SNO-STR 96-018
June 12, 1996

Installing SNODB, The SNO Database
SNODB Code v2.09

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1 Introduction

The current version of SNODB is supported on UNIX platforms. The VMS platform will be supported in the near future but, if you have a choice, it is strongly recommended that you install SNODB on a UNIX platform.

Before you can use the SNO database you must obtain and install at least 95a, and preferably 95b or 96a PACKLIB (part of CERNlib). Even 96a currently has

some bugs (cdfrst, cdfsnd and cdsopn) but a set of `cd*.f` routines is supplied with SNODB and fixes bugs in 95a, 95b and 96a.

The main engine for installing SNODB is a PERL script. PERL is a language for easily manipulating text, files and processes. Many UNIX system managers use PERL to control complex system-related tasks. PERL is freeware and widely available, and may already be present on your UNIX site. To find out if it is, type `which perl`. Typically you will get an answer like "/usr/bin/perl". If you do not, PERL is either not in your path or it is not present on your machine. The next step is therefore to ask your system manager if PERL is on your system. If it isn't, have it installed by following the instructions in the subsection 1.1. If PERL is present, but isn't in /usr/bin/perl, please have your system manager set up softlink so that /usr/bin/perl points to wherever your PERL is located. If PERL is present you can skip to section 2.

1.1 Getting PERL

PERL is freeware. You can get it via anonymous ftp from any of the following sites:

- ftp.uu.net
- archive.cis.ohio-state.edu
- jpl-devvax.jpl.nasa.gov

Each of these machines keep things in a slightly different way, so the best strategy is to look for a README file and follow the local instructions. At this writing, the most recent version of PERL was >5.0. We are currently running v5.000. Please install PERL in /usr/bin/perl, or set up a softlink from there to wherever it is installed.

For those of you who wish to know more about PERL, there are two excellent books [1], web sites containing on-line manuals (http://www.eleves.ens.fr:8080/cgi-bin/perl-man and http://www.cs.cmu.edu:8001/htbin/perl-man), and at least one user group (comp.lang.perl).

2 Getting Started

Before shipping and installing the code on your computer you will need to create one account with name "cdsno". This account will host the SNODB code and will run the database server to process updates. We strongly recommend that you adhere to the following steps in creating this accounts. If you don't, it may be very difficult to include your institution in the networked version of the database due out shortly. Many of the items below must be done by the system manager.

- Create an account with name "cdsno". This is the account under which the various database management servers will run, and will be used for database maintenance purposes.

- Create a "sno" group which will be used to control who gets read access to the SNO database. Every account owned by someone affiliated with SNO should probably be in this group. "cdsno" should also be a member of this group.
- Create a "snodbw" group which will be used to control who gets write privileges to the SNO database. "cdsno" should be a member of this group. Only people officially responsible for putting data into the database should be members of this group. Others, in general, should not be allowed to write to the SNO database in order to protect the integrity of your local database.
- Create a "hepdb" directory (owned by "cdsno" with permission 0750) somewhere with at least a few hundred MB of space. There should be a link to this directory in the root directory, and it should be called "/hepdb". This is the directory which will contain all of the files and directories required by the HEPDB database servers. This directory is refered to as the parent directory.

You are now ready to ship and install the programs.

3 Shipping and Installing the Programs

From your "cdsno" account, pick up `snodb_2_09.tar.gz` via anonymous ftp from the distribution site:

Site:	upenn5.hep.upenn.edu
Directory:	pub/cowen/snodb

From this directory copy the tar file

snodb_n_nn.tar.gz where n_nn is the version number (*i.e.* 2_09)

into the cdsno root directory (*e.g.*, /hepdb/cdsno). Run "gunzip" and "tar xvf snodb_n_nn.tar" to expand it. You should now have the following directory structure on "cdsno":

```
./cdsno
        /2_09
              /cern_mods_f   ! Debugged CERN packlib routines
              /dbs_tools_f   ! The database tools
              /doc           ! Documentation
              /includes      ! include files common to /dbs_tools_f and /snoman_f
              /scripts       ! The main perl script plus other scripts
              /snoman_f      ! SNOMAN subroutines, alter at your own peril
```

Go to the /xxx_f directories and remove the "*.o" files. If needed, go to the /xxx_f directories and rename the "*.f" files to "*.for".

The /snoman_f directory is special in that it contains several subdirectories for each SNO platform. They, in turn, contain our platform-dependent debugged versions of the CERN cd*.f routines. If your platform is not there, modify SNO_TOOLS/get_platform_variabl accordingly, make a subdirectory with this platform name, and then make symbolic links to the .f files in the SUN subdirectory. (At present, none of the routines are platform-dependent, so we arbitrarily chose the SUN subdirectory to hold all the files.)

3.1 Defining Your Local SNODB Configuration

The database setup proceeds throught a single perl script:

```
/cdsno/2_09/scripts/snodb.perl
```

But prior to running snodb.perl you need to edit the file:

```
/cdsno/2_09/scripts/snodb.config
```

to specify the location of various directories and various snodb initializations.

The final step is to set an environmental variable CDSERV which tells HEPDB where your server resides. It is located under the parent directory with the name you have choosen for your server. The default is /hepdb/cdsno and it is set by the snodb.perl script as needed. However, users other than cdsno will need to edit their .login file and define the variable CDSERV to point to the server directory:

```
setenv CDSERV /hepdb/cdsno
```

The setup script automatically loads in the compiling and linking flags defined for your platform in the SNOMAN file SNO_TOOLS/get_platform_variables.scr. For this to work you must have edited the contents of that file as needed and defined SNO_TOOLS and SNO_PLATFORM (see the SNOMAN installation procedure).

You are now ready to run snodb.perl. Type the command:

```
~/2_09/scripts/snodb.perl -help
```

to see a list of the snodb.perl command options. Note that in what follows command options are given one at a time, but that they can be entered simultaneously if you wish, keeping in mind that the order may matter.

3.2 Creating the directory structure for SNODB

The first step is to create the directory structure. Type:

```
~/2_09/scripts/snodb.perl -dir
```

This will create the required directory structure and set the proper ownerships[1] for each of them. You should now have 3 directory structure:

1. The official database directory with permission 750.
2. The test database directory with permission 750.
3. The server directory. This is set by default to be `/hepdb/cdsno`. It should have the following minimum structure.

```
/hepdb
        /cdsno
                /bad              ! dir where the server places bad updates
                /exes             ! dir for SNODB binaries
                /log              ! dir where the server logs are written
                /queue            ! dir where HEPDB clients place new updates
                /save             ! dir where server saves old updates
                /todo             ! dir which server scans for new updates
                /write_to_dbase   ! Top dir for ascii titles files writes
                /read_from_dbase  ! Top dir for ascii titles files reads
```

3.3 Making the binaries

Next compile and link the various SNODB tools and the server program by issuing the command:

```
~/2_09/scripts/snodb.perl -make_tools
```

You should now have the minimum following files under the `/hepdb/cdsno/exes` directory.

[1] In some institutions, where the system administrator does not allow the parent directory to belong to the "cdsno" account, you will need to reset the group assignment (and some permissions) of all the created directories and files.

```
cdserv                  ! The server program from CERN plus bug fixes
sncreate                ! Will create the database files
sndirs                  ! Will create the directory structure in the database file
snalia                  ! Will create alias definition for the diretories
sn_input_titles_2_09    ! Loads the SNOMAN 2_09 titles in the database
```

3.4 Creating the hepdb.names file

Next create the hepdb.names file.

```
~/2_09/scripts/snodb.perl -names
```

This file is created on $CDSERV/ and it contains the server configuration. It contains such information as the location of the database file(s), the location of the servers directories, the write and read autorizations, the wake-up interval for the server, nodes locations, etc.

3.5 Starting the server

You then need to start the database server before building the database:

```
~/2_09/scripts/snodb.perl -server
```

You may verify that the server is running with the ps command. You are now ready to build the database.

4 Building the database

4.1 Building the database files and structure

Now that the server is running and ready to receive updates type the command:

```
~/2_09/scripts/snodb.perl -build_test
```

This builds the test database files. When run, the **sncreate** program causes the server to create the database files requested and listed in the **sncreate.dat** file. The program **sndirs** creates internal structure as requested by **sndirs.dat** in each of these files. **snalia** is then run to create HEPDB aliases as requested in **sndirs.dat**.

4.2 Loading the database with the SNOMAN titles files

Finally you can load the database with the SNOMAN 2_09 titles files.

```
~/2_09/scripts/snodb.perl -load_tz
```

This loads the 2_09 title files in the database file `sm.dbs` in the test database directory. The loading is performed by running the program `sn_input_titles_2_09`. This is a dedicated program for the version 2_09 release of SNOMAN.

5 Setting up for a Networked Database

The following changes must be made by your system manager in order to enable SNODB to update the database on your node, and accept database updates from your node, via ftp. (Note that SNODB will not be running in networked mode in this release but that it will be in the near future.)

1. Add the following line to /etc/services:
   `zserv 346/tcp # server for zftp`
2. Add the following line to /etc/inetd.conf:
   `zserv stream tcp nowait root <path to zserv>/zserv zerv`
3. Reset inetd by finding its Process ID (PID) with "ps" and issuing the command
   `kill -HUP <PID>`

6 Running SNOMAN with the "static database"

Here are the relevent excerpts from the SNOMAN user manual.

> SNOMAN 2.09 has an interface to the SNO Database which is implemented using the CERN package HEPDB. To allow people time to get an up to date CERNlib and set up a database, SNOMAN 2.09 does not require a database to run. Indeed, by default, it will not even initialise the database software unless the symbolic command
>
> `$enable_database`
>
> is issued. Even that is insufficient to get it to read from the database as titles banks coming from titles files take priority. As SNOMAN comes with a complete set of title files so by default it will not search the database for them. To force loading from the database it is necessary to remove the TITLES commands from the .cmd files and the file `read_universal_titles.cmd`.

To test out the database you could try commenting out lines in this file (assuming that the files have been loaded into the database!). However, do NOT comment out the following files:

`job_control.dat` This contains the TMTT titles bank which controls enabling of the database. As such, it could hardly be useful if the database had to be accessed to get it!

`ntuple.dat` SNOMAN does not demand NTPR (ntuple request) banks; instead it just uses those that the user has provided via titles files.

Do NOT load the `pmt_positions_seattle_*.dat` files into the database as the GEDP banks they contain will overwrite the SNO ones and you will end up with rather few PMTs! This will not be a problem in the longer term; miniSNO data from the Seattle tank will have a different data type to SNO and the access to the database will be data type sensitive. For now, to run miniSNO data will require the use of the TITLES command to load in the required PMT position files.

In short you can run SNOMAN with the database by removing all `.dat` files from the `/prod` area except

`ntuple.dat`, `job_control.dat`, `pegs4_10.dat` and `symbol_table.dat`.

Then a simple command file such as:

```
!file member=RUN_SNODB library=SNOMAN language=cmd
!file DATE=30:Jun:1995
echo
*     Standard Command File: run_snodb.cmd                    22 May 1996
noecho
*     Contact:  G. Jonkmans,  CRL.

*     Perform standard run.

$enable_database

titles ntuple.dat
titles job_control.dat
*     Terminate command processing
end
!endfile member=RUN_SNODB
```

---

7 Post-mortem

Oh, and...congratulations, you have just been nominated "local database Czar" for your node. Send your name and e-mail to cowen@upenn5.hep.upenn.edu along with the internet address of the machine where you have installed SNODB.

8 Contacts

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9 Acknowledgements

The authors would like to thank Nick West for many useful suggestions.

References

[1] Schwartz, *Learning PERL*, O'Reilly & Associates (http://www.ora.com/), 1994. Recommended starting point.

Wall and Schwartz, *Programming PERL*, O'Reilly & Associates, 1992. A good reference.