Cloud's Big Caveat: Runaway Costs

Enterprises want more tools to guard against unpredictable costs--like the bill that arose when one team accidentally left a server cluster turned on for a long weekend. Fourth in our series on cloud computing pricing.

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It's Friday, and as the software testing team heads home for a three-day weekend, they forget to turn off a 250-server cluster they've been renting from a public cloud infrastructure vendor. The cluster doesn't have a job to run, but it still racks up a $23,400 bill, 10 times what was planned. "It went from $2,300 to $23,000 so quickly," the testing team leader explained when he got back.

It's a true story recounted by a software company CEO, and it points to a major concern that would-be cloud buyers have: runaway costs. Sixty percent of companies using or evaluating cloud computing services are very concerned (22%) or concerned (38%) with the risk of runaway costs, finds the 2012 InformationWeek Cloud ROI survey. The reason for overrun could be error, mismanagement, or even an attack such as a distributed denial of service, which floods a website with information requests.

Cloud computing is a relatively new tool for IT--Amazon really launched the modern infrastructure as a service concept with its beta service in 2006. The management tools and IT practices used to control it show that inexperience. Also at many companies, cloud infrastructure is in a small-scale pilot that doesn't justify much spending on management tools, so the tool is a spreadsheet of what employees have said they plan to use. The technical term for such a system is "deploy and pray."

A manager might know how many employees have created Amazon Web Services accounts, but even that can be tough to know, since departments can spin up capacity just by providing a credit card. Even if employees are diligently reporting planned use, they can get tripped up by unexpected fees. If marketing has been accumulating tons of data from a new promotion and decides to download that cloud data to the in-house data center at the end of the month, that could set off Amazon's 12 cents per GB download charge, and 10 TBs runs up more than $1,000 in unexpected costs. Or a project manager who had been using a high-memory, double extra-large server four hours a day runs over to 7.5 hours a day, and the project bill hits $9,120 instead of $4,560.

Cloud managers in most cases have no real time accounting system tabulating charges throughout the month. Fifty-three percent of companies using or evaluating cloud say they use or plan to use monthly reports, our Cloud ROI survey finds. And that bill looks a bit like a household utility bill--some account numbers, categories, and total units of usage, but not a granular accounting to find the culprits for overcharges. Just over a third use in-house monitoring system; existing data center management systems are starting to offer more options for managing public clouds. Just one-fifth of companies use an alert system such as text messages, and 31% don't know how they will prevent cost overruns.
Cloud computing started with the idea of simplicity—a flat rate for on-demand computing infrastructure, delivered over the Internet. But as our four-part series on cloud computing pricing shows, pricing has gotten increasingly complex as the vendors and product variations grow. But even if companies get past that pricing complexity to pick the right vendor at the right price for them, IT faces a major problem of getting clear visibility into how the charges are run up.

But IT doesn't want to slow down cloud computing's use with a lot of administrative controls and approvals, so that creates another tension. One of the major benefits of cloud computing is speed—a researcher can launch a virtual server in minutes to pursue a new products idea, rather than waiting weeks for an IT team to buy and provision a conventional, physical server.

For companies in the early stages of using cloud computing, the reality is that they can probably get by with a good spreadsheet and regularly polling employees. But that becomes unworkable the larger the cloud adoption gets.

Amazon offers a Simple Price Calculator to help customers figure their monthly bills, and the calculator itself is easy enough to use. But behind it sits a complex pricing structure that includes on-demand, reserved, and spot instance classes, a wide variety of server sizes and types in each class, and charges for other services such as caching, load balancing, and data transfer. These prices also vary from one Amazon data center to another. Amazon and other cloud vendors will offer human assistance if you're a big enough customer. Otherwise, the public cloud's pricing is based on customers figuring its out themselves from automated systems.

The bill predictability problem is persistent enough that a cottage industry of collecting and interpreting cloud bills has started to address it. 6Fusion, Uptime Software, Cloud Cruiser, and the cloud server configuration management service, Puppet Labs, offer more detailed and sometimes more real time billing information.

Uptime says it doesn't need user names and passwords to provide such billing insight; it can use the Amazon API that allows read-only access to server stats to figure out bills. Going beyond Amazon bill tracking, Uptime can tag an account with extra identifiers so that the buyer knows not only is the human resources department over its planned budget for the month but which employee's account is responsible. With its detailed information, UptimeCloud can compose a near real-time picture of a company's bill at any time of the month.

But these services will leave some companies uneasy, since it offers a third party a close look into how much computing capacity the company is using and possibly for what applications. That might be more information than a company wants to share. Plus, it adds costs.

Carpathia InstantOn Cloud offers a financial threshold alarm, so that a company is alerted when it uses up the planned hours before the end of the month. 6fusion says its Cloud Resource Meter can indicate whether it's cheaper to run a VMware workload on premises or in the cloud. The company sells a management platform for both on premises or public cloud, with bill per use pricing, but it works with VMware virtual servers, not Amazon AMIs (Amazon Machine Images, a proprietary version of Xen) or Carpathia InstantOn Cloud XenServers.

Another source of billing information is a third party, front end management firm, RightScale—a server commissioning, monitoring, and management service—is one of the few that can track and summarize bills at any time of the month from multiple cloud providers. That as-you-go tracking of costs during the month isn't information RightScale gets directly from all the cloud suppliers, though. "We had to develop bill tracking ourselves," said CEO Michael Crandall in an interview.

Amazon and other leading cloud vendors are aware of the problem and working on providing greater visibility into cloud charges, during the month as well as at the end of the month. At the same time, Amazon has dropped the price on its popular small Linux server offering twice in three years, from 10 cents an hour to 8.5 cents to 8 cents, or by about 20%. Microsoft has likewise recently dropped prices. Cloud customers, regardless of whether
they can see all the details they want, see per unit charges headed in the right direction.

As a new type of service, the public cloud industry in many areas has brought a new level of transparency to IT operations. Its price list is posted for anyone to see, and a service failure results in public notices and post mortems explaining what went wrong, all of which is then dissected in online analysis and tweets. But the public cloud has yet to achieve an adequate degree of transparency that would make it easy for would-be customers to predict monthly bills. It's a feature that in the rush to expand cloud services seems to have been overlooked so far. If public cloud is going to take over more large-scale, enterprise IT workloads, tools that allow that kind of predictability will be essential.

**Cloud Pricing part 1:** [Cloud's Thorniest Question: Does It Pay Off?](http://www.informationweek.com/news/cloud-computing/infrastructure/)

**Cloud Pricing part 2:** [Cloud Pricing: Amazon, Microsoft Keep Cutting](http://www.informationweek.com/news/cloud-computing/infrastructure/)

**Cloud Pricing part 3:** [Why Cloud Pricing Comparisons Are So Hard](http://www.informationweek.com/news/cloud-computing/infrastructure/)

SMBs have saved big buying software on a subscription model. The new, all-digital [Cloud Beyond SaaS](http://www.informationweek.com/news/cloud-computing/infrastructure/) issue of InformationWeek SMB shows how to determine if infrastructure services can pay off, too. Also in this issue: One startup’s experience with infrastructure-as-a-service shows how the numbers stack up for IaaS vs. internal IT. (Free registration required.)

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