

Totalview Debugging on Pleiades

Category: Program Development Tools

TotalView is an advanced debugger for complex and parallel codes. Its versions have been installed as modules. To find out what versions of TotalView are available, use the `module avail` command.

On Pleiades, our current licenses allow using TotalView up to a total of 256 processes. Use the following command to find if there are unused licenses before you start TotalView:

```
pfe% /u/scicon/tools/bin/check_licenses -t
```

There are additional steps needed in order to start the TotalView GUI. You'll need to rely on the ForwardX11 feature of your SSH. First, you'll have to make sure that your sysadmin had turned on ForwardX11 when SSH was installed on your system or use the `-X` or `-Y` (if available) options of `ssh` to enable X11 forwarding for your SSH session.

For Debugging on a Back-End Node

Step 1: Compile your code with `-g`

Step 2: Start a PBS session. For example:

```
% qsub -I -V -lselect=2:ncpus=8,walltime=1:00:00
```

Step 3: Test the X11 forwarding with `xlock`

```
% xclock
```

Step 4: Load the `totalview` module

```
% module load totalview/8.9.2-1
```

Step 5: Start TotalView Debugging

- For Serial Applications

Simply start `totalview` with your application as an argument

```
% totalview ./a.out
```

If your application requires arguments:

```
% totalview ./a.out -a app_arg_1 app_arg_2
```

- For MPI Applications Built with SGI's MPT

Make sure that you have loaded the latest MPT module:

```
% module load comp-intel/11.1.072
% module load mpi-sgi/mpt.2.04.10789
```

Launch your program with the following:

```
% mpiexec_mpt -tv -np 16 ./a.out
```

- For Applications Built with MVAPICH:

- ◆ Load the appropriate modules:

```
% module load comp-intel/11.1.072
% module load mpi-mvapich2/1.4.1/intel
```

- ◆ Launch TotalView by typing "totalview" all by itself. Once the TotalView windows pop up, you will see four tabs in the "New Program" window: Program, Arguments, Standard I/O and Parallel.
- ◆ Fill in the executable name in the "Program" box or use the Browse button to find the executable
- ◆ Give any arguments to your executable by clicking on the "Arguments" tab and filling in what you need. If you need to redirect input from a file, do so by clicking the "Standard I/O" tab and filling in what you need.
- ◆ In the "Parallel" tab, select the parallel system option MVAPICH2.
- ◆ Enter in the number of processes in the "tasks" box; leave the "nodes" field 0. For example, if you run your application with 2 nodes x 4 MPI processes/node = 8 processes in total, fill in 8 in the "tasks" box and 0 in the "node" box.
- ◆ Then press "Go" to start. Note that it may initially dump you into the `mpiexec` assembler source which is not your own code.
- ◆ Respond to the popup dialog box which says "Process xxx is a parallel job. Do you want to stop the job now?" Choose "No" if you just want to run your application. Choose "Yes" if you want to set breakpoint in your source code or do other tasks before running.

TIP: If you want to use the Replay Engine feature of TotalView, you need to set these two environment variables:

```
setenv IBV_FORK_SAFE 1
setenv LD_PRELOAD /nasa/sles11/totalview/toolworks/totalview.8.9.2-1/
    linux-x86-64/lib/undodb_infiniband_preload_x64.so
```

Because of a formatting issue, the second variable may break across two lines. It should only be one line.

More information about TotalView can be found at the [TotalView online documentation website](#).

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<http://www.nas.nasa.gov/hecc/support/kb/entry/93/?ajax=1>