The Eclipse Parallel Debugger

Part of the Eclipse Parallel Tools Platform Project

http://eclipse.org/ptp





Eclipse Parallel Debugger Key Features

- Tightly integrated with Eclipse IDE
 - Preserves Eclipse "look and feel"
 - Uses PTP runtime and widgets
 - Uses standard Eclipse debug widgets
 - Provides services for other integrated tools
- Designed for very large parallel programs (1000+ procs)
 - UI tested to 90,000 processes
 - Simulated 40,000 processes
- Language neutral
 - Uses any source editor available (C/C++/Fortran)
 - Identical interface for multiple languages





Eclipse Parallel Debugger Key Features (cont...)

- Supports debugging of multiple jobs simultaneously
 - Users can switch between multiple parallel jobs
 - Manages process status, breakpoints, etc. for multiple jobs
- Manages "sets" of processes
 - Creation/deletion/modification of process "sets"
 - Can be used for any debug commands: breakpoint, step, etc.
- High level external debug API
 - Simplifies integration with external debug infrastructure
- Open source
 - The only open source GUI-based parallel debugger currently available





Eclipse Parallel Debugger User Interface

```
000
                                                  Parallel Debug - test.c - Eclipse SDK
Parallel De... 🐉 Java
E Parallel Debug ⊠
                                     job0 - Root [40000]
                                                                                                    * * * * * * * | + | - | - | - |
  参 job0
                                                                                     test.c [Line: 9] <Job: job0 - Set: a>
                                                                                     test.c [Line: 13] < Job: job0 - Set: a>
                                                                                     test.c [Line: 8] < Job: job0 - Set: Root>
                                    Process ID: 4063
                                      🗆 🗆 🕶 🛒 👼 🏚 🎉 🎉 🛤 💵 👊
ॐ Debug ☒
 ▶ 🍪 Proc 0
    ▼ SProc 1
       ▶ № 1 - 0
    ▼ % Proc 39999
       ▶ № 39999 - 0
       Debugger
       Launch Label 0
                                                                                                  □ □ E Outline 🛭
€ test.c 🖾
                                                                                                                 La K & o
   #include <stdio.h>
  #include <mpi.h>
                                                                                                           stdio.h
                                                                                                           mpi.h
  main(int argc, char *argv[])
                                                                                                          main
         int i;
         MPI_Init(&argc, &argv);
         MPI_Comm_rank(MPI_COMM_WORLD, &i);
         printf("hi from %d\n", i); fflush(stdout);
         sleep(1);
         for (i = (i+1) * 100 ; i > 0 ; i--) {
              printf("i is now %d\n", i);
              fflush(stdout);
```

Eclipse Parallel Debugger Pros & Cons

Pros

- Designed for scalability
- Highly integrated
- Extensible
- Services available for other tools
- Open source

Cons

- Heavyweight server processes
- May be difficult to support unusual architectures (e.g. Red Storm)
- Early days; full functionality not yet available
- Initial implementation relies on OpenRTE
- Needs contribution from other sources



