Tutorial on Using TotalView

- Instructors:
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- 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
  o A small number of features available only in Classic UI
  o 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/](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](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](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/memyscape.default/bin/memscape
- [https://docs.nersc.gov/tools/debug/totalview/#remote-display-client](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](https://docs.nersc.gov/connect/mfa/#sshproxy) and [https://docs.nersc.gov/connect/mfa/#ssh-configuration-file-options](https://docs.nersc.gov/connect/mfa/#ssh-configuration-file-options))
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
Thank You!