

Debian: Offline Package Installation

If you need to add services or packages to a VM that has no internet access to pull down packages, here's an offline method.

NOTE: These steps were performed and vetted when updating a template that was already deployed inside an isolated network (without internet access). See this page: [Debian VM Template](#)

Needed Elements

For this method, we need a few pieces to get the job done.

- Sudo access on the target VM (the one without internet access).
- Access to a surrogate VM that has internet visibility

NOTE: In order to correctly retrieve packages that an offline VM requires, the surrogate VM needs to be the same Distro and very close to the same OS version as the target VM. This ensures that you fetch the correct secondary dependencies (of the target package) that are needed (by the same Distro/version).

- The ability to ferry a set of package files across the network boundary to the isolated, target VM.

Process Steps

For demonstrations purposes, we will attempt to perform an offline install of SubVersion on a Debian 13.4 VM, using a surrogate Debian 13.5 VM with internet access.

Surrogate VM

Log into the surrogate VM.

From an SSH session, create a download folder where you will download packages, and navigate to it.

```
mkdir -p ~/Desktop/temppkg/subversion
cd ~/Desktop/temppkg/subversion
```

Once inside the download folder, we will download the desired package and secondary dependencies.\

Apt-RDepends

NOTE: Since any package that you want to install, has dependencies of its own, we will be downloading these secondary dependencies, as well.

NOTE: Downloading dependency sets, requires apt-rdepends, which is not part of a normal OS build.

This next step will install it.

If you skip it, you will get an error message, like this:

Command 'apt-rdepends' not found, but can be installed with: `sudo apt install apt-rdepends`

Before downloading the offline dependency set, you will need to ensure that apt-rdepends is installed on the surrogate VM.

Install apt-rdepends, with this:

```
sudo apt update
sudo apt install -y apt-rdepends
```

With apt-rdepends installed, we can safely download the target package and its secondary dependencies.

Package Download

The following command will download the subversion package and all of its dependencies needed for a Debian 13.4 OS.

```
apt-get download $(apt-rdepends subversion | grep -v "^ ")
```

NOTE: You can change the package name, in the above command, to get the dependency set for any package.

Here's what the downloaded dependency set (for subversion) looks like, today:

```

glwhite@gitlab01:~/Desktop/temppkg/subversion$ ls -l
total 11304
-rw-r--r-- 1 glwhite glwhite 49432 Mar 15 2025 gcc-14-base_14.2.0-19_amd64.deb
-rw-r--r-- 1 glwhite glwhite 104232 Sep 7 2024 libaprilt64_1.7.5-1_amd64.deb
-rw-r--r-- 1 glwhite glwhite 89444 Jan 16 2025 libaprutilt64_1.6.3-3+b1_amd64.deb
-rw-r--r-- 1 glwhite glwhite 2847424 Mar 3 02:41 libc6_2.41-12+deb13u2_amd64.deb
-rw-r--r-- 1 glwhite glwhite 25044 Mar 9 19:04 libcom-err2_1.47.2-3+b10_amd64.deb
-rw-r--r-- 1 glwhite glwhite 90072 Jan 16 2025 libcrypt1_1%3a4.4.38-1_amd64.deb
-rw-r--r-- 1 glwhite glwhite 703676 Oct 15 2024 libdb5.3t64_5.3.28+dfsg2-9_amd64.deb
-rw-r--r-- 1 glwhite glwhite 108204 Jul 17 2025 libexpat1_2.7.1-2_amd64.deb
-rw-r--r-- 1 glwhite glwhite 72772 Mar 15 2025 libgcc-s1_14.2.0-19_amd64.deb
-rw-r--r-- 1 glwhite glwhite 75176 Aug 7 2024 libgdbm6t64_1.24-2_amd64.deb
-rw-r--r-- 1 glwhite glwhite 138232 Mar 13 2025 libgssapi-krb5-2_1.21.3-5_amd64.deb
-rw-r--r-- 1 glwhite glwhite 81540 Mar 13 2025 libk5crypto3_1.21.3-5_amd64.deb
-rw-r--r-- 1 glwhite glwhite 9456 Apr 13 2025 libkeyutils1_1.6.3-6_amd64.deb
-rw-r--r-- 1 glwhite glwhite 326308 Mar 13 2025 libkrb5-3_1.21.3-5_amd64.deb
-rw-r--r-- 1 glwhite glwhite 33036 Mar 13 2025 libkrb5support0_1.21.3-5_amd64.deb
-rw-r--r-- 1 glwhite glwhite 63900 Mar 7 2025 liblz4-1_1.10.0-4_amd64.deb
-rw-r--r-- 1 glwhite glwhite 57512 Feb 28 2025 libsasl2-2_2.1.28+dfsg1-9_amd64.deb
-rw-r--r-- 1 glwhite glwhite 19768 Feb 28 2025 libsasl2-modules-db_2.1.28+dfsg1-9_amd64.deb
-rw-r--r-- 1 glwhite glwhite 52992 Oct 29 2024 libserf-1-1_1.3.10-3+b1_amd64.deb
-rw-r--r-- 1 glwhite glwhite 914268 Mar 1 05:28 libsqlite3-0_3.46.1-7+deb13u1_amd64.deb
-rw-r--r-- 1 glwhite glwhite 2445272 Apr 3 11:53 libssl3t64_3.5.5-1~deb13u2_amd64.deb
-rw-r--r-- 1 glwhite glwhite 1422564 Apr 6 2025 libsvn1_1.14.5-3_amd64.deb
-rw-r--r-- 1 glwhite glwhite 60960 Oct 29 2024 libutf8proc3_2.9.0-1+b2_amd64.deb
-rw-r--r-- 1 glwhite glwhite 37612 May 9 2025 libuuid1_2.41-5_amd64.deb
-rw-r--r-- 1 glwhite glwhite 27096 Jan 4 2025 libxxhash0_0.8.3-2_amd64.deb
-rw-r--r-- 1 glwhite glwhite 303836 Mar 13 2025 libzstd1_1.5.7+dfsg-1_amd64.deb
-rw-r--r-- 1 glwhite glwhite 310940 Apr 3 11:53 openssl-provider-legacy_3.5.5-1~deb13u2_amd64.deb
-rw-r--r-- 1 glwhite glwhite 961896 Apr 6 2025 subversion_1.14.5-3_amd64.deb
-rw-r--r-- 1 glwhite glwhite 88892 Oct 29 2024 zlib1g_1%3a1.3.dfsg+really1.3.1-1+b1_amd64.deb
glwhite@gitlab01:~/Desktop/temppkg/subversion$ █

```

Target VM

Next, you need to move the dependency set over to the target VM, by whatever means you have. For me, I copied them out of the surrogate, via SCP.

Then, they were ferried across the network boundary as committed changes to an SVN repository (visible on both sides).

Next, log into the target VM, and create a download folder, where you will push the dependency set.

```

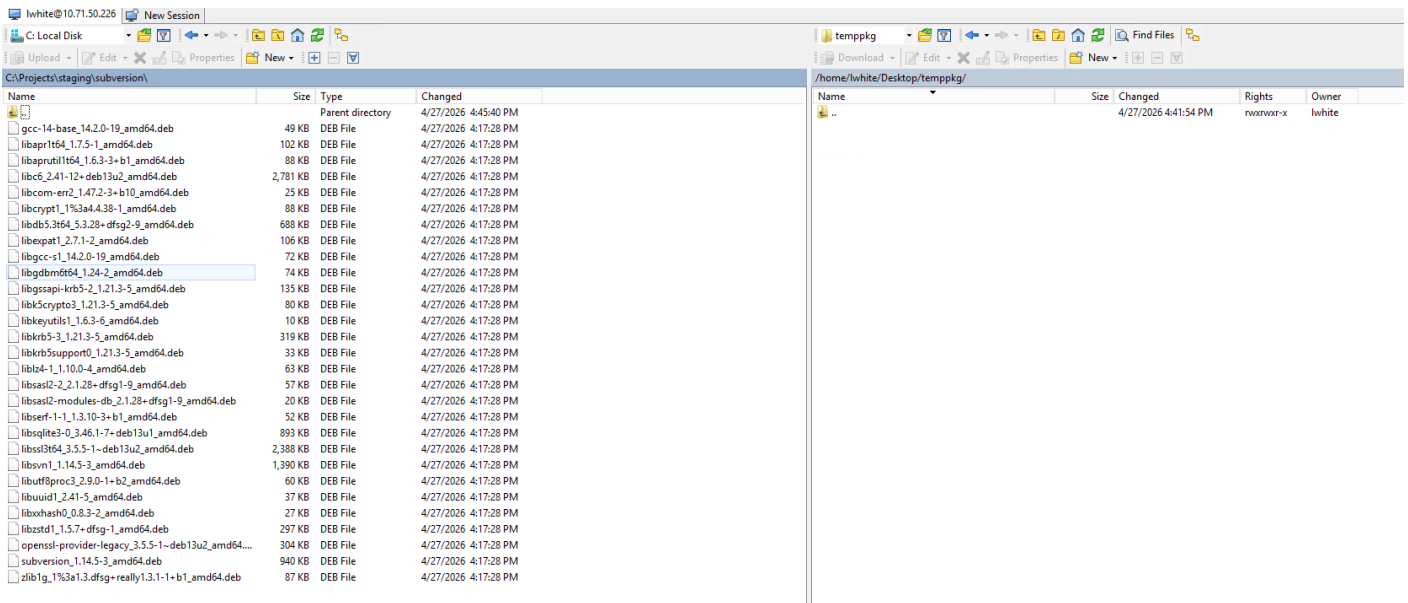
login as: lwhite
lwhite@10.71.50.226's password:
Linux localhost 6.12.74+deb13+1-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.12.74-2 (2026-03-08) x86_64

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
lwhite@localhost:~$ cd ~/Desktop/
lwhite@localhost:~/Desktop$ ls -l
total 4
drwxrwxr-x 4 lwhite lwhite 4096 Apr 24 19:09 dotnet-test
lwhite@localhost:~/Desktop$ mkdir ./temppkg
lwhite@localhost:~/Desktop$ cd temppkg/
lwhite@localhost:~/Desktop/temppkg$ █

```

Then, another SCP push to a temporary folder on the target VM.



Once the packages are on the target VM, open an SSH session to it, and navigate to the download folder.

Confirm the dependency set is there:

```

lwhite@localhost:~/Desktop$ mkdir ./tempkg
lwhite@localhost:~/Desktop$ cd tempkg/
lwhite@localhost:~/Desktop/tempkg$ ls -l
total 11304
-rw-r--r-- 1 lwhite lwhite 49432 Apr 27 16:17 gcc-14-base_14.2.0-19_amd64.deb
-rw-r--r-- 1 lwhite lwhite 104232 Apr 27 16:17 libapr1t64_1.7.5-1_amd64.deb
-rw-r--r-- 1 lwhite lwhite 89444 Apr 27 16:17 libaprutilt64_1.6.3-3+b1_amd64.deb
-rw-r--r-- 1 lwhite lwhite 2847424 Apr 27 16:17 libc6_2.41-12+deb13u2_amd64.deb
-rw-r--r-- 1 lwhite lwhite 25044 Apr 27 16:17 libcom-err2_1.47.2-3+b10_amd64.deb
-rw-r--r-- 1 lwhite lwhite 90072 Apr 27 16:17 libcrypt1_1:4.4.38-1_amd64.deb
-rw-r--r-- 1 lwhite lwhite 703676 Apr 27 16:17 libdb5.3t64_5.3.28+dfsg2-9_amd64.deb
-rw-r--r-- 1 lwhite lwhite 108204 Apr 27 16:17 libexpat1_2.7.1-2_amd64.deb
-rw-r--r-- 1 lwhite lwhite 72772 Apr 27 16:17 libgcc-s1_14.2.0-19_amd64.deb
-rw-r--r-- 1 lwhite lwhite 75176 Apr 27 16:17 libgdbm6t64_1.24-2_amd64.deb
-rw-r--r-- 1 lwhite lwhite 138232 Apr 27 16:17 libgssapi-krb5-2_1.21.3-5_amd64.deb
-rw-r--r-- 1 lwhite lwhite 81540 Apr 27 16:17 libk5crypto3_1.21.3-5_amd64.deb
-rw-r--r-- 1 lwhite lwhite 9456 Apr 27 16:17 libkeyutils1_1.6.3-6_amd64.deb
-rw-r--r-- 1 lwhite lwhite 326308 Apr 27 16:17 libkrb5-3_1.21.3-5_amd64.deb
-rw-r--r-- 1 lwhite lwhite 33036 Apr 27 16:17 libkrb5support0_1.21.3-5_amd64.deb
-rw-r--r-- 1 lwhite lwhite 63900 Apr 27 16:17 liblz4-1_1.10.0-4_amd64.deb
-rw-r--r-- 1 lwhite lwhite 57512 Apr 27 16:17 libsasl2-2_2.1.28+dfsg1-9_amd64.deb
-rw-r--r-- 1 lwhite lwhite 19768 Apr 27 16:17 libsasl2-modules-db_2.1.28+dfsg1-9_amd64.deb
-rw-r--r-- 1 lwhite lwhite 52992 Apr 27 16:17 libserf-1-1_1.3.10-3+b1_amd64.deb
-rw-r--r-- 1 lwhite lwhite 914268 Apr 27 16:17 libsqlite3-0_3.46.1-7+deb13u1_amd64.deb
-rw-r--r-- 1 lwhite lwhite 2445272 Apr 27 16:17 libssl3t64_3.5.5-1~deb13u2_amd64.deb
-rw-r--r-- 1 lwhite lwhite 1422564 Apr 27 16:17 libsvn1_1.14.5-3_amd64.deb
-rw-r--r-- 1 lwhite lwhite 60960 Apr 27 16:17 libutf8proc3_2.9.0-1+b2_amd64.deb
-rw-r--r-- 1 lwhite lwhite 37612 Apr 27 16:17 libuuid1_2.41-5_amd64.deb
-rw-r--r-- 1 lwhite lwhite 27096 Apr 27 16:17 libxxhash0_0.8.3-2_amd64.deb
-rw-r--r-- 1 lwhite lwhite 303836 Apr 27 16:17 libzstd1_1.5.7+dfsg-1_amd64.deb
-rw-r--r-- 1 lwhite lwhite 310940 Apr 27 16:17 openssl-provider-legacy_3.5.5-1~deb13u2_amd64.deb
-rw-r--r-- 1 lwhite lwhite 961896 Apr 27 16:17 subversion_1.14.5-3_amd64.deb
-rw-r--r-- 1 lwhite lwhite 88892 Apr 27 16:17 zlib1g_1:1.3.dfsg+really1.3.1-1+b1_amd64.deb
lwhite@localhost:~/Desktop/tempkg$

```

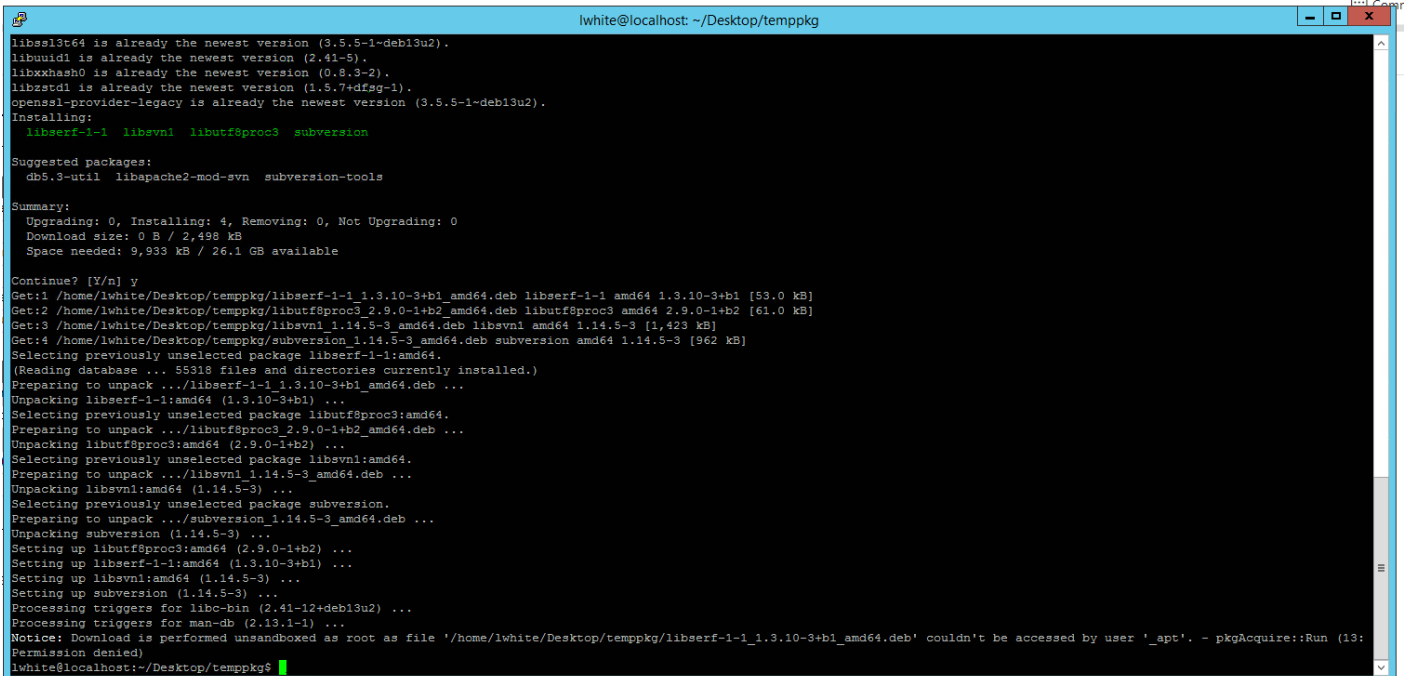
Warning: To prevent an apt elevation warning, read ahead on how to set permissions on the dependency folder, first.

From inside the folder with the dependencies, run this, to install all of them:

```
sudo apt install ./*.deb
```

The installation ran for a good bit, and finished.

But, it did have, what appears to be, an error.



```
lwhite@localhost: ~/Desktop/temppkg
libse13t64 is already the newest version (3.5.5-1-deb13u2).
libuid1 is already the newest version (2.41-5).
libxxhash0 is already the newest version (0.8.3-2).
libzstd1 is already the newest version (1.5.7+dfsg-1).
openssl-provider-legacy is already the newest version (3.5.5-1-deb13u2).
Installing:
 libserf-1-1 libsvn1 libutf8proc3 subversion
Suggested packages:
 db5.3-util libapache2-mod-svn subversion-tools
Summary:
 Upgrading: 0, Installing: 4, Removing: 0, Not Upgrading: 0
 Download size: 0 B / 2,498 kB
 Space needed: 9,933 kB / 26.1 GB available
Continue? [Y/n] y
Get:1 /home/lwhite/Desktop/temppkg/libserf-1-1_1.3.10-3+b1_amd64.deb libserf-1-1 amd64 1.3.10-3+b1 [53.0 kB]
Get:2 /home/lwhite/Desktop/temppkg/libutf8proc3_2.9.0-1+b2_amd64.deb libutf8proc3 amd64 2.9.0-1+b2 [61.0 kB]
Get:3 /home/lwhite/Desktop/temppkg/libsvn1_1.14.5-3_amd64.deb libsvn1 amd64 1.14.5-3 [1,423 kB]
Get:4 /home/lwhite/Desktop/temppkg/subversion_1.14.5-3_amd64.deb subversion amd64 1.14.5-3 [962 kB]
Selecting previously unselected package libserf-1-1:amd64.
(Reading database ... 55318 files and directories currently installed.)
Preparing to unpack ../libserf-1-1_1.3.10-3+b1_amd64.deb ...
Unpacking libserf-1-1:amd64 (1.3.10-3+b1) ...
Selecting previously unselected package libutf8proc3:amd64.
Preparing to unpack ../libutf8proc3_2.9.0-1+b2_amd64.deb ...
Unpacking libutf8proc3:amd64 (2.9.0-1+b2) ...
Selecting previously unselected package libsvn1:amd64.
Preparing to unpack ../libsvn1_1.14.5-3_amd64.deb ...
Unpacking libsvn1:amd64 (1.14.5-3) ...
Selecting previously unselected package subversion.
Preparing to unpack ../subversion_1.14.5-3_amd64.deb ...
Unpacking subversion (1.14.5-3) ...
Setting up libutf8proc3:amd64 (2.9.0-1+b2) ...
Setting up libserf-1-1:amd64 (1.3.10-3+b1) ...
Setting up libsvn1:amd64 (1.14.5-3) ...
Setting up subversion (1.14.5-3) ...
Processing triggers for libc-bin (2.41-12+deb13u2) ...
Processing triggers for man-db (2.13.1-1) ...
Notice: Download is performed unsandboxed as root as file '/home/lwhite/Desktop/temppkg/libserf-1-1_1.3.10-3+b1_amd64.deb' couldn't be accessed by user 'apt'. - pkgAcquire::Run (13:
Permission denied)
lwhite@localhost:~/Desktop/temppkg$
```

At the tail of the installation scroll, you may see an `_apt` notice that looks like an error. See above. That final notice is not a failure.

It just means APT could not read the local `.deb` files as the low-privilege `_apt` user, so it read them as root instead.

That notice can be prevented by making the folder/files world-readable before installing.

Run this to make the downloaded packages and folder world-readable:

```
chmod -R a+rX ~/Desktop/temppkg
```

Validation

Since we were installing SubVersion, we can confirm its installation, with this:

```
svn --version
```

```
lwhite@localhost:~/Desktop/temp pkg$ svn --version
svn, version 1.14.5 (r1922182)
  compiled Apr  6 2025, 16:59:00 on x86_64-pc-linux-gnu

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see the NOTICE file for more information.
Subversion is open source software, see http://subversion.apache.org/

The following repository access (RA) modules are available:

* ra_svn : Module for accessing a repository using the svn network protocol.
  - with Cyrus SASL authentication
  - handles 'svn' scheme
* ra_local : Module for accessing a repository on local disk.
  - handles 'file' scheme
* ra_serf : Module for accessing a repository via WebDAV protocol using serf.
  - using serf 1.3.10 (compiled with 1.3.10)
  - handles 'http' scheme
  - handles 'https' scheme

The following authentication credential caches are available:

* Plaintext cache in /home/lwhite/.subversion
* Gnome Keyring
* GPG-Agent
* KWallet (KDE)

lwhite@localhost:~/Desktop/temp pkg$
```

Cleanup

Once installed, you can remove the packages and download folder, with this:

```
cd ~/Desktop
rm -rf ~/Desktop/temp pkg
```

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