

# Samba File Sharing Server Management



# Foreword

- After completing the courses on basic openEuler commands and operations, you can set up openEuler-based various services and apply them to IT systems. In this course, you will set up a file sharing server using openEuler and Samba.

# Objectives

- Upon completing this course, you will understand:
  - openEuler-based File sharing server configuration
  - File sharing server user and permission configuration
  - File sharing server basic O&M and troubleshooting

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# Samba File Sharing Service

- Samba is a piece of software which enables the Linux OS to use the Server Message Block (SMB) network communication protocol.
- Samba can be used for file sharing and print sharing between Linux and Windows systems, as well as between Linux systems.
- Samba adopts the client/server structure, so a Samba server can function as:
  - A file sharing server
  - A Samba client
- On Windows, Samba uses the NetBIOS protocol. To use files shared from Linux on Windows, ensure that this protocol is installed.

# Samba Suites

- To install a Samba server, at least **three suites** are required: samba, samba-common, and samba-client.
  - **samba**: contains the **smbd** and **nmbd** daemons, **Samba documents**, **log rotation settings**, and **preset startup options**
  - **samba-common**: provides the main configuration file of the Samba **smb.conf** and the **testparm** program for checking the syntax of the **smb.conf** file
  - **samba-client**: provides the tool commands required when running a Samba client on Linux, such as the **smbmount** command for mounting a Samba file system



# Samba Configuration Files (1)

- Samba configuration files are stored in **/etc/samba**. The main configuration files are **smb.conf**, **lmhosts**, and **smbpasswd**.
  - **smb.conf**: the most important Samba configuration file—also the only basic settings configuration file. Its main sections are:
    - **[global]**: sets server functions
    - **[sharedir]**: sets the attributes of each shared directory
  - **lmhosts**: maps the **NetBIOS names and IP addresses of the hosts**. Samba is constantly improving and can now, at startup, obtain the IP addresses which correspond to hosts' NetBIOS names in the local area network (LAN). Generally, you do not need to configure this file.
  - **smbpasswd**: **If the Samba server requires users to log in with passwords**, user passwords are stored in this file.

# Samba Configuration Files (2)

- **smb.conf** file example

```
[global]                                # Set the overall environment of the Samba server.
    workgroup = MYGROUP                 # Name of a work group
    server string = Samba Server Version # Description of the host
    netbios name = MYSERVER             # Default host name of the Samba server
    hosts allow = 127. 192.168.12. 192.168.13. # IP address range that is allowed to access the
                                                Samba server. By default, all IP addresses are
                                                allowed.

    security = user                     # Set the security mode. user mode requires user
                                                authentication while share mode does not.

[homes]
    valid users =                       # Specify users who are allowed to access the Samba server.
    invalid users =                     # Specify users who are not allowed to access the Samba server.
    write list =                         # Specify users who are allowed to write data.
    read list =                          # Specify users who are allowed to read data only.
    public = yes                        # Specify whether anonymous access is allowed.
```



# Common Samba Commands

- Common commands of the Samba server are as follows:
  - **smbpasswd**: sets Samba users and passwords. Option **-a** is used to add a Samba user and set that user's password.
  - **smbclient**: views the directories and devices shared from a host. Option **-L** is followed by the IP address of the host to be viewed, and **-U** is followed by the user name used for login.
  - **smbmount**: similar to the **mount** command, this mounts a shared directory from a remote host to the Linux host.
  - **testparm**: tests whether the Samba configuration is correct by checking the **smb.conf** file. If the file passes the test, the Samba service will be able to properly load the configuration.

# Installing Samba from a Specific Source using DNF

- Configure the software source for the DNF software package management tool, then obtain and install the Samba suites, including samba, samba-common, and samba-client along with their dependency packages.

- 1 ▫ Add a DNF software source:
  - `dnf config-manager --add-repo repository_url`
- 2 ▫ Enable the added DNF software source:
  - `dnf config-manager --set-enable repository`
- 3 ▫ Download and install the software using DNF:
  - `dnf install samba samba-common samba-client`

# Managing the Samba Service, Listening Port, and Startup Settings

- After Samba is installed, enable the Samba service to start upon system startup, start the Samba service, and check the status of its listening ports.
  - Enable the Samba service to start upon system startup:
    - `systemctl enable smb`
  - Start the Samba service:
    - `systemctl start smb`
  - View the Samba service running status:
    - `systemctl status smb`
  - Check the port listening status:
    - `netstat -lantp |grep 139`
    - `netstat -lantp |grep 445`

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# Adding Users

- If you need the Samba server to control access to resources, you need to create a user on openEuler and only allow the user to log in through the Samba service (not log in to the system through a shell).
  - Create user **smb**. Do not create a home directory for the user or grant the user shell login permission.

```
[root@openEuler ~]# useradd smb -M -s /sbin/nologin
```

- Allow the **smb** user to log in through the Samba server and set the user's password.

```
[root@openEuler ~]# smbpasswd -a smb
```

# Preparing Shared Files and Setting File Access Permissions

- Provide shared directories for the Samba server. Create the shared files on openEuler and set the permissions on the shared directories.

- Create shared directories **share** and **smb**.

```
[root@openEuler ~]# mkdir /var/share /var/smb
```

- Grant all users the read, write, and execute permissions on the **share** and **smb** shared directories :

```
[root@openEuler ~]# chmod 777 /var/share /var/smb
```

- Change the owner of the **smb** shared directory to the **smb** user:

```
[root@openEuler ~]# chown smb:smb /var/smb
```

# Configuring Samba Sharing (1)

- Edit the Samba configuration file **smb.conf** to allow the client to anonymously read and write to the **share** directory, and to allow authenticated users to read and write to the **smb** directory.
  - Add **map to guest = Bad User** to the **[global]** section to enable anonymous access.
  - Add a **[share]** section for the **share** directory and set its permissions:

```
[share]
comment = share
path = /var/share
guest ok = yes
browseable = yes
writeable = yes
```



# Configuring Samba Sharing (2)

- Add an **[smb]** section for the **smb** directory and set its permissions:

```
[smb]
comment = smb
path = /var/smb
write list = smb
browseable = yes
writable = yes
read list = smb
valid users = smb
create mask = 0777
```

# Verifying that the Samba Server Can Be Accessed

- On Windows, access the Samba server in file sharing mode. After connecting to the file sharing server, you should be able to create files.
  - Access the directory through `\\Samba_IP\share`. You should be able to access the directory without login authentication and create or delete folders or files.
  - Access the **smb** directory through `\\Samba_IP\smb`. You should be able to open files and create folders or files in the **smb** directory after providing the authentication information of the **smb** user.

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# Using a Scheduled Task to Manage Files (1)

- You can schedule a task to back up the shared data of a Samba server every day. Use a shell script and a crontab scheduled task to archive and back up the data in the **share** directory to the **smb** directory.

X

```
#!/bin/sh
mkdir /var/backup                # Create a temporary backup directory.
cp -r /var/share/ /var/backup/   # Copy the data in the share directory to the backup directory.
tar -zcPvf /var/smb/backup$(date +%Y%m%d).tar.gz /var/backup # Compress the data in the share
                                                                    directory to /var/backup.
rm -rf /var/backup/              # Delete the temporary backup directory.
find /var/smb/ -mtime +30 -name "*.tar.gz" -exec rm -rf {} \; # Delete backup data that is stored
                                                                    more than 30 days.
```

- Set the execute permission on the script.

```
[root@openEuler ~]# chmod +x backup.sh
```

# Using a Scheduled Task to Manage Files (2)

- Set and edit a periodic task by running the **crontab** command. The **backup.sh** script is executed at 22:00 every day. Data is backed up to the **smb** directory as a file named after the time the backup is run.

```
[root@openEuler ~]# crontab -e  
0 22 * * * /root/backup.sh
```

- Run the **crontab -l** command to view the backup task.

# System and Service Logs

- To view the status or error information of the Samba server through logs, you can run **ls** to find the log file of the Samba service in the **/var/log** directory. Then, you can run a command to view the latest 20 log entries.
  - Run **ls -l /var/log/samba** to find the log file in the **/var/log/samba** directory, for example, **log.smbd**.
  - Run **tail /var/log/samba/log.smbd -n 20** to view the latest 20 log entries.
  - Run **tail /var/log/messages** to view the latest 20 log entries of the openEuler system.

# File Sharing Fault Locating and Troubleshooting

- These errors can make the file sharing impossible when you use Samba. Solutions are provided:
  - The file sharing server cannot be accessed or the network connection is faulty.
    - If the firewall is enabled, run `systemctl stop firewalld` to disable it.
    - If the Samba service is not started, run `systemctl restart smb` to restart it.
  - The file sharing server cannot be started due to an incorrect configuration.
    - Run `cd /etc/samba; testparm` to check whether the configuration file is configured correctly, and modify the configuration according to the prompt.
  - The user does not have the permission to access or create files. Permissions on the shared directory are configured incorrectly.
    - If the file owner is incorrect, run `chown smb:smb /var/smb` to change the file owner to the correct user.
    - If the file permissions are incorrect, run `chmod 777 smb:smb /var/smb` to change the file permissions.



# Quiz

1. To configure the Samba file sharing server, which software needs to be installed? What is the main configuration file? What operations are required for user- and resource-based access control?

# Summary

- This course describes how to deploy, configure, and maintain the file sharing server as well as how to use openEuler and how to configure services. It also presents simple service troubleshooting and basic Linux O&M capabilities.

# Thank you.

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