SUN HPC CLUSTERTOOLS™ 3.0 SOFTWARE

The power of parallel processing for High-Performance Computing (HPC).

Sun HPC ClusterTools™ 3.0 software offers unrivaled parallel development tools, bringing Sun's network computing vision to high-end technical markets. With tools that connect multiple shared-memory machines for supercomputing-class performance—at a fraction of supercomputer costs—Sun is fast becoming a leader in high-performance technical computing. Sun HPC ClusterTools 3.0 software supports the industry standard message-passing interface (MPI) for developing portable message-passing applications. What's more, our Prism™ programming environment is the same product that helped make Thinking Machines Corp. the parallel software leader. Put that together with the rest of our comprehensive suite of development and administration tools, and you have the industry's most integrated, flexible—and affordable—parallel development environment.

HIGHLIGHTS

- Supports single symmetric multiprocessors (SMPs) and clusters of SMPs; supports applications running with up to 1024 processes and up to 64 nodes (SMPs).
- Supports 64-bit applications with Solaris™ 7 operating environment.

- Sun MPI delivers optimized, thread-safe message passing; Sun MPI I/O supports parallel I/O capabilities.
- Prism programming environment lets you develop, execute, debug, tune, and visualize programs.

- Integrated with Load Sharing Facility (LSF) to provide resource management for both serial and parallel applications, including distributed batch scheduling.
- Parallel File System supports parallel I/O, for exceptional throughput.

- Cluster Run-Time Environment (CRE) delivers tools for parallel application configuration, monitoring, and execution.
- Sun Scientific Subroutine Library provides scalable parallel functions and tools for scientific and engineering applications.

Sun HPC ClusterTools 3.0 Software Specifications

A leader in technical computing, Sun is committed to delivering world-class tools to developers. Through internal research and development, acquisition of technology and expertise (for example, our acquisition of the Thinking Machines Corp. parallel development unit), product licensing, and strategic alliances with top HPC technology providers, Sun delivers the industry's most comprehensive, integrated tool suite for high-performance computing. And we're developing and evolving the kinds of high-quality products that will keep you competitive well into the next century.

Sun HPC ClusterTools 3.0 Package

(Bundled with Sun™ HPC Servers; optionally available on any Sun UltraSPARC™ system)

Sun™ MPI

- Implementation of industry-standard MPI message-passing library for parallel applications that execute across clusters or within a single SMP
- Thread safe and optimized for Sun HPC platforms
- Integrates with Cluster Run-Time Environment; utilizes load balancing and other resource management features
- Low latency implementation using Remote Shared Memory (RSM) over SCI cluster interconnect
- Supports most of MPI-2 standard including client-server, spawn, and spawn_multiple
- FORTRAN 77, F90, ANSI C, C++ interface specifications

Sun MPI I/O

- Includes all MPI I/O routines from MPI-2 standard
- Supports parallel applications by allowing them to express high-level I/O needs clearly
- Supports I/O to and from standard Solaris and Parallel File System files

Prism

- Graphical programming environment for debugging and performance analysis of MPI applications
- Visualizes data in a variety of formats including text, dither, colormap, threshold, graph, surface, vector, and histogram
- Controls program execution, sets breakpoints and tracepoints, prints values of variable expressions, and graphically displays call stack
- Controls multiple processes and allows user to aggregate them into meaningful groups
- Supports FORTRAN 77, F90, ANSI C, C++
- Provides message queue analysis for MPI applications

Sun Scientific Subroutine Library (S3L)

- Set of parallel and scalable functions and tools for scientific and engineering computing
- Includes array syntax interface callable from programs using Sun MPI
- Supports multiple-instance paradigm
- Thread safe
- Uses Sun Performance Library for nodal computation
- Detailed programming examples are provided online
- Direct support for a subset of the ScaLAPACK API

Cluster Run-Time Environment (CRE)

- Provides basic job-launching and load-balancing capabilities for applications running with up to 256 processes and 64 nodes
- Daemon-based environment handles security and program execution across nodes
- Tracks system resources, ensuring execution on nodes that best meet requirements

Sun Parallel File System (PFS)

- Supports high-performance, scalable I/O, distributing individual files across multiple disks and I/O servers
- Reads from and writes to multiple disks and servers in parallel, for significantly higher file I/O performance
- Optimized for complex data-access patterns common in parallel scientific applications
- Supports variable block sizes for striping

Cluster Console Manager (CCM)

- Allows administrators to open windows to each node in a cluster and initiate operations across a subset or all nodes with simple commands

Switch Management Agent (SMA)

- Provides ability to configure and monitor an SCI switch

Load Sharing Facility (LSF) Package

(Optional, not bundled with HPC Servers)

- Resource-management system licensed from Platform Computing Corporation
- Provides load sharing and distributed batch queuing on heterogeneous platforms
- Optimally allocates jobs based on availability and current load, as well as individual job resource requirements
- Graphical interface for batch submission, configuration, and monitoring
- Includes LSF Base, LSF Batch, and LSF Parallel
- Integrated with HPC ClusterTools software to support parallel application submission and control; supports parallel applications running with up to 1024 processes and 64 nodes

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