

# SICStus Prolog Frequently Asked Questions

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# 1 About This Document

This is a compilation of frequently asked question related to SICStus Prolog.

It is maintained by the SICStus Prolog support team. Any questions about this FAQ should be sent to [sicstus-support@sics.se](mailto:sicstus-support@sics.se). Questions about SICStus Prolog should be addressed as follows:

- Bug reports and technical support questions to [sicstus-support@sics.se](mailto:sicstus-support@sics.se).
- Follow-ups to submitted bug reports or technical support questions to [sicstus@sics.se](mailto:sicstus@sics.se).
- Questions regarding licensing, contracts, etc. to [sicstus-request@sics.se](mailto:sicstus-request@sics.se).

This FAQ is *not* intended for questions about the Prolog language in general. There is a specific Prolog FAQ for that, available at

<http://www.selwerd.nl/~dirk-jan/prolog/faq/>

## 2 Introduction

*Question:* What is SICStus Prolog?

Prolog is a simple but powerful programming language developed at the University of Mar-seilles, as a practical tool for programming in logic. From a user's point of view the major attraction of the language is ease of programming. Clear, readable, concise programs can be written quickly with few errors.

SICStus Prolog is owned and maintained by the Swedish Institute of Computer Science. Parts of the system were developed by the project "Industrialization of SICStus Prolog" in collaboration with Ericsson Telecom AB, NobelTech Systems AB, Infologics AB and Televerket.

SICStus Prolog follows the mainstream Prolog tradition in terms of syntax and built-in predicates. As of release 3.8, SICStus Prolog provides two execution modes: the `iso` mode, which is fully compliant with the International Standard ISO/IEC 13211-1 (PROLOG: Part 1—General Core); and the `sicstus` mode, which is largely compatible with e.g. C-Prolog and Quintus Prolog, supports code written in earlier versions of SICStus Prolog.

*Question:* Where can I get more information about SICStus Prolog?

The main source of information about SICStus Prolog is the WWW-site available at

<http://www.sics.se/sicstus/>.

and in particular the User's Manual, Release Notes, and this FAQ list, at

<http://www.sics.se/sicstus/docs/>.

*Question:* Does SICStus run on platform XYZ?

SICStus runs under most UNIX dialects and under Windows 95/98/NT/2000. Release 3.8 is actively being supported on the following platforms:

- Digital Unix 4.x
- Linux Intel
- HP-UX 10.x
- IRIX 6.5
- Solaris 2.6 Sparc/Intel, 7 Sparc
- Windows 95/98/NT/2000
- FreeBSD 3.3
- AIX 4.3
- Rhapsody 5.3 PowerPC

*Question:* What do I need to run SICStus?

- Disk space: a typical binary installation of SICStus takes up around 10 Mb. Fastcode-installations (i.e. SPARC) takes up around 15-20 Mb. To compile SICStus from the sources you need at least 50 Mb.
- Memory usage: At least 8-16 Mb RAM, but more memory is recommended.
- In order to use `library(tcltk)` you need a Tcl/Tk installation on your machine, available from  
<http://www.ajubasolutions.com> (formerly Scriptics)
- In order to use `library(jasper)` you need a JNI compatible Java installation, for example Sun's JDK, available from  
<http://java.sun.com>.
- In order to use `library(bdb)` you need a Berkeley DB version 2 (version 2.7.5 or later), available from  
<http://www.sleepycat.com>

Note that `library(bdb)` does not work with version 3 of Berkeley DB.

*Question:* How can I get SICStus?

SICStus is a commercial product and licensing information can be found on the WWW-site (<http://www.sics.se/sicstus/>). Free evaluation licenses are available.

Upon completed license agreement, you will receive a mail containing download instructions including confidential passwords and encryption keys. Be sure to read the Release Notes before installation.

If you are a university student, your department may have acquired the right to sub-license SICStus to its students. If that is the case, your department should provide to you download instructions and license codes for the relevant distributions. Your professor should know.

*Question:* How do I report a bug or some other problem?

If you think you've discovered a bug or if you have another problem, first read this FAQ list. If it doesn't address your problem, submit a bug report by filling in the form:

<http://www.sics.se/sicstus/bugreport/bugreport.html>.

## 3 Installation problems

Some of the problems in this sections are UNIX (Windows) specific. These are marked *[UNIX]* (*[Windows]*).

### 3.1 Windows Installer Problems

*Question:* *[Windows NT]*

The installer complains that ‘MSIEXEC’ cannot be found.

This happens if the installing user does not have ‘Administrator’ rights. Either install as the user ‘Administrator’ or ensure that the installing user have these rights during installation. If this is unclear, please contact your system administrator.

This problem should not happen on Windows 95, 98 or 2000.

### 3.2 Corrupted binary files

*Question:* *[UNIX]*

gzip says “stdin not in gzip format”.

This means that the input piped to `gzip` has been corrupted in some way. Consider the command line:

```
% cat file.tar.gz.crypt | crypt password | gzip -cd > file.tar
```

There are two common reasons this occurs. Either the `password` is incorrect, whereby `gzip` gets a corrupt `.gz` file as input. Or, the original file `file.tar.gz.crypt` was downloaded incorrectly, typically in ASCII mode instead of binary mode.

### 3.3 Linux C libraries

*Question:* *[UNIX]*

I get the message “.../sp.exe: no such file or directory” when running SICStus, even though `sp.exe` is there. What’s wrong?

This error message appears when SICStus has been compiled using a different version of `libc.so` than your machine has installed. The message “no such file or directory” does not refer to `sp.exe` but to the particular `libc.so` version that SICStus expects.

SICStus is currently available as binary distributions for `libc.so.6`, a.k.a. `glibc`, versions 2.0 and 2.1. Make sure to download the correct version.

### 3.4 Encryption tools

*Question:* *[UNIX]*  
 There is no “crypt” program on my Linux machine. How do I unpack the SICStus distributions?

The `crypt` program is not included in Linux-distributions since the code in it is not free. A replacement can be downloaded from

<ftp://ftp.sics.se/archive/sicstus3/aux/crypt.tar.gz>

Download it, unpack it and follow the instructions in `README`.

### 3.5 Configure options

*Question:* *[UNIX]*  
 I’ve changed the arguments to `configure`, but nothing happens. Why?

The `configure` script maintains a cache-file called `config.cache`. This file has to be removed between configure-runs if you’ve changed the arguments. Alternatively, you can specify `--cache-file=/dev/null`, causing configure to avoid creating a cache-file entirely.

*Question:* *[UNIX]*  
 The configure script seems to ignore some of my options. Why?

Make sure that there is no site-wide configuration file (`config.site`). If configure finds one, it will print a message similar to:

```
loading site script /usr/local/etc/config.site
creating cache ./config.cache
checking SICStus version... 3.8.5
[...]
```

In this case, configure has found a `config.site` in `/usr/local/etc`.

The solution is to either remove the file or to set the environment variable `CONFIG_SITE` to an empty file of your choice. For example, assuming `csh`:

```
% setenv CONFIG_SITE ./config.site
% echo "# empty config.site" > ./config.site
```

### 3.6 Password problems

*Question:* *[Windows]*  
 When asked for the installation password, I typed it but it doesn’t work. Why?

There are three pieces of information that you must not mix up.

- The password to the FTP/HTTP site containing the SICStus distributions.
- The password required by the installation program.
- Your license code, which comes with a site name and an expiration date.

### 3.7 Problems getting started

*Question:* I get the message “Failed to locate bootfile”. What’s wrong?

The message “Failed to locate bootfile” means that SICStus cannot find either `spds.sav` or `sprt.sav`, depending on whether you are executing a Development System or a Runtime System. If you are running a Runtime System, you may want to read the chapter “Runtime Systems” in the User’s Manual. If you want to execute Runtime Systems on machines which do not have SICStus installed (a.k.a. target machines), read the sections “Runtime Systems on Target Machines” and the documentation the `SP_PATH` variable in the Release Notes and User’s Manual.

If you get this message running a Development System, your installation is probably inconsistent. Reinstall SICStus and try again.

*Question:* `^D` doesn’t seem to bring me back a level down after `break`. What’s wrong?

The manual assumes that `^D` is the EOF character. Under Windows, however, it’s `^Z`. In most contexts, the term `end_of_file` terminated by a full stop (`.`) can be typed instead of the EOF character.

## 4 Runtime problems

### 4.1 Memory allocation problems

*Question:* I get the message “Memory allocation failed”

A generic limitation of SICStus Prolog is that it cannot use more than 256 Mb of virtual memory on 32-bit architectures. This is an artifact of the tagged pointer scheme that we use. We have plans for replacing the tagging scheme, but it’s a long term project.

Under Linux on x86, the limit is 128 Mb due to the fact that Linux `sbrk()` returns memory starting at `0x08000000`. So with a better Linux `sbrk()`, the limit would be 256 Mb there too. An experimental workaround for Linux is available from [sicstus-support@sics](mailto:sicstus-support@sics).



## 5 Generic Prolog Programming

*Question:* How can I split a module into several source code files?

You need a main file for the module, e.g. `main.pl` and several subfiles, e.g. `sub1.pl`, `sub2.pl`, ... Lay out the main file as follows:

```
:- module(ModuleName, ExportList).

... clauses/directives ...

:- ensure_loaded(sub1).

.. clauses/directives ...

:- ensure_loaded(sub2).
```

The subfiles can contain any clauses and directives, including `ensure_loaded/1` directives, but not `module/2` directives.

*Question:* How can I write access predicates for terms without paying a performance penalty?

There is support for unfolding predicates at compile time: `user:goal_expansion/3`. For example, assume that `is_ornode(X)` (`is_andnode(X)`) is true if the shape (principal functor) of `X` is `or/2` (`and/2`). If you consult the following:

```
:- multifile
    user:goal_expansion/3.

:- dynamic
    user:goal_expansion/3.

user:goal_expansion(is_ornode(Term), _, Term=or(_,_)).
user:goal_expansion(is_andnode(Term), _, Term=and(_,_)).

plan_tree( [N|_Rest], _GuidanceNodes, _Indent ) :-
    is_andnode(N).
plan_tree( [N|_Rest], _GuidanceNodes, _Indent ) :-
    is_ornode(N).
```

then `plan_tree/3` becomes transformed to:

```
plan_tree([A|_], _, _) :- A=and(_,_).
plan_tree([A|_], _, _) :- A=or(_,_).
```

If you are using `fcompile/1`, make sure that the definition of `user:goal_expansion/3`, and anything else that the compiler needs to know, has been loaded at `fcompile` time. A common idiom is:

```
?- ensure_loaded(SetOfFiles), fcompile(SetOfFiles).
```

Note that `fcompile/1` is obsolescent with the introduction of partial saved states (`.po` files).

Note also that `plan_tree/3` will not be able to determinately select a matching clause based on `A`, as predicates are indexed on the shape of the first argument only, which is a list in both clauses. Achieving indexing on `A` is the subject of the next question.

*Question:* Is `SICStus` capable of folding unifications across `:-` to determinately select a matching clause?

Consider the following clauses, with the above goal expansion:

```
plan_tree( [N|_Rest], _GuidanceNodes, _Indent ) :-
    is_andnode(N).
plan_tree( [N|_Rest], _GuidanceNodes, _Indent ) :-
    is_ornode(N).
```

In `SICStus`, as in most WAMs, indexing is done on the shape of the first argument. If all arguments are distinct variables `A`, `B`, `C`, ..., and the first goal is `A = Term`, indexing will be done on the shape of `Term`.

So to enable indexing on the shape of `N`, you must transform the clause e.g. to:

```
plan_tree( [N|_Rest], _GuidanceNodes, _Indent ) :-
    plan_tree_flat( N, _Rest, _GuidanceNodes, _Indent ).

plan_tree_flat(N, _Rest, _GuidanceNodes, _Indent ) :-
    is_andnode(N).
plan_tree_flat(N, _Rest, _GuidanceNodes, _Indent ) :-
    is_ornode(N).
```

With the above goal expansion, this code will indeed index on `N`.

*Question:* Why doesn't this Fibonacci program work?

Here's some code that purports to print all the Fibonacci numbers. The author of the code expected `retract/1` to backtrack forever, finding ever new `fibs/2` facts.

```
print_fibs :-
    retractall(fib(_)),
    assert(fibs(1,1)),
    retract(fibs(F1,F2)),
    write(F1), nl,
    F3 is F1+F2,
    assert(fibs(F2,F3)),
    fail.
```

If you run it:

```
| ?- print_fibs.  
1  
  
no
```

It doesn't work because of the semantics for calls to dynamic predicates in the presence of asserts and retracts. SICStus Prolog complies with the ISO Prolog standard in this respect. Clause 7.5.4 of the standard reads:

Any change in the database that occurs as the result of executing a goal (for example, when the activator of a subgoal is a call of `assertz/1` or `retract/1`) shall affect only an activation whose execution begins afterwards. The change shall not affect any activation that is currently being executed.

In the above example, the `retract/1` goal is unaffected by the subsequent `assert`, and only succeeds once.

## 6 Interfacing with other Languages

### 6.1 Interfacing with C++

TODO: write.

### 6.2 Interfacing with Visual Basic

### 6.3 Interfacing with Tcl/Tk

#### 6.3.1 Installing the Tcl/Tk library module under UNIX

**NOTE:** This section applies to UNIX binary distributions only.

As of 3.8, the Tcl/Tk library module is automatically configured by the installation script (`InstallSICStus`), after asking a few simple questions.

*Question:* When `InstallSICStus` asks for the "Tcl/Tk installation path", which path should I specify?

The installation path should be specified such that *installation-path/lib* contains the Tcl/Tk libraries (`libtcl<version>.so`). This is the same as the value of the `--prefix` options specified to Tcl/Tk's `configure-script`.

*Question:* My Tcl and Tk installation are not in the same directory. What should I do?

Unfortunately, there is no solution to this yet. You need to install Tcl/Tk in the same directory in order for `InstallSICStus` to find them.

#### 6.3.2 Configuring the Tcl/Tk library module under Windows

*Question:* I need to use a different Tcl/Tk version from the one SICStus is compiled against. How do I do?

The symptoms of this is that Windows complains about not finding `tcl<ver>.dll`.

SICStus 3.8.5 is compiled against Tcl/Tk version 8.2. If you want to use another Tcl/Tk version, you need to recompile `library(tcltk)`. You can do this by following these steps:

(Please do not embark on this unless you are fairly familiar with command-prompts and compilation procedures).

1. You need MSVC version 6.0 or later. 5.x or 4.x might work but have not been tested.
2. Compile the Tcl/Tk object code:

```
% cd library/tcltk
% cl -Ic:/progra~1/Tcl/include -Ic:/progra~1/sicstu~1/include -c *.c
```

If you do not have a shell which expands “\*.c”, you need to replace “\*.c” with the name of all C source files in `library/tcltk`.

3. Build the foreign resource (assuming Bash/Cygwin):

```
% cd library
% ../bin/splfr tcltk.pl tcltk/*.obj \
  c:/progra~1/Tcl/lib/tcl82.lib c:/progra~1/Tcl/lib/tk82.lib
```

Again, you might need to spell out “\*.obj”. Also, don’t forget to adjust the actual paths to your needs.

The following sample session shows how it may look:

```
% cl -Ic:/progra~1/Tcl/include -Ic:/progra~1/sicstu~1/include -c *.c
Microsoft (R) 32-bit C/C++ Optimizing Compiler Version 11.00.7022 for 80x86
Copyright (C) Microsoft Corp 1984-1997. All rights reserved.
```

```
tcl.c
tk.c
tkappini.c
tkterm.c
tkterm.c(231) : warning C4113: 'void (__cdecl *)(void)' differs in parameter list
oid (__cdecl *)(void )'
util.c
Generating Code...
% ../bin/splfr tcltk.pl tcltk/*.obj \
  c:/progra~1/Tcl/lib/tcl82.lib c:/progra~1/Tcl/lib/tk82.lib
SICStus 3.8.5 (Windows_NT-4-586): Fri Jan 08 09:44:23 1999
Licensed to SICS

yes
{C:\TEMP\tcltkglu.c generated, 40 msec}

yes
tcltkglu.c
  Creating library C:\TEMP\junk.lib and object C:\TEMP\junk.exp
```

4. Test your new resource:

```
% sicstus
SICStus 3.8.5 (x86-win32-nt-4): Fri Jan 08 09:44:23 1999
Licensed to SICS
| ?- use_module(library(tcltk)).
{loading c:/program files/sicstus prolog/library/tcltk.po...}
{loaded c:/program files/sicstus prolog/library/tcltk.po in module tcltk, 90 msec}

yes
```

### 6.3.3 Compiling SICStus with Tcl/Tk support

**NOTE:** This section is only relevant when compiling source distributions with support for Tcl/Tk.

Most UNIX machines today have Tcl/Tk preinstalled. This reduces the risk of installation difficulties since the linker and the runtime linker usually finds Tcl/Tk in its default paths. Most other installation and/or configuration problems related to Tcl/Tk are caused by improper installation or installation in a path where the linker and runtime linker cannot find Tcl/Tk.

Tcl/Tk is configured for installation similar to SICStus; by the use of a `configure` script generated by GNU Autoconf. The installation directory is specified by the `--prefix` option. The value of this option is referred to as the *installation-dir* below.

*Question:* The configure-script complains that it cannot find `Tcl_Init` and/or `Tk_Init`. What should I do?

The following message from `configure` indicates that it could not link a test program with the Tcl/Tk libraries.

```
...
checking for Tcl_Init in -ltcl8.3... no
checking for Tk_Init in -ltk8.3... no
...
```

The common cause of this is that the compiler cannot find `-ltcl8.3` and/or `-ltk8.3` (or whichever version it tries to find), usually because Tcl/Tk has been installed in a non-standard directory (i.e. different from `/usr/lib`, `/usr/local/lib`, etc.).

If you've installed Tcl/Tk in *installation-dir*, specify the following to `configure`:

```
% ./configure --with-tcltk=installation-dir more options
```

The problem can occur even if the Tcl/Tk shared libraries can be found, but the link-phase failed due to other reasons. If this occurs, it is often useful to look in `config.log`, where output from compilation stages etc. is logged.

*Question:* I've installed Tcl and Tk in different directories. What do I do?

You can use:

```
% ./configure --with-tcl=tclinstallpath --with-tk=tkinstallpath
```

*Question:* There are no shared Tcl/Tk libraries. What has happened?

You need to specify `--enable-shared` when configuring Tcl/Tk. This is *not* enabled by default.

### 6.3.4 Generic Tcl/Tk problems

*Question:* I get the message “tcl\_new/1 - Can’t find a usable init.tcl in the following directories...”

This means that Tcl/Tk can’t find its libraries of tcl-code needed for operation. This occurs when Tcl/Tk has been built but not properly installed. You have the option of stating the location of the libraries by means of the environment variables `TCL_LIBRARY` and `TK_LIBRARY`. See also the Tcl/Tk documentation.

Another reason for this could be if you are not using SICStus 3.8.1 or later. The original SICStus 3.8 did not initialize Tcl/Tk correctly.

*Question:* I get the message “tcl\_eval/3 - can’t read ‘var(Tree)’: no such variable”

This message can appear in Tcl code which tries to access Prolog variables. Example:

```
tk_test :-
    tk_new([],Interp),
    tcl_eval(Interp,
            ,
            global var
            set Tree []
            set Children []
            set GrandChildren []
            prolog {get_tree(Tree),
                    make_children(Tree, Children),
                    make_grandChildren(Tree, Children, GrandChildren)}
            puts "$var(Tree) $var(Children) $var(GrandChildren) "
            ', _),
    tk_main_loop,
    tcl_delete(Interp).
```

The problem is that the argument to the `prolog` function is just a string that is interpreted by Prolog as a goal. There is no connection between the Prolog variables `Tree`, `Children` and `GrandChildren` and the Tcl-variables with the same name. After returning from `prolog`, the values which the Prolog variables have been bound to are assigned to the array variable `prolog_variables`.

So replacing `$var` in your example with `$prolog_variables`, makes it work.

## 6.4 Interfacing with Java

*Question:* I’m having basic trouble in getting Java to work. What should I do?

Read the Release Notes and the User’s Manual and the section in them related to Jasper.

*Question:* *[Windows]*  
splfr insists on looking for JDK in 'C:/jdk1.2.2'

Use the '--with-jdk' option like this:

```
splfr --with-jdk=D:/jdk1.3 ...
```

*Question:* *[UNIX]*  
I want to use JDK 1.3.

InstallSICStus will fail to configure SICStus if JDK 1.3 is specified. However, if you set the environment variable `JDK_USE_EXTRALIBS` to 'no' before running InstallSICStus then you may be able to use the SICStus run-time system from a Java application, e.g. (for bash):

```
export JDK_USE_EXTRALIBS=no && InstallSICStus
```

*Question:* I want to use Jasper from an applet, but my browser won't let me. What's wrong?

Jasper is built as a layer on top of SICStus' C-Prolog interface and hence Jasper needs to be able to call methods declared as *native* (i.e. C-functions). For security reasons, this is prohibited in applets.

This is a serious restriction, and future versions of Jasper will most likely allow connecting to the Prolog engine via sockets.

*Question:* I get the message "Failed to locate bootfile" when running `java ClassUsing-Jasper`. What's wrong?

The answer to this (and related questions) can be found in the Jasper chapter of the Release Notes, section "Getting Started".



## 7 Standard Prolog compliance

SICStus 3.8 supports standard Prolog, adhering to the International Standard ISO/IEC 13211-1 (PROLOG: Part 1—General Core). At the same time it also supports programs written in earlier versions of SICStus. This is achieved by introducing two execution modes `iso` and `sicstus`. Users can change between the modes using the Prolog flag `language`. Main issues:

- The `sicstus` execution mode is practically identical to 3.7.1, except for minor changes in error term format.
- The `iso` mode is fully compliant with ISO standard, but no strict conformance mode is provided.
- The dual mode system supports the gradual transition from legacy SICStus code to ISO Prolog compliant programs.
- Note that the built-in predicates, functions and Prolog flags, required by the ISO standard, are also available in `sicstus` execution mode, unless they conflict with existing SICStus predicates or functions. This expansion of the language carries a remote risk of name clashes with user code.

## 8 Miscellany

*Question:* *[Windows]*  
How do I save a transcript of my Prolog session on Windows?

As of 3.8.3 the Windows console (`'spwin.exe'`) can save a transcript of the interaction with the Prolog top-level. The command is under the **'File'** menu. You may wish to increase the number of **'save lines'** in the **'Windows Settings'** (under the **'Settings'** menu).

*Question:* *[Windows]*  
How do increase the number of history lines used by the Windows console (`'spwin.exe'`)?

See [section "Command line editing"](#) in *the SICStus Prolog Release Notes*.

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