# Paragon<sup>™</sup> XP/E Supercomputer

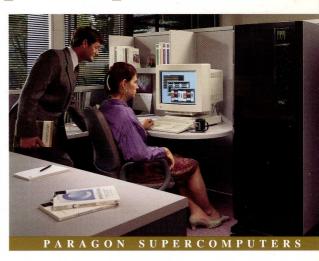
A new level of affordability for Paragon™ systems. Designed to provide entry level

access to Paragon™ technology, Paragon

XP/E systems scale to deliver the

right compute power for dedicated

applications and serve as develop
ment platforms for remote Paragon



XP/S systems. Paragon XP/E systems offer the same standard hardware and software options as other Paragon systems, all in a single office environment cabinet.

### **Production Ready**

- Familiar UNIX\* environment
- Single system image
- Support for virtual memory
- Parallel File System layered on UFS
- IPSC\*/860 and Concurrent File System compatibility
- Air-cooled
- Designed for high availability

## **Enhanced Programmability**

- Fortran 77, C#, High Performance Fortran#, Ada
- Performance optimized single node and parallel libraries
- Interactive, graphical parallel development tools
- X Window System\*, DGL\*, OpenGL\*, and Motif\* graphics

#### **External Connectivity**

- Unitree\* client support
- NFS\* and TCP/IP protocols
- HiPPI and SCSI interfaces and HiPPI-VME#
- Ethernet and FDDI interfaces

## The Paragon™ XP/E System

Paragon XP/E systems are complete systems incorporating the same nodes, interconnect backplanes, card cages, operating systems, and programming environment available in the Paragon XP/S systems. To achieve aggressively low pricing, these elements are packaged in a single low-cost cabinet containing one or two card cage backplane assemblies along with power supplies and disk drives. The Paragon XP/E is scalable from 4 to 32 nodes.

- Provides a software development platform for large Paragon XP/S systems
- Fully compatible hardware and software with Paragon XP/S systems
- Performance scales to over 2 Gflops
- Software developed on Paragon XP/E systems will scale to teraFLOPS
- Accommodates all Paragon hardware and software options such as HiPPI, FDDI, etc.



# Paragon™ System Overview

The Paragon family of supercomputers are distributed-memory multi-computers based on Intel's teraFLOPS architecture, which has been developed over the course of four generations of parallel supercomputers and is implemented using Intel's advanced microprocessor and semiconductor process technology. A modular implementation allows for continuous technology insertion as new generations of microprocessors and advances in messaging technology becomes available.

# **Paragon™ System Architecture**

To deliver maximum sustained performance, every aspect of the Paragon supercomputer is scalable and remains in balance as the system size increases.

The Paragon system's interconnect network offers high-bandwidth, low-latency communications and frees programmers from having to concern themselves with interconnect topology. Fixed function Mesh Router Controllers, arranged in a two-dimensional mesh, route messages between any two nodes at speeds approaching 175 MB/sec full duplex. All nodes appear to be connected to all other nodes: communications performance is uniform.

The Paragon supercomputer's computational node is designed around Intel's i860™ XP RISC microprocessor. Each node contains a single i860 XP dedicated to computation and a second i860 XP dedicated to improving latency and throughput of message passing operations. The second message co-processor is not involved in the system's performance ratings.

### Distributed OSF\*/1 Operating System

The Paragon operating system brings OSF\*/1, the Open Software Foundation's industry standard version of the UNIX operating system,

		CIFICATIONS	
	To the state of		
XP/E-8N	XP/E-16N	XP/E-24N	XP/E-28N 2.1
8	16	24	28
1	1	1	1
		Byte Service	and
	256	384	448
1.2	2.5	3.8	4.5
4.0 one 4mm Interface.	4.0 tape (2GB) a	4.0 and one Ether	4.0 net
	1 20"	1 (0.54 m)	
vailable	10 sq.'	(0.35 m <sup>2</sup> )	
	0.6 8 1 one comb Ethernet n 128 1.2 4.0 one 4mm	0.6 1.2 8 16 1 1 one combination 32 M Ethernet node 128 256 1.2 2.5 4.0 4.0 one 4mm tape (2GB) a Interface.	0.6

to the performance-driven environment of scalable, distributed-memory computing. It provides both the portability benefits of industry standard UNIX and a number of enhancements that increase applications performance and ease of use.

#### For more information call (503) 531-5300

Intel Corporation Supercomputer Systems Division 14924 NW Greenbrier Parkway Beaverton, OR 97006

Intel Corporation (UK) Ltd. Supercomputer Systems Division Pipers Way Swindon, SN3IRJ United Kingdom (+44)-793-696700

Intel Japan K.K. Supercomputer Systems Division 5-6 Tokodai, Tsukuba City Ibaraki-Ken 300-26 Japan (+81)-29847-8511 Intel GmbH Supercomputer Systems Division Dornacher Strasse 1 8016 Feldkirchen bei Muenchen Germany (+49)-89-90-992-415

Intel Corporation Supercomputer Systems Division 1 Rue Edison-BP303 78054 St. Quentin-en-Yvelines Cedex France (+33) 1-30-57-7000

# © Intel Corporation, 1993 Order No. 910-001 11/93/5K/JP Specifications, features and prices are subject to change without notice. iPSC is a registered trademark and i860", Paragon", Intel486", and ProSolver" are trademarks of Intel Corporation. \*All other brands and names are property of their respective owners.

# PARAGON™ DEVELOPMENT ENVIRONMENT

#### Languages

Fortran-77 C C++# High Performance Fortran (HPF) Validated Ada\*

#### **Tools**

FORGE-90\* parallelization tools (from APR)
Paragon ParAide toolset.
Interactive parallel debugger and performance analysis tools, with Motif visual interface

#### **Sequential Libraries**

BLAS, FFT, NAG\* Signal Processing Library (SEGlib)

#### **Parallel Solvers & Libraries**

ProSolver™ family of equation solvers

DES direct dense matrix solver SES skyline spare matrix solver IES iterative spares matrix solver 2D and 3D FFTs

\*Available through a thirdparty supplier.