Abstract

This paper presents the design and development of the Beowulf cluster that can be used by institutions to perform research that requires high performance computing. In many industries and scientific applications there is often a need to analyse large datasets using computational power of distributed and parallel systems. The High Performance Computing (HPC) components are very expensive but with the use of commercial-off-the-shelf (COTS) hardware components, the costs can be lowered down. COTS provide inexpensive computing alternative to educational institutions to perform their research that need high performance computers. In High Performance Computing jobs are divided into several small jobs that can be distributed in to all the nodes and they run concurrently on the system, this is made possible by the use of parallel computing. This paper will address the advantage that the Beowulf clusters have in the high performance computing field as well as how it can be implemented using COTS. The most important part of this paper is to investigate the factors that affect the cluster.
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**Index Terms**

Computer Science

Information Sciences

**Keywords**

High Performance Computing  Beowulf Clusters  Large data sets  Parallel
Computing.