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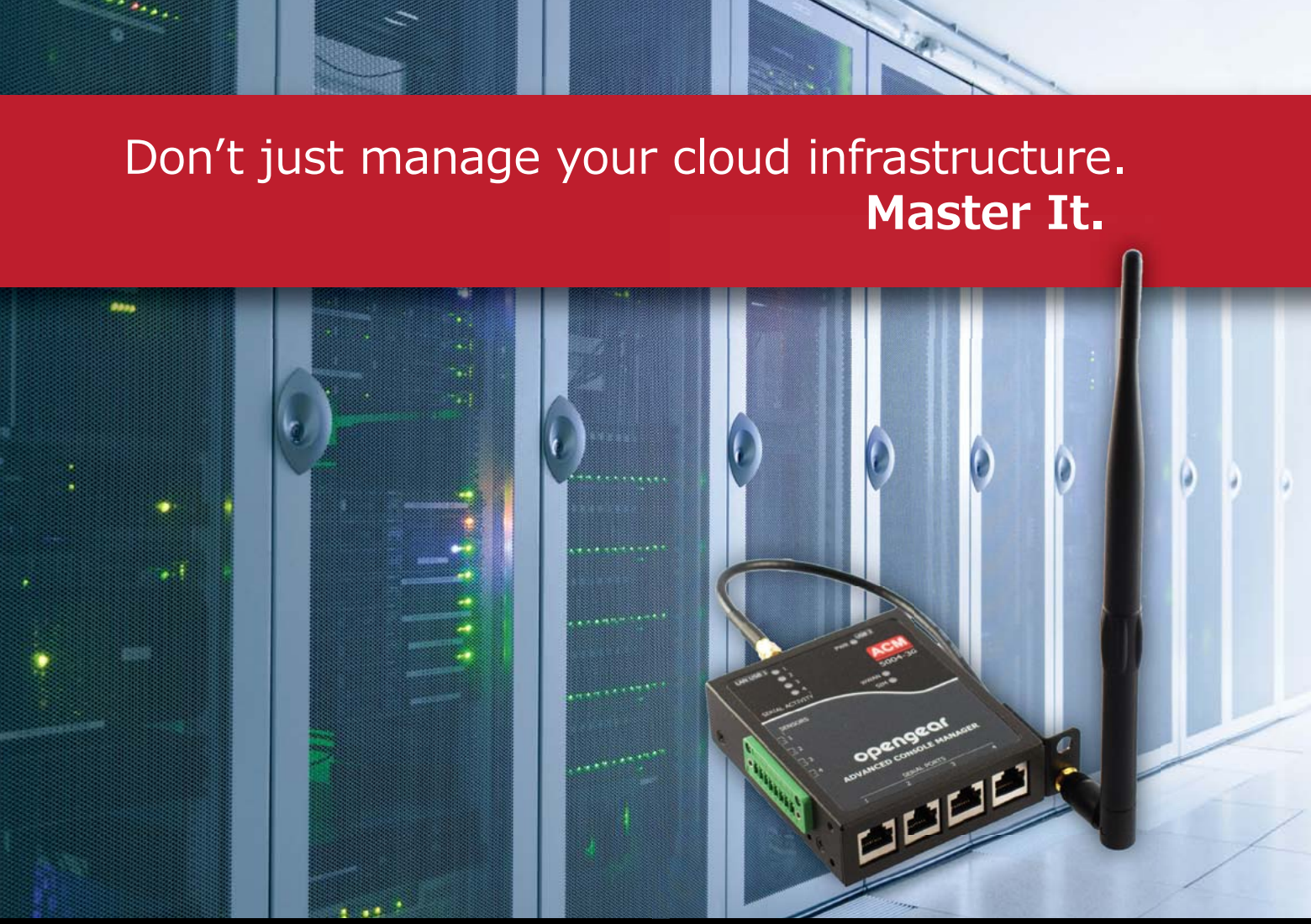

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by Erin E. Harrison

Storm of Cloud Confusion Persists

Recently, I covered a somewhat vexing cloud topic that I haven't been able to shake since writing the article for TMCnet.com last month. While the industry is caught up in this "storm" known as "cloud," most Americans believe cloud computing is actually affected by inclement weather, according to a recent study. If you were among those who saw this report, you may have been in as much as, if not more, disbelief than I.

According to the Wakefield Research survey of more than 1,000 American adults, which was commissioned by Citrix, while the cloud is widely used, it is still broadly misunderstood. In fact, 51 percent of respondents – which include a majority of Millennials – believe stormy weather can interfere with cloud computing.

In addition, nearly one third say they view the cloud as a "thing" of the future, yet 97 percent are actually using cloud services today via online shopping, banking, social networking and file sharing. Despite this confusion, three in five (59 percent) believe the "workplace of the future" will exist entirely in the cloud, which indicates people feel it's time to figure out the cloud – or risk being left behind in their professional lives.

"We know that cloud isn't actually a 'thing,' – it's a metaphor," Slate blogger Matthew Yglesias points out.

"The idea is that you're using your computer [or phone or tablet] to access data and applications that are hosted remotely," Yglesias concludes. "I have no idea why this particular 'cloud' metaphor was chosen, and it doesn't make a ton of sense, but it all has nothing to do with clouds or the weather."

Perhaps there are a lot of questions still unanswered, but by many accounts, 2012 was the year cloud moved past the hype phase into the adoption stage. However, in its annual Hype Cycle report, which was released in late summer, Gartner says, "confusion remains the norm" about the cloud computing industry.

"Many misconceptions exist around potential benefits, pitfalls and, of course, cost savings. Cloud is often part of cost-cutting discussions, even though its ability to cut costs is not a given," according to the Gartner report. "There are also many reasons to talk about the capabilities enabled by cloud computing: agility, speed and innovation. These are the potential benefits that can be overlooked if hype fatigue sets in."

The true measurements of moving past the hype phase will be when IT teams begin to deploy business critical applications to the new cloud platforms and not just secondary and supporting applications. We explore cloud's future in this issue's cover story, "2013: The Next Frontier of Cloud," (page 26).

As Cloudscaling's CTO Randy Bias summarizes: "CIOs are beginning to see the need for an on-premise elastic infrastructure in addition to their virtualized infrastructure, but they don't know how to get there."

We hope this issue of *Cloud Computing* helps break the clouds hovering over the looming confusion, as 2013 looks to be a bright future for this thing known as "cloud."

by Rich Tehrani

Tomorrow's Cloud, Optimized by Plantronics

Most people think of the cloud as being removed from the local environment because, after all, it requires the addition of a browser to access. But thanks to innovation from the people at Plantronics, the cloud can now reach through the browser and closer to the user than ever before. In fact, the company has an SDK, which for the first time bridges the worlds of mobile and enterprise communications as well as computing. While CTI or computer-telephony integration is not a new concept, Plantronics uses its Spokes software as communications middleware to seamlessly connect mobile telephony with cloud-based or on-premise enterprise software.

Moreover, the headset can now provide contextual information to applications such as the mobile call state, mobile Caller ID, proximity, presence and wearing state. One of the more compelling new apps that uses this interface is Popcorn from ThreeWill; it integrates with a PC/laptop, Chatter, Salesforce.com and mobile devices while monitoring incoming phone calls. When one comes in, it pops a screen based on caller information in corporate databases. The problem being solved is mobile workers have work calls coming to their cell phones which don't necessarily provide complete details regarding the caller.

How this differs from a traditional screen pop, in this case, is the call is coming over the mobile network so the enterprise PBX is out of the loop. Instead, the caller ID information is transmitted over Bluetooth to the Spokes software by Plantronics, which gives other applications access and these apps can in-turn query corporate databases in the cloud and in the data center.

Moreover, Popcorn allows the user to quickly type in notes, which are automatically placed in the appropriate customer record saving time and effort.

Another company using the Plantronics APIs is Datahug, they have solution that looks at a person you are in contact with at a company and ascertains via social networks and emails which other people in the company has contacts in your organization. Until now, Datahug could not sift through telephony data but it now can, thanks to the middleware-nature of the new Spokes APIs.

The good news for cloud, and software developers in general, is they now are able to determine if a user is wearing their headset, if it is in use, whether the user is close to their cellphone and PC. Think about security apps that can lock the PC or mobile device if a user wanders off. Or call center software that can ensure calls aren't routed to an agent who just took off their headset. Then there are apps that will likely be created for a crisis situation where a building needs to be evacuated rapidly.

Of course this is just the beginning. Plantronics is actively working to open up more information to developers such as the caller ID of incoming calls to desk phones.

The company first told me about this news over five years ago but at that time weren't able to go into detail. They just told me, "Rich, we are onto something big."

And as a result of their diligent work through the years every application now has the ability to get rich contextual information relating to users.

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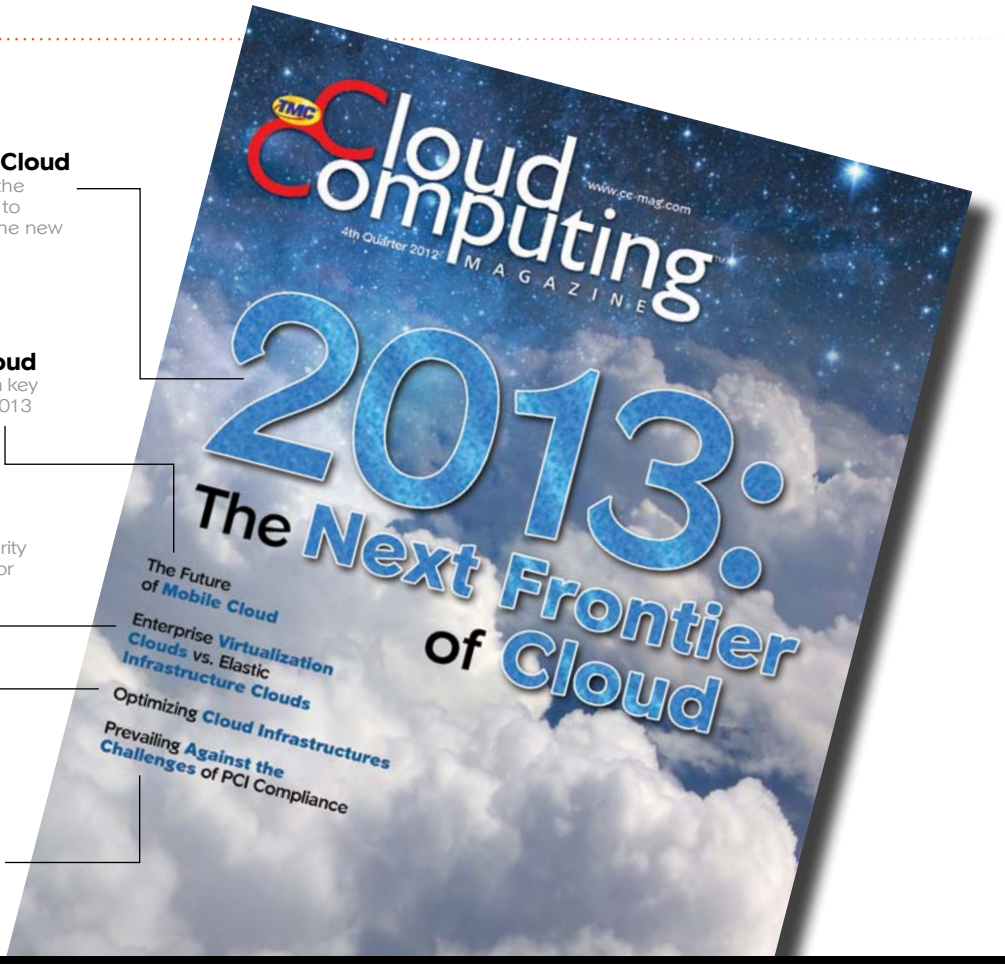

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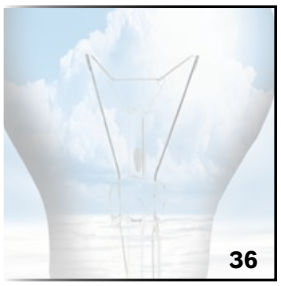

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Sauce Labs Secures $3 Million to Support Mobile Web Testing Cloud Expansion

Sauce Labs, Inc., a provider of web application testing solutions for enterprise developers, has closed a $3 million Series B funding round led by Triage Ventures. Salesforce.com also joined as an investor in the Series B round.

Sauce Labs offers automated and manual testing services for web applications. The company's Sauce OnDemand and Sauce Scout solutions are used by some of the largest consumer and enterprise brands. The Sauce OnDemand testing cloud is already used to run approximately one million tests each month with that number continuing to grow.

The Bottom Line: By expanding its solutions to support the Mac OS X platform, Sauce Labs becomes the first to provide Mac developers an automated, enterprise-class testing cloud that leverages virtualization for iOS applications. Company officials say the new testing capabilities will reduce, to just hours or days, the testing and debugging process for applications for the iPad and iPhone.

http://tmcnet.com/59207.1

Ask Ziggy's Cloud-Based Speech Recognition Receives $5 Million in Funding

Ask Ziggy's recent expansion of its strategic partners list and a $5 million funding from a publicly traded multinational corporation are seen as a milestone in the company's rapid growth.

Ask Ziggy, which provides voice recognition technology and personal voice assistant that incorporates artificial intelligence for Android, Apple and Microsoft devices, has seen over three million voice searches within a year since its inception in January 2012. This growth has attracted major companies to start recognizing the value of Ask Ziggy's cloud-based contextual search solutions and provide key investments.

The Bottom Line: According to the CEO of Ask Ziggy, Shai Leib, the new $5 million funding will enable the Rocklin, Calif.-based firm to deliver multi-language, accent independent, Natural Speech Personal Assistant apps running on all devices.

http://tmcnet.com/59209.1

Infratel Secures $3 Million to Build Telephony Service for Cloud Providers

Infratel, a provider of cloud telephony services for small businesses, has secured $3 million in Series A funding from Prostor Capital and Runa Capital. Prostor is a global investment firm with knowledge of the telephony and service provider industry and Runa Capital international venture capital firm is focused on investing in cloud computing, internet-services and virtualization software companies such as NGINX, Ecwid and Jelastic.

The funds will be used to build out Infratel's cloud telephony platform for small business and to strengthen the company's presence globally.

The Bottom Line: Unlike other SOHO telephony products designed solely for the end user, Infratel is leveraging its roots with the hosting community to build a cloud-based service that integrates directly into the provider's infrastructure. This unique go-to-market strategy provides the highest ROI for cloud services providers and enables Infratel to achieve faster market penetration in the highly fragmented SOHO sector.

http://tmcnet.com/59210.1

Silver Lake Acquires Velocity to Expand Cloud Management Software Offering

Velocity Technology Solutions, a provider of cloud-based enterprise resources planning (ERP) solutions, was acquired by a Silver Lake Sumeru-led investor group and Velocity management. The acquisition is part of the company's strategy to advance its leadership in cloud application services and the cloud management software segment.

By giving access to critical business enterprise applications through the highly secure private cloud, the company relieves businesses from the burden of software ownership and allows them to focus on the priority initiatives that propel their businesses.

The Bottom Line: The investment by Silver Lake Sumeru will accelerate deployment of Velocity's capabilities that further increases the firm's level of customer support and ability to deliver the highest-quality managed services, according to Paul Cioni, senior vice president of service delivery for Velocity.

http://tmcnet.com/59211.1

OpenText-EasyLink Merger Releases OpenText Cloud

Enterprise content management software provider Open Text Corp. and business messaging service EasyLink Services International Corp. completed the merger of EasyLink with an indirect wholly-owned subsidiary of OpenText.

As a result of the merger, EasyLink became an indirect wholly owned subsidiary of OpenText, which has introduced the OpenText Cloud, a platform for Enterprise Information Management. It provides a managed hosted environment for a range of EIM services and cloud-based applications, including content management, customer experience management, business process management, information exchange and discovery.

The Bottom Line: As a result of the merger, the companies now service over 25,000 customers and two million end users for infrastructure services, social enterprise services, process and data services and SAAS-based information exchange – processing over two billion transactions a year.

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by Jason Alley, Interactive Intelligence

The Cloud... Isn't It Ironic?

When the cloud first showed up in the contact center, adoption lagged behind other enterprise applications due to concerns… about security, reliability, control, provider viability, you name it. The initial reluctance of business leaders, IT directors, and contact center management was understandable given the lack of exposure they had to cloud applications and the mission critical nature of customer care operations.

Now, however, businesses can't move their contact centers to the cloud fast enough. What's ironic is that decision makers tell us these very same areas (of previous concern) are now considered top selling points for the cloud.

The cloud offers a higher level of security

How hard is it to gain access to the room(s) your company runs its on-premises applications? Are your facilities manned 24 hours a day, seven days a week? Is two-factor authentication (biometric/card) required for access? Are video surveillance cameras in place to monitor the facility and perimeter at all times? Cloud providers that follow SSAE 16 best practices answer yes to these questions and often provide a higher level of physical security than companies do internally.

An additional level of security and isolation is offered by cloud providers with single-customer, multi-instance virtualized environments – each customer runs their contact center operation on their own virtual instance of the application, leveraging common hardware and services for economies of scale. As well, highly regulated organizations can now have voice traffic and other sensitive customer data (e.g., recordings) remain on their premises should they prefer.

The cloud provides a more reliable infrastructure

Does your IT team have the resources and time to keep your entire contact center infrastructure up-to-date and, better yet, keep a constant (24/7), proactive eye on the environment to ensure business isn't interrupted? Does your current environment provide geographic high availability? Does your IT team adhere to strict, well-documented SLAs that have penalties tied to them? Cloud providers do, and their business is centered around making sure your systems are up-to-date and remain operational, even when disaster strikes.

The cloud offers the business greater control over their operations

Can your contact center turn on a dime to address rapidly changing business requirements without a huge drain on IT? Better yet, are they empowered to make changes themselves? Cloud providers offer the ability to do so and have highly skilled resources – from the same company that wrote the underlying application code – waiting in the wings to help you turn customer care into a competitive weapon.

Ironic, isn't it? In its infancy, the cloud was only an afterthought in the minds of most contact centers. Today, it's proving to be one of their most beneficial assets now that reputable, market leading providers (such as Interactive Intelligence) are offering cloud solutions that are more secure and reliable, and that offer greater control than what companies are used to internally.

Jason Alley is solutions marketing manager at Interactive Intelligence.

by Peter Radizeski, RAD-INFO, Inc.

Winds of **Change**

The hosted versus premise debate has been raging for a while. The tide is turning. One major reason that hosted PBX is winning is due to the nature of the office. The idea of the office is changing. Freelancers, virtual workers and mobile workers are making the physical office – if there still is one – a hub, but not the place that many workers work.

The nature of the business environment now is the workforce that is spread out geographically. Certainly, IP-PBX delivers enterprise level features that rival Metaswitch, but the remote capabilities of these premise based systems is limited. It is limited by the voice trunking capacity, since voicemail requires a call path to be answered. Even forwarding calls to the mobile phone can tie up a call path. The capacity quickly gets eaten up.

Who will manage the premise IP-PBX? With the changing office, the number of moves/adds/changes has increased for 10 years ago. In addition, that remote capacity needs to be monitored and maintained. In many cases, the IP-PBX runs on a server that requires patches to both the operating system and the PBX software to fix bugs and security issues. Today, the voicemail system is the weak link that hackers exploit. Who is going to play cat and mouse with the hackers?

Besides Macs, capacity and security, the business manager just wants to focus on his core business. Running a PBX is not a core function. With downsized operations and personnel, any function that can be outsourced must be examined. It isn't just a financial decision; it is a practical one. One reason Xerox has been able to sell Managed Print is due to the need in business to control costs and upkeep. The copier gets jammed or doesn't send to email or some other function affects productivity, adds frustration and should just be a phone call away.

Premise-based solutions require someone to maintain them and keep them running efficiently. On top of that, they require a physical office to reside at. Both of those resources are diminishing – both a physical office and human resources since the move is to a virtual office with a remote workforce.

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

by David Grimes, NaviSite

(Hybrid) Storage in the Cloud: Why Not?

The amount of data and information enterprises are generating continues to grow at a truly staggering rate. Yet it seems very few companies are truly prepared to manage, store and protect it properly. Data is created through a wide array of devices and is distributed across numerous systems, locations, and geographies, so getting a handle on it can prove challenging.

With all of this happening in the background, the question is – how can businesses store, protect and manage data efficiently while reaping the business benefits? In truth, the traditional onsite data storage solutions coupled with conventional, offsite backup storage is no longer the practical answer for many. In addition to being extremely costly, enterprises need solutions that are scalable and can easily, and economically, grow as the quantity of data grows.

Enter the cloud.

Historically vendors have focussed on the service enabling side of cloud. However, according to analysts at the 451 Group, cloud-based storage will soon play the starring role in cloud development – and I for one agree.

The consumerization of IT, for example, has played a huge role in managing and storing enterprise data. With the exponential rise of unstructured content and the growing need for access to data from any location, there is now a huge demand for device and location independence. Smartphones and tablets are becoming increasingly ubiquitous and are enabling a more mobile workforce. For companies to keep up with this trend they need to adopt solutions that support the Bring Your Own Device (BYOD) policies of today.

As demand grows it becomes more and more evident there has been a significant rise in storage technologies that are location independent. Indeed, many technology providers have brought more mature, scalable and reliable solutions to the market. So why is the cloud yet to become the obvious choice and replacement for traditional block-orientated local storage, or to enhance backup storage requirements?

For business owners and IT decision makers, increasing storage needs have long posed a headache. There have been too few options and not enough reasons to continue to make the case for more budget. Nowadays companies need not worry about the considerable expense of traditional storage. There are a number of opportunities and benefits to storage in the cloud that IT departments can use to build a strong case to present to decision makers. The cost savings alone can be a key influencer for adoption but there are a lot more benefits beyond cash savings:

- Secure data back-up and recovery;
- Remote and secure storage archiving;
- Mobile file sharing and multiple device access; and
- Scalable, on-demand growth.

But despite all of the benefits of cloud storage, I am also a realist when it comes to the requirements and challenges of the enterprise. Regardless of the hype or the real value, many enterprises are still hesitant to embrace cloud technologies for a variety of reasons ranging from existing investment and expertise, to concerns around security and compliance. Therefore, my recommendation is that enterprises view cloud storage as a piece of their overall enterprise storage strategy – essentially meaning adopting a hybrid storage solution. By "hybrid storage" I mean what many would call a disk to cloud storage solution or, for an ideal backup storage solution, disk to disk to cloud. This means enterprises continue to utilize existing onsite or hosted physical storage solution investments and then connect to a cloud storage solution for additional flexibility, scalability and backup and recovery options.

As demand grows it becomes more and more evident there has been a significant rise in storage technologies that are location independent.

I believe that cloud storage, just like the cloud, is here to stay. The flexibility and scalability it offers companies brings an abundance of advantages including cost savings and efficiency of scale. Of course, just like the cloud, it's not for everyone. However, with the multitude of offerings available in the market at the moment and the emergence of new technologies such as the hybrid cloud, mark my words – there will soon be a cloud (and cloud storage) for everyone.

David Grimes is the CTO of NaviSite.

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by Randy Bias, Cloudscaling

Enterprise Virtualization Clouds vs. Elastic Infrastructure Clouds

Enterprises pursuing cloud computing migration strategies have endured a seemingly endless stream of promises, predictions and obfuscation over the past five years. Finally, a measure of clarity has emerged, one that presents two distinct and differing paths for enterprises making cloud infrastructure choices.

One path is that of the enterprise virtualization cloud (EVC). The other is the elastic infrastructure cloud (EIC).

An enterprise virtualization cloud is a cloud built on infrastructure that supports legacy enterprise applications like those built on SAP and Oracle. An EVC can be thought of as virtualization 2.0. It offers increased automation and server consolidation, and it focuses on the requirements of existing applications rather than the requirements of new, greenfield applications. EVCs are typically built as "gold-plated" clouds: expensive and redundant hardware and expensive enterprise software. The canonical example is the VCE VBlock.

An elastic infrastructure cloud, by comparison, is one that is exemplified by web-scale Internet giants such as Amazon Web Services, Google Compute Engine and the captive infrastructures built and operated by companies like Facebook.

Both cloud infrastructure types are useful and can deliver value. However, these two types of cloud infrastructure are very different creatures. Enterprise buyers need to know how to recognize each type, and they need to understand which cloud infrastructure is best suited to solving their particular problems.

Enterprise Virtualization Clouds

The value of an EVC architecture lies in its native ability to support applications that enterprises have been using to run their businesses for two decades.

EVCs are comfortable for most enterprises to deploy. They're run on the same hardware that enterprises already have in their datacenters. The software licensing models are familiar. In other words, the transition to EVC is evolutionary, not revolutionary. EVCs are also expensive. In fact, they can be three to eight times more expensive than EICs.

Enterprises that are looking for server consolidation and a measure of automation but chiefly need to support legacy applications likely will prefer an EVC.

Elastic Infrastructure Clouds

EICs, by contrast, are intended to support new applications that do not require the proprietary hardware and software systems that one finds in EVCs. Examples include web applications that need to scale out quickly as user demand increases and applications that are sufficiently simple that they do not demand the complexity of EVC.

EICs are dramatically less expensive to build and operate than EVCs because they can be built with open source software and brand-name-free hardware. The systems are highly automated, so operational costs are minimized. The popularity of EICs is seen in the rapid rise of open source cloud operating system communities like OpenStack.

There's another, major difference: The scale-out capabilities of an EIC allow applications to manage their own resiliency and provision new resources when hardware fails. In an EVC, by contrast, resiliency is managed in the infrastructure itself. The difference is a critical one, because with EICs, you eliminate the expense and lock-in that come with high-end hardware.

EICs are new technology, compared to EVCs. Enterprises building an EIC are faced with many more choices – technologies, vendors, build vs. buy, support – than are those building EVCs. Also, the ability to shift the hosting of applications from your own EIC to a public cloud as needs dictate (hybrid cloud) requires careful planning.

Summary

Choosing the right cloud infrastructure for your enterprise begins with an understanding of the differences between the two options available. Enterprises that must support heavy legacy workloads likely need an EVC, while those that need to support new applications and those easily ported will probably find the agility benefits of EIC compelling. Most organizations will discover that they need both – an EVC for legacy applications, and an EIC to deploy new applications in support of new business opportunities.

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

A Comparison: EVC vs. EIC

	Vendors	Ideal for...	Keep in mind...
EVC	- VMware - Savvis - Terremark	- Legacy apps built on platforms like Oracle and SAP - Enterprises who want an evolutionary approach to cloud - Low risk and incremental savings	- Expensive - Aging technology - Can run legacy apps with little or no adaptation
EIC	- AWS - GCE - OpenStack - Eucalyptus - CloudStack	- Easily ported apps and new apps - Enterprises that want a revolutionary approach to cloud - Business agility; new apps for new opportunities; faster time to market	- Technology choices - Build vs. buy decision - Hybrid cloud decision - Can run legacy apps only with rearchitecting

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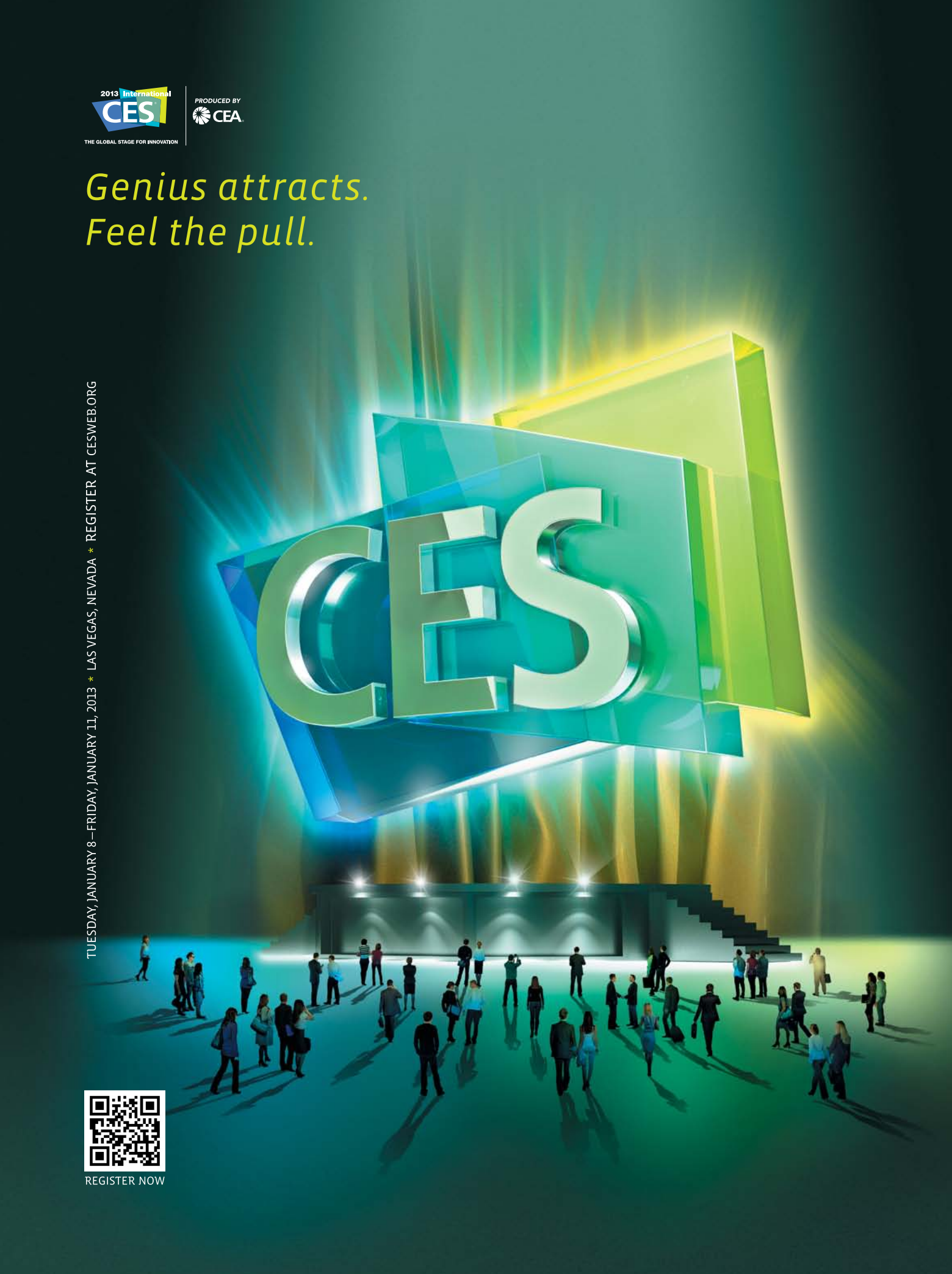

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by Josh Restivo, Hexagrid

Fear, Uncertainty and Dumb: The 'Horrors' of Cloud

An Open Letter to Steve Wozniak:

Dear Mr. Wozniak,

We've never met. Unfortunately, we probably never will. I, and many of my peers, grew up tinkering, hacking and learning on the hardware that you designed. It saddens me a bit that hardware has advanced to a point where a motivated curious child armed with a soldering iron and a grand vision is simply no match for modern industrial electronics manufacturing techniques. I value your past contributions to computing and fully respect the wisdom of my elders (for the record, I'm not exactly a spring chicken myself). However, I saw your recent comments about cloud computing and, not being one to put even the most respected figures above question, I feel compelled to take you to task on the matter.

From Santayana's The Life of Reason, "...and when experience is not retained, as among savages, infancy is perpetual." You and I have witnessed the infancy of computing with all of its awkwardness and angst like the suspicion of outsiders who were simply paranoid of that which they did not yet understand. We've seen it grow into young adulthood becoming cool and fashionable while ever more reliable and responsible.

If we go back and chart computing's progress in the microcosm, we see that, as with most human endeavors, it did not come to its current state through steady linear growth. Instead we see periods of resistance followed by waves of forward progress. The telcos used to hate when modem users would call to complain about the noisy lines that worked well-enough for voice calls but would wreak havoc on our 300bps bi-coastal connections (which may or may not have been routed through a Fortune 500's toll-free extender in order to assure "low-cost" access to the freshest text files in the land). Eventually, however, critical mass was achieved. The Internet, as we have come to know it, was born and the dial-up ISP business ultimately legitimized consumer telecommunications.

Later, email came into vogue for commercial purposes. Many companies initially fought the adoption of electronic communication for fear of associated liabilities, both real and imagined. Eventually, we saw once again, a critical mass that brute-forced even the stodgiest captains of industry into the development of a functional electronic presence.

These waves of adoption are truly forces of nature. With society as busy and as complex as ever, any significant convenience will be sought out and put to the test. By the time a technical computing concept has been blessed with a marketing moniker and has successfully infiltrated the cultural lexicon (think "cloud"), the wave has crested. You cannot hope to stop it but only to guide it as it comes crashing down.

So you think that things are going to be "horrendous" over the next five years? Based on what metrics? Aren't things pretty bad right now?

So you think that things are going to be "horrendous" over the next five years? Based on what metrics? Aren't things pretty bad right now? I don't know about you but my family and non-technical friends all still use PCs that are prone to and regularly infected with data-stealing viruses. Backups? Yeah, right. The average person needs to store files, personal data, financial info, etc. but is woefully unprepared to defend it. Many still don't know or believe that their data needs to be defended.

As we move important consumer data into the cloud, we put it in the hands of organizations who have a vested interest in securing their customers' information. If they're not any good, reputation and customer service will see their businesses to a timely demise. Sure there will be some bad operators along the way but that's true in any industry. Admittedly, there's more at stake with millions of user accounts on the line. That very fact, though, places more pressure on a brand to ensure its operations are thoroughly monitored and secured. When, inevitably, defenses fail or the human factor rears its head this same fact will also help to ensure consistent and fair treatment of those affected by the vendor's failure. Again, there will be failures but the potential of cloud computing to streamline our already complicated lives is well worth the risk for the average person.

Some of the metrics by which we will begin to judge data security and longevity will grow organically. Some will be engineered. The latter is where I beseech you to reconsider your comments and assume a positive role. Cloud computing is here to stay. You cannot fend off the inevitable. I would hope, though, that someone having your intellectual investment in the computing field would seek to shape this next wave of advancement. Instead, your recent remarks incite fear and uncertainty in a way that serves no constructive purpose. Ignoring the lessons of the past through denial of present realities is, as a weathered engineer might say, "not even broken." It's just dumb.

Josh Restivo is senior cloud integration specialist at Hexagrid.

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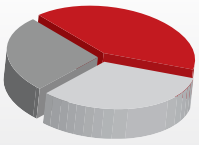

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by Dan Lamorena, Symantec

If You've Got It, Use It: Implement a Private Cloud with Minimal Changes

Imagine that you want to remodel your home, adding onto your family room to accommodate larger gatherings. Would it be more cost-effective to tear down your entire house, or just make changes to the one room? Obviously it's best to just change what you need to, but some organizations today think that to take advantage of new technology trends, they essentially have to tear down the house. One area in which this is evident is implementing a private cloud.

Cloud computing is one of the major IT trends of today, providing scalable, flexible IT resources that can reduce costs and improve efficiency within the organization. But because many businesses are still wary of the security of third-party providers, they are choosing to adopt a private cloud to support business-critical applications and store sensitive data. Other organizations are still hesitant to deploy a private cloud because they feel it represents a major infrastructure investment. But not everything needs to be replaced. Storage in particular is a large part of IT budgets, but leveraging existing storage more effectively in a private cloud can significantly reduce costs. It represents an important opportunity for improvement, however, as the majority of physical storage is underutilized.

The following tips can help you more effectively utilize your existing infrastructure to deploy a private cloud.

Utilize storage on demand

The operation efficiencies of cloud computing come from maintaining a central pool of resources that allocate needed assets to systems and users. But when they are no longer needed, the resources are returned to the central pool so they can be used elsewhere as needed. This is far better than simply buying more and more storage, as organizations have traditionally done. It also saves the time used for establishing storage needs up front for new services.

Take advantage of SLAs

Beyond on-demand storage is the need for correct provisioning. Because different applications are prioritized differently, some need more expensive solid-state storage, while slower options will suffice for others. Ensure that SLAs can provide for the provisioning you need for different business needs.

Implement tiered storage

In today's high-efficiency data center, it's important to avoid paying for more than you need. Some data should be available more quickly via top-tier storage, while other elements of the network are a lower priority. Storing less critical information in a lower tier can save a significant amount of money. A critical part of this process is classifying your organization's information, to separate it into the appropriate tiers.

Pay attention to consumption

Because cloud computing involves centralized resources, visibility into how they are being used is important to make the most of it. As you consider cloud solutions, make sure they will integrate well with your current infrastructure and provide visibility into your storage consumption, allowing you to reclaim unused space. Look at your consumption over time to establish a baseline for your needs.

Enable chargeback

Cloud computing requires the ability to track the usage of resources for chargeback to different entities within the company, requiring a knowledge of ownership and the ability to manage consumption. Given the ever-increasing amount of data we are using today, this is becoming more of a challenge. Take advantage of the latest management tools that can provide chargeback capabilities to streamline private cloud performance.

Control storage sprawl

The sheer amount of information produced today can be overwhelming, making efficiency a top priority. One element of controlling this information sprawl is to reduce usage costs through methods such as compression, auto tiering and archiving. In addition, maintain needed access to important information through backup and deduplication technologies in case of data loss.

As organizations consider moving to a private cloud, the transition can be made more smoothly and more cost-effectively by utilizing current storage capabilities as much as possible. Current resources can be combined into a pool of assets which, combined with storage management tools, will prevent the need for a "rip and replace" mentality and give your business the flexibility of the cloud in a secure environment without having to tear down the house.

Dan Lamorena is director of the storage and availability management group at Symantec.

by Andrew Hay, CloudPassage

Prevailing Against the Challenges of PCI Compliance in the Cloud

Implementing the technical and administrative controls that will pass a PCI audit is challenging enough in a traditional data center where everything is under your complete control. Cloud-based application and server hosting, however, adds additional complexity to these challenges. Cloud teams often hit a wall when it's time to select and deploy PCI security controls for cloud server environments. Quite simply, the approaches we've come to rely on just don't work in highly dynamic, less-controlled cloud environments. Things were much easier when all computing resources were behind the firewall with layers of network-deployed security controls between critical internal resources and the bad guys on the outside.

Organizations required to follow international, state or industry-specific regulatory compliance mandates often find themselves scratching their heads when it comes to moving "in-scope" servers and applications to cloud environments. As such, compliance is frequently perceived as one of the primary roadblocks to cloud adoption by most organizations. Several questions plague the minds of security architects and compliance offers looking to move servers and applications to cloud environments.

Addressing the challenges of PCI DSS in cloud environments isn't an insurmountable challenge. Luckily, there are ways to address some of these key challenges when operating a PCI-DSS in-scope server in a cloud environment. The first step towards embracing cloud computing, however, is admitting (or in some cases learning) that your existing tools might be not capable of getting the job done.

Traditional security strategies were created at a time when cloud infrastructures did not exist and the use of public, multi-tenant infrastructure was data communications via the Internet. Multi-tenant (and even some single-tenant) cloud hosting environments introduce many nuances, such as dynamic IP addressing of servers, cloud bursting, rapid deployment and equally rapid server decommissioning, that the vast majority of security tools cannot handle.

The technical nature of cloud-hosting environments makes them more difficult to secure. A technique sometimes called "cloud-bursting" can be used to increase available compute power extremely rapidly by cloning virtual servers, typically within seconds to minutes. That's certainly not enough time for manual security configuration or review.

While highly beneficial, high-speed scalability also means high-speed growth of vulnerabilities and attackable surface area. Using poorly secured images for cloud-bursting or failing to automate security in the stack means a growing threat of server compromise and nasty compliance problems during audits.

Traditional firewall technologies present another challenge in cloud environments. Network address assignment is far more dynamic in clouds, especially in public clouds. There is rarely a guarantee that your server will spin up with the same IP address every time. Current host-based firewalls can usually handle changes of this nature but what about firewall policies defined with specific source and destination IP addresses? How will you accurately keep track of cloud server assets or administer network access controls when IP addresses can change to an arbitrary address within a massive IP address space?

The auditing and assessment of deployed servers is an addressable challenge presented by cloud architectures. Deploying tools purpose-built for dynamic public, private and hybrid cloud environments will also ensure that your security scales alongside your cloud server deployments. Also, if you think of cloud servers as semi-static entities deployed on a dynamic architecture, you will be better prepared to help educate internal stakeholders, partners and assessors on the aforementioned cloud nuances – and how your organization has implemented safeguards to ensure adherence to PCI-DSS.

Customers need to know that cloud architectures are different than on-premise physical and virtualized servers. Depending on which cloud architectures are employed, be they SaaS, PaaS, IaaS or some combination of the three, customers must be education on the required changes to existing policies and procedures – or in some cases, educated on how to create new policies and procedures to specifically address cloud architecture adoption.

A number of free resources exist to facilitate cloud security education.

Cloud Security Alliance (https://cloudsecurityalliance.org/) – Promotes the use of best practices for providing security assurance within cloud environments.

The SANS Institute (http://www.sans.org/cloud) – Topical and very technical cloud security blog.

The National Institute of Science and Technology (NIST - http://csrc.nist.gov/publications/PubsSPs.html) – Fairly detailed guidance on cloud computing security.

The European Network and Information Security Agency (ENISA - http://www.enisa.europa.eu/activities/application-security/cloud-computing) – Cloud security risk assessment guidance.

CloudPassage PCI Resource Kit (http://pages.cloudpassage.com/pci-kit.html) – Free white papers, solutions briefs, use cases and blog posts that provide information and guidance on aligning server operations with PCI compliance mandates.

Using the aforementioned resources should help expedite cloud comfort-levels and address some of the questions customers may have with regards to their inevitable adoption of cloud computing architectures.

Andrew Hay is the chief evangelist for CloudPassage, a cloud server security provider.

by Mike Small, ISACA

The 7 Deadly Sins of Cloud Computing

Cloud computing provides an increasingly popular way of procuring IT services that offers many benefits including increased flexibility as well as reduced cost. It extends the spectrum of information technology (IT) service delivery models beyond managed and hosted services to a form that is packaged and commoditized. However, many organizations are "sleepwalking" into the cloud. Moving to the cloud may outsource the provision of the IT service, but it does not outsource the organization's responsibilities. There are issues that may be forgotten or ignored when adopting cloud computing strategies.

In a recent survey by global nonprofit IT association ISACA, 30 percent of the 3,700 respondents said cloud computing is one of the top issues expected to impact their enterprise's security in the next 12 months.

Most people are aware of the concept of the seven deadly vices that are said to explain human weaknesses, which are: wrath, greed, sloth, pride, lust, envy and gluttony, and are referred to as the "seven deadly sins." Of these vices one above all can lead to problems with cloud computing – sloth. Clearly, a good understanding of cloud is critical, as is effective governance over the cloud.

Sloth affects cloud computing activities because it can lead to inattention to details such as:

1. Not knowing you are using the cloud: This sounds irrational, but it happens more frequently than would be expected. It is easy to buy a cloud service using a credit card – and your organization may be using the cloud without the appropriate people knowing about it. When you buy the cloud service that way, it is likely that you have agreed to the terms and conditions set by the provider and these may not be appropriate for your needs. You should ensure that there is a proper process for obtaining a cloud service and that it is followed.

2. Not assuring legal and regulatory compliance: Many organizations have invested heavily to ensure that their internal IT systems comply with the legal and regulatory requirements for their type of business. You need to check that if you move these systems into the cloud that you will not lose this compliance.

3. Not knowing which data are in the cloud: One of the key legal requirements for many organizations is compliance with data privacy laws. If you don't know what data you are moving to the cloud you could be in trouble. This problem has become more acute because of the explosion in the amount of unstructured data such as spreadsheets, presentations and documents. It is essential that you identify and classify data you are moving to the cloud to manage risks and ensure compliance.

4. Not managing identity and access to the cloud: Controlling who can access what is even more important when data and applications are accessed via the Internet. Managing identity and access remains the responsibility of the customer when the data and application are moved to the cloud. The best way to achieve this is through the use of identity federation based on standards such as Security Assertion Markup Language (SAML) and Active Directory Federation Services (ADFS).

5. Not managing business continuity and the cloud: Organizations adopting the cloud need to determine the business needs for continuity of any services and/or data being moved to the cloud. To support this they should have policies, processes and procedures in place to ensure that theses business requirements are met. These involve not only the cloud service provider, but also the customer as well as intermediate infrastructure such as telecommunications and power suppliers.

6. Becoming locked-in to one provider: A number of factors can make changing cloud providers difficult. For example, there may be contractual costs incurred on termination of the service contract. The ownership of the data held in the cloud may not be clear and return of the data on termination of contract may be costly or slow. When data are returned they may not be in a form that can easily be used or migrated. Cloud services may be based on a proprietary architecture and interfaces making it very difficult to migrate to another provider.

7. Not managing your cloud provider: You need to manage your cloud provider just like any other outsourced IT service provider. This means defining and agreeing to metrics via service level agreements and then making sure that these are achieved. A customer may wish to perform an audit of the provider but it may not be practical for the provider to allow every customer to perform their own audit. Certification of providers by a trusted third party is a way to satisfy this need. However, it is important to understand what these service organization controls (SOC) reports cover.

> Moving to the cloud may outsource the provision of the IT service, but it does not outsource the organization's responsibilities.

Mike Small is a member of the London Chapter of ISACA, a fellow of the BCS, and an analyst at KuppingerCole.

by Jay Parekh, Oracle

Is Your Enterprise Cloud Driving Business Agility?

7 Steps to Help IT Make Strategic Decisions for Enterprise Cloud Investments

In this article, I will provide seven steps to help IT and business leaders make strategic decisions for their enterprise cloud investments and drive business agility.

Step 1: Understand Business Agility

Businesses of all sizes perceive cloud as a path to transformation, expecting several major benefits; the most important of which is business agility. Business agility enables businesses to respond faster to the changing needs of business users, end customers and partners, create stronger business differentiations, and drive competitive advantages.

Step 2: Define Your Business Agility Architecture

A typical enterprise has a five-layer Business Value Stack (Fig. 1) that can be used as a discussion framework and template for a business agility architecture. Both IT and business executives must have a common understanding of these layers so that a joint discussion can be carried out to define business agility goals, roles, strategies, priorities and implementation plans. Next, modify and extend this template as needed to completely and accurately reflect the business agility architecture of your enterprise.

Business Agility Hierarchy

Business agility requires an end-to-end agility across the entire business value stack including the business-centric layers (top 2 layers) and the IT-centric layers (bottom 3 layers).

Business-centric Change Management

Most business changes can be grouped into five key change categories: business transactions, activities, services and processes, and user experiences. To meet business agility goals, changes within these categories must be managed rapidly and completely.

IT Plays a Key Role in Delivering Business Agility

First, IT needs to provide appropriate tools, support and services to the business organizations so that they can easily and rapidly manage all business-centric changes (across top 2 layers). Next, IT needs to design, operate and manage all IT-centric layers (bottom 3 layers) of the business value stack so that IT-centric changes can adapt rapidly to the business-centric changes within the top two layers.

Step 3: Define Business Agility Goals

Business agility goals should be defined by IT and business executives. These goals should identify which business processes, business transactions, business services, business activities and user experiences need to be agile, and to what level. Targets for business agility levels (similar to SLAs) should be established.

Step 4: Check Your IT Readiness

Before embarking on a business agility project, check the readiness of your IT organization. IT must be mature enough to understand and effectively address business agility requirements. Your IT organization needs to be mature on the "business-centric IT" dimension. If not, creating and executing a strategy to achieve maturity is necessary.

Step 5: Check Your Cloud Readiness

Next, your cloud offering must be mature enough to effectively address business agility requirements. To meet the requirements, your cloud needs to be a "business-centric cloud."

Check Cloud Operations Readiness

Business agility is directly dependent on how well you can operate and manage your cloud. Your cloud solution should meet the following requirements:

- End-to-end discovery, monitoring and management of all layers and elements of the business value stack, ideally from a single console.
- Deep configuration management; and dependency and relationship mappings across all layers of the business value stack (so that a change at any level can be rapidly propagated up or down the stack to all other layers as needed.
- Complete lifecycle management of the entire cloud stack and all cloud services.
- Integrated and business-driven management of all enterprise clouds and delivery models.

Step 6: Identify and Fill Gaps in Your Current Cloud Offerings

Using the business value stack, identify and fill gaps in your cloud and cloud management solutions. Add automation capabilities in your cloud management software to automate change management tasks and processes to the fullest extent possible, creating a business-driven cloud.

Step 7: Measure, Monitor and Improve Business Agility Levels

Measure, monitor and report on the business agility levels that were defined in step 3. Improve these levels as described in step 6.

Conclusion

- Business agility can be achieved by following a systematic process. Business agility can't be achieved unless both IT and business organizations work together.
- IT agility does not equal business agility. It is necessary but not sufficient.
- An infrastructure-centric cloud alone won't deliver a significant amount of business agility.
- Business-centric clouds are key enablers of business agility.
- Business-centric cloud management tools play a very important role in delivering business agility.

Jay Parekh is vice president of Oracle where he is responsible for the overall strategy and architecture of Oracle's enterprise management solutions.

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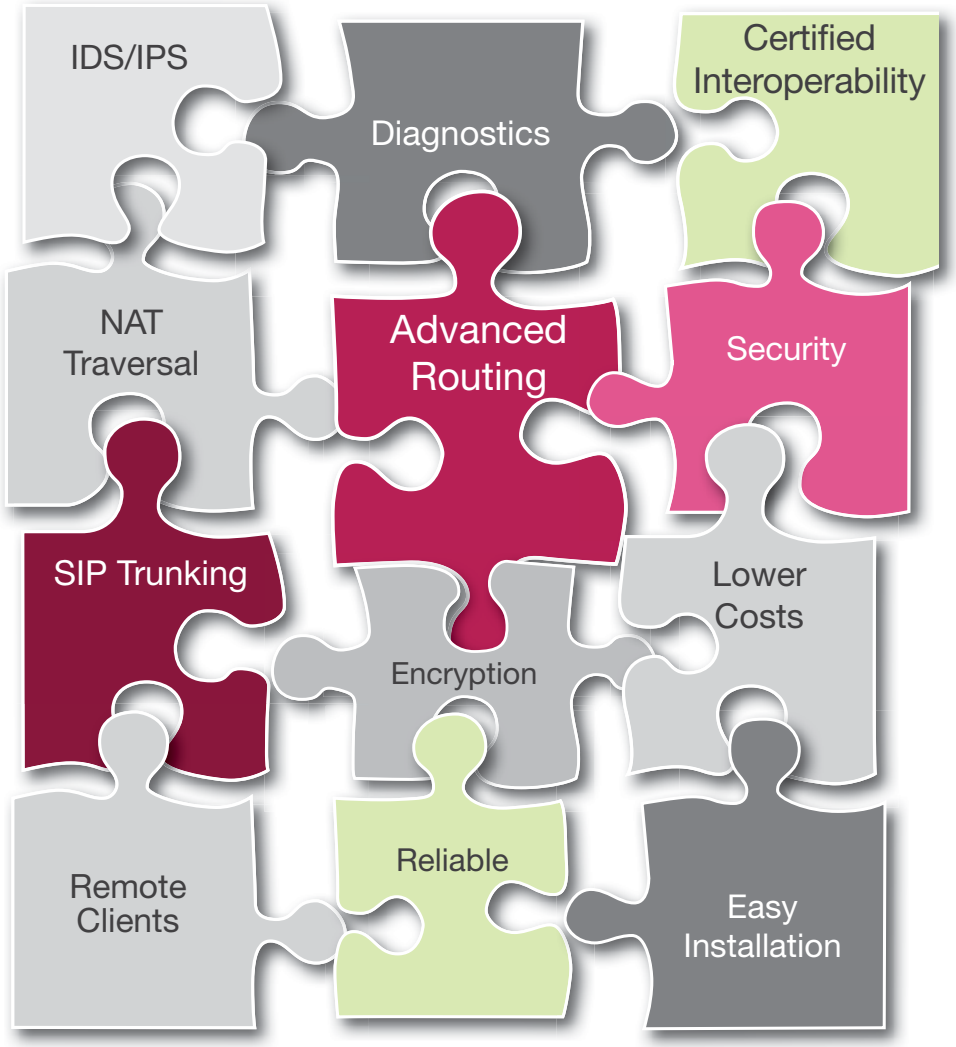

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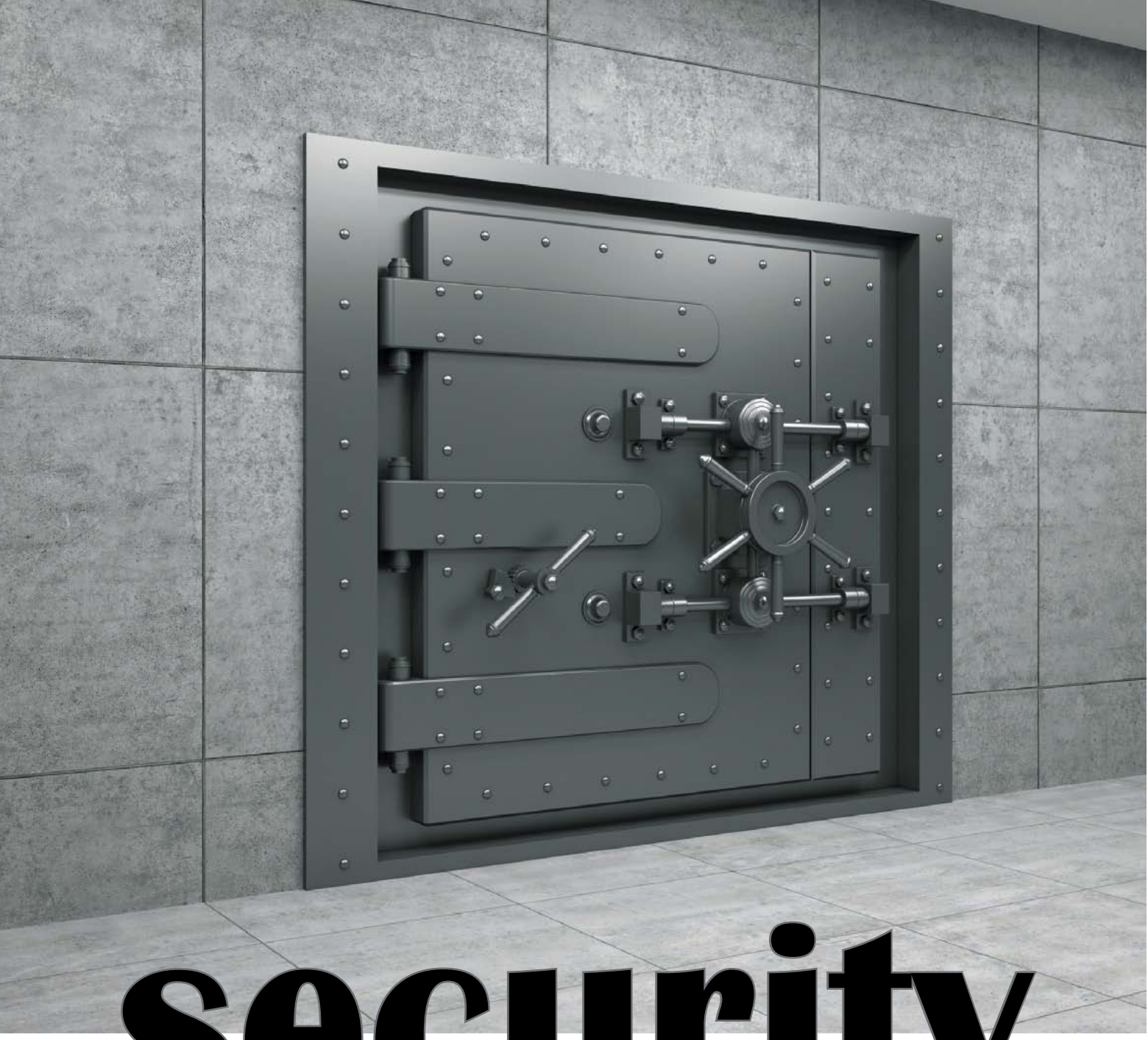

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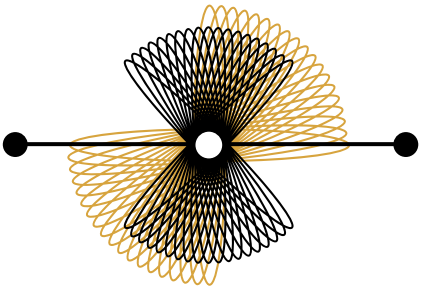

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by Chris Holland, SafeNet

The 4 Pitfalls of SaaS Monetization

A transformation is taking place in the software industry. Experts agree that the number of traditional on-premise-only software vendors will continue to decrease at a rapid rate and most new software vendors coming to market will focus on building their solutions as SaaS (Software-as-a-Service) offerings. Despite this fundamental shift in the delivery of software, developers still need to pay close attention to maximizing the value of their software from both a revenue and cost perspective.

Independent software vendors (ISVs) that don't or can't monetize their applications effectively leave excessive amounts of revenue on the table, which limits their profitability potential and ultimately leaves them exposed to more nimble competitors. Savvy developers and product management teams know that addressing all aspects of monetization is the key to maximizing their investment in development, and for many of them, it's the only way to stay in business.

No matter what type of software application has been developed or how that application is being delivered to end-users, a successful comprehensive software monetization strategy hinges on four key factors: how effectively software publishers can package, control, manage, and monitor their offerings. Understanding the basics – including managing, measuring and controlling users' rights – is only the first step.

Below is a series of SaaS monetization pitfalls that readers need to be aware of in order to save themselves from incurring pain in the future:

1. Failing to Automate – Automation improves internal operations to achieve the core objectives of cost reduction and positive customer experience. Manual user provisioning, management, and usage tracking are not only painful processes for administrators, but they create a negative customer experience more often than not. In an instant-gratification world, customers will turn to competitive solutions if they don't get the level of service they expect. An automated system will not only grant access quickly, delivering a positive, consistent and predictable user experience, it can easily transition information to back-end billing systems and enforce contracts. Automated provisioning cuts costs, eliminates headaches, provides fast access for new users, and denies access when contracts expire – all helping make the most of the software.

2. Failing to Control Usage – It is the developer's responsibility to make sure the users are sticking to what the contract says. Making sure that people aren't using the service in a way they're not authorized to and making sure that only authorized users have access to the service are software monetization fundamentals. Not only will basic enforcement help monetize the solution, it will create more positive user experiences by eliminating the dreaded audit "true-up," which enforces compliance after the fact, often surprising customers with balloon bills.

3. Failing to Measure Usage – Understanding who customers are and how they use SaaS offerings is critical to monetizing the solution. By monitoring usage and adjusting service offerings, SaaS providers can drive incremental revenue, initially by customizing offerings and service plans to better meet customers' immediate needs. Usage analysis can also help SaaS providers avoid customer churn by providing early warning signs that usage has dropped off, prompting salespeople to engage with customers to inquire about the cause of the change and attempt to address it before the customer turns to an alternative solution.

4. Failing to Adapt the Offering – The market is always changing, but not all SaaS providers evolve with the change that's taking place around them. The key to surviving the turbulent market is adapting offerings to address the emerging demands of the customer. Gleaning data from usage analysis and using it to align product roadmaps with customer needs cannot only create a better product; it can save precious engineering cycles by avoiding the wrong development path. This time-to-adaptation can deliver a huge competitive edge. Beyond addressing the needs of existing customers, SaaS developers need to evaluate the appeal of their solutions to overlooked market segments in order to drive incremental revenue. Solution flexibility and adaptability "on the fly" is an important element of software monetization in a real-time world.

The market is always changing, but not all SaaS providers evolve with the change that's taking place around them.

Maximizing revenue and profitability from SaaS solutions is a key to survival in turbulent competitive markets. When every tactic counts, making the most from your existing investments by understanding the basics of available monetization tools and processes is the first step. Avoiding the pitfalls is step two.

Chris Holland is vice president of software rights management at SafeNet.

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by Erin E. Harrison

2013: The Next Frontier of Cloud

By many accounts, 2012 was the year cloud moved past the hype phase into the adoption stage. In fact, cloud computing is expected to grow 19 percent in 2012, becoming a $109 billion industry compared to a $91 billion market last year, according to Gartner. Certainly it can't be disputed that more cloud implementations are occurring across industries, all over the world, however, many IT decision makers still need convincing that shifting away from on-premise computing is the way to go.

One of the biggest drivers of cloud is the growth of data data, which is doubling at a rate of every two years, according to IDC. As movement to cloud environments triggers increasing demand for a place for all of that data to reside, the biggest segment of cloud adoption is cloud storage. The total number of subscriptions to cloud-based storage services is set to reach more than half a billion by the end of the year, according to research firm IHS. In the next 10-12 months, cloud storage use will expand by 25 percent, and by 2017, the firm forecasts a whopping 1.3 billion users will subscribe to some sort of cloud storage platform.

Predictions aside, IT needs to prepare for how cloud is changing the IT infrastructure as 2013 will be the year when companies buckle down and tackle the operational issues of cloud computing. In fact, many industry experts maintain cloud remains in the experiential stages of growth, and whether cloud has moved past the hype phase is still up for debate.

"There's no evidence to suggest that cloud is moving past the hype phase. That said, there are a range of operational issues that require attention," Cloudscaling CTO Randy Bias recently told *Cloud Computing*. "One basket of issues revolves the HR and organizational changes that elastic cloud demands. IT departments have to learn how to support business units that, more and more, will be controlling the app dev budgets and calling the shots."

In its annual Hype Cycle report, which was released in late summer, Gartner says "confusion remains the norm" about the cloud computing industry.

"Many misconceptions exist around potential benefits, pitfalls and, of course, cost savings. Cloud is often part of cost-cutting discussions, even though its ability to cut costs is not a given," according to the report. "There are also many reasons to talk about the capabilities enabled by cloud computing: agility, speed and innovation. These are the potential benefits that can be overlooked if hype fatigue sets in."

However, software giant Oracle contends cloud is quickly moving beyond the early adopter stage and towards the mainstream. The driving force is not the cost savings professed by cloud evangelists, but rather the business agility benefits cloud can bring to organizations, according to Rex Wang, vice president of product marketing at Oracle.

"About a third of our customers are already using cloud computing in some way, and more are developing their own cloud adoption plans. While cost savings was the most common driver for cloud computing, today faster innovation and greater business agility is getting the attention of business and IT leaders," he says. "Many of our most forward-thinking customers are leveraging cloud-based solutions to deliver better customer service, build products faster, operate more efficiently, and enable greater access and more effective collaboration."

If 2012 was the year of adoption for cloud, 2013 is poised to be the year of second-generation cloud, or "Cloud 2.0," according to Bob Rizika, CEO of ProfitBricks U.S., which launched its infrastructure-as-a-service (IaaS) in July.

The Cambridge, Mass.-based company, founded in Berlin, Germany in 2010, claims it can increase the size of servers on demand – scaling up vertically – rather than invoking the usual public infrastructure technique of scaling out horizontally, adding more virtual server nodes.

"Next year, you are going to hear a lot about the software defined network – prior to 2013, you had to build your infrastructure from what was available – 2013 is going to be the year you are going to be able to build it," Rizika told *Cloud Computing*.

Public, Private & Hybrid

In terms of cloud models, it's becoming clear that companies won't adopt a single cloud deployment model, but instead they will use a combination of various cloud services. The ability to manage this hybrid environment will be the difference between success and failure. With hybrid, enterprises get the best of the physical world – performance, stability, reliability – coupled

with the best of the cloud – rapid deployment, scalable, consumption-based billing.

However, currently there is greater adoption of private clouds over public clouds, according to Wang. Both are growing, he says, but public clouds are growing faster than private.

"We see adoption of SaaS applications continuing to grow rapidly, and we have also seen a sharp increase in PaaS for developers building new apps or extensions to existing apps. IaaS continues to be popular, and there are new entrants in this space, so they need to differentiate themselves," says Wang.

Many organizations have a multi-phase plan to adopt cloud, so it's important for cloud solutions to co-exist and integrate with legacy solutions, he adds.

"Companies are also finding that they will adopt solutions from multiple clouds, because up to this point in time there has been no single cloud that delivers all the necessary functionality, so organizations will need to integrate across multiple clouds and their on-premise systems as well," Wang explains.

Hybrid is positioned to take major steps forward in the year ahead, according to Bias.

"Progress can be seen in the emergence of open source alternatives that give enterprises and service providers legitimate alternatives to the walled gardens of virtualization cloud vendors," he says. "You see this in the growth of OpenStack, the growth of Eucalyptus, and the attempt to jump on the open bandwagon by CloudStack."

Meanwhile, BlueStripe Software is seeing IT organizations getting a handle on security and deployment concerns for their cloud projects, however, those problems are well down the path of being solved. IT is struggling with deployments of large complex systems when it comes to managing the end-to-end infrastructure of supporting those applications, according to BlueStripe Software COO and Co-Founder Vic Nyman. BlueStripe provides an application performance management platform that gives IT visibility into what IT components make up important business applications, where the application transactions go in those systems, exactly where transactions are spending time, and why.

"As the next waves of private and hybrid cloud projects arrive for more and more important business applications, enterprise IT teams are demanding management controls for availability and reliability that match the needs of their businesses: not only 24/7 availability but also 24/7 good customer experience," Nyman explains. "More importantly, they are demanding the ability to manage the availability and performance of user interactions against the infrastructure supporting them."

Roadblocks Ahead: Security & Education

Security and quality of service continue to be the most commonly cited concerns for public clouds, and there have been several breaches this year, according to Wang.

"It goes without saying that whether on premise or in a public cloud, data and applications must be safe, secure and highly available. First generation clouds often outsource the management of their cloud applications to a third party and rely on multiple partners to complete their solution," Wang explains. "Understanding who has access to your data and having the ability to quickly isolate a problem if something goes wrong can therefore be a big challenge. Customers gain greater confidence when solutions are delivered by a single vendor with all the technology pieces, know-how and accountability to deliver true enterprise grade cloud solutions."

Security questions will be answered incrementally over time as successful deployments continue to take hold, according to Bias.

"There will be setbacks, and each will have bad PR associated with it. It's just going to take some time," says Bias. "The biggest macro trend we see in 2013 is the growth of elastic infrastructure cloud as a preferred cloud model to address future needs in the enterprise."

The success of cloud technologies in general has led to real projects for enterprise IT organizations mostly in the form of private cloud and hybrid cloud projects where they are placing important revenue and transaction-based applications on these new platforms, Nyman adds.

> **"In order for private cloud and hybrid cloud technologies to succeed, they will have to have the reliability and availability management at least as good as the platforms they are trying to replace."**
>
> – BlueStripe Software COO and Co-Founder Vic Nyman

The challenge is that these business applications are large, complex and interconnected. The problem set expands from basic cloud deployment and utilization to how tens, hundreds, and thousands of these systems are interacting in the cloud, he says.

"Imagine an end user problem who is experiencing slow performance. Now, imagine the IT support team who has to track down where the problem is occurring across thousands of components in new cloud technology that is designed to separate the application from the systems: it's a support team's nightmare," Nyman explains. "In order for private cloud and hybrid cloud technologies to succeed, they will have to have the reliability and availability management at least as good as the platforms they are trying to replace."

Another challenge that needs to be addressed is education, according to Bias.

"CIOs are beginning to see the need for an on-premise elastic infrastructure in addition to their virtualized infrastructure, but they don't know how to get there," Bias says. "Ideally, they need an elastic infrastructure that is compatible with a public elastic cloud, not only in APIs but in architecture. This is only now becoming possible, and the market need to be educated about how to get there."

The true measurements of moving past the hype phase will be when IT teams begin to deploy business critical applications to the new cloud platforms and not just secondary and supporting applications, according to Nyman.

"The most important issue is to realize that just because cloud abstracted the application away from the underlying platform that it didn't absolve the support teams of dealing with underlying platform issues causing end user application problems. If anything, cloud technologies raise the bar on that challenge," he says. "In 2013, IT organizations will have to adopt transaction and service-oriented approaches to management and monitoring that can follow the end user issues across any platform being used: physical servers, hybrid cloud or public cloud."

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Feature STORY

by Erin E. Harrison

The Future of **Mobile Cloud**

As more enterprises adopt cloud services and embrace enterprise mobility initiatives, mobile and cloud are converging. With more mobile workers and consumers supporting tablets, mobile content, mobile video and personal cloud services, the IT world is in another state of transition as "mobile" serves as both the protagonist and subject of this unpredictability.

Yet in order to compete, organizations need to intelligently leverage cloud-enabled mobile devices – for both external customers and internal stakeholders, cloud-enabled mobile services will be a key differentiator between competitors in 2013 and beyond.

Looking at the numbers, the market for mobile/connected devices is projected to reach $350 billion market by the end of 2012 – and is forecast to double to $700 million by 2016, according to Yankee Group research.

May the (Mobile) Force be With You

There are three driving forces of mobile cloud, according to AC Chakrabarti, CEO and co-founder of AnyPresence. The first force – and perhaps most obvious given the overwhelming use of smart devices – is data, Chakrabarti recently told *Cloud Computing*.

"Many mobile use-case scenarios call for data to be pulled across various sources thereby enabling the assembly of 'composite mobile applications. As most forms of software move to the cloud, it only makes sense that mobile clouds take shape to build economies of scale, especially in the aggregation and management of app data," he says. "In addition, instant cloud storage of app data and files are a huge advantage when leveraging mobile clouds."

AnyPresence offers a cloud-based platform designed to reduce the time it takes to build cross-device HTML5 and native mobile apps. The increasing adoption of HTML5 standards is making it easier to design apps that rely on mobile cloud.

With many businesses rolling out multiple mobile applications that need shared mobile services, they ultimately enable different apps, which make shared mobile services the second driving force of mobile cloud.

Examples of these, Chakrabarti points out, include: shared mobile services, user role/access controls, push notifications, SMS, email and social extensions.

"The pragmatic way of managing mobile services is to invest in the mobile cloud so that it adds value across many applications," he maintains.

Speed is the third major driver of mobile cloud, Chakrabarti says, as most mobile applications today are designed and built in an "on-premise" mode.

"The implicit value of mobile cloud infrastructure will push for new app development paradigms that are free from developer workstations to apps that are designed and built in the cloud with shared resources," adds Chakrabarti. "The next iteration of mobile app development will be orchestrated in the cloud with no localized software other than a connected web browser, and this new way of building mobile apps will result in greater adoption/growth of mobile clouds."

BYOD and Consumerization

As businesses look to gain better insight and control over the explosive growth of smart devices, this trend is also driving the growth of mobile cloud computing through consumerization and the rapid adoption of mobile devices with end users who buy these devices from a store and bring them into the work environment, according to David McNeely, senior director of product management at Centrify.

The Sunnyvale, Calif.-based company provides software and cloud-based services designed to centrally control, secure and audit access to cross-platform systems, mobile devices and applications by leveraging the infrastructure organizations already own: Microsoft Active Directory, which helps businesses to manage corporate identities, credentials, information protection, system and application settings.

The Bring Your Own Device (BYOD) phenomenon is also forcing IT to change corporate security policies, since the need to access the data from all the devices is making it necessary to use applications that tap the mobile cloud.

"This is the biggest challenge for people to address. Because you are dealing with both corporate and personal data," explains McNeely. "Management needs to be very granular. In the past they looked at the compute platform and was something the company controlled as the entire O/S. Now mobile devices and applications are in their own sandbox – the container that we secure is not the entire O/S but we need to make sure that the applications are not jailbroken or tampered with…that's what is changing from a security management point of view."

As McNeely points out, the challenge with supporting these devices lies in the fact that organizations need to manage them no matter where they are, or whom they belong – or what operating system they run on.

"The ideal system is hosted in the cloud because there is a more natural pathway to the device," McNeely told *Cloud Computing*. "When we are looking at mobile cloud – we are looking at where the mobile device is being managed via the cloud, which makes a lot of sense in that environment."

The enterprise trends of heterogeneous computing environments and hybridization are also adding to the challenges of the convergence of mobile and cloud, according to Frank Cabri, vice president of marketing at Centrify.

"There are two trends we saw happening several years ago – where companies were becoming heterogeneous using Unix, Linux, Apple/Mac and Windows. Offering control over all of this is something we are able to bring under the fold of Active Directory. The second trend is hybridization; much of this is getting deployed on cloud now – and with 4G and 3G networks, organization are having to manage an extended enterprise."

The Challenges of Mobile Cloud

In addition to the technical and security challenges of mobile cloud, businesses are also faced with political challenges.

"Mobile devices have traditionally been viewed on the telco side of an organization because that was their first touch point," explains McNeely. "More people are starting to realize devices are a decent computing platform so it now needs to be treated as a PC with brings the change from messaging/telco to more traditional desktop support staff. Our belief is that the mobile device is just another computing system so it should be managed just like you manage your corporate Windows."

One of the most difficult questions asked of IT security managers in cross-platform environments is: Can you prove which users have access to a specific business-critical system or application?

"These devices tend to get lost more frequently than laptops – where the user has to type in a user ID password to gain access to an application on a company network. But on a smartphone with just a password is where it gets kind of complicated. So it is easier if we can provide a user with a pin – and focus on shifting security authentication over to the business with a strong credential that enables IT to say you can only access if you have strong credential."

The process also allows businesses to very easily remove the credentials off the device, Cabri adds.

"A lot of IT folks have been through this consumerization trend where they are potentially exposing the network," he says. "I don't think they are resisting the move to mobile devices – but they are taking a carrot and stick approach…we are going to provide that for you but in exchange we are going to provide some security control that are going to go beyond the traditional access information.

Of course the stakes are much different, but consumer behavior is clearly different than IT's in that IT is very risk averse, he points out.

"They wait for a new O/S – and test it and test it, and six months later they might be using it once they can lock it down. Then you have consumers who are in line at the Mac store as soon as a new update becomes available. This is a big challenge for IT to keep up with. They need to make sure they have a vendor that can provide the security capability…protecting the credentials and managing the applications – a little big less important, but it's not eliminated.

AnyPresence's Chakrabarti believes the BYOD trend is here to stay because of the implicit benefits on both ends.

"For the employee: 'I get to keep my device that I love to use' and for the CIO: 'My costs are lower as I'm not paying for mobile hardware.' I think most businesses will shape their mobile landscape to invest in software that provides a clear sense of comfort and security so that BYOD adoption does not lead to a breach of sensitive information," Chakrabarti explains. "I'm particularly excited about new software that is creating a virtual working environment on personal devices and thereby instantiating a personal and work environment which helps the CIO feel good about locking down secure data while keeping the employee happy."

For mobile cloud, the central challenge is security, Chakrabarti adds, which is really about preventing mobile devices from stealing and or manipulating sensitive data.

"The opportunity is clear and it's all about gaining huge economies of scale from shared infrastructure that will fundamentally change the way business engage with employees (B2E) and customers (B2C) through mobile scenarios. A few years later, we will see very few apps that are not mobile enabled just as we see few applications that are not web enabled," he says.

The Future of Personal Cloud

While cloud is still in the early stages of growth, businesses today can't introduce one cloud (iCloud or Google) over another because they don't support non-Apple or non-Google devices, which is in turn driving the need for a personal cloud, according to Funambol Vice President of Worldwide Marketing Hal Steger.

Certain data in Google, Amazon, Facebook, etc, and other content and media people are using is getting much more fragmented, which has two affects on personal cloud.

"First, people are getting used to accessing and storing personal data in the cloud which has created this fragmentation, because data itself is getting more fragmented. Think about how it was 15 years ago when people started using email. They might have three or five email accounts. Eventually, people figured out they are better off minimizing that," explains Steger. "We are seeing the same phenomenon in the cloud as people gravitate toward using a personal cloud."

In fact, according to Yankee Group research, nearly one in five professionals with three or more devices will adopt a personal cloud service for online storage, backup and synching.

"Commercially generated and user generated content such as music, movies, TV shows and pictures, video…the way those are being treated are driving the use of the personal cloud," Steger adds. "Mobile networks are getting better. People are getting more comfortable using videos on their mobile devices just like they take pictures. The question now is 'where do you want to store all that content?' Since people want to access it from mobile devices, it makes more sense for them to access them from the cloud."

by Erin E. Harrison

OPNET
Application and Network Performance

Why Businesses Need to Put APM in the Cloud Ahead of Anything Else

As more companies look towards implementing a variety of cloud deployments to gain infrastructure efficiencies and operational cost savings, many times planning for application performance management (APM) gets lost in the process of defining the infrastructure requirements and implementation of the cloud components.

Cloud Computing recently had the opportunity to catch up with APM expert P.J. Malloy, senior vice president of R&D at OPNET Technologies, about the trend towards cloud computing and the role of APM in the cloud.

In today's IT environment, many organizations are looking to the cloud, however, some critical areas may be overlooked during the planning stages – including the role of APM.

"Many companies are not thinking about application performance until they are rolling out to the cloud," explains Malloy. "They don't necessarily have a plan, but you can't ignore the significance of application performance management."

Although cloud promises greater efficiency and productivity, it brings decreased visibility of end-user transactions within the applications. As Malloy points out, you can't manage what you can't see – which is why visibility is so crucial in a cloud environment.

Surprisingly, the acceleration of cloud adoption has not necessarily heightened awareness of APM, but Malloy says it needs to be brought into focus in the early stages – whether an IT department is adopting a private, public or hybrid cloud model.

"We are approaching an inflection point on cloud adoption where more pilot programs will be graduating to full-fledged deployment. With that will come growing pains, as you can see with public cloud providers having outages. But with the right tools and processes in place, I am sure this industry will mature through those growing pains very quickly," predicts Malloy. "The private cloud has been a very strong force all along; and prior to private cloud, virtualization was a massive transformation for IT. We are definitely seeing an acceleration of cloud. Twelve to 18 months ago, more startups or SMEs were adopting the cloud, and now we're seeing a much greater acceleration of cloud adoption within the Fortune 500 and Global 2000."

P.J. Malloy, senior vice president of R&D at OPNET Technologies

Is there an ideal or one-size-fits-all approach for planning an application performance management strategy for the cloud?

"APM is offering a new paradigm; rather than managing separate components, the focus is on end-user experience," Malloy explains. "Managing application performance from the end-user perspective removes a lot of the ambiguity and subjectivity that comes into the conversation."

Malloy also emphasizes the importance of taking a "transaction-centric" approach when planning an APM strategy.

"Instead of looking at CPU or RAM utilization, it's very important to actually monitor the performance of individual transactions. For example, how many times did users click the 'submit' button?" explains Malloy. "How long does that transaction take? It's important to have the proper instrumentation that gives visibility at the transaction level rather than more basic tier-by-tier basis and recognize that APM is focused on collecting data.

So how is the approach for APM different in the cloud? According to Malloy, cloud adds a layer of complexity not present with on-premise technologies.

"Cloud is another step in the complexity curve – it's more distributed, more monetized – therefore cloud is bringing more performance challenges including an inherent loss of control and visibility, which interferes with application performance," explains Malloy. "OPNET has tackled to restore visibility – there is no one-size-fits-all approach, but it needs to be a flexible approach that has options."

OPNET offers federated analytics which distributes analysis processing across the entire cloud environment and can process the data without having to move much around the cloud, according to Malloy. The other unique piece that OPNET brings to the table is dealing with the network service provider.

"It becomes very important to hold them accountable. That is where APM as a discipline can really shine in identifying cross-silo issues and resolving them," says Malloy.

As more applications are being hosted in the cloud, it makes sense to use the cloud to leverage the management of those applications. For example, OPNET provides a Software-as-a-Service (SaaS) offering, what Malloy calls a "cloud-friendly" way to monitor end-user experience for small to medium-sized businesses (SMBs) up to the largest global enterprises.

Regardless of how a company migrates to the cloud, or what size that organization is, IT departments must above all else practice due diligence.

"You need to do your due diligence…most organizations will have a hybrid approach. It's important to have a unified APM approach regardless of the different models," says Malloy.

"Especially with public cloud, you can have users from around the world. Whether it's the general public or employees accessing applications in the cloud, or Java-script based instrumentation – we can monitor application performance from anywhere based on almost any format of that application," says Malloy.

Certainly IT decision makers are tasked with many responsibilities when they consider moving into the cloud. However, the first step when considering a cloud strategy, contends Malloy, is long-term planning.

"As with any technology migration strategy, planning is critical, especially factoring for any downtime. OPNET has a long history in helping customers accomplish that. By offering APM as a discipline, we enable the restoration of visibility of application behavior and performance which allows companies to take on migration to a cloud infrastructure," says Malloy. "We help people understand exactly what their true end-user experience is in terms of providing a concrete picture and by assembling that with very detailed performance data, we are able to very quickly identify the root cause of a performance issue if one were to occur."

Cloud APM Best Practices

Accountability: The most important piece of any cloud strategy is to have a plan to be able to hold different constituents accountable if the system is not performing well or you are encountering other problems. You need to have a visibility strategy from an APM perspective so that if things do happen, you can see what's going on.

Network Performance: Organizations must consider the impact of the network. The network is becoming the back plane. As you move to the cloud, you need to be acutely aware of the network impact on application performance. Data servers can be very sensitive to network latency.

Transparency: It's important to have the right process and tools to be able to plan and triage between silos. APM can be an important way to transfer the knowledge between silos and avoid finger pointing.

Feature STORY

by Erin E. Harrison

Optimizing Cloud Infrastructures, Driving Business Innovation

Nnamdi Orakwue, Dell

With the ever-increasing number of cloud infrastructure providers, businesses are now able to choose from a variety of options to align their cloud strategy with their specific business needs. The cloud drives business innovation by being infinitely scalable, completely secure and able to turn on a dime to innovate without any interruption of service or extra cost to customers.

A recent market study of over 600 companies conducted by cloud management provider RightScale reveals how businesses are approaching cloud computing and what priorities they set for implementing their cloud strategies.

"Cloud infrastructure now dominates as the architecture for 'the new IT' – and companies big and small enjoy an unprecedented variety of options for deploying the best cloud solution to meet their business needs," says Michael Crandell, CEO of RightScale. "No one-size-fits-all approach will work for everyone, which is why it's important to choose a platform that will allow you freedom of choice now and into the future as you decide where and how to leverage infrastructure-as-a-service cloud providers."

With adoption of cloud computing rising, businesses are becoming more sophisticated in their strategies for leveraging cloud technologies, according to the study. More than 68 percent of survey respondents report that they are pursuing a multi-cloud strategy and 53 percent of respondents are pursuing a hybrid strategy that includes a combination of public and private clouds.

Regardless of which cloud model an organization implements, optimizing the cloud is critical in achieving innovation and cost-savings goals, according to Ravi Thakur, vice president of services and support at cloud-based software provider Coupa.

For example, Coupa's spend optimization platform helps companies gain visibility into spending and save money with a direct impact on the bottom line, he says. Coupa's Procure to Pay platform provides solutions from procurement to invoicing including RFQs, contracts, requisitions and POs to budgets, invoicing and inventory management. Coupa also offers expense management for expense reporting, budgets and auditing.

"Coupa was built from the ground up on the cloud, it has features in common with other well-known cloud players: 100 percent usability just like Facebook and Amazon, proven scalability and built-in redundancy similar to Netflix, and its subscription-based, no hardware, pay only for what you use is akin to Google Apps," Thakur says. "Finally, it's multi-tenant and single code base structure reminds users of Yelp."

Coupa customers are typically up and running within months, reducing "maverick spend" by at least 50 percent, and most save nine to 11 percent the first year, he adds.

"This speed to 100 percent adoption within customer companies is resulting in a 100 percent win rate over non-pure – and not entirely – cloud solutions like Ariba," Thakur explains.

Strategically, once organizations decide to shift to cloud, companies need to determine the business needs – not just the IT needs – of the organization and the best cloud infrastructure to support that, according to Nnamdi Orakwue, vice president for Infrastructure Cloud Services at Dell.

"They may select a secure on-premise cloud infrastructure; using a converged infrastructure of servers, storage, software, networking and management services or even private cloud technologies like our OpenStack solution," Orakwue explains. "Both allow for maximum control and security over data while bringing the agility benefits of cloud."

Alternatively, they might choose access to public cloud services, helping supplement businesses to augment their fixed compute assets to satisfy the peaks and valleys of workloads.

"In assessing the best cloud infrastructure, customers must think through the workloads they are running and the variability in demand characteristic of their specific workloads," Orakwue adds. "Once the workloads are well understood, customers may need a hybrid or bursting solution to get the benefits of both public and private, and will require multiple layers of security and connectivity for on or off premise clouds."

In order to truly optimize cloud infrastructures to drive business innovation, organizations need to first decide whether it is going, strategically, for a mixture of private and public (a.k.a. hybrid) cloud, or if it can achieve its goals with public-only or private-only infrastructure, says Gilad Parann-Nissany, founder and CEO of Porticor.

"This is not just a cost analysis but even more an analysis of flexibility and future needs. Once having chosen the correct mix, the next

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step is to learn by doing a few projects, and to define the business and technology mix that will be repeatedly used by the business in all its projects," Parann-Nissany explains. "In this discussion, all the businesses we are talking to include a security component, which again is best learned by doing and then scaling up."

Dell believes that what is defined today as hybrid cloud will be the end state for most of its customers.

"Said another way, in the long run, we believe customers will not differentiate between public or private clouds. The SW orchestration layer will advance to the point that the customer will effortlessly move data between his/her on-premise cloud and public clouds with such ease and efficiency that it will feel like a unified, seamless experience," says Orakwue. "Hybrid balances choice and the needs of the business against cost, flexibility and risk. Workloads and data can be moved from private to public as needed during peak capacity, seasonal or cyclical spikes."

While public cloud is still the most adopted model (in some customer segments), many organizations will see the value in seamless integration between their public and private clouds. Dell has focused on developing and acquiring integration solutions that ensure secure, integrated access to applications and data – from physical to virtual, and virtual to cloud, according to Orakwue.

"Specifically, we are helping our customers build, operate and manage their private data center using Dell's state the art hardware combined with software and services," he says. "In the public cloud space, we have a thriving business supplying infrastructure to large, hyper-scale cloud companies with our DCS offerings. In addition we offer secure public cloud, access to business process applications (SaaS), integration of applications through Dell Boomi and services to tie it all together. We are building multiple layers of security into our clouds based on the technology from Dell SecureWorks, Dell AppAssure, and through our partnership with TrendMicro and others."

Cloud enables new scenarios, adds Parann-Nissany, in that infrastructure can be automated, and can be brought up and down as necessary, which enables a "campaign" approach to many business problems, he says.

"The fact that cloud is global enables a global approach. The fact that cloud is flexible and elastic enables a succeed and then scale up approach. Bringing these business benefits to the cloud (both public and private) is what Porticor's security, encryption and key management solution is all about," Parann-Nissany adds.

In the end, customers want agility and choice of technologies to meet their desired business outcomes and end users want self-service and mobile solutions, according to Orakwue. The key attributes Dell works with IT to evaluate are:

Integration: Enterprise customers are looking for a higher degree of security and application integration than provided by most commodity clouds. Adopting cloud brings new challenges with applications. Dell Boomi AtomSphere connects vendors and customers of SaaS, cloud, and on-premise applications via a pure SaaS integration platform, which does not require software or appliances.

Security: The integrity of data is a huge concern for our enterprise customers. Hence our Dell Cloud solutions are based on technologies from Dell SecureWorks, SonicWall, partnering with Trend Micro and others.

Virtualization: Most customers have already started building private cloud infrastructure through virtualization. There is incremental value in using public cloud to increase compute capacity and access business applications.

As Orakwue summarizes: "Realizing the true benefits from cloud requires a determination of the organization's readiness and a sound corporate strategy and buy-in from the business."

Realizing the True Benefits of Cloud

Understanding and implementing cloud can be daunting but the benefits can be well worth the time:

Agility to scale up or down based on immediate business needs: The ability to provision and access significant resources on demand helps companies to quickly scale up and down to meet changing needs. In addition to optimize IT spend by scaling up or down instead of having to spend for maximum capacity, this extra flexibility enables the business side of the house to treat IT as more a dynamic, agile resource for supporting new, fast moving business models and ideas.

Better Utilization of IT Personnel: Rather than spending much of their time managing the daily mundane tasks of caring and feeding an IT infrastructure, IT personnel can spend more of their time dealing with strategic activities.

Move expenses from CAPEX to OPEX: Cloud computing allows the sharing of IT resources, so IT costs can be funded as an expense rather than as a large upfront investment.

Meet the Changing Requirements of a Mobile Workforce: Cloud enables access to data from multiple devices including laptops, tablets or smartphones, anywhere, and anytime. With "consumerization of IT" companies are going as far as giving their employees the ability to buy their own devices. Mobility in the workforce is seen to drive end-user productivity and connectivity between all aspects of the business.

Even the Playing Field: The capabilities of cloud computing mean that smaller businesses can access IT services that were previously only affordable to large corporations with high CAPEX budgets. Without having to procure dedicated hardware and datacenter space, smaller companies can match their IT spend the business demand rather than having to budget for maximum usage with large up-front capital investment. Additionally, the agility that cloud brings gives companies small (and large) increased agility from speed, for example, setting up a IT infrastructure can happen days instead of weeks or months.

Source: Dell Networking

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By Erin E. Harrison

Building the Better Cloud

ServerCentral Puts its High Performance Cloud Infrastructure to the Test

While cloud computing continues to grow in both demand and the number of players in the market, there are only a few real contenders when it comes to public cloud services. Many cloud service providers, including Amazon, may be an affordable option, but they typically do not offer the performance and reliability organizations need to truly leverage the benefits of cloud.

As cloud moves past the hype phase into the reality stage for many organizations, evaluating services can be a tedious process for IT – today's users want stable, predictable performance for computing and storage that gives users more control over technology choice.

"Over the last 10 to 12 months, we have gone from the testing and investigation phase to reality. We now have real customers doing actual work in the cloud, versus 18 months ago when it was merely a seminar topic," Peter Berg, vice president of sales and marketing at ServerCentral, recently told *Cloud Computing*. "Cloud is quickly going mainstream in 2012. We still aren't seeing too many customers doing everything in the cloud, and in the long run, the hybrid approach is probably going to be the right approach. That's what's exciting and challenging about cloud at the same time and that's what presents the real opportunity for providers like us."

Few vendors can base their claims to fame on performance, price and scalability. But ServerCentral says it can. The company's customers range from five virtual machines up to 2,000 machines – and no two customers are alike since they serve small, medium and large enterprises from industries ranging from financial and healthcare to retail and government.

With over 12 years of experience in infrastructure design, in June 2012, ServerCentral entered the public cloud space with its High Performance Cloud (HPC) service. Rather than work with a third-party, ServerCentral spent more than a year going through the development process to create its own cloud platform, based initially on open source software and management tools such as Preboot eXecution Environment (PXE).

The Chicago-based company serves two large customer bases with its private and public cloud services: Enterprises and High Tech/Web 2.0 companies.

"But the enterprise typically has more demands for high performance," explains Avi Freedman, chief technology officer at ServerCentral. "We've seen a lot of companies look at how to manage servers in managed environments. It's been interesting; a lot of people have been taking the improvements and methodologies that have come out of cloud and have this desire to have a cloud service that meets their price and service needs."

With more established infrastructure providers like Amazon claiming to be the best or the cheapest, ServerCentral differentiates itself in what is becoming a much more dense IaaS market through its multi-10-Gigabit network HPC service.

"The ServerCentral IaaS offering has been designed for people unhappy with economics of running content infrastructure in cloud environments," Freedman says. "In looking at the top five and beyond public cloud options, they found when they want to replace real physical servers…that it is actually uneconomical to always leave the infrastructure up in the cloud."

Today, many cloud solutions exist, as Freedman points out, but they revolve around architecting for a specific kind of environment and assuming that all instances on an IaaS are worst-case performers and building in resiliency in the form of extra servers and elastic performance. ServerCentral sees an opportunity to build the features of cloud into platforms without those weaknesses and allow enterprise users to architect and manage their applications in even more efficient ways.

"We built this high performing cloud specifically to outperform the other cloud providers that are out there. We want our cloud to really combat that and give customers way more performance at even a small scale," Berg adds.

Google is another major public cloud provider, which ServerCentral says doesn't offer the enterprise support companies need.

"They have a focus on, and deliver, high performance, which is a good approach to take, but it's not as focused on predictability of where resources are located and in terms of support," Freedman explains.

Each ServerCentral virtual machine (VM) has dedicated CPU as well as support from a multi-10-Gigabit

Building Performance in the Cloud on a Foundation of Experience

For more than a decade, ServerCentral has been delivering highly specialized data center solutions to its customers. That collective expertise has now been woven into the design of a powerful new cloud that maintains speed and performance during periods of the highest I/O workloads.

The ServerCentral High Performance Cloud is built with dedicated CPU and memory per core, all supported by a multi-10-Gigabit network. This allows each virtual machine to run at 1 Gigabit/second per core, ensuring that your data and applications will always be accessible, protected, and lightning-fast.

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Avi Freedman, chief technology officer


Peter Berg, vice president of sales and marketing

network, allowing every VM to run at 1 Gigabit/sec per core, ensuring data and applications are accessible, protected, and lightning-fast 100 percent of the time.

Although there are many more implementations of cloud today than there were even just a year ago, there is still a lot of hype around cloud based on the innovation promises professed by countless cloud service providers. A great competitive equalizer, cloud computing provides immediate access to resources, saves time and money in developing new services and, more and more, addresses infrastructure, platform and software needs.

ServerCentral separates the marketing jargon from the real value cloud can offer to organizations by allowing customers to test their systems for 30 days.

"We give people free test resources for 30 days to hammer it, benchmark it, and make sure it's ready for them to do real work," Berg says.

The company's High Performance Cloud provides virtual machines (VMs) that can do the work of physical servers. Each VM has 1 gigabit/sec per core of usable connectivity with high-performance disk to support real workloads such as database infrastructure and content delivery applications.

For every cloud vendor on the market today, there are almost just as many definitions of what "cloud computing" actually means.

"I would say we are not dogmatic about the definition of cloud," adds Freedman. "We give people the flexibility to try IaaS offerings that we have but we also work with them to use the IaaS model that works best for them. The cloud is about applying the best technology from a set of applications that people need to run. In order to offer the best network and storage offerings in the industry, that usually requires that you have a dedicated offering, hybrid, private and public."

The latest Amazon cloud outages have exposed some of the inherent risks of cloud computing, according to industry analysts who also point out that outages are not uncommon in data centers, but are increasingly harmful in the cloud because so many businesses are affected by the downtime. Given the potential performance risks associated with cloud, ServerCentral's strategy for guaranteeing uptime stems from the underlying technology, as Freedman explains.

"Everything that underlies our cloud from the data center and power and network to the storage and computing is implemented all the time with constant HA from the bottom to the top, run 24/7 using the best techs we can find," Freedman says. "With the right architecture, I believe the cloud industry can do better and we try to do that with the service level agreement (SLA) we offer people. If you architect it correctly, 100 percent uptime is achievable."

"When I joined in 2009 there was a big focus on enabling single VMs to run often in inflexible ways. That's focused on 'how do I move my infrastructure to an on demand infrastructure service' with predicable performance and good economics. People today still find cloud services to be inadequately performing…or they have higher costs…I think that is a niche that we were right people had a lot of interest in. We are probably six months too early to tell what our demand curve is, but the initial reaction has been very good," Freedman adds.

He also points out that many components of cloud are still not very mature, especially in the provisioning layer.

"I had hoped that bigger companies like Microsoft that understand how to do things virtually supported would go in this direction, but they haven't and that leaves a big wide open market," he says.

Looking ahead, Freedman says that where cloud will go, no one really knows for sure.

"The only thing that's sure is that it is going to continue to evolve. There is a large niche of organizations that need to run infrastructure – those people need predictable, economical, high-performance infrastructure and we are positioning ourselves as the leader in that segment of the cloud market," Freedman summarizes. "Over the last 12 years, ServerCentral has focused on supporting people and running the applications that run their business. Our approach to cloud is bringing the best management, server, and network technologies to support the applications."

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by Erik Linask

SPECIAL
Feature

2nd Annual Cloud Computing Excellence Awards

Over the past several years, cloud computing has become one of the defining trends in technology, acting both as a catalyst to function of evolution in both enterprise and consumer markets, as well as fixed and mobile network environments. Judging from most analyst and research firm reports, the impact of cloud computing is only beginning to be felt. As questions surrounding reliability, security, compliance, and ROI are being answered, more and more businesses are moving their cloud applications from test scenarios to live production – as many cloud vendors have expressed, "people are doing 'real' things in the cloud now, not just testing and toying around with the ideas."

Indeed, while vendors are as competitive as ever, the cloud has driven a parallel ecosystem, which has caused significant collaboration and partnership between vendors, as the entire industry seeks to fulfill the promise they have been preaching to the market. The second annual Cloud Computing Excellence Awards recognize the companies that have exhibited an innovation and excellence, bringing cloud-based products and services to market and helping generally advance this growing and significant technology and building a better experience for both corporate and consumer end users.

We congratulate this year's winners.

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Citrix Online Services Division	GoToAssist
Datapipe, Inc.	Datapipe Stratosphere®
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Evolve IP	vServer
Five9, Inc.	Five9 Virtual Contact Center
FrontRange Solutions	FrontRange Cloud

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by Erik Linask

User Expectations Driving Cloud Adoption

Following the launch of the iPhone 5, the technology world's attention was focused squarely on the new features and enhanced capabilities – as well as those that were still missing from Apple's latest iconic device. In fact, the majority of technology conversations tend to focus on what users can do with the latest hardware, services and applications.

It's a natural conversation, as those features and capabilities are the selling points. But they also serve to set user expectations. Whether it's surrounding NBC's online coverage of the Olympic Games, Facebook's mobile apps, mobile integration with a corporate PBX, connectivity to an enterprise WLAN, or any other capability, the expectation has been set by vendors and service providers that these services should "just work." When they don't, conversation begins rabidly and, more often than not, users don't know how to handle the situation, whether in personal or corporate environments.

In the corporate world, when technology doesn't work properly, the first call is typically to the IT department. After all, that's what they are there for. The problem – and this is only exacerbated by the BYOD movement – is there are so many devices and applications that can cause challenges for users and, consequently, for IT staff.

That means IT has less time to perform their other tasks, including managing and maintaining network infrastructure and deploying and updating corporate software and services. It seems like a disaster waiting to happen.

But, to the contrary, there is plenty of hope and opportunity, thanks to the evolution of cloud services. In fact, the continuing maturation of cloud computing offers a new set of opportunities for IT staff to effectively offload much of their IT management to cloud service providers, who have developed hosts of services running in cloud environments specifically to ease the IT burden within the enterprise.

In fact, nearly all business IT functions can now be outsourced to cloud providers and MSPs, who have built entire cloud portfolios that deliver enterprise services, while relieving IT staff of the management duties. When you look at the companies featured in these pages, along with the host of providers present at TMC's ITEXPO, Cloud4SMB Expo, and Cloud Communications Expo, it's evident that everything from voice communications and email to storage and security to full-blown network and mobile management can be fully or partially outsourced.

Even traditional hardware vendors have started building out cloud portfolios, either on their own, or by acquiring or partnering with cloud vendors, recognizing the value they can offer customers be easing much of their IT burden. If you're not a believer yet, take a look at some of these statistics.

- Open Data Center Alliance members are adopting cloud services 15 percent faster than originally predicted, with more than half of its members expecting to run more than 40 percent of their IT operations in the private cloud by 2015.

- Worldwide spend on public IT cloud services will top $40 billion in this year, reaching $100 billion by 2016, according to IDC, growing at a CAGR of more than 26 percent.

- IDC also says that, this year, 80 percent of new commercial enterprise apps will be deployed on cloud platforms.

- Gartner predicts that by the end of 2016, more than half of the Global 1000 will be storing customer-sensitive data in the public cloud.

- Parallels says the SMB cloud services market grew 25 percent last year $15.1 billion, and expects it to hit $69 billion next year, a CAGR of 26 percent.

- Intel says a new cloud server is brought online for every 600 smartphones or 120 tablets. If Piper Jaffray's prediction of more than 27 million iPhone 5 sales by the end of the year is close, that alone will see 45,000 new cloud servers added.

Certainly, there are naysayers, and doubts about the viability and security of the cloud have been plentiful, but, without exception, the folks I spoke to at Cloud Expo in New York earlier this year echoed the notion that these questions have been answered and cloud adoption is set to experience massive growth among businesses of all sized (watch all the TMC interviews from Cloud Expo at www.tmcnet.com/tmc/videos to see some of the incredible advances in cloud computing).

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