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## Public-sector cloud computing: The good, the bad and the ugly

As state and local governments look to the cloud, everyone can learn from agencies' struggles with compliance and ingrained cultures.

BY HOWARD BALDWIN

When the second-in-command of one of the most technologically advanced states in the country slams public-sector computing—publicly—it's a resounding wake-up call.

"Don't underestimate how far local, state and federal government is behind [in computing]," said California Lt. Gov. Gavin Newsom at a tech conference in Silicon Valley earlier this year. "We have to wake up to the new reality."

The new reality Newsom was referring to is cloud computing—a versatile way for government agencies of all sizes to solve a variety of technological issues relating to cost, human resources and the ability to respond quickly to constituents' needs. Many government agencies are doing just that—albeit in limited areas, such as email and data center consolidation.

But overall, progress is slow: Federal agencies are struggling to comply with the U.S. government's "cloud first" mandate, and state and local government entities, which tend to be less well funded, are even further behind.

As noted by CIOs and technology vendors at the TechAmerica conference on public-sector computing in February, the cloud allows government agencies to decrease their costs and deploy systems more quickly—all good news. And as in the private sector, cloud computing can enable public entities to devote fewer resources to day-to-day tasks like maintenance, so they can focus on more important things, like improving services and increasing innovation.

But there's also bad news—and some ugly realities—when it comes to cloud computing in the public sector. Current and former public-sector CIOs say it can be difficult to drag government agencies forward. It remains to be seen whether government CIOs will be able to convince politicians and bureaucrats that cloud computing is the antidote for the financial and technological dol-drum they're experiencing.

### The state of the state (and the county, and the city...)

A March 2012 survey conducted by *Government Executive* magazine, co-sponsored by Cisco Systems, found that government entities significantly lag behind the private sector when it comes to cloud deployments.

The report's findings were based on responses from 429 government executives and managers in 10 countries, as well as responses from 808 private-sector executives. Of the government executives who responded, only 12% said that more than 10% of their agencies' overall annual IT resources were allocated to the cloud in 2011. While researchers expect those percentages to grow by the end of this year, even doubling them wouldn't represent a significant move to the cloud.

A more-optimistic 2011 survey by Red Shift Research put the penetration of cloud computing in the public sector at 23%, compared with 42% in the private sector.

Either way, Thom Rubel, an analyst at research firm IDC Government Insights, concurs that the cloud computing adoption rate is lower in government than it is in the private sector.

He says that's primarily due to the fact that government agencies have to comply with more stringent security and privacy requirements. Moreover, Rubel says he believes that government agencies are still in the "data sorting" process—that is, they're trying to figure out what kind of information can go into the cloud. Right now, "you can put 3-1-1 informational services in the public cloud, but you want to keep tax and revenue data in a private cloud," he says. Within the next three years, he predicts, we'll see government agencies figuring out how to best take advantage of the cloud.

### The bad and the ugly

Public-sector CIOs have no qualms about discussing the ugly side of government computing.



To them, it's a fact of life. Challenges related to parochialism, funding, politics, governance and more get in the way of progress, especially when it comes to cloud computing.

One of the biggest obstacles is the long-held belief that any given agency's needs are special and must be handled in a specific (and usually siloed) way.

"A state government is not all one entity," says Carlos Ramos, CIO of the California state government. "Some agencies report to the executive branch, some agencies are constitutionally mandated, and so they're managed differently." Nor, he says, do agencies like giving up control, even to colleagues in the public sector. Just as some citizens mistrust government, "sometimes government doesn't even trust government," he says.

"People focus on more on best practices than utilizing a common system to accommodate them,"

says Douglas Cotnoir, deputy state controller in Maine. "People in government interpret the rules for one group differently than they do for another. It depends on who your constituents are."

That may be true, but the problem can snowball in unintentional ways. For instance, the individual government agencies of the state of Virginia might each require accountability, but does that also mean the state needs 94 separate e-mail systems?

Resistance to change is one of the biggest obstacles to cloud adoption by state and local governments, says Andrea Di Maio, an analyst specializing in public-sector issues at Gartner. "It depends on the maturity of the organization," she says. "Clients of ours who have experience in outsourcing have an easier time moving to the cloud."

Another obstacle is the way the reins of power change hands on a regular basis, whether in the governor's office or even on a municipal city council. "Every new elected official coming in wants to make an impact," says Steven Fletcher, CIO for the state of Utah. "But new officials don't think about operations, they think about programs like education and economic development. They're not paying attention to the most efficient way to provide services, which makes it difficult for the CIO to provide those services."

Sometimes regulations gum up the works. When John Letchford, CIO of the state of Massachusetts, decided to try cloud computing by moving the state's e-mail system to a cloud service provider, he got more of a challenge than he had bargained for.

"Maybe this was naïve, but we thought e-mail was simple," says Letchford. "But we found that we had to adhere to a variety of compliance rules, because you're touching every business function in some shape or form. It was like boiling the ocean." The RFP for moving the mail, which is still in progress, had to comply with IRS Publication 1075 (Tax Information Security Guidelines for Federal, State and Local Agencies), the Social Security Administration's Section 1128E (Health Care Fraud and Abuse Data Collection Program) and more than 100 state regulations.

Letchford, who spent 10 years in IT at Procter & Gamble, is frankly surprised by how polarizing the idea of cloud computing is in the public sphere. "Some people in government see it as a threat, and some see it as a solution, but I haven't met anyone who doesn't have an opinion."

### The good

Where are the successes in public-sector cloud computing? Primarily in three areas: hosted e-mail, private cloud-based data centers and ERP. In fact, if you look at the case studies from the TechAmerica conference, almost half involve e-mail.

However, there are also some cutting-edge government agencies that are looking at becoming service providers themselves, and that's where the outlook for public-sector cloud computing is most encouraging, analysts and practitioners say. IDC's Rubel calls cloud sharing "the coolest thing" in public-sector cloud computing and cites Michigan and Utah as trendsetters in such endeavors.

Ohio is another pioneer in public-sector cloud computing. CIO Stu Davis is offering both cloud-based and on-premises e-mail to give agencies as much flexibility as possible. The new system takes the place of what had been 19 different applications on four different e-mail platforms. If an agency wants on-premises e-mail, and about 60% do, the state's IT department charges the agency \$4.50 per user per month for 1GB of storage. If an agency opts for hosted e-mail, as the remaining 40% have, the price drops to \$2.50 per user per month for 500MB of storage.

In Utah, CIO Fletcher launched a cloud computing project in 2010. He started with a server consolidation project that reduced the number of machines from 1,900 to 500 through virtualization. That initiative cut operating costs by about 25%. Then IT began providing hosted e-mail and storage services for all state agencies. "A gigabyte of our storage was a nickel cheaper than Amazon's before they instituted their government rate," says Fletcher proudly.

Now Fletcher's Utah IT department has started offering the same hosting and storage services to the state's cities and counties, which previously had to fend for themselves when it came to procuring tech services. "This is really beneficial for smaller cities that don't have IT folks or the capital to put projects in place," says Fletcher. "We can set it up rapidly and provide the service cost-effectively." Over a five-year budget cycle, Fletcher's department has saved Utah \$72 million; all of the money saved goes into the state's general fund.

Beyond cloud sharing, Ohio's Davis is looking at optimizing the state's computer infrastructure, partly to reduce the complexity of server, storage and network needs, but also to proactively keep agencies from migrating to public clouds on their own.

"Our intent is to continue building a private cloud and get the agencies to move their infrastructure to a consolidated center," Davis says. "If we let them go to commercial cloud providers, it'll be harder to put the cat back in the bag."

And in Maine, deputy state controller Cotnoir is using global consulting firm CGI to host and manage the state's ERP system, which currently handles financial and procurement applications, with an RFP underway for HR management tools due to come online next year.

"We had seven full-time equivalents supporting the application, not including [database administrators] and hardware costs," says Cotnoir. "We wanted to be able to predict our costs better." Now, he says, the state can look forward to predictable costs for the next 10 years, with two hardware refreshes and two software refreshes as part of the contract with CGI. The Maine government will save \$5 million over the life of the contract, and it now has just one person interacting with CGI, with the others redeployed to handle applications that were underserved.

"We're able to devote our time internally to help our agencies strengthen their own internal controls, as well as improve policy management and fiscal control statewide," says Cotnoir. "And because we're not babysitting the system ourselves, I don't get phone calls at 2 a.m. asking what to do."

### Making the cloud work for the public sector

IDC's Rubel says that the most forward-thinking agencies are now taking the cloud beyond its most basic capabilities. "They can make reporting easier when cities and counties are getting funds from the state. They can simplify business processes. That's a game-changer because they can make a difference [in efficiency] over the long run," he says.

The cloud can also bring government agencies hiring and staffing flexibility. Massachusetts CIO Letchford worries about two competing trends: More new IT jobs are being created, but 40% of the current IT workforce will be retiring within 20 years. "I'm going to be desperate to find people to hire. I'm going to have people leaving, and it'll be hard to encourage people to work here at state salaries," he says. The answer: offload day-to-day activities to cloud service providers and attract talented IT professionals by offering them the opportunity to work on strategic, innovative initiatives.

That's what Ohio's Stu Davis wants for his IT staff. "If we could concentrate them at the top and leverage their expertise for the enterprise, that's better than having them in different agencies," he says. "It focuses IT skills on the enablement of the business of the state of Ohio." No agency needs its own infrastructure, and besides, the state doesn't have the human or financial resources to support that type of setup anymore. "There has to be a different way," Davis says. "The status quo of the siloed approach can't continue."

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