

Demystifying Cloud Computing: A Three-Minute Tutorial

Cloud computing is all over the news as a cost-effective way to deliver innovative government services over the network. How does cloud computing change the experience of government employees and citizens? This tutorial briefly presents the what, why, where, and how of cloud computing.

What Is Cloud Computing?

You might have seen network diagrams with a puffy cloud representing the behind-the-scenes components. The cloud conveys the notion that you don't really need to know the location or number of servers delivering the service. Your experience is that you request a service—say, setting up a voice, video, and web conference, or viewing your tax-return status—and then by some magic you receive it.

"Cloud computing unbinds a service from a particular infrastructure," says Kapil Bakshi, chief solutions architect for federal government, Cisco. Instead, a collection of servers stands at the ready, available to whichever agency or department needs them at any given moment. Depending on the number of people using a service at the same time, the cloud automatically pulls in the right number of servers, adding or releasing servers dynamically as demand fluctuates.

Clouds are used for three main purposes, and your agency might today or someday use any or all of them:

- **Software as a Service:** An example is Cisco WebEx, which agencies use to enable people in different locations to collaborate with voice, video, and web sharing. Another example is HR services common to many agencies.
- **Platform as a Service:** Some agencies have begun developing new software not on their own server platform, but on a shared platform in the cloud.
- **Infrastructure as a Service:** Certain government agencies have begun sharing the infrastructure they use for voice, video, or web applications.

Why Is Cloud Computing a Good Idea in Government?

"Cloud computing can reduce the costs of existing services and enable government to cost-effectively introduce enhanced services," Bakshi says. Citizens benefit from cloud computing because their tax dollars are used more efficiently. Government IT costs often decrease because agencies don't need to purchase more capacity than they need to prepare for usage spikes. Management costs can decrease, as well. "Agency IT personnel spend less time and resources making the IT infrastructure efficient, which enables them to focus on the core mission," says Bakshi.

Cloud computing also makes it much easier for agencies to introduce new citizen services. Examples include interactive Web 2.0 applications that let you share videos or collaborate with coworkers on a social networking site.

Where Is the Cloud?

An agency can host a cloud itself, subscribe to a cloud service hosted by another agency, or subscribe to a service from a third-party service provider. Some agencies subscribe to an external cloud for some services and build a private cloud for others, depending on the criticality and security classification of the service. The Office of Management and Budget, General Service Agency, and National Institute of Standards and Technology are all defining standards for cloud procurement and acquisition.

How Can Our Agency Get Started with Cloud Computing?

"Given the incredible value of cloud computing in terms of flexibility and cost savings, integrating cloud architectures into an agency Enterprise Architecture, with Federal Enterprise Architecture as the backdrop, is an important exercise," says Dan Kent, Cisco's director of systems engineering, federal government. As an example, the Washington, D.C. government has embarked on a pilot to host training videos on a public video-sharing site.

To host a cloud, your agency needs a platform with the following characteristics:

- **Performance:** The platform needs to be able to support high transaction volume and multiple applications.
- **Low management overhead:** Acquiring new servers should not add management burden. Automated provisioning offloads the agency IT department. And to keep costs down, IT staff should be able to manage computing, storage access, network infrastructure, and virtualization from one interface.
- **Energy efficiency:** Look for a platform that minimizes the number of components to power and cool.

Cisco designed the new Cisco Unified Computing System with these requirements in mind. It can grow to 320 server blades in 40 interconnected chassis, and hundreds of servers can act like thousands of virtual machines, managed with no more resources than if you had one server.

To receive recommendations for data center articles tailored to your agency's needs and your level of experience, visit:

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To watch short videos about how Cisco is implementing the Unified Computing System internally, visit:

[http://tools.cisco.com/cmn/jsp/index.jsp?id=88235&redir=YES&userid=\(none\)](http://tools.cisco.com/cmn/jsp/index.jsp?id=88235&redir=YES&userid=(none))

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To read a blog on cloud computing by Padmasree Warrior, Cisco's Chief Technology Officer, visit:

http://blogs.cisco.com/news/comments/cisco_cto_on_cloud_computing/



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