SUMMARY- HOW TO BUILD A COMPUTER FARM

Parallel computing is the method of dividing a task into subtasks and executing these subtasks on different machines to achieve increased execution speed. This is useful in highly computation intensive applications like processing large amount of data, brute force solution to NP complete problems and the like. ComputeFarm is a open source framework for running such parallel programs.

Computer farm has a replicated worker pattern. The model is called a replicated worker pattern because all the workers are identical.
There are 3 major components in a Computer Farm.
a)ComputerSpace
b)Client
c) Workers

The ComputerSpace holds the task objects and the result objects. The Client which requires a job to be done breaks up the tasks into smaller subtasks and puts them into the Compute Space. The workers take tasks from the clients , execute the tasks and return the results to the Compute Space. The Client then collects the results from the Compute Space and consolidates the results into the result of the complete job that it had submitted to the Compute Space.

The paper quotes the simple example of how to break up a task of computing the sum of sqaures of n integers using the Jobrunner and JobRunnerFactory of JavaSpaces. SimpleJobRunnerFactory makes the program run as a single process. It can be made to run as multiple processes on different JVM's usind JavaSpacesJobRunnerFactory.

One major advantage of using the Computer farm is the code mobility. When the parallel processes are run on different machines or different JVM's the code for executing the task is made available to the worker by a codebase which is hosted on a HTTP Web server. To avoid the complexity of running a separate HTTP Daemon Computerfarm provides a ClassServer that allows the server and client to be run on the same JVM.

The main intention behind the development of the Jini framework was to provide the programmer relief from the "Fallacies of Distributed Computing" as the failures faced in a distributed environment are inherently different from running the program as a single process.