Grid computing involvement in Gaining benefits from using hardware of other computer of the same network

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Abstract

The paper is focusing on benefits of Grid computing associating in the hardware with same network. Grid computing systems work on the principle of pooled resources. Let's say you and a couple of friends decide to go on a camping trip. You own a large tent, so you've volunteered to share it with the others. One of your friends offers to bring food and another says he'll drive the whole group up in his SUV. Once on the trip, the three of you share your knowledge and skills to make the trip fun and comfortable. If you had made the trip on your own, you would need more time to assemble the resources you'd need and you probably would have had to work a lot harder on the trip itself.

Introduction

A grid computing system uses that same concept: share the load across multiple computers to complete tasks more efficiently and quickly. Before going too much further, let's take a quick look at a computer's resources:

- **Central processing unit (CPU)**: A CPU is a microprocessor that performs mathematical operations and directs data to different memory locations. Computers can have more than one CPU.
- **Memory**: In general, a computer's memory is a kind of temporary electronic storage. Memory keeps relevant data close at hand for the microprocessor. Without memory, the microprocessor would have to search and retrieve data from a more permanent storage device such as a hard disk drive.

Storage:

In grid computing terms, storage refers to permanent data storage devices like hard disk drives or databases.

Normally, a computer can only operate within the limitations of its own resources. There's an upper limit to how fast it can complete an operation or how much information it can store. Most computers are upgradeable, which means it's possible to add more power or capacity to a single computer, but that's still just an incremental increase in performance.

Methodology

At its most basic level, grid computing is a computer network in which each computer's resources are shared with every other computer in the system. Processing power, memory and data storage are all community resources that authorized users can tap into and leverage for specific tasks. A grid computing system can be as simple as a collection of similar computers running on the same operating system or as

complex as inter-networked systems comprised of every computer platform you can think of.

The grid computing concept isn't a new one. It's a special kind of distributed computing. In distributed computing, different computers within the same network share one or more resources. In the ideal grid computing system, every resource is shared, turning a computer network into a powerful supercomputer. With the right user interface, accessing a grid computing system would look no different than accessing a local machine's resources. Every authorized computer would have access to enormous processing power and storage capacity.

The major benefit is that it can solve larger, more complex problems in a shorter time.

- Also it is easier to collaborate with other organizations
- Grid Computing is truly helpful in making better use of existing hardware

Though the concept isn't new, it's also not yet perfected. Computer scientists, programmers and engineers are still working on creating, establishing and implementing standards and protocols. Right now, many existing grid computer systems rely on proprietary software and tools. Once people agree upon a reliable set of standards and protocols, it will be easier and more efficient for organizations to adopt the grid computing model.

Conclusive Theory

This section reveals the obvious benefits of Grid computing which has been around for a few years now and its advantages are many. Grid computing can be defined in many ways but for these discussions let's simply call it a way to execute compute jobs (e.g. Perl scripts, database queries, etc.) across a distributed set of resources instead of one central resource. In the past most computing was done in silos or large SMP like boxes. Even today you'll still see companies performcalculations on large SMP boxes (e.g. E10K's, HP Superdomes). But this model can be quite expensive and doesn't scale well. It illustrates that:

1) Grid environments are much more modular and don't have single points of failure. If one of the servers/desktops within the grid fail there are plenty of other resources able to pick the load. Jobs can automatically restart if a failure occurs.

2) No need to buy large SMP servers for applications that can be split up and farmed out to smaller servers (which cost far less than SMP servers). Results can then be concatenated and analyzed upon job(s) completion.

3) Much more efficient use of idle resources. Jobs can be farmed out to idle server or even idle desktops. Many of these resources sit idle especially during off business hours. .

4) Policies can be managed by the grid software. Some of the most popular grid enabling software include Platform LSF, Sun Grid Engine, Data Synapse, PBS, Condor, Univa UD, among others. Each do a good job of monitoring resources and managing job submissions based upon internal policy engines. .

5) This model scales very well. Need more compute resources just plug them in by installing grid client on additional desktops or servers. They can be removed just as easily on the fly.

The potential for grid computing applications is limitless, providing everyone agrees on standardized protocols and tools. That's because without a standard format, third-party developers -- independent programmers who want to create applications on the grid

computing platform -- often lack the ability to create applications that work on different systems. While it's possible to make different versions of the same application for different systems, it's time consuming and many developers don't want to do the same work twice. A standardized set of protocols means that developers could concentrate on one format while creating applications.

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