

Report: Cloud Computing (July 21, 2009)

By [Jeff Erlichman](#), 1105 Government Information Group Custom Media.

To Cloud or Not to Cloud? The answer is Yes says Federal CIO Vivek Kundra! But public and private Cloud experts agree there is still much work to be done to get the Federal Government up in the Cloud.

Cloud Computing

To evangelists it is “going where no man has gone before”; to skeptics it just “puts us behind the 8-ball to secure data”; and to many IT vets, it is “déjà vous all over again” taking us back to the days of mainframes and dumb terminals.

To Federal CIO Vivek Kundra, Cloud Computing is fundamental to the technology strategy being developed by the Obama Administration of how to get more efficiency from IT, while expanding applications and reducing costs.

To help him, he has enlisted the aid of the Federal CIO Council to formulate a Federal Cloud strategy. And to help him build the Federal Cloud, he has chosen GSA to be the point agency and Patrick Stingley to be the CTO of The Federal Cloud.

Stingley was just one of the Cloud experts, providers and potential government users that came together for the Cloud Computing Summit, April 29, 2009 in Washington, DC.

“My job is to make sure as we plan the Federal Cloud, we have the technical knowledge to carry it off,” Stingley said.

Stingley said that Cloud could be used for email, portals, remote hosting and other applications that would grow in complexity as our experience of working securely in the Cloud grows. “No single approach will work. No single approach or architecture can meet all of the government’s needs, so a tiered approach will be provided.”

NIST’s Peter Mell told Summit attendees that his agency’s working definition of Cloud Computing is “a pay-per-use model for enabling convenient, on-demand network access to a shared pool of configurable and reliable computing resources (e.g., networks, servers, storage, applications, services) that can be rapidly provisioned and released with minimal consumer management effort or service provider interaction.”

Cloud Fundamentals

“Every generation rediscovers the power of interchangeable parts; that’s what Cloud is,” Stingley proclaimed.

“Where I came from in our data center we have 5 different operating systems, all kinds of applications, 3 or 4 DBMS with multiple versions. I’d have to have 5 different stacks – one for each OS,” Stingley explained.

“What Cloud brings to the table is commodity hardware that is the same throughout the Cloud Center. The premise of Cloud is to reduce the variability and the number of things you have to support; and by doing so that’s where your economy comes from.”

Stingley said that the goal is to build a distributed Cloud that can host applications, while at the same time providing capabilities for those applications and information that can’t – mostly for security reasons – move into the Cloud.

“A Cloud is built using commodity hardware and that’s the real key architectural tenet,” said Stingley. But even if the Cloud were ready to occupy today, the Federal government is not ready to move in. “Most applications couldn’t go there because of code and OS. What we need to do is provide a suite of services in order for people to begin a migration strategy to the Cloud.”

Why Cloud Now?

For some, Cloud is just a 21st century version of centralized mainframe computing. But philosophy aside, why is Cloud Computing a movement whose time has come?

IDC’s Teresa Bozzelli said there are two reasons. “First in government specifically, it is a cost constrained environment. As technology advances quickly to create (and refresh) infrastructure quickly gets pricy. It also can’t be done fast enough. Cost is opportunity to look at new models.”

Another reason is driven by a convergence of the amount of information we need to analyze better and the Administration’s demand for openness, transparency and accountability.

It’s driven by the need for more information and how Web 2.0 allows us to engage differently; it’s about technologies coming together such as virtualization and network bandwidth; and being able to lower costs and be faster in our deployments Bozzelli explained.

What all this is for said Bozzelli is with Cloud we are able to deal with larger amounts of data from different sources and engage collaboratively through the web to compress the timeline of knowledge sharing and decision management.

Rod Fonticilla from Booz-Allen agreed with Bozzelli about lower costs, but added while it is a better way to utilize underused servers and resources what is really exciting about Cloud is what you can do with Cloud that you couldn’t do before.

65 Years of NY Times

“What excites people are the unlimited computing power and the ability to answer questions you couldn’t do before because by being able to boost computing power on demand, query time will be lowered,” said Fonticilla.

Fonticilla told the audience how the NY Times wanted to put every article it had printed from 1845 to 1912 on PDF on the web. They realized it would take years using their own IT infrastructure. So, the Times bought services from the Amazon Cloud and were able to take use the increased computing power to do the entire job in 24 hours for a cost of \$240.

The five key inherent characteristics common to all types of Cloud Computing are: on-demand self-service; ubiquitous network access; location independent resource pooling; rapid elasticity; and pay per use.

Just imagine the implications for the Library of Congress and the National Archives. On January 20, 2009 200 million emails from the Bush Administration came to National Archives according to Jason Baron, an Archives attorney.

“They came on servers – real hardware and software – not in the Cloud,” explained Baron. “We will have a billion emails coming from Obama. The volumes are staggering; and the paradigm will change as data moves from servers inside government walls and is outsourced in the Cloud or somewhere else.

Challenges and Visions

Cloud Computing can be thought of as either a revolution or an evolution. Either way it signals a clear desire for the Federal government from owning its IT assets to buying IT services from a third party vendor and hosting them in a public, private or community Cloud.

Baron told the Summit there is a tension between government in the sunshine and CIOs actually moving their data to somewhere else - outside their physical control. “Who owns the servers? Are they in the U.S. or abroad? This raises profound challenges.”

One challenge is that when passing the 1950 Federal Records Act, Congress did not anticipate Cloud Computing the lawyer said, but was clear about the definition of a record and what that means as to how they are archived.

“According to the law, the definition of a Federal record includes information created and received by government agencies that are in machine readable form,” explained Baron. “So anything electronic or digitally created and received in agency is a record. The challenge is whenever we are thinking about Web 2.0 and Cloud Computing, there is an institutional driver against parking these records beyond the traditional IT structure or using a web-based application to get at these records.”

That poses a challenge as to how to meet security requirements, while meeting public and Congressional demands for transparency. And there are others who are skeptical about the promises of Cloud Computing.

Burke Cox, CTO of Platinum Solutions told 1105 Government Information Group Custom Media that “Cloud Computing hype may create false hope for those agencies who have never stared down their real challenge of an inadequate enterprise architecture.”

Further he said “there are more barriers to Cloud adoption now than benefits. For most agencies enabling SOA is a better first step that will prepare them for the maturation of a service oriented architecture infrastructure – what we call a “cloud” – as vendor and service solutions improve.”

What Cox advocates is real. Implementing Cloud Computing will not happen by the time the next budget cycle comes around. However, when solved, government will participate in a plethora of public Clouds and private Clouds. And you’ll see community Clouds that serve niche constituencies and even hybrid Clouds where you can abstract applications or services through a combination of in house infrastructure or reaching out to many multiple Clouds.

Down the road, interoperability standards will emerge so the application won’t know the difference and just go out and consume the infrastructure services from various resources.

Stingley said it takes twice the lifespan of a typical system to fully embrace a new technology. “We can start moving stuff now but the majority of the government is not position to use the Cloud effectively.” He projects that the Federal Cloud will offer a range of services to allow agencies to migrate gracefully, say over 20years – which happens to be twice the 10 year lifespan of typical system.

Jeff Erlichman is a freelance writer for 1105 Government Information Group’s Custom Media unit. This Snapshot report was commissioned by the Custom Media Group, an independent editorial arm of 1105 Government Information Group. Specific topics are chosen in response to interest from the vendor community; however, sponsors are not guaranteed content contribution or review of content before publication. For more information about 1105 Government Information Group Custom Media, please email us at GIGCustomMedia@1105govinfo.com

Controversy In The Clouds

“It will cost money to move to the cloud; this isn’t going to be free,” said Patrick Stingley, CTO of the Federal Cloud. “Most applications are not capable of getting there so there will be retooling costs.”

Retooling costs are just one of the obstacles in the way of Cloud Computing implementation. Public and private Cloud experts such as CSC CTO Yogesh Khanna point to 7 areas where solutions need to be found.

1. Vendor Lock-in – most service providers offer proprietary offerings thus an app built for one Cloud cannot be ported to another.
2. Lack of Standards – Stingley asserts there wouldn’t even be Cloud Computing without standards. But that aside, if there were clear standards, then NIST wouldn’t be getting involved. A lack of standards feeds the vendor lock-in problem because every provider uses a proprietary set of access protocols and programming interfaces for their cloud services.
3. Security & Compliance – There are limited security offerings for data at rest and in motion and no agreed upon compliance methods for providers to get their offerings certified (like common criteria or FISMA).
4. Trust – Cloud providers today offer limited operational visibility, if any. That won’t work for the government; complete transparency is a must.
5. Service Level Agreements (SLAs) – As they say, the “devil is in the details”. Enterprise class SLAs (for example four/five 9s availability) are necessary for most services.
6. Personnel – Many of the public clouds span the Globe, and thus use a Global workforce. This poses a serious problem for agencies that may wish to leverage the cloud, but have sensitive data.
7. Integration – Lots of work needs to be done to integrate cloud providers’ services with enterprise services and make them work together. The task of identifying the most cost effective, secure, and reliable cloud services and orchestrating them for enterprise applications and/or users is complex.

Cloud Manifesto (www.opencloudmanifesto.org)

Then there is the Cloud Manifesto signed by more than 175 organizations and growing. The Open Cloud Manifesto establishes a core set of principles to ensure that organizations will have freedom of choice, flexibility, and openness as they take advantage of cloud computing.

Backers of the Manifesto are calling for “an objective, straightforward conversation about how this new computing paradigm will impact organizations, how it can be used with existing technologies, and the potential pitfalls of proprietary technologies that can lead to lock-in and limited choice. This document is intended to initiate a conversation that will bring together the emerging cloud computing community (both cloud users and cloud providers) around a core set of principles. We believe that these core principles are rooted in the belief that cloud computing should be as open as all other IT technologies.”

And by the way, while Stingley did not say he backed the Manifesto by name, he did tell the audience that collaboration and openness are fundamentals for the Federal Cloud. So it looks as if proprietary Cloud providers are going to have to find a way to be interoperable.

Finally, check out the McKinsey Report. As reported in TechCrunch, McKinsey & Company released a report, “Clearing the Air on Cloud Computing,” April 15 that claims that large corporations could lose money through the adoption of cloud computing. The report paints cloud computing as over-hyped and maintains that cloud computing services like Amazon Web Services (AWS) overcharge large

companies for a service the companies could do better on their own. The study also says that while cloud computing is optimal for small and medium-sized businesses, large companies will spend less if using traditional data centers. Check out www.techcrunch.com for a lot of comments both pro and con.