

## Network computing: A LAN based parallel computing platform at the University of Indonesia

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### Abstrak

This paper explains the development of a parallel computing platform using the available LAN at the Inter University Center for Computer Science of Indonesia. A software tool like parallel virtual machine enables the networked stations to be harnessed as a huge computing resource, combining various type of computing nodes to run parallel computing tasks. The research was aimed at first: to develop a number of parallel high complexity algorithms such as modelling air pollution distribution based on Gaussian Air Pollution Dispersion Formula which simulates dispersion of pollutant emitted from industrial exhaust and also from vehicle exhaust on the road. Secondly these algorithms were used to test the platform to obtain network behaviour in supporting the implementation of parallel algorithms. From the experiments conducted there are strong indications that the network based computing facility could be used as a suitable platform for running parallel programs with some restrictions. Optimum performance with near linear speed up could be obtained by carefully partitioning the problems, limiting message passing activities and balancing the load of the participating processors.