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@server07 ~ $ dnf install -y samba
Last metadata expiration check: 23:18:05 ago on Tue 01 Apr 2025 11:42:19 AM.
Dependencies resolved.
================================================================================
 Package                 Architecture    Version                 Repository  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
================================================================================
Install  6 Packages
```

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

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

```
root@server07 ~ $ systemctl enable --now smb
Created symlink /etc/systemd/system/multi-user.target.wants/smb.service → /usr/lib/systemd/system/smb.service.
root@server07 ~ $ 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 11:01:28 EDT; 19s ago
       Docs: man:smbd(8)
             man:samba(7)
             man:smb.conf(5)
   Main PID: 11006 (smbd)
     Status: "smbd: ready to serve connections..."
      Tasks: 3 (limit: 22829)
     Memory: 18.8M
        CPU: 43ms
     CGroup: /system.slice/smb.service
             ├─11006 /usr/sbin/smbd --foreground --no-process-group
             ├─11008 /usr/sbin/smbd --foreground --no-process-group
             └─11009 /usr/sbin/smbd --foreground --no-process-group

Apr 02 11:01:28 server07 systemd[1]: Starting Samba SMB Daemon...
Apr 02 11:01:28 server07 smbd[11006]: [2025/04/02 11:01:28.190025,  0] ../../source3/smbd/server.c:1746(main)
Apr 02 11:01:28 server07 smbd[11006]:   smbd version 4.20.2 started.
Apr 02 11:01:28 server07 smbd[11006]:   Copyright Andrew Tridgell and the Samba Team 1992-2024
Apr 02 11:01:28 server07 systemd[1]: Started Samba SMB Daemon.
root@server07 ~ $
```

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

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

```
root@server07 ~ $ firewall-cmd --permanent --add-service=samba --zone=nm-shared
success
root@server07 ~ $ firewall-cmd --reload
success
root@server07 ~ $ firewall-cmd --list-services --zone=nm-shared
dhcp dns mountd nfs rpc-bind samba ssh
root@server07 ~ $
```

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

```
root@server07 ~ $ 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      11006/smbd
tcp        0      0 0.0.0.0:2049            0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      985/sshd: /usr/sbin
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      1/systemd
tcp        0      0 0.0.0.0:139             0.0.0.0:*               LISTEN      11006/smbd
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN      983/cupsd
tcp        0      0 0.0.0.0:39825           0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:46593           0.0.0.0:*               LISTEN      9348/rpc.statd
tcp        0      0 0.0.0.0:20048           0.0.0.0:*               LISTEN      9352/rpc.mountd
tcp6       0      0 :::445                  :::*                    LISTEN      11006/smbd
tcp6       0      0 :::2049                 :::*                    LISTEN      -
tcp6       0      0 :::22                   :::*                    LISTEN      985/sshd: /usr/sbin
tcp6       0      0 :::111                  :::*                    LISTEN      1/systemd
tcp6       0      0 :::139                  :::*                    LISTEN      11006/smbd
tcp6       0      0 :::57593                :::*                    LISTEN      9348/rpc.statd
tcp6       0      0 ::1:631                 :::*                    LISTEN      983/cupsd
tcp6       0      0 :::20048                :::*                    LISTEN      9352/rpc.mountd
tcp6       0      0 :::36581                :::*                    LISTEN      -
udp        0      0 0.0.0.0:5353            0.0.0.0:*                           771/avahi-daemon: r
udp        0      0 0.0.0.0:20048           0.0.0.0:*                           9352/rpc.mountd
udp        0      0 0.0.0.0:36447           0.0.0.0:*                           9348/rpc.statd
udp        0      0 192.168.198.128:68      192.168.198.254:67      ESTABLISHED 959/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:*                           799/chronyd
udp        0      0 0.0.0.0:35272           0.0.0.0:*                           771/avahi-daemon: r
```

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

Port > 139 : Protocol > TCP > smbd

Port > 445 : Protocol > TCP > smbd

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@server07 ~ $ mkdir -p /Samba/General
root@server07 ~ $ chmod -R 777 /Samba/General
root@server07 ~ $ chown -R nobody:nobody /Samba/General
root@server07 ~ $ chcon -t samba_share_t /Samba/General
root@server07 ~ $
```

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

```
root@server07 ~ $ vim /etc/samba/smb.conf
```

```
[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 Public 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@server07 ~ $ 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

# Global parameters
[global]
        map to guest = Bad User
        printcap name = cups
        security = USER
        workgroup = SAMBA
        idmap config * : backend = tdb
        cups options = raw


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


[printers]
```

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

```
root@server07 ~ $ systemctl restart smb
root@server07 ~ $
```

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**.

```
gkeymole@client07: $ sudo apt update
[sudo] password for gkeymole:
Get:1 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Hit:2 http://ca.archive.ubuntu.com/ubuntu jammy InRelease
Hit:3 https://dl.google.com/linux/chrome/deb stable InRelease
Get:4 http://ca.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:5 http://ca.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:6 http://ca.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [781 kB]
Get:7 http://ca.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [2,453 kB]
Get:8 http://ca.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages [763 kB]
Get:9 http://ca.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages [1,198 kB]
Fetched 5,452 kB in 1s (5,453 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
14 packages can be upgraded. Run 'apt list --upgradable' to see them.
gkeymole@client07: $ sudo apt install samba-client
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:
  python3-gpg python3-samba python3-tdb samba-common samba-common-bin samba-dsdb-modules
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
0 upgraded, 7 newly installed, 0 to remove and 14 not upgraded.
Need to get 4,827 kB of archives.
After this operation, 29.0 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://ca.archive.ubuntu.com/ubuntu jammy-updates/main amd64 samba-common all 2:4.15.13+dfsg-0ubuntu1.6 [75.7 kB]
```

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

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

```
gkeymole@client07:~$ smbclient //192.168.50.10/General
Password for [WORKGROUP\gkeymole]:
Try "help" to get a list of possible commands.
smb: \> mkdir test
smb: \>
```

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

```
root@server07 ~ $ ls -la /Samba/General
total 0
drwxrwxrwx. 3 nobody nobody 18 Apr  2 11:43 .
drwxr-xr-x. 3 root   root   21 Apr  2 11:19 ..
drwxr-xr-x. 2 nobody nobody  6 Apr  2 11:43 test
root@server07 ~ $
```

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

```
root@server07 ~ $ netstat -tunap | grep smb
tcp        0      0 0.0.0.0:445             0.0.0.0:*               LISTEN      11228/smbd
tcp        0      0 0.0.0.0:139             0.0.0.0:*               LISTEN      11228/smbd
tcp        0      0 192.168.50.10:445       192.168.50.20:47216     ESTABLISHED 11236/smbd
tcp6       0      0 :::445                  :::*                    LISTEN      11228/smbd
tcp6       0      0 :::139                  :::*                    LISTEN      11228/smbd
root@server07 ~ $ ss -tunap | grep smb
tcp   LISTEN 0      50                   0.0.0.0:445           0.0.0.0:*     users:(("smbd",pid=11228,fd=31))

tcp   LISTEN 0      50                   0.0.0.0:139           0.0.0.0:*     users:(("smbd",pid=11228,fd=32))

tcp   ESTAB  0      0              192.168.50.10:445     192.168.50.20:47216 users:(("smbd[192.168.50",pid=11236,fd=3
4))
tcp   LISTEN 0      50                      [::]:445              [::]:*     users:(("smbd",pid=11228,fd=29))

tcp   LISTEN 0      50                      [::]:139              [::]:*     users:(("smbd",pid=11228,fd=30))

root@server07 ~ $
```

```
Every 2.0s: netstat -tunap                                          server07: Wed Ap

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      11228/smbd
tcp        0      0 0.0.0.0:2049            0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN      985/sshd: /usr/sbin
tcp        0      0 0.0.0.0:111             0.0.0.0:*               LISTEN      1/systemd
tcp        0      0 0.0.0.0:139             0.0.0.0:*               LISTEN      11228/smbd
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN      983/cupsd
tcp        0      0 0.0.0.0:39825           0.0.0.0:*               LISTEN      -
tcp        0      0 0.0.0.0:46593           0.0.0.0:*               LISTEN      9348/rpc.statd
tcp        0      0 0.0.0.0:20048           0.0.0.0:*               LISTEN      9352/rpc.mountd
tcp        0      0 192.168.50.10:445       192.168.50.20:33876     ESTABLISHED 11339/smbd
```

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

```
smb: \> exit
gkeymole@client07:~$
```

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

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

```
root@server07 ~ $ groupadd smbgrp
root@server07 ~ $ usermod gkeymole -aG smbgrp
root@server07 ~ $ smbpasswd -a gkeymole
New SMB password:
Retype new SMB password:
Added user gkeymole.
root@server07 ~ $
```

```
root@server07 ~ $ mkdir -p /Samba/Secure
root@server07 ~ $ chmod -R 770 /Samba/Secure
root@server07 ~ $ chgrp -R smbgrp /Samba/Secure
root@server07 ~ $ chcon -t samba_share_t /Samba/Secure
root@server07 ~ $
```

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

```
[Secure]
        comment = Secure share
        path = /Samba/Secure
        valid users = @smbgrp
        browsable = yes
        writable = yes
        guest ok = no
```

```
root@server07 ~ $ vim /etc/samba/smb.conf
root@server07 ~ $
```

3. Validate the SAMBA configuration file for correctness.

```
root@server07 ~ $ 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

# Global parameters
[global]
        map to guest = Bad User
        printcap name = cups
        security = USER
        workgroup = SAMBA
        idmap config * : backend = tdb
        cups options = raw


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


[printers]
        browseable = No
```

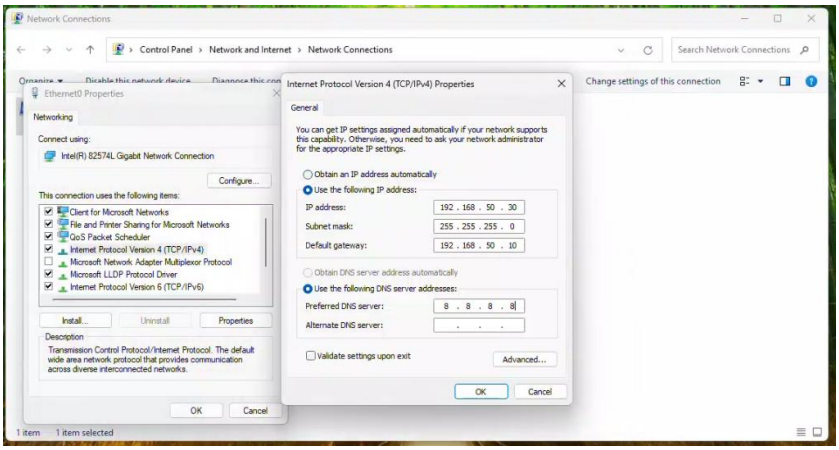
4. Restart the **smb service** to apply your configuration.

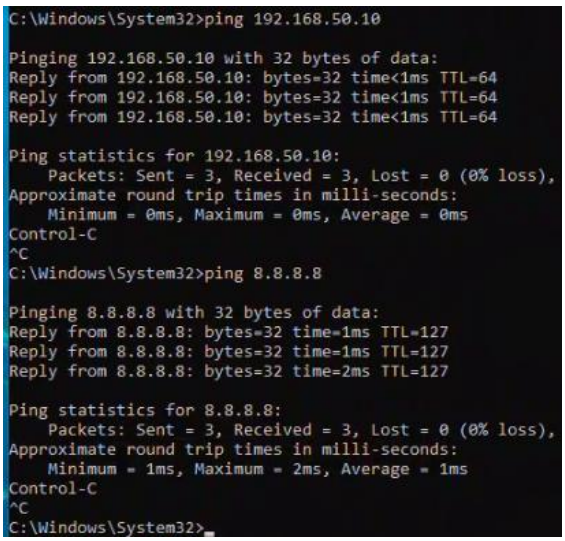
```
root@server07 ~ $ systemctl restart smb
root@server07 ~ $ systemctl status smb
● smb.service - Samba SMB Daemon
     Loaded: loaded (/usr/lib/systemd/system/smb.service; enabled; preset: disabled)
     Active: active (running) since Wed 2025-04-02 12:18:01 EDT; 1min 19s ago
       Docs: man:smbd(8)
             man:samba(7)
             man:smb.conf(5)
   Main PID: 11539 (smbd)
     Status: "smbd: ready to serve connections..."
      Tasks: 3 (limit: 22829)
     Memory: 7.0M
        CPU: 32ms
     CGroup: /system.slice/smb.service
             ├─11539 /usr/sbin/smbd --foreground --no-process-group
             ├─11542 /usr/sbin/smbd --foreground --no-process-group
             └─11543 /usr/sbin/smbd --foreground --no-process-group

Apr 02 12:18:01 server07 systemd[1]: Starting Samba SMB Daemon...
Apr 02 12:18:01 server07 smbd[11539]: [2025/04/02 12:18:01.309893,  0] ../../source3/smbd/server.c:1746(main)
Apr 02 12:18:01 server07 smbd[11539]:   smbd version 4.20.2 started.
Apr 02 12:18:01 server07 smbd[11539]:   Copyright Andrew Tridgell and the Samba Team 1992-2024
Apr 02 12:18:01 server07 systemd[1]: Started Samba SMB Daemon.
```

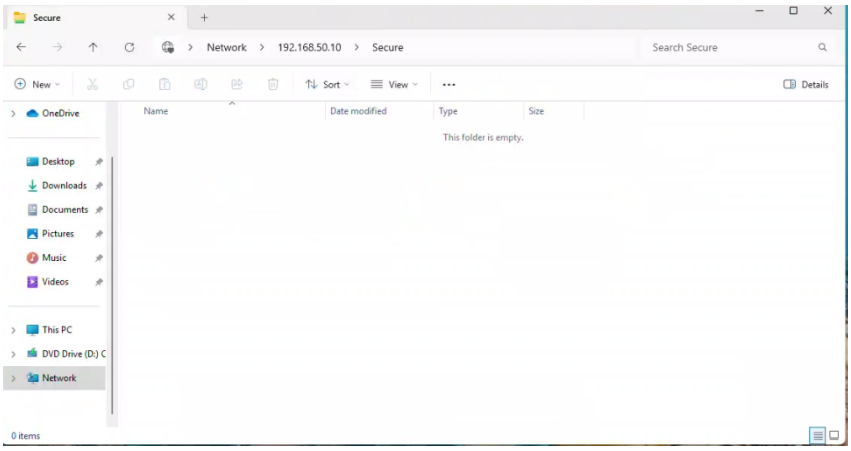
5. Test the SAMBA share from a **Windows 11** client by attempting to access the **Secure share.**

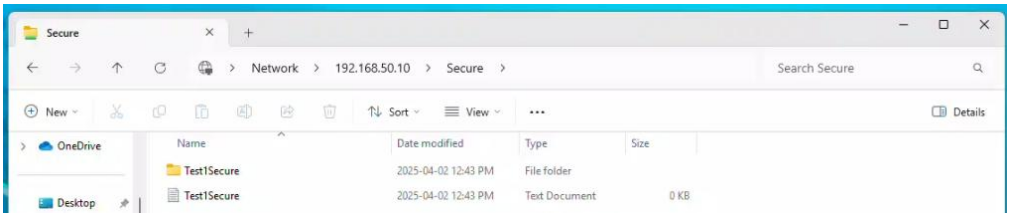
Step 1 :





Step 2 :





```
root@server07 ~ $ ls -la /Samba/Secure
total 0
drwxrwx---. 3 root      smbgrp    48 Apr  2 12:43 .
drwxr-xr-x. 4 root      root      35 Apr  2 12:07 ..
drwxr-xr-x. 2 gkeymole gkeymole   6 Apr  2 12:43 Test1Secure
-rwxr--r--. 1 gkeymole gkeymole   0 Apr  2 12:43 Test1Secure.txt
root@server07 ~ $
```

```
root@server07 ~ $ ls /home
antoine  gkeymole  teacher1
root@server07 ~ $
```

Note. Windows 11 client user is gkeymole, Windows will automatically try to authenticate to the Samba server as gkeymole without prompting, if that user exists on the Samba server and has a Samba password set. Windows will try logging in silently as gkeymole, using its local credentials, and succeed without prompting if the credentials match.

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
```

```
root@server07 ~ $ vim /etc/samba/smb.conf
root@server07 ~ $
```

```
root@server07 ~ $ chcon -R -t samba_share_t /home/*
root@server07 ~ $ systemctl restart smb
root@server07 ~ $ 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 18:19:57 EDT; 10s ago
       Docs: man:smbd(8)
             man:samba(7)
             man:smb.conf(5)
   Main PID: 12164 (smbd)
     Status: "smbd: ready to serve connections..."
      Tasks: 3 (limit: 22829)
     Memory: 7.0M
        CPU: 30ms
     CGroup: /system.slice/smb.service
             ├─12164 /usr/sbin/smbd --foreground --no-process-group
             ├─12166 /usr/sbin/smbd --foreground --no-process-group
             └─12167 /usr/sbin/smbd --foreground --no-process-group

Apr 02 18:19:57 server07 systemd[1]: Starting Samba SMB Daemon...
Apr 02 18:19:57 server07 smbd[12164]: [2025/04/02 18:19:57.593904,  0] ../../source3/smbd/server.c:1746(main)
Apr 02 18:19:57 server07 smbd[12164]:   smbd version 4.20.2 started.
Apr 02 18:19:57 server07 smbd[12164]:   Copyright Andrew Tridgell and the Samba Team 1992-2024
Apr 02 18:19:57 server07 systemd[1]: Started Samba SMB Daemon.
root@server07 ~ $
```

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