Installing TeX Live 2024 on Salix OS 15.0 via ISO Image

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Contents

Abstract

These are notes I made during my installation of TEX Live (hereafter abbreviated "TL"), using a TL `.iso` file downloaded from a CTAN mirror on the Internet. I successfully installed TL 2024 on Salix OS 15.0 (Xfce version).

This method uses an ISO file which you download to your `/home` folder, and will then install directly—without the need for burning it to a DVD. Installing from an ISO disk image is more environmentally friendly than using a "one-off" optical disc.

The instructions are not 100% complete, so I recommend that you read the TL documentation available on TUG's website in conjunction with this document. I would also like to thank user `rsamurti` for the TL How-to he posted on the Zenwalk Wiki.[1] His article provided some useful tips which I incorporated into this procedure.

Disclaimer: Although this procedure may contain a few errors or inaccuracies, it worked for me and I hope it will work for you, too. This installation method should not break your system, as the TL installer adopts a distro-neutral, "plain vanilla" approach. However, *please understand that this how-to is presented "as is" with absolutely no guarantees*.

1 Overview of the Process

In a nutshell, what you will do is to run the built-in install script from the TL ISO and then modify your `PATH` to make the TL binaries available to your user account.

The general steps are as follows:

- Download a TL .iso image from a CTAN mirror.[2] Verify its `md5sum` and `sha512sum` to ensure that the download is not corrupted.

  Note: The ISO is a very large file—5.6 GB in size—so be prepared that the download will take a while if you have a non-broadband Internet connection. After being installed, TL occupies approximately 8 GB of hard disk space.

[1] Unfortunately, the Zenwalk Wiki no longer exists.

[2] CTAN (acronym for "**C**omprehensive **T**eX **A**rchive **N**etwork") is the authoritative place where TEX-related material and software can be found for download.

- Save the file to an appropriate location in your `/home` directory. (In my case, I created a folder named **TeX Live 2024** and saved it there).
- Follow the instructions as outlined below to install TL and then do post-installation configuration and testing.

2 Pre-Installation

- First, you need to clean up any existing TEX installations. If you previously installed any `texlive` packages, completely remove them with the Gslapt Package Manager.
- Create a temporary mount point for the TL ISO disk image.

  Open up a Terminal within your regular user account, issue the command "`su -`" and type root's password to acquire root user privileges.[3]

  ```
  # mkdir /mnt/iso
  ```

  N.B.: That pound sign[4] (#) as the command prompt is your verification that you are logged in as the root user.

  It helps to visualize the mount point as a clothes hanger, and the file (our ISO file) as the clothes—if you need to hang up your clothes, you need a hanger.[5]

2.1 Mount the ISO Image on the Temporary Mount Point

Now you can follow these steps:

- Navigate to the directory where your TL ISO file is located, for example:

  ```
  # cd /home/david/"TeX Live 2024"
  ```

[3] N.B. that is a *hyphen* used as the command argument. If you want to become the root user, and use its environment variables, you must type `su -`

As a comparison, if you just issue the command `su` (without a hyphen), you will become root but your non-root (`/home`) environment variables will remain in place.

[4] Also known as the "number sign," "hash mark" and "octothorpe," depending on which part of the world you live in.

[5] Thanks to user HacK_MiNDeD for this analogy.

Note: You need to surround the directory name with quotation marks in order to let the **bash** shell know that the interword spaces are part of the directory name.

- Point to the ISO image and tell Salix to mount it on our newly created mount point:

```
# mount -o loop texlive.iso /mnt/iso
```

A gloss of this command is:

`mount [option flag]`[6] `[set up loop device]`[7] `[source]`[8] `[target directory]`[9]

loop A loop device is a pseudo-device that makes a file accessible as a block device. Loop devices are often used for CD ISO images. Mounting a file containing a filesystem via such a loop mount makes the files within that filesystem accessible. You will not be able to mount the ISO without the loop function.

Note: You will see a warning message that states:

```
mount: /mnt/iso: WARNING: source write-protected, mounted read-only.
```

Do not worry . . . That is to be expected because ISO files are always mounted as read-only by default, so it is safe to proceed.

These preliminary steps will allow us to run the TL install script shortly.

3 Installation Proper

In general, we will use the Quick Install instructions from TUG's website as a guideline:

https://tug.org/texlive/quickinstall.html
"TEX Live – Quick Install for Unix [and GNU/Linux]."

The full-length guide (for TEX Live 2024) can be read here:

[6] `-o`
[7] `loop`
[8] Your TL `.iso` file.
[9] The temporary mount point we just created.

https://tug.org/texlive/doc/texlive-en/texlive-en.html
Berry, Karl, ed. "The TEX Live Guide — 2024." Mar. 2024.

All commands below were issued by / (root) rather than a normal user.

Follow these steps:

- Navigate to your newly created directory / mount point:

```
# cd /mnt/iso
```

- Issue the `ls` (list) command to show you the directory's contents:

```
root@salix:/mnt/iso# ls
LICENSE.CTAN       archive/     install-tl*
release-texlive.txt  tlpkg/
LICENSE.TL         autorun.inf  install-tl-windows.bat*  source/
README             doc.html     readme-html.dir/         texlive-doc/
README.usergroups  index.html   readme-txt.dir/          tl-tray-menu.exe*
```

3.1 Using the Installer's Text Mode

We will use the Installer's text mode to install TL 2024.

- Now you are ready to run the installer script (`install-tl`). Type

```
./install-tl
```

(Do not forget the **initial period** (`.`) before the forward slash).

- From the text menu, select the **o** command to change the default paper size, if desired. I changed the paper size from A4 to Letter. (Letter size is used in the US, Canada and Mexico. A4 is commonly used in Europe and in most locations outside North America). I accepted all the other defaults offered by the TL installer.
- Afterwards, press **r** to Return to the main menu.
- If you wish to bypass the need for manually changing the `PATH`, as discussed in Section 5.1, you have the option here of selecting `Create symlinks in system directories`. I have never tried this option myself; furthermore, the TL Guide cautions in Sec. 3.2.4 that "The safest and recommended approach is to leave the option unchecked."

- Type the letter **i** (for `i(nstall)`) to begin the installation.

3.2 Duration of Installation

Installation time was approximately 16 minutes on my desktop PC.[10]

The script will install 4670 packages in alphabetical order, beginning with `12many`, `2up`, and ending with `zxjatype` and `zztex`.

As the installation finishes, you should see this output in the Terminal:

```
Installing [4668/4670, time/total: 15:03/15:03]: zxjafont [173k]
Installing [4669/4670, time/total: 15:03/15:03]: zxjatype [144k]
Installing [4670/4670, time/total: 15:03/15:03]: zztex [147k]
Time used for installing the packages: 15:03
running mktexlsr /usr/local/texlive/2024/texmf-dist ...
mktexlsr: Updating /usr/local/texlive/2024/texmf-dist/ls-R...
mktexlsr: Done.
writing fmtutil.cnf to /usr/local/texlive/2024/texmf-dist/web2c/fmtutil.cnf
[ ... ]

Welcome to TeX Live!
See /usr/local/texlive/2024/index.html for links to documentation.

The TeX Live web site (https://tug.org/texlive/) provides all updates
and corrections. TeX Live is a joint project of the TeX user groups
around the world; please consider supporting it by joining the group
best for you. The list of groups is available on the web
at https://tug.org/usergroups.html.

Add /usr/local/texlive/2024/texmf-dist/doc/man to MANPATH.
Add /usr/local/texlive/2024/texmf-dist/doc/info to INFOPATH.
Most importantly, add /usr/local/texlive/2024/bin/x86_64-linux
to your PATH for current and future sessions.

Logfile: /usr/local/texlive/2024/install-tl.log
```

4 Finishing the Installation

After the install script finishes, you should now unmount the ISO file:

[10] Dell OptiPlex 7050 with Intel Core i5-7500 CPU, 16 GB RAM, 500 GB SSD.

```
# cd
# umount /mnt/iso
```

N.B.: The command is `umount` ('unmount' without the first letter "n").

Next, remove the directory you created at the beginning of the installation process.

```
# rm -rf /mnt/iso
```

Important:
Be careful to not accidentally delete the `/mnt` directory, as it is one of Linux's standard subdirectories.

5 Post-Installation Configuration

5.1 Setting the `PATH` Variable

When installation is complete, you must add the TEX Live binary directory to your `PATH`.

I found that the method posted in the Zenwalk Wiki worked well. Its author, `rsamurti` (R.S. Ananda Murthy), proposes creating a small shell script and placing it in the `/etc/profile.d` directory. Here's how we accomplish that:

- From within your regular user account, use your favorite text editor (e.g., Geany, nano, vi, Emacs) to create a file called **texlive.sh** in your `/home` directory.
- Paste these three lines into it, and save the file:

```
export PATH=$PATH:/usr/local/texlive/2024/bin/x86_64-linux
export MANPATH=$MANPATH:/usr/local/texlive/2024/texmf-dist/doc/man
export INFOPATH=$INFOPATH:/usr/local/texlive/2024/texmf-dist/doc/info
```

- Make `texlive.sh` executable by typing this command:

```
chmod a+x texlive.sh
```

- Move the `texlive.sh` file into the `/etc/profile.d` directory:

```
david[~]$ su -
Password:
root@salix:~# cd /home/david

root@salix:/home/david# ls
Desktop/    Downloads/         Finances/  Pictures/  TeX\ Live\ 2024/
Videos/  texlive.sh*
Documents/  Eqonomize\ 1.5.8/  Music/     Public/    Templates/
apts*    typst/
```

```
root@salix:/home/david# mv texlive.sh /etc/profile.d
```

- A change in the `PATH` variable does not take effect immediately, so log out of your account, completely reboot your system and log back in.

- Finally, issue the command:

```
# texhash
```

  It might take some time for this command to complete, so please wait patiently. The final portion of its output will look something like this:

```
root@salix:~# texhash
texhash: Updating /usr/local/texlive/2024/texmf-config/ls-R...
texhash: Updating /usr/local/texlive/2024/texmf-dist/ls-R...
texhash: Updating /usr/local/texlive/2024/texmf-var/ls-R...
texhash: Updating /usr/local/texlive/texmf-local/ls-R...
texhash: Done.
```

- Check your `PATH` to verify that it now includes the TL binaries:

```
david[~]$ echo $PATH
/home/david/typst:/usr/local/bin:/usr/bin:/bin:/usr/games
:/usr/lib64/qt5/bin:/usr/local/texlive/2024/bin/x86_64-linux
:/usr/local/sbin:/sbin:/usr/sbin
```

5.2 Font Configuration for XETEX

When tested according to the TL Web documentation, I got an error message saying ‘‘Invalid fontname ‘Latin Modern Roman/ICU’ ... ’’ So I needed to configure my system so that XETEX could find the fonts shipped with TEX Live.

This is accomplished by configuring the `texlive-fontconfig.conf` file. In TL 2024, this file resides within the directory:

`/usr/local/texlive/2024/texmf-var/fonts/conf/`

As root user, you will be copying this file to the `/etc/fonts/conf.d/` directory and simultaneously renaming the file `24-texlive.conf`.

```
root@salix:~# cd /usr/local/texlive/2024/texmf-var/fonts/conf/
root@darkstar:~# ls
conf  texlive-fontconfig.conf
```

```
root@salix: # cp texlive-fontconfig.conf /etc/fonts/conf.d/24-texlive.conf
```

Now you must run the `fc-cache -fv` command:

```
root@darkstar:~# fc-cache -fv
```

If we test the XETEX font configuration now (from our regular user account), it should pass and produce a PDF file:

```
david[~]$ xetex opentype-info.tex
This is XeTeX, Version 3.141592653-2.6-0.999996 (TeX Live 2024)
(preloaded format=xetex)
 restricted \write18 enabled.
entering extended mode
(/usr/local/texlive/2024/texmf-dist/tex/xetex/xetexfontinfo/opentype-info.tex
[1] [2] )
Output written on opentype-info.pdf (2 pages).
Transcript written on opentype-info.log.
```

6 Testing the Installation

All the tests suggested in the TL online guide passed. Some sample tests are:

```
$ tex --version

$ latex sample2e.tex
$ xdvi sample2e.dvi

$ pdflatex sample2e.tex
$ atril sample2e.pdf
```

Note: TL 2024 installs the `xdvi` viewer as part of its default routine.[11] Apparently, Atril requires a plug-in to display DVI files. I received an error message when I tried opening a DVI with Atril.[12] Section 9.2 provides info on changing TeXstudio's configuration so that it uses `xdvi` instead of Atril.

7 Deleting the TL ISO Image

Once you have verified that the base TL system is working properly, to save disk space you will probably want to delete the ISO file:

```
$ rm -Rf "TeX Live 2024"
```

8 Accessing the Documentation

With a full TL system, almost every package comes with documentation that is accessible via `texdoc`.[13] Just type:

```
    $ texdoc <package-name>
```

where `<package-name>` is the name of the package, e.g., `hyperref` or `tcolorbox`.

[11] The `xdvi` binary is located in `/usr/local/texlive/2024/bin/x86_64-linux/`.

[12] "Unable to open document. File type TeX DVI document (application/x-dvi) is not supported."

[13] The documentation resides in the `/usr/local/texlive/2024/texmf-dist/doc` directory and occupies 3.6 GB of disk space.

9 Additional Goodies to Install

You might consider installing these programs / packages to have a more pleasant experience using TEX and its friends.

9.1 Editors

TEXstudio A LATEX editor with a friendly, easy-to-use GUI; it is a fork of Texmaker. The version available in the Salix repos is 4.0.2. The SlackBuild is for ver. 4.8.4 (*current at the time this guide was written*).

TEXworks Another TEX editor with a user-friendly GUI, modeled on Dick Koch's TeXShop for Mac OS X. The version available in the Salix repos is 0.6.7. The SlackBuild is for ver. 0.6.9 (*current at the time this guide was written*).

Note: TEXstudio and TEXworks are also released as a Flatpak and an AppImage; however, I have not tried using these package formats on my Salix system.

Geany Although it lacks some of the bells and whistles of TEXstudio, it is quite capable and has a LATEX plugin available. An additional advantage is that Geany has no TL dependencies in Salix.

9.1.1 Why Install SlackBuilds instead of Using the Salix Repository?

I decided to use the SlackBuilds for TEXstudio and TEXworks because the packaged versions in the Salix repository include an older version of TL as a dependency.

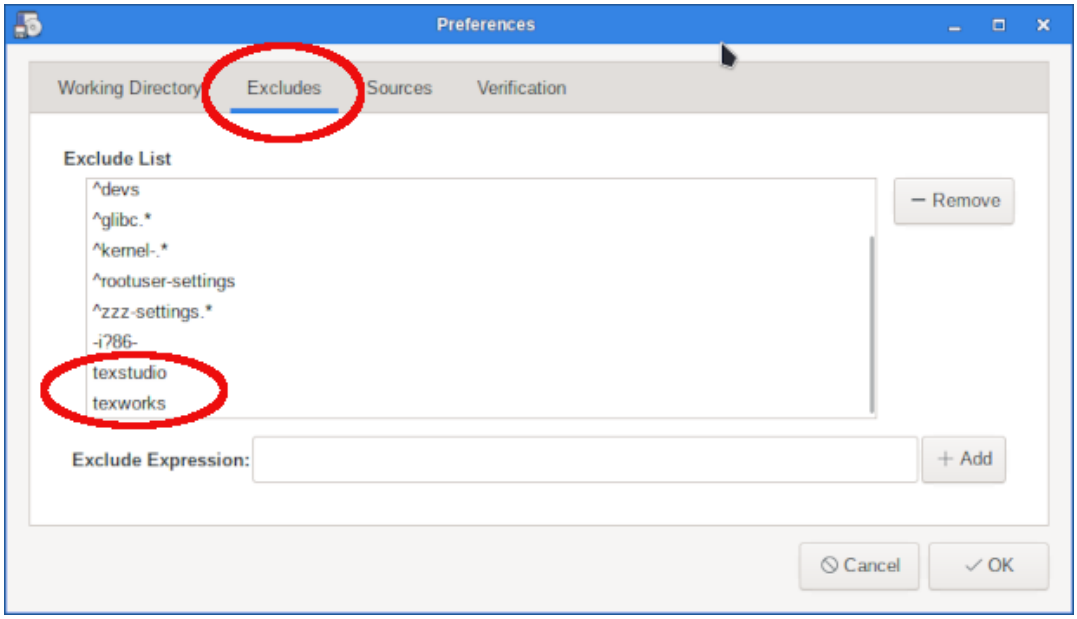
Although I am fairly new to SlackBuilds, I followed the instructions in the HowTo guide and successfully installed each program without problems. (It helps that neither program has extra dependencies.)

9.1.2 Adding TEXstudio and TEXworks to Gslapt's `Exclude` List

After installing the SlackBuilds, I discovered that Gslapt was wanting to "upgrade" these two newer packages to the older repo version: TEXstudio 4.8.4 → 4.0.2; TEXworks 0.6.9 → 0.6.7.

It is possible to solve this by adding the two packages to the **Exclude** list, from inside Gslapt.

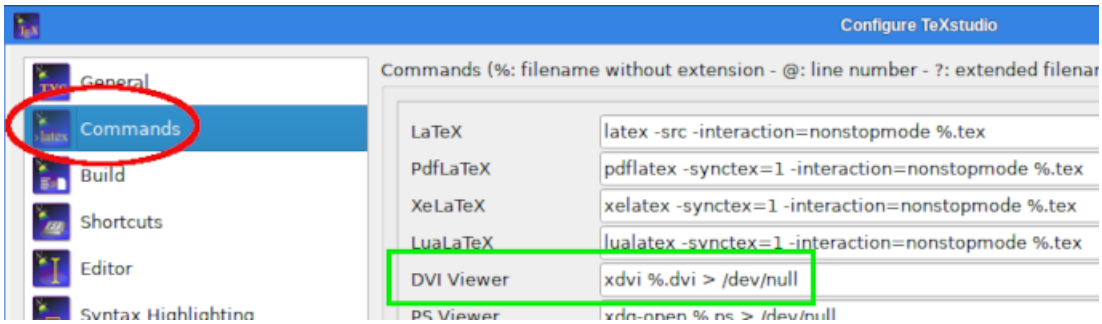
- From Gslapt's `Edit` menu > choose `Preferences` > then click on the `Excludes` tab to bring it forward.
- Type the name of each program in the `Exclude Expression` box and click on the `Add` button.



9.2 Configuring TEXstudio to Display DVI Files

In order to get TEXstudio to display DVIs with the `xdvi` viewer, you need to make a change in its Configuration options:

`Options` > `Configure TeXstudio` > `Commands` tab > `Dvi Viewer: xdvi %.dvi`



(Odds are that you will rarely need to view DVI files, as most people today use pdflatex as the compiler, which produces a PDF document. TEXstudio is configured to use the pdflatex compiler by default.)

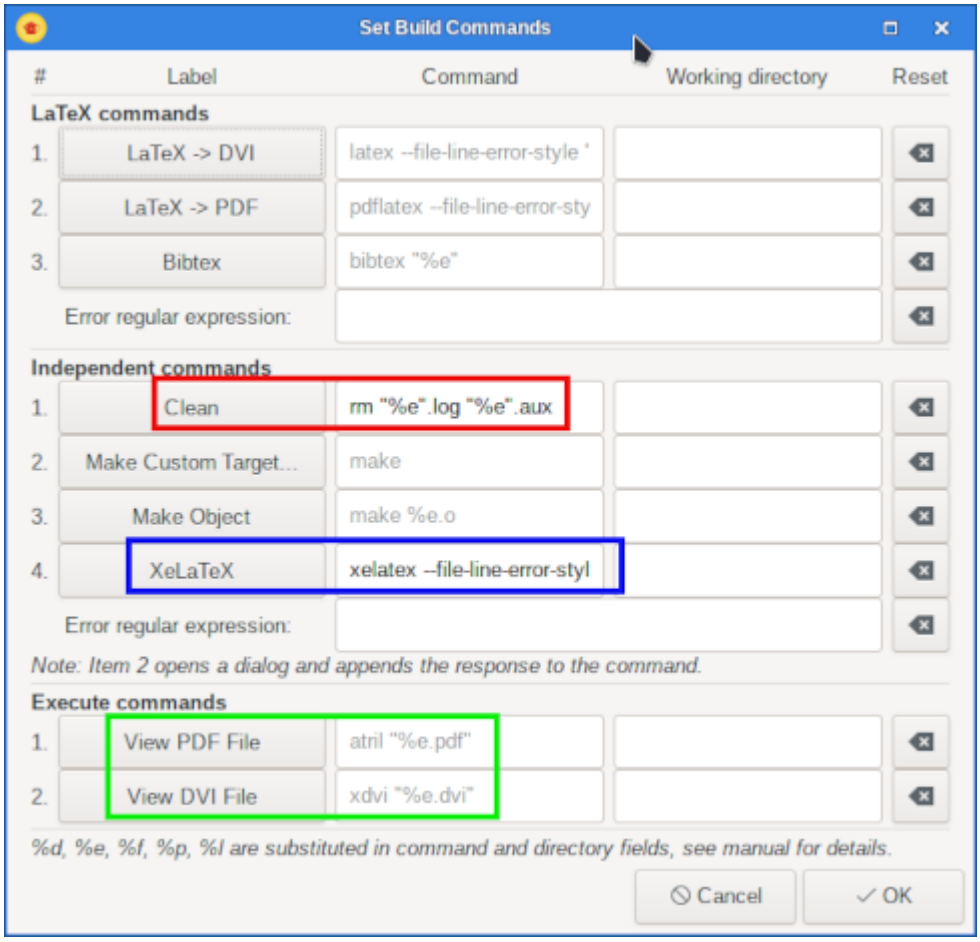
9.3 Configuring Geany for LATEX Use

Thanks to some online tips I found, it is possible to further customize Geany for use with LATEX. The screenshot below illustrates where such custom commands are added.

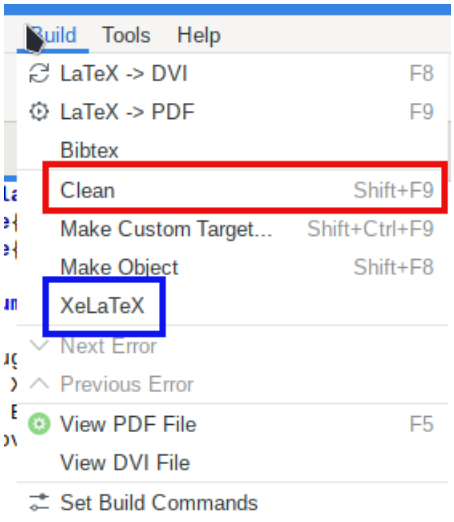
```
LaTeX > DVI
LaTeX > PDF
Bibtex

Clean   rm "%e".log "%e".aux
Make Custom Target
Make Object
XeLaTeX xelatex --file-line-error-style "%f"
```

Note: In order to use Geany's Preview feature, you will first have to install the `xterm` package.



The resulting menu options will look like this:



I hope this compilation will be helpful for anyone considering independently installing TL 2024 on their Salix system.

Good Luck and Happy TEXing!