rid or sid specified, choosing algorithmic mapping
Successfully added group Domain Computers to the mapping db
# net groupmap modify ntgroup="Domain Admins" unixgroup=root
Updated mapping entry for Domain Admins
# net groupmap modify ntgroup="Domain Users" unixgroup=users
Updated mapping entry for Domain Users
# net groupmap modify ntgroup="Domain Guests" unixgroup=nobody
Updated mapping entry for Domain Guests
# net groupmap list | sort
Account Operators (S-1-5-32-548) -> -1
Administrators (S-1-5-32-544) -> -1
Backup Operators (S-1-5-32-551) -> -1
Domain Admins (S-1-5-21-2378321768-3584930663-1635001120-512) -> root
Domain Guests (S-1-5-21-2378321768-3584930663-1635001120-514) -> nobody
Domain Computers (S-1-5-21-2378321768-3584930663-1635001120-1203) -> computers
Domain Users (S-1-5-21-2378321768-3584930663-1635001120-513) -> users
Guests (S-1-5-32-546) -> -1
Power Users (S-1-5-32-547) -> -1
Print Operators (S-1-5-32-550) -> -1
Replicators (S-1-5-32-552) -> -1
System Operators (S-1-5-32-549) -> -1
Users (S-1-5-32-545) -> -1
```

Also very the contains of the /etc/samba/smbusers file:

```
# cat /etc/samba/smbusers
# Unix_name = SMB_name1 SMB_name2 ...
root = administrator admin
nobody = guest pcguest smbguest
```

7.5 Net logon

At each logon your Windows client will execute a batch file. The purpose of the file is to allow an Administrator to make several drive to share mappings for make network access easier for the users. An example script:

```
@echo off
echo.
echo WARNING: Do not close this window!!!
echo.
net use O: \\NETFINITY\applications
net use P: \\NETFINITY\common
echo.
echo WARNING: You may now close this window!!!
echo.
```

Please keep in mind that Windows and Unix machines use different end-of-line encoding. Luckily CentOS has a nifty tool to compensate. It's called `unix2dos` and it works like this:

```
# unix2dos < netlogon.bat.unix > netlogon.bat
# ls -l
total 14
drwx-----  2 root    root      12288 Dec 28 15:07 lost+found
-rw-r--r--   1 root    root        167 Dec 28 15:49 netlogon.bat
-rw-r--r--   1 root    root        159 Dec 28 15:49 netlogon.bat.unix
```

7.6 Setting the root password

Samba maintains a separate password database. So our root user will not yet have a Samba password assigned. So here we go:

```
# smbpasswd -a root
New SMB password:
Retype new SMB password:
Unable to open/create TDB passwd
Unable to open/create TDB passwd
pdb_getsampwnam: TDB passwd (/etc/samba/passdb.tdb) did not exist. File success
fully created.
TDBSAM version too old (0), trying to convert it.
TDBSAM converted successfully.
Added user root.
```

7.7 Name resolution

In our current system state, our CentOS machine will not be able to interpret NetBIOS names. This is not of critical importance. But it's nice to have. We will need to edit `/etc/nsswitch.conf`, and match the `hosts` statement to this one:

```
hosts:      files wins dns
```

7.8 Activating Samba

After all configuration has been done, we can finally start the two Samba daemons: `smbd` and `nmbd`.

```
# service smb start
Starting SMB services:           [ OK ]
Starting NMB services:          [ OK ]
# chkconfig --list smb
smb          0:off  1:off  2:off  3:off  4:off  5:off  6:off
# chkconfig --level 2345 smb on
```

7.9 Verifying operation

We can check whether Samba works correctly using `smbclient`:

```
# smbclient -L NETFINITY -U%
Domain=[JOHNSON] OS=[Unix] Server=[Samba 3.0.9-1.3E.1]

      Sharename      Type      Comment
      -----      ---      -
      netlogon       Disk     Netlogon
      profiles$     Disk     Profiles
      applications   Disk     Applications
      IPC$           IPC      IPC Service (Samba 3.0.9-1.3E.1)
      ADMIN$        IPC      IPC Service (Samba 3.0.9-1.3E.1)
Domain=[JOHNSON] OS=[Unix] Server=[Samba 3.0.9-1.3E.1]

      Server          Comment
      -----          -
      NETFINITY       Samba 3.0.9-1.3E.1

      Workgroup       Master
      -----          -
      JOHNSON         NETFINITY
```

7.10 Administrative scripts

These scripts can really make maintenance easier. Please make sure you understand what they do. Error checking is next too non-existent in these scripts. They were designed to ease the job of a competent administrator.

I recommend you put these script in `/root/bin`, which is already available as `$PATH` for the root user.

7.10.1 smb.inc

```

1  #!/bin/bash
2
3  SMB_PROFILES=/var/lib/samba/profiles
4  SMB_HOMES=/var/lib/samba/homes
5  SMB_COMMON=/var/lib/samba/common
6
7  UNIX_GROUP_PREFIX="smb"
8
9  ntunix ()
10 {
11     net groupmap list | grep "^$1 (S[0-9\\-]*) -> [a-z][a-z0-9]\\+$" | sed 's/. * -> //'
12 }
13
14 unixnt ()
15 {
16     net groupmap list | grep "^.*(S[0-9\\-]*) -> $1$" | sed 's/ (S.*//''
17 }
18
19 unixify ()
20 {
21     echo "$1" | sed 's/[^[:alnum:]]//g' | tr 'A-Z' 'a-z'
22 }

```

7.10.2 smbgroupadd

```

1  #!/bin/bash
2
3  source smb.inc
4
5  usage ()
6  {
7      echo "usage: $0 [-c] [-g unixgroup] ntgroup"
8  }
9
10 UNIX_GROUP=""
11
12 DONT_CREATE_COMMON_AREA=0
13
14 while getopts ":cu:g:" OPT; do
15     case $OPT in
16         c)
17             DONT_CREATE_COMMON_AREA=1
18             ;;
19         u)
20             UNIX_GROUP="$OPTARG"
21             ;;
22         g)
23             UNIX_GROUP="$OPTARG"
24             ;;
25         *)
26             usage
27             exit 1
28             ;;

```

```

29     esac
30     done
31     shift $((OPTIND - 1))
32
33     if [[ -z "$1" ]]; then
34         usage
35         exit 1
36     fi
37
38     NT_GROUP="$1"
39
40     if [[ -z "$UNIX_GROUP" ]]; then
41         UNIX_GROUP="$UNIX_GROUP_PREFIX$(unixify "$NT_GROUP")"
42     fi
43
44     echo "NT-Group:  $NT_GROUP"
45     echo "UNIX-Group: $UNIX_GROUP"
46
47     groupadd "$UNIX_GROUP"
48     net groupmap add ntgroup="$NT_GROUP" unixgroup="$UNIX_GROUP"
49
50     if [[ $DONT_CREATE_COMMON_AREA = 0 ]]; then
51         mkdir -p "$SMB_COMMON/$NT_GROUP"
52
53         chown "root:$UNIX_GROUP" "$SMB_COMMON/$NT_GROUP"
54
55         chmod "750" "$SMB_COMMON/$NT_GROUP"
56
57         echo "Common area created."
58     fi
59
60     exit 0

```

7.10.3 smbgroupdel

```

1  #!/bin/bash
2
3  source smb.inc
4
5  usage ()
6  {
7      echo "usage: $0 [-c] ntgroup"
8  }
9
10 DONT_DELETE_COMMON_AREA=0
11
12 while getopts ":c" OPT; do
13     case $OPT in
14         c)
15             DONT_DELETE_COMMON_AREA=1
16         ;;
17         *)
18             usage
19             exit 1
20         ;;
21     esac
22 done
23 shift $((OPTIND - 1))
24
25 if [[ -z "$1" ]]; then

```

```

26     usage
27     exit 1
28 fi
29
30 NT_GROUP="$1"
31 UNIX_GROUP=$(ntunix "$NT_GROUP")
32
33 echo "NT-Group:  $NT_GROUP"
34 echo "UNIX-Group: $UNIX_GROUP"
35
36 net groupmap delete ntgroup="$NT_GROUP"
37 groupdel "$UNIX_GROUP"
38
39 if [[ $DONT_DELETE_COMMON_AREA = 0 ]]; then
40     rm -Rf "$SMB_COMMON/$NT_GROUP"
41
42     echo "Common area destroyed."
43 fi
44
45 exit 0

```

7.10.4 smbuseradd

```

1  #!/bin/bash
2
3  source smb.inc
4
5  usage ()
6  {
7      echo "usage: $0 [-c comment] [-t template] [-n ntgroup] [-u unixgroup] [-g unixgroup] [-N ntgroup] [-U unixgroup]"
8  }
9
10 COMMENT=""
11 TEMPLATE=""
12 UNIX_GROUP=""
13 SEC_UNIX_GROUP=""
14 PASSWORD=""
15
16 while getopts ":c:t:n:u:g:N:U:G:p:" OPT; do
17     case $OPT in
18         c)
19             COMMENT="$OPTARG"
20             ;;
21         t)
22             TEMPLATE="$OPTARG"
23             ;;
24         n)
25             UNIX_GROUP=$(ntunix "$OPTARG")
26             ;;
27         u)
28             UNIX_GROUP="$OPTARG"
29             ;;
30         g)
31             UNIX_GROUP="$OPTARG"
32             ;;
33         N)
34             OLDIFS=$IFS;
35             IFS=","
36             for NT_GROUP in $OPTARG; do
37                 SEC_UNIX_GROUP=$(ntunix $NT_GROUP),$SEC_UNIX_GROUP"

```

```

38     done
39     SEC_UNIX_GROUP="$(echo "$SEC_UNIX_GROUP" | sed 's/,,$//')"
```

```

40     IFS=$OLDIFS;
41     ;;
42     U)
43     SEC_UNIX_GROUP="$OPTARG"
44     ;;
45     G)
46     SEC_UNIX_GROUP="$OPTARG"
47     ;;
48     p)
49     PASSWORD="$OPTARG"
50     ;;
51     *)
52     usage
53     exit 1
54     ;;
55 esac
56 done
57 shift $((OPTIND - 1))
58
59 echo $SEC_UNIX_GROUP
60
61 if [[ -z "$1" ]]; then
62     usage
63     exit 1
64 fi
65
66 if [[ -n "$COMMENT" ]]; then
67     COMMENT="-c $COMMENT"
68 fi
69
70 if [[ -z "$UNIX_GROUP" ]]; then
71     UNIX_GROUP="users"
72 fi
73
74 if [[ -n "$SEC_UNIX_GROUP" ]]; then
75     SEC_UNIX_GROUP=" -G $SEC_UNIX_GROUP "
76 fi
77
78 mkdir -p $SMB_PROFILES/$1
79 mkdir -p $SMB_HOMES/$1
80
81 if [[ -n $TEMPLATE ]]; then
82     cp -R $SMB_PROFILES/$TEMPLATE/* $SMB_PROFILES/$1
83     cp -R $SMB_HOMES/$TEMPLATE/* $SMB_HOMES/$1
84 fi
85
86 useradd $COMMENT -g $UNIX_GROUP $SEC_UNIX_GROUP -d $SMB_HOMES/$1 -s /bin/false -M $1
87
88 if [[ -n "$PASSWORD" ]]; then
89     echo -e "$PASSWORD\n$PASSWORD" | smbpasswd -a -s $1
90 else
91     smbpasswd -a -n $1
92 fi
93
94 chown -R $1.$UNIX_GROUP $SMB_PROFILES/$1
95 chown -R $1.$UNIX_GROUP $SMB_HOMES/$1
96
97 chmod 700 $SMB_PROFILES/$1
98 chmod 700 $SMB_HOMES/$1
99

```

```

100 if [[ -n $TEMPLATE ]]; then
101     edquota -p $TEMPLATE -u $1
102 fi
103
104 exit 0

```

7.10.5 smbusermod

```

1  #!/bin/bash
2
3  source smb.inc
4
5  usage ()
6  {
7      echo "usage: $0 [-c comment] [-t template] [-n ntgroup] [-u unixgroup] [-g unixgroup] [-N ntgroup] [-U unixg
8  }
9
10 COMMENT=""
11 TEMPLATE=""
12 UNIX_GROUP=""
13 SEC_UNIX_GROUP=""
14 PASSWORD=""
15
16 while getopts "c:t:n:u:g:N:U:G:p:" OPT; do
17     case $OPT in
18         c)
19             COMMENT="$OPTARG"
20             ;;
21         t)
22             TEMPLATE="$OPTARG"
23             ;;
24         n)
25             UNIX_GROUP="$(ntunix "$OPTARG")"
26             ;;
27         u)
28             UNIX_GROUP="$OPTARG"
29             ;;
30         g)
31             UNIX_GROUP="$OPTARG"
32             ;;
33         N)
34             OLDIFS=$IFS;
35             IFS=","
36             for NT_GROUP in $OPTARG; do
37                 SEC_UNIX_GROUP="$(ntunix $NT_GROUP),$SEC_UNIX_GROUP"
38             done
39             SEC_UNIX_GROUP="$(echo "$SEC_UNIX_GROUP" | sed 's/,,$//')"
40             IFS=$OLDIFS;
41             ;;
42         U)
43             SEC_UNIX_GROUP="$OPTARG"
44             ;;
45         G)
46             SEC_UNIX_GROUP="$OPTARG"
47             ;;
48         p)
49             PASSWORD="$OPTARG"
50             ;;
51         *)
52             usage

```

```

53     exit 1
54     ;;
55     esac
56 done
57 shift $((OPTIND - 1))
58
59 if [[ -z "$1" ]]; then
60     usage
61     exit 1
62 fi
63
64 if [[ -n "$COMMENT" ]]; then
65     COMMENT="-c $COMMENT"
66 fi
67
68 if [[ -n "$UNIX_GROUP" ]]; then
69     UNIX_GROUP="-g $UNIX_GROUP"
70 fi
71
72 if [[ -n "$SEC_UNIX_GROUP" ]]; then
73     SEC_UNIX_GROUP="-G $SEC_UNIX_GROUP "
74 fi
75
76 usermod $UNIX_GROUP $SEC_UNIX_GROUP $1
77
78 if [[ -n $PASSWORD ]]; then
79     echo -e "$PASSWORD\n$PASSWORD" | smbpasswd -s $1
80 fi
81
82 if [[ -n $TEMPLATE ]]; then
83     edquota -p $TEMPLATE -u $1
84 fi
85
86 exit 0

```

7.10.6 smbuserdel

```

1  #!/bin/bash
2
3  source smb.inc
4
5  usage ()
6  {
7      echo "usage: $0 -p username"
8  }
9
10 while getopts ":p" OPT; do
11     case $OPT in
12         p)
13         PRESERVE=1
14         ;;
15         *)
16         usage
17         exit 1
18         ;;
19     esac
20 done
21 shift $((OPTIND - 1))
22
23 if [ -z $1 ]; then

```

```

24     usage
25     exit 1
26 fi
27
28 echo "Username: $1"
29
30 smbpasswd -x $1
31 userdel $1
32
33 if [ $PRESERVE ]; then
34     chown -R root.root $SMB_PROFILES/$1
35     chown -R root.root $SMB_HOMES/$1
36 else
37     rm -Rf $SMB_PROFILES/$1
38     rm -Rf $SMB_HOMES/$1
39 fi
40
41 exit 0

```

7.10.7 smbuserinf

```

1  #!/bin/bash
2
3  source smb.inc
4
5  usage ()
6  {
7      echo "usage: $0 username"
8  }
9
10 gidgroupname ()
11 {
12     grep ":$1:" /etc/group | awk -F: {'print $1'}
13 }
14
15 if [[ -z "$1" ]]; then
16     usage
17     exit 1
18 fi
19
20 UNIX_GROUP_ID=$(id --group $1)
21 UNIX_GROUP=$(gidgroupname $UNIX_GROUP_ID)
22 NT_GROUP=$(unixnt $UNIX_GROUP)
23
24 SEC_UNIX_GROUP_ID=$(id --groups $1)
25 SEC_UNIX_GROUP=""
26 SEC_NT_GROUP=""
27
28 for GID in $SEC_UNIX_GROUP_ID; do
29     SEC_UNIX_GROUP="$$(gidgroupname $GID)' $SEC_UNIX_GROUP"
30     SEC_NT_GROUP="$$(unixnt $(gidgroupname $GID))' $SEC_NT_GROUP"
31 done
32
33 echo "Username:           $1"
34 echo "Primary group (UNIX):  $UNIX_GROUP"
35 echo "Primary group (NT):     $NT_GROUP"
36 echo "Secondary group (UNIX): $SEC_UNIX_GROUP"
37 echo "Secondary group (NT):   $SEC_NT_GROUP"
38 echo
39 quota $1

```

```
40
41  exit 0
```

7.10.8 smbmassuseradd.pl

This script was written in Perl because it provided a ready made CSV parser.

We first need to install the CSV parser called Text::CSV.

```
# perl -MCPAN -e "shell"
cpan> install Text::CSV
cpan> quit
#
```

If you have installed the CSV parser you can make use of the following script:

```
1  {PLACEHOLDER -- COMING SOON}
```

This script will take a .csv file as input and a .tex file as output. From the .tex file letters can be generated with pdflatex. These letters are addressed to your newly added users, and include their account information. The .csv file requires the following format:

```
"'fullname'", "template", "'prigroup'", "'secgroup', 'secgroup'", "password", "username"
```

Please mind the quotation marks. Use them exactly like represented here.

Chapter 8

Printing

8.1 Automatic driver download

First you'll need to download and install a printer driver. Please go to the following URL: <http://www.adobe.com/support/downloads/> Then go to the following section: PostScript printer drivers – Windows Then download the following files:

- Adobe Universal PostScript Windows Driver Installer 1.0.6 - English
- PPD Files: Adobe

Then install the Adobe Universal PostScript Windows Driver onto a Windows NT machine. First make sure `/usr/share/cups/drivers` exists:

```
# mkdir -p /usr/share/cups/drivers
```

Then transfer the following files to your CentOS server using (for example) WinSCP, and put them into `/usr/share/cups/drivers`.

```
C:\WINNT\system32\spool\drivers\W32X86\2\ADOBEPS5.DLL
C:\WINNT\system32\spool\drivers\W32X86\2\ADOBEPSU.DLL
C:\WINNT\system32\spool\drivers\W32X86\2\ADOBEPSU.HLP
C:\WINNT\system32\spool\drivers\WIN40\ADFONTS.MFM
C:\WINNT\system32\spool\drivers\WIN40\DEFPRTR2.PPD
C:\WINNT\system32\spool\drivers\WIN40\ICONLIB.DLL
C:\WINNT\system32\spool\drivers\WIN40\PSMON.DLL
C:\WINNT\system32\spool\drivers\WIN40\0\ADOBEPS4.DRV
C:\WINNT\system32\spool\drivers\WIN40\0\ADOBEPS4.HLP
```

It's generally recommendable to backup these files to future use:

```
# tar cvzf ~/samba-cups-adobeeps.tar.gz *
```

8.2 PDF Distiller

```
[root@netfinity drivers]# cupsaddsmb -U root -v PDFDistiller
Password for root required to access localhost via SAMBA:
Running command: smbclient //localhost/print\$ -N -U'root%mypassword' -c 'mkdir
W32X86;put /var/spool/cups/tmp/41da95aee23e5 W32X86/PDFDistiller.PPD;put /usr/s
hare/cups/drivers/ADOBEP5.DLL W32X86/ADOBEP5.DLL;put /usr/share/cups/drivers/
ADOBEP5U.DLL W32X86/ADOBEP5U.DLL;put /usr/share/cups/drivers/ADOBEP5U.HLP W32X8
6/ADOBEP5U.HLP'
Domain=[JOHNSON] OS=[Unix] Server=[Samba 3.0.9-1.3E.1]
NT_STATUS_OBJECT_NAME_COLLISION making remote directory \W32X86
putting file /var/spool/cups/tmp/41da95aee23e5 as \W32X86/PDFDistiller.PPD
putting file /usr/share/cups/drivers/ADOBEP5.DLL as \W32X86/ADOBEP5.DLL
putting file /usr/share/cups/drivers/ADOBEP5U.DLL as \W32X86/ADOBEP5U.DLL
putting file /usr/share/cups/drivers/ADOBEP5U.HLP as \W32X86/ADOBEP5U.HLP

Running command: rpcclient localhost -N -U'root%mypassword' -c 'adddriver "Wind
ows NT x86" "PDFDistiller:ADOBEP5.DLL:PDFDistiller.PPD:ADOBEP5U.DLL:ADOBEP5U.H
LP:NULL:RAW:NULL"'
Printer Driver PDFDistiller successfully installed.

Running command: smbclient //localhost/print\$ -N -U'root%mypassword' -c 'mkdir
WIN40;put /var/spool/cups/tmp/41da95aee23e5 WIN40/PDFDistiller.PPD;put /usr/sha
re/cups/drivers/ADFFONTS.MFM WIN40/ADFFONTS.MFM;put /usr/share/cups/drivers/ADOBE
PS4.DRV WIN40/ADOBEP4.DRV;put /usr/share/cups/drivers/ADOBEP4.HLP WIN40/ADOBE
PS4.HLP;put /usr/share/cups/drivers/DEFPRTR2.PPD WIN40/DEFPRTR2.PPD;put /usr/sh
are/cups/drivers/ICONLIB.DLL WIN40/ICONLIB.DLL;put /usr/share/cups/drivers/PSMO
N.DLL WIN40/PSMON.DLL;'
Domain=[JOHNSON] OS=[Unix] Server=[Samba 3.0.9-1.3E.1]
NT_STATUS_OBJECT_NAME_COLLISION making remote directory \WIN40
putting file /var/spool/cups/tmp/41da95aee23e5 as \WIN40/PDFDistiller.PPD
putting file /usr/share/cups/drivers/ADFFONTS.MFM as \WIN40/ADFFONTS.MFM
putting file /usr/share/cups/drivers/ADOBEP4.DRV as \WIN40/ADOBEP4.DRV
putting file /usr/share/cups/drivers/ADOBEP4.HLP as \WIN40/ADOBEP4.HLP
putting file /usr/share/cups/drivers/DEFPRTR2.PPD as \WIN40/DEFPRTR2.PPD
putting file /usr/share/cups/drivers/ICONLIB.DLL as \WIN40/ICONLIB.DLL
putting file /usr/share/cups/drivers/PSMON.DLL as \WIN40/PSMON.DLL

Running command: rpcclient localhost -N -U'root%mypassword' -c 'adddriver "Wind
ows 4.0" "PDFDistiller:ADOBEP4.DRV:PDFDistiller.PPD:NULL:ADOBEP4.HLP:PSMON.DL
L:RAW:ADOBEP4.DRV:PDFDistiller.PPD,ADOBEP4.HLP,PSMON.DLL,ADFFONTS.MFM,DEFPRTR2
.PPD,ICONLIB.DLL"'
Printer Driver PDFDistiller successfully installed.

Running command: rpcclient localhost -N -U'root%mypassword' -c 'setdriver PDFDi
stiller PDFDistiller'
Successfully set PDFDistiller to driver PDFDistiller.

[root@netfinity drivers]#
```

```
# lpinfo -v | grep pdf
direct pdf
# lpinfo -m | grep adist
adist5.ppd.gz Acrobat Distiller 3011.104
# lpadmin -p "PDFDistiller" -E -v pdf:/var/lib/samba/documents/ -m adist5.ppd.gz
```

8.3 Mapping printers

If you wish to make the PDFDistiller network printer to be installed by default for every user you can include the following file into your netlogon.bat:

```
C:\>rundll32 printui.dll,PrintUIEntry /in /n "\\NETFINITY\PDFDistiller"
```

This will also automatically download the required drivers from the indicated server, if point'n'print has been configured.

Chapter 9

SNMP

There are several ways to monitor your Samba server. One of those involves the use of the Simple Network Management Protocol and the accompanying utilities.

9.1 Installation

Please make sure you have the `net-snmp` and `net-snmp-utils` rpms installed. You can check it like this:

```
# yum install net-snmp net-snmp-utils
```

9.2 Configuration

You can use this as a sample configuration file, please save it as `/etc/snmp/snmpd.conf`:

```
rocommunity public
syslocation "The Netherlands"
syscontact "P.M.J. de Bruijn <keizerflipje@home.nl>"
syssservices 76
```

If you're not satisfied with this configuration you are free to use the `'snmp-conf'` utility to modify anything you dislike.

9.3 Activation

As with all system services we can activate `snmpd` using the `service` command. With `chkconfig` we can make sure it activates on every boot.

```
# service snmpd start
Starting snmpd: [ OK ]
# chkconfig --level 2435 snmpd on
```

9.4 Verifying operation

You can verify snmpd operation like this:

```
# snmpwalk -Os -c public -v 2c netfinity system | head -7
sysDescr.0 = STRING: Linux netfinity 2.4.21-27.0.1.EL #1 Fri Dec 24 02:04:03
sysObjectID.0 = OID: netSnmpAgentOIDs.10
sysUpTime.0 = Timeticks: (50105) 0:08:21.05
sysContact.0 = STRING: "P.M.J. de Bruijn <keizerflipje@home.nl>"
sysName.0 = STRING: netfinity
sysLocation.0 = STRING: "The Netherlands"
sysServices.0 = INTEGER: 76
```

9.5 Monitoring

There are several ways you can monitor your system now, for example you could do a periodic snmpwalk yourself, but this would get tedious real fast, also with snmpwalk you don't get any perspective.

You can use third party software like MRTG or HP OpenView for constant monitoring and graphing.

Chapter 10

Joining the domain

10.1 Windows NT 4.0 Workstation (SP6)

Click the *Start* button. Then go to *Settings*, wait for the menu to expand and click *Control Panel*. A new window will present itself, please open the *Networking* icon. Go to the *Protocols* tab. Then select *TCP/IP Protocols* and click *Properties*. Make sure *Obtain an IP address from a DHCP server* is active.

To join a Windows NT 4 Workstation client into our domain, please repeat the previously stated action until your back in the *Networking* window again. Then take a look at the *Identification* page. Click on the *Change* button. Change the *Member of* to *Domain* and fill in the appropriate domain name, in our case 'JOHNSON'. Next, make sure that *Create a Computer Account in the Domain* is checked. Fill in the *User Name* and *Password* fields with the Administrator account. Click *OK*. You'll see a welcome window. And you will be asked to reboot the machine. Please do so.

10.2 Windows 2000 Professional (SP4)

Click the *Start* button. Then go to *Settings*, wait for the menu to expand and click *Network and Dial-up Connections*. A new window will open, click *Local Area Connection*. Click on the *Properties* button. Select *Internet Protocol (TCP/IP)*, then click *Properties*. Make sure that *Obtain an IP address automatically* and *Obtain DNS server address automatically* are selected.

To join a Windows 2000 Professional client into our domain, please open the properties window of *My Computer*. Then proceed to the *Network Identification* tab. Then you'll see the following text: "To rename this computer or join a domain, click *Properties*." So click *Properties*. Then activate the "Domain" radiobutton and enter the domain's name.

Most likely you'll be asked for the domain administrators account and password, you'll need to provide it.

Then reboot, and your machine is part of the domain.

10.3 Windows XP Professional (SP2)

Click the *Start* button. Then right click on the *My Network Places* icon. Select *Properties*. Next right click on *Local Area Connection* and select *Properties* again. Look for the *General* tab. Then select *Internet Protocol (TCP/IP)* from the list, and click *Properties* once more. Make sure the radio button are set to *Obtain an IP address automatically* and *Obtain DNS server address automatically*.

To join a Windows XP Professional client into our domain, please open the properties window of *My Computer*. Then proceed to the *Computer Name* tab. Then you'll see the following text: "*To rename this computer or join a domain, click Change.*" So click *Change*. Then activate the "*Domain*" radiobutton and enter the domain's name.

Most likely you'll be asked for the domain administrators account and password, you'll need to provide it.

Then reboot, and your machine is part of the domain.

Chapter 11

OpenOffice.org

11.1 Server

First you need to login as Administrator on a Windows workstation. Then start the OpenOffice.org installer called setup.exe with the '-net' parameter. Go through the setup as normal, but specify 'O:\OpenOffice.org\' as the installation directory.

11.2 Client

Then each user can login and start 'O:\OpenOffice.org\OpenOffice.org Setup'. Just follow the instructions and do a workstation install, which will use about 2MB of the users allocated profile space.

Chapter 12

Performance

Mind that you should not blindly use any of these settings! Test them excessively in your own lab environment. These are mere guidelines.

12.1 Samba

In most LAN environments these parameters should improve file serving performance somewhat:

```
socket options = IPTOS_LOWDELAY TCP_NODELAY
```

12.2 Linux

Version 2.4.*x* of the Linux kernel gives the user the ability to do some tuning of the disk scheduler. With some experimentation I found that these settings will leverage more consistent performance.

```
# elvtune -r 1024 -w 2048 /dev/sda
```

/dev/sda elevator ID	1
read_latency:	1024
write_latency:	2048
max_bomb_segments:	6

If you notice benefit from the elevator tuning you might want to consider having these settings auto applied at every boot. You can add the following line to your `/etc/rc.local` file:

```
elvtune -r 1024 -w 2048 /dev/sda > /var/log/elvtune.log 2>&1
```

Chapter 13

Security

13.1 Services

We can determine which sockets are bound by scanning our own machine.

```
# nmap -sT localhost

Starting nmap V. 3.00 ( www.insecure.org/nmap/ )
Interesting ports on netfinity (127.0.0.1):
(The 1594 ports scanned but not shown below are in state: closed)
Port      State    Service
22/tcp    open    ssh
25/tcp    open    smtp
111/tcp   open    sunrpc
139/tcp   open    netbios-ssn
199/tcp   open    smux
445/tcp   open    microsoft-ds
631/tcp   open    ipp

Nmap run completed -- 1 IP address (1 host up) scanned in 1 second
# nmap -sU localhost

Starting nmap V. 3.00 ( www.insecure.org/nmap/ )
Interesting ports on netfinity (127.0.0.1):
(The 1460 ports scanned but not shown below are in state: closed)
Port      State    Service
67/udp    open    dhcpserver
111/udp   open    sunrpc
123/udp   open    ntp
137/udp   open    netbios-ns
138/udp   open    netbios-dgm
161/udp   open    snmp
631/udp   open    unknown
756/udp   open    unknown

Nmap run completed -- 1 IP address (1 host up) scanned in 6 seconds
```

As you might see we have quite a lot of services available to our network users. Note you can use the following list to determine what port are used by which services: IANA Assigned Port Numbers

Now lets see which services are enabled at our current runlevel (3).

```
# chkconfig --list | grep 3:on
```

Now we can disable all NFS related services:

```
# chkconfig --level 2345 nfslock off
# chkconfig --level 2345 portmap off
# service nfslock stop
Stopping NFS statd: [ OK ]
# service portmap stop
Stopping portmapper: [ OK ]
```

Next up, we still have an unidentified service called 'smux'. We can find out what it does as follows:

```
# lsof | grep smux
snmpd    1966  root    8u  IPv4      2501          TCP *:smux (LISTEN)
```

It seems to be part of the SNMP package, which we enabled on purpose, so this port may remain open.

Chapter 14

Maintenance

This section talks about various maintenance tasks.

14.1 Resizing partitions

Since the introduction of the Logical Volume Manager it's been possible to add disks to an existing virtual volume. This makes expansion of available disk space quite easy. It can be done like this:

```
# umount /var/lib/samba/common
# lvextend -L +500 /dev/samba/common
# e2fsck -f /dev/samba/common
# resize2fs /dev/samba/common -p
# mount /var/lib/samba/common
```

First we'll unmount the filesystem. Then the `lvextend` command extends the logical volume by 500 MegaByte of disk space. Next we check the filesystem for errors, before resizing it. Then we use `resize2fs` to expand the `ext3` filesystem to match the size of the logical volume under it. And at last we remount the filesystem and it's ready to be used once more.

Appendix A

Frequently Asked Questions

A.1 Windows 98

I firmly recommend against using Windows 98 in any network environment, especially in conjunction with a Microsoft style Domain. Please view the following article for more information:

<http://support.microsoft.com/default.aspx?scid=kb;EN-US;264866>

A.2 block-major-43 Warnings

Luckily this error is cosmetic, your system should work just fine. Of course we'll want to keep our systems nice and tidy. We can fixup the cosmetics by adding the following line to your `/etc/modules.conf` file:

```
alias block-major-43 off
```

A.3 Common area permissions

All users in a certain group can delete and rename all files in their common area. This is because the parent directory has writable group permission set. This gives a user the ability to delete and rename.

If you do not wish this behaviour a user can create a directory which he or she owns. Then the other users will only be able to read inside that specific directory.

Appendix B

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Appendix C

Changelog

The following gives a somewhat accurate representation of when changes

	Date	Change
	27 Dec 2004	First Edition.
	16 Jan 2005	Added Performance. Added SNMP. Added OpenOffice.org. Did some work on the administration scripts.
were made to this document:	18 Jan 2005	Added the administration scripts. Added the security section. Added the maintenance section.
	19 Jan 2005	Did some cleaning up.
	23 Jan 2005	Adjusted headers, footers. Adjusted the title page.
	28 Jan 2005	Did some work on the smbmassuseradd.pl script. Added a debug mode to the smbuseradd script.