**Background**

A common trend in computing over the last few years has been to create more computational power by connecting cheap, less powerful computing platforms into cluster. The initial purpose of this project was to build an ARM cluster of 6-12 homogeneous single board computers to make it the fastest and most efficient in cost and energy.

(1) A computer cluster is a single logical unit consisting of multiple computers that are linked through a LAN. The networked computers essentially act as a single, much more powerful, machine. A computer cluster provides much faster processing speed, larger storage capacity, better data integrity, superior reliablility, and wider availablility of resources. Computer clusters are, however, much more costly to implement and maintain. This results in much higher running overhead compared to a single computer.

(2) A cluster can also refer to a group of machines that work together that perform a similar function. Unlike grid computing, a computer cluster is controlled by a single software program that manages all the computers or "nodes" within the cluster. The nodes work together to complete a single task. This process is called "parallel computing" since the nodes perform operations in tandem.

Computer clusters can range from two machines to hundreds of connected computers. Small clusters are often used to improve the performance of web and online gaming services by handling multiple incoming requests in parallel. A web farm, for example, is a type of cluster that provides low latency access to websites. Large clusters can be used to perform scientific calculations or to run a large number of complex algorithms. For example, a large cluster may be used to apply textures and lighting effects to 3D models in each frame of an animated movie.

**Linpack**

(3)What is the Linpack Benchmark?

The Linpack Benchmark is a measure of a computer’s floating-point rate of execution. It is determined by running a computer program that solves a dense system of linear equations. Over the years the characteristics of the benchmark has changed a bit. In fact, there are three benchmarks included in the Linpack Benchmark report.

The Linpack Benchmark is something that grew out of the Linpack software project. It was originally intended to give users of the package a feeling for how long it would take to solve certain matrix problems. The benchmark stated as an appendix to the Linpack Users' Guide and has grown since the