Feasibility Study: Basic Concepts of Grid-Service Oriented Computing

Daniel Beatty

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The fundamental issue for Grid computing is making many machines behave as one super-computer. Not all features of a super-computer can be made to work on more spread out machines due to the synchronization of time. If the grid is trying to make its connected machine behave as nodes of a supercomputer, then the features of an operating system designed for a supercomputer will have analogs in the grid.

Most supercomputer operating systems support shared libraries just like single processor machine operating system does. In the case of a grid, these libraries are shared by the middleware which determines how to distribute these libraries, how to access these libraries, and mechanisms for publishing a common set of libraries for many people to share and use.

One other concept that concerns the grid is reliability. Nodes are likely to fail, and redundancy is a mechanism to reduce the impact of this failure. Discovery services provide mechanisms identify resources (libraries, hardware specific devices, memory, data storage, etc).

Of course, the synchronization of time and the degree of precision to which this synchronization can be made determines how dynamic the scheduler can be. In many cases, a pyramid scheme going from weak to strong precision is hypothesized for a mechanism.