

## What Grid Computing Is Really About

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Grid computing uses a mesh of computers to perform complex tasks, but is not fully understood by all its potential users. This Spotlight dispels misconceptions about an emerging technology and shows how to profit from it.

## ANALYSIS

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Grids are collections of computer resources, owned by multiple organizations, that are coordinated to solve a common problem. These resources can be computers, collectively run in extremely large parallel-processing programs — typically used to solve the large-scale problems found in scientific and engineering computing. The multiple organizations may be product or geographic divisions of one firm, or may be multiple companies. Another type of grid hosts large amounts of data by spreading it across many systems.

Regardless of its type, the key aspects of a grid are multiple resource ownership and a single purpose. This distinguishes grids from previous distributed- or networked-computing models. Grid is not a product or specific technology. Grid computing is not new, it has been a topic of industry discussion and debate for many years and Gartner has written a number of reports on it. The academic, government and scientific communities have been some of the earliest successful adopters of grid, but it is also used heavily by financial services and pharmaceutical firms, among others.

Nevertheless, grid computing could still be considered to be a nascent concept, too immature for many commercial customers, despite the marketing hype of the vendors. There are many factors that hold back the widespread adoption of grids. It is not just technology limitations or the issue of complexity (you cannot just go out one day and buy a "grid"), but also the political or organization issues that arise when multiple owners with possibly conflicting priorities are involved. However, the motivations for using a grid to create a more powerful, larger, single virtual system, or to produce a less-expensive alternative of the same size as the system it's replacing, are powerful factors that compel many organizations to look at possible grid solutions. These organizations can be a manufacturer looking to do large amounts of design simulation and analysis, or an insurance company looking to more accurately assess its risk. The ability to create a virtual supercomputer that is faster than the largest traditional design opens the door for sizeable long-term rewards.

Gartner's research agenda for grid focuses on three significant client issues:

What is the current state of grid, and what can be expected in the future?

Where, when and how should organizations prepare for grid computing?

How will IT organizations benefit from grid?

This Spotlight addresses many of the questions we get from end users. In particular, it discusses three issues and attempts to debunk some of the vendor hype.

In "Grid Computing Boosts Cooperative Problem-Solving," originally published in 2003, we established our definition for grid computing, which we believe remains valid today.

In "It's Too Soon for Standardized Grid Computing," we highlight that in some organizations where a grid application may be successfully deployed, there could be a tendency to try and standardized the approach to grid across the organization. We believe this type of strategy is premature.

In "Public and Private Sectors Form Two Worlds for Grid Computing," we look at just one aspect of the challenges faced in trying to come up with a "universal" grid solution — the approaches and obstacles to grid computing can be very different depending on the nature of the organization.

In "The Utilities Analogy for Grid Computing Is Simplistic," we tackle one of the most prevalent vendor concepts — that grid computing is a utility like electrical utilities. We highlight the issues that show this is a dangerous concept to believe.

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