

Debugging on BW

Aaron Weeden
&
Mobeen Ludin

DDT Debugger

- We will be using gdb (terminal based) debugger and DDT (graphical interface) debugger
- A parallel debugger from Allinea Software, can be used for scalar, multithreaded and large-scale parallel applications.
- DDT user guide:
 - <http://content.allinea.com/downloads/userguide.pdf>
- Blue Waters documentation:
 - <https://bluewaters.ncsa.illinois.edu/ddt>
- General debugging strategies:
 - http://www.oscer.ou.edu/ncsiworkshop2012intropar_debugging_parallel_programs_peck_20120802.pdf

Before you login

- How to SSH:
 - \$ `ssh -Y instr004@bwbay.ncsa.illinois.edu`
- Compile with the -g option:
 - \$ `cc -g mpi_pi_MonteCarlo.c -o mpi_pi_MonteCarlo`
- Ask for interactive session:
 - \$ `qsub -I -V -X -l nodes=1:ppn=32:xe,walltime=01:55:00`

Ways to use DDT

- Starting a DDT debugging session with one of the following:
 - submit a job through DDT
 - manually launch a program with DDT
 - attach DDT to a running program
 - start a debug session from inside an interactive
- The first three begin by launching ddt using the commands:
 - \$ `module load ddt`
 - \$ `ddt &`

Commands to start DDT

- On Compute Node:
 - \$ ddt -start -n 4 ./mpi_pi_integration
 - \$ ddt &

Submit job through DDT

Run (queue submission mode)

Application: /u/training/instr004/mydebug/thread_model_detect Details

Application: /u/training/instr004/mydebug/thread_model_detect Folder icon

Arguments: Dropdown arrow

stdin file: Folder icon

Working Directory: Folder icon

MPI: 10 processes, Cray XT/XE/XK/XC (MPI/shmem/UPC/CAF) Details

Number of processes: 10 Dropdown arrow

Implementation: Cray XT/XE/XK/XC (MPI/shmem/UPC/CAF), use queue Change...

aprun arguments Dropdown arrow

OpenMP Details

CUDA Details

Memory Debugging: Fast, No guard pages, Backtraces, Preload Details...

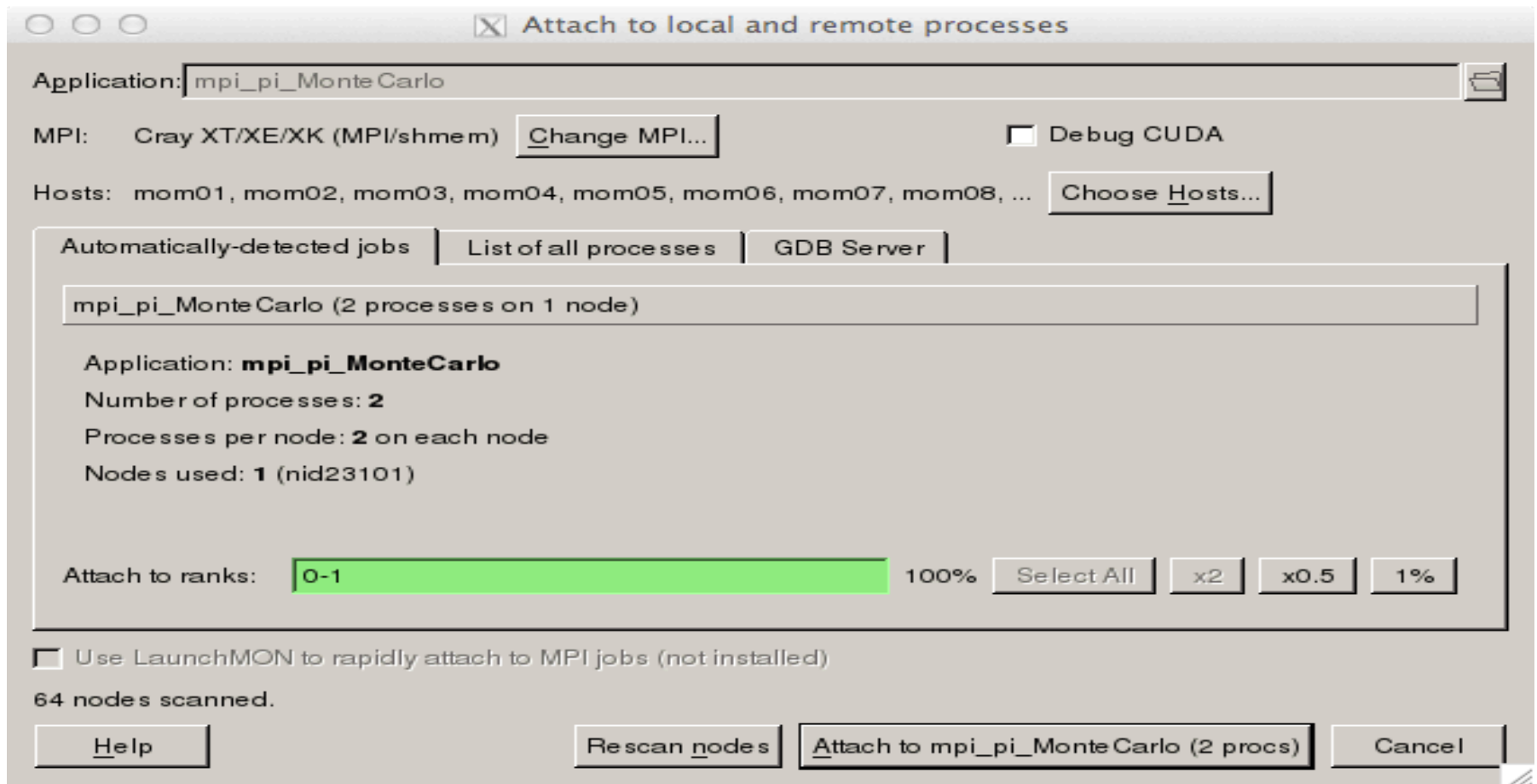
Queue Submission Parameters: Wall Clock Limit=00:30:00, Queue=normal, Node Feature=xe Details...

Environment Variables: none Details

Plugins: none Details

Help Submit Cancel

Attaching to a job already running



More Helpful Resources

- https://www.sharcnet.ca/help/index.php/Parallel_Debugging_with_DDT
- Allinea Tutorials: <http://www.allinea.com/tutorials>
- <https://www.sharcnet.ca/Documents/tutorials/DDT/>