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The Cloud: Too Much (or Too Little) of a Good Thing?

Without proper capacity planning, a cloud computing initiative won't be efficient or affordable.

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Hoping Isn't Planning

MUCH OF THE allure of cloud computing stems from the idea that you're using—and paying for—only as much capacity as your organization actually needs. In the abstract, there's something perfect about that notion. Unfortunately, IT operates in a reality that's never so clean and neat.

The trouble with right-sizing, of course, is knowing which size is right. That's where capacity planning, as troublesome as it can be, pays off. You'll want to fully understand your organization's environment, where it is now, where it is heading, and how business needs affect—and will continue to affect—IT realities.

This handbook puts a spotlight on capacity planning. Paul Korzeniowski starts us off with a discussion of how IT admins should approach cloud capacity. Companies trying to gauge

exactly the resources they need face barriers, he writes, but the effort can make the difference between a cost-effective success and an inefficient and expensive letdown.

Costs are a crucial part of the cloud equation, and this handbook looks at situations where use of the cloud might be an inexpensive way to accomplish particular tasks.

The cost issue can work against you, however, if you haven't properly planned capacity. TechTarget's Beth Pariseau reports on such mishaps, such as noisy neighbors, that can add costs and frustration to your cloud endeavor.

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Cloud Capacity Planning Takes Shape—But Slowly

CAPACITY PLANNING HAS long been a discipline that earns lip service in IT departments, but not much more than that. That attitude has not changed much in the cloud era. It's likely, though, that IT professionals might soon devote more attention to capacity planning—at least once they realize they are overspending on cloud services.

Capacity planning emerged decades ago. At that time, IT administrators oversaw large centralized systems that cost millions of dollars. Fine-tuning the system and planning ahead when upgrades were needed were techniques IT departments could use to minimize their expenditures.

But even then, the use of these tools was scattershot. “Many firms do little to no capacity planning,” said Jean-Pierre Garbani, a vice president at Forrester Research.

In some cases, they lacked the skills in-house. As technology has evolved, capacity

planning has only become more complicated. The emergence of virtualization, for instance, means IT staffs no longer examine one large system. Instead, they need to track the workings of virtualized servers running [tens or even hundreds of applications](#).

In addition, some corporations consider capacity planning not worth the investment. Indeed, the costs can be substantial. Planning tools, which involve multiple components, need to be purchased. Devoting staff to implementing those tools into an organization's particular environment requires manpower expenses. That process, depending on the complexity of an organization's IT environment, can be time-consuming and tedious.

As a way around these costs and complications, a business might simply acquire more cloud-processing power when needed. In many cases, cloud vendors position their services as a cure-all for the traditional challenges that IT



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departments faced when trying to deliver sufficient system resources. The suppliers keep focus on these platforms' seemingly never-ending elasticity, which makes resource allocation as simple as making a phone call or clicking a few buttons.

While allocating resources is easier in today's virtualized data center, businesses find that determining the right amount of cloud service remains a challenge.

Vendors do make it easier for IT staff to add cloud resources quickly, but, like most things, convenience comes at a price. In order to be able to deliver computing resources quickly, IT departments and cloud providers overprovision resources. Of course, someone has to pay for that surplus infrastructure.

In a private cloud environment, a corporation will overbuild its IT infrastructure. A public cloud vendor, meanwhile, will have [pricing models](#) that reward customers for being steady users of a service. A customer will pay a premium when requesting a big, unexpected boost in resources.

While they tout unlimited resources, vendors face constraints on how much server

processing, storage or network bandwidth they can deliver to customers. The suppliers use the airline model and overbook, so there's a risk factor that needs to be included in the planning process. If, say half of its customers call on the Thursday before Black Friday and ask for extra storage, the cloud vendor may not be able to fulfill all requests.

To deliver computing resources quickly, IT departments and cloud providers overprovision resources. Of course, someone has to pay for that surplus infrastructure.

In addition, the customer needs an adequate network connection from its site to the supplier's data center. If a vendor allocates additional capacity, it does no good if the intended users don't have enough bandwidth to take advantage of it. So, at the very least, businesses will need to continue with network capacity planning.

Once a company decides it wants to [track its cloud resource needs](#) more closely, other



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roadblocks emerge. One such obstacle arises with the tools used to help determine the amount of capacity needed in particular situations. There are simply too few of those tools available.

“Established system and network management vendors have not seen capacity planning as a moneymaker,” noted Forrester’s Garbani.

One reason is that cloud capacity planning has become so complex. In addition to the traditional capacity bottlenecks with servers, storage and network bandwidth, new elements such as different cloud providers and network connections from the customer site to the cloud vendor have been added to the mix. Not surprisingly, potential vendors aren’t enthusiastic about putting time and money into developing new products when interest in such products remains lukewarm.

That’s doesn’t mean there aren’t planning tools available. BMC Software Inc.’s Pro-activeNet Performance Management Suite

analyzes, forecasts and optimizes IT resource capacity across the cloud. The system automatically generates alerts if future capacity issues emerge, so businesses can mitigate potential harm. CA Inc.’s Capacity Management suite includes “what-if” scenarios so businesses can examine the impact of adding various resources to their cloud applications.

Some lesser-known suppliers also offer planning tools. CiRBA Inc. claims its customers realize 40% to 70% improvements in their cloud infrastructure. TeamQuest Inc.’s products create customizable service performance reports. Uptime Software Inc.’s capacity tools enable customers to see how much capacity they are using in both physical and cloud environments.

Interest in such tools could rise in the coming years. As corporations conduct more business in the cloud, they will see the need for more effective monitoring. As they spend more on cloud services, they will want to track those expenses more closely. —*Paul Korzeniowski*



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CLOUD COMPUTING HAS changed the cost and budget equation for many businesses, and IT managers can get a better understanding of where the money goes—and get more for their cloud money—if they keep a watchful eye on the numbers.

Using cloud Infrastructure as a Service can remove a business' capital expenditure, said Kris Bliesner, CEO of 2nd Watch, an Amazon Web Services systems integrator. But the timing involved in deploying IT services has shifted dramatically, Bliesner said.

“Before, when I talked about building a budget as an IT person, I thought about three years ahead,” he said. “Now my cost model is a by-the-hour cost model. How do I take advantage of that?”

Bliesner offered some tips on getting the most out of this new cloud cost model at a recent [Modern Infrastructure Decisions conference](#) in New York.

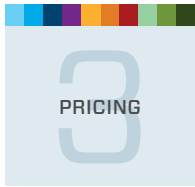
■ **Lower your cloud computing costs.** First, Bliesner said, employ a [pay-for-use](#) cost model. With that method, it makes sense to schedule regular server jobs and configure a baseline, then scale from that accordingly to meet demand.

“We schedule our servers to do backups every day,” he said. “It costs about 67 cents a month to do that.”

To avoid wasting time during peak periods or for installs, he recommends changing instance sizes.

And manage your storage the way you manage your data, Bliesner advised. “It can be a lot cheaper to store your archives in a cloud data center,” he said.

■ **Making cloud computing features work for you.** IT shops can move to the cloud without getting burned—if they use it wisely. The cloud can be a good place for research



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and development work, “[pilot light](#)” [disaster recovery](#) (DR) and backup, and website hosting. Adding capacity at peak times also makes sense, Bliesner said.

Software as a Service is a great place to get started with the cloud. Email is especially appealing.

“Put infrastructure in the cloud, then the VPN between that and the data center” to add capacity when needed, Bliesner advised. “The opposite is also true. Can I front-end my existing data center with apps in the cloud?”

And pilot-light DR—a “warm/cold” DR site in the cloud, ready to turn on if needed—can make sense from a cost perspective, Bliesner said.

“I can have warm standby at the cost of cold storage,” he said. “It’s superfast to recover, and

I don’t have to worry about whether I have to transfer stuff over.”

Software as a Service is a great place to get started with cloud. Email is especially appealing.

“When you get beyond that, with applications like SharePoint, think about moving more,” Bliesner said. “Start with team collaboration, because it’s not a customer-facing thing.”

■ **Plan for the worst.** For all its cost benefits, the public cloud also has its risks.

“Plan for failure in the cloud,” Bliesner said. “You have to build in high availability in every tier. We have less visibility, so we want to account for that.”

That’s still a better bet, cost-wise, Bliesner said. “It’s less expensive for me to build a redundant infrastructure in the cloud.”

—Christine Cignoli



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THE CLOUD OFFERS easy resource provisioning and flexible pricing. Before deploying workloads there, you'll want to consider several cloud computing costs beyond the instance price lists.

Cloud computing pricing usually includes storage, networking, load balancing, security, redundancy, backup, application services and operating system licenses. Certain cloud computing costs, such as resource contention, bandwidth and redundancy, can come as a surprise.

So-called noisy neighbors—server instances from other tenants in the cloud that share the same hardware and cause resource contention—are a common problem.

“In a public cloud world, you tend to have to have more capacity because of noisy neighbors consuming more resources than you'd expect on that shared host, the fact that certain hosts will become unresponsive, or the fact that

you have to replace hosts frequently,” said Jim O’Neill, CIO of the hosted marketing software provider HubSpot Inc., based in Cambridge, Mass. “We tend to see extra investment in additional capacity just to keep performance at a known state.”

While overprovisioning can sometimes be necessary, it's also easy to go [overboard in the opposite direction](#), said Jared Reimer, co-founder of Cascadeo Corp., an IT consulting firm in Mercer Island, Wash.

“It's very expensive if you are not continuously studying and right-sizing instances, storage pools, memory footprint, etc.,” Reimer said. “We've seen companies, for example, take their VMware Converter, convert their virtual machine images into Amazon instances, boot them up and then get a huge bill and go, ‘What happened?’” The problem is that those images were made into large instances, he said, “when there was no legitimate reason to do so.”



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Cloud computing costs can soar when new customers assume that an initial deployment needs to be as large as the internal infrastructure being converted to cloud, said Anthony Pagano, director of StrataScape Technologies, an IT consulting firm based in Philadelphia.

“If the business goes through a slow period ... you can always scale back,” Pagano said. “When you start out really high and want to scale back, you can’t go below [your original footprint]. If you’ve set yourself too high a bar, it becomes a renegotiation and a hidden cost for you.”

DON'T FORGET THE STORAGE

Storage performance and contention have long been problems in the cloud, and while there are ways to improve, they aren't free, said Sean Perry, CIO for Robert Half International Inc., a professional staffing firm.

Amazon Web Services (AWS), in particular, has added features to [its storage options](#), so users can get an Elastic Block Storage (EBS) optimized instance and designated IOPS per volume.

At first, these costs will seem like nothing to

be concerned about. “But as you multiply out hours and days and bytes, all of a sudden [you're talking significant money](#),” Perry said.

His company simulated tests to determine how fast it could load data into a SharePoint instance running on AWS, and used the Provisioned IOPS feature along with the EBS-optimized instances. “We’re looking at a bill like, ‘Holy smokes!’” Perry recalled. The amount spent for Provisioned IOPS represented 50% of the total AWS charges for one of the company’s teams—roughly \$11,000.

While many consider [cloud backup a low-cost alternative](#), it’s easy to get caught off guard by costs. Specifically, trouble can arise with snapshot backups, which capture data at multiple points in time during a given day.

It’s easy to do an automatic snapshot backup and forget to prune back the data set, said Cascadeo’s Reimer. This means the data footprint for the backup grows endlessly.

“And then they get a \$20,000 storage bill and think, ‘What the heck happened?’” Reimer said. “The answer is: You have 10,000 different backups. You need to go back and clean that out.” —*Beth Pariseau*

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