ECPA Reform and the Revolution in Cloud Computing

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Before

The U.S. House of Representatives

Committee on the Judiciary

Subcommittee on the Constitution, Civil Rights, and Civil Liberties

September 23, 2010

Chairman Nadler, Ranking Member Sensenbrenner and Members of the Committee, thank you for holding this hearing on cloud computing and for inviting me to share my views with you. Cloud computing technology is emerging as an engine for economic growth and jobs, and it is important that we create a policy framework that supports it. As the Executive Vice President and General Counsel at Salesforce.com, I am deeply involved in policy discussions about cloud computing, and I applaud the efforts of this Committee to address this issue.

About Salesforce.com

Salesforce.com is a leading enterprise cloud computing company that provides Internet-based solutions to organizations of all sizes in all industries globally. Our main service offerings are applications that allow organizations to input, store, process, and access data to manage their sales and customer services. In addition, we provide an enterprise collaboration tool called Chatter [1] and a development platform called Force.com.[2]

Salesforce.com delivers its services over the Internet through commercially available Web connections and browser software. Before cloud computing, the customers we service today would typically purchase software and hardware from different vendors and

[1] Salesforce.com Chatter enables real-time enterprise collaboration. As both a collaboration application and a platform for building collaborative cloud computing applications, Chatter allows users to connect and share information securely – all in real time.

[2] Force.com is the leading cloud platform for business applications. It gives developers a platform to create rich, collaborative custom cloud applications fast – without buying hardware or installing software.

integrate this technology in their own data centers. Today, instead of building and maintaining costly IT infrastructure, our customers simply log on to the Salesforce.com Website and access their cloud services using a unique username and password. Over 82,000 organizations globally, including governments and businesses in highly regulated industries like financial services, healthcare, insurance and communications trust Salesforce.com with their data. We also have several U.S. federal government customers, including the Department of Justice, the Department of Health and Human Services, the Securities Exchange Commission, and the Department of State.

In my remarks today, I will make reference to the Salesforce.com enterprise cloud computing model, not the consumer cloud computing model that companies like Amazon and eBay have made popular. In doing so, I will emphasize two points:

1. **US public policy should support cloud computing because it is a powerful driver of economic growth and jobs.**
2. **In order to build public confidence in cloud computing, the rules for government access to data held in the cloud should be the same as for data held on-premise.**

Cloud Computing is a Driver of Economic Growth

Cloud computing has already been embraced by consumers and successfully implemented by organizations of all sizes around the world. Every major analyst firm

believes that cloud computing will expand its share of the overall IT market. According to Gartner, the worldwide market for cloud services will be worth $148.8 billion by 2014.[3] According to Saugatuck Technology, an average of 45 percent of all new business and IT spending will go to cloud services within the next five years. [4] According to a recent Goldman Sachs report[5] the shift toward cloud computing is "unstoppable" and has likely been accelerated by the macroeconomic downturn that has forced businesses to look for lower-cost solutions.

A good way to explain why enterprise cloud computing is gaining popularity is to compare it to a high-rise office building that houses many different businesses under one roof. Just as a high-rise allows tenants to lease secure, individual offices in the same building while sharing core services such as plumbing and electricity, multi-tenant enterprise cloud computing allows organizations to use individualized software applications while sharing core computing services such as database and security. For the tenants, it's cheaper, more efficient, and easier to scale up than are the alternatives. By eliminating the need for costly and wastefully duplicative infrastructure, multi-tenant cloud computing frees users to focus on their core business, not their IT.

In a multi-tenant cloud, data and applications are separated logically within the hardware and software, so different users can view only the information and cloud services that

[3] Gartner, Inc., Forecast: Public Cloud Services, Worldwide and Regions, Industry Sectors, 2009-2014, June 2, 2010
[4] Saugatuck Technology, Ageing IT Infrastructure: A Boon for Cloud Adoption?, March 12, 2010.
[5] Goldman Sachs SaaS Survey, February 2010.

pertain to them. In this respect, multi-tenant cloud computing is like online banking – it allows large numbers of individuals to use their accounts at the same time while keeping their information private through the logical (not physical) separation of data.

In order to appreciate the power of multi-tenant cloud computing, it is useful to contrast it to traditional, single-tenant computing applications. Multi-tenant applications can satisfy the needs of numerous organizations with the hardware resources and staff needed to manage one large computing stack. By contrast, single-tenant applications require a dedicated set of resources for each organization. It is largely for this reason that the Application Service Provider (ASP) single-tenant computing model of the late 1990s failed. In the ASP model, the setup, maintenance and upgrades of computer applications were outsourced to a third-party service provider, just like they are with cloud computing. The difference was that the ASP had to maintain a separate infrastructure stack for each customer. As more and more customers were added, the sheer scale, cost and complexity of maintaining the aggregate computing infrastructure became unsustainable.

With multi-tenant cloud computing, the software applications are provided as a service to multiple customers on a single, large infrastructure stack. The configurations of each user are stored as metadata that describes the base functionality of their application and corresponds to their data and customizations. This metadata is then interpreted by the platform's runtime engine. In a robust multi-tenant, metadata cloud architecture there is a clear separation of the compiled runtime engine (kernel) and the application data. As a

result, the kernel can be upgraded without disrupting customer's applications or data, thus allowing for continuous improvements in performance.

With its multi-tenant architecture, Salesforce.com is able to run approximately 230,000 applications for its more than 82,000 customers on just a few thousand servers. No other computing model delivers that kind of efficiency. A single-tenant computing model (sometimes referred to as a "private cloud") would require a minimum of 2 servers per application (one database server and one application server), plus additional servers for redundancy and disaster recovery. Consequently, a single-tenant computing model could require several hundred thousand servers to manage the computing needs of the customer base that Salesforce.com manages with just a few thousand servers.

Nicholas Carr, former executive editor of the *Harvard Business Review* and one of the most influential thinkers in the IT industry, has written a best-selling book validating the concept of multi-tenant cloud computing. Carr believes that ''utility-supplied'' computing will have economic and social impacts as profound as the ones that took place a hundred years ago, when companies ''stopped generating their own power with steam engines and dynamos and plugged into the newly built electric grid.''[6] Just as the electric grid made it possible to deliver electrical services to large numbers of users remotely, cloud computing makes it possible to deliver computing services to large numbers of users remotely. Moreover, just as electric utilities led to a surge of new businesses and jobs, so will cloud computing. Thus, the jobs that cloud computing generates are measured not only by the jobs created in the cloud computing industry itself, but also by

[6] Nicholas Carr, The Big Switch: Rewiring the World, from Edison to Google, New York: Norton, 2008.

the additional jobs that cloud computing customers can generate by being freed of the burden of maintaining a costly internal IT infrastructure.

Multi-tenant enterprise cloud computing is cost-effective, fast, easy-to-use, flexible and available anywhere. It is also a powerful driver of innovation. This combination of benefits allows organizations that use cloud computing to dramatically boost their performance.

Cost-Effective

Because enterprise cloud computing customers do not have to invest in costly IT infrastructure, they enjoy significant upfront savings. And because they pay on a per subscriber basis that includes system upgrades, costs are more predictable.

Fast

Because customers do not have to spend time procuring, installing or maintaining servers and networking equipment, cloud applications can be implemented quickly (from a few days to a few months) and deployed simultaneously to thousands of users in different locations.

Easy to Use

Because Salesforce.com has modeled its service after consumer Web applications like Amazon and Google, interfaces are intuitive and easy to use, leading to high user adoption and customer satisfaction.

Flexible

Because enterprise cloud computing is built on Internet scale platforms, it provides flexibility that traditional computing cannot. For example, it took only three weeks for the 2008 Presidential Transition Team to launch its Change.gov application on the Salesforce.com platform, and during the week that the application was live, it registered 40 million hits and handled 145 hits per second at its peak.

Available Anytime, Anywhere

Because enterprise cloud applications are accessed over the Internet and housed in large data centers that run 24 hours a day, users can securely access real-time data anytime and from anywhere with an Internet browser.

Continuous innovation

Because Salesforce.com implements all upgrades on its platform automatically, our customers benefit from new features immediately and do not have to worry about legacy software. Because Salesforce.com lets developers build, host and support their applications on our platform, they can bring innovative ideas to life quickly and share them widely.

Together, these benefits constitute a powerful engine for economic growth. Cloud computing has already spawned scores of new companies and the jobs that go with them.

IDC estimates that there are more than 1,000 worldwide software-as-a-service providers alone. In the coming decade, thanks to the proliferation of cloud services, low-cost bandwidth, and inexpensive access devices like smart-phones, the market for cloud computing will accelerate. In order to maximize the benefits to the American economy, Congress should adopt policies that support the cloud computing model, or at a minimum, do not discriminate against it.

The Rules for Government Access to Data in the Cloud should be the same as for Data On-premise.

Government has legitimate reasons to access privately-held data. It needs to access data in order to fight crime and prevent terrorist attacks. The legitimacy of these activities is widely accepted. In order to generate public confidence in the way that government manages these operations, it is essential that the guidelines for them be applied in a predictable way that is appropriately transparent.

At Salesforce.com, we endeavor to promote trust in our enterprise cloud computing solution in several ways:

- We maintain robust security practices based on international standards like ISO 27001.[7]
- We publicly post our privacy policies.
- We host a public website, https://trust.salesforce.com, which shows the performance of our system on a daily basis.
- We list customer success stories from around the world.
- We track and share information about customer satisfaction.
- We contractually agree to keep our customers' data confidential with exceptions for due process of law.

For many potential customers, these actions are all the evidence they need to determine that they can trust the privacy and security of our cloud services. For others, however, especially those outside the United States, these actions are not enough. These customers want something more -- they want assurances that the U.S. government will not access their data without deliberate due process. As the demand for cloud computing services has grown, so have these concerns about undue government access. At Salesforce.com, we face this issue on a regular basis, principally from customers who have often expressed their belief that the current regulatory framework permits the U.S. government overly broad access to data stored in the cloud. We need to have clear laws that prove this belief incorrect.

[7] The International Organization for Standardization (ISO) is the world's largest developer and publisher of international standards.

As part of the private sector, Salesforce.com cannot make representations to its customers that government will not gain access to data. What we can do is point to and explain the legal process that government must undertake to access data held in the cloud. This is why reform of the Electronic Communications Privacy Act is so critical. Because ECPA codifies guidelines for US government access to data, it sends a signal to other countries about the confidentiality of information held in the cloud. As a result, it is urgent that Congress update ECPA **to clarify that data stored and processed in the cloud on behalf of a customer has the same protections and standards for law enforcement access as data stored locally by that customer.**

ECPA has not been significantly revised since it was enacted in 1986 – well before the emergence of cloud computing. Today, ECPA is a patchwork of confusing standards that have been interpreted inconsistently by the courts, creating uncertainty for service providers and law enforcement agencies alike. This murky legal landscape does not serve the government, customers or service providers well. Customers are, at best, confused about whether their data is subject to adequate protections when the government seeks access. Companies are uncertain of their responsibilities and unable to assure their customers that subscriber data will be uniformly protected. The solution is a clear set of rules for law enforcement access that will safeguard end-user privacy, provide clarity for service providers, and enable law enforcement officials to conduct effective and efficient investigations.

As Congress contemplates ECPA reform, it should balance the law enforcement interests of government, the privacy interests of users, and the public confidence interests of business. In attempting to balance these interests, Congress should embrace the concept of technology neutrality. In practice, technology neutrality means that a particular kind of information (for example, the content of private documents and communications) will receive the same level of protection regardless of the technology, platform or business model used to create, communicate or store it. We're not asking for special treatment for data stored in the cloud, but rather for equal treatment.

Salesforce.com is part of the Digital Due Process Coalition whose goal is to update ECPA to keep pace with changes in technology. The Coalition did not seek to answer all questions or concerns about ECPA, but it has agreed on four principles that provide a framework for opening a public dialogue on the issue. The overarching goal of the Coalition is as follows:

> *To simplify, clarify, and unify the ECPA standards, providing stronger privacy protections for communications and associated data in response to changes in technology and new services and usage patterns, while preserving the legal tools necessary for government agencies to enforce the laws, respond to emergency circumstances and protect the public.*

The Coalition principle that is the most relevant to cloud computing reads as follows:

A governmental entity may require an entity covered by ECPA (a provider of wire or electronic communication service or a provider of remote computing service) to disclose communications or stored data that are not readily accessible to the public only with a search warrant based on a showing of probable cause, regardless of the age of the communications, the means or status of their storage or the provider's access to or use of the communications in its normal business operations.

What this principle would mean in practice is that the government must obtain a search warrant based on probable cause before it can compel a service provider to disclose a user's private communications or documents stored online.

This principle would subject private communications, documents and other private user content stored in or transmitted through the Internet "cloud" to the same warrant standard that the Constitution and the Wiretap Act have traditionally provided for the privacy of our phone calls or the physical files we store in our homes. It is intended to apply to private emails, instant messages, text messages, digital documents and spreadsheets, photos, Internet search queries and private posts made over social networks. It is not intended to apply to materials revealed to the public on the Internet.

Conclusion

In the past decade, entrepreneurs have developed, and the American public has embraced, truly revolutionary changes in communications and information technology. These changes have yielded remarkable benefits in terms of economic activity, jobs, education, democratic participation and social engagement. In order to create the public confidence necessary to fuel continued innovation and economic growth, Congress should update ECPA in ways that preserve law enforcement tools and give companies the clarity they deserve. Congress should extend the traditional warrant standard to our personal communications, private commercial documents and highly sensitive information stored and processed in the cloud. By making sure that ECPA is technology-neutral, Congress can send a clear signal to individuals, companies and governments around the world that they can safely use cloud computing platforms. Doing so will unleash a wave of innovation and productivity that will drive economic growth and create jobs for years to come.