

Welcome to NERSC TotalView Tutorial



September 29, 2022

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User Engagement Group

Tutorial on Using TotalView

- Instructors:
 - Bill Burns, John DelSignore and Peter Thompson (Perforce Software)
 - Scot Halverson, Andrew Gontarek (NVIDIA)
- Training agenda and presentation slides, etc. available at <https://www.nersc.gov/users/training/events/totalview-tutorial-september-29-2022/>
- Exercise materials in /global/cfs/cdirs/training/2022/totalview
- **Gdoc for questions and answers** (instead of Zoom chat): <https://tinyurl.com/2pebkb5y>

Running Jobs

- Perlmutter GPU and CPU nodes are reserved for today's tutorial (8:30 am-12:30 pm).

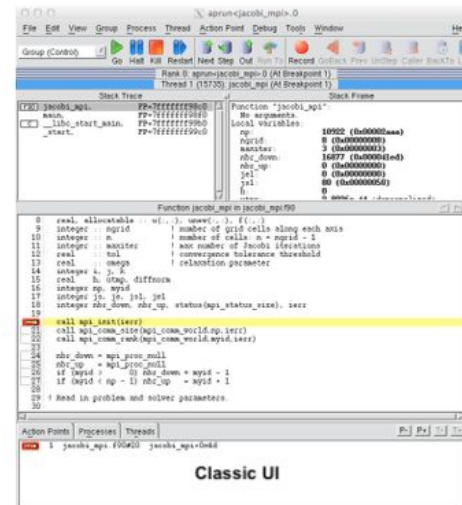
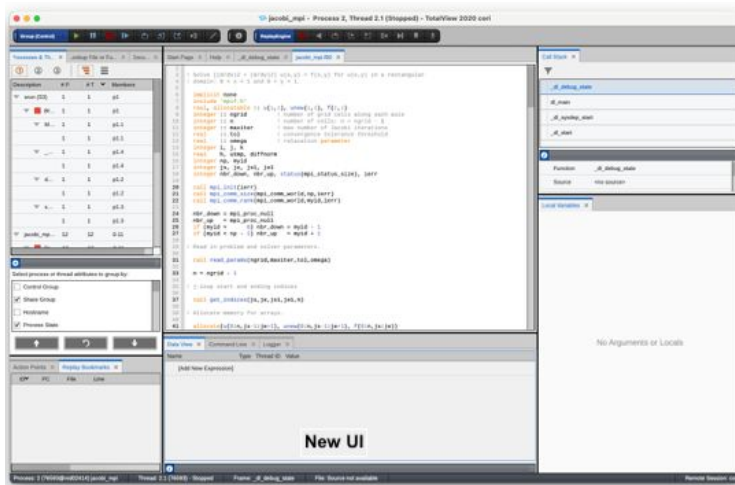
```
$ salloc -C gpu -N 1 --gpus-per-node=4 -t 30 -q debug  
    --reservation=totalview_g -A ntrain2  
  
$ salloc -C cpu -N 1 -t 30 -q debug --reservation=totalview_c -A ntrain2
```

- No reservation on Cori. Use your own project account.

```
$ salloc -C haswell -N 1 -t 30 -q debug  
  
$ salloc -C knl -N 1 -t 30:00 -q debug
```

TotalView UI - Classic vs. New

- A new modernized UI introduced a few years ago
 - A small number of features available only in Classic UI
 - Today's tutorial using New UI
- New UI if `~/ .totalview/ .tvnewui` contains `true`.
- Can override with `-newUI` or `-classicUI` command-line flag
- <https://docs.nersc.gov/tools/debug/totalview/#new-ui-vs-classic-ui>



Using X11 GUIs Interactively

- Running an X-window GUI over internet: GUI is painfully slow due to high latency and inefficient bandwidth for X11 forwarding between the client and the server
- Solutions
 - Use NoMachine (NX) to improve the speed
 - <https://docs.nersc.gov/connect/nx/>
 - Use TotalView's Remote Connections or Remote Display Client (RDC)
 - <https://docs.nersc.gov/tools/debug/totalview/#slow-x-window-gui-responses>
 - Perlmutter doesn't support RDC, yet
 - Installation packages and RDC available at <https://totalview.io/downloads> for Linux, macOS (Intel), Windows (64-bit)
 - RDC also available in `$TOTALVIEW_DIR/remote_display`
 - Need to install 'VNC Viewer' too on Mac for RDC

RDC for Cori

- **Remote Host:** cori.nersc.gov
- **User Name:** <your NERSC account name>
- **Path to TotalView on Remote Host:**
/usr/common/software/toolworks/totalview.default/bin/totalview
- **Path to MemoryScape on Remote Host:**
/usr/common/software/toolworks/memscap.default/bin/memscap
- <https://docs.nersc.gov/tools/debug/totalview/#remote-display-client>

For password-less
ssh, use sshproxy's
keys

(<https://docs.nersc.gov/connect/mfa/#sshproxy>

and

<https://docs.nersc.gov/connect/mfa/#ssh-configuration-file-options>)

TotalView Remote Display Client

File Help

TotalView
by Perforce

Session Profiles:
cori

1. Enter the Remote Host to run your debug session:
Remote Host: cori.nersc.gov User Name : elvis Advanced Options

2. As needed, enter hosts in access order to reach the Remote Host:

Host	Access By	Access Value	Commands
1	User Name		
2	User Name		

3. Enter settings for the debug session on the Remote Host :

TotalView MemoryScape

Path to TotalView on Remote Host: /usr/common/software/toolworks/totalview.default/bin/totalview

Arguments for TotalView:

Your Executable (path & name):

Arguments for Your Executable:

Submit Job to Batch Queueing System: Not Applicable

Launch Debug Session

Remote Connections

- Full installation of the tool on a local machine
- Use it for establishing remote connections
- Installation packages available from <https://totalview.io/downloads>

- <https://docs.nersc.gov/tools/debug/totalview/#remote-connections>

- **Connection Name:** perlmutter or cori

- **Remote Host(s):**

<account_name>@saul-p1.nersc.gov or

<account_name>@cori.nersc.gov

- **TotalView Remote Installation Directory:**

/global/common/software/shasta2105/toolworks/totalview.default/bin (perlmutter) or

/usr/common/software/toolworks/totalview.default/bin (cori)

- Use sshproxy's keys for password-less ssh



Preferences

Remote Connections

Create a configuration to launch the TotalView debugger on a remote host.

Provide the necessary information to reach the host and the debugger.

Select a configuration to edit: perlmutter or create a new configuration

Connection Name
Provide a name for your connection.
perlmutter

Remote Host(s)
Provide a comma separated list of SSH hosts in the form: user@host1, user@host2
elvis@saul-p1.nersc.gov

Private Key File
Specify an optional local private key (e.g. .pem or .ppk) file to use for the SSH connection.
/my/path/my_key.pem

TotalView Remote Installation Directory
Enter the path to the totalview executable or leave blank if totalview is in your path.
/global/common/software/nersc/shasta2105/toolworks/totalview.default/bin

Remote Command(s)
Enter optional shell commands to execute or source a remote script before starting remote TotalView debugger
module load totalview

Delete Configuration

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OK APPLY CANCEL

Thank You!

