

# 1 Samba

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Samba (named after Microsoft's **S**erver **M**essage **B**lock protocol) is an Open Source/Free Software suite that provides seamless file and print services to Windows clients. It can act as a primary domain controller (authentication server) to all major variants of Windows.

The course will show how to:

- install the necessary software
- configure samba for some basic file service tasks
- configure samba for to operate as a PDC
- use an LDAP server to manage its user data base

## 1.1 What is Samba

As the front page at [samba.org](http://samba.org) says, "Samba is an Open Source/Free Software suite that provides seamless file and print services to SMB/CIFS clients." Samba is freely available, unlike other SMB/CIFS implementations, and allows for interoperability between Linux/Unix servers and Windows-based clients.

Samba is a software package that gives network administrators flexibility and freedom in terms of setup, configuration, and choice of systems and equipment. Because of all that it offers, Samba has grown in popularity, and continues to do so, every year since its release in 1992.

## 1.2 Installation & Configuration

The installation of Samba on Debian GNU/Linux is normally quite easy! The packages are pre-built, and you just have to run `apt-get` for the installation of the needed packages. Thus, the first step is:

```
apt-get install samba smbclient
```

This has to be done as root! During the installation, a few questions will be asked to build an initial database.

Question	Answer
Workgroup/Domain Name?	[country]
Use password encryptions?	Yes
Modify <code>smb.conf</code> to use WINS settings from DHCP?	No
How do you want to run Samba?	daemons
Create samba password database?	No

After the installation, you should be able to do a first test (samba is automatically started from the system). This example assumes that your machine is called `bruxelles`:

```
smbclient -L bruxelles
```

This will ask for a password, simply type return, and you will see a list of all shares that are defined, as well as some other servers on which exist on your LAN <sup>1</sup>.

### 1.2.1 Structure of the configuration file

The configuration file is made up of various *sections*. These are named `[sectionname]`. Most sections represent file or print shares. Parameters which apply to samba as a whole are set in a `global` section.

There are a number of reserved shares or sections, such as for example

- `printers` defines parameters for printers which are not explicitly listed
- `netlogon` is used for holding the Windows startup scripts when operating as a PDC
- ...

## 1.3 Samba as a simple file server

### 1.3.1 Global parameters

The following global parameters are relevant to simple file server operation:

Name	Description
<code>workgroup</code>	Windows workgroup or Domain
<code>netbios name</code>	NetBIOS name by which a Samba server is known. By default it is the same as the first part of the Unix host name.
<code>printing</code>	Identifies the printing system. One of <code>plp</code> , <code>lprng</code> or <code>cups...</code>
<code>wins support</code>	yes if this server should be a wins server, no otherwise.
<code>wins server</code>	the IP address of the Wins server (only set this if <code>wins support</code> is no).

Set `wins support` to `no` if you intend to put your server into an existing Windows network, which already has a Wins server.

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<sup>1</sup>the listing will only be shown on a samba server configured as a wins server, and will in most cases only contain those machines that use your server as a Wins server. Use `smbclient -L yourwinsserver` to explicitly query your wins server, rather than the local machine.

### 1.3.2 Per share parameters (all shares)

The following parameters are useful on all shares:

Name	Description
<code>comment</code>	Informative text to be displayed near share in Windows Browser
<code>browseable</code>	If set to <code>yes</code> , share shows up in network neighborhood, else is hidden
<code>public</code>	All users may access this share
<code>read only</code>	Users may only read from share
<code>available</code>	If set to <code>no</code> , share is switched off

### 1.4 Parameters for file shares

The following parameters are useful on file shares:

Name	Description
<code>path</code>	Path of Unix directory which is exported in this share

#### 1.4.1 Parameters for printer shares

The following parameters are useful on printer shares:

Name	Description
<code>printable</code>	must be set to <code>yes</code>
<code>printer</code>	Unix (Cups, ...) printer corresponding to this share
<code>path</code>	Path of temporary directory where print jobs are to be spooled to (by default <code>/tmp</code> )
<code>cups options</code>	If your printing system is cups, this specifies the options passed on to cups. Usually, " <code>raw,media=a4</code> ". These mean that "raw" mode should be used (no postscript processing, because in the Windows world, the "printer driver" lives on the client), and that the paper size is A4.

#### 1.4.2 Parameters for the global printers share

If you don't want to define each printer individually, you can set up a global `printers` share which exports all printers known locally to Windows.

For this, set `load printers = yes` in the `global` section, and define a `printers` section.

### 1.4.3 User management

So far, we have not yet defined any users in Samba. The file server is already usable, but only for anonymous access (guest user).

If you want to set up named access, the following parameters need to be defined:

Name	Description
<code>encrypt password</code>	<code>yes</code>
<code>guest user</code>	Name of Unix user who will serve anonymous (guest) requests (usually <code>nobody</code> )
<code>username map</code>	(Optional) Name of a file which maps long Windows user names to short Unix login names

The `username map` has the following format (left is the Unix login, right the long Windows name):

```
root = admin administrator
tridge = "Andrew Tridge"
```

Once these changes are done, you add samba users using the following command:

```
smbpasswd -a user
```

These users have to be existing Unix users; the `smbpasswd` command only enables them for samba.

### 1.4.4 Testing

The following tools are available for testing:

- `testparm`: this parses the `/etc/samba/smb.conf`, mentions any errors that it finds, and waits for a keystroke. After the keystroke, it prints out the whole configuration, as understood by samba
- `smbclient`: `smbclient` is a samba client that allows you to access your file server, just as a Windows workstation would. Of course, it can also be used to access a real Windows server.

```
smbclient -L server -U user
```

```
smbclient //server/share -U user
```

The first command logs in as `user` and lists all shares on `server`.

The second command logs in as `user` connects to `share` on `server`. Once connected, the you get an ftp-like command line interface to get and put files on the server.

- log files are put into `/var/log/samba/machine.log`, where `machine` is the netbios name of the client having connected. Set `log level` to at least 3 in the global section of `smb.conf` to see a log of all files that are opened.

### 1.4.5 Example

This example shows the configuration file of a simple file server:

```
[global]
    workgroup = samba
    printing = cups
    cups options = "raw,media=a4"
    load printers = yes
    encrypt passwords = yes
    log level = 3

[public]
    comment = A Test Share
    browseable = yes
    public = yes
    read only = yes
    path = /samba/public

[authenticated]
    comment = An authenticated share
    browseable = yes
    read only = no
    path = /samba/auth

[printers]
    comment = Printers share
    printable = yes
```

Exercises:

- Create the share directories on Unix (`/samba/auth`, `/samba/public`).
- Log in using `smbclient`, using various users, and put files into the shares, where possible

## 1.5 Primary domain controller

A primary domain controller acts as an authentication server for all windows workstations in its domain. Users authenticate to the PDC when they log in to their workstation. Once authenticated, they have access to all resources in the domain, be it on their local workstation, on the PDC, or on other windows servers participating in the domain.

To set up a primary domain controller, you need to

- add some attributes to the global sections
- define a `netlogon` share
- define a `homes` share, which will contain Windows' users home directory
- set up a place where roaming profiles are stored

### 1.5.1 Global settings

Name	Description
<code>workgroup</code>	name of the domain
<code>domain logons</code>	<code>yes</code>
<code>wins support</code>	<code>yes</code> in most cases, unless you've defined several domains which share a same LAN
<code>add machine script</code>	Script to handle the joining of workstations to the domain: <code>add machine script=/usr/sbin/useradd -d / -G '' -g 100 -s /bin/false -M %u</code>
<code>logon drive</code>	Drive letter for home directory (example: H:)
<code>logon home</code>	profile location for Windows 95/98 <sup>2</sup>
<code>logon path</code>	profile location for Windows NT/2000/XP <sup>3</sup>

Notes:

- Unlike with earlier Samba versions, the drive letter (`logon drive`), profile directory (`logon path`), and others should **not** be enclosed in quotes
- The purpose of the `add machine script` is to create the Unix accounts that back the machine accounts which are created when a workstation joins the domain. Care must be taken that those cannot be abused for interactive logins; that's why we set the login share to `/bin/false`.
- `logon home` and `logon path` are interpreted by the Windows workstation (after substitution of samba variables), and should refer to an existing share. Example: `\\%L%\%U\profile`. After substitutions of samba variables by the server, this will be `\\server\user\profile`, which is then interpreted by the workstation to mean the `profile` directory in the user's home share.

### 1.5.2 Homes share

The homes share represents the user's home directories. Each user will "see" a share named after himself, containing his own home directory.

```
[homes]
    comment = Home Directories
    browseable = no

# By default, the home directories are exported read-only. Change next
# parameter to 'yes' if you want to be able to write to them.
    writable = yes

# File creation mask is set to 0700 for security reasons. If you want to
# create files with group=rw permissions, set next parameter to 0775.
    create mask = 0700

# Directory creation mask is set to 0700 for security reasons. If you
# want to create dirs. with group=rw permissions, set next parameter
# to 0775.
    directory mask = 0700
```

### 1.5.3 Roaming Profiles

On login the user's is copied from the location identified by `logon path` to the local workstation.

On logout, it is copied back to the server.

On first login, when the user does not yet have a profile on the server, his profile gets initialized from the "Default User"'s profile.

### 1.5.4 Netlogon share

The main purpose of the netlogon share is as a location for the startup script (identified by the `logon script` parameter), which is executed on the client workstation on login

### 1.5.5 Adding a workstation to the domain

When joining a workstation to the domain, you need to supply a user name and a password on the server, who has the appropriate privileges.

One such user is `root`; however in Debian, `root` is marked as `invalid user` in `smb.conf`. In order to enable him, you need to comment out the following line, if present:

```
invalid users = root
```

After having made sure that the above line is gone, `root` can now add new workstations to the domain.

In many circumstances, however, it may not be desirable to hand out the root password of the server to the people doing the maintenance on the clients. In such cases, you may set up another user in such a way that he is entitled to add machines to the domain.

After having created this user using `useradd` and then `smbpasswd -a`), you declare him to be `admin user` on the reserved `IPC$` share.

```
[IPC$]
    admin users = winjoin lenin bigmouse
    path = /ipc
```

The `IPC` share is a reserved file share which is used for administrative communications among windows machines. Windows workstations log in to this share for numerous tasks, including joining the domain.

The `admin users` parameter defines a space-separated list of users who will enjoy root privileges when connecting to this share.

Caution: In addition to its special meaning, the `IPC$` share may contain files just like any other shares, and the admin users have full privileges on those files. Therefore it is important to point it to a directory which contains nothing of value (create an empty directory `/ipc` just for this purpose).

After having set up the `IPC$` share in this way, the user named `winjoin`, `lenin` and `bigmouse` are now entitled to add machines to the domain.

### 1.5.6 Setting up a “Domain administrator”

“Domain administrators” are users, defined on the PDC, which have administrative privileges on the workstations. They do not, however, have any particular privileges on the server itself.

In order to define domain administrators, you need to:

- Create or chose a Unix Group which will hold the domain administrators:

```
groupadd domadm
```

- Define this group as domain administrators:

```
net groupmap modify ntgroup="Domain Admins" unixgroup=domadm
```

- add users to this group (by editing `/etc/group`. These users now enjoy administrative privileges on the workstations.

Notes:

- The `net groupmap` database may get corrupted, especially when samba’s SID changes due to re-installation. In such case execute the following command: `net groupmap cleanup`, and try again.
- Use `net groupmap add ...` if the Windows group does not yet exist, and `net groupmap modify ...` if it does exist, or else the command will happily create two groups with different SIDs!



### 1.5.7 Example

```
[global]
## Browsing/Identification ###

# Change this to the workgroup/NT-domain name your Samba server will part of
workgroup = test47
domain logons = yes
security = user
encrypt passwords = yes
add machine script = /usr/sbin/useradd -d / -G '' -g 100 -s /bin/false %u

printing = cups
cups options = "raw,media=a4"
load printers = yes
username map = /etc/samba/user.map
...
# Windows Internet Name Serving Support Section:
# WINS Support - Tells the NMBD component of Samba to enable its WINS Server
wins support = yes
...
[homes]
comment = Home Directories
browseable = no
# By default, the home directories are exported read-only. Change next
# parameter to 'yes' if you want to be able to write to them.
writable = yes
```

## 1.6 Password synchronization

Due to the peculiar way how Windows workstations authenticate to servers and PDCs, the Windows password record format (as stored in `/etc/samba/smbpasswd`) is fundamentally incompatible with Unix' password records (as stored in `/etc/shadow`).

By default, these passwords are independent of each other: if the end user changes his Unix password, his Windows password is unaffected, and vice-versa. However, this is rather confusing to the end users, and this is where password synchronization steps in.

With password synchronization, the `smbpasswd` utility also changes the Unix password, and vice versa.

### 1.6.1 Unix password follows Samba

In order to make the Unix password follow the samba password, two steps are needed:

**configure samba** : Add (or uncomment) the following lines to `/etc/samba/smb.conf`:

```
unix password change = yes
pam password change = yes
```

**configure pam** : Add the following line to `/etc/pam.d/samba`:

```
@include common-password
```

Note: from yesterday's LDAP presentation, Unix authentication is still configured to use LDAP. Disable this temporarily by commenting out the `password sufficient pam_ldap.so` line in `/etc/pam.d/common-password`, or by only using users that do not exist in LDAP for our samba tests.

You may test password change:

```
smbpasswd -r server -U user
```

This command performs the samba password change the same way as a windows workstation would. Change the samba password of user, and then check (by logging in via `ssh`, for instance), that the Unix password has been changed as well.

### 1.6.2 Samba password follows Unix

In principle, a similar method should allow to do the synchronization in the other direction, by appending the following line to `/etc/pam.d/common-password`:

```
password sufficient pam_smbpass.so nullok try_first_pass use_authok
```

However, unlike other distributions, such as SuSE, Debian does not ship the `pam_smbpass` module with its samba.

To solve this, you may either:

- compile samba from source, and enable the feature:

```
./configure --with-pam --with-pam_smbpass
```

- simply symlink `/usr/bin/passwd` to `/usr/bin/smbpasswd`

## 1.7 Access control

In addition to the normal Unix file permissions, samba allows very fine-grained access control to shares.

This section describes how to control access by user, by workstation IP, and how to control the mapping of samba users to Unix users.

### 1.7.1 Access control by user

The following settings define which users may access a share:

Name	Description
<code>valid users</code>	Users who may connect to this share
<code>invalid users</code>	Users who may <b>not</b> connect to this share

Both lists may contain individual users or groups. If a user ends up in both lists at once, `invalid users` takes precedence.

The following settings define which users may access a share:

Name	Description
<code>write list</code>	Users who may write to this share
<code>read list</code>	Users who may <b>not</b> write to this share

Both lists may contain individual users or groups. If a user ends up in both lists at once, `write list` takes precedence, i.e. users that are in both lists at once may write.

The `admin users` setting defines a list of users who are granted administrator access to the share (i.e. they perform all operations on the share as root).

### 1.7.2 Access control by IP

The following settings define which IP addresses may access a share:

Name	Description
<code>hosts deny</code>	IP addresses who may not connect
<code>hosts allow</code>	IP addresses who may connect.

Both lists may contain individual machines or subnets (IP/netmask). If a machine happens to be in both lists at once, `allow` takes precedence.

### 1.7.3 Unix rights granted to share users

The following settings define which Unix rights the Samba users get:

Name	Description
<code>force user</code>	If this is set, all valid users connecting to the share act as this Unix user
<code>force group</code>	If this is set, all valid users connecting to the share act as belonging to this Unix group
<code>create mask</code>	“maximal” set of permissions set on newly created files. If client who creates a file asks to grant more permissions than specified in mask, the additional permission bits are silently ignored. For instance, if the mask does not include the <i>world writable</i> bit, samba will not create any world writable files, even if client asks it to.
<code>directory mask</code>	same <code>create mask</code> , but for new directories, rather than files
<code>force create mode</code>	“minimal” set of permissions set on newly created files. If client who creates a file asks to grant less permissions than specified in mask, the missing permission bits are set anyways. For instance, if the mode includes the <i>group readable</i> bit, samba will make files group readable, even if client didn't ask for group readable files.
<code>directory mask</code>	same as <code>force create mode</code> , but for new directories, rather than files
<code>force security mode</code>	same as mode, but applies to permission bit changes ( <code>chmod</code> ), rather than new object creation. There is a <code>force security mode</code> , a <code>security mask</code> , a <code>force directory security mode</code> and a <code>directory security mask</code> (minimal/maximal bit masks, applicable to directories or plain files)
<code>dos filemode</code>	The default behavior in Samba is to provide UNIX-like behavior where only the owner of a file/directory is able to change the permissions on it. However, this behavior is often confusing to DOS/Windows users. Enabling this parameter allows a user who has write access to the file (by whatever means) to modify the permissions on it.

### 1.8 Samba variables

Often it is interesting to make values of samba configuration parameters dependant on the environment, such as properties of the client or user connecting to the service. This can be done using *samba variables*. Samba variables start with a percent sign (%) followed by a letter.

Variable	Description
%U	User name who connected to the share. This is the user name “requested”, by the client, i.e. before it is changed by <code>username map</code> , <code>force user</code> or <code>admin users</code> .
%u	User name assigned by samba (after taking into account any remapping performed by <code>username map</code> , <code>force user</code> and <code>admin user</code> )
%G	Primary Unix group of %U
%g	Forced group (if set), or primary Unix group of %u if there is no <code>forced group</code> not
%H	Unix home directory of %u
%m	Net BIOS name of client workstation
%I	IP address of client workstation
%a	Windows variant of client (one of <code>WfWg</code> , <code>Win95</code> , <code>WinNT</code> , <code>Win2k</code> , <code>WinXP</code> . This variable is particularly useful to use different profile directories for different windows versions (there may be some issues when <code>WinNT</code> and <code>Win2k</code> use the same profile, so we better keep them separate).
%L	Net BIOS name of server

## 1.9 Using samba with an LDAP backend

### 1.9.1 Motivation

LDAP is useful if the user database

- is huge
- changes frequently
- needs to be shared among many hosts (NIS clients, other Samba servers, ...)

LDAP also allows to specify some settings per user, which would otherwise be global:

- profile path
- startup script

## 1.9.2 Setting up openldap server for samba

The following steps need to be performed on the `slapd` configuration to support samba

**Schema** Get the `samba.schema` from the following location, and put it into `/etc/ldap/schema/samba.schema`.

```
http://samba.org/~jerry/patches/post-3.0.6/samba.schema
```

Then declare it in `slapd.conf` by adding the following line:

```
include      /etc/ldap/schema/samba.schema
```

**Object tree** : Make sure you set up an object tree such as the following, to support samba:

```
com---tux-industries---belgium----People
    |
    |--Group
    |
    |--Samba---Idmap
    |
    |--Samba---Machine
```

This can be done using `ldapadd` or using a graphical tool such as `gq`

**Security** : As Windows' password encryption scheme is not secure, special care must be taken to protect the password attributes used by samba:

```
access to attribute=sambaLMPassword
    by dn="cn=admin,dc=belgium,dc=tux-industries,dc=com" write
    by self write
    by * none
```

```
access to attribute=sambaNTPassword
    by dn="cn=admin,dc=belgium,dc=tux-industries,dc=com" write
    by self write
    by * none
```

### 1.9.3 Samba configuration

The following changes needed to be performed in `smb.conf` to instruct samba to use LDAP:

Name	Description
<code>passdb backend</code>	Set this to the URL of your Samba server: <code>ldapsam:ldap://localhost</code> . N.B. You should remove any previously existing <code>passdb backend</code> lines if there are any.
<code>idmap backend</code>	URL of samba server used for Idmapping. This is mostly needed if you import accounts from other domains. Example: <code>ldap:ldap://localhost</code>
<code>ldap admin dn</code>	DN (Ldap user) used for accessing the repository: <code>cn=admin,dc=belgium,dc=tux-industries,dc=com</code>
<code>ldap ssl</code>	Use SSL to connect to LDAP: <code>on</code>
<code>ldap suffix</code>	Base path under which all Samba-relevant objects are stored. This is an absolute path. Example: <code>dc=belgium,dc=tux-industries,dc=com</code>
<code>ldap user suffix</code>	Path where user account objects are stored. This is interpreted relatively to <code>ldap suffix</code> . Example: <code>ou=People</code>
<code>ldap group suffix</code>	Path where group and groupmap objects are stored (such as <code>domadm</code> ). This is interpreted relatively to <code>ldap suffix</code> . Example: <code>ou=Group</code>
<code>ldap idmap suffix</code>	Path where idmap objects are stored. This is interpreted relatively to <code>ldap suffix</code> . Example: <code>ou=Idmap,ou=Samba</code>
<code>ldap machine suffix</code>	Path where machine account objects (workstations that are member of the domain) are stored. This is interpreted relatively to <code>ldap suffix</code> . Example: <code>ou=Machine,ou=Samba</code>
<code>ldap filter</code>	Filter used to locate entries by user name. Example: <code>(cn=%u)</code>
<code>ldap passwd sync</code>	Set this to <code>yes</code> for synchronizing LDAP password with windows passwords (the LDAP password is used for Unix authentication with LDAP)
<code>unix passwd sync</code>	In order for ldap password synchronization to work correctly, <code>unix passwd sync</code> , which is used for a non-LDAP authentication DB, needs to be switched off. Remove any line that sets it to <code>yes</code>

Example:

```
passdb backend = ldapsam:ldap://localhost

idmap backend = ldap:ldap://localhost
ldap admin dn = cn=admin,dc=belgium,dc=tux-industries,dc=com
ldap ssl = on

ldap suffix = dc=belgium,dc=tux-industries,dc=com
ldap user suffix = ou=People
ldap group suffix = ou=Group
ldap idmap suffix = ou=Idmap,ou=Samba
ldap machine suffix = ou=Machine,ou=Samba
```

```
ldap filter = (cn=%u)
```

```
ldap passwd sync = yes  
unix passwd sync = no
```

After having performed these changes in `smb.conf`, you still need to tell samba the password for the `ldap admin dn`. This can be done using the following command:

```
smbpasswd -w lxd2005
```

Yes, the password shows up on the command line, and no, this is not very secure! Let's hope that the samba team will address this issue in one of the next versions...

#### 1.9.4 List of LDAP attributes relevant to Samba

LDAP attribute	description
<code>objectClass</code>	Samba user object should have classes <code>sambaSamAccount</code> and <code>account</code>
<code>uid</code>	user name, equivalent to <code>cn</code>
<code>sambaSID</code>	SID of samba user (usually constructed by concatenating the SID of the server as obtained with <code>net getlocalsid</code> with the user's Unix id)
<code>sambaLMPassword</code>	LanManager password hash
<code>sambaNTPassword</code>	NT password hash
<code>sambaLogonScript</code>	script to be invoked at logon time (equivalent to <code>logon script</code> parameter of <code>smb.conf</code> ). If empty, default from <code>smb.conf</code> is used.
<code>sambaHomeDrive</code>	drive letter of home share (equivalent to <code>logon drive</code> parameter of <code>smb.conf</code> ). If empty, default from <code>smb.conf</code> is used. Note: this string must contain the colon following the drive letter!
<code>sambaProfilePath</code>	Windows Path where 95/98 profile is stored ( <code>logon home</code> )
<code>sambaHomePath</code>	Windows Path where NT/2000/XP profile is stored ( <code>logon path</code> )
<code>sambaUserWorkstation</code>	comma-separated list of workstations from where user may log on

The easiest way to add a samba user is to use `smbpasswd -a`. This will convert the existing LDAP object for the Unix user into an object that is also suitable for samba, by adding the needed object class and attributes. The optional attributes (`sambaLogonScript`, etc.) may then be added by `ldapmodify` or `gq`.



### 1.9.5 Samba groupmap object

Groupmap objects (used for setting up domain administrators) are also stored in LDAP:

LDAP attribute	description
objectClass	top, posixGroup, sambaGroupMapping
cn	group's Windows name
sambaSID	group's SID
gidNumber	group's Unix group id.
sambaGroupType	must be 2

The easiest way to create these entries is to use `net groupmap modify` or `net groupmap add`. With LDAP, the groupmap does not automatically contain the default users (Domain Admins, Domain Guests etc.), so you need to create these explicitly (use `add`, rather than `modify`), and you need to supply the SID (machine sid followed by `-512`).

```
bruxelles:~# net getlocalsid
SID for domain BRUXELLES is: S-1-5-21-1180513021-3148254490-3206183951
bruxelles:~# net groupmap add ntgroup="Domain Admins" unixgroup=domadm \
  sid=S-1-5-21-1180513021-3148254490-3206183951-512
Successfully added group Domain Admins to the mapping db
bruxelles:~#
```

## 1.10 Miscellaneous Gimmicks

### 1.10.1 User monitoring

`smbstatus` : The `smbstatus` command displays the currently logged in users, as well as the shares, locks and files that they have currently open.

`root preexec` : The `root preexec` and `root postexec` share parameters specify a program that is executed whenever the share is mapped and/or unmapped. It can be used to propagate samba login/logout activity to Unix's `last` facility:

```
root preexec = /usr/X11R6/bin/sessreg -l %m -h %M -a %u
root postexec = /usr/X11R6/bin/sessreg -l %m -h %M -d %u
```

### 1.10.2 Time synchronization

The following line, in the global section, enables the samba server to act as a timeserver for its workstations:

```
time server = yes
```

To make use of this feature, the client workstation needs to execute the following command (for instance, from its startup script):

```
net time \\bruxelles /set
```

### 1.10.3 Hiding files

**hide** The following hides the files with the named extensions (slash-separated list). They can still be accessed by their name, but will not show up in directories (their Dos H bit is set)

```
hide files = *.exe/*.scr
```

**veto** The following makes the files with the named extensions (slash-separated list) completely inaccessible to samba. These files cannot be accessed, even if the user knows their name

```
veto files = *.exe/*.scr
```

### 1.10.4 Included configuration files

It is possible for `smb.conf` to refer to other configuration files. This may be useful for better organizing the samba configuration, and also for making some configuration aspects dependant on samba variables.

**complete override** If the named file exists, the current configuration file is overridden (i.e. all settings read from the current file, except location of new file, are forgotten), and new file is read instead. If the named file does not exist, the settings from the current file are retained

```
configuration file = /etc/samba/lib/smb.conf.%m
```

**include / merge** The new file is read, and its setting merged with those read from the current file:

```
include = /etc/samba/lib/smb.conf.%m
```