Samba Course

Theory and exercises

Samba Course

Table of Contents

General Steps

1 - Installation: Packages: `samba, samba-client, samba-doc, kdebase3-samba, yast2-samba-client, yast2-samba-server. kdenetwork3-lan, kdenetwork3-lisa.`

2 - Auto-start at Boot-up: `insserv smb nmb` : Sets the smb and nmb in run levels 3 & 5

`insserv -r smb nmb` : removes smb and nmb from run levels

3 - Samba TCP/UDP Ports

`smbd` (port 139-TCP)	Shares and printers data transfer
`nmbd` (ports UDP: 445,137,138)	WINS, WINS Proxying, Browsing, Broadcast answer: His NETBiosname -> IP

4 - Manual start/stop of Samba:
```
rcsmb {start|stop|restart|reload|status}
rcnmb {start|stop|restart|reload|status}
```

5 - Create Linux users for Samba only:
`mkdir /etc/empty; useradd -l -mk /etc/empty -s /bin/false` *username*

6 - Create Samba users:

Important: Make sure each new samba user is already as a system user before proceeding.
(Not needed if `encrypt passwords = no` and `ClearTextPassword` is set in windows clients registry)

`smbpasswd -a` *username* Adds a new samba username

(`-d` Disables user `-e` Enables user `-x` Deletes user `-U` Update existing user)

NOTE: All upper/lowercase of usernames characters must match between Windows users and Linux/Samba users. First character might not matter ;) .

- To transfer only the user's list from `/etc/passwd` to `/etc/samba/smbpasswd` then issue the command:

```
cat /etc/passwd | /usr/share/samba/script/mksmbpasswd.sh \
    > /etc/smbpasswd
```

This above command will only transfer the user's list and not the passwords.
Clean-out the system users from the file then for each of the transfered users use:

`smbpasswd -U` *username* to enter each of their samba passwords.

Deleting a samba account:

`smbpasswd -x` *username* to delete a samba user from smbpasswd file

7 - Help

See below: **Appendix -I-Typical samba configuration of `/etc/samba/smb.conf`**

- Make sure `samba-doc` package is installed
- To get help on parameters:
  From SuSE 7.0 to 7.3 and SuSE 9.1 on:
  `/usr/share/doc/packages/samba/htmldocs/smb.conf.5.html`
  From SuSE 8.0 to 9.0
  `/usr/share/samba/swat/help/smb.conf.5.html`
- or read the all help files via `swat`
- Testing samba configuration and listing all the default configurations:
  `testparm | tee /etc/samba/smb.conf.all | less`

Note: The Sharenames should be without space and no longer than 13 chars.
The NetBIOS(max 15 characters) names can also include: `@ # $ % ^ & ( ) - { } . ~`

8- Checking listening ports (137,138,139) and Searching for SMB Hosts
`netstat -ltunp | egrep ":137 |:138 |:139"` (Shows listening ports)
`findsmb [`*`BroadcastAddr`*`] or findsmb `*`workgroup`* (Shows SMB hosts)
Sign before names: **+**=LocalMaster Browser *****=Domain Master Browser
`nmblookup '*'|cut -d" " -f1|xargs nmblookup -A|egrep "^Looking\<|03\>"`
`smbstatus` (shows the used shares and the client hosts that are using them)

9 - Testing local samba with `smbclient`:
`smbclient -N -L `*`LocalIPNumber`* (local host IP or `localhost`)
Testing a remote SMB server (samba or windows)
`smbclient -L //`*`ServerNetbiosName`* or *`//IP/ShareName`* **-U** *`UserName`*
eg. `smbclient //laptop/freddata -U fred -D photos -c ls`
shows the list(`ls`) of the directory `photos` in `freddata` share on `laptop`
The password from `fred` will be asked, and then use the typical `ftp` like commands.
(eg. `cd, lcd, pwd, ls, put, mput, get, mget, del, rename, mkdir, rmdir, chown, chmod !`*`Befehl`*`, exit, quit`

10 - Mounting SMB shares on a local Directory
On older systems:
`mount -t smbfs //`*`ServerNetbiosName-`*`or-`*`IP`*`/`*`ShareName`* */`*`MountPoint`* \
`-o username=`*`username`*`,password=`*`password`*`,workgroup=`*`workgroup`*
eg. `mount -t smbfs //laptop/public /mnt \`
`-o username=john,password=hallo,workgroup=ms01`
On new systems (eg. openSuSE 10.2)
`mount -t cifs //`*`ServerNetbiosName-`*`or-`*`IP`*`/`*`ShareName`* */`*`MountPoint`* \
`-o username=`*`username`*`,password=`*`password`*`,workgroup=`*`workgroup`*

or in `/etc/fstab`
`//ServerNetbiosName/share /MountPoint` `smbfs username=`*`username`*`,password=`*`password`* `0 0`
then `mount `*`MountPoint`* as root to mount the share....sorry no chance to mount as user.

`//ServerNetbiosName/share /MountPoint` `cifs`
`noauto,``username=`*`username`*`,password=`*`password`* `0 0`
then as root to mount the share....sorry no chance to mount as user.
`mount `*`MountPoint`*

Unmounting SMB share:
`umount `*`MountPoint`*

11 - **Log files** are in: `/var/log/samba/log.smbd` and
`/var/log/samba/log.nmbd`

12 - Extra Linux **smb/cifs** clients programs to connect to Windows or Samba shares:
`xsmbrowser` From `www.samba.org`. Needs **`tcl`** `expect` and `expectk` packages

`konqueror` **-** Delivered with KDE-3. needs packages:
`kdebase3-samba, kdenetwork3-lan, kdenetwork3-lisa`.
- Needs to set-up LISA in KDE Control Center
eg. `smb:/samba1/linux03/test`

`LinNeighborhood` (on SuSE CD)

- May have to add a Master Browser as `localhost`
- Need to set **suid** to `/usr/bin/smbmnt` and `/usr/bin/smbumount` to allow normal users to mount the shares.
  Command: `chmod u+s /usr/bin/smbmnt /usr/bin/smbumount`

smb4k - Graphic SMB Client for KDE. Very good. from `smb4k.berlios.de`
Note: As root do the commands:

```
chmod u+s $(which smbmnt)
chmod u+s $(which smbumount)
```

`smbc` - SMB Commander. Get from internet as RPM and install.
Similar design as Midnight Commander

SuSE **`smbfs`** run level service**:**

- Mounts at boot time all the remote smb shares that are listed in:
  `/etc/fstab` and `/etc/samba/smbfstab` (if it exists)
- `smbfstab` file format:

service	moint-point	vfstype	options
eg. `//server/testdir`	`/data/test`	`cifs`	`username=tridge,password=foobar`

- Command to mount/unmount the shares:
  `rcsmbfs {start|stop|restart|status}`
  Note: From SuSE 10.2, the command `rcsmbfs start` mounts also the *cifs* shares in `/etc/fstab` automatically.

14 - Using **`swat`**:

- If using `inetd` as Superdaemon then:
  Enable the line "`swat`" in `/etc/inetd.conf` (Delete the '#' at start of line)
  Restart the `inetd` daemon - `rcinetd restart`
- If using `xinetd` as Superdaemon then:
  Change the following line in `/etc/xinetd.d/samba` (SuSE8.0-9.0)
  or in `/etc/xinetd.d/swat` (SuSE9.1 and up)

```
disable  = yes
```

  to

```
disable  = no
```

  Comment the line: `only_from = 127.0.0.1` (to allow from network)
  Restart the `xinetd` daemon - `rcxinetd restart`

- To use swat enter the following address in a browser:
  `http://localhost:901` name = **`root`** and its *'root password'*

15 - Using **`webmin`**: get the latest rpm version of webmin(`www.webmin.com`) and install it.
`http://localhost:10000` name = **`root`** and its *'root password'*

16 - Sending messages to Windows clients:
`echo " My Message....." | smbclient -M WindowsClientName > /dev/null`
smbclient will use the port 445 to send the message.

For receiving messages from Windows clients:
- Samba server MUST be installed and running
- Install the program `linpopup` or `kpopup` and insert the following line in the smb.conf

```
message command = /opt/kde3/bin/receivepopup '%s' '%f';
```

or

```
message command = /opt/kde3/bin/linpopup '%s' '%f';
```

17 - Other means of transfering data: (see `90_Network_File_Transfer.sxw` document)

- FTP, NFS, `mc`
- Using `sshd` (as server) + clients: `mc` (from SuSE 8.2 and on), `scp`,

- Using `rsync: rsync` on client and `sshd` and `rsync` on server
- Windows programs using `sshd` (on the server):

`pscp`	From Putty(Free)	
`WinSCP.exe`	From Winscp,(Free) (Based on Putty)	`http://winscp.vse.cz`
`sshclient.exe`	From SSH Secure Shell(Not free)	`http://www.ssh.com`
`mindterm.jar`	Java graphic secure shell and copy client. (runs also on Linux) Needs java runtime engine on client.	

18 - Extra programs related to Samba:

`samba-vscan`	Virtual file system modules connected to samba to provide on-line file virus scanner. It interfaces with some well known Anti-Virus software.

Typical Configuration of smb.conf

Server Global Options

```
[global]
   workgroup = WORKGROUP
   kernel oplocks = false      ; TCP protocol fine tuning parameters
   socket options = TCP_NODELAY
   printing = cups             ; Printing system. We use cups here but also possible:
                               ;   bsd, sysv, plp, lprng, aix, hpux, qnx, cups
   printcap name = cups        ; Where is the file listing the printer queues and capabilities
   load printers = yes         ; All printer names will be presented as shares?
   encrypt passwords = yes     ; Use the encrypted samba passwords instead of linux passwd
   null passwords = no         ; Do we allow users having empty passwords to access shares
   security  = user            ; Users are logged-on once and identified as so for all shares
             = share           ; Everybody is allowed to all shares. It needs the setting:
                                valid users= username1 username2.. to limit users.
             = server          ; Samba asks a password server to validate the user.
             = domain          ; Samba asks an PDC server to validate the user.
                               ; Note: Both server and domain need also the setting of:
                               ;       password server = PWServerNetBIOSName

   guest account = nobody        ; What usename will guests use in Linux
   map to guest  = Bad Password  ; - Accepts any wrong login is a guest user.
                 = Bad User      ; - Good name and bad password is refused,
                                     Bad name and bad password is accepted as guest
   os level = 2                ; WfW/Win95/98 = 1    NT-Desktop = 17    NT-Server = 33
   local master = yes          ; Samba (nmbd) is the Local Master Browser ?
   preferred master = yes      ; Force a new election for Master Browser when samba starts?
   wins support = no           ; Samba is a WINS server ? (lmhosts contains data)
#  wins server = 192.168.1.1   ; IP Number of a WINS server if any exists in the network

# Interfaces or networks that samba will respond to
   interfaces = eth*   eth0   192.168.2.10/24  192.168.3.10/255.255.255.0
   loglevel = 7                ; Log levels possible 1 to 7 : 1 minimal, 3 normal, 7 a hell of a
                                ; lot
```

Standard Shares (share names are reserved only for these purposes) ---------

```
[homes]
   comment = Heimatverzeichnis
   browseable = no             ; Name of user share seen by other users ?
   read only = no              ; Cannot write ? (same as writable=yes)
   create mode = 0750          ;  ANDed with 0766(default) to set the files access rights

[printers]
   comment = All Printers
   browseable = no             ; Seen as a directory share?      (absolutely NO !)
   read only = yes             ; We can save files there ?       (absolutely NO !)
   printable = yes             ; We can send print jobs to it ?  (absolutely yes !)
   public = yes                ; Usable by all users including guests ?
   directory = /tmp            ; Where the print jobs will be saved before they are printed
   create mode = 0700          ; Allow only owners to do anything to these saved print jobs
```

Normal Shares:

```
[cdrom]                          ; Example of a typical share
   comment = CD-ROM
   path = /media/cdrom           ; Path of the share
   writeable = no                ; Preventing trying to write on CDROMs. (same as read only=yes)
   locking = no                  ; Prevent samba from locking the accessed files while opened
   public = yes                  ; Usable by all users including guests ? (same as guest ok = yes)

[LaserJet]                       ; Single Printer share settings if  load printers = no
   printable = yes               ; Here the user paul is the only one allowed to use this printer.
   printer = laserjet
   printing = cups
   read only = yes               ; Same as writeable = no
   valid users = paul
```

List of extra usefull share parameters:

Global area:

```
hosts equiv =/etc/hosts.equiv ; List of the hosts and users allowed without passwords.(Global)
                              ; File Format: ClientFQDNHostname UserName
```

Shares (services) area:

```
path = /var/pc/%m             ; Each machine gets its own share directory
                              ; (directory must exist and must be all in lowercase characters)
path = /var/users/%u          ; Each user gets its own share directory (user dir. must exist)

create mode = 0740            ; Mode ANDed with Windows(rw/ro) and 0766 for file creation
                              ; Default = 0744
max connections = 4           ; Allow only up to 4 connections per share
                              , Good for CDROMS access(Can burn the CDROM otherwise)
max disk size = 100           ; Limits the size of this share to 100 MB
                              ; 0 = Unlimited(till end of partition space!!!)
directory mode = 0751         ; Mode ANDed with Windows(rw/ro) and 0755 for Dir. creation
                              ; Default = 0755
force create mode = 0740      ; Forces all the files to have this mode when created
force directory mode = 0750   ; Forces all directories to have this mode when created

hosts deny = 192.168.         ; Hosts that are not allowed to acces the share.
                              ; Valid values: ALL, FQDN, IPAddr, NetAddr/Netmask, Partial IP
                              ; Often used in combination with hosts allow
hosts allow = 150.203. EXCEPT 150.203.6.66
                              ; Allows all hosts clients with IP starting with 150.203.
                              ; except the host which has the IP 150.203.6.66
                              ; Valid values: ALL, FQDN, IPAddr, NetAddr/Netmask, Partial IP
                              ; hosts allow takes priority over hosts deny if conflicting.
valid users = john sophie     ; Sets the only users allowed access to the share.
write list = marie @admin     ; Only these users or group(@) are allowed to write to the share
                              ; Normally combined with writeable = no
read list = marie @shipping   ; These users or group(@) are limited to rear-only to the share.
                              ; Normally combined with writeable = yes

follow symlinks = no          ; Doesn't permit to follow symbolic links. Default is yes
wide links = no               ; Limits following symbolic links to inside the share tree.(Def=yes)

preexec = LinuxCommand        ; Runs a command as user before access to a share
root preexec = LinuxCommand   ; Runs a command as root before access to a share
postexec = LinuxCommand ; Runs a command as user before closing access to a share
root postexec = LinuxCommand  ; Runs a command as root before closing access to a share
```

Samba as Windows 95/98 longon server

1) Enter the following `[global]` settings and `[netlogon]`share.
   If only Authentication and no logon scripts are needed, the `[netlogon]` share and its directory are still needed but can be empty.

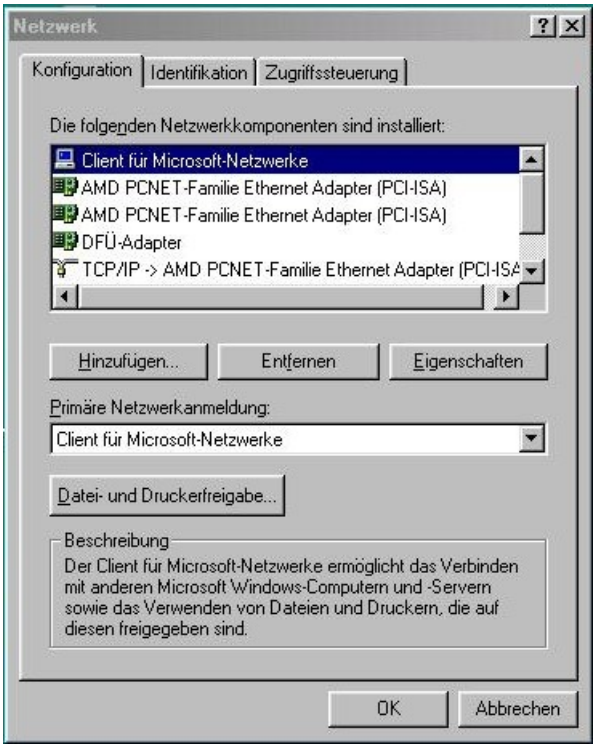
```
[global]
   ..........
   logon script =%u.bat
   domain logons = yes

[netlogon]
   path = /etc/samba/netlogon/
   public = no
   read only = yes
   browseable = no
```

2) Create Clients Logon scripts(if needed) using a Windows editor (RC/LF at end of lines) and save them as *username*`.bat` in the dir. (`path =`) of the `[netlogon]`share in samba host.
   Example of logon script content: (`/etc/samba/netlogon/mario.bat`)

```
net use G: \\sambasrv\mario
```

3) Set-up the Windows 95/98 clients for Domain logon:
   eg. (right click)Network Neighborhood ----------> Properties ----> Clients for Microsoft Networks ---> Properties ---> - (click) Logon to an NT Domain - Enter the Domain name ----------> OK

Example in German Windows 98



4) What does Windows at start-up:
   Windows 95/98 should authenticate through the samba server(using samba users

accounts), get its logon script(if it exists) from samba `[netlogon]`share and run it.

Samba as Primary Domain Controller(PDC):

This PDC setting only allows NT/Win2k to logon and get their profiles.
To add Win95/98 Logons, add the settings of above section called:
Samba as Windows 95/98 longon server

1) Enter the following `[global]` and `[profiles]` sections:

```
[global]
      domain master = yes              ; Samba is PDC ?
      logon path = \\%L\profiles\%U    ;\\Localhost\ProfilesShare\UserName

[profiles]
      path = /var/samba/profiles
      browseable = no
      writable = yes
      create mode = 0700
      directory mode = 0700
```

Note: The `[profile]` share is a hidden share needed to store the users profiles sent and read from the NT/W2k clients.(Personal system setups and access rights of Windows clients)

Things to do in Samba system

- Create a user in linux for each NT machine:
  `useradd -d /dev/null -s /bin/false` *`MachineName`*`$` ('$' is important!!)
  `smbpasswd -a -m` *`MachineName`*`$` "" ""
  `smbpasswd -a root` Only needed for Win2000/XP to first time join to domain. Recommended: Not the same as system root password)

- Create a user account for each user with an empty home directory:
  ```
  mkdir /etc/empty
  useradd -mk /etc/empty -s /bin/false  UserName
  smbpasswd -a UserName
  ```

- Create the profiles directories:
  ```
  mkdir -p /var/samba/profiles
  chmod 777 /var/samba/profiles
  ```

- Join the domain from NT/Win2000/XP for the first time:
  NT (right click)Network Neighborhood ----> Properties ----> Identification ---> *Click* Change----> *Select* Domain---> *Enter DomainName*
  DO NOT select *'Create computer account'* ..account already exist.

  WIN2000/XP (right click)MyComputer ---->Network Identification----> Properties ----> More ---> Unselect 'Change primary DNS suffix....' ---> OK
  Select Domain---> Enter *DomainName*--->Enter *Computer Name* ---> OK----> Enter Name(`root`) and password(*samba root passwd*) --->OK
  REBOOT

- What does Windows do at first Login:
  The first time the NT/Win2000/XP user logs in and logs out, samba saves all the NT/Win2000/XP user's environment profile in the `/var/samba/profile/<UserName>/` *directory*.
  The NT users will not be forced to get this profile each time they login. To force the NT users to get his profile from Samba, then rename the file: `NTUSER.DAT` to `NTUSER.MAN`.

  When the NT/Win2000/XP user logs in, this Homes share will be automatically mapped to a

network drive on his machine.

Samba as Primary Domain Controller(PDC) and Printer drivers server for Win2000:

This configuration sets samba as : File Server - Print Server
PDC - Master Browser - Win95/98 Logon Server - Win2K Printer Driver server.

- **On Linux:**
  1. You need samba Version >= 2.2.1a
  2. Create a new group `ntadmin` as a printer administrator group
  3. Create a user account for the printer administrator with: `passwd -g ntadmin`
  4. Add the same user account with `smbpasswd -a ntadmin`
  5. If not added yet: `smbpasswd -a root` otherwise Win2000 can not connect to the Domain the first time. It is probably adviseable to not give the same password as the original password under linux.
  6. Add an account for every host (with a $ at the end):
     `useradd -s /bin/false -d /dev/null hostname$`
  7. Add the same account in `smbpasswd`:
     `smbpasswd -a -m hostname$`
  8. Create a structure for the profiles and the drivers:
     ```
     mkdir /home/samba/
     cd /home/samba
     mkdir netlogon profiles printers
     chown :ntadmin printers
     chmod 775 printers
     chmod 777 profiles
     mkdir printers/W32X86 printers/WIN40
     ```
     The drivers will be copied from APW in a subdirectory of W32X86.
  9. Modify `/etc/samba/smb.conf` with all entries for the PDC, print$ etc.
  10. Create a script `/usr/bin/addprinter` that will create a printer
  11. Add with `visudo` the possibility for printer administrators to reload samba:
      ```
      Cmnd_Alias RCSMB=/etc/init.d/smb
      madmin THIS_HOST=NOPASSWD:RCSMB
      ```
  12. Add `SystemGroup ntadmin` in `/etc/cups/cupsd.conf` and reload `cups`.

- **On Windows2000**

1) Join the domain with user `root`, (Settings - System - Network Identification). Then reboot.
2) Log in as a printer administrator in the domain
3) Click on the Network Neighborhood und search for your samba server
4) Click on the samba server folder and then on the printer folder
5) Click on the Add Printer Wizzard (APW) and install a printer. You need of course some drivers for this. Don't print a test page, it doesn'work.
6) You should now be able to see your new printer.
   if you get an "`access denied`", this mean your script `addprinter` doesn't work.
7) Go to the regular "`Printers`" folder in the "`Settings`" and add a new network printer (the one you just uploaded). This time, the drivers will be copied from samba to your win2k directory: `X:WINNT\System32\spool\drivers\W32X86\...`
8) Print a test page, that's it!

- File /etc/samba/smb.conf:

```
[global]
   workgroup = STARS
   server string = Linux Samba PDC Server %v
   socket options = TCP_NODELAY  ; Some TCP fine tuning stuff (3 lines)
   kernel oplocks = false
   keep alive = 30
   debug level = 2               ; Lest get some info on how it goes
   security = user               ; User is authenticated once for all shares
   guest account = nobody        ; All our guests are Mr. nobody
   map to guest = Bad User       ; Known user name but bad passwd is refused
   encrypt passwords = yes       ;Our encrypted passwords are in smbpasswd file.
   printing = cups               ; Here we use CUPS Printing system
   printcap name = /etc/printcap
   load printers = yes           ; We want to see all the availabe printer
   printer admin = @ntadmin      ; Users from group ntadmin are printers admins.
   ; Script to execute when a printer is added through the APW from Win2K
   addprinter command = /usr/bin/addprinter  ; Content shown below
   local master = yes            ; We can be Local Master Browser
   os level = 64                 ; We make sure WE are the Master Browser.
   preferred master = yes        ; Lets provoke a Browser election at start-up
   domain logons = yes           ; We are a logon server for Win95/98/2K/XP
   domain master = yes           ; We are a PDC
   logon path = \\%L\Profiles\%u       ; Where the profiles will be stored
   logon drive = H:
   logon home = \\%L\%u
   logon script = %u.bat         ; logon scripts name: eg. michel.bat,
joe.bat

[netlogon]                       ; Share for logon scripts storage
   path = /home/samba/netlogon   ; Where in Linux the logon scripts will be stored
   writeable = no                ; Used only to read from windows clients
   writelist = ntadmin           ; Only the user ntadmin can write in this directory.
   browseable = no               ; This share is hidden from the browse list.

; Share for storing user profiles
[profiles]                       ; Share for profiles storage
   path = /home/samba/profiles   ; Where in Linux the Windows profiles will be
stored
   writeable = yes               ; Windows clients write their profiles here
   browseable = no               ; This share is hidden from the browse list.
   create mask = 0600            ; Profile files are readable only by their owners
   directory mask = 0700         ; Profile dirs. are readable only by their owners

[print$]                         ; Share for storing printer drivers
   path = /home/samba/printers   ; Where in Linux the drivers will be stored
   public = yes                  ; Usable by all windows clients incl. guests
   browseable = yes
   read only = yes               ; Normal users cannot write here
   write list = Administrator,madmin,root   ; But some users can write here
   directory mask = 0775

[homes]                          ; Each uwindows user gets a private share
   comment = home directory
   browseable = no               ; Sharename not seen in the browser list
```

```
   read only = no                ; Users can write in their own share
   create mode = 0750            ; The content is readable by own group

[printers]
   comment = all printers
   browseable = no
   printable = yes
   public = no              ; The Printers not available to guests, only to valid users
   read only = yes
   create mode = 0700
   directory = /tmp
```

- File /usr/bin/addprinter

```
#!/bin/sh
# Name:    /usr/bin/addprinter
# Authors: Pierre Burri & Michel Bisson
# Date:    7-Oct-2001
# This script adds a CUPS printer (Postscript) from Windows2000 APW
# with Samba Version 2.2.1a. (APW = Add Printer Wizard)
#------------------------------------------------------------------------
# Parameters given by the APW:
# $1 = printer name
# $2 = share name
# $3 = port name
# $4 = driver name
# $5 = location
# $6 = windows 9x driver location
#------------------------------------------------------------------------
smb_pr_dir="/home/samba/printers"
addpr_log="$smb_pr_dir/addprinter.log"
print_port="parallel:/dev/lp0"
#
echo "----------------------" >> $addpr_log
echo "date : `date`"          >> $addpr_log
echo "all parameters : 1=<$1> 2=<$2> 3=<$3> 4=<$4> 5=<$5> 6=<$6>" \
                                        >> $addpr_log
```

- Extract the PPD file name

```
driver=$(grep -lr "$4" $smb_pr_dir/W32X86 |head -1)
echo "driver name : <$driver>"  >> $addpr_log
```

- Add the printer to cups

```
/usr/sbin/lpadmin -p $2 -P $driver -L "$5" -v $print_port -E \
                                        >> $addpr_log  2>>1&
```

- Reload samba (with the SuSE Linux script)

```
sudo /etc/init.d/smb reload
sleep 3
```

Samba Tips and tricks:

- Logs the share access in the `/var/log/samba-access.log` file.
```
root preexec = echo "User %u at Host %m running %a has logged \
                     in %S on %T" >> /var/log/samba-access.log
```
RESULT: %u %m %a %S %T
```
User admin at Host toshiba running Win2K has logged in MYSHARE on 2003/05/03
18:52:30
```

- Sends a message to the host that has accessed a share.
```
preexec = echo "You have accessed the share %S" \
                | /usr/bin/smbclient -M %m > /dev/null
```

- Use another password server(NT/Win2K/XP) for samba users authentication:
`security = server` (or `domain` if PWserver is a PDC)
`password server = NetBIOSPasswordServerName`

- Synchronizing passwords files `/etc/passwd` and `/etc/samba/smbpasswd`, by using `smbpasswd` command only.
NOTE: Doesn't always work on all Linuxes, especially in SuSE :-(
First the `passwd` is changed (as root rights) then `smbpasswd`.
```
unix password sync = yes
passwd program = /usr/bin/passwd %u
passwd chat = *New*password* %n\n *new*password* %n\n *changed*
```

- Translate Windows users to Linux Users
`username map = /etc/samba/smbusers`
Content of `smbusers` file:
LinuxInternalUser = Windows Logon Users (may have multiple names)
eg.
```
!root = Administrator Admin
!michel = "michel bisson" michael
!marie = marieanne
!joe = joanne
guest = *
```
In this case the Windows client logging on as `Administrator` or `Admin` will be seen as samba `root` user. His home share will be `/root` and so on. Even if `Administrator` already exists as a samba user, he will be seen as `root` user. Simply said: samba translates immediately the entered name in Windows Client by the one given here in the file if it finds it.

Exception: If samba uses an external logon server(`security = server` or `domain`) then the username entered in Windows will be passed-on to the password server.
The '`!`' indicates that samba should stop searching the file if any name is matching.
The '*' indicates that all names will be translated to the samba user `guest`.
In this above case, samba will translate the given name and stop the file search at the first match. If the name is not found then it will translate any name to the samba `guest` user. If the '*' is not used in the file then no need to have the '!' otherwise they are needed. The line with the '*' should always be at the end of the file.

- Special characters in filenames of Windows shares with `smbmount`:
  To make sure that the special characters in the filenames are handled properly when mounting a Windows share in Linux via the `smbmount`, we need to make sure that the mounting options in smbmount are setting the right type of characters and codepage. To do that we need to do the following:
  In Windows DOS box, issue the command:
  ```
  chcp
  ```
  This will give the codepage. eg. `850`

  Then in the command `smbmount` include the following options:
  ```
  iocharset=utf8,codepage=cp850
  ```
  eg.
  ```
  smbmount //SERVER/share /mnt/server -o  iocharset=utf8,codepage=cp850
  ```

Meaning of Magic(%*x*) characters in `smb.conf`

%S = The name of the current service, if any.
%P = The root directory of the current service, if any.
%u = User name of the current service, if any.(real user)
%g = Primary group name of **%u.**
%U = Session user name (the user name that the client wanted, not necessarily the same as the one they got). The user name is allways in lowercase characters.
%G = Primary group name of **%U.**
%H = The home directory of the user given by **%u.**
%v = The Samba version.
%h = The internet hostname that Samba is running on.
%m = The NetBIOS name of the client machine (very useful).
%L = The NetBIOS name of the server.This allows you to change your config based on what the client calls you. Your server can have a "dual personality".
%M = The internet name of the client machine.
%N = The name of your NIS home directory server.This is obtained from your NIS auto.map entry. If you have not compiled Samba with the `--with-automount` option then this value will be the same as **%L.**
%p = The path of the service's home directory, obtained from your NIS `auto.map` entry. The NIS auto.map entry is split up as **"%N:%p".**
%R = The selected protocol level after protocol negotiation. It can be one of `CORE,COREPLUS, LANMAN1, LANMAN2 or NT1.`
%d = The process id of the current server process.
%a = The architecture of the remote machine.Only some are recognized, and those may not be 100% reliable. It currently recognizes Samba,WfWg, WinNT and Win95. Anything else might be known as "UNKNOWN".
%I = The IP address of the client machine.
%T = The current date and time.

Operations on Windows Machines

Check the SMB Shares listing of the server

```
net view \\NetBIOSServername
```

To MAP a DOS drive to a Samba share (Normally used in Logon Scripts)

```
net use DOSDrive: \\NetBIOSServername\ShareName
```

e.g. `net use F: \\SERVER\MYSHARE`

To MAP a Local Printer Queue to a samba Printer

```
net use Lpt1: \\NetBIOSServername\PrinterName
```

Note: The local printer port setting should stay connected to LPT1 (physical LPT port) but will be rerouted to the samba printer through the above command

EXTRA INFO from NetBIOS Environment (available names and groups and their services offered)

`nbtstat -a NetBIOSServername` (service list of smb host)
`nbtstat -c` (list of SMB hosts on the network...well almost all)

Useful Directives:

Logs the share access in the `/var/log/samba-access.log` file.

```
  root preexec = echo "User %u at Host %m running %a has logged \
                       in %S on %T" >> /var/log/samba-access.log
```

```
RESULT: %u          %m            %a                %S                  %T
User admin at Host toshiba running Win2K has logged in MYSHARE on 2003/05/03 18:52:3
```

`path = /var/users/%u` Each user gets its own share directory (user dir. must exist)

`hosts deny = 192.168.` Hosts that are not allowed to acces the share. Valid values: ALL, FQDN, IPAddr, NetAddr/Netmask, Partial IP. Often used in combination with `hosts allow`

`hosts allow = 150.203. EXCEPT 150.203.6.66`
Allows all hosts clients with IP starting with: `150.203.` except the host which has the IP `150.203.6.66`
Valid values:
ALL, FQDN, IPAddr, NetAddr/Netmask, Partial IP
`hosts allow` takes priority over `hosts deny` if conflicting.

`valid users = john, sophie`
Sets the only users allowed access to the share.

`write list = marie, @admin`
Only these users or group(@) are allowed to write to the share. Normally combined with `writeable = no`

`read list = marie, @shipping`
These users or group(@) are limited to rear-only to the share. Normally combined with `writeable = yes`

After having done a few normal shares, show the above directives, configure the following conditions in Samba server:

- Common share `[www]` where 2 HTML programmers working on the same project.
  `peter` and `martin`
  They also should also have their own home directory with Read/Write access.

- One exchange share `[transfer]` for **all** to:
  - Read and Write files and directories
  - Not allowing others to delete or change files or directories belonging to others.
  - Delivery area computers(dozent computers) should **not** be allowed in this area

  ######## For the advanced students
  - Need a log for this area
  - Only `paul` and `marie` should have access this area from Conference room PC.

- Normal workers should have their own home directories. Create 2 samples user of it.

Solution:

- 2 programmers working on the same files: `peter` and `martin`

  Commands:

```
groupadd prog
mkdir -m 775 /www
chgrp prog /www
mkdir -p /etc/leer/public_html
useradd -mk /etc/leer -s /bin/false -g prog peter
useradd -mk /etc/leer -s /bin/false -g prog martin
smbpasswd -a peter
smbpasswd -a martin
```

  in `/etc/samba/smb.conf`

```
[www]
     Comment = Arbeitsplatz fuer peter und martin
     path = /www
     public = no
     writable = yes
     valid users = peter martin
     force create mode = 0664
     force directory mode = 0775
```

- Transfer directory for all. Restriction: nobody can change other user's files

  Commands:

```
mkdir -m 1777 /var/transfer
```

  in `/etc/samba/smb.conf`

```
[transfer]
     Comment = Gemeinsame Transferplatz
     path = /var/transfer
     public = yes
     hosts deny = 172.16.11.27 172.16.11.200
     writable = yes
```