



# Installation Guide

Version 4.x

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# 1

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## Introduction

This section includes:

- **About This Guide** on page 5
- **SFX 4 Terminology** on page 6
- **Instances Included with SFX 4** on page 6
- **Bundled Software** on page 7

## About This Guide

This guide describes how to install the SFX server. For information regarding disk space and operating system requirements, refer to the *Requirements for SFX 4 Installation* document. For information on upgrading from SFX 3 to SFX 4, refer to the *SFX Upgrade Guide*.

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### NOTE:

The Sun Operating system is supported only for existing customers, not for new customers.

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### IMPORTANT:

Note that we continuously update and improve this guide to make it as user friendly as possible. Make sure that you only use the latest version that is available from the Documentation Center.

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## SFX 4 Terminology

The following terminology has been changed for SFX version 4:

Table 1. SFX 4 Terminology

Instance Name	Version 3	Version 4
Global	<code>sfxglb3</code>	<code>sfxglb41</code>
Local	<code>sfxlc13</code>	<code>sfxlc141</code>
Test	<code>sfxtst3</code>	<code>sfxtst41</code>

Customers who upgrade from SFX 3 can choose to maintain the SFX 3 terminology; however, this guide uses SFX 4 terminology.

## Instances Included with SFX 4

The SFX 4 package includes three instances:

- The global instance (`sfxglb41`) – The global database and SFX software
- The test instance (`sfxtst41`) – The test database
- The local instance (`sfxlc141`) – The local database

The directory structure is as follows:

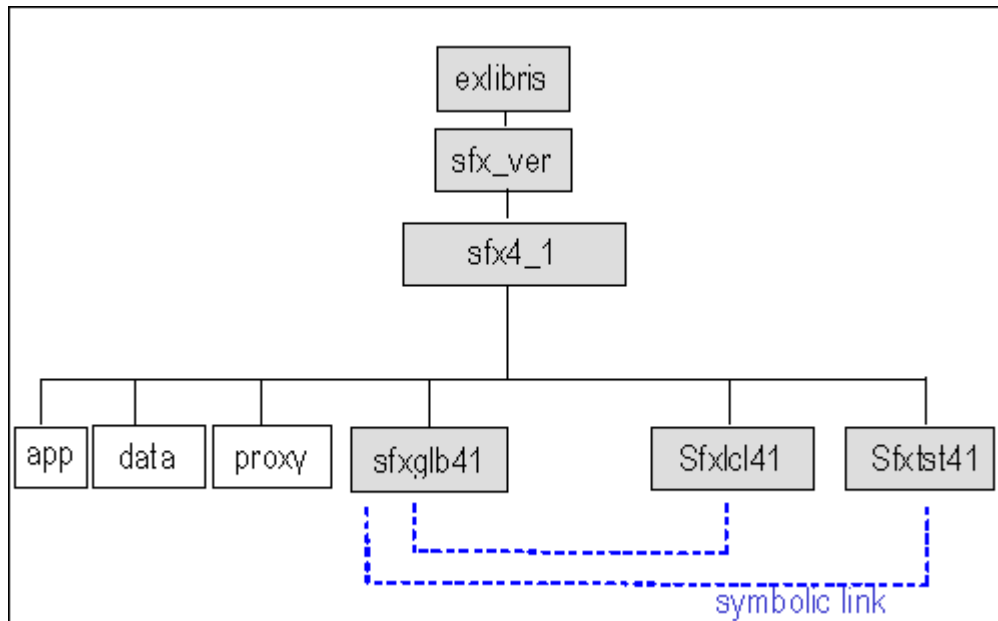


Figure 1: Directory Structure

## Bundled Software

SFX 4 includes the following software:

- Apache Web Server Version 2.2
- Perl Version 5.10
- MySQL Version 5.1
- Open SSL 0.9.8.f



# 2

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## Installing the SFX Server

This section includes:

- [About the Installation Process](#) on page 9
- [Before Installing the SFX 4 Server](#) on page 10
- [Running the Installer](#) on page 11
- [Running the Revision Update in Batch Mode](#) on page 15

### About the Installation Process

You install the SFX server using the basic installer download package, which contains a complete `sfxglb41` instance, including a fully-populated database and a complete set of UNIX files. The installer installs the `sfxglb41` instance and then uses this instance to create any additional local instances that are part of your license agreement. After SFX is installed, you have at least one fully functioning, but non-localized, local instance.

In addition, SFX 4 UNIX users with the `SFX` group ID are created with the same names as the corresponding SFX instances. For a typical installation with a global, local, and test instance, the following UNIX users are created (if they do not already exist):

- `sfxglb41`
- `sfxlc141`
- `sfxtst41`

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#### NOTES:

- It is strongly recommended that these users not be created in advance.
  - For security reasons, it is recommended that you change the passwords of these UNIX users when the installer prompts you to do so.
- 

A log report, which lists the activities of the installer, is generated.

It is generally recommended that the installer be run from start to finish with no interruptions. This may take several hours to complete, depending on the number of instances to be created. A standard installation with three instances should take about half an hour to forty-five minutes to complete after the installation package is downloaded.

While running the program, you are periodically prompted for administrator input. When the input is a `yes` or `no` option, the action recommended by Ex Libris is highlighted with a capital letter. Pressing `ENTER` is equivalent to typing the capital letter.

For example:

```
File abcdefg.config exists. Do you want to remove it? [Y/n]
```

The letter `Y` is capitalized to indicate that this is the recommended option. Type `Y` or press `ENTER` to select this option.

## Before Installing the SFX 4 Server

Before you begin the installation process:

- Ensure that all system requirements, as described in the *Requirements for SFX 4 Installation* document, have been met. For Linux Red Hat Enterprise, it is recommended that you run the following commands to verify that your system requirements are up-to-date:

- For Red Hat Enterprise 7:

```
rpm -q bzip2-libs.i686 glibc.i686 glibc.x86_64 libaio.i686 libaio.x86_64  
libgcc.x86_64 libgcrypt.i686 libgpg-error.i686 libstdc++.x86_64  
libuuid.i686 libxml2.i686 libxml2.x86_64 libxslt.i686 ncurses-libs.i686  
ncurses-libs.x86_64 nss-softokn-freebl.i686 nss-softokn-freebl.x86_64  
pam.x86_64 xz-libs.i686 xz-libs.x86_64 zlib.i686 zlib.x86_64 | grep "not  
i"
```

- For SUN Solaris:

- 1 Check the existing limits of the maximum descriptors using the following commands:

```
bash  
# soft limit  
ulimit -S -n  
# hard limit  
ulimit -H -n
```

Both values should be above 4096.

- 2 If the existing limits are lower than 4096, change the parameters as a root user.

On Solaris 10, use the following commands to change limits for the SFX group. (You must be a root user to perform this operation.)

```
projadd group.sfx
projmod -sK "process.max-file-descriptor=(priv,4096,deny)"
group.sfx
```

Rebooting is not necessary. Log out and in again before proceeding with the installation.

- Make sure that IPtables is not running on your server during the installation, as it may cause problems. The installer checks if this service is running and if it is, the installer displays a warning message. You must stop this service before continuing with the installation.
- Security-Enhanced Linux (SELinux) must be disabled in the SFX installation because of conflicts with Apache.
- Ensure that your firewall is configured so that the default HTTP reverse proxy server port, 3410, is open to incoming traffic. If you choose to use another port instead, configure your firewall accordingly.
- If you are using a UNIX system with an interface language other than English, run the following command to set the interface language to English for the current session of the installer: `setenv LANG C`
- Have in hand the license numbers of your instances, as well as the user name and password sent to you by Ex Libris. You will need the user name and password to download the installer and the license numbers for the installation process.

## Running the Installer

This section describes how to install SFX 4 using the installer download package.

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### NOTE:

The installer must be run by the `root` user for the server, or by a UNIX user with `sudo` to `root` permissions.

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### To run the installer:

- 1 Log on to the server as the `root` user.
- 2 Change the directory to `/exlibris/ftp_from_exlibris` (create the directory if it does not exist):

```
mkdir -m777 /exlibris/ftp_from_exlibris  
cd /exlibris/ftp_from_exlibris
```

- 3 Download the SFX 4 package that is appropriate for your operating system from the Ex Libris FTP server:

```
wget 'ftp://sfxuser:<your password>@ftp.exlibrisgroup.com/  
sfx4/sfx_version_4<operating system>_installer.run'
```

---

### NOTE:

When including passwords in the `wget` command, encode unsafe characters as `%xy`, with `xy` being the hexadecimal representation of the character's ASCII value. Some common unsafe characters include `%`, (quoted as `%25`), `:` (quoted as `%3A`), `!` (quoted as `%21`) and `@` (quoted as `%40`). Refer to [rfc1738](#) for a comprehensive list of unsafe characters.

---

The available packages are:

- `sfx_version_4_linux64_installer.run`
- `sfx_version_4_SunOS-i86pc_installer.run`
- `sfx_version_4_SunOS-sparc_installer.run`

- 4 Change the permissions of the file, as appropriate for your operating system, so that the file is executable:

```
chmod a+x <installer_package>
```

- 5 Create a text file named `license.txt`, containing the SFX licenses that you received from Ex Libris. This file is used by the installer to automatically read and process your licenses and therefore needs to be in a specific format. There cannot be any extra lines, spaces, or text and the file must consist of license keys only. List each license in a separate line of the file.
- 6 Place the `license.txt` file in the same directory in which the installer is located.
- 7 Run the installer program:

```
./<installer package>
```

The program verifies that it is being run as `root`, unpacks the `.tar` file, checks the operating system and available disk space, verifies that the `/exlibris` file

system and `/sfx_ver` directory exist, and creates the `/sfx4_<copy number>` directory.

---

**NOTES:**

If SFX 4 has previously been installed on the server, the program asks you if you want to continue. Type `y` or press `ENTER`. To overwrite the existing copy of SFX, enter `1`. To create a new copy of SFX, enter `2`. Note that you will need to specify another license key for this additional copy. If you want to overwrite an existing copy of SFX V4, it is important to make sure that no processes are running before starting the installer, as these processes will prevent the installer from proceeding.

- To check if any processes are running, type: `ps -ef | grep sfx`
  - To kill a process, type: `kill -9 <process_id>`
- 

The steps of the installer are described in detail below. Administrator input is required for some of the steps.

- License agreement – Type `yes` (spelled out in full) to continue.
  - System checkup – The following items are verified: operating system, installation package name, disk space, `root` user permissions, and various files and directories. No administrator input is required.
- 

**NOTE:**

This step also checks if `IPTables` and `SELinux` are running.

---

- Directory setup – No administrator input is required.
- Unpack installation package – No administrator input is required.
- Setup of `sfxglb41` instance:
  - Operating system analysis – Verifies that your system is supported. No administrator input is required.
  - IP check – Verifies that the IP address of the server is valid. No administrator input is required.
  - Setting of licenses – This section is relevant only if no license file was created and you are creating this file manually (which is not the default and is not recommended). Enter the license keys that you received from

Ex Libris for each instance that you create. Copy and paste them into the installer, one at a time. For example:

```
[ 3 ] Setting of licenses.
Please provide the licenses you received from Ex Libris.
The order in which you provide them is not important.
Input 1st license or press ENTER to end:
43437293a213e26373c737668776c62633c7132
Checking... ok.
Input 2nd license or press ENTER to end:
43437293a213e26373c7376687c636c633c7132
Checking... ok.
Input 3rd license or press ENTER to end:
43437293a213e26373c73766875736c61633c71
Checking... ok.
Input 4th license or press ENTER to end:
Do you have more licenses? [y/N]
Ex Libris has allowed you to create these instances:
    sfxglb41
    sfxlcl41
    sfxst41
Is this correct? [Y/n]
```

- Disk space diagnostic – Based on the number of instances to be installed and migrated, the installer calculates the amount of disk space needed and verifies that the disk space is available on the server. No administrator input is required.
- Creation of the `sfxglb41` UNIX user – Set the UNIX password for this user.
- Setting correct ownerships and permissions for UNIX files – No administrator input is required.
- Setting of configuration files – Enter the number of the port that you want to use for the main SFX 4 HTTP server. The default is 3410, but you may choose another port, as long as it is higher than 1024 so that the `sfxglb41` user can own the Apache process.
- Setting of the `sfxd init` script – This script is run at server startup to initialize the MySQL and Apache processes for SFX. No administrator input is required.
- Starting services – Apache and MySQL are started for the initial `sfxglb41` instance. No administrator input is required.
- Diagnostics – The installer tests the connections and runs an OpenURL check. No administrator input is required. The first OpenURL check might take a minute or so to complete.
- Creation of instances – The installer uses the information from the license keys and creates and populates SFX 4 databases and UNIX file systems. Note that it may take several minutes to create each instance. New SFX 4 UNIX users are created for the instances and administrator

input is required to set the UNIX passwords for the new SFX 4 instance users. For security reasons, it is recommended that you change the default passwords of these UNIX users .

- Setting ownership and permissions – After all additional instances have been created, the system sets ownerships and permissions again for all instances. No administrator input is required.
- Restarting services – Apache and MySQL are restarted to include additional instances. No administrator input is required.
- Diagnostics of additional instances – No administrator input is required.
- FTP diagnostics – The installer connects to the <ftp.exlibris-usa.com> server to verify that the connection works in order to receive future updates. No administrator input is required.
- E-mail diagnostics – The installer tests the mail server configuration on the server by sending an e-mail notification of the installation to Ex Libris. No administrator input is required.
- Restarting services – SFX 4 daemons are restarted. No administrator input is required.

A log file of the installation is created in `/exlibris/sfx_ver/sfx4_1/tmp/setup.log`. If you experience any problems with the installation, send this file as an attachment to your local Ex Libris support center.

After installation, you may access the SFX installation's administrative interface via a browser at:

<http://hostname:port/sfxadmin/instancename>

For example:

<http://library.university.edu:3410/sfxadmin/sfxlcl41>

The default admin logon is user name `admin` and password `changeme`.

## Running the Revision Update in Batch Mode

To run the revision update in batch mode, you need the UNIX root password and the database passwords of all the instances you want to update.

---

### IMPORTANT:

If you are upgrading from SFX 3, select `--apply_v3_all` when running the revision to update SFX with the latest revisions available for SFX 3.

For example:

```
/bin/tcsh -c "source /exlibris/sfx_ver/sfx4_1/sfxglb41/home/.cshrc; /exlibris/sfx_ver/sfx4_1/sfxglb41/admin/revision/rev-up --apply_v3_all"
```

---

**To run the revision update in batch mode:**

- 1 Log on as root.
- 2 Enter the `/bin/tcsh -c "source <home directory of sfx global>/  
.cshrc; /exlibris/sfx_ver/sfx4_1/sfxglb/admin/revision/revup"`  
command to start the revision update program.

For example:

```
/bin/tcsh -c "source /exlibris/sfx_ver/sfx4_1/sfxglb41/home/  
.cshrc; /exlibris/sfx_ver/sfx4_1/sfxglb41/admin/revision/rev-up"
```

---

**IMPORTANT:**

There must be a space between `source` and the path to the environment variables of the global instance. The environment variables of the global instance must be loaded in order for the update to be run as root.

---

## Configuration Changes After SFX 4 Installation

It is recommended that you check the `my.cnf` MySQL configuration file for `sfxglb41` after the installation to make sure that the Performance Settings section is optimally configured for the number of concurrent users in your SFX installation.

For more information, see [Appendix A: MySQL Configuration File \(my.cnf\)](#) on page 19.

Contact SFX Support if you need help choosing the right settings for your installation.

---

# Appendix

This guide contains the following appendix:

- **Appendix A: MySQL Configuration File (my.cnf)** on page 19



# A

---

## MySQL Configuration File (my.cnf)

It is recommended that after the SFX 4 installation, you check the `my.cnf` configuration file to ensure that the Performance Settings section (as described below) is configured optimally, according to the number of concurrent users in your SFX 4 installation.

The file is located in the following directory: `/exlibris/sfx_ver/sfx4_1/data`

The following is a list of changes to this file for SFX 4:

- The following lines have been added:
  - `# Required by SFX Application`
  - `#plugin_dir=/exlibris/sfx_ver/sfx4_1/app/mysql/lib/mysql`
  - `event_scheduler=1`
  - `skip-external-locking`
  - `character-set-server = utf8`
  - `collation-server = utf8_general_ci`
- All directory names have been changed to comply with SFX 4 standards.
- The following lines have been deleted (if they were present in SFX 3):
  - `skip-locking`
  - `default-character-set`
  - `default-collation`

In the MySQL configuration file, change the Performance Settings section to reflect the number of concurrent SFX 4 users.

---

**NOTE:**

The MySQL password should not be included in this file.

---

```
[client]
password      = <your_password>
port          = 3310
socket        = /exlibris/sfx_ver/sfx4_1/tmp/socket/
mysql.sock
```

```
# The MySQL server
[mysqld]
port                = 3310
socket              = /exlibris/sfx_ver/sfx4_1/tmp/socket/
mysql.sock
bind-address        = 0.0.0.0
skip-external-locking
character-set-server = utf8
collation-server    = utf8_general_ci
#
# Required by SFX Application
plugin_dir=/exlibris/sfx_ver/sfx4_1/app/mysql/lib/mysql
event_scheduler=1
datadir =/exlibris/sfx_ver/sfx4_1/data
tmpdir  =/exlibris/sfx_ver/sfx4_1/tmp/
basedir =/exlibris/sfx_ver/sfx4_1/app/mysql
user = sfxglb41
ft_min_word_len=3
ft_stopword_file=/exlibris/sfx_ver/sfx4_1/data/stopword.txt

#
# Optional but recommended
#
# Slow Query Log
#
#slow_query_log
#slow_query_log_file=/exlibris/sfx_ver/sfx4_1/data/slow-
query.log
#log-queries-not-using-indexes
#long_query_time=5
#log-warnings=2
#
# Bin Log
#log-bin=/exlibris/sfx_ver/sfx4_1/data/bin-log
#expire-logs-days=1

#
# Performance Settings
#
#   Definition of Customer size by number of concurrent users
#   Small   - 100 (max_connections)
#   Medium  - 150   "
#   Large   - 200   "
```

```
#
# Recommendations for 32bit (2G process limitation)
#   Small  key_buffer_size=512M  read_buffer_size=8M
sort_buffer_size=8M
#   Medium key_buffer_size=1G    read_buffer_size=4M
sort_buffer_size=4M
#   Large  key_buffer_size=1G    read_buffer_size=2M
sort_buffer_size=2M
#
# Recommendations for 64bit
#   Small  key_buffer_size=2G    read_buffer_size=8M
sort_buffer_size=8M
#   Medium key_buffer_size=2G    read_buffer_size=6M
sort_buffer_size=6M
#   Large  key_buffer_size=2G    read_buffer_size=4M
sort_buffer_size=4M
#
key_buffer_size=1G
sort_buffer_size=8M
read_buffer_size=4M
max_connections=150
```

