

# Reality Sets In for Amazon Web Services

Users are lining up to throw all they've got at the cloud computing platform.  
But is it the golden goose people believe it to be? BY ALAN R. EARLS

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# How to Avoid AWS's Sneaky Surprises

AMAZON WEB SERVICES offers diverse and scalable capabilities that have users flocking to the cloud computing platform. Consumer services, like point-and-click options, secure mobile applications and speed of services, can take most of the credit.

But not all AWS resources are convenient. Scalability or functionality limitations can easily stop a project dead in its tracks. As with any software service, some workaround tips are necessary. This three-part guide addresses commonly recognized AWS problems—and offers solutions.

Because scaling from a small business to a larger one can easily inhibit data access, we first discuss [how to leverage and manage AWS resources](#) at all levels of data through the Management Console. With the console

at the center of AWS organizational resources, mastering the user interface is key to ensuring business processes run smoothly

Next, we list the [top four AWS “gotchas,”](#) with advice on how to control cost and tips on adjusting services to avoid configuration build-ups.

Although AWS offers some great tools and services, it could use some help in instance management and monitoring. Fortunately, a wide range of tools have sprung up to make using AWS easier. To that end, we close with a look at [significant third-party management tools](#) that are easing concerns about implementation. ■

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# Stay in Control of the AWS Management Console

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**THE AMAZON WEB** Services' Management Console is a central point for managing all your AWS resources. It's the place to initiate tasks ranging from deploying new applications to monitoring the health of an application.

According to Shlomo Swidler, CEO of consultancy Orchestratus, the console is great for the beginner because it provides a simple view of all AWS resources—like Elastic Compute Cloud (EC2) and Relational Database Service (RDS)—and allows you to manipulate them easily. In fact, he noted, smaller-scale AWS users can use it to do just about everything they need. As soon as you operate sizable deployments in AWS, however, the console's limitations will begin to chafe.

“When you have five or six [EC2 instances](#) listed in the console, it's relatively easy to zero in on the one you intend to manipulate at that moment,” Swidler said. “But when your screen lists tens or hundreds or even thousands

of instances, it will be much more difficult to identify your target instance.” For example, an innocent mistake by a developer, thinking he or she is terminating a development instance, could disrupt a production environment.

At a larger scale, the console's limitations are again made clear by the resource-centric view it provides. Swidler explained that the console organizes AWS resources according to resource type: EC2 instances on one panel, RDS instances on another and load balancers separately. “Your application or service may use several of each of these resource types, yet these will be spread across different console views,” he said. It would be much easier to manage an application or service if you could view and control all its component resources grouped accordingly, especially when there are multiple applications and services, Swidler explained.

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## READY, SET, EVOLVE

Because AWS is tag-based—categorizing the [AWS resources](#) in different ways, such as purpose, owner or environment—it's easy to create a “management mess,” with lots of servers and inconsistent use of tags for different users, explained Raj Bhargava, CEO of JumpCloud, a company that provides management capabilities that work with open source cloud data management tools Puppet and Chef. “Many organizations don't understand how to create separate islands of servers from an access control standpoint. Because of this, many businesses built on AWS end up with more permissions than is probably ideal,” Bhargava said.

Bhargava said other common mistakes are inconsistency in practice and users simply “not keeping their house in order.” Because of the flexibility of AWS and the relative ease with which businesses can dial up infrastructure, “folks often become complacent in terms of actively managing and adjusting their setup,” he explained.

Thus, he argued, diligence is really the name of the game.

“Many people choose the cloud for its

scalability, and as your organization grows so then does your number of servers, your employee headcount and your physical footprint,” Bhargava said. These changes mean that the way that you manage your infrastructure must also evolve. “You can't dial up your cloud with AWS and set it and forget it. It must change and adapt as your business does.” A simple somewhat tactical step, which can prevent headaches, is to create separate billable accounts based on business needs, he added.

## DON'T FORGET ABOUT LOCATION

A related issue encountered by Dan Sullivan, an AWS user and a system architect at DS Applied Technologies LLC, is managing instances with the best price. “In terms of where I spend most of my time, it is probably there,” he said. He noted that the console does provide an instance tab and you can track instance states. That is also his starting point for monitoring spot instance pricing. “One thing to keep in mind is that spot instances are priced differently in different regions,” he said. For example, prices may be lower in the U.S. West than in most of

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the U.S. East for the same instance—so it pays to look carefully when you select an instance, he said.

**“You can’t dial up your cloud with AWS, set it and forget it. It must change and adapt as your business does.”**

**—RAJ BHARGAVA, CEO of JumpCloud**

Sullivan said the spot prices provide a way to save money. You may win the capacity by bidding low. Although there is some risk another party could come along and buy the

capacity out from under you later if your bid came in below the offered price, that rarely happens. “There usually isn’t too much volatility. If jobs are short or you are running jobs in parallel, you may be able to justify bidding low and taking your chances,” Sullivan said.

A final bit of advice on using the console comes from Swidler, who advises leveraging AWS OpsWorks, an application management service that makes it easy for DevOps users to model and manage an entire application from load balancers to databases. Several third-party alternatives can also help enhance the view from the console, he said. ■

## Don't Let AWS Quirks Get the Best of You

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**AMAZON WEB SERVICES** may be the leading cloud service provider, but that doesn't make it fool-proof. Far from it, in fact.

For all of its capabilities, AWS has its shares of "gotchas" and annoyances. But the list of leading offenders is not long, and experts agree mastering its peculiarities isn't all that hard.

Avoiding accumulating costs is the first challenge. "If you are not careful, AWS and the cloud in general can lead to a spiraling infrastructure and subsequently a spiraling bill," said Raj Bhargava, CEO of JumpCloud. He explained that, while it's easy and relatively cheap to just turn the dial and spin up instances on AWS, organizations must carefully manage cost, efficiency and efficacy of this flexible infrastructure.

"It's very easy to spin up instances, but the billing can actually get very complicated as you continue to build out your infrastructure to meet your organization's growing needs,"

Bhargava said. "What may make sense from both a financial and functional standpoint today may not actually make sense tomorrow." For instance, the way servers are provisioned on day one of your business will probably no longer make sense in six or 12 months, he said.

### **NOT THE BE-ALL AND END-ALL**

There is a common misperception that AWS simply takes care of or outsources all IT needs, Bhargava said. "Don't get me wrong, what they provide is hugely valuable and well-designed [Infrastructure as a Service] solution, [but] I think there are a number of folks out there who believe that AWS is responsible for things like security, patching, user management, et cetera," he said. In most cases this is simply not true. "If a business thinks AWS is taking care of these things and they are not, they are opening the organization up to serious risk."

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Looking at AWS more broadly, Shlomo Swidler, CEO of Orchestratus, shared what he has found to be the top four most-cited AWS gotchas:

- **Failing to isolate production from development and testing environments.** Mistakes in development or testing should not be able to affect the delivery of your service, but with a single integrated account for all environments, this isolation can be difficult to enforce, Swidler explained. “You’ll also want tight controls over your production environment’s configuration—which may contain such secrets as payment gateway credentials and [Domain Name System] passwords,” Swidler said. In short, use separate AWS accounts for each environment.
- **Losing track of your bill.** Swidler explained that as the number of AWS resources across user accounts multiplies, it can be increasingly difficult to audit and track your AWS usage. Swidler recommends using Consolidated Billing, an AWS billing feature that allows you to collect many accounts under the

umbrella of a single master account, showing consolidated usage information and allowing for one payment. Swidler also recommended setting spending alerts on each account to notify you when spending levels reach important milestones.

- **Keeping up with your changing needs.** “It’s easy to launch resources in AWS and use them long term, but you’d be missing out on one of the main benefits of cloud: the flexibility to adjust to changing needs,” Swidler said. He recommended re-examining your needs regularly, at least every quarter. As AWS reduces prices and adds new services, you may find that you can meet your needs more efficiently by changing your resource usage, he added.
- **Depending on traditional [data center tools](#) to manage AWS resources.** “Data center management tools are excellent for managing a relatively static set of resources, but the cloud usage model allows you to dynamically add and remove resources to your inventory, a usage pattern that data center-centric tools cannot natively handle,” Swidler explained.

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Instead, AWS customers should use “modern tools that are designed to handle dynamism, such as Chef, Puppet and RunDeck.”

### **COST CONTROL**

“AWS has a smart business model where they want people to buy reserve servers to lock in the price early on. This is marketing at its best, and it flourishes because people feel like they are getting a deal and that prices will actually go up,” Bhargava said. This is often not the case. “Therefore diligence and education can go [a] long way toward getting not only the infrastructure that you need, but getting it at the best price possible,” he said.

Determine what the business needs are, and if it is unclear whether AWS can meet all those needs, ask. “AWS can help you to do a lot of things, but if not properly bolstered by good security and management practices and tools,

simply spinning up a business in the cloud can actually put you at risk,” Bhargava said.

Finally, looking at “end of life” issues, Dan Sullivan, a system architect at DS Applied Technologies LLC, reminds users that when you start an Amazon instance it comes equipped with local storage. When you later decommission or deprovision that instance, whatever data is there will be wiped out unless you find it a home—for example, elastic block storage.

Similarly, he noted, when you create virtual machines it is simpler to start with a base image, like Ubuntu Linux, and then install packages for development or production.

“You probably want to save that for yourself as your own image, so you don’t have to rebuild that structure every time you want to set up a new image,” Bhargava noted. And, if you require a rebuild, it’s helpful to employ a tool like Puppet or Chef. ■



# Third-Party Tools Assuage Implementation Woes

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**ALTHOUGH AMAZON WEB Services** comes with lots of “standard features” and a substantial number of extra tools and gadgets, they can be exceedingly complex to operate. Fortunately, a wide range of third-party tools and services has emerged to make using AWS easier. Indeed, experts say without those add-ons, companies with complex AWS implementations may be in trouble.

“In general, AWS will help you manage your AWS resources as such, but not at higher levels of abstraction closer to your business domain,” explained Shlomo Swidler, CEO of Orchestatus. As is, AWS can provide you with detailed performance monitoring for infrastructure-level metrics, such as CPU utilization, network traffic and load balancer latency. What AWS’s standard features won’t provide is an understanding of how your application is performing and how infrastructure issues influence application performance, he said.

## EXPECTATION VERSUS REALITY

The biggest issue when it comes to managing AWS is knowing the load you are running at any given point, said Rick Sizemore, the director of the [cloud computing](#) practice at Dallas-based consultancy Alsbridge. “Managing your load, especially using something like IBM CloudBurst, is actually fairly complex,” he said.

Sizemore said a fundamental problem is that people look at AWS as just a replacement for VMware virtualization, where applications have already been built or have evolved to take full advantage of the platform. There is an expectation that AWS will be able to deliver the same functionality. “To really take advantage of any extension within AWS, there are about 20 tools under AWS related to storage and computing that you might need to use. If you don’t, AWS is just a dumb box,” he said.

It is also crucial to have a tool that illuminates demand management as well as capacity

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management on an application, Sizemore said. So when you create an instance on Amazon, “You really need a management layer to do that,” he said. Among the tools available, the most established is probably RightScale. “Once you get everything in a process through a tool like RightScale, then you end up getting the benefits you thought you were going to get from Amazon in the first place,” Sizemore said.

“The nice thing is that with most of the tools you would use with AWS is that they are fairly open, so you can use them to manage beyond just AWS and they will usually even integrate into your overall environment,” Sizemore said.

## ROOM TO GROW

Raj Bhargava, CEO of JumpCloud, credits AWS for offering some great tools and services, but he said the company needs to improve its instance management and monitoring. Generally, AWS has stayed at the cloud layer, but it

has been reluctant to really go into a customer’s private instance, he said.

“There is a great deal of opportunity to help manage individual server instances and monitor them from the inside. AWS has done a great job of monitoring through APIs, but you can understand more about what is going on with a server from the inside out,” Bhargava said.

Automation is another area of opportunity. “AWS helps you automate the spin-up of a new server and even through its native OpsWorks will let you configure it. Automating the management of those servers is a critical task that AWS has not focused on to date.”

A final area of need is server security. “AWS has spent a great deal of time securing their infrastructure and cloud but has largely left it up to each individual customer to secure their instances,” Bhargava said. “That’s a huge challenge for most customers. Strong products and services that help lock down instances are a major opportunity.” ■

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