IBM

Parallel Environment

Highlights

Provides a full-function development environment for parallel applications

Supports AIX® V4.3.2 and PSSP V3.1

Exploits threads and thread-safe MPI message passing on all nodes including symmetric multiprocessors (SMPs)

Supports up to four user processes per SP™ node adapter

Supports Low-level Application Programming Interface (LAPI) programs

Advantages

Easier parallel application development

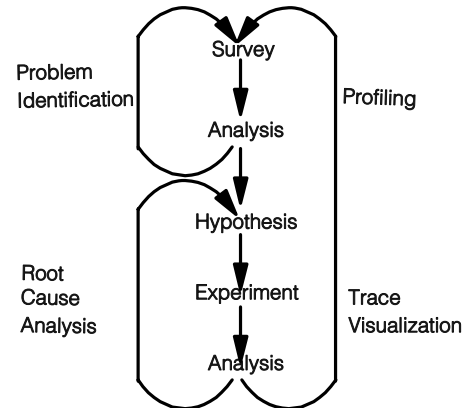*Enhanced support for threaded and LAPI applications*

Improved profiling for analysis of application performance

Enhanced XProfiler graphical performance tool

Enhanced visualization and monitoring tools for threaded applications

Enables easy application portability to networked RS/6000® or RS/6000 SP systems

Parallel Application Optimization Phases

Description

Parallel Environment (PE) for AIX on the RS/6000 platform is a complete solution for enterprises that need to develop, debug, analyze, tune and execute parallel programs on the AIX platform. This application development solution consists of:

• Parallel Message Passing APIs for full implementation of the MPI 1.2 standard, plus a subset of the MPI 1.2 I/O chapter of the MPI. 2 standard. Also, continued support for IBM's own Message Passing Library for communications between executing tasks in a Fortran, C or C++ parallel program.

• A Parallel Operating Environment (POE) for managing the development and execution of parallel applications.

• A user-friendly visualization and performance monitoring tool, Visualization Tool (VT), for viewing the unique performance characteristics of a parallel application. The VT graphically shows the performance and communication characteristics of an application and can act as an online monitor to show current application activity.

- Parallel debuggers offering both command-line and Motif-based interfaces. These debuggers extend traditional AIX capabilities and provide features for parallel application task debugging.

PE V2.3 functions

PE V2.3 provides exploitation of threads and thread-safe MPI message passing on all nodes, including SMPs, and also supports Low-level Application Programming Interface (LAPI) programs. Included are: tool extension for threaded applications, support for parallel applications on AIX 4.2.1, and easy application portability to a networked cluster of RS/6000 or RS/6000 SP systems.

The POE has been enhanced to support threaded applications and to handle asynchronous signals from the user parallel program. The visualization and performance monitoring tool has been enhanced to support thread-safe VT trace output files in addition to limited visualizations of thread events. A graphical tool, XProfiler, is available for analyzing application performance. Zoom, filter and search functions support graphical manipulation to aid analysis and tuning of parallel programs.

New with PE V2.4

PE V2.4 increases the number of tasks supported in a single POE job from 512 to 2048 (1024 with user space MPI or LAPI libraries). In addition, up to four user space tasks can now run on each SP node from the same or different jobs, allowing parallel applications to exploit SMP nodes. POE now also provides the ability to checkpoint the state of a parallel batch program for restart in case of application failure.

For increased MPI application debugging, a new PEDB capability provides the following:
- A summary of the number of active messages from each task in an application
- Message queue information for a specific task
- Detailed confirmation for a specific message
- The ability to debug parallel applications currently executing
- The ability to view thread events in the visualization and performance monitoring tool

Positioning

PE is IBM's strategic high-function development and execution environment for parallel applications using either the RS/6000 SP system or one or more RS/6000 processors. PE has been enhanced to exploit SMP nodes as well as threaded applications and the MPI message passing API. PE V2.3 requires AIX V4.2.1 and PSSP 2.3 when running on an SP, while PE V2.4 requires AIX V4.3.2 and PSSP V3.1 .

For more information
- Contact your IBM marketing representative or IBM Business Partner.
- Access http://www.rs6000.ibm.com on the Internet to get to the RS/6000 Products and Services page on IBM's World Wide Web server, and then select the appropriate hardware, software, or services option.

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