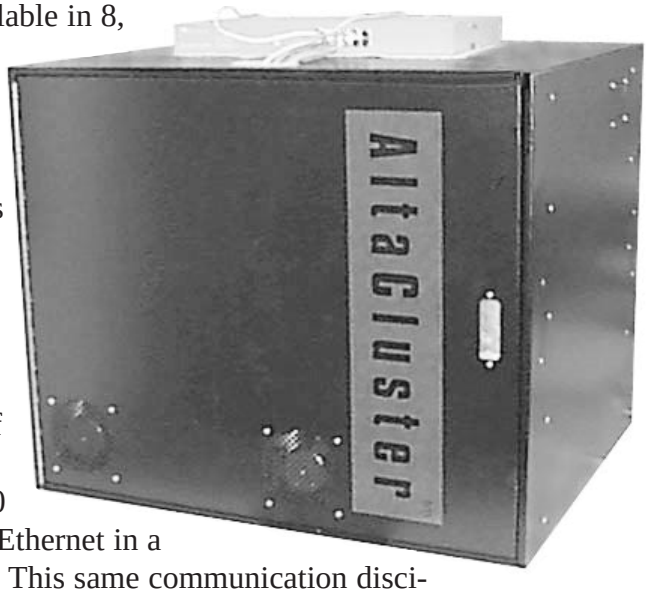
ALTA TECHNOLOGY®

AltaClusters™

AlphaPowered™ and Pentium® II

Overview

AltaClusters™ from Alta Technology are modular clustered computing systems which combine multiple Alpha or Pentium® II processors to form standard system configurations. Systems are available in 8, 16, 32, and 64 node configurations. Multiple systems may be connected using Gigabit communication links to form clustered systems of 1024 processors or more.



Processing Technology:

Each AltaCluster is composed of multiple processors (in multiples of 8) linked together with 10/100 Ethernet, GB Myrinet™, or GB Ethernet in a switched node-to-node topology. This same communication discipline is used to link multiple clusters together allowing them to function as a single, large integrated system.

High performance FORTRAN and parallel support extensions enable the parallel processing of any number of processes or processors. A total of 8 nodes can be installed within a single width system cabinet. Multiples of this cabinet are stacked and/or linked together using the same 1 GB communications capability with switches provided to allow for point-to-point communications between any node in the configuration.

Low-cost clusters incorporate eight ATX AlphaPowered or Pentium II motherboards per chassis and can be stacked for efficient space utilization. Limitations on memory and cache as found on ATX style motherboards are inherent in this design. However, off-the-self enhancement components are readily available in the form of PCI boards and memory modules.

Processor Nodes:

AlphaPowered Clusters

High performance Alpha nodes are implemented using Digital's 500MHz PC164™ single board computer operating at 500 MHz in a 2'x2'x2' system cabinet. Each Alpha node includes a large 2 MB L3 CACHE and up to 512 MB of memory.

PCI INDUSTRIAL PICMG COMPUTERS

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Pentium II Clusters

Pentium II based AltaCluster nodes are available with single or dual processors operating at up to 333MHz. Each Pentium II node is an ATX motherboard and provides 512K of CACHE and up to 512 MB of DRAM on board.

Power Control Management:

Each node in an AltaCluster has its own power supply. Power supplies are standard PC power units managed by the power supervisor module via 10/100 Ethernet. Custom software implemented over Fast Ethernet allows for control of each processor's power supply as well as for power sequencing to reduce the risk of overloaded circuits.

This power management also allows for loading of the system and eliminating individual processors from the active system for maintenance at a nominal cost per processor.

System Topology:

Standard AltaCluster configurations use 10/100 Ethernet for inter-processor communications. For applications requiring much faster links, Alta provides a choice of two products: Myrinet™ from Myricom or Gigabit Ethernet from Packet Engines. Both options operate at peak speeds of 1GB per second but perform differently according to specific application.

Software:

Extreme Linux is standard Red Hat™ Linux 5.0 with Parallel Virtual Machine (PVM) and Message Passing Interface (MPI) extensions, all supported by Alta Technology and Red Hat. These extensions enable parallel processing to take place across any number of nodes. The optional High Performance FORTRAN compiler with parallel support extensions (PSE) allow standard FORTRAN code to be run in parallel with a minimum of human intervention. System administration is performed through a single monitor.

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