



*Building the National Virtual Collaboratory  
for Earthquake Engineering Research*

**NEESgrid**

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**Installing the NEESgrid NSDS Driver**

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## Installing the NEESgrid NSDS Driver

### Introduction

This document is to assist you in building and installing the NEESgrid NSDS driver for LabVIEW-based data acquisition systems. It covers compilation and installation. If you need more information about the overall design, please see the ANL NEESgrid page at <http://www.mcs.anl.gov/neesgrid> for links.

### Getting the Code

The driver and associated code are kept in the NEESgrid CVS archive. More information (e.g. obtaining write access to CVS) are available at <http://www.mcs.anl.gov/neesgrid/cvs.html>

If you simply want to download the code, the following C shell fragment should suffice:

```
setenv CVSROOT :pserver:anonymous@nees cvs.mcs.anl.gov:/disks/cvs/neesgrid
cvs checkout flog
cvs checkout nsds-driver
```

### About the Code

The driver is a relatively simple piece of threaded C code, coded to the POSIX 1003 API. It should compile and build on most modern Unix variants. It has been tested on several Linux distributions, as well as Mac OS X 10.2. It ships with a simple makefile that can be modified for local needs or system variations. If required, we can generate a Autotools build setup (i.e. ./configure; make).

### External Dependencies

The code uses the Fermilab ‘flog’ messaging library for thread-safe console messages. The flog library is a separate package in the NEESgrid CVS archive; the instructions above show how to obtain it. Flog has been built and tested on Linux, Solaris, IRIX, and Mac OS.

To build it, simply change into the flog directory and run make.

**Note:** The drivers’ makefile expects flog in ../flog (relative to the driver). If you place flog elsewhere, you will need to modify the driver makefile.

The code also relies upon the GNU ‘getopt’ library for parsing the command line. Any Linux or BSD will have this installed; Mac users should see the README.OSX file for how to get and install it.

### Before You Compile

If you wish to use the fake\_daq program for testing, you might want to open nsds\_util.h and change MAX\_CHANNELS to the number of data sources you wish to have

### **Installing the NEESgrid NSDS Driver**

available. This only affects fake\_daq; the driver does not have any limitations on the number of channels.

If you need to make other code modifications, you should also read the ‘NSDS Driver’ documentation, posted on the above web page. It covers more of the internals of the driver and protocol that you will need to understand.

### **Compiling the Code**

The included makefile should suffice for almost any site. Just ‘make’ will build the fake\_daq and driver binaries, which is the common requirement. Also available are ‘make clean’ (to force a recompile) and ‘make all’, which also builds an etags file for Emacs, the cvs2cl (Perl script for generating the ChangeLog file) and the Doxygen documentation.

### **Running the Driver**

The driver has five command line options. You will usually only need to set two of them. They can be seen by running the driver with a –help or –h option:

```
11:12:00 (main)[N:0] Options are --daq_port, --daq_machine,  
      [+:0] --nsds_port, --nsds_machine, --driver_name, --quiet  
      [+:0] All except quiet have arguments, either hostname or  
TCP port number  
      [+:0] driver_name is for multiple instances per host
```

Normally, you simply tell the driver where to find the NSDS and DAQ machines:

```
./driver -daq_machine neeslabview2.mcs.anl.gov -nsds_machine  
neespop.mcs.anl.gov
```

would be a typical local example. If you want to run more than one driver per machine, for multiple DAQ systems, then you have to change the driver name with –driver\_name. Consult the NSDS documentation for more details on this before doing so.

The code will keep trying to contact the DAQ until it succeeds or is aborted. Once that connection is in place, it will try to reach the NSDS. If there are any errors, it will restart all connections and start over.

### **Installing and Running the Code**

Once compiled, the driver can be run from any location. It does not need to be run as root or any other privileged user. You may wish to save the output to a file; the following will do so under C shell:

```
./driver &> logfile.txt
```

### **Installing the NEESgrid NSDS Driver**

If you want less output, you can specify `-quiet` on the command line to only print out errors.

### **Where to Go Next**

If this document did not answer your question(s), please go to <http://www.mcs.anl.gov/neesgrid/> and get the 'NSDS Driver' document. If you still have questions, please post them to the NEES-DAQ mailing list; instructions are on the same web page.