

McStas installation instructions

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Abstract

This document describes installation of the McStas package, including some information on installing other required pieces of software.

The text below is also included as a chapter in the McStas manual.

1 Getting McStas

The McStas package is available in various distribution packages, from the project website at <http://www.mcstas.org/download>.

- **McStas-1.10-i686-Win32.exe**
Preferred Windows installation method: self-extracting executable including essential support tools. - Refer to section 3.

(If you prefer the old `build.bat/install.bat` procedure for Windows, you should instead download the alternative `mcstas-1.10-i686-unknown-Win32.zip` package.
Please note that the `.exe` method is clearly recommended.)
- **mcstas-1.10-i686-unknown-Linux.tar.gz**
Binary package for Linux systems, currently built on Ubuntu 6.06 'Dapper Drake'. Should work on most Linux setups. - Refer to section 4
- **mcstas-1.10-src.tar.gz**
Source code package for building McStas on (at least) Linux and Windows XP. This package should compile on most Unix platforms with an ANSI-c compiler. - Refer to section 4

2 Licensing

The conditions on the use of McStas can be read in the files `LICENSE` and `LICENSE.LIB` in the distribution. Essentially, McStas may be used and modified freely, and copies of the McStas source code may be distributed to others. New or modified component and instrument files may be shared by the user community, and the core team will be happy to include user contributions in the package.

3 Installation on windows

As of release 1.10 of McStas, the preferred way to install on Microsoft Windows is using a self-extracting `.exe` file.

The archive includes all software needed to run McStas, including perl, a c-compiler, a vrmf viewer and Scilab for data plotting.

Installation of all the provided support tools is needed to get a fully functional McStas. The option not to install some of the tools is only included for people who have one or more tools installed already.

The safe and fully tested configuration/installation is to install all tools, leaving all installation defaults untouched. Specifically you may experience problems if you install to non-standard locations.

Simply follow the guidance given by the installer, pressing 'next' all the way.

If you experience any problems, or have some questions or ideas concerning McStas, please contact peter.willendup@risoe.dk or the McStas mailing list at neutron-mc@risoe.dk.

4 Installation on Unix systems

Our current reference Unix class platform is Ubuntu Linux, which is based on Debian GNU/Linux. Some testing is done on other Unix variants, including Fedora Core, SuSE and FreeBSD.

To get a fully functional McStas installation on Unix systems, a few support applications are required. Essentially, you will need a C compiler, Perl and Perl-Tk, as well as a plotter such as Matlab, Scilab or PGPLOT. In the installer package, we supply a method to install PGPLOT and related perl modules - see step 4 below and also a method to download and install Scilab for Linux/Intel - see step 5

On Debian and Ubuntu systems, the needed packages to install are `perl-tk`, `pdl`, `gcc`, `libc6-dev`

(On Ubuntu you need to enable the 'universe' package distribution in

the file

`/etc/apt/sources.list.`)

We also recommend to install octaga vrm viewer from

http://www.octaga.com/download_octaga.html.

4.1 Configuration and installation

McStas uses autoconf to detect the system configuration and creates the proper Makefiles needed for compilation. On Unix-like systems, you should be able to compile and/or install McStas using the following steps:

1. Unpack the sources to somewhere convenient and change to the source directory:

```
gunzip -c <package>.tar.gz | tar xf -  
cd mcstas-1.10/
```
2. Configure McStas:

```
./configure
```
3. Build McStas (only in case of the `mcstas-1.10-src.tar.gz` package):

```
make
```
4. Optionally build/install PGPLOT (as superuser - build dependencies are `pdl`, `g77`, `libx11-dev`, `xserver-xorg-dev`, `libxt-dev` on Ubuntu):

```
make install-pgplot && ./configure
```
5. Optionally download/install Scilab (as superuser - only on Linux with Intel hardware):

```
make install-scilab && ./configure
```
6. Install McStas (as superuser):

```
make install
```

The installation of McStas in step 6 by default installs in the `/usr/local/` directory, which on most systems requires superuser (root) privileges.

4.2 Specifying non-standard options

To install in a different location than `/usr/local`, use the `-prefix=` option to configure in step 2. For example,

```
./configure -prefix=/home/joe
```

will install the McStas programs in `/home/joe/bin/` and the library files needed by McStas in `/home/joe/lib/mcstas/`.

In case `./configure` makes an incorrect guess, some environment variables can be set to override the defaults:

- The `CC` environment variable may be set to the name of the C compiler to use (this must be an ANSI C compiler). This will also be used for the automatic compilation of McStas simulations in `mcgui` and `mcrun`.
- `CFLAGS` may be set to any options needed by the compiler (eg. for optimization or ANSI C conformance). Also used by `mcgui/mcrun`.
- `PERL` may be set to the path of the Perl interpreter to use.

To use these options, set the variables before running `./configure`. Eg.

```
setenv PERL /pub/bin/perl5
./configure
```

It may be necessary to remove `configure`'s cache of old choices first:

```
rm -f config.cache
```

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5 Finishing and Testing the McStas distribution

Once installed, you may check and tune the guessed configuration stored within file

- `MCSTAS\tools\perl\mcstas_config.perl` on Windows systems
- `MCSTAS/tools/perl/mcstas_config.perl` on Unix/Linux systems

where `MCSTAS` is the location for the McStas library.

You may, on Linux systems, ask for a reconfiguration (e.g. after installing MPI, Matlab, ...) with the commands, e.g:

```
cd MCSTAS/tools/perl/
sudo ./mcstas_reconfigure
```

On Windows systems, the reconfiguration is performed with the `mcconfig.pl` command.

The **examples** directory of the distribution contains a set of instrument examples. These are used for the McStas self test procedure, which is executed with

```
mcrun --test # mcrun.pl on Windows
```

This test takes a few minutes to complete, and ends with a short report on the installation itself, the simulation accuracy and the plotter check.

You should now be able to use McStas. For some examples to try, see the `examples/` directory. Start 'mcgui' (`mcgui.pl` on Windows), and select one of the examples in the 'Neutron Sites' menu.