Using Samba to play nice with Windows

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Potential Technologies

SMB (Server Messenger Block) Now called CIFS (Common Internet File System)

Historically one of Microsoft's core network protocls, it provides the following services:

- File-sharing (“mapped drives”)
- Network printing (“Printer sharing”)
- Name resolution (similar to DNS)

Samba

- smbd: Handles the connections from a single remote computer
- nmbd: Provides “network neighborhood” and WINS
- winbind: Allows PAM-enabled systems (such as Linux and FreeBSD 5) to get user information from SMB servers (“domain controllers”)
- SWAT: a web-based program for configuring Samba
- smbmount: Allows a POSIX system to connect to an SMB server similar to connecting to an NFS server
- smbclient: an FTP-like tool to upload/download files to an SMB server

Drawbacks

SMB is **never** safe to use across untrusted networks!

SMB's performance is terrible over slow connections, or high-latency connections (i.e. the Internet).

Samba is everywhere

It's difficult to gather numbers, but it's likely that Samba is moving more files around than Windows!

- Most Linux distributions have it pre-installed
- Mac OS X for server and client roles
- Solaris
- Embedded NAS?
- Who knows what else!

Getting Started

smbclient makes it easy to connect to a Windows server from a minimally installed POSIX machine – no configuration required!

```
bash-2.05b$ smbclient //proxy/work
params.c:OpenConfFile() - Unable to open configuration
  file "/usr/local/etc/smb.conf":
        No such file or directory
smbclient: Can't load /usr/local/etc/smb.conf - run
  testparm to debug it
Password:
Domain=[PT] OS=[Unix] Server=[Samba 2.2.4]
smb: \> get MiniMiniMusicApp.class
smb: \> bash-2.05b$
```

Nice and GUI

- Mac OS X has access to SMB nicely integrated into the GUI.
- Gnome and KDE file managers can access SMB servers by using the smb://server/share syntax.

Mounting Windows

Mount remote Windows drives so they appear to be part of you local filesystem:

mount -t smbfs //server/share /mountpoint

(-t option may be “smb” or “smbfs”)

- The SMB protocol only supports a single user at a time, so whoever mounts the filesystem sets the permissions for whatever other user accesses it.

Finding Samba Servers: nmbd

- nmbd is a server process that handles Microsoft's outrageous “browse” protocol to allow Windows (and Samba-enabled machines) to easily find each other on a network.
- Without nmbd, your Samba server will not show up in “network neighborhood”
- nmbd can also act as a WINS server to provide browse services to very large networks.
- Reads its configuration from the smb.conf file.

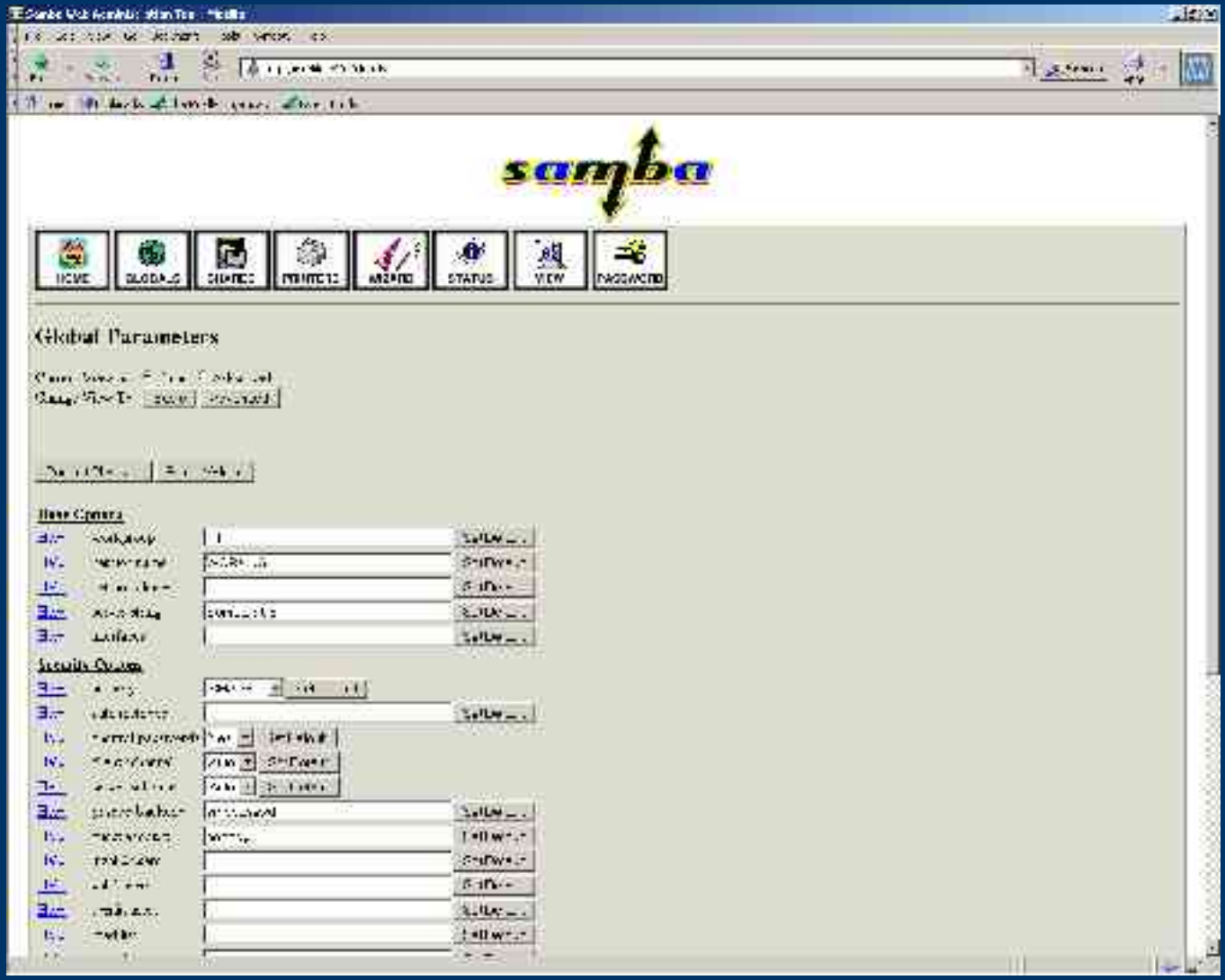
Providing SMB services: smbd

- Server process that handles the interaction across a connection (i.e. A connection could be a mapped drive, or a connection to a shared printer)
- The smbd is what is actually copying the file or displaying the directory listing.
- Gets its configuration from smb.conf

Example minimal smb.conf

```
[global]
   workgroup = PT
   security = share
# Share Definitions
[home]
   browseable = yes
   writable = yes
   path = /usr/home
```

SWAT: Samba Web Administration Tool



Winbind: Using Windows as a login server

- winbind is a PAM module to allow POSIX systems that utilize PAM (such as Linux and FreeBSD 5) to get their user information from a Windows domain controller instead of /etc/password

Some intersting capabilities

- VFS allows you to plug in features, such as the included network trash bin.
- Samba has a very flexible security model. You can go from virtually no security (as in earlier example) to full-fledged domain-style authentication.
- VFS has a plugin to emulate Windows shadow copy.
- Samba has considerably more options than a Windows server.
- VFS allows on-the-fly virus scanning through OpenAntiVirus

Security in Samba

Security =

- share: each share has (or lacks) a password as defined by that share
- user: each connection is authenticated against the password list on the server
- domain: this server is part of an NT domain and will use the domain's security
- server: user is authenticated against an AD server, but doesn't have to be part of a realm (falls back to user on failure)
- ADS: the server is part of the AD realm, and will be authenticated by the AD server

Security in more detail

- Any mode that requires auth against the UNIX password files (user, server in failover mode) requires an additional password file with the NT encrypted passwords (see the smbpasswd utility)
- The server mode allows integration with an Active Directory without setting up Kerberos
- The ADS mode requires that a Kerberos server be up and running alongside Samba

Interesting smb.conf features

- hide dot files = yes
  Causes files starting with a . to appear as hidden files to clients
- hide special/unreadable/unwriteable
  Causes various types of files not to be visible to clients
- Parameters can contain magic values that depend on various circumstances:
  logon script = scripts/%U.bat

Enterprise Samba

- Login server
- Roaming Profiles
- Domain controller
- AD member

Everyday Samba

- Shared files and printers
- Friendly communication between Windows and Posix systems