Grid- und Utility Computing

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Technology   **23**

THE COMPELLING CASE FOR UTILITY COMPUTING

Dan Hushon, chief technology officer, Sun Grid, Sun Microsystems, Inc, urges organisations to ditch their capital costs and underused hardware and tap into standardised utilities.

Looking at the evolution of the commodity called computing, history provides an extraordinary parallel in the evolution of electricity as a commodity.

More than a century ago, financier J P Morgan was among the first to wire his house for electricity. The system was fragile, however, and he needed an electrical engineer to manage it. At 11pm, the engineer went home and the lights went out. Also, electricity was many times the price of gas lighting.

A decade later, those deploying electricity settled on a few standards that ultimately accelerated consolidation in the industry. Prices began falling rapidly, and electricity was soon less expensive than gas for lighting. Today using electricity is simple, inexpensive and ubiquitous, and the technological complexity of producing it is hidden from the end user.

What's most interesting to me is that once the standards were adopted, and competition established, the electricity market finally established a transparent price – the hallmark of a true commodity. If the definition and pricing aren't transparent and established by a marketplace, products can't be deemed a commodity. Here are a few examples of transparent pricing: 5c per kWh, $2 per gallon. It's either a standardised physical delivery (gallon, barrel, tonne) or unit of consumption (typically time based: megabit hours, MWh hours), and it's the same across the industry.

Does your company produce its own electricity? Does it have in-house telecommunications staff to provide a telephone service? No? So why does every enterprise need to acquire all of the computing resources it uses, and then pay for the staff and facilities required to manage those resources?

We've entered a new era of computing: an era of simple, secure, low-cost, utility-style access to massive computer power and storage resources. This model is the first in the industry to offer standardised, transparent pricing and availability for a measured unit of the commodity called computing.

Consider these advantages:

- No hardware acquisition costs
- Simplified procurement and near-instant access to computing resources
- No software licenses or upgrades to manage
- No new employees or consultants to hire
- No facilities to lease
- You remain in control

There are no capital costs of any kind and no hidden costs, simply a fixed per-use cost or subscription fee that's clearly defined, completely transparent and financially very compelling.

Many organisations require vast amounts of computer power, but only occasionally. These demand spikes can be daily, weekly, quarterly or unscheduled. Thus, companies must acquire the resources they need for peak loads, resources that sit underutilised on valuable data centre floor tiles most of the time.

The utility or commodity model is nothing new. In fact, it is the natural destination of technical resources for which demand is pervasive. The progression is typically the same:

- Solutions are custom-built when the technology is immature and complex.
- Standards are established to make adoption easier and economies of scale realised.
- Pricing becomes transparent and the resource becomes commoditised.

The bottom line is that standardised, secure, scalable utility computing can be a viable option for many organisations looking to dial up or down computing capacity at a cost-effective price. ■
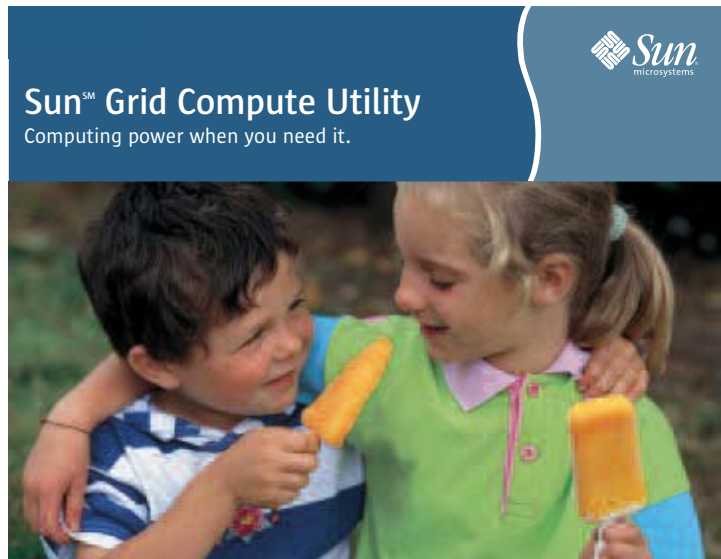
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Sun℠ Grid Compute Utility
Computing power when you need it.

> Compute resources — they must be available and accessible whenever you need them, 24x7. Many organizations are faced with resource utilization issues — they need vast amounts of compute power, but only at certain times. The rest of the time, resources are underutilized. Compounding this problem is the increased dependence on computationally intensive processing, which is now filling every square inch of data centers — imposing a substantial real estate/energy expense burden. This is true in many industries, including financial services and energy, where large batch jobs, such as risk/portfolio analysis and seismic processing, are run on a project basis.

Yet, organizations must continually invest in additional computing resources to meet the demand for increasing, and sometimes unpredictable, utilization spikes. Add to this the typical business pressures to reduce costs, reduce time to deployment, and drive standardization, as well as technical pressures to manage increasing capital resources and multiple, concurrent projects. These challenges drive many companies to seek a better solution than continuing to purchase and manage additional capital assets.

The Solution: Sun™ Grid Pay-Per-Use Computing

Sun has defined and developed a better solution: pay-per-use computing. This model changes the IT game — enabling you to purchase computing power as you need it, without owning and managing the assets. This allows you to address budget issues by moving capital expenditures to operational expenditures. You can use Sun's assets, paying only for the compute cycles you need, when you need them. Using this solution, you can "plug into" an agile, reliable, cost-effective infrastructure that allows you to offload compute power and applications securely.

To meet this need for computing resources on a utility basis, Sun introduced the Sun Grid family of standardized offerings, that redefines the utility computing marketplace. Sun Grid utility offerings radically simplify the way you select, acquire, and use next generation IT infrastructure. With Sun Grid, we're making complex technology simple to use via a single point of contact — be it a desktop, a call center, or an enterprise. Sun Grid allows you to derive immediate productivity and economic benefits from our open, grid-based computing infrastructure. This utility model gives you more choice and control on how you purchase and leverage IT power for competitive advantage.

Sun Grid is an open solution that is based on Sun and industry best practices, and will incorporate leading technologies from the open source community and Sun partners. Sun Grid offerings are simple and efficient, because you pay only for the CPUs you want.

Simple, Affordable Compute Utility: $1/cpu-hr

The first in the Sun Grid family of offerings is Compute Utility, a $1 per CPU per hour pay-per-use offering for batch workloads such as Monte Carlo simulations, protein modeling, geologic exploration, and mechanical CAD simulations, among others. This offering meets the needs of our customers for agile, highly available, affordable compute resources on a pay-per-use basis. Pricing is simple and straightforward—with no hidden costs. It provides standardized, ubiquitous, secure and yet easy-to-access compute resources at an affordable price point—which means you don't need to tie up your capital expenditure on complex, one-off infrastructures.

Compute Utility is based on Sun's decades of delivering cost- and performance-balanced systems, as well as on our intellectual capital and innovation in hardware, software, networking, security, and isolation. The offering provides you with fully virtualized CPU, memory, and high-performance storage connected via a secure networked grid. The Compute Utility architecture leverages reliable, scalable Sun technologies, including Solaris™ 10 x86 and N1™ Grid Engine, to help provide optimal performance, functionality, and security.

This offering is especially suited to the industries and applications shown in the table below.

Innovating with Partners for Customer Success: Sun Grid Developer and ISV Programs

To help extend the richness and functionality of Sun Grid, we offer special programs for partners. The Sun Grid Developer Community, http://sun.java.net/sungrid, provides developers with information and a collaborative forum in which to exchange source code and ideas about Sun Grid and utility computing. The Sun Grid Readiness Offer assists Partner Advantage ISV partners by supplying a framework and support for ensuring their applications are optimized for Sun Grid. For more information about this initiative, visit www.sun.com/partners/grid.

Get started today.
For more information about Sun Grid utility offerings, visit sun.com/sungrid or contact your Sun sales representative to find out how these offerings can enhance your current operations.

Sun Expertise to Help your Business Thrive

Based on more than 20 years of helping customers solve complex IT problems, we've developed a set of unique methodologies to help you achieve bottom-line business results. Our dedicated team of network computing experts draws from our comprehensive portfolio of solution building blocks combining our strength in network computing and our production-proven R&D with the expertise of our best-in-class partners that we implement as complete solutions to your unique business challenges. Sun offers solutions to help you optimize your business, manage change, and reduce risk for a more effective, efficient, and flexible IT infrastructure.

Target Industries	
Industries	*Computing Tasks*
Financial Services	Risk and portfolio analysis, Monte Carlo simulations
Energy	Reservoir simulations, seismic processing
Entertainment/Media	Digital content creation, animation, rendering, digital asset management
Manufacturing	EDA, MCAD, computational fluid dynamics, crash-test simulations, aerodynamic modeling
Government Education	Weather analysis, image processing
Health Sciences	Medical imaging, bioinformatics, drug development simulations