

Practical Samba Server Configuration Guide on CentOS in Ebonyi State University ICT Department

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Abstract

Samba is a powerful tool that enables seamless file and printer sharing to Server Message Block and Common Internet File System (SMB/CIFS) clients from a Linux server or desktop computer. With Samba technology, an organization can even connect a Linux machine to a Windows Domain. the services created by running Samba are available to Linux, macOS, and Windows clients. It's an essential service to run in organizations that support multiple operating systems, and it's even useful on homogenous networks. The article is designed to outline the step by steps procedures involved in setting up Samba Server in Ebonyi State University ICT Department.

1. Introduction

Samba is an open-source application suite which provides services such as file and print to Server Message Block (SMB) or Common Internet File System (CIFS) clients. Samba is publicly available software package, which allows for interoperability between different operating system platform such as Unix/Linux and windows-based clients. Samba uses the Transmission Control protocol/Internet Protocol (TCP/IP) installed on the server machine to interact with the windows-based client in order to share folders, files and printer devices among themselves [1].

The (SMB) Server Message Block Protocol is a client-server communication protocol that is used for sharing access to files, printers, serial ports, and other resources on a network. The (CIFS) Common Internet File System Protocol is a dialect of the SMB protocol. A collection of message bundles that describes a distinct variant of a protocol is called a dialect [2].

Samba has provided secure, stable and fast file and print services for all clients using the SMB/CIFS protocol, such as all versions of DOS and Windows, OS/2, Linux and many others. Samba is an important component to seamlessly integrate Linux/Unix Servers and Desktops into Active Directory environments. It can function both as a domain controller or as a regular domain member. 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],[3].

2. Prerequisites

In order to install Samba, we will need to log into our CentOS server as a user with sudo privileges, or as the root user.

- CentOS Server (installed and running)
- Configure Network Adapter to acquire IP dynamically or statically assign IP to the Server
- Root access to the Server
- Internet connectivity
- Fully Qualified Domain Name (optional) [4]

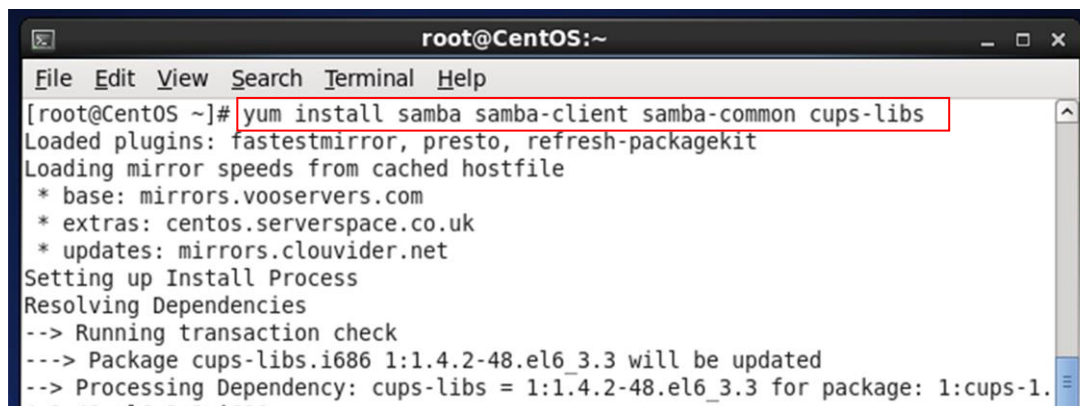
2.1 Disable Firewall and Selinux Temporarily

Instructions:

1. Type: ***service iptables stop*** at the terminal to temporarily disable firewall
2. Type: ***set enforce 0*** at the terminal to temporarily disable selinux service [5]

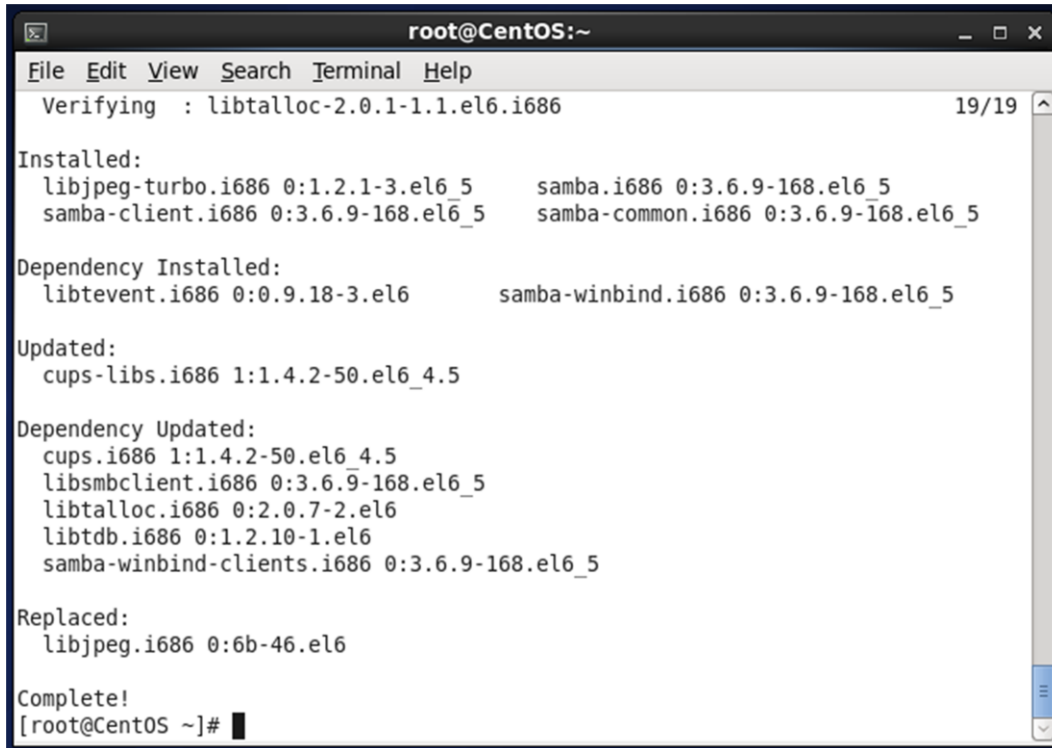
2.2 Installation of Samba Server on CentOS

To install samba file server on CentOS and its dependencies files, run the *yum* command at the terminal as shown below:



```
root@CentOS:~  
File Edit View Search Terminal Help  
[root@CentOS ~]# yum install samba samba-client samba-common cups-libs  
Loaded plugins: fastestmirror, presto, refresh-packagekit  
Loading mirror speeds from cached hostfile  
* base: mirrors.vooservers.com  
* extras: centos.serverspace.co.uk  
* updates: mirrors.clouvider.net  
Setting up Install Process  
Resolving Dependencies  
--> Running transaction check  
--> Package cups-libs.i686 1:1.4.2-48.el6_3.3 will be updated  
--> Processing Dependency: cups-libs = 1:1.4.2-48.el6_3.3 for package: 1:cups-1.
```

Fig. 1: Installing samba and its dependencies



```
root@CentOS:~  
File Edit View Search Terminal Help  
Verifying : libtalloc-2.0.1-1.1.el6.i686 19/19  
Installed:  
libjpeg-turbo.i686 0:1.2.1-3.el6_5 samba.i686 0:3.6.9-168.el6_5  
samba-client.i686 0:3.6.9-168.el6_5 samba-common.i686 0:3.6.9-168.el6_5  
Dependency Installed:  
libtevent.i686 0:0.9.18-3.el6 samba-winbind.i686 0:3.6.9-168.el6_5  
Updated:  
cups-libs.i686 1:1.4.2-50.el6_4.5  
Dependency Updated:  
cups.i686 1:1.4.2-50.el6_4.5  
libsmbclient.i686 0:3.6.9-168.el6_5  
libtalloc.i686 0:2.0.7-2.el6  
libtdb.i686 0:1.2.10-1.el6  
samba-winbind-clients.i686 0:3.6.9-168.el6_5  
Replaced:  
libjpeg.i686 0:6b-46.el6  
Complete!  
[root@CentOS ~]#
```

Fig. 2: Showing files installed on CentOS Server

3. ~~~~~

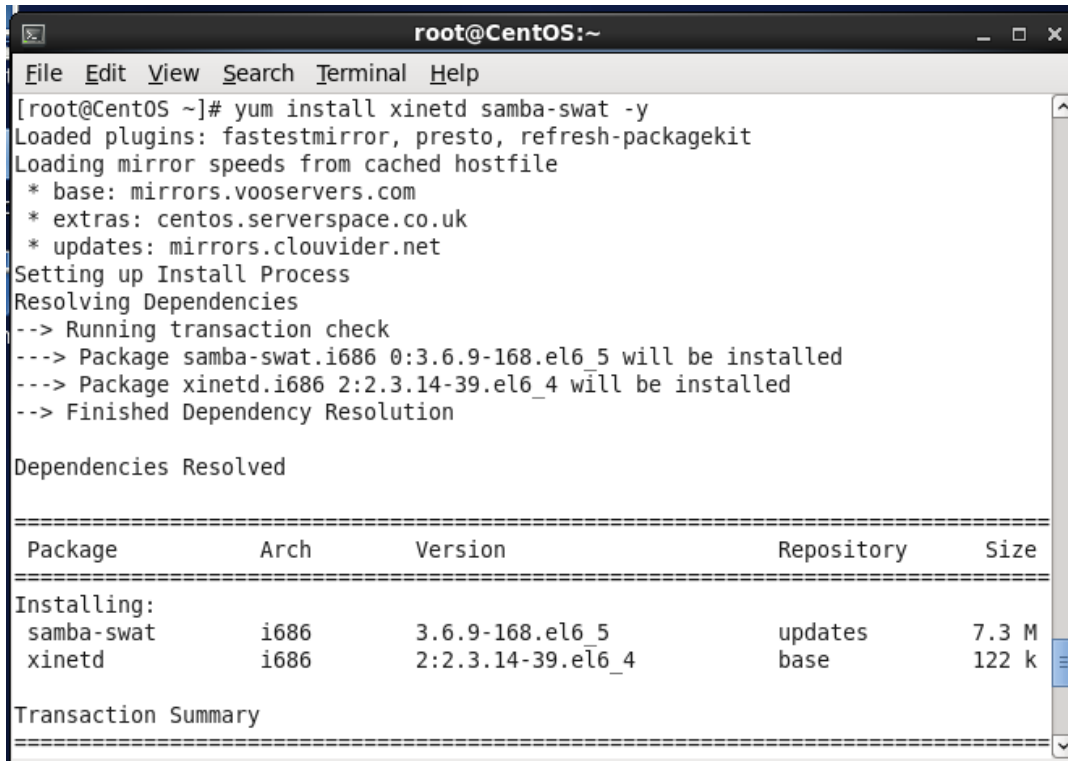
Samba Server can be configured in two modes, namely Graphical Configuration or Command Line Configuration

3.1 Graphical Configuration

Instructions:

- i. To configure samba server in GUI mode, we need to install Samba Web Application Tool (SWAT) using the yum command as follows:

Fig. 3: SWAT installation



```
root@CentOS:~  
File Edit View Search Terminal Help  
[root@CentOS ~]# yum install xinetd samba-swat -y  
Loaded plugins: fastestmirror, presto, refresh-packagekit  
Loading mirror speeds from cached hostfile  
* base: mirrors.vooservers.com  
* extras: centos.serverspace.co.uk  
* updates: mirrors.clouvider.net  
Setting up Install Process  
Resolving Dependencies  
--> Running transaction check  
--> Package samba-swat.i686 0:3.6.9-168.el6_5 will be installed  
--> Package xinetd.i686 2:2.3.14-39.el6_4 will be installed  
--> Finished Dependency Resolution  
  
Dependencies Resolved  
  
=====
```

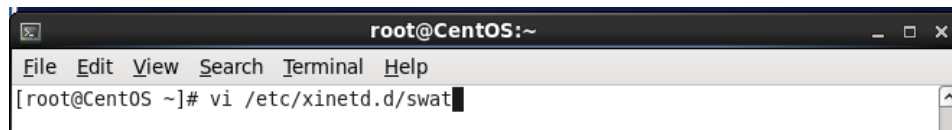
Package	Arch	Version	Repository	Size
Installing:				
samba-swat	i686	3.6.9-168.el6_5	updates	7.3 M
xinetd	i686	2:2.3.14-39.el6_4	base	122 k

```
=====
```

Transaction Summary

```
=====
```

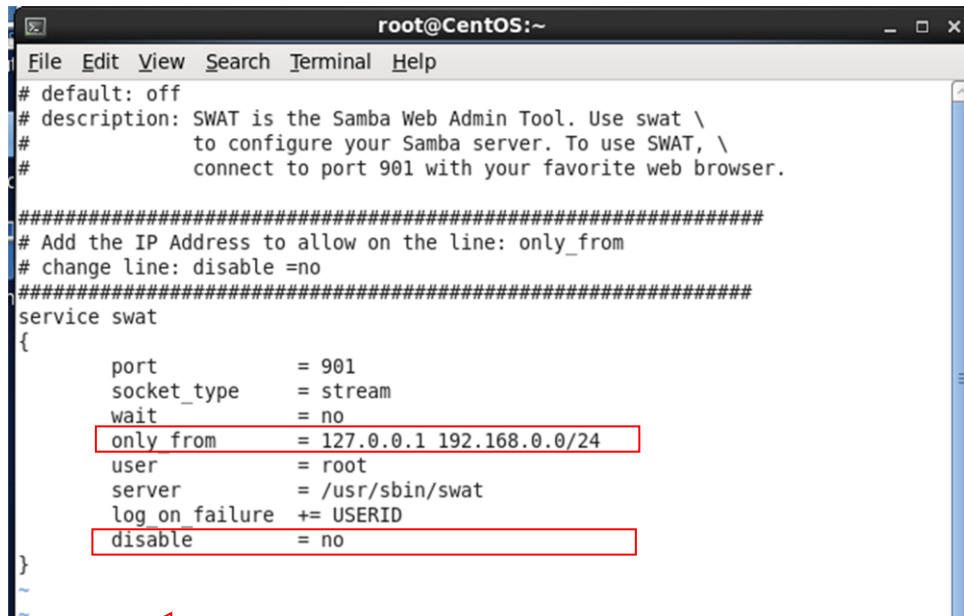
- ii. Open the Samba-SWAT configuration file using vi editor



```
root@CentOS:~  
File Edit View Search Terminal Help  
[root@CentOS ~]# vi /etc/xinetd.d/swat
```

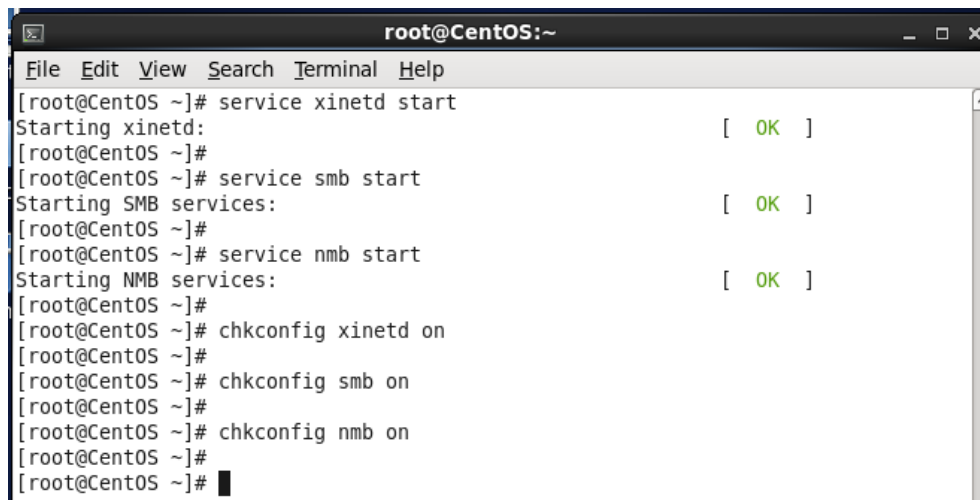
Fig. 4: Open SWAT Configuration file

- iii. Edit the Samba-SWAT configuration file as shown below



```
root@CentOS:~  
File Edit View Search Terminal Help  
# default: off  
# description: SWAT is the Samba Web Admin Tool. Use swat \  
#               to configure your Samba server. To use SWAT, \  
#               connect to port 901 with your favorite web browser.  
#####  
# Add the IP Address to allow on the line: only_from  
# change line: disable =no  
#####  
service swat  
{  
    port          = 901  
    socket_type   = stream  
    wait          = no  
    only from     = 127.0.0.1 192.168.0.0/24  
    user         = root  
    server       = /usr/sbin/swat  
    log on failure += USERID  
    disable      = no  
}
```

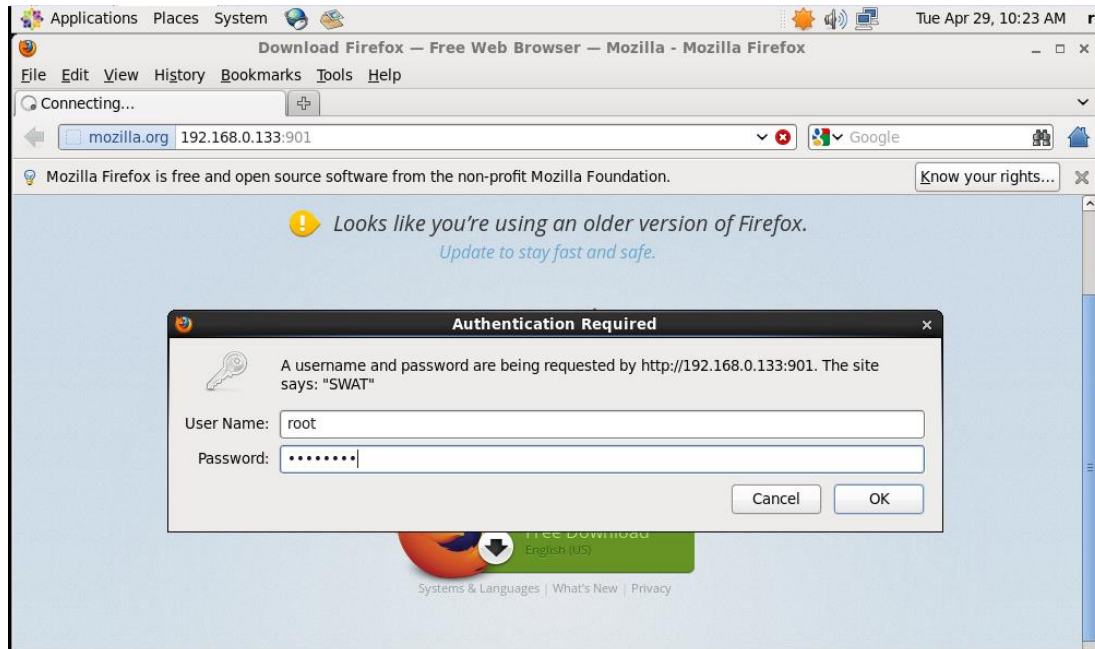
- iv. S



```
root@CentOS:~  
File Edit View Search Terminal Help  
[root@CentOS ~]# service xinetd start  
Starting xinetd: [ OK ]  
[root@CentOS ~]#  
[root@CentOS ~]# service smb start  
Starting SMB services: [ OK ]  
[root@CentOS ~]#  
[root@CentOS ~]# service nmb start  
Starting NMB services: [ OK ]  
[root@CentOS ~]#  
[root@CentOS ~]# chkconfig xinetd on  
[root@CentOS ~]#  
[root@CentOS ~]# chkconfig smb on  
[root@CentOS ~]#  
[root@CentOS ~]# chkconfig nmb on  
[root@CentOS ~]#  
[root@CentOS ~]#
```

- v. C Fig. 6: Start Samba Services and provide the Server username and password as shown below

Fig. 7: Samba Server GUI login page



After successful login, the Samba Server GUI appear as shown below

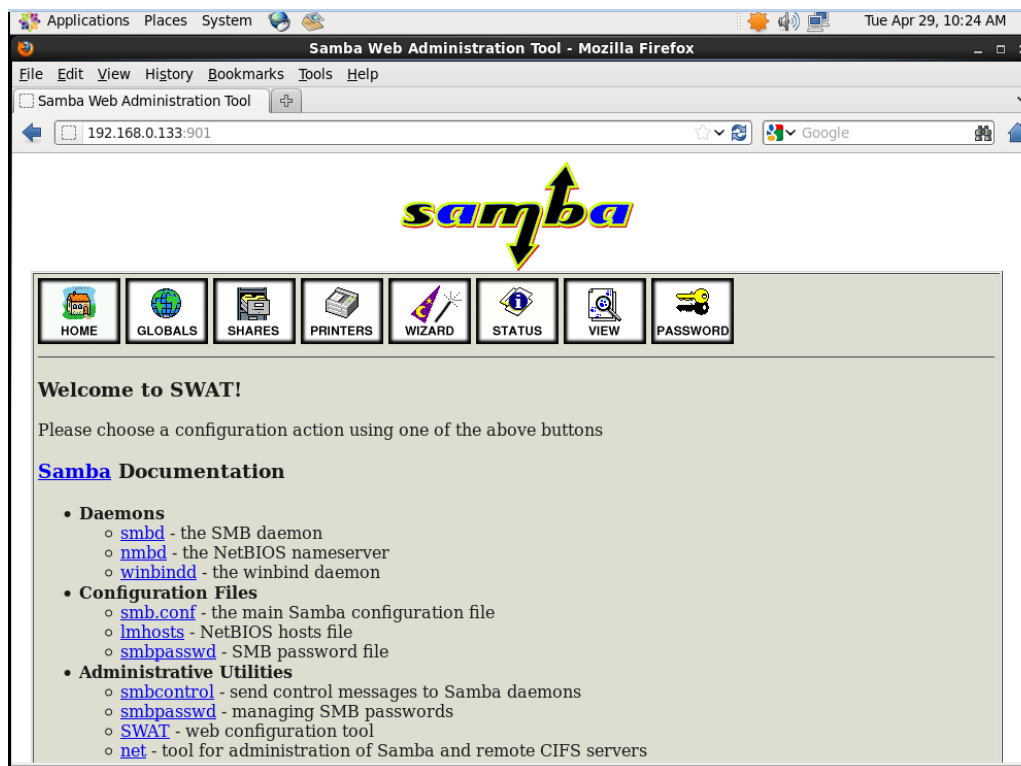


Fig. 8: Samba Server Home Page

3.2 Command Line Configuration

We will be using command line configuration in setting up our samba server

Step 1: Create a Samba shared directory using the command: *mkdir -p*

/home/samba_share

Step 2: Create a group called “sambausers” that will share the directory using the command:
groupadd sambausers

Step 3: Add two users in the “sambausers” group created, so that they can access the samba_share directory. This will be achieved using:

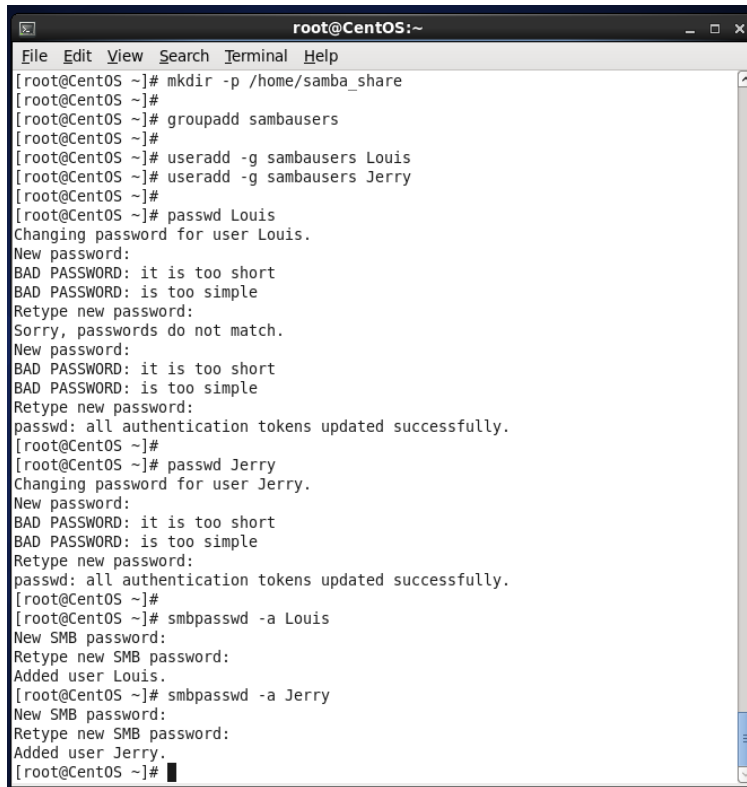
- i. *useradd -g sambausers Louis*
- ii. *useradd -g sambausers Jerry*

Step 4: Create password for the two users added to the group and verify the password when prompted

- i. *passwd Louis*
- ii. *passwd Jerry*

Step 5: Add the users (Louis and Jerry) to Samba User Account and enter smb password when ask to do so

- i. *smbpasswd -a Louis*
- ii. *smbpasswd -a Jerry*



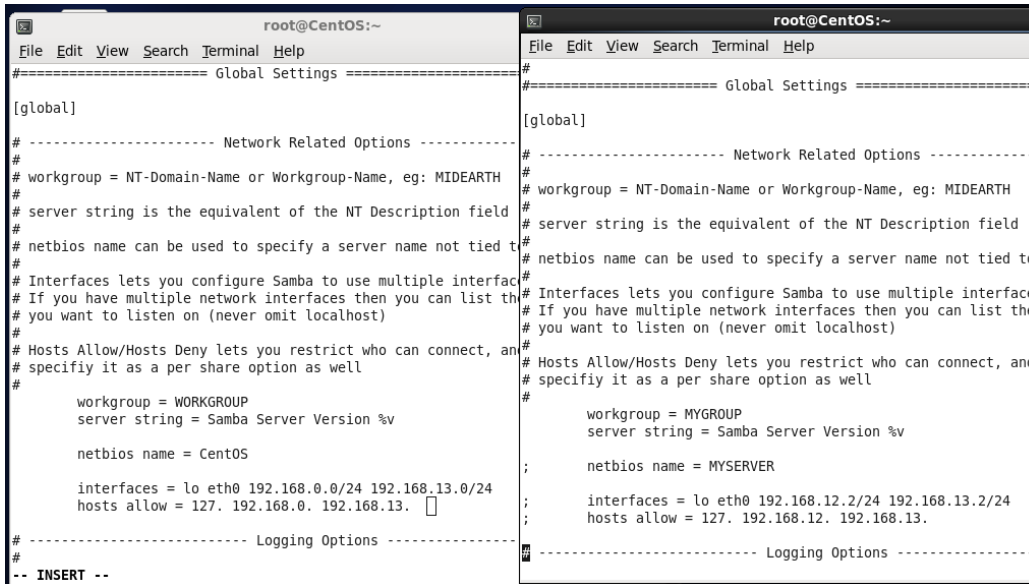
```
root@CentOS:~  
File Edit View Search Terminal Help  
[root@CentOS ~]# mkdir -p /home/samba_share  
[root@CentOS ~]#  
[root@CentOS ~]# groupadd sambausers  
[root@CentOS ~]#  
[root@CentOS ~]# useradd -g sambausers Louis  
[root@CentOS ~]# useradd -g sambausers Jerry  
[root@CentOS ~]#  
[root@CentOS ~]# passwd Louis  
Changing password for user Louis.  
New password:  
BAD PASSWORD: it is too short  
BAD PASSWORD: is too simple  
Retype new password:  
Sorry, passwords do not match.  
New password:  
BAD PASSWORD: it is too short  
BAD PASSWORD: is too simple  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[root@CentOS ~]#  
[root@CentOS ~]# passwd Jerry  
Changing password for user Jerry.  
New password:  
BAD PASSWORD: it is too short  
BAD PASSWORD: is too simple  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[root@CentOS ~]#  
[root@CentOS ~]# smbpasswd -a Louis  
New SMB password:  
Retype new SMB password:  
Added user Louis.  
[root@CentOS ~]# smbpasswd -a Jerry  
New SMB password:  
Retype new SMB password:  
Added user Jerry.  
[root@CentOS ~]#
```

Fig. 9: Creating of Samba Account

Step 6: Configure the Samba Server Configuration file

Instruction:

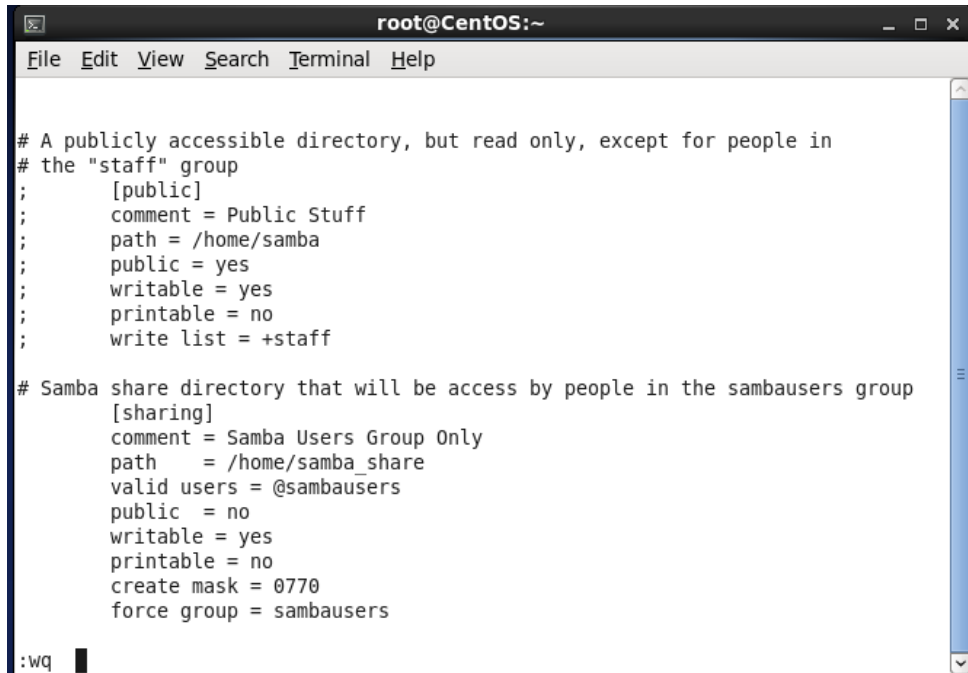
1. Open the samba file using vi /etc/samba/smb.conf
2. Configure the samba global setting section in the smb.conf file to allow client machine to access the samba services



```
root@CentOS:~  
File Edit View Search Terminal Help  
#----- Global Settings -----  
[global]  
# ----- Network Related Options -----  
#  
# workgroup = NT-Domain-Name or Workgroup-Name, eg: MIDEARTH  
# server string is the equivalent of the NT Description field  
# netbios name can be used to specify a server name not tied to  
# Interfaces lets you configure Samba to use multiple interfaces  
# If you have multiple network interfaces then you can list them  
# you want to listen on (never omit localhost)  
# Hosts Allow/Hosts Deny lets you restrict who can connect, and  
# specify it as a per share option as well  
#  
workgroup = WORKGROUP  
server string = Samba Server Version %v  
  
netbios name = CentOS  
  
interfaces = lo eth0 192.168.0.0/24 192.168.13.0/24  
hosts allow = 127. 192.168.0. 192.168.13.   
# ----- Logging Options -----  
#  
-- INSERT --
```

```
root@CentOS:~  
File Edit View Search Terminal Help  
#----- Global Settings -----  
[global]  
# ----- Network Related Options -----  
#  
# workgroup = NT-Domain-Name or Workgroup-Name, eg: MIDEARTH  
# server string is the equivalent of the NT Description field  
# netbios name can be used to specify a server name not tied to  
# Interfaces lets you configure Samba to use multiple interfaces  
# If you have multiple network interfaces then you can list them  
# you want to listen on (never omit localhost)  
# Hosts Allow/Hosts Deny lets you restrict who can connect, and  
# specify it as a per share option as well  
#  
workgroup = MYGROUP  
server string = Samba Server Version %v  
  
netbios name = MYSERVER  
  
interfaces = lo eth0 192.168.12.2/24 192.168.13.2/24  
hosts allow = 127. 192.168.12. 192.168.13.  
# ----- Logging Options -----  
#
```

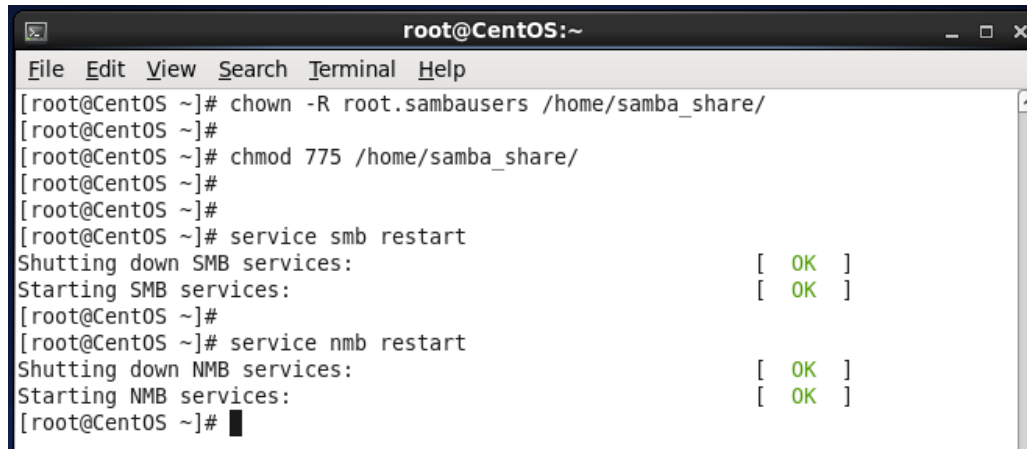
Fig. 10: Modify (Left Hand Side) and Default (Right Hand Side) smb.conf Settings



```
root@CentOS:~  
File Edit View Search Terminal Help  
  
# A publicly accessible directory, but read only, except for people in  
# the "staff" group  
;  
[public]  
; comment = Public Stuff  
; path = /home/samba  
; public = yes  
; writable = yes  
; printable = no  
; write list = +staff  
  
# Samba share directory that will be access by people in the sambausers group  
[sharing]  
comment = Samba Users Group Only  
path = /home/samba_share  
valid users = @sambausers  
public = no  
writable = yes  
printable = no  
create mask = 0770  
force group = sambausers  
  
:wq
```

Fig. 11: setup samba_share directory

4. Change the ownership, permissions of the shared directory and restart the samba services

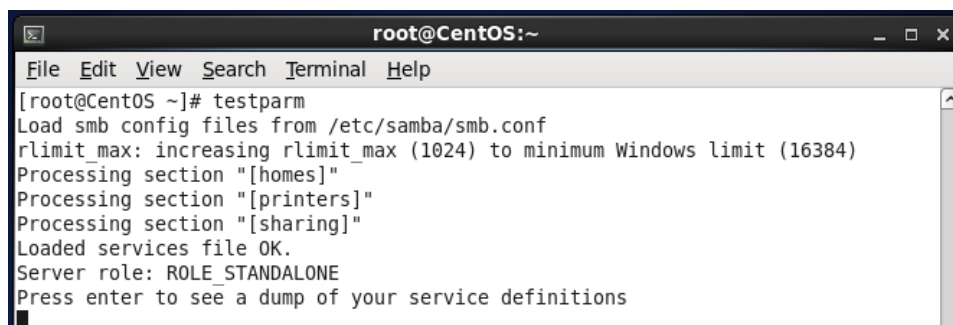


```
root@CentOS:~  
File Edit View Search Terminal Help  
[root@CentOS ~]# chown -R root.sambausers /home/samba_share/  
[root@CentOS ~]#  
[root@CentOS ~]# chmod 775 /home/samba_share/  
[root@CentOS ~]#  
[root@CentOS ~]# service smb restart  
Shutting down SMB services: [ OK ]  
Starting SMB services: [ OK ]  
[root@CentOS ~]#  
[root@CentOS ~]# service nmb restart  
Shutting down NMB services: [ OK ]  
Starting NMB services: [ OK ]  
[root@CentOS ~]#
```

Fig. 12: change ownership, permission and restart services

5. Test the samba configuration

The command: testparm is used to check/test the Samba file for any configuration error. We will execute the command as shows:

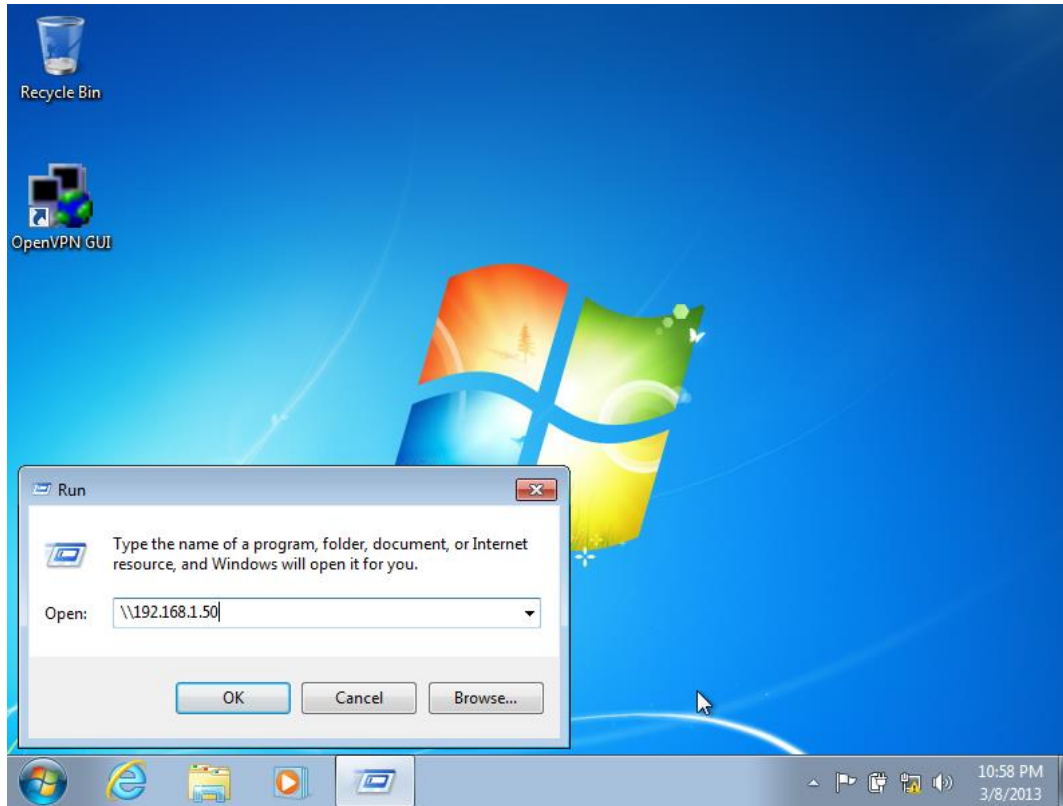


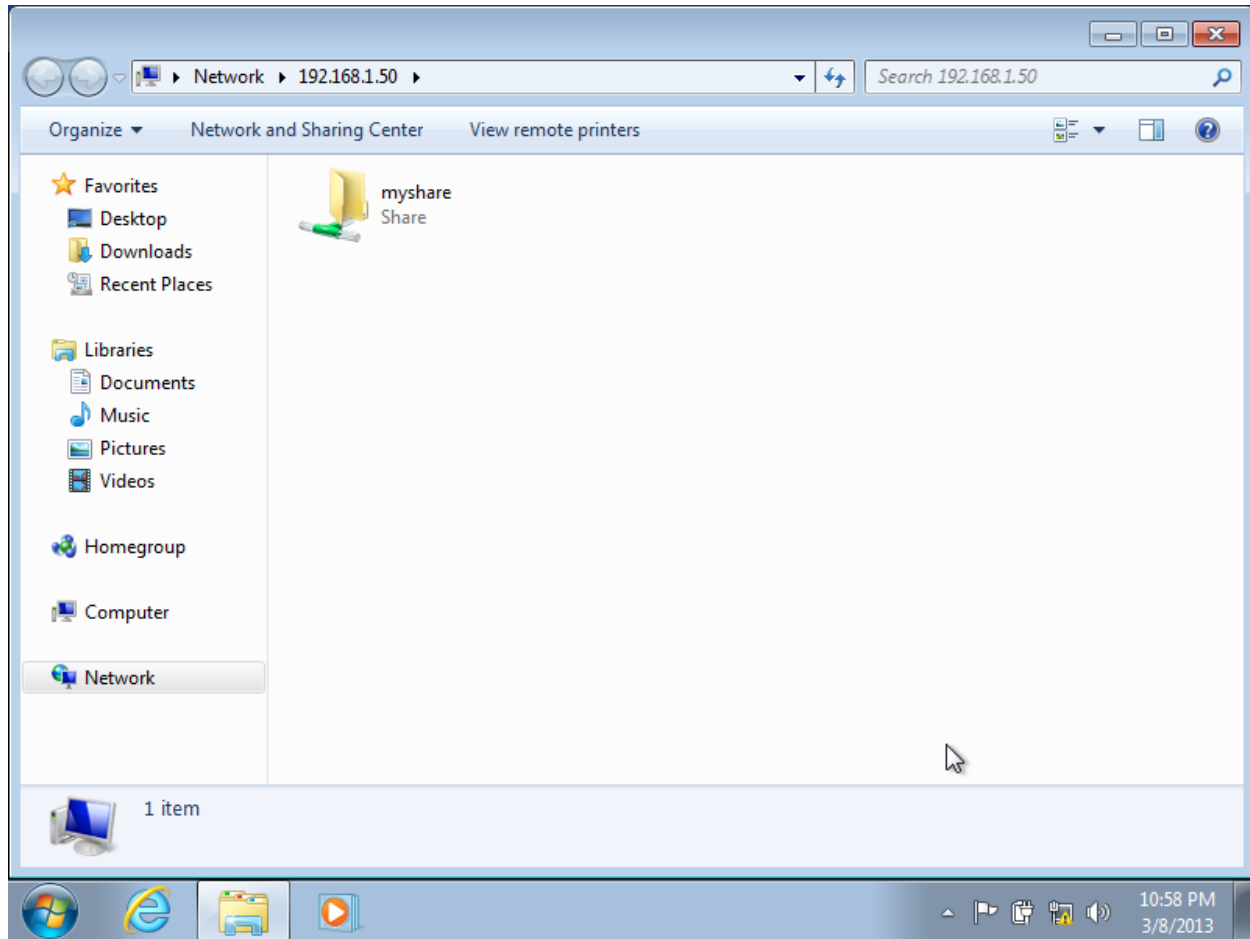
```
root@CentOS:~  
File Edit View Search Terminal Help  
[root@CentOS ~]# testparm  
Load smb config files from /etc/samba/smb.conf  
rlimit_max: increasing rlimit_max (1024) to minimum Windows limit (16384)  
Processing section "[homes]"  
Processing section "[printers]"  
Processing section "[sharing]"  
Loaded services file OK.  
Server role: ROLE_STANDALONE  
Press enter to see a dump of your service definitions
```

Fig. 13: Testparm command

6. Accessing the Samba Share directory from the client machine

Click **Start Menu** -> Select **Run** and enter the IP of the samba Server as shown below:





References

- [1] John H. (2006). What is samba? Available at: http://www.samba.org/samba/what_is_samba.html, Accessed: 4th May, 2024.
- [2] Ronald, C. (2022). 'Samba Config and Install Guide for Linux and Windows', Available at: <https://www.liquidweb.com/blog/how-to-install-samba-on-linux-windows/>, 28th June, 2024.
- [3] Phil, H. (2023). 'How to Set Up Quick and Easy File Sharing With Samba', Available at: <https://www.techrepublic.com/article/how-to-set-up-quick-and-easy-file-sharing-with-samba/>, Accessed: 1st July, 2024.
- [4] Libu Das (2012). Samba File Server Installation and Configuration on Centos 6.2. Available at: <http://learntoconfigure.wordpress.com/2012/11/19/samba-file-server-installation-and-configuration-on-centos-6-2-2/>, Accessed: 4 April, 2024.

[5] Seth,K. (2022). 'How to share files with Samba', Available at: <https://www.redhat.com/sysadmin/samba-file-sharing>, Accessed: 1st July, 2024.