

# Installation details for SIMFIT and SIMDEM

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## 1 Introduction

Note the following facts.

- The SIMFIT package is designed for end-users who just want to do statistics, simulation, curve-fitting, and graphics. It is completely self-contained and runs out of the box, requiring no programming skills.
- The SIMDEM package is intended for programmers who want to use the SIMFIT GUI to create true Windows programs instead of DOS-type console applications. It comes with a stand-alone driver program and documentation illustrating how to create messages, menus, tables, and graphics
- SIMFIT and SIMDEM are Open Source and free of charge to all users.
- The 32-bit versions of SIMFIT and SIMDEM will run on either 32-bit or 64-bit operating systems.  
The 64-bit versions will only run on 64-bit operating systems.
- SIMFIT and SIMDEM do not use the registry: all configuration relies on the same set of ASCII text files (\*.cfg) and, if any such configuration file is deleted, SIMFIT or SIMDEM will create a default copy.
- Windows users who want to make the best use of SIMFIT graphics should save SVG or PNG files directly or, for better quality and greater versatility, archive EPS files. These can be transformed into PNG or other types of graphics files for importing into documents as required, using the SIMFIT interface to Ghostscript.

## 2 Installing the Simfit package

There is only one version of SIMFIT : the Academic version which is free-standing and requires no other libraries. However, there are programs `change_simfit_version.exe` and `x64_change_simfit_version.exe` which allow SIMFIT to use the NAG library DLLs if you have an operational copy of the NAG library DLLs, from Mark 20 onwards.

At present, the 32-bit and 64-bit versions of SIMFIT are distributed separately.

The 32-bit SIMFIT driver program is called `w_simfit.exe`.

The 64-bit SIMFIT driver program is called `x64_simfit.exe`.

- (a) The SIMFIT setup programs will install SIMFIT in MS Windows, and also in Linux where Wine is installed, or in Mac with Crossover.

You can uninstall previous versions of SIMFIT or just allow the installation program to overwrite the old files. However, if you decide to over-write, make sure that the existing SIMFIT files do not have the read-only attribute, otherwise you could end up with inconsistent binaries and test files. Existing `*.cfg` files and files you make are never over-written by the installation program.

- (b) Download the setup files from the SIMFIT website:

`https://simfit.org.uk`

The setup files for version N (N = 7, 8, or 9) are either

`simfit_setupN_x_y.exe` ... the complete 32-bit SIMFIT package, or  
`x64_simfit_setupN_x_y.exe` ... the complete 64-bit SIMFIT package.

The subscripts `_x_y` identify the version and release number.

- (c) In Windows, install using `simfit_setup7_x_y.exe` in the 32-bit version, or else `x64_simfit_setupN_x_y.exe` in the 64-bit version, by double-clicking from Windows Disc Explorer and, unless there is some very compelling reason to the contrary, choose to install in the default top-level folder.

The 32-bit installation program will create the default folders:

```
C:\Program Files (x86)\simfit\bin...(binaries)
C:\Program Files (x86)\simfit\doc...(documentation)
C:\Program Files (x86)\simfit\dem...(demonstration data)
```

but the 64-bit installation program will create the default folders:

```
C:\Program Files\simfit\bin...(binaries)
C:\Program Files\simfit\doc...(documentation)
C:\Program Files\simfit\dem...(demonstration data)
```

- (d) Non-default installations. The installation will create sub-folders under your chosen top-level folder, and in your `...\ProgramData\Simfit` folder.

- (e) In Linux, copy `w_simfit.exe` into the Wine C: equivalent, e.g.  
`/home/user-name/.wine/drive_c`  
In new installations you will now create the two files

```
l_simfit.cfg  
w_simfit.cfg
```

If you mistakenly install the Windows configuration it will not run properly in Linux, and you will have to delete these two files and let SIMFIT create a default configuration. As root, run using wine, i.e. `wine w_simfit.exe`, or run from the appropriate Wine or KDE start menu. Further details will be found on the SIMFIT website and in `linux.txt`.

- (f) The SIMFIT package is run from the program manager program, `w_simfit.exe`, or `x64_simfit.exe`, and you do not need to run any other SIMFIT programs.

Make a shortcut from your desktop to the SIMFIT program manager

`C:\Program Files (x86)\simfit\bin\w_simfit.exe` (or else

`C:\Program Files\simfit\bin\x64_simfit.exe`).

Run this shortcut and read any warning messages. Finally, press the [Configure] button, then the [Check] button to correct the paths if necessary, and finally the [Apply] button to complete the configuration.

- (g) If you decide not to use the default folders, that is allowed as long as the installation folder ends like this `...\Simfit`. You can install any binaries you like as auxiliaries, as long as the fully qualified path is provided using the [Configure] option.

- (h) Run `w_simfit.exe` (or `x64_simfit.exe`) at least once from the installation folder with all flags switched on to check for missing or obsolete files.

When a good configuration has been set up, you should switch off the options to check for missing files, etc. to speed up the start up and prevent errors arising from impatient double clicking.

- (i) Where SIMFIT is for group use, the test files `*.tf?` could be made read-only, or refreshed regularly, to prevent accidental editing leading to corrupt test files.

- (j) Print or browse the SIMFIT manual `w_manual.pdf` using a PDF-viewer (e.g. Adobe Acrobat Reader). This can be done from the [Manual] button on the `w_simfit.exe` or `x64_simfit.exe` main page if SIMFIT is configured properly.

- (k) Common errors include inconsistent `.exe` or `.dll` files, failing to configure SIMFIT so that it cannot use an editor, PDF-reader, calculator, Ghostscript, or PS-reader, or not allowing SIMFIT write permission to create configuration and results files.

### 3 Using Simfit with the NAG library DLLs

SIMFIT was originally developed as a front end to use the NAG library on mainframes. Subsequently an alternative free Open Source library was developed to replace the NAG library on the PC using DOS, then Salford Software DBOS, and then Windows.

With the release of the NAG library DLLs for Windows, two programs have been developed so that SIMFIT users can switch at will between using the SIMFIT library or the NAG library for numerical calculations.

If a user has a valid licensed version of the NAG library DLLs available there are some advantages in making the swap. In particular, some of the MKL NAG routines, e.g. those using LaPack and BLAS, will execute faster than the SIMFIT academic ones, and there are a number of additional options available, particularly when using the NAG differential equation solving and optimization routines.

To switch between the academic and NAG libraries the following technique must be used.

1. Make sure that SIMFIT is switched off so that no DLLs are linked in.
2. Use Windows explorer to move into the SIMFIT binary folder which will be something like  
C:\Program Files (x86)\Simfit\bin for the 32-bit version, or  
C:\Program Files\Simfit\bin for the 64-bit version.
3. As administrator execute one of the programs  
change\_simfit\_version.exe for the 32-bit version, or  
x64\_change\_simfit\_version.exe for the 64-bit version.
4. If you try to swap to the NAG version you may encounter one of two problems.
  - The utility may not be able to find the alternative interface DLLs.
  - The NAG version created may not run because it cannot locate the NAG DLLs on the path.
  - The NAG version created may report that there is no valid license.

If this happens then correct the mistake or restore the academic version.

### 4 Installing the Simdem package

This is a subset of the SIMFIT package designed to allow Fortran programmers to use subroutines from either

w\_menus.dll and w\_graphics.dll, or  
x64\_menus.dll and x64\_graphics.dll

to create stand-alone executables that will run in MS Windows, Linux under Wine, or Mac under crossover.

It comes with a help program called `simdem.chm`, source codes for the driver, 70 example programs, and compiled versions of `simdem.exe` and `x64_simdem.exe`.

The 32-bit `SIMDEM` driver program is called `simdem.exe`.

The 64-bit `SIMDEM` driver program is called `x64_simdem.exe`.

There is only one installation file which installs both the 32-bit and 64-bit binaries, but there are several alternative forms as follows.

- (A) Silverfrost FTN95 in 32-bit CDECL mode, and also in 64-bit mode. These are the versions bundled with the FTN95 compiler and can link to either 32-bit CDECL DLLs, or 64-bit DLLs.
- (B) The gFortran 64-bit version. This is for linking to executables made using 64-bit gFortran.
- (C) The NAGfor 32-bit version using the `-compatible` switch (which invokes `STDCALL` mode) and the NAGfor 64-bit version. Both of these use the Silverfrost Clearwin+ interface to the Windows API. These are the versions bundled with the NAG builder.

The default configuration is

```
C:\Program Files\Simdem\bin    ... (binaries)
C:\Program Files\Simdem\f95    ... (free format codes)
C:\Program Files\Simdem\for    ... (fixed format codes)
C:\Program Files\Simdem\doc    ... (txt,html,pdf files)
C:\Program Files\Simdem\dem    ... (demonstration data)
```

The `SIMDEM` run time system depends on the compiler version as follows.

- Silverfrost FTN95

The 32-bit dll is `simdem32.dll` (CDECL) and the 64-bit version is `simdem64.dll`.

- NAGfor

The 32-bit dlls are `w_clearwin.dll`, `w_graphics.dll`, and `w_clearwin.dll` (`STDCALL`) and the 64-bit ones are `x64_clearwin`, `x64_graphics.dll`, and `x64_clearwin.dll`.

- gFortran

The 64-bit dlls are `x64_clearwin.dll`, `x64_graphics.dll`, and `w_menus.dll`.

## 5 Ghostscript and GSview

The best and most versatile vector graphics format for archiving and printing professional quality scientific graphs is PostScript. SIMFIT creates such high quality Encapsulated PostScript files (.eps), but it only displays a low resolution bit-map representation of the graph on screen, using Windows graphics. To get the most out of the additional graphics functionality that SIMFIT provides for PostScript files, it is useful to have facilities for viewing, transforming, incorporating into documents, and printing SIMFIT \*.eps files.

From Version 7.4.1 onwards SIMFIT is installed with the Ghostscript DLLs as local files in the binary folder, so there is no need to install the Ghostscript package any more. Alternatively, if the ghostscript DLL is not present as a local file but is on the path, then it will be used. However, there are three points to note.

1. If the ghostscript package is installed then this will be used if the DLL is not local or on the path.
2. Many free file readers, such as SumatraPDF, will also open PostScript files if ghostscript is installed, and so could be used instead of Gsview as a PostScript reader.
3. Gsview is an excellent PostScript and PDF viewer, and version Gsview 6 onwards is highly recommended as it permits a very wide range of file conversion facilities, e.g., SVG from EPS.

The 32-bit Ghostscript DLL is called `gsdll32.dll`

The 64-bit Ghostscript DLL is called `gsdll64.dll`

The 32-bit Ghostscript package driver is called `gswin32c.exe`

The 64-bit Ghostscript package driver is called `gswin64c.exe`

The GSview driver from Version 6 onwards is called `gsview.exe`

## 6 Scalable Vector Graphics

From Version 7.5.9 onwards SIMFIT and SIMDEM can create SVG files from the [Windows] button displayed on all graphical displays. These are device-independent image files that can be displayed at any magnification with no loss of precision and no pixellation. In addition, from the [SVG] button of the advanced 2D graphics display, graphs can be re-scaled in such a way as to overcome crowding of labels or symbols, which is very valuable for internet graphics as demonstrated at <https://simfit.org.uk/svg.html>.