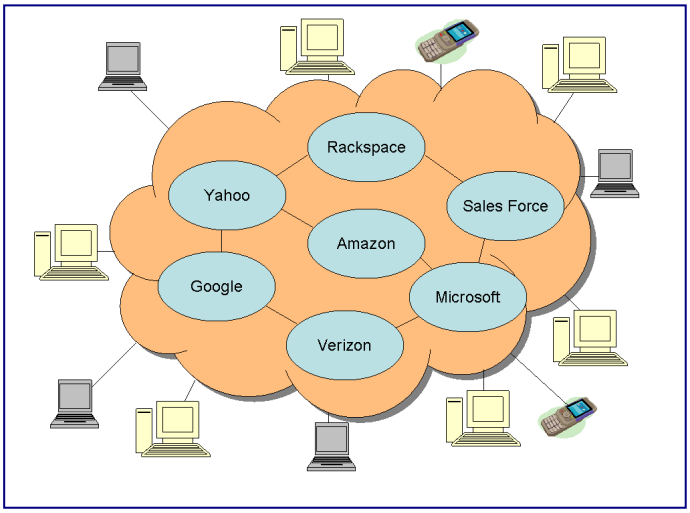
Partly Cloudy: Is my head in the Clouds?

Storage Implications for Cloud Computing

by Phil Godwin, Vice President of Sales, Clear Technologies

Lately, it seems that all of our heads are in the cloud – cloud computing, that is. Cloud computing has swept the IT community by storm and has been called revolutionary, exciting, and the next paradigm in IT efficiency and cost containment. As a result, the terms cloud computing and cloud storage have gained exponential popularity, steadily beating out other popular technology marketing buzzwords. However, obtaining notoriety is only the first hurdle in becoming a sustainable long-term trend that delivers value. Business executives must delineate between marketing hyperbole and solutions that deliver real functionality and value.



What is Cloud Computing?

Larry Ellison, CEO of Oracle Corporation, stated that cloud computing has been defined as "everything that we already do" and that it will have no effect except to "change the wording on some of our ads." Even so, according to IBM, the global cloud computing market is expected to grow at a compounded annual rate of at least 28% to about $126 billion by 2012.

The term "cloud" was first used as a metaphor to describe a telephone network, and later used to depict the underlying infrastructure of the internet. A key element of cloud computing is the creation of a customized, user-defined experience. From an end-user's perspective, cloud computing is the ability to utilize computing services from a shared resource, rather than from an individual's laptop or desktop computer (or a company's internal network). Cloud computing can be delivered in many ways, including the use of "private" equipment for delivery to users within the same company, delivery to the general "public", or "hybrid" models. Services that may be available through cloud platforms include data storage, also known as infrastructure as a service (IaaS); application development, also known as platform as a service (PaaS); software hosting, also known as software as a service (SaaS); and converged IP and IT services, also known as everything as a service (EaaS).

Although similar in many regards, cloud computing is different than traditional outsourcing relationships because of where the data resides or is processed. For example, in a traditional outsourcing relationship, a company knows where its data is

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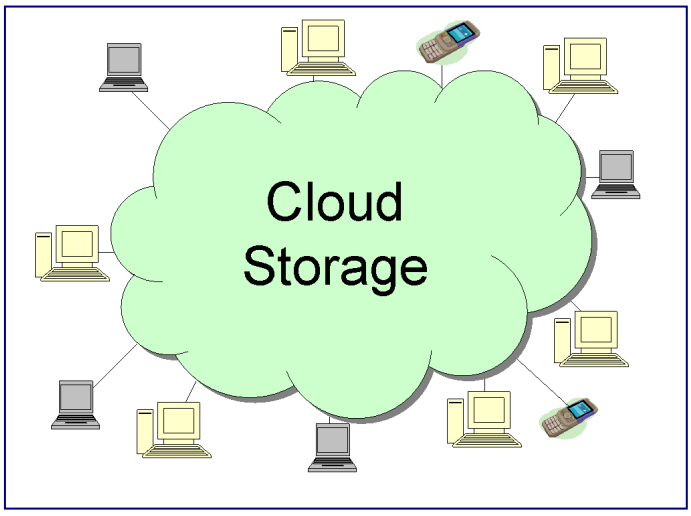
routed and where it will be stored and processed. In a cloud environment, data may be dispersed across and stored in multiple data centers all over the world. This is true even for a "private cloud", "public cloud", and "hybrid cloud."

The Benefits: On Cloud Nine. There are several benefits of cloud computing. First, using cloud services can result in cost savings because companies do not need to purchase their own infrastructure or software, hire people to maintain it, or regularly upgrade it. Next, using cloud services results in better asset utilization because, rather than maintaining extra servers that are only used during peak periods (for example, the holiday e-commerce rush), companies can maintain variable capacity levels to suit their immediate needs using the cloud. Moreover, utilizing the cloud can offer better end-user services as it allows companies to take advantage of the best and latest technology, since they will not have to disassemble and rebuild their entire IT infrastructure in order to provide those services. Finally, cloud computing can be a profit center as many companies with sprawling infrastructure have realized that they could sell unused or underutilized processing capacity as a business.



What is Cloud Storage?

One study concluded that although storage is initially cheap to buy, a majority of storage's total cost of ownership is spent on *maintenance*. As a result, because storing huge and growing volumes of enterprise data is not sustainable from either a cost or management perspective, many IT departments are looking to cloud storage as a cost-effective and simpler way to store data.

Hailed by some as a "storage game changer," cloud storage has a unique architecture as the data is stored on multiple virtual servers rather than being hosted on dedicated servers. Companies that require their data to be hosted either buy or lease storage capacity from IaaS hosting companies and use it to meet their end-user's storage needs. Hosting companies operate large data centers that may physically span across multiple servers and in multiple data centers. The data center

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operators then in turn, virtualize the resources according to customer requirements and expose them as virtual servers for the customers to use.

The Benefits. Andrew Reichmann, of Forrester Research summed it up best in his recent article, *Cloud Storage Comes down to Earth,* "Done right, cloud storage promises to free up your I&O staff from complex and onerous storage management tasks"

What are the storage cloud implications?

"I do not need data - I need intelligence!"

Most new technologies promise to serve and please but fail to reach their potential because of unforeseen circumstances. Mr. Reichmann echoes this sentiment when stating, "Few advances in storage have been hyped as much as "cloud storage." Every vendor in the space is painting its products and message with a cloud veneer. But for all this hype, there is little clarity about what cloud storage really means and how it might be used. Currently, only three cloud storage use cases are ready for prime time: 1) whole in-cloud applications with their own storage; 2) backup to the cloud; and 3) file storage in the cloud." He concludes that in order to achieve the benefits, "you must push for Service Level Agreements (SLAs) that are as good as, if not better than, ones you could offer internally."

Failure to prepare is preparation for failure. Therefore, the real task before moving toward the storage cloud is to make sure that you understand your current and future storage needs and then hold your cloud storage provider accountable. To accomplish this you need to have a grasp of your current storage environment, the unused/underused amounts, and your storage utilization growth trend.

A perfect storm?

A customer of ours recently engaged in iterative cloud storage project. This company quickly realized the benefits of economies of scale when they began their cloud journey by "backing up to the cloud". The executive was quite proud about his team's efforts toward "reaching for the cloud". And, because of the cost reduction and efficiency increase he realized after backing up to the cloud, he wanted to move some applications and their accompanying storage onto the cloud.

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However, he was quite frustrated because no one could completely predict his organization's storage usage of these applications. We probed further to understand the cause of this frustration. He stated he could not make smarter purchasing decisions because of his team's inability to provide a visual, actionable storage intelligence report. Moreover, although he had both human and technology assets to perform the analysis, his team could not, in a timely manner provide intelligence because of the difficulty of performing the analysis.

He summed it up best when he stated, "I do not need data - I need intelligence!" As a result, we realized that three cloud metaphors were to blame. These include that the analysis was not visual, not thorough, and time consuming to attain.

A rough patch - It's foggy in the clouds. You can't 'get' what you can't 'see'. One study concluded that 65% of people are visual readers and learners. This executive stated that each time he asked for a Storage Area Network (SAN) analysis report, he received a ream of paper filled with an over-whelming amount of information. He simply did not have the time to pour through reams of data to make a thoughtful decision.

Behind every cloud there is another cloud. Clouds can be very dense - just like accurately finding information and performing analyses can be overwhelming. The tragic flaw with most SAN tools is that they can only analyze homogeneous environments. This executive's environment was filled with EMC, HP, and IBM SANs. Thus, the reams of data he received were a result of three separate, voluminous SAN reports.

The sun always shines above the clouds. When he asked his team to 'roll-up', the report into a user-friendly format, they responded that they do not have the time, given the current human resource constraints. Ironically, this is especially true even when a company has a storage tool in place. Most tools, including excel, require a person, who is already overworked, to learn, maintain, and hopefully, if their work week allows, use the tool.

A silver lining in this cloud.

Our solution, Visual Storage Intelligence™, reduces complexity and provides a report that quickly enables storage utilization intelligence without learning a new tool. Some benefits of rapid complexity resolution using Visual Storage Intelligence™ include:

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Intelligence without Learning. The patent-pending Visual Storage Intelligence™ service provides a true in-depth analysis of a Storage Area Network (SAN) environment, to identify the root causes of performance problems. Rapidly identifying problems, increases efficiency and decreases costs. Users have taken what they thought was a properly-configured SAN and used Visual Storage Intelligence™ to identify current and future issues. Benefits to storage administrators include that it is non-obtrusive, provides visual reports, does not require learning a new piece of software, does not require any special data-gathering, and enhances future planning.

Rapidly Ready to Use. Delivered as a Software-as-a-Service (SaaS) offering or frequent report, Visual Storage Intelligence™ does not require additional training or data-gathering.

Rapidly Provides Insight. Enables IT to realize, reduce and efficiently reallocate storage to meet the needs of the end-user. The summary provides a snapshot of the SAN environment which helps to complete a root-cause analysis of issues.

Rapidly Reports an Overall Picture. By consolidating and distilling only those relevant problems, Visual Storage Intelligence™ provides the means from which a person can make accurate decisions. Hundreds of pages are summarized into a small set of charts and graphs. This visual report contains data summarized across all the storage arrays.

Rapidly Enables Future Planning. Users are able to obtain tremendous present and future benefits. By quickly and efficiently analyzing the SAN, users spend more time proactively planning future storage allocation needs. This lead time enables the user to be able to stick to budget constraints but also make more efficient use of financial resources.

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