

Install Dependencies

Install these dependencies with `apt-get` or `yum/rpm` as shown below or similar with other package managers.

`apt-get`

```
$ sudo apt-get update && sudo apt-get install -y \  
  build-essential \  
  libssl-dev \  
  uuid-dev \  
  libgpgme11-dev \  
  squashfs-tools \  
  libseccomp-dev \  
  pkg-config
```

`yum`

```
$ sudo yum update -y && \  
  sudo yum groupinstall -y 'Development Tools' && \  
  sudo yum install -y \  
  openssl-devel \  
  libuuid-devel \  
  libseccomp-devel \  
  wget \  
  squashfs-tools
```

Install Go

This is one of several ways to [install and configure Go](#).

Visit the [Go download page](#) and pick a package archive to download. Copy the link address and download with `wget`. Then extract the archive to `/usr/local` (or use other instructions on go installation page).

```
$ export VERSION=1.11 OS=linux ARCH=amd64 && \  
  wget https://dl.google.com/go/go$VERSION.$OS-$ARCH.tar.gz && \  
  sudo tar -C /usr/local -xzf go$VERSION.$OS-$ARCH.tar.gz && \  
  rm go$VERSION.$OS-$ARCH.tar.gz
```

Then, set up your environment for Go.

```
$ echo 'export GOPATH=${HOME}/go' >> ~/.bashrc && \  
  echo 'export PATH=/usr/local/go/bin:${PATH}:${GOPATH}/bin' >> ~/.bashrc && \  
  source ~/.bashrc
```

If you are installing Singularity v3.0.0 you will also need to install `dep` for dependency resolution.

```
$ go get -u github.com/golang/dep/cmd/dep
```

Install from source

The following commands will install Singularity from the [GitHub repo](#) to `/usr/local`. This method will work for $\geq v3.0.0$. To install an older tagged release see [older versions of the docs](#).

When installing from source, you can decide to install from either a **tag**, a **release branch**, or from the **master branch**.

- **tag:** GitHub tags form the basis for releases, so installing from a tag is the same as downloading and installing a [specific release](#). Tags are expected to be relatively stable and well-tested.
- **release branch:** A release branch represents the latest version of a minor release with all the newest bug fixes and enhancements (even those that have not yet made it into a point release). For instance, to install v3.0 with the latest bug fixes and enhancements checkout `release-3.0`. Release branches may be less stable than code in a tagged point release.
- **master branch:** The `master` branch contains the latest, bleeding edge version of Singularity. This is the default branch when you clone the source code, so you don't have to check out any new branches to install it. The `master` branch changes quickly and may be unstable.

Download Singularity repo (and optionally check out a tag or branch)

To ensure that the Singularity source code is downloaded to the appropriate directory use these commands.

```
$ go get -d github.com/sylabs/singularity
```

Go will complain that there are no Go files, but it will still download the Singularity source code to the appropriate directory within the `$GOPATH`.

Now checkout the version of Singularity you want to install.

```
$ export VERSION=v3.0.3 # or another tag or branch if you like && \  
  cd $GOPATH/src/github.com/sylabs/singularity && \  
  git fetch && \  
  git checkout $VERSION # omit this command to install the latest bleeding edge code from master
```

Download and install Singularity from a release

You can also install Singularity from one of our releases. For this, you can simply download a release from <<https://github.com/sylabs/singularity/releases>>`. After that you can just run the following commands to proceed with the installation.

Note

Make sure to update the release version before running the following commands.

```
$ export VERSION=3.0.3 && # adjust this as necessary \  
  mkdir -p $GOPATH/src/github.com/sylabs && \  
  cd $GOPATH/src/github.com/sylabs && \  
  wget https://github.com/sylabs/singularity/releases/download/v${VERSION}/singularity-  
${VERSION}.tar.gz && \  
  tar -xzf singularity-${VERSION}.tar.gz && \  
  cd ./singularity && \  
  ./mconfig
```

Compile Singularity

Singularity uses a custom build system called `makeit`. `mconfig` is called to generate a `Makefile` and then `make` is used to compile and install.

```
$ ./mconfig && \  
  make -C ./builddir && \  
  sudo make -C ./builddir install
```

By default Singularity will be installed in the `/usr/local` directory hierarchy. You can specify a custom directory with the `--prefix` option, to `mconfig` like so:

```
$ ./mconfig --prefix=/opt/singularity
```

This option can be useful if you want to install multiple versions of Singularity, install a personal version of Singularity on a shared system, or if you want to remove Singularity easily after installing it.

For a full list of `mconfig` options, run `mconfig --help`. Here are some of the most common options that you may need to use when building Singularity from source.

- `--sysconfdir`: Install read-only config files in `sysconfdir`. This option is important if you need the `singularity.conf` file or other configuration files in a custom location.
- `--localstatedir`: Set the state directory where containers are mounted. This is a particularly important option for administrators installing Singularity on a shared file system. The `--localstatedir` should be set to a directory that is present on each individual node.
- `-b`: Build Singularity in a given directory. By default this is `./builddir`.

Source bash completion file

To enjoy bash completion with Singularity commands and options, source the bash completion file like so. Add this command to your `~/.bashrc` file so that bash completion continues to work in new shells. (Obviously adjust this path if you installed the bash completion file in a different location.)

```
$ . /usr/local/etc/bash_completion.d/singularity
```

Build and install an RPM

Building and installing a Singularity RPM allows the installation be more easily managed, upgraded and removed. In Singularity \geq v3.0.1 you can build an RPM directly from the [release tarball](#).

Note

Be sure to download the correct asset from the [GitHub releases page](#). It should be named *singularity-<version>.tar.gz*.

After installing the [dependencies](#) and installing [Go](#) as detailed above, you are ready download the tarball and build and install the RPM.

```
$ export VERSION=3.0.3 && # adjust this as necessary \  
  wget https://github.com/sylabs/singularity/releases/download/v${VERSION}/singularity-  
${VERSION}.tar.gz && \  
  rpmbuild -tb singularity-${VERSION}.tar.gz && \  
  sudo rpm -ivh ~/rpmbuild/RPMS/x86_64/singularity-${VERSION}-1.el7.x86_64.rpm && \  
  rm -rf ~/rpmbuild singularity-${VERSION}*.tar.gz
```

Options to `mconfig` can be passed using the familiar syntax to `rpmbuild`. For example, if you want to force the local state directory to `/mnt` (instead of the default `/var`) you can do the following:

```
rpmbuild -tb --define='_localstatedir /mnt' singularity-${VERSION}.tar.gz
```