



STRATEGY GUIDE TO THE **CLOUD** IN GOVERNMENT AND EDUCATIONAL INSTITUTIONS

Advancing technology has put more computing power in the hands of more people than ever. We use smartphones and tablet devices to pay bills, find our way through traffic and check out books from the local library. In a society where information is available instantly, it's no surprise that citizens, students, teachers and administrators expect more convenient, faster and more efficient services from their IT organizations.

We know your organization is under serious budget constraints. Most state and local governments as well as educational institutions have fewer funds available to develop new services and focus on innovation. However, advancing technology has also contributed to the emergence of a new IT paradigm—cloud computing—that enables new services without requiring huge investments in hardware, software and infrastructure. Cloud computing is actually a collection of technologies, including virtualization, software and broadband networks, that create a new economic model for IT. The idea is to have one central repository of shared IT resources that can be accessed on demand by a variety of users. Rather than buying new infrastructure and incurring large capital costs to provide their own IT, organizations can buy computing as a service, using and paying for IT only as needed.

Government and education organizations are using the cloud as a way to consolidate IT, save money and provide new services, both internally and to constituents. There are barriers, however.

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OVERVIEW OF HP'S CLOUD OFFERINGS

First, the hype and confusion about the cloud have created a certain amount of FUD (fear, uncertainty and doubt). The U.S. National Institute of Standards (NIST) helped clarify concepts last fall when it published its definition of cloud computing, which includes five essential characteristics (see story on page 4). Wisely, NIST didn't stop there but also included descriptions of the various types of clouds—such as public, private, community and hybrid—as well as different service models, including software as a service (SaaS), platform as a service (PaaS) and infrastructure as a service (IaaS).

Second, traditional procurement vehicles are designed for buying hardware and software rather than “IT as a service,” making it more difficult for public sector organizations to adopt the cloud. Third, lack of

“The deployment of the HP VirtualSystem was smooth, efficient and cost-effective. It truly could not be better than what we've experienced so far.”

— Omer Siddiqui, CIOI, DC Water

To learn more, [click here](#).

funding is an inhibitor. Fortunately, the journey to the cloud consists of many steps, and the early ones required to lay a foundation—such as modernization of applications and virtualization—are likely to produce cost savings that can be used to fund the pathway to the cloud.

Some innovative governments and education groups have already embarked on this journey. They are implementing shared service agreements among agencies, departments and key stakeholder groups as a way to cut costs. Under such arrangements, the stakeholder groups pool funds to buy infrastructure and applications and then share the resources. In a variation, the IT organization might shoulder the cost of the infrastructure and then charge other agencies to provide its services.

A recent report by IDC Government Insights predicts the emergence of regional community cloud computing hubs, in which one government agency or educational institution provides cloud services to others, both inside and outside its home state or region. Michigan and Utah have already implemented regional cloud hubs offering SaaS, IaaS, online storage, security management and data backup, according to the report.

Even local governments and schools are adopting cloud computing. When the [District of Columbia](#)

CLOUD DISCOVERY WORKSHOP

HP'S CLOUD DISCOVERY WORKSHOP is a one- to two-day session in which HP senior consultants will help you understand how and where cloud computing can be most effectively used in your organization. Designed for business and technology decision-makers, the workshop covers cloud concepts and models, sourcing options, financial implications, security issues, governance process and structure, applications and service management.

The workshop will help you

- Discover cloud-related projects that promise immediate benefits and quick ROI
- Realize the benefits, scope, scale and critical success factors for adopting the cloud or becoming a cloud service provider
- Quickly get stakeholder buy-in and give traction to existing cloud efforts
- Draw on best practices for data centers, infrastructure, applications and service delivery
- Define a road map for your journey to the cloud
- Take a holistic approach to cloud computing, including technology, process, people and governance

CLOUD SERVICES FOR U.S. PUBLIC SECTOR

[Water and Sewer Authority](#) (DC Water), the regional water utility for D.C. as well as parts of Maryland and Virginia, needed to modernize its storage, it did so within an overall strategy of moving to a private cloud. With an eye to the future, it decided to implement a virtualization project based on HP's [Converged Infrastructure](#), a preconfigured and pretested solution that simplifies, integrates and automates storage,

“If we had to buy licensing for every desktop for every application, it would bankrupt the district. HP Thin Client computing makes us a lot more efficient with the technology budget.”

— Greg Partch
Director of Education Technology
Hudson Falls Central School District

To learn more, [click here](#).

SOLUTION SNAPSHOT

Hudson Falls uses HP SchoolCloud to improve education and reduce costs

GREG PARTCH, director of education technology for the [Hudson Falls](#) (N.Y.) Central School District, faced a major challenge. The town's schools were underfunded yet desperately in need of effective classroom technology. Partch was looking for reliable, cost-effective computers that would not require much maintenance.

He found the solution in the HP SchoolCloud, a solution that uses thin clients to access cloud-based resources. Rather than deploying individual desktop PCs, which need near-constant maintenance and upkeep, the school now uses HP Thin Clients, which have neither hard drives nor resident software. Instead, when students log in, they get a virtual desktop from an application server in the school district's main data center. The desktop is delivered via ClassLink LaunchPad software, a cloud-based instructional desktop developed specifically for education.

OBJECTIVE:

Provide reliable technology in the classroom while improving student access

APPROACH:

Hudson Falls Central School District implemented the HP SchoolCloud solution, including HP Thin Clients in the classroom linked to HP Server Blades

IT IMPROVEMENTS:

- Greater reliability with HP Thin Clients
- Centralized software management from the data center
- Ability to access both private and public cloud resources

BUSINESS BENEFITS:

- Lower costs due to
 - Licensing fewer copies of software and managing access at the server
 - Replacing traditional desktops with thin clients that cost substantially less
 - Centralized server (and software) management in the data center
- Improved access with more workstations and more uptime
- Student access to a consistent desktop
- More “time on task” in the classroom

[Click here](#) to read the entire case study.

networking, servers, management software and energy use. That project has enabled DC Water to reallocate nearly 40 percent of its acquisition budget and 10 percent of its operating budget. It has also become the foundation of a private cloud that can flex rapidly and cost-effectively to accommodate DC Water's growing volumes of data.

Ironically, one of the chief benefits of the cloud—its flexibility—is also a feature that can confound organizations trying to take advantage of the cloud. Although the NIST definitions helped clarify the technical aspects and models of cloud computing, organizations are still left with a dizzying array of choices. Which cloud model should they adopt? What types of services should be shared? Which options will provide the best services to constituents while also providing savings?

The most effective implementations of the cloud will likely be hybrids that combine public and private models. In government and education, the security needs of certain data, such as tax returns, health records or student records, may require a private cloud.

HP Cloud Protection Program and Consulting Services

Putting your computing resources and data into the cloud requires an integrated and comprehensive approach to information security. The HP Cloud Protection Program and Consulting Services can help you build the necessary security controls and principles into your enterprise hybrid cloud environment across people, process, products and policies.

NIST DEFINITION OF CLOUD

"CLOUD COMPUTING is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction."

NIST lists five essential characteristics of the cloud:

- On-demand self-service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

Source: "The NIST Definition of Cloud Computing," Special Publication 800-145, September 2011

ALLIANCE AIMS TO OFFER REQUIREMENTS, GUIDANCE ON CLOUD

The Open Data Center Alliance was formed in October 2010 by leading global IT organizations to deliver a unified voice for the emerging IT requirements for data centers and cloud computing.

An independent organization, The Alliance has more than 300 members that are developing a unified vision for cloud requirements—particularly focused on open, interoperable solutions for secure cloud federation, automation of cloud infrastructure, common management and transparency of cloud service delivery.

To learn more, go to www.opendatacenteralliance.org.

But some services might be shared in a public cloud. For example, the State of Oregon has consolidated e-mail systems across multiple agencies by using a SaaS-based e-mail solution.

But each organization needs to decide for itself, because each organization is unique. And the decisions are complicated. Moving to the cloud is more than just deciding on one model and how to implement it. HP believes that cloud computing transforms IT into a multisourced, hybrid service delivery organization with multiple operating models and funding streams. That means that effectively adopting the cloud requires changes in process, security procedures, data stewardship and cost accounting.

In fact, a recent report by the TechAmerica Foundation, on which HP collaborated, recommended a framework state and local governments could use to evaluate, adopt and implement the cloud. "Among the first steps should be assessing cloud readiness, assessing risk and planning governance," says Bob Otterberg, HP state, local government and education CTO, who participated in the study.

HP has both the technical expertise in the cloud and experience in the public sector and education to help IT leaders assess their organizations and plan a cloud strategy as well as help them enable cloud services on their journey to the cloud. Each organization needs to approach the cloud differently, depending on its own unique requirements and maturity.

How do I start? What should I put into the cloud? What about security? Several resources can help you answer these questions, whether you are just starting out or have already begun your journey to the cloud. Among them are Intel® [Cloud Builders](#), a cross-industry initiative aimed at making it easier to build, enhance and operate cloud infrastructure, and HP's [Cloud Discovery Workshop](#) (see the story on page 2).

HP offers the industry's broadest cloud solution portfolio and world-class cloud consulting services. One of HP's cloud offerings and consulting services is CloudStart, an all-in-one solution for deploying an open and flexible private cloud environment in 30 days or less. Based on HP's Converged Infrastructure, CloudStart simplifies and speeds private cloud deployments. For example, with [CloudStart](#), HP did a full assessment of the needs of Carnegie Mellon University and helped the school build a private cloud in less than 30 days.

HP has been a trusted government and education partner for more than 45 years and today provides services worldwide to government and education clients in 31 countries. The company stands ready to help governments, large and small, provide the best services at the lowest costs with cloud technology. ■

Four Ways to a Self-Sufficient Infrastructure: HP ProLiant Gen8

Learn more about the new HP ProLiant Gen8...explore the architecture, see the portfolio, understand the value and [join the conversation](#).

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Suggested Reading

These additional resources include business white papers and previously published articles from IDG Enterprise.



Are you paying too much for cloud services?

Experts say overprovisioning cloud resources is a widespread corporate problem

By Brandon Butler
Network World

Knowing exactly how much and what type of cloud service a company needs is one of the more challenging aspects of deploying a cloud strategy, and most enterprises are getting it wrong, according to experts.

"The whole premise of the cloud should be to drive the IT director to think small, but people aren't doing that," says Sharon Wagner, president of Cloudyn, an Israeli company whose SaaS application helps businesses monitor their cloud usage and provides recommendations on how to right-size it. "Many customers are over provisioning, which leads directly to over paying."

Experts agree. "I think it's a problem just about everyone could be facing," says Paul Burns, an independent cloud analyst at Neovise. Burns believes there is somewhat of a misnomer about paying for cloud services. While many consumers think they are paying for resources they use in the cloud, instead users are actually paying for a certain capacity of compute or storage. Whether they use it or not is up to them.

"Just about every customer likely has an issue with this," says James Staten, a vice president and principal analyst at Forrester. "Some have had that shock bill from their service provider so they've gotten pretty good at dealing with it, but almost everyone could benefit from taking a closer look at their actual usage."

So what can be done about overprovisioning of resources? Companies can fairly easily install measures to prevent it, Staten says. The best way is by having load balancers written directly into application code that automatically scale up and down resources based on need. Just as important as scaling up though is scaling back down when those resources are no longer needed. Staten warns, however, that enterprises can run into some complications. A bug in a software or a distributed denial-of-service attack can, for example, create false scaling requests for additional resources.

[Read the full article](#)



Government Moves Toward Cloud Computing 'Perfect Storm'

As FedRAMP initiative ramps up, cloud service providers can look forward to clearer guidance from federal clients and a robust market as administration tech chiefs press on toward a 'Perfect Storm' in cloud computing.

By Kenneth Corbin
CIO.com

Amid mounting budget pressures and a maturing set of technologies, the federal government is poised for the rapid adoption of cloud computing services over the next several years, according to one of the senior agency leaders helping craft a government-wide cloud strategy.

While federal tech chiefs have long envisioned an environment in which agency storage and applications are hosted and shared throughout the government, the policy reforms required for such a shift, though still very much a work in progress, have recently come into focus and figure to precipitate a major migration to the cloud over the next several years, said David McClure, the associate administrator of the General Services Administration's Office Citizen Services and Innovative Technologies.

Perfect Storm Clouds

"We've been trying with this on and off for the last couple decades," McClure said in remarks here at the Software and Information Industry Association's annual Cloud/Gov conference.

"I think we now have a perfect storm. We have a budget crisis, a new wave of technology that's actually entered in [to the government]. We have a new generation of CIO and IT leadership in the federal government that I think is very open to this kind of environment," he said.

McClure is one of the driving forces behind FedRAMP, the federal government's program to develop a uniform framework for federal cloud solutions, spanning the security, assessment, privacy and procurement considerations of the new deployments. FedRAMP, with its "do once, use many times" mantra, is currently in the prelaunch phase, with the initial, "phased roll-out" scheduled to begin in June.

[Read the full article](#)

Suggested Reading



TechAmerica Foundation: Governments Need to Get Into the Cloud

The cloud is being pitched as the best way to do more with less, but government agencies are slow to modernize, California official stresses

By Paul Krill
CIO.com

Cloud computing presents opportunities for governments to modernize and improve cost efficiency, public officials stressed Thursday at the introduction of a report advising state and local governments on cloud adoption. But one California official cited government tendencies making the modernization process a slow one.

The TechAmerica Foundation's State and Local Government Cloud Commission released its report entitled "The Cloud Imperative," offering best practices for cloud computing for state and local governments. In an introduction of the report at Microsoft's Silicon Valley offices in Mountain View, Calif., government officials including California Lieutenant Governor Gavin Newsom and San Jose Mayor Chuck Reed emphasized potential benefits of cloud computing.

"San Jose's approach is very simple. We're trying to do more with less," Reed said in explaining San Jose's perspective on the cloud. Newsom, however, stressed how governments need to wake up to technological change. "You're seeing with this rapid and extraordinary change with the cloud in the private sector how it is dramatically changing the way people are doing business," bringing down costs and boosting collaboration, he said. "But government has been slow to pick up on this."

The state of California, though, has been adopting cloud technology in several applications, both in public and private clouds, said Carlos Ramos, secretary of the state's technology agency. "We've done a big migration in the state from traditional telephony to cloud-based VoIP technology." Pressure on budgets forces departments to start looking at cloud infrastructure, Ramos said.

[Read the full article](#)



Is Your Cloud Project Ready to be Agile?

By David Taber
Computerworld

In the decade since the Agile Manifesto, the movement has encouraged a number of best practices like test-driven development, user-centered design, iterative development, clean code, refactoring, continuous integration, and—arguably—cloud computing. I'm a card-carrying Agile zealot, and to me its benefits are unarguable. (Although here's a great spoof site that does argue against it.)

There's a catch, though: not every IT organization can really implement Agile, let alone profit from it. There are organizational, project, and personnel characteristics that can make Agile downright dangerous. The awesome price of freedom is that you have to live up to its obligations.

[Read the full article](#)



How to Break Down the OpEx vs. CapEx Cloud Computing Debate

Cloud computing is too often reductively branded as an economic calculus that would trade a CapEx model for an OpEx model. But it's a little more complicated than that. Bernard Golden explains what we talk about when we talk about cloud computing.

By Bernard Golden
CIO.com

The debate about the economic benefits of cloud computing is intense, and is commonly boiled down to a talking point labelled OpEx vs. CapEx. Very often, like many talking points, the headline conflict is really a stalking horse that conceals the true source of conflict.

In the case of OpEx vs. CapEx, what often underlies the discussion is really an indirect, coded debate about the future of IT infrastructure and operations groups: Will they be operators of assets owned by the larger organization, or will they be operators of assets owned by an external provider?

[Read the full article](#)