

SUSE

FILE AND PRINT SERVICES WITH SuSE LINUX ENTERPRISE SERVER 8



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OVERVIEW

This whitepaper presents an overview of file and print services based on the latest version of SuSE Linux Enterprise Server. The services are described both from the user view as well as from the administrator view. References to additional documentation are provided in the respective sections.

FILE SERVICES

SuSE Linux Enterprise Server enables the setup of file servers for all kinds of requirements. The comprehensive hardware support of SuSE Linux Enterprise Server ranges from desktop PCs serving a department network to high-performance servers connected to a SAN (Storage Area Network).

This whitepaper introduces the Samba software that can be used to establish a file server and PDC (Primary Domain Controller) for heterogeneous networks.

THE USER VIEW

All common clients – such as Linux, UNIX, Windows, or Apple Macintosh systems – can store data on a SuSE Linux Enterprise Server file server. Thus, the file server serves as a link between the diverse operating systems. Access rules determine which users and user groups are permitted to access which data.

For Windows clients, the file services are offered by way of the Samba Server. SuSE has further improved Samba's support of ACLs (Access Control Lists) for SuSE Linux Enterprise Server, thereby allowing users to use common Windows tools to specify security settings and the permissions that are to be passed on to files and directories.

THE ADMINISTRATOR VIEW

File servers based on SuSE Linux Enterprise Server support several important file service protocols that are listed in Table 1.

Protocol	Clients
SMB	Windows, Linux, UNIX
NFS	Linux, UNIX
Netatalk	Apple Macintosh

Table 1: Important File Service Protocols

Samba Web Frontend

Samba can be administered by means of the web frontend SWAT (Samba Web Administration Tool; Figure 1). To activate SWAT, the SuSE Linux Enterprise Server packages `inetd` and `tcp` must be installed.

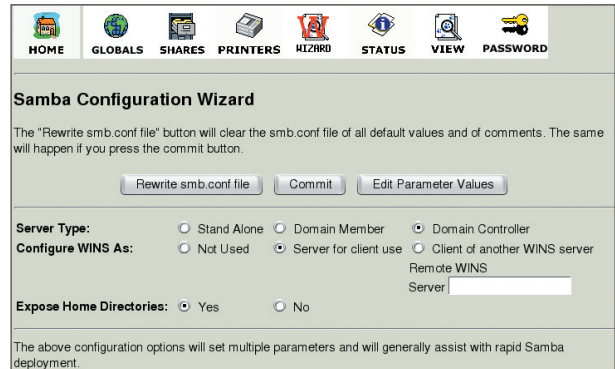


Figure 1: Samba Web Frontend SWAT (<http://servername:901/>)

SWAT can be accessed via TCP port 901, which must be opened in `/etc/inetd.conf`:

```

...
/etc/inetd.conf
...
# swat is the Samba Web Administration Tool
swat stream tcp nowait.400 root /usr/sbin/swat swat
...
    
```

File Sources

SuSE Linux Enterprise Server supports the powerful modern file systems XFS, ReiserFS, JFS and Ext3, whose journaling functions reduce check and restore times. Using LVM (Logical Volume Manager), a file system can span several physical storage systems. LVM also allows additional partitions or hard disks to be integrated during operation to adapt the capacity of a Linux file system to growing needs.

Login Service

In order to set up a PDC for Windows networks (for Windows NT 4, Windows 2000, and Windows XP), the Samba version included in SuSE Linux Enterprise Server provides the possibility to manage user and group accounts in a directory service.

For this purpose, SuSE Linux Enterprise Server offers the versatile directory service OpenLDAP. The needed schema definitions are already included in the Samba package.

OVERVIEW

OpenLDAP can be used for tasks such as the individual management of the profile path and home directory for every user.

In Linux, Pluggable Authentication Modules (PAM) are used for the login procedure and for the negotiation between the account database and the file service. PAM delegates the authentication query (user name, password) and the authorization query (query to the account management) to various modules. For example, depending on the needs, the PAM winbind module can be used to forward password queries to a PDC.

The Samba component winbind greatly reduces the administration workload in heterogeneous environments. winbind automatically maps user accounts from NT domains to Linux systems. Thus, they are valid on both systems without having to be administered separately. Before winbind can be configured, the SuSE Linux Enterprise Server server must first join the existing Windows domain. Then two lines in the configuration have to be adapted to the name service switch configuration that is responsible for tasks such as querying the user accounts. Consequently, NT users and groups will be available on the Linux host. Following the customization of the PAM services e.g. for the KDE display manager, NT users will also be able to log in directly to Linux desktops with their NT passwords.

Access Control

The use of various ACLs is an important capability of Samba for crossing operating system borders. To deliver file services to Windows clients, Samba maps the ACLs used in Linux to the NTFS ACLs commonly used in Windows NT/2000/XP in accordance with the international POSIX standard.

Logon Scripts and Profile Data

By way of the netlogon share, Samba provides the Windows clients with the usual logon scripts. Users can store their desktop environments in roaming profiles on the Samba PDC.

Extensions

The capabilities of Samba can be expanded by means of the VFS (Virtual File System Modules). For example, the recycle module enables the rescue of data that were mistakenly deleted by the user without any additional software: during the deletion, the data are

moved to a separate recycle bin from which the user or administrator (depending on the configuration) can restore the data. Another utilization field for VFS modules is the use of the vScan module for on-access virus scanning.

Documentation

The Samba HOWTO collection

`/usr/share/doc/packages/samba/Samba-HOWTO-Collection.pdf`

of the Samba package contains comprehensive information on all issues in connection with Samba.

PRINT SERVICES

SuSE Linux Enterprise Server makes use of CUPS (Common UNIX Printing System), a modern and powerful print system. CUPS enables printing

- over Internet connections,
- in the local network, and
- on printers connected directly to the host.

CUPS offers a high level of security, log and accounting functions, as well as load balancing possibilities. CUPS comes with drivers for all common printer models, which support the use of device-specific properties such as the selection of paper trays, specification of the print medium, and color printing.

THE USER VIEW

Linux clients can employ various methods for setting printer-specific options (selection of the print media and the print quality). Print jobs can easily be generated by means of the web interface (Figure 2) or the dialogs of the graphical desktop environment KDE.

The Samba server based on SuSE Linux Enterprise Server automatically provides Windows clients with the printer drivers specified by the administrator. Subsequently, users can select the desired options as usual by means of the print dialog.

THE ADMINISTRATOR VIEW

CUPS provides a web interface (Figure 2) for the administration of the print system. The access to the web interface via network connections must be permitted by means of the “Allow” rules in the CUPS configuration.



Figure 2: Web Interface for the Administration of CUPS (<http://servername:631/>)

```

_____ /etc/cups/cupsd.conf _____
##### Security Options
...
<Location />
...
Order Deny,Allow
Deny From All
Allow From 127.0.0.1
Allow From 127.0.0.2
</Location>
...
<Location /admin>
...
Order Deny,Allow
Deny From All
Allow From 127.0.0.1
...
</Location>

```

Combined File and Print Server

In SuSE Linux Enterprise Server, the interaction between Samba and CUPS enables the setup of combined file and print servers. The following entries in the Samba configuration prompt Samba to use the CUPS print system:

```

_____ /etc/samba/smb.conf _____
[ global]
...
printcap name = CUPS
printing = CUPS
...

```

A group for printer administrators (ntadmin) already exists in the Samba standard installation, thereby facilitating the assignment of special permissions (e.g. deleting print jobs) to certain users.

Documentation

Detailed documentation for the CUPS package is available in

</usr/share/cups/doc/documentation.html>

The software administrator’s manual is especially useful for the configuration.

PRINT SERVICES

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