

Extra Feature Story

Privacy Concerns Arise As Digital Life Trends Toward Cloud Computing

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As more people rely on the Internet for applications and data storage, those technologies and services are raising tough questions about user privacy.

Imagine if all your schoolwork, music and games lived on the Internet instead of laptops, flash drives, phones and iPods. That's the future of so-called "cloud computing."

Cloud computing relies on Internet

For individual users, cloud computing means relying on Web applications to write papers, listen to music, organize pictures, and save everything on to a remote server instead of a personal computer's hard drive.

Google Documents, for example, features a basic text editor and a PowerPoint-style slide presentation function. Users create projects then save them to an external Web-based network, referred to as a "cloud."

"Before, in the browser, we could only search for things. Now we can create content through the browser. This enables us to do cloud computing," explained Vinay Mahagaokar, who recently left Microsoft for a San Francisco startup.

Cloud computing opens new spaces for collaboration

Saving work "in the cloud" instead of on a computer, CDs or DVDs frees up space on school servers, and can cut costs. All a person needs is a cheap access device such as a simple computer or phone, Web browser and an Internet connection.

Educators hope cloud computing will usher in new opportunities for collaborative learning.

"Collaboration has been a one-time, relatively static and sequential process. New technologies make interactive collaboration possible on the Web, between students in the same class, or around the world. Dynamic teaming and very interactive collaboration are 21st century skills," consultant Thomas Bittman says in the Gartner Research technology blog.

Additionally, open-source textbooks, produced by groups like CK-12, allow teachers to write and edit classroom material that better fits their curricula and lesson plans. Because these books are stored "in the cloud," other teachers and students can access them and share their feedback.

Cloud computing requires faster computers

There are also technical obstacles to universal cloud computing. Web applications such as Facebook are having trouble maintaining services such as free picture uploads.

Earlier this year, BusinessWeek reported that Facebook is looking to borrow up to \$100 million for additional servers to support its growing online social network.

As user expectations and standards for cloud applications continue to rise, developers will have to write better code that can function quicker.

"There will never be a mobile, Web-based application equivalent to a desktop application," said Austin-based software developer Sevag Frankian. He says that the limitations on efficiency are simply too severe.

Until now, the ability of a computer chip to process information has doubled every two years. There's even a rule to describe the speed of development called Moore's Law, named after Intel co-founder Gordon Moore

However, according to Moore, computing speed is about to hit a wall. "The doubling will slow down" around the year 2010, Moore told ZDNet News in 2002.

"You really get bit by the fact that the materials are made of atoms."

Storing data on Web raises privacy concerns

As the idea of cloud computing begins to take hold, concerns about privacy are also emerging.

Earlier this year, many Facebook users panicked when the site changed its terms of service. The new policy implied that the company had control over data users had deleted, raising fears it could reveal embarrassing photographs or other material to parents, teachers and prospective employers.

Companies must still list all the ways they use personal information, but many people fail to read the user agreement.

A World Privacy Forum report says privacy fears are just the tip of the iceberg.

As people and businesses take advantage of Internet-based services, they may well find trade secrets in the hands of competitors, private medical records made public and e-mail correspondence in the hands of government investigators without any prior notice, the report warns.

If a service such as Google Docs becomes the spot where everyone stores their documents, it will become a legal battleground, according to privacy lawyer Robert Gellman, author of the report.

"The cops will love this," he said. "They can go to a single place and get everybody's documents."

-- Written by Siddhartha Mahanta for NewsHour Extra

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