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A Technology Marketing Publication, River Park, 800 Connecticut Ave., 1st Fl. Norwalk, CT 06854-1628 U.S.A. Phone: (203) 852-6800 Fax: (203) 295-3773, (203) 295-3717 by Erin E. Harrison



Calling All Cloud Skeptics

or the past three years, we have heard, said and read a lot about the term "cloud computing," which has brought with it some mystique. At first, most people liked the idea of moving resources off premise, but many didn't want to get close enough to actually touch the concept. Times have certainly changed and we are seeing a maturing cloud movement: Even though cloud is still in the hype phase, as we enter the second quarter of 2012, more companies are choosing to move their IT infrastructures or communications into the cloud.

The hype has also brought all kinds of predictions as to how significantly cloud will affect not only the IT industry, but also the U.S. and global economy. In March, IDC said that spending on public and private IT cloud services will generate nearly 14 million jobs worldwide from 2011 to 2015. And after years of speculation and forecasts by industry analysts, the National Inflation Association, which predicts that by 2013 the cloud computing boom could surpass the dot-com boom of the early 2000s, announced the cloud computing era has arrived. Indeed, a subjective analysis.

Cloud computing, which appears to be on the cusp of becoming widely adopted, is currently a \$74 billion industry that accounts for 3 percent of global IT spending; by 2013, cloud computing is expected to become a \$150 billion market, according to the NIA. In the consumer space, Gartner is predicting that cloud services will be on 90 percent of personal consumer devices by year 2015 so that consumers can store, connect, stream, and synchronize content across multiple platforms at different locations.

Despite these "uncloudy" predictions, there is still a large contingent of skeptics that believe much of these forecasts are skewed – certainly a debatable but nonetheless valid point. What we do know is that CIOs across industries have been focused on the rationalization of cloud, and in this issue of *Cloud Computing*, we shed light on some important topics, one being another debatable issue: the notion of private cloud vs. public cloud. Regardless of which cloud model is best for an organization, all forms of cloud computing are on the rise with many different adoptions patterns taking hold (see page 26). But as we have learned, it's not a decision of choosing one model over the other – a hybrid model, which draws on the resources of both public and private clouds, is a more common cloud decision, especially for large organizations.

After "cloud," the next biggest buzz phrase we are hearing more of in this data-driven world is Big Data. There is an emerging trend affecting cloud storage growth, which is the notion that Big Data is driving demand for cloud storage that is in turn pushing vendors to expand their services and help companies leverage masses of data by making more intelligent business decisions (see page 24). Although more businesses are looking to the cloud for their storage needs, the industry is challenged with addressing the hurdles that delay widespread adoption.

And turning to this issue's cover story, *Cloud Computing* recently had the opportunity to sit down with Walter Scott, the CEO of GFI Software, to talk about adoption trends in the SMB market, how cloud is helping this segment to level the playing field, and what concerns about cloud are justified (see page 30). Like any other tool in business, Scott says, the value of cloud comes from the thoughtful use and complete understanding of how to exploit it.

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by Rich Tehrani

Neustar Aims to Make Mobile App Development Easier

ith over half a million apps in the Apple App Store alone, one might argue that developers have all the tools they need to develop compelling applications – but what if there was a way to take traditional apps and integrate them more closely with carrier networks and big data analytics allowing them to be more powerful, spur increased consumer spending while greasing the wheels of mobile commerce and more?

Recently Jean Foster and Steve Edwards at Neustar showed me their Intelligent Cloud service, which integrates rich, anonymized databases from TARGUSInfo with access to carrier network and other information to accelerate developer productivity and, frankly, to enable applications to become better drivers of value for consumers and revenue for advertisers and merchants.

One demo they showed me involved a gift card where a user scans the bar code associated with it. At this point a unique URL is passed to a browser and opened on the mobile device allowing a consumer to check balance information, make a payment and connect their cell phone to the card. Then a consumer can opt in for marketing information and can further text message to get a response with balance information on the card. Then they can scan a code on a product to have the amount debited from the card. In this manner the cell phone becomes the card meaning the card doesn't need to be used again.

It is worth mentioning that Neustar handles the messaging and communications in the above demo.

The company has covered North America with carrier partnerships and recently Telus has signed up to the platform enabling developers to integrate the best of Neustar APIs with those from Telus allowing such things as mobile payments and messaging.

Neustar also provides communications for enterprises – for example their Mobile Enter-

prise Services solution allows an HR department to communicate rapidly with workers not only via SMS but also via email and desktop solutions. This solution is powered by the company's Text Everywhere service. They also have a Geofence solution enabling marketing based upon location. Partner ZOS enables the company to provide its customers the ability to provide messages and offers when users are near specific locations.

Neustar has a storied history as a trusted third party providing SMS short codes, DNS look ups LNP information and more. They believe this position in the market allows them to be the optimal partner at a time when privacy and consent are becoming so important.

Last year the company purchased TAR-GUSInfo and is now able to correlate anonymized data from 200 independent databases allowing an app developer for example to see if a cell phone user is likely to be able to purchase a luxury car, etc.

Neustar is a fascinating organization as it has its hands in myriad areas of technology and communications – this move into big data, analytics and mobile enablement for developers seems like a smart diversification move as many of its legacy markets begin to slow. And certainly with all the recent security challenges facing mobile app developers, it is possible Neustar really is at the right place at the right time to ensure increased user, carrier and ecosystem trust.



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Big Data is driving the demand for cloud storage, lighting a fire under vendors to expand their services and help companies leverage masses of data by making more intelligent business decisions.

26 Public vs. Private Cloud? It's Not An 'Either/Or' Decision As cloud-based services are on the rise and service providers continue to emerge, it's an exploratory time for businesses, which are undergoing the validation of cloud. ClOs are faced with an array of choices – private, public and hybrid cloud models – all which have their own unique benefits.

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perhaps more important, not justified.

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Cloud Investor Emergence Capital Raises \$250 Million in Third Fund

The investment firm that early on raised millions of dollars for Salesforce.com and SuccessFactors has closed its third fund at \$250 million. Emergence Capital Partners, a venture capital firm focused on investing in software as a service (SaaS) companies, has raised \$575 million across the three funds since the group was formed in 2003.

The Bottom Line: The San Mateo, Calif.-based VC firm is known for having been early investors in two top public SaaS companies – Salesforce.com (CRM) and SuccessFactors (SFSF), as well as private companies including EchoSign (acquired by Adobe), Yammer, Lithium, YouSendIt, Box, Veeva Systems, among others. If the firm's track record says anything, its next VC injection will help write the story known as cloud.

www.tmcnet.com/59110.1

Symplified Raises \$20 Million in Series C Funding

Cloud security company Symplified, which provides identity and access management tools for cloud applications, has raised \$20 million in Series C funding led by Seattle-based Ignition Partners.

The company's total funding is now at \$38.8 million, including existing investor Allegis Capital, Granite Ventures, and Quest Software, which also participated in the financing. Symplified said it will use the funds to expand operations, service and support, research and development and marketing.

The Bottom Line: As more businesses look to integrate management and control of access to cloud computing into their existing IT environments, they need the ability to transparently extend policies and controls that already exist within their data center. As part of this bigger trend, Symplified tripled revenues and customer adoption last year.

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Code 42 Lands \$52.5 Million in Round of Big Data Funding

Cloud backup provider Code 42 Software, which developed and launched the CrashPlan series of consumer, SMB and enterprise cloud storage and disaster recovery offerings, has secured \$52.5 million in its first round of venture capital funding led by Accel Partners and participated in by Split Rock Partners.

Code 42 officials said its the first major investment from Accel Partners' recently announced Big Data Fund, dedicated to funding category-defining infrastructure and application companies in Big Data.

The Bottom Line: Starting out as a software development company in 2001, Code 42 Software is the creator of CrashPlan, CrashPlan PRO, and PROe onsite, off-site and cloud backup solution for consumers and businesses. The funding will be used to accelerate product development and increase Code 42's global market share via expanded sales and marketing efforts.

www.tmcnet.com/59112.1 Cloud Desktop Company Nivio Secures \$21 Million

On the heels of its U.S. launch, cloud desktop company Nivio secured \$21 million in financing. The funding will help expand engineering efforts in Nivio's Palo Alto, Calif. office and further rollout the cloud platform across Nivio's operating regions in Europe, the Middle East, India and Australia. The company also has an office in Le Mont-Sur-Lausanne, Switzerland.

The funding round was completed by Videocon, an India-based \$5 billion conglomerate, and AEC Partners, a boutique private equity firm in Kansas City.

The Bottom Line: The new round of funding comes at a time when the market for cloud desktop computing is rapidly expanding. Nivio is expected to use the

dollars to leverage their cloud services in Europe, India, Australia and West Asia.

http://tmcnet.com/59119.1

Cloud Startup Appirio Secures \$60 Million in Funding

Enterprise cloud service provider Appirio has secured \$60 million in funding, which will be used to support expansion of its global consulting business, as well as to build out the company's cloud technology and acceleration of its "crowdsourcing" development platform CloudSpokes. Global growth investor General Atlantic led the Series D funding with participation from existing investors Sequoia Capital and GGV Capital.

In 2011, Appirio increased year-over-year revenue by over 80 percent, expanded into Europe with the acquisition of Saaspoint and developed its Cloud Enablement Suite – a set of applications, assets and development capacity that supports enterprise cloud development. Additionally, the company introduced Cloud-Spokes, a crowdsourcing community for cloud development that has already attracted 35,000-plus developers.

The Bottom Line: CEO Chris Barbin said Appirio was founded in 2006 because the company's founders viewed the industry as "broken" for global system integrators, including Accenture and Deloitte, which have been challenged to overcome their on-premise dependency and adapt to the market. Appirio is aiming to fill that void in the market.

Did You Know?

The largest individual cloud market continues to be the public SaaS market, which will hit \$33 billion by the end of 2012.

Source: Forrester Research

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Can the Cloud Cover Your Business When Disaster Strikes?

Five Reasons to Consider the Cloud in Your BC/DR Plan

Disaster recovery is like life insurance – it's something everyone knows they need, but no one really wants to talk about, plan for, or spend money on. But, like life insurance, when disaster strikes, you're incredibly glad you made the decision to put that safety net in place.

One of the biggest hurdles in creating a solid business continuity/ disaster recovery (BC/DR) and document storage plan is the belief that there's no way around adding redundant physical servers – and their associated capital expense costs – to your back room. If you've heard that argument in your own organization, it may be time to reassess your BC/DR strategy. The idea that disaster recovery can be sold as a value-priced service managed in the cloud is not new, but it's quickly gaining traction among savvy CIOs and IT managers keeping a close eye on their budgets.

So how can you determine if your company's data is a candidate for a DR-in-the-cloud solution? First, you need a qualified, independent third party that can conduct a business impact assessment to determine if your business' recovery point objective (RPO) and recovery time objective (RTO) requirements can be supported by DR in the cloud before any decisions are made. If it turns out that your company is a candidate for DR in the cloud, there are several good reasons to move forward with a full-scale evaluation of the advantages.

Five Reasons to Move Your DR Plan to the Cloud

1. Price: Imagine that the monthly operational expense of doing DR in the cloud is similar to the way consumers work with their residential electric companies. The customer pays a small monthly fee for connecting his or her home to the utility, and then pays for actual power usage. If no electricity is used, the small monthly fee remains; if the customer turns on a pool pump and a refrigerator and lights, costs are added incrementally as that customer uses increasingly more power. That's a vastly different model than the way outsourced DR services have traditionally been handled, where clients pay a fee commensurate with the amount of service that might be needed in the event of a disaster whether or not they ever use it. Which sounds more cost effective?

2. Security: Today's servers are designed for multitenancy use and can support different customers based on a variety of security settings, including advanced encryption methodologies to ensure the security of data in transit as well as at rest. As a result, data stored in the cloud is widely considered to be equally secure to information stored in a redundant local data center. 3. Flexibility: A great analogy is to compare traditional outsourced DR services to a residential cell phone provider. To upgrade a cell phone or change a coverage model, you typically have to sign up for another two years or more on a new service contract. But expanding BC/DR service levels through the cloud gives you the freedom to reserve more or less space in a shared "container" system without dramatically impacting cost, without having to renegotiate service level agreements (SLAs), and without adding new multi-year commitments. If you're doing DR in your own data center, or outsourcing to a third party who has reserved dedicated systems for your use only, the cost can be astronomical by comparison. In the cloud, with a shared container model, you simply reserve the space you need available and make changes as your business needs dictate, usually at a very minimal cost, if any, for those changes.

4. Design: Clients with their own in-house data centers can design their BC/DR plan and redesign it to meet changing needs, and they can conduct tests at random. Often, however, with traditional outsourced DR providers, the ability to customize RPOs, RTOs, and to conduct multiple tests throughout the year is sharply curtailed according to the parameters of the client's SLA. But typical DR-in-the-cloud solutions offer an unrivaled combination of price-performance and custom design options.

5. Managed Recovery: Ask yourself if your DR strategy gives you a "SWAT team" of IT professionals who can jump into action to kick-start a failover when disaster strikes. This is yet another reason to consider DR in the cloud. Cloud providers are accustomed to running and managing their own systems, and when they are in crisis mode, they are often able to conduct the initial restore on your behalf, getting you up and running that much faster.

What does this all mean to you? It's simple. You need a disaster recovery strategy. If you don't already have one in place or don't want to incur a large capital expense adding redundant servers to your data center, the cloud can be a very affordable option. Even if you do already have a DR plan in place, it may be time to rethink your strategy: Can those redundant servers be better utilized as primary computing resources if you move your DR to the cloud? There's no time like the present to find out.

Michael Feil is the director of cloud solutions for Logicalis (www. us.logicalis.com), an international IT solutions and managed services provider.



The Cloud's Next Step: Increasing Intelligence



For as much as the cloud is still emerging in business communications, its foundation is sound. Now that things like virtual server technology and flexible deployment options are commonly in use, organizations in growing numbers are successfully meeting key requirements for security and predictability as well as control.

Call it the cloud's acceptance phase. The transformation to cloud-based solutions and associated mobile apps, smart devices, social networks and everything "cloud" is well underway and powering mainstream brands. However, businesses and consumers are still anxious for the cloud to become more "intelligent."

Call that the cloud's next phase, the intelligence phase. At the forefront are advanced applications – chat, presence, social media, mobility and collaboration – converged and offered from the cloud to make customer care processes more intelligent and custom tailored. In fact, cloud providers are now pushing hard to introduce functionality designed to take the intelligence of these applications to a whole new level. A perfect example is real-time speech analytics.

Imagine this scenario in a contact center. An application spots keywords and phrases during a live call, and continuously updates a cumulative score for both the agent and the customer based on predetermined keyword lists and what's said throughout the interaction. For all calls, supervisors track such scores in real time, make more informed decisions on which calls need assistance, and are better able to keep customer satisfaction levels to a premium.

Along with speech analytics for customer care, there's a greater market movement underway to introduce real-time/stream analytics for "big data" – to drive analytics "pervasively into the growing fabric of cloud solutions" as analysts at IDC put it.

Interesting, too, that IDC is targeting entire industries for the intelligence movement: financial services, healthcare, energy, and retail. These "intelligent industries" will be the result of IT platforms that are cloud-enabled, mobile, broadband-connected, social, and rich with contextual information. By exploiting the cloud, these sectors will increase the value of service delivery with more intelligent mobile apps and by managing larger volumes of data intelligently.

It's anyone's guess just how far-reaching the cloud's intelligence will be. The only

certainty is that technology will continue evolving to make business and customer service processes even more intelligent, to pave a more personal course of service for each customer. Are the interactions you have with customers as intelligent as they can be? If they aren't, maybe it's time to evaluate. This next phase of cloud-based business communications looks promising.

Jason Alley serves on the solutions marketing team at Interactive Intelligence.





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Simplicity Scales: A Winning Strategy for Cloud Builders



All cloud systems are inherently complex, and complexity is inherently evil. You can't avoid complexity, since the size and scale that drives efficiency also adds complexity. However, you can choose how complex to make your basic system. A winning strategy for any team of cloud builders is to start simple and then get more complex organically over time. Starting with a complex system means multiplying that complexity as you scale, multiplying the risk of a major failure.

Systems & Complexity

First, let's look at two important lessons on complexity from systems theory:

- 1. Complex systems fail.
- 2. People love to build complex systems.

Many engineers see understanding and developing complex systems as a rite of passage. In reality, the true test of a great engineer is their ability to make things simpler, not more complex. In software development, this is talked about as "elegance" or "code elegance."

Complexity is the opposite of elegance. Complexity breeds failures. Systems that are not designed for failure, which are complex or sprawling, will fail catastrophically. Frequently catastrophic failure will turn into a cascading failure. "High availability" (HA) as typically implemented in an enterprise datacenter will not protect a system from cascading or catastrophic failures. Traditional HA stems from the idea of risk mitigation, but it simply is not possible to ensure robustness by predicting what could go wrong and adding complexity to handle a predicted range of failures. Cloud systems must embrace risk acceptance and planning, the new emerging approach for building reliably unreliable cloud systems.

Failures in Systems

There are a number of works on systems and failures. They are best summarized by "Gall's Law":

"A complex system that works is invariably found to have evolved from a simple system that worked. The inverse proposition also appears to be true: A complex system designed from scratch never works and cannot be made to work. You have to start over, beginning with a working simple system."

Many of the current approaches to building Infrastructureas-a-Service (IaaS) clouds are deeply rooted in complexity. In this regard, they look similar to how enterprise datacenters and applications are constructed today: heterogeneous, sprawling, multiplicity of silos with no prevailing design patterns or reusability. These kinds of approaches are difficult to scale, to secure, or to maintain with high levels of uptime. So, simplicity beats complexity. To see it in action, let's look at AWS.

Examples of AWS EC2's Design Elegance

When Amazon Web Services EC2 launched in August of 2006, you could get an m1.small for \$0.10/hr. in one region using an API. That was it. That was all of it. You couldn't even get m1.large or m1.xlarge instances until over a year later.

Even as AWS grows in scope, Amazon maintains simplicity in individual services, such as EC2. Some highlights:

• Only one hypervisor is supported.

• The default networking model is a simple flat layer-3 routed networking model.

• Instance disk storage is ephemeral, meaning there are no SANs or NAS, just regular old DAS.

• Elastic Load Balancing (and similar services) are "lowest common denominator" capabilities: you get just simple L4 load balancing, not a complex L7 load balancer.

• EC2 evenly subdivides physical hosts and "bin packs" VM instances onto the same kind of physical hardware designed for that workload/VM-type.

• Every VM instance has one network interface (NIC).

Build It Right

The challenge in building robust and scalable IaaS systems isn't "will there be enough features?" The challenge is, "will we simplify and grow organically what we know works?" Right now I see more of the former and not nearly enough of the latter. In looking at your own systems, I would keep asking questions about the main inputs of complexity at the outset:

1) Features: What is the minimal set of services that you need to provide to your users to be a viable solution?

2) Options: Do your users really need more than one way to do things, to start? Flexible systems are rarely simple, ask Larry Wall.

3) Best practices: Tried and true IT practices for small systems do not automatically improve a production cloud system. They can, in fact, weaken it. Context is key.

Seek simplicity in your cloud implementations, or be prepared for the unavoidable dangers of complexity.

Randy Bias is co-founder and chief technology officer of CloudScaling.



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CLOUD Communications

- by Peter Radizeski, RAD-INFO, Inc.

The M5 Case

M5 Communications was acquired for about \$160 million by ShoreTel. The premise PBX vendor caves into the pressure of the cloud communications space both because of the opportunity and the threat. Avaya, Interactive Intelligence and MITEL have CaaS offerings. At some point, ShoreTel had to jump on that bandwagon.

It's not enough to just offer hardware anymore. Customers deserve the choice. Many VAR's already have both guns in their arsenal. To not do so would be to miss out on opportunities; this in today's economic environment is not a healthy business avenue. Shore Tel's C-suite probably saw that they lacked a CaaS strategy, but the decision comes down to build or buy. The advantage to buying is that – if done properly – you get revenue, a market proven service offering, and a sales channel. Building from scratch has a big learning curve, capital investment and little revenue. Why M5 Communications? M5 had a proven business model. At \$48 million in revenue, M5 was one of the giants in the Hosted PBX space with a proven sales record that had grown 30 percent in the last year. Their indirect and direct sales teams were effectively selling the service. Not many VoIP providers are organically growing revenue. In 2010, M5 was doing about \$32M in revenue when it acquired Gekkotech, a Chicago based VoIP provider that was utilizing M5's softswitch platform and bringing in about \$8 million.

M5 had migrated off the Broadsoft platform in 2010. This move increased the profit margin by eliminating the licensing fees to Broadsoft. This was another factor that made M5 attractive – margin. For the second quarter of fiscal year 2012, Shore-Tel revenue was \$58 million with a net loss of \$1 million. Hardware alone is a difficult business to be in, ask Amazon or Dell.

Under the terms of the deal, M5 shareholders will receive approximately \$84 million in cash and 9.5 million shares of ShoreTel stock, for a total of about \$146 million on stock value at close of sale. Moreover, M5 shareholders have incentives that could realize up to \$13.7 million, according to the company's press release.

M5 will be run as a separate division with CEO Dan Hoffman still running things. This is a smart strategy; the same one that TelePacific took when it acquired Telekenex. The culture of CaaS is different than hardware / premise PBX. There is some rivalry there. Why break either corporate culture?

This transaction is just another example of how the legacy telecom world will have to jump into the new cloud world – mostly through buying since it will be cheaper and faster that building it from scratch.

Peter Radizeski is a telecom consultant and the owner of RAD-INFO, Inc.





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No matter how you play it, disaster recovery (DR) is an expensive hedge. Maintaining a live replica of your production environment in a remote location cannot be reduced to a negligible expense. Cloud-derived efficiencies can, however, make a functional DR solution far more accessible and less expensive. Rather than expounding upon the obvious benefits of cloud DR, this article focuses on the inherent obstacles using a borrowed theme that symbolically parallels the road from disaster to recovery.

Environment Replication

Employing cloud as a core component of a DR plan is, by no means, a new idea. However, cloud DR has historically offered little more than glorified cloud-based backup. Aside from the prohibitive physics of hurriedly shuttling terabytes of data to perform emergency rebuilds of critical systems, storage-centric offerings fundamentally fail to address business continuity.

Should a tornado whisk your production datacenter off to the Land of Oz, a remote non-functional repository of data, no matter how well-groomed and current, serves zero practical function for getting back to work. Had the munchkins kindly pointed Dorothy to pallets of nicely organized yellow bricks and suggested that she pave her way to the Emerald City, it's fair to assume that her "road to recovery" would have taken a lot longer. Simply put, a sound DR plan ensures some reasonable path to operational continuity.

P2V, V2V

Since reduced operational capacity is an accepted risk in the context of DR, it may be perfectly reasonable to virtualize systems at the DR site which otherwise demand dedicated hardware for day-to-day production loads. Physical-to-virtual (P2V) conversion is virtualization's "quest for Oz": deceptively simple in concept, fraught with peril in practice.

Whoever coined the phrase "gotcha" must have been peering through their crystal ball and referencing P2V conversion. Not to suggest that it can't or shouldn't be done but the challenges, risks and expected rewards must be quantified up front and reviewed with the nearest wise wizard (read: someone who's done it before) before committing. Sometimes, it makes perfect sense and is worth the effort; in fact, sometimes it's totally painless. Other times it's easier to invest in application-level HA tools for an architecturally complex design that's more predictable.

Virtual-to-virtual (V2V) conversions can be similarly vexing. Moving VMs between environments that are not strictly homogeneous, even those with the same hypervisor and disk image format, can be problematic for a number of reasons. The upshot to all of this is that once initial conversion issues are resolved, the cloud DR operation becomes routine and reliable even during dynamic conversions like ongoing physical-production to virtual-DR replication.

Network I/O

Divination of required bandwidth for the DR site can be a significant project for which the popular and convenient clickyour-heels-three-times level of effort will assuredly be insufficient. Most organizations have a solid handle on Internet and remote-site WAN needs. However, many have not needed to collect the type of near-real-time inter-system throughput metrics required for engineering a DR solution. These are two feasible "misqueues of the masses" related to DR network throughput:

Emerald City Municipal IT Department leases a burstable private-line circuit to handle DR traffic (their biggest operational nemesis being the wicked ditch-digger of the West that lands with surprising accuracy and frequency upon unsuspecting fiberoptic cables). The original thought during DR design was that a burstable circuit would hedge against underestimated bandwidth requirements. Historic network and system throughput statistics were non-existent and best guesses were deemed sufficient.

In all of Emerald IT's merriment upon taking the DR site live, they neglected the imposition of outbound rate-limiting from their production site. Middle-of-the-night data synchronizations began consuming every last drop of available bandwidth (including premium-rate burstable bandwidth) for four to five hours per day on the otherwise dormant circuit.

Since Emerald City operates with stereotypical government efficiency, eight months passed before Emerald's Comptroller mentioned the egregious DR cost-overruns. After much undo expense, the configuration fix was implemented in under an hour. Ruby Shoe Company was an early adopter of cloud technology and adroitly identified mission-critical systems for DR deployment.

To determine bandwidth requirements for the desired 24-hour replication frequency, a Ruby Shoe Network Engineer added up the collective volume of disk space assigned to the aforementioned critical VMs. Knowing how much data must pass within a given time frame allowed for a simple calculation to determine the necessary bandwidth.

The Ruby Shoe Engineer surmised that 16 terabytes of data needed to be transferred to the DR site daily; the fundamental oversight being that the VMs were thin-provisioned and the total actual data utilization was closer to 2 terabytes. This sparkling realization did not occur until after Ruby Shoe committed to a two-year contract for the type of wickedly expensive private-line circuit required to move 16 terabytes per day.

Using cloud for DR purposes makes for a highly compelling story. However, it requires brains, courage and some benevolent guidance to ensure a happy ending.

Josh Restivo is a senior cloud integration specialist at Hexagrid Computing, Inc.



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Private Personal Clouds: Fact or Fiction?



The recent forced closure of the popular Megaupload cloud file sharing service has left many people wondering about the security and overall wisdom of storing data and content in the cloud.

Megaupload was shut down because it facilitated the illegal sharing of copyrighted material such as music, movies and TV shows. At the same time, Megaupload was used by many people as a free and convenient way to store legitimate data and content in the cloud. Many innocent "bystanders" lost their data and content because it was intermixed in a cloud with other content that was illegally shared. The Megaupload situation raises several critical questions, such as: These questions are particularly relevant in light of a new industry survey that points to the high level of interest in personal clouds. AAccording to a recent survey* of mobile users in 48 countries, 89 percent said their digital content was rapidly growing out of control due to the proliferation of mobile and computing devices for work and personal use, and the increasing number of apps and services to access and create data and content.

Clearly, there is significant interest in personal clouds for storing digital content and data, but also substantial concern about privacy and security.

What is the likelihood that another personal cloud service to shut down, causing other people to lose data? Not likely, for several reasons.

89 percent of mobile users said their digital content was rapidly growing out of control due to the proliferation of mobile and computing devices for work and personal use

• How concerned are people, really, about the security and privacy of data and content in the cloud?

• What's to prevent closure of other cloud digital locker services such as Apple iCloud, Microsoft SkyDrive, Amazon Cloud Drive and Dropbox that could also be used to illegally share copyrighted material?

• How can a user, whether a consumer or business, reap the benefit of storing data and content in the cloud, while protecting against inadvertent loss? First, other cloud services have license agreements that prohibit the illegal file sharing that caused Megaupload's downfall. These companies have invested significantly in their brands and reputations and are united in their pursuit against illegal sharing, whether it be of their own software or other's copyrighted material. These companies are motivated to police and enforce the terms of use that prohibits behavior that leads to the loss of many innocent peoples' data.

They also tend to employ industry best practices such as repeatedly reminding people about the terms of use to not distribute content illegally. Some companies allow users to report abuse, while others employ automated methods to identify copyrighted material and warn people about suspected unauthorized use.

Beyond this, though there remains the question of how secure is your data in a personal cloud service. Technology can make it very difficult for intruders to access your cloud data. This includes using https when transmitting data over the internet from mobile devices, and encrypting data in databases and file systems, such that only the true owner can view their data and content. Many service providers have stringent policies regarding which employees can access user data, to prevent unauthorized access.

At the same time, if a government agency came knocking on a service provider's door with a warrant to search for information for an individual or group, and the choices were to shut down the service, go to jail and pay a huge fine, or just look the other way, what do you think a service provider would do? It's one thing if a service is operated in a country which has a legal system based on due process, but if you reside in another country, or the cloud service you use operates in another one, how can you be sure your data would not be accessed inappropriately?

To get the benefits of a private cloud, do your homework. How does a provider discourage and prevent illegal sharing of copyrighted material? What methods do they use to safeguard data? Which employees are allowed to access it? Where are their servers and what laws govern their use? It's like reading the fine print in a financial transaction; if it's really important take the time to eliminate surprises.

Hal Steger is chief marketing officer at Funambol.

* The entire survey can be downloaded for free at http://funambol.com/solutions/requestpublication.php.



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CLOUD Compliance

Assuring Cloud Compliance



Enterprises look for application and data security regardless of where they reside. They also look for failover and disaster recovery capabilities in every premisebased, hosted or cloud-based solution they evaluate.

Federal and state laws and industry regulations such as HIPAA and PCI DSS require strict controls on what kind of data can be stored, who can access it and where it can be stored. It is possible to have much tighter control on access in fully premisebased solutions, but they tend to be costly, especially for SMBs when they need to maintain multiple data center locations for failover and disaster recovery.

Cloud Service Providers

Large public cloud service providers provide generic cloud platforms that can be used for almost any kind of application that companies or even individuals would need. Because it is impossible for these service providers to know the kinds of applications and software that will be installed on their platform, being certified in all possible industry regulations and industry specific state and federal laws is unrealistic.

There are certain basic security and access restrictions that public cloud service providers build inherently in their platform. Most of the platform architecture is built

Organizations should be fully aware of the type of data that they own and what can and cannot be stored in the cloud.

Cloud service providers have geographically diverse data center locations that allow for load balancing, failover and disaster recovery. Most cloud-based solutions leverage the ability to share hardware and software resources across multiple customers to provide cost benefits to both service providers and customers. And yet, it is this very same ability that endangers compliance to the various regulations. One of the questions that arise is if it is the job of the cloud service provider or the client to be compliant. In this article we discuss some of the issues and difficulties for both service providers and clients face in obtaining cloud compliance and some possible solutions.

around the use of Virtual Machines or VMs. Several VMs can run on a single physical machine. To the users accessing one of these VMs, it is the same experience as accessing any other remote machine in their own network or data center and can employ similar security measures as well. The access can be restricted to just a few people in the network or open to everyone on the Internet. What is missing for the users is the access to the physical box itself.

Private cloud service providers, on the other hand, can restrict their platforms to certain types of industries and can obtain at least some level of compliance to the regulations of that particular industry. However, where restrictions, such as access to the physical machine have to be limited to a select few people, have to implemented, even these service providers usually fall short.

Cloud Service Users

Organizations have to recognize that regardless of where the data or applications reside, it is their data and in the end, they are responsible for it. They need to do their homework on the cloud service providers and understand their SLAs. If those SLAs do not match up to the regulatory expectations, then they should not use those cloud service providers. If they find providers that have SLAs that live up to the compliance, organizations should still put plans in place for periodic audits. They would be well-advised to do so even if they own their own data centers.

Organizations should be fully aware of the type of data that they own and what can and cannot be stored in the cloud. The better strategy may be to use a hybrid approach where critical data required for strict compliance like HIPAA reside locally, however; some of the not-so critical data and applications can be pushed to the web.

Conclusion

Cloud services are a long way from being fully compliant with all the regulatory requirements. However, organizations can still benefit from them if they are able to differentiate between the types of data and applications that can or cannot be stored on the cloud and by negotiating the proper SLAs to ensure security and access. In the long run, though, as cloud services get more popular and more cost effective, it may be worthwhile for some of the regulators to revamp these regulations to keep up with changes in datacenter technologies.

Vishal Shah is vice president of R&D at Intelliverse.

Headache to Nightmare: Email Now a Corporate Threat?

Unsolicited email has always been a nuisance for both users and IT administrators. Recently, the intent of this type of email has taken a turn for the worse. What was once unwanted bulk mail, soliciting products, has turned into dangerous and sophisticated emails with the intent of stealing sensitive corporate data, costing businesses a substantial amount of time network could be vulnerable to attacks. Attackers sent an enticing HR email to employees, which resulted in a security breach that enabled hackers to use stolen intellectual property from RSA to breach Lockheed-Martin.

This leads security systems to address multiple facets of an organization. If one layer

In 2012, cloud users will experience predictive cloud protection that works where older systems fail, protecting the critical last 1 percent of spam.

and money. Gartner recently reported that advanced technologies must catch the last .5 percent of this advanced spam. It is imperative that businesses stop malicious email before it reaches corporate networks.

Targeted Email Attacks – More Vicious and Damaging

Phishing attacks, spearphishing, advanced persistent threats and malware-tainted emails have climbed to an all time high. During the past year, 37 percent of midsized and large organizations in North America have had malware successfully infiltrate their corporate network through email. Many of these attacks have been extremely harmful to the corporation, resulting in the loss of millions of dollars, sensitive financial data and intellectual property.

Phishing Attacks Continue to Grow and Infiltrate Corporate Email

The RSA breach that occurred earlier this year revealed that even the most secure

is exposed it is easier for unauthorized users to use this exposed layer to further access pertinent information. While seemingly innocent, these corporate emails have brought down corporate networks around the world and many organizations are realizing that email security is essential in preventing malicious attacks.

Capture Rates Must Be Near Flawless

An email filter rate of 98 percent seems efficient enough, right? Wrong. A 98 percent catch rate enables 50 times more unwanted mail through than a 99.9 percent accuracy rate. Previously ignored susceptibilities must be addressed. Corporations must reduce their network attack surface if they hope to eliminate losses caused by compromised computer systems.

To the Cloud with Mail Filtering Technology

Technology must be able to filter that last percent of threatening spam and

respond instantly to evolving threats. Large corporations and businesses must be wary of the determined adversaries that are rapidly changing and evolving their strategies. Defenses need to instantly respond to constantly occurring threats. Filtering email in the cloud combines the benefit of blocking malicious messages before it enters the network perimeter.

New intelligent cloud-based services are available to fight the war against this malicious email. Major advances in anti-phishing, anti-spam and anti-malware can keep corporate email safe and secure by staying one step ahead of attackers, sidestepping older and outdated approaches such as volume-based reputation filters and signature-based content filters. In 2012, cloud users will experience predictive cloud protection that works where older systems fail, protecting the critical last 1 percent of spam. By integrating these new cloud-based systems into existing networks, the war on spam just got easier.

Conclusion

While the tech world thought the war on spam was ending, 2012 will see many more attacks, similar to the breaches suffered by RSA, Facebook and others. Today's email phishing schemes are becoming worse as the nature of spam takes a dramatic and dangerous twist. When spammer meets hacker - and you add global organized crime or even hostile nations in the mix - unwanted and unsolicited email moves from nuisance to a serious security risk. Without proper defensive solutions in place, new and unforeseen breaches and major attacks will become a regular occurrence. 📿

John Jefferies is general manager and chief marketing officer of Abaca.



Feature STORY

Big Data Drives Maturing Cloud Storage **Market**

et's face it: Choosing a cloud storage service can be a tedious process, and certainly not all cloud storage services are created equal. A growing number of companies are turning to cloud storage for the economic advantage of utility storage instead of the higher capital and operational costs of building and managing remote data centers.

Cloud backup and disaster recovery service providers are the companies both consumers and businesses trust with valuable, often irreplaceable data. Although more businesses are looking to the cloud for their storage needs, the industry is challenged with addressing the hurdles that delay widespread adoption.

As the volume of data grows at an exponential rate – with IDC predicting a growth rate of nearly 60 percent per year – storing your company's most valuable data on a server somewhere doesn't cut it. The resulting trend is a growing number of enterprises building their own private cloud for storage needs, and small and mediumsized businesses putting their data in a public cloud. There is also a shift toward hybrid models, which leverage the best of both worlds. Each model offers enterprises large-scale, better planning capabilities and more flexibility to meet unique user demands.

While public cloud storage models are perhaps best-suited for SMBs that do not have their own internal IT infrastructure and have more cost constraints, enterprises are adopting private cloud storage to ensure their data is safe, accessible and redundant.

In fact, Gartner predicts that Global 1000 IT organizations will spend more money building private cloud computing services through 2012 than they will on offerings from public cloudcomputing service providers. Furthermore, by 2015, combined spending for public and private cloud storage will be \$22.6 billion worldwide, IDC forecasts.

Predictions aside, what businesses and consumers alike are realizing is that with such vast amounts of data to store – whether for operational or compliance needs – the status quo of yesterday's storage model is not only unsuitable – it's a ticking time bomb.

"People store their most priceless, precious data on a hard drive and that's a ticking time bomb," says Erik Zamkoff, CEO of MiMedia, a cloud storage company similar to Dropbox.

Certainly security is a very important piece of the storage equation, and remains one of the hurdles standing in the way of widespread cloud storage adoption. But with the rising number of utility-like cloud storage vendors emerging, they are enabling companies to grow on demand, allowing them to handle massive amounts of data from anywhere, at any time.

At this point in the market, businesses are starting to realize they don't need to hold on to all their data on premise, and CIOs are more strategic about ensuring business continuity by backing up their data in the cloud – it's the fundamental idea that not only will their data be kept safe, it will be readily available in the case of a disaster.

Big Data

Besides the obvious capabilities and benefits cloud storage can bring, there is an emerging trend affecting cloud storage growth – it's the notion that Big Data is driving demand, lighting a fire under vendors to expand their services and help companies leverage masses of data by making more intelligent business decisions. The term Big Data is getting almost as much play as "cloud computing" did when it was the hot button buzz-term five years ago.

Big Data will earn its place as the next "must have" competency in 2012, according to IDC which predicts that 2.43 zettabytes of data will need to be created in 2012. These data storage demand will be used mostly for social media like videos, photos and music files.

Big Data developments will likely be the most critical new marketplace for storage solutions providers in the coming decade, according to IDC the researcher says.

"Providing a strong portfolio of complete Big Data solutions – hardware, software, and implementation services – will be a high priority to succeed. Similarly, a strong portfolio of active archival storage solutions will be a critical differentiator for private content/archive cloud deployments," says Richard Villars, vice president of storage systems and executive strategies at IDC.

However, size isn't all that matters. Just because data is growing at unprecedented, astronomically astounding rates does not mean businesses are ready to offload all of that critical information into the cloud. While cloud storage has gained immense traction in the past 12 months, the lack of standards, portability and continuing security concerns inhibit widespread adoption, according to Rani Osnat, vice president of marketing for CTERA.

"When you look at cloud storage there are several obstacles to widespread adoption – security being one of them," says Osnat. "Not security of the cloud structure itself; the issue is more around data security. Today if you want to upload your data to



the cloud, you don't get end-to-end encryption just like that if you are doing it yourself, especially for SMBs."

While cloud storage is gaining momentum seemingly by the day, at the same time there is some confusion, or lack of knowledge in the market, in terms of how to not only use cloud storage, but also to leverage it to the fullest.

"SMBs really have a lot to gain from cloud in general and cloud storage especially. Their needs are less predictable than large enterprises, so the cloud can really help them," explains Osnat. "Even more, we find that it gets them the kinds of level of service that until now that was really not accessible to them."

Backup applications and features found in high end, enterpriselevel applications and on-demand access to backup over the Web are now available to SMBs – which presents a very lucrative value proposition for service providers.

"A lot of SMBs need to do something but it's not clear what to do and how we get it," Osnat says, who suggests firms work with a single supplier or a handful of service providers for their cloud storage needs. "A lot of SMBs are stepping and doing that. And those that aren't are going to miss out on this opportunity and really jeopardize their business. Over time we are going to see migration of more storage to the cloud. With enterprises, they prefer the control over the infrastructure and enjoy the cost reduction without paying for a service provider."

Osnat describes growth of the market as an undercurrent in cloud storage. "It's not a massive revolution yet but it's happening slowly. We see this in very large enterprises investing in this and saving millions of dollars," he says.

The proliferation of Bring Your Own Device into the workplace is also driving cloud storage needs, according to Michael Weil, director of cloud solutions at Logicalis, an international IT solutions and managed services provider.

"People are looking to have this storage somewhere and to access it from anywhere and they want to be able to access it form a variety of devices. They want to be able to get to this data – instead of trying to make all of those copies. They want a place to store their data that they can access from any device that they choose," explains Weil.

Storing data on-premise is also becoming a very costly endeavor for businesses. Looking to the cloud not only gives them more space, but also lowers IT costs associated with legacy storage systems.

More IT decision makers are realizing the best way to get more storage is to work with a cloud provider to be able to move business-critical data into the cloud. Companies aren't just looking for the data to get backed up, they are also looking for it to be copied and redundant via Tier 3 and Tier 4 storage providers.

"It's getting expensive to hold onto the data. With the changes that came under legal compliance – as hard drives got bigger

Best Practices: Backing Up and Securing Data

Your cloud storage plan needs to be comprehensive. The following are best practices for organizations considering the benefits of cloud storage.

Backup. Don't just back up your servers, back up your laptops and desktops. You never know what will be damaged. Back up at least once at day, preferably more. Make sure you have a least one copy.

Automation is imperative. Manual intervention experience has proven back up is not reliable. Your storage system needs to be fully automated and monitored.

Time sensitivity. Remember how important your data is and determine how much does that data change. Data always needs to be protected. Is it an hour old? 24 hours old? That's going to determine how often it needs to be backed up.

Disaster recovery. How fast do you need that data back? A lot of people have a solid idea of how much they data they have but there is a time factor is associated. Most people don't grasp it and they just come up with an arbitrary number.

Data security. What is the data actually comprised of? Companies know how much data they have, they know the business uses that information, but many CIOs can't determine how the business uses the data it is storing. There is a big difference between documents the marketing team has to store (pictures and icons), versus HR and payroll and information where encryption is required. Type and context your data so you can apply the proper protection to prevent data theft.

Make sure the data is in a single unified capability.

Multiple copies of data in multiple places – paying for it to be stored multiple times with no benefit of it having it in so many places just drives up the cost of storing it. There needs to be a value to it. Understand the difference between highly available data versus multiple copies of data that doesn't change a lot that are accessible by one source.

Work with the right vendor. Partner with a service provider who can help you navigate the different storage options. Today, there is not a great deal of standardization and portability across providers. Ensure that your applications are portable. A good partner can help you achieve that.

and more systems came online, all of the sudden, this data became very important," Weil says. "In the SMB market, we are seeing a big trend in clients that have data they want to hold onto and they are using back-up tapes for legal compliance. This gets expensive. More clients are taking that archived data and are starting to want a point of presence so they can dump this data. They don't access the data a lot but it's important to them – and it has to be a seamless interaction."



Public vs. Private Cloud? It's Not An 'Either/Or' Decision

hile cloud computing is still in the early stages of growth and widespread adoption is likely several years out, few would argue cloud is a game changer. At this stage in the cloud movement, as cloud-based services are on the rise and service providers continue to emerge, it's an exploratory time for businesses which are undergoing the validation of cloud. ClOs are faced with an array of choices – private, public and hybrid cloud models – all which have their own unique benefits.

As the market has matured over the past eight to 10 months, CIOs across industries have been focused on the rationalization of cloud, according to Dan Kent, the federal CTO of Cisco Cloud, who recently spoke with *Cloud Computing*. U.S. agencies have been one of the biggest adopters of private cloud thus far, leveraging the many benefits associated with cloud computing.

"Businesses and agencies are going through the understanding that the private cloud is a good way to get familiar with the technology and to look at each application specifically – determining which applications should go somewhere other than on their private cloud, and does it need to be customized versus standard," explains Kent. "They are of course weighing security concerns, which has proliferated this movement to bring private cloud. There is a lot of collaboration in how to move voice and video into these other apps into off-premise environments."

While a recent IBM study found that organizations are embracing the pay-as-you-go concept of cloud as a way to reduce the complexity and costs associated with traditional IT approaches, only 38 percent of IT decision makers cited cloud as a leading priority for the entire company. However, it's clear that cloud will grow exponentially in the next few years – the number of respondents whose companies have substantially implemented cloud is expected to grow from 13 percent today to 41 percent in three years.

"The initial gut instinct is, if I go to the cloud I can bring down my costs...but it almost becomes not the cost of the software or the licensing or hardware, it becomes an operational consideration," says Kent. "How can I do more with less? It equates to cost and looking at your resources."

Public vs. Private

Regardless of which cloud model or models are best for an organization, all forms of cloud computing are on the rise with many different adoptions patterns are taking hold, according to Rex Wang, vice president of product marketing at Oracle. "The industry is moving from the early adopter stage to a mainstream form. We see cloud adoption rising rapidly, both in public and private and we see many different adoption patterns, not just one or another since there is not one single model that covers everything," says Wang. "Businesses want the freedom to make their choices and to even change their mind."

Companies must weigh several considerations: business criticality of the applications they want to move to the cloud, regulatory issues, required service levels, usage patterns for the workloads and how integrated the application must be with other enterprise functions. But regardless of which model an organization selects after evaluating how to best implement cloud, they are going to make certain trade-offs in either direction.

"What's great about public cloud is it's a form of outsourcing. There is a tradeoff between the control you get in private cloud versus the visibility you get with in a public cloud. If it involves integration with your own data center, it's made easier in a private model," explains Wang, who says there is currently a wider-spread adoption of private clouds.

With public cloud, companies are paying for the service as an operating expense, whereas with the private cloud organizations are encumbering both capital expenses and OPEX.

"It's like buying versus renting a house. The idea that public clouds are always cheaper is a myth if that enterprise has sufficient economies of scale. If they have sufficient scale, private clouds can be cheaper at some point during the breakeven period," says Wang.

A public cloud can gives companies, especially small and medium-sized businesses, the flexibility they need – but they surrender direct control, according to Steve Garrison, vice president of marketing at Infoblox.

"I don't have to build it, I can try it. It is that utility mindset. All I really need to do is how to manage that SLA," says Garrison. "But if I ask for a change, how fast does that happen? The real reason why everybody wants to try public cloud is that it means no CA-PEX averted. Because you aren't building it you are just treating it like a utility, and I am writing a check every month to pay for it," adds Garrison, who says this notion that comes with the drawback of not fully understanding what's happening behind the scenes.

"When I don't build it, I don't learn it. I don't know what's going on under the hood," he says.

Another so-called tradeoff is security. Certainly, we know that cloud computing is imposing change to IT strategies, but is



security a real or perceived threat in the cloud, and does a private cloud mean better security?

"There's perceived differences at least about the security around private and public cloud. It's a hotly-debated topic, one that is perception-based," maintains Wang. "In a private cloud, an organization has control of and perhaps greater confidence in security. In a public cloud you are entrusting someone else controlling that for you. There is a basic tradeoff between private and public. We see people adopting both on a case-by-case basis. Organizations are making the decision based on 'should I put this in my private or public cloud.' So it's not a question of which, it's a question of both?"

In further breaking down the concept of security, there are three core issues that are intertwined, according to Wang: 1) Data loss or unauthorized access because of an attack; 2) privacy and the idea of isolating customer data from neighboring customer data from one tenant to another tenant; and 3) regulatory issues that dictate where data must reside.

"Some industries are more sensitive to regulatory issues or are simply more conservative, so they may have a preference for private clouds. They have the resources, the scale and the structure to move in this direction," Wang concludes. "As far as public clouds – today there are a lot of them and they are quite popular. Public clouds tend to offer one thing and they do it particularly well – it's a standardized offering."

Hybrid: The Best of Both Worlds?

As cloud computing matures, the term "hybrid" has taken on an ambiguous connotation – but in its fundamental form, a hybrid model draws on the resources of both public and private clouds. Hybrid clouds can mean different things to different people, explains Wang, as there is no such thing as a one-size-fits-all cloud solution.

With hybrid, there is reference to "cloud bursting," a type of overdraft protection, which allows businesses to move their workloads from private to public cloud, or from within their own data center into the cloud. There is also hybrid across the application lifecycle, which means organizations might do tests in one cloud and might do deployments in another cloud. Another definition of hybrid is one that is used across a business process.

"It's a little bit like integration across clouds in that you are putting one business process in one cloud, and another part in another cloud," Wang explains.

In the recent report, "Hybrid IT: How Internal and External Cloud Services are Transforming IT," Gartner states that although businesses have adopted public cloud services for non-critical applications, they are still using internal IT functions for core capabilities.

"IT organizations are taking an 'adopt and go' strategy to satisfy internal customer IT consumerization and democratization requirements," says Chris Howard, managing vice president at Gartner. "Many IT organizations are adopting public cloud computing for non-critical IT services such as development and test applications or for turnkey software as a service (SaaS) applications, such as web analytics and CRM that can holistically replace internal applications and enable access for a mobile workforce."

The industry is moving in a hybrid direction since it's not an "either-or" type of decision for businesses when it comes to private and public models. Both have their advantages and rather than imposing the choice of one over the other, it will be this "hyper-hybrid" model defined by Deloitte as multiple clouds which must link back to the core and often to each other.

"Ultimately that's where most people want to go. We see people being able to move workloads around different providers and to do that it requires some standards and management systems that can manage across multiple clouds in an integrated federated manner," says Wang.

As cloud computing matures and standards become established, it will enable portability and interoperability – which now stand as an obstacle toward migration to the cloud.

"Today the perfect hybrid is the disaster recovery scenario or the bursting of a certain application at a point so I can expand out if I need to," adds Cisco's Kent. "Today, those are the standard hybrid cloud operations. Going forward we are going to see more use cases going into the hybrid model. Still I think a normalization as to what is hybrid cloud has to occur because it means a lot of things to a lot of people."

As with any new technology, IT decision makers must immerse themselves and understand the context of the user while balancing business needs – a tall order for any CIO. Kent suggests the following best practices:

1) Get familiar with the technology. The best way to achieve this is through a private cloud or pilot. Evaluate the operational impact on all your systems when you start automating the data center.

2) Start small. Understand the various cloud offering that are out there. Start with a SaaS (Software as a Service) model or remote storage. Understand the various capabilities in the marketplace. Understand the importance of SLAs (service level agreements).

3) Go off premise with something that will have a big enough impact so that the organization can decide if they want to get that capability longer term. Don't jump into cloud and then stop there. Look at your applications based on performance, not just based on cost savings.

Looking ahead as all three models become more defined, Garrison says cloud is redefining the role of CIO.

"We see this moving full steam ahead. It gets back to what's fundamentally changed in IT, which used to be very rigid with a once-a-year planning schedule. Business units and users now have so much control and choices to do things without IT involved," Garrison says. "IT has to show value and this is a concern of CIOs. He has to show time to value – by building a private cloud or managing the MSPs outside so IT isn't just burning up the tools they've bought. That's a cultural change. Cloud makes them interact in a new way."



Cloud Telephony: Not Just Another **Buzzword**

urning to the cloud for unified communications, PBX solutions or hosted VoIP can give businesses access to sophisticated communications infrastructure. In fact, small and medium-sized businesses are adopting cloud-based services at rates twice as fast as larger corporations, primarily because they aren't as risk-averse or don't have be concerned about integration with legacy systems. While the best-known service is cloud computing, cloud telephony is built on the same foundation – a vendor provides a product or service in a virtual environment.

With so many available options on the market today, as Aculab's Faye McClenahan suggests, businesses want to have their cake, and eat it, too. In a recent interview with Cloud Computing, McClenahan explains how cloud telephony is levelling the communications landscape for SMBs and enterprises, allowing them to achieve new operational efficiencies and harness this great competitive equalizer. Our full exchange follows:

EH: What telephony challenges do enterprises and SMBs face, and how are solution providers stepping up to the plate?

FM: Whether you are talking telephony, IT services, utilities or other business resources, I think enterprises are looking to achieve three things: to reduce costs, while continuing to deploy the best technology and all without writing off their existing infrastructure investment. They want to have their cake and eat it.

In today's economic climate, that desire on behalf of enterprises and SMBs provides all the more reason for solution providers to explore new ways in which they can reduce the underlying cost of their service, be it hosted or premisebased. These cost reductions could come in the form of flexibility, perhaps allowing enterprises to dynamically increase/decrease capacity as desired, in addition to allowing new payment models (i.e., OPEX rather than CAPEX, as illustrated on page 29).

EH: We hear a lot about cloud computing and cloud-based services – what does cloud computing mean to telecommunications?

FM: Where telecoms stand out against other cloud-based services is the fact that the concept of "cloud" originates from telecommunications. The terminology actually derives from the image used to represent the Public Switched Telephone Network (PSTN) – the cloud. In the case of cloud-based telephony, the service is offered on a pay-per-minute basis and users can enjoy such a capability without having to own and manage the infrastructure. Somebody else does that for them and the complicated technology part "just happens" - in the cloud.

That being said, cloud computing, as a movement, has injected new life into the industry. It has made it quicker, easier and more costeffective for service providers to develop and produce an application. It has also made a greater number of applications available to SMBs, which due to cost were once only available to enterprises.

A true cloud telephony platform should maintain the promise of cloud computing: It should remove the need for users to purchase or maintain specialist telephony resources or gateways and it should



allow you to invest in your application as your traffic volumes increase. It should enable you to pay as you go and scale seamlessly, up or down, when you have the need.

One of the most provocative or disruptive elements that cloud-based telephony offerings have brought to the market is that telephony application development is no longer a black art, with only a limited number of developers having the skills required to build applications. Now, thanks to the provision of APIs in high-level programming languages, just about any developer can get to grips with building IVRs or voicemail – and in days, rather than months.

EH: What is telephony platformas-a-service (PaaS) and what do you need to run a cloud-based telephony application? What are the main points to consider when looking to run a cloud-based telephony software-as-a-service?

FM: A telephony PaaS allows you to write your own telephony application and connect it to the PSTN or even directly to the end user via SIP, without having to purchase

The CAPEX of a hardware-based platform versus the OPEX of a cloud-based platform.



telephony cards or software. You can access "tools" and sample code to help you write and deploy an application, based on technology owned and managed by someone else. What are the main points to consider when looking to run a cloud-based telephony softwareas-a-service? To run a cloud-based telephony software-as-a-service, there are five things to consider: the application; the application server; telephony resources (Telephony PaaS); deployment options; connection to the PSTN or directly to the end customer; and data.

The telephony application is going to add telephony functionality to your workflow processes and, in telephony terms, the equivalent is call flow. That is achieved by means of your application controlling the telephony resources via a menu of structured commands – an API. That, in turn, results in the call logic that is executed by the software program that makes, takes or interacts with a call (e.g., plays or records a message; presents a caller menu; transfers a call; creates a conference; or records a call).

The primary function of any cloud-based telephony platform is to provide you with the resources to make an outbound call, transfer a call to an agent and record messages, for example, negating the need to buy specialist technology. Your cloud vendor's purpose in life is to make available to you – in the cloud and on demand – a virtually inexhaustible bank of resources for your application to use.

It's only when you're ready to deploy your application that you need to really invest. At that point, you will need to pay for inbound numbers and to be able to make outbound calls. From that moment on, you can make and/or take as many calls as you need, and you don't have to plan ahead for peaks. The cloud platform will scale automatically, depending on the traffic passing through, and it will handle innumerable, concurrent calls. You pay for what you use, rather than pay for hardware and software or specialist technology.

When it comes to calls breaking out to the PSTN or when you have to receive calls originating in the PSTN, the cloud-based telephony platform vendor also manages this functionality. The cloud provider should have taken care of all necessary interconnect arrangements with its various service provider partners and any break out to the PSTN will be through those partners' existing, established gateways.

And finally... data or, more specifically, data security, can be a very sensitive point. In truth, there is no reason why data stored

on premise is any more secure than that in the cloud. Nevertheless, you (or your customers) may not be willing to place any or all of your data in the cloud at any time, if at all (although it's important to add that you could, if you so wished). If your application is data driven, your data can remain on premise; a connection simply needs to be made between it and your application. Most likely, that will be a pre-existing connection, which means you won't have to add any costly, additional interfaces.

EH: Aculab has long been known as a respected telephony vendor -- how is the company redefining itself and reinventing its offerings?

FM: Aculab has been in the computer telephony business for over 20 years now and in many ways, what we are doing now is the same as we have always done – develop software. True, we are a manufacturer of computer telephony boards and software. However, the strength of these boards stems from the wealth of telephony resources available to run on them. These resources have been developed and enhanced over many years; tried and tested within a range of telephony applications. All Aculab has sought to do and will continue to do, is increase the platform deployment options for its software. Whether it's delivered on a card, on a host-based server processor, or packaged as a Telephony PaaS, Aculab provides an exemplary, professional solution.

EH: Is cloud communications primarily an SMB service? How can enterprises benefit equally?

FM: Why can't all businesses benefit? In the mainstream, SMBs will benefit by being able to make use of applications that they simply wouldn't have been able to afford in the past. For enterprises, it's slightly different. They will benefit because, rather than having to buy a solution and install/maintain it in-house, they can simply consume a service.

EH: In addition to cost-savings and flexibility, what are the main benefits of Aculab cloud and a cloud telephony platform in general?

FM: I would argue that every benefit has some kind of cost saving associated with it. I guess it all depends on how broad a definition you are using. For example, cloud actually allows some SMBs and enterprises to take advantage of applications they simply wouldn't have been able to afford in the past as cloud makes it affordable for more enterprises to 'invest' in new/ different types of technologies or applications.

Aculab Cloud and its service can spark innovation that would have been too expensive to develop in the past. It's also less hassle... you don't own anything, you just consume a service. Not having responsibility for purchasing, installing, managing and supporting equipment can be a good thing.

EH: Is an on-premise PBX obsolete? Looking ahead, how do you envision cloud telephony evolving over the next 12 months?

FM: The PBX is already obsolete; folks just won't admit it. Okay, it's not obsolete in that there are millions of them in use, and folks even buy new ones, albeit they are IP-PBXs, but the PBX is obsolete in the sense that it is an obsolete concept – the need to have a physical box sitting in a corner on site at an office. Heck even the offices don't exist any more when people work from home. The new concept is to make all that functionality available as a cloud-based service.

by Erin E. Harrison

SMB Cloud Forecast: The Future is Bright

B Y now, you've seen the statistics, or you've witnessed the trend with your own eyes: Small and medium-sized businesses (SMBs) have been the most aggressive segment to adopt cloud services. In fact, Gartner projects this sector's revenues will exceed \$150 billion by 2013. Adding to this sunny prediction for cloud service providers, research firm McKinsey says SMBs with fewer than 250 employees are more than twice as likely as larger companies to adopt subscription or on-demand technology services.

The bigger story, of course, is that the cloud enables SMBs to get on-demand access to the same enterprise-class communications applications that have previously been exclusive to large organizations. *Cloud Computing* recently sat down with Walter Scott, CEO of GFI Software, to discuss adoption trends in the SMB market, how cloud is helping them level the playing field, and what concerns about cloud are justified or, perhaps more important, not justified. Our full exchange follows:

EH: According to recent industry studies (including Gartner and Microsoft), SMBs are adopting cloud at a much faster pace than enterprises. Do you see wider acceptance among the mid-level space and why is this trend happening?

WS: I would say there are a number of reasons for this trend.

First, the fear factor is decreasing among small and medium businesses, and this has, in part, been driven by the consumerization of cloud services – their personal email is hosted; they save files in the cloud, their tablets and smart phones use cloud services, and so on.

Second, not all SMBs can afford an ever-increasing infrastructure with good IT staff, security software or hardware, licensing and renewal costs, and other expenses that come with onpremise solutions. For very small businesses, the capital outlay often exceeds the budget allocated for IT. At the same time, they cannot do without the technology. Cloud service providers address SMBs' concerns and budget limitations by providing a full package at a very reasonable price and they are capable of providing them with redundancy and continuity while removing the burden of managing the technology on-premise. Third, the market is starting to mature. Vendors and the services they offer are more robust than ever; they have made massive investments in data centres, security and compliance and, now even price points are coming down. SMBs are keen to adopt cloud services so long as they have guarantees that they services is reliable, their data is secure and they are not ripped off. As each concern is knocked off the list, this trend will continue at a rapid pace.

Fourth is the fact that the SMB simply doesn't have the time required for the care and feeding of the system. Without a dedicated resource the "technical" guy in the office ends up taking time away from their job to be the IT guy. With shrinking margins, and a sluggish economy, that person's time would be better spent selling, or accounting or whatever they are actually paid to do by the company, and not chasing down user or operations issues.

Finally, as technology continues to advance with more access points, higher access speeds, faster computers and so on, systems are now available that support a robust cloud environment.

EH: How has cloud helped resolve IT challenges for SMBs in ways that traditional on-premise computing can't?

WS: Having access to greater computing power than ever before without the need for massive capital investment and complex licensing is changing the way SMBs use IT and do business. Cloud computing is giving SMBs the ability to act like, and appear to be, organizations that are much larger and it is also impacting positively on their business by enabling growth with minimal investment. Because the cloud takes away the need to install new hardware, configure software, maintain and update the software, deal with complex licensing, the IT manager or administrator can dedicate more time to managing the network and ensuring the service provider is delivering as promised.

Cloud-based services also have a higher velocity of change. Program improvements can be rolled out on a daily basis to improve the user experience. If a more efficient way to roll-out a patch was implemented in a cloud service tonight, tomorrow when the user logged in they would be able to take advantage of that change immediately. This continued improvement-and-use model allows many more development cycles to be introduced over a given period of time.



EH: Which cloud-based service is being adopted most readily by SMBs and why?

WS: I don't think there is a single cloud-based service that stands out; I would say, however, that SMBs are looking at a mix of services that allow them to improve operations, reduce costs, increase productivity and, from an IT manager's perspective, secure and manage the corporate network.

SMBs are taking advantages of hosted email and storage, hosted email security, archiving, online payment, accounting software, CRM, collaboration software and faxing. If the cloud service boosts efficiency, increases productivity and lowers costs, then it is an attractive option for an SMB to consider.

Adoption increases when SMBs are able to source more than one solution from one interface a one-stop shop. GFI has used this approach with our traditional on-premise services and we are now doing the same as we take our product portfolio to the cloud and to a wider audience.

Walter Scott, CEO of GFI Software

EH: What is the biggest misnomer about cloud computing and small to medium-sized businesses?

WS: I think the biggest misnomer is that you either have everything on premise or you have to take everything to the cloud. There are situations when a company will not or cannot move to a cloud-based solution. If you work in a highly regulated industry and manage confidential information, it may be against company policy to move data into a cloud environment managed by third parties. So, hosted archiving, for example, is a no-go. At the same time, their CRM and HR systems are provided by a cloud provider, freeing up resources, increasing efficiency and reducing overheads: Same company, different needs and objectives.

EH: There is still a lot of concern in regard to security and the cloud. In what ways are these concerns justified or not justified?

WS: The questions I would ask is "are these security concerns any different to those that businesses have been facing for the past 30 years?" In some ways the issues are the same and in some ways there is a need for some concern. When data is stored in the cloud we have less control over it. We are depending on the vendor to take the appropriate steps to safeguard the data. And in many cases the vendors have failed. My advice would be to make sure you ask your cloud provider what measures they have taken to not only assure the availability of your information but the safeguarding of it against hackers or the introduction of viruses and other malicious software. It is in the interest of every

It is in the interest of every vendor offering cloud-based services that the clients' data is secure and protected. In a country like the United States where a lawsuit could result in material punitive damages for a business,

cloud-based solution vendors do their utmost to protect the data they are managing. They have to out-perform because they know that a single incidence, a single breach could lead to litigation and significant risk and materially impact the corporate brand. Therefore, cloud-based solution vendors not only have the latest technology, the latest firewalls, the best datacenters and the highest levels of redundancy possible but they will apply multiple layers of defense in-depth that your average business (a Fortune 500 company may be an exception) can never have. Thus, if the



cloud-based vendor can offer such a high level of security that is beyond what an SME can provide, isn't this concern irrational?

I would argue that clients' concerns should focus on how flexible the service provider is in meeting their requirements. In choosing a vendor, the existing security policies adopted must meet the needs of the business paying for the service. Moreover, if the client's security requirements change, these changes must also be reflected in the security policies implemented by the cloud-based solution vendors. What has changed with the cloud is the extent that security policies can change. For example, if an employee were made redundant, you would delete his account and block all access to the network. When using a cloud-based service, you now also have to block any access rights to the data that is stored in the cloud. The concern that an employee could take confidential data with him is the same in both cases. The process to stop that requires additional policies. This is why it is so important that a vendor's security policies are flexible and can change as their clients' needs change.

The point I'd like to make is that security issues may have changed slightly with this delivery model but the approach to security should be the same irrespective of where the data is kept – on-premise or hosted/managed in the cloud. The same best practices apply. Good business judgement is still required.

EH: What do vendors need to be able to offer in order to deliver successful cloud implementations?

WS: With security no longer a priority with our delivery model, it makes sense that SMBs are focusing on the business aspects of the model. How much is it going to cost them? Will they be locked-in? How much will it cost to migrate their data if they choose to return to an on-premise model? These are the real business concerns that have a direct impact on the bottom line.

Businesses are going to look beyond the simple provision of the service that they signed up for and a major consideration is the quality, price and reliability of the service being provided. To be successful, vendors need to be crystal clear on pricing, how the subscription works and what the terms are for product support and customer service. Service level agreements should be written in a language that SMBs understand and should the SMB wish to part ways at some point, the vendor should explain what will happen to the SMB's data; how the data will be returned, what happens to the vendor's copy or logs and so on.

At the end of the day, what customers really want is freedom of choice and the ability to pick and choose applications, software, licensing models, even payment terms that suits them and not the vendor. That is the key to the successful delivery of cloud implementations.

EH: Cloud is still largely in its infancy; do you think in the next 12-18 months will we see more SMBs gravitate toward hybrid models and not just a public cloud? What will drive such trends?

WS: The beautiful thing about technology is that it brings about change and with change you get more choice. And with greater choice, SMBs can design and build their IT infrastructure in a way that is efficient, cost-effective and allows them to do what they do best – grow the company. GFI has been offering the hybrid model to our customers for over a year now; giving them the ability to

create another line of defense using a cloud-based solution while they continue to run our on-premise products. So long as SMBs see value in the hybrid proposition, they will invest in it.

EH: Go out on a limb: What do you predict happening with cloud in the next 12 months, especially pertaining to SMBs?

WS: Adoption of cloud-based IT services is, to an extent, correlated to the adoption of smartphones and tablets and over the next 12 to 18 months, we will see more SMBs avail themselves of cloud-based services. There are certain markets, such as the financial sector, that will be more cautious in their approach. SMBs handling confidential client data may shy away from having third parties manage their data, but may look into services such as CRM, HR and basic IT services for other non-data critical departments.

The sweet spot for vendors remains the SMB market. Managing expectations and keeping prices within an acceptable range for SMBs are the key elements of success and what will drive adoption of cloud-based solutions. Looking beyond 2013, I would say that within the next four to five years, the cloud-based delivery model for IT will be main choice for many businesses.

One thing that SMBs will begin to discover is that just because you are paying by month or year does not mean the solution is any cheaper. In fact, it may be more expensive as the vendors have to incur the costs of storage and bandwidth to deliver their services. SMBs should expect that over time, however, the price points of cloud services will go down as the cost to store and deliver information is reduced.

EH: Cloud computing is often termed a "disruptive" force in technology. What would your compare this movement to or is such a disruption unprecedented?

WS: Cloud computing has changed the way we do business and how we deliver our products and solutions. It has changed the economics of IT, it has changed how businesses look at IT and adopt the technology. The technology in and of itself is not disruptive; after all we are simply using established computing technologies but it is a disruptive model of IT delivery which creates a much more efficient model for businesses. I would argue that the foundation of the disruption is the Internet itself, and we are now beginning to exploit its true value. There will be tremendous gains in the future in the areas of supply chain, distribution, and even manufacturing that we are just beginning to realize. The value of Big Data is another area that we are just scratching the surface.

EH: As many companies are still in the knowledge process of cloud, what perceptions about cloud do you wish to dispel?

WS: The cloud is not something adopted by large enterprise alone. There is nothing holding back small and medium businesses from adopting cloud-based solutions except the misconception that it is not good for them. Like any other tool in business, the value comes from the thoughtful use and complete understanding of how to exploit it. Today with a more level playing field than ever, the companies that don't simply react to market pressure but take the time to take full advantage of these great new technologies will be the leaders of the future.





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SILVER Lining



by Erik Linask

Cloud is Really About Growth, Not Cost

t's turning into alphabet soup, tech style. Start with a cup of SaaS, add a touch of CaaS, a dash of PaaS, a pinch of IaaS, and a dollop of RaaS. What you end up with is your IT served up cloud style. As so many technology conversations today, cloud strategies often begin around cost implications. But, the truth is, cost isn't necessarily the ultimate driver of cloud adoption. Rather, it's about business efficiency, process improvement, and service reliability. In fact, in a recent study from CSC, mobility nearly doubled cost as the top reason for adopting cloud computing globally.

In the United States, the trend is even more evident, with nearly half of small businesses naming information access (e.g., mobility) as the primary adoption driver – while only one in ten named cost savings.

Still, most businesses enjoy some level of cost savings as a result of cloud migrations, however those savings tend to be limited, at best. In fact, in the long-term, cloud may even eclipse local deployment because the monthly recurring costs continue beyond the point of local infrastructure having been paid for.

Ah, but you don't need as many IT staff, or so the theory goes. Looking again at CSC's study, more businesses actually grew their IT departments after cloud adoption than downsized. This aligns with the long-term cloud investment strategy that nearly two-thirds of global cloud adopters have followed.

As businesses embrace cloud computing for increased workforce mobilization, nearly all report some level of performance improvement in addition to modest cost savings. The key, however, lies in growth and the ability to scale easily without a tremendous increase in overhead.

"Customers are trying to do more with less and are looking to better support the infrastructure they have today or will need to support," says Mitchell Hershkowitz, national practice manager, consulting services, Dimension Data. "Cloud offers the flexibility and scalability to do that."

In terms of flexibility, virtualization is second to none. Offering IT staff the ability to move applications between virtual servers for maintenance or upgrades without service interruption, it is key to maintaining workflow consistency.

In fact, it can be as easy as three mouse clicks and a drag. I sat with Wendy Moore-Bayley from Mitel recently at Enterprise Connect and had a chance to migrate the UC platform from one virtual server to another with, as I said, three clicks and a drag.

The idea is that UC should be as simple to manage as any other application in the data center. And, in the broader perspective, migrating applications to a cloud infrastructure drives the flexibility and ease of management across all applications that IT staff need in order to appropriately support an organization.

But there are questions. When is the right time to move to the cloud? Which model is best for me – private, public, or hybrid? Do I create a migration path or should I go all-in? Are you sure this cloud thing is secure? How do I know it is?

"Half of the CIOs are ready for cloud and are looking for the right provider; the other half want nothing to do with it," notes Hershkowitz.

Regardless of which group you are in, TMC is bringing a new event that will either help answer your questions about cloud. Cloud4SMB Expo (cloud4smbexpo.com) is coming this October 2-5 to Austin, Texas.

It's ironic that the cloud conversation has focused mainly around the large enterprise opportunity, considering the phenomenon really grew out of SMB adoption of hosted services and the benefits they derived from it. But, like the VoIP market several years ago, vendors are starting to realize there are a limited number of big fish in the sea – but the SMB market can net an abundance of customers.

Cloud4SMB is a unique event that focuses on the unique needs and challenges SMBs face as they seek to build their businesses, and how cloud computing can help drive that growth. Come to Austin to become one of the 80 percent cloud adopters that have enjoyed business process improvements and, by extension, increased revenue opportunities, within six months of cloud adoption.





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