

# The Implementation of a Parallel Data Processing Platform on Linux based PC Clusters

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## Abstract

In this project, a parallel processing platform built through standard personal computers (PCs) running under Linux operation system was constructed. While the mentioned platform's hardware components consist of fifteen standard off-the-shelf Linux PC, cabling and a cheap data switch to connect these PCs to one another as well as to the outside world (i.e., to the Internet), its software components include Linux operating system to run the PCs and Message Passing Interface (MPI) and/or Parallel Virtual Machine (PVM) to enable parallel processing over the connected PCs. Combining these open source software and hardware components, a Linux PC cluster was realized. On this PC cluster, the performances of MPI and PVM parallel processing interfaces were studied and it was determined that compared to PVM, MPI interface has better performance results. The parallel platform developed in this project achieved a maximum of 18.5 Gflop/sec (18.5 billion floating point operations per second) using standard 10 Mbit/sec Ethernet switches and without employing any special interconnection network such as Myrinet or Gigabit Ethernet.

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