

## PRODUCT OVERVIEW

MPI/Pro® is the leading independent commercial MPI middleware based on the MPI standard. MPI/Pro optimizes time to solution for parallel processing applications in hundreds of production sites. RunTime Computing Solutions® 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 RunTime Computing Solutions 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

## 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.
- ▶ 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 RunTime Computing Solutions for MPI/Pro.
- ▶ Support – RunTime Computing Solutions 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.

## Important Features of MPI/Pro:

- ▶ Thread Safe
- ▶ Strong Progress Support
- ▶ 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)
- ▶ OpenMP compliant
- ▶ UFS, NFS
- ▶ 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

## MPI/Pro® for Windows®

Architecture	Device Interconnect
x86 (Intel) / x86-64 (AMD)	TCP, SMP
x86 (Intel)	Myrinet® (GM Architecture)
x86 (Intel)	InfiniBand®

## 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

## MPI/Pro for Mac OS X

Version	Device Interconnect	Availability
10.4.x and higher	TCP, SMP	Now

## MPI/Pro for Mercury Platforms

Architecture	Interconnect/Fabric
PowerPC	RACE++
PowerPC	RapidIO™ and SRIO

## MPI/Pro for LynxOS™ 4 and higher

Architecture	Interconnect
x86 (Intel)	TCP, SMP

## MPI/Pro for Curtiss-Wright CHAMP-AV6

Architecture	OS	Interconnect/Fabric
PowerPC	VxWorks 6.7 or higher	SRIO

Also available for TCP/IP on other VME/VPX platforms.