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Understanding Cloud Computing and Datacenter Storage

When it comes to cloud computing, companies that think they can afford to stay on the sidelines are in for a surprise. "You are probably already doing cloud computing," according to NetApp Founder David Hitz. "You just don't realize it," he says. As businesses struggle with the concept of the cloud, Hitz advises that they first assess what they are already doing in their datacenters, and then consider the business problem that they are trying to solve.

"Cloud computing is a very powerful trend that is changing the way people do business."



DAVID HITZ
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Q: What are the key trends you see sweeping the datacenter?

A: I see two critical trends. The first is server virtualization, which is all about sharing datacenter infrastructure between lots of users. Some people call this an internal cloud. It lowers cost by consolidating many lightly used systems into a smaller number of heavily used ones.

The second trend is external cloud computing. Instead of buying and operating your own apps, servers, storage, datacenter space, power, cooling—and hiring people to run it all—you let somebody else do all that. Then you access it over the internet, typically paying by the SIP.

Internal clouds are a technology trend: What is the best way to build a modern, efficient datacenter? External clouds are a business trend. Should I build the datacenter myself, with all that capital and people, or should I let someone else do it? The datacenters that external cloud providers build typically use the same shared-infrastructure model as internal clouds.

Q: Is cloud computing already going mainstream?

A: If you define cloud computing as accessing somebody else's software and computers over the internet, then most companies are doing it already. Payroll is a good example. Few people do this themselves anymore. They use some Web-based service. That's cloud computing.

The problem is that a lot of companies haven't admitted that to themselves. Nor have they dealt with the question, "What if our cloud vendor went out of business?" That's what you need to think about.

Q: How is cloud computing playing out and which apps move first?

A: Many companies have a combination of standalone systems—UNIX, Windows, and maybe even mainframe—along with internal cloud and external cloud. I expect these models to coexist for many years.

The trick is figuring out which solution works best for a particular business problem. For many areas, cloud computing is quite mature. Examples include payroll, blogging, Web hosting, online training, CRM like Salesforce.com. Those are all good places to start. I think that e-mail and database test-and-dev are getting interesting as well.

For lessons, think back to the transition from mainframes to UNIX, or UNIX to Windows. Experimental new apps are often the first to migrate; the most mission-critical apps typically move last.

Q: Are flexibility and efficiency mutually exclusive in a datacenter?

A: Cloud computing is about both. It is more efficient because you are sharing resources and driving up utilization. And it is more flexible because the infrastructure is ready and waiting to be used immediately. New projects can start very quickly.

To deliver efficiency, internal clouds need a foundation of flexibility. You build out the shared infrastructure before you know what will run on it, so it must be flexible enough to handle any problem that is thrown at it.

Q: Why does storage matter in cloud computing?

A: With cloud computing, applications and virtual machines hop from one physical server to another, but even as they move, they always need access to their data. This puts a very high requirement on the underlying storage. Many customers have found that to virtualize their servers, they must first put in the foundation of a shared-storage infrastructure.

As compared with standalone systems, internal clouds typically require higher performance and reliability, and better manageability. External clouds are typically bigger, and need even more speed and uptime. In addition, they have higher security requirements, since users from different companies may be sharing the same infrastructure.

It is a fun time to be a storage vendor.