Scaler Display System

The scaler display system consists of a group of related programs: *sca_disp* - the scaler display itself, *sca_reader* an interface program between the scaler display and the information source, *info_server* - an information "clearing-house" which maps several input data sources onto several output sources, and *i_spy* - the information spying program which allows you to monitor the various output data streams. The scalers also depend on the *dd2scaler* program which extracts scaler events from the DD ring and sends them to the *info_server*.

Running the scaler display system

Starting the scaler display system is generally pretty easy - there is a single shell script to start the *sca_disp* and *info_server* programs with a sensible set of defaults. In addition, you must ensure that *dd2scaler* is running to provide the source of scaler events.

Starting the Display

1. `cd  clasrun/scalers`
   Switch to the scalers subdirectory of the clasrun account.

2. `start_scaler`
   This command first tries to start the *info_server*. If the *info_server* is already running, it will just use the old one. Then the script starts the scaler display system so that the display opens on the display specified in the ENV variable $DISPLAY.

3. `dd2scaler -snam SCALER`
   You must run this command on **CLON00** after the DD ring has been created. With the advent of secondary DD rings on remote nodes, it may be possible to run *dd2scaler* on one of the other nodes but **this has not been tested!**.

In most cases this is sufficient to get the system up and running.

The Information Spy Program

The *i_spy* program is designed to spy on selected output streams. Eventually, this program will be replaced by a spiffy GUI for viewing the same information but for now it is a useful debugging and monitoring tool in the absence of any other display program. The *info_server* is capable of generating any number of output messages, containing any arrangement of the input data. Users have the option of creating their own display program or of using the default *i_spy* program.
To use the *i_spy* program, you must provide two mandatory pieces of information. You may provide additional parameters if desired. The first required information is the name of the current SmartSockets application. The second is the *info_server* configuration file. The third parameter is the name of the particular data stream that you want to observe. So, for example, the following command line:
`i_spy -app clasprod -config info_server.cfg -dg scaler`
will run the *i_spy* program in the "clasprod" application, using the configuration file "info_server.cfg" from the current directory and tell the program to display only the information sent out in "scaler" messages. (Note: I do not advise this. The scaler messages contain an array of 1024 integers which is not very enlightening when it is scrolling past you on the screen)
When running, the *i_spy* program will print the contents of any messages to the terminal window in which it was run. Nothing fancy but it will allow you to look at your data. FYI, the main configuration file is expected to reside in $CLON_PARMS/info_server.cfg for most of this run. You will either have to type the entire path or define an alias. This behavior will change, but there are other priorities higher on the task list right now. Sorry.

Troubleshooting

-or- "Leave the gun, take the cannoli"

There are several steps to follow if the display system is not working. Some are diagnostic and the rest of corrective. Several of these have the potential to *SERIOUSLY* annoy people so use them sparingly[1]!

[1] People tend to get cheezed off if their carefully tended scaler displays suddenly vanish

- Check to be sure that the dd2scaler program is running. You just can't get any events without it. If it is not running, start it.

- Check to see what *info_server* related processes are running. This is done with the `find_scaler` command located in the *scalers* subdirectory of the *clasrun* account. This program will present you with a list of processes on the entire CLON cluster which are related to the scalers and information system.

- There should be **exactly one** process named *info_server*. If more than one exists, you will have to kill them and restart (see below).

- To kill an *info_server* program, execute the command
`info_stop -app clasprod -uniq info_server`
which tells all *info_server* processes in the SmartSockets application "clasprod" to quietly kill themselves. This works regardless of who owns the process. Using the usual `kill` command will not work if you don't own the process.

- In addition to the *info_server* program, there can be any number *sca_disp* and *i_spy* programs. There should be one *sca_reader* program for each *sca_disp* program on each machine. (i.e. if there is a *sca_disp* on CLON01, there should also be a *sca_reader* on CLON01.). If there are unmatched *sca_disp* or *sca_reader* programs you should stop them. This may require that you stop all copies of these programs on a given node because it will be difficult to determine which pairs should be matched. The `kill -KILL` command will work fine, but you will have to log into the specified node first. Note: mismatched display programs will not prevent *you* from getting output - you just need to be sure that *your* programs are not mismatched. If some other poor slob has mismatched programs and you can't kill them (i.e. not the owner), it is perfectly safe to leave those programs alone. *That guy* will wonder why he/she is not getting any information, but you will be happily watching scalers and feeling superior because you have a nifty matched set of programs.

- If there are extraneous *i_spy* programs floating around that you cannot account for (i.e. they were run in background or something else equally

silly) you can kill them with the command
`info_stop -app clasprod -uniq i_spy`
which will assasinate all versions of *i_spy* on the CLON cluster. (Actually, it will assasinate all copies of the *i_spy* program anywhere in the world. Don't you feel powerful?)

- If things are totally screwed up, you can run the following three commands
  ```
  kill_scalers
  info_stop -app clasprod -uniq info_server
  info_stop -app clasprod -uniq i_spy
  ```
  which will hunt down all the info related processes on all the CLON machines and get rid of them.

Once you have a clean setup, you can restart as specified above, or you can start the programs individually. I recommend using the `start_scaler` script, but if you are a masochist, you can start the system as follows:
```
info_server -app clasprod -config $CLON_PARMS/info_server.cfg >/dev/null
&
sca_disp -app clasprod >/dev/null &
```
and make sure that *dd2scaler* is running correctly.