

MPI/Pro[®]

LEADING COMMERCIAL MPI MIDDLEWARE



FEATURES AT A GLANCE

Scalable and robust implementation of the MPI-2 standard

Support for SMP communication, traditional transports (TCP/IP), and high-speed networks (Myrinet[®] and InfiniBand[®])

Support for Microsoft[®] Windows[®], Linux, Mac OS X, LynxOS[®] 4 and Mercury[™] MC/OE

Supports hybrid concurrency model with OpenMP[™] or POSIX threads

PRODUCT OVERVIEW

MPI/Pro® is the leading commercial MPI middleware based on the MPI standard. MPI/Pro optimizes time to solution for parallel processing applications in hundreds of production sites. Verari Systems® offers MPI/Pro on a wide variety of operating systems and interconnects, including Microsoft® Windows®, Linux and Mac OS X, as well as Gigabit Ethernet, Myrinet® and InfiniBand®.

Value Drivers of MPI/Pro - The creators of MPI/Pro were co-authors of the MPI standards (1 and 2) and also of the original MPICH freeware. It uses interrupt-driven architecture and supports the progress rule to ensure scalability. Minimum time to solution, rather than lowest latency, is one of the key values of MPI/Pro. Lack of polling also leads to higher bandwidth and greater overlapping of communication and computation than are possible in polling or quasi-polling implementations.

Complete MPI-2 Support - MPI/Pro has all of the functionality of MPI-2. These include all of MPI 1.2 plus one-sided communication, dynamic process management, parallel file I/O and extended collective operations.

MPI/Pro in Production at Cornell - "We use MPI/Pro message passing middleware with commercial applications and fracture mechanics codes that run in parallel on 256-processor Windows High Performance Computing clusters. MPI/Pro is a highly reliable, commercially supported product that provides our programmers with a fully compliant implementation of the MPI standard in all areas, including error handling. The engineers at Verari Systems Software continually update their products to use the latest Microsoft technologies such as .NET."

Gerd Heber, PhD, Research Associate
Cornell Theory Center

Quality and Performance - "With its excellent performance, support products and access to engineers, MPI/Pro was the natural choice for West End Capital to implement its business critical parallel computation environment. MPI/Pro helped us to set new standards for real-time evaluation of risk within our Fixed Income Arbitrage Fund, making use of a large scale parallel Monte Carlo simulation of financial markets."

Mark Byrne, Chairman and CEO
West End Capital Management

ABOUT VERARI SYSTEMS

Verari Systems, Inc. is the premier developer of energy efficient data center and desktop consolidation platforms utilizing independent blade-based compute and storage solutions that are defining a new era in the green data center. Verari Systems is a market leader in blade storage and energy efficient platforms. Organizations such as Wachovia, Akamai, Microsoft, Qualcomm, CGGVeritas, Harris, Lockheed Martin, Northrop Grumman, and Sony Imageworks, as well as top universities and research institutions worldwide, are among the customers who have chosen Verari Systems' line of award-winning high density blade storage and servers, rack-optimized platforms and software solutions.

Specifications

Key Benefits

- ▶ Performance – Has degrees of tuning that competing implementations do not. Constant examples of customers running applications in less overall time with MPI/Pro than competing implementations.
- ▶ Scalability – MPI/Pro is used in some of the fastest supercomputers in the world (NCSA's Tungsten, JPL's Cosmos, Cornell Theory Center's Velocity).
- ▶ Ease of Use – From improvements in documentation to walking customers through the installation, ease of use is an important benefit of MPI/Pro.
- ▶ Robustness – MPI/Pro can run large jobs and also run for long periods of time. Customers can run jobs for weeks and months not hours or days. When customers depend on getting their work done, they come to Verari Systems Software® for MPI/Pro.
- ▶ Support – Verari Systems Software offers commercial-grade phone and email support. Our support staff helps customers get started with MPI/Pro and make sure they are working on their projects rather than their cluster. MPI/Pro is the only MPI implementation that is supported on a vast number of architectures and OS's.

Other Important Features of MPI/Pro:

- ▶ Efficient multi-device architecture
- ▶ Supports automatic termination of MPI jobs when one or more processes exit abnormally
- ▶ Offers remote debugging with GDB
- ▶ Supports a variety of C/C++ and Fortran compilers
- ▶ Remote start-up implemented through native services (no daemons)
- ▶ OpenMPTM compliant
- ▶ UFS, NFS, Lustre™, Panasas™ and PVFS High Performance Parallel I/O support- comes with MercuriOTM High Performance I/O and is ROMIO API backwards compatible
- ▶ Comes with new performance configurator tool for TCP to extract maximum performance
- ▶ Transport fault detection and asynchronous notification of user programs
- ▶ Offers a number of performance tuning parameters that help with adjusting the performance and scalability behavior of the library to the specific user's environment
- ▶ Processor Affinity
- ▶ Dynamic Process Management (DPM)
- ▶ 1-sided (put/get/accumulate) communication API
- ▶ Extended collective operations
- ▶ "Miscellaneous" MPI-2 Support
- ▶ Choice of low-latency or low overhead mode
- ▶ Quality tested against industry leading compliance and performance suites
- ▶ Patent pending algorithms for communication protocols

MPI/Pro® for Windows®

Architecture	Device Interconnect
x86 (Intel) / x86-64 (AMD)	TCP, SMP
x86 (Intel)	Myrinet® (GM Architecture)
x86 (Intel)	InfiniBand®
Notes:	
<ul style="list-style-type: none"> • 8 process minimum • Configurations of over 128 processes are priced on custom basis • Support and maintenance is required for the first year at a rate of 20% per annum of the purchase price • Support and maintenance is required for the first year at an annual rate of 20% of the purchase price 	

MPI/Pro for Linux

Architecture	Linux Distribution	Device Interconnect
x86 (Intel)	Red® Hat	TCP, SMP
x86 (Intel)	Red Hat	InfiniBand, Myrinet (GM Architecture)
x86-64 (AMD and Intel)	SUSE, Red Hat	TCP, SMP
x86-64 (AMD and Intel)	SUSE, Red Hat	InfiniBand
Notes:		
<ul style="list-style-type: none"> • 8 process minimum • Configurations of over 128 processes are priced on custom basis • Support and maintenance is required for the first year at an annual rate of 20% of the purchase price 		

MPI/Pro for Mac OS X

Version	Device Interconnect	Availability
10.4.x and higher	TCP, SMP	Now
Notes:		
<ul style="list-style-type: none"> • 8 process minimum • Configurations of over 128 processes are priced on custom basis • Support and maintenance is required for the first year at an annual rate of 20% of the purchase price 		

MPI/Pro for MC/OE (Mercury)

Architecture	Interconnect/Fabric
PowerPC®	RACE++
PowerPC	RapidIO™
Notes:	
Support and maintenance is required for the first year at an annual rate of 20% of the purchase price	

MPI/Pro for LynxOS™ 4

Architecture	Device Interconnect
x86 (Intel)	TCP, SMP
Notes:	
Support and maintenance is required for the first year at an annual rate of 20% of the purchase price	



Verari Systems 9449 Carroll Park Drive, San Diego, CA 92121 USA Phone 858-874-3800 or 888-942-3800 Web www.verari.com

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