Welcome to the Cloud (Again)!

This article will discuss the computing phenomenon, "Cloud Computing" which has become for the early part of the 21st century, a similarly hyped term like "client/server computing" was in the 1990s. (Read my byline and you will see that I have been in an active participant in both of these trends.)

Cloud Computing Explained: What is Cloud Computing?

Cloud Computing, as you have probably heard by now, is one of the hottest new trends in the IT field. Everyone is talking about it and writing about it. And it's everywhere, literally. But here's something that may surprise you: If you are using a web browser and an Internet connection, you have most like been using "Cloud Computing" services for a while, and probably without even knowing it. Indeed, such online services as web e-mail, search, banking, shopping, etc., are all provided by various types of well-designed Cloud Computing services, which originate somewhere in one or more remote Data Centers, from a location or locations you are unaware of, and from your vantage point, accessing the services in a way that you likely don't understand or care how it all works. You just expect it to work as easily and reliably as walking into the doorway of a dark room and switching the light switch from off to on. This is the essence of Cloud Computing for the consumer. So because you have most likely been using Cloud Computing services for a while without realizing it, I used the word, "*Again*" in the title of this article.

From the consumer perspective, Cloud Computing is all about leveraging computing assets, especially those in remote Data Centers, which are accessible via the web, across the Internet, with very little knowledge of the technical underpinnings which are required to support the uses of the Cloud. This means providing great remote but easily accessible, computing resources to users who can, at costs ranging from $0.00 to some very reasonable, preset amount, focus on and get their personal and/or business needs met.

Some Currrent Uses: Examples of Cloud Computing already in common use

Some of the most obvious commonplace Cloud Computing applications that are currently in common use are listed below.

- Hotmail
- Gmail
- eBay
- Google applications: Google Search, Word Processing, Spreadsheet, Flickr, Calendar, etc.
- YouTube
- YAHOO Search, e-Mail, Groups, etc.
- MySpace
- FaceBook
- LinkedIn

- ClassMates
- Second Life
- SKYPE
- Windows Live
- Windows Live SkyDrive
- Windows Live Spaces

And this list will just continue to grow…

Have no doubt, if you are using any of these application listed above, and/or if you are using services such as e-mail, online banking, online shopping, etc. you are a Cloud Computing participant.

The Enablers: Technologies and Trends that Make Cloud Computing Easy

As previously stated, from the client perspective you are using a browser on some type of computing device to initiate a request for services. Notice that I avoided terms like desktop PC, MAC or notebook. That is because starting in 2003, the typical computing device was no longer necessarily a desktop device or a laptop. This was when cell phones and PDAs reached critical mass in the market.

From the Cloud Computing services perspective, the severs are usually located in secure, modern data centers, which have been designed to typically have redundant everything, including redundant disks, power supplies, switches, cooling, backup power, etc. And these servers are usually accessible via load balanced web servers that are listening for incoming clients so they can later be redirected to the application server which will provide the requested service(s). All of these servers that reside in a modern Data Centers will be

connected on one or more local area networks which are usually based on Fast Ethernet or Gigabit Ethernet.

Of course, all this is enabled via the networking technologies, such as advanced high capacity switches, digital carrier circuits, optical carrier circuits TCP/IP protocols, and DNS servers form the "glue" that bring all these clients and servers together.

While this is just a summary of the basic technologies that make "Cloud Computing" possible, they form the foundation of how and why it all works, with an appearance of seamless operation to the consumer of these services.

The Drivers: Why Cloud Computing is becoming increasingly the "right thing to do."

Some of the drivers that will help to make compelling business cases for utilizing Cloud Computing as a method to provide for your present and computing needs:

1. The increasingly high costs of building and managing your own Data Center(s), especially in terms of electrical power costs and personnel costs.
2. Cloud Computing resources are now ubiquitous and easily accessible via the Internet.
3. Cloud Computing resources are mature, continually improving and now immediately available, for free or at highly competitive prices.
4. Your competitors are either presently evaluating or are already embracing Cloud Computing.

What's Coming? The Future of Cloud Computing

As previously mentioned, the initial Cloud Computing Services provided e-mail, online shopping and some financial management services such as online banking. Next came Web 2.0 applications, which characterized by the ability to support web-based communities in environments that facilitated highly customizable, customer-focused features and capabilities. But the world that's fast approaching is so powerful, feature-rich, and exciting that the initial Cloud Computing Services look like baby steps in comparison. Read on.

Using rapidly maturing technologies such Software as a Service (SAAS), as well as other technologies such as "containerized computing" where as many as approximately 2500 servers can be placed in a container or module and rapidly deployed (visit www.rackable.com for more information on this), Microsoft is embracing Cloud Computing as the predominant style of computing in the near-term future. On October 27, 2008, Windows Azure (formerly code-named "Red Dog") was announced by Microsoft as the world's first Cloud-based Operating System. With Windows Azure, which runs on servers located in Microsoft Cloud Data Centers, Cloud-based application developers will be able to provide access to a host of rich services that include seamless access to Cloud Services which provide SQL Server services, SharePoint Services, and the identity management and security required to build serious enterprise-strength Cloud Computing applications. In basic forms, these applications are available using Windows Vista, and note that Internet Explorer 8.0 and updates to the .NET Framework are both required to run these new Microsoft Cloud Computing

applications. Microsoft has also provided robust Cloud Application Developer updates in the form of free Software Development Kits that operate under the Visual Studio 2008 environment. And coming up in 2010, when Windows 7.0 and newer versions of PDA operating systems come out, they will have the client side to natively enable Microsoft Cloud Computing applications to be run on devices.

Google too, is building large both large Data Centers and a host of web-based applications that enable Cloud Computing.

Indeed, both of these technology giants anticipate a great influx of customers who will hopefully rapidly come to the realization that it's a smarter business decision to utilize the computing assets inside these enormous Cloud Data Centers, than it is to attempt to build their own Data Centers, and the SAAS options that will come available as a result of their embracing the Cloud Computing model will be mind-boggling.

Still, there is another new Cloud Computing company that bears close watching. A company named MOSSO (www.mosso.com) has announced a set of new services that allow companies to embrace Cloud Computing on their own terms, using MOSSO's own Cloud Data Centers, and as well as specially developed application programmer interfaces (API) which are already developed and documented for Java and C# developers. MOSSO also provides well defined business services that allow technology companies to migrate their business customers into the Cloud, thereby avoiding the heavy infrastructure costs associated with Data Centers. Get it? Data Center power and capabilities without Data Center costs! MOSSO is an early enabler for these types of well-defined Cloud Computing services, but possibilities look very promising, for MOSSO, for their technology partners and ultimately for their business users.

Conclusion

History will show that the technology advances in software, in Data Centers, and in networking, during the early 21st century, especially in 2007 and 2008, helped bring Cloud Computing to fruition and resulted in the next paradigm shift in computing. As stated earlier, this paradigm will be characterized by users using networked devices to access an ever increasing array applications will be available via Cloud Computing resources. Yet, it is entirely possible, that the biggest challenge of Cloud Computing will be communicating its benefits to ultimate consumer user base, both home users and business users. Nevertheless, if the user community embraces Cloud Computing as expected, the future of powerful, economical computing will be as close as the browser on your computing device.

Byline:

William F. Slater, III, PMP, is a seasoned IT professional and Project Manager / Program Manager, who made his living as an IT professional since 1977. He lives in Chicago, IL with his lovely wife, Joanna Roguska. During the 1990s, he participated in the Client/Server Computing trend as a developer, a tools developer, an author, and a lecturer. During 2008, he was the very first Data Center Manager of the world's largest Data Center, which is the Microsoft Chicago Data Center, located in a western suburb of Chicago. It is a Cloud Data Center. He is also the president and founder of the Chicago Chapter of the Internet Society, and he supported and voted for Chicago's Barack Obama, who during his first term as our 44th U.S. President, will help leverage technology, especially IT, in new innovative ways to bring better-managed government to the people of the United States. More information about Mr. Slater can be found at http://billslater.com/career or by just googling his full name.