

Exercise 1 – SAMBA Server Installation and configuration

Installation of SMABA Server

Use the root account to complete this exercise

Exercise 1.1: Tasks to Perform on AlmaLinux:

1. Install the **SAMBA** server and its dependencies.

```
[root@server12 ~]# dnf install -y samba
Last metadata expiration check: 2:51:14 ago on Wed 02 Apr 2025 09:19:23 AM.
Dependencies resolved.
=====
Package                                Arch      Version                                Repo      Size
=====
Installing:
samba                                  x86_64    4.20.2-2.el9_5.alma.1                baseos    938 k
Installing dependencies:
libnetapi                             x86_64    4.20.2-2.el9_5.alma.1                baseos    142 k
samba-common-tools                    x86_64    4.20.2-2.el9_5.alma.1                baseos    482 k
samba-dcerpc                          x86_64    4.20.2-2.el9_5.alma.1                baseos    716 k
samba-ldb-ldap-modules                x86_64    4.20.2-2.el9_5.alma.1                baseos     27 k
samba-libs                            x86_64    4.20.2-2.el9_5.alma.1                baseos    123 k
Transaction Summary
```

```
Installed:
libnetapi-4.20.2-2.el9_5.alma.1.x86_64
samba-4.20.2-2.el9_5.alma.1.x86_64
samba-common-tools-4.20.2-2.el9_5.alma.1.x86_64
samba-dcerpc-4.20.2-2.el9_5.alma.1.x86_64
samba-ldb-ldap-modules-4.20.2-2.el9_5.alma.1.x86_64
samba-libs-4.20.2-2.el9_5.alma.1.x86_64
```

2. Start and enable the **SAMBA** service.

```
[root@server12 ~]# systemctl start smb
[root@server12 ~]# systemctl enable smb
Created symlink /etc/systemd/system/multi-user.target.wants/smb.service → /usr/lib/systemd/system/smb.service.
[root@server12 ~]#
```

3. Verify that the SAMBA service is both **active** and **enabled**.

```
[root@server12 ~]# systemctl status smb
● smb.service - Samba SMB Daemon
   Loaded: loaded (/usr/lib/systemd/system/smb.service; enabled; preset: disabled)
   Active: active (running) since Wed 2025-04-02 12:11:28 EDT; 56s ago
     Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
  Main PID: 3682 (smbd)
    Status: "smbd: ready to serve connections..."
     Tasks: 3 (limit: 22831)
    Memory: 18.8M
       CPU: 289ms
    CGroup: /system.slice/smb.service
            └─3682 /usr/sbin/smbd --foreground --no-process-group
              └─3684 /usr/sbin/smbd --foreground --no-process-group
                └─3685 /usr/sbin/smbd --foreground --no-process-group


Apr 02 12:11:28 server12 systemd[1]: Starting Samba SMB Daemon...
Apr 02 12:11:28 server12 smbd[3682]: [2025/04/02 12:11:28.479556, 0] ../../source3/smbd.c:100: smbd version 4.20.2 started.
Apr 02 12:11:28 server12 smbd[3682]: Copyright Andrew Tridgell and the Samba Team
Apr 02 12:11:28 server12 systemd[1]: Started Samba SMB Daemon.
lines 1-21/21 (END)
```

4. Authorize the SAMBA service in the **firewall**.

```
[root@server12 ~]# firewall-cmd --permanent --add-service=samba --zone=nm-shared success
[root@server12 ~]#
```

5. Verify that the necessary services have been added and allowed through the firewall.

```
[root@server12 ~]# firewall-cmd --reload
success
[root@server12 ~]# firewall-cmd --list-services --zone=nm-shared
dhcp dns mountd nfs rpc-bind samba ssh
[root@server12 ~]#
```



6. List all **TCP** and **UDP** ports currently listening on the server.

```
[root@server12 ~]# netstat -tunap
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:445             0.0.0.0:*               LISTEN      3682/smbd
tcp        0      0 0.0.0.0:34903           0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:59469           0.0.0.0:*               LISTEN      1248/rpc.statd
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      1/systemd
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      1073/sshd: /usr/sbi
tcp        0      0 0.0.0.0:2049            0.0.0.0:*               LISTEN      -
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN      1069/cupsd
tcp        0      0 0.0.0.0:139             0.0.0.0:*               LISTEN      3682/smbd
tcp        0      0 0.0.0.0:20048           0.0.0.0:*               LISTEN      1269/rpc.mountd
tcp6       0      0 :::39299                :::*                    LISTEN      1248/rpc.statd
tcp6       0      0 :::445                  :::*                    LISTEN      3682/smbd
tcp6       0      0 :::111                  :::*                    LISTEN      1/systemd
tcp6       0      0 :::22                   :::*                    LISTEN      1073/sshd: /usr/sbi
tcp6       0      0 :::2049                 :::*                    LISTEN      -
tcp6       0      0 :::139                  :::*                    LISTEN      3682/smbd
tcp6       0      0 ::1:631                 :::*                    LISTEN      1069/cupsd
tcp6       0      0 :::20048                :::*                    LISTEN      1269/rpc.mountd
tcp6       0      0 :::37957                :::*                    LISTEN      -
udp        0      0 192.168.207.128:68      192.168.207.254:67      ESTABLISHED 1035/NetworkManager
udp        0      0 0.0.0.0:111             0.0.0.0:*               1/systemd
udp        0      0 127.0.0.1:323           0.0.0.0:*               814/chronyd
udp        0      0 0.0.0.0:46042           0.0.0.0:*               -
udp        0      0 127.0.0.1:1001          0.0.0.0:*               1248/rpc.statd
udp        0      0 0.0.0.0:44027           0.0.0.0:*               1248/rpc.statd
udp        0      0 0.0.0.0:5353            0.0.0.0:*               801/avahi-daemon: r
udp        0      0 0.0.0.0:60943           0.0.0.0:*               801/avahi-daemon: r
udp        0      0 0.0.0.0:20048           0.0.0.0:*               1269/rpc.mountd
udp6       0      0 :::111                  :::*                    1/systemd
udp6       0      0 ::1:323                 :::*                    814/chronyd
udp6       0      0 :::47541                :::*                    -
udp6       0      0 :::5353                 :::*                    801/avahi-daemon: r
udp6       0      0 :::58772                :::*                    1248/rpc.statd
udp6       0      0 :::34367                :::*                    801/avahi-daemon: r
udp6       0      0 :::20048                :::*                    1269/rpc.mountd
```

7. Identify the **TCP port numbers** used by SAMBA services.

```
[root@server12 ~]# netstat -tunap
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State       PID/Program name
tcp        0      0 0.0.0.0:445             0.0.0.0:*               LISTEN      3682/smbd
tcp        0      0 0.0.0.0:34903           0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:59469           0.0.0.0:*               LISTEN      1248/rpc.statd
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      1/systemd
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      1073/sshd: /usr/sbi
tcp        0      0 0.0.0.0:2049            0.0.0.0:*               LISTEN      -
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN      1069/cupsd
tcp        0      0 0.0.0.0:139             0.0.0.0:*               LISTEN      3682/smbd
tcp        0      0 0.0.0.0:20048           0.0.0.0:*               LISTEN      1269/rpc.mountd
tcp6       0      0 :::39299                :::*                    LISTEN      1248/rpc.statd
tcp6       0      0 :::445                  :::*                    LISTEN      3682/smbd
tcp6       0      0 :::111                  :::*                    LISTEN      1/systemd
tcp6       0      0 :::22                   :::*                    LISTEN      1073/sshd: /usr/sbi
tcp6       0      0 :::2049                 :::*                    LISTEN      -
tcp6       0      0 :::139                  :::*                    LISTEN      3682/smbd
tcp6       0      0 ::1:631                 :::*                    LISTEN      1069/cupsd
tcp6       0      0 :::20048                :::*                    LISTEN      1269/rpc.mountd
tcp6       0      0 :::37957                :::*                    LISTEN      -
udp        0      0 192.168.207.128:68      192.168.207.254:67     ESTABLISHED 1035/NetworkManager
udp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      1/systemd
udp        0      0 127.0.0.1:323           0.0.0.0:*               LISTEN      814/chronyd
udp        0      0 0.0.0.0:46042           0.0.0.0:*               LISTEN      -
```

SAMBA Server Configuration

Use the root account to complete this exercise

Exercise 1.2: Tasks to Perform on AlmaLinux:

1. Create the directory /Samba/General.

```
[root@server12 ~]# mkdir -p /Samba/General
[root@server12 ~]#
```

2. Configure the **SAMBA** service to share the /Samba/General directory, accessible from SAMBA clients without requiring a password (guest access).

```
[root@server12 ~]# chmod -R 777 /Samba/General
[root@server12 ~]# chown -R nobody:nobody /Samba/General
```

```
[root@server12 ~]# chcon -t samba_share_t /Samba/General
```

```
[root@server12 ~]# ls -ldZ /Samba/General
drwxrwxrwx. 2 nobody nobody unconfined_u:object_r:samba_share_t:s0 6 Apr  2 12:26 /Samba/General
[root@server12 ~]#
```



```

[global]
    workgroup = SAMBA
    security = user

    passdb backend = tdbsam
    map to guest = Bad User
    printing = cups
    printcap name = cups
    load printers = yes
    cups options = raw

[General]
    comment = General Share
    path = /Samba/General
    browsable = yes
    writable = yes
    guest ok = yes
    read only = no
    force user = nobody

```

3. Run a command to validate the SAMBA server configuration.

```

[root@server12 samba]# testparm
Load smb config files from /etc/samba/smb.conf
Loaded services file OK.
Weak crypto is allowed by GnuTLS (e.g. NTLM as a compatibility fallback)

Server role: ROLE_STANDALONE

Press enter to see a dump of your service definitions

```

4. Restart the **smb service** to apply the configuration changes.

```

[root@server12 samba]# systemctl restart smb
[root@server12 samba]# systemctl status smb
● smb.service - Samba SMB Daemon
   Loaded: loaded (/usr/lib/systemd/system/smb.service; enabled; preset: disabled)
   Active: active (running) since Wed 2025-04-02 14:01:59 EDT; 9s ago
     Docs: man:smbd(8)
           man:samba(7)
           man:smb.conf(5)
  Main PID: 4065 (smbd)
    Status: "smbd: ready to serve connections..."
     Tasks: 3 (limit: 22831)
  Memory: 7.0M
     CPU: 338ms
   CGroup: /system.slice/smb.service
           └─4065 /usr/sbin/smbd --foreground --no-process-group
             └─4067 /usr/sbin/smbd --foreground --no-process-group
               └─4068 /usr/sbin/smbd --foreground --no-process-group

Apr 02 14:01:59 server12 systemd[1]: Starting Samba SMB Daemon...
Apr 02 14:01:59 server12 smbd[4065]: [2025/04/02 14:01:59.339392, 0] ../../source3
Apr 02 14:01:59 server12 smbd[4065]:   smbd version 4.20.2 started.
Apr 02 14:01:59 server12 smbd[4065]:   Copyright Andrew Tridgell and the Samba Team
Apr 02 14:01:59 server12 systemd[1]: Started Samba SMB Daemon.
[root@server12 samba]#

```

Test the SAMBA service from an Ubuntu client

Use your Ubuntu user account to complete this exercise on Ubuntu

Exercise 1.3: Tasks to Perform on Ubuntu:

1. Install the **SAMBA** client on **Ubuntu**.

```

lmohammed@client12:~$ sudo apt install samba-client
[sudo] password for lmohammed:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Note, selecting 'smbclient' instead of 'samba-client'
The following additional packages will be installed:
  libsmbclient libwbclient0 python3-gpg python3-samba python3-tdb samba-common
  samba-common-bin samba-dsdb-modules samba-libc
Suggested packages:
  heimdal-clients python3-markdown python3-dnspython cifs-utils
The following NEW packages will be installed:
  python3-gpg python3-samba python3-tdb samba-common samba-common-bin
  samba-dsdb-modules smbclient
The following packages will be upgraded:
  libsmbclient libwbclient0 samba-libc
3 upgraded, 7 newly installed, 0 to remove and 124 not upgraded.
Need to get 11.4 MB of archives.
After this operation, 29.0 MB of additional disk space will be used.
Do you want to continue? [Y/n] y

```

2. Use the SAMBA client to connect to the **General share** on the AlmaLinux server.

```

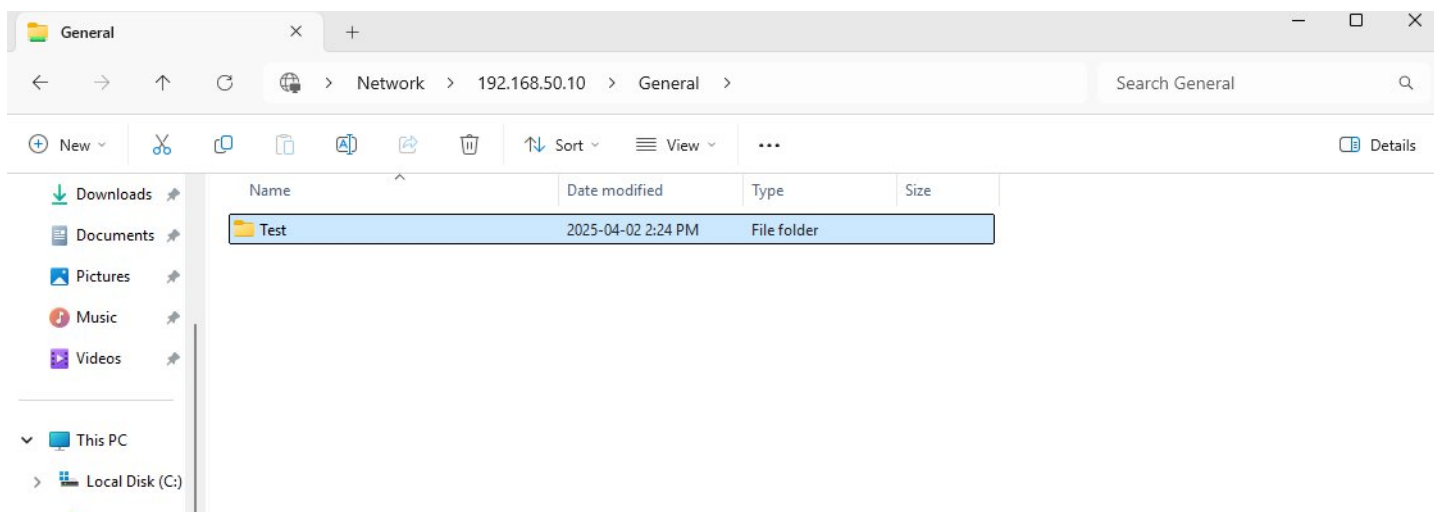
lmohammed@client12:~$ smbclient '\\192.168.50.10\General'
Password for [WORKGROUP\lmohammed]:
Try "help" to get a list of possible commands.
smb: \> ls

.                D                0   Wed Apr  2 12:26:18 2025
..               D                0   Wed Apr  2 12:26:18 2025

41882624 blocks of size 1024. 37226872 blocks available
smb: \> pwd
Current directory is \\192.168.50.10\General\
smb: \>

```

Here is Windows also! (I took the screenshot after creating the test folder in Ubuntu)



3. Create a **test** subdirectory inside the General share.

```
smb: \> mkdir Test /General
smb: \> ls
.           D           0   Wed Apr  2 14:24:06 2025
..          D           0   Wed Apr  2 14:24:06 2025
Test        D           0   Wed Apr  2 14:24:06 2025

41882624 blocks of size 1024. 37226872 blocks available
smb: \>
```

4. Return to the **AlmaLinux** server and verify that the subdirectory **test** was created in **/Samba/General**.

```
[root@server12 etc]# cd /Samba/General
[root@server12 General]# ls
Test
[root@server12 General]#
```

5. While still on **AlmaLinux**, list **open ports**. Is there an active connection between the **SAMBA** server and the **Ubuntu** client?

Proto	Recv-Q	Send-Q	Local Address	Foreign Address	State	PID/Program name
tcp	0	0	0.0.0.0:445	0.0.0.0:*	LISTEN	4065/smbd
tcp	0	0	0.0.0.0:34903	0.0.0.0:*	LISTEN	-
tcp	0	0	0.0.0.0:59469	0.0.0.0:*	LISTEN	1248/rpc.statd
tcp	0	0	0.0.0.0:111	0.0.0.0:*	LISTEN	1/systemd
tcp	0	0	0.0.0.0:22	0.0.0.0:*	LISTEN	1073/sshd: /usr/sbi
tcp	0	0	0.0.0.0:2049	0.0.0.0:*	LISTEN	-
tcp	0	0	127.0.0.1:631	0.0.0.0:*	LISTEN	1069/cupsd
tcp	0	0	0.0.0.0:139	0.0.0.0:*	LISTEN	4065/smbd
tcp	0	0	0.0.0.0:20048	0.0.0.0:*	LISTEN	1269/rpc.mountd
tcp6	0	0	:::39299	:::*	LISTEN	1248/rpc.statd
tcp6	0	0	:::445	:::*	LISTEN	4065/smbd

- On the **Ubuntu** client, close the established SAMBA connection.

```
smb: \> exit
lmohammed@client12:~$
```

Exercise 1.4: Tasks to Perform on AlmaLinux and Windows 11:

- On the **AlmaLinux** Server, create the directory **/Samba/Secure**.

```
[root@server12 ~]# groupadd smbgrp
[root@server12 ~]# usermod lmohammed -aG smbgrp
[root@server12 ~]# smbpasswd -a lmohammed
New SMB password:
Retype new SMB password:
Added user lmohammed.
[root@server12 ~]# mkdir -p /Samba/Secure
[root@server12 ~]# chmod -R 770 /Samba/Secure
[root@server12 ~]# chgrp -R smbgrp /Samba/Secure
[root@server12 ~]# chcon -t samba_share_t /Samba/Secure
[root@server12 ~]#
```

- Configure the **SAMBA** service to share **/Samba/Secure**, making it accessible from a **Windows 11** client using your user credentials.

```
force user = nobody
[Secure]
    comment = Secure share
    path = /Samba/Secure
    valid users = @smbgrp
    browsable = yes
    writeable = yes
    guest ok = yes
```

3. Validate the SAMBA configuration file for correctness.

```
[root@server12 ~]# testparm
Load smb config files from /etc/samba/smb.conf
Loaded services file OK.
Weak crypto is allowed by GnuTLS (e.g. NTLM as a compatibility fallback)

Server role: ROLE_STANDALONE

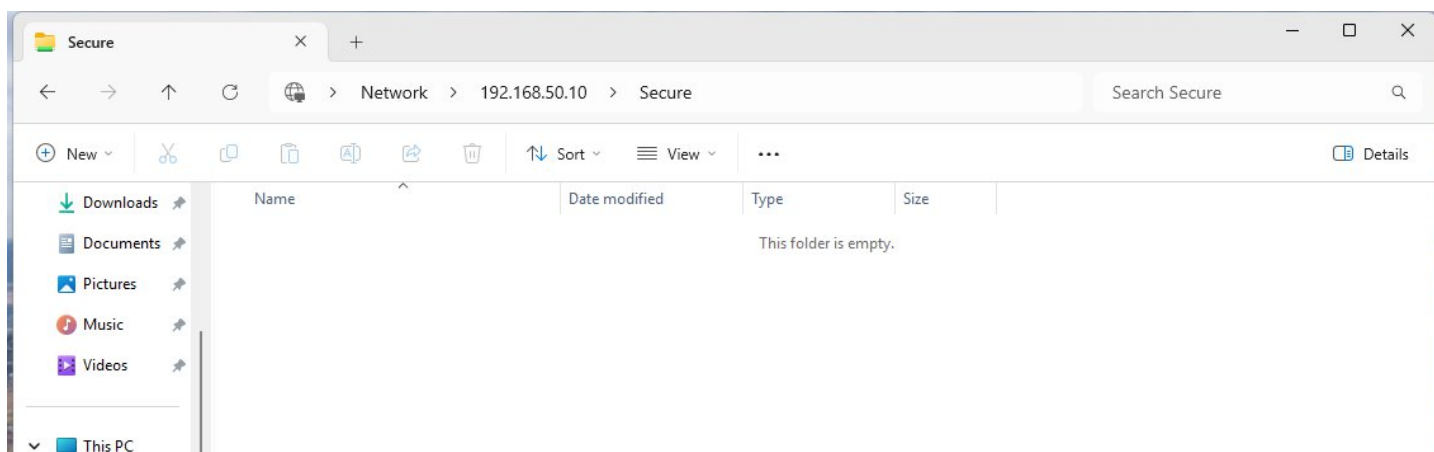
Press enter to see a dump of your service definitions
```

```
[Secure]
    comment = Secure share
    guest ok = Yes
    path = /Samba/Secure
    read only = No
    valid users = @smbgrp
```

4. Restart the **smb service** to apply your configuration.

```
[root@server12 ~]# systemctl restart smb
[root@server12 ~]#
```

5. Test the SAMBA share from a **Windows 11** client by attempting to access the **Secure share**.



Exercise 1.5: Tasks to Perform on AlmaLinux and Windows 11:


1. On the **AlmaLinux** Server, configure the **SAMBA** service to allow your **AlmaLinux** user to access their **home** directory from a **Windows 11** client.

```
[homes]
comment = Home Directories
valid users = %S, %D%W%S
browseable = Yes
read only = No
inherit acls = Yes
```

```
[homes]
comment = Home Directories
inherit acls = Yes
read only = No
valid users = %S %D%W%S
```

```
[root@server12 ~]# systemctl restart smb
[root@server12 ~]# chcon -R -t samba_share_t /home/*
[root@server12 ~]#
```

2. Test this configuration by accessing the user's home directory from a **Windows 11** machine using **valid** credentials.

 Map Network Drive

What network folder would you like to map?

Specify the drive letter for the connection and the folder that you want to connect to:

Drive:


Folder:

Example: \\server\share

☒ Reconnect at sign-in

☐ Connect using different credentials

[Connect to a Web site that you can use to store your documents and pictures.](#)


 Windows Security

Enter network credentials

Enter your credentials to connect to: 192.168.50.10

User name

Password



☐ Remember my credentials

